

PRELIMINARY INFORMATION SHEET (BRIDGE)

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STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	8/29/2011

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03-16-2004
E-142	REGULATORY SIGN DETAILS	09-20-1995
E-143	REGULATORY SIGN DETAILS	06-15-2004
E-152	WARNING SIGN DETAILS	05-01-2004
E-160	FLANGED CHANNEL STEEL SIGN POST	05-20-1999
E-161	W-SHAPED STEEL SIGN POST	08-18-1995
E-171A	TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS	08-09-1995
E-171B	TRAFFIC CONTROL SIGNALS MISC. DETAILS	08-09-1995
E-171C	TRAFFIC CONTROL SIGNALS CANTILEVER MOUNTING DETAILS	08-09-1995
E-172	VEHICLE DETECTOR LOOP DETAILS	08-09-1995
E-173	PULL BOXES AND JUNCTION BOXES	08-09-1995
E-175	POWER DROP STANCHIONS	06-08-2009
E-191	PAVEMENT MARKING DETAILS	02-01-1999
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1B	BOX BEAM GUARD RAIL	06-01-1994
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	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-24	TRAFFIC CONTROL FOR MAINTENANCE PAVEMENT MARKING OPERATION	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-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-44	MILE MARKER DETAILS STATE AND TOWN HIGHWAYS	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

DATE:			
DRAINAGE AREA:	70.0 SQ. MI.		
CHARACTER OF TERRAIN:	HILLY TO MOUNTAINOUS VALLEY SETTING		
STREAM CHARACTERISTICS:	STRAIGHT TO SINUOUS, ALLUVIAL, LITTLE TO NO FLOOD PLAN		
NATURE OF STREAMBED:	SAND, GRAVEL, SMALL COBBLES		
Q 2.33 =	2850 CFS	Q50 =	8680 CFS
Q 10 =	5170 CFS	Q 100 =	10550 CFS
Q 25 =	7070 CFS	Q 500 =	16000 CFS
DATE OF FLOOD OF RECORD:	AUGUST 28, 2011		
ESTIMATED DISCHARGE:	20942 CFS		
WATER SURFACE ELEVATION:	414.6 FT AT GAGE STATION DOWNSTREAM OF BRIDGE		
NATURAL STREAM VELOCITY:	11.2 FPS @ Q50 = 8680 CFS		
ICE CONDITIONS:	LIGHT TO MODERATE		
DEBRIS:	LIGHT TO 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	N/A		
WATERSHED STORAGE:	<1% HEADWATERS:	-	
	UNIFORM:	X	
	IMMEDIATELY ABOVE SITE:	-	

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE:	3 SPAN STEEL GIRDER BRIDGE		
YEAR BUILT:	1954		
CLEAR SPAN (NORMAL TO STREAM):	157 FT		
VERTICAL CLEARANCE ABOVE STREAMBED:	28.3 FT (AVG.)		
WATERWAY OF FULL OPENING:	2220 SQ. FT		
DISPOSITION OF STRUCTURE:	REMOVE ABUTMENT BACKWALL AND SUPERSTRUCTURE		
TYPE OF MATERIAL UNDER SUBSTRUCTURE:	GRAVEL		
WATER SURFACE ELEVATIONS AT:	ONE BRIDGE LENGTH UPSTREAM		
Q 2.33 =	428.7 FT	VELOCITY =	10 FT/SEC
Q 10 =	431.0 FT	"	10.7 FT/SEC
Q 25 =	432.8 FT	"	11.2 FT/SEC
Q50 =	434.0 FT	"	12.4 FT/SEC
Q 100 =	435.4 FT	"	13.6 FT/SEC
LONG TERM STREAMBED CHANGES:	LITTLE CHANGE SINCE 1953 PLANS		
IS THE ROADWAY OVERTOPPED BELOW Q100?	NO		
FREQUENCY:	>Q500		
RELIEF ELEVATION:	+/- 448.5 FT		
DISCHARGE OVER ROAD @ Q100:	N/A		

