

# PRELIMINARY INFORMATION SHEET (BRIDGE) - US 7 BR 73A

BRIDGE QUANTITIES

FINAL HYDRAULIC REPORT

**INDEX OF SHEETS**

SHEET NO.	SHEET TITLE
1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET - US 7 BR73A
3-4	PROJECT NOTES 1-2
5-6	QUANTITY SHEETS 1-2
7	CONVENTIONAL SYMBOLOLOGY LEGEND
8	TYPICAL SECTIONS - BR73A
9	SURVEY CONTROL AND TIES
10	LAYOUT PLAN - BRIDGE NO. 73A
11	ROADWAY PROFILE
12	STREAM PROFILE
13	STRUCTURAL PLAN & DETAILS - BR73A
14	PRELIMINARY INFORMATION SHEET - C06470
15	TYPICAL SECTIONS - RR CULV C06470
16	LAYOUT PLAN - RR CULV C06470
17	STRUCTURAL PLAN/DET. - RR CULV C06470
18	TRAFFIC CONTROL
19	BORING PLAN
20-23	BORING LOG 1-4
24-25	US ROUTE 7 CROSS SECTIONS 1-3
26	RAILROAD CROSS SECTIONS
27-28	STREAM CROSS SECTIONS 1-2
29	EPSC NARRATIVE
30	EPSC PLAN
31-32	EPSC DETAILS 1-2
33	PROJECTS IMPACTS PLAN
34	PROJECTS IMPACTS PLAN 2
35	ROW DETAIL SHEET #1
36	ROW LAYOUT PLAN #1

**VAOT STANDARD SHEETS**

NO.	TITLE	DATE
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08/08/95
E-171A	TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS	08/09/95
E-172	VEHICLE DETECTOR LOOP DETAILS	08/09/95
E-191	PAVEMENT MARKING DETAILS	02/01/99
E-192	PAVEMENT MARKING DETAILS	10/12/00
E-193	PAVEMENT MARKING DETAILS	08/18/95
G-1	STEEL BEAM GUARDRAIL DETAIL (POST, DELINEATOR, TYPICALS)	11/10/15
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11/15/02
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	02/10/14
T-1	TRAFFIC CONTROL GENERAL NOTES	04/25/16
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08/06/12
T-28	CONSTRUCTION SIGN DETAILS	08/06/12
T-30	CONSTRUCTION SIGN DETAILS	08/06/12
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08/06/12
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08/06/12
T-42	BRIDGE NUMBER PLAQUE	04/09/14
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01/02/13

**STRUCTURE DETAIL SHEETS**

NO.	TITLE	DATE
SD-366.00	LONGSPAN STEEL BEAM GUARDRAIL, GALVANIZED	01/03/14
SD-501.00	CONCRETE DETAILS AND NOTES	02/09/12
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/12

**HIGHWAY SAFETY & DESIGN DETAIL**

NO.	TITLE	DATE
HSD-400.01	SAFETY EDGE DETAILS	03/29/16
HSD-621.06	GUARDRAIL TERMINAL LABEL DETAIL	11/03/15

**HYDROLOGIC DATA**

Date: November 2014

DRAINAGE AREA: 0.8 sq. mi.  
CHARACTER OF TERRAIN: Hilly to mountainous, mostly forested with some open areas  
STREAM CHARACTERISTICS: Small, intermittent, sinuous  
NATURE OF STREAMBED: Gravel, cobbles and sand

**PEAK FLOW DATA**

Q 2.33 =	70 cfs	Q 50 =	185 cfs
Q 10 =	130 cfs	Q 100 =	205 cfs
Q 25 =	160 cfs	Q 500 =	270 cfs

DATE OF FLOOD OF RECORD: Unknown  
ESTIMATED DISCHARGE: Unknown  
WATER SURFACE ELEV.: Unknown  
NATURAL STREAM VELOCITY: @ Q50 = 8.1 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? Yes  
IF YES, DESCRIBE: This site may be in the Otter Creek floodplain. Floodwaters from that river may affect this site.

