

PROJECT MANUAL

BRADSTREET'S LANDING IMPROVEMENTS SPENCER CREEK STREAMBANK RESTORATION

Prepared for:

City of Rocky River



ISSUED FOR BID

Project No: 00015426.000 Issue date:

February 20 2026

Prepared by:

SMITHGROUP

CITY OF ROCKY RIVER, OHIO

**ROCKY RIVER
SPENCER CREEK REHABILITATION PROJECT**

**ADVERTISEMENT, INSTRUCTIONS TO BIDDERS, SPECIFICATIONS,
CONTRACT AND BIDDING DOCUMENTS**

February 20, 2026

**LEGAL NOTICE - CITY OF ROCKY RIVER - ROCKY RIVER, OHIO
SPENCER CREEK REHABILITATION
LEGAL NOTICE**

Sealed bids for Spencer Creek Rehabilitation will be received by the City of Rocky River until 12:00 noon on Friday, March 20, 2026, at 21012 Hilliard Blvd. in said City. Bids will then be publicly opened and read aloud. A virtual prebid meeting for all bidders will be held at 10:00 AM EST on Wednesday March 4, 2026. A link will be provided to access the meeting via the ARC Plan Room site listed below. Prospective prime bidders are encouraged to attend. All contractor questions must be submitted to rsnyder@rockyriverohio.gov prior to 4pm on Monday, March 9th.

Work will include construction of up to 750 linear feet of shoreline toe protection, 120 linear feet of rock cross-vane flow control structure, restoration planting of up to 0.65 Acres along the shoreline and along the creek, grading of two floodplain benches using site materials, up to 200 linear feet of retaining wall and invasive species removal within up to 0.87 acres of uplands.

Plans, specifications, bid forms, and contract documents may be examined and purchased at <https://order.e-arc.com/arcEOC/ARCPlanRoom.aspx>. The bidder is responsible for all printing and delivery fees. Fees are non-refundable. Each bidder must ensure that all employees and applicants for employment are not discriminated against because of their race, creed, color, sex or national origin. Contractors shall be required to pay prevailing wages on this contract in accordance with Sections 4115.03-4115.06 of the Ohio Revised Code. Each proposal must contain the full name of party or parties submitting the proposal and all persons interested in same and be accompanied by a bid guaranty in the form of either a Bond in an amount equal to one-hundred percent (100%) of the total bid drawn in favor of the City of Rocky River, or a consent of surety together with a certified or cashier's check or letter of credit on a solvent bank in Cuyahoga County made payable to the City of Rocky River in an amount not less than ten percent (10%) of the total amount of the bid as prescribed in Ohio Revised Code Section 153.54. Each bidder must submit evidence of its experiences on projects of similar size and complexity. Equal Opportunity Employer, Rich Snyder, Director of Public Safety Service. All proposals shall be sealed and marked: SPENCER CREEK REHABILITATION

Pre-Bid Meeting Link:

Microsoft Teams meeting

Join: <https://teams.microsoft.com/meet/29481097287499?p=w38jOriS5KTF8tyVQt>

Meeting ID: 294 810 972 874 99

Passcode: bw9cR2Xm

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PART I – FEDERAL AND STATE REQUIREMENTS

1.101 NOTICE TO CONTRACTOR

A. O.S.H.A.

B. UNRESOLVED FINDINGS FOR RECOVERY DATABASE

C. EXISTING UTILITIES

**D. AFFIDAVIT IN COMPLIANCE WITH SECTION 3517.13
OF OHIO REVISED CODE**

E. MAINTENANCE OF EXISTING WATER FLOW IN THE CREEK

1.102 PREVAILING WAGES

1.101 NOTICE TO CONTRACTOR

A. O.S.H.A.

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970, O.S.H.A., (P.L. 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (P.O. 91-54).

B. UNRESOLVED FINDINGS FOR RECOVERY DATABASE

Per Ohio Revised Code 9.24(A) the City cannot award contracts over \$50,000 to a contractor against whom a finding for recovery has been issued by the Auditor of the State. Bidders must provide proof that no unresolved finding for recovery has been issued by the Auditor of the State of Ohio by accessing the Auditor's website at <http://www.auditor.state.oh.us/>. At this website, type contractor name in where specified and then print the page that appears. If you company's name does not appear on the list, the City will consider this as proof that there is no unresolved finding for recovery from the Auditor's office.

C. EXISTING UTILITIES

The Contractor shall protect all existing underground and above ground utilities, including, but not limited to AT&T ducts, conduits, and manholes; Dominion East Ohio Gas pipes; electric lines; and water mains. It is the responsibility of the contractor to notify the City's representative if any conflicts with existing underground utilities occurs or is anticipated to occur.

D. AFFIDAVIT IN COMPLIANCE WITH SECTION 3517.13 OF OHIO REVISED CODE

All parties submitting a bid for this project are required to complete an affidavit certifying compliance with O.R.C. 3517.13. Please refer to section 5.109 for affidavit form.

E. MAINTENANCE OF EXISTING WATER FLOW IN THE CREEK

Due to stormwater and treated wastewater conveyance through Spencer Creek, the Contractor will be responsible for maintaining the existing flow in the creek provide the same degree of stormwater conveyance to reduce potential upstream flooding impacts during construction. The Contractor shall provide for the adequate flow around the section or sections of work. If required, pump and bypass lines shall be of adequate capacity and size to handle the entire flow. The Contractor shall be responsible for all installation, operation, and maintenance of the system. Manpower, fuel, and necessary utilities required by the systems shall be provided by the Contractor. Ready-use, stand-by pumping shall be achieved by backing up pump size for size (100% back-up capability) in case of emergency situations, equipment malfunction, or higher than anticipated flow. Pump loudness shall not exceed 60 dBA 50 feet from the source. Cost for this item shall be included with other items bid, no separate payment shall be made.

1.102 PREVAILING WAGES

Contractor and all subcontractors working on the Project shall comply with the prevailing wage requirements contained in Sections 4115.03 through 4115.06 of the Ohio Revised Code. Included herein are the “Prevailing Wages” current on the bidding dates hereof.

Prevailing Wage Rate Skilled Crafts

Name of Union: Bricklayer Local 23 (Cleveland)

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Bricklayer

Effective Date:
5/7/2025

Effective Date:
5/7/2025

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Bricklayer	\$40.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.57	\$83.78
Stone Mason	\$40.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.57	\$83.78
Pointer Caulker Cleaner	\$40.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.57	\$83.78
Marble Mason	\$40.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.57	\$83.78
Terrazzo Worker	\$40.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.57	\$83.78
Cement Mason	\$40.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.57	\$83.78
Sandblaster	\$40.67		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$63.82	\$84.16
Sewer Stack	\$40.92		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$64.07	\$84.53
Swing Scaffold	\$41.42		\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$64.57	\$85.28
Masonry Maintenance Specialist	\$20.21		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$20.21	\$30.32
Apprentice	BHR	Percent										
1st 6 Months	\$24.25	\$60.00	\$11.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35.90	\$48.03
2nd 6 Months	\$26.27	\$65.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.42	\$62.56
3rd 6 Months	\$28.29	\$70.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$51.44	\$65.59
4th 6 Months	\$30.32	\$75.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.47	\$68.62
5th 6 Months	\$32.34	\$80.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$55.49	\$71.65
6th 6 Months	\$34.36	\$85.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$57.51	\$74.69
7th 6 Months	\$36.38	\$90.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$59.53	\$77.72
8th 6 Months	\$38.40	\$95.00	\$11.65	\$10.66	\$0.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$61.55	\$80.75
MASON TRAINEE S 1st 90 Days	\$18.19	\$45.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$18.19	\$27.28
1st Year AFTER 90 Days	\$18.19	\$45.00	\$11.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$29.84	\$38.93

2nd Year	\$20.21	\$50.00	\$11.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$31.86	\$41.97
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(*)Special Calculation Note :

Apprentice must be hired prior to hiring Mason Trainees

Ratio :

1-2 Journeyman to 1 Apprentice 1 Trainee 3-4 Journeyman to 2 Apprentices 1 Trainee 5-6 Journeyman to 2 Apprentices 2 Trainees 6-10 Journeyman to 3 Apprentices 2 Trainees

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Lorain, Medina

Special Jurisdictional Note :

Details :

Masonry Maintenance Specialist * * - in partnership with a local education organization employer may employ School to Work students providing said employee is a full time student and that no conflicts exist with any Federal or State Laws. Employer must be party to an apprentice program duly registered with the DOL and Ohio State Apprentice Compliance (OSAC). Wages for Masonry Maintenance Specialist shall be fifty-five percent (55%) of the journeyperson base rate with no fringe benefits.

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Local 404

Type of Rate: Commercial

Change #:
LCN01-2024ib

Craft:
Cement Mason

Effective Date:
5/1/2024

Effective Date:
5/1/2024

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Cement Mason	\$34.88		\$9.40	\$7.10	\$0.63	\$0.00	\$5.95	\$0.08	\$0.00	\$0.00	\$58.04	\$75.48
Apprentice	BHR	Percent										
1st yr	\$20.41	\$58.51	\$9.40	\$7.10	\$0.63	\$0.00	\$2.98	\$0.08	\$0.00	\$0.00	\$40.60	\$50.80
2nd yr	\$25.64	\$73.50	\$9.40	\$7.10	\$0.63	\$0.00	\$2.98	\$0.08	\$0.00	\$0.00	\$45.83	\$58.65
3rd yr	\$29.13	\$83.51	\$9.40	\$7.10	\$0.63	\$0.00	\$2.98	\$0.08	\$0.00	\$0.00	\$49.32	\$63.88
4th yr	\$34.36	\$98.50	\$9.40	\$7.10	\$0.63	\$0.00	\$2.98	\$0.08	\$0.00	\$0.00	\$54.55	\$71.73

(*)Special Calculation Note :

Other is Training Fund

Ratio :

5 Journeymen to 1 Apprentice 2 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Geauga, Lake, Lorain

Special Jurisdictional Note :

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Cement Mason Local 404 Hev Hwy

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Cement Mason

Effective Date:
5/1/2025

Effective Date:
5/1/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Cement Mason	\$36.29		\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$57.16	\$75.31
Apprentice	BHR	Percent										
1st Year	\$25.40	\$70.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$46.27	\$58.97
2nd Year	\$29.03	\$80.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$49.90	\$64.42
3rd Year	\$32.66	\$90.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$53.53	\$69.86
4th Year	\$34.48	\$95.00	\$9.20	\$7.85	\$0.75	\$0.00	\$3.00	\$0.07	\$0.00	\$0.00	\$55.35	\$72.58

(*)Special Calculation Note :

Other: International Training Fund

Ratio :

1 Journeyman to 1 Apprentice 2 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Geauga, Lake, Lorain

Special Jurisdictional Note :

Details :

Highway Construction, Sewer, Waterworks And Utility Construction, Industrial & Building Site, Heavy Construction, Airport Construction Or Railroad Construction Work, Power Plant, Tunnels, Amusement Park, Athletic Stadium Site Work, Pollution Control, Sewer Plant, Waste & Water Plant, Water Treatment Facilities Construction.

Prevailing Wage Rate Skilled Crafts

Name of Union: Ironworker Local 17

Type of Rate: Commercial

Change #:
LCN01-2020fb

Craft:
Ironworker

Effective Date:
12/24/2020

Effective Date:
12/24/2020

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Ironworker	\$33.83		\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$59.04	\$75.96
Apprentice	BHR	Percent										
1st 6 Months	\$16.92	\$50.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$42.13	\$50.58
2nd 6 Months	\$18.61	\$55.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$43.82	\$53.12
2nd Year 1st 6 Months	\$23.68	\$70.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$48.89	\$60.73
2nd Year 2nd 6 Months	\$25.37	\$75.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$50.58	\$63.27
3rd Year 1st 6 Months	\$27.06	\$80.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$52.27	\$65.81
3rd Year 2nd 6 Months	\$28.76	\$85.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$53.97	\$68.34
4th Year 1st 6 Months	\$30.45	\$90.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$55.66	\$70.88
4th Year 2nd 6 Months	\$32.14	\$95.00	\$7.94	\$10.00	\$0.67	\$2.10	\$4.50	\$0.00	\$0.00	\$0.00	\$57.35	\$73.42

(*)Special Calculation Note :

No special calculations for this skilled craft wage rate are required at this time.

Ratio :

4 Journeymen to 1 Apprentice on Structural Work 3 Journeymen to 1 Apprentice on Rod Work 2 Journeymen to 1 Apprentice on Finishing, Steel Sash, Stairway and Ornamental Work 1 Apprentice for every Sheeting Gang 1 Journeymen to 2 Apprentice Roadway Signage and Sound Barriers 2 Journeymen to 2 Apprentice Unloading and Erection of Light Gauge Metal Trusses

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Erie, Geauga, Huron, Lake, Lorain, Medina, Portage, Summit

Special Jurisdictional Note :

West Boundary Line :Sandusky, Ohio: Boundary lines between Local 17 & Local 55 are as follows: Columbus Ave north to Sandusky Bay (and/or Lake Erie): Columbus Ave South to present Route 4: Route 4 South to present Route 99: from Route 99 south to old Route 224-all territory to the west of the boundary line to be the jurisdiction of Local 55.All territory to the East of the boundary line to be the jurisdiction of Local 17.Kelly's Island to be within jurisdiction of Local 17.All bridges,tunnels,viaducts,etc, relative to these boundary lines shall be the jurisdiction of Local 17 South Boundary Line:Canton, Ohio: Boundary lines between Local 17 & Local 550 are as follows: All territory north of old Route 224 line to be the jurisdiction of Local 17. All bridges,tunnels,viaducts,signs,etc, relative to old Route 224 line to be within the jurisdiction of Local 17. All territory south of old Route 224 line is to be within the jurisdiction of Local 550, except for everything within the city limits of Barberton which shall be the jurisdiction of Local 17. Reading from West to East: Route old 224 line: Greenwich Ave-Wooster Road or East Ave. Route old 224 line: New 224 line including Cloverleaf: East Waterloo Road: New 224 line-Attwood Road-Old 224. This will be considered to be the old Route 224 line,except for the city limits of Barberton, Ohio which shall be the jurisdiction of Local 17 Southeast Boundary : Between local 17 and Local 207 are as follows: West of a line from Middlefield to Shalersville to Deerfield, shall be under the jurisdiction of local 17. East of a line from Middlefield, to Shalersville to Deerfield, shall be under the jurisdiction of Local 207. Local 17 & Local 207 have agreed that the Ohio County of Ashtabula shall be as follows: Everything North of Route 6, starting at the Geauga County line, proceeding east to State Route 45, shall be under the jurisdiction of Local 17. Everything South, starting at the Geauga County line shall be under local 207. North Boundary: The East boundary line and the West boundary line continuing North halfway across Lake Erie.

Details :

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor HevHwy 1B

Type of Rate: Commercial

Change #:
LCN02-2025ib

Craft:
Laborer

Effective Date:
6/11/2025

Effective Date:
6/11/2025

Classification	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Laborer Group 1	\$38.93		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.03	\$74.50
Group 2	\$39.10		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.20	\$74.75
Group 3	\$39.43		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.53	\$75.25
Group 4	\$39.88		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.98	\$75.92
Watch Person	\$32.00		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$48.10	\$64.10
Apprentice	BHR	Percent										
0-1000 hrs	\$31.14	\$80.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$47.24	\$62.82
1001-2000 hrs	\$33.09	\$85.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$49.19	\$65.74
2001-3000 hrs	\$35.04	\$90.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$51.14	\$68.66
3001-4000 hrs	\$36.98	\$95.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$53.08	\$71.58
More than 4000 hrs	\$38.93	\$100.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$55.03	\$74.50

(*)Special Calculation Note :

Watchman have no Apprentices. Tunnel Laborer rate with air-pressurized add \$1.00 to the above wage rate
 Commercial Driver's License – Any Laborer required to utilize a valid Commercial Driver's License (CDL), are in compliance with necessary FMCSA regulations and approved by the Contractor to operate a Commercial Motor Vehicle (CMV), shall be paid one dollar (\$1.00) per hour above the base rate for the entirety of their working shift.

Ratio :

1 Journeymen to 1 Apprentice 3 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga

Special Jurisdictional Note :

Hod Carriers and Common Laborers - Heavy, Highway, Sewer, Waterworks, Utility, Airport, Railroad, Industrial and Building Site

Details :

Group 1 Laborer (Construction); Plant Laborer or Yardman, Right-of-way Laborer, Landscape Laborer, Highway Lighting Worker, Signalization Worker, (Swimming) Pool Construction Laborer, Utility Man, *Bridge Man, Handyman, Joint Setter, Flagperson, Carpenter Helper, Waterproofing Laborer, Slurry Seal, Seal Coating, Surface Treatment or Road Mix Laborer, Riprap Laborer & Grouter, Asphalt Laborer, Dump Man (batch trucks), Guardrail & Fence Installer, Mesh Handler & Placer, Concrete Curing Applicator, Scaffold Erector, Sign Installer, Hazardous Waste (level D), Diver Helper, Zone Person and Traffic Control. *Bridge Man will perform work as per the October 31, 1949, memorandum on concrete forms, by and between the United Brotherhood of Carpenters and Joiners of America and the Laborers' International Union of North America, which states in; "the moving, cleaning, oiling and carrying to the next point of erection, and the stripping of forms which are not to be re-used, and forms on all flat arch work shall be done by members of the Laborers' International Union of North America." Group 2 Asphalt Raker, Screwman or Paver, Concrete Puddler, Kettle Man (pipeline), All Machine-Driven Tools (Gas, Electric, Air), Mason Tender, Brick Paver, Mortar Mixer, Skid Steer, Sheeting & Shoring Person, Surface Grinder Person, Screedperson, Water Blast, Hand Held Wand, Power Buggy or Power Wheelbarrow, Paint Striper, Plastic fusing Machine Operator, Rodding Machine Operator, Pug Mill Operator, Operator of All Vacuum Devices Wet or Dry, Handling of all Pumps 4 inches and under (gas, air or electric), Diver, Form Setter, Bottom Person, Welder Helper (pipeline), Concrete Saw Person, Cutting with Burning Torch, Pipe Layer, Hand Spiker (railroad), Underground Person (working in sewer and waterline, cleaning, repairing and reconditioning). Tunnel Laborer (without air), Caisson, Cofferdam (below 25 feet deep), Air Track and Wagon Drill, Sandblaster Nozzle Person, Hazardous Waste (level B), ***Lead Abatement, Hazardous Waste (level C) ***Includes the erecting of structures for the removal, including the encapsulation and containment of Lead abatement process. Group 3 Blast and Powder Person, Muckers will be defined as shovel men working directly with the miners, Wrencher (mechanical joints & utility pipeline), Yarnier, Top Lander, Hazardous Waste (level A), Concrete Specialist, Curb Setter and Cutter, Grade Checker, Concrete Crew in Tunnels. Utility pipeline Tappers, Waterline, Caulker, Signal Person will receive the rate equal to the rate paid the Laborer classification for which the Laborer is signaling. Group 4 Miner, Welder, Guniting Nozzle Person A.) The Watchperson shall be responsible to patrol and maintain a safe traffic zone including but not limited to barrels, cones, signs, arrow boards, message boards etc. The responsibility of a watchperson is to see that the equipment, job and office trailer etc. are secure.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor HevHwy 5

Type of Rate: Commercial

Change #:
LCN02-2025ib

Craft:
Laborer

Effective Date:
6/11/2025

Effective Date:
6/11/2025

Classification	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Laborer Group 1	\$40.31		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$56.41	\$76.57
Watch Person	\$32.00		\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$48.10	\$64.10
Apprentice	BHR	Percent										
0-1000 hrs	\$32.25	\$80.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$48.35	\$64.47
1001-2000 hrs	\$34.26	\$85.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$50.36	\$67.50
2001-3000 hrs	\$36.28	\$90.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$52.38	\$70.52
3001-4000 hrs	\$38.29	\$95.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$54.39	\$73.54
More than 4000 hrs	\$40.31	\$100.00	\$8.60	\$4.45	\$0.45	\$0.00	\$2.50	\$0.00	\$0.10	\$0.00	\$56.41	\$76.57

(*)Special Calculation Note :

Watchman have no Apprentices. Commercial Driver's License – Any Laborer required to utilize a valid Commercial Driver's License (CDL), are in compliance with necessary FMCSA regulations and approved by the Contractor to operate a Commercial Motor Vehicle (CMV), shall be paid one dollar (\$1.00) per hour above the base rate for the entirety of their working shift.

Ratio :

1 Journeymen to 1 Apprentice 3 Journeymen to 1 Apprentice thereafter

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga

Special Jurisdictional Note :

Sewage Plant, Waste Plant, Water Treatment Facilities Construction, Pumping Stations, Ethanol Plant Construction, and Municipal, County & State Facility Pool Construction, (except packaged plants). All work in construction of pumping stations, waste and sewage disposal plants, incinerator plants, water treatment plants, filtration plants and solid waste disposal plants, ethanol plants & swimming pools at municipal, county & state facilities.

Details :

Laborer Heavy Highway 5 for Cuyahoga and Geauga Counties provides wage rates for ONLY the following work: All work in laying and installation of process piping both outside and within sewage filtration, water treatment plants, and ethanol plants, including mechanical and pressure pipe within. All work in construction of swimming pools, including but not limited to, the installation and demolition of water filtration systems, at municipal, county & state facilities. Construction of pumping stations, waste and sewage disposal plants, incinerator plants, water treatment plants, filtration plants and solid waste disposal.

Prevailing Wage Rate Skilled Crafts

Name of Union: Labor Local 310

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Laborer

Effective Date:
5/7/2025

Effective Date:
5/7/2025

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Laborer Group 1	\$33.18		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.52	\$73.11
Group 2	\$33.66		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$57.00	\$73.83
Group 3	\$33.43		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.77	\$73.49
Group 4	\$30.08		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$53.42	\$68.46
Group 5	\$27.58		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$50.92	\$64.71
Group 6	\$29.73		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$53.07	\$67.94
Group 7	\$33.68		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$57.02	\$73.86
Group 8	\$33.83		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$57.17	\$74.09
Group 9	\$28.03		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$51.37	\$65.39
Group 10	\$24.03		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$47.37	\$59.39
Group 11	\$33.33		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.67	\$73.34
Group 12	\$33.57		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.91	\$73.70
Group 13	\$34.68		\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.00	\$58.02	\$75.36
Apprentice	BHR	Percent										
1-1000 hours	\$19.91	\$60.00	\$8.86	\$0.00	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$32.30	\$42.25
1001-2000 hours	\$23.23	\$70.00	\$8.86	\$5.48	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$41.10	\$52.71
2001-3000 hours	\$26.54	\$80.00	\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$49.88	\$63.16
3001-4000 hours	\$29.86	\$90.00	\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$53.20	\$68.13
4001 plus	\$33.18	\$100.00	\$8.86	\$10.95	\$0.10	\$0.00	\$3.08	\$0.15	\$0.00	\$0.20	\$56.52	\$73.11

(*)Special Calculation Note :

Other is Supplemental Unemployment Benefit (SUB).

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga, Lake

Special Jurisdictional Note :

Details :

Group 1 - Building and construction Laborers and Tenders; Asbestos Removal - hazardous materials; unloading of furniture and fixtures. Group 2 - Gunite Operating (Machines of all type). Group 3 - Laborers on swinging scaffolds; air track and wagon drill. Group 4 - Drywall stocking and handling. Group 5 - General Landscaping. Group 6 - Final Clean-up (must perform clean-up duties for entire work shift, and excludes demolition work). Group 7 - Blasters, Shooters, Caissons, Well Cylinder, Cofferdams, Mine Workers without air, acid brick tenders. Group 8 - Top man on free standing radial stack; bellman and bottom man in blast furnace and stove. Group 9 - Sewer jet. Group 10 - Heat tender. Group 11 - Firebrick. Group 12 - Mason tender handling carbon block and bottom block for blast furnace stoves, stacks etc. Group 13 - Lansing Burners.

Prevailing Wage Rate Skilled Crafts

Name of Union: Operating Engineers - Building Local 18 - Zone I (A)

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Operating Engineer

Effective Date:
6/11/2025

Effective Date:
6/11/2025

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Operator Group A	\$49.41		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$66.31	\$91.02
Operator Group B	\$49.26		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$66.16	\$90.79
Operator Group C	\$47.81		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$64.71	\$88.62
Operator Group D	\$47.03		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.93	\$87.45
Operator Group E	\$46.71		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.61	\$86.97
Operator Group F	\$39.63		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$56.53	\$76.35
Master Mechanic	\$50.41		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$67.31	\$92.52
Lift Director	\$50.41		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$67.31	\$92.52
Crane 200'-299'	\$50.41		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$67.31	\$92.52
Crane 300' and over	\$50.91		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$67.81	\$93.27
Mobile Concrete Pumps 200'-299'r	\$51.41		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$68.31	\$94.02
Mobile Concrete Pumps 300' and over	\$50.91		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$67.81	\$93.27
Apprentice	BHR	Percent										
1st Year	\$29.56	\$59.82	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$46.46	\$61.24
2nd Year	\$34.48	\$69.78	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$51.38	\$68.62
3rd Year	\$39.41	\$79.76	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$56.31	\$76.01
4th Year	\$44.33	\$89.72	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$61.23	\$83.40

(*)Special Calculation Note :

Other & Misc is Education & Safety and National Training Fund.

Ratio :

For every (3) Operating Engineer Journeymen employed by the company, there may be employed (1) Registered Apprentice. An apprentice, while employed as part of a crew per Article VIII, paragraph 77, will not be subject to the apprenticeship ratios in this collective bargaining agreement.

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Erie, Geauga, Huron, Lake, Lorain, Medina

Special Jurisdictional Note :

Details :

Note: There will be a 5% increase for the apprentices on top of the percentages listed above provided they are operating mobile equipment. Operating Engineers employed on any piece of equipment requiring a Certified Crane Operator (CCO) certification or employed on cranes involved in pile driving operations shall be paid a premium of one dollar (\$1.00) per hour in addition to the crane rate or any escalated rate that may be in effect. Group A - A-Frames; "Boiler Operators, Compressor Operators, Hydraulic Pumps & Power Pacs when mounted on a crane or regardless of where said equipment is mounted (piggy-back operation)"; Boom Trucks (all types); Cableways; Cherry Pickers; Combination - Concrete Mixers & Towers; Concrete Pumps; Cranes (all types); Cranes- compact: Track or rubber over 4000lbs. capacity; Cranes- self erecting: stationary, track or truck (all configurations); Derricks (all types); Draglines; Dredges (dipper, clam or suction) 3-man crew; Elevating Graders or Euclid Loaders; Floating Equipment; Gradalls; Helicopter Operators, hoisting building materials; Helicopter Winch Operators, hoisting building materials; Hoes (All types); Hoists (two or more drums); Lift Slab or Panel Jack Operators; Locomotives (all types); Maintenance Engineers (Maintenance Operators and/or Welder); Mixers, paving (multiple drum); Mobile Concrete Pumps with booms; Panelboards, (all types on site); Pile Drivers; Power Shovels; Robotics Equipment Operator/Mechanic; Rotary Drills (all), used on caissons work, wells (all types), Geothermal work and sub-structure work; Rough Terrain Forklifts with Winch/Hoist (when used as a crane); Side Booms; Slip Form Pavers; Straddle Carriers (Building Construction on site); Trench Machines (over 24" wide); Tug Boats; Tunnel Boring Machine (TBM). Group B - Asphalt Pavers; Bulldozers; CMI type Equipment; End Loaders; Horizontal Directional Drill Locator; Horizontal Directional Drill Operator; Instrument Man; Kolman-type Loaders (Dirt Loading); Lead Greasemen; Mucking Machines; Power Graders; Power Scoops; Power Scrapers; Push Cats; Rotomills; Vermeer Type Concrete Saw. Group C - Air Compressors, Pressurizing Shafts or Tunnels; Articulating/Straight bed end dumps if assigned by the employer (minus \$4.00 per hour from Group C); All Asphalt Rollers; Fork Lifts; Hoists (with one drum); House Elevators (except those automatic call button controlled); Hydro Excavator (all types C rate) (F rate if a second person is needed) Helper rate; Laser Screeds and like equipment; Man Lifts; Modular Moving and Placement machine (C Rate) (F Rate if second person is needed); Mud Jacks; Portable Hydraulic Gantry (lift system C rate) (F Rate if a second person is needed); Power Boilers (over 15 lbs. pressure); Pump Operators (installing or operating Well Points or other types of Dewatering Systems); Pressure Grouting; Trenchers (24" and under); Utility Operators. Group D – Brokks with a manufacture's weight of 3,500 lbs. and above; Compressors, on building construction; Conveyors, used for handling building materials; Generators; Guniting Machines; Mixers, more than one bag capacity; Mixers, one bag capacity (side loader); Pavement Breakers (hydraulic or cable); Post Drivers; Post Hole Diggers; Road Widening Trenchers; Rollers; Welder Operators. Group E - Backfillers and Tampers; Batch Plants; Bar and Joint Installing Machines; Bull Floats; Burlap and Curing Machines; Cleaning Machine Operator (decontamination included); Clefplanes; Concrete Spreading Machines; Crushers; Deckhands; Drum Fireman (asphalt); Farm-type, Tractor, pulling attachments; Finishing Machines; Forklifts (masonry work only); Form Trenchers; High Pressure Pumps (over 1/2" discharge); Hydro Seeders; Pumps (4" and over discharge), provided it is not part of a de-watering system discharged into a common header; Self-Propelled Power Spreaders; Self-Propelled Sub Graders; Submersible Pump (4" and over discharge), provided it is not part of a dewatering system discharged into a common header; Tire Repairman; Tractors, pulling sheepsfoot rollers or graders; Vibratory Compactors with integral power. Group F - Apprentice/Helpers, Oiler, Signalmen; Barrier Moving Machines (additional duty, paid same rate); Bobcat-type and/or Skid Steer Loader; Bobcat-type and/or Skid Steer Loader with any and all attachments; Brokks with a manufacture's weight less than 3,500 lbs.; Cranes – compact, track or rubber under 4000 lbs. capacity; Geodimeter; Grade Checker; Grinders (all); Inboard/Outboard Motor Boat Launches; Light Plant Operators; Planers (all types); Power Boilers (less than 15 lbs. pressure); Power Driven Heaters (oil fired); Power Scrubbers; Power Sweepers; Pumps (under 4 inch discharge); Rod Man; Rotomills; Saw (concrete Vermeer-type); Submersible Pumps (under 4 inch discharge); Vac Alls; Cutting, burning and fabricating on equipment and their attachments. Master Mechanic - Master Mechanic Crane 200'-299' - Boom & Jib 200' feet and over Crane 300' and Over - Boom & Jib 300' and over

Prevailing Wage Rate Skilled Crafts

Name of Union: Operating Engineers - HevHwy Zone I

Type of Rate: Commercial

Change #:
LCN01-2025ib

Craft:
Operating Engineer

Effective Date:
5/1/2025

Effective Date:
5/1/2025

Classification	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Operator Class A	\$47.33		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$64.23	\$87.90
Operator Class B	\$47.23		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$64.13	\$87.75
Operator Class C	\$46.19		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$63.09	\$86.19
Operator Class D	\$44.97		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$61.87	\$84.36
Operator Class E	\$39.68		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$56.58	\$76.42
Master Mechanic	\$48.33		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$65.23	\$89.40
Lift Director	\$48.33		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$65.23	\$89.40
Crane and Mobile Concrete Pump 150' - 179'	\$47.83		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$64.73	\$88.65
Crane and Mobile Concrete Pump 180' - 249'	\$48.33		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$65.23	\$89.40
Crane and Mobile Concrete Pump 250' and Over	\$48.58		\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$65.48	\$89.77
Apprentice	BHR	Percent										
1st Year	\$23.67	\$50.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$40.57	\$52.40
2nd Year	\$28.40	\$60.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$45.30	\$59.50
3rd Year	\$33.13	\$70.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$50.03	\$66.60
4th Year	\$37.86	\$80.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$54.76	\$73.70
Field Mech Trainee	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1st year	\$28.40	\$60.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$45.30	\$59.50
2nd year	\$33.13	\$70.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$50.03	\$66.60
3rd year	\$37.86	\$80.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$54.76	\$73.70
4th year	\$42.60	\$90.00	\$9.51	\$6.25	\$0.95	\$0.00	\$0.00	\$0.09	\$0.00	\$0.10	\$59.50	\$80.80

(*)Special Calculation Note :

Other: Education & Safety Fund Misc: National Training

Ratio :

For every (3) Operating Engineer Journeymen employed by the company, there may be employed (1) Registered Apprentice or Trainee Engineer through the referral when they are available. An Apprentice, while employed as part of a crew per Article VIII, paragraph 68 will not be subject to the apprenticeship ratios in this collective bargaining agreement

Jurisdiction (* denotes special jurisdictional note) :

Ashtabula, Cuyahoga, Erie, Geauga, Lake, Lorain, Medina, Portage, Summit

Special Jurisdictional Note :

Details :

**Apprentices will receive a 10% increase on top of the percentages listed above provided they are operating mobile equipment. Class A - Air Compressors on Steel Erection; Asphalt Plant Engineers (Cleveland District Only); Barrier Moving Machine; Boiler Operators, Compressor Operators, or Generators, when mounted on a rig; Boom Trucks (all types); Cableways; Cherry Pickers; Combination- Concrete Mixers & Towers; Concrete Plants (over 4 yd capacity); Concrete Pumps; Cranes (all types); Compact Cranes track or rubber over 4,000 pounds capacity; Cranes self-erecting stationary, track or truck; Derricks (all types); Draglines; Dredges dipper, clam or suction; Elevating Graders or Euclid Loaders; Floating Equipment (all types); Gradalls; Helicopter Crew (Operator- hoist or winch); Hoes (all types); Hoisting Engines; Hoisting Engines, on shaft or tunnel work; Hydraulic Gantry (lifting system); Industrial-type Tractors; Jet Engine Dryer (D8 or D9) diesel Tractors; Locomotives (standard gauge); Maintenance Operators/Technicians (class A); Mixers, paving (single or double drum); Mucking Machines; Multiple Scrapers; Piledriving Machines (all types); Power Shovels, Prentice Loader; Quad 9 (double pusher); Rail Tamper (with automatic lifting and aligning device); Refrigerating Machines (freezer operation); Rotary Drills, on caisson work; Rough Terrain Fork Lift with winch/hoist; Side Booms; Slip Form Pavers; Survey Crew Party Chiefs; Tower Derricks; Tree Shredders; Trench Machines (over 24" wide); Truck Mounted Concrete Pumps; Tug Boats; Tunnel Machines and /or Mining Machines; Wheel Excavators. Class B - Asphalt Pavers; Automatic Subgrade Machines, self-propelled (CMI-type); Bobcat-type and /or Skid Steer Loader with hoe attachment greater than 7000 lbs.; Boring Machine Operators (more than 48 inches); Bulldozers; Concrete Saws, Vermeer type; Endloaders; Horizontal Directional Drill (50,000 ft. lbs. thrust and over); Hydro Milling Machine; Kolman-type Loaders (production type-dirt); Lead Greasemen; Lighting and Traffic Signal Installation Equipment includes all groups or classifications; Maintenance Operators/Technicians, Class B; Material Transfer Equipment (shuttle buggy) Asphalt; Pettibone-Rail Equipment; Power Graders; Power Scrapers; Push Cats; Rotomills (all), Grinders and Planners of all types, Groovers (excluding walk-behinds); Trench Machines (24 inch wide and under). Class C - A-Frames; Air Compressors, on tunnel work (low Pressure); Articulating/straight bed end dumps if assigned (minus \$4.00 per hour); Asphalt Plant Engineers (Portage and Summit Counties only); Bobcat-type and/or skid steer loader with or without attachments; Drones; Highway Drills (all types); HydroVac/Excavator (when a second person is needed, the rate of pay will be "Class E"); Locomotives (narrow gauge); Material Hoist/Elevators; Mixers, concrete (more than one bag capacity); Mixers, one bag capacity (side loader); Power Boilers (over 15 lbs. pressure); Pump Operators (installing or operating well Points); Pumps (4 inch and over discharge); Railroad Tie Insert/Remover; Rollers, Asphalt; Rotovator (lime-soil Stabilizer); Switch & Tie Tampers (without lifting and aligning device); Utilities Operators, (small equipment); Welding Machines and Generators. Class D - Backfillers and Tampers; Ballast Re-locator; Bar and Joint Installing Machines; Batch Plant Operators; Boring Machine Operators (48 inch or less); Bull Floats; Burlap and Curing Machines; Concrete Plants (capacity 4 yds. and under); Concrete Saws (multiple); Conveyors (highway); Crushers; Deckhands; Farm type tractors, with attachments (highway); Finishing Machines; Firemen, Floating Equipment (all types); Fork Lifts (highway), except masonry; Form Trenchers; Hydro Hammers; Hydro Seeders; Pavement Breakers (hydraulic or cable); Plant Mixers; Post Drivers; Post Hole Diggers; Power Brush Burners; Power Form Handling Equipment; Road Widening Trenchers; Rollers (brick, grade, macadam); Self-Propelled Power Spreaders; Self-Propelled Sub-Graders; Steam Firemen; Survey Instrument men; Tractors, pulling sheepsfoot rollers or graders; Vibratory Compactors, with integral power. Class E - Compressors (portable, Sewer, Heavy and Highway); Cranes-Compact, track or rubber under 4,000 pound capacity; Drum Firemen (asphalt plant); Fueling and greasing (Primary Operator with Specialized CDL Endorsement Add \$3.00/hr); Generators; Inboard-Outboard Motor Boat Launches; Masonry Fork Lifts; Oil Heaters (asphalt plant); Oilers/Helpers; Power Driven Heaters (oil fired); Power Scrubbers; Power Sweepers; Pumps (under 4 inch discharge); Signalperson; Survey Rodmen or Chairmen; Tire Repairmen; VAC/ALLS. Master Mechanic - Master Mechanic Cranes and Mobile Concrete Pumps 150' -179' - Boom & Jib 150 - 179 feet Cranes and Mobile Concrete Pumps 180' - 249' - Boom & Jib 180 - 249 feet Cranes and Mobile Concrete Pumps 250' and over - Boom & Jib 250 feet or over

Prevailing Wage Rate Skilled Crafts

Name of Union: Truck Driver Local 436 - HevHwy Class 1

Type of Rate: Commercial

Change #:
LCN02-2025ib

Craft:
Truck Driver

Effective Date:
5/28/2025

Effective Date:
5/28/2025

Classification	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Truck Driver CLASS 1	\$34.92		\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$54.62	\$72.08
Apprentice	BHR	Percent										
First 6 months	\$27.94	\$80.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47.64	\$61.60
7-12 months	\$29.68	\$85.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.38	\$64.22
13-18 months	\$31.43	\$90.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$51.13	\$66.84
19-24 months	\$33.17	\$95.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$52.87	\$69.46
25-30 months	\$34.92	\$100.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$54.62	\$72.08

(*)Special Calculation Note :

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga, Lake

Special Jurisdictional Note :

Details :

CLASS 1: Drivers on trucks, including but not limited to: 4-wheel service trucks; 4-wheel dump trucks; batch trucks; drivers on tandems; truck sweepers (not to include power sweepers and scrubbers) Drivers on tractor – trailer combinations including but not limited to the following: Semi-tractor trucks; pole trailers; ready-mix trucks; fuel trucks; all trucks five (5) axle and over; drivers on belly dumps; truck mechanics (when needed).

Prevailing Wage Rate Skilled Crafts

Name of Union: Truck Driver Local 436 - HevHwy Class 2

Type of Rate: Commercial

Change #:
LCN02-2025ib

Craft:
Truck Driver

Effective Date:
5/28/2025

Effective Date:
5/28/2025

	BHR		Fringe Benefit Payments						Irrevocable Fund		Total PWR	Overtime Rate
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)	MISC (*)		
Classification												
Truck Driver CLASS 2	\$35.73		\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$55.43	\$73.30
Apprentice	BHR	Percent										
First 6 months	\$28.58	\$80.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$48.28	\$62.58
7-12 months	\$30.37	\$85.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50.07	\$65.26
13-18 months	\$32.16	\$90.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$51.86	\$67.94
19-24 months	\$33.94	\$95.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$53.64	\$70.62
25-30 months	\$35.73	\$100.00	\$9.25	\$10.05	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$55.43	\$73.30

(*)Special Calculation Note :

Ratio :

3 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :

Cuyahoga, Geauga, Lake

Special Jurisdictional Note :

Details :

CLASS 2: Drivers on articulated dump trucks; rigid-frame rock trucks; distributor trucks; low boys/drag driver on the construction site only and heavy duty equipment (irrespective of load carried) when used exclusively for transportation on the construction site only.

PART 2 INFORMATION FOR AND INSTRUCTIONS TO BIDDERS

- 2.100 GENERAL
- 2.101 LOCATION
- 2.102 EXAMINATION OF CONTRACT DRAWINGS AND SPECIFICATIONS
- 2.103 CONDITION OF WORK
- 2.104 EXAMINATION OF SITE
- 2.105 PREPARATION OF PROPOSALS
- 2.106 PRICES BID
- 2.107 INFORMATION SUBMITTED WITH BID
- 2.108 PROGRAM AND METHOD OF CONSTRUCTION
- 2.109 RIGHT TO ACCEPT OR REJECT PROPOSALS
- 2.110 ADDENDA & INTERPRETATIONS
- 2.111 DEFAULTER
- 2.112 SIGNATURE OF BIDDERS
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- 2.138 EXPERIMENTAL EQUIPMENT AND MATERIAL PROHIBITED
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PART 2 – INFORMATION FOR AND INSTRUCTION TO BIDDERS

2.100 GENERAL

Information as to the time and place of receiving proposals, the requirement of the guarantee and the procedures appropriate to obtaining plans and specifications, together with other facts, is given in the Legal Notice. Proposals will be opened and read publicly at the time and place designated. Bidders, their authorized agents, and other interested parties are invited to be present.

2.101 LOCATION

The work is located in Bradstreet's Landing Park, 22400 Lake Rd, Rocky River, OH 44116.

2.102 EXAMINATION OF CONTRACT DRAWINGS AND SPECIFICATIONS

Bidders are advised to carefully examine the contract drawings and specifications for the proposed work. The contract drawings show the existing conditions likely to affect the prosecution of the work, insofar as they have been determined, but the information shown is not guaranteed as being correct and complete, bidders being expected to examine the contract drawings and the location of the work and to judge for themselves all the circumstances affecting the cost of the work and the time required for its completion.

2.103 CONDITION OF WORK

Each bidder must inform himself fully of the conditions relating to construction and labor under which the work is now being or will be performed. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of the contract documents and to complete the contemplated work for the consideration set forth in this bid.

The Contractor shall keep himself fully informed and shall comply with all existing and future laws, ordinances, and regulations of the Federal, State and County and Municipal Governments, in any manner, affecting his employees, or the conduct of the work, or the materials used or employed in the work.

2.104 EXAMINATION OF SITE

The bidder's attention is directed to the necessity of examining the site of the proposed work before submitting a proposal. Also, before submitting a proposal, bidders are required to fully inform themselves of all conditions relating to construction and labor, under which the work will be or is now being prosecuted. The submission of a proposal will be deemed as an acknowledgment by the bidder that all conditions and difficulties that may be encountered in the execution of the work are fully and completely appreciated, and that the drawings, specifications and form of contract are fully understood.

Subject to the convenience of the Owner, prospective bidders will be permitted to visit the site for visual observation of existing conditions. The Contractor must, at his own risk, inspect the site(s) of the proposed work and assume all risk as to the nature and behavior of the existing conditions whether such conditions be apparent upon visual inspection or be disclosed only in the process of carrying forward the work.

2.105 PREPARATION OF PROPOSALS

Each bidder must submit a bid for each and every item of the proposal submitted, and failure to do so will render his bid irregular and subject to rejection.

Proposals must be submitted on the prescribed forms. All blank spaces for bid prices must be filled in, in ink, with the unit or lump sum price for each item as requested therein. All bids must be submitted in sealed envelopes bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. **Do not disassemble the specifications book. The entire book is to be submitted with your bid.**

2.106 PRICES BID

Prices shall be stated in figures in the appropriate places in the proposal for the various items, and all bids may be considered informal which contain items not specified in the form of bids.

In the event that there is a discrepancy between the total prices, the procedure described on the Proposal and Bid Form shall be used to determine "Bidders Unofficial Total". No bid will be accepted which does not contain unit or lump sum prices for every item contained in the proposal forms.

Bids will be compared on the basis of the schedule of approximate quantities contained herein. The lowest bid will be determined upon the basis of the aggregate cost.

2.107 INFORMATION SUBMITTED WITH BID

In considering bids for the contract, particular attention will be given to the procedure the Contractor intends to follow in using experienced and trained persons in the construction of the work specified herein.

Furthermore, the Contractor must, prior to the award of the contract, be prepared to discuss in detail, all matters relating to the above described aspects of the work with the result being that the Municipality will obtain high grade workmanship.

2.108 PROGRAM AND METHOD OF CONSTRUCTION

In considering bids for this work, the order of execution, methods of construction, and general conduct of the work and the arrangement of the project work area will be given particular attention. Attention is called to the fact that the Contractor shall conduct his work so that there shall be no undue interference with adjacent properties, buildings, or other appurtenances.

2.109 RIGHT TO ACCEPT OR REJECT PROPOSALS

The City reserves the right to reject any or all proposals, or parts thereof, to waive any informalities or irregularities in the proposals received, and to accept any proposal or combination of proposals which is deemed to be in the City's best interest.

2.110 ADDENDA AND INTERPRETATIONS

Neither the City nor the Owner's Representative will make any oral interpretation of the meaning of the plans, specifications or other contract documents, to any bidder, nor will any preference or

approval be expressed in any way for any material or equipment prior to the receipt of the proposals. Oral interpretations or clarifications will be without legal effect.

If any person who contemplates the submission of a proposal is in doubt as to the true meaning of any part of the plans, specifications or other proposed contract documents, he may submit to the Owner's Representative, at least eight (8) days prior to the date set for the receiving of proposals, a written request for an interpretation thereof. The person submitting the request will be responsible for its delivery.

In event of any error, omission or discrepancy in the contract drawings or between the drawings and specifications, the bidder shall request an interpretation in writing in advance of the taking of bids. Failing to do so, the Contractor must accept the ruling of the Owner's Representative as to the correct intent.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be issued through the digital plans room with email notification, not later than three (3) days prior to the date fixed for the receiving of proposals to all parties of record as having taken out a complete set of plans and specifications. Failure of any bidder to receive any addendum or interpretation shall not relieve the bidder from any obligation under his bid as submitted. All addenda so issued shall become a part of the contract documents and must be attached to each proposal.

2.111 DEFAULTER

No contract will be awarded to any bidder who is in arrears to the City upon debt or contract, or who is a defaulter as surety or likewise upon any obligation to the City.

2.112 SIGNATURE OF BIDDERS

The firm, corporate, or individual name of the bidder must be signed by the bidder in the space provided for the signatures on the proposal blank. In the case of a corporation, the title of the officer signing must be stated and such officer must be thereunto duly authorized. In case of a partnership, the signature of at least one of the partners must follow the firm name, using the term "doing business as _____" or "Sole Owner". The bidder shall further state in his proposal the name and address of each person or corporation interested herein.

2.113 WITHDRAWAL OF PROPOSAL

A bidder may withdraw his proposal, provided the request, in writing, is delivered to the city prior to the time set for opening proposals. When the withdrawal is received, the proposal will be returned to the bidder unopened. No bidder may withdraw his bid for a period of sixty (60) days after the opening of bids.

2.114 COMPETENCY OF BIDDER

No bid will be considered unless the bidder shall have furnished evidence satisfactory to the City that he has the necessary facilities, ability and financial resources to fulfill the conditions of the contract or several contracts and specifications.

2.115 BIDDER'S AFFIDAVIT

Each bidder is required to submit with his bid an affidavit stating that neither he nor his agents nor any other party for him has paid or agreed to pay, directly or indirectly, a person, firm, or corporation any money or valuable consideration for assistance in procuring or attempting to procure the contract herein referred to, and further agreeing that no such money or reward will be hereafter paid.

Each bidder who is a foreign corporation, that is, a corporation not chartered in Ohio but licensed to do business in Ohio is required to submit with his bid an affidavit duly executed by the President or General Manager of the corporation, stating in said affidavit that said foreign corporation has, in accordance with the provisions of the General Code of the State of Ohio, obtained a certificate authorizing it to do business in the State of Ohio. (These certificates or certified copies of them are obtainable from the Tax Commission of Ohio at Columbus.)

2.116 NON-COLLUSION AFFIDAVIT

The successful bidder will be required to submit a non-collusion affidavit in the form included in the proposal herein. This affidavit shall be dated and executed after the opening of bids and before the award of the contract is made.

2.117 PROPOSAL GUARANTY

No proposal will be considered unless accompanied by a bond in an amount equal to one-hundred percent (100%) of the total bid drawn in favor of the City of Rocky River, or a certified check, cashier's check, or letter of credit drawn on a solvent bank in Cuyahoga County made payable to the City of Rocky River in an amount not less than ten percent (10%) of the total amount of the bid as prescribed in Ohio Revised Code Section 153.54. The bid guaranty shall be conditioned upon the execution of the Contract and the furnishing of a contract bond in the event the Contract is awarded to the bidder. The bid guaranty bond shall be in the same form as shown in Section 5.103 hereof. The bond must show the full mailing address for the company acting as surety, and the full name, mailing address and telephone number of the office, business or agency actually issuing the bond. If a certified check, cashier's check or a letter of credit is submitted, then the bidder must also submit as part of its bid a Consent of Surety form as set forth in Section 5.104 hereof from an approved Surety Company licensed to conduct business in the State of Ohio.

2.118 CONSIDERATION OF PROPOSALS

1. ACCEPTANCE OF PROPOSAL - The City reserves the right to disqualify or refuse to consider a proposal for any of the following reasons:
 - (a) Lack of competency and adequate machinery, plant and other equipment.
 - (b) Failure to comply with any specified conditions.
 - (c) Default under previous contracts.
2. IRREGULAR PROPOSALS - Proposals will be considered irregular and may be rejected for the following reasons:

- (a) If the proposal is on a form other than that furnished, or if the form is altered or any part thereof is detached.
 - (b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
 - (c) If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award. This does not exclude a bid limiting the maximum gross amount of awards acceptable to any one bidder at any one bid letting, provided that any selection of awards will be made by the City.
 - (d) If the proposal does not contain a unit price for each pay item listed, except in the case of authorized alternate pay items or lump sum items.
3. **DISQUALIFICATION OF BIDDERS** - Any of the following reasons may be considered as being sufficient for the disqualification of a bidder and the rejection of this proposal or proposals:
- (a) More than one proposal for the same work from an individual, firm or corporation under the same or different name.
 - (b) Evidence of collusion among bidders. Participants in such collusion will receive no recognition as bidders for any future work of the department until any such participant shall have been reinstated as a qualified bidder.
 - (c) Bid prices which obviously are unbalanced.

The right is reserved to reject any and all proposals, to waive technicalities, or to advertise for new proposals if, in the judgment of the awarding authority, the best interest of the City will be promoted thereby.

2.119 AWARD OF CONTRACT

If a Contract is awarded, the award will be made within 60 calendar days after the opening of proposals to the lowest and best bidder whose proposal complies with all of the requirements prescribed. In no case will an award be made until all necessary investigations are made as to the responsibility of the bidder to whom it is proposed to award the Contract. The successful bidder will be notified, by letter mailed to the address shown in the proposal, that his bid has been accepted and that he has been awarded the Contract.

If no contract shall have been awarded within sixty (60) days from the receipt of proposals, any proposal may be withdrawn or nullified by the party or parties submitting the same but in the absence of such action shall be deemed to be confirmed and extended in time and for as long as permitted by the proposers thereof. Except to persons who submit the lowest and next lowest bids, all deposits made with bids will be returned as soon as the two (2) lowest responsible bidders are determined by the Owner's Representative.

The party or parties submitting a proposal will be required to execute a written contract with approved sureties within ten (10) days from the date of service of notice to that effect.

A written contract with sureties approved may be held by the Owner for a period of ninety (90) calendar days following the date of award of contract, and, if not then approved, as by law required, shall be null and void, provided that the Contractor or second party thereof may permit the extension of said ninety (90) day period.

Work shall be commenced within ten (10) days from the date of a notice from the Owner to commence work. Any work performed prior to the date of said notice to commence work will be at the Contractor's sole instance and expense, and such work may or may not be paid for according as the Owner is enabled by formal contract therefore.

The time for completion of the contract shall be that fixed on the bid proposal sheet.

2.120 CANCELLATION OF AWARD

The Director of Public Safety-Service reserves the right to rescind the award of any Contract at any time before the execution of said Contract by all parties without any liability against the City.

2.121 RETURN OF PROPOSAL GUARANTY

All proposal guaranties will be returned after a satisfactory Contract Bond has been furnished, and the Contract has been executed by the successful bidder, or after rejection of all bids.

2.122 REQUIREMENTS OF CONTRACT BOND

The successful bidder must, within ten (10) days after he has received notice of the award to him and before entering into Contract, furnish a Contract Bond in the form provided by Section 153.57 of the Ohio Revised Code in the full amount of his proposal, which bond shall cover the entire Contract until final acceptance by the City of Rocky River this improvement.

The Contract Bond shall include a clause governing the payment of subcontractors, material men and laborers. The Bond must include the full mailing address of the Surety Company, and the full name and mailing address and telephone number of the office, business, or agency actually issuing the bond.

2.123 EXECUTION OF CONTRACT

The Contract shall be signed by the successful bidder and returned, together with the Contract Bond and other required contract documents, within ten (10) days after the bidder has received notice that the Contract has been awarded. No proposal shall be considered binding upon the City of Rocky River until the execution of the Contract.

A bidder to whom a contract is awarded and who is a corporate body shall furnish, at the time of the execution of the contract, a resolution of the directors of the corporation, bearing the seal of the corporation, evidencing authority of the officer signing the contract to do so. A copy of this proof shall be attached to each copy of the contract.

