

PRELIMINARY INFORMATION SHEET

FINAL HYDRAULIC REPORT

INDEX OF SHEETS

| | |
|--|--|
| 1. TITLE SHEET | |
| 2. PRELIMINARY INFORMATION SHEET | |
| 3. PROJECT TYPICAL SECTIONS | |
| 4-5. QUANTITY SHEETS | |
| 6. R.O.V. LAYOUT SHEET | |
| 7. TIE INFORMATION | |
| 8. ALIGNMENT SHEET | |
| 9. LAYOUT SHEET | |
| 10. PROFILE SHEET | |
| 11. EXISTING TRAFFIC SIGNS LAYOUT SHEET | |
| 12. NEW TRAFFIC SIGNS AND PAVEMENT MARKINGS LAYOUT SHEET | |
| 13. TRAFFIC SIGN SUMMARY SHEET | |
| 13A. TRAFFIC CONTROL SHEET | |
| 14. EROSION CONTROL NARRATIVE | |
| 15. EXISTING CONDITIONS SITE PLAN | |
| 16. EROSION PREVENTION AND SEDIMENT CONTROL PLAN | |
| 17-19. EROSION CONTROL DETAILS | |
| 20. PLAN AND ELEVATION | |
| 21. PROJECT NOTES | |
| 22. DECK REINFORCING PLAN & BRIDGE TYPICAL SECTION | |
| 23. TRUSS REPAIRS | |
| 24. FRAMING PLAN | |
| 25. FLOOR BEAM ELEVATIONS | |
| REV. 25A. FLOOR BEAM ELEVATIONS & LIGHT TRUSS DETAILS | |
| 26. LATERAL BRACING DETAILS | |
| 27-32. BEARING DETAILS | |
| 33. EXPANSION JOINT PLAN AND ELEVATION | |
| 34. EXPANSION JOINT DETAILS | |
| 35. DOWNSPOUT DETAILS | |
| 36. APPROACH SLAB DETAILS | |
| 37. SPECIAL PROVISION (BOX BEAM GUARDRAIL, PAINTED) LAYOUT | |
| 37A. SPECIAL PROVISION (BOX BEAM GUARDRAIL, PAINTED) DETAILS | |
| 37B. TRUSS RAILING ELEVATION | |
| REV. 37C. TRUSS RAILING DETAILS (1) | |
| 37D. TRUSS RAILING DETAILS (2) | |
| 38. MISCELLANEOUS PROJECT DETAILS | |
| 39. EXISTING ABUTMENT CONCRETE REMOVAL DETAILS | |
| 40. ABUTMENT NO.1 DETAILS | |
| 41. ABUTMENT NO.1 STEM REINFORCING DETAILS | |
| 42. ABUTMENT NO.2 DETAILS | |
| 43. ABUTMENT NO.2 STEM REINFORCING DETAILS | |
| 44. ABUTMENT SECTIONS | |
| 45. ABUTMENT BACKWALL DETAILS | |
| 46. WINGWALL ELEVATIONS | |
| 47. REINFORCING STEEL SCHEDULE | |
| 48. BANKING DIAGRAM & MATERIAL TRANSITION DETAIL | |
| 49-53. ROADWAY CROSS SECTIONS | |
| 54-55. T.H. 68 CROSS SECTIONS | |
| 58-62. CHANNEL CROSS SECTIONS | |
| 63-85. REFERENCE SHEETS | |
| NEW 25B. HEAVY TRUSS FLOOR BEAM TO TRUSS AT ABUT. #1 END DETAILS | |

