

**Vermont Department of Environmental Conservation**

Watershed Management Division  
Springfield Regional Office  
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Springfield, VT 05156  
www.watershedmanagement.vt.gov

*Agency of Natural Resources*

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**AUTHORIZATION TO CONDUCT STREAM ALTERATION ACTIVITIES**

Pursuant to Section C.2.2.4 of the VT Stream Alteration General Permit (Reporting activities not requiring an application)

Project Number: **SA-05-006-2015 Vernon Central Park Road Culvert**

Applicant Name: Vernon Department of Public Works, Vermont

Contact: David Walker

Mailing Address: 567 Governor Hunt Rd, Vernon, Vermont 05354

Phone: (802) 257-0292 or (802)-254-9428

Project Location: Central Park Road over tributary to Connecticut River

Email: [vernonhighway@gmail.com](mailto:vernonhighway@gmail.com)

The Secretary of the Vermont Agency of Natural Resources (VT ANR) has determined that:

1. This project authorizes the replacement of an existing metal pipe culvert with a 14' span precast box culvert over an un-named tributary to the Connecticut River.
2. The proposed activity is eligible for coverage under the VT ANR Stream Alteration General Permit.
3. The proposed activity will meet the terms and conditions of the General Permit provided:
  - a) The project will be completed and approved as shown on the attached plans dated 8/3/14, prepared by Clough Harbor Associates and approved by the VT ANR as attached herein.
  - b) The project will not adversely affect the public safety by increasing flood hazards.
  - c) The project will not significantly damage fish life or wildlife.
  - d) The project will not significantly damage the rights of riparian owners.
  - e) The project will not obstruct the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
  - f) The project is conducted in a manner which minimizes or avoids any discharge of sediment or other pollutants to surface waters in violation of the VT Water Quality Standards.
  - g) The ANR River Management Engineer is notified by phone or email when construction begins and when the project is complete.
  - h) In-stream working dates for all GP activities are from July 1<sup>st</sup> through October 1<sup>st</sup>; any in-stream work outside these dates will require an Individual Stream Alteration Permit authorization by the River Management Engineer.
  - i) This authorization has been posted for three days public comment. This authorization constitutes final approval.

If there are any changes in the project plan or deviation in construction from the plan, the Permittee must notify the River Management Engineer immediately.

If the project is constructed as you have described, as shown on the above referenced approved plans and according to the above conditions, there is no reason to expect any violation of Vermont Water Quality Standards.

Signed this 16th day of March, 2015

This permit expires October 1, 2015.

David K. Mears, Commissioner

Department of Environmental Conservation



by \_\_\_\_\_

Todd Menees, P.E., P.H., River Management Engineer

### **Streambed Stone Fill Design Guidance**

<b>Type</b>	<b>Velocity Range (fps)*</b>	<b>Embeddedness (in)</b>
E1	$V \leq 9$	18
E2	$9 < V \leq 11$	24
E3	$11 < V \leq 13$	36
E4	$13 < V \leq 15$	48

\*Maximum velocity should be based on a minimum 50-year design flow rate and calculated at the structure outlet.

### **Item xxx.xxx CY Streambed Stone Fill Specification**

Type E1. The longest dimension of the stone shall be at least 18 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 12 inches, and at least 25 percent of the particles shall have a maximum dimension of 2 inches and be well graded material.

Type E2. The longest dimension of the stone shall be at least 24 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 18 inches, and at least 25 percent of the particles shall have a maximum dimension of 2 inches and be well graded material.

Type E3. The longest dimension of the stone shall be at least 36 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 24 inches, and at least 25 percent of the particles shall have a maximum dimension of 2 inches and be well graded material.

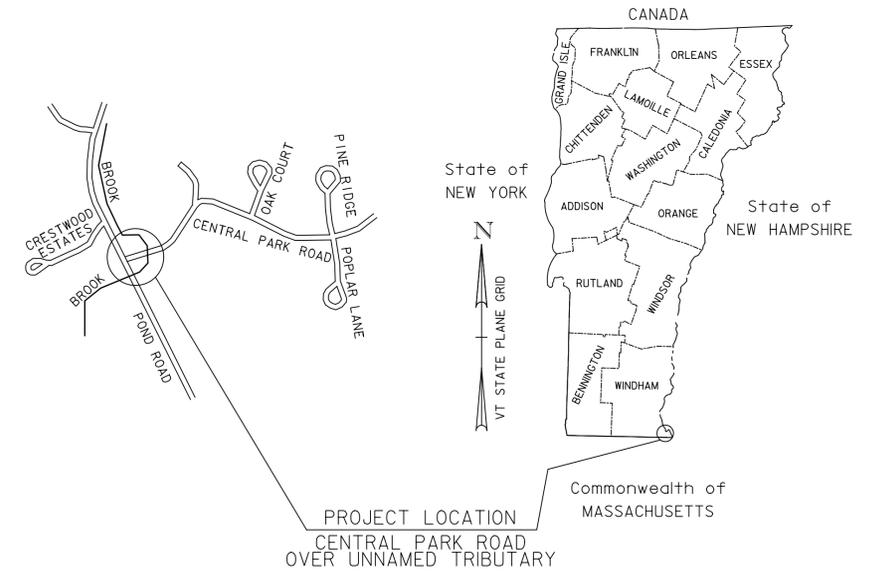
Type E4. The longest dimension of the stone shall be at least 48 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 36 inches, and at least 25 percent of the particles shall have a maximum dimension of 2 inches and be well graded material.

### Notes

- The streambed stone fill shall be hard, blasted, angular rock other than serpentine rock containing the fibrous variety chrysotile (asbestos). Similar sized river sediment is an acceptable alternative as is a mixture of angular material and river sediment.
- Stone placed inside of a closed structure shall be placed such that the structure is not damaged.
- Care shall be taken to limit segregation of the materials.
- Add sand borrow item as needed to seal the bed and prevent subsurface flow.
- There shall be no subsurface flow upon final inspection.

# TOWN OF VERNON

## PROPOSED IMPROVEMENT REPLACEMENT OF CENTRAL PARK ROAD CULVERT COUNTY OF WINDHAM



- INDEX OF SHEETS**
1. TITLE SHEET
  2. GENERAL NOTES AND QUANTITIES
  3. GENERAL PLAN AND SECTION
  4. LAYOUT PLAN AND CULVERT DETAILS
  5. WINGWALL DETAILS
  6. STAGING
  7. EPSC DETAILS (1)
  8. EPSC DETAILS (2)
  9. REINFORCING SCHEDULE

- STANDARDS LIST**
- A-21 RURAL HIGHWAY TYPICAL SECTIONS (TOWN HIGHWAY, CLASS 3)
  - A-76 STANDARDS FOR TOWN AND DEVELOPMENT ROADS
  - B-5 SLOPE GRADING, EMBANKMENTS, MUCK
  - D-3 TREATED GUTTERS
  - E-100A SIDE ROAD CONSTRUCTION - APPROACH SIGNS
  - E-101 CONSTRUCTION SIGN DETAILS
  - E-102 CONSTRUCTION SIGN DETAILS
  - E-106 TRAFFIC CONTROL - MISCELLANEOUS DETAILS
  - E-107 DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS
  - E-121 STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD
  - G-1 STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)
  - G-1D STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIUM)
  - SD 366.00 LONGSPAN STEEL BEAM GUARDRAIL, GALVANIZED
  - T-1 TRAFFIC CONTROL GENERAL NOTES
  - T-10 CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING

ROUTE NO : CENTRAL PARK ROAD

PROJECT LOCATION: LOCATED IN THE COUNTY OF WINDHAM, TOWN OF VERNON, CENTRAL PARK ROAD OVER UN-NAMED TRIBUTARY TO THE CONNECTICUT RIVER, APPROXIMATELY 150 FEET EAST OF THE JUNCTION OF CENTRAL PARK ROAD AND POND ROAD.

PROJECT DESCRIPTION: CONSTRUCTION OF NEW PRECAST BOX CULVERT, GRADING, SUBBASE, SURFACE COURSE, GUARDRAIL, AND OTHER INCIDENTAL ITEMS.

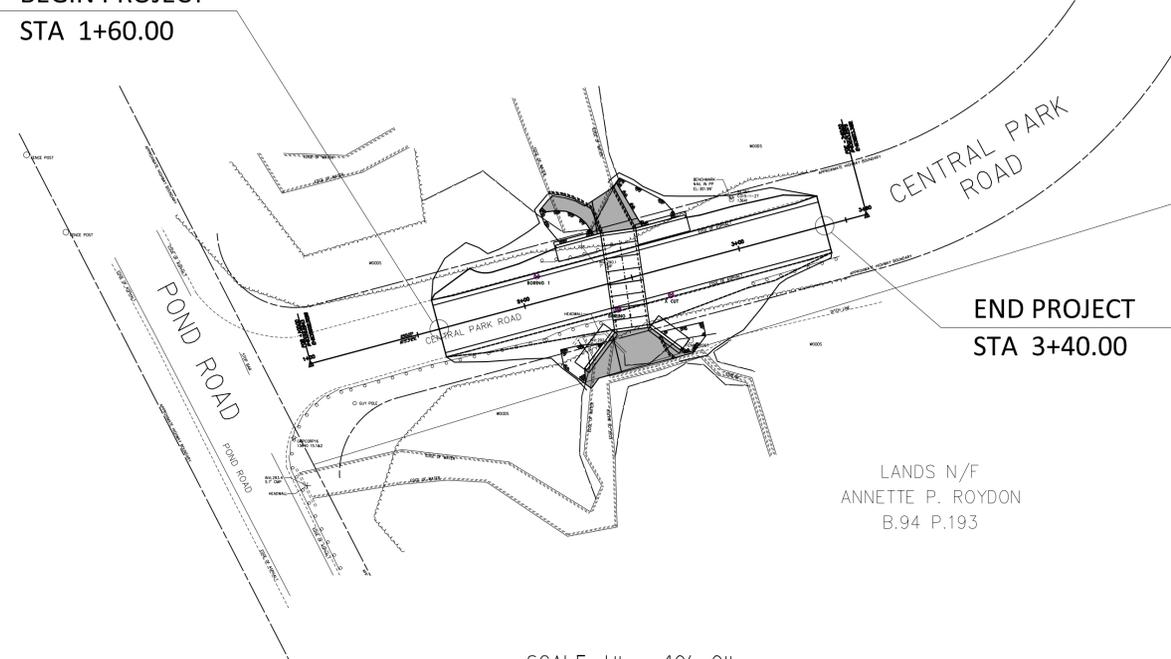
LENGTH OF STRUCTURE : 14.0 FEET  
LENGTH OF ROADWAY : 180.0 FEET  
LENGTH OF PROJECT : 180.0 FEET

