

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-141	REGULATORY SIGN DETAILS	09-20-1995
E-142	REGULATORY SIGN DETAILS	09-20-1995
E-143	REGULATORY SIGN DETAILS	06-15-2004
E-151	WARNING SIGN DETAILS	05-01-2004
E-153	WARNING SIGN DETAILS	05-01-2004
E-155	WARNING SIGN DETAILS	05-01-2004
E-191	PAVEMENT MARKING DETAILS	02-01-1999
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	02-10-2014
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	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	THRIE 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-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
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-44	MILEMARKER DETAILS STATE AND TOWN HIGHWAYS	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

HYDROLOGIC DATA

Date: June 2014

DRAINAGE AREA : 1.0 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, forested, rural
 STREAM CHARACTERISTICS : Steep, alluvial
 NATURE OF STREAMBED : Coarse gravel, cobbles, boulders

PEAK FLOW DATA

Q 2.33 =	60 cfs	Q 50 =	240 cfs
Q 10 =	140 cfs	Q 100 =	290 cfs
Q 25 =	200 cfs	Q 500 =	410 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50= 17.7 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 rolled beam bridge
 YEAR BUILT: 1919, Reconstructed in 1981
 CLEAR SPAN(NORMAL TO STREAM): 34'
 VERTICAL CLEARANCE ABOVE STREAMBED: -5'
 WATERWAY OF FULL OPENING: 92 sq. ft.
 DISPOSITION OF STRUCTURE: Replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	718.8'	VELOCITY =	9.9 fps
Q10 =	719.5'	"	12.4 fps
Q25 =	719.9'	"	13.4 fps
Q50 =	720.2'	"	13.9 fps
Q100 =	720.5'	"	14.5 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 725.1'
 DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Middlesex DISTANCE: 2250'
 HIGHWAY #: TH 23 STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: 8' x 6' CMPA

DOWNSTREAM STRUCTURE

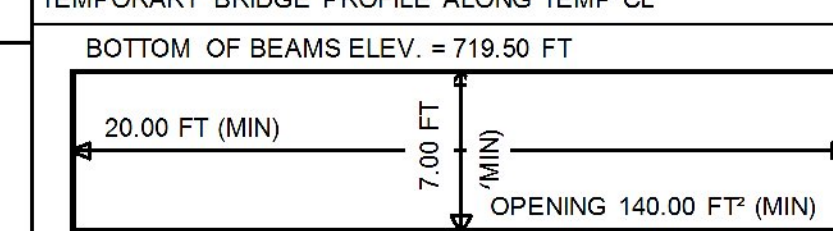
TOWN: Middlesex DISTANCE: 700'
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: Wrightsville Reservoir

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	1.98	1.19					
POSTING							
OPERATING	2.58	1.55	2.73	1.43	1.9	1.73	2.18
COMMENTS:							

AS BUILT "REBAR" DETAIL

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



STRUCTURAL DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	08-29-2011
SD-601.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	05-02-2011

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2016	3400	420	59	4.4	170
2036	3700	450	59	6.7	280

20 year ESAL for flexible pavement from 2016 to 2036 : 605000
 40 year ESAL for flexible pavement from 2016 to 2056 : 1428000
 Design Speed : 50 mph

PILE DRIVING AND TESTING REQUIREMENTS

- NOMINAL PILE DRIVING CAPACITY F_{pd} : 432.00 KIP
- PILE TEST RESISTANCE FACTOR ϕ : 0.65

PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Rolled Beam Bridge
 CLEAR SPAN(NORMAL TO STREAM): 44'
 VERTICAL CLEARANCE ABOVE STREAMBED: ~7'
 WATERWAY OF FULL OPENING: 175 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	718.8'	VELOCITY=	9.5 fps
Q10 =	719.5'	"	12.1 fps
Q25 =	720.0'	"	13.1 fps
Q50 =	720.2'	"	13.5 fps
Q100 =	720.5'	"	14.0 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 726.6'
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 723.4'
 VERTICAL CLEARANCE: @ Q50 = 3.2'

SCOUR: 1' contraction scour at Q100 and Q500

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION: _____
 ORDINARY LOW WATER: 1 cfs <0.5'
 ORDINARY HIGH WATER: 30 cfs 1'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Steel Beam
 CLEAR SPAN (NORMAL TO STREAM): 20'
 VERTICAL CLEARANCE ABOVE STREAMBED: El. 719.5' minimum
 WATERWAY AREA OF FULL OPENING: ~140 sq. ft.

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d_p : ---
3. DESIGN SPAN	L : <u>45.00 FT</u>
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ : ---
5. PRESTRESSING STRAND	f_y : ---
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 : <u>4.0 KSI</u>
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c : <u>3.5 KSI</u>
11. CONCRETE, CLASS C	f'_c : ---
12. REINFORCING STEEL	f_y : <u>60 KSI</u>
13. STRUCTURAL STEEL AASHTO M270 (GALVANIZED)	f_y : <u>50 KSI</u>
14. SOIL UNIT WEIGHT	γ : <u>0.140 KCF</u>
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n : <u>4.0 KSF</u>
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : <u>0.45</u>
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 : <u>432.0 KIPS</u>
20. PILE YIELD STRENGTH ASTM A572	f_y : <u>50 KSI</u>
21. PILE SIZE	<u>HP 12X 84</u>
22. EST. PILE LENGTH ABUTMENT # 1	L_p : <u>30 FT</u>
23. EST. PILE LENGTH ABUTMENT # 2	L_p : <u>55 FT</u>
24. PILE RESISTANCE FACTOR	ϕ : <u>0.65</u>
25. LATERAL PILE DEFLECTION	Δ : ---
26. BASIC WIND SPEED	V_{3s} : ---
27. MINIMUM GROUND SNOW LOAD	p_g : ---
28. SEISMIC DATA	PGA : <u>15 %g</u> S_s : --- S_1 : ---

PROJECT NAME: **MIDDLESEX**

PROJECT NUMBER: **BRF 024-1(37)**

FILE NAME: 10c220pl.dgn PLOT DATE: 2/6/2015
 PROJECT LEADER: C. CARLSON DRAWN BY: C. BURRALL
 DESIGNED BY: H. SALLS CHECKED BY: H. SALLS
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