

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 = 1690 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						
	H-20	HL-93	SS2	8 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' _{cr} : ---
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 f_{pd}: 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