2.124 FAILURE TO EXECUTE CONTRACT

Failure to execute the Contract and file an acceptable bond shall be just cause for the cancellation of the award and the forfeiture of the proposal guaranty which shall become the property of the

City, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible bidder, or the work may be readvertised, as the Director of Public Safety-Service may determine.

2.125 CONTRACTOR'S LIABILITY INSURANCE

1. The Contractor shall take out and maintain during the life of this Contract such public liability and property damage insurance as shall protect himself, the Owner and any Sub-Contractor performing work covered by this Contract from any claims for damages or personal injury, including accidental death, as well as from claims for property damages which may arise from operations under this Contract, whether such operations be by himself or by any Sub-Contractor or any other person directly or indirectly employed by either of them, and the amount of insurance shall be as follows:
2. Public Liability Insurance - In an amount not less than one million (\$1,000,000) each person in an amount not less than two million (\$2,000,000) aggregate for both bodily injury and property damage coverage must include: products, completed operations, personal injury, advertising injury and contractual liability. Medical payments shall be included at a limit of \$5,000 and Ohio Stop gap/Employees Liability at one million (\$1,000,000) limit. Fire damage legal shall be provided at one hundred thousand (\$100,000) limit.
3. The following special hazards shall be covered during the life of the Contract by a rider or riders to the policy or policies above required, or by separate policies of insurance in amounts as follows:
 - (a) Public Liability Insurance to cover each automobile, truck or other vehicle used in the performance of the Contract in an amount not less than five-hundred thousand (\$500,000) for injuries or death of one person, and not less than one-million (\$1,000,000) on account of injury or death of two or more persons.
 - (b) Property Damage Liability Insurance to cover each automobile, truck or other vehicle used in the performance of the Contract in an amount not less than one million (\$1,000,000) in any accident. A combined single limit of one million (\$1,000,000) for automobile liability bodily injury and property damages will be deemed an acceptable limit of liability.
 - (c) Public Liability and Property Damage Insurance to cover the use of explosives used in the performance of this Contract, in the same limits as set forth in the preceding subsections.
 - (d) The Contractor shall insure for the life of the Contract against all loss or damage by fire at the site and against all loss or damage by the standard extended coverage insurance endorsement. The insurance policy shall be held jointly in the names of the Owner and the Contractor. The amount of the policy may vary with the extent of the work completed but shall at all times be at least equal to the amount paid on account of work and materials plus the value of work done but not paid for by the Owner. Certificates of the insurance companies as to the amount of extended coverage shall be delivered to the Owner before commencing work.

- (e) Each Sub-Contractor is required to take out and maintain during the life of each Sub-Contract such public liability and property damage insurance as shall protect such Sub-Contractor from claims and damages for personal injury, including accidental death, as well as claims for property damages which may arise from operations under any such Sub-Contract. Such insurance shall be in such amounts as may be determined by the Contractor with the Owner, and the Sub-Contractors' insurance shall name the City as a co-insured.
4. The policy or policies shall contain the following special provisions:
- (a) The City of Rocky River, its officers and employees must be named as additional insured. Certificates of the insurance companies as to the amount of coverage shall be delivered to the City of Rocky River before commencing work.
 - (b) The company agrees that ten (10) days prior to the cancellation or reduction of the insurance afforded by this policy with respect to the Contract involved, written notice will be provided to the City.
5. Also see additional insurance requirements under Section 4.118 and 4.120 of the General Provisions.

2.126 MAINTENANCE BOND

Before the four percent (4%) guarantee retainer is released to the Contractor, a two-year Maintenance Bond in the amount of ten percent (10%) of the final Contract amount shall be provided by the successful bidder at his own expense. The two-year term of this guarantee shall begin on the date of final acceptance of this improvement and shall guarantee that this improvement will remain in good condition for and during said period of guarantee. If at any time before or during said period of guarantee any defects or omissions become apparent in the work, or if it becomes apparent that any work is not in accordance with the requirements, or if any work constructed under this Contract required repairs due to defects in materials or workmanship, or for any other cause which may be attributed to the work which is being done or has been done by the Contractor, as determined by the Director of Public Safety-Service, the Contractor shall rectify such defects or omissions within five (5) days of notification and shall complete such corrections within a reasonable length of time at his own expense. If the Contractor fails to rectify such defects or omissions or fails to start such repairs within five (5) days, the City reserves the right to make such corrections at the expense of the Contractor or bonding company. The bond must include the full mailing address of the Surety Company, and the full name, mailing address and telephone number of the office, business, or agency actually issuing the bond.

The Maintenance Bond shall be that of an approved surety company, to the satisfaction of the Director of Law, and meeting the provisions of the Contract Bond as to agent, Surety Company and failure of surety; and the form of the Maintenance Bond shall be approved by the Director of Law. (See Section 5.301 Maintenance Bond.)

2.127 LICENSING

Contractor must be licensed and bonded with the City of Rocky River before execution of the Contract.

2.128 PERMITS

Unless otherwise provided in the Contract Documents, the Contractor shall take out all necessary permits from municipal or other public authorities, and shall give all notices required by law or municipal ordinance. The charge or fee for any permit issued by the Owner will be assumed by the Owner, but any other fees will be borne by the Contractor.

2.129 STATE OR FEDERAL TAXES

The Contractor's attention is called to the "General Provisions" of these specifications relative to Local and/or State Income Taxes.

2.130 PERSONAL PROPERTY TAX AFFIDAVIT

The Contractor shall provide the Finance Director of the City of Rocky River with an affidavit showing his payment status for personal property tax before signing the Contract.

2.131 BASIS OF PAYMENT

All payments under this Contract will be made in accordance with the requirements of Chapter 153 of the Ohio Revised Code governing public improvements.

2.132 MECHANICS LIEN LAW

Contractors are required to comply with Ohio Mechanics Lien Law, including, but not limited to, Ohio Revised Code Section 4113.61.

2.133 TEMPORARY UTILITY REQUIREMENTS

Not Used

2.134 ASSIGNMENT

Assignment of this contract, or any part thereof, or any funds to be received thereunder by the Contractor will be subject to the approval of the Owner. Any such assignment shall contain a clause to the effect that is agreed that the funds to be paid the assignee under the assignment are subject to a prior lien for services rendered or materials supplied for the performance of the work called for in said contract in favor of all persons, firm, or corporations rendering such services or supplying such materials.

2.135 PROGRESS SCHEDULE

After the award of the contract, the Contractor shall prepare and submit to the Owner's Representative, a progress schedule of a type and in a manner satisfactory to the Owner, showing graphically the progress rate on which time for completion is based. Should the progress of the work fall behind this schedule to such extent that the completion date may not be met, and if the Contractor, after written notice to that effect makes no substantial effort to speed up his work and to meet the schedule, then the Owner may notify the Contractor's Surety of the circumstances or

may declare the work abandoned or forfeited and proceed according to the provisions of this contract. The cost for his additional manpower or for providing overtime shall be borne solely by the Contractor.

2.136 PAYMENT BOND

The Bid Guaranty and Contract Bond provided for in Section 5.103 hereof shall include a clause governing the payment of subcontractors, materialmen and laborers.

2.137 COOPERATION

Each successful bidder to whom a contract is awarded on this project will be obligated to cooperate to the fullest extent with every other contractor, as to timing and performance for the expeditious and smooth progress of all work involved. Shop drawings when required, must be prepared, completed, submitted and approved, sufficiently in advance of actual need so that no delay will be occasioned in actual construction by the contractor. Each contractor will be responsible for the performance of his subcontractors in carrying out the intent of this section. Timing is of utmost importance and approved progress must be strictly adhered to.

2.138 EXPERIMENTAL EQUIPMENT AND MATERIAL PROHIBITED

Each bidder shall, if so required by the Engineer submit ample proof that the equipment and material proposed to be furnished by him, is of reliable make; or comparable size; suitable for the service intended and that is of a type that has been successfully used in practical service.

2.139 WAGE RATES

There shall be paid each laborer or mechanic of the Contractor or Subcontractor engaged in the work on the project under this contract, not less than the "prevailing rate of wages of Public Improvements in Cuyahoga County, State of Ohio, as ascertained and determined by the Department of Industrial Relations as provided for in the Laws of Ohio relating to hours and prevailing wages of Public Improvements", and as such rate is applicable to the classification, and trade in which the laborer or mechanic is engaged. These rates shall apply regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such laborer or mechanic.

Any laborer or mechanic employed to perform work on the project under this contract, which work is not covered by any of the ascertained classifications shall be paid not less than the minimum rate of wages specified herein for the classification which most nearly corresponds to the work to be performed by him, and such minimum wage rate shall be retroactive to the time of initial employment of such person in such classification. In the event of any dispute as to classification, the question shall be referred to the Owner whose decision shall be conclusive on the parties to the contract with the same effect as if the work performed by such laborer or mechanic has been classified and the minimum rate specified herein.

The foregoing specified wage rates are minimum rates only, and the Owner will not consider any claims for additional compensation made by the Contractor because of payment by the Contractor of any wage rate in excess of the applicable rate contained in this contract. All disputes in regard to the payment of wages in excess of those specified in this contract shall be adjusted by the Contractor.

Except as may be otherwise required by law, all claim and disputes pertaining to the classification of labor employed on the project under this contract shall be decided by the Owner.

The minimum wage rates, if any, herein specified for apprentice shall apply only to persons working with the tools of the trade they are learning under the direct supervision of journeyman mechanics. Except as otherwise required by law, the number of apprentices, in each trade or occupation, employed by the Contractor or Subcontractor shall not exceed the number permitted by the applicable standards of the United States Department of Labor, or, in the absence of such standards, the number permitted under the usual practice prevailing between the unions and the employer's association of the respective trades or occupations.

PART 3 – PROJECT INFORMATION

3.101 SCOPE OF WORK

3.102 COMPLETION DATE

3.103 EXTRA COPIES OF CONTRACT DOCUMENTS

3.104 MATERIAL DISPOSAL

3.105 TRACKING MUD UPON PUBLIC WAYS

3.106 EXISTING CONDITIONS

3.107 INSPECTION

3.108 SCOPE, PROGRAM AND METHOD OF CONSTRUCTION

3.109 PRECONSTRUCTION VIDEO PHOTOGRAPHY

PART 3 – PROJECT INFORMATION

3.101 SCOPE OF WORK

The work contemplated consists of construction of up to X linear feet of shoreline toe protection, creation of up to x linear feet rock cross-vane flow control structure, restoration planting of up to X sf along the shoreline and in the uplands of the creek, two (2) floodplain benches, up to X linear feet of retaining wall, up to x acres of invasive species removal, planting of native seeds in the area of invasive species removal, and placing of up to 6 boulder habitat structures in the creek bed, as delineated in the Contract Drawings and Specifications.

The work contemplated shall include the furnishing of all labor, tools, equipment, materials and supplies for such other work as is herein described and in accordance with any contract document.

3.102 COMPLETION DATE

The work under this contract shall be completed in a manner acceptable to the City of Rocky River as follows:

Contract Completion Date: November 30, 2026.

The Contractor shall be advised that the provisions of this article in regards to time of completion shall be rigidly enforced. Liquidated damages will be assessed in accordance with General Provision 4.128. Liquidated damages will be assessed for failure to meet the final completion date or any interim completion date.

The work shall be carried on with such force and in such manner and order and at such points that within the number of calendar days as set forth in the bid form, or as may be modified or extended as mutually agreed upon, and as computed from the date of notice of authorization to proceed, the whole work of the contract documents shall be performed.

The Contractor shall work continuously until the work is completed and shall not leave the job site until all phases are acceptable to the Owner's Representative.

It is mutually agreed by and between the parties hereto that time is an essential part of this Contract and that if the Contractor shall fail to complete the work as herein provided within the time fixed, or extended as mutually agreed upon, the City may retain as liquidated damages incident to such delay, from the monies which are or may become due said Contractor, and for every calendar day the completion of the work be delayed beyond the time set forth herein for such completion, in accordance with the contract documents.

It is agreed by and between the parties hereto that inasmuch as expenses and inconveniences and other damages will be sustained by the City in the event that said Contractor fails to perform the work herein specified within the time herein set forth, such as inconvenience to the public, engineering expenses, interest charges, wages of clerks, salaries of inspectors, delay caused to other work by failure to perform this contract, and other elements, some of which are indefinite and, in some cases, in susceptible of easy proof, an amount equal to that stated below for each calendar day's delay shall be considered as liquidated damages and not as a penalty and shall become due said City as full payment for all such expenses and damages sustained by it by the failure of the Contractor to complete the work as herein specified.

The Contractor shall be advised that the provisions of this article in regards to time of completion shall be rigidly enforced.

3.103 EXTRA COPIES OF THE CONTRACT DOCUMENTS

The City will provide PDF digital copies of the Contract Documents to the Contractor. The Contractor may print additional sets of the Contract Documents from these files at their own expense.

3.104 MATERIAL DISPOSAL

The Contractor shall not dump any waste materials on any City property and shall dispose of waste materials in accordance with applicable laws and standards.

3.105 TRACKING MUD UPON PUBLIC WAYS

It shall be the duty of the Contractor to supervise the handling of all traffic entering and leaving the property under construction to prevent mud or debris of any nature from being tracked onto the sidewalks and street of the city. The Contractor is advised that the provisions of this paragraph will be rigidly enforced.

3.106 EXISTING CONDITIONS

Damage caused to facilities adjacent to the work area including but not limited to existing structures, existing paved areas and existing plantings by the Contractor, shall be restored to a condition found prior to damage, by the Contractor at his own expense.

3.107 INSPECTION

The Contractor shall schedule all inspections with the Authorities Having Jurisdiction and the Owner's Third-Party Inspectors.

The Owner's Representative may periodically inspect the work for congruence with the Contract Documents.

The Contractor is required to complete work in accordance with the plans and specifications. Neither the City of Rocky River nor Owner's Representative will be responsible for any mistakes made by the Contractor due to the Contractors failure to comply with the plans and specifications.

3.108 SCOPE, PROGRAM AND METHOD OF CONSTRUCTION

The methods of construction, the general conduct of the work and the general arrangement of the construction to be installed shall be at all times subject to the approval and direction of the Owner's Representative. If at any time before the commencement of, or during the progress of the work, or any part of it, such methods, features and appliances used or to be used appear to the Ohio Industrial Commission, Occupational, Safety and Health Administration, or to the Owner's Representative as unsafe, insufficient or improper they may order the Contractor to increase their safety or efficiency or to improve their character, and the Contractor shall conform to such order; but the failure of the engineer to demand any increase of such safety, efficiency, adequacy or any

improvement shall not release the Contractor from his obligation to secure the safe conduct and quality of the work specified. The use of explosives will not be permitted.

3.109 PRE-CONSTRUCTION VIDEO PHOTOGRAPHY

A. General:

Prior to the delivery of any materials or supplies to the site of any work, or to the beginning of any of the work, the Contractor shall provide preconstruction photography as specified below for the purpose of establishing the surface conditions existing in all of the areas to be affected.

The preconstruction photography shall be performed by independent companies having had previous experience in similar type work. The names of the companies shall be submitted for approval prior to engaging in the work.

PART 4 – GENERAL PROVISIONS

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PART 4 – GENERAL PROVISIONS

4.101 DEFINITIONS

Wherever the words herein defined or pronouns used in their stead occur in this contract and in these specifications, they shall have the meaning here given:

1. Wherever in this contract the words "Approved, "Acceptable", "Satisfactory" or words of like import are used, it shall mean approved by, or acceptable or satisfactory to the Owner's Representative is intended, unless another meaning is plainly intended and so stated in the contract.
2. Advertisement. The public announcement, as required by law, inviting bids for work to be performed or materials to be furnished.
3. "Finance Director" as used herein shall refer to and designate the Finance Director of the City of Rocky River, Ohio.
4. Award. The written acceptance of a bid by the Owner.
5. Bidder. An individual, firm or corporation submitting a bid for the advertised work acting directly or through a duly authorized representative, and that conforms to the conditions for bidders contained herein.
6. Calendar Day or Day. Every day shown on the calendar.
7. Change order. A written order issued by the Owner's Representative to the Contractor, covering changes in the plans or quantities or both, within or beyond the scope of the contract and establishing the basis of payment and time adjustments for the work affected by the changes.
8. "City" or "Municipality" or words "City of Rocky River, Ohio", or "Municipality of Rocky River, Ohio", or the expression "Party of the First Part", or "First Party", shall mean the City of Rocky River, Ohio, acting through its properly authorized agents such agents acting severally within the scope of the particular duties entrusted to them.
9. Completion date. The date, as shown in the proposals on which the work contemplated shall be completed.
10. Contract. The Agreement entered into between the Owner and the Contractor, setting forth the terms under which the work covered by the plans and specifications is to be performed. The word "Contract" shall mean, severally and collectively, all of the covenants, terms, and stipulations set forth and contained in the Contract as defined in Section 5.201 and all supplemental agreements entered into by the parties to the Contract.
11. Contract Bond. The bond executed by the Contractor and his surety in favor of the Owner guaranteeing the complete execution of the contract in accordance with the plans and specifications, the payment of all debts pertaining to the work and maintenance of the work as provided by law or by the specifications.
12. Contract Period. The contract period is the period from the specified date for beginning the work to the specified date of completion, both dates inclusive. The contract period

may be extended by the Owner as provided in these specifications in which event the contract period includes the new date of completion.

13. "Contractor" or the expression "Party of the Second Part" shall mean the person, persons, partnership, firm or corporation entering into this contract for the performance of the work required by it, or his or their properly authorized agent, or agents.
14. Council shall mean the duly elected Council of the City of Rocky River, Ohio.
15. "Director of Public Safety-Service." As used, the same shall mean the Director of Public Safety-Service of the City of Rocky River or his duly authorized agent.
16. Wherever in the contract, the words "Directed", "Required", "Permitted", "Ordered", "Instructed", "Considered Necessary", "Prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, instruction, designation, or prescription, etc. of the Owner's Representative and Owner is intended, unless another meaning is plainly intended and so stated in the contract.
17. "Drawings" or "Plans" shall mean, severally and collectively, such detailed contract drawings for the work of this contract as are filed in the office of the Owner's Representative, and also such supplementary drawings as the Owner's Representative may have prepared and issued from time to time in order to illustrate or to provide for a clearer interpretation of the contract drawings; and also the drawings furnished by the Contractor with his proposal as well as the additional drawings furnished by the Owner's Representative for approval by the Contractor, as part of his contract performances.
18. "Owner's Representative" shall mean Quality Control Inspections, Inc. and its representatives.
19. Equipment shall mean all machinery and equipment, together with the necessary supplies for up keep and maintenance and also tools and apparatus necessary for the proper construction and acceptable completion of the work.
20. Extra Work. An item of work not provided for in the contract as awarded but found essential to the satisfactory completion of the contract within its intended scope.
21. Inspector. The City's authorized representative assigned to make detailed inspection of contract performance.
22. Instructions to Bidders. The clauses setting forth, in detail, the information relative to the proposed work and requirements for the submission of proposals.
23. Interpretations. In order to avoid cumbersome and confusing repetition of expressions in these specifications, it is provided that whenever anything is, or is to be done, if, as, or, when, or where "contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned, "it shall be understood as if the expression were followed by the words "by the Owner's Representative" or "to the Owner's Representative".

24. Invitation for Bids. The invitation for proposals for all work or material on which bids are required. Such proposal will indicate with reasonable accuracy the quantity and location of the work to be done or the character and quality of the material to be furnished and the time and place of the opening of proposals.
25. "Mayor" as used herein, shall refer to and designate the Mayor of the City of Rocky River, Ohio.
26. Notice to Bidders. The notice calling attentions of bidders to the time and place for receiving bids, containing a brief description of the work and briefly setting forth the requirements and conditions for submission of proposals.
27. Official Publications. The official publication are the formal resolutions and notices relative to the proposed improvement that are required by law to be published in a prescribed manner, and that have actually been published in accordance with the statutes relating thereto.
28. "Or Equal" Clause. Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturers, or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and, any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed, is, in the opinion of the Owner's Representative, of equal substance and function. It shall not be purchased or installed by the Contractor without the Owner's Representative's written approval.
29. Owner. The "Municipality" or "City" of Rocky River, Ohio which will purchase the goods and services provided under this contract.
30. Proposal. The written proposal, submitted by the bidder in the prescribed manner, and on the standard form, for the improvements covered by these specifications.
31. Proposal Guarantee or Proposal Bond. The security designated in the Legal Notice or Proposal, to be furnished by the bidder as a guarantee of good faith to enter into a contract and furnish an acceptable bond for the work contemplated, if it be awarded him.
32. Responsible Agency. The City of Rocky River, Ohio.
33. Section. "Section" or "Part" as herein shall be understood to refer to the entire section of the specifications following the number referred to.
34. Shown or Specified. Wherever in this contract, the words "as shown", "as specified", or "as designated", or words of like import are used, it shall be understood that the information or directions indicated or shown on the contract drawings or in the specifications which govern the construction included in this contract.
35. "Director of Law" as used herein, shall refer to and designate the Director of Law of the City of Rocky River, Ohio.

36. Special Provisions. Clauses or memoranda not contained herein, applying to the contract of which these specifications are a part, which change and supplement these specifications.
37. "Specifications" shall mean, severally and collectively, all of the terms and stipulations contained in those portions of the Contract known as the Specifications - General Provisions, and the Specifications - Detailed Provisions, and also any specifications required to be furnished by the Contractor with and at the time his proposal is submitted, as well as the additional specifications furnished by the Contractor as part of his contract performances. These documents, which have been prepared by the design professionals of record, set forth the manner in which the proposed work is to be accomplished.
38. Subcontractor. Any person, firm or corporation who has, with the approval of the Owner, contracted with the contractor to execute and perform in his stead all, or any part, of the contract.
39. Superintendent. The Contractor's authorized, on site, representative in responsible charge of the work.
40. Supplemental Agreement. A written agreement executed by the Contractor and by the Mayor covering necessary alterations.
41. Supplemental Specifications. Detailed specifications supplemental to or superseding these specifications.
42. Surety. The corporate body bound with and for the Contractor for the acceptable performance of the Contract.
43. Work. Work shall mean the furnishing of all labor, material, equipment, and other incidentals necessary or convenient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract.

4.102 CONTRACT DOCUMENTS

Should anything be omitted from the Contract drawings or specifications which is necessary to a clear understanding of the work, or should any error appear either in any of the various instruments furnished or in the work done by other Contractors affecting the work included in the Contract, the Contractor shall promptly notify the Owner's Representative of such omissions or errors and in the event of the Contractor's failure to do so, he shall make good any damage to or defect in his work caused thereby. He will not be allowed to take advantage of any error or omission on the contract drawings, as full instructions will be furnished by the Owner's Representative. Such instructions or interpretation by the Owner's Representative shall be final, and the Contractor shall carry them out as if originally specified.

4.103 OBLIGATIONS OF CONTRACTOR

The Contractor shall, at his own cost and expense, furnish all the necessary materials, labor, superintendence, tools, appliances, and equipment, and shall execute, construct, furnish, and test

in an expeditious, substantial and workmanlike manner the work of this contract within the time and in the manner specified, and in conformity with the requirements set forth in the specifications herein contained or hereto attached, and in accordance with the contract drawings of said work.

He shall complete the entire work to the satisfaction and approval of the Owner's Representative and Owner, and shall accept in consideration, thereof, and as full compensation therefore, a sum of money equal to the total of the sums determined from the actual amount of work done or materials furnished under each stipulated item of work and the appropriate unit or lump sum price stated in the proposal or in any subsidiary agreement to this contract, and with the quantities of work done determined in finality by the Owner's Representative and approved by the Owner.

4.104 PERSONAL ATTENTION OF CONTRACTOR

The Contractor shall give his personal attention to the faithful and continuous prosecution of the work. He shall maintain, at the site of the work, a copy of the contract, specifications, and drawings appropriate to the contract.

Should the Contractor himself be absent, there shall be present on the work at all times, a duly authorized representative who shall receive and execute all orders given by the Owner's Representative or his duly authorized agents, and such orders so given to and received by the said representative, shall be deemed to have been given to and received by the Contractor. Whenever the Contractor or his representative is not present at any place on the work where it may be necessary to give orders or directions, they will be given to, and shall be received and promptly obeyed by the Superintendents or the Foreman who may have immediate charge of the men employed on the particular work in relation to which, the order may be given.

4.105 COMPETENT PEOPLE TO BE EMPLOYED

The Contractor shall employ only competent, skillful, faithful and orderly people to do the work, and whenever the Owner's Representative shall notify the Contractor that any person on the work is, in his opinion, incompetent, unfaithful, disorderly or otherwise unsatisfactory, the Contractor shall discharge such person from the work, and shall not again employ such person except with the written consent of the Owner's Representative.

4.106 STATEMENT OF QUANTITIES

The schedule of quantities for the work as stated in the form of proposal or shown on the drawings is approximate only and will be used for the purpose of computing and comparing proposals which are submitted. This Contract is for a complete and satisfactory project, and the contractor must do all work and furnish all materials necessary regardless of whether such are, or are not shown in proper detail on the contract drawings or specifically called for in the specifications.

4.107 ALTERATIONS AND CHANGES

Should it be deemed necessary in the execution of the work, by reason of any condition or circumstances arising or discovered after the making of the contract, to make any variation desirable or necessary for the stability, safety, economy make such variations. If such variations diminish the quantity of work to be done, the value of such work dispensed with will not be included in any payments made to the Contractor, and no claim for damages or anticipated profits

on the work that may be dispensed with shall thereby accrue to the Contractor. If such variations increase the amount of work, the value of such increase shall be determined and fixed by the Owner's Representative in accordance with the quantity of such work actually done, and at the unit prices stipulated in the Contract.

If such alterations increase the amount of work to be done, where lump sum prices are specified, such increase shall be paid for as extra work. If such alterations or omissions diminish the amount of work to be done where lump sum prices are specified, such alterations or omissions shall not constitute a claim for damages or for loss of profits on the work that may be dispensed with, and the Owner shall not be required to pay for work or material omitted. The Contractor shall allow a credit for all such work or material omitted, the amount of the credit to be fixed on the basis of the estimated cost of the labor and materials omitted and authorized by a subsidiary agreement.

Such alterations or changes as are mentioned in this section shall not vitiate or annul the obligations of the contract or the agreement for the work, nor the liability and surety on the bond.

Should the Contractor consider himself entitled to extra compensation on account of the before mentioned alterations or changes, he shall notify the Owner by making his claim in writing to the Owner with a copy to the Owner's Representative, before proceeding with the work in question. Should the Contractor proceed with the said work in compliance with the order of the Owner, it will be construed as his acceptance of the order and of the stipulated compensation for the said work.

4.108 ORDERS TO CONTRACTOR

The address given in the bid or proposal upon which this contract is founded is hereby designated as the place where all notices, letter and other communications to the Contract shall be mailed or delivered. The delivering at the above named place or depositing in a postpaid wrapper directed to the above named place, in any post office box regularly maintained by the office, or any notice, letter or other communications to the Contractor shall be deemed sufficient service thereof upon the Contractor, and the date of said service shall be the date of such delivery or mailing. Such address may be changed at any time by an instrument in writing executed and acknowledged by the Contractor and delivered to the Owner. Nothing herein contained shall preclude or render inoperative the service of any notice, letter, or other communications upon the Contractor personally.

4.109 ACCESS TO WORK

The Contractor shall at all times give to the Owner and to the Owner's Representative, and to their officers and agents, all the necessary facilities for determining both on the work and at the places of manufacture, that all work to be done and all the materials to be furnished under this contract is being performed and are being made strictly in accordance with the terms of the contract and with the contract drawings and specifications. The Contractor shall notify the Owner's Representative in writing at least seven (7) days previous to the commencement of the manufacture of any materials of the time and place where the manufacture is to take place, in order that a representative of the Owner's Representative may be present to inspect the manufacture, should the Owner's Representative deem such presence necessary.

4.110 DECISIONS

All the work under this contract shall be done to the satisfaction of the Owner's Representative, who shall in all cases determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for hereunder, and shall decide all questions which may arise as to the fulfillment of this contract on the part of the Contractor, and the Owner's Representative's determination and decision thereon shall be final and conclusive; and such determination and decision, in case any question shall arise, shall be a condition precedent to the right of the contract to receive any monies hereunder.

4.111 INSPECTION

The Contractor shall provide all labor and all reasonable facilities necessary for the inspection of materials and work, and where directed, he shall furnish proper samples for test before or after the delivery of materials as required.

The Owner's Representative is empowered to reject and refuse all work and materials, and the method of application of any part thereof that do not comply in kind, quality, quantity, time or place with the specifications or contract drawings.

Materials or workmanship found to be defective at any time during the period of the contract or not in conformity with the requirements of the contract, shall be replaced or remedied by the Contractor, regardless of previous inspection, approval, acceptance of payment on account thereof. No unapproved equipment or material shall be incorporated into the work nor will such be included in any estimate for payment.

All materials which are rejected shall be removed from the site or vicinity of the work within two (2) days of its rejection.

4.112 PERMITS

Unless otherwise provided in the Contract Documents, the Contractor shall, at his expense, obtain all necessary permits. There will be no charge(s) or fee(s) for permits issued by the Owner for work performed within the jurisdiction of the Owner and for the Owner.

4.113 MATERIALS AND WORKMANSHIP

All materials furnished under this contract shall be as specified or required, or in the absence of particular specifications, shall be the best of their respective kinds, of new stock, unused and not deteriorated, and all the work contemplated and described shall be done in a good, substantial and workmanlike manner.

Wherever the contract drawings or the specifications describe materials, devices, or equipment as those which shall be similar or equal to certain material devices or equipment designated by trade or manufacturer's name, the Contractor will be required to demonstrate to the satisfaction of the Owner's Representative that the materials, devices or equipment he proposes to furnish are in fact similar or equal to those designated. It is understood and provided, moreover, that the decision of the Owner's Representative on all such questions of similarity or equality shall be final and that in the event of any adverse decision, no claim of any sort shall be made or allowed against the Owner's Representative or the owner.

If, subsequent to the signing of the contract and by reason of conditions of availability, time of delivery or other element of supply, the Contractor offers substitutions for the standards stipulated in the contract, the acceptability of such substitution may be conditioned upon adjustment of the contract price to reflect any difference between the cost of the article stipulated for standard in the contract and the cost of the article offered in substitution and if the Owner's Representative finds such difference in costs due to general difference in quality, efficiency, history of performance or service for repairs or replacements, it being the intent herein that savings in cost which from substitutions subsequent to the signing of the contract shall occur in major part to the advantage of the Owner.

Refer to Section 01 25 00 "Substitution Procedures" for additional requirements.

4.114 DEFECTIVE WORK

If at any time before the final payment for the work, any material or workmanship should be discovered which do not comply with the specifications and contract drawings, or which have become damaged as a result of Contractor's operations or neglect, they shall be immediately removed by the Contractor, when notified to do so by a written notice from the Owner, and they shall be replaced at the Contractor's expense. Any work condemned by the Owner's Representative as unsuitable or improperly done shall be removed and repaired or otherwise remedied, as the owner may direct.

Any material condemned by the Owner's Representative shall be removed from the site of the work within two (2) days if and after notice to that effect is given. Should work or materials not readily accessible or available to examination be suspected or be defective or not in accord with this contract, the Owner's Representative may require the Contractor to uncover or take work down or to make openings in the finished work for the purpose of examination at such points as may be designated.

If the Contractor shall neglect or refuse to remove or replace defective work or materials or to uncover completed work for examination within seven (7) days from the date of the written notice to do so, then the Owner may remove or cause the same to be removed and satisfactorily replaced by contract or otherwise as it may deem expedient, and the Owner is empowered to charge the expense thereof to the Contractor. The expense so charged will be deducted and paid by the Owner out of such monies as are or may become due under this agreement, or if such monies are not sufficient to meet said expense, the additional monies shall be provided by the contractor, and if he refuses or neglects to provide the necessary monies, they shall be provided by his surety.

Failure or omission on the part of the Owner's Representative or the owner or any of their officers or agents, to condemn defective or inferior work, material or equipment, or release the Contractor from the obligation of tearing out, removing and properly replacing the defective work, material or equipment without compensation and at his own cost and expense at any item upon the discovery of said defective work, material or equipment prior to final acceptance of the entire contract and the release of the Contractor by the owner, notwithstanding that such work, such material, or such equipment may have been estimated for payment, or that partial payments may have previously been made on the same.

If the work so uncovered meets the specifications and contract drawings in all particulars, then the Contractor shall be compensated for his cost of uncovering the work at the unit price bid for the classes of work involved in his complying with the Owner's Representative's or the Owner's orders to uncover such work.

4.115 SUSPENSION OF WORK

The Owner may order any or all of the work suspended for reasons of public necessity, adverse weather, or for other causes. Upon receipt of such order in writing, the Contractor shall protect work and materials affected by the order and shall suspend all operations pertinent thereto.

4.116 LAWS AND ORDINANCES

The Contractor shall keep himself fully informed of, and shall carefully observe and comply with all Federal, State, Municipal, and Local Laws, Ordinances and Regulations which in any manner affect the conduct of the work, and all such orders or decrees as exist at present and those which may be enacted later, of bodies or tribunals have any jurisdiction or authority over the work and shall indemnify and save harmless the Owner, the Owner's Representatives, and all their officers, agents and servants against any claim or liability arising from or based upon the violation of any such law, ordinances, regulation, order or decree, whether by himself, his agents or employees.

4.117 WORKERS' COMPENSATION AND INSURANCE

The contractor shall comply with the state law know as the Workers' Compensation Act, and he shall relieve and protect the Owner from any costs due to accidents or other liabilities mentioned in said Act. At the time of delivery of this contract and at such other times as may be requested, the Contractor shall furnish official certificates or receipts showing compliance with the Act and the provision of adequate and proper compensation insurance. If, for any reason, employees engaged in the work of this contract are not or cannot be protected directly under the Worker's Compensation Act, the Contractor shall provide other and adequate compensation insurance for such employees together with proof thereof.

In case any of the work is sublet, the contractor shall require the subcontractor to provide compensation insurance for those employees who are not covered by the Contractor himself, and he shall furnish evidence that such insurance is provided.

The Contractor shall not perform any work on this contract until the requirements of this section have been met and proof thereof submitted to and approved by the Owner.

4.118 SOCIAL SECURITY

The Contractor shall be and remain an independent Contractor with respect to all services performed hereunder and agrees to and does hereby accept full and exclusive liability for the payment of any and all contributions or taxes for social security, unemployment insurance, or old age retirement benefits, pensions or annuities now or hereafter imposed under any state or federal law which are measured by the wages, salaries, or other remuneration paid to persons employed by the Contractor on work performed under the terms of this contract, and further agrees to obey all lawful rules and regulations and to meet all lawful requirements which are not or hereafter may be issued or promulgated under said respective laws by any duly authorized state and federal officials; and said Contractor also agrees to indemnify and save harmless the Owner from any such contributions or taxes or liability therefore.

4.119 ACCIDENTS TO BE GUARDED AGAINST

The Contractor shall at all times exercise reasonable precautions for the safety of the public and of employees 4101.11 and 4113.06, Ohio Revised Code, relative to providing a "Safe Place to Work". All machinery and other physical hazards shall be guarded in accordance with safety codes approved by the American Standards Association unless such codes are incompatible with Federal, State and Municipal laws or regulations.

The Contractor shall be held responsible for all accidents and shall indemnify, defend and save harmless the Owner's Representative and the Owner from all suits, claims and actions, and all expenses, including costs to defend and costs for liability to which the Owner or the Owner's Representative may be put for any injury or alleged injury to the person or property of another arising in connection with the performance of the Contractor's work, or in caring for the same, or from any improper or inferior workmanship or inferior materials used. The Contractor shall employ at all times as many watchmen as are needed and when necessary, shall erect and maintain on the work such strong and suitable barriers and at night time such red lights and/or flashers, as will effectually prevent any accident to life, limb or property in consequence of said work, or in the use or occupancy of street, alley, highway or public or private grounds. All loss or damage to the work arising from fires, floods, storms, or other natural causes or from any detention, obstruction or other difficulties which may be encountered in the prosecution of the work shall be borne by the Contractor.

4.120 PATENTS

The Contractor shall indemnify and save harmless the Owner and its officers, agents and Owner's Representatives from all damages, judgments, claims and expenses arising from the infringement of any letters patent, or patent right or because of any royalty fee or license for the use, arrangement or operation of any tools, machinery, appliances, devices or materials which may be used by the Contractor or furnished by him in fulfillment of the requirements of this contract. In the event of any claim or action at law on account of such patents or fees, it is agreed that the Owner may retain out of the monies which are or which may become due the Contractor under this contract, a sum of money sufficient to protect itself against loss, and to retain the same until said claims are paid or satisfactorily adjusted.

4.121 CERTIFICATE OF APPROPRIATIONS

This contract, or any agreement subsidiary thereto, shall not be binding or of any force unless the Owner shall endorse thereon its certification that there remains unexpended or in process of collection and unapplied, an appropriation of funds applicable thereto and sufficient to pay the estimated expenses of completing this contract or subsidiary agreements which are certified by the officers making the same.

4.122 EXTRA WORK

Any additional work not originally contemplated under this contract, and which, in the opinion of the Owner's Representative and the Owner seems desirable or necessary, shall be performed by the Contractor, if authorized, but only subsequent to and in accordance with subsidiary agreement between the Owner and the Contractor, in which agreement of the prices and method of payment and of doing the work and any extension of time, shall be fixed and agreed upon. The

Contractor shall not proceed with work under any subsidiary agreement until so notified in writing by the Owner.

In case the parties to this agreement fail to agree upon the term of the said subsidiary agreement, the Owner shall have the right to provide otherwise for the execution of said work, and the Contractor shall permit the doing of said work, and afford every necessary opportunity therefore and further shall be entitled to no pay for damages due to delay or detention caused thereby.

It is agreed further that any increase in quantities of unit price items, over those stated in the estimated quantities, which might be required for the proper completion of this contract will not be classified as extra work, it being presumed that the bidder had verified the quantities before having submitted his proposal.

It is distinctly agreed and understood that any changes made in the plans and specifications for this work, whether such changes increase or decrease the amount thereof or any change in the manner or time of payments, nor of time for completing the work made by the Owner to the Contractor shall in no way annul, release or affect the liability and surety on the bond given by the Contractor.

4.123 ABANDONMENT OF WORK

Should the Contractor abandon or in any manner fail to complete the work of this contract, the Owner is hereby authorized and empowered to pay any laborers for work done who may have been employed by said Contractor upon the herein work, and to pay any claim against the Contractor for materials furnished, out of any funds that would otherwise be due or become due said Contractor under this contract, and in every case said Owner is hereby authorized and empowered to ascertain the amount or amounts so due or owing such labor or laborers, or for materials, from said Contractor, in such manner and upon such proof as it may deem sufficient. The amount or amounts so found to be due and payable to such labor or laborers, or for materials furnished, shall be final and conclusive against the Contractor, and may thereafter be paid by the Owner for said labor or laborer, and to liquidate claims for materials furnished; and any estimate or payment may be withheld from said Contractor until all such claims for labor or material on his contract have been satisfied.

4.124 FORFEITURE OF CONTRACT AND COMPLETION BY OWNER

If, at any time prior to the date of acceptance, the work to be done under this contract shall be abandoned by the Contractor, or if this contract or any part thereof shall be assigned or the work sublet by him without previous written consent of the Owner; or an employee thereof, shall become directly or indirectly interested in this contract or in furnishing the supplies or performing the work thereunder or in any portion of the profit thereof, or if at any time, the Owner shall be of the opinion that the performance of this contract is unnecessarily or unreasonably delayed, or that the Contractor is willfully violating any of the provisions of the contract; or if the work be not fully completed within the time named in this contract or such time may be extended in the manner herein provided; or if the Contractor shall fail or refuse to remedy defective work or materials when so ordered as herein provided; then and in any such case the Owner shall have the right and power to declare the whole or any part of the contract forfeited, and, in such event, shall notify the Contractor and his surety or affect the liability of the Contractor and his surety for breach of any of the covenant and conditions of said contract.

Upon the service of a declaration of forfeiture, the Contractor shall discontinue the work in whole or part as may be directed, hereupon the surety may, at its option, assume the contract, and proceed to perform the same, and may, with the written consent of the Owner, sublet the work or any portion of the work; provided, however, that the surety shall exercise its option within two (2) weeks after the date of service of notice of forfeiture. The surety, in such event, shall take the Contractor's place in all respects and shall be paid by the Owner for all work performed by it in accordance with the terms of the contract.

In case the surety does not, within the herein before specified time of two (2) weeks, exercise its right and option to assume this contract, to the extent forfeited, then the Owner shall have the right and power to complete by contract, or otherwise, as it may determine, the work in default, and for such completion the Owner, for itself or for its agents, may take possession of and use or cause to be used any materials, machinery, equipment, or tools provided by the Contractor, and may procure or cause to be procured other materials, machinery, equipment, or tools for the completion of the work, and the cost and expense thereof shall be charged to the Contractor or the surety.

All expenses, including those of re-letting, incurred at the instance of and charged under the foregoing clauses, or by virtue of this contract, shall be deducted from and paid by the Owner out of any monies then due the Contractor under and by virtue of this contract or any part thereof. In case such expense shall exceed the amount which would have been payable under the contract if the same had been completed by the Contractor, the Contractor or the surety shall pay the full amount of such excess to the owner; but should such expenses be less than the amount payable under this contract had the same been completed by the Contractor, he shall receive the difference, but shall not be entitled to damages for not being allowed to complete the work himself.

Should, by virtue of this section, a part or parts of the contract be forfeited, the Contractor hereunder shall continue the remainder of the work in conformity with the terms of this contract, and in such manner as no way to interfere with the operation of the Owner or of others designated to complete work forfeited as herein provided.

4.125 CLAIM FOR DAMAGES

If the Contractor shall claim compensation for any alleged damage by reason of the acts or omissions of the owner, or its Owner's Representatives or agents, he shall, within five (5) days after the sustaining of such damage, make a written statement to the Owner of the nature of the alleged damage. On or before the last day of the month next succeeding that in which any such damage is claimed to have been sustained, the Contractor shall file with the claim an itemized statement of the details and amount of the damage and unless such itemized statement is filed as thus required, the Contractor's claim for compensation shall be forfeited and invalidated, and he shall not be entitled to payment on account of any such damage. Upon request of the Owner, the Contractor shall give the Owner access to all books of account, receipts, vouchers, bills of lading and other books or papers containing evidence relative to the amount of claimed damages.

4.126 TIME

Work on this contract shall commence within ten (10) days from the date of notice in writing from the City to commence work.

The work shall be carried and with such force and in such manner and order and at such points that within the number of days designated by the Contractor or established in his proposals or as

may be modified or extended as hereinafter provided, and as computed for the date of notice to commence work, the whole work and its parts shall be performed in accordance with the terms of this contract.

It is mutually agreed by and between the parties hereto that time is an essential part of this contract, and that, if the Contractor shall fail to complete the work or any part thereof within the time above fixed, the Owner may retain as liquidated damages incident to such delay, from the monies that are or which may become due said Contractor, such sum per day as specified in the contract for each and every day (Sundays and legal holidays excepted) the completion of the work be delayed beyond the time specified herein for such completion.

It is agreed by and between the parties hereto that inasmuch as expenses and inconvenience and other damages will be sustained by the Owner in event that said Contractor fails to perform the work herein specified within the time herein set forth, such as inconvenience to the public, Owner's Representative, and other departments, salaries of inspectors, delay caused to other work by failure to perform this contract and other elements, some of which are indefinite and in some cases insusceptible of easy proof, the sum per day specified in the contract for each days delay (Sunday and legal holidays excepted) shall be considered as liquidated damages and not as a penalty and shall become due said Owner in full payment for all expenses and damages sustained to it by the failure of said Contractor to complete the work as herein specified.

4.127 EXTENSION OF TIME

If the Contractor be delayed in the completion of the work by any act or neglect of the Owner or by any other Contractor employed by the Owner, or by changes ordered in the work, or by strikes, lockouts, fire, unusual cause beyond the Contractor's control, or by delay authorized by the Owner or by and cause with the Owner shall decide to justify the delay, then for all such delays and suspensions, the Contractor shall be allowed one (1) day additional to the time herein stated for each and every day of such delay so caused in the completion of the work, the same to be ascertained by the Owner's Representative and a similarly allowance of extra time for such delays as the Owner's Representative may find justified, or to have been caused by the Owner.

The Contractor is cautioned to take full cognizance of time required for delivery of materials and equipment and should be governed accordingly in setting his time for completion and in placing his orders. Delay in delivery may not be accepted by the Owner as justification for extension of time.

No such extension shall be made for any one or more of such delays unless within ten (10) days after the beginning of such delay, a written request for additional time shall be filed with the Owner. In case of a continuing cause of delay, only one (1) request is necessary.

No claim for damages or any claim other than for an extension of time as herein provided shall be made or asserted against the Owner by reason of any of the delays herein before mentioned.

4.128 LIQUIDATED DAMAGES

If the Contractor fails to complete the Work by the Completion Date, then the City, if satisfied that the Contractor is making reasonable progress, and deems it in the best interest of the public, may allow the Contractor to continue in control of the Work. The City will pay the Contractor for Work performed on the Project less any liquidated damages incurred.

If the Work is not completed by the Completion Date and the Director permits the Contractor to remain in control, prosecute the Work at as many different places, at such times, and with such forces as the City requests. Provide a written plan for the completion of the Work.

For each calendar day that Work remains uncompleted after the Completion Date, the City will deduct the sum specified herein from any money due the Contractor, not as a penalty, but as liquidated damages. The City will adjust the Completion Date or other contractually mandated dates for delays specified in 4.126 and 4.127.

Permitting the Contractor to continue and complete the Work or any part of the Work after the Completion Date, or after extensions to the Completion Date, will in no way operate as a waiver on the part of the Department of any of its rights under the Contract.

The City may stop deducting liquidated damages when:

1. The Work is substantially complete and the project is available for use as intended by the contract.
2. The Contractor is diligently pursuing the remaining Work.
3. The Work remaining will not interfere with the intended use of the project and will not impact City operations.
4. All contract safety items and requirements of the authorities having jurisdiction are complete and operational.
5. Deemed reasonable and appropriate by the Owner’s Representative.

Original Contract Amount (Total Amount of the Bid)		Amount of Liquidated Damages to be Deducted for Each Calendar Day of Overrun in Time
From More Than	To and Including	
\$0.00	\$500,000	\$500
\$500,000	\$2,000,000	\$1,000
\$2,000,000	\$10,000,000	\$1,500
\$10,000,000	\$50,000,000	\$2,600
Over \$50,000,000		\$3,200

4.129 PRICES

The Owner will pay and the Contractor shall receive the prices herein stipulated in the proposal herein contained or hereto annexed, as full compensation for everything required to be furnished and done by the Contractor under this contract, including all incidental work required but not specifically mentioned, and also for all loss or damage arising out of the nature of the work or from action of the weather, floods or from any unforeseen obstruction or difficulty encountered

in the prosecution of the work, and for all risks of every description connected with the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work herein specified, and for well and faithfully completing the work and the whole thereof as herein provided, together with the remedying of all defects developing within the period for which the work is under guarantee.

The Owner is exempt from all sales, excise and transportation taxes, except State of Ohio gasoline tax. The price or prices bid, whether a unit price, lump sum price, lot price or a trade discount from catalog prices, shall be exclusive of all such taxes and will be so construed.

4.130 LABOR AND MATERIAL SUPPLIERS

- (a) The Contractor shall well, truly and promptly pay or satisfy the just and equitable claims of all persons who have performed labor or furnished material for said contract in the execution of the contract, including those who shall have previously filed attested account of such claims with the Owner and all bills, costs or claims of whatever kind which might in law or equity become a lien upon said work or against the Owner. In case said attested accounts, claim, bills, or costs are not paid or adjusted to the satisfaction of the Owner, then it is agreed the said Owner may proceed as in the next succeeding paragraph.
- (b) The Owner may retain out of any monies at any time due the Contractor, a sum sufficient to pay all persons who have done work or furnished labor or materials for the work herein contracted for, and who shall have filed an attested account of such claims with the Owner within four (4) months from the performance of labor, or the delivery of materials, and before the acceptance of said work, stating that any balance for said work or materials is still due and unpaid, which amount may be retained by the owner until satisfactory evidence is furnished to the Owner that said balance has been fully paid, and if said evidence is not furnished before the next estimate becoming due to the Contractor under the contract, the Owner may pay said balance to the person claiming it and charge such payment to the Contractor as payment on the contract, unless the Contractor shall have previously filed with the Owner written notice that such claim is in dispute. In the event of such dispute, the owner will retain the amount until the claim has been adjusted or the money paid into court on proceedings in the nature of an inter-pleader.

4.131 PARTIAL PAYMENT ESTIMATES

On the first day of each month, or within seven (7) days thereof, during construction, the Contractor shall prepare and submit to the Owner's Representative for approval, an estimate of the amount of labor performed and of the amount of materials incorporated in the work and/or materials delivered to the site in reasonable amounts and in proper condition. The Owner's Representative shall review the Contractor's estimate for the Owner to verify that the estimate is just and fair of the amount of value of work satisfactorily done and the materials and equipment incorporated into the work during the previous calendar month. Upon agreement between the Owner's Representative and Contractor as to the amount of labor performed and of the materials incorporated in the work and/or materials delivered to the site, the Owner's Representative will approve the estimate and submit it to the Owner for payment to the Contractor. More frequent estimates may, at the option of the Owner, be made at any time during the progress of the work, and payment may at any time be withheld if the work is not proceeding in accordance with this contract.

Partial payment to the Contractor for work performed under a lump sum price shall be based on a detailed cost breakdown of the bid showing labor and material as prepared by the Contractor preceding the state of construction and approved by the Owner's Representative.

Allowances at invoice prices or at the unit price bid for materials, or the lesser value of the two, will be made for approved nonperishable equipment and materials which are to be incorporated into the work, when approved, delivered, properly stored and protected upon the site and verified to the Owner's Representative by a copy of the invoice. For materials and equipment meeting the foregoing conditions, the Owner will pay, when properly included in an approved estimate, ninety-two percent of the invoice value of the same. Until the job is fifty percent (50%) completed, the Contractor will be paid ninety-two (92%) of the estimated value of labor and material completed. All labor performed after the job is fifty percent (50%) completed shall be paid for at a rate of one hundred percent (100%) of the estimates submitted by the Contractor and approved by the Owner's Representative, provided that the Contractor is making satisfactory progress and there is no specific cause for greater withholding. The retainer shall be withheld by the Owner until thirty (30) days after completion of work as defined, and upon completion of the work, the retainage shall be reduced to that amount necessary to assure completion of the contract work and retained for thirty (30) days after the approval and acceptance of the contract work by the Owner. After the job is fifty percent completed, material incorporated in the work and labor performed will be paid for at one hundred percent of the estimated value of same as bid.

The Owner may at all times reserve and retain out of any/or all of said partial payments, all such sums as it is or may be authorized to reserve or retain. The making of any such estimates or payment thereon shall not be taken or construed as an approval or acceptance by the owner of any work or estimates.

The Contractor may provide the owner with a cash bond or irrevocable letter of credit in lieu of the eight percent (8%) cash retained held by the Owner until construction is 50% complete, or the four percent (4%) total retained held thereafter, or of that amount retained by the Owner necessary to assure completion of the contract amount. The cash bond or irrevocable letter of credit shall be that of an approved surety company or financial institution, to the satisfaction of the Director of Law and meeting the provision of the Contract Bond as to agent, Surety Company and failure of surety. The cash bond or irrevocable letter of credit shall be only for all or part of the amount retained until completion of the work, and thereafter, shall be equal to the total amount being retained by the Owner and due the Contractor. All provision of the Contract including Completion of Work Defined, Approval and Acceptance of Work, Release of Guaranty Retainer, and Warranty Band shall be applicable to the manner in which the release of the cash bond or irrevocable letter of credit shall be executed.

4.132 COMPLETION OF WORK DEFINED

The time for completion of the herein specified work is defined as that stage when the installations included under this contract have been completed and tested, and are, together, ready for continuous, permanent, satisfactory use and occupancy for the purpose intended. After this date there may still remain some cleaning up of Contractor's plant or other minor work which does not prevent the permanent satisfactory use of the installations. The date established by the owner as the date of completion shall be the date from which bonus or liquidated damage shall be computed.

4.133 APPROVAL AND ACCEPTANCE OF WORK

Following the completion of this contract, as such completion is defined herein; and after the Contractor has completed all work required by him to be done in full conformity with the plan, specifications and the orders of the Owner; and after he had completed fine grading, seeding, sodding, and landscaping and has removed all equipment, debris, construction shanties and trailers; and after he has repaired or replaced all damaged fence, walks, drives, shrubbery, trees, etc.; and when he has repaired all defects in material and workmanship and cleaned up all work included in the Owner's Representative's check list; THEN, the Owner will inspect the entire work in all parts and details, or cause the same to be inspected by the Owner's Representative, and if said work and all workmanship, materials and equipment, and all contract performances are found to be satisfactory, complete and in accordance with the provisions and terms of the contract and specifications, the Owner's Representative will certify the work as acceptable and will accept it upon behalf of the Owner, in writing to the Contractor. The date of the letter of acceptance shall be the beginning of the thirty day guarantee period and shall also be the date for preparation of the Pre-Final Estimate which will release to the Contractor all monies due him less a retainer of four (4) percent of the total due the Contractor, which shall be security in guarantee for a period of thirty (30) days.

