

Index of Sheets

1	Title Sheet
2	Preliminary Information Sheet
3	Misc. Typical
4	Roadway Typical
5 - 7	Quantity Sheet
8	Item Detail Sheet
9	Drainage Detail Sheet
10	Earth Works Detail Sheet
11 - 13	Right of Way Layout
14	Right of Way Detail Sheet
15 - 16	Tie Sheet
17 - 19	Layout Sheet
20	Profile Sheet
21	Banking Diagram
22 - 24	Markings, Signs, Utils & Eros Cntrl
25	Traffic Sign Summary Sheet
26	Street Lighting Layout
27	Boring Layout Sheet
28 - 29	Boring Log Sheet
30	Plan and Elevation
31	General Notes Sheet
32 - 33	Not Used
34	Bridge Typical Section
35	Deck Reinforcing Detail
36	Steel Framing Detail
37	Misc Steel Details
38	Bearing Details
39	Approach Slab #1 Detail
40	Approach Slab #2 Detail
41	Approach Slab Elevation Detail
42	Street Lighting Details
43	Power Drop Stanchion Details
44	Misc, Concrete Details
45	Abutment Typical
46	Abutment #1 Plan and Elevation
47	Abutment #2 Plan and Elevation
48	Abutment Reinforcing Plan
49	Wingwall Plan and Elevation
50	Retaining Wall Plan & Elev
51	Reinforcing Steel Schedule
52 - 54	Aluminum Rail Details
55 - 60	Main Line Cross Sections
61 - 62	Drive Sections
63 - 67	Channel Sections

Standards List

B-5M	SLOPE GRADING, EMBANKMENTS	6/13/97
B-17M	TURNOUTS	6/13/97
B-71M	RESIDENTIAL & COMMERCIAL DRIVES	6/13/97
C-1M	CAST IN PLACE CONCRETE CURB	6/13/97
D-2M	UNDERDRAIN & CARRIER PIPE DETAILS	6/13/97
D-3M	TREATED GUTTERS	6/13/97
D-4M	FLUSHING BASINS, PIPE ELBOWS	6/13/97
D-6M	RCDI W/GRATE (DITCHES)	6/13/97
D-8M	RCDI W/ PRECAST COVER & GRATE	6/13/97
D-9M	RCDI TOPS	6/13/97
D-15M	CAST IRON GRATE W/FRAME, TYPE E	6/13/97
D-20M	HIGHWAY CROSSING FOR GROUND UTILITY	6/13/97
E-100M	CONSTRUCTION APPROACH SIGNS	6/13/97
E-101M	CONSTRUCTION SIGN DETAILS	6/13/97
E-102M	CONSTRUCTION SIGN DETAILS	6/13/97
E-102AM	CONSTRUCTION SIGN DETAILS	6/13/97
E-103M	TRAFFIC CONTROL DETAILS	9/24/98
E-106M	TRAFFIC CONTROL DETAILS	6/13/97
E-107M	DELINEATION & BARRICADES	6/13/97
E-107AM	BREAKAWAY BARRICADE DETAILS	6/13/97
E-108M	WORK ZONE LONGITUDINAL DROP OFFS	6/13/97
E-121M	STANDARD SIGN PLACEMENT	6/13/97
E-134M	BRIDGE NUMBER PLAQUE	6/13/97
E-160M	FLANGED CHANNEL STEEL SIGN POST	6/13/97
E-163M	TUBULAR STEEL SIGN POST	6/13/97
E-173M	PULL BOXES & JUNCTION BOXES	6/13/97
E-175M	POWER DROP STANCHIONS	6/13/97
E-180AM	STREET LIGHTING DETAILS	6/13/97
E-180BM	STREET LIGHTING DETAILS	6/13/97
E-181M	BRIDGE MOUNTING DETAILS	6/13/97
E-192M	PAVEMENT MARKING DETAILS	12/28/98
E-193M	PAVEMENT MARKING DETAILS	6/13/97
G-4M	MARKER POSTS	6/13/97
G-19M	GRADING PLANS FOR END OF GUARD RAIL	10/21/98
J-1M	BOUNDARY MARKERS	6/13/97
J-3M	MAILBOX SUPPORT DETAILS	6/13/97
T-1M	TEMPORARY EROSION CONTROL DETAILS	6/13/97
T-2M	TEMPORARY EROSION CONTROL DETAILS	6/13/97