### HYDRAULIC DATA

Q	cfs	EXISTING		PROPOSED	
		WSE	FPS	WSE	FPS
0 10	360 cfs				
0 25	490 cfs	WSE=299.4	12.7 FPS	WSE=297.6	11.0 FPS
0 50	580 cfs				
0 100	680 cfs	WSE=301.7	14.2 FPS	WSE=299.0	12.2 FPS

BEGIN PROJECT  
STA 1+60.00

END PROJECT  
STA 3+40.00



LANDS N/F  
ANNETTE P. ROYDON  
B.94 P.193

SCALE 1" = 40' - 0"  
40 0 40



### CONVENTIONAL SYMBOLS

COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	
FENCE LINE	
STONE WALL	
TRAVELED WAY	
GUARD RAIL	
RAILROAD	
SURVEY LINE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
TREES	
OVERHEAD WIRES	
EXISTING SEWER LINE	
EXISTING WATER LINE	
EXISTING ROW LINE	
EXISTING WETLANDS	
EXISTING WATER'S EDGE	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	
TOP OF CUT	
TOE OF SLOPE	

SURVEYED BY : CHA  
SURVEYED DATE : MAY 2014

DATUM  
VERTICAL : NAVD 88  
HORIZONTAL : NAD 83 (92)



### TRAFFIC DATA

ADT : UNKNOWN  
ADTT : 5%  
DESIGN SPEED : 25 MPH

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

GENERAL NOTES

- CONSTRUCT THIS PROJECT IN ACCORDANCE WITH STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, CURRENT STANDARD PLANS, SUPPLEMENTAL SPECIFICATIONS, THESE PLANS AND SPECIAL PROVISIONS INCLUDED IN THE CONTRACT.
- NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
- PERFORM ALL WORK WITHIN THE EXISTING RIGHT-OF-WAY AND TEMPORARY AND PERMANENT EASEMENTS.
- REMOVE TOPSOIL FOR ITS TOTAL DEPTH WITHIN THE LIMITS OF THE SLOPE LINES. UNLESS OTHERWISE DIRECTED, STOCKPILE TOPSOIL AND USE IT ON THIS PROJECT AS NEEDED.
- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, ESPECIALLY THE DISCHARGE OF RAW CONCRETE, INTO ANY BROOK, STREAM, OR RIVER.
- ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT UNLESS OTHERWISE NOTED.
- FEATURES OF THE EXISTING STRUCTURE AND SURVEY SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM LIMITED SURVEY AND MAY NOT ACCURATELY REFLECT ACTUAL FIELD CONDITIONS. THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE DIFFERENT FROM THAT SHOWN OR MAY NOT BE SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS TO ENSURE CONSISTENCY WITH THE PROPOSED MODIFICATIONS. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER, OR EXTENT OF EXISTING FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ADVANCING THE WORK.
- THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL BURIED AND AERIAL UTILITIES AND POLES PRIOR TO STARTING WORK. THE CONTRACTOR SHALL CONTACT DIG SAFE SYSTEM, INC (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY IN-GROUND WORK.
- THE WATER LEVEL MAY VARY FROM WHAT IS SHOWN ON THE PLANS.
- ALL EXCAVATION WILL BE PAID FOR AS STRUCTURE EXCAVATION. NO REMOVAL OF ROCK LEDGE IS ANTICIPATED.

MAINTENANCE AND PROTECTION OF TRAFFIC

- THE CONTRACTOR SHALL CLOSE CENTRAL PARK ROAD TO TRAFFIC DURING CONSTRUCTION AFTER THE TOWN OF VERNON HAS ESTABLISHED A DETOUR. THE CONTRACTOR SHALL PLACE TEMPORARY TRAFFIC BARRIER AT THE END OF THE ROAD AT ITS INTERSECTION WITH POND ROAD AS WELL AS ACROSS CENTRAL PARK ROAD TO THE NORTHEAST OF THE PROJECT AREA AT A LOCATION DESIGNATED BY THE TOWN.
- THE TOWN OF VERNON WILL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING THE DETOUR ALONG WASHBURN WAY AND THROUGH A PRIVATE DRIVE CONNECTING TO THE EAST END OF CENTRAL PARK ROAD INCLUDING ALL SIGNING.
- THE CONTRACTOR'S USE OF THE TEMPORARY DETOUR WILL BE LIMITED CARS AND PICK-UP TRUCKS.
- TEMPORARY TRAFFIC BARRIER SHALL BE MOVED BY THE CONTRACTOR FOR THEIR CONVENIENCE FOR ACCESS TO THE WORK AREA, BUT SHALL BE REPLACED ACROSS CENTRAL PARK ROAD AT THE CLOSE OF EACH WORK DAY.

EROSION CONTROL NOTES

- PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL ESTABLISH EROSION CONTROL MEASURES SHOWN ON EPSC DETAILS (1-2), SHEETS 7 AND 8, AND AT THE DIRECTION OF THE ENGINEER. THE EROSION CONTROL MEASURES SHALL BE INSTALLED DOWNSTREAM OF ALL DISTURBED AREAS. THE INSTALLATION AND LAYOUT SHALL BE BASED ON THE PRINCIPLES PROVIDED IN THE ITEM DETAILS AND THE STANDARD SPECIFICATIONS, SPECIFIC LAYOUT AND QUANTITIES MAY CHANGE WITH APPROVAL OF THE ENGINEER.
- THE FINAL GRADING THROUGH THE NEW CULVERT, INCLUDING RIPRAP, SHALL BE ESTABLISHED BEHIND THE COFFERDAM PRIOR TO REMOVING THE COFFERDAM AND ESTABLISHING THE FLOW IN THE NEW CULVERT.
- PERMANENT EROSION CONTROL MATTING SHALL BE PLACED ON ALL SLOPES STEEPER THAN 3:1 AND AT THE DIRECTION OF THE ENGINEER. AFTER THE SOIL HAS BEEN SHAPED, FERTILIZED AND SEEDDED, THE MATTING SHALL BE PLACED VERTICALLY ON SLOPES AND IN DIRECT CONTACT WITH THE SOIL SURFACE. THE CONTRACTOR SHALL NOT STRETCH OR ALLOW MATERIAL TO BRIDGE OVER SURFACE INCONSISTENCIES. EROSION MATTING AND GROUND FASTENERS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. THE CONTRACTOR SHALL MAINTAIN THE MATTED AREAS UNTIL VEGETATION IS ESTABLISHED AND HAS BEEN ACCEPTED. SEE ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE DETAIL, EPSC DETAILS (1), SHEET 7, FOR FURTHER DETAILS. PAYMENT SHALL BE MADE UNDER THE "PERMANENT EROSION MATTING" ITEM.

EROSION CONTROL NOTES (CONTINUED)

- GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED SHALL BE PLACED AS SHOWN ON THE GENERAL PLAN DOWN HILL OF ALL DISTURBED AREAS AND AT THE DIRECTION OF THE ENGINEER. PLACEMENT OF THE FENCE IS APPROXIMATE AND FINAL DIRECTION ON FENCE LOCATION SHALL BE PROVIDED BY THE ENGINEER. ALL SILT FENCE USED ON THE PROJECT SHALL BE WOVEN WIRE REINFORCED SILT FENCE AND SHALL BE INSTALLED AS SHOWN ON THE SILT FENCE DETAIL ON EPSC DETAILS (2), SHEET 8. ALL WORK ASSOCIATED WITH THE INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE PAID UNDER THE "GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED" ITEM.
- PROVIDE SURFACE ROUGHENING ON ALL DISTURBED SLOPES. PLACE FILL MATERIALS IN LIFTS NO GREATER THAN 9 INCHES AND PROPERLY COMPACTED. ENSURE THE FACE OF THE SLOPE CONSISTS OF LOOSE, UNCOMPACTED FILL, 4 TO 6 INCHES DEEP. GROOVE THE SLOPE USING MACHINERY TO CREATE A SERIES OF RIDGES AND DEPRESSIONS THAT RUN PERPENDICULAR TO THE SLOPE, FOLLOWING THE CONTOUR. GROOVE USING ANY APPROPRIATE IMPLEMENT WHICH CAN BE SAFELY OPERATED ON THE SLOPE. DO NOT MAKE THE GROOVES LESS THAN 3 INCHES DEEP OR MORE THAN 15 INCHES APART. SEE SURFACE ROUGHENING DETAIL, EPSC DETAILS (2), SHEET 8, FOR FURTHER DETAILS. THIS WORK SHALL BE INCIDENTAL TO THE PROJECT.
- THE CONTRACTOR SHALL PROVIDE FILTER BAGS FOR DEWATERING OPERATIONS TO RETAIN SILT, SAND AND FINES PRIOR TO DISCHARGING WATER TO THE BROOK. FILTER BAGS SHALL BE POSITIONED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG. FILTER BAGS SHALL BE A MINIMUM OF 50 FEET FROM THE BROOK. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF THE FILTER BAGS MEETING THE REQUIREMENTS STATED ABOVE WITH THE ENGINEER PRIOR TO INSTALLATION. SEE THE FILTER BAG DETAIL, EPSC DETAILS (2), SHEET 8, FOR FURTHER DETAILS. THIS WORK SHALL BE PAID UNDER THE "FILTER BAG" ITEM.
- DUE TO THE STREAM CHANNEL VELOCITY IT IS ANTICIPATED THAT TURBIDITY CURTAIN SHALL NOT BE USED FOR CONSTRUCTION OPERATIONS. HOWEVER, IF THE ENGINEER ORDERS INSTALLATION OF FILTER CURTAIN IT SHALL BE INSTALLED AS SHOWN IN THE FILTER CURTAIN DETAIL ON EPSC DETAILS (1), SHEET 7. THIS WORK SHALL BE PAID BY THE "GEOTEXTILE FOR FILTER CURTAIN" ITEM. A QUANTITY HAS BEEN INCLUDED FOR BIDDING PURPOSES, BUT THE ACTUAL QUANTITY WILL DEPEND ON FIELD CONDITIONS. PAYMENT WILL BE FOR THE AMOUNT OF FILTER CURTAIN PLACED AND ACCEPTED.

CONCRETE NOTES

- THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT, AND UPWARD KEYS SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW JOINTS.
- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".
- ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).
- REINFORCEMENT STEEL PLACEMENT TOLERANCES SHALL BE:  
SPACING: +/- 1"  
CLEARANCE: +/- 1/4"
- MINIMUM COVER FOR REINFORCING STEEL SHALL BE 3" FOR CONCRETE CAST AGAINST EARTH, AND 2 1/2" ELSEWHERE, UNLESS OTHERWISE NOTED.
- REINFORCING IN CAST-IN-PLACE COMPONENTS SHALL BE "LEVEL I, PLAIN REINFORCING STEEL" AND SHALL CONFORM TO LATEST STATE OF VERMONT AGENCY OF TRANSPORTATION GENERAL SPECIAL PROVISIONS SECTION 507 - REINFORCING STEEL.
- ALL VERTICAL SURFACES OF NEW CONCRETE WHICH WILL BE EXPOSED TO BACKFILL SHALL BE DAMPPROOFED.
- WATER REPELLENT (SILANE) SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES TO 1'-0" BELOW THE FINISHED GRADE.
- PLACE 4" DIAMETER WEEP HOLES AT 10'-0" MAXIMUM SPACING IN WALLS.
- ALL FOOTING CONCRETE SHALL BE PLACED IN THE DRY. DEWATERING SHALL BE CONTINUOUS UNTIL THE FOOTINGS ARE BACKFILLED TO THE ELEVATION OF THE WATER. SUMPS AND TRENCHES THAT DIRECT WATER SHALL BE LOCATED TO PREVENT THE REMOVAL OF FINES BELOW THE FOOTINGS.

