

Scope of Services
Material Compaction Testing, Soils Investigations,
Drilling and Well Construction

SCHEDULE A

- (1) The Contractor shall provide qualified personnel to test and inspect the quality and placement of fill materials on the projects specified by the Engineer within eighteen (18) hours of notice. Tests and inspections shall include, but not be limited to, laboratory compaction tests, field density tests, moisture content determinations, percent compaction, types and gradations of the materials, and placement of the fill materials. The Contractor shall have control of and responsibility for the fill material, being empowered to reject any fill material failing to be suitable for the area placed, either for reasons of compaction or quality of materials.
- (2) The Contractor shall provide qualified personnel to provide on-site soil investigations to inventory the existing soil conditions and determine the general suitability of the soils encountered for the intended purposes. These investigations may be made by means of test pits, soil borings performed by hand augers or machine drills, or by continuous tube sampling with a three (3) inch diameter tube. The method will be determined by the City and the Contractor acting in conjunction based on the existing field conditions for the location being investigated. These investigations shall include, but not be limited to, soil classifications and boring logs, groundwater conditions, and those laboratory tests required to determine the suitability of the materials encountered for the intended purposes.
- (3) The Contractor shall provide qualified personnel and equipment to perform exploratory borings and to install groundwater, leachate, and gas monitoring wells. Services shall include but not be limited to, soil boring, well drilling, sediment/bedrock sampling, field and laboratory analyses, well installation, well development, and borehole/well abandonment. Boring/well locations, depths, and dimensions will be determined by the City. Proposed drilling locations could exist within areas exhibiting contamination (e.g., landfills and LUST sites). All well installation and abandonment activities shall be conducted per Ch. NR 141 of the Wisconsin Administrative Code. The Contractor shall be responsible for contacting the Digger's Hotline "One Call" system in advance of drilling at a proposed site to verify the location of underground utilities. Under the City's direction, the contractor shall remove and dispose of all drill cuttings and shall be responsible for site restoration.
- (4) The Contractor shall provide qualified personnel to obtain and analyze creek or lake sediment cores. The sediment cores shall be taken where directed by the City Engineer. "Shallow water sediment cores" shall include water five (5) feet deep or less. "Deep water sediment cores" shall include water greater than five (5) feet deep. The sediment cores shall have a minimum diameter of 10 cm. Core depths shall be determined for each specific site depending on the actual sediment depth. Cores shall be divided as directed by the City Engineer and each division (i.e., 12" increment, halves, thirds, etc.) shall be analyzed independently and shall constitute a lab analysis. These samples shall be analyzed for any combination of the constituents listed on the following page. Elutriate[TLCP] testing may be required for all chemicals listed. A second column has been provided for listing of prices for elutriate testing. Payments for each analysis being the sum of listed prices for all constituents analyzed. Tests performed on these cores shall be in compliance with Ch. NR 149 of the Wisconsin Administration code.
- (5) The Contractor shall provide field and laboratory testing facilities required to perform the tests and inspections.

- (6) The Contractor shall make those inspections and perform those tests at those locations and at those times as directed by the City Engineer.
- (7) The Contractor shall invoice the City Engineer on a monthly basis for services performed. A separate invoice shall be submitted for each project for which services were performed on, and the invoice shall describe the project name and City contract numbering, the date the services were performed, the hours for each of the Contractor's employees and their respective rates, and the number and description of reimbursable test.

Such payments shall be full compensation for services rendered and for all labor, materials, supplies, equipment and incidentals necessary to complete the services rendered.

There shall be no charge for mileage to and from projects other than drill rig mobilization.

- (8) The Contractor shall provide the services described in this contract at the following rates:

- (a) General.

Laboratory Technician	\$No Charge	per Hour
Field Technician	\$29 - 55	per Hour
Field Engineer	\$68 - 80	per Hour
Professional Engineer	\$90 - 99	per Hour

Note: The above rates apply to the position and services performed regardless of the status of classification of the person performing the services.

- (b) Equipment for Compaction Testing

\$9

 per Field Density Test

- (c) Soil Investigations and Monitoring Well/Probe Installations.

Drilling Rig Mobilization		
Truck Mounted	\$320	Each
Track Mounted	\$350	Each
Equipment Decontamination (when required)	\$200	Day
Traffic Control – Signs	\$120	Day

Standard Soil Borings (ASTM D 1586)		
0' – 10' No Bentonite Backfill	\$13.50	V.F.
0' – 20' Bentonite Backfill	\$16.50	V.F.
20' – 40' Bentonite Backfill	\$17.50	V.F.
Casing for Rotary Drilling	\$7.50	V.F.
Additional Split Spoon Sample	\$25	V.F.

