



ADDENDUM #3
ITB/RFP NUMBER: 2016022-PW-B
Reservoir Street Project ITB

DATE: January 20, 2016

TO: All Potential Bidders/Offerors

City of Harrisonburg's Reservoir Street Project ITB, is modified as follows:

On January 12, 2016 at 2:00 PM a Non-Mandatory Pre-Bid meeting was held for this project. A copy of the sign in sheet is attached to this addendum as well as the agenda. The agenda summarizes the things discussed at the pre-bid.

This Addendum will include the following information:

1. List of Questions, Answers, Revisions, and Clarifications
2. Pre-Bid Agenda & Sign In Sheet
3. Pre-Bid Orientation Slides
4. Revised Plan Sheets – 2B(1), 2B(2), 2B(3), 2D(2), 2D(6), 2D(7), 2D(8), 2E(1), 2E(2), 9, and 19(2)
 - a. PLEASE NOTE THESE PLAN SHEETS WILL BE POSTED AS A PDF, SEPARATE FROM THIS ADDENDUM.
5. Revised Project Manual Pages - Form 0300 Bid Form, Supplementary Specification 1007,
6. Supplementary Specification 1009 – Jacked & Bored 36" Pipe
7. Key to the Northern Long-Eared Bat 4(d) Rule for Non-Federal Activities

Questions, Answers, Revisions, & Clarifications:

The following is a summary of questions posed by attendees as well as additional comments/questions that are being addressed:

1. Clarification of the conflict between the cross sections and the plan sheets regarding full depth pavement removal and replacement versus resurfacing/milling and paving.

The intent was for contractors to follow the patterning on the plan sheets and not the pavement thickness on the cross sections. There will be a clarification made for sheet 9, STA 48+25 to STA 50+50, where the patterning will be changed to depict full depth pavement removal and replacement instead of resurfacing. A revised plan sheet and bid tab is provided to clarify this change in plan and quantities. See revised plan sheets: 2D(2), 2D(8), and 9.

2. Will the pavement mix designs be changed due to the new VDOT specifications?

This project will be constructed using the mix designs specified on the plan sheets.

3. Can C-48s be submitted after bids are due?

No, the C-48s are due with the bid packets per P.0100-2 3.E. of the Project Manual.

4. The plans indicate that the 36” stormsewer on Sheet 19(2) is to be jacked and bored. It also calls for RCP pipe to be used along with concrete cradle shown. Is this correct?

The concrete cradle has been removed and the pipe type has been changed to 36” steel pipe. The contractor is to submit a complete boring plan for approval. See revised Sheets: 2B(1), 2B(2), 2B(3) and 19(2) Supplementary Specification 1009 has also been added for clarity.

5. *Supplementary Specification 1003, QC, QA, & IA Testing, and Supplementary Specification 1007, Precast Modular Block Retaining Wall System, were found to be in conflict in some areas. Supplementary Specification 1007 has been revised to be consistent with Supplementary Specification 1003. See attached revisions to Supplementary Specification 1007. The contractor is responsible to engage testing and inspection services for Acceptance Testing.*
6. *The City has agreed to allow the contractor to use Ramblewood Park, between Ramblewood Road and I-81, as a site to place clean construction waste that is free from organics, root material, metals, etc. and less than 2’ in length/diameter. This would need to be requested and coordinated at the pre-construction meeting.*
7. *The Stone Strong modular block retaining wall system is specified for all walls except Wall E and Wall H. If bidders prefer to bid a different manufacturer, this request needs to be made prior to bidding.*
8. *Revisions to Sheet 2D(6) – Top of the grading plan should say 40+00 instead of 35+00 (see attached)*
9. *Revisions to Sheet 2D(7) – Total Regular Excavation Table is revised to add “D.” (see attached)*
10. *Revisions to Sheet 2E(2) – Callout referencing detail for connection of HR-1 to coping has been removed from this sheet. Contractor to provide detail as part of their design submittal.*
11. Regarding the Moment Slab for retaining Wall “E” and BR27D Railing Wall, the Bid Tabulation calls for 14,866 pounds of Reinforcing Steel but I do not see a rebar schedule or layout information on the plans. Will a schedule or detail be provided for this item and is the Reinforcing Steel for the BR27D Wall included in this quantity? Is Corrosion Resistant Reinforcing Steel required for the Moment Slab and BR27D Railing Wall?

A steel schedule or detail will not be provided to the contractor. Rebar design/layout and schedule shall be the responsibility of the contractor and shall be included in the design submittal for the MSE wall. Corrosion Resistant Reinforcing is required for precast facing panels, precast coping and moment slab. See revised sheet: 2E(1)

12. The bid sheet calls out using Type b class 1 Thermoplastic on bid item 187. The plans tell me to use Preformed thermoplastic (note 4 page 12(3)) but references type B class 1 which is extruded or sprayed thermoplastic. If we are to use Preformed thermoplastic Type B class 2 needs to be referenced on the plans and bid sheet. Type B class 1 is the usual type of installation for thermoplastic.

Line items will be revised to call out Type B Class 2, Preformed Thermoplastic.

13. Plan Sheet 2. General Note G-7. States suitable excavation from regular excavation shall be placed in the top portion to allow for stabilization with hydraulic cement/lime.
 - a. There is not a bid item or specification for lime stabilization
 - b. We shall presume that lime/cement stabilization, if required, shall be paid for under a change order to the contract.

Note G-7 has been removed.

14. Plan Sheet 2. General Note I-10.
 - a. Please provide a bid item and bid quantity for RM-1 monuments

This note will be removed from the plan sets. The contractor will not be required to install RM-1's. See revised sheet: 2

15. Plans – 36” Jack and Bore
 - b. Bid Item 16 lists 134 LF of 36” Jack and Bored Pipe
 - c. Drainage Sheet 2B1 lists the run of 134 LF from 8-8 to 8-9, but does not call out jack and bore as a requirement
 - d. Qty Summary 2B2 list 134 LF of pipe and 42 CY of Class A3 Concrete cradle.
 - e. As a pipe cradle cannot be installed with a Jack and Bore method, we would presume the intent is to open cut this pipe and install the cradle.
 - f. Please advise the intended method of construction

See response to question #4.

16. Plans – Sheet 2D(5) and 6: Demolition Items D500 and D501
 - g. Please provide the Environmental Assessment for these UST's
 - h. At this time, this item cannot be accurately priced without this information

Underground storage tanks were part of an underground stormwater detention facility. No environmental assessment will be needed. If the contractor should encounter hazardous materials during construction, the City is to be notified immediately and will manage any remediation necessary.

17. Plans – CG-9B, CG-9D, CG-11 and CG-13
 - i. Quantities and designations between bid items and pavement summary do not match.

Quantities on sheets 2D(1)-2D(4) are for asphalt quantities only. Additional summaries can be found on sheet 2D(8).

- j. Please clarify the bid items and the bid quantities

Quantities have been verified.

- k. CG-9B
 - i. Plan Pavement Summary: 377 SY
 - ii. Bid Item: 77 SY

Quantities for CG-9B are listed in the incidental summary on sheet 2D(8). Quantities on sheet 2D(1) – 2D(4) are for asphalt quantities only.

