



**FINAL HYDRAULICS REPORT**

**HYDROLOGIC DATA**

DRAINAGE AREA: 3.4 SQUARE MILES

CHARACTER OF TERRAIN: MOUNTAINOUS AND FORESTED

CHARACTER & TYPE OF STREAM: PERENNIAL FLASHY, SUPERCritical AND SIMULOUS

NATURE OF STREAMBED: GRAVEL, COBBLES TO LARGE BouldERS

DATE OF FLOOD OF RECORD: UNKNOWN

WATER SURFACE ELEV. @ FLOOD OF RECORD @ 050: 12.8 FPS

ICE CONDITIONS: MODERATE DEBRIS: MODERATE

DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? YES

IS ORDINARY RISE RAPID? YES

IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES

IF YES, DESCRIBE: CONFLUENCE WITH THE DEERFIELD RIVER AT THE OUTLET OF THIS STRUCTURE

WATERSHED STORAGE: 1% HEADWATERS: UNIFORM THROUGHOUT WATERSHED X

**EXISTING STRUCTURE**

STRUCTURE TYPE: SINGLE SPAN CONCRETE T-BEAM YEAR BUILT: 1932

CLEAR SPAN (NORMAL TO STREAM): 24.7 FT.

VERTICAL CLEARANCE ABOVE STREAMBED: 7.8 FT.

WATERWAY OF FULL OPENING: 185 SQ. FT.

DISPOSITION OF STRUCTURE: REMOVE

TYPE OF MATERIAL UNDER SUBSTRUCTURE: REFER TO BORING LOGS

WATER SURFACE ELEV. @ 02.33: 1633.3 FT. HW = 3.5 FT. VELOCITY = 6.7 FPS

010: 1634.0 FT. HW = 4.2 FT. VELOCITY = 9.5 FPS

025: 1634.7 FT. HW = 4.9 FT. VELOCITY = 10.7 FPS

050: 1634.7 FT. HW = 4.9 FT. VELOCITY = 10.7 FPS

0100: 1634.7 FT. HW = 5.1 FT. VELOCITY = 12.6 FPS

**PROPOSED STRUCTURE**

STRUCTURE TYPE: SINGLE SPAN PRE-CAST CONCRETE BRIDGE

CLEAR SPAN (NORMAL TO STREAM): 32.0 FT.

VERTICAL CLEARANCE ABOVE STREAMBED: 10.8 FT.

WATERWAY OF FULL OPENING: 340 SQ. FT.

WATER SURFACE ELEV. @ 02.33: 1633.3 FT. HW = 3.5 FT. VELOCITY = 6.7 FPS

010: 1634.0 FT. HW = 4.2 FT. VELOCITY = 9.5 FPS

025: 1634.7 FT. HW = 4.9 FT. VELOCITY = 10.7 FPS

050: 1634.7 FT. HW = 4.9 FT. VELOCITY = 10.7 FPS

0100: 1634.7 FT. HW = 5.1 FT. VELOCITY = 12.6 FPS

IS THE ROADWAY OVERTOPPED BELOW THE 0100? NO FREQUENCY: ABOVE 0100

RELIEF ELEVATION: 1646 FT. DISCHARGE OVER ROAD @ 0100: NONE

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1640.5 FT.

VERTICAL CLEARANCE @ 0100 = @ 050: 4.2 FT.

SCOUR: NO CONTRACTION SCOUR AT 0100 OR 0500

REQUIRED CHANNEL PROTECTION: TYPE IV STONE FILL

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 10 CFS DEPTH: 0.5 FT.

ORDINARY LOW WATER: 5 CFS DEPTH: 1.5 FT.

ORDINARY HIGH WATER: 10 CFS DEPTH: 1.5 FT.

**ADDITIONAL COMMENTS**

\*\*LOAD RATINGS SHALL BE SUPPLIED BY PCC SPAN UNIT FABRICATOR (DESIGNER) AND PLACED INTO THE TABLE BY THE ENGINEER-IN-CHARGE

**ADDITIONAL INFORMATION**

\* HEADWATER (HW) DEPTHS ARE PROVIDED TO GIVE A COMPARISON BETWEEN THE TWO STRUCTURES.



**DESIGN CRITERIA:**

- DESIGN LIVE LOAD AASHTO HS 20
- DESIGN SPAN 33'-0"
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 2.4 TSF FOR 8' WIDE FOOTING, 3.0 TSF FOR 12' WIDE FOOTING ON LEDGE
- ALLOWABLE LOAD FOR PILING N/A TYPE ESTIMATED LENGTH
- STRUCTURAL STEEL N/A
- REINFORCING STEEL AASHTO GRADE 60 M30 BILLET STEEL
- CONCRETE CLASS B @PC-BI - f'c=3500 PSI

**TRAFFIC MAINTENANCE:**

1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES OR ON TEMPORARY BRIDGE

2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY N/A TRAFFIC CONTROL SIGNALS REQUIRED

MINIMUM CLEAR SPAN (NORMAL TO STREAM): VERTICAL CLEARANCE ABOVE STREAMBED:

WATERWAY OF FULL OPENING: ARE SIDEWALKS REQUIRED? IF SO, ON WHAT SIDE?

STRUCTURE TYPE:

**\*\*LOAD FACTOR LOAD RATING (TONS)**

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	3S2	6 AXLE	3A,STR.	4A,STR.	5A,SEMI
INVENTORY A = 2.17; B = 1.00							
POSTED A = 1.55; B = 1.40							
OPERATING A = 1.30; B = 1.67							

RF = 0Mn - 1.3 MDL  
A x MLLH

0.95 Ft SLLH - MDL SLLH - MSDL SLLH - SSDL  
1.67 MLLH

**PROJECTED TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	% ADTT
20					
40					

20 year ESAL for flexible pavement from 2000 to 2020: 4,825,000  
 40 year ESAL for flexible pavement from 2000 to 2040: 17,229,000  
 Design speed: 100 KM/H

**STATE OF VERMONT AGENCY OF TRANSPORTATION**

Town Of SEARSBURG Bridge No. 24

Highway No. VT. RTE. 9 Log Sta. Surv. Sta.

**VT. RTE. 9 OVER BOND BROOK**

**PRELIMINARY INFORMATION**

Designed By M. GOGUEN/D. VIENI Drawn by J. LAGONE

Checked By M. OLSTAD Date 2/2002 Bridge Design Supervisor M. OLSTAD Date 2/2002

PROJECT SEARSBURG - WILMINGTON PROJECT NO. NHF 010-108

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