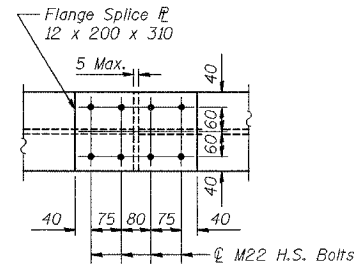


**DIAPHRAGM D<sub>2</sub>**

(Looking North)  
2 Required  
For details of connections to Beams see Diaphragm D<sub>1</sub>.  
(All dimensions are along skew.)



**SECTION A-A**

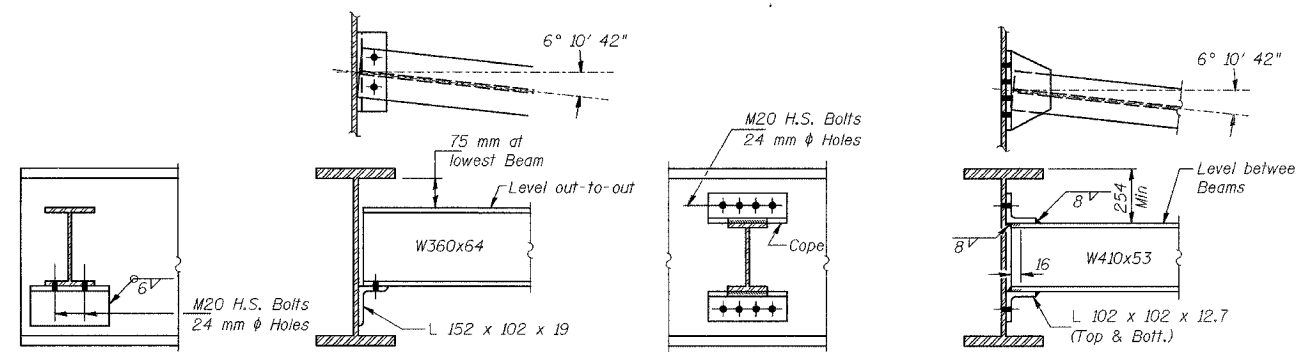
**DIAPHRAGM D<sub>2</sub> CONSTRUCTION SEQUENCE**

1. Order Diaphragm D<sub>2</sub> in two sections, each with a length of 1.027 m.
2. Attach Section ① of Diaphragm to Beam 6 and Top Flange Splice PL during Stage I Construction.
3. Place Timber Block Posts between Section ① of Diaphragm and Abutment Bearing Seat.
4. Attach Section ② of Diaphragm to both Beam 7 and Section ① of Diaphragm during Stage II Construction.
5. Attach Web Splice Plates to Sections ① and ② of Diaphragms.
6. Remove Timber Block Posts.
7. Attach Bottom Flange Splice Plate to Sections ① and ② of Diaphragms.

	0.4 Sp. I	Pier
I <sub>s</sub> (10 <sup>6</sup> mm <sup>4</sup> )	6250	6250
I <sub>c</sub> (n) (10 <sup>6</sup> mm <sup>4</sup> )	13695	---
I <sub>c</sub> (sn) (10 <sup>6</sup> mm <sup>4</sup> )	9947	---
S <sub>s</sub> (10 <sup>3</sup> mm <sup>3</sup> )	13700	13700
S <sub>c</sub> (n) (10 <sup>3</sup> mm <sup>3</sup> )	18219	---
S <sub>c</sub> (sn) (10 <sup>3</sup> mm <sup>3</sup> )	16429	---
Z (10 <sup>3</sup> mm <sup>3</sup> )	---	15400
Q (kN/m)	14.185	22.211
M <sub>l</sub> (kN·m)	711	1796
s <sub>l</sub> (kN/m)	8.026	---
M <sub>s</sub> (kN·m)	466	---
M <sub>l</sub> (kN·m)	942	597
M (Imp) (kN·m)	226	143
1.3[M <sub>l</sub> + M (Imp)] (kN·m)	1948	1233
M <sub>a</sub> (kN·m)	4063	3937
M <sub>u</sub> (kN·m)	6841	5257
f <sub>s</sub> non-comp (MPa)	52	131
f <sub>s</sub> (comp) (MPa)	28	---
f <sub>s</sub> 5/8 Imp (MPa)	107	90
f <sub>s</sub> (Overload) (MPa)	187	221
f <sub>s</sub> (Total) (MPa)	---	---
VR (kN)	236	---

	Abut.	Pier	Abut.
R <sub>l</sub> (kN)	229	727	229
R <sub>t</sub> (kN)	177	260	177
Imp. (kN)	42	62	42
R (Total) (kN)	448	1049	448

I<sub>s</sub> and S<sub>s</sub> are the moment of inertia and section modulus of the steel section used in computing f<sub>s</sub> (Total & Overload).  
I<sub>c(n)</sub> and S<sub>c(n)</sub> are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.  
I<sub>c(sn)</sub> and S<sub>c(sn)</sub> 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<sub>a</sub> (Applied Moment) = 1.3[M<sub>l</sub> + M<sub>s</sub> + s<sub>3</sub>(M<sub>l</sub> + M<sub>imp</sub>)].  
The Plastic Moment capacity (M<sub>u</sub>) is computed according to AASHTO 10.48.1 and 10.50.1.1.  
f<sub>s</sub> (Overload) is the sum of the stresses due to M<sub>l</sub> + M<sub>s</sub> + s<sub>3</sub>(M<sub>l</sub> + M<sub>imp</sub>).  
f<sub>s</sub> (Total) (Non-compact section) is the sum of the stresses due to 1.3[M<sub>l</sub> + M<sub>s</sub> + s<sub>3</sub>(M<sub>l</sub> + M<sub>imp</sub>)].



**DIAPHRAGM D<sub>1</sub>**

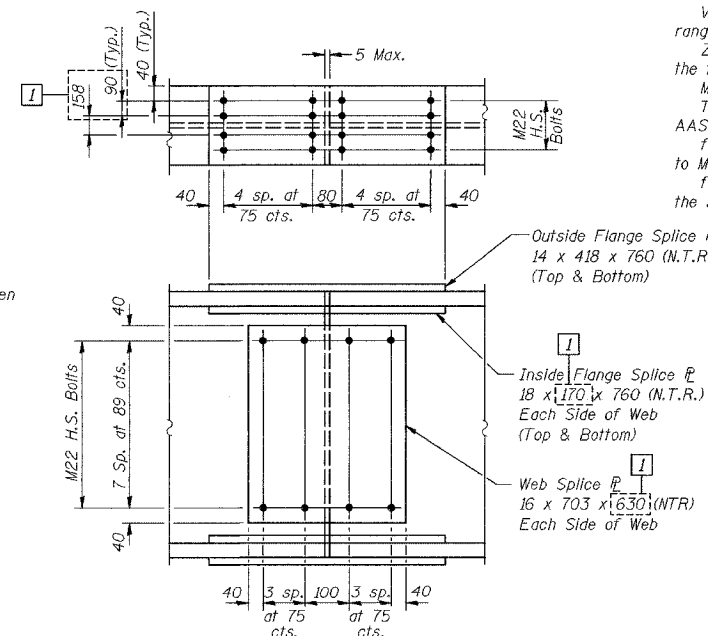
20 Required

**DIAPHRAGM D**

77 Required

DESIGNED	BPS
CHECKED	JDG
DRAWN	MJB
CHECKED	JDG

1 REVISED 01-20-04 KFA



**FIELD SPICE DETAIL**

All splice plate material shall be AASHTO M 270M, Grade 345 and shall meet notch toughness requirements.

ILLINOIS DEPARTMENT OF TRANSPORTATION  
F.A.I. ROUTE 80/94 (KINGERY EXPRESSWAY)  
UNDER WENTWORTH AVE  
**FRAMING DETAILS**  
**SECTION 2626.1B**  
**COOK COUNTY**  
**STATION 7 + 579.488**  
**STRUCTURE NO. 016-2790**  
DATE 07/05  
**AMERICAN**  
CONSULTING ENGINEERS

FOR INFORMATION ONLY