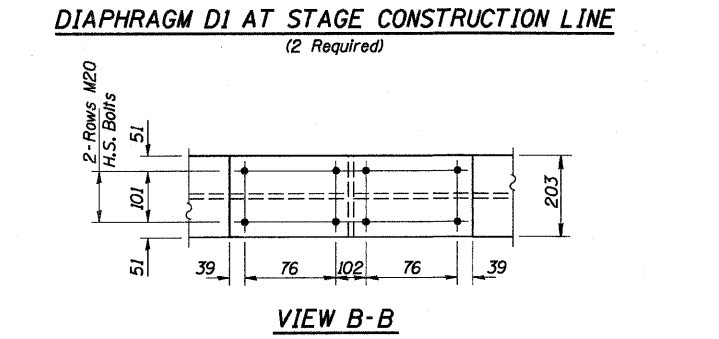
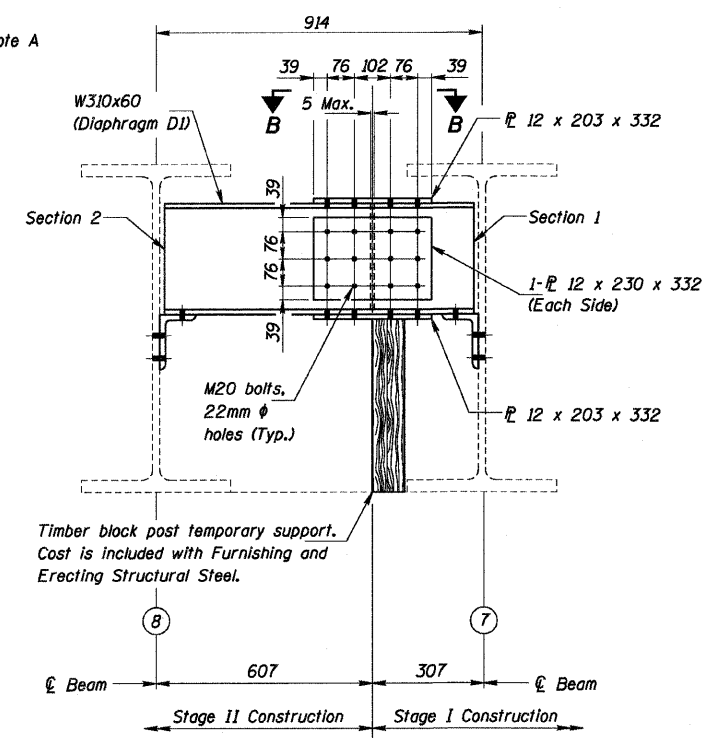


**Note A:**  
Remove existing 22 mm φ rivets or bolts and replace with M22 H.S. Bolts with 24 mm φ holes. Place bolts finger tight until after placement of Stage II Concrete, then tighten according to Specifications. Cost of existing diaphragm removal, including connection hardware to existing beams, is included with Structural Steel Removal. Cost of fabricating new connection angles to match existing bolt holes in beam webs is included with Furnishing and Erecting Structural Steel.

LOCATION	EXISTING TOP OF BEAM ELEVATIONS													
	BEAM													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
€ Brg. W. Abut.	188.201	188.213	188.230	188.252	188.266	188.298	188.305	188.306	188.277	188.262	188.244	188.231	188.200	188.195
€ Splice 1	188.450	188.439	188.459	188.477	188.514	188.526	188.671	188.662	188.543	188.517	188.498	188.474	188.430	188.432
€ Pier 1	188.441	188.439	188.459	188.477	188.495	188.516	188.527	188.527	188.523	188.497	188.468	188.455	188.430	188.432
€ Splice 2	188.431	188.439	188.459	188.477	188.476	188.507	188.383	188.393	188.504	188.478	188.440	188.436	188.430	188.432
€ Brg. E. Abut.	187.953	187.950	187.971	187.984	188.020	188.043	188.077	188.066	188.035	188.021	188.003	187.984	187.962	187.951



- DIAPHRAGM D1 CONSTRUCTION SEQUENCE**
- Order Diaphragm D1 in two sections as shown.
  - Attach Section 1 to Beam 7 along with top flange splice plate.
  - Place timber block posts between Section 1 of diaphragm and abutment bearing seat.
  - Attach Section 2 of diaphragm to Section 1 and Beam 8 during Stage II Construction.
  - Attach web splice plates to Sections 1 and 2 of diaphragms.
  - Remove timber block posts.
  - Attach bottom flange splice plate to Sections 1 and 2.