COFFERDAM NOTES

- THE CONTRACTOR SHALL DESIGN ALL COFFERDAMS REQUIRED TO MAINTAIN TRAFFIC AT ALL TIMES WHILE CONSTRUCTING THE CULVERT IN THE DRY.
- ALL EXCAVATION WITHIN COFFERDAM SHALL BE PAID AS STRUCTURE EXCAVATION.
- EXCAVATION BETWEEN THE EXCAVATION PAY LIMITS AND THE COFFERDAM WILL NOT BE PAID FOR.

# QUANTITIES

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY
201.10	CLEARING AND GRUBBING	LS	1
204.25	STRUCTURE EXCAVATION	CY	1721
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	956
208.401	COFFERDAM (STAGE 1)	LS	1
208.402	COFFERDAM (STAGE 2)	LS	1
301.25	SUBBASE OF CRUSHED GRAVEL, COARSE GRADE	CY	100
406.25	BITUMINOUS CONCRETE PAVEMENT	TON	125
501.34	CONCRETE, HIGH PERFORMANCE CLASS B	CY	107
507.15	REINFORCING STEEL	LB	9472
514.10	WATER REPELLENT, SILANE	GAL	10
519.20	SHEET MEMBRANE WATERPROOFING, PREFORMED SHEET	SY	110
524.11	JOINT SEALER, HOT POURED	LF	86
540.10	PRECAST CONCRETE BOX CULVERT	LS	1
613.11	STONE FILL, TYPE II	CY	61
621.20	STEEL BEAM GUARDRAIL, GALVANIZED	LF	127
621.206	STEEL BEAM GUARDRAIL, GALVANIZED/NESTED	LF	188
621.60	ANCHOR FOR STEEL BEAM RAIL	EA	1
621.90	TEMPORARY TRAFFIC BARRIER	LF	460
635.11	MOBILIZATION/DEMobilIZATION	LS	1
641.10	TRAFFIC CONTROL	LS	1
649.31	GEOTEXTILE UNDER STONE FILL	SY	136
649.515	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	SY	212
649.61	GEOTEXTILE FOR FILTER CURTAIN	SY	59
651.15	SEED	LB	4
651.18	FERTILIZER	LB	28
651.20	AGRICULTURAL LIMESTONE	TON	0.25
651.35	TOPSOIL	CY	31
651.40	GRUBBING MATERIAL	SY	24
653.21	PERMANENT EROSION MATTING	SY	271
653.45	FILTER BAG	EA	2
900.608	STREAM BED STONE FILL	CY	125
10000.00	MATERIAL TESTING	\$	3000

\* A SUM HAS BEEN INSERTED FOR BIDDING PURPOSES, HOWEVER THIS ITEM IS TO BE PAID BY THE TEST (WITHOUT ADDITIONAL MARK-UP) AS REQUESTED BY THE TOWN OF VERNON DURING CONSTRUCTION.

\*\* BY OTHERS

PRECAST CONCRETE STRUCTURES

- THE DESIGN, CONSTRUCTION, HANDLING AND ASSEMBLY OF THE PRECAST UNITS SHALL BE IN ACCORDANCE WITH VTRANS SPECIFICATION SECTION 540 AND SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AS APPLICABLE.
- THE PRECAST CONCRETE STRUCTURE SHALL BE DESIGNED TO SUPPORT CONSTRUCTION LIVE LOADS DIRECTLY ON TOP OF THE CONCRETE TOP SLAB WITHOUT ANY FILL OVER THE CONCRETE TOP SLAB.
- DESIGN CRITERIA:  
DESIGN LIVE LOAD: HL-93  
FILL OVER STRUCTURE: VARIES 1.75' TO 4.00'  
BACKFILL SOIL PARAMETERS:  
UNIT WEIGHT: 0.14 KCF  
FRICTION ANGLE: 34 DEGREES  
FACTORED BEARING RESISTANCE: 5.6 KSF
- GEOTECHNICAL REPORT IS AVAILABLE UPON REQUEST.

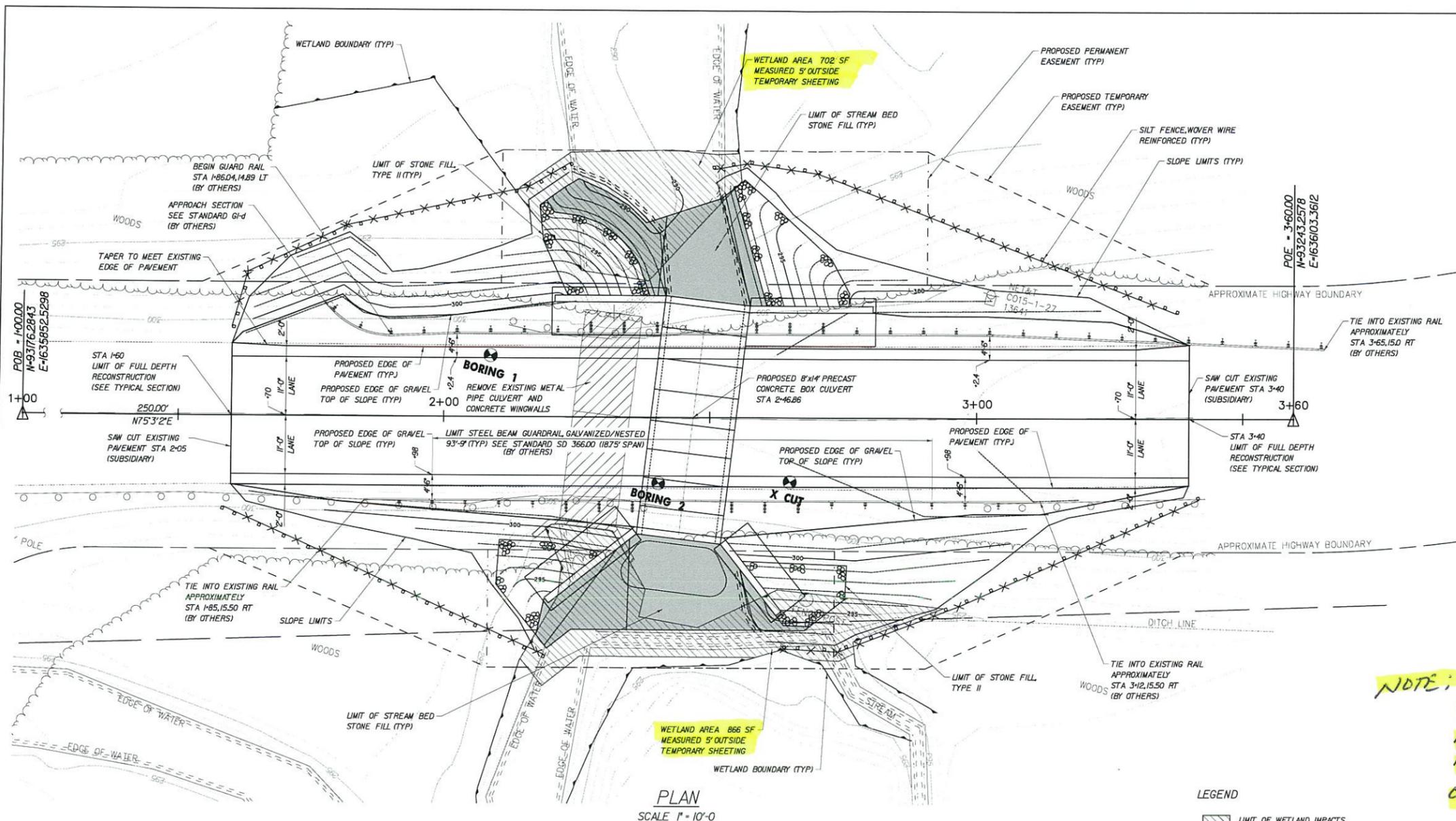
SURVEY NOTES

- BASE MAPPING PREPARED BY CHA FROM A MAY 2014 FIELD SURVEY.
- NORTH ORIENTATION IS TRUE NORTH BASED ON GPS OBSERVATION TAKEN AT THE TIME OF THE FIELD SURVEY. MAPPING PREPARED ON NAD83 STATE PLANE COORDINATE SYSTEM - NEW YORK EAST ZONE.
- CONTOURS AND ELEVATIONS SHOWN ON NAVD88 VERTICAL DATUM BASED ON GPS OBSERVATIONS.
- UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES HAVE BEEN SHOWN FROM SURFACE LOCATIONS COMBINED WITH AVAILABLE RECORD PLANS. THEIR ACTUAL LOCATION MAY VARY SOMEWHAT FROM WHAT IS SHOWN AND OTHERS MAY EXIST. SIZE, TYPE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED BY PROPER AUTHORITIES PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG SAFE PRIOR TO ANY EXCAVATION.

## TOWN OF VERNON

Town Of	VERNON	Bridge No.	
Highway No.		Log Sta.	
		Surv. Sta.	
REPLACEMENT OF CENTRAL PARK ROAD CULVERT			
GENERAL NOTES AND QUANTITIES			
Designed By	RLP	Drawn By	PRP
Checked By	RJF	Date	8/3/14
		Bridge Design Supervisor	PMP
		Date	8/3/14
PROJECT	PROJECT NO. 28424		
I.G.C. Info.			