Machine Auger Borings		
No Bentonite Backfill	\$11	V.F.
Bentonite Backfill	\$14	V.F.
Asphalt Patch Borehole	\$30	Each
Concrete Patch Borehole	\$35	Each
Continuous Tube Sampling, 3" Tube	\$130	Five Ft. of Depth
	\$260	Ten Ft. of Depth

Drill Concrete Pavement in Excess of 4" Thickness	\$60	Test Hole
Direct Push Sampling		
0' - 20' Depth	\$12	L.F.
20' - 40' Depth	\$12	L.F.
Water Sample Collection (peristaltic)	\$40	Each
Shallow Water Sediment Cores	\$300	V.F.
Deep Water Sediment Cores:		
5'-10' Depth	\$375	V.F.
10'-20' Depth	\$450	V.F.
20'-30' Depth	\$500	V.F.
Monitoring Well/Probe Installation		
Boring (2.25" I.D. Auger), 0' - 40' Depth	\$13.50	L.F.
Boring (3.25" I.D. Auger), 0' - 40' Depth	\$15	L.F.
Boring (6.25" I.D. Auger), 0' - 40' Depth	\$18	L.F.
Boring (6.25" I.D. Auger), 40' - 80' Depth	\$20.50	L.F.
Boring (6.25" I.D. Auger), 80' - 120' Depth	\$27	L.F.
Boring (8.25" I.D. Auger), 0' - 40' Depth	\$33	L.F.
Generator	\$85	Day
Rock Drilling - Air Rotary (6-inch dia.)	\$38	L.F.
Air Compressor - Air Rotary (750 cfm)	\$375	Day
Rock Drilling - Casing/Mud (6-inch dia.)	\$30	L.F.
1.0 Inch Schedule 40 PVC Well Casing, incl. installation and backfill	\$16	L.F.
2.5 Inch Schedule 40 PVC Well Casing, incl. installation and backfill	\$16	L.F.
2.5 Inch Schedule 80 PVC Well Casing, incl. installation and backfill	\$20	L.F.
6.0 Inch Schedule 80 PVC Well Casing, incl. installation and backfill	\$48	L.F.
Sand and Bentonite (Various Gradation)	\$11	Bag
Protective Casing (6" Aluminum) (w/ cap)	\$200	Each
Protective Casing (10" Steel) (w/ cap)	\$250	Each
Protective Casing (PVC Flush Mount)	\$70	Each
Well Development	\$75	Hour
Water Haul	\$120	Each
Soil Classification and WDNR Logs	\$11	Each
Hydraulic Conductivity Testing (Well Slug Test)	\$165	Hour
Rock Coring	\$55	L.F.
Rock Coring Set-up	\$275	each
Well Repair Crew	\$200	Hour
Well Repair Parts (fill in the % charge)	5	Cost plus %

(d) Laboratory Tests

Atterberg Limits	\$60	per Set
Wash and Dry Sieve Analysis	\$50	Each
Unconfined Compressive Strength	\$50	Each
Wet and Dry Densities	\$25	Each
Loss on Ignition	\$40	Each
Natural Moisture Content	\$7	Each
Particle size distribution by hydrometer (with curve)	\$99	per Sample
Hydraulic conductivity by falling head method	\$175	per Sample
Hydraulic conductivity by ASTM D 5084	\$400	per Sample
Optimum Moisture/Maximum Density Test Curve (Check Point Curve)		
Clay Soils	\$50	per Sample
Granular Soils	\$50	per Sample
Optimum Moisture/Maximum Density Test Curve (3-point Proctor)		
Clay soils	\$150	per Sample
Granular soils	\$150	per Sample

(e) Sampling Equipment

2-inch diameter Shelby tubes, 30-inches long, with end caps	\$53	Each
2-inch diameter Shelby tubes, 36-inches long, with end caps	\$53	Each
3-inch diameter Shelby tubes, 12-inches long, with end caps	\$48	Each
3-inch diameter Shelby tubes, 18-inches long, with end caps	\$50	Each
3-inch diameter Shelby tubes, 24-inches long, with end caps	\$53	Each
3-inch diameter Shelby tubes, 30-inches long, with end caps	\$60	Each
3-inch diameter Shelby tubes, 36-inches long, with end caps	\$60	Each
Chipped bentonite, 50-pound bags	\$11	per Bag
Granular bentonite, 50-pound bags	\$11	per Bag

(f) Core/Soil Analysis (Lab costs exclusive of personnel). There shall be no additional charge for laboratory equipment required to perform the services rendered, other than those listed below. Prices below are for standard ten (10) working day turnaround. Premium charge for 24 hour turnaround shall increase the below cost by two times, premium charge for 2 to 3 working day turnaround shall increase the below cost by 1.75 times, premium charge for 4 to 5 working day turnaround shall increase the below cost by 1.3 times. Note: Turnaround times begins when samples arrive at laboratory.