LIST OF STANDARDS

| | | |
|--------|--|-----------|
| A-80 | SHARED USE PATH/HIGHWAY INTERSECTION DETAILS | 3/31/2004 |
| B-5 | SLOPE GRADING, EMBANKMENTS, MUCK | 6/1/1994 |
| D-1 | PRECAST REINFORCED CONCRETE PIPE DROP INLET WITH CAST IRON GRATE | 6/1/1994 |
| | PRECAST REINFORCED CONCRETE PIPE DROP INLET WITH CONCRETE COVER | |
| E-100 | CONSTRUCTION APPROACH SIGNS | 3/7/88 |
| E-100A | SIDE ROAD CONSTRUCTION - APPROACH SIGNS | 1/2/2004 |
| E-101 | CONSTRUCTION SIGN DETAILS | 5/30/2003 |
| E-102 | CONSTRUCTION SIGN DETAILS | 6/30/2003 |
| E-102A | CONSTRUCTION SIGN DETAILS | 5/1/2004 |
| E-106 | TRAFFIC CONTROL - MISCELLANEOUS DETAILS | 3/1/2004 |
| E-107 | DELINEATION, BARRICADES AND DETOURS FOR U-TURNS ON DIVIDED HIGHWAY | 6/30/2003 |
| E-107A | BREAKAWAY BARRICADE DETAILS | 8/8/1995 |
| E-121 | STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD | 8/8/1995 |
| E-123 | GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS | 3/16/2004 |
| E-131B | BI-CYCLE GUIDE SIGN DETAILS | 5/30/2003 |
| E-141 | REGULATORY SIGN DETAILS | 9/20/1995 |
| E-142 | REGULATORY SIGN DETAILS | 9/20/1995 |
| E-143 | REGULATORY SIGN DETAILS | 6/15/2004 |
| E-143B | REGULATORY SIGN DETAILS | 3/15/2005 |
| E-146 | REGULATORY SIGN DETAILS | 9/20/1995 |
| E-153B | WARNING SIGN DETAILS | 5/30/2003 |
| E-180 | FLANGED CHANNEL STEEL SIGN POST | 5/20/1999 |
| E-184 | SQUARE STEEL SIGN POST | 5/20/1999 |
| E-191 | PAVEMENT MARKING DETAILS | 3/6/92 |
| E-193 | PAVEMENT MARKING DETAILS | 8/18/1995 |
| E-195 | SHARE USE PATH PAVEMENT MARKINGS AND SIGN DETAILS | 2/6/2004 |

HYDROLOGIC DATA Date: August 24, 2005

DRAINAGE AREA : 202.6 sq. mi.
 CHARACTER OF TERRAIN : Steeply sloped woodlands
 STREAM CHARACTERISTICS : Sinuous with moderate flood plane
 NATURE OF STREAMBED : Sand and gravel

PEAK FLOW DATA

| | | | |
|----------|-----------|---------|------------|
| Q 2.33 = | 2,000 cfs | Q 50 = | 6,020 cfs |
| Q 10 = | 3,500 cfs | Q 100 = | 7,500 cfs |
| Q 25 = | 4,800 cfs | Q 500 = | 13,000 cfs |

DATE OF FLOOD OF RECORD : November 1927
 ESTIMATED DISCHARGE : 24,000 cfs
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q25 = 3.9 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 IS ORDINARY RISE RAPID? No
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
 IF YES, DESCRIBE : 100 year backwater from the Connecticut River extends 500' upstream of bridge 81.

WATERSHED STORAGE : >1% HEADWATERS :
 UNIFORM : x
 IMMEDIATELY ABOVE SITE :

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : Steel Thru Truss
 YEAR BUILT : 1929
 CLEAR SPAN(NORMAL TO STREAM) : 96.5'
 VERTICAL CLEARANCE ABOVE STREAMBED : 22'
 WATERWAY OF FULL OPENING : 2,075 sq. ft.
 DISPOSITION OF STRUCTURE : Rehabilitation
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : Unknown

WATER SURFACE ELEVATIONS AT:

| | | | |
|---------|--------|------------|---------|
| Q2.33 = | 293.1' | VELOCITY = | 4.7 fps |
| Q10 = | 297.8' | " | 3.9 fps |
| Q25 = | 300.9' | " | 3.9 fps |
| Q50 = | 303.8' | " | 3.8 fps |
| Q100 = | 305.8' | " | 4.1 fps |

LONG TERM STREAMBED CHANGES : Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY :
 RELIEF ELEVATION : 309.3'
 DISCHARGE OVER ROAD @Q100 :

UPSTREAM STRUCTURE

TOWN : Springfield DISTANCE : 9,750'
 HIGHWAY# : TH 430 (Bridge St) STRUCTURE # : Br 43
 CLEAR SPAN : 117' CLEAR HEIGHT : 13'
 YEAR BUILT : 1989 FULL WATERWAY : 1213 sq. ft.
 STRUCTURE TYPE : Single Span Plate Girder

DOWNSTREAM STRUCTURE

TOWN : Springfield DISTANCE : 3,850'
 HIGHWAY# : VT 11 STRUCTURE # : Br 68
 CLEAR SPAN : 255' CLEAR HEIGHT : 16'
 YEAR BUILT : 1966 FULL WATERWAY : 4150 sq. ft.
 STRUCTURE TYPE : 3-Span Welded Girder