- l. CG-9D

- i. Plan Pavement Summary: 1890 SY
- ii. Bid Item: 511 SY

Quantities for CG-9D are listed in the incidental summary on sheet 2D(8). Quantities on sheet 2D(1) – 2D(4) are for asphalt quantities only.

- m. CG-13
 - i. Plan Pavement Summary: 0 SY
 - ii. Bid Item: 43 SY

Quantities for CG-13 are listed in the incidental summary on sheet 2D(8). Quantities on sheet 2D(1) – 2D(4) are for asphalt quantities only.

- n. CG-11
 - i. Plan Pavement Summary: 3945 SY
 - ii. Bid Item Does Not Exist. Please provide a bid item and verify the bid quantity

There will be no line item for CG-11 entrances. Payment for CG-11's are included in the unit price for corresponding items such as CG-6, regular excavation, asphalt, stone, etc.

18. A Supplementary Specification 1009 was added for the Jacked and Bored 36" Pipe.

19. Please note that Addendum #2 was labeled incorrectly as Addendum #1.

All other requirements, terms and conditions of the ITB/RFP remain unchanged.

Addendum page must be signed and returned with your bid/proposal to acknowledge receipt of this addendum.

Authorized Signature

By: Pat Hilliard, CPPB
Procurement Manager

PRE-BID MEETING – January 12, 2016 @ 2PM, City Hall (NOT mandatory)

Reservoir Street Improvement Project U000-115-R30

- Introduction of City and McCormick Taylor staff
 - Kim Cameron, Public Works Engineer/Project Manager
 - Danielle Morris, Project Coordinator
 - Jim Baker, Public Works Director
 - Tom Hartman, Assistant Director of Public Works
 - Doug Adams, Chief Inspector
 - Pat Hilliard, Procurement Manager
 - Danny DeLong, Design Engineer, McCormick Taylor

- Sign in Sheet – see attached

- General Description of Work

Widen approximately 1.5 center lane miles of Reservoir Street from University Boulevard to city limits to include: sidewalk, curb & gutter, CG-12 detectible warning surface, entrances, retaining walls, traffic signals, pedestrian signal work, together with all appurtenances, public water and sewer relocations and incidental items required to complete the work.

**Note: changes from previous bidding-1) shortened right turn lane on University @ Reservoir/ Costco, 2) changed typical pavement section to: 8" – 21B Agg., 4" – Base, 1 ½" Surface (per geotech reports & other sections of Reservoir), and 3) changed most walls to Stone Strong block walls (except: wall E is MSE & Wall H is RW-2 w/Arch finish-SP1004)*

- Instructions to bidders

- Questions will be received up until January 19, 2016 at 12:00 PM EST and posted on the City's website at www.harrisonburgva.gov/bids-proposals as well as on the eVA website at www.eva.virginia.gov.
- Bids due:
 - Thursday, **January 26, 2016 at 3:00** PM EST at the **Financing/Purchasing Office at City Hall located on the 3rd floor**. Bids will be opened and read publicly shortly thereafter at the same location as this pre-bid – Room #011 and #-12 (lower level.)
- Start/ end dates:
 - *Anticipated Notice to Proceed is March 14, 2016. Entire project must be completed by December 15, 2017.*
- Liquidated damages will be applied as specified in the current VDOT Road and Bridge Specifications

- **Funding**
 - VDOT Revenue Sharing, local funds

- **Required Bid Forms and VDOT Civil Rights**
 - Required Responsive Bid Forms – P. 0100-2 Item 3E lists all documents
 - After Bid Award Required Forms – Agreement, Cert. of Insurance & Endorsement, Payment & Performance Bonds,
 - Materials forms will be required – C25s, submittals (list), QC Plan,
 - No DBE Good Faith Effort
 - No Davis-Bacon Wage Rates

- **Contract - Supplementary Provisions**

1000 – Low Permeability Liners for SWM Facilities

1001 – Street Centerline Monuments – Contractor to install – provided by City

1002 – Seed Specification – submittal for this

1003 – QC, QA, & IA Testing – Contractor to provide a QC Plan – std. VDOT table rev. April 2015

1004 – Arch Finish & Concrete Surface Color Coating – for form liners –

1005 – Sign Specifications

1006 – Bus Shelter Hardware & Pad Design

1007 – Precast Modular Block Retaining Wall System – Most walls except Wall E & Wall H – Stone Strong or equal – if another system is requested, submit the information prior to LDFQ

1008 – Cemetery Wall – modular block wall – reinstall plaque and ornamental balls – Wall D (Stone Strong)

- **Construction Work**
 - Contractor will be responsible for obtaining the Land Disturbing Permit and VSMP permit. City will pay all fees and provide the Contractor with the forms to sign.
 - Building permits – retaining wall – contractor to obtain permit
 - Tracking of quantities for work will be needed – contractor to provide & sign daily Qty.
 - Sequence of Construction – suggested by MOT, encourage making maximum use of time when JMU is out of session – open to discuss variations of SOC
 - Retaining Walls – most walls are modular block except Wall E (MSE) & Wall H (VDOT RW-2)
 - Quality Control Testing – contractor to submit QC Plan for review & coordinate all testing per the plan – incidental to contract items
 - Excavation will be paid via % - notify prior to bidding if contractor quantity takeoffs differ from plan quantities (we won't be counting dump trucks of material)

- **Addendums & Questions**
 - 1 – Engineer's Est. & utility locating – Contractor to call in Miss Utility – City will then locate our utilities – City will not be digging test pits – that's contractor's responsibility

- 2 – Geotechnical Reports –F&R 12/4/13 and S&ME 7/27/12
- 3 – to be done - Pre-bid mtg. notes & additional questions: 1)pavement replacement versus resurfacing – intent to follow patterning/Sh. 9 will change, 2) spoil site,
- Long Eared Bats –Final ruling was released by U.S Fish and Wildlife Service Thursday January 14th. See attached form for reference. City will continue to coordinate with VDOT and inform contractors once there is a final guidance from VDOT. As of now the contractor must abide by the April-September time of year restriction for tree removal but there is a chance this might lessened by the Notice to Proceed date.