4.134 RELEASE OF GUARANTY RETAINER

Within thirty days after acceptance of the work by the Owner, the Owner will make or will cause to be made, an inspection of the work, materials and equipment and of all contract performances. If the said performance and work shall be found satisfactory and the work shown no signs of deterioration through defects of workmanship, equipment or materials; and after the Contractor has furnished the owner a notarized affidavit evidencing his satisfaction of any and all claims of whatever nature against the Contractor; and upon Contractor's delivery to the Owner of an acceptable Maintenance Bond as required under section 2.127; then the Owner shall certify the release of the four percent (4%) guarantee retainer and will instruct the Owner's Representative to prepare and to issue the final estimate, releasing to the Contractor all funds due him excepting only such monies as the Owner may be authorized or required by law to retain. Release of the final estimate shall also release the surety on the Contract Bond. If, however, the review and re-inspection as herein or any prior inspection discloses defects due to the non-fulfillment of this contract, or noncompliance with its requirements, the Owner shall so notify the Contractor in writing, and thereupon the Contractor shall, at his own expense, repair and replace and shall make good all defects of workmanship, materials and guarantee, and shall rectify any noncompliance and such repairs and fulfillment shall be a prerequisite to certifying the release of the guarantee retainer and of the surety on the Contract Bond. If, however, the Contractor shall, after due notice, refuse or neglect to make good the defects as notified and to the satisfaction of the Owner, then the owner may and is empowered to proceed in the manner prescribed in the event of abandonment or forfeiture of the work by the Contractor, and completion by the Owner and the payment of claims for materials and labor and other expenses as provided in such procedures shall be a prerequisite to the release of, the four percent (4%) retainer and to the release of the surety on the Bond. Any liquidated damages that are due to the City for schedule delay may be deducted from the retainer amount by the City and prior to any payments to Contractor.

4.135 MAINTENANCE BOND

Before the four percent (4%) guarantee is released to the Contractor, as above provided, the Contractor shall furnish to the Owner an acceptable Maintenance Bond in accordance with the requirements set forth in section 2.127.

4.136 OTHER CONTRACTS

It is understood and agreed that the Contractor shall execute his work in such a manner and in such order as will not interfere with work in progress and will permit the Owner to perform other work or to enter into other contracts for work herein described, with the least interference possible and with complete cooperation whenever it is desirable to prosecute said work, either simultaneously with the work under this contract or otherwise.

It is agreed that the Contractor shall not be entitled to any damages or extra compensation from the Owner an account of any work performed by the Owner or other Contractors that in any way affects the work under this contract, provided that such work of the Owner and other Contractors shall in the opinion of the Owner's Representative be performed in a proper and expeditious or a necessary manner. The Owner's Representative shall decide all questions between the Contractor hereunder, and other Contractors; and the order of the carrying and the work shall always be subject to his direction and approval.

If, in the judgment of the Owner's Representative, the joint occupation of the site of the work by the Owner or by two or more Contractors working an different contracts as the time, actually impeded progress of the work herein described, then the Owner's Representative may extend the time for the completion of the work and in an amount which accords with and compensates for the delays so caused.

In case the Contractor by his own acts or the acts of any person or persons in him employ, shall unnecessarily delay, in the opinion of the Owner's Representative, the work of the Owner or other Contractors, by not properly cooperating with them, or by not affording them sufficient opportunity or facility to perform work as may be specified, the Contractor shall, in that case, pay all costs and expenses incurred by such parties due to any such delays, and he hereby authorizes the Owner to deduct the amount of such cost and expenses from any monies due or to become due the Contractor under this contract. The Owner's Representative shall decide the extent of such delay or delays, and the amount of such cost and expenses, and his decision shall be binding upon both parties to this contract. Nothing contained in the paragraph shall however, relieve said Contractor from any liability or damage resulting to the owner an account of such delay or delays.

4.137 SUBLETTING-ASSIGNING

The Contractor shall give his personal attention to the faithful prosecution of the work, shall keep the same under his personal control, and shall not assign by power of attorney or otherwise, nor sublet the work or any thereof, without the previous consent of the Owner, and shall not, either legally or equitably, assign any of the monies payable under this agreement, or his claim thereto, unless by and with the like consent of the Owner. Assigning or subletting the whole or any portion of this contract shall not operate to release the Contractor or the Surety hereunder from any of the contract obligations.

4.138 NO WAIVER OR ESTOPPEL

The Owner shall not be precluded or estopped by any return or certificate made or given by it from at any time either before or after the final completion and acceptance of the work and payment therefore pursuant to any such return or certificate, showing the true and correct amount and character of the work done and materials furnished by the Contractor or any other person under this agreement, or from showing at any time that any such return or certificate is untrue and incorrect or improperly made in any particular, or that the work or materials, or any part thereof, do not in fact conform to the specifications; and the Owner shall not be precluded or estopped not withstanding any such return or certificate and payment in accordance therewith, from demanding and recovering from the Contractor such damages as it may sustain by reason of his failure to comply with the specifications. Neither the acceptance by the Owner, nor any order, measurement or certificate by the Owner, nor any order for payment of money, nor any payment for, nor acceptance of the whole or any part of the work by the Owner, nor any extension of time, nor any processions taken by the owner, or its employees, shall operate as a waiver of any portion of this contract or of any power herein provided; nor shall any waiver of any breach of this contract be held to a waiver of any other or subsequent breach.

4.139 DIVISION OF WORK

The part of the contract specifications which deal with materials and construction matters, essential to the performance of this contract, are generally divided into units of work for the purpose of ready reference. The actual division or assignment of any of the work among his subcontractors, as may be necessary by the Contractor to properly perform the contract, is the Contractor's responsibility and the Owner's Representative hereby assumes no responsibility to act as an arbiter to establish subcontract limits between the Divisions, Parts, Sections, or Subsections of the work. The Contractor is reminded, however, that all subcontractors must be approved as provided for elsewhere in the specifications.

4.140 LOCAL INCOME TAXES

The Contractor shall be responsible for assuring that all locally taxable income of all person and/or firms who have done work or otherwise provided goods and/or services as a part of the Contractor's obligation for the project a reported to the local government which has proper jurisdiction for taxing such aforementioned incomes. He shall comply with all local ordinances regarding income reporting and tax withholding for his employees, subcontractors, suppliers, etc. as applicable. He shall ascertain that his employees, subcontractors, and suppliers are all properly informed of their respective local income tax obligations.

4.141 CONSTRUCTION SCHEDULE

As soon as possible after award of the Contract, the Contractor shall draw up his proposed construction schedule for the project and submit it to the Owner's Representative for approval. The schedule shall set up a dated and detailed program for the starting and completing of all sections for the work in each state. It shall also provide space for the detailed charting of the actual progress of all portions of the scheduled work. No payment will be made to the Contractor unless his construction schedule has been submitted and approved by the Owner's Representative.

The Contractor shall submit the construction schedule, upon which has been indicated the actual progress with each requisition for payment.

If the Contractor shall fail to maintain the scheduled progress as noted above, the City may, by giving the Contractor five (5) day written notice, require the Contractor to provide for overtime and/or additional manpower until such progress schedule is brought up to date.

The cost for this additional manpower or for providing overtime shall be borne solely by the Contractor.

4.142 PROGRAM AND METHOD OF CONSTRUCTION

The order of sequence of execution of the work, the methods of construction, the general conduct of the work, and the general arrangement of the construction plant to be installed shall be at all times subject to the approval and direction of the Owner's Representative. If at any time before the commencement or during the progress of the work, or any part of it, such methods, features, and appliances used or to be used appear to the Owner's Representative as unsafe, insufficient or improper, he may order the Contractor to increase their safety or efficiency or to improve the character, and the Contractor shall conform to such orders, but the failure of the Owner's Representative to demand any increase of such safety, efficiency, adequacy or any improvement shall not release the Contractor from his obligation to secure the safe conduct and quality of the work specified.

4.143 NIGHT WORK

No night work or work on Sundays and legal holidays requiring the presence of an Owner's Representative or Inspector will be permitted except in case of emergency and, then only to such an extent as is absolutely necessary and with the written permission of the Owner's Representative.

4.144 INTOXICATING LIQUORS

The Contractor shall neither permit nor suffer the introduction or use of intoxicating liquors upon or about the work specified in this contract or upon any of the grounds occupied by him or by his employees.

4.145 SANITARY MEASURES

Sanitary conveniences for the use of all persons employed on the work shall be contracted and maintained by the Contractor in sufficient number, in such manner, and in such places as shall be approved by the Owner's Representative. All persons connected with the work shall be obligated to use them, and any employees found violating these provisions shall be discharged and not again employed without written consent. All necessary precautions, including the care of employees, shall be at all times satisfactory to the governing Health Department. The Contractor shall promptly and fully comply with all orders and regulations in regard to these matters.

4.146 AID TO THE INJURED

The Contractor shall keep on site, ready for immediate use, all articles necessary for giving "First Aid to the Injured". He shall also have standing arrangements for the immediate removal and hospital treatment of any employee who may be injured on the work.

4.147 ACCESS TO OWNER'S REPRESENTATIVE

During the prosecution of this contract, the Contractor shall enable and facilitate access to all parts of the work by the Owner's Representative.

4.148 CLEANING UP

The Contractor shall at his own expense, keep the site of his operation, building or structure being worked on clean during the construction, and shall remove all rubbish as it accumulates.

4.149 UNNECESSARY NOISE

The movement and use of machinery and equipment, the handling of materials, and the conduct of the work shall be such as to avoid and eliminate unnecessary noise, dirt and dust.

4.150 DAMAGES AND CLAIMS

The Contractor shall defend and hold harmless the City and its officers and agents, from all claims of any nature whatsoever by any person, firm or corporation, for damages either to person or property, arising in any manner out of the carrying on of the work; and against liability from all claims relating to labor or materials furnished for the work; and claims to inventions, patents, and patent rights used in doing the work.

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PART 5 – CONTRACT AND BIDDING DOCUMENTS

SECTION ONE – BID DOCUMENTS

- 5.101 INFORMATION SHOWING QUALIFICATIONS OF BIDDER
- 5.102 LIST OF SUBCONTRACTORS
- 5.103 BID GUARANTY AND CONTRACT BOND
- 5.104 CONSENT OF SURETY
- 5.105 AFFIDAVIT
- 5.106 NON-COLLUSION AFFIDAVIT
- 5.107 CERTIFIED COPY OF CORPORATE RESOLUTION
- 5.108 SUBSTITUTIONS
- 5.109 AFFIDAVIT IN COMPLIANCE WITH SECTION 3517.13 OF THE OHIO REVISED CODE
- 5.110 PROPOSAL AND BID FORM
- 5.111 DOCUMENT CHECKLIST

SECTION TWO – CONTRACT DOCUMENTS

- 5.201 CONTRACT
- 5.202 CONTRACT BOND
- 5.203 CERTIFICATE OF FINANCE DIRECTOR / CERTIFICATE OF DIRECTOR OF LAW
- 5.204 APPROVED LIST OF SUBCONTRACTORS
- 5.205 DELINQUENT PERSONAL PROPERTY STATEMENT
- 5.206 NOTICE OF AWARD
- 5.207 NOTICE TO PROCEED
- 5.208 NOTICE OF COMMENCEMENT OF PUBLIC IMPROVEMENT
- 5.209 CITY OF ROCKY RIVER’S ELECTRONIC VENDOR PAYMENTS

SECTION THREE – CONTRACT COMPLETION DOCUMENTS

- 5.301 MAINTENANCE BOND
- 5.302 AFFIDAVIT OF CONTRACTOR OR SUBCONTRACTOR (PREVAILING WAGES)
- 5.303 AFFIDAVIT OF CONTRACTOR

5.101

INFORMATION SHOWING QUALIFICATIONS OF BIDDER
(To be completed for submission with bid)

The bidder shall here furnish information relative to the facilities, equipment ability, and financial resources available for the fulfillment of the contract if such be awarded to him.

EQUIPMENT AND FACILITIES: To indicate that he or they be properly equipped to perform the work included in the proposed contract.

ABILITY: To indicate that he or they have performed and/or are in the process of performing the following work: (Give the respective location, kind, size (or cost), date(s) of performance, and reference to name and address of client or engineer for each work assignment, including at least three (3) completed work assignments, listed).

***FINANCIAL RESOURCES:** To indicate that information relative to his or their financial resources can and may be obtained from the following: (Give name, business and address).

*To be used if Bid Guaranty is Certified or Cashier's Check.

BID GUARANTY AND CONTRACT BOND
(O.R.C. 153.571)
(Not to be filled out if certified check is submitted.)

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned _____

(Here insert full name or legal title of Contractor and Address)

as Principal and _____
(Here insert full name or legal title of Surety)

as Sureties, are hereby held and firmly bound unto _____

(Here insert full name or legal title of Owner)

as Oblige, in the penal sum of the dollar amount of the bid submitted by the

Principal to the Oblige on _____ to undertake the project known as:

(Here insert full name, address and description of the Project)

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Oblige, incorporating any additive or deductive alternate bids made by the Principal on the date referred to above to the Oblige, which are accepted by the Oblige. In no case shall the penal sum exceed the amount of

_____ dollars (\$ _____).

(If the foregoing blank is not filled in, the penal sum will be the full amount of the Principal's bid, including alternates. Alternatively, if the blank is filled in, the amount stated must not be less than the full amount of the bid, including alternates, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named Principal has submitted a bid for the above referred to project;

NOW, THEREFORE, if the Oblige accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Oblige may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Oblige does not award the contract to the next lowest bidder and resubmits the project for bidding, the Principal pays to the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect. If the Oblige accepts the bid of the Principal and the Principal within ten days after the

awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein; and

NOW ALSO, IF THE SAID Principal shall well and faithfully do and perform the things agreed by _____ to be done and performed according to the terms of said; and shall pay all lawful claims of subcontractors, material suppliers, and laborers; for labor performed and materials furnished in the carrying forward, performing or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any material suppliers or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SAID Surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefor shall in any wise affect the obligations of said Surety on its bond.

SIGNED AND SEALED This _____ day of _____, 20_____.

PRINCIPAL:

SURETY COMPANY ADDRESS:

BY: _____

Street

TITLE: _____

City

State

Zip

SURETY: _____

SURETY AGENT'S ADDRESS:

Agency Name

BY: _____
Attorney-in-Fact

Street

City

State

Zip

CONSENT OF SURETY

(To be completed for submission with bid
if a certified check is submitted)

(Name of Surety Company)

(Address)

KNOW ALL MEN BY THESE PRESENTS, that we as _____, as
(Name of Bidder)
principal, and _____, a corporation created
(Name of Surety Company)

and existing under the Laws of the State of _____ having its principal office
_____ are held firmly bound unto the City of
(Complete Address of Surety Company)

Rocky River, Ohio, hereby jointly and severally binding our heirs, successors, administrators, executors, legal
representatives and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that whereas, the above named principal submits
the herewith proposal for _____

_____ for the City of Rocky River, Ohio in conformance with the Information for and Instructions to Bidders; we, the
above named Surety, will meet all stipulations and will execute the Contract Bond as hereinafter, to the above
named principal in the event he should be awarded a contract and in the amount one hundred percent (100%) of
the total bid price for performing the work and guaranteeing its performance in conformity with the plan and
specifications, to the City of Rocky River, Ohio.

WITNESS OUR SIGNATURES, This _____, day of _____, 20_____.

Attest:

(Contractor - Principal)

Witness _____

(Signature)

Seal

(Title)

Attest:

(Name of Surety Company)

Witness _____

(Signature)

Seal

(Title)

AFFIDAVIT

This affidavit is to be filled out and executed by the bidder, if the bid is made by a corporation, then by its properly authorized agent.

The name of the individual swearing to the affidavit should always appear on the line marked "Name of Affiant". The affiant's capacity, when a partner or officer of a corporation should be inserted and the lines marked "Affiant". The Affiant should sign an individual name at the end, not a partnership or corporation name, and swear to said affidavit before a Notary Public, who must attach his seal.

STATE OF _____ COUNTY OF _____, SS.

(Name of Affiant)

being duly sworn, do _____ depose and say that _____

reside at _____

and that _____

(Give all names of all persons, firms or corporation interested in the bid)

is or are the only persons interested with _____ in the profits of any contract which may result from herein contained proposal; that the said proposal is made without any connection or interest in the profits thereof with any other person making any other bid or proposal for said work; that the said proposal is, on _____ part, in all respects fair, and without collusion or fraud; and also that no member of the City Council, head of any department or bureau or employee therein or any officer of the City of Rocky River, Ohio, is directly or indirectly interested therein and that all the statements made by him in this proposal are true.

Subscribed and sworn this _____ day of _____, 20____, before me _____

Notary Public

Affiant

5.106

NON-COLLUSION AFFIDAVIT

State of _____)

County of _____)

_____ being first duly sworn, deposes and says that he is _____

_____ (Sole owner, a partner, president, secretary, etc.)

of _____

the party making the foregoing proposal or bid; that such bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed directly or indirectly with any bidder or person, to put in a sham bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference with any person, to fix the bid price of affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of an other, bidder, or to secure any advantage against the City of Rocky River, Ohio, or any person interested in the proposed contract; and that all statements contained in said proposal or bid are true; and, further that such bidder has not, directly or indirectly submitted this bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

Affiant

Sworn to and subscribed before me this _____ day of _____ 20_____ .

Notary Public in and for

_____ County, Ohio

My Commission Expires:

_____, 20_____ .

CORPORATE RESOLUTION

I, _____ Secretary of _____

_____, an _____ Corporation, hereby certifies that the following is a true and correct copy of a resolution duly adopted by the Board of Directors of _____

_____ on _____ 20____,

to wit:

"Resolved, that _____
of this Company, namely, _____

be and he is hereby authorized and directed to enter into any and all contracts, bid guaranty and performance bonds with the CITY OF ROCKY RIVER for the purpose of furnishing labor and materials as to

_____ at such price and upon such terms and conditions, including any amendments or modifications thereto, as said in his sole discretion shall deem best, and that said actions shall be binding upon the Corporation.

Resolved further, that said _____ be, and he is hereby further authorized and directed to execute and deliver unto said CITY OF ROCKY RIVER other Instruments which in his discretion, he shall deem necessary to carry out the foregoing resolution."

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at _____, Ohio this _____ day of _____, 20____,

and I further certify that said resolution is still in full force and effect.

SEAL

Secretary

AFFIDAVIT IN COMPLIANCE WITH SECTION 3517.13
OF THE OHIO REVISED CODE

STATE OF _____)
)SS:
COUNTY OF _____)

_____ (name) personally appeared before me the undersigned, as an individual or as a representative of _____ (name of entity) for a potential contract for _____ (type of product or service) to be let by the City of Rocky River, Ohio, who, being duly cautioned and sworn, makes the following statement with respect to prohibited activities constituting a conflict of interest or other violations under Ohio Revised Code Section 3517.13 (campaign contributions and reporting) and further states that the undersigned has the authority to make the following representation on behalf of himself or herself or of the business entity:

1. That none of the following has individually made within the two previous calendar years campaign contributions that total in excess of \$2000 and that, if awarded a contract for the purchase of goods or services in excess of \$10,000, none of the following individually will make, beginning on the date the contract is awarded and extending until one year following the conclusion of the contract, as an individual, one or more campaign contributions totaling in excess of \$1,000, to the Mayor of the City of Rocky River or the individual campaign committees, or if the contracting authority is another elected official of City of Rocky River that authorizes contracts to that official or their individual campaign committee:
 - a. myself;
 - b. any partner or owner or shareholder of the partnership (if applicable);
 - c. any owner of more than 20% of the corporation or business trust (if applicable);
 - d. each spouse of any person identified in (a) through (c) of this section;
 - e. each child seven years of age to seventeen years of age of any person identified in divisions (a) through (c) of this section (only applicable to contributions made on or after January 1, 2007).
2. That none of the following have collectively made within the two previous calendar years campaign contributions that total in excess of \$2,000, and that, if awarded a contract for the purchase of goods and services in excess of \$10,000, none of the following collectively will make, beginning on the date the contract is awarded and extending until one year following the conclusion of the contract, one or more campaign contributions totaling in excess of \$2,000, to the Mayor of the City of Rocky River or the individual campaign committees, or if the contracting authority is another elected official of City of Rocky River that authorizes contracts to that official or their individual campaign committee:
 - a. myself;
 - b. any partner or owner or shareholder of the partnership (if applicable);
 - c. any owner of more than 20% of the corporation or business trust (if applicable);
 - d. each spouse of any person identified in (a) through (c) of this section;
 - e. each child seven years of age to seventeen years of age of any person identified in divisions (a) through (c) of this section.
3. That this representation is made to cooperate with the City before entering into a contractual relationship with the Contractor, and with the knowledge that City officials will rely on the authenticity of statements made herein awarding and administering such contracts.

Signature _____

Title: _____

Sworn to before me and subscribed in my presence this ____ day of _____, 20 ____.

Notary Public _____

My Commission Expires: _____

5.110

PROPOSAL AND BID FORM
FOR THE ROCKY RIVER POLICE STATION FIRING RANGE FIT-OUT
IN THE
CITY OF ROCKY RIVER, OHIO

We the undersigned _____

_____ having carefully examined the location for the construction of the:

ROCKY RIVER SPRENCER CREEK REHABILITATION PROJECT

for which the following proposal prices are submitted to the City of Rocky River, Ohio, and having also carefully examined and read the contract drawings and specifications and form of contract and instructions to bidders, which are understood and accepted as sufficient for the purpose hereby proposed to comply with said requirements to furnish all of said work in accordance with said contract drawings, specifications and conditions, and to complete said work within the time thereafter stipulated and for the prices.

It is understood, further, that the quantities set forth herein are those which will be used in determining the total amount of each proposal for this improvement and for the purpose of determining the lowest bidder, but it is understood and agreed that these quantities are approximate only, and that the Contractor to whom the contract is awarded shall not be entitled to any claim for loss of profits, or for other damages, should the quantity of work done prove to be greater or less than is herein given in said estimated quantity columns.

The Contractor further agrees that, in the event of failure on his part to contract as aforesaid (provided this proposal is accepted), the bid bond, check or letter of credit accompanying this proposal shall be forfeited to the OWNER as liquidated damages for the difference between this bid and the awarded Contract price, not to exceed the amount of the bond. We further agree that the OWNER may reject any or all bids.

THE CITY RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS, INCREASE OR DECREASE QUANTITIES, AND TO AWARD THE CONTRACT TO THE CONTRACTOR SUBMITTING THE LOWEST AND BEST BID.

The Contractor further agrees to complete all of the work specified for this contract within the schedule stipulated herein and he further agrees that the City may retain from monies that are or which may become, due, pursuant to section 4.128 of this contract.

**PROPOSAL AND BID FORM FOR THE
SPENCER CREEK REHABILITATION PROJECT**

BID PACKAGE No. 1: GENERAL CONSTRUCTION

Acknowledgement of Addenda

<u>Addendum No.</u>	<u>Date of Receipt</u>
_____	_____
_____	_____
_____	_____
_____	_____

Enter the amount of the Base Bid for ALL LABOR AND MATERIALS (including Allowances) to complete the associated scope of Work. DO NOT include Alternates (if applicable) in the Base Bid amount.

General Trades Sub-Total	\$ _____
Mechanical Sub-Total	\$ _____
Plumbing Sub-Total	\$ _____
Electrical Sub-Total	\$ _____
Sub-Total Base Bid (without Allowances)	\$ _____

Allowance(s) per Specification Section 01 21 00 to be included in the **Base Bid** are as follows:

Allowance No. 1 – Contingency
10% of the Total Base Bid Amount \$ _____
Allowance No. 1 Bid in words: _____

Total Base Bid (with Allowance(s)) \$ _____
Total Base Bid
in words: _____

ALTERNATE PRICES

Alternate Prices for ALL LABOR AND MATERIALS to complete the associated scopes of Work per Specification Section 01 23 00.

Alternate No. (): _____

Alternate No. () Bid: ADD/DEDUCT \$ _____

Alternate No. () Bid in words: _____

BID FORM

SPENCER CREEK RESTORATION

ROCKY RIVER, OHIO

DATE

BID ITEM	UNIT	BID QTY	UNIT PRICE	ITEM TOTAL
GENERAL				
MOBILIZATION/DEMOBILIZATION	LS	1		
SITE PREPARATION/EARTHWORK				
SITE PREPARATION				
STABILIZED CONSTRUCTION ENTRANCE, SITE FENCING, TRAFFIC MANAGEMENT, TREE PROTECTION	LS	1		
SEDIMENT AND EROSION CONTROL				
TURBIDITY MANAGEMENT, SILT CURTAIN, CATCH BASIN PROTECTION	LS	1		
DEBRIS REMOVAL AND EXISTING STRUCTURE DEMOLITION				
CLEARING AND GRUBBING	LS	1		
INVASIVE SPECIES REMOVAL	Acres	1		
DREDGING	CY	100		
SITE GRADING - EXCAVATION AND STOCKPILING	CY	700		
EXCESS SOIL OFF-HAUL	CY	900		
Slope Protection/Stabilization				
RETAINING WALL - CONCRETE FOOTING	CY	75		
RETAINING WALL - STONE BLOCK	FSF	1575		
RETAINING WALL - DRAIN ROCK BACK FILL AND UNDER DRAIN	LF	225		
CROSS VANE - STONE BLOCK	EA	174		
CROSS VANE - COBBLE RIFFLE	Tons	40		
TOE PROTECTION - ARMOR LAYER ODOT TYPE A	Tons	1400		
TOE PROTECTION - OPEN GRADED BASE	Tons	400		
TOE PROTECTION - GEOTEXTILE	SY	1200		
FLOODPLAIN BENCH - BACKFILL WITH EXISTING MATERIAL	CY	15		
RESTORATION AND PLANTINGS				
UPLAND RESTORATION - SLOPED AND SHORTGRASS PRAIRIE AND FLOODPLAIN SEED MIX	SY	3050		
EAST BANK PLANTINGS - LIVE STAKES	SF	868		
RESTORATION PLANTINGS - SHRUBS	EA	188		
RESTORATION PLANTINGS- TREES	EA	22		
RESTORATION PLANTINGS - FLOODPLAIN PLUG MIX	SF	2640		
STAGING AREA RESTORATION	SY	2480		
<u>ENGINEERS ESTIMATE</u>				<u>\$1,340,000.00</u>
TOTAL BASE BID:				
<u>CONTINGENCY:</u>				<u>\$150,000.00</u>
TOTAL BASE BID (Plus Contingency):				
ALTERNATE 1 (ADD OR DEDUCT) East bank plantings (following invasive species removal)				
ALTERNATE 2 ADD OR DEDUCT) In Stream Boulder Habitat				

DOCUMENT CHECKLIST

BIDDING

Forms listed below shall be completed and signed by the Bidder. Bids received with incomplete or unsigned forms will be considered incomplete and non-responsive and will be subject to disqualification. Do not disassemble the specifications book. The entire book is to be submitted with your bid.

Check if Completed

- _____ 1. INFORMATION SHOWING QUALIFICATIONS OF BIDDER – Section 5.101
- _____ 2. LIST OF SUBCONTRACTORS – Section 5.102
- _____ 3A. BID GUARANTEE AND CONTRACT BOND – Section 5.103

OR

- _____ 3B. CERTIFIED CHECK AND CONSENT OF SURETY – Section 5.104
- _____ 4. AFFIDAVIT – Section 5.105
- _____ 5. FORM OF NON-COLLUSION AFFIDAVIT – Section 5.106
- _____ 6. CORPORATE RESOLUTION – Section 5.107
- _____ 7. SUBSTITUTIONS – Section 5.108
- _____ 8. AFFIDAVIT IN COMPLIANCE WITH SECTION 3517.13 OF THE OHIO REVISED CODE – Section 5.109
- _____ 9. PROPOSAL AND BID FORM – Section 5.110
- _____ 10. VERIFICATION STATING THE CONTRACTOR IS NOT LISTED IN THE AUDITOR OF STATE’S UNRESOLVED FINDINGS FOR RECOVERY DATABASE. Section 1.01 Part D

CONTRACT AWARD

The forms listed below shall be completed by the Contractor awarded the Contract to Complete the work stated herein.

- _____ 1. CONTRACT – Section 5.201
- _____ 2. CONTRACT BOND – Section 5.202
- _____ 3. DELINQUENT PERSONAL PROPERTY STATEMENT – Section 5.205
- _____ 4. INSURANCE CERTIFICATES – Sections 4.118 and 4.120
- _____ 5. CITY OF ROCKY RIVER’S ELECTRONIC VENDOR PAYMENTS – Section 5.209

CONTRACT COMPLETION

- _____ 1. MAINTENANCE BOND – Section 5.301

- _____ 2. AFFIDAVIT OF CONTRACTOR OR SUBCONTRACTOR (PREVAILING WAGES) – Section 5.302

- _____ 3. AFFIDAVIT OF CONTRATOR – Section 5.303

CONTRACT

THIS AGREEMENT made and entered into at Rocky River, Ohio, this _____ day of _____, 20 __, by and between the CITY OF ROCKY RIVER, hereinafter referred to as "OWNER" and _____ (a corporation, partnership, or individual) hereinafter referred to as "CONTRACTOR".

WITNESSETH: That the said CONTRACTOR has agreed and by these presents does agree with the OWNER for the consideration hereinafter set forth, to furnish at his own cost and expense, all the necessary tools, materials, labor, and tests in an expeditious, substantial and workmanlike manner, the equipment and materials specified herein, completing work within the "Time of Completion" stated on the Proposal and Bid Form and executing the same in the manner specified and in conformity with the requirements set forth in this Contract.

The following form essential parts of the Contract:

1. Legal Notice
2. Federal, State, and County Requirements
3. Information for and Instructions to Bidders
4. Proposal and Bid Form
5. Non-Collusion Affidavit
6. Contract and Related Exhibits
7. Contract Bond
8. Specifications
9. Plans
10. Workers' Compensation Certificate
11. Certificates of Insurance
12. Certified Copy of Corporate Resolution

The CONTRACTOR agrees and understands that the work on this Contract shall be subject to the acceptance of the OWNER based upon and in accordance with the Contract specifications on file in the office of the OWNER.

The CONTRACTOR shall proceed with the said work in a prompt and diligent manner, and shall do the several parts thereof at such times and in such order as the OWNER may direct. Further, he shall complete the whole of said work in accordance with the specifications to the satisfaction of the OWNER on or before the time stated, and in default of completion within the time as fixed, the Contractor shall pay to the OWNER as liquidated damages, an amount consistent with Section 4.128 of this contract.

It is hereby mutually agreed that the OWNER is to pay, and the CONTRACTOR is to receive, the prices submitted in the proposal as full compensation for furnishing all materials and labor in building, constructing, testing, and in all respects, completing the project.

The CONTRACTOR agrees that each individual employed by the CONTRACTOR or any Sub-Contractor engaged in work on the project under this Contract shall be paid by prevailing wages established by the Department of Industrial Relations of the State of Ohio. This shall occur regardless of any contractual relationship which may be said to exist between the CONTRACTOR or any Sub-Contractor and such individual.

This is Contract shall be in full force and effect from the date of execution by the parties.

This is Contract shall be in full force and effect from the date of execution by the parties.

IN WITNESS WHEREOF: The parties
hereunto affixed their signatures the day and year first mentioned above.

WITNESS:

WITNESS:

OWNER:

CITY OF ROCKY RIVER

By: _____

Pamela E. Bobst
MAYOR

CONTRACTOR:

By: _____

Title: _____

CONTRACT BOND
(O.R.C. 153.571)

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____

(Here insert full name or legal title of Contractor and Address)

as Principal and _____
(Here insert full name or legal title of Surety)

as Surety, are hereby held and firmly bound unto _____

(Here insert full name or legal title of Owner)

hereinafter called the Oblige, in the penal sum of the dollar amount of the bid submitted by the
Principal to the Oblige on _____ to undertake the project know as:

(Here insert full name, address and description of the Project)

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Oblige, incorporating any additive or deductive alternate proposals made by the Principal on the date referred to above to the Oblige, which are accepted by the Oblige. In no case shall the penal sum exceed the amount of

_____ dollars (\$ _____).

(If the above line is left blank, the penal sum will be the full amount of the Principal's bid, including alternates. Alternatively, if completed, the amount stated must not be less than the full amount of the bid, including alternates, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named Principal has submitted a bid on the above referred to project;

NOW, THEREFORE, if the Oblige accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Oblige may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Oblige does not award the contract to the next lowest bidder and resubmits the project for bidding, the Principal will pay the Oblige the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect. If the Oblige accepts the bid of the Principal and the Principal within ten days after the

awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein; and

IF THE SAID Principal shall well and faithfully perform each and every condition of such contract; and indemnify the Obligee against all damage suffered by failure to perform such contract according to the provisions thereof and in accordance with the plans, details, specifications, and bills of material therefore; and shall pay all lawful claims of subcontractors, materialmen, and laborers; for labor performed and materials furnished in the carrying forward, performing or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SAID Surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefore shall in any wise affect the obligations of said Surety on this bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

SIGNED AND SEALED This _____ day of _____, 20_____.

PRINCIPAL:

SURETY COMPANY ADDRESS:

BY: _____

Street

TITLE: _____

City State Zip

SURETY: _____

SURETY AGENT'S ADDRESS:

Agency Name

BY: _____

Attorney-in-Fact

Street

City State Zip

**CERTIFICATE
OF
FINANCE DIRECTOR**

I, Michael A. Thomas, duly appointed and acting Finance Director of the City of Rocky River, do hereby certify that a copy of the foregoing Agreement has been received by me from the Clerk of Council of the City of Rocky River, and that I hereby certify that the amount of _____

_____ (\$ _____) required to meet the payment of this Contract has been lawfully appropriated or authorized or directed for such purpose of complying with the terms and conditions of the foregoing Contract and is on deposit or in the process of collection to the credit of the appropriate fund, and the same is free from any previous encumbrances.

WITNESS MY HAND this _____ day of _____, 20_____, at Rocky River, Ohio.

Jonathan Lindow, Finance Director

**CERTIFICATE
OF
DIRECTOR OF LAW**

On this _____ day of _____, 20_____, I, Michael J. O'Shea, Director of Law for the City of Rocky River, Ohio, do hereby approve the foregoing Contract with

_____ as to form.

Michael J. O'Shea, Director of Law

APPROVED LIST OF SUBCONTRACTORS

The following subcontractors are hereby approved for work under this Contract:

SUB-CONTRACTOR

DESCRIPTION OF WORK

Approvals:

CONTRACTOR

THE CITY OF ROCKY RIVER, OHIO

ATTEST

ATTEST

DELINQUENT PERSONAL PROPERTY STATEMENT

_____, having been awarded a Contract by the City of Rocky River; hereby affirms under oath, pursuant to Ohio Revised Code Section 5719.042, that at the time the bid was submitted, my company (*was*)(*was not*) charged with delinquent personal property taxes on the General Tax List of Personal Property for Cuyahoga County, Ohio.

If such charge for delinquent personal property tax exists on the General Tax List of Personal Property for Cuyahoga County, Ohio, the amount of such due and unpaid delinquent taxes, including due and unpaid penalties and interest, shall be set forth below.

A copy of this statement shall be transmitted by the Cuyahoga County Auditor to the County Treasurer within thirty (30) days of the date it is submitted. A copy of this statement shall also be incorporated into the Contract made between the City of Rocky River and _____

_____ and no payment shall be made with respect to any Contract unless such statement has been so incorporated as a part thereof.

Delinquent Personal Property Tax \$ _____
Penalties _____
Interest _____

By: _____

Title: _____

Subscribed in my presence, and sworn to before me, this ____ day of _____, 20____.

Notary Public

My commission expires _____.

NOTICE OF AWARD

TO: PROJECT DESCRIPTION:

The Owner has considered the Bid submitted by you for the above-described work in response to its Legal Notice dated _____, and Instructions to Bidders.

You are notified that your Bid dated _____ has been accepted for items in the amount of _____ as authorized by Ordinance No. _____.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Contractor's Performance Bond, Payment Bond, and Certificates of Insurance within ten (10) days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

**CITY OF ROCKY RIVER
(OWNER)**

Dated this ___ day of _____

By _____

**Rich Snyder
Director of Public Safety-Service**

ACCEPTANCE OF NOTICE:

**Receipt of the above NOTICE OF AWARD
is hereby acknowledged by:**

(Company Name)

this ___ day of _____, 20__.

By: _____

Title: _____

5.207

NOTICE TO PROCEED

TO: PROJECT DESCRIPTION:
OWNER: CITY OF ROCKY RIVER
DATE:

Transmitted herewith is one (1) completely executed set of Contract Documents. You are hereby notified to commence work in accordance with the contract dated _____ . All work shall be completed by _____ as authorized by Ordinance No. _____ . One signed copy of this Notice to Proceed is to be returned within five (5) days.

CITY OF ROCKY RIVER

By: _____
Rich Snyder
Director of Public Safety-Service

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

(Company Name)

this ___ day of _____, 20__.

By: _____

Title: _____

**CITY OF ROCKY RIVER
NOTICE OF COMMENCEMENT OF PUBLIC IMPROVEMENT
Section 1311.252 Ohio Revised Code**

STATE OF OHIO)
COUNTY OF CUYAHOGA) ss

Director of Public Safety-Service Rich Snyder (hereafter the "Affiant"), being first duly sworn according to law, depose and says that:

1. Affiant is the Director of Public Safety-Service for the City of Rocky River, Ohio, hereinafter referred to as the "Public Authority".
2. The Public Authority has contracted for the Rocky River Police Station Firing Range Fit-Out located within the City of Rocky River, hereinafter referred to as the "Project".
3. The Public Authority's address is Rocky River Municipal Building, 21012 Hilliard Blvd., Rocky River, Ohio 44116.
4. The City of Rocky River executed a contract for the Project on _____, 20__ with the following Principal Contractor:

<u>NAME</u>	<u>ADDRESS</u>	<u>TRADE</u>	<u>CONTRACT DATE</u>
-------------	----------------	--------------	----------------------

5. The following lists the names and addresses of the sureties for all the principal contractors working on this public improvement:

<u>PRINCIPAL CONTRACTOR</u>	<u>NAME OF SURETY</u>	<u>ADDRESS OF SURETY</u>
-----------------------------	-----------------------	--------------------------

6. For the purpose of serving an affidavit pursuant to Revised Code Section 1311.26, service may be made upon the following representative of the Public Authority: Rich Snyder, Safety-Service Director, City of Rocky River, 21012 Hilliard Blvd., Rocky River, Ohio 44116.

Affiant

Sworn to before me and subscribed in my presence, this _____ day of _____, 20__.

Notary Public

My Commission Expires: _____

5.209

**Replace this page in PDF with
Electronic Transfer Form**



June 1, 2010

Bidding Contractor:

The City of Rocky River has obtained the ability to make electronic vendor payments by ACH (automated clearinghouse).

The successful bidder must complete the Authorization Agreement form (see next page) and return it to the City of Rocky River Department of Finance to electronically receive payment under the contract deposited directly to your company's account.

Be sure to attach a cancelled/voided check for checking accounts or a "spec sheet" from the financial institution for savings accounts. Provide your email address on the Authorization Agreement to receive the payment remittance advice.

You may contact me with questions.

Thank you.

Sincerely,

s/Michael A. Thomas

Michael A. Thomas, CPA
Director of Finance

Enclosure

MAINTENANCE BOND

KNOWN ALL BY THESE PRESENTS: That we _____,
as Principal, and _____, a corporation organized and existing
under the Laws of the State of _____, as Surety, are held and firmly bound unto
_____, as Oblige, in the total sum of _____ U.S. Dollars
(\$ _____) for the payment whereof said Principal and Surety bind themselves, jointly and severally,
as provided herein.

WHEREAS, the Principal entered into a contract with the Oblige dated _____ for
_____ (“Work”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall maintain
and remedy said Work free from defects in materials and workmanship for a period of _____ year(s)
commencing on _____ (the “Maintenance Period”), then this
obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that any suit under this bond shall be commenced no later than one (1) year from the
expiration date of the Maintenance Period; provided, however, that if this limitation is prohibited by any law
controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the
minimum period of limitation permitted by such law, and said period of limitation shall be deemed to have
accrued and shall commence to run on the expiration date of the Maintenance Period.

IN WITNESS WHEREOF: The parties hereunto affixed their signatures the day and year first mentioned
above.

WITNESS:

CONTRACTOR:

(Name of Firm)

By: _____
(Name and Title)

WITNESS:

SURETY:

(Name of Surety Company)

By: _____
(Name and Title)

**AFFIDAVIT OF CONTRACTOR
OR SUB-CONTRACTOR**

I, _____,
(Name of person signing affidavit) (Title)

of the _____, do hereby certify that the wages
paid to all employees for the full number of hours working in connection with the Contract to the Improvement,
Repair and Construction of:

(Project and Location)

During the following period from _____ to _____
is in accordance with the prevailing wage prescribed by the contract document.

I further certify that no rebates or deductions for any wages due any person have been directly or
indirectly made other than those provided by law.

(Signature of Officer or Agent)

Sworn to and subscribed in my presence this _____ day of _____, 20____.

(Notary Public)

The above affidavit must be executed and sworn to by the officer or agent or the Contractor or subcontractor
who supervises the payment of employees, before the owner will release the surety and/or make a final payment
due under the terms of the Contract.

DIVISION 00 ATTACHMENTS

PERMITS

NATIONWIDE PERMITS FOR THE STATE OF OHIO

U.S. ARMY CORPS OF ENGINEERS (CORPS) REGULATORY PROGRAM REISSUANCE AND ISSUANCE OF NATIONWIDE PERMITS WITH OHIO EPA 401 WATER QUALITY CERTIFICATION AND OHIO DEPARTMENT OF NATURAL RESOURCES CONSISTENCY DETERMINATION UNDER THE COASTAL ZONE MANAGEMENT ACT

Final rule published in the *Federal Register* (86 FR 73522) on December 27, 2021

NWP 27

27. Aquatic Habitat Restoration, Enhancement, and Establishment Activities.

Activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services.

To be authorized by this NWP, the aquatic habitat restoration, enhancement, or establishment activity must be planned, designed, and implemented so that it results in aquatic habitat that resembles an ecological reference. An ecological reference may be based on the characteristics of one or more intact aquatic habitats or riparian areas of the same type that exist in the region. An ecological reference may be based on a conceptual model developed from regional ecological knowledge of the target aquatic habitat type or riparian area.

To the extent that a Corps permit is required, activities authorized by this NWP include, but are not limited to the removal of accumulated sediments; releases of sediment from reservoirs to maintain sediment transport continuity to restore downstream habitats; the installation, removal, and maintenance of small water control structures, dikes, and berms, as well as discharges of dredged or fill material to restore appropriate stream channel configurations after small water control structures, dikes, and berms are removed; the installation of current deflectors; the enhancement, rehabilitation, or re-establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to enhance, rehabilitate, or re-establish stream meanders; the removal of stream barriers, such as undersized culverts, fords, and grade control structures; the backfilling of artificial channels; the removal of existing drainage structures, such as drain tiles, and the filling, blocking, or reshaping of drainage ditches to restore wetland hydrology; the installation of structures or fills necessary to restore or enhance wetland or stream hydrology; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; coral restoration or relocation activities; shellfish seeding; activities needed to reestablish vegetation, including plowing or

discing for seed bed preparation and the planting of appropriate wetland species; re-establishment of submerged aquatic vegetation in areas where those plant communities previously existed; re-establishment of tidal wetlands in tidal waters where those wetlands previously existed; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

This NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands and streams, on the project site provided there are net increases in aquatic resource functions and services.

Except for the relocation of non-tidal waters on the project site, this NWP does not authorize the conversion of a stream or natural wetlands to another aquatic habitat type (e.g., the conversion of a stream to wetland or vice versa) or uplands. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type. This NWP does not authorize stream channelization. This NWP does not authorize the relocation of tidal waters or the conversion of tidal waters, including tidal wetlands, to other aquatic uses, such as the conversion of tidal wetlands into open water impoundments.

Compensatory mitigation is not required for activities authorized by this NWP since these activities must result in net increases in aquatic resource functions and services. *Reversion.* For enhancement, restoration, and establishment activities conducted: (1) In accordance with the terms and conditions of a binding stream or wetland enhancement or restoration agreement, or a wetland establishment agreement, between the landowner and the U.S. Fish and Wildlife Service (FWS), the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), the National Marine Fisheries Service (NMFS), the National Ocean Service (NOS), U.S. Forest Service (USFS), or their designated state cooperating agencies; (2) as voluntary wetland restoration, enhancement, and establishment actions documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or (3) on reclaimed surface coal mine lands, in accordance with a Surface Mining Control and Reclamation Act permit issued by the Office of Surface Mining Reclamation and Enforcement (OSMRE) or the applicable state agency, this NWP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or establishment activities). The reversion must occur within five years after expiration of a limited term wetland restoration or establishment agreement or permit, and is authorized in these circumstances even if the discharge of dredged or fill material occurs after this NWP expires. The five-year reversion limit does not apply to agreements without time limits reached between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS, or an appropriate state cooperating agency. This NWP also authorizes discharges of dredged or fill material in waters of the United States for the reversion of wetlands that were restored, enhanced, or established on prior-converted cropland or on uplands, in accordance with a binding agreement between the

landowner and NRCS, FSA, FWS, or their designated state cooperating agencies (even though the restoration, enhancement, or establishment activity did not require a section 404 permit). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before conducting any reversion activity, the permittee or the appropriate Federal or state agency must notify the district engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements are applicable to that type of land at the time. The requirement that the activity results in a net increase in aquatic resource functions and services does not apply to reversion activities meeting the above conditions. Except for the activities described above, this NWP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its prior condition. In such cases a separate permit would be required for any reversion.

Reporting. For those activities that do not require pre-construction notification, the permittee must submit to the district engineer a copy of: (1) the binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement, or a project description, including project plans and location map; (2) the NRCS or USDA Technical Service Provider documentation for the voluntary stream enhancement or restoration action or wetland restoration, enhancement, or establishment action; or (3) the SMCRA permit issued by OSMRE or the applicable state agency. The report must also include information on baseline ecological conditions on the project site, such as a delineation of wetlands, streams, and/or other aquatic habitats. These documents must be submitted to the district engineer at least 30 days prior to commencing activities in waters of the United States authorized by this NWP.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing any activity (see general condition 32), except for the following activities:

- (1) Activities conducted on non-Federal public lands and private lands, in accordance with the terms and conditions of a binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS or their designated state cooperating agencies;
- (2) Activities conducted in accordance with the terms and conditions of a binding coral restoration or relocation agreement between the project proponent and the NMFS or any of its designated state cooperating agencies;
- (3) Voluntary stream or wetland restoration or enhancement action, or wetland establishment action, documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or

(4) The reclamation of surface coal mine lands, in accordance with an SMCRA permit issued by the OSMRE or the applicable state agency.

However, the permittee must submit a copy of the appropriate documentation to the district engineer to fulfill the reporting requirement. (Authorities: Sections 10 and 404)

Note: This NWP can be used to authorize compensatory mitigation projects, including mitigation banks and in-lieu fee projects. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition, since compensatory mitigation is generally intended to be permanent.

Ohio 401 Certification Special Limitations and Conditions:

1. Ohio state certification general limitations and conditions apply to this nationwide permit.
2. Individual 401 WQC is required for projects where the primary purpose of the project is not the restoration, enhancement and establishment of tidal and non- tidal wetlands and riparian areas and the restoration and enhancement of non-tidal streams and other non-tidal open waters.
3. Bank stabilization activities authorized under this nationwide permit must utilize bioengineering techniques.
4. Individual 401 WQC is required for impacts to more than 0.50 acres of category 2 forested wetlands associated with the construction of a wetland mitigation bank unless Ohio EPA is a signatory to an Interagency Review Team (IRT) instrument which addresses the impact.
5. Individual 401 WQC is required for temporary and permanent impacts to category 3 wetlands greater than 0.1 acres except for impacts to Lake Erie coastal wetlands¹, which are category 3 wetlands for the following reasons:
 - a. the wetland scores less than 60 on the Quantitative Rating of the ORAM, is "hydrologically unrestricted" and contains a predominance of native species within vegetation communities (i.e., they are category 3 wetlands using the Narrative Rating of ORAM), but the wetland has been drained, farmed, or degraded and is unvegetated or sparsely vegetated with wetland annuals or is vegetated with one or several of the following species: *Butomus umbellatus*, *Lythrum salicaria*, *Myriophyllum spicatum*, *Najas minor*, *Phalaris arundinacea*, *Phragmites australis*, *Potamogeton crispus*, and/or *Typha angustifolia*; or

- b. the wetland is diked and managed ("hydrologically restricted"), scores less than 60 on the Quantitative Rating of ORAM, is a category 3 wetland using the Narrative Rating of ORAM because of the presence of state or federally threatened or endangered species, and/or because of the documented presence of significant breeding or non-breeding bird concentration areas, and the proposed activities will not destroy, jeopardize or adversely affect, either directly or indirectly, *the continued existence of the threatened or endangered species.*
6. Impacts to Lake Erie coastal wetlands described above that are authorized under this 401 WQC are as follows (any other impacts to category 3 wetlands, except those described below, that occur at Lake Erie coastal wetlands require an individual 401 WQC):
 - a. *Tile alteration.* Removing, altering, disabling drain tile or replacing perforated drain tile with non-perforated drain tile.
 - b. *De-leveling.* Re-grading for the purposes of microtopography to enhance hydrologic diversity, including the creation of shallow scrapes, channels, submerged islands and interconnected areas of deeper water is authorized. Final grade of any excavation, following topsoil replacement if applicable, shall not exceed 60-cm (approximately two feet). Replacement of the original excavated topsoil is required for all de-leveling activities except when the seed bank is dominated by invasive vegetation. In these cases, the area must be seeded by using a seed mix of native Ohio vegetation indigenous to the area/region where the project is located and appropriate for the hydrological regime present in the area. Excess spoils that are not able to be incorporated into the re-grading activities shall be deposited in adjacent non-wetland areas, used in other restoration activities listed in this paragraph or trucked to an upland area off-site.
 - c. *Ditch plugs and ditch fills.* Ditch plugs and water control structures: Disabling surface drains by filling lengths, provided that the surface drains originate on the property of the project sponsors and have no base flow or installing water control structures (e.g., riser structures, flap gates, fixed weirs, trickle tubes). Ditch plugs may include an emergency spillway to safely route flows back into the ditch below the plug.
 - d. *Earthen embankments.* Earthen fill structures that do not exceed 1.8 m (six feet) in height with side slopes of 3:1 or

greater with less than 50 acre-feet of storage. The embankments may include rock or vegetated overflow structures to pass base-flow as needed.

- e. *Interior dikes.* Earthen fill structures constructed within the interior of an existing diked and managed wetland for the purpose of improving management of hydrology in the diked wetland in order to facilitate control of invasive plant species, exclude or control invasive animal species, improve habitat features, etc.

¹“Lake Erie coastal wetland” means a wetland located at an elevation less than 575 feet on the USGSmap, adjacent to this elevation or along a tributary to Lake Erie that is accessible to fish.

A. Special Note: For NWP's that do not require pre-construction notification to the Corps, it is an applicant's responsibility to review the Water Quality Certification general and NWP-specific terms and conditions and submit information to the OEPA as required by their water quality certification. A project that meets the terms and conditions of a NWP with no Pre-Construction Notification to the Corps is only valid when accompanied by a blanket or individual 401 Water Quality Certification from the OEPA. No work in waters of the United States may commence until the required 401 water quality certification (or waiver) has been obtained from the OEPA.

B. Nationwide Permits Regional General Conditions (Applies to All Nationwide Permits)

1. NWP's shall not authorize any regulated activity which negatively impacts bogs and/or fens.
2. NWP's shall not authorize any regulated activity in Lake Erie which would result in diversion of water from the Great Lakes.
3. NWP's shall not authorize any regulated activity which has an adverse impact on littoral transport within Lake Erie.
4. **In-Water Work Exclusion Dates:** Any work associated with a regulated activity under a nationwide permit cannot take place during the restricted period of the following Ohio Department of Natural Resources (ODNR), Division of Wildlife (DOW) In-Water Work Restrictions, unless the applicant receives advanced written approval from the DOW, notifies the District Engineer in accordance with Nationwide Permit General Condition 32 and Regional General Condition 6, and receives written approval from the Corps:

Statewide In-Water Work Restriction Periods and Locations

1. Salmonid Locations Restriction Period: September 15 – June 30

Arcola Creek (entire reach)
Ashtabula Harbor
Ashtabula River (Hadlock Rd. to mouth)
Aurora Branch (Chagrin River (RM 0.38 to mouth))
Big Creek (Grand River (Girdled Road to mouth))
Black River (entire reach)
Chagrin River (Chagrin Falls to mouth)
Cold Creek (entire reach)
Conneaut Creek (entire reach)
Conneaut Harbor
Corporation Creek (Chagrin River (entire reach))
Cowles Creek (entire reach)
Ellison Creek (Grand River (entire reach))
Euclid Creek (entire reach)
Fairport Harbor
Grand River (Dam at Harpersfield Covered Bridge Park to mouth)
Gulley Brook (Chagrin River (entire reach))
Huron River (East Branch-West Branch confluence to mouth)
Indian Creek (entire reach)
Kellogg Creek (Grand River (entire reach))
Mill Creek (Grand River (entire reach))
Paine Creek (Grand River (Paine Falls to mouth))
Rocky River (East Branch-West Branch confluence to mouth)
Smokey Run (Conneaut Creek (entire reach))
Turkey Creek (entire reach)
Vermilion River (dam at Wakeman upstream of the US 20/SR 60 bridge to mouth)
Ward Creek (Chagrin River (entire reach))
Wheeler Creek (entire reach)
Whitman Creek (entire reach)

2. Other Locations Restriction Period: March 15 – June 30

All other perennial streams not listed above as salmonid.
Also includes Lake Erie and bays not listed above as salmonid.

Note: This condition does not apply to Ohio Department of Transportation projects that are covered under the “Memorandum of Agreement Between The Ohio Department of Transportation, The Ohio Department of Natural Resources, and The United States Fish and Wildlife Service For Interagency Coordination For Projects Which Require Consultation Under the Endangered Species Act, Impact State Listed Species, and/or Modify Jurisdictional Waters 2016 Agreement Number: 19394” or subsequent amendments to this Ohio Department of Transportation memorandum of agreement.

5. **Waters of Special Concern:** PCN in accordance with NWP General Condition 32

and Regional General Condition 6 is required for regulated activities in the following resources:

- a. **Threatened and Endangered Species:** Due to the potential presence of federally threatened or endangered species or their habitats, PCN in accordance with NWP General Conditions 18 and 32 and Regional General Condition 6 is required for any regulated activity under the NWPs in Ohio that includes:
- i. The removal of trees \geq three (3) inches diameter at breast height. These trees may provide suitable roosting, foraging, or traveling habitat for the federally listed endangered Indiana bat and the federally-listed threatened northern long-eared bat; and/or
 - ii. Regulated activities that impact a sand, gravel, and/or cobble beach (landform between the low and high water marks affected by waves) and/or mud flat (areas affected by natural seiche effect) on the Lake Erie shoreline; and/or
 - iii. Regulated activities in the waterway or township of the corresponding counties listed in Appendix 1.

Note 1: Applicants must ensure they are referencing the latest version of Appendix 1 by contacting their nearest U.S. Army Corps of Engineers district office and visiting the online resources identified in General Condition 18(f) of these NWPs, since federally listed species are continuously listed, proposed for listing, and/or de-listed.

Note 2: As mentioned in General Condition 18, federal applicants should follow their own procedures for complying with the requirements of the Endangered Species Act (ESA). Federal applicants, including applicants that have received federal funding, must provide the District Engineer with the appropriate documentation to demonstrate compliance with ESA requirements.

b. **Critical Resource Waters:**

- i. In Ohio, two (2) areas have been designated critical habitat for the piping plover (*Charadrius melodus*) and are defined as lands 0.62 mile inland from normal high water line. Unit OH-1 extends from the mouth of Sawmill Creek to the western property boundary of Sheldon Marsh State Natural Area, Erie County, encompassing approximately two (2) miles. Unit OH-2 extends from the eastern boundary line of Headland Dunes Nature Preserve to the western boundary of the Nature Preserve and Headland Dunes State Park, Lake County, encompassing approximately 0.5 mile.
- ii. In Ohio three (3) areas have been designated critical habitat for the rabbitsfoot mussel (*Quadrula cylindrica cylindrica*). Unit RF26 includes 17.5 river kilometers (rkm) (10.9 river miles [rimi]) of the Walhonding River from the convergence of the Kokosing and Mohican Rivers downstream to Ohio Highway 60 near Warsaw, Coshocton County, Ohio. Unit RF27 includes 33.3 rkm (20.7 rmi) of Little Darby Creek from Ohio Highway 161

near Chuckery, Union County, Ohio, downstream to U.S. Highway 40 near West Jefferson, Madison County, Ohio. Unit RF29 includes 7.7 rkm (4.8 rmi) of Fish Creek from the Indiana and Ohio State line northwest of Edgerton, Ohio, downstream to its confluence with the St. Joseph's River north of Edgerton, Williams County, Ohio.

iii. Old Woman Creek National Estuarine Research Preserve.

- c. **Oak Openings:** Wetland activities conducted in the Oak Openings Region of Northwest Ohio located in Lucas, Henry and Fulton Counties. For a map of the Oak Openings Region, visit <https://www.google.com/maps/d/viewer?mid=1JADupaZXJzO6AUDvnUaV18GVjG7yfBim&usp=sharing>
- d. **Category 3 Wetlands:** As determined through use of the latest approved version of the Ohio Environmental Protection Agency's Ohio Rapid Assessment Method wetland evaluation form.
- e. **Ohio Stream Designations:** Exceptional Warmwater Habitat, Cold Water Habitat, Seasonal Salmonid, or any equivalent designation; or water bodies with an antidegradation category of Superior High Quality Water, Outstanding National Resource Water, or Outstanding State Waters as determined by the Ohio Environmental Protection Agency except for NWP 1, 2, 3, 9, 10, 11, 27, 28, 32, and 35 or maintenance activities covered under NWPs 7 and 12. The current list of these rivers and tributaries can be found on the Ohio Environmental Protection Agency web-site at: http://www.epa.ohio.gov/dsw/rules/3745_1.aspx. These designations can be found under the aquatic life use of the rivers and tributaries within its basin and under the "Anti-deg Rule #05."

6. **PCN Submittals:** In addition to the information required under NWP General Condition 32, the following information must be provided with the PCN:

- a. **Threatened and Endangered Species:** Section 7(a)(2) of the Endangered Species Act (ESA) states that each federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Section 7 of the ESA, called "Interagency Cooperation," is the mechanism by which federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the continued existence of any federally or proposed federally listed species. Consistent with NWP General Condition 18, information for federally threatened and endangered species must be provided in the PCN to determine the proposed activity's compliance with NWP General Condition 18 and to facilitate project-specific coordination with the USFWS. All relevant information obtained from the USFWS must be submitted with the PCN.

- b. **Cultural Resources:** Under the National Historic Preservation Act (NHPA), the Corps must ensure no federal undertaking, including a Corps permit action, which may affect historic resources, is commenced before the impacts of such action are considered and the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) are provided an opportunity to comment as required by the NHPA, 36 CFR 800, and 33 CFR 325, Appendix C. Consistent with NWP General Condition 20, historic properties information must be provided in the PCN if the proposed undertaking might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. All relevant information obtained from the SHPO must be submitted with the PCN.
- c. **National Wild and Scenic Rivers:** The following waterways are components of the National Wild and Scenic River System and require PCN to the Corps:

Big and Little Darby Creeks

- Big Darby Creek from Champaign-Union County line downstream to the Conrail railroad trestle and from the confluence with the Little Darby Creek downstream to the Scioto River;
- Little Darby Creek from the Lafayette-Plain City Road bridge downstream to within 0.8 mile from the confluence with Big Darby Creek; and
- Total designation is approximately 82 miles.

Little Beaver Creek

- Little Beaver Creek main stem, from the confluence of West Fork with Middle Fork near Williamsport to mouth;
- North Fork from confluence of Brush Run and North Fork to confluence of North Fork with main stem at Fredericktown;
- Middle Fork from vicinity of Co. Rd. 901 (Elkton Road) bridge crossing to confluence of Middle Fork with West Fork near Williamsport;
- West Fork from vicinity of Co. Rd. 914 (Y-Camp Road) bridge crossing east to confluence of West Fork with Middle Fork near Williamsport; and
- Total designation is 33 miles.

Little Miami River

- Little Miami River - St. Rt. 72 at Clifton to the Ohio River;
- Caesar Creek - lower two (2) miles of Caesars Creek; and
- Total designation is 94 miles.

- d. **Temporary Fills or Structures:** When a PCN is required for temporary fills or structures, the PCN must specify how long the temporary fills or structures will remain and include a restoration plan showing how all temporary fills and

structures will be removed and the area restored to pre-construction contours and elevations. Native, non-invasive vegetation must be used unless otherwise authorized by a Corps NWP verification.

7. Invasive Species: No area for which grading has been completed will be unseeded or unmulched for longer than 14 days. All disturbed areas will be seeded and/or revegetated with native species and approved seed mixes (where practicable) after completion of construction activities for stabilization and to help preclude the establishment of non-native invasive species.

APPENDIX 1 TO REGIONAL GENERAL CONDITION 5 (a)		
County	Waterway	Township
Adams	Ohio River, Scioto Brush Creek, South Fork Scioto Brush Creek	
Ashtabula	Grand River, Pymatuning Creek	Andover, Austinburg, Cherry Valley, Colebrook, Dorset, Hartsgrove, Harpersfield, Morgan, New Lyme, Orwell, Richmond, Rome, Trumbull, Wayne, Williamsfield, Windsor
Athens	Ohio River	
Brown	East Fork Little Miami River, Ohio River	
Butler	Great Miami River	Lemon, Liberty
Champaign		Mad River, Union, Urbana
Clark	Little Miami River	Bethel, Moorfield, Pleasant, Springfield
Clermont	East Fork Little Miami River, Little Miami River, Ohio River	
Clinton		Chester, Richland, Wayne
Columbiana		Butler, Fairfield, Hanover, Knox, Unity
Coshocton	Killbuck Creek, Muskingum River, Walhonding River	
Crawford		Auburn, Bucyrus, Cranberry, Dallas, Holmes, Whetstone
Darke	Stillwater River	
Defiance	St. Joseph River	Milford
Delaware	Mill Creek, Olentangy River	
Erie		Margaretta
Fairfield		Walnut
Fayette		Concord, Green, Jasper, Union
Franklin	Big Darby Creek, Little	

APPENDIX 1 TO REGIONAL GENERAL CONDITION 5 (a)

County	Waterway	Township
	Darby Creek, Scioto River	
Fulton	Swan Creek	
Gallia	Ohio River	
Greene	Little Miami River	Bath, Beaver Creek, Spring Valley, Sugar Creek
Hamilton	Great Miami River, Little Miami River, Ohio River	
Hancock	Blanchard River	
Hardin	Blanchard River	Blanchard, Dudley, Hale, Jackson, McDonald, Roundhead
Hocking		Benton, Laurel
Holmes		All townships
Huron		New Haven, Richmond
Lake	Grand River	Madison
Lawrence	Ohio River	
Licking		Licking, Union
Logan	Great Miami River	Perry, Richland, Stokes, Washington, Zane
Lucas	Swan Creek	All townships
Madison	Big Darby Creek, Little Darby Creek	
Mahoning		Beaver, Boardman, Canfield, Green, Poland, Springfield
Marion	Tymochtee Creek	Big Island, Bowling Green, Grand, Green Camp, Montgomery, Salt Rock
Meigs	Ohio River	
Miami	Great Miami River, Stillwater River	
Montgomery	Great Miami River, Stillwater River	Mad River, Wayne
Morgan	Muskingum River	
Muskingum	Muskingum River	
Ottawa		All townships
Perry		Thorn
Pickaway	Big Darby Creek, Scioto River	
Pike	Scioto River	
Portage		Aurora, Atwater, Charlestown, Deerfield, Edinburg, Franklin, Freedom, Mantua, Nelson, Palmyra, Paris, Randolph, Ravenna, Rootstown, Streetsboro

APPENDIX 1 TO REGIONAL GENERAL CONDITION 5 (a)

County	Waterway	Township
Preble		Dixon, Gasper, Israel, Jackson, Lanier, Monroe, Somers, Twin, Washington
Richland		Plymouth
Ross	Salt Creek, Scioto River	
Sandusky		All townships
Scioto	Ohio River, Scioto Brush Creek, Scioto River, South Fork Scioto Brush Creek	Nile, Rush, Union
Shelby	Great Miami River	
Stark		Lexington, Marlboro
Summit		Hudson, Tallmadge, Twinsburg
Trumbull	Pymatuning Creek	All townships
Union	Big Darby Creek, Little Darby Creek, Mill Creek, Treacle Creek	Allen, Darby, Washington
Warren	Great Miami River, Little Miami River	Clear Creek, Deerfield, Massie, Turtle Creek, Union, Washington, Wayne
Washington	Muskingum River, Ohio River	
Wayne		All townships
Williams	Fish Creek, St. Joseph River	Bridgewater, Center, Florence, Jefferson, Madison, Northwest, St. Joseph, Superior
Wyandot	Tymochtee Creek	Antrim, Marseilles, Mifflin, Pitt

**HELPFUL INFORMATION FOR COMPLIANCE WITH THE
NWP GENERAL CONDITIONS**

DISCLAIMER: The below information is intended to provide helpful contact information and other submittal recommendations. Contact the appropriate local, state, or federal agency for the most updated links to ensure compliance with the NWP General Conditions.

General Condition 1 (Navigation)

List of Section 10 Navigable Waters of the U.S.:

Buffalo District –

https://www.lrb.usace.army.mil/Portals/45/docs/regulatory/DistrictInfo/waterway_oh.pdf

Huntington District – <https://www.lrh.usace.army.mil/Missions/Regulatory/Section-10->

Streams/

Louisville District –

<https://www.lrl.usace.army.mil/Portals/64/docs/Regulatory/Public%20Notices/Limits%20of%20Jurisdiction%20Public%20Notice-revised.pdf?ver=2013-02-13-120705-203>

Pittsburgh District –

<https://www.lrp.usace.army.mil/Portals/72/docs/regulatory/RegulatoryBoundaries/PN12-2.pdf>

Navigation Charts:

Buffalo District – <https://www.lrb.usace.army.mil/Library/Maps-and-Charts/>

Huntington District – <https://www.lrh.usace.army.mil/Missions/Regulatory/Section-10-Streams/>

Louisville District –

<https://www.lrl.usace.army.mil/Portals/64/docs/Ops/Navigation/Charts/Ohio/OhioRiverCharts102-122.pdf>

Pittsburgh District – <https://www.lrp.usace.army.mil/Missions/Navigation/Navigation-Charts/>

Locks and Dams:

Buffalo District – <https://www.lrb.usace.army.mil/Library/Maps-and-Charts/>

Huntington District – <https://www.lrh.usace.army.mil/Missions/Civil-Works/Locks-and-Dams/>

Louisville District – <https://www.lrl.usae.army.mil/Missions/Civil-Works/Navigation/Locks-and-Dams/>

Pittsburgh District –

<https://www.lrp.usace.army.mil/Missions/Navigation/Locks-and-Dams/#:~:text=Locks%20and%20Dams%20%20%20Allegheny%20River%20,Locks%200%26%20Dam%20%205%20more%20rows%20>

Notice to Navigation Interests Request Sheets:

Huntington District –

<https://www.lrh.usace.army.mil/Portals/38/docs/navigation/Notice%20Info%20sheet.pdf>

Louisville –

<https://www.lrl.usace.army.mil/Portals/64/docs/Regulatory/Forms/Notice%20to%20Navigation%20Interests%20Data%20Form%202019.pdf?ver=2019-07-22-101251-297>

Pittsburgh District –

<https://www.lrp.usace.army.mil/Portals/72/docs/regulatory/NavNoticeRequestForm.pdf>

General Condition 5 (Shellfish Beds)

Shellfish beds in Ohio include concentrations of freshwater mussels. All native mussels are protected in the State of Ohio (Section 1533.324 of the Ohio Revised Code). In addition, 10 federally listed species occur in the state and are protected by the ESA (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). All rivers and tributaries that contain mussels or potential mussel habitat must be surveyed prior to any proposed streambed disturbance. Currently accepted protocol and supporting materials can be found on the Ohio Department of Natural Resources' website:

<https://ohiodnr.gov/wps/portal/gov/odnr/buy-and-apply/special-use-permits/collecting-research/ohio-mussel-surveyor>

General Condition 7 (Water Supply Intakes)

Locations of drinking water source protection areas associated with public water supply intakes, including the name of the public water supply, can be found at the following link:

<https://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=3b39e11ba7fc43c3b41801e3580e6d21>

Contact information for public water suppliers can be obtained from Ohio EPA by contacting the Division of Drinking and Ground Waters at whp@epa.ohio.gov or 614-644-2752.

General Condition 10 (Fills Within 100-year Floodplains)

The following website provides a statewide listing of Floodplain Managers in Ohio:

<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/water-resources/floodplains/>

General Condition 16 (Wild and Scenic Rivers)

Prior to submitting a PCN for work in a National Wild and Scenic River System, it is recommended that the applicant contact the National Park Service Regional Wild and Scenic Rivers Specialist, at the Midwest Regional Office, 601 Riverfront Drive, Omaha, Nebraska 68102, for assistance in complying with NWP General Condition 16. Any determination provided by the National Park Service should be submitted with the PCN. The following website provides information on National Wild and Scenic Rivers within Ohio:

<https://www.rivers.gov/ohio.php>

General Condition 18 (Endangered Species)

To obtain the most up to date information on federally threatened and endangered species applicants are encouraged to utilize the USFWS's Information for Planning and Consultation System (IPaC) found at <https://ecos.fws.gov/ipac/>

Prior to the submittal of a PCN, applicants may also contact the USFWS, Ohio Ecological Services Field Office at:

Address: 4625 Morse Road, Suite 104
Columbus, Ohio 43230

Email: ohio@fws.gov

Phone: (614) 416-8993

The Ohio Mussel Survey Protocol may be found at the following link:

<https://ohiodnr.gov/wps/portal/gov/odnr/buy-and-apply/special-use-permits/collecting-research/ohio-mussel-surveyor>

General Condition 4 (Migratory Bird Breeding Areas) and General Condition 19 (Migratory Birds and Bald and Golden Eagles)

Prior to the submittal of a PCN, information to assist in complying with NWP General Conditions 4 and 19 may be obtained from the USFWS, Ohio Ecological Services Field Office at:

Address: 4625 Morse Road, Suite 104
Columbus, Ohio 43230

Email: ohio@fws.gov

Phone: (614) 416-8993

The Ohio Division of Natural Resources Division of Wildlife may be contacted at (800) 945-3543.

General Condition 20 (Historic Properties)

The Ohio National Register of Historic Places can be found at the following link:
<https://www.ohiohistory.org/preserve/state-historic-preservation-office/nationalregister>

When reviewing a PCN, the Corps will scope appropriate historic property identification

efforts and, if applicable, work with the applicant to take into account the effect of the proposed activity on historic properties. In these instances, information and coordination may include:

- Requesting comments directly from the Ohio History Connection SHPO on the effect the proposed regulated activity may have on historic properties. The Ohio History Connection SHPO may be contacted at:

Address: Ohio History Center
800 E. 17th Ave., Columbus, Ohio 43211
Phone: (614) 297-2300
Email: info@ohiohistory.org

- To identify potential historic properties that may be affected by a proposed project, the following information may be reviewed and/or provided with the PCN when applicable:
 - A detailed description of the project site in its current condition (i.e. prior to construction activities) including information on the terrain and topography of the site, the acreage of the site, the proximity of the site to major waterways, and any known disturbances within the site.
 - A detailed description of past land uses in the project site.
 - Photographs and mapping showing the site conditions and all buildings or structures within the project site and on adjacent parcels are useful. Photographs and maps supporting past land uses should be provided as available.
 - Information regarding any past cultural resource studies or coordination pertinent to the project area, if available.
 - U.S. Geological Survey (USGS) 7.5' series topographic maps;
 - Ohio History Connection SHPO files including:
 - Ohio Archaeological Inventory (OAI) files;
 - Ohio Historic Inventory files (OHI);
 - Ohio SHPO Cultural Resources Management (CRM)/contract archaeology files;
 - NRHP files including Historic Districts; and
 - County atlases, histories and historic USGS 15' series topographic map(s).
- When needed to evaluate effects to historic properties, the applicant is encouraged to consult with professionals meeting the Professional Qualification Standards as set forth in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716) during this data gathering process. These professionals can assist with compiling the project information discussed above and should provide recommendations as to whether the proposal has the potential to affect historic properties and if further effort is needed to identify or assess potential effects to historic properties. These professionals can also compile preliminary review information to submit to the

District Engineer as part of the PCN.

General Condition 23 (Mitigation)

Information pertaining to mitigation can be found at the following link:

<https://www.lrh.usace.army.mil/Missions/Regulatory/Mitigation.aspx>

General Condition 25 (Water Quality)

The Ohio Environmental Protection Agency may be contacted at:

Address: Lazarus Government Center
50 W Town St. Suite 700
Columbus, Ohio 43215

Phone: (614) 644-2001

Information pertaining to the Ohio Environmental Protection Agency water quality certification (WQC) program, including the Section 401 Clean Water Act WQC application form, can be obtained at the following link:

<https://www.epa.state.oh.us/dsw/#113292723-programs>

General Condition 32 (Pre-Construction Notification)

The nationwide permit pre-construction notification form (Form ENG 6082) may be obtained at the following link:

https://www.publications.usace.army.mil/Portals/76/Eng_Form_6082_2019Oct.pdf?ver=2019-10-22-081550-710/

A checklist of information that must be provided in a pre-construction notification can be obtained at the following link:

<https://www.lrh.usace.army.mil/Missions/Regulatory/How-to-Apply-for-a-Permit/Nationwide-Permits/>

Electronic Submittal:

- PCNs should be saved as a PDF document, and then submitted as an attachment in an email to the appropriate Regulatory Office:

Buffalo District – LRB.Ohio.RegActions@usace.army.mil

Huntington District – LRH.permits@usace.army.mil

Louisville District – CELRL.Door.To.The.Corps@usace.army.mil

Pittsburgh District – Regulatory.Permits@usace.army.mil

- Electronic documents must have sufficient resolution to show project details. The PCN and supporting documents submitted electronically must not exceed 10 megabytes (10MB) per email. Multiple emails may be required to transmit documents to ensure the 10MB limit is not exceeded. Alternatively, use of the Department of Defense Secure Access File Exchange (DoD SAFE) service to transfer large files may be requested in your email.
- For tracking and processing purposes, the email should include the following:
 - **Email Subject Line:** include the name of the applicant, type of PCN request, and location (County and State). Example: RE: Doe, John, PCN and Section 401 WQC Request, Summit County, Ohio;
 - **Email Body:** 1) Brief description of the proposed project, 2) contact information (phone number, mailing address, and email address) for the applicant and/or their agent, and 3) the project location: Address and Latitude/Longitude in decimal degrees (e.g. 42.92788° N, 88.36257° W).
- If you do not have internet access, information may be submitted through the U.S. Postal Service to the appropriate Regulatory Office:

U.S. Army Corps of Engineers, Buffalo District
ATTN: Regulatory Branch
1776 Niagara Street
Buffalo, New York 14207
Phone: (716) 879-4330
Fax: (716) 879-4310

U.S. Army Corps of Engineers, Huntington District
ATTN: Regulatory Division
502 Eighth Street
Huntington, West Virginia 25701-2070
Phone: (304) 399-5210
Fax: (304) 399-5805

U.S. Army Corps of Engineers, Pittsburgh District
ATTN: Regulatory Division
William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222-4186
Phone: (412) 395-7155
Fax: (412) 644-4211

U.S. Army Corps of Engineers, Louisville District
ATTN: CELRL-RD, Room 752
600 Dr. Martin Luther King Jr. Place
Louisville, Kentucky 40202-0059
Phone: (502) 315-6733
Fax: (502) 315-6677

C. Nationwide Permit General Conditions:

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation.

- a. No activity may cause more than a minimal adverse effect on navigation.
- b. Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.
- c. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below.

The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during

construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers.

- a. No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study
- b. river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.
- c. If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.
- d. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species.

- a. No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a
- b. species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”
- c. Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.
- d. Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will

have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

- e. As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.
- f. Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.
- g. If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP

- h. activity or whether additional ESA section 7 consultation is required.
- i. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties.

- a. No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.
- b. Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If preconstruction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.
- c. Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the preconstruction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current

- procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect.
- d. Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.
 - e. Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

- a. The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).
- b. Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.
- c. Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For

- wetland losses of 1/10-acre or less that require preconstruction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.
- d. Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require preconstruction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult to-replace resources (see 33 CFR 332.3(e)(3)).
 - e. Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.
 - f. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.
 - 1. The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal

adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the

2. district engineer may approve the use of permittee-responsible mitigation.
 3. The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)
 4. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option
 5. considered for permittee-responsible mitigation.
 6. If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.
 7. If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).
 8. Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).
- g. Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an

- acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.
- h. (h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.
 - i. Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality.

- a. Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.
- b. If the NWP activity requires preconstruction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water

- quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.
- c. The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

- a. If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.
- b. If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

- a. A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
- b. A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
- c. The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C.

408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification.

- a. **Timing.** Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:
 1. He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
 2. 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been

obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

- b. Contents of Pre-Construction Notification:** The PCN must be in writing and include the following information:
1. Name, address and telephone numbers of the prospective permittee;
 2. Location of the proposed activity;
 3. Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
 4.
 - i. A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.
 - ii. For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.
 - iii. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a

conceptual plan), but do not need to be detailed engineering plans);

5. The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;
6. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
7. For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;
8. For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;
9. For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

10. For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

- c. **Form of Pre-Construction Notification:** The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.
- d. **Agency Coordination:**
1. The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.
 2. Agency coordination is required for:
 - i. All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States;
 - ii. NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and
 - iii. NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.
 3. When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the preconstruction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's

compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

4. In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.
5. Applicants are encouraged to provide the Corps with either electronic files or multiple copies of preconstruction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.
2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects

caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the

NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) That the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. General Limitations and Conditions for all Ohio Environmental Protection Agency Clean Water Act Section 401 Certified Nationwide Permits

A. CULVERTS

For intermittent and perennial streams:

1. When practicable, bottomless or buried culverts are required when

culvert size is greater than 36" in diameter. This condition does not apply if the culverts have a gradient of greater than 1% grade or installed on bedrock. A buried culvert means that the bottom 10% by dimension shall be buried below the existing stream bed elevation.

2. The culvert shall be designed and sized to accommodate bankfull discharge and match the existing depth of flow to facilitate the passage of aquatic organisms.
3. When practicable, culverts shall be installed at the existing streambed slope, to allow for the natural movement of bedload and aquatic organisms.

B. BEST MANAGEMENT PRACTICES

1. Unless subject to a more specific storm water National Pollutant Discharge Elimination System (NPDES) permit, all best management practices for storm water management shall be designed and implemented in accordance with the most current edition of the NPDES construction general permit available at: <http://www.epa.ohio.gov/dsw/storm/index.aspx>, or any watershed specific construction general permit.
2. Sediment and erosion control measures and best management practices must be designed, installed, and maintained in effective operating condition at all times during construction activities as required by applicable NPDES permits. Proper maintenance ensures corrective measures will be implemented for failed controls within 48 hours of discovery.
3. For perennial and intermittent streams, in-stream sediment control measures shall not be utilized, with the exception of turbidity curtains parallel to the stream bank, for the purpose of sediment collection. All sediment and erosion control measures shall be entirely removed and the natural grade of the site restored once construction is completed.
4. All avoided water resources and associated buffers/riparian areas shall be demarcated in the field and protected with suitable materials (e.g., silt fencing, snow fencing, signage, etc.) prior to site disturbance. These materials shall remain in place and be maintained throughout the construction process and shall be entirely removed once construction is completed.
5. Disturbance and removal of vegetation from the project construction area is to be avoided where possible and minimized to the maximum extent practicable. Entry to surface waters shall be through a single

point of access to the maximum extent practicable to minimize disturbance to riparian habitat. Unavoidable temporary impacts to forested riparian habitat shall be restored as soon as practicable after in-water work is complete using tree and shrub species native to the specific ecoregion where the project is located.

6. All dredged material placed at an upland site shall be controlled so that sediment runoff to adjacent surface waters is minimized to the maximum extent practicable.
7. Straw bales shall not be used as a form of sediment control unless used in conjunction with another structural control such as silt fencing. Straw bales may be utilized for purposes of erosion control such as ditch checks.
8. Heavy equipment shall not be placed below the ordinary high water mark of any surface water, except when no other alternative is practicable.
9. Temporary fill for purposes of access or staging shall consist of suitable non-erodible material and shall be maintained to minimize erosion.
10. Chromated copper arsenate (CCA) and creosote treated lumber shall not be used in structures that come into contact with waters of the state.
11. All dewatering activities must be conducted in such a manner that does NOT result in a violation of water quality standards.
12. All areas of final grade must be protected from erosion within seven days.
13. All disturbed areas which remain dormant in excess of fourteen days must be protected from erosion within seven days from the last earth disturbing activity.
14. In the event of authorized in-stream activities, provisions must be established to redirect the stream flow around or through active areas of construction in a stabilized, non-erosive manner to the maximum extent possible.

C. MITIGATION

1. Compensatory mitigation is required for the discharge of dredged or fill material into wetlands for permanent impacts exceeding 0.10 acres.
2. Compensatory mitigation is required for the discharge of dredged or fill material into streams for permanent impacts exceeding 0.03

acres.

3. When required, compensatory mitigation ratios for wetlands shall be provided in accordance with chapters 3745-1-54 of the Ohio Administrative Code.
4. When compensatory mitigation will be provided wholly or in part at a mitigation bank or through an in-lieu fee program, credit purchase shall only be authorized at those banks or in-lieu fee programs approved by the Interagency Review Team (IRT).

D. DIRECTOR'S AUTHORIZATION

1. In accordance with the procedures outlined in Appendix A, Ohio EPA can grant coverage under this certification for any project that does not meet one or more of the terms and conditions for eligibility of this certification or where the district engineer has been granted authority to waive certain requirements. Coverage can be granted when Ohio EPA determines, consistent with the special limitations and conditions for each certification, and after considering comments received on the requested director's authorization, that a project will have such a minimal impact on water quality that an individual 401 WQC is not necessary provided all other terms and conditions of this certification have been met. If a director's authorization is not granted, an individual 401 WQC must be obtained. In no case may a director's authorization issued under this certification exceed an impact threshold authorized by the Corps' Nationwide Permit.

E. NOTIFICATION TO OHIO EPA

1. For any activity proposed to be authorized under NWP's 3, 4, 5, 6, 7, 13, 14, 15, 16, 18, 22, 23, 25, 27, 30, 32, 33, 34, 35, 36, 37, 38, 41, 45, 49, 53, and 54, **when a PCN is not required by the Corps**, notification to Ohio EPA is required for impacts to the following resources:
 - a. category 3 wetlands;
 - b. ≥ 0.10 acres of wetland.
2. Notifications required by E.1 should be submitted using the Ohio EPA 401 Pre-application Request Form and contain all information required by Appendix B, as well as a description of the proposed impacts including project design details.
3. For any activity proposed to be authorized under NWP's 4, 6, 7, 13, 14, 15, 16, 18, 22, 23, 25, 30, 33, 34, 36, 37, 38, 41, 45, 53, and 54, **when a PCN is not required by the Corps**, notification to Ohio EPA is required for impacts to streams located in possibly eligible areas

as depicted in the GIS NWP's Stream Eligibility Map.

4. Notifications required by E.3 should be submitted using the Ohio EPA 401 Pre-application Request Form and contain all information required by Appendix C, as well as a description of the proposed impacts including project design details.
5. When notification to Ohio EPA is required by conditions E.1 and E.3 above, the applicant shall not begin the activity until either:
 - a. They are notified in writing by Ohio EPA that the activity may proceed under the 401 WQC for the NWP; or
 - b. 45 calendar days have passed from Ohio EPA's receipt of the notification and the applicant has not received written notice from Ohio EPA that additional information is necessary or that an individual 401 WQC is required.

F. MISCELLANEOUS

1. Authorization under this certification does not relieve the certification holder from the responsibility of obtaining any other federal, state or local permits, approvals or authorizations.
2. For purposes of this certification the Corps' definition of single and complete linear and non-linear projects shall be applied to all conditions regarding impacts, mitigation, and director's authorizations. If a project includes impacts that are ineligible under this certification, an applicant must apply for an individual 401 WQC or a director's authorization for those impacts to resources that do not meet one or more of the terms and conditions within this certification.
3. For purposes of this certification temporary impact means temporary activities which facilitate the nature of the activity or aid in the access, staging, or development of construction that are short term in nature and which are expected, upon removal of the temporary impact, to result in the surface water returning to conditions which support pre-impact biological function with minimal or no human intervention within 12 months following the completion of the temporary impact. Examples of temporary impacts include, but are not limited to access roads, work pads, staging areas, and stream crossings, including utility corridors. Activities that result in a wetland conversion (e.g. forested to non-forested) are not considered temporary impacts.
4. In the event that the issuance of a nationwide permit by the Corps requires individual 401 WQC for an activity that constitutes an

emergency as defined in 33CFR 325.2(e)(4), the limitation and/or condition requiring the individual 401 WQC is not applicable and the project may proceed upon approval by the Corps provided all other terms of this certification, including mitigation, are met.

5. Representatives from Ohio EPA, Division of Surface Water will be allowed to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of this certification. This includes, but is not limited to, access to and copies of any records that must be kept under the conditions of this certification; and, authorization to sample and/or monitor any discharge activity or mitigation site. Ohio EPA will make a reasonable attempt to notify the applicant of its intention to inspect the site in advance of that inspection.
6. Impacts as referenced in this certification consist of waters of the United States, that are also waters of the state, directly impacted by the placement of fill or dredged material.
7. In accordance with the procedures outlined in Appendix B, and where specifically required in the special limitations and conditions of this certification, an applicant proposing to impact a wetland shall perform a wetland characterization analysis consistent with the Ohio Rapid Assessment Method (ORAM) to demonstrate wetland category for all projects requiring a PCN to the Corps or notification to Ohio EPA.
8. In accordance with the procedures outlined in Appendix C, and where specifically required in the special limitations and conditions of this certification, an applicant proposing to impact a stream shall determine the eligibility of the stream proposed for impact for all projects requiring a PCN to the Corps or notification to Ohio EPA.

1. To apply for a director's authorization for coverage under this certification, the applicant must provide to Ohio EPA the following:
 - a. A completed Director's Authorization Request Form available on the "Director's Authorization" tab located at:
<http://www.epa.ohio.gov/dsw/401/permitting.aspx>;
 - b. A copy of the pre-construction notification submitted to the Corps or a copy of the notification to Ohio EPA, if no PCN is required, including all attachments;
 - c. A copy of the provisional nationwide permit notification issued by the Corps including all attachments and special conditions, if any;
 - d. A copy of the mitigation plan as approved by the Corps, if applicable;
 - e. A detailed description of the conditions within this certification that are not being met;
 - f. A detailed description of any NWP terms and conditions, including impact limits that the Corps district engineer has waived for the project, if applicable;
 - g. A rationale of how the applicant believes the project will minimally impact water quality for those impacts to resources that do not meet one or more of the terms and conditions within this certification, including reason(s) why the resources are unable to be avoided;
 - h. Comments received from the Ohio Department of Natural Resources and United States Fish and Wildlife Service regarding threatened and endangered species or comments from an applicant that has been authorized by these entities to make threatened and endangered species determinations;
 - i. A one-time review fee of \$2000 for the project;
 - j. A detailed description of how the project meets public need, as defined in OAC 3745-1-50, for impacts to category 3 wetlands;
 - k. Documentation as required under Appendix B and C;
 - l. Any other documentation as may be required under this certification.
2. Upon receipt of the director's authorization request containing items a. through o. outlined above, excluding item c., the director will post the materials on the Ohio EPA, DSW webpage and invite public comment on the request for 15 days. The director will review and consider the

comments received during the public comment period before making a decision on the director's authorization.



Appendix B ORAM Verification Process

The ORAM results shall be included with the pre-construction notification (PCN) or notification to Ohio EPA if a PCN is not required by the Corps.

For each wetland proposed for impact the applicant must provide the following information for review in accordance with the ORAM verification procedure:

- a. Complete ORAM forms prepared in accordance with the current ORAM manual;
- b. Wetland delineation prepared in accordance with the current method required by the Corps;
- c. A minimum of four high resolution color photographs taken while facing each of the four cardinal directions of each wetland proposed for impact. Photographs must accurately depict the quality of the wetland and may not include a majority of dying or dead vegetation or excessive cover due to seasonal conditions that vegetation and substrates cannot be observed, such as leaf litter, snow, or ice. Photographs deemed to be insufficient of representing the wetland will be required to be retaken once seasonal conditions are appropriate. Photographs shall be clearly labeled with the wetland name, direction, and date;
- d. USGS topographical map, National Wetlands Inventory map, Soil Survey map and aerial images (both historical and current) which clearly outline the entire wetland boundary; and
- e. Coordination letter from the Ohio Department of Natural Resources (ODNR), Natural Heritage Database indicating the presence or absence of state listed threatened or endangered species or comments from an applicant that has been authorized by ODNR to make threatened and endangered species determinations.
- f. A detailed description of how the project meets public need, as defined in OAC 3745-1-50, for impacts to category 3 wetlands;

Appendix C
Stream Eligibility Determination Process

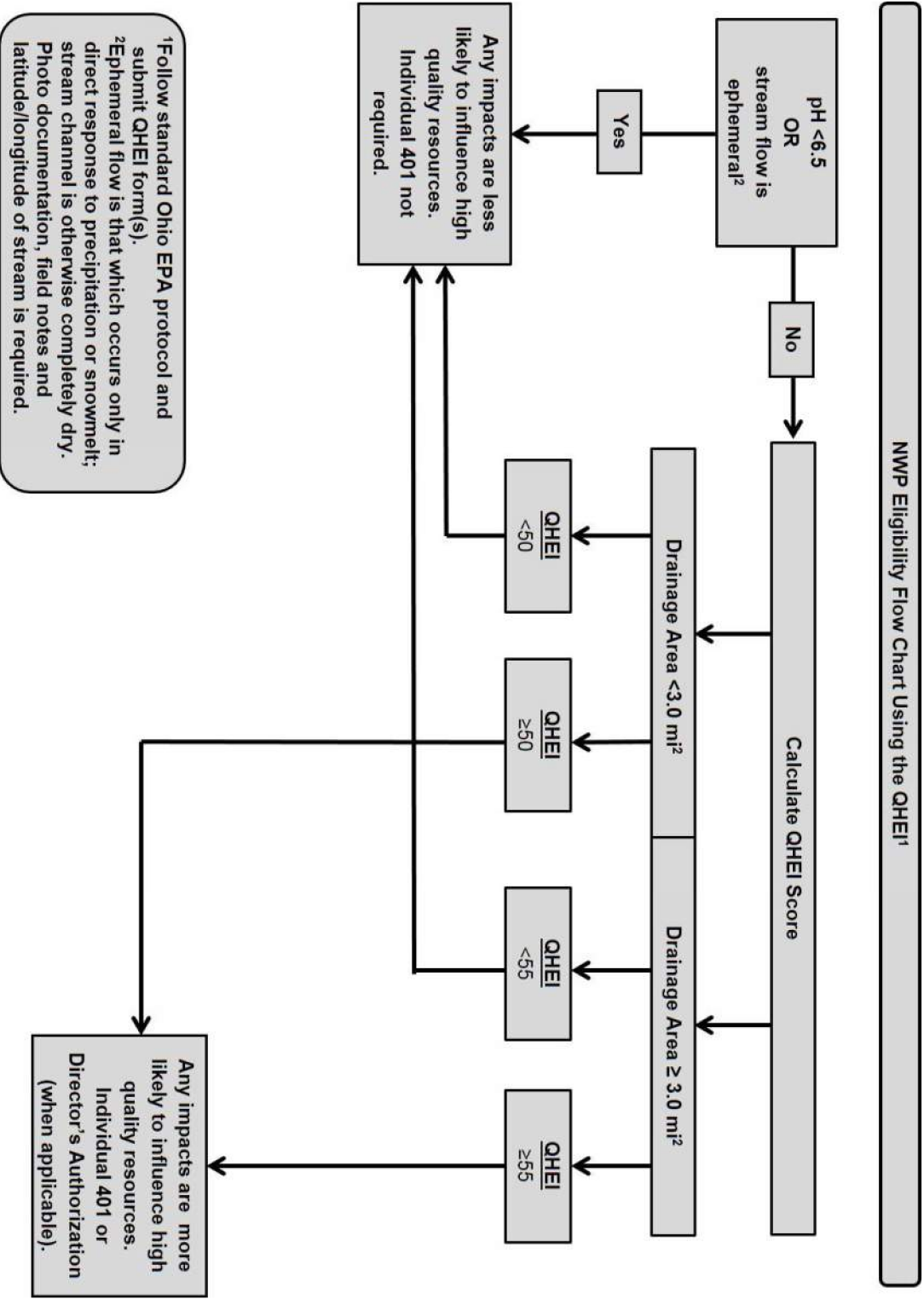
1. The stream eligibility results shall be included with the PCN or notification to Ohio EPA if a PCN is not required by the Corps. For each single and complete project with potential impacts to streams, where it is specifically required in the special limitations and conditions of this certification, the applicant shall determine if the streams proposed for impact are eligible for coverage under the 401 WQC for the Nationwide Permits using the following procedure:
 - a. Navigate to the Ohio EPA 401 website at: <http://www.epa.ohio.gov/dsw/401/permitting.aspx>
 - b. Click on the “Nationwide Permits” tab and then click on the “Stream Eligibility Web Map” link. To download the shapefile from the web map, click on the  in the upper right-hand corner of the webpage and select download. To draw project boundaries directly on the web map, click on the  in the upper left hand corner of the webpage.
 - i. If any stream proposed for impact within the project area falls within an ineligible area, impacts to that stream are not eligible for coverage under the 401 WQC for the Nationwide Permits, and the applicant shall apply for an individual 401 WQC or a director’s authorization.
 - ii. If any stream proposed for impact within the project area falls within a possibly eligible area, the applicant shall take pH values, when applicable, and perform a Qualitative Assessment Habitat Evaluation Index (QHEI) or Headwater Habitat Evaluation Index (HHEI) assessment for the stream. Using the flow charts provided below, the applicant shall determine if impacts to that stream are eligible for coverage under the 401 WQC for the Nationwide Permits or if an individual 401 WQC is required.
 - iii. If all streams proposed for impact within the project area are located within the eligible area, impacts to that stream are eligible for coverage under the 401 WQC for the Nationwide Permits and no further assessment is necessary.
 - d. The applicant shall submit the following information with the PCN or notification to Ohio EPA:

i. Color map(s), no smaller than 8"x10", which clearly shows the project boundary, streams proposed for impact, current aerial imagery, and the stream eligibility GIS layer.

ii. For each stream located in possibly eligible areas:

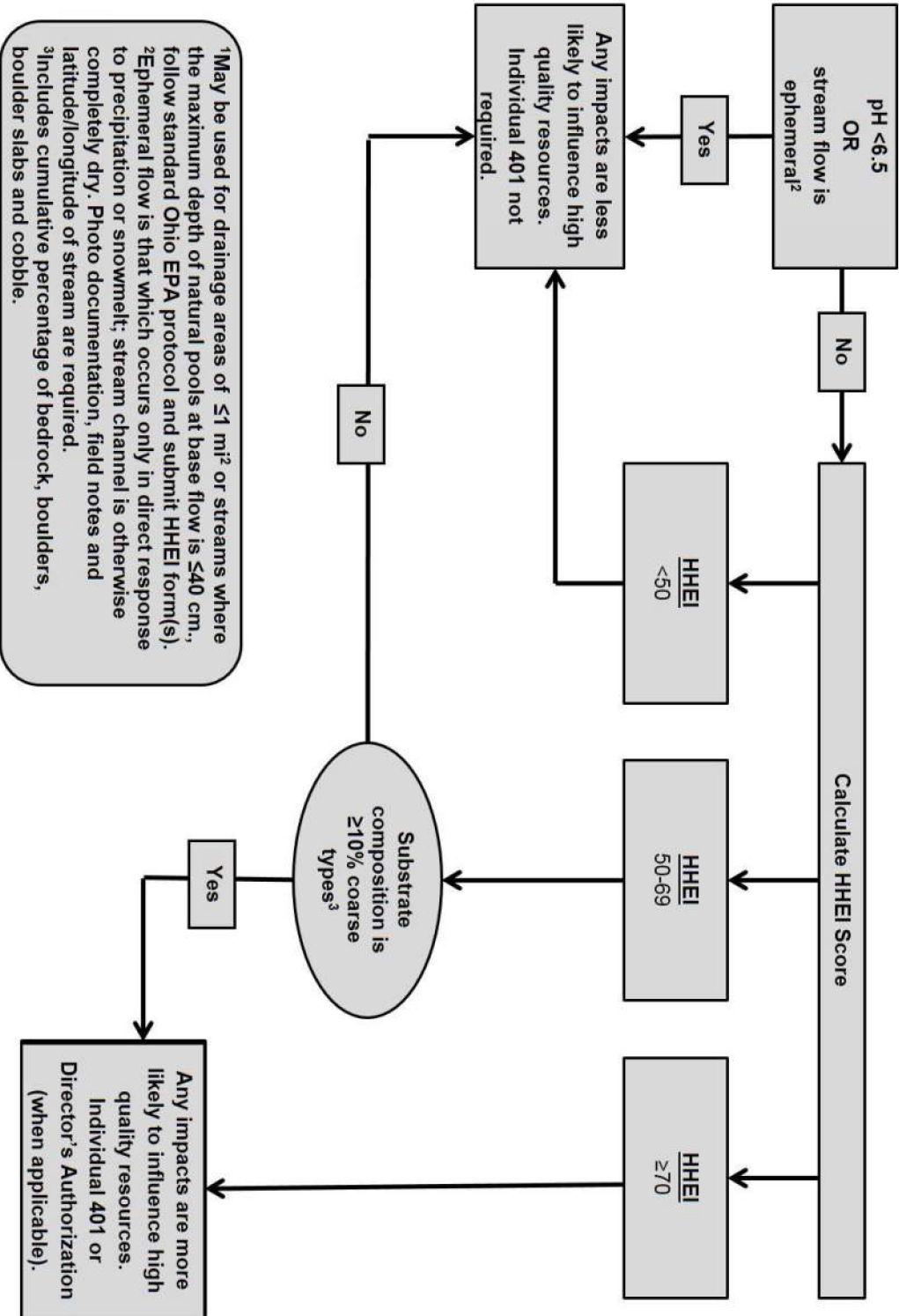
- (1) A minimum of three high resolution color photographs taken of the proposed impact area, including one facing upstream, one facing downstream, and a close up which clearly depicts the substrate composition and size for each stream proposed for impact. Photographs must accurately depict the quality of the stream and may not include excessive cover due to seasonal conditions that substrates cannot be observed such as snow or ice. Photographs deemed to be insufficient of representing the stream will be required to be retaken once seasonal conditions are appropriate. Photographs shall be clearly labeled with the stream name, direction, and date;
- (2) pH values for each stream proposed for impact taken within the proposed project area, where applicable;
- (3) Complete QHEI or HHEI sheets prepared in accordance with the current manuals; and
- (4) Statement of whether the streams proposed for impact within the project area are eligible for coverage under the 401 WQC for the Nationwide Permits or if an individual 401 WQC or a director's authorization is required.

401 WQC Stream Eligibility Flow Chart Using the QHEI



401 WQC Stream Eligibility Flow Chart Using the HHEI

NWP Eligibility Flow Chart Using the HHEI¹



¹May be used for drainage areas of ≤ 1 mi² or streams where the maximum depth of natural pools at base flow is ≤ 40 cm, follow standard Ohio EPA protocol and submit HHEI form(s).
²Ephemeral flow is that which occurs only in direct response to precipitation or snowmelt; stream channel is otherwise completely dry. Photo documentation, field notes and latitude/longitude of stream are required.
³Includes cumulative percentage of bedrock, boulders, boulder slabs and cobble.

G. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural. **Compensatory mitigation:** The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high

tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Nontidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWP, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Preconstruction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where preconstruction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Reestablishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic

resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: Reestablishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent

utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: (1) Held in trust by the United States for the benefit of any Indian tribe or individual; or (2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal

circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWP, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

GEOTECHNICAL INFORMATION

March 31, 2025

Smith Group
44 East Mifflin Street, Suite 500
Madison, WI 53703

Attention: Mr. David Wolmutter, PE
Principal | Civil Engineering Discipline Lead

Reference: Geotechnical Engineering Report
Spencer Creek – Stabilization/Rehabilitation
Bradstreet's Landing Park
22400 Lake Road
Rocky River, Cuyahoga County, Ohio
CTL Project No. 24050030CLE

Mr. Wolmutter:

CTL Engineering, Inc. has completed the Geotechnical Engineering Report for this project. Enclosed is the digital (pdf) copy of the report.

Thank you for the opportunity to work with you on this project. If you have any questions or need further information, please feel free to contact our office.

Respectfully Submitted
CTL ENGINEERING, INC.



H. Matthew Kairouz, P.E.
Project Manager

GEOTECHNICAL ENGINEERING REPORT

**SPENCER CREEK – STABILIZATION/REHABILITATION
BRADSTREET’S LANDING PARK
22400 LAKE ROAD
ROCKY RIVER, CUYAHOGA COUNTY, OHIO

CTL PROJECT NO. 24050030CLE**

PREPARED FOR:

**BIOHABITATS
2081 CLIPPER PARK ROAD
BALTIMORE, MD 21211**

PREPARED BY:

**CTL ENGINEERING, INC.
3085 INTERSTATE PARKWAY
BRUNSWICK, OHIO 44212
www.ctleng.com**

March 31, 2025



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APPENDICIES

APPENDIX A:	-	BORING LOCATION PLAN SOIL PROFILE
APPENDIX B:	-	TEST BORING RECORDS
APPENDIX C:	-	LABORATORY TEST RESULTS
APPENDIX D	-	SLOPE STABILITY ANALYSES



I. INTRODUCTION

The project consists of erosion protection and slope stabilization along Spencer Creek within the Bradstreet's Landing Park in Rocky River, Cuyahoga County, Ohio. The project limits are from the culvert outlet at Lake Road to the discharged point into Lake Erie. This report presents the results of a subsurface investigation, slope stability analysis, and recommendations for slope stabilization and improvement along Spencer Creek.

II. SUBSURFACE INVESTIGATION

On November 4, 2024 CTL Engineering obtained manual samples of rock and soils along the creek bed and creek banks surfaces. In addition, on November 7, 2024 Ohio TestBor under the directions of CTL Engineering advanced two (2) soil test borings identified as B-01, B-01A to depths Of 40 and 20 feet respectively below existing grade.

CTL Engineering, in collaboration with Smith Group, selected the boring locations as shown approximately on the enclosed Boring Location Plan in Appendix A and Table 1 below. Soil Boring B-02 initially planned on top of slope over the east bank was canceled due to home owner reluctance to provide access to our drill rig due to potential site/yard damage. CTL Engineering field located the borings and obtained their respective surface elevations using provided Topographic Map. Contractors and design engineers should consider these elevations and any elevations stated in this report as approximate unless they are field verified prior to construction.

Table 1, Approximate Test Boring Locations.

Boring No.	Elevation (ft.)	Latitude (N)	Longitude (W)	Depth (ft.)
B-01	596.5	41°28'54.14"N	81°52'1.39"W	40
B-01A	584.0	41°28'55.96"N	81°52'2.29"W	20
M-01	573.0	41°28'54.88"N	81°52'0.71"W	Creek Bed
M-02T	577.0	41°28'54.56"N	81°52'1.34"W	Creek Bank
M-02B	573.0			Creek Bed
M-03T	576.5	41°28'55.26"N	81°52'1.68"W	Creek Bank
M-03B	573.5			Creek Bed
M-04	578.0	41°28'56.41"N	81°52'1.50"W	3 Creek Bank

The drillers obtained soil samples at 2.5- foot interval in upper 20 feet and at 5-foot interval thereafter using Standard Penetration Tests (SPTs). The SPT consists of driving a 2.0-inch outside diameter (OD) split-spoon sampler 18 inches into the soil with an automatic 140-pound hammer falling 30 inches. The SPT hammers used for this project had energy ratio of 79.1 percent in obtaining industry standard N-values (N_{60} -values). A 5-foot NX Rock cores was extracted from soil borings B-01A.

The drilling crew visually classified the soil samples, secured them in glass jars, and delivered them to accredited CTL laboratory for further testing and analysis. A CTL



geologist reclassified the soil samples and performed laboratory testing on representative samples under the direction of the Geotechnical Engineer. The laboratory testing included moisture content, grain size distribution, Atterberg limits, Slake Durability Tests, Rock Unconfined Compressive Strength Tests.

The drilling, sampling, and soil testing was performed in accordance with standard geotechnical engineering practices and current ASTM procedures. Appendices B and C include the test boring records and the laboratory test results, respectively.

III. FINDINGS

A. Site Geology

Surface soils of the project site, as defined using United States Department of Agriculture (USDA) Official Soil Series Description (OSD) nomenclature, include Hornell-Urban land complex, rolling. Hornell-Urban land complex (HsC) is characterized as having a fine texture and 6 to 18 percent slopes, the parent material is residuum weathered from shale and/or till. this soil is also classified as somewhat poorly drained.

Review of the Ohio Karst Interactive Map (Ohio Department of Natural Resources) indicated that no suspected or verified karst features are located within two miles of the project site. The Bedrock Geologic Map of Ohio indicates that bedrock beneath the project is an Ohio Shale of Devonian age: the Carbonaceous shale with carbonate/siderite concretions is reported to have been encountered at approximate elevation 585 feet) below the existing surface grade on some of the surrounding properties based on an interactive web-based geology survey database (as reported by *ODNR Division of Geological Survey*).

According to the ODNR, there are no active or inactive underground mines in the immediate vicinity of the project site.

B. Visual Observations

The site consists of creek banks over the Spencer Creek. The east bank of the creek is in residential property while the west bank is in a recreational Park setting and both are consisting of wooded, grass, and vegetation covered over steep slopes. The West Bank consisted of shale outcrop with random overburden fills, it is experiencing erosion. The East Bank is covered with trees and consisted of variable topography. Surface sloughing and slope failures along with toe erosion are evident along this East Bank. The Creek bed consisted of shale outcrop and various cobble and concrete slab.

The following photos depict the conditions of the creek bed and slopes:





Figure 1: East Bank Erosion/Sloughing. Figure 2: East Bank



Figure 3: West Bank Erosion/Outfall Structure Failure.



Figure 4: East Bank Severe erosion/Sloughing.

