



TRANSVERSE BRIDGE SECTION
SCALE 1:40

STRESS TABLE		
GIRDER	SPAN 30.7 meters	
	SHEARS (END OF BEAM)	MOMENTS (MIDSPAN)
DL	871 kN	7,327 kN-m
LL (E80)	1,344 kN	6,585 kN-m
IMP (40Z)	537 kN	3,582 kN-m
CENTRIFUGAL	45 kN	343 kN-m
TOTAL	2,797 kN	17,837 kN-m

STRESS TABLE		
FLOOR BEAM	SPAN 6.2m	
	SHEARS (END OF BEAM)	MOMENTS (MIDSPAN)
DL	26.3 kN	41.7 kN-m
LL (E80)	132.6 kN	309.9 kN-m
IMP (50Z)	68.0 kN	159.0 kN-m
CENTRIFUGAL	7.0 kN	n/a kN-m
TOTAL	234 kN	510.7 kN-m

PROPERTIES	
A _{web} = 47,625 mm ²	S _{x gross} = 1,323x10 ⁶ mm ³
I _{x gross} = 4,394x10 ⁸ mm ⁴	S _{x net} = 1,323x10 ⁶ mm ³
b _{web} = 1,384x10 ³ mm ⁴	

PROPERTIES	
A _{web} = 6780 mm ²	S _x = 4,220x10 ⁶ mm ³
I _x = 1,25x10 ⁸ mm ⁴	

STRESS		
SHEAR	BENDING (TENSION IN BOT. FLANGE)	DEFLECTION (LL+I)
f _s = 58,730 kPa	f _b = 164,870 kPa	Δ max = 45 mm
ALL f _s = 120,000 kPa	ALL f _b = 189,000 kPa	ALL Δ = 48 mm
BENDING (COMPRESSION IN TOP FLANGE)		
	f _{bc} = 163,580 kPa	
	ALL f _{bc} = 187,900 kPa	

STRESS		
SHEAR	BENDING (TENSION IN BOT. FLANGE)	DEFLECTION (LL+I)
f _s = 34,760 kPa	f _b = 153,900 kPa	Δ max = 7 mm
ALL f _s = 120,000 kPa	ALL f _b = 189,000 kPa	ALL Δ = 9 mm
BENDING (COMPRESSION IN TOP FLANGE)		
	f _{bc} = 120,870 kPa	
	ALL f _{bc} = 162,300 kPa	

FATIGUE (FRACTURE CRITICAL)	
(BASE METAL & WELD METAL FLANGE TO WEB CONNECTION)	BENDING
Max LL, IMP (mean) =	79,833 kPa
STRESS RANGE	79,833 kPa
STRESS CATEGORY	B
ALLOW. STRESS RANGE	10,000 kPa

FATIGUE	
(BASE METAL BOT. FLANGE)	BENDING
Max LL, IMP (mean) =	151,300 kPa
STRESS RANGE	151,300 kPa
STRESS CATEGORY	A
ALLOW. STRESS RANGE	165,500 kPa

PROPOSED STRUCTURE	
STRUCTURE GEOMETRY:	
1. STRUCTURE TYPE	SINGLE SPAN HALF-THRU GIRDER
2. CLEAR SPAN LENGTHS:	29.5 meters
3. VERTICAL CLEARANCE ABOVE ROADWAY:	4.95 meters
4. ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES?	N/A
EXISTING STRUCTURE	
1. STRUCTURE TYPE:	SINGLE SPAN STEEL DECK GIRDER YEAR BUILT: 1937
2. CLEAR SPAN (NORMAL TO ROADWAY):	9.9 meters
3. VERTICAL CLEARANCE ABOVE ROADWAY:	4.35 meters

DESIGN CRITERIA:	
1. DESIGN LIVE LOAD AREA	E80
2. DESIGN SPAN	6 TO Q BRG. 30.7m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL	TO - 88 kPa ON LEDGE - 950 kPa
4. ALLOWABLE LOAD FOR PILING	N/A TYPE N/A ESTIMATED LENGTH N/A
5. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO	M210M GR 345 WEATHERING STEEL TENSION - 186 MPa
6. ALLOWABLE STRESS FOR REINFORCING STEEL AASHTO	M31M GRADE 400 TENSION 165 MPa COMPRESSION - 138 MPa
7. ALLOWABLE STRESS FOR CONCRETE CLASS A	f _c 30 MPa f _t NA
	CLASS B f _c 25 MPa f _t NA
	SILICA FUME f _c 35 MPa f _t NA

FEB 05 2003

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

Town Of	BRATTLEBORO	Bridge No.	62.56
Highway No.	VT. ROUTE 9	Log Sta.	
		Surv. Sta.	
NEW ENGLAND CENTRAL RAILROAD OVER VT. ROUTE 9			

PRELIMINARY INFORMATION			
Designed By	LM	Drawn By	DHL
Checked By	GJB	Date	
		Bridge Design Supervisor	JHR
		Date	
PROJECT	BRATTLEBORO	PROJECT NO.	NH BRF 012-(K33)
I.G.C. Info.			

95b270\structures\rt9br302.dgn	09-MAR-2001
rt9br302.l	

221 Row