- **Anticipated Next Steps**

- Review/ Approval by VDOT/ City Manager Authorization
- Notice of Award – estimated to be by February 22, 2016
- Pre-Construction Meeting - TBD
- Notice to Proceed – anticipated March 14, 2016
- Third Addendum will be issued next week after LDFQ, Jan 19, 2016

PRE-BID MEETING ATTENDANCE
 Reservoir Street Project U000-115-R30
 Tuesday, January 12, 2016 at 2:00 PM

NAME (Please Print)	COMPANY	MAIN PHONE/MOBILE	EMAIL
Kim Cameron	City of Harrisonburg	540-434-5928 540-820-5585	kimberly.cameron@harrisonburgva.gov
Danielle Morris	"	540-434-5928	danielle.morris@harrisonburgva.gov
Tom Hartman	"	"	Tom.Hartman@harrisonburgva.gov
Rick Altizer	"	"	Larry.Altizer@harrisonburgva.gov
Danny DeLong	McCormick Taylor	804-762-5800	djdelong@mccormicktaylor.com
Jim Baker	city of Harrisonburg	434-5928	Jim.Baker@harrisonburgva.gov
Orin Pappas	Richardson Wayland	540-400-3191	ORIN.PAPPAS@RWTRAFFIC SIGNAL.COM
Neil Murray	Richardson Wayland	540-581-2597	NMurray@RWtrafficsignal.com
Tim Smith	Branch Highways	540-982-1678	timothy.smith@branchhighways.com

MIKE JEFFERIES
 540 962 4931
 mikejmi@shatel.net

PRE-BID MEETING ATTENDANCE
 Reservoir Street Project U000-115-R30
 Tuesday, January 12, 2016 at 2:00 PM

NAME (Please Print)	COMPANY	MAIN PHONE/MOBILE	EMAIL
Tom Petty	Branch Highways, Inc	540-982-1678	tom.petty@branchhighways.com
Ronnie Rabston	Branch Highways Inc	540-815-6323	ronnier@branchhighways.com
MIVE HARRIS	DAVIS H ELLIOT	859-221-4416	mharris@dhec.com
Chris Blair	Greenway Engineering	540-662-4185	cBlair@GreenwayEng.com
ERLIE HOLZWORTH	GREENWAY ENGINEERING	540-662-4185	eholzworth@greenwayeng.com
Jake Hensley	AJS Excavating	540-815-6317	Jhensley@Team Hand Jr.com
Amy Comer	Contracting Unlimited	540-434-2748	amy.comer@contractingunlimitedinc.com
TREY ALLEY	FAULCONER CONSTRUCTION	434 295 0033	TALLEY@FAULCONERCONSTRUCTION.COM
STEVE WIDHONE	FAULCONER CONSTRUCTION	434-295-0033	SMADHON@FAULCONERCONSTRUCTION.COM

Ira Biggs Commonwealth Excl 540-248-2000 CNS Ce: @hotmail.com
 Jacob Judy Ferguson Ent. 540-742-1162 jacobjudy@ferguson.com

PRE-BID MEETING ATTENDANCE
 Reservoir Street Project U000-115-R30
 Tuesday, January 12, 2016 at 2:00 PM

NAME (Please Print)	COMPANY	MAIN PHONE/MOBILE	EMAIL
DENNIS BARKER	DLB, INC.	276-728-2137	dennis@dlinovr.com
Jack Hinton	Pav-Con	540-487-8985	Jack.hinton@conmatgroup.com
Frank Breeden	Pavcon	540-908-9592	Frank.Breeden@conmatgroup.com
Gregg Shultz	Adams Construction	540 434 3878 ext. 4	gshultz@adamspaving.com
Ben Swarey	Partners Excavating	540-433-1475	benepartners-excavating.com
Terry Whitmer	Contracting Unlimited, Inc	540.434.2438	TerryWhitmer@contractingunlimitedinc.com
ERIC HINKLE	A+J EXCAVATING	540-271-0142	ERIC@TEAM AANDJ.COM
JIM STEVE	EAGLE Site Solutions Allied Concr. Products	703-932-2712	JSTEVE@ALLIEDCONCRETE.COM
CHRIS BERNIER	ALLIED CONCRETE	540-447-0812	CBERNIER@ALLIEDCONCRETE.COM

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 David Frazier Frazier Quarry 540.434.6192/540.209.4397 david.frazier@frazierquarry.com
 Jeff Holsinger Frazier Quarry 540 434 6192/540 478 4141 Jeff.Holsinger@Frazier Quarry.com

Reservoir Street Proj. #: U000-115-R30

PRE-BID ORIENTATION

REQUIRED RESPONSIVE BID FORMS

- ✘ Signed Cover Sheet
- ✘ Bid Form (0300)
- ✘ Bid Security (0301)
- ✘ Contractor Eligibility & Registration (0302)
- ✘ State Corporation Commission Registration (0303)
- ✘ Non-Collusion Affidavit (0304)
- ✘ Form C-48 Subcontractor/Supplier Solicitation & Utilization (0305)
- ✘ Copy of VDOT Certification of Qualifications
- ✘ Insurance Requirements for the City of Harrisonburg
- ✘ Signed Addenda, if applicable

Failure to provide ALL signed forms will make the bid unresponsive.

****All subcontractors shall be pre-qualified by VDOT for all pre-qualifiable trades.**

C-48 SUBCONTRACTOR/SUPPLIER SOLICITATION & UTILIZATION

- ✘ ALL bidders shall complete this form.
- ✘ This form represents utilization/non-utilization of the firms solicited for work on the project.
- ✘ Please list the subcontractor/supplier, telephone number and whether they are DBE or not.
- ✘ Please indicated whether they are being utilized or not for this project.
- ✘ This form should be a complete list of suppliers/subcontractors.

**0305 COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF TRANSPORTATION
 SUBCONTRACTOR/SUPPLIER SOLICITATION
 AND UTILIZATION FORM (ALL BIDDERS)**

PROJECT NO. 0033-150-229 **CONTRACT I.D. NO.** _____

FHWA NO. HSIP-5115(194) **DATE SUBMITTED** _____

All bidders, including DBEs bidding as Prime Contractors, shall complete and submit the following information as requested as part of the bid submittal.

The bidder certifies this form accurately represents its solicitation and utilization or non-utilization, as indicated, of the firms listed below for performance of work on this contract. The bidder also certifies he/she has had direct contact with the named firms regarding participation on this project.

BIDDER _____ **SIGNATURE** _____

TITLE _____

SUBCONTRACTOR/SUPPLIER SOLICITATION AND UTILIZATION (ALL)

VENDOR NUMBER	NAME OF SUBCONTRACTOR/SUPPLIER	TELEPHONE NUMBER	DBE OR NON-DBE	UTILIZED (Y/N)
	Superior Concrete		Non	Y
	Frazier Quarry		non	y
	XYZ Company		DBE	y

NOTE: Attach additional pages, if needed. Bidder must sign each sheet to certify content and completion of form.

AFTER BID AWARD

- ✘ Pre-construction Meeting
- ✘ C25 Forms will be needed for this project at least 7 days prior to performing ANY work and must be approved prior to ANY work being performed.
- ✘ EEO Items: must have proper posters posted on the job site.