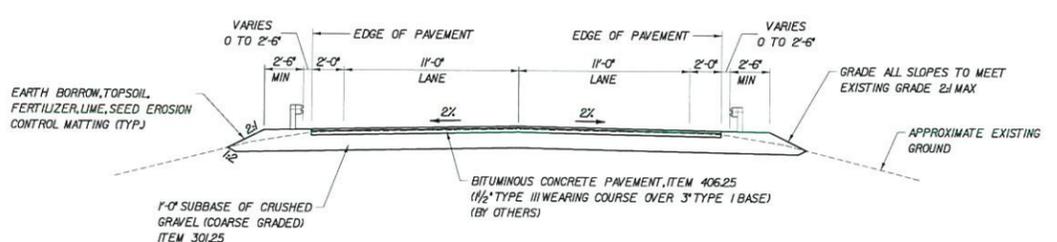




PLAN  
SCALE 1" = 10'-0"  
0 10

**NOTE: BANK FULL WIDTH WAS FIELD DETERMINED BY TODD MENDES, ANR RIVER MANAGEMENT ENGINEER, DURING A FIELD MEETING ON 5/8/14. BFW = 14'**

LEGEND  
 [Symbol] LIMIT OF WETLAND IMPACTS  
 [Symbol] LIMIT OF STREAM BED STONE FILL. STREAM BED STONE FILL SHALL ALSO BE USED INSIDE THE ENTIRE CULVERT BOTTOM

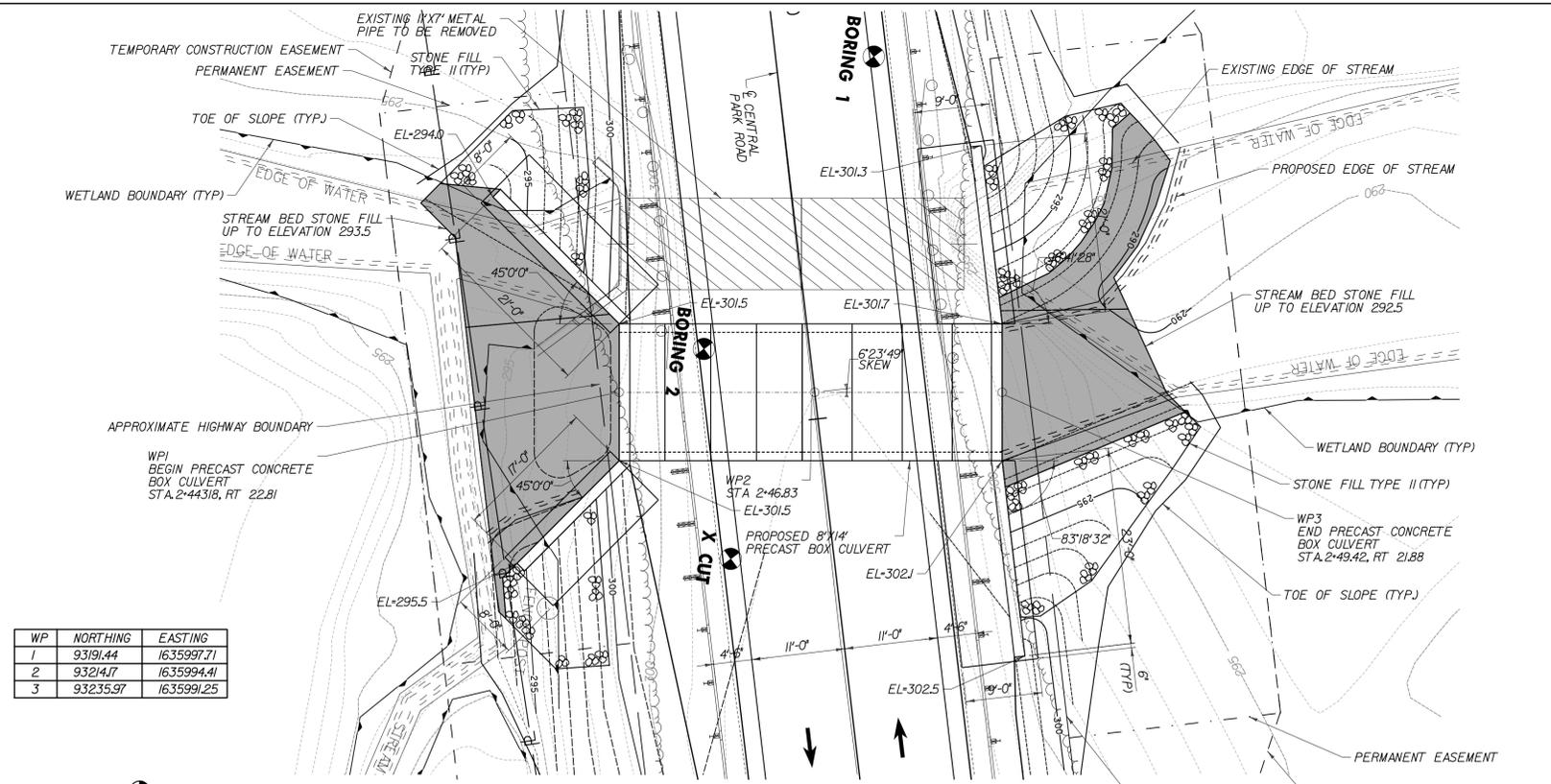


TYPICAL SECTION  
NOT TO SCALE

<b>TOWN OF VERNON</b>	
Town Of	VERNON
Highway No.	REPLACEMENT OF CENTRAL PARK ROAD CULVERT
GENERAL PLAN AND SECTION	
Designed By	RLP
Checked By	RJF Date 8/3/14
Drawn By	PRP
Bridge Design Supervisor	PMP Date 8/3/14
PROJECT	PROJECT NO. 28424
I.G.C. Info.	



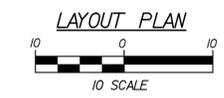
DATE: 1/12/2015  
FILE NAME: 08FILE.S  
PEN TABLE: 08PEN.TBL



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2	93214.17	1635994.41
3	93235.97	1635991.25

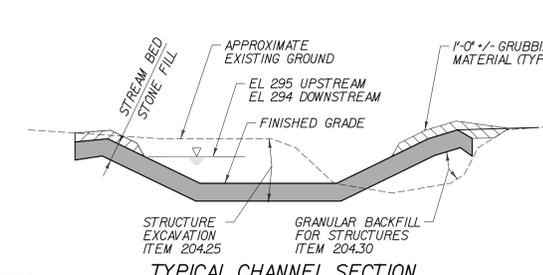
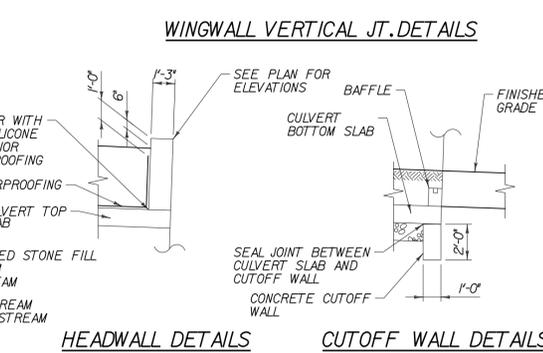
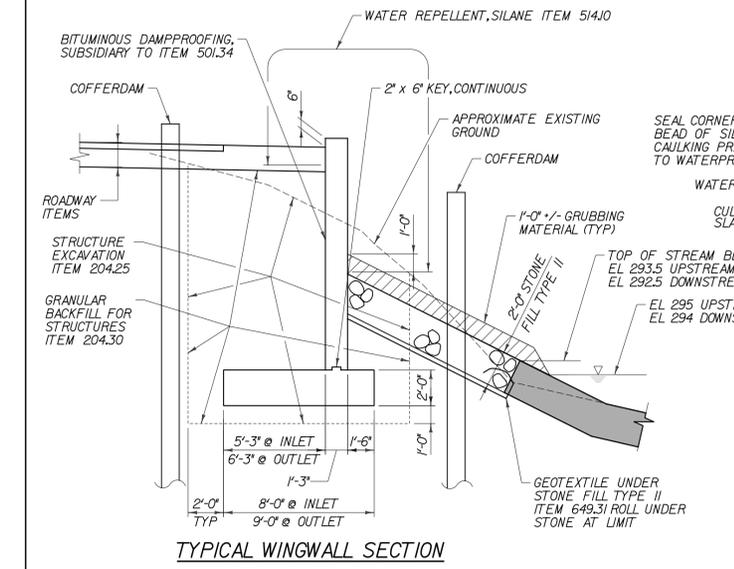
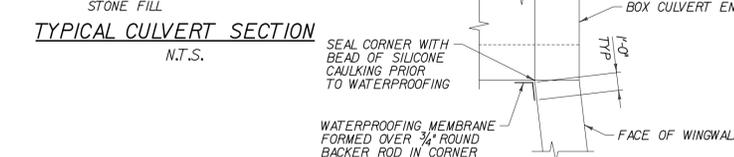
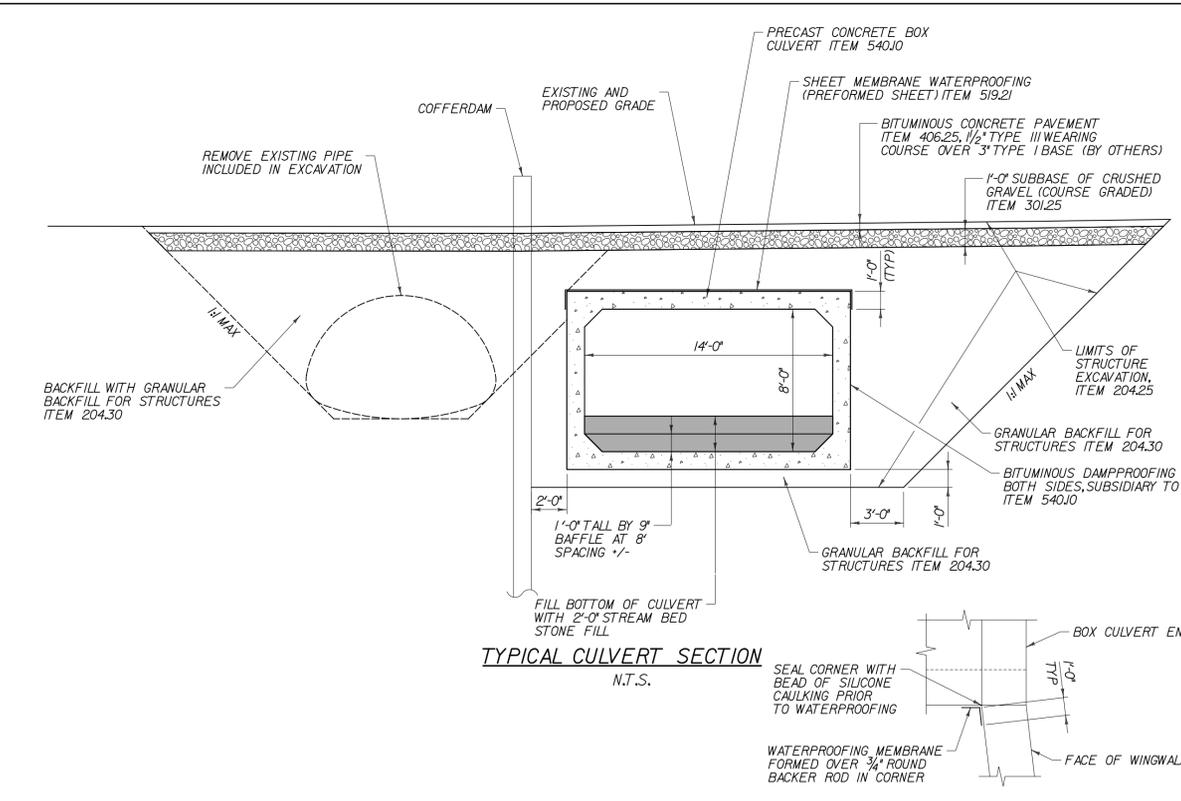
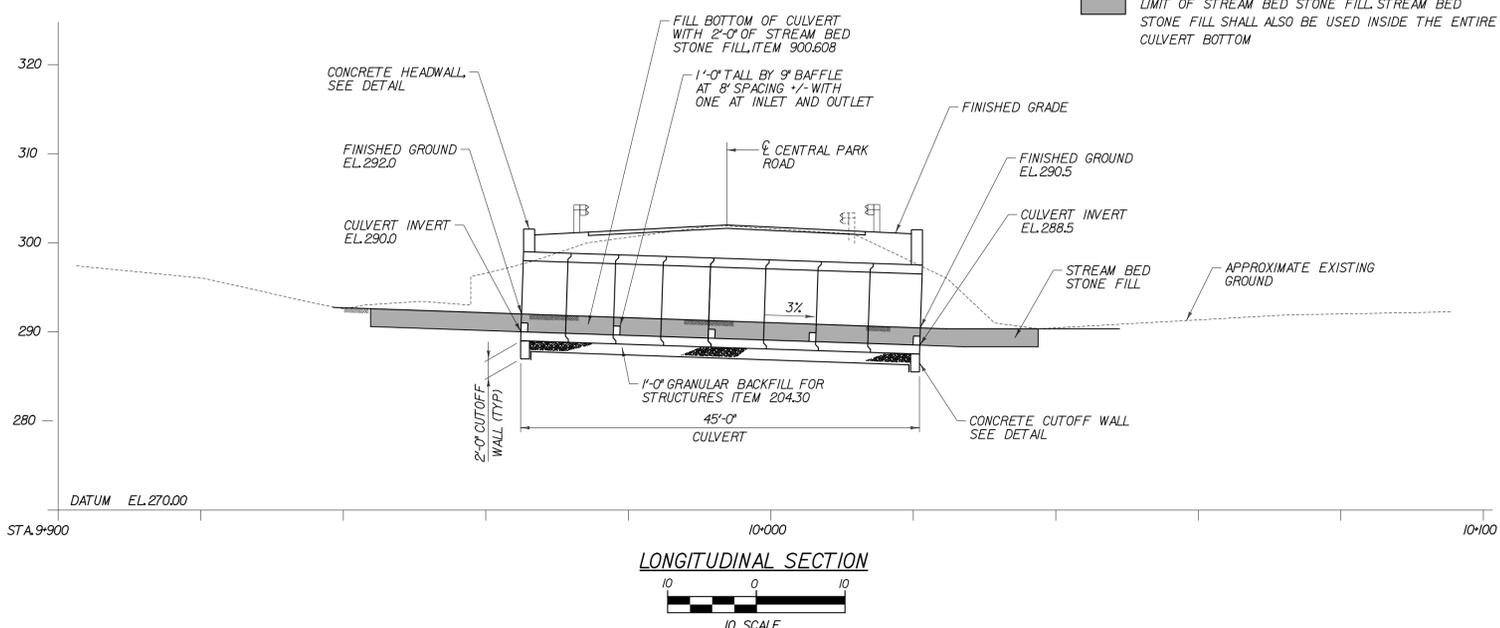
STANDARD PENETRATION BORING

