

**OKLAHOMA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL SERVICES - APPROVED UNIT RATES
 EFFECTIVE: JANUARY 1, 2024**

LABORATORY TESTING					
CHARGE ITEM			TEST METHOD(S)	UNIT	UNIT PRICES
1	Soil Classification (Gradation and Atterberg Limits)		AASHTO T88, T89, and T90	each sample	\$160.00
2	Moisture Content		AASHTO T265	each test	\$12.00
3	Specific Gravity		AASHTO T100	each test	\$85.00
4	Chunk Density		AASHTO T233	each test	\$40.00
5	Dispersive Characteristics Testing	A. Hydrometer	AASHTO T88	each test	\$150.00
		B. Double Hydrometer	ASTM D4221	each test	\$220.00
		C. Pinhole Test	ASTM D4647 / D4647M	each test	\$190.00
		D. Crumb Test	ASTM D6572	each test	\$60.00
6	Soil Resistivity		AASHTO T288	each test	\$95.00
7	Soluble Sulfate Content		OHD L-49	each test	\$70.00
8	pH	A. Soil	ASTM D4972 or AASHTO T289	each test	\$60.00
		B. Water	ASTM D1293	each test	\$60.00
9	Sulfate Ion (SO ₄)	A. Soil	AASHTO T290	each test	\$70.00
		B. Water	ASTM D516	each test	\$70.00
10	Chloride Ion (CL)	A. Soil	AASHTO T291	each test	\$80.00
		B. Water	ASTM D512	each test	\$80.00
11	Slake Durability of Shales and Other Weak Rocks		ASTM D4644	each test	\$180.00
12	Unconfined Compressive Strength	A. Cohesive Soil	AASHTO T208	each test	\$90.00
		B. Rock Cores	ASTM D7012 (Method C)	each test	\$115.00
		C. Rock Cores with Strain Measurement	ASTM D7012 (Method D)	each test	\$300.00
13	Point Load Test		ASTM D5731	each test	\$55.00
14	Moisture-Density Test	A. Standard Effort	AASHTO T99 - Method A	each test	\$180.00
			AASHTO T99 - Method B	each test	\$190.00
			AASHTO T99 - Method C	each test	\$200.00
			AASHTO T99 - Method D	each test	\$210.00
		B. Modified Effort	AASHTO T180 - Method A	each test	\$195.00
			AASHTO T180 - Method B	each test	\$205.00
			AASHTO T180 - Method C	each test	\$215.00
			AASHTO T180 - Method D	each test	\$225.00
15	One Dimensional Consolidation Test		ASTM D2435 / D2435M	each test	\$550.00
16	One Dimensional Swell or Collapse Test		ASTM D4546	each test	\$350.00
17	Drained Direct Shear Test	A. Cohesionless Soil	AASHTO T236	each test	\$575.00
		B. Cohesive Soil	AASHTO T236	each test	\$900.00
18	Triaxial Shear Test	A. Unconsolidated Undrained (UU)	AASHTO T296	each test	\$600.00
		B. Consolidated Undrained (CU) with Pore Pressure Measurement	AASHTO T297	each test	\$1,450.00
19	Torsional Ring Shear Test		ASTM D6467	each test	\$850.00
20	Resilient Modulus		AASHTO T307	each test	\$675.00