CONTACTS

Danielle Morris, Project Coordinator

Ofc.: 540-434-5928, Cell: 540-820-2483

Email: Danielle.Morris@harrisonburgva.gov

Kim Cameron, Project Manager

Ofc.: 540-434-5928, Cell: 540-820-5585

Email: Kimberly.Cameron@harrisonburgva.gov

RESERVOIR STREET IMPROVEMENTS PROJECT UPC#101209

BID TAB

LINE #	ITEM #	DESCRIPTION	UNIT	EST. QUANTITY	Unit Price (\$)	Amount (\$)
1	100	MOBILIZATION	LS	1		
2	101	CONSTRUCTION SURVEYING (CONSTR.)	LS	1		
3	110	CLEARING AND GRUBBING	LS	1		
4	120	REGULAR EXCAVATION	CY	17459		
5	525	CONCRETE CLASS A3 MISC.	CY	27.3		
6	560	STRUCTURAL STEEL JB-1	LB	5422		
7	588	UNDERDRAIN UD-4	LF	13851		
8	590	COMB. UNDERDRAIN CD-1	LF	194		
9	591	COMB. UNDERDRAIN CD-2	LF	81		
10	595	OUTLET PIPE	LF	20		
11	1150	15" CONCRETE PIPE	LF	6		
12	1156	STORM SEWER PIPE 15"	LF	2744		
13	1186	STORM SEWER PIPE 18"	LF	2273		
14	1246	STORM SEWER PIPE 24"	LF	1500		
15	1306	STORM SEWER PIPE 30"	LF	733		
16	1361	JACKED & BORED 36" PIPE	LF	134		
17	1606	STORM SEWER PIPE 60"	LF	46		
18	2140	23" X 14" ELLIPTICAL PIPE	LF	12		
19	6300	30" END SECTION ES-1 OR 2	EA	1		
20	6360	36" END SECTION ES-1 OR 2	EA	1		
21	6491	60" END SECTION ES-1	EA	1		
22	6740	DROP INLET DI-1	EA	7		
23	6751	DROP INLET DI-2B,L=12'	EA	5		
24	6815	DROP INLET DI-3A	EA	1		
25	6818	DROP INLET DI-3B,L=6'	EA	2		
26	6819	DROP INLET DI-3B,L=8'	EA	1		
27	6821	DROP INLET DI-3B,L=12'	EA	44		
28	6830	DROP INLET DI-3BB,L=12'	EA	1		
29	6835	DROP INLET DI-3C,L=6'	EA	7		
30	6838	DROP INLET DI-3C,L=12'	EA	6		
31	9056	MANHOLE MH-1 OR 2	LF	95.7		
32	9057	FRAME & COVER MH-1	EA	20		
33	9066	NS FRAME AND COVER (SHALLOW)	EA	1		
34	9150	EROS.CONTR.STONE CL. I, EC-1	TON	255		
35	10121	AGGR.BASE MAT.TY. I NO.21A OR 21B	TON	24929		
36	10598	NS ASPHALT CONCRETE (SM-9.5AL)	TON	650		
37	10628	FLEXIBLE PAVE.PLANING 0"-2"	SY	22930		
38	12020	STD. CURB CG-2	LF	4268		
39	12600	STD. COMB. CURB & GUTTER CG-6	LF	16551		
40	10642	ASPHALT CONCRETE TY. BM-25.0A	TON	10297		
41	12920	ENTRANCE GUTTER CG-9B	SY	77		
42	12940	ENTRANCE GUTTER CG-9D	SY	511		
43	13108	CG-12 DETECTABLE WARNING SURFACE	SY	209		
44	13114	ENTRANCE GUTTER CG-13	SY	43		
45	13215	MAILBOX POST, SINGLE	EA	64		
46	13220	HYDR. CEMENT CONC. SIDEWALK 4"	SY	6801		

47	13222	HYDR. CEMENT CONC. SIDEWALK 7"	SY	1673		
48	13520	RETAINING WALL RW-2	CY	12		
49	13565	RETAINING WALL EXCAVATION	CY	1674		
50	13570	NS RETAINING WALL "E" MSE WALL PANELS	SF	3554		
51	14502	MOMENT SLAB REINFORCING STEEL	LB	14866		
52	16355	ASPHALT CONCRETE TY. SM-12.5D	TON	5060		
53	50430	SIGN POST STP-1	EA	45		
54	21110	MEDIAN STRIP MS-1A	SY	709		
55	21215	MEDIAN STRIP MS-2	LF	1702		
56	23600	NS SPLIT RAIL FENCE	LF	302		
57	24100	ALLAYING DUST	HR	1200		
58	24152	TYPE III BARRICADE 8'	EA	6		
59	24160	CONSTRUCTION SIGNS	SF	293		
60	24260	CR. RUN AGGR. NO. 25 OR 26	TON	1000		
61	24278	GROUP 2 CHANNELIZING DEVICES	DAY	127600		
62	24279	PORT.CHANGEABLE MESS. SIGN	HR	17520		
63	24281	ELECTRONIC ARROW	HR	5000		
64	24282	FLAGGER SERVICE	HR	640		
65	24297	TRAF.BARR.SER.CONC.DOUBLE FACE	LF	475		
66	24410	DEMOLITION OF PAVEMENT	SY	16880		
67	24640	NS ADJUST EX. MH	LF	8.2		
68	24802	REMOVE EX. MH	LF	11.5		
69	24832	ABANDON EX. MH	LF	60.7		
70	25003	HANDRAIL HR-1 TYPE II	LF	735		
71	27012	TOPSOIL CLASS A 2"	ACRE	4.0		
72	27102	REGULAR SEED	LB	800		
73	27103	OVERSEEDING	LB	800		
74	27210	FERTILIZER(10-20-10)	TON	0.60		
75	27250	LIME	TON	8		
76	27340	TEMP.DIVE.CHANNEL EXCAVATION	CY	2880		
77	27430	SILTATION CONTROL EXCAVATION	CY	5500		
78	27451	INLET PROTECTION , TYPE A	EA	80		
79	274561	INLET PROTECTION , TYPE B	EA	103		
80	27500	GEOTEXTILE FABRIC	SY	950		
81	27505	TEMP. SILT FENCE	LF	8600		
82	27506	TEMP. FILTER BARRIER	LF	1500		
83	27543	NS SWM LOW PERMEABILITY LINER	SY	2200		
84	27544	NS SWM TOPSOIL LINER (CL. A, 12" DEPTH)	CY	733		
85	27545	STORM WATER MAN. BASIN EXCAV.	CY	5100		
86	27550	STORM WATER MAN.DRAIN.STR.SWM	LF	8		
87	28805	BED PREPARATION	UNIT	5.5		
88	28810	MULCHING	UNIT	5.5		
89	28811	REMULCHING	CY	51		
90	28820	WATERING	UNIT	5		
91	28864	VEGETATION CONTROL	UNIT	5		
92	38900	SWEET PEPPER BUSH	EA	36		
93	38900	RED TWIG DOGWOOD	EA	33		
94	38900	SWITCH GRASS	EA	95		

