

PRELIMINARY INFORMATION SHEET (BRIDGE)

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PLAN SHEETS

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STANDARDS LIST

| | | |
|--------|---|------------|
| D-15 | PRECAST REINF CONC. MH GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E | 05-01-1994 |
| E-121 | STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD | 05-08-1995 |
| E-141 | REGULATORY SIGN DETAILS | 09-20-1995 |
| E-142 | REGULATORY SIGN DETAILS | 09-20-1995 |
| E-160 | FLANGED CHANNEL STEEL SIGN POST | 05-20-1999 |
| E-161 | V-SHAPED STEEL SIGN POST | 05-20-1999 |
| E-162 | TUBULAR ALUMINUM SIGN POST | 05-20-1999 |
| E-163 | TUBULAR STEEL SIGN POST | 05-20-1999 |
| E-191 | PAVEMENT MARKING DETAILS | 02-01-1999 |
| E-192 | PAVEMENT MARKING DETAILS | 10-12-2000 |
| E-193 | PAVEMENT MARKING DETAILS | 03-18-1995 |
| G-18M | BOX BEAM GUARD RAIL | 05-13-1997 |
| S-364A | BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM | 02-10-2014 |
| S-364B | GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM | 02-10-2014 |
| S-364C | GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM | 02-10-2014 |
| S-364D | GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM | 04-23-2012 |
| T-1 | TRAFFIC CONTROL GENERAL NOTES | 05-06-2012 |
| T-10 | CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING | 05-06-2012 |
| T-28 | CONSTRUCTION SIGN DETAILS | 05-06-2012 |
| T-35 | CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS | 05-06-2012 |
| T-42 | BRIDGE NUMBER PLAQUE | 04-09-2014 |
| T-45 | SQUARE TUBE SIGN POST AND ANCHOR | 01-02-2013 |

STRUCTURES 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 DETAILS AND NOTES | 06-04-2010 |
| SD-602.00 | STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES | 05-02-2011 |

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: Nov. 2012

DRAINAGE AREA: 9.4 sq. mi.
 CHARACTER OF TERRAIN: Hilly to mountainous, mostly forested.
 STREAM CHARACTERISTICS: Sinuous, semi-alluvial and probably incised.
 NATURE OF STREAMBED: Mostly cobbles and boulders with some gravel.

PEAK FLOW DATA

| | | | |
|----------|----------|---------|----------|
| Q 2.33 = | 900 cfs | Q 50 = | 3550 cfs |
| Q 10 = | 1900 cfs | Q 100 = | 4300 cfs |
| Q 25 = | 2800 cfs | Q 500 = | 5800 cfs |

DATE OF FLOOD OF RECORD: Unknown
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 14.2 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:

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam bridge with concrete deck.

CLEAR SPAN (NORMAL TO STREAM): 65'
 VERTICAL CLEARANCE ABOVE STREAMBED: 14'
 WATERWAY OF FULL OPENING: 590 sq. ft.

WATER SURFACE ELEVATIONS AT:

| | | | |
|---------|---------|------------|----------|
| Q2.33 = | 1408.6' | VELOCITY = | 9.9 fps |
| Q10 = | 1410.8' | | 12.2 fps |
| Q25 = | 1412.5' | | 13.6 fps |
| Q50 = | 1413.7' | | 14.4 fps |
| Q100 = | 1414.7' | | 15.1 fps |

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1418.6'
 DISCHARGE OVER ROAD @ Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1416.2'
 VERTICAL CLEARANCE: @ Q50 = 2.5'

SCOUR: Total long term degradation and contraction scour = 2' at Q100 and 4' at Q500.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span steel beam bridge with concrete deck.
 YEAR BUILT: 1929
 CLEAR SPAN (NORMAL TO STREAM): 59'
 VERTICAL CLEARANCE ABOVE STREAMBED: 14'
 WATERWAY OF FULL OPENING: 570 sq. ft.
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs.

WATER SURFACE ELEVATIONS AT:

| | | | |
|---------|---------|------------|----------|
| Q2.33 = | 1408.6' | VELOCITY = | 9.9 fps |
| Q10 = | 1410.8' | | 12.2 fps |
| Q25 = | 1412.5' | | 13.6 fps |
| Q50 = | 1413.7' | | 14.4 fps |
| Q100 = | 1414.7' | | 15.1 fps |

LONG TERM STREAMBED CHANGES: Comparing current survey to record plans and the flood insurance study, it appears there may have been some degradation in the past.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1418.6'
 DISCHARGE OVER ROAD @ Q100: N/A

PERMIT INFORMATION

AVERAGE DAILY FLOW: 20 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 10 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 390 cfs Depth = 3.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
 CLEAR SPAN (NORMAL TO STREAM): 58' minimum
 VERTICAL CLEARANCE ABOVE STREAMBED: Elev. 1414.0' minimum
 WATERWAY AREA OF FULL OPENING: 395 sq. ft. minimum

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

| | |
|--|----------------------------------|
| 1. DESIGN LIVE LOAD | HL-93 |
| 2. FUTURE PAVEMENT | d _p : 2.5 INCH |
| 3. DESIGN SPAN | L: 68.00 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' _{cr} : --- |
| 8. CONCRETE, HIGH PERFORMANCE CLASS AA | f' _c : --- |
| 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 (WEATHERING) | f _y : 50 KSI |
| 14. SOIL UNIT WEIGHT | γ: 0.140 KCF |
| 15. NOMINAL BEARING RESISTANCE OF SOIL | q _n : 4.0 KSF |
| 16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) | φ: --- |
| 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 : 346.0 KIPS |
| 20. PILE YIELD STRENGTH ASTM A572 | f _y : 50 KSI |
| 21. PILE SIZE | HP 12X74 |
| 22. EST. PILE LENGTH | L _p : 77 FT |
| 23. PILE RESISTANCE FACTOR | φ: 0.65 |
| 24. LATERAL PILE DEFLECTION | Δ: 0.37 INCH |
| 25. BASIC WIND SPEED | V _{3s} : --- |
| 26. MINIMUM GROUND SNOW LOAD | p _g : --- |
| 27. SEISMIC DATA | PGA: --- S ₁ : --- |

UPSTREAM STRUCTURE

TOWN: Wardsboro DISTANCE: 3000'
 HIGHWAY #: TH 29 STRUCTURE #: 26
 CLEAR SPAN: 69' CLEAR HEIGHT: 7.5'
 YEAR BUILT: 1939 FULL WATERWAY: N/A
 STRUCTURE TYPE: Single span steel beam bridge with timber deck.

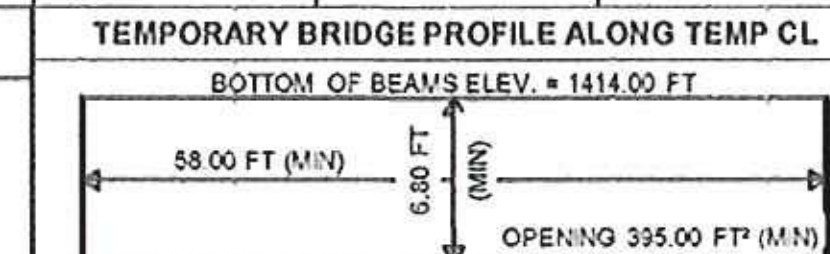
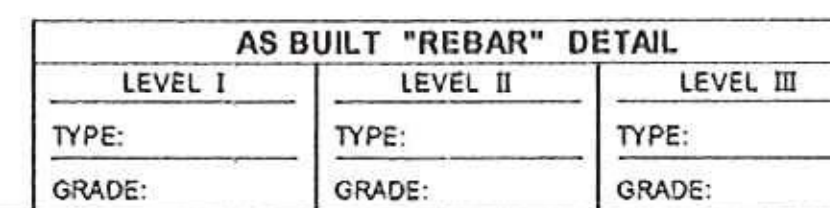
DOWNSTREAM STRUCTURE

TOWN: Wardsboro DISTANCE: 8000'
 HIGHWAY #: TH 6 STRUCTURE #: 27
 CLEAR SPAN: 96' CLEAR HEIGHT: 19'
 YEAR BUILT: 1978 FULL WATERWAY: N/A
 STRUCTURE TYPE: Single span steel beam bridge.

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 Δ | 2.40 | 1.26 | | | | | |
| POSTING | | | | | | | |
| OPERATING Δ | 3.19 | 1.63 | 2.63 | 1.74 | 2.26 | 2.03 | 2.22 |

COMMENTS:



PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY P_{d0} : 346.00 KIP
2. PILE TEST RESISTANCE FACTOR ϕ : 0.65
3. MINIMUM PILE TIP ELEVATION: 1377.00 FT
4. ONE DYNAMIC PILE LOAD TEST REQUIRED PER ABUTMENT.

| KEY | DATE | BY | REVISION |
|-----|------------|------|------------------------------------|
| Δ | 10/05/2015 | VAOT | MODIFIED LRFR LOAD RATING FACTORS. |

TRAFFIC DATA

| YEAR | ADT | DHV | % D | % T | ADTT |
|------|------|-----|-----|------|------|
| 2013 | 1300 | 190 | 51 | 11.4 | 160 |
| 2033 | 1500 | 220 | 51 | 17.3 | 270 |

20 year ESAL for flexible pavement from 2013 to 2033 : 878000
 40 year ESAL for flexible pavement from 2013 to 2053 : 2064000
 Design Speed: 30 mph

PROJECT NAME: WARDBORO
 PROJECT NUMBER: BRF 013-1(15)
 FILE NAME: e92b283p1.xls PLOT DATE: 10/5/2015
 PROJECT LEADER: C. CARLSON DRAWN BY: R. PELLETT
 DESIGNED BY: D. PETERSON CHECKED BY: D. PETERSON
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