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FIELD SERVICES						
CHARGE ITEM				UNIT	UNIT PRICES	
21	Geotechnical Drilling, Coring, and Soil Survey Sampling (Soil & Rock)	A.	Soil Drilling (Augers)	feet	\$27.00	
		B.	Shale, Sandstone, Siltstone, Gypsum, and Anhydrite Bedrock (Rockbit Drilling)	feet	\$38.00	
		C.	Shale, Sandstone, Siltstone, Gypsum, and Anhydrite Bedrock (Coring)	feet	\$70.00	
		D.	Limestone, Conglomerates, and Dolomite Bedrock (Coring)	feet	\$80.00	
		E.	Chert, Granite, and other Igneous Bedrock (Coring)	feet	\$110.00	
		F.	Poorly Cemented Geologic Formations (i.e. Ogallala Unit) (Coring / Sampling with Denison or Pitcher Barrel Sampler)	feet	\$75.00	
		G.	Borehole Casing (HW/HWT or PW/PWT)	feet	\$40.00	
		H.	Drilling and/or Sampling for Shoulder, In-Place, and Pavement and Subgrade Soil Surveys	feet	\$40.00	
		I.	Drilling and/or Sampling for Pedological and Geological Surveys	hours	\$220.00	
22	Standard Penetration Test (ASTM D1586 / D1586M)			each test	\$32.00	
23	Texas Cone Penetration (TCP) Test			each test	\$40.00	
24	Dynamic Cone Penetrometer (DCP) Test for Shallow Pavement Applications (ASTM D6951)			feet	\$25.00	
25	Thin-Walled Tube Sample (ASTM D1587 / D1587M)			each sample	\$40.00	
26	Mechanical and Electrical Friction Cone and Piezocone Penetration Testing (CPT) of Soils (ASTM D3441 and D5778)	A.	Penetration Testing	feet	\$32.00	
		B.	Dissipation Testing	hours	\$250.00	
		C.	Seismic Shear Wave Testing	each test	\$30.00	
27	Pressuremeter Test (ASTM D4719)	A.	Pressuremeter Test in Soil	each test	\$550.00	
		B.	Pressuremeter Test in Bedrock	each test	\$650.00	
		C.	Unload-Reload Cycle	each cycle	\$150.00	
28	Flat Plate Dilatometer Test (ASTM D6635)	A.	Dilatometer Testing	each test	\$80.00	
		B.	Dissipation Testing	hours	\$300.00	
29	Borehole Jack Test (ASTM D4971)			each test	\$750.00	
30	Rock Dilatometer (ASTM D8359)			each test	\$950.00	
31	Seismograph Surveys	A.	Engineering Surveys	12 Channel Spread	each shot point	\$300.00
		B.	Engineering Surveys	24 Channel Spread	each shot point	\$320.00
		C.	Rippability Surveys	12 Channel Spread	each shot point	\$350.00
		D.	Rippability Surveys	24 Channel Spread	each shot point	\$370.00
32	Monitoring Well Installation (ASTM D5092 / D5092M)			feet	\$60.00	
33	Water Bailing and Sampling			hours	\$155.00	
34	Field Permeability Test (ASTM D6391)			each test	\$800.00	
35	Borehole Plugging (OWRB Specification 785:35 - 11-2)	A.	Bentonite	feet	\$8.50	
		B.	Cement Grout	feet	\$15.00	
36	Bridge Deck Boring - Core Hole Repair			each boring	\$150.00	
37	Dozer Working Time for Borehole Access and Work Area Development			hours	\$250.00	
38	Traffic Control			NPTO	NPTO	
39	Towboat/Barge Mobilization of Equipment	A.	Mobilization of Equipment	NPTO	NPTO	
		B.	Daily Rate	NPTO	NPTO	
40	Mobilization	A.	Truck Mounted Drilling Rig (Weighing less than or equal to 26,000 lbs) (per vehicle)	miles	\$6.00	
		B.	Truck Mounted Drilling Rig (Weighing more than 26,000 lbs - CDL Driver Required) (per vehicle)	miles	\$7.50	
		C.	Vehicle Hauling Dozer, Trackhoe or ATV Drilling Rig (Non-CDL) (per vehicle)	miles	\$6.50	
		D.	Vehicle Hauling Dozer, Trackhoe or ATV Drilling Rig (CDL Driver Required) (per vehicle)	miles	\$8.00	
		E.	Support Truck with Trailer (Water Tank, Pavement Coring, FWD, GPR) (per vehicle)	miles	\$6.50	
		F.	Standard Vehicle (Car, Truck, or SUV) with no trailer (per vehicle)	miles	\$2.00	
41	Pavement Coring, Evaluation, and Non-Destructive Testing	A.	Pavement Coring	Concrete Coring (0 to 12 inches thick pavement)	each core	\$105.00
			Concrete Coring (more than 12 inches thick pavement)	each core	\$130.00	
			Asphalt Coring (0 to 12 inches thick pavement)	each core	\$95.00	
			Asphalt Coring (more than 12 inches thick pavement)	each core	\$120.00	
		B.	Pavement Distress Identification	lane-mile tested	\$450.00	
C.	Falling Weight Deflectometer (FWD)	lane-mile tested	\$590.00			
D.	Ground Penetrating Radar (GPR)	lane-mile tested	\$650.00			
42	Survey for Geotechnical Borings	A.	Level and Rod (Performed by On-Site Field Personnel)	per hour	\$250.00	
		B.	Survey Crew	NPTO	NPTO	
43	Site Preparation Work for Environmental Conformance			NPTO	NPTO	
44	Per Diem and Overnight Lodging (Field Crew excluding Field Engineer / Geologist)	A.	Per Diem (Overnight Stay)	per day per person	GSA Rate	
		B.	Lodging	per night per person	GSA Rate	

