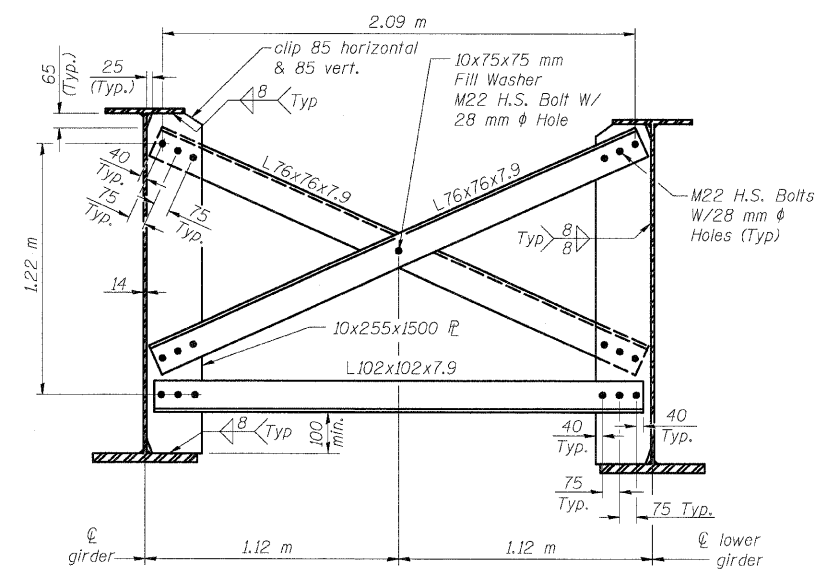


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ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET NO.
310	*	MADISON	272	113
F.A.P. 310 * MADISON 272 113 24 SHEETS				
* 60-15HB-2 CONTRACT NO. 76624				



