

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

F.A.R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2843	3249B-R	COOK	64	36
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT-	
Sheet 12 of 22			Contract No. 62539	

	0.4 Sp. 1	S. Pier	0.5 Sp. 2	N. Pier	0.6 Sp. 3
$I_s$ (in <sup>4</sup> )	3990	3990	3990	3990	3990
$I_c$ (n) (in <sup>4</sup> )	11961		11961		11961
$I_c$ (3n) (in <sup>4</sup> )	8864		8864		8864
$S_s$ (in <sup>3</sup> )	269	269	269	269	269
$S_c$ (n) (in <sup>3</sup> )	419		419		419
$S_c$ (3n) (in <sup>3</sup> )	378		378		378
$Z$ (in <sup>3</sup> )		312		312	
$\bar{D}$ (k/ft.)	0.87	1.44	0.87	1.44	0.87
$M\bar{D}$ (k)	169	404	124	404	169
$s\bar{D}$ (k/ft.)	0.57		0.57		0.57
$Ms\bar{D}$ (k)	127		121		127
$M\bar{L}$ (k)	363	191	362	191	363
$M$ (Imp) (k)	101	53	98	53	101
$^{5_3}LM\bar{L} + M(Imp)$ (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
$fs\bar{D}$ non-comp (k.s.i.)	7.5	18.0	5.5	18.0	7.5
$fs\bar{D}$ (comp) (k.s.i.)	4.0		3.8		4.0
$fs^{5_3}(\bar{L} + Imp)$ (k.s.i.)	22.1	18.1	22.0	18.1	22.1
$fs$ (Overload) (k.s.i.)	33.6	36.1	31.3	36.1	33.6
$fs$ (Total) (k.s.i.)					
$VR$ (k)	50.4		40.2		50.4

\*Compact Braced Sections  
\*\*Non-Compact Section

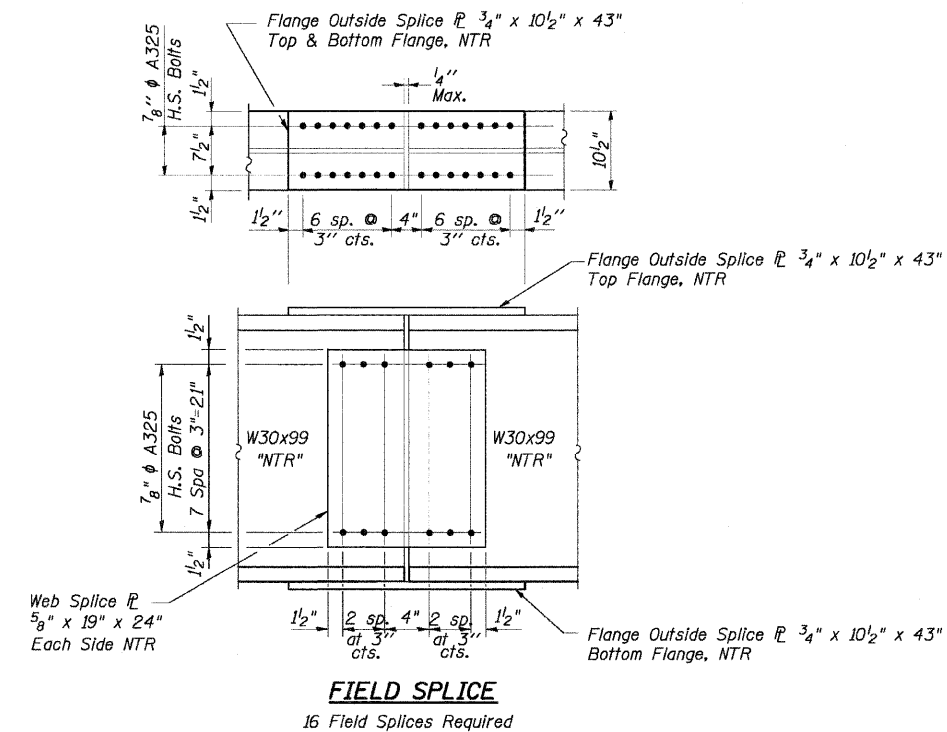
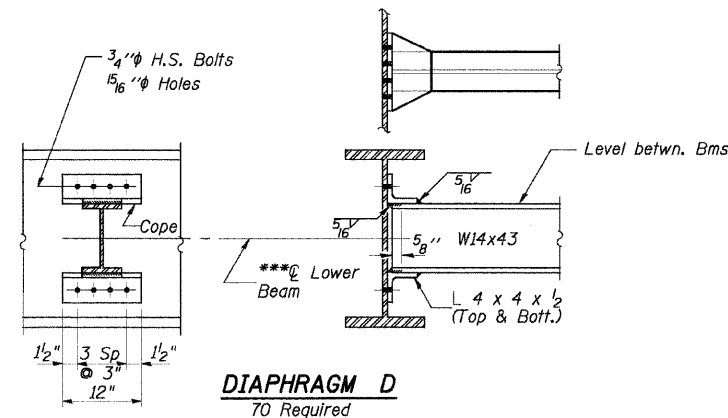
	S. Abut.	S. Pier	N. Pier	N. Abut.
$R\bar{D}$ (k)	29.2	88.1	88.1	29.2
$R\bar{L}$ (k)	36.7	42.8	42.8	36.7
$Imp.$ (k)	10.3	12.0	12.0	10.3
$R$ (Total) (k)	76.2	142.9	142.9	76.2

$I_s$  and  $S_s$  are the moment of inertia and section modulus of the steel section used in computing  $fs$  (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) =  $1.3[M\bar{D} + Ms\bar{D} + ^{5_3}(M\bar{L} + M(Imp))]$ .  
 The Plastic Moment capacity ( $M_u$ ) is computed according to AASHTO 10.48.1 and 10.50.1.1.  
 $fs$  (Overload) is the sum of the stresses due to  $M\bar{D} + Ms\bar{D} + ^{5_3}(M\bar{L} + M(Imp))$ .  
 $fs$  (Total) (Non-compact section) is the sum of the stresses due to  $1.3[M\bar{D} + Ms\bar{D} + ^{5_3}(M\bar{L} + M(Imp))]$ .

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



NAME	DATE

STEEL DETAILS &  
TOP OF BEAM ELEVATIONS

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

SCALE: NOT-TO-SCALE  
DATE 6-25-09

DRAWN BY BV  
DESIGNED BY BS  
CHECKED BY PK

**RME** Rubinos & Mesia Engineers, Inc.

\$PENTL \$S  
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 \$DATES \$  
 \$TIME \$