NOTE: NPTO = NEGOTIATED PER TASK ORDER OR CONTRACT

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ENGINEERING				
CHARGE ITEM			UNIT	UNIT PRICES
45	Mobilization for Field Engineer and/or Geologist	A. Preliminary Site Reconnaissance, etc.	miles	\$3.50
		B. Field Coordination and Borehole Logging	miles	\$3.50
46	Per Diem and Overnight Lodging (Field Engineer / Geologist)	A. Per Diem (Overnight Stay)	per day per person	GSA Rate
		B. Lodging	per night per person	GSA Rate
47	Engineering	A. Field Work Planning / Desk Reconnaissance	per hour	NPTO
		B. Preliminary Site Reconnaissance	per hour	NPTO
		C. Pedological and Geological Survey Research and Assessment	per hour	NPTO
		D. Environmental Review Coordination	per hour	NPTO
		E. Field Coordination	per hour	NPTO
		F. Borehole Logging	per hour	NPTO
		G. Global Stability Analysis	per hour	NPTO
		H. Settlement Analysis	per hour	NPTO
		I. Retaining Wall Analysis	per hour	NPTO
		J. Bearing Capacity Analysis	per hour	NPTO
		K. End Bearing and Friction Pile Analysis	per hour	NPTO
		L. End Bearing and Friction Drilled Shaft Analysis	per hour	NPTO
		M. Seismic Analysis	per hour	NPTO
		N. Miscellaneous Analysis	per hour	NPTO
		O. FWD Backcalculation and Analysis	per hour	NPTO
P. GPR Analysis	per hour	NPTO		
Q. Pavement Design	per hour	NPTO		
R. Report Preparation	per hour	NPTO		
S. Meetings	per hour	NPTO		

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**OKLAHOMA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL SERVICES – CHARGE ITEM DESCRIPTIONS
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Method of Payment. Unless otherwise specified, the price per unit of work or lump sum item shall include all engineering, labor, personnel, equipment, materials, etc. necessary to complete that unit of work. Failure to follow the procedures as stated will result in non-payment of the unit price item. The most current referenced test procedure and supporting tests shall be used. Unless otherwise specified, the method of compensation for the work involved in laboratory testing will be unit cost. The quantities of charge items for laboratory testing will be the actual number of units completed and accepted. The unit prices for the respective laboratory testing charge items shall include all testing, determinations, measurements, computations, tabulations, and other work required in the performance of the tests; technical supervision and engineering oversight; and services, labor, storage, equipment, transportation, materials, and supplies necessary for and incidental to the completion of the laboratory testing work specified herein, including work reasonably implied. The units of work are defined as follows:

Laboratory Testing:

The preferred test methods for the charge items are shown in the following descriptions. If a deemed equivalent ASTM Standard is desired to be performed in place of an AASHTO Standard, or vice versa, then those tests can be proposed during the negotiation phase and if approved, be performed at no additional cost.

1. **Soil Classification.** Soil Classification includes gradation and Atterberg limits tests and shall be paid for at a unit price per sample. This charge item shall include all operations and materials necessary to perform the tests according to AASHTO T88, T89, and T90, as well as all calculations needed to classify the soils using the Unified Soil Classification System (USCS) and/or AASHTO Soil Classification System, as required in the ODOT Geotechnical Specifications. If hydrometer analysis is needed, it will be paid for under charge item 5A.
2. **Moisture Content.** Moisture Content tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to obtain the test specimen from the field sample and perform the test according to AASHTO T265 (ASTM D2216 test would be allowed at no additional cost). Moisture content required for other tests such as unconfined compression, etc. will be reimbursed under those test costs and will not be paid for under this item.
3. **Specific Gravity.** Specific Gravity tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test according to AASHTO T100 (ASTM D854 test will be allowed at no additional cost).

