

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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STANDARDS LIST

FINAL HYDRAULIC REPORT BRIDGE NO. 52

HYDROLOGIC DATA

Date: August 2013

DRAINAGE AREA: 0.7 sq. mi.
 CHARACTER OF TERRAIN: Hilly to mountainous, mostly forested
 STREAM CHARACTERISTICS: Sinuous, alluvial, wide floodplain upstream
 NATURE OF STREAMBED: Silt, sand and gravel

PEAK FLOW DATA

Q 2.33 = 40 cfs Q 50 = 150 cfs
 Q 10 = 100 cfs Q 100 = 175 cfs
 Q 25 = 130 cfs Q 500 = 250 cfs

DATE OF FLOOD OF RECORD: Unknown
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 6.4 fps
 ICE CONDITIONS: Slight to moderate
 DEBRIS: Slight
 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: Twin 6.0' CMP's
 YEAR BUILT: 1948
 CLEAR SPAN(NORMAL TO STREAM): 6.0' + 6.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 6.0'
 WATERWAY OF FULL OPENING: 56.6 sq. ft. total
 DISPOSITION OF STRUCTURE: Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 = 1925.7' VELOCITY = 5.9 fps
 Q10 = 1926.7' " 7.8 fps
 Q25 = 1927.1' " 8.4 fps
 Q50 = 1927.4' " 8.8 fps
 Q100 = 1927.7' " 9.1 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1933.6'
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: NA, stream divides DISTANCE: _____
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

DOWNSTREAM STRUCTURE

TOWN: Winhall DISTANCE: 400'
 HIGHWAY #: VT 11 STRUCTURE #: 12
 CLEAR SPAN: 10' CLEAR HEIGHT: 6'
 YEAR BUILT: 1948 FULL WATERWAY: 60 sq. ft.
 STRUCTURE TYPE: R. C. 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:							

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

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast concrete box
 CLEAR SPAN(NORMAL TO STREAM): 12.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.0'
 WATERWAY OF FULL OPENING: 60 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 1923.3' VELOCITY = 2.2 fps
 Q10 = 1923.9' " 3.3 fps
 Q25 = 1924.2' " 3.6 fps
 Q50 = 1924.4' " 3.9 fps
 Q100 = 1924.6' " 4.1 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1933.6'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1927.5' at inlet
 VERTICAL CLEARANCE: @ Q50 = 3.1'

SCOUR: Not applicable for a box structure.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type II

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 20 cfs Depth = 2'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary needed. Use phased construction.
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC UNDER PHASED CONSTRUCTION.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 12.00 FT
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'cl: ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'c: ---
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. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 6.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
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 : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOWLOAD	p _g : ---
27. SEISMIC DATA	PGA: --- S: --- S1: ---

PROJECT NAME: WINHALL
 PROJECT NUMBER: STP CULV (31)

FILE NAME: z_winhall_br52_pi.xls PLOT DATE: 10/9/2014
 PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON
 DESIGNED BY: VTRANS CHECKED BY: M. CHENETTE
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	10 year ESAL for flexible pavement from 2013 to 2033 : 753000
2013	3000	450	51	11.4	300	20 year ESAL for flexible pavement from 2013 to 2033 : 1751000 Design Speed : 50 mph
2023	3000	480	51	14.8	420	