STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (CULVERT)

Version 11.06.15

LRFD

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SHEETS AND LIST OF STANDARDS

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: July 2015

DRAINAGE AREA : 0.25 sq. mi.
CHARACTER OF TERRAIN : Mostly fields and small ponds, wetlands
STREAM CHARACTERISTICS : Wetlands, sinuous
NATURE OF STREAMBED : Silt and clay

PEAK FLOW DATA

Q 2.33 =	50 cfs	Q 50 =	110 cfs
Q 10 =	80 cfs	Q 100 =	125 cfs
Q 25 =	95 cfs	Q 500 =	175 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50= 7.0 fps
ICE CONDITIONS : Light
DEBRIS: Light
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: <1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Concrete Box
YEAR BUILT: 1949
CLEAR SPAN(NORMAL TO STREAM): 4'
VERTICAL CLEARANCE ABOVE STREAMBED: 3'
WATERWAY OF FULL OPENING: 12 sq. ft.
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	207.9'	VELOCITY =	10.2 fps
Q10 =	209.1'	"	10.9 fps
Q25 =	209.7'	"	11.4 fps
Q50 =	210.5'	"	11.8 fps
Q100 =	211.4'	"	12.2 fps

LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 212.6'
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Charlotte — DISTANCE: 3900'
HIGHWAY # : TH 5 — STRUCTURE #:
CLEAR SPAN: — CLEAR HEIGHT:
YEAR BUILT: — FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Ferrisberg — DISTANCE: 2330'
HIGHWAY # : TH 1 — STRUCTURE #:
CLEAR SPAN: 54" — CLEAR HEIGHT: 54"
YEAR BUILT: — FULL WATERWAY: 15.9 sq. ft.
STRUCTURE TYPE: Pipe

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

CULVERT DESIGN CRITERIA

1. PROPOSED CULVERT IS A PRESTRESS CONCRETE STRUCTURE (6'-0" X 3'-0" X 72'-0" BOX).
2. CULVERT ENDS ARE NOT SKEWED.
3. CULVERT WILL BE SET AT A SLOPE OF 8.64 IN. ON 72 FT.
4. CULVERT WILL NOT REQUIRE FISH PASSAGE ACCOMODATIONS
5. CULVERT CONSTRUCTION WILL REQUIRE A TEMPORARY PIPE

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast Concrete Box Culvert

CLEAR SPAN(NORMAL TO STREAM): 6'
VERTICAL CLEARANCE ABOVE STREAMBED: 3'
WATERWAY OF FULL OPENING: 18 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	207.3'	VELOCITY=	9.0 fps
Q10 =	208.0'	"	10.2 fps
Q25 =	208.4'	"	10.7 fps
Q50 =	208.8'	"	11.1 fps
Q100 =	209.2'	"	11.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 214.8'
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 208.3'
VERTICAL CLEARANCE: @ Q50 = -0.1'

SCOUR: Scour is not calculated for a box

REQUIRED CHANNEL PROTECTION: Stone Fill Type II

PERMIT INFORMATION

		DEPTH OR ELEVATION:
AVERAGE DAILY FLOW:		
ORDINARY LOW WATER:		
ORDINARY HIGH WATER:		

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None required
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON THE EXISTING STRUCTURE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_p:	8.5 INCH
3. CULVERT OPENING	D:	18 SF
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'_{ci}:	---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	---
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:	---
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
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:	---
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 SNOW LOAD	p_g:	---
27. SEISMIC DATA — PGA: ---	S_s:	---
	S_1:	---

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2016	11,200	1,200	56	4.9	900
2036	11,500	1,200	56	5.2	970

20 year ESAL for flexible pavement from 2016 to 2036 : 10.716.000
40 year ESAL for flexible pavement from 2036 to 2056 : 22.153.000
Design Speed : 50 mph

PROJECT NAME: CHARLOTTE
PROJECT NUMBER: F EGC 019-4(20)

FILE NAME: d78d062_frm.dgn
PROJECT LEADER: K. UPMAL
DESIGNED BY: B. KIPP
BR 140 PRELIMINARY INFORMATION SHEET

PLOT DATE: 15-MAR-2016
DRAWN BY: C. LEACH
CHECKED BY: M. GAMELIN
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