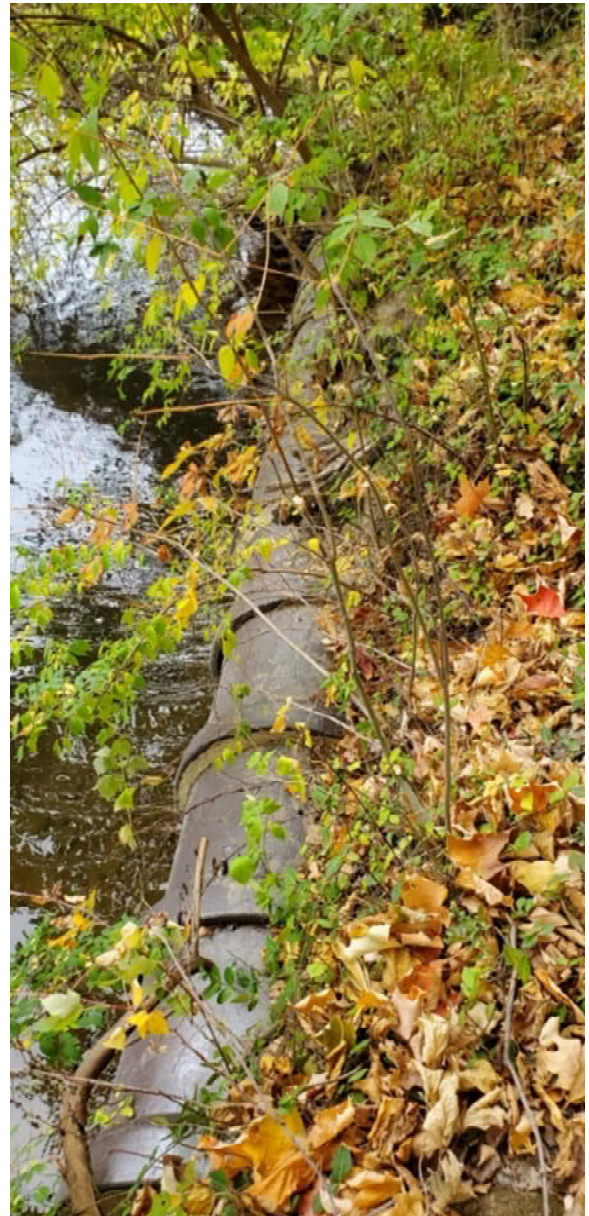


Figure 5: East Bank Storm Sewer Along Toe

C. Subsurface Conditions:

The surface material along the riverbed and toe of slopes consisted of gray shale outcrop and various cobble, and broken concrete slab. The surfaces along the West bank consisted of approximately 16 to 24 inches of topsoil mixed with rubble and broken glass. The surface along the East bank consisted of 4 to 6 inches of topsoil or exposed sandy silt.

East Bank:

The soil data over the East Bank is limited. The subsurface material at least in the

upper 3 to 4 feet along the East Bank consisted of natural sandy silt.

West Bank:

The subsurface material along the West bank consisted of approximately 6 to 23 feet of random rubble fill over a 3 to 6 feet thick sandy silty lean clay followed by very weak severely to highly weathered shale.

The standard penetration test (SPT, N_{60}) values and moisture content of the fill materials ranged from 7 to 37 blows per foot (bpf) and from 8 to 28 percent, respectively. The standard penetration test (SPT, N_{60}) values and moisture content of the natural clay soil ranged from 7 to 12 blows per foot (bpf) and 17 to 19 percent, respectively.

The rock quality designation (RQD), and recovery were 20% and 93% respectively.

The results of soil and rock laboratory tests are presented in Appendix C and are summarized below in Table 2.

Table 2 – Laboratory Test Results

Soil Boring	Elev. (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₅₀ (mm)	Unconfined Compression (psi)	Slake Durability Index ID ₂
B-01	579.5	41	21	20	0.032	---	---
B-01A	577.5	41	23	18	0.036	---	---
	567.5	---	---	---	---	2,200	---
	565.5	---	---	---	---	710	---
M-01	573.0	---	---	---	---	---	95.9
M-02T	577.0	---	---	---	---	---	97.5
M-03B	573	---	---	---	---	---	98.0
M-04	576	NP	NP	NP	0.057	---	---

D. Groundwater:

Groundwater was encountered during drilling at soil boring B-01 at 20.7 feet below existing grades (about elevation 575.8 feet). It should be noted that fluctuations in groundwater levels should be expected over time due to variations in precipitation, surrounding groundwater use, and the time of year, the measurements are determined. Static groundwater levels can only be determined through observations made in cased holes over relatively long periods.



V ANALYSIS & RECOMMENDATIONS

The following analyses and recommendations are provided based upon experience, available information, and the subsurface information obtained from the field and laboratory testing.

A. Scour/Erosion

Based on the subsurface conditions and the shale slake durability tests, the shale consisted of alternating layers of Non-durable subject to erosion to very high durable resisting to wind erosion, but all exposed and tested intact shale based on the RQD and the Unconfined compressive strength tests is considered scour able. The overburden soils based on the D_{50} values are also subject to scour and erosion. The soil and rock parameters for scour and erosion evaluation are summarized in Table 2 in Section V, Item D of this Report.

B. Slope Stability Analysis:

Global and local slope stability analysis were performed at representative critical sections of the West Bank. CTL Engineering selected the sections to be analyzed. Smith Group provided the topographic map and the sections as noted on the plan view included in Appendix D of this report. The slope stability analysis was performed using Slide computer software. This program is based on two-dimensional limiting equilibrium methods in which the calculation of the factor of safety against instability of a slope is performed by the method of slices. Various methods of analysis were used in analyzing over 1000's of potential failure surfaces for each section.

The results of the slope stability analysis in term of minimum factor of safety (FOS), and proposed stabilizations option are included in Appendix D of this report and are summarized in Table 3 below:

Table 3: Summary of Slope Stability Analysis – for Proposed Sections.

Section	Conditions	FOS	Remarks
A-A	Existing	1.1	Unacceptable
	Proposed Wall	2.0	Globally Stable
B-B	Existing Global	> 1.3	Globally Stable
	Existing Local	< 1.0	Unstable

The slope along the West Bank as represented by Section A-A is potentially unsafe locally and globally with a FOS < 1.3. Per discussion with Smith Group and due to site restriction, we recommend that the West Bank slope starting at the culvert outlet and progressing northward to just pass the storm outfall structure be stabilized and retained using a gravity retaining wall. Due to scour able shale the



wall shall be supported on conventional concrete footings bearing at 3.5 feet below existing grades into the shale. The soil and rock design parameters for the wall are presented in Item C of this Section.

The slope along the West Bank as represented by Section B-B is potentially unsafe and unstable locally within the overburden soils (FOS < 1.0). However, the slope global stability beyond the storm outfall structure is adequate. For the local stability we recommend the slope within only the overburden soils be laid back at a 2H:1V. The creek bed along the toe of banks on both sides shall be protected against scour and erosion using riprap such as rock Type A and B or maybe larger depending on Hydraulic factors.

All exposed slopes within overburden soils shall be protected against erosion using seeding and mesh.

The summaries of slope stability analysis are included in Appendix D.

C. Retaining Walls:

It is understood that a Gravity Wall is considered for segment of the west bank starting at the culvert outlet at Lake Road and progressing westward to just pass the existing failed storm Outfall Structure. This wall shall also be used to support the storm outfall structure. Due to potential scour the gravity wall shall be supported on pored concrete footing bearing at least 3.5 feet below exposed surface into the shale.

The proposed wall may be designed using parameters summarized in Table 4 below.

Table 4. Walls - Design parameters

Soil Parameters	Overburden Soil	Onsite Shale	Engineered Granular Fill
Average Cohesion, (c, psf)	Ignore	845	Ignore
Angle of Internal Friction, (ϕ°)	27	27	34
Total Unit Weight, pcf	120	146	135
At Rest Earth Pressure Coefficient, Effective (K_0)	0.55	0.55	0.44
Active Earth Pressure Coefficient, Effective (K_a)	0.38	0.38	0.28
Passive Earth Pressure Coefficient, Effective (K_p)	2.63	2.63	3.57
Allowable Bearing Pressure, psf	N/A	7,000.0	N/A

The active and passive earth pressure parameters provided above are based on Rankine assuming horizontal backfill. In order to account for sloped backfill above the wall, we recommend adding 1/2 of the sloped height to the wall height. Passive resistance within clay should take into account the cohesion term per Rankine's



procedure. Passive resistance within erodible zones (upper 3 feet) should be ignored.

V CHANGED CONDITIONS

The evaluations, conclusions, and recommendations in this report are based on our interpretation of the field and laboratory data obtained during the exploration, our understanding of the project and our experience with similar sites and subsurface conditions using generally accepted geotechnical engineering practices. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates drilled, they are not necessarily representative of the subsurface conditions between boring locations or subsurface conditions during other seasons of the year.

In the event that changes in the project are proposed, additional information becomes available, or if it is apparent that subsurface conditions are different from those provided in this report, CTL Engineering should be notified so that our recommendations can be modified, if required.

VI TESTING AND OBSERVATION

During the design process, it is recommended that CTL Engineering work with the project designers to confirm that the geotechnical recommendations are properly incorporated into the final plans and specifications, and to assist with establishing criteria for the construction observation and testing.

VII CLOSING

The report was prepared by CTL Engineering, Inc. (Consultant) solely for the use of the Client in accordance with an executed contract. The Client's use of or reliance on this report is limited by the terms and conditions of the contract and by the qualifications and limitations stated in the report. It is also acknowledged that the Client's use of and reliance of this report is limited for reasons which include: actual site conditions that may change with time; hidden conditions, not discoverable within the scope of the assessment, may exist at the site; and the scope of the investigation may have been limited by time, budget and other constraints imposed by the Client.

Neither the report, nor its contents, conclusions nor recommendations are intended for the use of any party other than the Client. Consultant and the Client assume no liability for any reliance placed on this report by such party. The rights of the Client under contract may not be assigned to any person or entity, without the consent of the Consultant which consent shall not be unreasonably withheld.



This geotechnical report does not address the environmental conditions of the site. The Consultant is not responsible for consequences or conditions arising from facts that were concealed, withheld, or not fully disclosed at the time the assessment was conducted.

To the fullest extent permitted by law, the Consultant and Client agree to indemnify and hold each other, and their officers and employees harmless from and against claims, damages, losses and expenses arising out of unknown or concealed conditions. Furthermore, neither the Consultant nor its employees shall be liable to the Owner in an amount in excess of the available professional liability insurance coverage of the Consultant. In addition, Client and Consultant agree neither shall be liable for any special, indirect or consequential damages of any kind or nature. The Consultant's services have been provided consistent with its professional standard of care. No other warranties are made, either expressed or implied.

Respectfully Submitted,
CTL ENGINEERING, INC.



Matthew Kairouz, P.E.
Project Manager




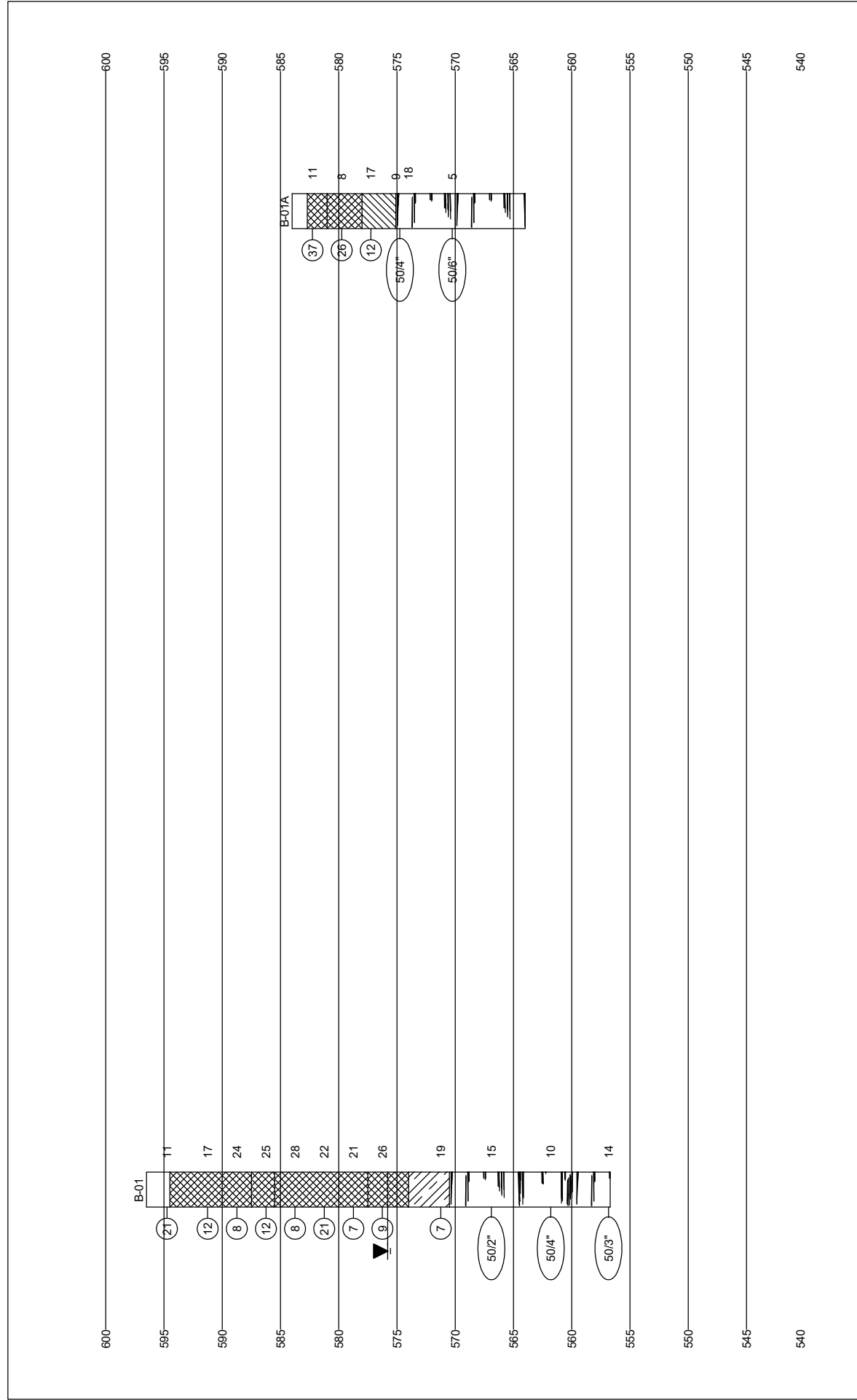
APPENDIX A

- ▣ **BORING LOCATION PLAN**
- ▣ **SOIL PROFILE**



SITE LOCATION MAP

<p>CTL ENGINEERING, INC. GEOTECHNICAL ENGINEERS TESTING * INSPECTION LABORATORY SERVICES</p> 		<p>Smith Group Spencer Creek Stabilization 22400 Lake Road Reocky River, Cuyahoga County, Ohio</p>		<p>Project No. 24050030CLE</p>
<p>Date 4/1/2025</p>	<p>Scale None</p>	<p>Drawn By MK</p>	<p>Reviewed By</p>	<p>Page 1 of 1</p>



CTL ENGINEERING, INC.
CONSULTING ENGINEERS
 3085 Interstate Parkway
 Brunswick, Ohio 44212

SOIL PLAN/PROFILE
Smith Group
 Spencer Creek -Stabilization/Rehabilitation
 22400 Lake Rd. Rocky River, OH
 PROJECT NUMBER
 24050030CLE

DATE
3/31/2025
SCALE
AS SHOWN
DRAWN BY
MK

PAGE
1 OF 1

LEGEND

▲ GROUND WATER DURING DRILLING — W MOISTURE CONTENT IN PERCENT (w)

▽ GROUND WATER AT COMPLETION OF DRILLING (N) STANDARD PENETRATION IN BLOWS PER FOOT (N)

▽ GROUND WATER AT *N* HOURS AFTER COMPLETION

LIMESTONE

FILL

CH

MH

OH

PT

SHALE

SILTSTONE

SC

SC-SM

ML

CL

CL-ML

OL

SP

SW-SM

SW-SC

SP-SM

SP-SC

SM

GP-GM

GP-GC

GM

GC

GC-GM

SW

TOPSOIL

ASPHALT

GW

GP

GW-GM

GW-GC

B-01

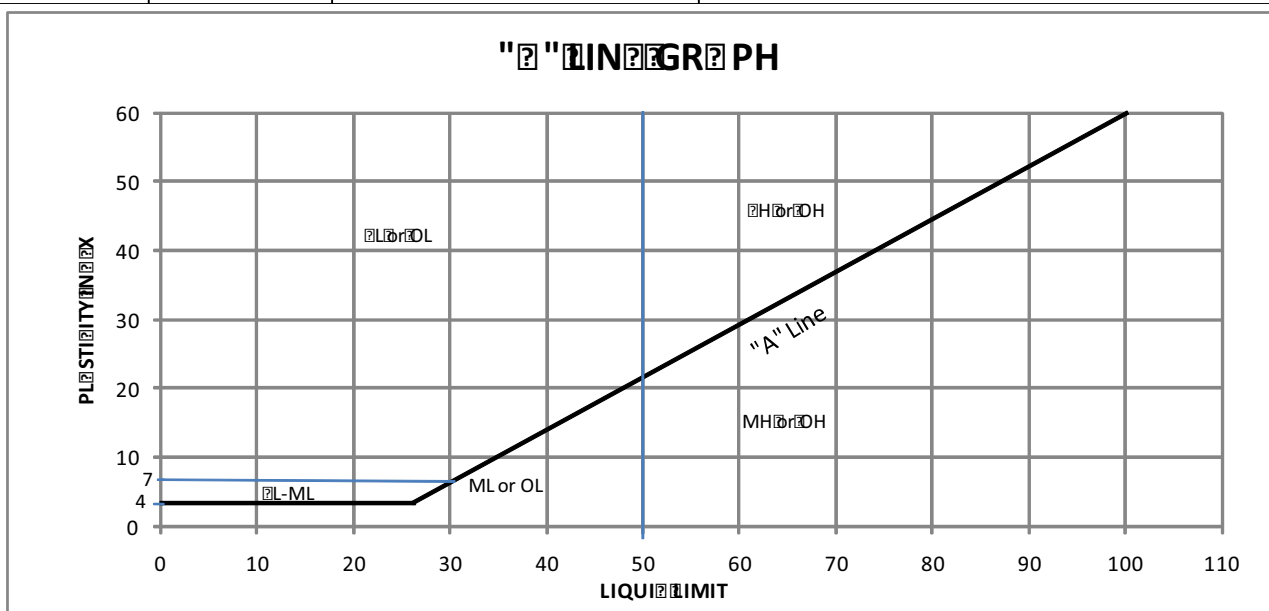
APPENDIX B

▣ TEST BORING RECORDS

SOIL DESCRIPTIONS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM

ASTM D 2487 and D 2488

Major Division		Group Symbol	Letter Symbol	Group Name*	
Coarse Grained Soils Less Than 50 Percent Passing the # 200 Sieve	Gravel - Percent GRAVEL > percent SAND	Gravel with < 5% Fines	GW	Well Graded GRAVEL	
		Gravel with Between 5 and 15% Fines	GP	Poorly Graded GRAVEL	
		Gravel with > 15% Fines	GW-GM	Well Graded GRAVEL with silt	
		Gravel with > 15% Fines	GW-GC	Well Graded Gravel with clay	
		Gravel with > 15% Fines	GP-GM	Poorly Graded GRAVEL with silt	
		Gravel with > 15% Fines	GP-GC	Poorly Graded GRAVEL with clay	
	Sand - Percent SAND ≥ percent GRAVEL	Sand with < 5% Fines	GM	Silty GRAVEL	
		Sand with < 5% Fines	GC	Clayey GRAVEL	
		Sand with < 5% Fines	SW	Well Graded SAND	
		Sand with < 5% Fines	SP	Poorly Graded SAND	
		Sand with Between 5 and 15% Fines	SW-SM	Well Graded SAND with silt	
		Sand with Between 5 and 15% Fines	SW-SC	Well Graded SAND with clay	
	Fine Grained Soils 50 percent or more Passing the # 200 Sieve	SILT and CLAY	Liquid Limit Less Than 50	SM	Silty SAND
			Liquid Limit Less Than 50	SC	Clayey SAND
Liquid Limit Less Than 50			ML	SILT	
SILT and CLAY		Liquid Limit 50 or Greater	CL	Lean CLAY	
		Liquid Limit 50 or Greater	CL-ML	SILTY CLAY	
		Liquid Limit 50 or Greater	OL	Organic SILT, CLAY, or SILTY CLAY	
Highly Organic Soils		MH	Elastic SILT		
Highly Organic Soils		CH	Fat CLAY		
Highly Organic Soils		OH	Organic SILT or CLAY		
Highly Organic Soils		PT	Peat		
* Additional Modifiers	Coarse Grained Soils	with silt or clay	5 to 12 % Silt or Clay by weight		
		Silty or Clayey	more than 12 % Silt or Clay by weight		
	Fine Grained Soils	with sand or gravel	15 to 29 % Sand or Gravel by weight		
		Sandy or Gravelly	30 % or more Sand or Gravel by weight		



SOIL DESCRIPTION

Descriptors for soil consistency used in this report are based upon the Standard Penetration Test (SPT), ASTM D 1587, with the penetration (N) values corrected to N_{60} , based upon the efficiency of the SPT Hammer used for the soil sampling.

Descriptors for both non-cohesive and cohesive soils are presented below, with the corresponding range of corrected penetration values.

NON-COHESIVE SOIL DESCRIPTION

CORRECTED PENETRATION VALUES BLOWS PER FOOT (BPF)

Very Loose.....	0 – 4
Loose.....	5 – 10
Medium Dense.....	11- 30
Dense.....	31 – 50
Very Dense.....	Over 50

COHESIVE SOIL DESCRIPTION

CORRECTED PENETRATION VALUES BLOWS PER FOOT (BPF)

Very Soft.....	0 – 1
Soft.....	2 – 4
Medium Stiff.....	5 – 8
Stiff.....	9 – 15
Very Stiff.....	16 –30
Hard.....	Over 30

Moisture term descriptors for both non-cohesive and cohesive soils are presented below.

NON-COHESIVE SOIL DESCRIPTION

MOISTURE TERMS

COHESIVE SOIL DESCRIPTION

Powdery.....	Dry.....	Powdery
Some Moisture.....	Damp.....	Below Plastic Limit
Damp to the Touch.....	Moist.....	Above Plastic, Below Liquid Limit
Free Water.....	Wet.....	Above Liquid Limit



TEST BORING RECORD


CLIENT : Smith Group
 PROJECT : Spencer Creek -Stabilization/Rehabilitation
 LOCATION : 22400 Lake Rd. Rocky River, OH
 PROJECT NO. : 24050030CLE

BORING NO.: B-01
 SHEET 1 OF 1
 DATE STARTED : 11-07-24
 DATE COMPLETED : 11-07-24

BORING ELEVATION : <u>596.5 Feet</u>	RIG TYPE : <u>D-50</u>	DRILLER : <u>John/Keith</u>
STATION : _____	CASING DIA. : <u>3:25</u>	TEMPERATURE : <u>50°</u>
OFFSET : _____	CORE SIZE : _____	WEATHER : <u>cloudy</u>
DEPTH : <u>39.8 Feet</u>	HAMMER : <u>Auto</u>	
BORING METHOD: <u>HSA</u>	ENERGY RATIO : <u>79.1</u>	

GROUNDWATER: Encountered at 20.7 ft Caved in at 15.5'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	N ₆₀	RECOVERY (%)	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS			
											LL	PL	PI	
594.5		TOPSOIL with RUBBLE	2.0	SS-1	4 9 7	21	44	11						
	5	Brown, SANDY SILT, some slag, brick, cinders, moist. (FILL)		SS-2	3 5 4	12	56	17						
587.5		Black, CINDERS, little clay, gravel, slag, moist. (FILL)	9.0	SS-3	2 3 3	8	39	24						
585.5	10	Black, CINDERS, little clay, gravel, slag, moist. (FILL)	11.0	SS-4	3 4 5	12	78	25						
	15	Grey, LEAN CLAY with SAND, moist. (FILL)		SS-5	2 2 4	8	67	28		0.5*				
		Grey, LEAN CLAY with SAND, moist. (FILL)		SS-6	7 9 7	21	50	22		2.5*				
577.5		Black, SILTY CLAY, interlayers of sand, trace organics, moist. (SEWER ODOR) (FILL)	19.0	SS-7	2 2 3	7	38	21		1.0*	41	21	20	
575.8	20	Black, SILTY CLAY, interlayers of sand, trace organics, moist. (SEWER ODOR) (FILL)	20.7	SS-8	2 3 4	9	100	26		4.5*				
574.0		Grey, SANDY SILT, trace gravel, moist.	22.5											
570.5	25	Stiff, grey, SILTY CLAY, some shale fragments, wet. (completely weathered SHALE)	26.0	SS-9	2 2 3	7	44	19		3.5*				
	30			SS-10	50/2"		100	15						
	35	Very weak, grey, SHALE, severely weathered, moist.		SS-11	50/4"		100	10						
556.7	40	End of boring @39.8'	39.8	SS-12	50/3"		67	14						

 3085 Interstate Pkwy Brunswick, Ohio 44212 Telephone: 330-220-8900 Fax: 330-220-8944 Email: ctl@ctleng.com	BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
	HSA - Hollow Stem Auger SFA - Solid Flight Auger RC - Rock Coring MD - Mud Drilling WD - Wash Drilling HA - Hand Auger	SS - Split Spoon Sample ST - Shelby Tube Sample CR - Rock Core Sample BS - Bag Sample	* - Hand Penetrometer LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index SPT - Standard Penetration Test N ₆₀ - Standard Penetration Normalized to 60% Drill Rod ER

TEST BORING/PIT RECORD 24050030CLE.GPJ CTL CORPORATE.GDT 3/31/25

TEST BORING RECORD

CLIENT : Smith Group
 PROJECT : Spencer Creek -Stabilization/Rehabilitation
 LOCATION : 22400 Lake Rd. Rocky River, OH
 PROJECT NO. : 24050030CLE


BORING NO.: **B-01A**
 SHEET 1 OF 1
 DATE STARTED : 11-07-24
 DATE COMPLETED : 11-07-24

BORING ELEVATION : <u>584.0 Feet</u>	RIG TYPE : <u>D-50</u>	DRILLER : <u>John/Keith</u>
STATION : _____	CASING DIA. : <u>3:25</u>	TEMPERATURE : <u>50°</u>
OFFSET : _____	CORE SIZE : _____	WEATHER : <u>cloudy</u>
DEPTH : <u>39.8 Feet</u>	HAMMER : <u>Auto</u>	
BORING METHOD: <u>HSA</u>	ENERGY RATIO : <u>79.1</u>	

GROUNDWATER:

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	N ₆₀	RECOVERY (%)	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS			
											LL	PL	PI	
582.7		TOPSOIL with glass (16")	1.3		7									
581.0		Brown, SANDY SILT, some rock fragments, moist. (FILL)	3.0	SS-1	11 17	37	83	11						
	5	Brown, SILTY CLAY, some rock fragments, moist. (FILL)	6.0	SS-2	6 9 11	26	100	8						
578.0		Very stiff, dark grey, SANDY LEAN CLAY, moist. (SEWER ODOR)	8.9	SS-3	3 4 5	12	67	17		5.5*	41	23	18	
575.1		Very weak, grey, SHALE, severely weathered, moist.	10.0	SS-4B SS-4T	10 26		89	9 18		8.0*				
	10					50/4"								
570.0		Weak, grey, SHALE, highly weathered, moist.	14.0	SS-5	50/6"		100	5						
	15									164	316.8*			
564.0	20	End of boring @20.0'	20.0	CR-1 RQD=20%			93		147	102.2*				

TEST BORING/PIT RECORD_24050030CLE.GPJ CTL CORPORATE.GDT_3/31/25

 <p>3085 Interstate Pkwy Brunswick, Ohio 44212 Telephone: 330-220-8900 Fax: 330-220-8944 Email: ctl@ctleng.com</p>	<p>BORING METHOD</p> <p>HSA - Hollow Stem Auger SFA - Solid Flight Auger RC - Rock Coring MD - Mud Drilling WD - Wash Drilling HA - Hand Auger</p>	<p>SAMPLING METHOD</p> <p>SS - Split Spoon Sample ST - Shelby Tube Sample CR - Rock Core Sample BS - Bag Sample</p>	<p>ABBREVIATIONS</p> <p>* - Hand Penetrometer LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index SPT - Standard Penetration Test N₆₀ - Standard Penetration Normalized to 60% Drill Rod ER</p>
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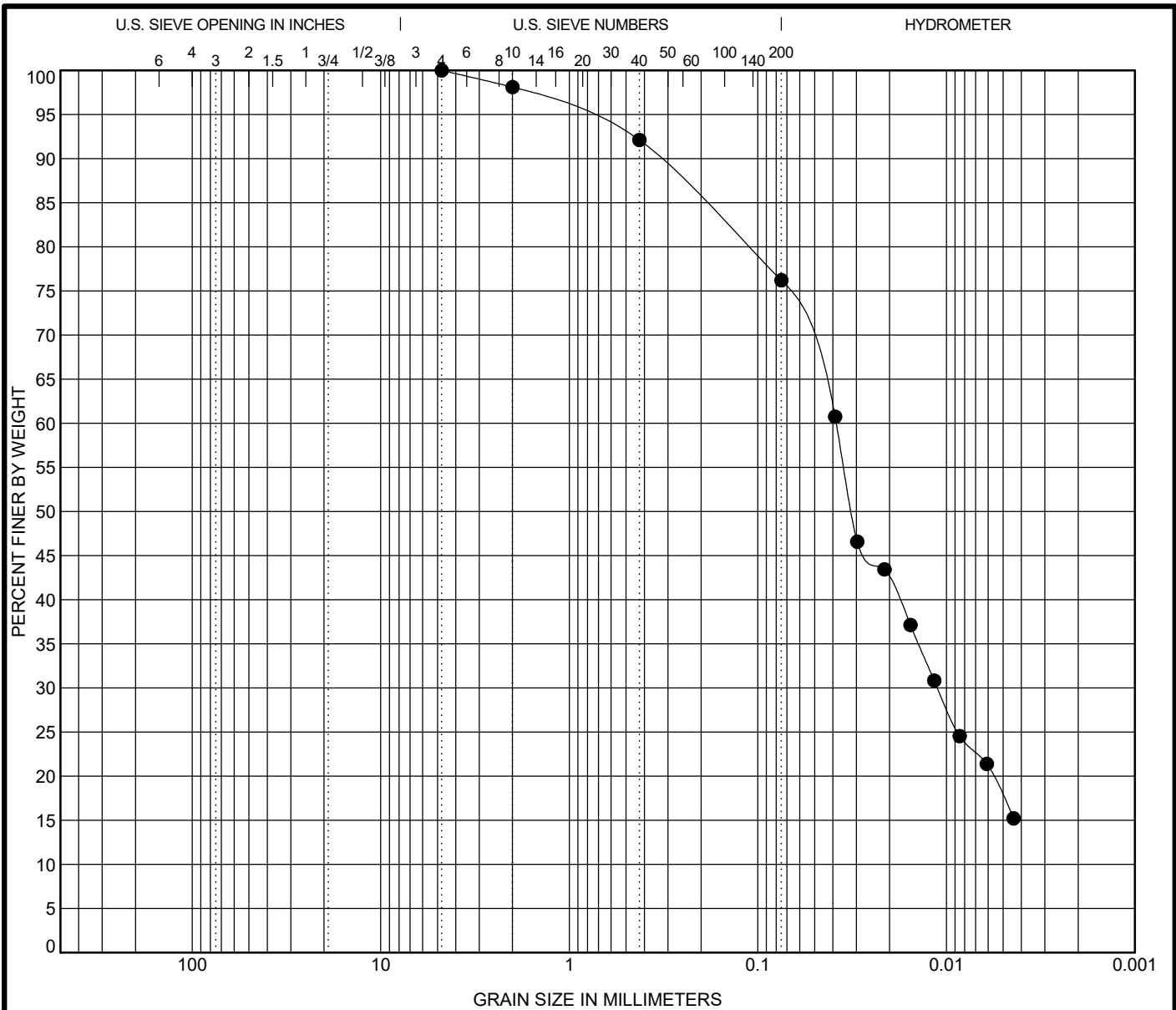
B-01A



Run #:	Depth	Recovery	RQD
NX-1	15.0'	56/60	12/60
Spencer Creek- Stabilization/Rehabilitation			
	20.0'	93%	20%

APPENDIX C

▣ LABORATORY TEST RESULTS



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Sample	Depth	Classification				%MC	LL	PL	PI	Cc	Cu
● B-01	SS-7	17.0	LEAN CLAY with SAND(CL)				21	41	21	20		

Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-01	SS-7	17.0	4.75	0.038	0.032	0.011		0	24	58	18

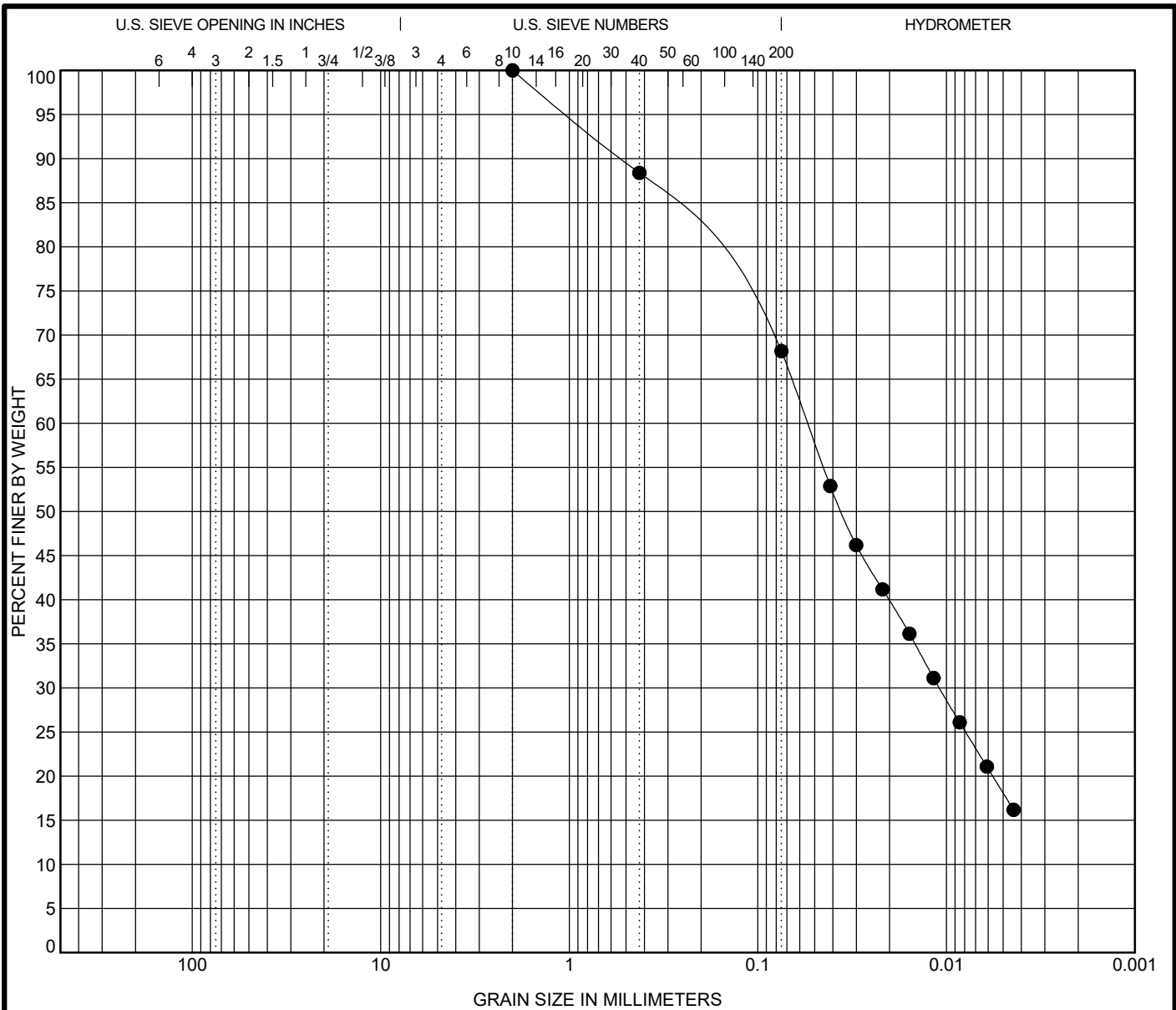
USCS 24050030CLE.GPJ CTL CORPORATE.GDT 4/1/25



CTL Engineering
 3085 Interstate Parkway
 Brunswick, Ohio 44212
 Telephone: 330-220-8900
 Fax: 330-220-8944
 Email: ctl@ctleng.com

GRAIN SIZE DISTRIBUTION

Project: Spencer Creek -Stabilization
 Location: 22400 Lake Rd. Rocky River, OH
 CTL Project Number: 24050030CLE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-01A	SS-3	6.0	SANDY LEAN CLAY(CL)	17	41	23	18		

Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-01A	SS-3	6.0	2	0.055	0.036	0.011		0	32	50	18

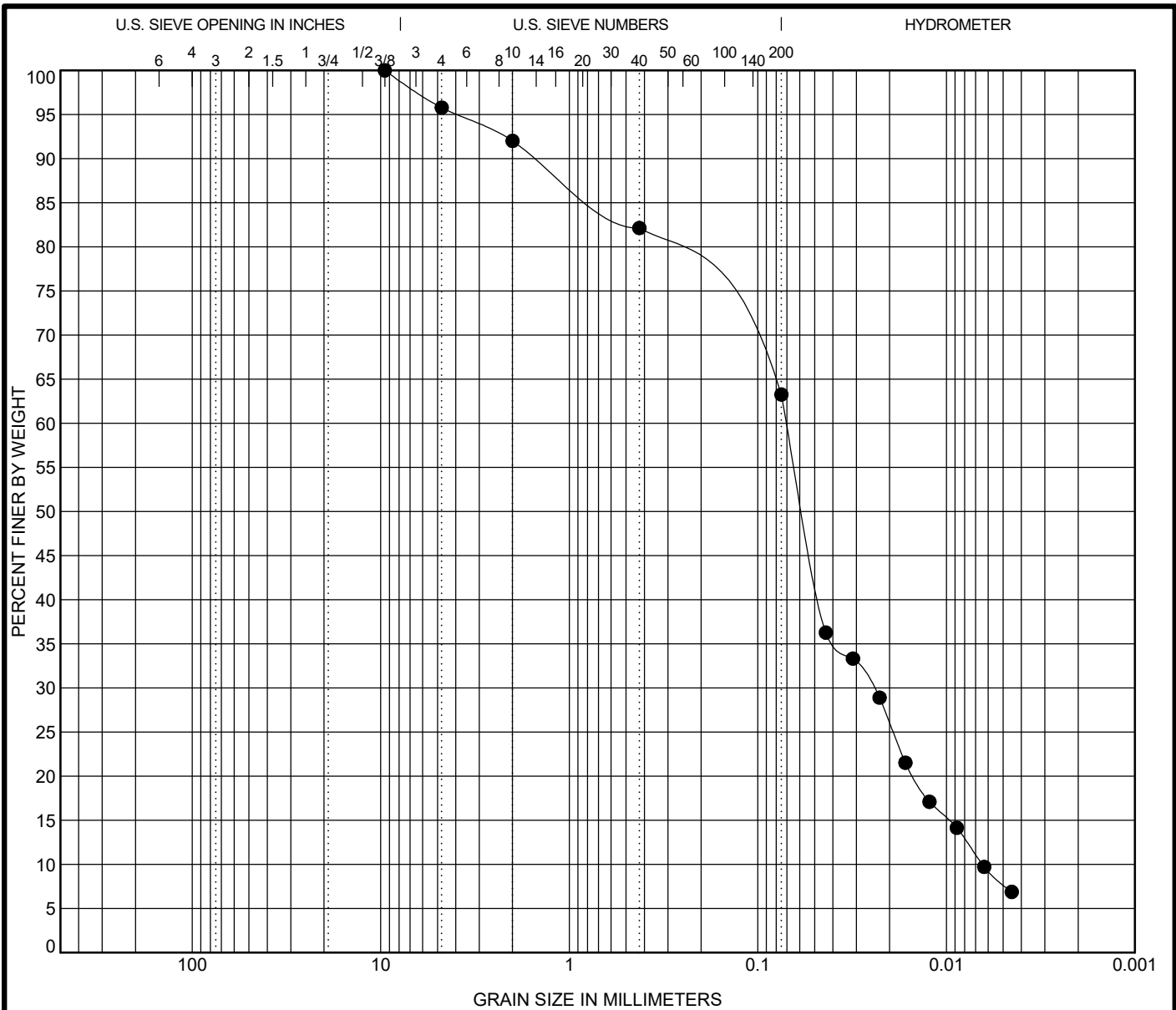
USCS 24050030CLE.GPJ CTL CORPORATE.GDT 4/1/25



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GRAIN SIZE DISTRIBUTION

Project: Spencer Creek -Stabilization
 Location: 22400 Lake Rd. Rocky River, OH
 CTL Project Number: 24050030CLE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● M-4	SS-1	0.0	SANDY SILT (ML)		NP	NP	NP	1.33	10.92

Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● M-4	SS-1	0.0	9.525	0.07	0.057	0.025	0.006	4	33	55	8

USCS 24050030CLE.GPJ CTL CORPORATE.GDT 4/1/25



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 Email: ctl@ctleng.com

GRAIN SIZE DISTRIBUTION

Project: Spencer Creek -Stabilization
 Location: 22400 Lake Rd. Rocky River, OH
 CTL Project Number: 24050030CLE



REPORT ON SAMPLE OF CORES

CLIENT: Smith Group

DATE REPORTED: 02/19/25

DATE TESTED: 02/19/25

DATE RECEIVED:

ATTN:

SAMPLED BY:

LAB CODE NO.:

PROJECT NO.: 24050030CLE

PROJECT: Spencer Creek – Stabilization/Rehabilitation

IDENTIFICATION: B-1A

COMPRESSION & UNIT WEIGHT
 TEST RESULTS (ASTM D 2938)

CORE NO.	DIAMETER (in)	ACTUAL LENGTH (in)	WEIGHT (grams)	UNIT WEIGHT (lb/ft ³)	TOTAL LOAD (lbf)	COMPRESSIVE STRENGTH (psi)
B-1A (16.3')	1.97	3.0	390.7	164.0	6,970	2,200
B-1A (18.4')	1.96	3.5	399.9	146.9	2,160	710

NOTE: Cores were tested at "as-received" Moisture content.

Respectfully submitted,
 CTL ENGINEERING, INC.

mls

<p>Slake Durability of Shales and Similar Weak Rocks ASTM D 4644</p> <p>Sample ID: M-1</p> <p>Sample Description: Shale, Gray</p> <p>Slake Durability Index (%): 95.9 (second cycle)</p> <p>Moisture Content (%): 3.3</p> <p>Temperature Range (°C): 19.8-20.5</p> <p>Temperature Average (°C): 20.1</p>	<p>CTL ENGINEERING, INC. 2860 Fisher Road Columbus, Ohio 43204</p> <p>Client: Smith Group Project: Spencer Creek -Stabilization/Rehabilitation</p> <p>Project No. 24050030CLE Lab Code. 24050798COL Date Tested: 11/12-11/15/24 Reviewed by: MK</p>
<div style="display: flex; justify-content: space-around;"> <div> <p>Pre-Test Sample</p> </div> <div> <p>Post Test Sample</p> </div> </div> <p>Remarks:</p> <p>Post Test Sample Description : Type I—Retained specimen remain virtually unchanged.</p>	



- 3. Related Sections
 - a. Section 024119 Selective Structure Demolition
 - D. Clearing and Grubbing
 - 1. Measurement: Lump sum (LS).
 - 2. Payment:
 - a. Payment shall be full compensation for clearing and grubbing site area as shown on the drawings. Clearing and Grubbing shall include all costs associated with cutting, removal, hauling, and disposal of all trees, brush, and stumps in conformance with construction documents.
 - 3. Related sections:
 - a. Section 311000 Site Clearing
 - E. Invasive Species Removal
 - 1. Measurement: Acres
 - 2. Payment
 - a. Payment shall be full compensation for identification, marking, treatment, removal and proper disposal of invasive species within the areas identified in the contract documents.
 - 3. Related Sections: Vegetation Control 329282 Vegetation Control
 - F. Dredging
 - 1. Measurement: Cubic Yards (CY)
 - 2. Payment
 - a. Payment shall be full compensation for excavation and reuse of creek bed material within the site grading in conformance with the contract documents.
 - G. Site Grading – Excavation and Stockpiling
 - 1. Measurement: Cubic Yards (CY)
 - 2. Payment
 - a. Payment shall be full compensation for excavation and stockpiling of existing grades to meet grades and lines of the proposed improvements in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 311000 Site Clearing
 - b. Section 329100 Topsoil
 - H. Excess Soil Off-Haul
 - 1. Measurement: Cubic Yards (CY)
 - 2. Payment
 - a. Payment shall be full compensation for off-haul and legal disposal of excess soil material.
 - 3. Related Sections
 - a. Section 311000 Site Clearing
- 4.3 Slope Protection and Stabilization**
- A. Retaining Wall – Concrete Leveling Pad
 - 1. Measurement: Cubic Yard (CY)
 - 2. Payment
 - a. Payment shall be full compensation for delegated design, furnish and install of delegated design item, including dewatering, subgrade preparation, formwork, and placement of the Concrete Leveling Pad.
 - 3. Related Sections
 - a. Section 013573 Delegated Design Requirements and Procedures
 - B. Retaining Wall – Armor Wall
 - 1. Measurement: Face Square Feet (FSF)

- 2. Payment
 - a. Payment shall be full compensation for delegated design, furnish and install of delegated design item in conformance with the Contract Documents.
- 3. Related Sections
 - a. Section 013573 Delegated Design Requirements and Procedures
- C. Retaining Wall – Drain Rock Backfill and Underdrain
 - 1. Measurement: Lump Sum (LS)
 - 2. Payment
 - a. Payment shall be full compensation for delegated design, furnish and install of drain rock backfill, Filter Fabric and underdrain including all labor, tools, equipment, and incidental items necessary to complete the work, in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 013573 Delegated Design Requirements and Procedures
- D. Cross Vane – Stone Block
 - 1. Measurement: EA
 - 2. Payment
 - a. Payment shall be full compensation for furnish and install of Cross Vane Stone blocks including all labor, tools, equipment, and incidental items necessary to complete the work, in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 353119 Stone Revetments and Breakwaters
- E. Cross Vane – Cross Vane Cobble Riffle
 - 1. Measurement: Tons
 - 2. Payment
 - a. Payment shall be full compensation for furnish and install of , including all all labor, tools, equipment, and incidental items necessary to complete the work, in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 353119 Stone Revetments and Breakwaters
- F. Toe Protection – Armor Layer ODOT Type A
 - 1. Measurement: Tons
 - 2. Payment
 - a. Payment shall be full compensation for furnish and install of Armor Stone for the toe protection along the East and West banks and Floodplain Benches, including all labor, tools, equipment, and incidental items necessary to complete the work, in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 353119 Stone Revetments and Breakwaters
- G. Toe Protection –Open Graded Base
 - 1. Measurement: Tons
 - 2. Payment
 - a. Payment shall be full compensation for furnish and install of Open Graded Base for the toe protection along the East and West banks and Floodplain Benches, including all labor, tools, equipment, and incidental items necessary to complete the work, in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 353119 Stone Revetments and Breakwaters

- H. Toe Protection - Geotextile
1. Measurement: Square Yards (SY)
 2. Payment
 - a. Payment shall be full compensation for furnish and install of Geotextile Fabric for the toe protection along the East and West banks and Floodplain Benches, including all labor, tools, equipment, and incidental items necessary to complete the work, in conformance with the Contract Documents.
 3. Related Sections
 - a. Section 353119 Stone Revetments and Breakwaters
- I. Floodplain Bench – Backfill with Existing Material
1. Measurement: Cubic Yards (CY)
 2. Payment
 - a. Payment shall be full compensation for placing existing excavated or dredged material to raise grades of the Flood plain Benches to the prosed grades and lines of the proposed improvements in conformance with the Contract Documents.
 3. Related Sections
 - a. Section 311000 Site Clearing
 - b. Section 312000 Earth Moving

4.4 Restoration and Plantings

- A. Upland Restoration – Sloped and Shot prairie and Floodplain Seed Mix
1. Measurement: Square Yards (SY)
 2. Payment
 - a. Payment shall be full compensation for furnishing, handling, and storing all seed; preparing the seed bed and sowing the seed; furnishing, hauling, handling, storing, placing, and incorporating fertilizer into the work; furnishing, hauling, placing, spreading, and anchoring of mulch material unless area is designated to receive erosion mat; repair of all damaged areas; watering; and furnishing all labor, tools, equipment, and incidental items necessary to complete the work in conformance with the Contract Documents.
 3. Related Sections
 - a. Section 329100 Topsoil
 - b. Section 329220 Native Seeding
- B. East Bank Plantings – Live Stakes
1. Measurement: Each (EA)
 2. Payment
 - a. Payment shall be full compensation for acquisition, delivery, placement and maintenance through the warranty period of live stakes in the east bank of the creek in conformance with the Contract Documents.
 3. Related Sections
 - a. Section 329300 Exterior Plantings
- C. Restoration Plantings - Shurbs
1. Measurement: Each (EA)
 2. Payment
 - a. Payment shall be full compensation for furnishing, transporting, handling, potting, storing, pruning, placing and replacing plant materials; excavation of plant holes, salvaging of topsoil, mixing and backfilling; furnishing and applying all required fertilizer, mulch, water, and herbicides; disposal of all excess and waste materials; care; warranty; and furnishing all labor, tools, equipment and incidentals necessary to complete the work in conformance with the Contract Documents.
 3. Related Sections
 - a. Section 329100 Topsoil
 - b. Section 329300 Exterior Plantings

- D. Restoration Plantings - Trees
 - 1. Measurement: Each (EA)
 - 2. Payment
 - a. Payment shall be full compensation for furnishing, transporting, handling, potting, storing, pruning, placing and replacing plant materials; excavation of plant holes, salvaging of topsoil, mixing and backfilling; furnishing and applying all required fertilizer, mulch, water, and herbicides; disposal of all excess and waste materials; care; warranty; and furnishing all labor, tools, equipment and incidentals necessary to complete the work in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 329100 Topsoil
 - b. Section 329300 Exterior Plantings
- E. Restoration Plantings – Floodplain Plug Mix
 - 1. Measurement: Each (EA)
 - 2. Payment
 - a. Payment shall be full compensation for furnishing, transporting, handling, potting, storing, pruning, placing and replacing plant materials; excavation of plant holes, salvaging of topsoil, mixing and backfilling; furnishing and applying all required fertilizer, mulch, water, and herbicides; disposal of all excess and waste materials; care; warranty; and furnishing all labor, tools, equipment and incidentals necessary to complete the work in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 329100 Topsoil
 - b. Section 329300 Exterior Plantings
- F. Staging Area Restoration
 - 1. Measurement: Square Yard (SY)
 - 2. Payment
 - a. Payment shall be full compensation for furnishing, handling, and storing all seed; preparing the seed bed and sowing the seed; furnishing, hauling, handling, storing, placing, and incorporating fertilizer into the work; furnishing, hauling, placing, spreading, and anchoring of mulch material unless area is designated to receive erosion mat; repair of all damaged areas; watering; and furnishing all labor, tools, equipment, and incidental items necessary to complete the work and provide mowing and maintenance in conformance with the Contract Documents.
 - 3. Related Sections
 - a. Section 329200 Lawns
- 4.5 Alternate 1 – Includes addition of native seed following treated areas of Invasive species removal. Alternate provides full compensation for furnishing, handling, and storing all seed; preparing the seed bed and sowing the seed; furnishing, hauling, handling, storing, placing, and incorporating fertilizer into the work; furnishing, hauling, placing, spreading, and anchoring of mulch material unless area is designated to receive erosion mat; repair of all damaged areas; watering; and furnishing all labor, tools, equipment, and incidental items necessary to complete the work maintenance as outlined in Section 329200, and as shown on the plans. Unit price is Lump Sum.**
- 4.6 Alternate 2 – Includes addition of individual boulders to the stream bed downstream of the cross vane as directed by the Engineer. Alternate provides full compensation for furnish and install of up to 6 boulders ranging in size from 2-3 ton, including all labor, tools, equipment, and incidental items necessary to complete the work. Unit Price is Lump Sum.**

END OF SECTION

SECTION 012500 - SUBSTITUTION PROCEDURES**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for substitutions.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

- A. Substitution Requests:
1. Intent:
 - a. To fully identify, prior to beginning the Work, the products Contractor intends to provide, and substitutions the Contractor requests.
 - b. To facilitate timely submittal processing by avoiding rejection of unacceptable products and unspecified products later during construction.
- B. Substitution Requests Prior to Product Submittal Review:
1. A request for substitution will be considered, subject to the following requirements:
 - a. Submit each proposed substitution using a separate copy of the substitution request form. Use substitution request form provided by the Owner.
 - b. The substitution request is submitted 14 calendar days prior to the proposed product submittal. A request submitted after the proposed product submittal is subject to rejection..
 - c. Include with the request complete data on the proposed substitution. Such data shall include:
 - 1) Product Data highlighted to show applicability to the proposed substitution and project conditions;
 - 2) Performance and test data;
 - 3) References, and samples, where applicable; and
 - 4) An itemized comparison of the proposed substitution with the product features specified in the Contract Documents, including data relating to design and artistic effect, where applicable.
 - d. Include copies of the pertinent Contract Documents, clearly marked and highlighted to show changes necessary to accommodate the proposed substitution.
 - e. If the proposed substitution is due to unavailability of a specified product, a written statement shall accompany it, written by the supplier of the specified product, confirming lack of availability.
 - f. By submitting the substitution request, Contractor affirms that: 1) the proposed substitution conforms to the required dimensions and meets or exceeds the standards of required function, appearance, and quality set by the specified product: and 2) the burden of proof rests with the Contractor.
 - g. By submitting a substitution request, Contractor agrees to absorb all costs resulting from acceptance of the proposed substitution, including both known and subsequently discovered revisions to other construction needed to accommodate the substitution, and other expected and unforeseen costs, such as delays, code approval-related expenses, and additional architectural services.
- C. Substitution Requests After Proposed Products List:
1. Use no product in the Work that is not named in the Contract Documents, or not approved as a substitute or comparable product. Products specified solely by reference standard or performance requirements do not require naming.
 2. During construction of the Work, products not previously accepted through substitution request or product submittal review, shall not be used without receipt of an approved substitution request for a listed product. A substitution request will be considered under one of the following conditions:

- a. The product listed becomes unavailable. Include with the substitution request a letter from the listed manufacturer, on the manufacturer's letterhead, verifying that the product is no longer available.
 - b. Conditions uncovered at the Site render the listed product inappropriate, or an undesirable choice for the conditions uncovered. Include with the substitution request a full description of the uncovered conditions and why the requested substitution is preferable to the listed product.
 3. Make each substitution request on the specified substitution request form. Fully execute form in accordance with the provisions of Article, Substitution Requests Prior to Product Submittal Review. Check the box indicating the Contractor's request is being submitted separate from and after proposed product submittal.
- D. A request for substitution forwarded by the Contractor means that Contractor:
1. Has investigated the proposed substitution.
 2. Has determined that the substitution is equal to or superior in quality and serviceability (performance) to the product specified in the Contract Documents.
 3. Will provide the same guarantee for the substitution that is required for the product specified in the Contract Documents.
 4. Waives all claims for additional costs that subsequently become apparent as a result of the substitution.
 5. Will coordinate the installation of the accepted substitution into the Work, and will make such changes in the Work of the various trades as may be required to provide a completed condition.
- E. A request for a substitution will not be considered if:
1. The substitution is merely indicated or implied on the Shop Drawing or Product Data submittal without the specified formal request and documented proof of conformance. Submittal approvals for items not meeting specifications are not valid. Completed construction related to such items is subject to rejection.
 2. Implementation requires a major revision of the Contract Documents in order to accommodate the substitution.
 3. The substitution request is substantially incomplete.
- F. Engineer's Review of Substitution Requests:
1. The Engineer will review properly submitted substitution requests.
 2. The Engineer will evaluate each substitution request and inform Contractor in writing whether the proposed substitution is accepted, accepted as noted, or not accepted.
 - a. Substitution requests that do not conform to requirements, including submittal timing, are subject to return without review.
 - b. A substitution will not be considered accepted by the Owner until it has been documented by Change Order.
 3. The Engineer's decision as to conformance and acceptability will be consistent with the intent of the Contract Documents.
 4. In the absence of written acceptance of a substitution request, proposed substitutions shall be understood as not accepted.
 5. The Engineer will endeavor to evaluate the substitution request in a reasonable period of time. With the request, the Contractor shall inform the Engineer of the deadline for final decision on the request. In the absence of Engineer's decision within the critical time, the Contractor shall proceed with the specified product.
- G. Product List and Substitution Request Format:
1. Substitution Requests: Provide PDF of requests.
- 1.4 QUALITY ASSURANCE**
- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.
- 1.5 PROCEDURES**
- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.
- 1.6 SUBSTITUTIONS**
- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 14 days prior to time required for preparation and review of related submittals.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Engineer will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.
 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013573 - DELEGATED DESIGN REQUIREMENTS AND PROCEDURES**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section includes procedures for portions of Work under this Contract that include delegated design requirements and procedures.