Chemical/Parameter	Minimum Soil Limit of Detection (mg/kg)	Proposed Method	Soil Sample Test Cost	TCLP Elutriate Test Cost
Metals				
Arsenic, total	0.039	EPA 6010	\$14	\$14
Barium	5500	EPA 6010	\$14	\$14
Cadmium, total	8	EPA 6010	\$14	\$14
Chromium, total	14	EPA 6010	\$14	\$14
Chromium, hexavalent	14	EPA 7196	\$120	
Copper, total	14	EPA 6010	\$14	\$14
Lead, total	50	EPA 6010	\$14	\$14
Manganese, total	50	EPA 6010	\$14	\$14
Mercury, total	4.7	EPA 7471	\$34	\$34
Nickel, total	310	EPA 6010	\$14	\$14
Selenium, total	78	EPA 6010	\$14	\$14
Zinc, total	2300	EPA 6010	\$14	\$14
Nutrients				
Nitrogen, Ammonia	--	EPA 350.1	\$110#	
Nitrogen, Kjeldahl, Total	7800	EPA 351.2	\$110#	
Nitrogen, NO2 plus NO3	--	EPA 351.3	\$110#	
Phosphorus	1.6	EPA 365.4	\$28	
Polycyclic Aromatic Hydrocarbons				
1-Methylnapthalene	8.8	EPA 8270 SIM	\$110	\$110
2-Methylnapthalene	8.8			
Acenaphthene	900			
Acenaphthylene	8.8			
Anthracene	5000			
Benzo(a)anthracene	0.088			
Benzo(a)pyrene	0.0088			
Benzo(b)fluoranthene	0.088			
Benzo(g,h,i)perylene	0.88			
Benzo(k)fluoranthene	0.88			
Chrysene	8.8			
Dibenzo(a,h)anthracene	0.0088			
Fluoranthene	600			
Fluorene	600			
Indeno(1,2,3-cd)pyrene	0.088			
Naphthalene	600			
Phenanthrene	0.88			
Pyrene	500			

Chemical/Parameter	Minimum Soil Limit of Detection (mg/kg)	Proposed Method	Soil Sample Test Cost	TCLP Elutriate Test Cost
Organic Compounds				
Full VOC Scan*	--	EPA 8260	\$90	\$90
Benzene	0.0055	EPA 8021+	\$35	\$35
1,2-Dichloroethane	0.0049			
Ethylbenzene	2.9			
Toluene	1.5			
Xylenes, Total	4.1			
DRO	100			
GRO	100	WI 8021	\$33	
Hexane Extractable Material (Oil and Grease)	--	9071	\$70	
Pesticides				
Aldrin	0.38	EPA 8081	\$160	\$160
Dieldrin	0.04			
Endrin	23			
Heptachlor	0.14			
Lindane	--			
Toxaphene	0.58			
Trans-Chlordane	0.49			
Cis-Chlordane	0.49			
o,p-DDT	1.9			
p,p-DDT	1.9			
o,p-DDD	1.9			
p,p-DDD	1.9			
o,p-DDE	1.9			
p,p-DDE	1.9			
Miscellaneous				
Total Cyanide	--	EPA 9012	\$44	\$14
PCBs, Total	0.05	EPA 8082	\$145	\$145
pH	--	EPA 9045	\$13	
Total Organic Carbon	--	EPA 9060	\$70	
Electrical Conductivity	--	EPA 9050	\$21	
Fecal Coliform	--	SM 9222D	\$34	

*Detection limits for VOCs in soils and water shall meet industry standards.

Nutrients: Nitrogen tests performed as group.

+ EPA 8021 test is without 1,2 Dichloroethane. EPA 8260 full VOC scan includes 1,2 Dichloroethane.

Note: 1) Protocol B (attached) to be invoiced as lump sum of \$910. 2) TCLP extraction \$60.

G. Billing and Payment.

The Contractor will submit invoices to the City monthly for work completed and accepted to date. Invoices are to be paid no later than thirty (30) days after the date of approval by the City. The Contractor will also indicate the contract name, the billing category and number, and the billing interval on each invoice and shall compile and submit separate invoices correlated with each of the following categories:

ENGINEERING

Resurfacing Streets 15-1

Reconstructing Streets 15-2

Assessable and Privately Contracted Streets 15-3

PARKS DIVISION

Parking Lots and Various Courts 15-4

OTHER CITY DIVISIONS

Parking Lots and Miscellaneous 15-7