

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-F	COOK	22	14
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT-	
			Sheet 12 of 22 Contract No. 60119	

	0.4 Sp. 1	S. Pier	0.5 Sp. 2	N. Pier	0.6 Sp. 3
I_s	(in ⁴) 3990	3990	3990	3990	3990
I_c (n)	(in ⁴) 11961		11961		11961
I_c (3n)	(in ⁴) 8864		8864		8864
S_s	(in ³) 269	269	269	269	269
S_c (n)	(in ³) 419		419		419
S_c (3n)	(in ³) 378		378		378
Z	(in ³)	312		312	
ϕ	(k/ft.) 0.87	1.44	0.87	1.44	0.87
$M\phi$	(k) 169	404	124	404	169
$s\phi$	(k/ft.) 0.57		0.57		0.57
$Ms\phi$	(k) 127		121		127
$M\phi$	(k) 363	191	362	191	363
M (Imp)	(k) 101	53	98	53	101
$S_3[M\phi + M(Imp)]$	(k) 773.3	406.7	766.7	406.7	773.3
M_a	(k) 1390.1	1053.9	1315.2	1053.9	1390.1
M_u	(k) 2062	1300	2073	1300	2062
$f_s\phi$ (non-comp) (k.s.i.)	7.5	18.0	5.5	18.0	7.5
$f_s\phi$ (comp) (k.s.i.)	4.0		3.8		4.0
f_s (k + Imp) (k.s.i.)	22.1	18.1	22.0	18.1	22.1
f_s (Overload) (k.s.i.)	33.6	36.1	31.3	36.1	33.6
f_s (Total) (k.s.i.)					
VR	(k) 50.4		40.2		50.4

*Compact Braced Sections
**Non-Compact Section

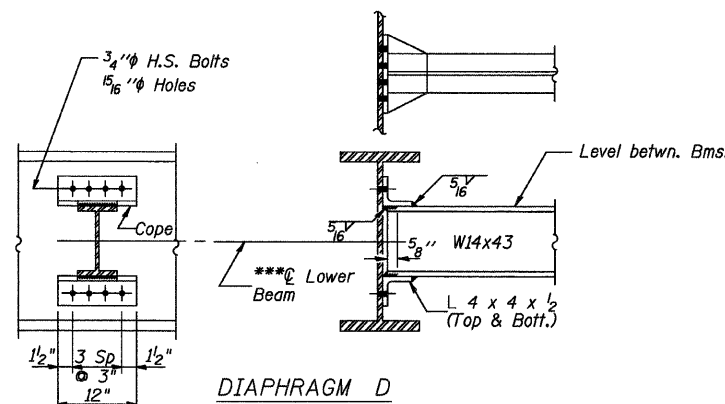
	S. Abut.	S. Pier	N. Pier	N. Abut.
$R\phi$	(k) 29.2	88.1	88.1	29.2
$R\phi$	(k) 36.7	42.8	42.8	36.7
Imp.	(k) 10.3	12.0	12.0	10.3
R (Total)	(k) 76.2	142.9	142.9	76.2

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.
 VR is the maximum Live Load + Impact shear within the composite portion of the span.
 Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.
 M_a (Applied Moment) = $1.3[M\phi + Ms\phi + S_3(M\phi + M(Imp))]$.
 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 $M\phi + Ms\phi + S_3(M\phi + M(Imp))$.
 f_s (Total) (Non-compact section) is the sum of the stresses due to $1.3[M\phi + Ms\phi + S_3(M\phi + M(Imp))]$.

TOP OF BEAM ELEVATIONS

For Fabrication Only

Location	Beam B1	Beam B2	Beam B3	Beam B4	Beam B5	Beam B6	Beam B7	Beam B8
⊕ Bearing South Abutment	643.438	643.263	643.088	642.911	642.734	642.557	642.378	642.199
⊕ South Pier	643.495	643.329	643.163	642.996	642.828	642.660	642.491	642.322
⊕ Field Splice 1	643.506	643.342	643.178	643.013	642.847	642.681	642.514	642.347
⊕ Field Splice 2	643.481	643.324	643.167	643.009	642.851	642.692	642.532	642.372
⊕ North Pier	643.456	643.301	643.146	642.990	642.834	642.677	642.519	642.361
⊕ Bearing North Abutment	643.333	643.188	643.043	642.896	642.749	642.602	642.453	642.304

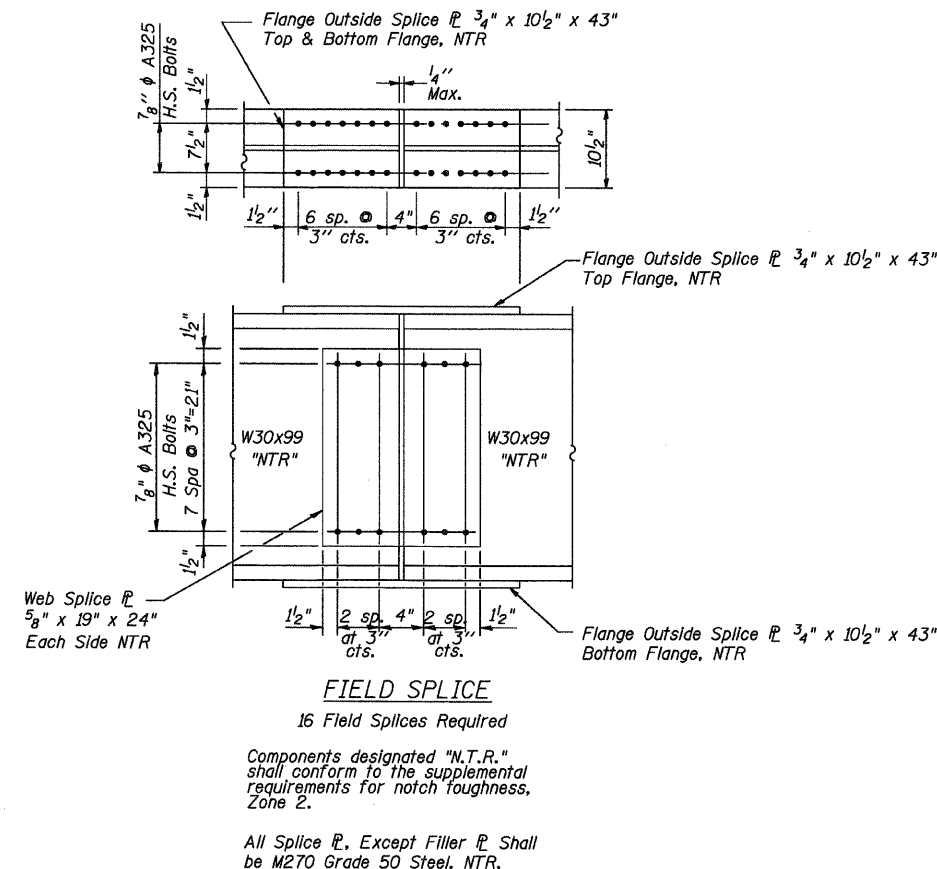


DIAPHRAGM D

70 Required

***For Diaphragm Adjacent to Field Splice 2, Use ⊕ Higher Beam

Notes: Two hardened washers shall be required over all oversize holes
 For future diaphragm D1, apply 1 5/16 inch holes at location specified on Framing Plan.



FIELD SPLICE

16 Field Splices Required

Components designated "N.T.R." shall conform to the supplemental requirements for notch toughness, Zone 2.

All Splice ⊕, Except Filler ⊕ Shall be M270 Grade 50 Steel, NTR.

REVISIONS	
NAME	DATE

STEEL DETAILS &
TOP OF BEAM ELEVATIONS

DIXIE HIGHWAY OVER
 BUTTERFIELD CREEK
 F.A.U. ROUTE 2843 SECTION 3249B-F
 STA. 78+55.00
 COOK COUNTY
 STRUCTURE NUMBER 016-7946 - PROPOSED
 016-0775 - EXISTING

SCALE: NOT-TO-SCALE
 DATE 4-27-09

DRAWN BY TH
 DESIGNED BY TH
 CHECKED BY MF