1.2 DEFINITIONS

- A. Delegated Design: A portion or component of the Work identified by the Contract Documents to be provided by the Contractor, to satisfy performance and design criteria specified in the Contract Documents for that portion or component.
- B. Registered Design Professional: Provide a Design Professional responsible for the Delegated Design, who shall certify that the work is in compliance with the specified performance requirements and design criteria. Design professional shall be legally qualified to practice in jurisdiction where Project is located and shall be experienced in providing delegated design services of the kind indicated.
- C. AHJ: Authority having jurisdiction.
- D. Technical Sections: Specification sections included in Divisions 02 through 35 of the Project Manual.

1.3 SUBMITTAL PROCEDURES

- A. Performance and Design Criteria: Where Delegated Design is specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If specific performance and design criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
 - 2. Architect's review of Delegated Design submittal shall be limited to verifying conformance with performance and design criteria only.
- B. Delegated-Design Submittal: Include Shop Drawings, Product Data, and other required submittals indicated in individual technical sections. Submit digitally signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. In addition to other submittal requirements specified in other technical sections, at minimum, include the following in delegated design submittal:
 - a. Statement of design and performance criteria identified by the Contract Documents.
 - b. Assumptions.
 - c. Details, calculations, etc. related to the performance criteria.
 - d. Instructions for fabrication, assembly, installation, and interface with other trades.
 - 2. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
- C. Submittal Procedures for Delegated Design Components:
 - 1. Comply with requirements specified for other types of submittals included in this Section, including, but not limited to, form and procedures for delivering submittals.
 - a. Submit delegated design documents for approval prior to fabrication of components included in delegated design work.
 - b. Architect's review of delegated design submittals is for the limited purpose of checking for general conformance with information given and the design intent expressed in the Contract Documents. Architect will review submittals consistent with this limited purpose.
 - 1) Architect's review does not lessen nor shift burden or responsibility from Contractor to Architect or Owner.
 - 2) If during submittal review, Architect notes any deficiencies or errors, submittal will be returned with comments. Otherwise, there will be no responsive action by Architect.
 - 2. Delegated Design Submission: Submit final delegated design documents to Engineer for review, allowing not less than 10 days for review by Engineer.

1.4 RESPONSIBILITIES

- A. General Contractor's Responsibilities:

1. Ensure drawings, calculations, specifications, and other documentation provided by registered design professional are complete and are sealed and signed by the registered design professional in accordance with requirements of AHJ. Architect and Owner shall be entitled to rely on the completeness and accuracy of the documentation provided by the registered design professional.
 2. Coordinate and assign complete responsibility for design, documentation, calculations, and submittal of delegated design components.
 3. Coordinate components requiring delegated design with adjacent or related systems whether designed by Architect or another entity. Ensure complete, operational systems that perform their intended are provided.
 4. Performance requirements and design criteria are described in each technical section requiring delegated design. Conduct thorough review of other related portions of the Contract Documents to ensure inclusion of full scope of work in delegated design preparation and submittals.
 - a. Provide products and systems complying with specific performance and design criteria indicated.
 5. Comply with quality assurance requirements specified in individual technical sections containing delegated design requirements.
 6. Comply with accessibility guidelines, codes, policies, and standards required by the AHJ, applicable to the project, and as indicated.
- B. Registered Design Professional: Responsibilities include, but are not limited to, the following:
1. Sole responsibility to ensure delegated design accommodates all building movements, including, but not limited to deflection, rotation, creep, shrinkage, live loads, wind loads, and loads, interim and otherwise, resulting from means and methods.
 2. Prepare delegated design submittals that are sealed and signed by registered design professional.

1.5 SCHEDULING

- A. Schedule delegated design activities and submittals to occur in a timely manner that will not negatively impact Project's construction schedule.
1. Allow sufficient time for Engineer's review of delegated design submittals.
- B. Owner will not be responsible to pay for delays, additional products, additional hours of work, including overtime, restocking or rework required due to failure by Contractor to coordinate delegated design work with work of other trades.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION**PART 1 - GENERAL****1.1 SUMMARY**

- A. The Work of this Section Includes: General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for removing existing trees and shrubs and for temporary erosion- and sedimentation-control measures if not specified in Section 015000 "Temporary Facilities and Controls."

1.2 DEFINITIONS

- A. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.
- B. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1.4 FIELD CONDITIONS

- A. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Moving or parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Backfill Soil: Stockpiled soil from excavation, clearing and grubbing of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
- B. Protection-Zone Fencing: Fencing fixed in position and meeting[one of] the following requirements: Previously used materials may be used when approved by Engineer.
 - 1. Chain-Link Protection-Zone Fencing: [Galvanized-steel]or fencing fabricated from minimum 2-inch opening, 0.148-inch- diameter wire chain-link fabric; with pipe posts, minimum 2-3/8-inch- OD line posts, and 2-7/8-inch- OD corner and pull posts and 0.177-inch- diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.
 - a. Height: [48 inches] [72 inches] [96 inches] <Insert dimension>.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain[or to be relocated]. Flag each tree trunk at 54 inches above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE PROTECTION

- A. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
 - 1. Install temporary root protection matting over mulch to the extent indicated.

3.4 PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people[and animals] from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
 - 1. Chain-Link Fencing: Install to comply with ASTM F567 and with manufacturer's written instructions.
 - 2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.
- B. Maintain protection zones free of weeds and trash.
- C. Maintain hydration of plants to assure plant survival.
- D. Maintain protection-zone fencing and signage in good condition as acceptable to Architect/Engineer and remove when construction operations are complete and equipment has been removed from the site.
 - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 - 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.5 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones in accordance with requirements in Section 312000 "Earth Moving" unless otherwise indicated.

3.6 CROWN PRUNING

- A. Prune branches that are affected by temporary and permanent construction. Prune branches as directed by arborist.
 - 1. Prune to remove only broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated.
 - 2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
 - 3. Pruning Standards: Prune trees in accordance with ANSI A300.
- B. Unless otherwise directed by arborist and acceptable to Architect, do not cut tree leaders.
- C. Cut branches with sharp pruning instruments; do not break or chop.
- D. Do not paint or apply sealants to wounds.
- E. Provide subsequent maintenance pruning during Contract period as recommended by arborist.
- F. Chip removed branches and dispose of off-site.

3.7 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Architect/Engineer.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours in accordance with arborist's written instructions.

3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

END OF SECTION

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected site elements.
- B. Related Requirements:
 - 1. Section 015639 "Temporary Tree and Plant Protection" for temporary protection of existing trees and plants that are affected by selective demolition.
 - 2. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade improvements.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction, including associated attachments, supports, bracing, etc., and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Storage or sale of removed items or materials on-site is not permitted.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

3.2 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."

3.3 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 2. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 3. Dispose of demolished items and materials promptly.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be[recycled,] reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site[and legally dispose of them in an EPA-approved landfill].
 - 1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn demolished materials.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
1. Footings

1.2 DEFINITIONS

- A. Carbon Dioxide Mineralization: Active carbonation treatment of concrete during mixing such that the carbon dioxide (CO₂) that is injected during mixing is mineralized (I.E. chemically converted into a mineral) within the concrete. The concrete may undergo mix optimization whereby the strength enhancement property of the mineralized CO₂ is utilized to adjust cementitious content, pending that the optimized concrete mix meets concrete performance requirements as outlined.
- B. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- C. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.
- D. Water to Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture including the following:
1. Mixture identification.
 2. Material data and mixture proportions.
 3. Minimum compressive strength at specified time frame.
 4. Durability exposure class.
 5. Maximum w/cm ratio.
 6. Mixture proportions.
 7. Calculated equilibrium unit weight.
 8. Slump limit.
 9. Air content.
 10. Nominal maximum aggregate size.
 11. Synthetic fiber content.
 12. Material data.
 13. Supporting test data or preconstruction test results.
 14. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
 15. Intended placement method.
 16. Submit alternate design mixtures when characteristics of materials, mixture proportions, Project conditions, weather, test data for materials and concrete mixtures, or other circumstances warrant adjustments.
- C. Steel Reinforcement Shop Drawings: Comply with ACI MNL-66.
1. Include placing drawings that detail fabrication, bending, and placement.
 2. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, locations of splices, lengths of lap splices, details of mechanical couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Provide shrinkage test results for mixtures with shrinkage criteria showing that mixture meets performance criteria. The mix design number shown on the concrete mix design must match with the mix design number shown on the test data.
- E. Construction, Contraction, and Control Joint Layout: Indicate dimensions and locations of joint in accordance with drawings and as indicated and as required to construct the structure in accordance with ACI 301 (ACI 301M).
1. Location of joints are subject to approval of the Architect.
 2. For exposed vertical concrete walls, indicate dimensions and locations of joints and form tie locations.

3. Indicate location of waterstops.
- F. Repair Methods, Materials and Modifications to the Work: Provide description of proposed repair work to be performed to bring under-strength or nondurable concrete into compliance.
- G. Clearly indicate all revisions made on all re-submittals.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each of the following, signed by manufacturers:
 1. Cementitious materials.
 2. Aggregates.
 3. Admixtures.
 4. Form materials, form-release agents, and form liners.
 5. Steel reinforcement and accessories.
 6. Epoxy-coated reinforcement: CRSI's "Epoxy Coating Plant Certification."
 7. Fiber reinforcement.
 8. Waterstops.
 9. Curing compounds.
 10. Floor and slab treatments.
 11. Bonding agents.
 12. Adhesives.
 13. Vapor retarders.
 14. Joint-filler strips.
 15. Repair materials.
 16. Moisture vapor reduction admixture (MVRA).
 17. Embeds and anchors.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301.
- B. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
 1. Store reinforcement to avoid contact with earth.
 2. Do not allow epoxy-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
 3. Do not allow dual-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
 4. Do not allow stainless steel reinforcement to come into contact with uncoated reinforcement.

1.6 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 (ACI 306.1M) and as follows.
 1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 3. Do not use frozen materials or materials containing ice or snow.
 4. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 5. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
 6. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
 1. Maintain concrete temperature at time of discharge to not exceed 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

1.7 WARRANTY**PART 2 - PRODUCTS****2.1 CONCRETE, GENERAL**

1. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - a. ACI 301 (ACI 301M).
 - b. ACI 117 (ACI 117M).

2.2 MATERIALS

- A. Regional Materials: Concrete shall be manufactured within 100 miles of Project site from aggregates and cementitious materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of Project site.

2.3 PERFORMANCE REQUIREMENTS

- A. Provide concrete with moisture vapor emission rate or internal relative humidity that is in accordance with finish flooring materials and adhesive manufacturers' written instructions, by the time the finishes will be applied, when tested according to the technical Specification Sections and the manufacturers' written requirements. General Contractor is responsible for choosing and implementing methods of limiting excessive moisture, and for assigning and contracting for these responsibilities to suppliers and installers, including but not limited to one or more of the following:
 1. Limit moisture during curing. Plastic moisture-retaining curing covers are preferred over other methods of curing. Avoiding use of continuous water-fog spray. If a curing compound is used, verify compatibility with finish flooring materials in accordance with curing compound and finish flooring manufacturers' written instructions, or remove curing compound using method recommended by manufacturer without damaging concrete surface. If curing compound will remain, submit certification from the manufacturer that curing compound will not interfere with bonding of floor coverings used on Project.
 2. Provide temporary covers or enclosed construction to protect concrete from weather.
 3. Schedule to allow for drying time in accordance with ACI 302.2R and considering local seasonal humidity and temperatures.
 4. Provide self-leveling fast-drying concrete topping throughout for all new concrete slabs to achieve flatness and levelness requirements. May be used in conjunction with an intermediate layer of epoxy surface-applied vapor retarder. Submit written recommendations of selected manufacturer.
 5. Other methods submitted by Contractor.
 6. If methods employed still result in moisture limit exceeding limits acceptable for finish flooring, provide one of the following, to be included within the original Contract Sum:
 - a. Provide surface-applied vapor retarder as specified in 090561.13 "Moisture Vapor Emission Control."
 - b. Provide industrial drying and dehumidification with temporary enclosure.
- B. Follow applicable provisions of ACI 302.2R-06.
- C. Do not allow total water-cement ratio to exceed indicated amount, regardless of whether water is held back for adding to the mix at the Project site. Comply with ACI 301 (ACI 301M): "Do not exceed the specified water-cementitious material ratio or slump. Do not add water to concrete delivered in equipment not acceptable for mixing. After plasticizing or high-range water-reducing admixtures are added to the concrete at the site to achieve flowable concrete, do not add water to the concrete. Measure slump and air content of air-entrained concrete after slump adjustment to verify compliance with specified requirements."
 1. If required to improve concrete workability, use water-reducing, super-plasticizing, or other admixtures in accordance with ACI 212.3R and ACI 301 (ACI 301M).

2.4 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete or As-Cast Surface Form Facing Material:
 1. Panels that will provide continuous, true, and smooth concrete surfaces.
 2. Furnish in largest practicable sizes to minimize number of joints.
 3. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete or Concealed Surface Form-Facing Material: Plywood, lumber, metal, plastic or another approved material.
 1. Provide lumber dressed on at least two edges and one side for tight fit.

- C. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter on concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.5 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Recycled content not less than 96 percent, Provide documentation indicating postconsumer and preconsumer recycled content.
- B. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.
- C. Epoxy-Coated Reinforcing Bars:
 - 1. Steel Bars: ASTM A615/A615M, Grade 60, deformed bars.
 - 2. Epoxy Coating: ASTM A775/A775M or ASTM A934/A934M, epoxy coated, with less than 2 percent damaged coating in each 12 inch bar length.
- D. Plain-Steel Welded Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.
- E. Epoxy-Coated Welded Wire Reinforcement: ASTM A884/A884M, Class A coated, Type 1, plain steel.

2.6 REINFORCEMENT ACCESSORIES

- A. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A775/A775M.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place.
 - 1. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.
 - b. For concrete-on-grade, use supports with sand plates or horizontal runners if base material will not adequately support chair legs.
 - c. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, stone, broken block, or pieces of concrete.
 - d. For epoxy-coated reinforcement, use CRSI Class 1A epoxy-coated or other dielectric-polymer-coated wire bar supports.
- C. Shop fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with ACI 315-04. In case of fabricating errors, do not re-bend or straighten reinforcement in manner that will injure or weaken material.
- D. Unacceptable Materials: Defective reinforcement shall not be permitted in work:
 - 1. Bar lengths, depths, and bends exceeding specified fabrication tolerances.
 - 2. Bends or kinks not indicated on contract drawings or final shop drawings.
 - 3. Bars with reduced cross section due to excessive rusting or other cause.

2.7 CONCRETE MATERIALS

- A. Source Limitations:
 - 1. Obtain all concrete mixtures for a single ready-mixed concrete manufacturer for entire Project.
 - 2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.

3. Obtain aggregate from single source.
 4. Obtain admixtures from single source from manufacturer.
- B. Cementitious Material:
1. Portland Cement: ASTM C150/C150M, Type I/II, .
 2. Blended Hydraulic Cement: ASTM C595/C595M, Type IS Portland blast-furnace slag, Type IP Portland-pozzolan, Type IL Portland-limestone, or Type IT ternary blended cement, excluding:
 - a. Type IS (>70) and Type IT (s>70).
 3. Performance-Based Hydraulic cement: ASTM C 1157/C 1157M: Type GU, general use.
 4. Fly Ash: ASTM C618/C618M, Class C or Class F.
 5. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
- C. Silica Fume: ASTM C 1240, amorphous silica.
- D. Normal-Weight Aggregates: ASTM C 33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
1. Alkali-Silica Reaction: Comply with one of the following:
 - a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293/C1293M.
 - b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567/C1567M.
 - c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C 1293/C 1293M and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.
 2. Maximum Coarse-Aggregate Size: 3/4inch nominal.
 3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- E. Water and Water Used to Make Ice: Complying with ASTM C1602/C1602M, including all limits listed in Table 2 and the requirements of paragraph 5.4.

2.8 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260/C260M.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 2. Retarding Admixture: ASTM C494/C494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
- C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494/C494M, Type C.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Master Builder Solutions; Rheocrete CNI.
 - b. Euclid Chemical Company (The), an RPM company.
 - c. GCP Applied Technologies, Inc.
 - d. Sika Corporation.
- D. Carbon dioxide mineralization: ASTM C494/C494M Type S. Carbon dioxide in the mixture must be post-industrial.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CarbonCure Technologies.

2.9 FIBER REINFORCEMENT

- A. Synthetic Fibrillated Micro-Fiber: Fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C1116/C1116M, Type III, 1 to 2-1/4 inches long.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Euclid Chemical Company (The), an RPM company.
 - b. FiberForce, ABC Polymer Industries, LLC.
 - c. GCP Applied Technologies, Inc.

- d. Master Builders Solutions.
- e. Propex Operating Company, LLC.
- f. Sika Corporation.

2.10 WATERSTOPS

- A. Flexible PVC Waterstops: U.S. Army Corps of Engineers CRD-C 572, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BoMetals, Inc.
 - b. Sika Corporation.
 - c. Vinylex Waterstop & Accessories.
 - 2. Profile: Flat, dumbbell with center bulb.
 - 3. Dimensions: 6 inches by 3/8 inch thick; nontapered.

2.11 BELOW-SLAB VAPOR RETARDER

- A. Sheet Vapor Retarder, Class A: Low Permeance Polyethylene Sheet, Minimum 15 Mil Thickness: ASTM E1745, Class A, maximum 0.1 perms. Include manufacturer's recommended adhesive or pressure-sensitive tape.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Barrier-Bac; Intepast Group.
 - b. ISI Building Products.
 - c. Raven Industries, Inc.
 - d. Stego Industries, LLC.
 - e. Tex-Trude.
 - f. W. R. Meadows, Inc.
- B. Do not use a blotter layer between concrete slab on grade and vapor retarder, unless using enclosed construction and keeping blotter layer continually dry.
- C. Provide non-corrosive metal termination bar for below-slab vapor retarder.

2.12 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Bon Tool Co.
 - b. Brickform; a division of Solomon Colors.
 - c. ChemMasters, Inc.
 - d. Dayton Superior.
 - e. Euclid Chemical Company (The); an RPM company.
 - f. Kaufman Products, Inc.
 - g. Lambert Corporation.
 - h. Laticrete International, Inc.
 - i. Master Builders Solutions.
 - j. Metalcrete Industries.
 - k. Nox-Crete Products Group.
 - l. Sika Corporation.
 - m. SINAK Corporation.
 - n. SpecChem, LLC.
 - o. TK Products.
 - p. Vexcon Chemicals Inc.
 - q. W.R. Meadows, Inc.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
 - 1. Color:
 - a. Ambient Temperature Below 50 deg F: Black.
 - b. Ambient Temperature between 50 deg F and 85 deg F: Any color.
 - c. Ambient Temperature Above 85 deg F: White
- D. Water: Complying with ASTM C1602/C1602M, including all limits listed in Table 2 and the requirements of paragraph 5.4.

2.13 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1752, cork or self-expanding cork.

2.14 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C109/C109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
1. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
 4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C109/C109M.

2.15 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).
1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Drying shrinkage limit is percentage in change in length after 28 days of drying when tested as per ASTM C157/C157M with 3 inches x 3 inches x 11 inches specimen moist cured 7 days prior to drying.
- C. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used.
1. Limit supplementary cementitious materials for concrete assigned to Exposure Class F3 as follows:
 - a. Fly ash or natural pozzolans: 25 percent.
 - b. Slag cement: 50 percent.
 - c. Silica fume: 10 percent.
 - d. Total fly ash or natural pozzolans and silica fume: 35 percent.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
 5. Use permeability-reducing admixture in concrete mixtures where indicated.

2.16 MOISTURE VAPOR REDUCTION ADMIXTURE (MVRA)

- A. Products:
1. Vapor Lock 20/20, SPSG Go Green, Specialty Products Group.
 2. Barrier One High Performance Moisture Vapor Reduction Admixture.
 3. Moxie Shield 1800.
- B. Materials:

1. Concrete moisture vapor reduction admixture (MVRA) for all interior slab (on ground and elevated) and structural roof deck construction shall be a non-toxic, liquid admixture that is free of all volatile organic compounds (VOC). It shall be specifically designed to have a natural chemical reaction with pre-existing elements inside the cementitious material to eliminate the route of moisture vapor emission through the slab by restricting the integral capillary system. Chemical reaction shall form a permanent barrier (capillary break) that is integral to the concrete, insoluble, and irremovable.
 - a. Waterproofing: minimum 1.0 E-8 cm/s and per ASTM D5084.
 - b. Hydraulic conductivity: maximum of 6.0 E-8 cm/s per ASTM D5084.
 - c. Toxicity: none.
 - d. Odor: none.
 - e. Flammability: none.
 - f. VOC levels: zero (0).
 - g. Solvent: water.
 - h. Freeze Temp: 32 degrees Fahrenheit (0 degrees C) (store above 36 degrees Fahrenheit (2.3 degrees C)).
 - i. Acid resistance: excellent.
 - j. Hazardous vapors: none
 - k. Installation: all cementitious materials.
 - l. Capillary break: Calcium Silicate Hydrate.
 - m. pH: 11.3.
 - n. Integral biocide to inhibit growth of mold and bacteria.

2.17 CONCRETE MIXTURES

- A. Requirements for different classes of concrete mixtures for different location or structural members as indicated on drawings.

2.18 PLANT, EQUIPMENT, MACHINES, AND TOOLS

- A. General: Plant, equipment, machines, and tools used in the work shall be subject to approval and shall be maintained in a satisfactory working condition at all times.
- B. Soft-Cut Saw: Designed and shown to be able to cut concrete shortly after final set without causing raveling or other untoward effect upon the concrete finish. Provide diamond blade with thickness no greater than 1/8 inch to soft-cut joint of size indicated.

2.19 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.20 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

2.21 MASS CONCRETE MATERIALS

- A. Use any combination of Ground Granulated Blast Furnace Slag or Class F fly ash. The maximum total substitution of Portland cement shall not exceed 50 percent, including the amount in the blended cement.
- B. Cementitious content shall be a minimum of 470 pounds per cubic yard.
- C. Maximum water to cementitious ratio shall be 0.45.
- D. Air entrainment shall be used. To improve workability and aid in air entrainment water reducing or retarding admixtures may be used. A high range water reducing admixture may be used and the slump shall be increased to six inches maximum.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
 1. Daily access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
 4. Security and protection for test samples and for testing and inspection equipment at Project site.
- B. Protection of In-Place Conditions:
 1. Do not cut or puncture vapor retarder.
 2. Repair damage and reseal vapor retarder before placing concrete.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.3 INSTALLATION OF FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M) and to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes .
- C. Construct forms tight enough to prevent loss of concrete mortar.
 1. Minimize joints.
 2. Exposed Concrete: Symmetrically align joints in forms.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces.
 1. Provide crush or wrecking plates where stripping may damage cast concrete surfaces.
 2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 3. Install keyways, reglets, recesses, and other accessories, for easy removal.
- E. Do not use rust-stained, steel, form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.
 1. Provide and secure units to support screed strips.
 2. Use strike-off templates or compacting-type screeds.
- G. At construction joints, overlap forms onto previously placed concrete not less than 12 inches
- H. Construction and Movement Joints:
 1. Construct joints true to line with faces perpendicular to surface plane of concrete.
 2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 3. Place joints perpendicular to main reinforcement.
 4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.
 - a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 6. Space vertical joints in walls as indicated on Drawings.
 - a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
- I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

- J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.4 REMOVING AND REUSING FORMS

- A. Revise removal time in first paragraph below if required. Period of 24 hours is halved to 12 hours in ACI 347. Commentary in ACI 318 (ACI 318M) recognizes 12 hours for concrete using regular portland cement but advises that this period may be insufficient for concrete using Type II and Type V portland cements or ASTM C595 blended hydraulic cements, concrete with retarding admixtures, and concrete using ice during mixing. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work.
 - 1. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces.
 - 2. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.
 - 1. Align and secure joints to avoid offsets.
 - 2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.5 INSTALLATION OF STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement.
 - 1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
 - 2. Do not tack weld crossing reinforcing bars.
 - 3. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.
- E. Provide concrete coverage in accordance with ACI 318.
- F. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- G. Splices: Lap splices as indicated on Drawings.
 - 1. Bars indicated to be continuous, and all vertical bars to be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
 - 2. Stagger splices in accordance with ACI 318.
- H. Install welded wire reinforcement in longest practicable lengths.
 - 1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice." and to minimize sagging.
 - a. For reinforcement less than W4.0 or D4.0, continuous support spacing to not exceed 12 inches (305 mm).
 - b. Lap edges and ends of adjoining sheets at least one wire spacing.
 - c. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
 - d. Lace overlaps with wire.

- I. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963/D3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

3.6 JOINTS

- A. Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints:
 1. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.
 - b. Do not continue reinforcement through sides of strip placements of floors and slabs.
 3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.7 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm.
 1. Install in longest lengths practicable.
 2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
 3. Allow clearance between waterstop and reinforcing steel of not less than 2 times the largest concrete aggregate size.
 4. Secure waterstops in correct position at 12 inches on center.
 5. Field fabricate joints in accordance with manufacturer's instructions using heat welding.
 - a. Miter corners, intersections, and directional changes in waterstops.
 - b. Align center bulbs.
 6. Clean waterstops immediately prior to placement of concrete
 7. Support and protect exposed waterstops during progress of the Work.

3.8 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
 1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Structural Engineer in writing, but not to exceed the amount indicated on the concrete delivery ticket.
 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.
 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness.
 1. If a section cannot be placed continuously, provide construction joints as indicated.
 2. Deposit concrete to avoid segregation.
 3. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 4. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.

- d. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Do not place concrete floors and slabs in a checkerboard sequence.
 2. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 3. Maintain reinforcement in position on chairs during concrete placement.
 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 5. Level concrete, cut high areas, and fill low areas.
 6. Slope surfaces uniformly to drains where required.
 7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
 8. Do not further disturb slab surfaces before starting finishing operations.
- G. Cold-Weather Placement: Comply with ACI 306.1 (ACI 306.1M) and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- H. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
- I. Placing Concrete in Forms: Concrete shall not be allowed to free fall more than 5 feet unless confined by a closed chute. Concrete placed in walls 10 inches or less in thickness may free fall maximum of 8 feet.
- J. Mass Concrete - Thermal Control:
1. Concrete Temperature Limits: maximum concrete temperature at time of placement shall not exceed 70 deg F (21 deg C) and shall not be less than 35 deg F. The maximum concrete temperature during the period of heat dissipation shall not exceed 160 deg F (71 deg C).
 2. Thermal control of each placement shall be maintained until the temperature of the interior is within 50 deg F (27.8 deg C) of the daily low air temperature.

3.9 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish:
1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats.
 2. Restraighten, cut down high spots, and fill low spots.
 3. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 (ACI 117M) tolerances for conventional concrete.
 4. Apply float finish to surfaces to receive trowel finish.
- C. Trowel Finish:
1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
 2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
 3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 4. Do not add water to concrete surface.

5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces [exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system].
7. Contractor's Option: Install self-leveling fast-drying topping slab for new concrete slabs to achieve flatness and levelness requirements and moisture control. Maximum thickness of self-leveling compound to be 1 inch.

3.10 CONCRETE PROTECTING AND CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
 1. Comply with ACI 301 (ACI 301M) and ACI 306.1 (ACI 306.1) for cold-weather protection during curing.
 2. Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M) for hot-weather protection during curing.
 3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h, calculated in accordance with ACI 305.1 (ACI 305.1M), before and during finishing operations
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Curing Formed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:
 1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
 2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
 3. If forms remain during curing period, moist cure after loosening forms.
 4. If removing forms before end of curing period, continue curing for the remainder of the curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.
- D. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
 1. Begin curing immediately after finishing concrete.
 2. Interior Concrete Floors:
 - a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
 - b. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - 3) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

- a) Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- b) Cure for not less than seven days.
- 4) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.

F. Mass Concrete

1. Protect concrete after placement such that the maximum temperature does not exceed 160 deg F (70 deg C). Protection shall be continued until the concrete temperature is within 20 F deg (10 C deg) of the ambient air temperature.
2. Cool the concrete gradually so the difference in temperature between mid-depth and finish surface is no greater than 35 F deg (20 C deg) and so that the drop in surface temperature during and at the conclusion of the curing period does not exceed 20 F deg (10 C deg) in any 24 hour period.
3. Curing procedures and maintenance of curing temperature: Continuous.
 - a. Monitor and record concrete temperatures in mass concrete hourly until the concrete temperature is within 20 F deg (10 C deg) of the ambient air temperature.
 - b. Cure mass concrete for a minimum curing period of 14 days
 - c. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - d. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - e. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
4. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.11 TOLERANCES

- A. Conform to ACI 117.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
1. Defer joint filling until concrete has aged at least six month(s).
 2. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.
- D. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch.
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.

- e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces:
1. Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface.
 - a. Correct low and high areas to meet the specified flatness and levelness criteria by material and methods appropriate to the conditions..
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 2. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 3. After concrete has cured at least 14 days, correct high areas by grinding.
 4. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
 - a. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
 6. Correct other low areas scheduled to remain exposed with a repair topping.
 - a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
 - b. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
 - a. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4 inch clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
 8. Repair random cracks and single holes or less in diameter with patching mortar.
 - a. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.
- 3.14 MOISTURE VAPOR REDUCTION ADMIXTURE (MVRA) INSTALLATION**
- A. Add water vapor reducing admixture to concrete in accordance with supplier's written instructions.
 - B. Obtain approval of the MVRA supplier for the mix design. MVRA supplier will provide specific testing and warranty information in accordance with application requirements.
 - C. Notify MVRA supplier a minimum of 10 days prior to the placement of the first batch of treated concrete.
 - D. Dispense MVRA in compliance with mix design and supplier's recommendations.

- E. The use of other admixtures with MVRA in the same concrete batch is acceptable when included in the approved mix design.
- F. The inclusion of a shrink reducing admixture (SRA) is not acceptable.

3.15 CURING OF SLABS WITH MOISTURE VAPOR REDUCTION ADMIXTURE (MVRA)

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 (ACI 306.1M) for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.
- B. Cure concrete slabs to receive moisture sensitive coatings according to ACI 302.2R-06, by one or a combination of the following methods:
 - 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure concrete containing MVRA for not less than 24 hours, longer if ambient conditions are hot, windy, and sunny or subject to periods of very low humidity. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 3. Removal: After curing period has elapsed, mechanically remove curing compound prior to the installation of final flooring material in accordance with ASTM F710.
 - a. Do not chemically remove.
 - b. Air Content: ASTM C231/C231M, pressure method, for normal-weight concrete; One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

3.16 REPAIRS FOR CONCRETE WITH MOISTURE VAPOR REDUCING ADMIXTURES (MVRA)

- A. Make repairs to slab in accordance with other Division 03 Sections and as recommended by concrete moisture vapor reduction admixture manufacturer.

3.17 PROTECTION

- A. Protect concrete surfaces as follows:
 - 1. Protect from petroleum stains.
 - 2. Diaper hydraulic equipment used over concrete surfaces.
 - 3. Prohibit vehicles from interior concrete slabs.
 - 4. Prohibit use of pipe-cutting machinery over concrete surfaces.
 - 5. Prohibit placement of steel items on concrete surfaces.
 - 6. Prohibit use of acids or acidic detergents over concrete surfaces.

END OF SECTION

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Removing existing vegetation.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above- and below-grade site improvements.
 - 6. Disconnecting, capping or sealing, and [removing site utilities] [abandoning site utilities in place].
 - 7. Temporary erosion and sedimentation control.

1.2 DEFINITIONS

- A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 MATERIAL OWNERSHIP

- A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.
- B. Do not commence site clearing operations until temporary erosion- and sedimentation-control[and plant-protection] measures are in place.
- C. Tree- and Plant-Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.
- B. Silt Fence
 - 1. Provide materials in compliance with Chapter 6.3, Silt Fence, of the ODNR RLD Manual.
- C. Filter Sock
 - 1. Provide materials in compliance with Chapter 6.6, Filter Sock, of the ODNR RLD Manual.
- D. Stone Tracking Pad
 - 1. Provide ODOT #2 (1.5-2.5) inch or recycled concrete equivalent in areas as shown on the drawings. The stone layer shall be at least 6 inches thick.
- E. Erosion Mat

1. Provide materials in compliance with ODOT Item 712.11 Temporary Erosion Control Mats Materials.
2. Slope Erosion Mat: Provide erosion control mat meeting the requirements of the Erosion Control Technology Council (www.ectc.org) for a 2:1 slope gradient application with a functional longevity of 3 to 12 months and an organic net type, including the following products or equivalent:
 - a. "Curlex I FibreNet" manufactured by American Excelsior Company, www.americanexcelsior.com.
 - b. "AEC Premier Straw FibreNet DN" manufactured by American Excelsior Company, www.americanexcelsior.com.
 - c. "S150 BN" manufactured by North American Green, www.nagreen.com.
3. Fasteners for erosion control mat shall be a natural-based plastic product that is 100% biodegradable from microbial activity in accordance to ASTM D5338 and ASTM D5271, formed in a T-shape with barbed head and shoulders, 6 inches long, and installed per manufacturer's instructions. Wood and metal stakes are not permitted.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- C. Protect existing site improvements to remain from damage during construction.
 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff to Spencer Creek, adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones or Spencer Creek.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 2. Grind down stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
 3. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

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City of Rock River, Ohio
Spencer Creek Rehabilitation
November 20, 2025 - ISSUED FOR BID

END OF SECTION

SECTION 312000 - EARTH MOVING**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes:
 - 1. Excavating and filling for rough grading the Site.
 - 2. Subsurface drainage backfill for walls and trenches.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping[and stockpiling] topsoil, and removal of above- and below-grade improvements and utilities.

1.2 DEFINITIONS

- A. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- B. Fill: Soil materials used to raise existing grades.
- C. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.
- D. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

1.3 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 311000 "Site Clearing" are in place.
- C. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.

PART 2 - PRODUCTS**2.1 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487 Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches Insert dimension in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.

PART 3 - EXECUTION**3.1 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

3.2 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.3 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Removing concrete formwork.
 - 2. Removing trash and debris.
 - 3. Removing temporary shoring, bracing, and sheeting.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.4 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.5 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.6 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

3.7 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

3.8 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION

SECTION 323223 - SEGMENTAL RETAINING WALLS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes depth segmental retaining walls soil reinforcement.
- B. Related Requirements:
 - 1. Section 013573 "Delegated Design Requirements and Procedures" for definitions, submittal procedures, responsibilities, and scheduling requirements associated with delegated design assignment indicated in this Section.

1.2 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle concrete units and accessories to prevent deterioration or damage due to contaminants, breaking, chipping, or other causes.
- B. Store geosynthetics in manufacturer's original packaging with labels intact. Store and handle geosynthetics to prevent deterioration or damage due to sunlight, chemicals, flames, temperatures above 160 deg F or below 32 deg F, and other conditions that might damage them. Verify identification of geosynthetics before using and examine them for defects as material is placed.

PART 2 - PRODUCTS**2.1 PERFORMANCE REQUIREMENTS**

- A. Basis of Design: Design of segmental retaining walls is based on products indicated. If comparable products of other manufacturers are proposed, provide engineering design for proposed products, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Delegated Design: Engage a registered design professional, as defined in Section 013573 "Delegated Design Requirements and Procedures" to design segmental retaining walls, using performance requirements and design criteria indicated.
 - 1. Material properties indicated in this Section shall be considered as minimum properties.
- C. Compliance Review: Qualified professional engineer responsible for segmental retaining wall design shall review and approve submittals and source and field quality-control reports for compliance of materials and construction with design.
- D. Structural Performance: Engineering design shall be based on the following loads and be according to NCMA's "Design Manual for Segmental Retaining Walls."
 - 1. Gravity loads due to soil pressures resulting from grades and sloped backfill indicated.
 - 2. Superimposed loads (surcharge) indicated in Geotechnical report.

2.2 SEGMENTAL RETAINING WALL UNITS

- A. Concrete Units: ASTM C 1372, Normal Weight, except that maximum water absorption shall not exceed 7 percent by weight and units shall not differ in height more than plus or minus 1/16 inch from specified dimension.
 - 1. Manufacturers: Subject to compliance with requirements, [provide products by] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to,] licensees of one of the following:
- B. Color: As selected by Architect from manufacturer's full range.
- C. Shape and Texture: Provide units matching basic shape, dimensions, and face texture indicated by referencing manufacturer's pattern designation.
- D. Cap Units: Provide cap units of same shape as other units with smooth, as-cast top surfaces without holes or lugs.
- E. Special Units: Provide corner units, end units, and other shapes as needed to produce segmental retaining walls of dimensions and profiles indicated and to provide texture on exposed surfaces matching face.

2.3 INSTALLATION MATERIALS

- A. Cap Adhesive: Product supplied or recommended by segmental retaining wall unit manufacturer for adhering cap units to units below.
- B. Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent.
- C. Subdrainage Pipe and Filter Fabric: Comply with requirements in Section 334600 "Subdrainage."

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine areas and conditions, with Installer present, for compliance with requirements for excavation tolerances, condition of subgrades, and other conditions affecting performance of segmental retaining walls.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 RETAINING WALL INSTALLATION

- A. General: Place units according to NCMA's "Segmental Retaining Wall Installation Guide" and segmental retaining wall unit manufacturer's written instructions.
- B. First Course: Place first course of segmental retaining wall units for full length of wall. Place units in firm contact with each other, properly aligned and level.
 - 1. Tamp units into leveling base as necessary to bring tops of units into a level plane.
- C. Subsequent Courses: Remove excess fill and debris from tops of units in course below. Place units in firm contact, properly aligned, and directly on course below.
 - 1. For units with lugs designed to fit into holes in adjacent units, lay units so lugs are accurately aligned with holes, and bedding surfaces are firmly seated on beds of units below.
 - 2. For units with lips at front of units, slide units as far forward as possible for firm contact with lips of units below.
 - 3. For units with lips at bottom rear of units, slide units as far forward as possible for firm contact of lips with units below.
- D. Cap Units: Place cap units and secure with cap adhesive.

3.3 FILL PLACEMENT

- A. General: Comply with requirements in Section 312000 "Earth Moving" NCMA's "Segmental Retaining Wall Installation Guide," and segmental retaining wall unit manufacturer's written instructions.
- B. Fill voids between and within units with drainage fill. Place fill as each course of units is laid.
- C. Place, spread, and compact drainage fill and soil fill in uniform lifts for full width and length of embankment as wall is laid. Place and compact fills without disturbing alignment of units. Where both sides of wall are indicated to be filled, place fills on both sides at same time. Begin at wall and place and spread fills toward embankment.
 - 1. Use only hand-operated compaction equipment within 48 inches of wall, or one-half of height above bottom of wall, whichever is greater.
 - 2. Compact reinforced-soil fill to not less than 95 percent maximum dry unit weight according to ASTM D 698.
 - a. In areas where only hand-operated compaction equipment is allowed, compact fills to not less than 90 percent maximum dry unit weight according to ASTM D 698.
 - 3. Compact nonreinforced-soil fill to comply with Section 312000 "Earth Moving."
- D. Place drainage geotextile against back of wall and place layer of drainage fill at least 6 inches wide behind drainage geotextile to within 12 inches of finished grade. Place another layer of drainage geotextile between drainage fill and soil fill.
- E. Place a layer of drainage fill at least 6 inches wide behind wall to within 12 inches of finished grade. Place a layer of drainage geotextile between drainage fill and soil fill.
- F. Wrap subdrainage pipe with filter fabric and place in drainage fill as indicated[, sloped not less than 0.5 percent to drain].
- G. Place impervious fill over top edge of drainage fill layer.

- H. Slope grade at top of wall away from wall unless otherwise indicated. Slope grade at base of wall away from wall. Provide uniform slopes that will prevent ponding.

3.4 ADJUSTING

- A. Remove and replace segmental retaining wall construction of the following descriptions:
 - 1. Broken, chipped, stained, or otherwise damaged units. Units may be repaired if Architect approves methods and results.
 - 2. Segmental retaining walls that do not match approved Samples.
 - 3. Segmental retaining walls that do not comply with other requirements indicated.
- B. Replace units so segmental retaining wall matches approved Samples and mockups, complies with other requirements, and shows no evidence of replacement.

END OF SECTION

SECTION 329100 - TOPSOIL**PART 1 - GENERAL****1.1 SUMMARY**

- A. This section specifies all soil materials designated as "Topsoil" on the drawings or in the specifications. Supply topsoil for landscape work (seeding and planting) from on-site sources, off-site sources or both.
- B. Related Requirements:
 1. Section 311000 "Site Clearing" for on-site topsoil stripping and stockpiling.
 2. Section 329200 "Lawns" for placing topsoil to meet seed bed soil requirements.
 3. Section 329220 "Native Seeding" for placing topsoil to meet seed bed soil requirements.
 4. Section 329300 "Exterior Plantings" for placing soil mixtures that include topsoil.

1.2 REFERENCES

- A. ASTM International, as referenced herein as ASTM.
- B. US Department of Agriculture (USDA) Handbook No. 60 – Diagnosis and Improvement of Saline and Alkali Soils.

1.3 INFORMATIONAL SUBMITTALS

- A. Field Quality Control:
 1. Obtain samples, test materials and submit field test reports as described under Articles 2.1 and 3.1 below.

1.4 QUALITY ASSURANCE

- A. Qualifications:
 1. Soil-Testing Laboratory Qualifications: The contractor shall engage an independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Topsoil for Lawn Seeding and Planting Pit Backfill:
 1. Topsoil for landscape work shall be a fertile, friable, sandy loam, loam, or silt loam, surface soil without admixture of subsoil screened to be free of stones, stumps, root, trash, debris, and other materials deleterious to plant growth.
 2. Particle Size Distribution of Topsoil:

Sieve Designation	Percent Passing
1 inch screen	100
1/4 inch screen	97-100
No. 10 U.S.S. mesh sieve	95-100
No. 140 U.S.S.	15-35
 3. The pH range shall be 6.5 to 8.4. Topsoil that does not meet this pH range shall not be approved by the Project Engineer.
 4. Organic content shall not be less than 4 % and not greater than 20%.
 5. Clay content determined by Bouyoucous Hydrometer Test: between 5 percent and 15 percent.
 6. Base percentages on dry weight of the sample.
- B. Topsoil for Native Seeding, Plugging and Live Staking:
 1. Topsoil for landscape work shall be a fertile sandy loam, loam, silt loam, or silty clay loam surface soil without admixture of subsoil screened to be free of stones, stumps, root, trash, debris, and other materials deleterious to plant growth.
 2. The pH range shall be 6.0 to 8.4.
 3. Organic content shall not be less than 2% and not greater than 20%
 4. Base percentages on dry weight of the sample.

2.2 SOURCE QUALITY CONTROL:

- A. Laboratory Test Reports:
 1. Conduct topsoil testing for each soil test unit as follows:

- a. Existing on-site or off-site stockpile: 1 sample per 1,000 cubic yards of stockpiled soil.
2. Submit all test reports for approval. Topsoil test report must not be more than 4 months old. Topsoil units that do not meet the soil requirements specified under this section will not be permitted for use as Topsoil without appropriate amendment to bring the soil into compliance.
3. Chemical Properties: For each unamended soil type, test topsoil for organic materials, pH, soluble salts, phosphate, potash content, calcium, magnesium, zinc, iron, and manganese.
4. Physical Properties: Determine percent sand, silt and clay and textural classification (USDA) by hydrometer method. Identify all foreign materials such as rock, roots, and vegetation.
5. Recommendations: Based on the test results, the independent testing laboratory shall state recommendations for soil treatments and soil amendments to be incorporated prior to landscape installation. Test report shall provide recommendations specific to the type of landscape plants used on the Project site, including lawns, native vegetation, trees, shrubs, and perennials. List recommendations in weight per 1000 square feet. Recommendations shall include; nitrogen, phosphorus, and potash nutrients and all soil amendments required for the long-term growth of the specified plants and turf.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Sampling: Samples shall not be taken during winter months. Each soil test unit shall be a composite of five to seven subsamples taken the full depth of proposed source for each acre of surface area. For on-site stockpiles, discard upper 6 inches of soil before sampling. For large stockpiles, partial excavation will be required for collection of representative samples. Include a site plan verifying the locations of all topsoil sampling.
- B. Testing methods and written recommendations when not references elsewhere, shall comply with USDA's Handbook No. 60. Nutrient data to be given in parts per million (ppm) dry soil.
- C. Topsoil shall be as defined in ASTM D5268.
- D. Soil pH shall be tested in accordance with ASTM D4972.

END OF SECTION

SECTION 329200 - LAWNS**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes:
 - 1. Seeding
 - 2. Hydroseeding
 - 3. Mulching
 - 4. Turf renovation
 - 5. Maintenance
 - 6. Warranty
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for stripping and using on-site topsoil, sedimentation and erosion control measures.
 - 2. Section 312000 "Earth Moving" for mass grading of the site.
 - 3. Section 329100 "Topsoil" for lawns and plant mixture amendment.
 - 4. Section 329220 "Native Seeding" for native seeding.
 - 5. Section 329280 "Vegetation Control" for control of weeds before plantings.
 - 6. Section 329300 "Exterior Plantings" for trees, shrubs, ground covers, and other plants.

1.2 REFERENCES AND REGULATORY REQUIREMENTS

- A. United States Department of Agriculture (USDA), Federal Seed Act - labeling and purity standards and miscellaneous requirements.
- B. State Seed Laws - where applicable.
- C. Association of Official Seed Analysts (AOSA): "Rules for Testing Seed".
- D. Turfgrass Producers International (TPI): Guidelines for Turfgrass Sod.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Hydromulching: Mechanical application of a slurry of water, wood, or paper fiber mulch, and possibly a tackifier and dye, for the purpose of preventing soil erosion and sown seed protection.
- C. Hydroseeding: Mechanical application of a slurry of water, turf seed, and fertilizer or other soil conditioners to create a new turf bed. Often, a one-step application of water, seed, soil conditioners, and wood or paper fiber mulch, tackifier, etc. is erroneously termed "hydroseeding", but not for the purpose of this Section.
- D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to grasses, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- F. Pure Live Seed (PLS): $(\text{percent germination} \times \text{percent purity}) / 100 = \text{Percent PLS}$
- G. Topsoil: Existing, on-site soil or Imported soil that may have been modified with soil amendments and fertilizers to produce a soil mixture best for lawn growth. See Section 329100 "Topsoil" and drawing designations for topsoil.
- H. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before topsoil is placed.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at project site.

1.5 ACTION SUBMITTALS

- A. Product Data:
 - 1. Fertilizers - from manufacturer.
 - 2. Herbicides: Product label, manufacturer's product data sheet, application instructions and application equipment.
- B. Source Quality Control:

1. **Test Report:**
 - a. **Topsoil:** Test reports including soil amendments and fertilization rates for each seed mix. Refer to Section 329100 Topsoil.
 2. **Certifications/Licenses:**
 - a. Certification of Grass Seed for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity (PLS), germination, weed seed, year of production, and date of packaging. Include identification of source, name and telephone number of supplier.
- C. **Field Quality Control:** Coordinate with other landscape specifications for consistency.
1. **Project Work Schedule:** Within 4 weeks following the issuance of the Notice to Proceed, submit a project work schedule to the Project Engineer indicating dates for delivery, installation, and Substantial Completion for all landscape work. The Schedule shall be comprehensive and address procurement, delivery, and installations of planting and lawn areas of the site.
 2. **Maintenance Schedule:** Within 4 weeks following the issuance of the Notice to Proceed, submit a detailed typewritten approach and schedule for the warranty maintenance of all landscape activities. Coordinate landscape maintenance with other applicable Sections (Native Seeding, Vegetation Control, and Exterior Plantings) and combine all maintenance activities into one plan of action. The schedule shall be comprehensive .
 3. **Irrigation Plan:** Prior to the issuance of Substantial Completion, submit a detailed typewritten approach and schedule that outlines watering requirements for maintaining the landscape as described herein. The Irrigation Plan shall be submitted in conjunction with the Maintenance Schedule. Describe means, methods and frequencies for hand watering. Supply all water and equipment at the Contractor's expense from a source approved by the Project Engineer. Reliance on natural precipitation will only be allowed with provision of recorded data from a rain gauge located within a 2-mile radius of the project site. The schedule shall be comprehensive.
 4. **Maintenance Report Forms:** Using the approved Maintenance Schedule and Irrigation Plan as the framework for all maintenance activities (plant maintenance, seed bed maintenance and irrigation operations) the Contractor shall provide detailed maintenance report forms for each site visit. The reports shall be completed by the on-site maintenance superintendent performing the work prior to leaving the site and shall be submitted monthly as back-up to each invoice. Office prepared reports will not be permitted . Each report shall include the following:
 - a. Date of activity.
 - b. Length of time on site (start time and finish time).
 - c. Name and signature of the maintenance superintendent.
 - d. Number of personnel performing the work.
 - e. Site climatic conditions (rain, wind, temperature, etc.)
 - f. Detailed description of maintenance activities performed by area.

1.6 INFORMATIONAL SUBMITTALS

- A. **Qualification Data:**
1. Include list of at least three similar projects completed in the last 5 years by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
 2. Provide resumes of field technician (foreman) responsible for managing the purchase and installation of all materials. Separate resumes shall be provided for the seeding, planting, irrigation, and maintenance technicians.
 3. License certificates for pesticide applicator that includes "Turfgrass" category.

1.7 QUALITY ASSURANCE

- A. **Qualifications:**
1. The Contractor shall be a company specializing in seeding, sodding , and exterior landscape, installations and maintenance, having a minimum 5 years' experience in projects of the scope and scale being specified.
 2. **Installer's field technician:** The installer shall provide a full-time supervisor on site when work is in progress.
 3. **Pesticide applicator:** State licensed, commercial.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. **Seed and Other Packaged Materials:** Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable. During shipment and storage on site, protect materials from breakage, moisture, heat or other damage.

- B. **Straw Mulch:** Straw mulch shall be stored off the ground under a cover that provides protection from moisture and humidity.
- C. **Bulk Materials:**
 - 1. Do not dump or store bulk materials near structures, utilities, walkways, and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.

1.9 SCHEDULING

- A. **Work Schedule:**
 - 1. Upon authorization to proceed with the work, submit a project work schedule indicating the dates of each of the following items:
 - a. Submittal schedule.
 - b. Delivery of materials to the site.
 - c. Layout of seed bed locations on the site.
 - d. Installation including; topsoil placement, fine grading , seeding , mulching and slope stabilization.
 - e. Substantial Completion of the work.
 - 2. Update schedule monthly to reflect progress of the work.
- B. **Seasonal Limitations:**
 - 1. Seed mixes shall be installed during planting seasons normally recognized in the job locality.
 - 2. **Cool Season Grasses:** Install during the spring and fall only when soil temperatures are between 50 and 65 degrees Fahrenheit and daytime air temperatures are 60 to 75 degrees Fahrenheit.
 - a. Approximate spring installation: Between April 1 and May 15.
 - b. Approximate fall installation: Between August 15 and September 30 but no later than 60 days before the first average annual frost date.
 - c. Dormant seeding: Not permitted for cool season grasses.
 - 3. If special circumstances warrant installation outside the normal installation season, submit a written request to the Project Engineer describing conditions and stating the proposed variance. Seeding outside the specified seasons may extend warranty obligations and will be dependent upon the extent of the variance.
 - 4. **Weather limitations:** Proceed with seeding only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
 - 5. **Coordination with Plantings:** Plant trees, shrubs, and other plants after finish grades but prior to lawn installation unless otherwise indicated. When planting trees, shrubs, and other plants after lawn installation, protect completed areas, and promptly repair damage caused by planting operations.

