

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

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STANDARDS LIST

C-10	CURBING	02-11-2008
E-136B	STATE ROUTE MARKER SIGN DETAILS	08-08-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	02-10-2014
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-360A	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	04-23-2012
S-360B	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	04-23-2012
S-363	THREE BEAM TO STANDARD STEEL BEAM TRANSITION SECTION	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08-06-2012

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	2/9/2012
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/2012
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	8/29/2011

HYDROLOGIC DATA

Date: Dec. 2013

DRAINAGE AREA : 12.0 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous
 STREAM CHARACTERISTICS : Sinuous, incised and alluvial
 NATURE OF STREAMBED : Gravel, cobbles and a some boulders

PEAK FLOW DATA

Q 2.33 =	800 cfs	Q 50 =	2700 cfs
Q 10 =	1670 cfs	Q 100 =	3170 cfs
Q 25 =	2240 cfs	Q 500 =	4300 cfs

DATE OF FLOOD OF RECORD : unknown
 ESTIMATED DISCHARGE : unknown
 WATER SURFACE ELEV. : unknown
 NATURAL STREAM VELOCITY : @ Q50 = 12.0 fps
 ICE CONDITIONS : Moderate
 DEBRIS : 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 concrete T-beam bridge with steel beam widening
 YEAR BUILT : Built 1927, widened 1963
 CLEAR SPAN(NORMAL TO STREAM) : 41'
 VERTICAL CLEARANCE ABOVE STREAMBED : 10'
 WATERWAY OF FULL OPENING : 380 sq. ft.
 DISPOSITION OF STRUCTURE : Retain abutments and replace superstructure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1059.8'	VELOCITY =	7.0 fps
Q10 =	1061.9'	"	10.0 fps
Q25 =	1062.5'	"	12.1 fps
Q50 =	1063.3'	"	12.9 fps
Q100 =	1064.0'	"	13.5 fps

LONG TERM STREAMBED CHANGES : Some scour through the bridge

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY : Above Q100
 RELIEF ELEVATION : 1068.5'
 DISCHARGE OVER ROAD @Q100 : None

UPSTREAM STRUCTURE

TOWN : N.A. - stream divides DISTANCE :
 HIGHWAY # : STRUCTURE # :
 CLEAR SPAN : CLEAR HEIGHT :
 YEAR BUILT : FULL WATERWAY :
 STRUCTURE TYPE :

DOWNSTREAM STRUCTURE

TOWN : Andover DISTANCE : 4000'
 HIGHWAY # : TH 29 STRUCTURE # : 27
 CLEAR SPAN : 32' CLEAR HEIGHT : 8'
 YEAR BUILT : 1974 FULL WATERWAY : 250 sq. ft.
 STRUCTURE TYPE : Steel beam bridge with concrete deck

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	1.38					
POSTING							
OPERATING	4.26	1.79	3.82	1.76	2.48	2.13	2.61
COMMENTS:							

AS BUILT "REBAR" DETAIL

LEVEL I			LEVEL II			LEVEL III		
TYPE:	GRADE:		TYPE:	GRADE:		TYPE:	GRADE:	

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2015 to 2035 : 2770000
2015	2700	320	53	13.7	440	40 year ESAL for flexible pavement from 2015 to 2055 : 6188000
2035	2900	340	53	19.2	670	Design Speed : 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE : Single span Next Beam bridge
 CLEAR SPAN(NORMAL TO STREAM) : 41'
 VERTICAL CLEARANCE ABOVE STREAMBED : 11'
 WATERWAY OF FULL OPENING : 440 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1059.8'	VELOCITY=	7.0 fps
Q10 =	1061.9'	"	10.1 fps
Q25 =	1062.5'	"	12.1 fps
Q50 =	1063.3'	"	12.9 fps
Q100 =	1064.0'	"	13.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY : Above Q100
 RELIEF ELEVATION : 1068.5'
 DISCHARGE OVER ROAD @Q100 : None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 1066.1'
 VERTICAL CLEARANCE : @Q50 = 2.8'

SCOUR : Contraction scour - Q100 = 1' and Q500 = 2'
 Additional abutment scour and long term degradation can be expected.
 REQUIRED CHANNEL PROTECTION : Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW : 25 cfs DEPTH OR ELEVATION :
 ORDINARY LOW WATER : 10 cfs Depth = 0.5'
 ORDINARY HIGH WATER : 340 cfs Depth = 3.0'

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

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 44'-0" FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: 1.09 INCH
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f _y : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f' _c : 10.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : 8.0 KSI
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	f _y : ---
14. NOMINAL BEARING RESISTANCE OF SOIL	q _n : ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V _{3s} : ---
21. MINIMUM GROUND SNOW LOAD	p _g : ---
22. SEISMIC DATA	PGA: 0 S: ---
23.	S ₁ : ---
24.	---
25.	---
26.	---

PROJECT NAME : **ANDOVER**

PROJECT NUMBER : **BHF 016-1(29)**

FILE NAME : s12b140pi.dgn PLOT DATE : 2/10/2015
 PROJECT LEADER : C. CARLSON DRAWN BY : S. PIRO
 DESIGNED BY : D. PETERSON CHECKED BY : D. PETERSON
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