95	38900	TUSSOCK SEDGE	EA	111		
96	40002	3/4" WATER SERVICE LINE	LF	87		
97	40003	1" WATER SERVICE LINE	LF	730		
98	40005	1 1/2" WATER SERVICE LINE	LF	10		
99	40061	6" DI WATER MAIN	LF	262		
100	40081	8" DI WATER MAIN	LF	672		
101	40121	12" DI WATER MAIN	LF	1824		
102	40380	REMOVE EX.FH	EA	5		
103	40380	REMOVE EX. 6" WATER MAIN	LF	66		
104	40380	REMOVE EX. 12" WATER MAIN	LF	30		
105	40380	REMOVE EX. WM & BOX	EA	2		
106	40380	REMOVE EX. VALVE & BOX	EA	16		
107	40380	RECONNECT MAIN	EA	12		
108	41006	6" GATE VALVE & BOX	EA	6		
109	41008	8" GATE VALVE & BOX	EA	9		
110	41012	12" GATE VALVE & BOX	EA	12		
111	41101	RELOCATE EX. DUAL WM & MH	EA	4		
112	41101	RECONNECT SERVICE	EA	50		
113	41104	ADJUST EXIST. VALVE BOX	EA	28		
114	41398	8" X 6" TAP.SLEEVE VALVE & BOX	EA	1		
115	41400	12"X6" TAPPING SLEEVE VALVE & BOX	EA	1		
116	41405	12"X8" TAPPING SLEEVE VALVE & BOX	EA	1		
117	41413	12"X12" TAPPING SLEEVE VALVE & BOX	EA	3		
118	41820	FIRE HYDRANT	EA	7		
119	41825	RELOCATE EXIST. FIRE HYDRANT	EA	9		
120	41976	RELOC. EXIST. WATER METER & BOX	EA	41		
121	41982	NS WATER FITTINGS	LS	1		
122	42000	16" STEEL ENCASE. PIPE	LF	12		
123	42040	4" SAN. SEWER PIPE	LF	21		
124	42044	4" SANITARY SERVICE LATERAL CONNECTION	LF	59		
125	42080	8" SAN. SEWER PIPE SDR 35 PVC	LF	416		
126	42080	8" SAN. SEWER PIPE SDR 26 PVC	LF	960		
127	42082	8" DI SANITARY SEWER PIPE	LF	79		
128	42708	8" SANITARY DROP CONNECTION	LF	12.5		
129	42755	SANITARY SEWER MANHOLE (STD.)	LF	113.8		
130	42755	SANITARY SEWER MANHOLE (DOGHOUSE)	LF	19.0		
131	42764	MANHOLE FRAME & COVER F&C-1	EA	18		
132	42765	ADJUST EXIST FRAME & COVER	EA	6		
133	42771	RECONSTRUCT EXISTING SANITARY MANHOLE	EA	5		
134	42840	SEWER CLEANOUT	EA	3		
135	44301	RECONNECT EX. LATERAL	EA	20		
136	44301	RECONNECT EX. MAIN	EA	1		
137	45552	12" STEEL ENCASE. PIPE	LF	26		
138	49012	CORE DRILL EX. MH	EA	5		
139	50108	SIGN PANEL	SF	282.5		
140	50108	SIGN PANEL - FURNISH AND INSTALL	SF	357.5		
141	50490	NS PERMANENT SIGN ANCHOR	EA	45		
142	50600	REMOVE TY.I SIGNS	EA	12		

143	50610	RELOC.EXIST.SIGN STRUCT.TY. 1	EA	28		
144	50902	LED LIGHTED STREET NAME SIGNS	EA	15		
145	51184	SIGNAL HEAD SECTION 12" LED RED	EA	43		
146	51184	SIGNAL HEAD SECTION 12" LED RED ARROW	EA	1		
147	51184	SIGNAL HEAD SECTION 12" LED GREEN	EA	43		
148	51184	SIGNAL HEAD SECTION 12" LED GREEN ARROW	EA	16		
149	51184	SIGNAL HEAD SECTION 12" LED YELLOW	EA	43		
150	51184	SIGNAL HEAD SECTION 12" LED YELLOW ARROW	EA	16		
151	51198	ACCESSIBLE PEDESTRIAN ACTUATION PA-2 WITH ACCESSIBLE PED BUTTON	EA	28		
152	51208	PEDESTAL POLE PF-2 8'	EA	14		
153	51238	CONC. FOUND. SIGNAL POLE PF-8	CY	140		
154	51240	CONC. FOUNDATION PF-2	EA	14		
155	51245	CONCRETE FOUND. CF-1	EA	4		
156	51317	SIG. POLE MP-1 20' ONE ARM 30'	EA	1		
157	51327	SIG. POLE MP-1 20' ONE ARM 40'	EA	1		
158	51337	SIG. POLE MP-1 20' ONE ARM 50'	EA	6		
159	51347	SIG. POLE MP-1 20' ONE ARM 60'	EA	2		
160	51426	SIG. POLE MP-1 20' ONE ARM 65'	EA	3		
161	51426	SIG. POLE MP-1 20' TWO ARM 30' AND 50'	EA	1		
162	51602	14/4 CONDUCTOR CABLE	LF	25212		
163	51614	#8 BONDED GROUND	LF	1882		
164	51614	8/1 CONDUCTOR CABLE	LF	1239		
165	51614	EMERGENCY VEHICLE PREEMPTION DETECTOR CABLE	LF	2764		
166	51614	CAT 5 OUTDOOR CABLE	LF	111		
167	51700	14/2 CONDUCTOR CABLE SHIELDED	LF	2764		
168	51830	HANGER ASSEMBLY SM-3, ONE WAY	EA	44		
169	51836	HANGER ASSM.SMB-1 OR 2 ONE WAY	EA	15		
170	51839	HANGER ASSM.SMB-3, TWO WAY	EA	13		
171	51840	OVERHEAD SIGN HANGER ASSEMBLY SMD-2	EA	50		
172	51910	SAW CUT FULL DEPTH	LF	10332		
173	51960	CONTROLLER WITH CABINET	EA	4		
174	51962	RELOCATE EXISTING SIGNAL EQUIPMENT	LS	1		
175	51963	REMOVE EXISTING SIGNAL EQUIPMENT	LS	1		
176	51980	TEMPORARY SIGNILIZATION	LS	1		
177	52002	UNINTERRUPTIBLE POWER SUPPLY	EA	4		
178	52002	UNINTERRUPTIBLE POWER SUPPLY BATTERY	EA	24		
179	52002	UNINTERRUPTIBLE POWER SUPPLY CABINET	EA	4		
180	52002	EMERGENCY PREEMPTION 3-WAY	EA	1		
181	52002	EMERGENCY PREEMPTION 4-WAY	EA	2		
182	52403	PEDESTRIAN SIGNAL HEAD SP-8	EA	28		

