



Vermont Department of Environmental Conservation

Agency of Natural Resources

Watershed Management Division
St. Johnsbury Regional Office
1229 Portland Street, Suite 201
St. Johnsbury, VT 05819
www.watershedmanagement.vt.gov

[fax] 802-748-6687
[cell] 802-279-1143

AUTHORIZATION TO CONDUCT STREAM ALTERATION ACTIVITIES

Pursuant to Section C.2.2 of the VT Stream Alteration General Permit (Reporting activities not requiring an application)

Project Number: SA-3-113 -2016

Applicant Name: TOWN OF ST. JOHNSBURY

Mailing Address: POMERLEAU BLDG, 51 DEPOT SQ. SUITE Phone: 748-3926

Project Location MOOSE RIVER CROSSING OFF US 2 ^{VT 05819} Email: cwhitehead@stjvt.com

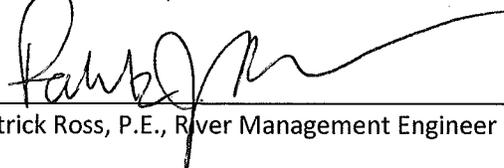
The Secretary of the Vermont Agency of Natural Resources (VT ANR) has determined that:

1. This project authorizes the replacement of the π under the Moose 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 plan dated 7-14-15, prepared by DG ENGINEERING, and approved by the Vermont Agency of Natural Resources.
 - 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 River Management Engineer is notified by phone or email when construction begins and when the project is complete.
 - h) A final construction inspection is required for all culvert and bridge projects.
 - i) In-stream working dates are from July 1st through October 1st; any in-stream work outside these dates will require authorization by the River Management Engineer.
 - j) This authorization has been posted for three days public comment. This authorization constitutes final approval.
 - k) Additional Conditions for this project: CONTRACTOR WATER CONTROL PLAN REQUIRED PRIOR TO START.

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.

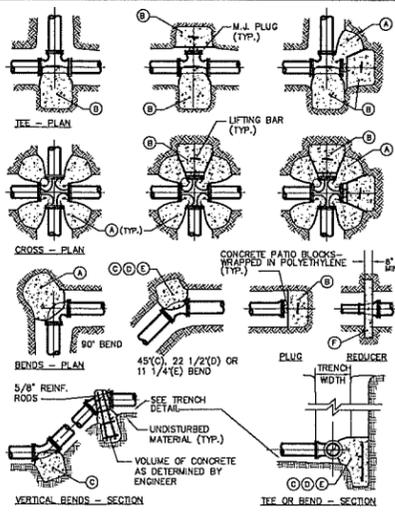
If the project is constructed as you have described, as shown on the above referenced approved plans and according to the above conditions, there is no reason to expect any violation of Vermont Water Quality Standards.

Alyssa B. Schuren, ANR DEC Commissioner


Patrick Ross, P.E., River Management Engineer

Dated: 6/7/16

CK# 80006



THRUST BLOCK SCHEDULE
 SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL

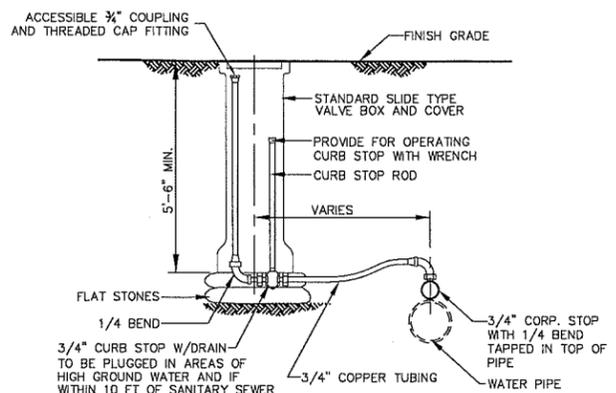
REACTION TYPE	PIPE SIZE										
	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
1	5.12	10.56	18.19	27.37	38.71	52.00	67.26	84.47	103.64	147.87	
2	3.62	7.48	12.87	19.35	27.37	36.77	47.56	59.73	73.28	104.56	
3	2.77	5.72	9.85	14.81	20.95	28.14	36.40	45.72	56.09	80.03	
4	1.41	2.92	5.02	7.55	10.68	14.35	18.56	23.31	28.60	40.80	
5	0.71	1.47	2.52	3.78	5.37	7.21	9.32	11.71	14.37	20.50	
6	3.86	8.25	15.73	23.75	33.29	44.08	56.88	71.93	89.17		

- NOTES:**
- THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.
 - POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
 - ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
 - PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK. PRE-FORMED AND PRE-POURED THRUST BLOCKS ARE NOT ACCEPTABLE.
 - THE USE OF A MECHANICAL JOINT RESTRAINT SYSTEM DOES NOT REDUCE THE REQUIREMENTS SHOWN IN THIS DETAIL.
 - ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
 - IF THREADED ROD IS USED, IT SHALL BE ANSI A242 F750 PIPE RESTRAINT NUTS TO MATCH ANKA GILL.
 - SIZES FOR REDUCERS SHOWN ARE BASED ON THE SMALLEST AVAILABLE RUN SIZE FOR A GIVEN PIPE SIZE.
 - INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.
 - TEST PRESSURE TO BE 200 PS. MIN. AT LOW END OF THE TEST SECTION. SQUARE FEET OF CONCRETE THRUST BLOCKING FOR OTHER TEST PRESSURES IS DIRECTLY PROPORTIONAL TO THE ABOVE TABLE. FOR INSTANCE, AT 300 PS. TEST PRESSURE, THE NUMBERS SHOWN IN THE ABOVE TABLE ARE MULTIPLIED BY 1.5. SEE BELOW FOR EXAMPLE CALCULATION.
 - THRUST BLOCK AREA IS BASED ON A SOIL BEARING STRENGTH OF 1500 LBS/SF AND A SAFETY FACTOR OF 1.5. MULTIPLY THE BEARING AREA FROM ABOVE (WITH CONSIDERATION OF TEST PRESSURE) AND MULTIPLY BY THE FOLLOWING FACTORS TO DETERMINE BEARING AREA REQUIRED FOR VARIOUS SOIL CONDITIONS:

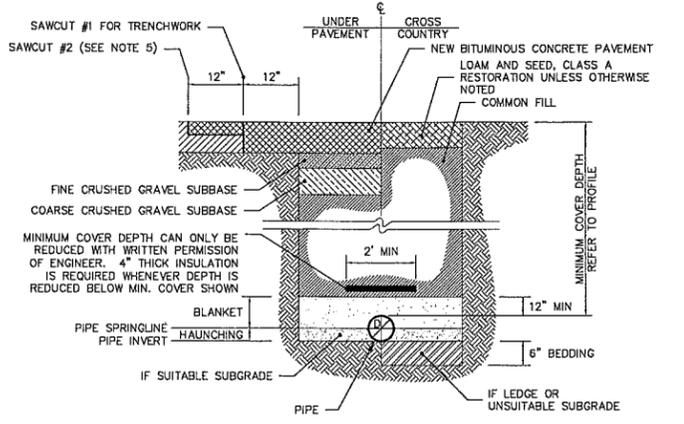
SOIL TYPE	BEARING CAPACITY (LB/SF)	FACTOR
SOFT CLAY	1,000	1.50
SILT	1,500	1.00
SANDY SILT	3,000	0.50
SAND	4,000	0.38
SANDY GRAVEL	5,000	0.30
SANDY CLAY	6,000	0.25
GRAVEL W/ ROCK	7,000	0.21
HARD CLAY	9,000	0.17

EXAMPLE: AN 8-INCH 90° BEND IN SANDY GRAVEL SOILS, TEST PRESSURE OF 200 PS.
 AREA REQUIRED = 18.19 SF x 1 x 0.30 = 5.46 SF

THRUST BLOCK DETAILS AND NOTES
 NOT TO SCALE



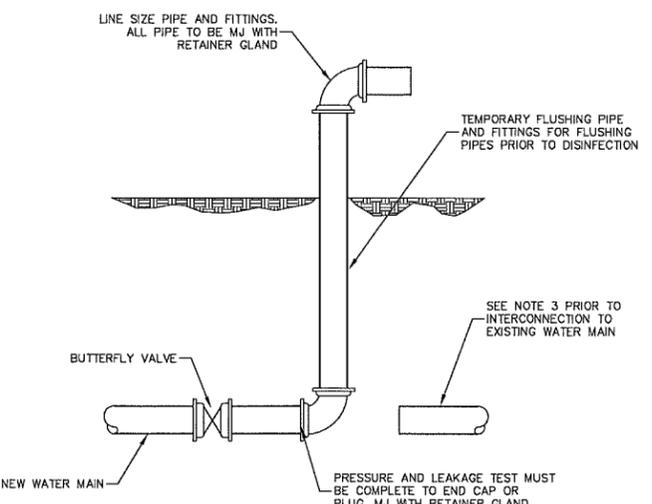
CHLORINATION INJECTION DETAIL
 NOT TO SCALE



