STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F. A. I. 80/94	*	COOK	90	45
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT-		

SHEET NO. 30
42 SHEETS

* 2004-133F CONTRACT NO. 62898

GIRDER MOMENT TABLE — GIRDER 11*		0.4 Sp.3	Pier 3	0.5 Sp.4	Pier 4	0.6 Sp.5
Is	(10^6 mm^4)	28366	50568	28366	50568	28366
Ic (n)	(10^6 mm^4)	60990	-	60990	-	60990
Ic (3n)	(10^6 mm^4)	44432	-	44432	-	44432
Ss	(10^3 mm^3)	31835	53229	31835	53229	31835
Sc (n)	(10^3 mm^3)	42531	-	42531	-	42531
Sc (3n)	(10^3 mm^3)	38342	-	38342	-	38342
Sb_l	(10^3 mm^3)	-	-	1013	2083	1013
Z	(10^3 mm^3)	-	59210	-	-	-
D	(kN/m)	17.50	28.49	17.50	28.49	17.50
MD	(kN·m)	1878	7345	2129	7463	1913
sD	(kN/m)	8.55	-	8.55	-	8.55
MsD	(kN·m)	989	-	1130	-	997
ML	(kN·m)	2057	2508	2345	2701	1867
M (Imp)	(kN·m)	387	434	469	540	467
5/3 [ML + M (Imp)]	(kN·m)	4073	4903	4691	5401	3889
Ma	(kN·m)	9021	15921	10335	16723	8839
Mb_l	(kN·m)	-	-	47	34	40
Mu	(kN·m)	11502	-	-	-	-
fs D (non-comp)	(MPa)	59	138	67	140	60
fs D (comp)	(MPa)	26	-	29	-	26
fs 5/3 [ML + M (Imp)]	(MPa)	96	92	110	101	91
f_l	(MPa)	-	-	46	16	39
fs (Overload)	(MPa)	181	230	206	241	177
fs (Total)	(MPa)	-	299	268	313	230
Fcr (Overload)	(MPa)	-	-	328	311	328
VR	(kN)	298	-	312	-	302
Fcr	(MPa)	-	-	283	327	283

GIRDER MOMENT TABLE — GIRDER 5		0.4 Sp.3	Pier 3	0.5 Sp.4	Pier 4	0.4 Sp.5
Is	(10^6 mm^4)	28366	50568	28366	50568	28366
Ic (n)	(10^6 mm^4)	60990	-	60990	-	53680
Ic (3n)	(10^6 mm^4)	44432	-	44432	-	39632
Ss	(10^3 mm^3)	31835	53229	31835	53229	31835
Sc (n)	(10^3 mm^3)	42531	-	42531	-	40893
Sc (3n)	(10^3 mm^3)	38342	-	38342	-	36734
Sb_l	(10^3 mm^3)	-	-	1013	2083	1013
Z	(10^3 mm^3)	-	59210	-	-	-
D	(kN/m)	17.50	27.56	16.35	22.11	12.71
MD	(kN·m)	1794	7028	2003	5808	68
sD	(kN/m)	12.26	-	6.73	-	4.80
MsD	(kN·m)	1073	-	1007	-	38
ML	(kN·m)	1955	2309	1755	1915	1067
M (Imp)	(kN·m)	368	393	439	383	213
5/3 [ML + M (Imp)]	(kN·m)	3872	4503	3656	3829	2134
Ma	(kN·m)	8759	14990	8666	12528	2913
Mb_l	(kN·m)	-	-	41	26	14
Mu	(kN·m)	11502	-	-	-	-
fs D (non-comp)	(MPa)	56	132	63	109	2
fs D (comp)	(MPa)	28	-	26	-	1
fs 5/3 [ML + M (Imp)]	(MPa)	91	85	86	72	52
f_l	(MPa)	-	-	40	13	14
fs (Overload)	(MPa)	175	217	175	181	55
fs (Total)	(MPa)	-	282	228	235	72
Fcr (Overload)	(MPa)	-	-	328	309	328
VR	(kN)	289	-	266	-	220
Fcr	(MPa)	-	-	283	327	283

GIRDER MOMENT TABLE — GIRDER 3 & 9		0.4 Sp.3	Pier 3
Is	(10^6 mm^4)	28366	50568
Ic (n)	(10^6 mm^4)	53680	-
Ic (3n)	(10^6 mm^4)	39632	-
Ss	(10^3 mm^3)	31835	53229
Sc (n)	(10^3 mm^3)	40893	-
Sc (3n)	(10^3 mm^3)	36734	-
Z	(10^3 mm^3)	-	59210
D	(kN/m)	14.05	20.78
MD	(kN·m)	1648	5640
sD	(kN/m)	6.63	-
MsD	(kN·m)	735	-
ML	(kN·m)	1264	1027
M (Imp)	(kN·m)	238	175
5/3 [ML + M (Imp)]	(kN·m)	2503	2002
Ma	(kN·m)	6350	9935
Mu	(kN·m)	14227	-
fs D (non-comp)	(MPa)	52	106
fs D (comp)	(MPa)	20	-
fs 5/3 [ML + M (Imp)]	(MPa)	61	38
fs (Overload)	(MPa)	133	144
fs (Total)	(MPa)	-	187
VR	(kN)	182	-