UPSTREAM STRUCTURE

TOWN:	ROCKINGHAM	DISTANCE:	0.5 MI
HIGHWAY #:	T.H. # 3 (HARTLEY HILL ROAD)	STRUCTURE #:	9
CLEAR SPAN:	128 FT	CLEAR HEIGHT:	15.3 FT
YEAR BUILT:	2004	FULL WATERWAY:	2130 SF
STRUCTURE TYPE:	WELDED PLATE GIRDER		

DOWNSTREAM STRUCTURE

TOWN:	ROCKINGHAM	DISTANCE:	1.0 MI
HIGHWAY #:	T.H. # 51 (HALL BRIDGE ROAD)	STRUCTURE #:	43
CLEAR SPAN:	113	CLEAR HEIGHT:	+/- 12 FT
YEAR BUILT:	1982	FULL WATERWAY:	+/- 1350 SF

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	2.87	1.89					
POSTING							
OPERATING	3.88	2.55	3.33	2.21	2.84	2.55	2.80
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE:	3 SPAN PRESTRESSED NEXT D BEAM BRIDGE		
CLEAR SPAN (NORMAL TO STREAM):	170.21 FT		
VERTICAL CLEARANCE ABOVE STREAMBED:	28.1 FT (AVG.)		
WATERWAY OF FULL OPENING:	2460 SQ FT		
WATER SURFACE ELEVATIONS AT:	ONE BRIDGE LENGTH UPSTREAM		
Q 2.33 =	428.7 FT	VELOCITY =	10.0 FT/SEC
Q 10 =	430.8 FT	"	11.1 FT/SEC
Q 25 =	432.6 FT	"	11.2 FT/SEC
Q50 =	433.9 FT	"	12.4 FT/SEC
Q 100 =	435.4 FT	"	13.6 FT/SEC
IS THE ROADWAY OVERTOPPED BELOW Q100?	NO		
FREQUENCY:	>Q500		
RELIEF ELEVATION:	+/- 448.5 FT		
DISCHARGE OVER ROAD @ Q100:	N/A		
AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:	446.7		
VERTICAL CLEARANCE:	12.8 FT @ Q50 = 8,680 CFS		
SCOUR:	CONTRACTION SCOUR FOR Q100 IS 2 FT (Q500 IS 3 FT) TOTAL PIER SCOUR FOR Q100 IS 23 FT (Q500 IS 26 FT) STONE FILL, TYPE IV AT ABUTMENTS TO BE LEFT IN PLACE.		
REQUIRED CHANNEL PROTECTION:	EXISTING SCOUR CRITICAL PIERS RETAINED WITHOUT ADDED REVETMENT		

PERMIT INFORMATION

AVERAGE DAILY FLOW:	150 CFS	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	70 CFS		423.1 FT
ORDINARY HIGH WATER:	1230 CFS		426.6 FT

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE:	N/A
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 SINGLE LANE ALTERNATING TRAFFIC USING PHASED CONSTRUCTION SEQUENCE
2. TEMPORARY TRAFFIC SIGNAL REQUIRED AT ROUTE 121 / OAK STREET INTERSECTION AND ON ROUTE 121 EASTERLY APPROACH

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 0.0 INCH
3. ABUTMENT BEARING TO BEARING LENGTH (THREE SPANS)	L: 200.00 FT (65.50 - 69.00 - 65.50) FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: - - -
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f _y : 243 KSI
6. PRESTRESSED CONCRETE STRENGTH	f' _c : 8.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : 6.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : 4.0 KSI
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: 0.65
19. LATERAL PILE DEFLECTION	Δ: 0.87 INCH
20. BASIC WIND SPEED	V _{3s} : 100 MPH
21. MINIMUM GROUND SNOW LOAD	p _g : - - -
22. SEISMIC DATA	PGA: 7.0% g S _s : 15% g S ₁ : 4.4% g

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	3700	420	55	7.0	280
2034	4000	450	55	9.5	410

20 year ESAL for flexible pavement from 2014 to 2034 :	1621000
40 year ESAL for flexible pavement from 2014 to 2034 :	3584000
Design Speed :	25 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL

