

PRELIMINARY INFORMATION SHEET

LRFD

INDEX OF SHEETS

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: June 2010

DRAINAGE AREA : 74.5 sq. mi. total for the New Haven River and the Bridge 7 tributary
 CHARACTER OF TERRAIN : Hilly to mountainous with a mixture of forested and open cover
 STREAM CHARACTERISTICS : Perennial, sinuous, semi-alluvial with variable width and bars
 NATURE OF STREAMBED : Sand, gravel, cobbles and some scattered boulders

PEAK FLOW DATA

Q 2.33 = 3,750 cfs	Q 50 = 11,300 cfs
Q 10 = 7,450 cfs	Q 100 = 13,200 cfs
Q 25 = 9,400 cfs	Q 500 = 18,400 cfs

DATE OF FLOOD OF RECORD : 1998
 ESTIMATED DISCHARGE : 12,900 cfs
 WATER SURFACE ELEV. : 336.0'
 NATURAL STREAM VELOCITY : @ Q50 = 7.4 fps
 ICE CONDITIONS : Light to moderate
 DEBRIS : Light 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 :

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : Single span steel pony truss bridge
 YEAR BUILT : 1925
 CLEAR SPAN(NORMAL TO STREAM) : 81' (96' along the roadway)
 VERTICAL CLEARANCE ABOVE STREAMBED : 10'
 WATERWAY OF FULL OPENING : 744 sq. ft.
 DISPOSITION OF STRUCTURE : Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 = 330.2'	VELOCITY = 7.0 fps
Q10 = 333.0'	" 9.6 fps
Q25 = 334.5'	" 9.2 fps
Q50 = 335.2'	" 9.7 fps
Q100 = 335.8'	" 9.9 fps

LONG TERM STREAMBED CHANGES : Local contraction scour through the bridge area.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q25
 RELIEF ELEVATION: 331.3'
 DISCHARGE OVER ROAD @Q100: 5500 cfs

UPSTREAM STRUCTURE

TOWN: Bristol DISTANCE: 2.4 mi.
 HIGHWAY #: T.H. 5 STRUCTURE #: 11
 CLEAR SPAN: 103' CLEAR HEIGHT: 13'
 YEAR BUILT: 1973 FULL WATERWAY: Unknown
 STRUCTURE TYPE: Single span steel beam bridge with concrete deck

DOWNSTREAM STRUCTURE

TOWN: New Haven DISTANCE: 1.2 mi.
 HIGHWAY #: T.H. 4 STRUCTURE #: 11
 CLEAR SPAN: 97' CLEAR HEIGHT: 22'
 YEAR BUILT: 1969 FULL WATERWAY: Unknown
 STRUCTURE TYPE: Two-span concrete T-beam bridge

PROPOSED STRUCTURE

STRUCTURE TYPE: Two span steel plate girder bridge with concrete deck
 CLEAR SPAN(NORMAL TO STREAM): 2 spans at 100.5' = 201' total
 VERTICAL CLEARANCE ABOVE STREAMBED: 19'
 WATERWAY OF FULL OPENING: 3066 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 330.4'	VELOCITY = 5.8 fps
Q10 = 332.9'	" 8.0 fps
Q25 = 334.0'	" 8.7 fps
Q50 = 334.5'	" 10.2 fps
Q100 = 335.6'	" 11.3 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 334.8'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 341.1' average (338.7' minimum)
 VERTICAL CLEARANCE: @ Q50 = 6.6' average (4.2' minimum)

SCOUR: Proposed bridge contraction scour = 6' at Q100 and 9' at Q500. No evidence of long term aggradation or degradation.
 Pier scour = 7' at Q100 and 6' at Q500. No evidence of long term aggradation or degradation.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 150 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 70 cfs Elev. 323' @ Br. 8, 325' @ Br. 7
 ORDINARY HIGH WATER: 1600 cfs Elev. 326' @ Br. 8 and Br. 7

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge to span the New Haven River
 CLEAR SPAN (NORMAL TO STREAM): 104' (145' minimum clear span along road)
 VERTICAL CLEARANCE ABOVE STREAMBED: Elevation 333.3' minimum
 WATERWAY AREA OF FULL OPENING: 1000 sq. ft. minimum

ADDITIONAL INFORMATION

Information for the existing bridge is based on the original Bridge 8 pony truss bridge and does not consider the temporary Maybey bridge that has been installed on top of it.
 Temporary bridge requirements for the bridge over the unnamed stream just east of the New Haven River are provided separately.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

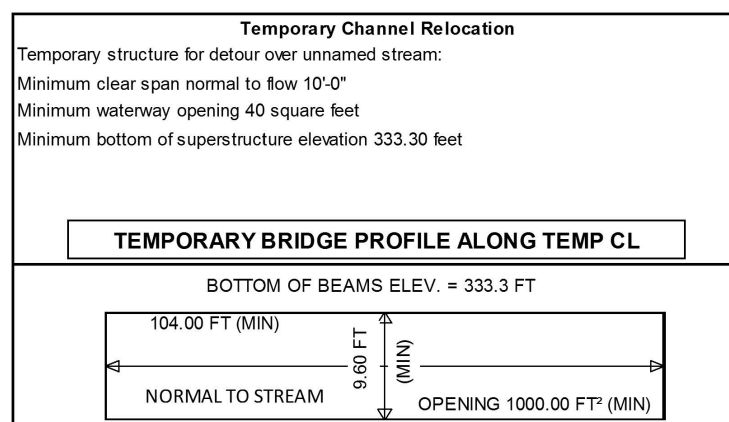
1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	dp: 3.0 INCH
3. ABUTMENT BEARING TO BEARING LENGTH (TWO SPANS)	L: 361.00 FT (180.50 - 180.50) FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	fy: ---
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: 4.0 KSI
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: 3.0 KSI
12. REINFORCING STEEL	fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	fy: 50 & 70 KSI
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	qn: 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	qn: ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	qp: 403.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	fy: 50 KSI
21. PILE SIZE	HP 14X 89
22. EST. PILE LENGTH	Lp: 80 FT
23. PILE RESISTANCE FACTOR	φ: 0.65
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V3s: 90 MPH
26. MINIMUM GROUND SNOW LOAD	ps: 0.05 K/FT²
27. SEISMIC DATA	PGA: --- S: --- S r: ---

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCKS						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY R_{pd} : 0.00 KIP
2. PILE TEST RESISTANCE FACTOR ϕ : 0
3. MAXIMUM PILE TIP ELEVATION: 0.00 FT
4. 0



TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2012 to 2032 : 1911000	40 year ESAL for flexible pavement from 2012 to 2052 : 4465000	Design Speed : 40 mph
2012	2600	290	53	8.9	270			
2032	3000	340	53	12.9	460			

PROJECT NAME: BRISTOL

PROJECT NUMBER: STP F 021-1(15)

FILE NAME: s78187br8pi.xls PLOT DATE: 25-APR-2012
 PROJECT LEADER: M.EVANS-MONGEON DRAWN BY: G.ROKES
 DESIGNED BY: W.PELLETIER CHECKED BY: W.PELLETIER
PRELIMINARY INFORMATION SHEET 9 OF 37