BORING NO.	STATION	OFFSET	LEDGE EL.
B-1	2+08.67	11.47 LFT	> 60 FT
B-2	2+40.3	12.34 RT	> 60 FT



**LEGEND**

- [Hatched Box] LIMIT OF WETLAND IMPACTS
- [Solid Grey Box] LIMIT OF STREAM BED STONE FILL. STREAM BED STONE FILL SHALL ALSO BE USED INSIDE THE ENTIRE CULVERT BOTTOM



**REINFORCING STEEL SCHEDULE**

NO.	PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
SEE SHEET 9																	

**ESTIMATED QUANTITIES**

NO.	ITEM	UNIT	TOTAL	FINAL
SEE SHEET 2				

**TOWN OF VERNON**

Town Of VERNON  
 Highway No. \_\_\_\_\_  
 Bridge No. \_\_\_\_\_  
 Log Sta. \_\_\_\_\_  
 Surv. Sta. \_\_\_\_\_

REPLACEMENT OF CENTRAL PARK ROAD CULVERT

**LAYOUT PLAN & CULVERT DETAILS**

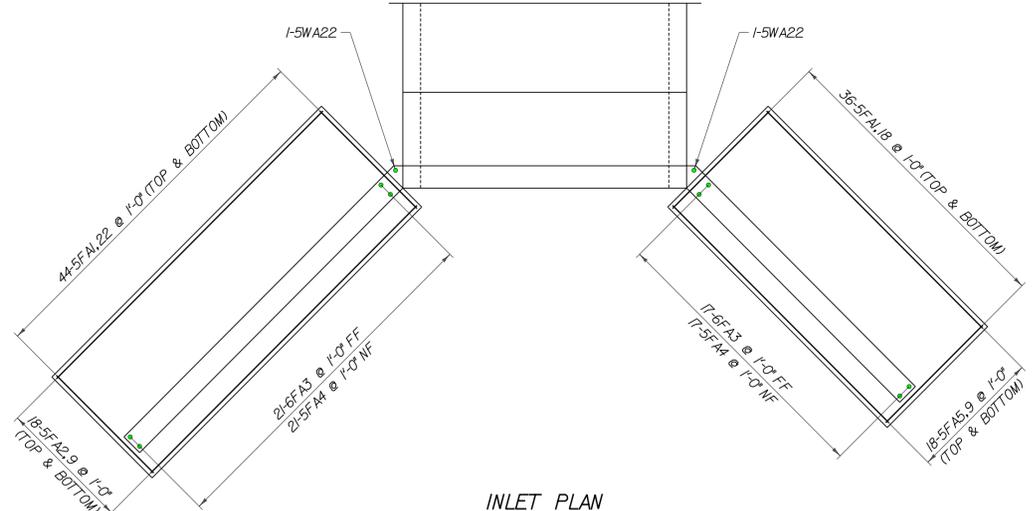
Designed By RLP  
 Checked By RJF Date 8/3/14  
 Drawn By PRP  
 Bridge Design Supervisor  
 PMP Date 8/3/14

PROJECT \_\_\_\_\_  
 PROJECT NO. 28424  
 I.G.C. Info. \_\_\_\_\_

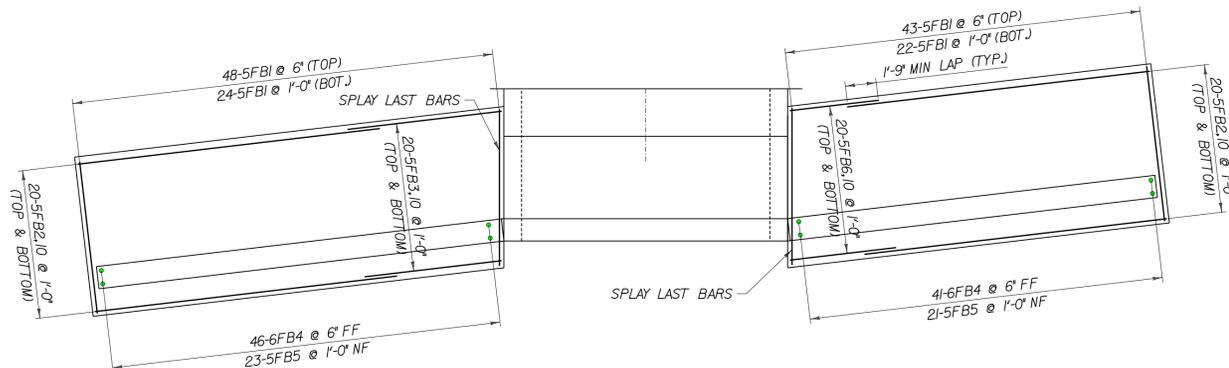
Sheet 4 of 9

**CHA**  
 CLOUGH HARBOUR & ASSOCIATES LLP  
 38 Eastwood, Suite 105, South Burlington, VT 05403  
 www.cloughharbour.com

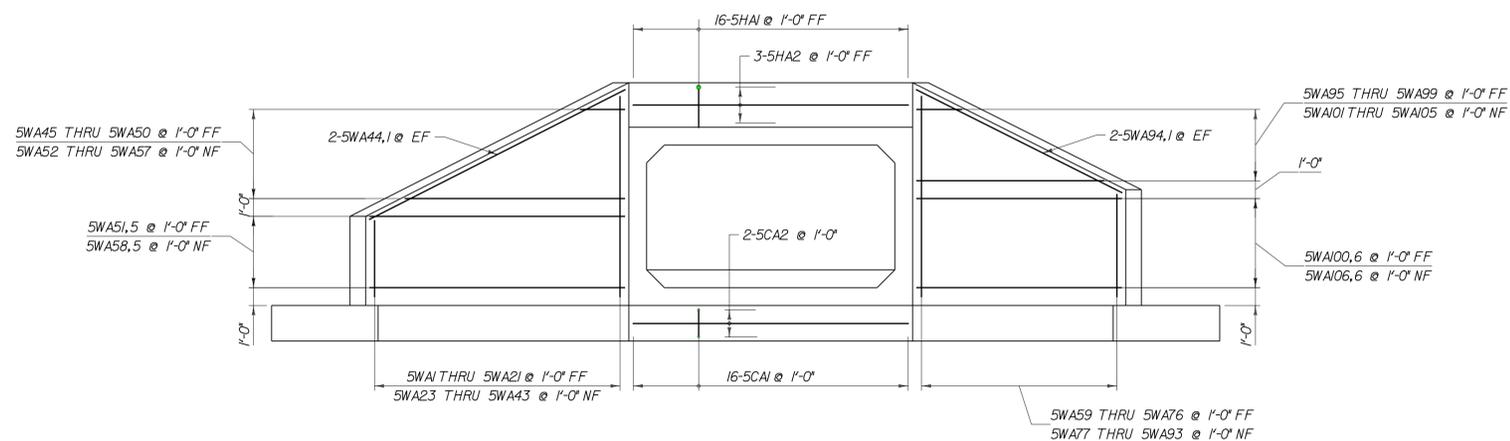
DATE: 1/26/2015  
 FILE NAME: \$FILEL\$  
 PEN TABLE: \$PENTBL\$