HYDROLOGIC DATA

DRAINAGE AREA= 175 SQUARE KM.
 CHARACTER OF TERRAIN: ROLLING HILLS TO MOUNTAINOUS
 CHARACTER & TYPE OF STREAM: STRAIGHT, SEMI-ALLUVIAL AND PROBABLY INCISED
 NATURE OF STREAMBED: GRAVEL, COBBLES AND BOULDERS
 Q2.33= 85 CMS Q50= 240 CMS
 Q10= 140 CMS Q100= 280 CMS
 Q25= 200 CMS Q500= 480 CMS
 DATE OF FLOOD OF RECORD: UNKNOWN
 WATER SURFACE ELEV: UNKNOWN ESTIMATED DISCHARGE: UNKNOWN
 NATURAL STREAM VELOCITY @ Q50= 4.2 MPS
 ICE CONDITIONS: SLIGHT DEBRIS: SLIGHT
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? YES
 IS ORDINARY RISE RAPID? YES
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
 IF YES, DESCRIBE.
 WATERSHED STORAGE 1% HEADWATERS UNIFORM THROUGHOUT WATERSHED X
 IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE

STRUCTURE TYPE: 3 SPAN CONCRETE T-BEAM BRIDGE* YEAR BUILT: 1927
 CLEAR SPAN (NORMAL TO STREAM): 29.9 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.0 m
 WATERWAY OF FULL OPENING: 112 SQ m
 DISPOSITION OF STRUCTURE: COLLAPSED IN FLOOD OF JUNE 1998, AND HAS BEEN PARTIALLY REMOVED. REMOVE REMAINING PORTIONS AS SHOWN ON PLANS.
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: UNKNOWN
 WATER SURFACE ELEV. @ Q2.33= 174.2 VELOCITY= 2.8 MPS
 Q10= 174.7 VELOCITY= 3.5 MPS
 Q25= 175.1 VELOCITY= 4.0 MPS
 Q50= 175.3 VELOCITY= 4.2 MPS
 Q100= 175.6 VELOCITY= 4.3 MPS
 LONG TERM STREAM BED CHANGES: CHANNEL SCoured OR DEGRADED 1 m TO 2 m
 AVERAGE DURING THE FLOOD OF JUNE, 1998.
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: ABOVE Q100
 RELIEF ELEVATION: 177.0 DISCHARGE OVER ROAD @ Q100: 0
 UPSTREAM STRUCTURE: TOWN: BRISTOL DISTANCE: 0.8 km
 HIGHWAY NO: VT 116 STRUCTURE NO: 11
 STRUCTURE TYPE: 3 SPAN CONCRETE T-BEAM BRIDGE
 CLEAR SPAN: 36.6 m CLEAR HEIGHT: 6.7 m
 YEAR BUILT: 1926 FULL WATERWAY: 223 sq m
 DOWNSTREAM STRUCTURE: TOWN: BRISTOL DISTANCE: 2.4 km
 HIGHWAY NO: TH 3 STRUCTURE NO: 31
 STRUCTURE TYPE: STEEL PONY TRUSS BRIDGE
 CLEAR SPAN: 30.8 m CLEAR HEIGHT: 4.0 m
 YEAR BUILT: 1928 FULL WATERWAY: 120 sq m

