

INDEX OF SHEETS						FINAL HYDRAULIC REPORT																																																																																																																																												
PLAN SHEETS						STANDARDS LIST																																																																																																																																												
						HYDROLOGIC DATA Date: December 2008 DRAINAGE AREA : 33.5 sq. mi. CHARACTER OF TERRAIN : Hilly to mountainous, mixed use, mostly rural STREAM CHARACTERISTICS : Sinuous, incised NATURE OF STREAMBED : Mostly gravel, cobbles PEAK FLOW DATA Q 2.33 = 1650 cfs Q 10 = 3450 cfs Q 25 = 4400 cfs Q 50 = 5525 cfs Q 100 = 6600 cfs Q 500 = 9250 cfs DATE OF FLOOD OF RECORD 1938 ESTIMATED DISCHARGE: unknown WATER SURFACE ELEV.: unknown NATURAL STREAM VELOCITY: @ Q50 = 11.3 fps ICE CONDITIONS : moderate DEBRIS: little to 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: N/A WATERSHED STORAGE: 1% HEADWATERS: UNIFORM: X IMMEDIATELY ABOVE SITE: EXISTING STRUCTURE INFORMATION STRUCTURE TYPE: 2-span continuous rolled beam YEAR BUILT: 1935 CLEAR SPAN(NORMAL TO STREAM): 2 spans @ 62' = 124' (111' normal clear span) VERTICAL CLEARANCE ABOVE STREAMBED: 10' WATERWAY OF FULL OPENING: 850 sq. ft. DISPOSITION OF STRUCTURE: Remove TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings WATER SURFACE ELEVATIONS AT: Q2.33 = 578.5' Q10 = 578.5' Q25 = 579.4' Q50 = 580.4' Q100 = 581.3' VELOCITY = 7.6 fps " 9.5 fps " 10.1 fps " 10.7 fps " 11.3 fps LONG TERM STREAMBED CHANGES: None noted IS THE ROADWAY OVERTOPPED BELOW Q100: No FREQUENCY: N/A RELIEF ELEVATION: 582.4' DISCHARGE OVER ROAD @Q100: N/A UPSTREAM STRUCTURE TOWN: Chester DISTANCE: 2,350' HIGHWAY #: VT 35 (TH 3) FAS 0125 STRUCTURE #: 9 CLEAR SPAN: CLEAR HEIGHT: 14' YEAR BUILT: 1940 FULL WATERWAY: STRUCTURE TYPE: Single span steel beam bridge DOWNSTREAM STRUCTURE TOWN: Chester DISTANCE: 2,070' HIGHWAY #: Green Mountain Railway Bridge STRUCTURE #: CLEAR SPAN: CLEAR HEIGHT: YEAR BUILT: FULL WATERWAY: STRUCTURE TYPE: LRFR LOAD RATING FACTORS <table><thead><tr><th rowspan="2">LOADING LEVELS</th><th colspan="7">TRUCK</th></tr><tr><th>H-20</th><th>HL-93</th><th>SS2</th><th>6 AXLE</th><th>3A STR</th><th>4A STR</th><th>5A SEMI</th></tr></thead><tbody><tr><td>TONNAGE</td><td>20</td><td>36</td><td>36</td><td>66</td><td>30</td><td>34.5</td><td>38</td></tr><tr><td>INVENTORY</td><td>3.35</td><td>2.35</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>POSTING</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>OPERATING</td><td>4.34</td><td>3.05</td><td>2.84</td><td>1.81</td><td>2.99</td><td>2.84</td><td>2.63</td></tr><tr><td>COMMENTS:</td><td colspan="7">0</td></tr></tbody></table> PILE DRIVING AND TESTING REQUIREMENTS 1. NOMINAL PILE DRIVING CAPACITY 2. PILE TEST RESISTANCE FACTOR 3. MAXIMUM PILE TIP ELEVATION 4. SEE GENERAL NOTES FOR REQUIRED PILE PENETRATION ELEVATIONS Find: 555.00 KIP phi: 0.65 SEE BELOW PROPOSED STRUCTURE STRUCTURE TYPE: Single span curved girder bridge CLEAR SPAN(NORMAL TO STREAM): 105' VERTICAL CLEARANCE ABOVE STREAMBED: 10' WATERWAY OF FULL OPENING: 880 sq. ft. WATER SURFACE ELEVATIONS AT: Q2.33 = 575.7' Q10 = 577.7' Q25 = 578.6' Q50 = 579.7' Q100 = 580.7' VELOCITY= 9.2 fps " 11.1 fps " 11.7 fps " 11.7 fps " 11.8 fps IS THE ROADWAY OVERTOPPED BELOW Q100: No FREQUENCY: N/A RELIEF ELEVATION: 582.4' DISCHARGE OVER ROAD @Q100: N/A AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 581.1' VERTICAL CLEARANCE: @ Q50 = 1.4' SCOUR: 1.0' at Q500 REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV PERMIT INFORMATION AVERAGE DAILY FLOW: 70 cfs ORDINARY LOW WATER: 30 cfs ORDINARY HIGH WATER: 710 cfs DEPTH OR ELEVATION: 0.5' 3.0' TEMPORARY BRIDGE REQUIREMENTS STRUCTURE TYPE: None CLEAR SPAN (NORMAL TO STREAM): VERTICAL CLEARANCE ABOVE STREAMBED: WATERWAY AREA OF FULL OPENING: ADDITIONAL INFORMATION Traffic will be detoured, so no temporary bridge required. Velocities reported are channel velocities. Elevations used are NAVD 88. TRAFFIC MAINTENANCE NOTES 1. MANTAIN TRAFFIC ON AN OFF SITE DETOUR. 