- BEDDING** - EXCAVATE BELOW PIPE AND REFILL ONLY WHEN SPECIFICALLY ORDERED. MATERIALS AND COMPACTION AS SPECIFIED.
- HAUNCHING** - FROM INVERT OF PIPE TO SPRINGLINE OF PIPE. HAND PLACE AND HAND TAMP TO REMOVE ALL VOIDS FROM UNDER PIPE. MATERIAL AND COMPACTION AS SPECIFIED.
- BLANKET** - FROM SPRINGLINE TO 12" MIN. ABOVE PIPE. MATERIAL AND COMPACTION AS SPECIFIED.

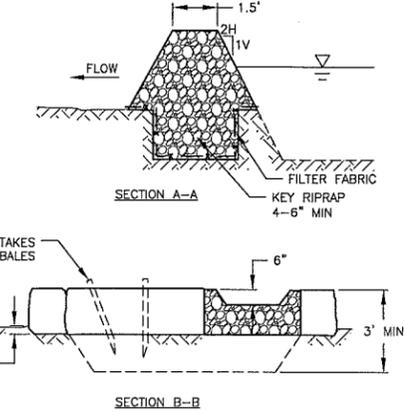
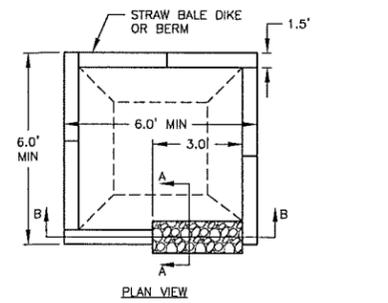
WATER MAIN TYPICAL TRENCH DETAIL
 NOT TO SCALE

- NOTES:**
- REFER TO SPECIFICATIONS FOR PAVEMENT THICKNESS REQUIREMENTS.
 - REFER TO THE SPECIFICATIONS FOR COMPACTION, PAY LIMITS, AND SPECIALTY MATERIALS FOR BLANKET, HAUNCHING, BEDDING, AND GRAVELS.
 - NORMALLY, EXCAVATED MATERIAL FROM THE TRENCH CAN BE USED AS COMMON FILL BACKFILL AND COMPACTION AS NECESSARY TO ACHIEVE COMPLIANCE WITH THE SPECIFICATIONS. IF IN THE OPINION OF THE ENGINEER, THE EXCAVATED MATERIAL WHEN REMOVED IS TOO WET TO BE USED AS BACKFILL TO ACHIEVE THE MINIMUM SPECIFIED COMPACTION, MATERIAL MEETING THE COMMON FILL SPECIFICATION WILL BE FURNISHED AND INSTALLED AT THE UNIT PRICE PROVIDED.
 - IF THE EXCAVATED MATERIAL BECOMES TOO WET DUE TO WEATHER CONDITIONS OR DUE TO IMPROPER HANDLING PROCEDURES AND CANNOT BE REUSED FOR BACKFILL, THE MATERIAL SHALL BE SUFFICIENTLY DRIED OR MIXED WITH DRY MATERIAL TO OBTAIN PROPER MOISTURE CONTENT AT NO ADDITIONAL CHARGE TO THE OWNER.
 - SAWCUT #2 FOR PERMANENT TRENCH PAVEMENT: CUT EXISTING PAVEMENT IN A STRAIGHT LINE TO A DEPTH EQUAL TO NEW WEARING COURSE PAVEMENT THICKNESS AND REMOVE EXISTING PAVEMENT. CLEAN SURFACES AND TACK COAT ALL EDGES OF EXISTING PAVEMENT.
 - TRENCH WIDTH SHALL BE SUFFICIENT TO ALLOW PIPE TO BE LAID AND JOINED PROPERLY AND FOR PLACEMENT AND COMPACTION OF BEDDING. TRENCH SUPPORT SHALL BE ADEQUATE TO PERMIT SAFE ACCESS BY INSPECTOR FOR COMPACTION SAMPLES.
 - WHERE PIPE IS INSTALLED IN GRAVELED ROAD, GRAVEL SUBBASE MATERIAL AND COMPACTION SHALL BE AS SPECIFIED.