GIRDER REACTION TABLE — GIRDER 11*		Pier 2	Pier 3	Pier 4	N. Abut.
RD	(kN)	432	1495	1462	380
RL	(kN)	234	512	528	226
Imp.	(kN)	44	96	132	68
R (Total)	(kN)	710	2103	2122	674

GIRDER REACTION TABLE — GIRDER 5		Pier 2	Pier 3	Pier 4	Head Beam
RD	(kN)	428	1455	1172	58
RL	(kN)	228	483	361	118
Imp.	(kN)	43	92	90	35
R (Total)	(kN)	699	2030	1623	211

GIRDER REACTION TABLE — GIRDER 3 & 9		Pier 2	Pier 3	Head Beam
RD	(kN)	317	1105	342
RL	(kN)	179	273	101
Imp.	(kN)	34	51	25
R (Total)	(kN)	530	1429	468

* Girder 11 has the largest forces among all girders. Parapet weight is distributed evenly among 3 exterior girders at each side although interior girders are designed with uniformly distributed parapet load.

Fcr - Critical average flange stress (smaller of Fcr1 or Fcr2 for partially braced flanges and Fy for continuously braced flanges) computed according to the 2003 AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges (Sections 5.2, 5.3 and 5.4).

Fcr (Overload) - Critical average flange stress at overload computed according to the 2003 AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges Section 9.5.

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total and Overload).

Ic(n) and Sc(n) are the moment of inertia and section modulus of the composite section used in computing stresses due to live load.

Ic(3n) and Sc(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 + impact shear range in span.

Sb_l is the section modulus for one flange plate for lateral bending.

MD - Moment due to dead loads on non-composite section.

MsD - Moment due to dead loads on composite section.

ML - Moment due to live load on non-composite or composite section.

M (Imp) - Moment due to live load impact on non-composite or composite section

Mb_l is the lateral bending moment for flange plate (factored).

Ma (Applied Moment) = 1.3 [MD + MsD + 5/3 (ML + M (Imp))]

fs (Overload) is the sum of stresses due to MD + MsD + 5/3 (ML + M (Imp))

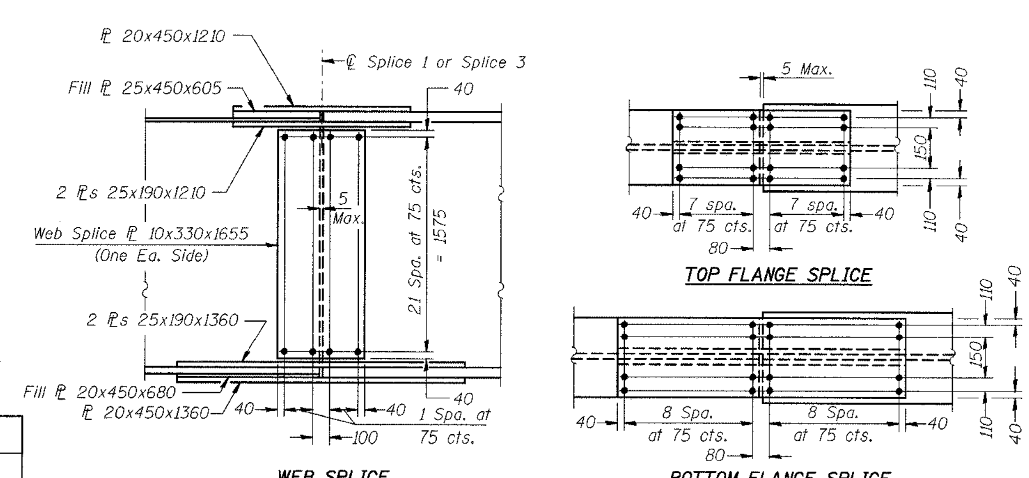
fs (Total) is the sum of stresses due to 1.3 [MD + MsD + 5/3 (ML + M (Imp))]

f_l is the calculated normal stress at the edge of flange due to lateral bending (factored).

ML and RL include the effects of centrifugal force and superelevation.

Z is the plastic section modulus used to determine the Fully Plastic Moments in the non-composite areas.

The Plastic Moment capacity (Mu) is computed according to AASHTO 10.48.1 & 10.50.1.1.



FIELD SPLICE 1, 2,3 & 4
(Splice 1, 3 shown, Splice 2, 4 opposite hand)

Notes:
1. All field splice plates, except fill plates to be AASHTO M270M, Grade 345 and meet N.T.R.
2. N.T.R. denotes plates to which notch toughness requirements are applicable.

DESIGNED	JY
CHECKED	MEA
DRAWN	LK
CHECKED	MEA

ILLINOIS DEPARTMENT OF TRANSPORTATION
I-94 EAST BOUND / IL 394 SOUTH BOUND
MOMENT & REACTION TABLES & FIELD SPLICES, SPANS 3-5 - UNIT 1
SB IL ROUTE 394 OVER THORN CREEK
F.A.P. 332 SECTION 2004-133F
COOK COUNTY
STA. 440+704.350 STRUCTURE NO. 016-2800
DATE 05/16/05
SCALE ---
HNTB

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