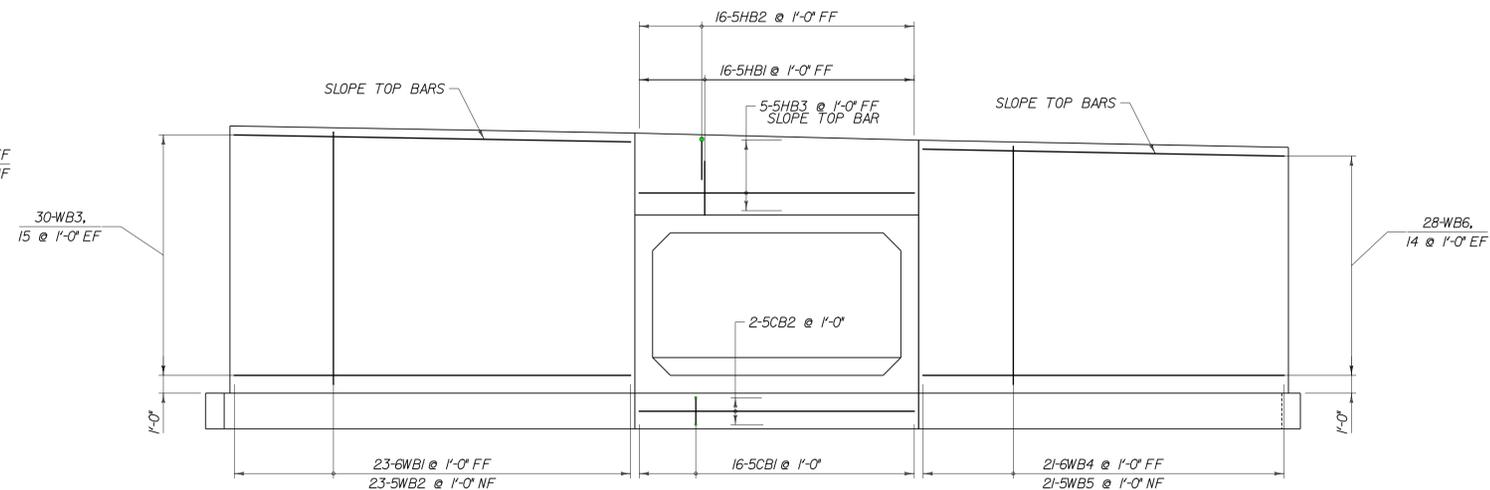
INLET PLAN



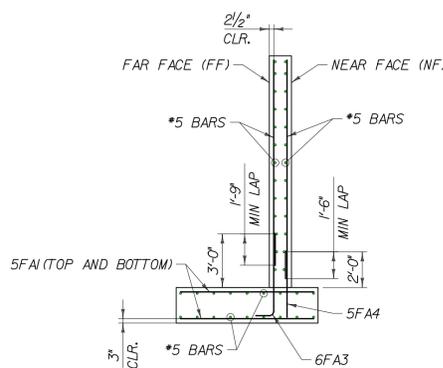
OUTLET PLAN



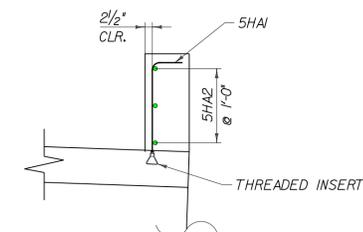
INLET ELEV.



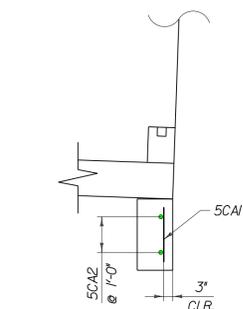
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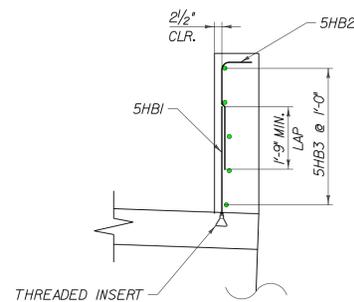
INLET SECTION



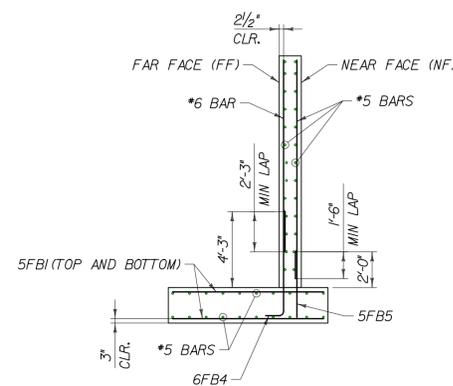
INLET HEADWALL SECTION



CUTOFF WALL SECTION



OUTLET HEADWALL SECTION

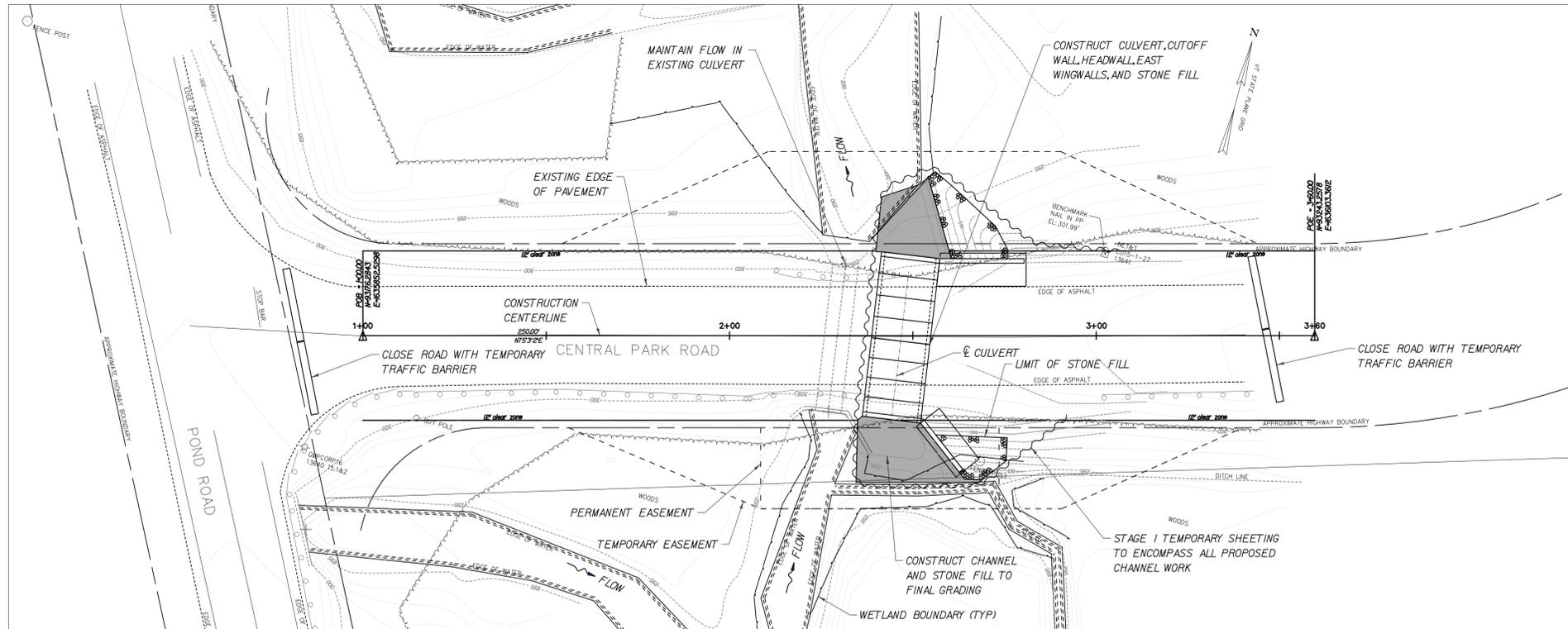


OUTLET SECTION

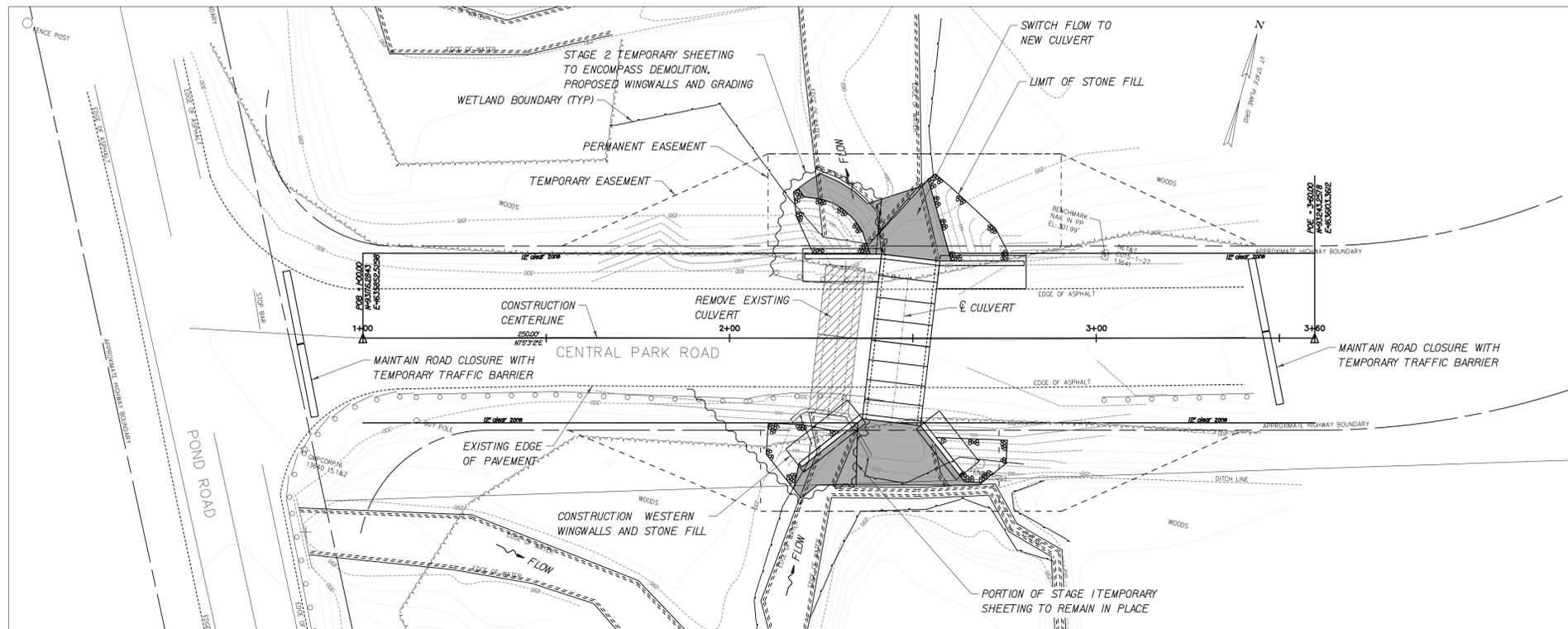
TOWN OF VERNON	
Town Of VERNON	Bridge No.
Highway No.	Log Sta.
	Surv. Sta.
REPLACEMENT OF CENTRAL PARK ROAD CULVERT	
WINGWALL DETAILS	
Designed By RLP	Drawn By PRP
Checked By RJF Date 8/3/14	Bridge Design Supervisor PMP Date 8/3/14
PROJECT	PROJECT NO. 28424
I.G.C. Info.	