4. **Chunk Density.** Chunk Density tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test according to AASHTO T233.
5. **Dispersive Characteristics Testing.** Hydrometer, Double Hydrometer, Pin Hole, and Crumb Tests shall be paid for at a unit price per test. These charge items shall include all operations and materials necessary to perform each test according to AASHTO T88, ASTM D4221, ASTM D4647 / D4647M, and ASTM D6572, respectively.
6. **Soil Resistivity.** Soil Resistivity tests shall be paid for at a unit price per test. This charge item includes all operations and materials necessary to perform the test sample preparation and testing according to AASHTO T288.
7. **Soluble Sulfate Content.** Soluble Sulfate Content tests shall be paid for at a unit price per test. This charge item includes all operations and materials necessary to perform this test according to the OHD L-49 procedures which can be found on the ODOT Materials Division Website.
8. **pH.** pH tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test on soil samples according to either AASHTO T289 or ASTM D4972. For water samples, this charge item shall include all operations and materials necessary to perform the test on samples according to ASTM D1293.
9. **Sulfate Ion (SO₄).** Sulfate Ion tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test on soil samples according to AASHTO T290. For water samples, this charge item shall include all operations and materials necessary to perform the test on samples according to ASTM D516.
10. **Chloride Ion (CL).** Chloride Ion tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test on soil samples according to AASHTO T291. For water samples, this charge item shall include all operations and materials necessary to perform the test on samples according to ASTM D512.
11. **Slake Durability of Shales and Other Weak Rocks.** Slake Durability tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform this test according to ASTM D4644.
12. **Unconfined Compressive Strength.** Unconfined Compressive Strength tests shall be paid for a unit price per test. This charge item shall include all operations and materials necessary for preparation of samples and to perform this test for soil and rock. Preparation and tolerances for rock specimens shall be in accordance with ASTM D4543 requirements.

- A. Unconfined Compressive Strength tests for soil and rock shall be performed according to AASHTO T208 and ASTM D7012 (Method C), respectively.
 - B. Uniaxial Compression Test of Intact Rock Core Specimens with axial strain measurement and corresponding intact rock modulus shall be performed according to ASTM D7012 (Method D).
13. **Point Load Test.** Point Load tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform this test in accordance with ASTM D5731.
 14. **Moisture-Density Test.** Moisture-Density tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the Standard Effort tests according to AASHTO T99 Methods A, B, C and D and the Modified Effort tests according to AASHTO T180 Methods A, B, C and D. Each test will include a minimum of five (5) moisture/density points. Sample preparation including (but not limited to) air drying, processing, and blending is included in the cost of this unit price.
 15. **One Dimensional Consolidation Test.** One-Dimensional Consolidation tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform this test according to ASTM D2435 / D2435M.
 16. **One Dimensional Swell or Collapse Test.** One Dimensional Swell or Collapse tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform this test according to ASTM D4546.
 17. **Drained Direct Shear Test.** Drained Direct Shear tests shall be paid for at a unit price per test for cohesionless soil and cohesive soils, respectively. These charge items shall include all operations and materials necessary to perform this test according to AASHTO T236. Each test will include a minimum of three (3) points.
 18. **Triaxial Shear Test.** Triaxial Shear tests shall be paid for at a unit price per test for unconsolidated undrained (UU) and consolidated undrained (CU) with pore pressure measurement, respectively. These charge items shall include all operations and materials necessary to perform this test according to AASHTO T296 and T297, respectively. Each test will include a minimum of three (3) points.
 19. **Torsional Ring Shear Test.** Torsional Ring Shear tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform this test according to ASTM D6467.

20. **Resilient Modulus.** Resilient Modulus tests shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test according to AASHTO T307.

