

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

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STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
B-17	GUARDRAIL, BRIDGES, REST AREA, TURNOUTS	02-23-1995
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	01-03-2000
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIUM)	01-03-2000
J-3	MAIL BOX SUPPORT DETAILS	08-07-1995
S-360a	BRIDGE RAILING, GALVANIZED NETC 2 RAIL	04-23-2012
S-360b	GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 RAIL	04-23-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

STRUCTURES DETAILS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-516.10	BRIDGE ASPHALTIC PLUG	08-29-2011

HYDROLOGIC DATA Date: 10/24/13

DRAINAGE AREA: 10.0 SQ. MI.
CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS
STREAM CHARACTERISTICS: SINUOUS, NON-ALLUVIAL, AND PERENNIAL CHANNEL
NATURE OF STREAMBED: GRAVEL AND COBBLES WITH BOULDERS

PEAK FLOW DATA

Q 2.33 =	500 CFS	Q 50 =	1380 CFS
Q 10 =	900 CFS	Q 100 =	1610 CFS
Q 25 =	1150 CFS	Q 500 =	2090 CFS

DATE OF FLOOD OF RECORD: UNKNOWN

ESTIMATED DISCHARGE: N/A
WATER SURFACE ELEV.: N/A
NATURAL STREAM VELOCITY: @ Q25 = 11.7 FPS
ICE CONDITIONS: MODERATE
DEBRIS: MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? NO
IS ORDINARY RISE RAPID? NO
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE:

WATERSHED STORAGE: 4% HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CONCRETE T-BEAM WITH REINFORCED CONCRETE ABUTMENTS
YEAR BUILT: 1928
CLEAR SPAN(NORMAL TO STREAM): 26 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 7.3 FT
WATERWAY OF FULL OPENING: 166 SQ. FT.
DISPOSITION OF STRUCTURE: REMOVE AND REPLACE
TYPE OF MATERIAL UNDER SUBSTRUCTURE: SEE BORINGS

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1132.5 FT	VELOCITY =	7.4 FPS
Q10 =	1133.5 FT	"	10.7 FPS
Q25 =	1135.4 FT	"	10.4 FPS
Q50 =	1136.3 FT	"	11.2 FPS
Q100 =	1137.2 FT	"	12.1 FPS

LONG TERM STREAMBED CHANGES: MINIMAL DUE TO LARGE SIZE OF STREAMBED MATERIAL

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
FREQUENCY: N/A
RELIEF ELEVATION: 1139.4 FT
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: BARTON DISTANCE: 0.2 MI.
HIGHWAY #: TH #2 ROARING BROOK RD STRUCTURE #: 7
CLEAR SPAN: 18 FT CLEAR HEIGHT: 6 FT
YEAR BUILT: UNKNOWN FULL WATERWAY: 108 FT
STRUCTURE TYPE: UNKNOWN

DOWNSTREAM STRUCTURE

TOWN: BARTON DISTANCE: 0.9 MI.
HIGHWAY #: TH NO. 2 STRUCTURE #: 9
CLEAR SPAN: 36 FT CLEAR HEIGHT: 6 FT
YEAR BUILT: 1928 FULL WATERWAY: 178 FT
STRUCTURE TYPE: CONCRETE T-BEAM

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	1.58	1.38					
POSTING							
OPERATING	1.97	1.79	2.07	1.09	1.44	1.32	1.7

COMMENTS:

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY Rndf: 218.00 KIP
2. PILE TEST RESISTANCE FACTOR ϕ : 0.65
3. MAXIMUM PILE TIP ELEVATION SEE BORINGS

PROPOSED STRUCTURE

STRUCTURE TYPE: CONCRETE NEXT BEAM STRUCTURE ON INTEGRAL ABUTMENTS

CLEAR SPAN(NORMAL TO STREAM): 42 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 7.5 FT
WATERWAY OF FULL OPENING: 213 SQ. FT.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1132.2 FT	VELOCITY =	8.5 FPS
Q10 =	1133.6 FT	"	9.9 FPS
Q25 =	1134.3 FT	"	11.7 FPS
Q50 =	1134.9 FT	"	12.4 FPS
Q100 =	1135.4 FT	"	12.9 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
FREQUENCY: N/A
RELIEF ELEVATION: 1139.7 FT
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1135.4 FT
VERTICAL CLEARANCE: @ Q25 = 1.1 FT

SCOUR: CONTRACTION SCOUR 1 FT @ Q500

REQUIRED CHANNEL PROTECTION: TYPE IV STONE FILL

PERMIT INFORMATION

AVERAGE DAILY FLOW: 120 CFS DEPTH OR ELEVATION:
ORDINARY LOW WATER: 55 CFS 1129.9 FT
ORDINARY HIGH WATER: 200 CFS 1130.8 FT

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: NO TEMPORARY STRUCTURE
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	dp: 0.0 INCH
3. DESIGN SPAN	L: 45.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ : 0.71 INCH
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	fy: 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f'c: 6.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'cr: 4.0 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: ---
11. CONCRETE, CLASS C	f'c: ---
12. REINFORCING STEEL	fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270	fy: ---
14. SOIL UNIT WEIGHT	γ : 0.120 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	qn: ---
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: 283.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	fy: 50 KSI
21. PILE SIZE	HP 12X63
22. EST. PILE LENGTH AT ABUTMENT #1	Lp1: 72 FT
EST. PILE LENGTH AT ABUTMENT #2	Lp2: 71 FT
23. PILE RESISTANCE FACTOR	ϕ : 0.50
24. LATERAL PILE DEFLECTION	Δ : 0.16 INCH
25. BASIC WIND SPEED	V3s: ---
26. MINIMUM GROUND SNOW LOAD	pg: ---
27. SEISMIC DATA	PGA: 8 %g Ss: 18 %g S1: 6 %g

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 149(31)

FILE NAME: z11j068pl.dgn PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT DRAWN BY: M. HALEY
DESIGNED BY: S. BEAUMONT CHECKED BY: J. BYATT
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2014	920	100	64	2.6	25	20 year ESAL for flexible pavement from 2014 to 2034 : 188000
2034	980	110	64	3.4	35	40 year ESAL for flexible pavement from 2014 to 2054 : 440000
Design Speed : 50 mph						