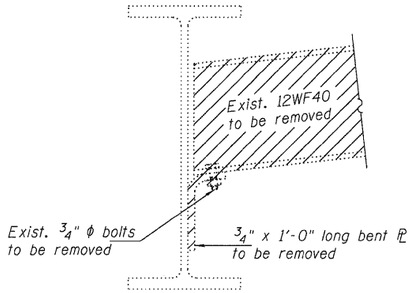
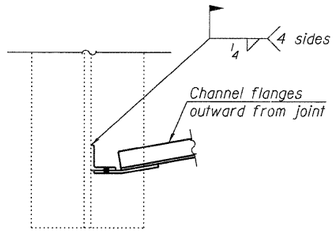


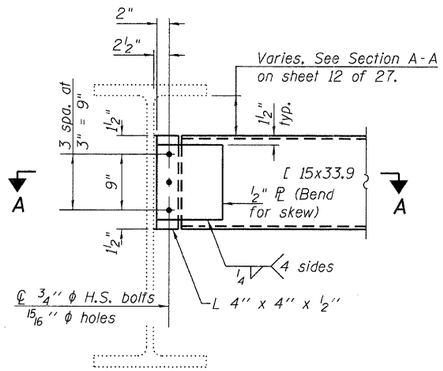
Exist. end diaphragms, bent PL's, bolts and any existing welds shall be removed. Existing welds shall be removed using the air-arc method. Grind smooth all weld material remaining on the web. Cost included with Structural Steel Removal.

EXISTING END DIAPHRAGM REMOVAL DETAIL

(Total 10 Diaphragms to be removed)



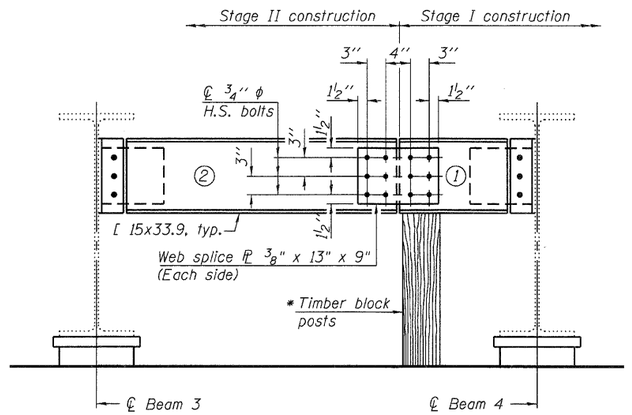
SECTION A-A



NEW END DIAPHRAGM DETAIL

(Total 10 Diaphragms)

* Cost of Timber Block Posts is included with Furnishing and Erecting Structural Steel.



END DIAPHRAGM

Note:
Individual diaphragms at supports may temporarily be disconnected to install bearing anchor rods. Two hardened washers shall be required over all oversized holes in diaphragms.

END DIAPHRAGM STAGE CONSTRUCTION SEQUENCE

1.) Order diaphragm in two sections.
2.) Attach section (1) of diaphragm to beam (4)
3.) Place timber block posts between section (1) of diaphragm and abutment bearing section.
4.) Attach section (2) of diaphragm to both beam (3) and section (1) of diaphragm during stage II construction with splice plates.
5.) Remove timber block posts.

INTERIOR GIRDER MOMENT TABLE						
		0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_s	(in^4)	11281.5	11281.5	11281.5	11281.5	11281.5
$I_c(n)$	(in^4)	26349		26349		26349
$I_c(3n)$	(in^4)	19215	19215	19215	19215	19215
$I_c(cr)$	(in^4)		14187		14187	
S_s	(in^3)	621.2	621.2	621.2	621.2	621.2
$S_c(n)$	(in^3)	862.2		862.2		862.2
$S_c(3n)$	(in^3)	776.4	776.4	776.4	776.4	776.4
$S_c(cr)$	(in^3)		693.7		693.7	
Z	(in^3)					
$\mathcal{D}$	(k/')	0.867	0.867	0.867	0.867	0.867
$M\mathcal{D}$	('k)	258	419	199	431	271
$s\mathcal{D}$	(k/')	0.309	0.309	0.309	0.309	0.309
$M_s\mathcal{D}$	('k)	92	151	69	155	96
$M\mathcal{L}$	('k)	409	337	380	342	422
M_{IM}	('k)	108	86	95	87	108
$5/3[M\mathcal{L} + IM]$	('k)	863	705	791	715	883
M_o	('k)	1576	1657	1376	1691	1626
* M_u	('k)	2427		2427		2427
f_s $\mathcal{D}$ non-comp	(ksi)	5.0	8.1	3.8	8.3	5.2
f_s $\mathcal{D}$ (comp)	(ksi)	1.4	2.6	1.1	2.7	1.5
$f_s(5/3[M\mathcal{L} + M_{IM}])$	(ksi)	12	12.2	11.0	12.4	12.3
f_s (Overload)	(ksi)	18.4	22.9	15.9	23.4	19
** f_s (Total)	(ksi)		29.8		30.4	
VR	(k)	54.27	49.54	42.95	49.41	53.98

INTERIOR GIRDER REACTION TABLE					
		W. Abut.	Pier 1	Pier 2	E. Abut.
$R\mathcal{D}$	(k)	29.4	90.9	92.2	30.1
$R\mathcal{L}$	(k)	38.5	45.8	46.1	30.0
R_I	(k)	10.2	8.7	8.7	18.8
R_{Total}	(k)	78.1	145.5	146.9	78.8

* Compact section
** Braced non-compact and partially braced section

I_s, S_s: Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) due to non-composite dead loads ($in.^4$ and $in.^3$).

$I_c(n)$, $S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total and Overload) due to short-term composite live loads ($in.^4$ and $in.^3$).

$I_c(3n)$, $S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total and Overload) due to long-term composite (superimposed) dead loads ($in.^4$ and $in.^3$).

$I_c(cr)$, $S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite dead loads ($in.^4$ and $in.^3$).

Z: Plastic Section Modulus of the steel section in non-composite areas ($in.^3$).

$\mathcal{D}$: Un-factored non-composite dead load (kips/ft.).

$M\mathcal{D}$: Un-factored moment due to non-composite dead load (kip-ft.).

$s\mathcal{D}$: Un-factored long-term composite (superimposed) dead load (kips/ft.)

$M_s\mathcal{D}$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

$M\mathcal{L}$: Un-factored live load moment (kip-ft.).

M_I: Un-factored moment due to impact (kip-ft.).

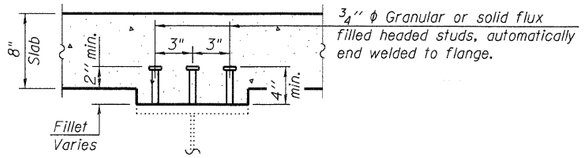
M_o: Factored design moment (kip-ft.).
$1.3\ [M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\mathcal{L} + M_I)]$

M_u: Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).

f_s (Overload): Sum of stresses as computed from the moments below (ksi).
$M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\mathcal{L} + M_I)$

f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\ [M\mathcal{D} + M_s\mathcal{D} + \frac{5}{3}(M\mathcal{L} + M_I)]$

VR: Maximum $\mathcal{L}$ + impact shear range within the composite portion of the span for stud shear connector design (kips).



SECTION A-A

BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	4,620
Structural Steel Removal	Pound	3,370
Stud Shear Connectors	Each	3,492

USER NAME = dheberling	DESIGNED - BRD	REVISED -	
FILE NAME = 8430007-64C94.dgn	CHECKED - CWC/SDS	REVISED -	
PLOT DATE = 12/6/2011	DRAWN - DLH	REVISED -	
PLOT TIME = 12:10:47 AM	CHECKED - BRD	REVISED -	

WHKS & CO. ENGINEERING
7018 KINGSMILL CT., SPRINGFIELD, IL
(217) 483-9457
DESIGN FIRM #184001036

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS
STRUCTURE NO. 043-0007
SHEET NO. 19 OF 27 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
301	(43B, 44B, 44HB, 45B)D	JO DAVIESS	309	180
		CONTRACT NO. 64C94		
	ILLINOIS FED. AID PROJECT			