

PRELIMINARY INFORMATION SHEET (BRIDGE)

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FINAL HYDRAULIC REPORT

PLAN SHEETS

STANDARDS LIST

HYDROLOGIC DATA

Date: December 2008

DRAINAGE AREA : 33.5 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous, mixed use, mostly rural
STREAM CHARACTERISTICS : Sinuous, incised
NATURE OF STREAMBED : Mostly gravel, cobbles

PEAK FLOW DATA

Q 2.33 = 1650 cfs Q 50 = 5525 cfs
Q 10 = 3450 cfs Q 100 = 6600 cfs
Q 25 = 4400 cfs Q 500 = 9250 cfs

DATE OF FLOOD OF RECORD 1938
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY: @ Q50 = 11.3 fps
ICE CONDITIONS : moderate
DEBRIS: little to 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: N/A

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 2-span continuous rolled beam
YEAR BUILT: 1935
CLEAR SPAN(NORMAL TO STREAM): 2 spans @ 62' = 124' (111' normal clear span)
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 850 sq. ft.
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 = 576.5' VELOCITY = 7.6 fps
Q10 = 578.5' " 9.5 fps
Q25 = 579.4' " 10.1 fps
Q50 = 580.4' " 10.7 fps
Q100 = 581.3' " 11.3 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 582.4'
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Chester DISTANCE: 2,350'
HIGHWAY#: VT 35 (TH 3) FAS 0125 STRUCTURE #: 9
CLEAR SPAN: _____ CLEAR HEIGHT: 14'
YEAR BUILT: 1940 FULL WATERWAY: _____
STRUCTURE TYPE: Single span steel beam bridge

DOWNSTREAM STRUCTURE

TOWN: Chester DISTANCE: 2,070'
HIGHWAY#: Green Mountain Railway Bridge STRUCTURE #: _____
CLEAR SPAN: _____ CLEAR HEIGHT: _____
YEAR BUILT: _____ FULL WATERWAY: _____
STRUCTURE TYPE: _____

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	HL-20	HL-93	3S2	6 AXLE	3A STR	4A STR	5A SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	3.35	2.35					
POSTING							
OPERATING	4.34	3.05	2.94	1.81	2.99	2.84	2.63
COMMENTS:	0						

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span curved girder bridge
CLEAR SPAN(NORMAL TO STREAM): 105'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 880 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 575.7' VELOCITY= 9.2 fps
Q10 = 577.7' " 11.1 fps
Q25 = 578.6' " 11.7 fps
Q50 = 579.7' " 11.7 fps
Q100 = 580.7' " 11.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 582.4'
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 581.1'
VERTICAL CLEARANCE: @ Q50 = 1.4'

SCOUR: 1.0' at Q500

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 70 cfs DEPTH OR ELEVATION:
ORDINARY LOW WATER: 30 cfs 0.5'
ORDINARY HIGH WATER: 710 cfs 3.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None
CLEAR SPAN (NORMAL TO STREAM): _____
VERTICAL CLEARANCE ABOVE STREAMBED: _____
WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

Traffic will be detoured, so no temporary bridge required.
Velocities reported are channel velocities.
Elevations used are NAVD 88.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT REQUIRED.
3. SIDEWALKS ARE NOT REQUIRED

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 0.0 INCH
3. DESIGN SPAN	L: 120.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND (0.50 INCH DIAMETER - LOW RELAX)	f _y : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f' _c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _c : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' _c : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' _c : 3.5 KSI
11. CONCRETE, CLASS C	f' _c : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f _y : 50 KSI
14. BACKFILL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOL	q _n : ---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : 555.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f _y : 50 KSI
21. PILE SIZE	HP 12X 84
22. EST. PILE LENGTH	L _p : 50 FT
23. PILE RESISTANCE FACTOR	φ: 0.65
24. LATERAL PILE DEFLECTION	Δ: 0.35 INCH
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p _g : ---
27. SEISMIC DATA	PGA: --- S _s : --- S ₁ : ---

PROJECT NAME: CHESTER

PROJECT NUMBER: BRF 025-1(37)

FILE NAME: 95b168/95b168excel.dgn PLOT DATE: 9/17/2010
PROJECT LEADER: C.P. WILLIAMS DRAWN BY: H.I. SALLS
DESIGNED BY: H.I. SALLS CHECKED BY: R.S. YOUNG
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2013 to 2033 : 5927000
2013	7200	1100	50	8.3	730	40 year ESAL for flexible pavement from 2013 to 2053 : 13731000
2033	8600	1300	50	10.8	1100	Design Speed : 30 mph

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY φ_p: 555.00 KIP
2. PILE TEST RESISTANCE FACTOR φ: 0.65
3. MAXIMUM PILE TIP ELEVATION SEE BELOW
4. SEE GENERAL NOTES FOR REQUIRED PILE PENETRATION ELEVATIONS