183	52425	ELECTRICAL SERVICE SE-3 TYPE B	EA	4		
184	54020	TY. A PAVEMENT LINE MARKING 4"	LF	17672		
185	54020	TY. A PAVEMENT LINE MARKING 4" (PARKING LOT)	LF	250		
186	54022	TY. A PAVEMENT LINE MARKING 6"	LF	9022		
187	54042	TY.B CL.II PAVE. LINE MARK. 24"	LF	2400		
188	54105	ERAD. OF EXIST.PAVE.MARKING	LF	36500		
189	54106	ERAD. OF EXIST.NONLINEAR PAV.MARK	SF	1628		
190	54250	PAVEMENT MESSAGE MARK. BICYCLE ARROW	EA	31		
191	54254	PAVEMENT MESSAGE MARK. BICYCLE LANE SYM.	EA	31		
192	54300	PAVE.MESS.MARK.ELONG.ARROW SINGLE TYPE B. CLASS II	EA	67		
193	54310	PAVE.MESS.MARK.ELONG.ARROW DOUBLE TYPE B. CLASS II	EA	6		
194	54510	CONSTR.PAVE.MARK.(TY.D,CL.I)4"	LF	9125		
195	54550	CONSTR.PAVE.MARK.(TY.F,CL.I)4"	LF	27375		
196	55586	JUNCTION BOX JB-S1	EA	10		
197	55587	JUNCTION BOX JB-S2	EA	11		
198	55588	JUNCTION BOX JB-S3	EA	9		
199	56014	ELECT. SER. GRD. ELECTRODE(10')	EA	8		
200	56021	1" PVC CONDUIT	LF	396		
201	56042	BORED CONDUIT 1"	LF	1138		
202	56050	BORED CONDUIT 2"	LF	3240		
203	56051	BORED CONDUIT 3"	LF	1377		
204	56053	2" PVC CONDUIT	LF	6820		
205	56054	3" PVC CONDUIT	LF	269		
206	56200	TRENCH EXCAVATION ECI-1	LF	3403		
207	56205	TEST BORE	EA	14		
208	59050	FIBER SWITCHES & MEDIA CONVERTER UNIT	EA	3		
209	59050	4-WAY VIDEO DETECTION SYSTEM WITH VIEWCOM	EA	3		
210	59050	3-WAY VIDEO DETECTION SYSTEM WITH VIEWCOM	EA	1		
211	59071	VIDEO DETECTOR CABLE (5 CONDUCTOR SIAMESE CABLE)	LF	2823		
212	59071	24 STRAND FIBER OPTIC CABLE	LF	3177		
213	60403	CONCRETE CLASS A3 (LEVELING PAD)	CY	20		
214	60404	CONCRETE CLASS A4 (MOMENT SLAB AND BARRIER)\	CY	116		
215	62045	RAILING, BR27D 2 RAILS	LF	271		
216	69007	FLOWABLE FILL	CY	20		
217	70000	NS D18 - SIGN FOUNDATION	LS	1		
218	70000	NS D900 - SIGN	LS	1		
219	70000	NS D500 - UNDERGROUND TANK	LS	1		
220	70000	NS D501 - UNDERGROUND TANK	LS	1		
221	70000	NS D904 - SIGN	LS	1		
222	70000	NS D19 - BUS SHELTER	LS	1		
223	70000	NS D901 - LIGHT	LS	1		
224	70000	NS D902 - LIGHT	LS	1		

1007 - PRECAST MODULAR BLOCK RETAINING WALL SYSTEM

PART 1: GENERAL

1.01 Description

- A. Work includes furnishing and installing precast modular blocks (PMB) to the lines and grades shown on the plans and as specified herein. Also included, is furnishing and installing appurtenant materials required for construction of the complete system.
- B. The contractor is solely responsible for safety. The Engineer and Owner shall not be responsible for means or methods of construction or for safety of workers or the public.

1.02 References

- A. ASTM - American Society for Testing and Materials
- B. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
- C. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregate
- D. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- E. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort
- F. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- G. ASTM D4595 - Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
- H. ASTM D5262 - Standard Test Method for Evaluating the Unconfined Creep Behavior of Geosynthetics
- I. ASTM D6638 - Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks)
- J. ASTM D6916 - Standard Test Method for Determining the Shear Strength Between Segmental Concrete Units
- K. ASTM C33 - Standard Specification for Concrete Aggregates

1.03 Submittals

- A. Contractor shall submit for review 2 sets of shop drawings for the retaining wall system prepared by a Professional Engineer registered in the state where the project is located. The shop drawings shall indicate the layout, height, and construction details of the retaining wall system. Design shall conform to relevant requirements and design methodologies of AASHTO Standard Specifications for Highway Bridges. Upon request, design calculations shall also be submitted. Minimum safety factors for design shall be as follows:

	<u>Gravity Wall</u>	<u>Geogrid Reinforced Wall</u>
Sliding	1.5	1.5
Overturning	1.5	2.0
Bearing	2.0	2.0

- B. If geogrid reinforcement is required by the contractor's design, submit manufacturer's literature and test data for geogrids to be used in the reinforced wall system if geogrid is not a standard combination with test data published on Stone Strong (or equivalent) web site. Test data shall include connection strength data for geogrid with Stone Strong (or equivalent) modular units determined in accordance with ASTM D6638, as well as geogrid tensile strength and creep data in accordance with ASTM D4595 and ASTM D5262.
- C. Submit grain size test results for aggregates to be used for the wall base and for unit fill.
- D. Submit test results on borrow material to be used for common backfill and for select backfill (if used) including Proctor and grain size or Atterberg limits results.

1.05 Delivery, Storage, and Handling

- A. Contractor shall check the materials upon delivery to assure that proper materials have been received.
- B. Contractor shall protect the materials from damage. Damaged material shall not be incorporated into the wall or the reinforced soil embankments.
- C. Contractor shall prevent excessive mud, concrete, adhesives and other substances that may adhere from coming in contact with the materials.
- D. Exposed faces of precast modular block units shall be reasonably free of chips, cracks, or stains when viewed from a distance of 10 feet.

PART 2: MATERIALS

2.01 Wall Units

- A. Precast modular blocks shall be Stone Strong units manufactured under license from Stone Strong LLC (or equivalent).
- B. Dimension tolerances for precast modular blocks shall be +/- 3/16 inch for height, +/- 1/2 inch for length (along face), and +/- 1 inch for width (face to tail).
- C. Concrete for precast modular blocks shall have a minimum 28-day compressive strength of 4,000 psi. Entrained air content shall be between 5 and 7%.
- D. Steel reinforcement shall be provided in extended blocks with a width greater than 44 inches (24-ME, 24-62, & 24-86 units). In geogrid reinforced walls, reinforced 24SF blocks shall be used below the top 12 feet of the wall, and heavy duty reinforcement shall be used in all blocks more than 33 feet below the top of the wall. Units shall be reinforced according standard Stone Strong (or equivalent) engineering guidance. All reinforcing shall have a minimum yield strength of 60 ksi. Minimum clear cover to reinforcement shall be 1½ inches.

E. The face pattern shall be "Split Limestone". The color of the units shall be natural gray.

2.02 Geogrid

N/A

2.03 Wall Base

A. The wall base shall consist of dense graded crushed aggregate. A minimum of 75% of coarse material shall have 2 or more fractured faces. Wall base material shall meet the following gradation:

<u>US Standard Sieve Size</u>	<u>Percent Passing</u>
1-1/2"	80-100
3/4"	50-90
#4	0-40
#200	0-10

B. The contractor may substitute concrete with a minimum 28-day compressive strength of 3,000 psi for the granular base material. Concrete may be placed full thickness or as a topping over a compacted granular the base. If used as a topping, the concrete shall have a minimum thickness of 3 inches.