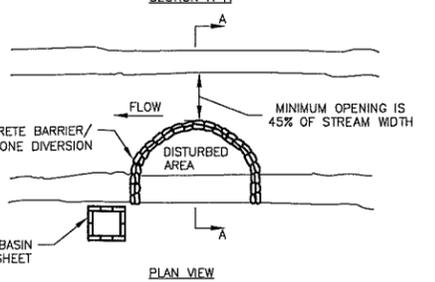
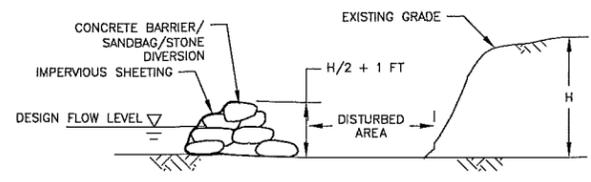


TEMPORARY FLUSHING CONNECTION
 SCALE: NOT TO SCALE

- NOTES:**
- MINIMUM FLUSHING VELOCITY IS 3 FEET PER SECOND.
 - CONTRACTOR TO INSURE ALL FLUSHING WATER IS CONTROLLED IN ACCORDANCE WITH CONSTRUCTION GENERAL PERMIT AND DECHLORINATED PRIOR TO DISCHARGE.
 - CONTRACTOR TO SWAB CHLORINATE FITTINGS AND CONNECTORS NOT INCLUDED IN INITIAL DISINFECTION PROCEDURE IF CONNECTING TO AN EXISTING WATER MAIN.

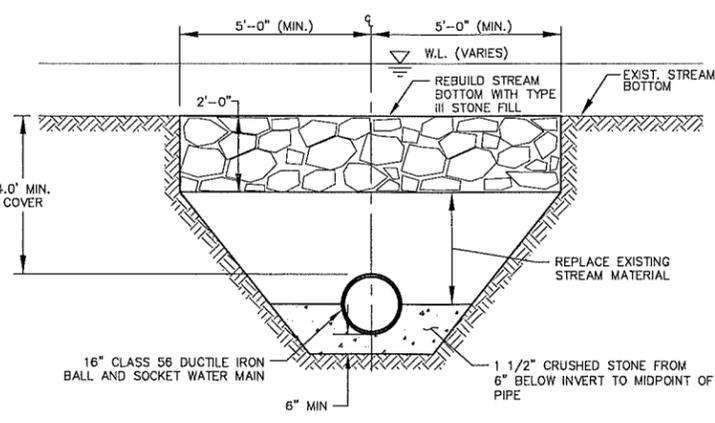


DEWATERING BASINS DETAIL
 NOT TO SCALE



SANDBAG/STONE DIVERSION DETAIL
 NOT TO SCALE

NOTE: CONTRACTOR MAY PROPOSE ALTERNATIVE METHODS FOR REVIEW BY THE ENGINEER AND THE STATE OF VERMONT.



WATER MAIN TRENCH WITHIN STREAM DETAIL
 NOT TO SCALE

DG
DUFRESNE GROUP
 CONSULTING ENGINEERS
 64 Main Street, P.O. Box B
 Windsor, Vermont 05089
 E-mail: dufresne@vermontel.net
 Web: www.dufresnegroup.com

Windsor, VT • Tel: (802) 674-2904 Fax: (802) 674-2913
 Barre, VT • Tel: (802) 479-3698 Fax: (802) 479-2261
 St. Johnsbury, VT • Tel: (802) 748-6605 Fax: (802) 748-4512
 Manchester, VT • Tel: (802) 768-8291 Fax: (802) 768-8315