INTERIOR BEAM MOMENT TABLE			
0.4 Sp. 1 & 2			
		Pier 1	
$I_s$	( $10^6 \text{ mm}^4$ )	6250	9948
$I_c (n)$	( $10^6 \text{ mm}^4$ )	17440	—
$I_c (3n)$	( $10^6 \text{ mm}^4$ )	11950	—
$S_s$	( $10^3 \text{ mm}^3$ )	13710	20800
$S_c (n)$	( $10^3 \text{ mm}^3$ )	21290	—
$S_c (3n)$	( $10^3 \text{ mm}^3$ )	18590	—
$Z$	( $10^3 \text{ mm}^3$ )	—	23170
$Q$	( $\text{kN/m}$ )	14.4	18.8
$M_D$	( $\text{kN-m}$ )	730	1907
$s_D$	( $\text{kN/m}$ )	4.34	—
$M_{sD}$	( $\text{kN-m}$ )	251	—
$M_L$	( $\text{kN-m}$ )	903	625
$M$ (Imp)	( $\text{kN-m}$ )	209	144
$\Psi_2 [M_L + M(\text{Imp})]$	( $\text{kN-m}$ )	1854	1282
$M_a$	( $\text{kN-m}$ )	3684	4145
$M_u$	( $\text{kN-m}$ )	5988	5767
$f_{sD} \text{ non-comp}$	(MPa)	53.2	91.7
$f_{sD} \text{ (comp)}$	(MPa)	13.5	—
$f_{s \Psi_2} (\pm \text{Imp})$	(MPa)	87.1	61.6
$f_s \text{ (Overload)}$	(MPa)	154	153
$f_s \text{ (Total)}$	(MPa)	—	—
$VR$	( $\text{kN}$ )	240	—

\*\* Compact, braced Section

INTERIOR BEAM REACTION TABLE			
	Abut.	Pier	
$R_D$	( $\text{kN}$ )	193	659
$R_L$	( $\text{kN}$ )	181	247
$\text{Imp.}$	( $\text{kN}$ )	42	57
$R \text{ (Total)}$	( $\text{kN}$ )	416	963

$I_s$  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.  
 $I_{c(3n)}$  and  $S_{c(3n)}$  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.  
 $Z$  is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.  
 $M_a$  (Applied Moment) =  $1.3[M_D + M_{sD} + \Psi_2(M_L + M_{\text{Imp}})]$ .  
The Plastic Moment capacity ( $M_u$ ) is computed according to AASHTO 10.48.1 and 10.50.1.1.  
 $f_s$  (Overload) is the sum of the stresses due to  $M_D + M_{sD} + \Psi_2(M_L + M_{\text{Imp}})$ .  
 $f_s$  (Total) (Non-compact section) is the sum of the stresses due to  $1.3[M_D + M_{sD} + \Psi_2(M_L + M_{\text{Imp}})]$ .

**Notes:**  
Two hardened washers shall be required over all oversize holes for diaphragms.  
All dimensions are in millimeters (mm) except as noted.

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www.collinsengr.com  
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-00993

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
115 TH. STREET OVER FAI 57  
FAU RTE. 1584 SEC. 068-1919.2-CF  
COOK COUNTY  
STATION 2+382.915  
STRUCTURE NO. 016-2037

**FRAMING PLAN**

DRAWN BY KAC  
CHECKED BY JMH/DGS  
DATE: JANUARY 16, 2009