

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: 9/14/04

DRAINAGE AREA: 32.9 square miles
 CHARACTER OF TERRAIN: Rolling to mountainous
 STREAM CHARACTERISTICS: Sinuous
 NATURE OF STREAMBED: Cobbles, gravel, sand and silt

PEAK FLOW DATA
 Q 2.33 = 900 cfs Q 50 = 2700 cfs
 Q 10 = 1800 cfs Q 100 = 3100 cfs
 Q 25 = 2300 cfs Q 500 = 4400 cfs

DATE OF FLOOD OF RECORD: Unknown
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 4.5 fps
 ICE CONDITIONS: Moderate
 DEBRIS: Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 IS ORDINARY RISE RAPID? No
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
 IF YES, DESCRIBE:

WATERSHED STORAGE: 3.0% HEADWATERS:
 UNIFORM:
 IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span concrete thru girder bridge
 YEAR BUILT: 1924
 CLEAR SPAN(NORMAL TO STREAM): 34'
 VERTICAL CLEARANCE ABOVE STREAMBED: 12'
 WATERWAY OF FULL OPENING: 348 sq. ft.
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Refer to borings

WATER SURFACE ELEVATIONS AT:
 Q2.33 = 428.4 ft VELOCITY = 5.5 fps
 Q10 = 431.0 ft " 7.6 fps
 Q25 = 432.1 ft " 8.9 fps
 Q50 = 433.1 ft " 9.8 fps
 Q100 = 433.7 ft " 10.8 fps

LONG TERM STREAMBED CHANGES: Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Just above Q50
 RELIEF ELEVATION: 433.2 ft
 DISCHARGE OVER ROAD @Q100: 131 cfs

UPSTREAM STRUCTURE

TOWN: Castleton DISTANCE: 1.53 mi.
 HIGHWAY #: VT 4A STRUCTURE #: B11
 CLEAR SPAN: 47' CLEAR HEIGHT: 7'
 YEAR BUILT: 1988 FULL WATERWAY: 403 sq. ft.
 STRUCTURE TYPE: Steel beam bridge

DOWNSTREAM STRUCTURE

TOWN: Castleton DISTANCE: 0.40 mi.
 HIGHWAY #: VT 4A STRUCTURE #: B7
 CLEAR SPAN: 65' CLEAR HEIGHT: 7'
 YEAR BUILT: 1984 FULL WATERWAY: 340 sq. ft.
 STRUCTURE TYPE: Steel beam bridge

LOAD FACTOR - LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A STR	4A STR	5A SEM
INVENTORY	0	0					
POSTED	0	0	0	0	0	0	0
OPERATING	0	0	0	0	0	0	0

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2006	2100	210	63	3	100
2026	2800	290	63	5	200

20 year ESAL for flexible pavement from 2006 to 2026 : 497000
 40 year ESAL for flexible pavement from 2006 to 2046 : 1301000
 Design Speed : 35 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Prestressed Concrete Voids Slab Bridge
 CLEAR SPAN(NORMAL TO STREAM): 50.5'
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.5'
 WATERWAY OF FULL OPENING: 495 sq. ft.

WATER SURFACE ELEVATIONS AT:
 Q2.33 = 428.4 ft VELOCITY = 5.0 fps
 Q10 = 430.9 ft " 6.4 fps
 Q25 = 431.9 ft " 7.4 fps
 Q50 = 432.9 ft " 8.1 fps
 Q100 = 433.5 ft " 8.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Q75
 RELIEF ELEVATION: 433.3'
 DISCHARGE OVER ROAD @Q100: 70 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 435.6'
 VERTICAL CLEARANCE: @ Q50 = 2.7'
 SCOUR: 4 ft maximum contraction scour at Q500

REQUIRED CHANNEL PROTECTION: Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 65 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 20 cfs Elevation = 424.0
 ORDINARY HIGH WATER: 400 cfs Elevation = 428.0

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
 CLEAR SPAN (NORMAL TO STREAM): 35 ft (minimum)
 VERTICAL CLEARANCE ABOVE STREAMBED: Bottom of beam elev. 432.0' (min.)
 WATERWAY AREA OF FULL OPENING: 315 sq. ft. (minimum)

ADDITIONAL INFORMATION

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO: HS-25
- DESIGN SPAN: 57
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ON LEDGE: NA
- ALLOWABLE LOAD FOR PILING: 184 kip
TYPE: HP 12x84 GR 50
ESTIMATED LENGTH: Abut 1 is approx 35'. Abut 2 is approx 40'.
- STRUCTURAL STEEL AASHTO M270M270 GRADE: 50W
- REINFORCING STEEL GRADE: 60
CONCRETE, HIGH PERFORMANCE CLASS A f_c: 4000 psi
CONCRETE, HIGH PERFORMANCE CLASS B f_c: 3500 psi
- DESIGN SOIL UNIT WEIGHT: 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: NA

TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? Yes
IF YES, ON EXISTING STRUCTURE? Temporary Bridge
OR ON TEMPORARY BRIDGE? Two-way
- ONE OR TWO-WAY TRAVEL? Two-way
- TRAFFIC CONTROL SIGNALS REQUIRED? No
- ARE SIDEWALKS REQUIRED? No
- IF SO, ON WHAT SIDE?

SEP 16 2008

PROJECT NAME: Castleton
 PROJECT NUMBER: RS 0142(10)

FILE NAME: sff193pl.xls PLOT DATE: 05/31/2005
 PROJECT MANAGER: R. Whitcomb DRAWN BY: str3
 DESIGNED BY: T. Lackey CHECKED BY:
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