Dufresne Group is owned by Dufresne & Associates, PC

REVISIONS

DATE COMMENTS BY

11/10/15	EXTENSION OF WATER MAIN ACROSS RAILROAD ROW	EAE
----------	---	-----

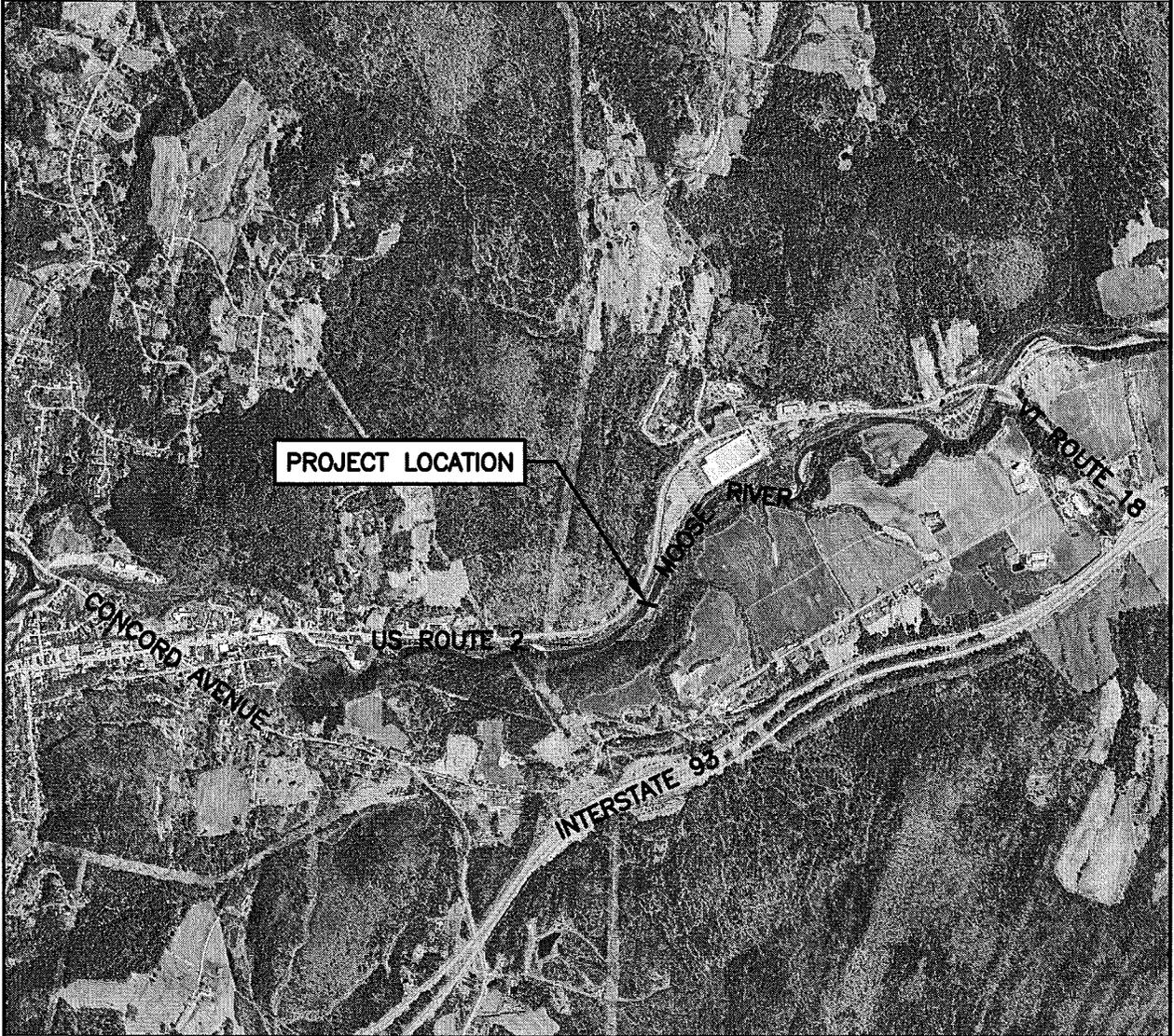
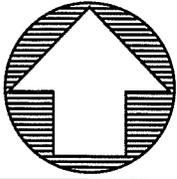
MOOSE RIVER WATER MAIN CROSSING
 CONTRACT 2015-1

STANDARD DETAILS

SAINT JOHNSBURY, VERMONT

Project #	4140007
Project Mgr.	AJD
Design by	AJD
Drawn by	EAE
Reviewed by	REVIEWED BY
Approved by	NAME
Date	JULY 14, 2015
Scale	AS SHOWN

C2



GRAPHIC SCALE



(IN FEET)



DUFRESNE GROUP
CONSULTING ENGINEERS

459 Portland Street, Suite 106
St. Johnsbury, Vermont 05819
Tel: (802) 748-8605 Fax: (802) 748-4512
E-mail: dufresne@vermontel.net
Home page: <http://www.dufresnegroup.com>

LOCATION MAP

MOOSE RIVER
WATER MAIN CROSSING
PROJECT AREA

ST JOHNSBURY, VERMONT

PROJECT NO. 4140007

PROJECT M.J.R. AJD

SCALE AS SHOWN

DATE MAY 2015

DRAWING NO. FIGURE 1 - AERIAL.dwg

FILE: J:\Saint Johnsbury VT\Town Projects\4140007 - Moose River Crossing\CAD\Figures\FIGURE 1 - AERIAL.dwg Mar 18, 2016 - 3:37pm