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

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE: 24" CPEP(SL) above 30" CMP  
YEAR BUILT: Unknown  
CLEAR SPAN(NORMAL TO STREAM): 24" and 30"  
VERTICAL CLEARANCE ABOVE STREAMBED: 24" and 30"  
WATERWAY OF FULL OPENING: 3.1 sq. ft. and 4.9 sq. ft. = 8.0 sq. ft. total  
DISPOSITION OF STRUCTURE: Remove and replace with a new structure  
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	587.3'	VELOCITY =	10.5 fps *
Q10 =	588.1'	"	6.8 fps *
Q25 =	588.2'	"	6.5 fps *
Q50 =	588.3'	"	6.6 fps *
Q100 =	588.4'	"	6.4 fps *

\*Pipe barrel of 24" PCP

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
FREQUENCY: Below Q10  
RELIEF ELEVATION: 587.5'  
DISCHARGE OVER ROAD @Q100: 160 cfs

**UPSTREAM STRUCTURE**

TOWN: N/A - Stream divides DISTANCE: \_\_\_\_\_  
HIGHWAY #: \_\_\_\_\_ STRUCTURE #: \_\_\_\_\_  
CLEAR SPAN: \_\_\_\_\_ CLEAR HEIGHT: \_\_\_\_\_  
YEAR BUILT: \_\_\_\_\_ FULL WATERWAY: \_\_\_\_\_  
STRUCTURE TYPE: \_\_\_\_\_

**DOWNSTREAM STRUCTURE**

TOWN: Wallingford DISTANCE: 75'  
HIGHWAY #: VT Railway STRUCTURE #: C06470  
CLEAR SPAN: 3' CLEAR HEIGHT: 2'  
YEAR BUILT: N/A FULL WATERWAY: 4 sq. ft.  
STRUCTURE TYPE: Box

**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							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

SEE SHEET 3 FOR CULVERT DESIGN CRITERIA

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Precast concrete box

CLEAR SPAN(NORMAL TO STREAM): 8.0'  
VERTICAL CLEARANCE ABOVE STREAMBED: 4.5'  
WATERWAY OF FULL OPENING: 36 sq. ft.

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	581.6'	VELOCITY =	5.4 fps *
Q10 =	582.7'	"	7.3 fps *
Q25 =	583.2'	"	7.6 fps *
Q50 =	583.7'	"	7.8 fps *
Q100 =	584.0'	"	7.9 fps *

\* Within box culvert

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
FREQUENCY: Above Q100  
RELIEF ELEVATION: 587.6'  
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 584.4' at the inlet  
VERTICAL CLEARANCE: @ Q50 = 0.6'

SCOUR: Not applicable for a box.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:  
ORDINARY LOW WATER: 1 cfs Depth < 0.1'  
ORDINARY HIGH WATER: 30 cfs Depth = 1'

**TEMPORARY BRIDGE REQUIREMENTS**

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

**ADDITIONAL INFORMATION**

Hydraulics at this site may be affected by tailwater due to the Otter Creek. The unnamed stream is anticipated to peak prior to the Otter Creek, therefore this report does not consider Otter Creek tailwater in predicting water surface elevations. Water surface elevations may be higher than reported if tailwater conditions exist.

**DESIGN VALUES**

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d <sub>p</sub> : 3.0 INCH
3. DESIGN SPAN	L: 8.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f <sub>y</sub> : ---
6. PRESTRESSED CONCRETE STRENGTH	f' <sub>c</sub> : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' <sub>cr</sub> : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' <sub>c</sub> : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' <sub>c</sub> : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' <sub>c</sub> : ---
11. CONCRETE, CLASS C	f' <sub>c</sub> : ---
12. REINFORCING STEEL	f <sub>y</sub> : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f <sub>y</sub> : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q <sub>n</sub> : 6.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q <sub>n</sub> : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q <sub>p</sub> : ---
20. PILE YIELD STRENGTH ASTM A572	f <sub>y</sub> : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L <sub>p</sub> : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V <sub>3s</sub> : ---
26. MINIMUM GROUND SNOW LOAD	p <sub>g</sub> : ---
27. SEISMIC DATA	PGA: --- S <sub>s</sub> : ---

PROJECT NAME: WALLINGFORD

PROJECT NUMBER: ER CULV(39)

FILE NAME: z\_wallingford\_pi.xlsm PLOT DATE: 2/19/2016  
PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER  
DESIGNED BY: M. CHENETTE CHECKED BY:  
PRELIMINARY INFORMATION SHEET - US 7 BR 73A SHEET 2 OF 36

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT	ESAL
2013	4300	480	54	11.6	510	40 year ESAL for flexible pavement from 2103 to 2053 : 7,480,000
2033	4600	530	54	17.3	820	Design Speed : 50 mph

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