**CHA**  
CLOUGH HARBOUR & ASSOCIATES LLP  
38 Eastwood, Suite 105, South Burlington, VT 05403  
www.cloughharbour.com

DATE: 1/26/2015  
FILE NAME: \$FILEL\$  
PEN TABLE: \$PENTBL\$



**STAGE 1 PLAN**



**STAGE 2 PLAN**

**STAGE 1**

1. CLOSE CENTRAL PARK ROAD AND INSTALL TRAFFIC BARRIER ACROSS ROAD ON BOTH SIDES OF CULVERT.
2. MAINTAIN FLOW IN EXISTING CULVERT. INSTALL TEMPORARY SHEETING ENCOMPASSING NEW CULVERT INCLUDING LIMITS OF CHANNEL WORK.
3. INSTALL NEW CULVERT, EASTERN WINGWALLS AND STONE FILL.
4. REMOVE TEMPORARY SHEETING TRANSVERSE TO STREAM AND ESTABLISH FLOW IN NEW CULVERT.

**STAGE 2**

1. MAINTAIN ROAD CLOSURE.
2. INSTALL TEMPORARY SHEETING ENCOMPASSING WESTERN WINGWALLS INCLUDING LIMITS OF STONE FILL.
3. REMOVE EXISTING CULVERT.
4. INSTALL WESTERN WINGWALLS AND STONE FILL.
5. REMOVE ALL TEMPORARY SHEETING.
6. COORDINATE WITH TOWN FOR PAVEMENT AND RAILING INSTALLATION PRIOR TO REMOVING TEMPORARY TRAFFIC BARRIER.

<b>TOWN OF VERNON</b>	
Town Of VERNON	Bridge No.
Highway No.	Log Sta.
	Surv. Sta.
REPLACEMENT OF CENTRAL PARK ROAD CULVERT	
STAGING	
Designed By RLP	Drawn By PRP
Checked By RJF Date 8/3/14	Bridge Design Supervisor PMP Date 8/3/14
PROJECT	PROJECT NO. 28424
I.G.C. Info.	



DATE - 1/26/2015  
 FILE NAME - \$FILEL\$  
 PEN TABLE - \$PENTBL\$

VAOT RURAL AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
37.5%	22.5	45	CREeping RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
42.5%	34	68	CREeping RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE			
FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	FOLLOW	PELLETIZED	FOLLOW
500 LBS/AC	MANUFACTURER	2 TONS/AC	MANUFACTURER

**CONSTRUCTION GUIDANCE**

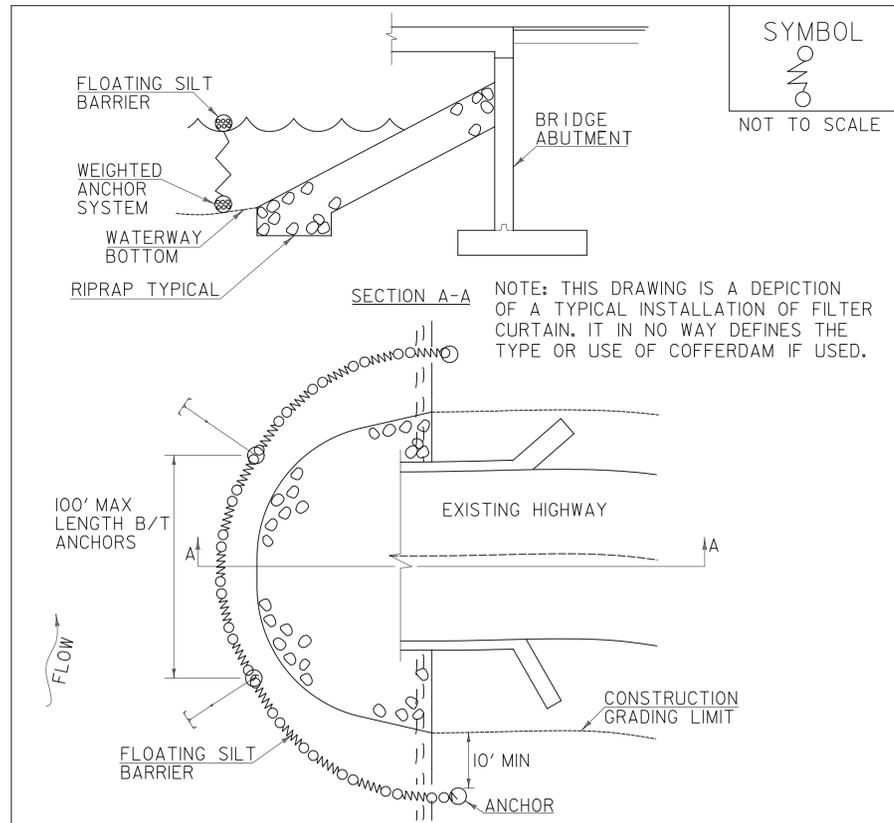
1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

**TURF ESTABLISHMENT**

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.15)

REVISIONS		
JUNE 23, 2009	WHF	
JANUARY 15, 2010	WHF	
FEBRUARY 16, 2011	WHF	



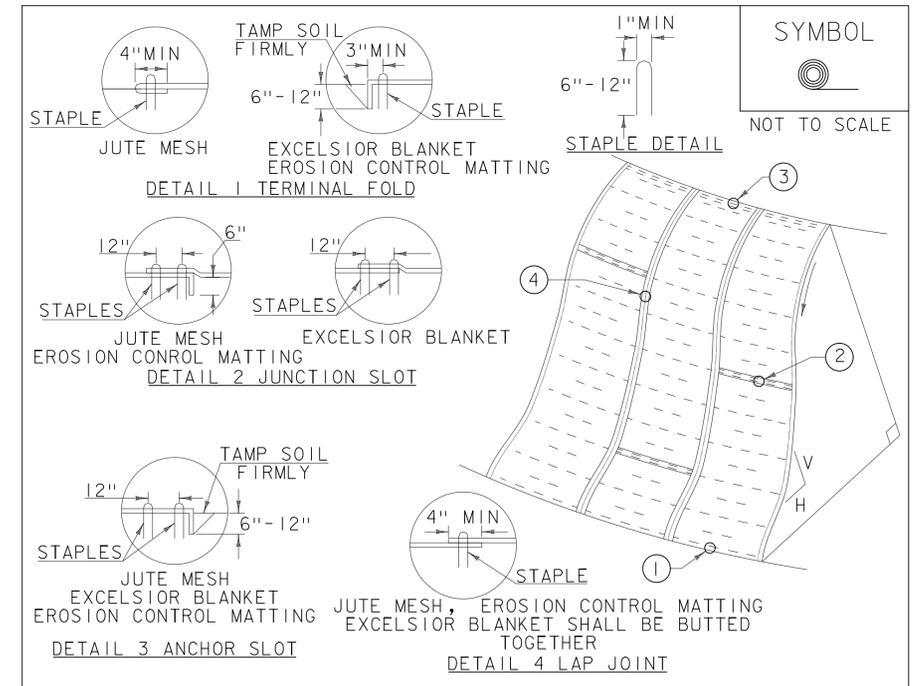
**CONSTRUCTION SPECIFICATIONS**

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

**FILTER CURTAIN**

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS		
APRIL 1, 2008	WHF	
JANUARY 13, 2009	WHF	
SEPTEMBER 4, 2009	WHF	



**CONSTRUCTION SPECIFICATIONS**

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE**

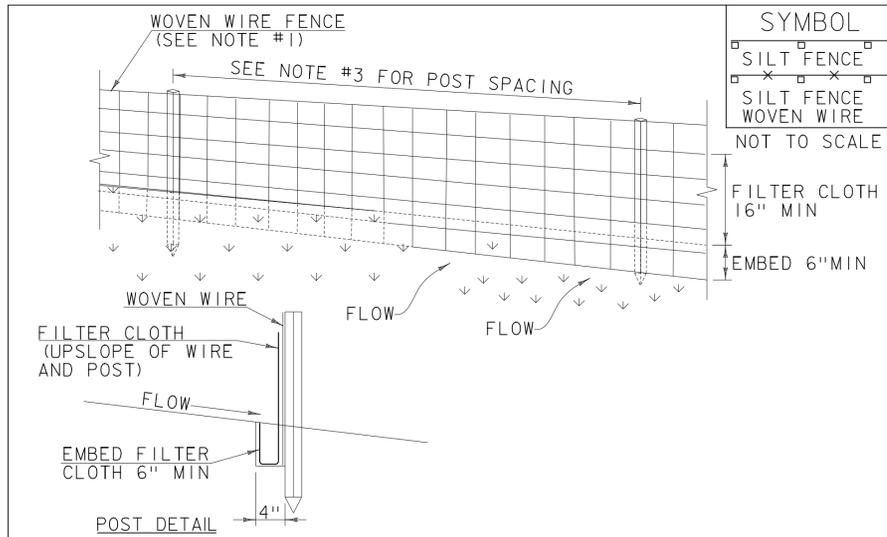
NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) AND PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS		
APRIL 16, 2007	JMF	
JANUARY 13, 2009	WHF	

**TOWN OF VERNON**

Town Of	VERNON	Bridge No.	
Highway No.		Log Sta.	
		Surv. Sta.	
REPLACEMENT OF CENTRAL PARK ROAD CULVERT			
EPSC DETAILS (1)			
Designed By	RLP	Drawn By	PRP
Checked By	RJF	Date	8/3/14
		Bridge Design Supervisor	PMP
		Date	8/3/14
PROJECT		PROJECT NO.	28424
I.G.C. Info.			