**TYPICAL INTERIOR CROSS FRAME (CF<sub>1</sub>)**  
50 Required

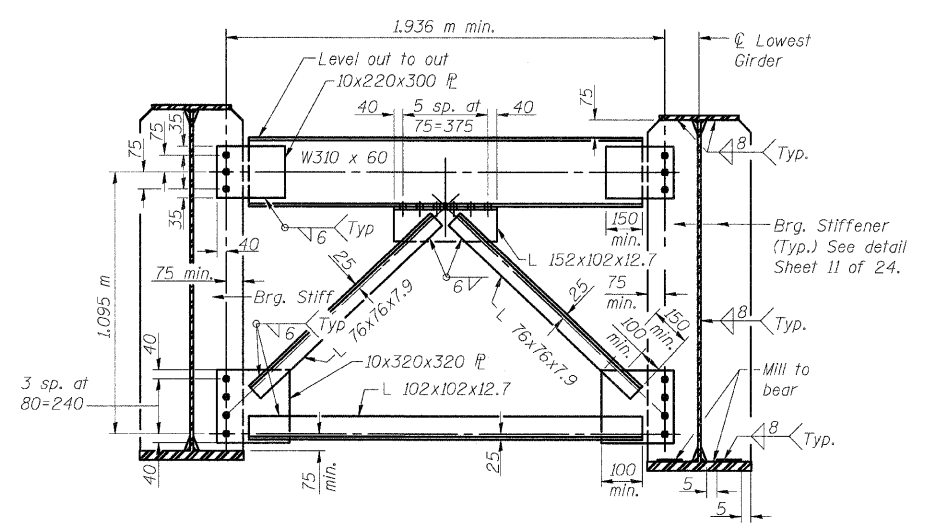
**S.B. AND N.B. STRUCTURES**

	0.5 Span
$I_s$ ( $10^6 \text{ mm}^4$ )	18,317
$I_c (n)$ ( $10^6 \text{ mm}^4$ )	46,212
$I_c (sn)$ ( $10^6 \text{ mm}^4$ )	32,268
$S_s$ ( $10^3 \text{ mm}^3$ )	30,126
$S_c (n)$ ( $10^3 \text{ mm}^3$ )	40,322
$S_c (sn)$ ( $10^3 \text{ mm}^3$ )	36,768
$\phi$ (kN/m)	14.55
$M\phi$ (kN-m)	3,347
$s\phi$ (kN/m)	6.93
$M_s\phi$ (kN-m)	1,604
$M\phi$ (kN-m)	2,048
$M$ (Imp) (kN-m)	385
$^5_3[M\phi + M(\text{imp})]$ (kN-m)	4,055
$M_a$ (kN-m)	11,708
$M_u$ (kN-m)	15,145
$f_s\phi \text{ non-comp}$ (MPa)	111
$f_s\phi \text{ (comp)}$ (MPa)	44
$f_s^5_3(\phi + \text{imp})$ (MPa)	101
$f_s \text{ (Overload)}$ (MPa)	255
$VR$ (kN)	251

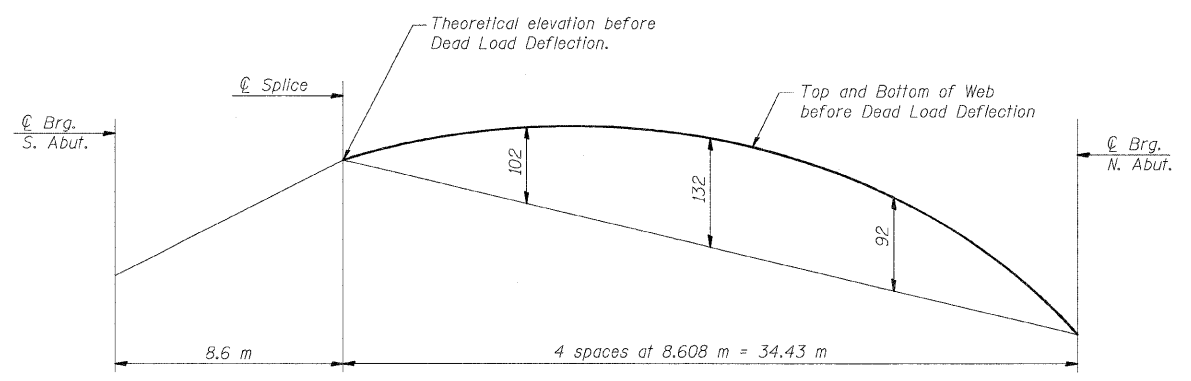
	Abutments
$R\phi$ (kN)	457
$R\phi$ (kN)	212
$\text{Imp.}$ (kN)	40
$R \text{ (Total)}$ (kN)	709

$I_s$  and  $S_s$  are the moment of inertia and section modulus of the steel section used in computing  $f_s$  (Total & Overload).  
 $I_c(n)$  and  $S_c(n)$  are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.  
 $I_c(sn)$  and  $S_c(sn)$  are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)  
 $VR$  is the maximum Live Load + Impact shear range in span.  
 $M_a$  (Applied Moment) =  $1.3EM\phi + M_s\phi + ^5_3(M\phi + M_{\text{imp}})$ .  
 The Plastic Moment Capacity ( $M_u$ ) is computed according to AASHTO 10.50.1.1.  
 $f_s$  (Overload) is the sum of the stresses due to  $M\phi + M_s\phi + ^5_3(M\phi + M_{\text{imp}})$ .

⊙ Compact, Braced Section



**TYPICAL END CROSS FRAME (CF)**  
20 Required



**CAMBER DIAGRAM**

DESIGNED	ADL
CHECKED	WLW
DRAWN	ADL/DGM
CHECKED	WLW

Notes: In cross frames all bolts are M22 H.S. Bolts with 28 mm  $\phi$  holes.  
 Two hardened washers shall be required over all 28 mm  $\phi$  holes.  
 "NTR" Denotes Notch Toughness Requirements - Zone 2.  
 All Splice plates and bearing Stiffeners shall be AASHTO M270 Grade 345.  
 Work this sheet with sheet 11 of 24.

**GIRDER DETAILS**  
**FAP RTE. 310 (IL RTE. 255) OVER**  
**IL RTE 111**  
**SECTION 60-15HB-2**  
**MADISON COUNTY**  
**STATION 39+914.647**  
**SN 060-0330 (NB) & 060-0331 (SB)**

Klingner & Assoc., P.C.