STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: Nov. 2006

DRAINAGE AREA : 15.4 sq. mi.
CHARACTER OF TERRAIN : Hilly to Mountainous
STREAM CHARACTERISTICS : Meandering, alluvial channel with some eroding stream banks.
NATURE OF STREAMBED : Silt, sand, gravel and cobbles

PEAK FLOW DATA

Q 2.33 =	1,000 cfs	Q 50 =	2,160 cfs
Q 10 =	1,500 cfs	Q 100 =	2,500 cfs
Q 25 =	1,850 cfs	Q 500 =	3,340 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV. : Unknown
NATURAL STREAM VELOCITY : @ Q50 = 2.8 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: <1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: A concrete arch was damaged in a flood in 2004 and removed.
YEAR BUILT: Built in 1900. Widened in 1973.
CLEAR SPAN(NORMAL TO STREAM): 35'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 250 sq. ft.
DISPOSITION OF STRUCTURE: It has been removed.
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	See note 1.	VELOCITY =	See note 1.
Q10 =	1015.7'	"	
Q25 =		"	
Q50 =	1017.6'	"	
Q100 =	1018.5'	"	

LONG TERM STREAMBED CHANGES: There is scour through the bridge area.
The stream is latterally unstable with areas of stream bank erosion.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 1021.7'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: N.A. - The stream divides
HIGHWAY # :
CLEAR SPAN:
YEAR BUILT:
STRUCTURE TYPE:
DISTANCE:
STRUCTURE #:
CLEAR HEIGHT:
FULL WATERWAY:

DOWNSTREAM STRUCTURE

TOWN: N.A. - Confluence with Connecticut River
HIGHWAY # :
CLEAR SPAN:
YEAR BUILT:
STRUCTURE TYPE:
DISTANCE: 4,000'
STRUCTURE #:
CLEAR HEIGHT:
FULL WATERWAY:

XXXX- LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY							
POSTED							
OPERATING							

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2005	610	220	51	6	40
2025	790	240	51	10	80

20 year ESAL for flexible pavement from 2005 to 2025 : 320,000
40 year ESAL for flexible pavement from 2005 to 2045 : 787,000
Design Speed : 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam bridge.

CLEAR SPAN(NORMAL TO STREAM): 60'
VERTICAL CLEARANCE ABOVE STREAMBED: 11' maximum
WATERWAY OF FULL OPENING: 660 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1014.7'	VELOCITY=	2.7 fps
Q10 =	1015.5'	"	3.6 fps
Q25 =	1016.0'	"	4.0 fps
Q50 =	1016.5'	"	4.4 fps
Q100 =	1017.0'	"	4.7 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 1022.8'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1018.3
VERTICAL CLEARANCE: @ Q100 1.3'

SCOUR: Estimate 4' of contraction scour up to Q500, based on the fact that the scour hole under the bridge has been at least 4' deeper than when the project was surveyed.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	30 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	15 cfs	Elevation 1011'
ORDINARY HIGH WATER:	150 cfs	Elevation 1013'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Temporary bridge already in use. It will be moved to a new alingment.
CLEAR SPAN (NORMAL TO STREAM): 80'
VERTICAL CLEARANCE ABOVE STREAMBED: Minimum low beam elev. 1017.0'
WATERWAY AREA OF FULL OPENING: Approximately 500 sq. ft.

ADDITIONAL INFORMATION

Note 1 - There is not enough information available for the previous arch and preflood conditions to do an accurate hydraulic analysis of that structure. Information shown for the existing bridge is from records and the 1980 Flood Insurance Study. The new bridge has a larger span, so it will result in lower upstream water surface elevations and lower velocities than the previous arch.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO ML-93
2. DESIGN SPAN 82 Feet centerline to centerline of bearing
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 2.5 ksf
   ON LEDGE not applicable
4. ALLOWABLE LOAD FOR PILING not applicable
   TYPE
   ESTIMATED LENGTH
5. STRUCTURAL STEEL AASHTO GRADE 50
6. REINFORCING STEEL GRADE 60
7. CONCRETE CLASS A (HPC-A) f'c : 4000 psi
   CONCRETE CLASS B (HPC-B) f'c : 3500 psi
   CONCRETE CLASS AA 4000 psi
8. SOIL UNIT WEIGHT 140 pcf
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? yes
   IF YES, ON EXISTING STRUCTURE? not applicable
   OR ON TEMPORARY BRIDGE? yes
   ONE OR TWO-WAY TRAVEL? two - way
2. TRAFFIC CONTROL SIGNALS REQUIRED? no
3. ARE SIDEWALKS REQUIRED? no
   IF SO, ON WHAT SIDE? not applicable

APR 19 2010

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: \04c098\x04c098excel.xls
PROJECT MANAGER: Evans-Mongeon
DESIGNED BY: S. SCRIBNER
PRELIMINARY INFORMATION SHEET
PLOT DATE: 7/26/2007
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
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