Field Services:

21. **Geotechnical Drilling, Coring, and Soil Survey Sampling.** Geotechnical Drilling shall be paid from top of ground (or bridge deck) to bottom of the borehole at a unit price per foot for the following subsurface and drilling conditions:

- A. Soil drilling with Augers
- B. Shale, Sandstone, Siltstone, Gypsum, and Anhydrite Bedrock drilling with a rock bit
- C. Shale, Sandstone, Siltstone, Gypsum, and Anhydrite Bedrock coring
- D. Limestone, Conglomerates, and Dolomite Bedrock coring
- E. Chert, Granite, and other Igneous Bedrock coring
- F. Poorly Cemented Geologic Formation (i.e. Ogallala Unit) coring / sampling with a Denison or Pitcher Barrel Sampler

When bedrock coring is required, the coring equipment setup time is included in the cost of the per foot rate of the coring. Where geologic or site conditions warrant it, borehole casing (such as HW/HWT or PW/PWT) may be used in lieu of augers to advance the borehole.

The drilling and coring charge items shall include all operations and materials necessary to advance the borehole. This includes borings for sampling and testing by means of the Standard Penetration Test split spoon sampler, thin-walled tube sampler, and the Texas Cone Penetrometer. Rock coring shall be performed in accordance with ASTM D 2113. Core samples shall be logged with % recovery, RQD, and the material shall be photo-logged inside the core box or barrel. Rock coring and sampling equipment should facilitate photography of samples in the rock core split-barrel or immediately upon extrusion of the sample from the Denison or Pitcher barrel sampler or core barrel.

Sampling and/or drilling for Shoulder, In-Place, and Pavement and Subgrade Soil Surveys shall be paid from the top of ground to the bottom of the borehole at a unit price per foot. For the Soil Surveys, a hand auger is the preferred soil sampling equipment, but a drilling rig may also be used when traffic and subgrade conditions warrant the need for a drilling rig.

Sampling and/or drilling for Pedological and Geological Surveys shall be paid at a unit price per hour performing the field work at the project site.

All rates shall include of the cost of properly backfilling the boreholes with auger cuttings and/or on-site soils unless the borehole meets the requirements outlined in the Oklahoma Water Resources Board (OWRB) specification and plugging with cement grout and/or bentonite is required. In that case, charge item 35 may be used for the grout and/or bentonite portions of the borehole backfilling. For situations where the majority of the auger cuttings are sampled and limited on-site soils are readily available to backfill the borings (i.e. soil surveys), cement grout or bentonite may be used to backfill the borings and charge item 35 may be used.

22. **Standard Penetration Test.** Standard Penetration testing shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test according to ASTM D1586 / D1586M.
23. **Texas Cone Penetration (TCP) Test.** Texas Cone Penetration testing shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test as outlined in the "State of Oklahoma Department of Transportation Geotechnical Specifications".
24. **Dynamic Cone Penetrometer (DCP) for Shallow Pavement Applications.** Dynamic Cone Penetration testing shall be paid for at a unit price per foot. This charge item shall include all operations and materials necessary to perform the test according to ASTM D6951.
25. **Thin-Walled Tube Sample.** Thin-Walled Tube sampling shall be paid for at a unit price per sample. This charge item shall include all operations and materials necessary to perform the test according to ASTM D1587 / D1587M.
26. **Mechanical and Electrical Friction Cone and Piezocone, Penetration Testing (CPT) of Soils, Seismic Shear Wave Velocity & Dissipation testing.** Mechanical and Electrical Friction Cone and Piezocone, Penetration Testing of Soils shall be paid from top of ground to the depth at refusal at a unit price per foot of cone advancement. This charge item shall include all operations and materials necessary to perform this test according to ASTM D3441 and D5778. Seismic shear wave velocity testing will be paid per test. Dissipation testing will be paid per hour.
27. **Pressuremeter Test.** Pressuremeter testing shall be paid for at a unit price per test. This charge item includes all operations and materials necessary to perform the test according to ASTM D4719 in either soil or bedrock. Unload-reload cycles will be paid per cycle.
28. **Flat Plate Dilatometer Test.** Flat Plate Dilatometer testing shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test according to ASTM D6635. Dissipation testing will be paid per hour.

29. **Borehole Jack Test.** Borehole Jack testing shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform the test according to ASTM D4971.
30. **Rock Dilatometer Test.** Rock Dilatometer Test shall be paid for at a unit price per test. This charge item includes all operations and materials necessary to perform the test according to ASTM D8359.
31. **Seismograph Surveys.** Seismograph surveys shall be paid for at a unit price per shot point along each survey spread. This charge item includes all operations and materials necessary to perform seismic tests according to the following criteria:
 - A. (A. & B.)