2.04 Unit Fill

A. Unit fill shall consist of a screened crushed aggregate. A minimum of 75% of coarse material shall have 2 or more fractured faces. Unit fill material shall meet the following gradation:

<u>US Standard Sieve Size</u>	<u>Percent Passing</u>
1-1/2"	100
3/4"	50-75
#4	0-40
#200	0-5

2.05 Backfill

A. If a select granular reinforced zone is indicated, it shall consist of fill sand or other clean aggregate meeting the following gradation:

<u>US Standard Sieve Size</u>	<u>Percent Passing</u>
3/4"	100
#200	0-5

B. All other backfill behind and in front of the wall shall consist of suitable on-site soil or imported borrow and shall be approved by the Geotechnical Engineer. Backfill shall generally consist of sands, silts, or lean clays with a liquid limit less than 45 and a plasticity index less than 20. Fat clay soils, cobbles, and large rock should generally be avoided unless approved by the Geotechnical Engineer based on local practices. Frozen soils, excessively wet or dry soils, debris, and deleterious materials should not be used.

- 2.06 Drain Tile
- A. Drain tile shall be a perforated or slotted PVC or corrugated HDPE pipe. The drain tile should be connected to storm drains or daylighted at low points and/or periodically along the wall alignment as shown on the plans.
- 2.07 Geotextile Fabric
- N/A
- 2.08 Concrete for Tail Extensions
- N/A

PART 3: EXECUTION

- 3.01 Excavation
- A. Excavate as required for installation of the retaining wall system. Excavate to the base level for a sufficient distance behind the face to permit installation of the base.
- B. Slope or shore excavation as necessary for safety and for conformance with applicable OSHA requirements.
- 3.02 Wall Base
- A. Foundation soils shall be excavated to the dimensions shown on the plans. Foundation soil shall be observed by the Geotechnical Engineer to confirm that the bearing soils are similar to the design conditions or assumptions.
- B. Construct the wall base to the lines and grades shown on the plans. Place and consolidate concrete, strike, and finish plane and level. Overexcavated areas shall be filled with additional concrete or granular base material. Compact granular base material to provide a hard and level surface to support the wall units. Base material shall be compacted to a minimum of 95 percent of the maximum dry density (ASTM D698, Standard Proctor). Final base elevation shall be within 0.1 feet of plan elevation.
- C. Prepare and smooth the granular material to ensure complete contact of the first course with the base. The base may be dressed with fine aggregate to aid leveling.
- 3.03 Unit Installation
- A. Place the first course of units directly on the wall base. Check units for level and alignment. Units shall be within 1/8 inch of level from end to end and from front to back. Adjacent units should be in contact. If possible, begin placing units at the lowest section of the wall.
- B. Fill all voids between and within the blocks with granular unit fill. Additional unit fill is not required behind the units, but may be placed for the convenience of the contractor.
- C. Place backfill behind the units in maximum loose lifts of 8 inches and compact. Compact all backfill to a minimum of 95 percent of the maximum dry density (ASTM D698, Standard Proctor). For cohesive soils, the moisture content at the time of compaction

should be adjusted to within -2 and +3 percent of optimum. Place backfill in successive lifts until level with the top of the facing unit.

- D. Remove all excess aggregate and other materials from the top of the units before laying up the next course.
- E. For geogrid reinforced walls, place the correct geogrid at the locations and elevations shown on the plans or the shop drawings. Geogrid reinforcement shall be placed horizontally on compacted backfill. The length of the geogrid is measured from the front face of the wall. Extend the grid onto the front face flange of the facing unit. Orient the geogrid with the strong axis (machine direction) placed perpendicular to the wall face. Geogrid shall not be spliced by any means in the roll direction.
- F. Geogrids shall be placed side by side to provide complete coverage along the wall face. No overlap is required between adjacent grids on straight sections of the wall. On convex curves, place a minimum of 3 inches of backfill material between overlapping geogrid layers.
- G. Place the next course of precast modular block units in running bond with the previous course. Place the web recess over the alignment hoop protruding from the unit below, and pull the unit forward to contact the hoop. Batter should be within ¼ inch tolerance (4 inches from 24 SF unit below, 2 inches from 6 SF unit below).
- H. For geogrid reinforced walls, pull geogrids taught and stake the loose end before placing the next course of backfill. Backfill shall be placed, spread, and compacted in such a manner that minimizes the development of wrinkles in the geogrid and/or movement of the geogrid. Do not operate equipment directly on the geogrid. A minimum backfill depth of 6 inches should be placed before operating equipment over the grids.
- I. Continue placing successive courses to the elevations shown on the plans. Construct wall in level stages, placing the units at each course for the entire length of the wall, if possible. Unit fill and backfill should be placed to the level of the top of the facing unit before placing the next course.
- J. Provide temporary swales to divert runoff away from wall excavation and away from face.
- K. Final grade above and below the retaining wall shall provide for positive drainage and prevent ponding. Protect completed wall from other construction. Do not operate large equipment or store materials above the wall that exceed the design surcharge loads.
- L. Where tail extensions are indicated on the plans, concrete shall be placed in the center void between the blocks extending to the minimum width behind the blocks indicated on the drawings. Tail extensions may be formed or may be placed directly against a cut embankment. Tail extensions should be placed in lifts not to exceed 4½ feet until the previous lift has fully set. The tail extension should be allowed to reach 2,000 psi compressive strength before backfill is placed above the top of the extension.

PART 4: CONSTRUCTION QUALITY CONTROL AND ASSURANCE

4.01 Construction Quality Control

- A. The contractor is responsible to ensure that all installation and materials meet the quality specified in the construction drawings.

- B. The contractor shall verify that installation is in accordance with the manufacturer's specifications and construction drawings.
- C. The contractor is responsible to engage testing and inspection services to provide independent acceptance testing.
- D. Compaction testing shall be done a minimum of every 1 foot of vertical fill and every 100 lineal feet along the wall.
- E. Testing shall be done at a variety of locations to cover the entire backfill zone and in accordance with the approved QC plan.
- F. The independent inspection professional should perform sufficient testing and observation to verify that wall installation substantially conforms to the design drawings, manufacturer's recommendations, and specifications.
- G. When there is a conflict between manufacturer's requirements and the QC Plan, the more stringent testing requirements shall be followed.

4.02 Quality Assurance (Verification Sampling and Testing)

The Owner will perform Verification Sampling and Testing in accordance with Section 1003 of the Supplementary Provisions.

SECTION 1000

SUPPLEMENTARY SPECIFICATIONS

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1009 – JACKED AND BORED 36” PIPE

The 36” steel casing pipe to be installed shall serve as the stormsewer pipe and shall be installed to the grade shown on the plans. The casing pipe will be measured and paid for per linear foot installed under *Line Item 16, Item 1361, Jacked & Bored 36” Pipe*. The unit price will include casing pipe installation, jacking, boring, sealing, drain, spacers, and any other associated work items required to install the pipe in accordance with the bid documents.

The contractor is to submit to the Engineer a complete Boring and Jacking Plan per VDOT Specifications Section 302.03. The contractor is free to perform additional geotechnical investigation work, at no additional cost to the owner, in order to gain information regarding the material that could be encountered while performing this work. This would need to be coordinated with a Public Access Permit from the City if it is done prior to award of this contract. Although jacking and boring is specified as the installation method, if the contractor anticipates encountering an obstruction during the jacking and boring operation, the City will be open to discussion concerning changing the method of installation of the 36” steel pipe. The casing pipe shall be jack & bore, or tunnel liner plate and shall be guaranteed except if the City gives “specific permission” to open cut a roadway, in which case the bid price for casing pipe will be used to pay for open cut. No other bid items, including pavement, excavation, or stone, will be used to pay for open cut. This price will include compensation for all labor, materials, tools, equipment, insurance, permitting, traffic control, coordination costs, spacers, excavation and backfill of boring pits, unsuccessful boring attempts, traffic control, and incidentals as required by the City as necessary to complete the Work in accordance with these specifications and City requirements.