1.10 WARRANTY, MAINTENANCE AND ACCEPTANCE

- A. **Substantial Completion:**
 - 1. The Substantial Completion inspection shall occur for the entire project and only one Notice of Substantial Completion will be issued. Phased approvals will not be permitted. Following the inspection, the Project Engineer will issue a punch list identifying all work requiring completion or correction.
 - 2. The Contractor shall complete all punch list items within 2 weeks of its issuance. All repairs shall occur at no additional cost to the Owner.
 - 3. Substantial Completion will be provided for all lawn areas complying with the following:
 - a. Project Engineer approval of all specified submittals.
 - b. The work shall be 100 percent complete (including all site preparation , earthwork , topsoil , seeding , mulching , planting and clean-up), and ready for inspection.
 - 4. After receiving a Notice of Substantial Completion, warrant and maintain all lawn areas in a vigorous, well-kept condition until Final Acceptance.
- B. **Final Acceptance:**

1. Approximately two weeks prior to the expiration of the warranty and maintenance period, the Project Engineer will conduct an inspection of all lawn areas, plantings and review all previously submitted maintenance report forms to verify all completed maintenance activities. There shall be thorough documentation previously submitted by the contractor and field observations made by the Owner or Landscape Architect that the specified maintenance has occurred. Following the inspection, the Project Engineer will issue a punch list identifying all work requiring completion, replacement, or correction.
 2. Complete all punch list items within 2 weeks of its issuance. All repairs shall occur at no additional cost to the Owner.
 3. Final Acceptance will be based upon Owner approval and the work having:
 - a. Uniform finished grades conforming to the drawings and free of erosion.
 - b. All maintenance items completed and documented by Contractor through maintenance report forms.
 - c. Satisfactory Seeded Lawn: At end of warranty and maintenance period, a healthy, uniform well-rooted, even-colored, close stand of grass has been established, free of weeds, disease and insect problems, and surface irregularities, with 100 percent coverage of the specified species.
 4. Areas which do not meet the contract requirements shall be regraded as needed and seeded. Use specified materials and procedures to reestablish lawn that does not comply with requirements and continue maintenance at no cost to the Owner until lawn is satisfactory.
 5. Final acceptance and the end of the warranty period for the lawns will occur only after all punch list items have been satisfactorily completed and the site is left in the condition specified under Clean and Protection.
- C. Warranty and Maintenance Period:
1. The end of the warranty and maintenance period shall be:
 - a. 60 days from date of completion of Substantial Completion punch list but no less than 3 maintenance mowing.
 2. When the initial warranty and maintenance period has not elapsed before end of growing season on October 31, or if lawns are not fully established, continue maintenance during next growing season until all maintenance and warranty obligations have been met.
 3. The Contractor will not be held responsible for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents beyond landscape installer's control which result from floods, hail storms, winds over 100 miles per hour, fires or vandalism, unless Contractor has not completed specified installation in a manner that could have protected the landscaping from these phenomena.
 4. If, in the opinion of the Project Engineer, it is advisable to extend the warranty and maintenance period for an additional growing season, the contractor will be notified of such requirement by the Owner. Improper execution of the installation and/or failure to perform and document the specified maintenance in accordance with contract requirement shall be the basis for extending the period of establishment for a second growing season. All specified maintenance and warranty requirements will be required during this extended period and all costs shall be the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Other varieties that those specified may be submitted for approval to Project Engineer, but they must be newer, more improved cultivars than what is listed.
- C. Dormant seeding shall only be permitted if approved by Project Engineer in writing. Apply seed at a rate that is 25 percent higher than the rates specified below.
- D. Seed Species:
 1. Quality: Seed of grass species as listed below for solar exposure, with not less than 90 percent germination, not less than 98 percent pure seed, and not more than 0.3 percent weed seed:
 2. Full Sun: Kentucky bluegrass (*Poa pratensis*), a minimum of three improved turf type varieties. Install at a rate of 4 pounds Pure Live Seed (PLS) per 1000 square feet of bed.
 3. Sun and Partial Shade Blend: Proportioned by weight as follows:

- a. 60 percent Kentucky bluegrass (*Poa pratensis*), a minimum of two improved turf type varieties.
- b. 30 percent fine fescue (*Festuca*), a minimum two varieties; chewing and creeping red.
- c. 10 percent perennial ryegrass (*Lolium perenne*).
- d. Install at a rate of 4 pounds Pure Live Seed (PLS) per 1000 square feet of bed.

2.2 STRAW MULCH

- A. Straw Mulch: Provide stalks from oats, wheat, rye, barley or rice that are free of weeds, air-dry, clean, mildew- and seed-free, threshed straw of wheat, rye, oats, or barley.
 1. Straw shall be in an air-dry condition and suitable for placing with commercial mulch blowing equipment.
- B. Tackifier:
 1. Hydraulically applied tackifier shall be an organic based or anionic polymeric emulsion blend designed for use over long-fibered mulch (straw). Tackifier shall:
 - a. Be powder or liquid based
 - b. Achieve a drying time between 12 and 18 hours
 - c. Minimum 4-month longevity after application
 2. Asphalt Emulsion tackifier is not permitted.

2.3 HYDRAULIC MULCH

- A. Hydraulic Mulch: Hydroseeding and hydraulic mulch may be used at the discretion of the Contractor. Provide biodegradable, cellulose fiber mulch made from 100 percent post-consumer recycled paper, or a combination of 70 percent recycled wood fiber and 30 percent post-consumer recycled paper cellulose fiber. Mulch should be processed to contain no growth or germination-inhibiting factors, nontoxic and dyed an appropriate color to facilitate visual metering of the application of materials. On an air-dry weight basis, provide hydroseeding mulch containing not more than 12 percent moisture, plus or minus three percent at the time of manufacture, with a pH range from 3.5 to 5.0 for wood/cellulose fiber blends and from 5.0 to 9.0 for 100 percent cellulose fiber mulch. Provide hydraulic mulch manufactured so that:
 1. After addition and agitation in slurry tanks with the fibers, tackifier and water, the material will become uniformly suspended to form a homogeneous slurry. Mixing the lawn seed, fertilizers and soil amendments is prohibited.
 2. When hydraulically sprayed on the ground, the material will form a blotter-like cover.
 3. The cover will allow the absorption of moisture and allow rainfall or applied water to percolate to the underlying soil.
- B. Hydraulic Mulch Tackifier
 1. Binding agent shall clear and non-staining and result in a stabilized fiber matrix consisting of wood and/or paper fibers and a stabilizing emulsion that includes a hydro-colloidal tackifier and polycarbonate flocculant specific to hydraulic mulch applications.
 2. Use products as recommended by fiber-mulch manufacturer for slurry application.
 3. Asphalt Emulsion tackifier is not permitted.

2.4 EQUIPMENT

- A. Hydroseed: A truck-mounted, hydraulically driven variable speed agitation seeder that effectively shoots an aqueous mixture of seed, fertilizer, and mulch over broad areas through a discharge boom and hydraulic hose. Minimum tank capacity shall be 1,000 gallons.
- B. Hydraulic mulcher: See Hydroseeder.
- C. Drop Spreader with Cultipacker, as manufactured by Brillion or John Deere or equivalent.
- D. Straw Mulcher: A power mulcher that thrashes and separates, then evenly distributes the straw at a capacity between 2 and 20 tons per hour, with a discharge distance between 35 and 100 feet in still air.
- E. Crimping Device: A mulch disc or other mechanical anchoring/crimping device for use in anchoring straw mulch into place, such as a Reinco Model MD-96 or equivalent, having flat discs with notched edges spaced 8" apart to impress mulch 1-3" down into soil.

2.5 WATER

- A. Water shall be free of wastewater effluent or other hazardous chemicals.

2.6 TOPSOIL

- A. Refer to Section 329100 "Topsoil".

2.7 SOIL AMENDMENTS

- A. Compost shall be a heavily decomposed mature/stabilized, humus-like material derived from the aerobic decomposition of yard clippings or other compostable materials. Manure is not suitable for use. The compost shall have a dark brown or black color, be capable of supporting plant growth without ongoing addition of fertilizers or other soil amendments and shall not have an objectionable odor. The compost shall be free of plastic, glass, metal and other physical contaminants, as well as viable weed seeds and other plant parts capable of reproducing (except airborne weed species). Composting facility shall be tested in accordance with the United States Composting Council, Seal of Testing Assurance (STA) following procedures as outlined in the Test Methods for the Examination of Composting and Compost protocols (TMECC).
1. pH: 5.5 to 8.
 2. Moisture content: 35 to 55 percent by weight. No visible free water or dust is produced when handling it.
 3. Sieve analysis: 100 percent passing 3/4 inch screen.
 4. Soluble salt content: Less than 5 percent.
 5. Organic matter content: Minimum 60 percent.
- B. Sand shall be clean, coarse, ungraded, meeting the requirements of ASTM C33 for fine aggregates.
1. pH Adjusters:
 - a. Lime shall be finely ground agricultural grade dolomitic limestone containing not less than 85 percent calcium and magnesium carbonates conforming to ASTM C602, Class T or O.
 - b. Elemental sulfur shall be granular, biodegradable, horticultural grade material containing at least 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.

2.8 FERTILIZER

- A. Fertilizer shall be a complete fertilizer of neutral character, consisting of fast and slow-release nitrogen and shall be applied at the rates and formulations that release nutrients when new plants can effectively draw them from the soil.
1. The percentages of slow release and fast release nitrogen shall be adjusted based on the time of year fertilizers are being applied.
 2. For fall seeding, the percentage of slow-release nitrogen shall be higher than spring seeding since a high percentage of fast-release nitrogen will be mostly lost by runoff or infiltration before plant uptake.
- B. Composition: The percentages by weight shall be determined per recommendations of the soil testing reports for lawns.

2.9 PESTICIDES AND HERBICIDES

- A. General: Pesticides and herbicides shall be registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides and herbicides unless authorized in writing by authorities having jurisdiction.
1. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within seeded areas at the soil level.
 2. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.
 3. Broadleaf Herbicide (Selective and Nonselective): A post-emergent herbicide effective for controlling annual and perennial broadleaf weeds within turf grasses.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. General:
1. The Contractor shall establish a quantifiable system to be employed in the field for measuring areas, weighing products and calibrating equipment on a daily basis to ensure all products are installed at the specified rates of application.

2. Prior to beginning work, examine and verify the acceptability of the project site and notify the Project Engineer of unsatisfactory conditions or obstructions that do not appear on drawings. Do not proceed with the work until unsatisfactory conditions have been corrected or resolved.
 3. Identify areas of subsoil compaction prior to placement of topsoil.
 4. Verify that no foreign or deleterious material has been deposited in soil within a planting area.
 5. Where lawn installation occurs in close proximity to other site improvements, provide adequate protection to all features prior to commencing work. Promptly repair any items damaged during installation operations to their original condition.
 6. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 7. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 8. Uniformly moisten excessively dry soil that is not workable, and which is too dusty.
 9. If lawn areas die or are rejected due to non-conformity to contract requirements, they must be removed from the site immediately and replaced before Substantial Completion.
- B. Utilities: Have all underground utilities located by servicing agencies. In the vicinity of utilities, hand-excavate to minimize possibility of damage.
- C. Coordination with Other Work:
1. The Contractor shall coordinate work with other contractors or trades to determine the appropriate sequence of landscape installation with respect to other work on the site.
 2. Completed work installed out of construction sequence which is subsequently disturbed by the completion of work by other trades shall be repaired by the landscape installer at no cost to the Owner.
 3. Maintain grade stakes and layout controls set by others until removal is mutually agreed upon by all parties concerned.

3.2 SUBGRADE PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by lawn installation operations.
- B. Install erosion control measures, if necessary, to prevent erosion or displacement of soils and discharge of soil-bearing water run-off or airborne dust to adjacent properties, natural resources and walkways.
- C. Vegetation Removal: Strip and dispose of organic debris and root mat.
- D. Topsoil stripping, stockpiling: Refer to Section 311000 "Site Clearing."
- E. Maintain subgrade in areas to be topsoiled in a uniform condition so as to prevent future depressions. Prior to placing topsoil;
1. Till all subsoils to a minimum depth of 18-inches with approved equipment to remove all compacted subsoils. Tilling shall be complete, thoroughly fracturing subsoil. Perform tilling in two directions, one perpendicular to the other.
 2. Upon completion of tilling, the subsoils will require light compaction and leveling to prevent ponding of water and settlement after topsoil placement. As a final operation, a lightweight tracked dozer shall be employed that will remove surface irregularities and prevent excessive settlement. During this procedure, the surface of the subsoil on slopes greater than 4:1 (H:V) shall be imprinted with tracks from the dozer. Imprinting shall be perpendicular to the slope and shall be approximately one inch deep.
 3. Do not proceed with topsoil placement until subgrade tilling and imprinting is completed to the satisfaction of the Project Engineer.
 4. Repair disturbances to previously graded areas and remove surplus subgrade material associated with any landscape construction.
- F. If the prepared subgrade is eroded or compacted by rainfall prior to topsoil placement, rework the surface as specified.
- G. In locations where existing topsoil has not been removed, till entire area in accordance with Part 3.2 E above. Do not till within dripline of existing trees.

3.3 PLACING TOPSOIL, SOIL AMENDMENTS AND FERTILIZER

- A. Provide, fertilize and amend topsoil in accordance with testing laboratory recommendations specified under Section 329113 "Topsoil".

- B. Uniformly distribute topsoil on lawn areas so that after light compaction and finish grading, a uniform depth of 4-inches is achieved. Placement shall include spreading, cultivating, lightly compacting, dragging and grading to the conditions specified below.
- C. Topsoil, when placed, shall be dry enough so as not to puddle or bond. Do not place topsoil when the subgrade is frozen, excessively wet, extremely dry or in a condition otherwise detrimental to proper grading or lawn operation.
- D. Following topsoil placement but prior to finish grading, broadcast all soil amendments and fertilizer and rototill into the topsoil. The coverage areas for soil amendments and fertilizer shall be carefully calculated by the installer and fully blended into the entire topsoil profile. Do not incorporate soil amendments and fertilizer more than 5 days in advance of seeding.

3.4 PRE-INSTALLATION PREPARATION

- A. Finish Grading:
 - 1. Immediately before lawn installation scarify, loosen, float, and drag topsoil as necessary to bring it to the proper condition. Remove all foreign matter larger than 1" in diameter. There shall be no visible plants, roots, debris, or any foreign material present prior to installation.
 - 2. Finished grades shall slope to drain, be free of depressions or other irregularities, lightly compacted to prevent settlement, and shall be uniform in slope between grading controls and the elevations indicated.
 - 3. Finished grade for seeded lawn areas shall meet existing grades at contract limits and be ½" below top of curbs, walk paving, and metal edging if used.

3.5 SEEDING AND MULCHING

- A. Moisten prepared area before seeding if soil is dry. Water thoroughly and allow surface to partially dry before seeding. Do not create muddy soil.
- B. Pay close attention to weather conditions. Ensure each area being seeded is fully completed in advance of weather conditions such as heavy rains and strong winds that will result in damage to the unfinished work. Fully completed shall mean seeding, dragging, mulching, crimping and tackifier.
- C. Seeding Procedures:
 - 1. Do not sow seed when weather conditions are unfavorable, such as during drought or high winds.
 - 2. Perform seeding with only approved equipment. Do not broadcast or drop seed when wind velocity exceeds 10 mph.
 - 3. Sow the seed uniformly at rates specified under Part 2.1 of this section.
 - 4. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 5. Do not seed against existing trees and limit extent of seed to outside edge of planting saucers, plant beds and other seed beds. Mulch within plant beds and tree saucers which are contaminated by overseeding shall be removed and replaced.
 - 6. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 7. Immediately following seeding, rake, drag or float all seed beds to provide a light covering of topsoil approximately 1/8 inch deep. When using equipment that lightly injects the seed into the soil, include equipment that lightly rolls the seed bed to provide good moisture contact between the seed and soil.
 - 8. Maintain soil moisture in accordance with Part 3.11 below.
- D. Straw Mulching Procedures:
 - 1. Do not use any straw that contains weeds and other plants that will contaminate the seed beds with unspecified plants. Carefully inspect each bale of straw prior to spreading and any bales observed to be contaminated with weeds shall be removed from the site on a daily basis.
 - 2. Do not mechanically blow straw when wind speeds exceed 10 mph.
 - 3. Remove all straw that has been deposited outside the limits of seeding and on adjacent pavement, plant beds and tree saucers.
 - 4. Spread straw mulch evenly at the rate of approximately 2 tons dry straw per acre. Place all mulch over all seeded areas within 24 hours after seeding. A mechanical blower or hand spreading shall be used to apply mulch material, provided the machine has been specifically designed and approved for this purpose. Mulch shall be uniform in thickness and cover resulting in a blanket of straw approximately 1 ½ inches loose thickness with little to no visible soil.
- E. Anchoring Straw Mulch Procedures:
 - 1. Anchor the mulch by using both an approved crimping device and applying tackifier on the mulched surface immediately following mulching operation.

2. Mulch shall be crimped in all seed beds where slopes are less than 4:1 (H:V) and of sufficient width to allow equipment to perform crimping without damaging the finished seed bed. Crimp all locations in two directions. When finished, straw shall be anchored one to two inches deep into the seed bed in rows no more than eight inches apart.
3. Tackifier shall be applied at the rate recommended by the manufacturer and shall be applied uniformly to all mulch either simultaneously with mulching operation or in a separate application. Take precautionary measures to prevent materials from marking or defacing structures, pavements, utilities, or plantings. Immediately clean all stains and damaged areas.
4. Any seed and mulch displaced due to improper crimping and bonding with tackifier shall be immediately replaced to the specified condition at no additional cost to the Owner.

3.6 HYDROSEEDING AND HYDROMULCHING

- A. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
- B. Moisten prepared area before seeding if soil is dry. Water thoroughly and allow surface to partially dry before seeding. Do not create muddy soil.
- C. Pay close attention to weather conditions. Ensure each area being seeded is fully completed in advance of weather conditions such as heavy rains and strong winds that will result in damage to the unfinished work. Fully completed shall mean, seeding, mulching, crimping and tackifier.
- D. Hydroseeding and mulching shall be installed as a two-step process.
 1. Hydroseeding - Step One Procedures:
 - a. Fertilizer and soil amendments shall be applied as specified under Part 3.3 above and shall not be included within the step one seed slurry.
 - b. Apply seed on the previously prepared bed at the rates specified under Part 2.1 of this section.
 - c. Water used shall be obtained from fresh water source and shall be free from injurious chemicals and other toxic substances at all times. Identify to the Owner all sources of water at least two weeks prior to use. The Owner, at its discretion, may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content.
 - d. Mixtures shall be constantly agitated from the time they are combined until they are finally applied to the seed bed. Once combined, mixtures shall be used within 8 hours.
 - e. Apply slurry uniformly and at the prescribed rate, avoiding misses and overlapping areas, gauging quantities of mixtures to measured application areas. Checks on the rate and uniformity of application may be made by the Project Engineer observing the degree of wetting, or by distributing test sheets and observing the quantity of seed deposited thereon.
 - f. Direct application nozzle sufficiently upward so that the mixture falls to the ground in a uniform shower. Never direct spray toward the ground in a manner that produces erosion or runoff. Discontinue application during periods of high wind that affect the ability to properly apply the seed at a uniform cover.
 - g. Maintain soil moisture in accordance with Part 3.11 below.
 2. Mulching - Step Two Procedures:
 - a. Apply straw mulch and anchor to soil as specified under Part 3.5 and Part 3.12.
 - b. Mulch all seeded areas with specified hydraulic mulch following the same requirements outlined under Part 3.6 D above.
- E. Anchoring Mulch Procedures:
 1. Spray hydraulic mulch tackifier concurrent with or immediately after mulching following the same requirements outlined under Part 3.6 D above.
 2. Use only an approved tackifier applied at the rate recommended by the manufacturer.
 3. Tackifier shall be applied at the rate recommended by the manufacturer and shall be applied uniformly to all mulch either simultaneously with mulching operation or in a separate application. Take precautionary measures to prevent materials from marking or defacing structures, pavements, utilities, or plantings. Immediately clean all stains and damaged areas.
 4. Any seed and mulch displaced due to improper installation of tackifier shall be immediately replaced to the specified condition at no additional cost to the Owner.

3.7 TURF RENOVATION

- A. All preparation work shall be conducted in accordance with Part 3.1 through Part 3.4 above. Following surface preparation, lawn installation shall be completed in accordance with the applicable lawn installation methods specified above. Blend newly seeded areas into adjacent existing lawns.

- B. Renovate existing lawns where indicated. In areas where diseased or contaminated lawns are identified, remove existing topsoil and dispose off site.
- C. Renovate lawns damaged by Contractor's operations, such as storage of materials, haul roads or other areas outside the limits of work.
- D. Renovate lawns where topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations has occurred. Remove existing topsoil and dispose off-site.
- E. Mow, dethatch, core aerate, and rake existing turf where identified.
- F. Maintain soil moisture in accordance with Part 3.11 below.

3.8 WATERING PROCEDURES

- A. Immediately following lawn installation water all bed areas thoroughly and immediately with a fine mist until soil is soaked to a depth of at least 2-inches or as indicated above. Puddling of water or allowing the seedbed to dry is unacceptable.
- B. For seeded areas, maintain soil in a moist condition (in hot dry weather irrigation may be required 2-4 times per day) until seeds have sprouted and reached a height of 1-inch. Water thereafter a minimum of once every 2-3 days unless natural rainfall has provided equivalent watering. Provide irrigation to moisten soil to a depth of 4" to encourage deeper rooting.
- C. Watering at accelerated rates that dislodge seed and mulch materials, or cause erosion shall be immediately repaired at no cost to the Owner.

3.9 MAINTENANCE

- A. General: Maintain and establish lawn areas by watering, fertilizing, pest and weed control, litter removal, mowing, trimming, repairs, and performing other operations as required to establish healthy, viable lawn. Maintenance shall also include grade repair, seeding and all associated soil amendments and fertilizers.
- B. Provide all maintenance under the supervision of a skilled employee of the lawn installer. The skilled maintenance supervisor shall be: capable of conducting turf diagnostics to identify the presence of disease, insect and fertility problems, and directing a maintenance crew in the performance of horticultural maintenance practices identified below. Maintenance requirements identified below shall be the basis for information to be included in the Maintenance Schedule and Irrigation Plan identified under Part 1.5. Cof this section and thoroughly documented under the required Maintenance Report Forms to verify the work has been properly performed.
 - 1. Failure to perform and submit factual Maintenance Report Forms could result in non-payment for said services and require the extension of the warranty and maintenance period an additional year at the Contractor's expense.
- C. Provide all equipment, materials, labor and services to maintain the landscape beginning immediately after each area is installed and continuing until Final Acceptance and the end of the warranty period. During this period, perform the following:
 - 1. Inspect the entire landscape at least once per week during the growing season and perform needed maintenance promptly. Check for over- or under-watering using visible turf symptoms and checking soil moisture. Adjust the irrigation schedule as needed. If turf is not appearing healthy or if foliage color is atypical, Contractor must determine the cause and resolve the condition ASAP.
 - 2. Prior to each mowing, collect all debris, litter and miscellaneous materials accumulating on the site and remove from the site.
 - 3. Irrigation: Irrigate all turf areas to maintain optimum moisture within the root zone as specified under Part 3.11 above.
 - 4. Mow all lawns weekly during the growing season and as described below. Mowing frequencies shall be adjusted based on cutting requirements and may require more frequent visits during high growth periods. Use mulching mower only with sharpened blades and alternate direction of each mowing session to prevent rutting.
 - 5. Fertilize as described below.
 - 6. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use Integrated Pest Management practices to minimize the use of chemical applications and reduce hazards. Apply herbicides and pesticides as described below.
 - 7. Remove leaves bi-weekly during the fall as they accumulate on the lawns. Bag and dispose off-site. Do not mow in advance of leaf removal.

8. Repair bare, eroded or settled areas and restore to provide a uniformly smooth lawn with the specified grasses. Provide same materials and installation procedures as those used in the original installation.
 9. Reclaim/replace soil materials and turf damaged or lost in areas of subsidence. Roll, regrade, and replant bare or eroded areas to produce a uniformly smooth lawn.
 10. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
- D. Mowing: Mow turf as soon as top growth is tall enough to cut. Remove no more than one-third of grass-leaf growth in initial or subsequent mowing. At the time of each mowing, adjust mowing equipment to meet this requirement. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing to maintain the following grass height:
1. Mow kentucky bluegrass to a height of 2-1/2 to 3 1/2-inches.
 2. Collect all grass clippings if mowing is not sufficiently timed to allow for composting into the existing lawn and accumulations of clippings can be observed on the surface of the grass. Collection and off-site disposal shall be performed at no additional cost to the Owner.

3.10 POST-INSTALLATION FERTILIZATION

- A. Apply fertilizers at the time of season, rate of application and grade of N-P-K that maximizes the health of the lawn and minimizes the potential run-off of fertilizers to adjacent waterways and groundwater. Avoid the use of phosphorus unless soil test results show that site soils are deficient of this nutrient.
- B. Test site topsoil in early spring and/or fall and base actual fertilizer rates on testing recommendations.

3.11 PESTICIDE APPLICATION

- A. Apply pesticides, and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
 1. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.
 2. For broadleaf herbicide:
 - a. Apply during August in Zones 3 and 4
 - b. Apply during September in Zones 5 through 8
 - c. Do not apply herbicides that contain Dicamba as they can harm adjacent woody plants.
 3. Apply, only as necessary, pre-emergent herbicide during early spring to prevent crabgrass and other annual weeds.

3.12 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Protect newly seeded areas from stormwater flows discharging from paved surfaces until grass establishment. Additional water diversion and erosion control measures including but not limited to silt fence, sediment control tubes, wattles, and check dams may be utilized at Contractor's discretion and expense.
- E. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION

SECTION 329220 - NATIVE SEEDING**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes: Procurement, scheduling, installation, maintenance, and warranty of all native seeding in accordance with the plans and as specified herein.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for stripping and using on-site topsoil.
 - 2. Section 312000 "Earth Moving" for mass grading of the site.
 - 3. Section 329100 "Topsoil" for topsoil for native seeded areas.
 - 4. Section 329280 "Vegetation Control" for control of weeds and eliminating established lawn or non-native vegetation before seeding, or for control of invasive species in existing natural areas.
 - 5. Section 329300 "Exterior Plantings" for trees, shrubs, plugs, and live stakes.
 - 6. Section 353119 "Stone Revetments and Breakwaters" for encapsulated soil lift fabric.

1.2 REFERENCES

- A. Association of Official Seed Analysts, as referenced as AOSA.
- B. Regulatory Requirements:
 - 1. Federal Seed Act.
 - 2. State seed laws, where applicable.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Within 4 weeks following the issuance of the Notice to Proceed, submit name and location of seed supplier(s) and a complete list of each seed mix by weight and proportion that is being supplied before the seed mix is ordered. Substitutions will not be permitted unless reviewed and approved by Project Engineer.
 - 2. Geographic origins of each seed species.
 - 3. Method of seeding, including all equipment to be used and manufacturer's specifications for care and handling.
 - 4. Tackifier: Manufacturer's specifications and recommended rates of application.
 - 5. Erosion control blankets, including anchor.
- B. Source Quality Control:
 - 1. Certifications:
 - a. Test Reports: Prior to delivery of products to the site, submit the following:
 - 1) Seed viability: Pure Live Seed (PLS) test reports for each species; tetrazolium (TZ) testing only conducted by a qualified independent testing laboratory.
 - 2) Seed purity: Test reports for each species.
- C. Field Quality Control:
 - 1. Maintenance Plan: Prior to the issuance of Substantial Completion, submit detailed methodology and schedules for warranty maintenance of native seeded areas including irrigation, weed control, and invasive species eradication. See "Maintenance" requirements below. Coordinate native seeding maintenance with other applicable Sections (Planting, Lawns, Vegetation Control, etc.).
 - 2. Maintenance Report Forms: Submit Maintenance Report Forms following completion of each maintenance visit. The forms shall cross-reference the Maintenance Plan. Payment for this work will only be made by the Owner when proof of completed work has been provided.
 - 3. Irrigation Plan: Submit watering or irrigation plan that outlines methods for maintaining seed bed moisture as described herein. Reliance on natural precipitation will only be allowed with provision of recorded data from a rain gauge located within 1-mile of the project site.
 - 4. Schedule: Within 4 weeks following the issuance of the Notice to Proceed, submit a project work schedule to the Project Engineer indicating the dates of each of the following events:
 - a. Seed installation - verify compliance with seeding schedules for each mix.
 - b. Substantial Completion of work - verify compliance with seeding schedules for each mix.

1.4 INFORMATION SUBMITTALS

- A. Qualification Data:
 - 1. Include a list of at least 3 similar projects completed in the last 5 years by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owner's contact persons.

2. License certificate for pesticide applicators.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 1. The work of this section (installation and maintenance) shall be performed by a Contractor specializing in native seeding and having a minimum of 5 years' experience in projects of the scope and scale being specified.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. All seeds shall be packaged and kept dry to ensure adequate protection against damage and to maintain dormancy while in transit, storage, or during planting operations.
- B. All seed shall be delivered to the site in sealed containers and labeled, in compliance with the Federal Seed Act and applicable State laws.
- C. Seed shall not be delivered and stored longer than 9 months before installation.
- D. Herbicides and other chemicals delivered to site must be in clearly labeled, unopened containers showing weight, analysis, and name of manufacturer.
- E. Straw mulch shall be stored off the ground under a cover that provides protection from moisture and humidity.

1.7 SCHEDULING

- A. Seeding Season
 1. Seeding of Native Seed Mix shall occur during in the early spring - April 1 through May 15.
 - a. Do not apply onto snow-covered ground.

1.8 WARRANTY

- A. Substantial Completion:
 1. Following Native Seed Mix installation, the Project Engineer and Contractor shall conduct a Substantial Completion Inspection on all seeded areas. Following this inspection, re-topsoil, reseed, mulch, and re-apply erosion control blankets as directed by the Project Engineer. Bare spots greater than 5 square feet shall be reseeded in accordance with the original specifications. All repairs shall be completed within one week following the inspection. All reseeding shall occur at no additional cost to the Owner.
- B. Final Acceptance:
 1. Final Acceptance will be granted one full year following installation of the Native Seed Mix dependent on achieving specification requirements. Final Acceptance shall be defined as an even distribution and germination of cover crop and an indication of specified native seedlings across the project site. There shall be clear evidence that the specified maintenance mowing has occurred to control weed species. Bare spots greater than 5 square feet shall be reseeded in accordance with the original specifications. All reseeding shall occur at no additional cost to the Owner. Failure to meet the requirement shall result in the Contractor extending the maintenance period until the specified cover is achieved at no additional cost to the Owner.
- C. Substantial Completion:
 1. Substantial Completion shall occur in two phases, one following completion of Native Grasses Seed Mix installation and one following completion of the Native Forbs Seed Mix installation. Substantial Completion will be granted upon the successful completion of seeding and the Project Engineer verification that all work has been installed in accordance with the plans and specifications.
- D. Preliminary Inspection:
 1. In early fall following Native Seed Mix installation, the Project Engineer and Contractor shall conduct a Preliminary Inspection on all seeded areas. Following this inspection, re-topsoil, reseed, mulch, and re-apply erosion control blankets as directed by the Project Engineer. This inspection should show an even distribution and germination of cover crop and an indication of specified native seedlings across the project site. There shall be clear evidence that the specified maintenance mowing has occurred to control weed species. Bare spots greater than 5 square feet shall be reseeded in accordance with the original specifications. All repairs shall be completed within one week following the inspection. All reseeding shall occur at no additional cost to the Owner.
- E. Final Acceptance:

1. Final Acceptance of the all Native Seed Mix areas will be granted one growing season following installation of the Native Forbs Seed Mix. Final Acceptance will be granted if the seeded area shows an even distribution and germination of cover crop and an indication of specified native plants across the project site. There shall be clear evidence that the specified maintenance mowing has occurred to control weed species. Failure to meet the requirement (weed-free seed beds) shall result in the Contractor extending the maintenance period until the specified cover is achieved at no additional cost to the Owner.
- F. Substantial Completion:
1. Following Native Seed Mix installation, the Project Engineer and Contractor shall conduct a Substantial Completion Inspection on all seeded areas. Following this inspection, re-topsoil, reseed, mulch, and re-apply erosion control blankets or turf reinforcement matting as directed by the Project Engineer. Bare spots greater than 5 square feet shall be reseeded in accordance with the original specifications. All repairs shall be completed within one week following the inspection. All reseeding shall occur at no additional cost to the Owner.
- G. Final Acceptance:
1. Final Acceptance will be granted following ONE full growing season after installation of the Native Seed Mix dependent on achieving specification requirements. Final Acceptance shall be defined as an even distribution and germination of specified native seed across the project site with no weed infestations. There shall be clear evidence that the specified maintenance mowing has occurred. Bare spots greater than 5 square feet shall be reseeded in accordance with the original specifications. All reseeding shall occur at no additional cost to the Owner. Failure to meet the requirement shall result in the Contractor extending the maintenance period until the specified cover is achieved at no additional cost to the Owner.

1.9 MAINTENANCE

- A. Native Seed Mix:
1. Site visits shall occur monthly during the first growing season to assess site conditions and correct issues with erosion and weeds. Reports documenting these visits and any completed maintenance shall be submitted to Owner within two weeks following the visit.
 2. Seeded areas shall be inspected with the Owner and Project Engineer twice during the first growing season, including a late spring/early summer and an early fall inspection. Notify the Owner of the inspection no less than 2 weeks prior to an inspection. The inspections shall be performed with the Owner in attendance. A report of the findings shall be issued by Contractor including agreed upon maintenance required.
 3. First Year Maintenance:
 - a. During the first growing season following seeding, mow the native seeded areas each time (up to 4 times) that the plant material (annual and perennial weeds) has reached a height of 12 to 16 inches tall. Mow to a height of 4 to 6 inches. A flail-type mower that will finely shred mowed clippings must be used. Alternatively, a string trimmer may be utilized but all clippings must be removed from the site following cutting.
 - b. Do not hand-pull any plants the first year following seeding because such action could disrupt small native seedlings.
 - c. Spot herbicide application for weed control: Spot treat aggressive weeds with an appropriate herbicide using a backpack sprayer with narrow stream nozzle, the wick applicator or soaked-glove method as appropriate for selective treatment of target species. All applications must be made by personnel that are licensed and certified to provide chemical applications and are knowledgeable in identification of native and weed species. All herbicides shall be applied in accordance with manufacturer label directions, including timing, mixing, application, storage, and clean-up.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Seed:
1. Origin:
 - a. All seed material shall originate from Midwest sources to the extent possible, but specifically from USDA Plant Hardiness 7 or lower.
 2. Quality:
 - a. Seed shall be fresh, clean, dry, new-crop seed tested for minimum percentages of purity and germination.
 3. Testing Requirements:

- a. The seed weights noted in this section indicate weight per acre in Pure Live Seed (PLS) and shall mean the total amount of fresh new crop seed per acre for all species listed. All test results for purity and vitality shall be completed and submitted in advance of seed installation. Based on these results, the Contractor will be required to provide supplemental seeding for each species that does not meet the specified rates of PLS.
4. Seed Mix Composition:
 - a. Native Seed Mix: See planting schedule in project plans for seed mix species composition and seeding rates.
5. Cover Crop Seed Mix:
 - a. Provide cover crops for native seeding using the species and rates shown on plan drawings.
- B. Topsoil:
 1. Topsoil for seeding shall be on-site and/or pre-approved off-site topsoil. Refer to Section 329100 "Topsoil."
- C. Mulch:
 1. Straw:
 - a. Provide stalks from oats, wheat, rye, barley, or rice that are free of weeds, mold, and other objectionable material.
 - b. Straw shall be in an air-dry condition and suitable for placing with commercial mulch-blowing equipment.
- D. Tackifier:
 1. Binding agent used to hold straw mulch material in place shall be a clear non-staining latex-based tackifier or a water-soluble polymer.
 2. Asphalt emulsion adhesive is not permitted.
- E. Erosion Control Blanket:
 1. Erosion Control Blanket Type 1: Intended for use on flat surfaces or slopes 4:1 (H:V) or greater where only sheet flow will be encountered.
 - a. Straw/jute blanket shall be constructed with a 100 percent agricultural straw matrix (0.5 lbs/square yard) with jute or cotton netting on top and bottom, be 100 percent biodegradable, and have a typical functional longevity of 12 months. Plastic weaving will not be permitted.
 2. Erosion Control Blanket Type 2: Intended for use on slopes 4:1 (H:V) or greater with the Spencer Creek 100 year flood elevation and/or Floodplain seeding areas, or in drainage swales with velocities up to 10 feet per second (fps).
 - a. Coconut fiber blanket shall be constructed with 100 percent coconut (coir) fiber matrix (0.50 lbs. per square yard), with 100 percent woven coir fiber netting on top and 100 percent woven jute netting on the bottom, sewn together with biodegradable cloth thread. The Blanket shall be 100 percent biodegradable and have a typical functional longevity of 24 months after installation. Plastic netting will not be permitted.
 3. Fasteners for erosion control blanket shall be a natural-based plastic product that is 100 percent biodegradable from microbial activity in accordance to ASTM D5338 and ASTM D5271, formed in a T-shape with barbed head and shoulders, 6 inches long, and installed per manufacturer's instructions.
- F. Fertilizer:
 1. Fertilizer is not permitted for native seeding.
- G. Water:
 1. Water shall be free of wastewater effluent or other hazardous chemicals. On-site sources of water may be available based on pumping from the creek or lake. Confirm prior to commencing work.

2.2 EQUIPMENT

- A. Seed may be installed using any of the following equipment at the Contractor's discretion.
 1. Broadcast by hand or a hand-held seed broadcaster.
 2. A spinning-disc type broadcaster with a calibration gauge shall be used to broadcast the seed over the designated areas.
 3. Drill seeder, such as Truax or Tye drill, or John Deere Rangeland drill.
 4. Drop seeder/spreader with cultipacker, such as Brillion or John Deere.
- B. Hydroseeding will not be permitted for native seeding.
- C. Crimping Device:

1. A mulch disc or other mechanical anchoring/crimping device for use in anchoring straw mulch into place, such as a Reinco Model MD-96 or equivalent, with flat discs with notched edges spaced 8 inches apart to impress mulch 1 to 3 inches down into soil.
2. Crimping device (serrated disk) is an acceptable alternative to the Tackifier and is the preferred method of anchoring.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Upon authorization to proceed with the work, the Contractor shall examine and verify the acceptability of the job site. Notify the Project Engineer if conditions detrimental to plant growth are encountered such as rubble fill, adverse drainage conditions, or other obstructions that are not shown on the Plans. Do not proceed with the work until unsatisfactory conditions have been corrected or resolved and approved in writing by the Project Engineer.
- B. Coordination is required to ensure rainfall/groundwater seepage does not result in soil moisture conditions that will cause excessive rutting during seeding and mulching operations. Failure to meet this requirement will not be an acceptable reason for not installing the seed as specified.
- C. Where seeding occurs in close proximity to other site improvements or areas to remain undisturbed such as existing wetlands and uplands areas, care shall be taken to not disturb the existing conditions. Any areas damaged during planting operations shall be promptly restored to their original condition at no cost to the Owner.

3.2 PREPARATION

- A. Immediately following contract award, the Contractor shall begin seed procurement. During the four week procurement period, the Contractor shall locate all seed suppliers, collectors and producers and set up supply contracts to ensure that the quantity and quality of seed material will be available during the specified planting window.
- B. Any species substitutions MUST be approved by the Project Engineer prior to seed procurement.

3.3 INSTALLATION

- A. General:
 1. Do not sow seed during adverse weather or when wind speeds exceed five miles per hour.
 2. Do not sow seed in areas where standing water is present.
- B. Grade Preparation:
 1. Subgrade and finish grade preparation shall be in accordance with site earthwork requirements, and topsoil shall be a minimum 6 inches deep after light compaction to prevent settlement. Existing uncompacted topsoil outside of the limits of grading will satisfy this requirement if it meets the requirements identified in 329100 "Topsoil."
 2. Prior to seeding, repair any ruts, rills, or gullies greater than 2 inches in depth to create smooth continuous grades for upland areas.
 3. If the prepared grade is eroded or compacted by rainfall or other reasons, rework the topsoil to the full depth.
 4. Minimize soil disturbance in woodland seed mix installation zone where no grading activities are occurring. Remove dead vegetation, invasive species, leaves, and other debris to expose topsoil while leaving existing native vegetation in place to the extent practicable (see Section 329280 "Vegetation Control").
 5. Immediately before seeding, scarify, loosen, float and drag topsoil as necessary to bring it to the proper condition. Remove foreign matter larger than 1-inch diameter.
 6. No further grade preparation is required.
- C. Layout:
 1. All seeding zone boundaries shall be surveyed and staked on the project site by the Contractor. No seed mix shall be installed until the grade preparation and layout have been approved by the Project Engineer.
 2. The Project Engineer reserves the right to adjust seed limits without adjusting total seeded areas, to meet field conditions, at no additional cost to the Owner.
- D. Method:
 1. Hand-broadcasting:
 - a. For spring seeding, sow seed directly onto bare ground or ground where the previous year's plant stubble has been cut to 2-inch height and cut material removed.

- b. Increase the volume of the broadcasted seed mix by mixing it with an approved carrier. Acceptable carrier material includes moistened compost, corn cob blast media, or coarse-grade vermiculite. Sand and sawdust are unacceptable carrier materials. Use one bushel basket of carrier per 1,000 square feet of area to be seeded (a bushel equals 8 gallons or 1.24 cubic feet).
 - c. Use half of the total seed quantity and cross the entire area to be seeded, evenly spreading the seed. Walk perpendicular to the original seeding and evenly broadcast the second half of the seed.
 - d. Light seeds, awned seeds, or bearded seeds tend to rise to the top of the spreader, therefore, mix seed accordingly as planting commences.
 - e. For upland areas, rake or drag the seed into the soil, but not more than 1/4-inch deep. Roll the area with a roller to firm the seed into the soil. For wetland areas, seed must be left on the soil surface but should be rolled to increase soil contact if soil conditions allow.
2. Drill Seeder or Drop Seeder/Spreader:
 - a. For spring drill seeding, sow seed directly onto bare ground or ground where the previous year's plant stubble has been cut to 2 inch height and cut material removed; for spring drop seeding, cultivate the ground before installing seed mix.
 - b. If using a drill seeder and there are separate native grass and forb seed mixes, remove delivery tubes when installing the forb mix and allow the seeds to drop directly from the box.
 - c. Check the equipment frequently to ensure the seed is dispersing evenly and is not clogging.
 - d. If the equipment is not equipped with a roller, pass over the seeded area with a roller to firm the seed into the soil. Rolling is not necessary with dormant seeding.
 - e. Do not mix the native seed with any carrier material.
 - f. Evenly distribute the seed across the entire site to be seeded.
 3. Keep the topsoil moist (to a depth of 3 inches) for 3-6 weeks following seeding; afterward, apply one inch of water during the growing season if rain has not occurred for more than one week. Do not apply water with such a force as to disturb seed, seedlings, and/or topsoil, or that would run off soil surface.
- E. Straw Mulch:
1. Spread straw mulch evenly at the rate of 2 tons per acre over the native seeded areas on slopes shallower than 4:1 (H:V) and outside of the Spencer Creek 100 year flood elevation. Place all mulch on given areas within 48 hours after seeding. A mechanical blower may be used to apply mulch material, provided the machine has been specifically designed and approved for this purpose. Anchor all mulch with crimping (preferred) or tackifier. If a spray tackifier is used, it may be applied either simultaneously with mulch or in a separate application. Apply tackifier over all mulched areas at a rate recommended by manufacturer.
- F. Erosion Control Blanket:
1. Seed must be installed prior to erosion control blanket.
 2. Install erosion control blanket as indicated in details on the Plans on all areas specified to receive it.
 3. Immediately following seeding, erosion control blanket shall be rolled out in place in the direction of the slope fall line. The material shall be applied without stretching and shall lie smoothly but loosely on the soil surface. Installers shall minimize walking directly on the seed or topsoil bed either before or after the blanket is applied.
 4. All ends shall be buried a minimum of 4 inches deep and the trench shall be firmly tamped after closing.
 5. In cases where roll ends join, the up-slope piece shall overlap the down-slope piece by at least 18 inches.
 6. Staple edges prior to backfilling trench, all overlaps at 12-inch intervals, and the center of each panel on 3-foot intervals.
 7. The upslope ends of the blanket shall be buried a minimum of 6 inches deep and stapled at 12-inch intervals prior to backfilling trench.
 8. Reseed all disturbed edges immediately following straw blanket installation and work seed into blanket.
- ### 3.4 REPAIR/RESTORATION
- A. All areas over which hauling operations have been conducted shall be kept clean on a daily basis. Promptly remove all materials spilled on pavement.
 - B. Upon completion of seed installation, remove from the site and legally dispose of all trash and debris including any material removed during grade preparation.

- C. Restore any existing areas damaged by operations under the contract. Restoration shall include finish grading and seeding as required to match existing grade and/or wetlands, and maintenance of restored areas.
- D. Protect seeded areas from stormwater flows discharging from paved surfaces until vegetation establishment. Additional water diversion and erosion control measures including but not limited to silt fence, sediment control tubes, wattles, and check dams may be utilized at Contractor's discretion and expense. Remove non-biodegradable erosion control measures after vegetation establishment.
- E. Any damage by the Contractor to established or newly seeded areas not within the project scope of work shall be repaired and reseeded at no cost to the Owner.

END OF SECTION

SECTION 329280 – VEGETATION CONTROL**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes use of herbicides and mechanical methods to remove invasive plants from native seeded areas of the project site.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for stripping and using on-site topsoil.
 - 2. Section 312000 "Earth Moving" for mass grading of the site.
 - 3. Section 329100 "Topsoil" for lawns and plant mixture amendment.
 - 4. Section 329200 "Lawns" for lawn seeding and sodding.
 - 5. Section 329220 "Native Seeding" for native seeding.
 - 6. Section 329300 "Exterior Plantings" for trees, shrubs, ground covers, and other plantings.
 - 7. Section 353119 "Stone Revetments and Breakwaters" for encapsulated soil lifts.

1.2 REFERENCES AND REGULATORY REQUIREMENTS

- A. Federal Insecticide, Fungicide, and Rodenticide Act.
- B. Relevant State Statutes

1.3 DEFINITIONS

- A. Adjuvants: Products added to an herbicide spray mixture that are not pesticides. The most common are surfactants and colorants.
- B. Dye (Colorant): Agricultural colorant used as a dye marker; in this Section it is an agent that, when mixed with herbicide, signals where the product has been applied, in some circumstances how much has been applied, and aids in assessing whether re-spraying is needed. Available for either water-based or oil-based herbicides.
- C. Herbicide: A substance that is toxic to plants, used to control or destroy unwanted vegetation.
 - 1. Non-selective herbicide: Kills or damages all plant material with which it comes in contact.
 - 2. Selective herbicide: Controls specific target weeds or plant species, while leaving desired species relatively unharmed.
 - 3. Pre-emergent herbicide: Effective for controlling the germination of weed seeds and therefore the growth of weeds.
 - 4. Post-emergent herbicide: Effective for controlling weed growth that has already germinated.
- D. Surfactant: A soluble compound (wetting agent) that reduces the surface tension of liquids to increase the penetration, coverage, and overall effectiveness of herbicides on plants. Unnecessary for soil applications.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data:
 - 1. Submit manufacturer's label or manufacturer's product data sheet for each manufactured product to be used to eradicate vegetation. Do not send Material Safety Data Sheets.
 - a. Herbicides
 - b. Surfactants
 - c. Dyes
 - 2. Equipment to be used to apply herbicide or to eradicate undesirable plants.
- B. Source Quality Control:
 - 1. Certifications/Licenses:
 - a. Pesticide Applicator: State commercial pesticide business license and commercial pesticide application number, with categories listed.
 - b. State certified/registered pesticide applicators must have certification in the appropriate category for the project site.
- C. Field Quality Control:

1. **Invasive Species Eradication Plan:** Contractor shall submit a comprehensive eradication plan to rid the specified project areas of invasive plants from the project site to provide clean, weed-free beds for planting and seeding. The list of species to be eradicated includes, but is not limited to, species identified as invasive by the Ohio Department of Natural Resources. Control shall include above and below ground parts of the plants. This plan shall then outline subsequent eradication procedures to be utilized to maintain the site free of invasive species prior to and during construction. The plan shall consider the use of non-chemical methods to control species as alternatives to chemical applications where feasible. The plan shall consider and coordinate availability of the site vs optimal time of herbicide application per the manufacturer's label for the species to be most successfully eradicated. Finally, this plan shall outline methodology to maintain the site weed-free following Substantial Completion of the landscape during the warranty period until Final Acceptance of the landscape. Refer to each related Section (Lawns, Native Seeding, and Exterior Plantings) for additional requirements during the maintenance period.
2. **Vegetation Control Report Forms:** Submit Vegetation Control Report Forms following completion of each vegetation control maintenance visit identifying the work completed at the site. The forms shall cross-reference the Invasive Species Eradication Plan. Payment for this work will only be made by the Owner when proof of completed work has been provided. Each report shall include the following:
 - a. Date of activity.
 - b. Length of time on site (start time and finish time).
 - c. Name and signature of the maintenance superintendent and/or certified pesticide applicator.
 - d. Number of personnel performing the work.
 - e. Site climatic conditions (rain, wind, temperature, etc.)
 - f. Detailed description of maintenance activities performed by area.
3. **Schedule:** Upon authorization to proceed with the work, submit 3 copies of vegetation control schedule outlining the anticipated dates of control.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. The Contractor must have a current certified pesticide applicator's license in the project state that includes the categories relevant to the specific types of areas/landscape in which pesticides will be applied; and the business for which the Contractor works must have a current pesticide applicator business license.
2. The Contractor shall submit documentation of previous work experience and licensure for approval by the Project Engineer.
3. All federal, state, and local laws and regulations associated with the use and application of herbicides shall be strictly followed.
4. The Contractor is required by law to comply with all instructions and directions for use on the herbicide manufacturer's label, including personal protective equipment and storage requirements.
5. Any proposed alternative methods of herbicide application other than those described in this Section must be submitted in writing and approved by Project Engineer before such actions take place.
6. The Contractor is responsible for investigating requirements and for obtaining all pertinent agency permits for applying herbicides, including those specific to application of herbicides in and around waters of the State.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. All herbicides to be delivered to site pre-mixed in approved containers or equipment; no mixing or addition of adjuvants is allowed on-site for any reason.
- B. No herbicide or herbicide mixture shall be stored on-site.

1.8 SCHEDULING

- A. Species control shall commence immediately following the issuance of the Notice to Proceed and continue through Final Acceptance of the entire project:
 1. The availability of the area to be treated may conflict with the manufacturer's recommended timing of herbicide applications for certain species. Every effort must be made to control invasive species during the time indicated on the herbicide label. If this is not possible, Contractor shall apply herbicides with the understanding that follow-up treatment will be necessary during construction and the maintenance period. This information should be part of the Invasive Species Eradication Plan outlined in Part 1 above.

2. Any deviations from Contractor's outlined schedule shall be submitted in writing to Project Engineer for review and prior approval.

1.9 WARRANTY and acceptance

- A. For control of undesirable vegetation in construction areas, the Contractor shall provide a surface free of invasive plant species, including roots and above-ground plant parts, in all seeded and/or planted areas until installation of desired landscape occurs. Contractor shall continue to control the invasion, growth, and spread of all invasive plants until Final Acceptance.
- B. For control of invasive species in existing natural areas being restored on site, the Contractor shall inspect the natural areas with Owner and Project Engineer to verify that control methods have been effective to eliminate the target undesirable species. Reapply treatment to any specific plants or areas identified during the walkthrough to the satisfaction of the Owner.
- C. The Contractor shall demonstrate that they have used the most appropriate and effective methods possible to eradicate invasive plants while completely avoiding injury to desirable plants. Desirable plants that are damaged will be replaced and/or restored by Contractor at no cost to Owner.

PART 2 - PRODUCTS

2.1 HERBICIDES

- A. Glyphosate, a non-selective, non-persistent (in soil) post-emergent herbicide (such as Roundup~~cc~~, AquaNeat~~cc~~, or equivalent) for use on herbaceous plants to be controlled.
- B. Imazapyr, a non-selective post-emergent herbicide (such as Arsenal~~cc~~, Habitat~~cc~~, or equivalent) for use on annual and perennial herbaceous plants but is especially effective on woody plants in upland and wetland areas. This herbicide can be persistent for months in soils but not in water.
- C. Sethoxydim, a selective, non-persistent post-emergent herbicide (such as Poast~~cc~~, Vantage~~cc~~, or equivalent) for use on annual and perennial grasses; does not affect broadleaf plants. Not for use near waters or wetlands.
- D. Triclopyr with a petroleum-based formulation (such as Garlon 4~~cc~~ or equivalent), selective post-emergent broadleaf herbicide labeled for use on non-desirable woody or broadleaf herbaceous plants encountered in upland areas. Does not affect many species of grasses. Most commonly used herbicide for basal bark treatment applications.
- E. Triclopyr with a water-soluble based formulation (such as Garlon 3~~cc~~ or equivalent), selective post-emergent herbicide labeled for use on woody or broadleaf herbaceous plants encountered in or near wetlands. Does not affect many species of grasses.

2.2 EQUIPMENT

- A. Sprayers:
 1. Hand-held or backpack sprayer or small motorized sprayer with the ability to be calibrated, as recommended on herbicide manufacturer's label. Sprayer should be fitted with appropriate nozzle for site condition: flat fan nozzle for widespread applications or narrow stream nozzle for plant-specific applications.
 2. Low-Pressure/low volume boom sprayers may be attached to ATV's or tractors, with the ability to be calibrated. If this method is utilized, supplementary treatment must occur on those invasive or weedy plants damaged, knocked down, or broken off by the equipment.
 3. Skid sprayers that fit in beds of pick-up trucks, with the ability to be calibrated. If this method is utilized, supplementary treatment must occur on those invasive or weedy plants damaged, knocked down, or broken off by the equipment.
 4. High-volume spray trucks for hydraulic applications.
- B. Blanket wipers: Vertical strip of material attached to a horizontal frame that wipes the surface of the target species, typically used with a non-selective herbicide. If this method is utilized, supplementary treatment must occur on those invasive or weedy plants damaged, knocked down, or broken off by the equipment.
- C. Rope wick applicator: A series of ropes impregnated with a non-selective herbicide to run over target species growing above desirable species. Has very low drift potential. Attaches to tractor or ATV. If this method is utilized, supplementary treatment must occur on those invasive or weedy plants damaged, knocked down, or broken off by the equipment.
- D. Hand-wick (rope) herbicide applicator for smaller areas, very low drift potential.

2.3 SURFACTANT

- A. Wetting agent that must be compatible with type of herbicide to be used. Some herbicide formulations already contain surfactants; if so, Contractor shall provide that information with the product data submittal. If applications are to be over or near water, then ONLY those surfactants that are labeled for use on water may be used.
1. Minimum 80% non-ionic, low-foam wetting agent (such as Activate~~cc~~ or SpreaderSticker~~cc~~ or equivalent) for use with all herbicides.
 2. Crop oil concentrate (for use with herbicides that target grasses).
 3. Nitrogen-surfactant blends (for use primarily with herbicides that target broadleaf weeds).
 4. Esterified or methylated seed oils for use with herbicides that require an oil-based adjuvant.
 5. Organo-silicones for use with all herbicides.

2.4 DYES

- A. Use colorant that is compatible with oil-based or water-soluble herbicide. Product shall be non-staining, non-hazardous. For herbicide formulations that contain pre-mixed dye, Contractor shall provide that information with the product data submittal.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Contractor shall follow all manufacturer labels including use of the specified protective equipment and all precautions, as well as the optimal timing of application.
- B. Protect all desirable species and seeded areas from activities associated with invasive species removal by utilizing appropriate application methods. Mark and protect any desired species or areas, or State-listed Special Concern, Threatened, or Endangered species.
- C. All herbicide mixing and preparation shall occur off-site in a location approved for such use.
- D. Delineate and flag all areas to be treated.

3.2 APPLICATION

- A. Herbaceous Plant Treatment:
1. Herbicide Application via Spraying:
 - a. Spray herbicide over target area using the appropriate timing for target plant species as indicated on manufacturer's label.
 - b. If individual invasive plants are discovered among desirable plants, use a narrow-stream nozzle to avoid injuring surrounding plants during days with no wind. Alternative methods of herbicide application are available that will not affect adjacent plants and should be used in lieu of spraying in these situations.
 - c. Follow manufacturer's label for recommended herbicide application concentrations.
 - d. Several re-applications or spot treatments using herbicides will likely be necessary during the current growing season (and possibly in subsequent years) to completely eradicate some herbaceous species. This should be outlined in the Invasive Species Eradication Plan presented in Part 1 above.
 - e. If dead plant material is dense enough to hinder access to live plants for supplemental herbicide treatment, the dead plant material must be removed by mowing or cutting, with cut plant material removed immediately. Remove dead and cut plant material from the site and dispose of legally in an approved off-site location, taking care to not disperse seed heads.
 - f. Allow 2 full weeks after treatment to allow herbicide to act upon the plant before any cutting or re-application of herbicides is undertaken.
 2. Alternative Treatments to Spraying:
 - a. Soaked Glove: This treatment involves using a cotton wicking glove over a chemical-resistant glove, dipping or spraying the outer glove with herbicide, and using the hand to coat individual target species, taking care not to drip herbicide on adjacent plants. Herbicide concentrations should be adjusted according to label.
 - b. Cut-Stem: This treatment involves cutting the target species stem at half the plant height and adding one drip to cut stems using a syringe or squirt bottle.
 - c. Wicking: This treatment involves using an absorbent material that is soaked with herbicide and swiping it over target species stems.

- d. Hand-removal: Hand-pulling target species shall only be allowed if the action removes all roots and does not uproot adjacent desirable plants. Use appropriate tools to ensure full plant removal is accomplished.
 - e. Several other methods are available for specific target species as selected by Contractor; Contractor must submit precise written methods to Project Engineer for approval prior to use.
- B. Woody Plant Treatment:
- 1. Using Water-based Triclopyr Herbicide Labeled for Use Around Waters/Wetlands
 - a. Cut-stump treatment: Cut stump and spray or paint the fresh surface with manufacturer's recommended concentration of herbicide solution within one hour of cutting. Apply to cut areas, especially to cambium layer, and outer bark around entire circumference of stump. Make sure to cover the entire stump surface. Do not spray onto surrounding soil.
 - b. Spray foliage using directions on label.
 - 2. Using Oil-Based Triclopyr Herbicide:
 - a. Do not use oil-based Triclopyr herbicides around wetlands as this material can be toxic to fish.
 - b. Cut-stump treatment: Cut stumps any time of year, including winter months, and apply herbicide by spray or with manufacturer's recommended concentration of herbicide using a paintbrush, any time after cutting. Do not make applications when snow or precipitation prevents spraying to the ground level. Spray or paint the entire cut surface and the outside bark all the way to the ground level. Avoid getting herbicide on surrounding soil.
 - c. Stem treatments for woody plants less than 2-inches diameter: Paint or spray entire circumference of tree at least 12-15-inches up the trunk. Apply any time during the growing season and late winter (approximately February through April).

3.3 CLEANING, REMOVAL, AND REPAIR

- A. Clearly post signs indicating herbicide applications, abiding by state laws for project's location for information that should be included on these signs and their posted locations.
- B. Upon completion of herbicide application, remove from the site and legally dispose of any remaining herbicide, related chemicals, and containers.
- C. No equipment shall be cleaned onsite, only at an approved off-site location.
- D. Paved areas over which hauling operations have been conducted shall be kept clean. Promptly remove materials spilled on pavement and clean to original condition.

END OF SECTION

SECTION 329300 – EXTERIOR PLANTINGS**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes:
 - 1. Tree and shrub plantings.
 - 2. Plug plantings.
 - 3. Plant procurement.
 - 4. Plant mulch.
 - 5. Aggregate maintenance edge.
 - 6. Staking.
 - 7. Maintenance.
 - 8. Warranty replacements.
- B. Related Requirements:
 - 1. Section 015639 "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
 - 2. Section 311000 "Site Clearing" for stripping on-site topsoil.
 - 3. Section 312000 "Earth Moving" for mass grading of the site.
 - 4. Section 329100 "Topsoil" for lawns and plant mixture amendment.
 - 5. Section 329200 "Lawns" for lawn seeding and sodding.
 - 6. Section 329220 "Native Seeding" for native upland and wetland seeding.
 - 7. Section 329280 "Vegetation Control" for control of weeds or eliminating established lawn areas before planting.
 - 8. Section 353119 "Stone Revetments and Breakwaters" for encapsulated soil lifts.

1.2 REFERENCES AND REGULATORY REQUIREMENTS

- A. Hortus Third, The Staff of the L.H. Bailey Hortorium. 1976. MacMillan Publishing Co., New York.
- B. ASTM International, as referenced herein as ASTM.
- C. American Standard for Nursery Stock, as referenced herein as ANSI Z60.1 (current edition). Where there is a conflict between the information in this Section and ANSI Z60.1, this Section shall govern.
- D. United State Department of Agriculture (USDA), Plant disease and insect control Phytosanitary and Export Certifications.
- E. United States Composting Council, Seal of Testing Assurance (STA), Procedures for sampling and testing as outlined in the Test Methods for the Examination of Composting and Compost (TMECC) protocols.

1.3 DEFINITIONS

- A. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- B. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- C. Live Stake: Living, woody plant cuttings with side branches removed and the bark intact, of a length sufficient to reach sustainable soil moisture when installed. Basl end cleanly cut at an angle and top end blunt.
- D. Finish Grade: Elevation of finished surface of planting soil.
- E. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

- F. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- G. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- H. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- I. Single Central Leader: A single central dominant leader branch, free of secondary co-dominant stems that would compete with the central leader, either naturally occurring or professionally trained in the nursery with no stem deformities.
- J. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees at or below the soil surface.
- K. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data:
 - 1. Plant procurement verification:
 - a. Within 4 weeks following the execution of the Agreement between the Owner and Contractor, submit vendor purchase order, invoice or bill of lading for each plant species showing sizes, quantities and root treatment.
 - b. Provide digital photos of all plant materials. Photos must depict the entire size and condition of the plant and include a scale rod or other measuring device to show scale. For species where more than 20 plants are required, include a minimum of three photos that show the average plant, the best quality plant, and the worst quality plant to be provided. Label each photograph with the plant name, plant size, and name of the growing nursery.
 - c. Substitutions shall not be permitted without written approval from the Project Engineer.
 - 2. Soil amendments: Provide information on composition and source of all soil amendments. Include test results for compost.
 - 3. Fertilizer.
 - 4. Antidesiccants: Include product label and manufacturer's application instructions.
 - 5. Organic Mulch: Include product source and composition.
 - 6. Staking materials and ties.
- B. Source Quality Control:
 - 1. Samples:
 - a. Organic Mulch: 1 quart by volume in sealed plastic bag labeled with composition of materials and source of mulch. Provide an accurate representation of color, texture, size, and organic makeup.
 - 2. Test Report:
 - a. Topsoil: Test reports including fertilization recommendations for lawns and plant materials. Refer to Section 329100 "Topsoil".
 - 3. Certifications/Licenses:
 - a. Phytosanitary Certification: Plant material Inspection Certificates required by Federal, State or other governing authority at the time of plant material verification identified above.
 - b. License certificate(s) for pesticide applicator.
 - 4. Nursery Requirements:
 - a. Plants shipped to the site as B&B must originate from a licensed plant nursery with a current Phytosanitary certification... Field collected plants will not be permitted.
 - b. Plant digging shall comply with the following requirements:
 - 1) Digging shall not occur more than 4 months in advance of plant installation.
 - 2) Plants dug during the spring digging season must be planted in advance of the fall digging season of that same year.
 - 3) Plants dug during the fall season must be planted during the same season and will not be permitted for spring planting.
 - 4) No plants that have leafed out shall be dug.

- 5) Plants with root systems that have grown through the original jute wrapping will not be permitted. This included all plants that have a second jute covering over the root ball.
- 6) Jute wrapping that is heavily decayed or torn with exposed roots and loose root ball soil will not be permitted.

c. Wrap tree trunks with protective material in advance of digging.

C. Field Quality Control:

1. Project Work Schedule: Within 4 weeks following the issuance of the Notice to Proceed, submit a project work schedule to the Project Engineer indicating dates for delivery, installation, and Substantial Completion for all landscape work. The Schedule shall be comprehensive and address procurement, delivery, and installation of planting and seeding areas of the site.
2. Maintenance Schedule: Prior to the issuance of Substantial Completion, submit a detailed typewritten approach and schedule for the warranty maintenance of all landscape activities outlined under Part 3 of this section. Coordinate landscape maintenance with other applicable Sections (Native Seeding, Lawns, and Vegetation Control) and combine all maintenance activities into one plan of action. The schedule shall be comprehensive.
3. Irrigation Plan: Within 4 weeks following the issuance of the Notice to Proceed, submit a detailed typewritten approach and schedule that outlines watering requirements for maintaining the landscape as described herein. The Irrigation Plans shall be submitted in conjunction with the Maintenance Schedule. Describe means, methods and frequencies for hand watering. Provide an approved temporary irrigation system or hand water from a source approved by the Project Engineer. The system shall have the ability to be operated without moving hoses or sprinklers around the site between seeded/planted areas (i.e. system can be set to water one area for the required maintenance period), and may be automated with a timer. Supply all water and equipment at the Contractor's expense from a source approved by the Project Engineer. Reliance on natural precipitation will only be allowed with provision of recorded data from a rain gauge located within a 2-mile radius of the project site. The schedule shall be comprehensive.
4. Maintenance Report Forms: Using the approved Maintenance Schedule and Irrigation Plan as the framework for all maintenance activities (plant maintenance, and lawn maintenance). The Contractor shall provide detailed maintenance report forms for each site visit. The reports shall be completed by the on-site maintenance superintendent performing the work prior to leaving the site and shall be submitted monthly as back-up to each invoice. Office prepared reports will not be permitted. Each report shall include the following:
 - a. Date of activity.
 - b. Length of time on site (start time and finish time).
 - c. Name and signature of the maintenance superintendent.
 - d. Number of personnel performing the work.
 - e. Site climatic conditions (rain, wind, temperature, etc.)
 - f. Detailed description of maintenance activities performed by area.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. Include list of at least three similar projects completed in the last 5 years by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
2. Provide resumes of field technician (foreman) responsible for managing the purchase and installation of all materials. Separate resumes shall be provided for the planting, seeding, irrigation and maintenance technicians.
3. ISA certification for arborist.

1.7 QUALITY ASSURANCE

A. Qualifications:

1. The Contractor shall be a company specializing in exterior landscape installations and maintenance, having a minimum 5 years' experience in projects of the scope and scale being specified.
2. Installer's field technician: The installer shall provide a full-time supervisor on site when work is in progress.
3. Maintenance field technician: The maintenance activities for all landscape areas shall be performed by skilled employees of the landscape installer. Subcontractors specializing in landscape and turf maintenance will not be permitted unless approved in writing by the Project Engineer.
4. Pesticide applicator: State licensed, commercial.

5. Tree and shrub pruning: ISA certified Arborist.

B. Substitutions:

1. It is the Contractor's responsibility to locate and secure all plant materials and to verify their availability well in advance of installation through the timely Action Submittal process identified above. Failure to comply with this requirement shall not be a reason for making substitutions. Furthermore, it may be necessary to purchase specified plants from multiple nurseries and from out-of-state sources providing said sources are within the same hardiness zone as the site.
2. Substitutions of plant materials will not be permitted unless authorized in writing by the Project Engineer. If proof is submitted in writing that a plant specified is not obtainable, the Project Engineer may assist in identifying alternate sources or substitutions.
3. Plants of larger size may be used if approved and if root balls meet ANSI Z60.1 for the increased size. Adjustments will be made at no additional cost to the Owner. Approval of smaller size plant materials shall require a corresponding credit to the contract price subject to Owner pre-approval.
4. Container plants may be substituted for those designated "B&B" if approved by the Project Engineer.

C. Measurements: Measure plants according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for trees larger than 4-inch caliper.
2. Other Plants: Measure with stems, petioles, and foliage in their normal position.
3. Plants pruned to compensate for transplanting shock will not be accepted if overall height and spread do not meet the specified dimensions after pruning.

D. Plant Material Observation: Project Engineer may observe plant material either at place of growth or at site before, during or after planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Project Engineer retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1.8 DELIVERY, STORAGE, AND HANDLING

A. General:

1. Packaged Materials: Deliver packaged materials in original unopened containers showing weight, analysis and name of manufacturer. During shipment and storage on site, protect materials from breakage, moisture, heat or other damage.
2. Store materials only in locations approved by the Owner. No storing or mixing of pesticides or herbicides is allowed on site.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

C. Plant Materials:

1. Do not bend, stack or bind plants in a manner that damages bark, breaks branches or root systems, deforms root balls or destroys natural shape.
2. Transport plants in closed vehicles or with the entire load properly covered to protect from drying winds, heat, freezing or other exposure that may be harmful. Schedule shipping to minimize on-site storage of plants. Closed vehicles shall be adequately ventilated/refrigerated.
3. Labels: Prior to shipping, each plant or bundle of like variety and size shall be labeled with legible weatherproof tags indicating the correct name and size of plant.
4. Stock shall not be shipped until the planting preparations have been completed. If planting is delayed more than 24 hours after delivery, set plants and trees in filtered sun or shade, protect from weather and mechanical damage, and keep roots moist.
 - a. Heel-in bare-root stock. Pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Soak roots in water for two hours immediately prior to planting. Plants with dry roots will be rejected. Any bare-root plants requiring sweating to break dormancy must have this procedure carried out before plants arrive onsite.

- b. Set balled stock on ground and cover ball with soil, or bark mulch.
 - c. Do not remove container-grown stock from containers before time of planting.
 - d. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.
5. Schedule shipping aquatic tubers and plugs to result in on-site storage time of less than one day prior to installation. If delays beyond the Contractor's control occur after delivery, store plants to ensure viability. All aquatic plants that are in a state of decay at the time of planting shall be rejected regardless of condition at the time of delivery to the site.
 6. Aquatic plant container bags shall be opened upon arrival to allow air flow, but stored in a cool shaded location with ample moisture to maintain the plants in their natural wet habitat condition.
 7. Store bulbs, corms, and tubers in a dry place at 60 – 65 degrees F until planting.
 8. Handle plants at all times in accordance with the best horticultural practices. Lift B&B materials from the bottom of the ball only; do not roll the plants. Plants handled otherwise will be subject to rejection. Balled and burlapped plants which have cracked or broken balls are not acceptable and shall not be planted. Plants with mechanical damage, deformation or breakage will not be accepted and are to be replaced at the Contractor's expense.

1.9 SCHEDULING

A. Work Schedule:

1. Upon authorization to proceed with the work, submit a project work schedule indicating the dates of each of the following items:
 - a. Submittal schedule.
 - b. Tagging of plants in nurseries.
 - c. Delivery of other materials to the site.
 - d. Staking of plant locations on the site.
 - e. Delivery of plant material to the site.
 - f. Planting.
 - g. Substantial Completion of the work.
 - h. Maintenance period.
2. Update schedule monthly to reflect progress of the work.

B. Planting Season:

1. Materials shall be installed during planting seasons normally recognized in the job locality. Soils shall be in workable condition and not frozen.
2. USDA Hardiness Zone 7:
 - a. B&B and container grown deciduous trees and shrubs, planting season shall be from March 15 through May 15 and from October 1 through November 30.
 - b. Coniferous evergreen plants, planting season shall be from March 15 through May 15 and from October 1 through November 1.
 - c. Live stakes, planting season shall be in early spring dormant period, prior to April 1 but no later than full leaf-out of existing woody plants in project area.
 - d. Plugs, tubers and root stock, planting season shall be only in spring from March 15 through May 15.
3. If special circumstances warrant installation outside the normal planting season, submit a written request to the Project Engineer describing conditions and stating the proposed variance. Planting outside the planting season could extend warranty obligations and will be dependent upon the extent of the variance.
4. Weather limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
5. Coordination with lawn installation: Plant trees, shrubs, and other plants after finish grades are established but before seeding/sodding unless otherwise indicated. When planting trees, shrubs, and other plants after seeding/sodding, protect completed areas, and promptly repair damage caused by planting operations.

1.10 WARRANTY AND ACCEPTANCE

A. Substantial Completion:

1. The Substantial Completion inspection shall occur for the entire landscape and only one Notice of Substantial Completion will be issued. Phased approvals will not be permitted. Following the inspection, the Project Engineer will issue a punch list identifying all work requiring completion or correction.

2. The Contractor shall complete all punch list items within 2 weeks of its issuance. All repairs and plant replacements shall occur at no additional cost to the Owner.
 3. Substantial Completion will be provided for all planting areas complying with the following:
 4. Project Engineer approval of all specified submittals.
 5. The work shall be 100 percent complete (including all site preparation , earthwork , plant mixture installation , plantings , lawns, native seeding, and clean-up), and ready for inspection.
 6. After receiving a Notice of Substantial Completion warrant and maintain all plantings in accordance with Part 3 of this Section in a vigorous, well-kept condition until Final Acceptance.
- B. Final Acceptance:
1. Prior to plant dormancy and the expiration of the warranty and maintenance period, the Project Engineer will conduct an inspection of all plantings and review all previously submitted maintenance report forms to verify all completed maintenance activities. There shall be clear evidence through factual reporting by the Contractor and field observations made by the Owner or Project Engineer that the specified maintenance has occurred. Following the inspection, the Project Engineer will issue a punch list identifying all work requiring completion, replacement or correction.
 2. The Contractor shall complete all punch list items within 2 weeks of its issuance. All repairs and plant replacements shall occur at no additional cost to the Owner.
 3. Final Acceptance will be based upon Owner approval and the work having:
 - a. Been well maintained with all landscape plantings in a healthy growing condition free of disease and insect problems.
 - b. All maintenance items completed and documented by Contractor through maintenance report forms.
 4. Final Acceptance and the end of the warranty period for the landscape will occur only after all punch list items have been satisfactorily completed and the site is left in the condition specified under Cleanup and Protection.
- C. Warranty and Maintenance Period:
1. The end of the warranty and maintenance period shall be:
 - a. October 31st one year following fall Substantial Completion.
 - b. June 30 th one year following spring Substantial Completion.
 2. Prior to and during the warranty and maintenance period, replace any plants that are damaged, dead, or, in the opinion of the Project Engineer, are unhealthy, or have lost more than 25 percent of their natural shape due to dead branches, excessive pruning or improper maintenance. Rejected plant materials shall be removed from the site immediately after being rejected and legally disposed off-site. Replacement plants shall be installed within 2 weeks following the inspection unless otherwise agreed to in writing by the Owner.
 3. Only one replacement of any plant is required after Substantial Completion, except for losses due to failure to comply with specified installation and/or maintenance requirements. Failures include but are not limited to: infestation of crowns of perennials or ornamental grasses with invasive weeds due to failure to maintain beds, insufficient watering operations, herbicide damage, structural failures such as trees not remaining upright, and faulty performance of tree stabilization or watering devices.
 4. Make replacements in accordance with the original specifications, plant list, planting details, and notes. Fully restore areas damaged by replacement operations to their original and specified condition.
 5. The Contractor will not be held responsible for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents beyond landscape installer's control which result from floods, hail storms, winds over 100 miles per hour, fires or vandalism, unless Contractor has not completed specified installation or maintenance in a manner that could have protected the landscaping from these phenomena.
 6. If, in the opinion of the Project Engineer, it is advisable to extend the warranty and maintenance period for an additional growing season, the Contractor will be notified of such requirement by the Owner. Improper planting and/or failure to perform and document the specified maintenance in accordance with contract requirement shall be the basis for extending the period of establishment for an additional growing season. All specified maintenance and warranty requirements will be required during this extended period and all costs shall be the responsibility of the Contractor.

PART 2 - PRODUCTS**2.1 PLANT MATERIALS**

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in the Plant List shown on Drawings and with the minimum quality conforming to ANSI Z60.1. Branching on all plants shall be characteristic of the species, well-shaped, full, sound, healthy, vigorous stock of uniform growth and densely foliated when in leaf. All plants shall be free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
1. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
 2. Plants shall originate from the same USDA Hardiness Zone as project site, or lower (colder).
 3. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Where plant height or spread is indicated with a tolerance, the smaller dimension is the minimum acceptable; the larger dimension represents the maximum permissible. The average dimension of all plants must, at least, equal the average of the tolerance figures shown on the drawings. Spread shall meet the minimum dimension specified in all directions and must be considered as pivoting on center of plant.
 4. Canes on shrubs shall arise at or just below the root crown. Multi-stem and clump form trees shall have branches that arise at or just below the root crown except when approved by the Project Engineer.
 5. All plants shall have a waterproof legible label securely attached to each plant bearing designation of plant's common and scientific name, including genus, species, and cultivar or variety, when applicable.
 6. Do not prune plants prior to delivery.
 7. Stressed or damaged plants or those not conforming to the specifications shall be subject to rejection by the Project Engineer at any time during the term of the contract.
- B. Root treatments on all plants shall conform to the following requirements:
1. Balled and burlapped ("B&B") plants shall have healthy root systems developed by transplanting or root pruning with a firm, natural ball of earth securely wrapped with burlap, bound with cord and wire basket. Root flare shall be visible before planting. Plants with damaged or broken root balls or multiple layers of burlap will not be accepted.
 2. Containers shall be finished landscape grade material having their roots well established in the soil mass. Plants over-established in the container, as evidenced by pot-bound root ends, will not be accepted.
 3. Perennial plugs shall have well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery. .
 4. Live stakes shall be living, woody plant cuttings with side branches removed and the bark intact. They shall be prepared from stock of the diameter shown on plans and cut into lengths that will reach sustainable soil moisture when installed, with a minimum length no less than specified in the planting schedule. The basal end shall be cleanly cut at an angle to facilitate easy insertion into the soil. The top shall be cut square or blunt. Pilot holes may be required depending on soil conditions to install live stakes without damaging the plant material.
- C. Trees: Evergreen and deciduous trees shall have straight single leaders. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will not be accepted. Evergreens shall be unshaired.
1. Caliper is the trunk diameter taken at a specified distance above root collar as described in ANSI Z60.1.
 2. Branching height is the distance above ground where balanced branching occurs.

2.2 MULCH

- A. Organic Mulch: Well-composted, finely shredded processed hardwood bark, free from foreign material and fragments in excess of 2 inches in any dimension.
1. Dyed mulch or mulch that is predominantly wood chips will not be accepted.

2.3 STAKING

- A. Staking (for deciduous trees less than or equal to 3.5-inch caliper, ornamental/understory trees, and evergreens less than or equal to 12-foot height) shall be installed for trees planted on slopes 4:1 or steeper. It is not required but may be installed for trees planted on shallower slopes at the discretion of the contractor at no additional cost to the Owner:

1. Tree support stakes shall be a minimum actual size (not nominal) 2 inch x 2 inch hardwood posts free of bark or 3 inch diameter hardwood or cedar posts with bark intact. Posts shall be minimum 8 feet long. Metal fence posts are not permitted unless approved in advance by the Project Engineer.
2. Wire stays for tree stakes shall be No. 12 to 14 gauge galvanized wire. Polypropylene strapping will not be permitted.
3. Chafing guards shall be fiber-reinforced hose of not less than 1/2 inch inside diameter, color black. Multi-colored hose will not be permitted.

2.4 WATER

- A. Water shall be available from on-site sources. Water may be available from the creek at no cost or from City hydrant with appropriate metering. Confirm prior to commencing work.
- B. Water shall be free of wastewater effluent or other hazardous chemicals.

2.5 TOPSOIL

- A. Refer to Section 329100 "Topsoil".

2.6 PLANTING MIXTURES

- A. General: All planting mixtures shall be well pulverized, blended materials, free of rocks, debris of any type, tree roots, and other extraneous materials that will impede plant growth. When blending off-site amendments (Compost, etc.) with topsoil, the topsoil shall be pulverized and screened to remove all non-soil materials greater than ½ inch diameter. If on-site topsoil is not available, substitute pre-approved off-site topsoil. On-site sub-soils will not be permitted for use in plant mixtures.
- B. Standard planting backfill for individual tree and shrub pits shall be: 1 part existing, well pulverized soil excavated from planting pit or from site topsoil stockpile thoroughly blended with 1 part approved off-site topsoil.
- C. Encapsulated soil lifts shall be filled with topsoil sourced from site topsoil stockpile or approved off-site topsoil.
- D. Planting backfill for native plugs shall be existing, well pulverized soil excavated from planting pit, supplemented with site topsoil stockpile or approved off-site topsoil as needed.
- E. The pH range shall be 5.5 to 8.0.
- F. Texture class shall be as defined in Section 329100 "Topsoil".
- G. Soluble salts: 500 ppm maximum.
- H. Decomposed organic matter: 3-5% by weight (8-20% by volume)

2.7 SOIL AMENDMENTS

- A. Compost shall be a heavily decomposed mature/stabilized, humus-like material derived from the aerobic decomposition of leaf compost or standard commercial grade compost of sheep or cow manure. Raw manure is not suitable for use. The compost shall have a dark brown or black color, be capable of supporting plant growth without ongoing addition of fertilizers or other soil amendments and shall not have an objectionable odor. The compost shall be free of plastic, glass, metal, rocks, gravel, and other physical contaminants, as well as viable weed seeds and other plant parts capable of reproducing (except airborne weed species).
 1. pH: 6 to 8.
 2. Moisture content: 35 to 50 percent by weight. No visible free water or dust is produced when handling it.
 3. Sieve analysis: 100 percent passing 3/4 inch screen.
 4. Soluble salt content: Electrical conductivity below 10 dS m-1.
 5. Organic matter content: Minimum 40 to 60 percent.
- B. Sand shall be clean, coarse, ungraded, meeting the requirements of ASTM C33 for fine aggregates.
- C. pH Adjusters:
 1. Lime shall be finely ground agricultural grade dolomitic limestone containing not less than 85 percent calcium and magnesium carbonates conforming to ASTM C602, Class T or O.

2. Elemental sulfur shall be granular, biodegradable, horticultural grade material containing at least 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.

2.8 FERTILIZER

- A. The fertilization program shall be based on soil testing and formulations and rates of application shall be based on test reports provided by the independent testing laboratory.
- B. The independent testing laboratory shall also prepare a custom formulation and rate for each category of plants to be installed and maintained; i.e. trees, shrubs
- C. Fertilizers shall include organic and inorganic, slow release and water-soluble nitrogen and the percentages shall be based on soil types and the time of year being applied. Fertilizers shall not be applied during the hot summer months unless specific to blooming plants or from mid-summer through the end of the growing season when new plant growth will not harden off prior to the first killing frost.
- D. The fertilizer to be used to amend the soil before planting shall be granular fertilizer that conforms to applicable state and federal regulations, and contains no less than 60 percent slow-release nitrogen.
- E. Fertilizer to be used during the warranty and maintenance period shall be a complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, not less than 30 percent of the nitrogen from a slow release source. Fifty percent of the nitrogen shall be derived from natural organic sources. The formulations shall be as provided by soil test of this Section.
- F. Native plugs and live stakes do not require fertilizer. Fertilize trees and shrubs only if required by soil testing report.

2.9 PESTICIDES AND HERBICIDES

- A. Pesticides and herbicides shall be registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for project conditions and application. Do not use restricted-use pesticides and herbicides unless authorized in writing by authorities having jurisdiction.
 1. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
 2. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.10 ANTIDESICCANTS

- A. Water-soluble, biodegradable, non-hazardous emulsion specifically manufactured for agricultural use that will provide a protective film over plant surfaces to limit transpiration yet not interfere with respiration, osmosis, or photosynthesis. Use according to manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. General:
 1. Prior to beginning work, examine and verify the acceptability of the project site and notify the Project Engineer of unsatisfactory conditions or obstructions that do not appear on the Drawings. Do not proceed with the work until unsatisfactory conditions have been corrected or resolved.
 2. Verify that no foreign or deleterious material has been deposited in soil within a planting area.
 3. Where planting occurs in close proximity to other site improvements, provide adequate protection to all features prior to commencing work. Promptly repair any items damaged during planting operations to their original condition.
 4. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 5. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 6. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
 7. If plants die or are rejected due to non-conformity to contract requirements, they must be removed from the site immediately and replaced before Substantial Completion.
- B. Utilities: Have all underground utilities located by servicing agencies. In the vicinity of utilities, hand-excavate to minimize possibility of damage.
- C. Pesticides and Herbicides:

1. General: All plants delivered to the site shall be free of disease, pests, eggs, and larvae. Promptly remove all plants that do not conform to this requirement.
 - a. Insecticides should only be used to control pests when present in quantities that will be detrimental to plant vigor.
 - b. Applying foliar herbicides to control weeds in plant beds after installation will not be permitted unless approved in advance by the Project Engineer. Approval will only be granted if plants to be controlled cannot be effectively removed by hand pulling. Foliar herbiciding will only be permitted as part of the weed control program developed by the Contractor in advance of planting.
 - c. All chemicals shall be stored and mixed off-site. No chemicals of any type shall remain on site at the end of each work day.
 - d. Do not apply over water or dispose of used containers on-site.
 - e. Post all pesticide and herbicide applications.
- D. Coordination with Other Work:
 1. The Contractor shall coordinate work with other contractors or trades to determine the appropriate sequence of landscape installation with respect to other work on the site.
 2. Completed work installed out of construction sequence which is subsequently disturbed by the completion of work by other trades shall be repaired by the landscape installer at no cost to the Owner.
 3. Maintain grade stakes and layout controls set by others until removal is mutually agreed upon by all parties concerned.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- B. Install erosion control measures, if necessary, to prevent erosion or displacement of soils and discharge of soil-bearing water run-off or airborne dust to adjacent properties, natural resources and all pavement surfaces.
- C. Vegetation Removal: Strip and dispose of organic debris and root mat.

3.3 LAYOUT

- A. Accurately lay out each plant location and planting bed edges according to the drawings, using clearly visible painted, labeled stakes or plastic flags. Spray paint continuous lines on bare soil delineating plant bed boundaries. When scaling locations on the drawings, use at least 2 known reference points as layout controls to determine plant locations. Do not proceed with planting operations until locations have been reviewed and approved in writing by the Project Engineer.
- B. Prior to installation, all plant locations must be approved by the Project Engineer, who may field adjust locations at no additional cost to Owner. Plants installed without layout approval are subject to relocation at Contractor's expense.

3.4 PLANT INSTALLATION

- A. General: Complete all tree and shrub planting and mulching prior to fine grading adjacent seed beds. Keep excavations covered or otherwise protected after working hours and when unattended by Installer's personnel.
- B. Planting Pit Excavation:
 1. For individual plant pits in seeded areas, spread seed bed topsoil to the uniform depth and rough grade prior to layout and planting pit excavation.
 2. Remove rocks and other unclassified underground obstructions to at least 6 inches below the finished planting depth of the root ball. Trim perimeter of planting pit leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Ensure that root ball will sit on undisturbed base soil to prevent settling. If plant pits are initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
 3. If underground utilities or other surface or subsurface obstructions are encountered that cannot be removed, do not proceed with planting operations until alternate planting locations have been selected and approved by the Project Engineer.
 4. Size and configure planting pits in accordance with the planting details. If rotating augers or other mechanical diggers are used, scarify the side walls and bottom of the pit.
- C. Mixing and Placing Planting Mixtures:

1. Install planting pit and encapsulated soil lift mixtures to the specified proportions and depths. On-site mixing of salvaged topsoil with off-site topsoil or amendments shall result in a homogenous blend of all ingredients. Screen all mixture to remove foreign debris and rocks greater than ½ inch diameter prior to placement.
2. Place planting bed mixture in 6 inch lifts and lightly compact to prevent settlement after planting. Settlement that occurs after planting will require plant removal and the placement of additional plant mixture at the Contractor's expense. When placing mixture in raised planters, set finish grade elevations 2 inches low for mulch placement, if required on Drawings.
3. Grade planting areas to a smooth, uniform surface plane. Roll and rake, remove ridges, and fill depressions to meet grade.
4. Before planting, obtain Project Engineer approval of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Fertilizing:

1. Prior to or during planting, amend all planting pit and bed mixes by incorporating fertilizer at rates required by soil test reports as specified under Section 329100 "Soil Preparation (Topsoil)". Do not broadcast fertilize over the surface of the soil or onto any plant root ball.
2. For individual plant pits, incorporate fertilizer into back fill during planting operations. For plant beds, pre-mix fertilizer prior to installation.

E. Planting and Backfill:

1. Do not plant when the ground is frozen or saturated.
2. Balled and burlapped plants: Do not use planting stock if root ball is cracked or broken before or during planting operation. Set the plant in the center of planting pit with the crown set at 1 inch above adjacent soil for shrubs and 2 inches above adjacent soil for trees. Root flares shall not be set below adjacent finish grade. Face plant to give the best appearance or relationship to primary views. Cut away burlap, rope, wire or other wrapping materials from the top one-third of the root ball, and remove from pit. If plastic wrap or other non-degradable materials are used in lieu of burlap, completely remove them from the root ball before backfilling. Backfill planting pit approximately two-thirds full, add fertilizer, water and allow planting mixture to settle. After the water has been absorbed, complete backfilling and tamp lightly to grade to prevent future settlement and form a watering basin with plant mixture of the size indicated on Plans.
3. Container-grown plants: Remove containers and make at least four vertical cuts one-half to one inch deep around the root ball and thoroughly loosen the roots on the outside of the ball. Plant as specified above for balled and burlapped plants with the additional requirement that container-grown stock shall be planted so that top of container soil is level with surrounding grade, unless the root flare is not at the surface of the container soil. If the root flare is buried, excavate to expose the flare and place as required above in relation to finish grade. Size of root ball must meet ANSI Z60.1 after removal of material. Do not plant higher to account for mulch, as mulch should not cover plant crown.
4. Live Stakes: Install live stakes in the configuration, spacing, and areas shown on the drawings. The cuttings shall be tamped into the ground at right angles to the slope to the depth shown on drawings. If soils are too firm to drive stakes without damaging the plant material, pilot holes shall be created with an augur or reinforcing rod. Pilot holes shall be narrower in diameter than the live stakes. If air gaps between the live stake and soil occur these must be filled with Topsoil as defined in Section 329100 "Topsoil".

3.5 SPECIAL PLANTING CONSIDERATIONS:

A. Sloped Plantings:

1. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball. Complete planting as specified under Planting and Backfill section above.

B. Floodplain Plug Mix:

1. Install native seed and erosion mat per Drawings prior to any plug planting.
2. Set out and space perennials plugs as indicated on drawings with triangular spacing.
3. Prior to planting, biodegradable plant containers shall be split and non-biodegradable containers removed. The root systems of all plants shall be split or crumbed by hand.
4. To install plugs into erosion control mat, cut 'X' into the erosion control mat, pull back corners and excavate hole 2x width of plug and same depth as plug. Install and backfill with topsoil, folding fabric under to hold open at sides of plug plant foliage.
5. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
6. Do not mulch plugs planted within seeded areas.

C. Live Stakes:

1. Do not re-cut stakes before planting.
2. Soak live stakes in water for at least 48 hours before planting.
3. Plant using triangular spacing as shown on plans.
4. Drive stake through erosion control blanket or encapsulated soil fabric into the ground at an angle of 90 degrees to the soil surface without breaking or damaging. It may be necessary to make a deep pilot hole with a piece of rebar, metal rod or planting tool.
5. Insert the stake with angled end down; burying stake as shown on details. Bottom of stake must reach consistently moist soil.
6. Pack soil firmly around stake, ensuring good contact between soil and stake along its entire buried length.

3.6 MULCHING

- A. Uniformly install mulch on all trees and shrubplanting pits to depth and radius shown on Plans within 48 hours of planting.
- B. Keep mulch out of the crowns of shrubs and perennials, at least 3 inches from all tree trunks, and off sidewalks and roadways.

3.7 PRUNING

- A. After planting, prune trees and shrubs to remove all dead, dying, broken, or crossed limbs flush with the ground or main stem leaving no stubs. Do not prune to shape or to compensate for transplanting shock. Retain natural form of the plant type. Prune using standard professional horticultural and arboricultural practices. Remove trimmings from the site.
- B. Employ workers experienced in this type of work.

3.8 STAKING

- A. Install staking as shown on the details for trees planted on slopes greater than 4:1. Trees on shallower slopes may be staked at the contractor's discretion at no additional cost to the Owner.
- B. Remove and dispose of stakes and guys at the end of the warranty period.

3.9 CLEANUP AND PROTECTION

- A. Remove excess and waste material daily. When planting has been completed, clear the site of all debris, stockpiles and materials.
- B. Repair any damage to existing landscape, paving or other such features as a result of work related to this contract to its original condition.

3.10 Protect landscape work and materials from damage due to landscape operations, and operations by other Contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.

- A. Provide all maintenance under the supervision of a skilled employee of the landscape installer. The skilled maintenance supervisor shall be: capable of conducting plant diagnostics to identify the presence of disease and insect problems and directing a maintenance crew in the performance of horticultural maintenance practices identified below. Maintenance requirements identified below shall be the basis for information to be included in the Maintenance Schedule and Irrigation Plan identified under Part 1 of this section and thoroughly documented under the required Maintenance Report Forms to verify the work has been properly performed.
 1. Failure to perform and submit factual Maintenance Report Forms could result in non-payment for said services and require the extension of the warranty and maintenance period an additional year at the Contractor's expense.
- B. Provide all equipment, materials, labor and services to maintain the landscape beginning immediately after each plant is installed and continuing until Final Acceptance and the end of the warranty period. Perform all work under the direct supervision of a technician trained to recognize and treat conditions affecting the establishment and growth of the plants and perform the following:
 1. Inspect the entire landscape at least once per week during the growing season and perform needed maintenance promptly.
 2. Irrigation:

- a. Irrigate all plants to maintain optimum moisture within the root zone. Reoccurring overly dry or wet conditions shall be grounds for rejection of plant material. When using an automatic sprinkler system, the landscape installer responsible for maintenance shall bear full responsibility to set each zone to the correct frequency and duration.
 - b. Provide an approved temporary irrigation system or hand water from a source approved by the Project Engineer. The system shall have the ability to be operated without moving hoses or sprinklers around the site between seeded/planted areas (i.e. system can be set to water one area for the required maintenance period), and may be automated with a timer. Supply all water and equipment at the Contractor's expense from a source approved by the Project Engineer.
3. All pruning shall be performed by or under the supervision of a certified arborist. Prune only dead wood and broken limbs as identified, in accordance with Part 3.7 - Pruning. Do not shear evergreens or any shrubs. Maintain the natural shape of trees and shrubs. Plants sheared so that they no longer present their natural shape will be replaced at Contractor's expense.
 4. If using maintain stakes and guys taut and in the specified condition.
 5. Maintain all planting areas and tree saucers weed free. Edge shrub and perennial beds and tree rings at least monthly during the growing season, keeping all tree rings to a uniform diameter. Hook mulch monthly and add mulch as needed.
 6. Apply treatments as necessary to keep plants and planted areas free of insects, pests, and disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and herbicides. Treatments include utilizing physical and cultural controls.
 7. All pesticides shall be applied by a licensed pesticide applicator. Apply pesticides and all other chemical products and biological control agents in accordance with the authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner at least 24 hours before each application is performed. No mixing or disposal of chemicals is allowed onsite.
 8. Apply antidesiccant to upright conifers and broadleaf evergreens in December through February, at least once per month.
 9. Collect all litter and debris from plant beds and dispose off-site.
 10. Fertilization:
 - a. Fertilize plant material only as recommended by the soil test report.
 11. Remove dead and unacceptable plants as their condition becomes apparent. Make replacements during normal planting schedule season unless otherwise directed by Project Engineer. Do not wait until end of the warranty period to replace plants unless directed to do so by Project Engineer.
 12. At the end of the warranty period, but prior to Final Inspection, remove all staking, watering bags or saucers, and other accessories and top dress tree rings and beds 1 inch deep with the specified mulch product.

END OF SECTION

SECTION 353119- STONE REVETMENTS AND BREAKWATERS**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes:
Bank toe protection
Floodplain bench toe protection
Cross Vane
Cobble riffle substrate

1.2 QUALITY ASSURANCE

Test Section:

1. General: The initial sections for each typical cross section will be considered as a test section. The purpose of the test sections will be to establish an in-the-field standard, built in accordance with the requirements of the Contract Documents, to which the remainder of the revetment shall be constructed. The Contractor will make whatever modifications are necessary to placement procedures such that this standard will be achieved consistently during construction of the remainder of the revetment. Based on these solutions, the Engineer may make modifications to the revetment cross section dimensions.

Approval: Rework deficient portions of the test section to meet these requirements. Upon approval, the test section can be incorporated into the remaining Work such that removal will not be necessary.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Exercise care in the transportation of all stone materials to prevent cracking, splitting, spalling, etc. that would otherwise lead to rejection at the job site.

Handle and store bedding material to ensure that stockpiles are not contaminated with other soils and materials, and to limit the segregation of material sizes.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. General:
- All shore protection stone materials to be furnished under this Agreement shall meet all requirements specified in this section. The Engineer, at any time during the Agreement, will reject materials at the source or at the job site for failure to meet the specified requirements. Inspection of materials at the quarry or at the job site shall be as specified in Quality Control. Inspection and testing of materials shall be as specified in Material Quality. Materials which have been delivered to the Project site and are rejected, whether in stockpile or in place in the structure, shall be removed from the Project site at the Contractor's expense.
- B. Stone Gradations
- Armor Stone, ODOT Type A: Material shall conform to Ohio Department of Transportation Construction and Material Specification Section 703.19.B
 - Open Graded Base: Material shall conform to Ohio Department of Transportation Construction and Material Specification Section 703.19.B Type D.

Cross Vane Stone:

Material having the gradations listed below shall be placed in the Work at the locations as shown on the Contract Drawings. Gradation limits are in-place requirements. Adjustments in production, transportation and placement methods shall be made as necessary to ensure final placed materials are within specified ranges. Within each gradation, a minimum of 50% of the stones by number shall be larger than the median stone weight:

Designation	Description	Weight range	Median Weight
Cross Vane Stone	24" Boulder	900-1450 lb	1250 lb
Cobble	Cobble Riffle Substrate	0.5 - 6lb (1"-4" Dia)	1 lb (2" Dia)

3.

[All stone shall have a minimum specific gravity of 2.6 based on water having a unit weight of 62.4 pounds per cubic foot.

The neat lines representing the limits of the armor stone and the sub-armor stone for revetment construction, as shown on the Contract Drawings, are based on either one or two layers of stone with an average weight of 162 pounds per cubic foot (specific gravity 2.6). If the specific gravity of the stone selected by the Contractor differs to the extent that the layer thicknesses change from what is indicated on the Contract Drawings, redesigning of the section will be required by the Engineer.

The least dimension of any piece of armor shall not be less than one-half of its greatest dimension when measured mutually perpendicular. The least dimension of any piece of sub-armor stone shall not be less than one-quarter of its greatest dimension.

All armor stone shall have angular faces that are fractured, split or the actual bedding plane surface.

C. Encapsulated Soil Lift Fabric shall be a biodegradable woven material meeting the following minimum physical property requirements:

Property	Test Method	Requirement
Tensile strength	ASTM D 4632	180 lb
Puncture resistance	ASTM D 4833	80 lb
Permittivity	ASTM D 4491	0.7 sec ⁻¹

Geotextile fabric shall be a woven monofilament geotextile and meet the following minimum physical property requirements:

Property	Test Method	Requirements
Tensile Strength	ASTM D1682 E	200 lbs.
Puncture Resistance	ASTM D751	135 lbs.
Burst Strength, Mullen	ASTM D751	425 psi
Apparent Opening Size (EOS)	ASTM D4751	100 US std. sieve
Permeability	ASTM D4491	0.4 cm/sec

PART 3 - EXECUTION

3.1 QUARRY OPERATIONS

A. Quarry operations shall be conducted by the Contractor/supplier in a manner that will produce stone conforming to the requirements specified, and may involve selective quarrying, handling and loading as necessary. Blasting and handling of rock shall be controlled by the Contractor/supplier to produce rock of the size ranges and quality specified. Techniques such as the use of proper hole diameter, hole depth, hole angle, burden and spacing distances, types and distribution of explosives, delay interval and sequence, removal of muck piles between each shot and special handling techniques will be required as necessary to produce the specified materials. All specifications of blasting operations shall be specifically designed so that the end product is not damaged from the blasting technique and that the stone is suitable for the intended purpose.

Submit, in writing, to the Engineer the anticipated production rates for the various types of stone materials. If the production rates change significantly such that delays are caused at the job site, the Engineer shall be notified in advanced writing with the reason for the delay.

3.2 CURING STONE

A. All sedimentary quarry stone from any source shall be stockpiled at the quarry a minimum of 48 hours prior to shipment to the Project site. No stone production shall be allowed prior to 1 April or after 1 November; unless quarry history is available to ensure that durable stone can be quarried in freezing temperatures.

3.3 PLACEMENT

A. General:

1. Placement of all stone materials shall not deviate from the neat lines as shown on the Contract Drawings by more than the tolerances described in this section, unless directed by the Engineer.

Approval of placement and/or check surveys for any stone set, or portion thereof, does not constitute final acceptance. The stone Work will be considered substantially complete when the Engineer has approved placement and check surveys for all sets comprising the total length of revetment Work for the Project. Any damages to approved sets prior to substantial completion, due to Contractor or subcontractor operations, wave activity, or otherwise, shall be repaired by the Contractor at no additional cost to the Owner.

B. Open Graded Base Stone:

1. Sub-Armor stone shall be placed in sets starting at the toe and proceeding lengthwise along the set and upward, placing both layers simultaneously, with stones placed firmly on the stones beneath. Do not place armor stone on the primary sub-armor stone until the placement of that set is completed as specified and approved by the Engineer, and check surveys indicate that the set is built to the required lines, grades and tolerances. If the Contractor elects to use multiple placement operations to construct separate primary sub-armor stone sets, it must ensure that the specified requirements are met in areas where the sets are to be joined. Equipment suitable for handling primary sub-armor stone of the specified gradation shall be used. All sub-armor stone shall be placed uniformly within the lines and grades indicated on the Contract Drawings and within the tolerances described in this section. Sub-Armor stones shall be placed in such a manner as to avoid displacing underlying materials and placing undue impact force on underlying materials and to minimize cracking or chipping of stones. Dumping and/or pushing, or the use of dragline buckets or skips, will not be acceptable for placement of sub-armor stone. Finishing of slopes will be done as the sub-armor stone is being placed. The finished primary sub-armor stone course shall be a well-graded, interlocked mass with rock-to-rock contact. Any damage to the sub-armor stone occurring subsequent to approval, but prior to armor placement, shall be corrected and resurveyed by the Contractor at no additional cost to the Owner. At the end of each work day that sub-armor stone is placed, the Contractor will provide a Sub-Armor Stone Placement Summary to the Owner's representative. The exact format of the Primary Sub-Armor Stone Placement Summary shall be determined and agreed upon by the Engineer and Contractor prior to commencement of sub-armor placement. This summary shall include as a minimum: the tonnage of sub-armor stone placed; the revetment stations between which the primary sub-armor stone was placed; and total primary sub-armor placement time.

C. Armor and Cross Vane Stone:

1. Where indicated on the Contract Drawings, construction of the armor course shall begin at the toe of the structure with the placement of uniformly sized select toe stones. These toe stones will serve to delineate the outer limits of the armor course and act as an anchor stone.

The remaining armor stones shall be placed in sets starting adjacent to the toe stone or at the outer limits of the revetment and proceeding upward, with each stone placed firmly on the stones beneath. Each armor stone set shall be as long as practicable so as to provide the Contractor the opportunity to select the most suitable position for each size and shape of rock in order to achieve the results specified herein. The Contractor shall not commence a new set until the previous set is completed as specified and approved by the Engineer, and check surveys indicate that the set has been constructed to the required lines, grades and tolerances. If the Contractor elects to use multiple placement operations to construct separate sets, it must ensure that the specified requirements are met in areas where the sets are to be joined.

Equipment proposed for armor stone placement shall be capable of placing the stone at its final position before release and also will be capable of moving and repositioning a released stone, if necessary. Casting or dropping of stone over 1 foot, or moving stones by drifting or manipulating down the slope will not be permitted. Buckets or skips will not be acceptable for placement of armor stone.

Armor stone shall be placed individually between the designated neat lines and to the grades shown on the Contract Drawings, within the tolerances described in this section. Armor stones shall be placed in such a manner as to avoid displacing or placing undue impact force on underlying materials and to minimize cracking or chipping of stones. Where more than one layer of stone is required, armor stone shall be placed to its full course thickness in one operation such that stones are keyed and layers are interlocked.

Finishing of the slopes will be done as the armor stone is being placed. Stockpiling of stones on approved sections of the breakwater will not be permitted. The finished armor stone course shall have uniform slope and crest surfaces and a well-defined break at the shoulder. The armor stone course shall be stable, tightly placed, keyed and interlocked, with rock-to-rock contact and no overhanging stones. All gaps, seams, holes, etc., in the armor surface shall be of a size not greater than the maximum allowable void defined in this section.

Re-handling of individual stones after initial placement will be required as necessary to achieve the results specified above.

At the end of each work day that armor stone is placed, provide an Armor Stone Placement Summary to the Engineer. The exact format of the Armor Stone Placement Summary shall be determined and agreed upon by the Engineer and Contractor prior to commencement of armor placement. This summary shall include as a minimum: a tally of each stone placed; the stations between which armor stones were placed; and total armor placement time.

- D. Geotextile Fabric Placement: Fabric shall be placed as follows:
1. Placement of fabric shall conform to manufacturer's requirements to assure a continuous layer unbroken by rips, tears, punctures, or other physical damage from placement of the fabric or placement of materials over the fabric.

Seams between individual pieces of fabric shall be joined or overlapped to provide a continuous layer. To the maximum extent possible, seams should be joined in the shop. Fabric shall be overlapped at a minimum of 18 inches at all longitudinal joints and a minimum of 36 inches at all transverse joints.

3.4 TOLERANCES

- A. The finished surface and stone layer thickness shall not deviate from the lines and grades shown on the Contract Drawings by more than the tolerances listed below. Tolerances are measured perpendicular to the indicated neat lines. Extreme limits of the tolerance given below shall not be continuous in any direction for more than five times the median stone dimension and/or for any area greater than 1,000 square feet of the structure surface. Any section of a stone course built to the upper tolerance limit shall not be immediately adjacent to a section built to the lower tolerance limits and vice versa (i.e., transitions between extreme tolerance limits shall be smooth).

Material	Above Neat Line	Below Neat Line
Armor	12 inches	12 inches
Open Graded Base	3 inches	6 inches
Cross Vane	6 inches	3 inches
Sub-grade	3 inches	6 inches

- B. In addition to the vertical tolerances above, the horizontal alignment for the finished stone courses shall be +2 feet from that shown on the Contract Drawings provided lines, arcs, curves and transition zones are smooth and continuous without visible deflections, bends, kinks, etc. The horizontal tolerance for the landward edge of the armor stone crest adjacent to the reference line shall be +12 inches.

The intention of the above tolerances is that the Work will be built to the required elevation, slopes and grades, and that the outer surfaces shall present a neat and positive aesthetic appearance. Placed material not meeting these intentions shall be removed and/or reworked to the satisfaction of the Engineer. Material beyond the upper tolerance limit permitted to remain in place by the Engineer will not be paid for, as discussed previously in this section.

END OF SECTION