Engineering Surveys to accurately profile geologic layers (bedrock and/or water table) and to determine depths to layers. For engineering surveys, at least five (5) shot points per spread are required with a forward, reverse, beyond end shots, and at least one (1) intermediate shot. Shot points and geophones will be surveyed for vertical and horizontal control. Short geophone spacings and sufficient number of shot points will be required to achieve overlapping reciprocal arrivals necessary for accurate depth to refractor determination.
 - B. (C. & D.)

Rippability Surveys to determine seismic velocities for rippability assessment. For rippability surveys, at least two (2) shot points per spread are required with a forward and reverse shot. If bore hole data is not available to establish a geologic profile, more rigorous field procedures described above for Engineering Surveys will be required to profile geologic layers.
32. **Monitoring Well Installation.** Monitoring Well Installation shall be paid for at a unit price per foot of well installed. This charge item shall include all operations and materials necessary to install monitoring wells according to ASTM D5092 / D5092M. Monitoring wells shall include a locking protective cover, and be constructed of 2" minimum ID PVC flush thread casing with factory slotted PVC screen. This unit price does not include drilling. Drilling shall be paid for under charge item 21.
33. **Water Bailing and Sampling.** Water Bailing and Sampling shall be paid for at a unit price per hour. This charge item shall include all operations and materials necessary to bail the water from the drilled borings and/or installed monitoring wells and to perform the water sampling as outlined in the Specifications for Geotechnical Investigation.

34. **Field Permeability Test.** Field Permeability testing shall be paid for at a unit price per test. This charge item shall include all operations and materials necessary to perform this test according to ASTM D6391.
35. **Borehole Plugging with Cement Grout and/or Bentonite.** Borehole Plugging with Cement Grout and/or Bentonite shall be paid for at a unit price per foot. This charge item includes all plugging with grout or bentonite necessary to plug the boreholes in accordance with Specifications 785:35- 11-2 of the Oklahoma Water Resources Board Rules. Backfilling the borings with auger cuttings or on-site soils is not included in this charge item. Only the boring depth backfilled with grout or bentonite may be paid for under this charge item.
36. **Bridge Deck Boring – Core Hole Repair.** Includes all labor and materials required repair core holes for borings in bridge decks. To be paid for at a unit price per boring.
37. **Dozer Working Time for Borehole Access and Work Area Development.** On-site dozer working time shall be paid for at a unit price per hour. Mobilization (including demobilization) costs for the dozer and/or operator shall be paid under charge item 40.
38. **Traffic Control.** Traffic Control shall be paid for as a unit rate per day and payment will be negotiated per each task order. This charge item includes all operations and materials necessary to perform traffic control according to Chapter IV of the Manual on Uniform Traffic Control Devices (MUTCD), and is required when performing testing and investigative operations on mainline paving such as FWD testing, pavement coring, soil borings, and in-place subgrade sampling of existing pavement section. For certain projects that require shoulder work near a high traffic roadway, this charge item may also potentially be used, however detailed description of the Traffic Control Plan and need for this charge item must be provided for justification.
39. **Towboat/Barge.** Towboat/Barge and its crew shall be paid as a lump sum for mobilization and unit rate per day. Charges for this work must be negotiated for each task order.
40. **Mobilization.** Mobilization shall be paid for at unit price per mile for each item. Round trip mileage shall be computed from the actual location of the equipment. This includes mobilization and demobilization of each piece of equipment (such as drilling rig, dozer, water truck/trailer, Falling Weight Deflectometer (FWD), Ground Penetrating Radar (GPR), etc.) necessary to perform the subsurface investigation(s). The mobilization and demobilization include any incidental mileage to and from hotels during overnight travel, hauling water to use at remote sites with dry creeks, etc. A detailed breakdown of the anticipated mobilization(s) should be provided for negotiation. Similarly, a detailed breakdown of the actual required

mobilizations(s) should be provided as part of the final invoice. If equipment breakdowns or issues occur on-site during the fieldwork, additional mobilizations and mileage due to this occurrence will not be covered by this line item. This charge item needs to cover both the cost of vehicle mobilization and the personnel traveling in the vehicle. Hourly charges for personnel during mobilization will not be allowed. This Mileage for vehicles for site reconnaissance or engineering field work shall be paid under charge item 45.