**CONSTRUCTION SPECIFICATIONS**

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

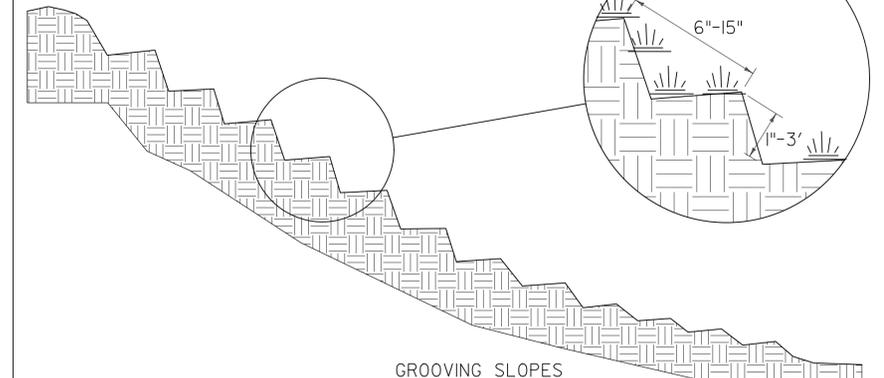
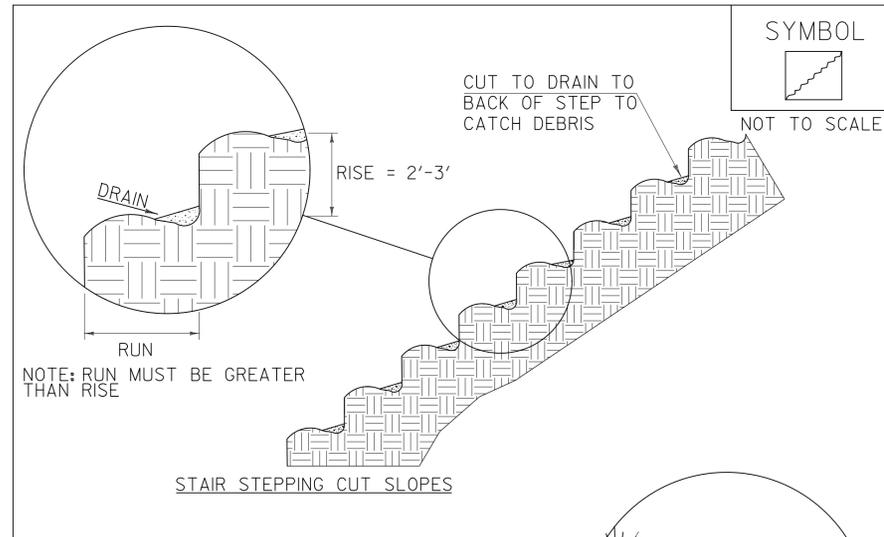
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**SILT FENCE**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

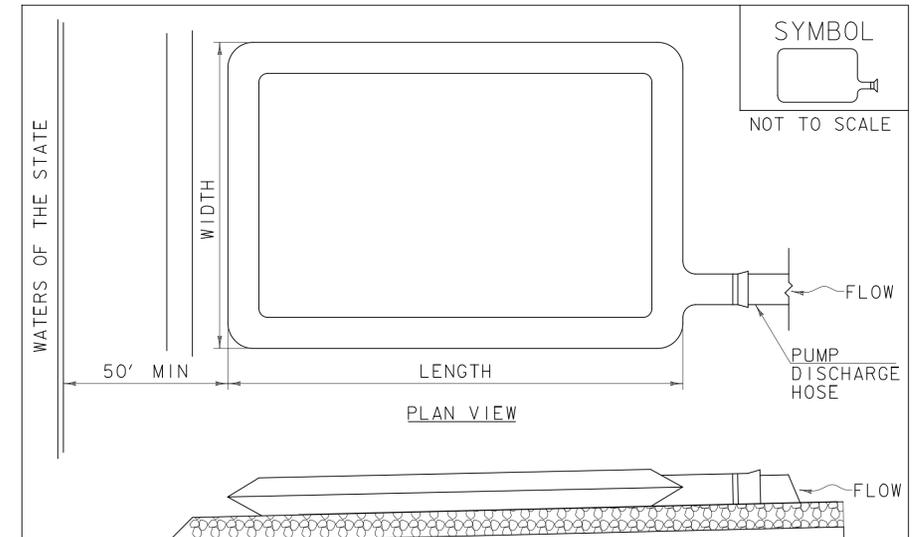
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**SURFACE ROUGHENING**

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF



**CONSTRUCTION SPECIFICATIONS**

1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR HAYBALES TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE EPSC PLAN OR AS DIRECTED BY THE ENGINEER.

NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR FILTER BAG (PAY ITEM 653.45) AND AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

**TOWN OF VERNON**

Town Of	VERNON	Bridge No.	
Highway No.		Log Sta.	
		Surv. Sta.	
REPLACEMENT OF CENTRAL PARK ROAD CULVERT			
EPSC DETAILS (2)			
Designed By	RLP	Drawn By	PRP
Checked By	RJF	Bridge Design Supervisor	PMP
	Date 8/3/14		Date 8/3/14
PROJECT		PROJECT NO.	28424
I.G.C. Info.			



MARK	SIZE	LENGTH	NO. PIECES	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
5CA1	5	1'-6"	16	STR.												
5CA2	5	15'-6"	2	STR.												
5HA1	5	3'-7"	16	2	10"	2'-9"					0"					
5HA2	5	15'-7"	3	STR.												
5FA1	5	7'-6"	80	STR.												
5FA2	5	21'-0"	18	STR.												
6FA3	6	5'-9"	38	2	1'-0"	4'-9"					0"					
5FA4	5	3'-9"	38	STR.												
5FA5	5	17'-0"	18	STR.												
5WA1	5	3'-7"	1	STR.												
5WA2	5	3'-11"	1	STR.												
5WA3	5	4'-3"	1	STR.												
5WA4	5	4'-8"	1	STR.												
5WA5	5	5'-0"	1	STR.												
5WA6	5	5'-4"	1	STR.												
5WA7	5	5'-9"	1	STR.												
5WA8	5	6'-1"	1	STR.												
5WA9	5	6'-5"	1	STR.												
5WA10	5	6'-9"	1	STR.												
5WA11	5	7'-2"	1	STR.												
5WA12	5	7'-6"	1	STR.												
5WA13	5	7'-10"	1	STR.												
5WA14	5	8'-3"	1	STR.												
5WA15	5	8'-7"	1	STR.												
5WA16	5	8'-11"	1	STR.												
5WA17	5	9'-3"	1	STR.												
5WA18	5	9'-8"	1	STR.												
5WA19	5	10'-0"	1	STR.												
5WA20	5	10'-4"	1	STR.												
5WA21	5	10'-9"	1	STR.												
5WA22	5	11'-0"	2	STR.												
5WA23	5	4'-4"	1	STR.												
5WA24	5	4'-8"	1	STR.												
5WA25	5	5'-0"	1	STR.												
5WA26	5	5'-5"	1	STR.												
5WA27	5	5'-9"	1	STR.												
5WA28	5	6'-1"	1	STR.												
5WA29	5	6'-6"	1	STR.												
5WA30	5	6'-10"	1	STR.												
5WA31	5	7'-2"	1	STR.												
5WA32	5	7'-6"	1	STR.												
5WA33	5	7'-11"	1	STR.												
5WA34	5	8'-3"	1	STR.												
5WA35	5	8'-7"	1	STR.												
5WA36	5	9'-0"	1	STR.												
5WA37	5	9'-4"	1	STR.												
5WA38	5	9'-8"	1	STR.												
5WA39	5	10'-0"	1	STR.												
5WA40	5	10'-5"	1	STR.												
5WA41	5	10'-9"	1	STR.												
5WA42	5	11'-1"	1	STR.												
5WA43	5	11'-6"	1	STR.												
5WA44	5	22'-0"	2	STR.												
5WA45	5	3'-11"	1	STR.												
5WA46	5	6'-9"	1	STR.												
5WA47	5	9'-6"	1	STR.												
5WA48	5	12'-4"	1	STR.												
5WA49	5	15'-1"	1	STR.												
5WA50	5	17'-11"	1	STR.												
5WA51	5	21'-3"	5	STR.												
5WA52	5	3'-5"	1	STR.												
5WA53	5	6'-3"	1	STR.												
5WA54	5	9'-0"	1	STR.												
5WA55	5	11'-10"	1	STR.												
5WA56	5	14'-7"	1	STR.												
5WA57	5	17'-5"	1	STR.												
5WA58	5	20'-9"	5	STR.												
5WA59	5	5'-1"	1	STR.												
5WA60	5	5'-5"	1	STR.												
5WA61	5	5'-9"	1	STR.												
5WA62	5	6'-2"	1	STR.												
5WA63	5	6'-6"	1	STR.												
5WA64	5	6'-10"	1	STR.												
5WA65	5	7'-2"	1	STR.												
5WA66	5	7'-7"	1	STR.												
5WA67	5	7'-11"	1	STR.												
5WA68	5	8'-3"	1	STR.												
5WA69	5	8'-7"	1	STR.												
5WA70	5	8'-11"	1	STR.												
5WA71	5	9'-4"	1	STR.												
5WA72	5	9'-8"	1	STR.												
5WA73	5	10'-0"	1	STR.												

MARK	SIZE	LENGTH	NO. PIECES	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
5WA74	5	10'-4"	1	STR.												
5WA75	5	10'-9"	1	STR.												
5WA76	5	11'-0"	1	STR.												
5WA77	5	5'-10"	1	STR.												
5WA78	5	6'-2"	1	STR.												
5WA79	5	6'-6"	1	STR.												
5WA80	5	6'-11"	1	STR.												
5WA81	5	7'-4"	1	STR.												
5WA82	5	7'-7"	1	STR.												
5WA83	5	7'-11"	1	STR.												
5WA84	5	8'-4"	1	STR.												
5WA85	5	8'-8"	1	STR.												
5WA86	5	9'-0"	1	STR.												
5WA87	5	9'-4"	1	STR.												
5WA88	5	9'-8"	1	STR.												
5WA89	5	10'-1"	1	STR.												
5WA90	5	10'-5"	1	STR.												
5WA91	5	10'-9"	1	STR.												
5WA92	5	11'-1"	1	STR.												
5WA93	5	11'-6"	1	STR.												
5WA94	5	17'-10"	2	STR.												
5WA95	5	3'-11"	1	STR.												
5WA96	5	6'-9"	1	STR.												
5WA97	5	9'-7"	1	STR.												
5WA98	5	12'-5"	1	STR.												
5WA99	5	15'-3"	1	STR.												
5WA100	5	17'-3"	6	STR.												
5WA101	5	3'-5"	1	STR.												
5WA102	5	6'-3"	1	STR.												
5WA103	5	9'-1"	1	STR.												
5WA104	5	11'-11"	1	STR.												
5WA105	5	14'-9"	1	STR.												
5WA106	5	16'-9"	6	STR.												
5CB1	5	1'-6"	16	STR.												
5CB2	5	15'-6"	2	STR.												
5HB1	5	3'-6"	16	STR.												
5HB2	5	4'-1"	16	2	10"	3'-3"					0"					
5HB3	5	15'-7"	5	STR.												
5FB1	5	8'-6"	137	STR.												
5FB2	5	19'-0"	40	STR.												
5FB3	5	6'-8"	20	STR.												
6FB4	6	7'-0"	87	2	1'-0"	6'-0"					0"					
5FB5	5	3'-9"	44	STR.												
5FB6	5	4'-0"	20	STR.												
5WB1	5	12'-9"	23	STR.												
5WB2	5	14'-3"	23	STR.												
5WB3	5	22'-7"	30	STR.												
5WB4	5	11'-11"	21	STR.												
5WB5	5	13'-5"	21	STR.												
5WB6	5	20'-5"	28	STR.												

NOTES:

- UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO.18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-S1). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
- FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER 'D' OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE". BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN