

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS NO.	SHEET NO.
3578	15VB-1-R	COOK	243	189
STA. 4+665.229		TO STA. 4+777.600		
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT				

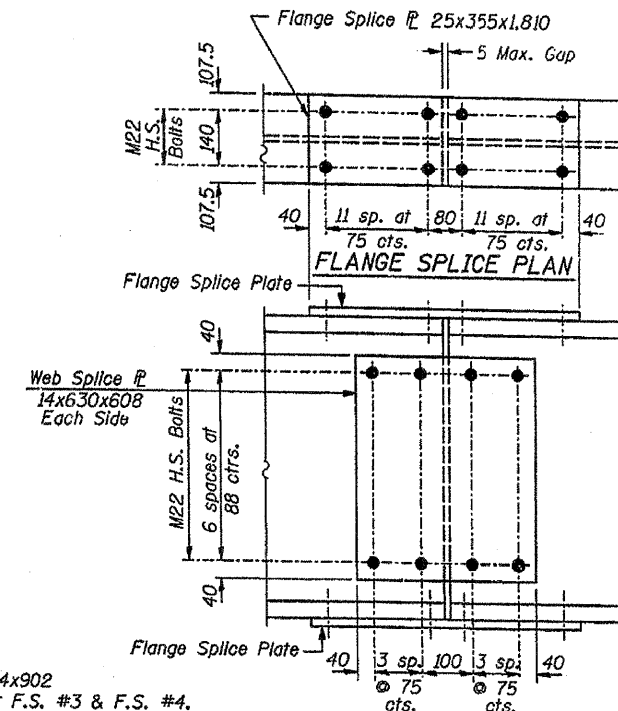
	0.4 Span 11	Pier 11	0.5 Span 12	Pier 12	0.5 Span 13	Pier 13	0.5 Span 14	Pier 14	0.6 Span 15
I_s (10^6 mm^4)	2,322	2,322	2,322	2,322	2,322	2,592	2,322	2,322	2,322
$I_c (n)$ (10^6 mm^4)	6,428	-	6,428	-	6,428	-	6,428	-	6,428
$I_c (3n)$ (10^6 mm^4)	4,691	-	4,691	-	4,691	-	4,691	-	4,691
S_s (10^3 mm^3)	6,677	6,677	6,677	6,677	6,677	7,398	6,677	6,677	6,677
$S_c (n)$ (10^3 mm^3)	9,849	-	9,849	-	9,849	-	9,849	-	9,049
$S_c (3n)$ (10^3 mm^3)	8,907	-	8,907	-	8,907	-	8,907	-	8,907
Z (10^3 mm^3)	-	7,495	-	7,495	-	8,326	-	7,495	-
D (kN/m)	14.59	23.35	14.59	23.35	14.59	23.35	14.59	23.35	14.59
M_D (kN·m)	355	636	116	650	312	996	336	862	295
s_D (kN·m)	8.76	-	8.76	-	8.76	-	8.76	-	8.76
M_{sD} (kN·m)	240	-	126	-	248	-	279	-	210
M_L (kN·m)	632	310	520	355	708	452	752	387	626
M (Imp) (kN·m)	174	86	143	94	180	114	188	101	172
$5/3[M_L + M(\text{Imp})]$ (kN·m)	1,344	660	1,105	749	1,480	943	1,567	814	1,330
M_a (kN·m)	2,521	1,685	1,751	1,819	2,652	2,521	2,837	2,179	2,386
M_u (kN·m)	3,154	2,585	3,313	2,585	3,180	2,872	3,162	2,585	3,194
$f_{sD} \text{ non-comp}$ (MPa)	53	96	18	98	47	135	51	129	44
$f_{sD} \text{ (comp)}$ (MPa)	27	-	15	-	28	-	32	-	24
$f_{sD} (\% \text{ Imp})$ (MPa)	137	99	112	112	150	127	160	122	147
$f_s \text{ (Overload)}$ (MPa)	217	195	145	210	225	262	243	251	215
$f_s \text{ (Total)}$ (MPa)	-	-	-	-	-	-	-	-	-
VR (kN)	252	-	198	-	220	-	220	-	260

** Compact, Braced Section

	Pier 10	Pier 11	Pier 12	Pier 13	Pier 14	Pier 15
R_D (kN)	167	442	442	545	515	154
R_L (kN)	187	218	228	249	236	187
$Imp.$ (kN)	52	60	60	63	62	52
$R \text{ (Total)}$ (kN)	406	720	730	857	813	393

Beam No.	¢ E. Brg. Pier 10	¢ Pier 11	¢ F.S. #1	¢ Pier 12	¢ F.S. #2	¢ F.S. #3	¢ Pier 13	¢ F.S. #4	¢ F.S. #5	¢ Pier 14	¢ W. Brg. Pier 15
B1	189.345	189.662	189.725	189.871	189.894	189.920	189.904	189.889	189.711	189.651	189.315
B2	189.381	189.699	189.762	189.908	189.931	189.957	189.941	189.925	189.748	189.688	189.352
B3	189.417	189.735	189.798	189.944	189.967	189.993	189.977	189.961	189.784	189.724	189.388
B4	189.453	189.771	189.834	189.980	190.003	190.029	190.013	189.997	189.820	189.760	189.424
B5	189.423	189.740	189.803	189.949	189.972	189.998	189.982	189.967	189.790	189.729	189.393
B6	189.387	189.704	189.767	189.913	189.936	189.962	189.946	189.931	189.754	189.693	189.357
B7	189.351	189.668	189.731	189.877	189.900	189.926	189.910	189.895	189.718	189.657	189.321
B8	189.304	189.621	189.684	189.830	189.853	189.879	189.863	189.848	189.670	189.610	189.274

* Top of beam elevations are for fabrication purposes only.



NOTE:
Use Fill # 3x354x902
Top & Bott., for F.S. #3 & F.S. #4.

NOTES:
 I_s and S_s are the Moment of Inertia and Section Modulus of the steel section used in computing f_s (Total and 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 Load. (See AASHTO 10.38).
 VR is the maximum $L_d +$ Impact Shear Range in span.
 Z is the Plastic Section Modulus used to determine the fully Plastic Moments in the Non-Composite areas.
The Plastic Moment Capacity (M_u) is computed according to AASHTO 10.48.1 & 10.50.1.1.
 f_s (Total) (Non-Compact Section) the sum of the stresses due to $1.3[M_D + M_{sD} + 5/3(M_L + M(\text{Imp}))]$.
 f_s (Overload) is the sum of the stresses due to $M_D + M_{sD} + 5/3(M_L + M(\text{Imp}))$.
 M_D - moment due to Dead Loads on Non-Composite Section.
 M_{sD} - moment due to Dead Loads on Composite Section.
 M_L - moment due to Live Load on Non-Composite or Composite Section.
 $M(\text{Imp})$ - moment due to Live Load Impact on Non-Composite or Composite Sections.
 M_a (Applied Moment) = $1.3[M_D + M_{sD} + 5/3(M_L + M(\text{Imp}))]$

NOTE:
All dimensions are in millimeters (mm) except as noted.

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION
STRUCTURAL STEEL DETAILS
SOUTHWEST HIGHWAY OVER
B. & O.C.T. RAILROAD AND MELVINA DITCH
F.A.U. ROUTE 3578 SEC. 15VB-1-R
COOK COUNTY STATION 4+716.471
STRUCTURE NO. 016-0463
SCALE: DRAWN BY: F. MUNIR
DATE: 6/17/09 CHECKED BY: B. SHAH
CHRISTIAN - ROGE & ASSOC.
CHICAGO ILLINOIS

FOR INFORMATION ONLY