PROPOSED STRUCTURE

STRUCTURE TYPE: SINGLE SPAN BRIDGE
 CLEAR SPAN (NORMAL TO STREAM): 34 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.3 m
 WATERWAY OF FULL OPENING: 120 sq m
 WATER SURFACE ELEV. @ Q2.33= 174.1 VELOCITY= 3.2 MPS
 Q10= 174.4 VELOCITY= 3.7 MPS
 Q25= 174.7 VELOCITY= 4.0 MPS
 Q50= 174.8 VELOCITY= 4.2 MPS
 Q100= 174.9 VELOCITY= 4.3 MPS
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: ABOVE Q100
 RELIEF ELEVATION: 177.0 DISCHARGE OVER ROAD @ Q100: 0
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 176.1
 VERTICAL CLEARANCE @ Q100= 1.2 m
 SCOUR: TOTAL PREDICTED SCOUR= 2.0 m AT Q100 & 2.5 m AT Q500
 REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 4 CMS
 ORDINARY LOW WATER: 2 CMS DEPTH: 0.5 m
 ORDINARY HIGH WATER: 37 CMS DEPTH: 2.0 m

ADDITIONAL COMMENTS

A TEMPORARY BRIDGE HAS ALREADY BEEN INSTALLED.
 * THE EXISTING BRIDGE PARTIALLY COLLAPSED IN JUNE, 1998. IT HAS BEEN REPLACED WITH A TEMPORARY BRIDGE. INFORMATION LISTED FOR THE EXISTING STRUCTURE IS FOR THE BRIDGE IN PLACE PRIOR TO JUNE, 1998.

DESIGN CRITERIA:

- DESIGN LIVE LOAD AASHTO MS 22.5
- DESIGN SPAN 44 m
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 27.6 MPa ON LEDGE N/A
- ULTIMATE CAPACITY OF PILE 1400 KN TYPE HP360x152 ESTIMATED LENGTH 28 m
- STRUCTURAL STEEL AASHTO GRADE 345W
- REINFORCING STEEL GRADE 420
- CONCRETE CLASS A $f_c = 30$ MPa
 CONCRETE CLASS B $f_c = 25$ MPa
 SILICA-FUME CONCRETE $f_c = 35$ MPa
- SOIL MASS 2243 kg/m³

TRAFFIC MAINTENANCE:

- IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES* OR ON TEMPORARY BRIDGE YES
 - TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY TWO TRAFFIC CONTROL SIGNALS REQUIRED NO
- * TEMPORARY IS IN PLACE. CONTRACTOR IS NOT RESPONSIBLE FOR INSTALLING A TEMPORARY.

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A=2.17; B=1.00	56	91					
POSTED A=1.55; B=1.40	79	127	142		120	122	134
OPERATING A=1.30; B=1.67		152	169	188	143	146	

$$\text{STRENGTH RF} = \frac{\phi M_N - 1.3 M_{DL}}{A \times M_{LL+1}} \quad \text{SERVICEABILITY RF} = B \left[\frac{.95 F_y S_{LL+1} - M_{DL} \frac{S_{LL+1}}{S_{DL}} - M_{SDL} \frac{S_{LL+1}}{S_{SDL}}}{1.67 M_{LL+1}} \right]$$

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1997	4410	600		3	270
2037	5950	780	59	3	380

20 year ESAL for flexible pavement from 1997 to 2017: 3,582,000
 40 year ESAL for flexible pavement from 1997 to 2037: 12,510,000
 Design speed: 65 km/h

STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of *Bristol* Bridge No. *Br.10*
 Log Sta.
 Highway No. *VT 116* Surv. Sta.

Preliminary Information Sheet
Vt 116 Br.10 Over New Haven River

Designed By _____ Date _____ Drawn By *C Weeber*
 Checked By *G. Colgrove* Date *5/99* Bridge Design Supervisor *A. Portalupi* Date *5/99*

PROJECT *Bristol* PROJECT NO. *ER 021-1(13)*

I.G.C. Info. /str2/78f188/sf188pl.dgn sf188pl.i