41. **Pavement Coring, Evaluation, and Non-Destructive Testing.** Pavement Coring, Evaluation, and Non-Destructive Testing (Ground Penetrating Radar (GPR) and Falling Weight Deflectometer (FWD)) shall be paid for under items for pavement coring, pavement distress identification, Falling Weight Deflectometer, and Ground Penetrating Radar testing.

Traffic Control for these items will be paid for under charge item 38. Mobilization of for these items will be paid for under charge item 40 at a unit price per mile from the actual location of the equipment including any incidental mileage to and from hotel during overnight travel and may include mileage incurred to replenish water supply used for coring operations. Charges for this work must be reviewed and approved by ODOT prior to performing any work associated with this item. Pavement Coring shall be paid for at a unit price for asphalt pavement cores and a unit price for concrete cores. Composite Cores shall be paid for at a unit price for concrete cores. This includes all operations and materials to cut four (4) or six (6) inch (100 or 150mm) diameter cores and repair/ patch core holes. Concrete pavement shall be repaired with concrete or grout and asphalt pavement shall be repaired with asphalt cold patch. Separate charge items are provided for cores that are up to 12 inches in length, and for cores exceeding 12 inches thick. Distress Identification will be paid per lane-mile tested and requires documenting at least 10% of the roadway condition and shall identify distress types and severities as detailed in the FHWA Publication No. FHWA-RD-03-031 "Distress Identification Manual for the Long-Term Pavement Performance Program". The charge items for Pavement Distress Identification, FWD testing, and GPR testing include all the required testing and field work and shall be paid as such for each lane-mile tested. The analysis for FWD and GPR shall be paid under charge items 47(O) and 47(P).

42. **Survey for Geotechnical Borings.** For projects on new alignments or where existing benchmarks cannot be found, survey crews can be used to locate geotechnical borings for projects (bridge, retaining wall, embankment, cut section, etc.), and shall be paid as a lump sum and will be negotiated for each task order. For projects with an existing usable benchmark, the boring elevations should be measured referencing the benchmark using a survey level and rod by the on-site field personnel. For projects not surveyed by a survey crew, the boring locations should also be located either by use of a handheld GPS device or by measuring from existing on-site reference points (i.e. wing walls, abutment walls, piers, etc.). Borehole elevation measuring using a level and rod will be paid as an hourly rate. The reported survey

coordinates shall include the plan stations (i.e. Sta. 100+00), offsets from Centerline Survey (i.e. 35 feet Right of CL Survey), and surface elevations (i.e. Elevation = 1000.00 feet).

43. **Site Preparation Work for Environmental Conformance.** Site Preparation Work for Environmental Conformance shall be paid as a lump sum for the service. Charges for this work must be negotiated for each task order. A detailed description of this work needs to be provided at the time of the fee estimate submittal.
44. **Per Diem and Overnight Lodging (Field Crew excluding Field Engineer/ Geologist).** The Department will reimburse the Consultant for per diem and overnight lodging travel expenses at the General Services Administration (GSA) rate for overnight travel. The hotel receipt(s) needs to be provided for reimbursement and proof of overnight stay. Pre-tax hotel rate cannot exceed GSA rate for project location. This charge item covers per diem and overnight lodging for all field personnel excluding the field engineer and/or geologist. The per diem and overnight lodging for the field engineer and/or geologist will be paid for under charge item 46.

Engineering:

45. **Mobilization for the Engineer and/or Geologist.** Mobilization for the Engineer and/or Geologist shall be paid for at unit price per mile for each item. The charge item is broken down into preliminary work (preliminary site reconnaissance, etc.) and field coordination and borehole logging at the time of the field work / drilling. This charge item needs to cover both the cost of vehicle mobilization and the personnel traveling in the vehicle. Hourly charges for personnel during mobilization will not be allowed. Mileage for all other equipment and personnel shall be paid under charge item 40.
46. **Per Diem and Overnight Lodging (Field Engineer/ Geologist).** The Department will reimburse the Consultant for per diem and overnight lodging travel expenses at the General Services Administration (GSA) rate for overnight travel. The hotel receipt(s) needs to be provided for reimbursement and proof of overnight stay. Pre-tax hotel rate cannot exceed GSA rate for project location. This charge item covers per diem and overnight lodging for all field personnel excluding the field engineer and/or geologist. The per diem and overnight lodging for all other field personnel will be paid for under charge item 44.
47. **Engineering.** Engineering shall be paid based on the level of effort negotiated at the approved rates in the contract. This charge item includes all operations and materials necessary to perform Engineering planning, research, on-site field work, analysis, design, reporting, analyses, and attend meetings as outlined below in items A through S. A detailed breakdown of the anticipated