LOAD FACTOR LOAD RATING (TONS)

| LOADING LEVELS (LOAD FACTOR) | TRUCK | | | | | | |
|------------------------------|-------|----|-----|--------|----------|----------|----------|
| | H | HS | 3S2 | 6 AXLE | 3A, STR. | 4A, STR. | 5A, SEMI |
| INVENTORY A=2.17 B=1.00 | 32 | 37 | | | | | |
| POSTED A=1.55 B=1.40 | 45 | 52 | 63 | | 48 | 50 | 59 |
| OPERATING A=1.30 B=1.67 | | 62 | 72 | 152 | 57 | 59 | |

STRENGTH RF = $\frac{0.9 M_N - 1.3 M_{DL}}{A \times M_{LL+1}}$ SERVICEABILITY RF = $B \times \frac{0.95 F_y S_{LL+1} - M_{DL} \frac{S_{LL+1}}{S_{DL}} - M_{SOL} \frac{S_{LL+1}}{S_{SOL}}}{1.67 M_{LL+1}}$

TRAFFIC DATA

| YEAR | ADT | DHV | % D | % T | ADTT |
|------|-----|-----|-----|-----|------|
| 2005 | 280 | 40 | 66 | 6 | 20 |
| 2025 | 380 | 50 | 66 | 6 | 30 |

20 year ESAL for flexible pavement from 2005 to 2025 : 141,000
 40 year ESAL for flexible pavement from 2005 to 2045 : 323,000
 Design Speed : 35 mph

PROPOSED STRUCTURE

STRUCTURE TYPE : Rehabilitation of Existing Truss with 6" facing on both abutments

CLEAR SPAN(NORMAL TO STREAM) : 95.5'
 VERTICAL CLEARANCE ABOVE STREAMBED : 23'
 WATERWAY OF FULL OPENING : 2,110 sq. ft.

WATER SURFACE ELEVATIONS AT:

| | | | |
|---------|--------|------------|---------|
| Q2.33 = | 293.1' | VELOCITY = | 4.7 fps |
| Q10 = | 297.8' | " | 3.9 fps |
| Q25 = | 300.9' | " | 3.9 fps |
| Q50 = | 303.8' | " | 3.8 fps |
| Q100 = | 305.8' | " | 4.1 fps |

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY :
 RELIEF ELEVATION : 309.3'
 DISCHARGE OVER ROAD @Q100 :
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 308.8'
 VERTICAL CLEARANCE : @ Q25 = 7.7'

SCOUR : 4.0' of contraction scour @ Q500

REQUIRED CHANNEL PROTECTION : Stone Fill Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW : 420 cfs DEPTH OR ELEVATION :
 ORDINARY LOW WATER : 185 cfs Elev = 288.0'
 ORDINARY HIGH WATER : 880 cfs Elev = 295.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE : n/a
 CLEAR SPAN(NORMAL TO STREAM) :
 VERTICAL CLEARANCE ABOVE STREAMBED :
 WATERWAY AREA OF FULL OPENING :

ADDITIONAL INFORMATION

This bridge is presently closed. During construction, traffic will continue to use detour established by Town of Springfield.

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO HS20-44
- DESIGN SPAN 160 FT.
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A
ON LEDGE N/A
- ALLOWABLE LOAD FOR PILING N/A
TYPE N/A
ESTIMATED LENGTH N/A
- STRUCTURAL STEEL AASHTO M270MM270 GRADE M270 GRADE 50 (PAINTED)
- REINFORCING STEEL GRADE 80
- CONCRETE, HIGH PERFORMANCE CLASS A fc: 4000 psi
CONCRETE, HIGH PERFORMANCE CLASS B fc: 3500 psi
SELF-CONSOLIDATING CONCRETE fc: 3500 psi
- DESIGN SOIL UNIT WEIGHT 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL N/A

TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? NO
IF YES, ON EXISTING STRUCTURE? N/A
OR ON TEMPORARY BRIDGE? N/A
ONE OR TWO-WAY TRAVEL? N/A
- TRAFFIC CONTROL SIGNALS REQUIRED? N/A
- ARE SIDEWALKS REQUIRED? N/A
IF SO, ON WHAT SIDE? N/A

PROJECT NAME : **SPRINGFIELD**
 PROJECT NUMBER : **BHO 1442(30)**
 FILE NAME : 96j348structures\96j348pi.xls PLOT DATE : 12/19/2007
 PROJECT MANAGER : R.R. WHITCOMB DRAWN BY : G. ROY
 DESIGNED BY : C. CARLSON CHECKED BY : C. CARLSON
 PRELIMINARY INFORMATION SHEET SHEET 2 OF 85