Key to the Northern Long-Eared Bat 4(d) Rule for Non-Federal Activities

A separate key is available for Federal Actions

This key will help you determine if your planned activity may cause prohibited take of northern long-eared bats as defined in the 4(d) rule under the Endangered Species Act and if a permit may be necessary. For more information about the northern long-eared bat and 4(d) rule go to www.fws.gov/midwest/endangered/nleb.

1. Will your activity **purposefully take** (see Definitions below) northern long-eared bats? For example, are you removing bats from a human structure or capturing bats for research?

Yes, my activity includes purposefully taking northern long-eared bats.

- ***Removing bats from human structures is not prohibited***; if you are removing bats from a human structure, you may proceed without a permit and you do not need to contact the U.S. Fish and Wildlife Service.
- ***Research that involves handling bats does require a permit*** after May 4, 2016; if you are conducting research that includes capturing and handling northern long-eared bats, you should contact the U.S. Fish and Wildlife Service to apply for a permit. www.fws.gov/endangered/regions
- ***Other purposeful take*** (see Definitions below) of northern long-eared bats is prohibited.

No, my activity does not include purposefully taking northern long-eared bats.
Continue to #2.

2. Is your activity located **outside the White-nose Syndrome Zone**? For the current White-nose Syndrome Zone map, please see www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf

Yes, my activity is located outside the white-nose syndrome zone.

Incidental take (see Definitions below) of northern long-eared bats is not prohibited in areas outside the White-nose Syndrome Zone. You may proceed with your activity, you do not need a permit and you do not need to contact the U.S. Fish and Wildlife Service.

No, my activity is located inside the white-nose syndrome zone.
Continue to #3

3. Will your activity take place **within a cave or mine where northern long-eared bats hibernate** (i.e., hibernaculum) or **could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?**

Yes, my activity will take place within a northern long-eared bat hibernaculum or it could alter the entrance or the environment (physical or other alteration) of a hibernaculum.

All take (see Definitions below) of northern long-eared bats within hibernacula is prohibited, including actions that may change the nature of the hibernaculum's environment or entrance to it, even when the bats are not present. If your activity includes work in a hibernaculum or it could alter its entrance or environment, please contact the Service's Ecological Services Field Office located nearest the project area. To find contact information for the Ecological Services Field Offices, please see www.fws.gov/offices.

No, my activity will not take place within a northern long-eared bat hibernaculum or alter its entrance or environment.

Continue to #4

4. Will your action involve **tree removal** (see definition below)?

No, my activity does not include tree removal.

Incidental take (see Definitions below) from activities that do not involve tree removal and do not take place within hibernacula or would not alter the hibernaculum's entrance or environment (see Question #3), are not prohibited, and a permit is not necessary. You may proceed with your activity, you do not need a permit and you do not need to contact the U.S. Fish and Wildlife Service.

Yes - continue to #5

5. Is your activity the **removal of hazardous trees** for protection of human life or property?

Yes, my activity is removing hazardous trees.

Incidental take (see Definitions below) of northern long-eared bats as a result of hazardous tree removal to protect human life or property is not prohibited. You may proceed with your activity, you do not need a permit and you do not need to contact the U.S. Fish and Wildlife Service.

No, my activity is not removing hazardous trees.

Continue to #6

6. Will your tree removal activities include one or both of the following: **1) removing a northern long-eared bat known occupied maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31; or 2) removing any trees within 0.25 miles of a northern long-eared bat hibernaculum at any time of year?**

No

Incidental take (see Definitions below) from tree removal activities is not prohibited unless it results from removing a known occupied maternity roost tree or from tree removal activities within 150 feet of a known occupied maternity roost tree from June 1 through July 31 or results from tree removal activities within 0.25 mile of a hibernaculum at any time. You may proceed with your activity, you do not need a permit and you do not need to contact the U.S. Fish and Wildlife Service.

Yes

Incidental take (see Definitions below) of northern long-eared bats is prohibited if it occurs as a result of removing a known occupied maternity roost tree or removing trees within 150 feet of a known occupied maternity roost tree during the pup season from June 1 through July 31 or as a result of removing trees from within 0.25 mile of a hibernaculum at any time of year. This does not mean that you cannot conduct your activity. Please contact your nearest Ecological Services Field Office and we will work with you to determine if your activity can proceed without harming or killing northern long-eared bats or if you need to apply for a permit. To find contact information for the Ecological Services Field Offices, please see www.fws.gov/offices

How do I know if there is a maternity roost tree or hibernacula on my property or in my project area?

We acknowledge that it can be difficult to determine if a maternity roost tree or a hibernaculum is on your property or in your project area. Location information for both resources is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. Links to state Natural Heritage Inventory databases are available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

When looking for information on the presence of maternity roost trees or hibernacula within your project area, our expectation is that a project proponent will complete due diligence to determine available data. If information is not available, document your attempt to find the information and move forward with your project.

We do not require private landowners to conduct surveys on their lands. However, surveys can reduce uncertainties and facilitate project planning. Recommended survey methods are available at www.fws.gov/midwest/endangered/mammals/nleb.

Definitions

“Incidental take” is defined by the Endangered Species Act as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." For example, harvesting trees can kill bats that are roosting in the trees, but the purpose of the activity is not to kill bats.

“Known hibernacula” are defined as locations where one or more northern long-eared bats have been detected during hibernation or at the entrance during fall swarming or spring emergence. Given the challenges of surveying for northern long-eared bats in the winter, any hibernacula with northern long-eared bats observed at least once, will continue to be considered “known hibernacula” as long as the hibernacula remains suitable for northern long-eared bat.

“Known occupied maternity roost trees” is defined in the 4(d) rule as trees that have had female northern long-eared bats or juvenile bats tracked to them or the presence of female or juvenile bats is known as a result of other methods. Once documented, northern-long eared bats are known to continue to use the same roosting areas. Therefore, a tree will be considered to be a “known occupied maternity roost” as long as the tree and surrounding habitat remain suitable for northern long-eared bat. The incidental take prohibition for known occupied maternity roosts trees applies only during the during the pup season (June 1 through July 31).

“Purposeful take” is when the reason for the activity or action is to conduct some form of take. For instance, conducting a research project that includes collecting and putting bands on bats is a form of purposeful take. Intentionally killing or harming bats is also purposeful take and is prohibited.

“Take” is defined by the ESA as ‘to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect’ any endangered species. Purposeful take is when the reason for the activity or action is to conduct some form of take. For instance, conducting a research project that includes collecting and putting bands on bats is a form of purposeful take.

“Tree removal” is defined in the 4(d) rule as cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bats.