2. TRAFFIC SIGNALS ARE NOT REQUIRED. 3. SIDEWALKS ARE NOT REQUIRED DESIGN VALUES <table><tbody><tr><td>1. DESIGN LIVE LOAD</td><td>HL-93</td></tr><tr><td>2. FUTURE PAVEMENT</td><td>dp: 0.0 INCH</td></tr><tr><td>3. DESIGN SPAN</td><td>L: 120.00 FT</td></tr><tr><td>4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)</td><td>Δ: ---</td></tr><tr><td>5. PRESTRESSING STRAND (0.50 INCH DIAMETER - LOW RELAX)</td><td>fy: 270 KSI</td></tr><tr><td>6. PRESTRESSED CONCRETE STRENGTH</td><td>f'c: ---</td></tr><tr><td>7. PRESTRESSED CONCRETE RELEASE STRENGTH</td><td>f'cr: ---</td></tr><tr><td>8. CONCRETE, HIGH PERFORMANCE CLASS AA</td><td>f'c: ---</td></tr><tr><td>9. CONCRETE, HIGH PERFORMANCE CLASS A</td><td>f'c: 4.0 KSI</td></tr><tr><td>10. CONCRETE, HIGH PERFORMANCE CLASS B</td><td>f'c: 3.5 KSI</td></tr><tr><td>11. CONCRETE, CLASS C</td><td>f'c: ---</td></tr><tr><td>12. REINFORCING STEEL</td><td>fy: 60 KSI</td></tr><tr><td>13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)</td><td>fy: 50 KSI</td></tr><tr><td>14. BACKFILL UNIT WEIGHT</td><td>γ: 0.140 KCF</td></tr><tr><td>15. NOMINAL BEARING RESISTANCE OF SOL</td><td>qp: ---</td></tr><tr><td>16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)</td><td>phi: ---</td></tr><tr><td>17. NOMINAL BEARING RESISTANCE OF ROCK</td><td>qp: ---</td></tr><tr><td>18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)</td><td>phi: ---</td></tr><tr><td>19. NOMINAL AXIAL PILE RESISTANCE</td><td>qp: 555.0 KIPS</td></tr><tr><td>20. PILE YIELD STRENGTH ASTM A572</td><td>fy: 50 KSI</td></tr><tr><td>21. PILE SIZE</td><td>HP 12X 84</td></tr><tr><td>22. EST. PILE LENGTH</td><td>Lp: 50 FT</td></tr><tr><td>23. PILE RESISTANCE FACTOR</td><td>phi: 0.65</td></tr><tr><td>24. LATERAL PILE DEFLECTION</td><td>Δ: 0.35 INCH</td></tr><tr><td>25. BASIC WND SPEED</td><td>Vs: ---</td></tr><tr><td>26. MINIMUM GROUND SNOW LOAD</td><td>pg: ---</td></tr><tr><td>27. SEISMIC DATA</td><td>PGA: ---</td></tr><tr><td></td><td>Ss: ---</td></tr><tr><td></td><td>S1: ---</td></tr></tbody></table> PROJECT NAME: CHESTER PROJECT NUMBER: BRF 025-1(37) FILE NAME: 95b168/95b168excel.dgn PROJECT LEADER: C.P. WILLIAMS DESIGNED BY: H.I. SALLS BRIDGE 9 PRELIMINARY INFORMATION SHEET PLOT DATE: 9/17/2010 DRAWN BY: H.I. SALLS CHECKED BY: R.S. YOUNG SHEET 58 OF 124 TRAFFIC DATA <table><thead><tr><th>YEAR</th><th>ADT</th><th>DHV</th><th>% D</th><th>% T</th><th>ADTT</th></tr></thead><tbody><tr><td>2013</td><td>7200</td><td>1100</td><td>50</td><td>8.3</td><td>730</td></tr><tr><td>2033</td><td>8600</td><td>1300</td><td>50</td><td>10.8</td><td>1100</td></tr></tbody></table> 20 year ESAL for flexible pavement from 2013 to 2033 : 5927000 40 year ESAL for flexible pavement from 2013 to 2053 : 13731000 Design Speed : 30 mph										LOADING LEVELS	TRUCK							H-20	HL-93	SS2	6 AXLE	3A STR	4A STR	5A SEMI	TONNAGE	20	36	36	66	30	34.5	38	INVENTORY	3.35	2.35						POSTING								OPERATING	4.34	3.05	2.84	1.81	2.99	2.84	2.63	COMMENTS:	0							1. DESIGN LIVE LOAD	HL-93	2. FUTURE PAVEMENT	dp: 0.0 INCH	3. DESIGN SPAN	L: 120.00 FT	4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---	5. PRESTRESSING STRAND (0.50 INCH DIAMETER - LOW RELAX)	fy: 270 KSI	6. PRESTRESSED CONCRETE STRENGTH	f'c: ---	7. 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