engineering hours and services should be provided for negotiation.

- A. **Field Work Planning / Desk Reconnaissance.** Includes hours in the office planning and preparing for field services. This includes, but is not limited to, calling in utility locate requests and developing traffic control plans.
- B. **Preliminary Site Reconnaissance.** Includes hours in in the field planning dozer clearing paths, staking and/or marking borings, establishing traffic control management plans or other traffic or space restrictions, coordinating with the Field District Engineer/ Personnel, locating potential water sources and survey benchmarks prior to equipment mobilization.
- C. **Pedological and Geological Survey Research and Assessment.** Includes “desktop” evaluation of mapped soils and units that are present near the proposed project alignment. Work under this item to include plotting the proposed alignment on the County soil survey map and determining which mapped units will be crossed. The National Resources Conservation Service (NRCS) database is to be used as a resource in obtaining the most current soil series descriptions. Consultant may also potentially be able to review existing geotechnical data, if available.
- D. **Environmental Review Coordination.** Includes hours in the office coordinating and preparing the Environmental Review Request. This includes all tasks included in the “ODOT Geotechnical Exploration Environmental Review Request Procedures”.
- E. **Field Coordination.** Includes making arrangements for site access, procuring any necessary permits, clearing utilities, preparing damage reports, and property damage restoration oversight.
- F. **Borehole Logging.** Includes a field engineer and/or geologist logging the fieldwork being performed. The engineer and/or geologist is on-site to provide quality control and expertise on the subsurface conditions encountered in the field.
- G. **Global Stability Analysis.** Analysis shall be performed in accordance with the most current version of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.
- H. **Settlement Analysis.** Includes foundation settlement and embankment settlement analyses. The analyses shall be performed in accordance with the most current versions of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.
- I. **Retaining Wall Analysis.** Analysis shall be performed in accordance with the most current version of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.

- J. **Bearing Capacity Analysis.** Analysis shall be performed in accordance with the most current versions of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.
- K. **End Bearing and Friction Pile Analysis.** Analysis shall be performed in accordance with the most current version of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.
- L. **End Bearing and Friction Drilled Shaft Analysis.** Analysis shall be performed in accordance with the most current version of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.
- M. **Seismic Analysis.** Analysis shall be performed in accordance with the most current versions of the “State of Oklahoma Department of Transportation Geotechnical Specifications”.
- N. **Miscellaneous Analysis.** This item is for other analyses not specifically outlined in items F through M. The scope of the specific analysis will be included in each task order.
- O. **FWD Backcalculation and Analysis.** This item is for the required backcalculation and analysis for FWD testing. FWD reporting shall be paid under the Report Preparation charge item.
- P. **GPR Analysis.** This item is for the required analysis for GPR testing. GPR reporting shall be paid under the Report Preparation charge item.
- Q. **Pavement Design.** This item is for all analyses required to complete both the Preliminary and Final Pavement Designs as required by the State Pavement Design Engineer. Pavement design reporting shall be paid under Report Preparation charge item.
- R. **Report Preparation.** At a minimum, each report will address those items required in the most current versions of the “State of Oklahoma Department of Transportation Geotechnical Specifications for Roadway Design” and the “State of Oklahoma Department of Transportation Specifications for the Geotechnical Investigation of Bridges and Related Structures”. Tasks under this item include boring location plan preparation, boring logs preparation, foundation logs preparation, and writing and typing the text of the geotechnical report(s).
- S. **Meetings.** This item is for geotechnical consultant to attend preliminary engineering review or 30% plan review prior to preparing detailed geotechnical scope and attend 60% plan review to provide and discuss geotechnical recommendations which would affect design.