

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

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STANDARDS LIST

E-100	CONSTRUCTION APPROACH SIGNS	01-02-2004
E-100A	SIDE ROAD CONSTRUCTION - APPROACH SIGNS	01-02-2004
E-101	CONSTRUCTION SIGN DETAILS	05-30-2003
E-102	CONSTRUCTION SIGN DETAILS	08-30-2003
E-102A	CONSTRUCTION SIGN DETAILS	05-01-2004
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-134	BRIDGE NUMBER PLAQUE	08-08-1995
E-164	SQUARE STEEL SIGN POST	06-08-2009
E-192	PAVEMENT MARKING DETAILS	10-12-2000
G-1B	BOX BEAM GUARD RAIL	06-01-1994
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	08-09-2010
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	08-09-2010
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	08-09-2010
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	08-09-2010

STRUCTURAL DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES
SD-502.00	CONCRETE DETAILS AND NOTES
SD-516.10	BRIDGE JOINT, ASPHALTIC PLUG
SD-601.00	STRUCTURAL STEEL DETAILS & NOTES

HYDROLOGIC DATA

Date: July 2010

DRAINAGE AREA : 45.4 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas.
 STREAM CHARACTERISTICS : Incised, sinuous, with a confluence 100' upstream
 NATURE OF STREAMBED : Gravel, cobbles, sand, silt and boulders

PEAK FLOW DATA

Q 2.33 =	1200 cfs	Q 50 =	3700 cfs
Q 10 =	2450 cfs	Q 100 =	4200 cfs
Q 25 =	3125 cfs	Q 500 =	5900 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 11.6 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 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 beam bridge with concrete deck
 YEAR BUILT : 1929
 CLEAR SPAN(NORMAL TO STREAM): 49'
 VERTICAL CLEARANCE ABOVE STREAMBED: 8'
 WATERWAY OF FULL OPENING: 314 sq. ft.
 DISPOSITION OF STRUCTURE: Remove superstructure and north abutment
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring information

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1013.5'	VELOCITY =	7.2 fps
Q10 =	1015.6'	"	11.1 fps
Q25 =	1019.3'	"	10.4 fps
Q50 =	1020.0'	"	11.6 fps
Q100 =	1020.5'	"	12.8 fps

LONG TERM STREAMBED CHANGES: Minor scour in the center of the channel through the bridge area.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Between Q25 and Q50
 RELIEF ELEVATION: 1019.6'
 DISCHARGE OVER ROAD @Q100: 730 cfs

UPSTREAM STRUCTURE

TOWN: Newark DISTANCE: 4200'
 HIGHWAY #: VT 114 STRUCTURE #: 19
 CLEAR SPAN: 52' CLEAR HEIGHT: 11'
 YEAR BUILT: 1929 FULL WATERWAY: 572 sq. ft.
 STRUCTURE TYPE: Single span steel beam bridge with concrete deck

DOWNSTREAM STRUCTURE

TOWN: East Haven DISTANCE: 3100'
 HIGHWAY #: T.H. 4 STRUCTURE #: 10
 CLEAR SPAN: 35' CLEAR HEIGHT: 10'
 YEAR BUILT: 1960 FULL WATERWAY: 350 sq. ft.
 STRUCTURE TYPE: Single span steel beam bridge with timber deck & stone abutments

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	2.84	1.46					
POSTING							
OPERATING	3.68	1.89	3.03	2.02	2.61	1.88	
COMMENTS:							

PILE DRIVING AND TESTING REQUIREMENTS

- NOMINAL PILE DRIVING CAPACITY P_{DIP} : 350.00 KIP
- PILE TEST RESISTANCE FACTOR ϕ : 0.65
- MAXIMUM PILE TIP ELEVATION: 987.00 FT
- 0

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span prestressed concrete box beam bridge

CLEAR SPAN(NORMAL TO STREAM): 65'
 VERTICAL CLEARANCE ABOVE STREAMBED: 10'
 WATERWAY OF FULL OPENING: 455 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1013.4'	VELOCITY =	6.7 fps
Q10 =	1015.2'	"	9.7 fps
Q25 =	1016.1'	"	11.3 fps
Q50 =	1016.9'	"	12.7 fps
Q100 =	1017.7'	"	13.6 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1019.9'
 DISCHARGE OVER ROAD @Q100: 0 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1018.2'
 VERTICAL CLEARANCE: @ Q50 = 1.3'

SCOUR: 3' of contraction scour at Q100.
 Maximum scour up to Q500 = 4' of contraction scour, at incipient overtopping flow.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 90 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 40 cfs Elevation 1010'
 ORDINARY HIGH WATER: 515 cfs Elevation 1012'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required.
 CLEAR SPAN (NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

- MAINTAIN ONE-WAY TRAFFIC ON THE EXISTING STRUCTURE.
- INSTALL AND MAINTAIN TRAFFIC SIGNALS.
- SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d_p : 3.0 INCH
3. DESIGN SPAN	L : 67.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ : ---
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f'_c : 7.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{cr} : 5.5 KSI
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	f_y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y : ---
14. SOIL UNIT WEIGHT	γ : 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n : 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n : 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : ---
19. NOMINAL AXIAL PILE RESISTANCE	q_p : 350 kips
20. PILE YIELD STRENGTH ASTM A572	f_y : 50
21. PILE SIZE	14X102
22. EST. PILE LENGTH	L_p : 39 FT
23. PILE RESISTANCE FACTOR	ϕ : ---
24. LATERAL PILE DEFLECTION	Δ : ---
25. BASIC WIND SPEED	V_{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p_g : ---
27. SEISMIC DATA	PGA : --- S_1 : ---

PROJECT NAME: EAST HAVEN

PROJECT NUMBER: BRF 0269(11)

FILE NAME: s00c162 PI Sheet Builder.xls PLOT DATE: 8/9/2011
 PROJECT LEADER: K. HIGGINS DRAWN BY: R. PELLETT
 DESIGNED BY: J. LACROIX CHECKED BY: J. LACROIX
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2005 to 2025 : 1681000
2005	1100	170	54	9	140	40 year ESAL for flexible pavement from 2005 to 2045 : 4381000
2025	1500	220	54	7	150	Design Speed : 50 mph