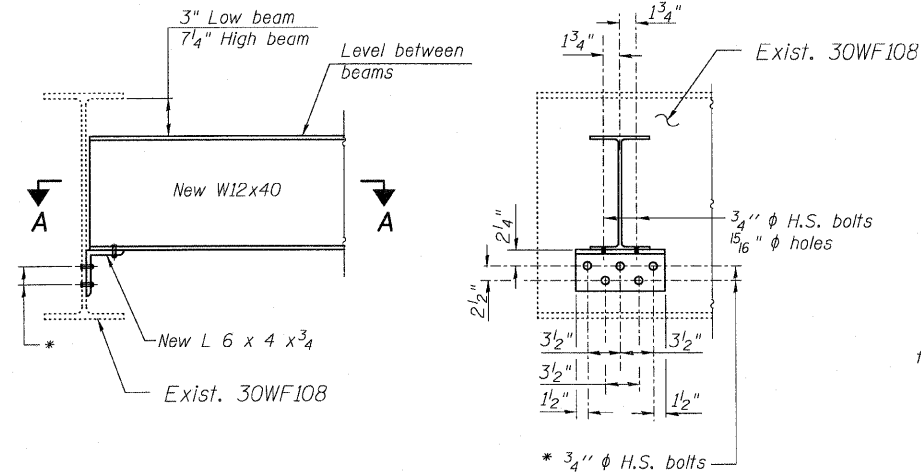


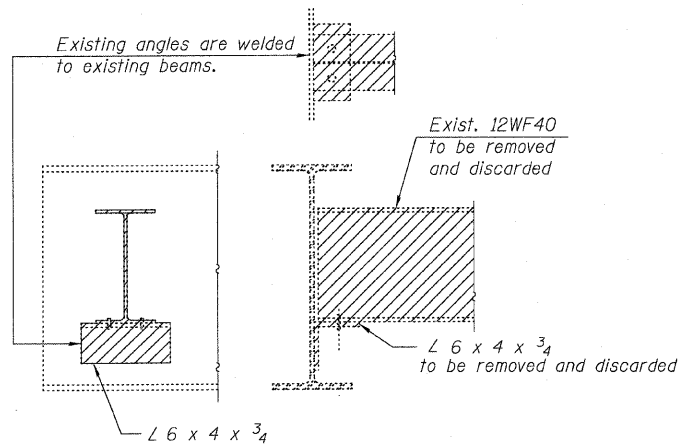
SECTION A-A



* Field drill 1 5/16" ϕ holes in new angle 6 x 4 x 3/4 and connect with 3/4" ϕ H.S. bolts. Use holes in new angle as a template to field drill holes in existing beam. Cost included with Furnishing and Erecting Structural Steel.

NEW END DIAPHRAGM "D"
(Total 8 Diaphragms)

Notes:
Two hardened washers required for each set of oversized holes.
Install 8 end diaphragms at locations marked D on sheet S15 of S21.



END DIAPHRAGM "D" REMOVAL DETAIL

Remove 10 Diaphragms and 20 Connection Angles

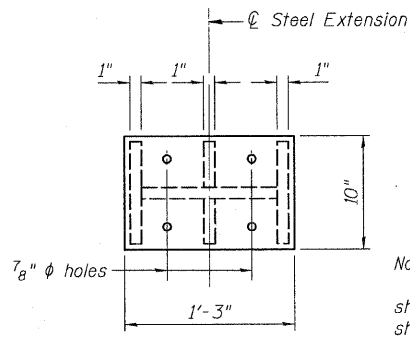
- I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) due to non-composite dead loads (in.⁴ and in.³).
- $I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", 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).
- ℓ : Un-factored non-composite dead loads (kips/ft.).
- $M\ell$: Un-factored moment due to non-composite dead load (kip-ft.).
- $s\ell$: Un-factored long-term composite (superimposed) dead load (kips/ft.).
- $M_s\ell$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- $M\ell$: Un-factored live load moment (kip-ft.).
- M_I : Un-factored moment due to impact (kip-ft.).
- M_a : Factored design moment (kip-ft.).
 $1.3[M\ell + M_s\ell + \frac{5}{8}(M\ell + M_I)]$
- 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).
 $M\ell + M_s\ell + \frac{5}{8}(M\ell + M_I)$
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3[M\ell + M_s\ell + \frac{5}{8}(M\ell + M_I)]$
- VR : Maximum ℓ + impact shear range within the composite portion of the span for stud shear connector design (kips).

INTERIOR BEAM MOMENT TABLE				
		0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
I_s	(in ⁴)	4,470	4,470	4,470
$I_c(n)$	(in ⁴)	12,309	-	12,309
$I_c(3n)$	(in ⁴)	9,316	-	9,316
$I(cr)$	(in ⁴)	-	6,471	-
S_s	(in ³)	299	299	299
$S_c(n)$	(in ³)	442	-	442
$S_c(3n)$	(in ³)	403	-	403
$S(cr)$	(in ³)	-	354	-
ℓ	(k/ft)	0.85	0.85	0.85
$M\ell$	(k)	65.7	181.3	117.0
$s\ell$	(k/ft)	0.34	0.34	0.34
$M_s\ell$	(k)	24.7	68.5	44.1
$M\ell$	(k)	213.8	199.0	258.7
M_I	(k)	64.2	59.0	77.7
$\frac{5}{8}[M\ell + M_I]$	(k)	463.3	430.0	560.7
M_a	(k)	719.9	883.7	938.3
M_u	(k)	1802	-	1802
$f_s\ell$ (non-comp)	(ksi)	2.64	7.28	4.70
$f_s\ell$ (comp)	(ksi)	0.67	2.32	1.20
$f_s \frac{5}{8}[M\ell + M_I]$	(ksi)	12.58	14.58	15.22
f_s (Overload)	(ksi)	15.89	24.17	21.11
f_s (Total)	(ksi)	-	31.4	-
VR	(k)	52.6	58.5	44.5

** Compact Section

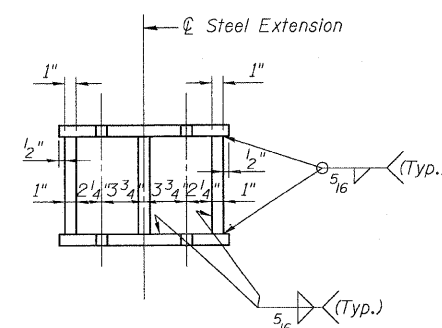
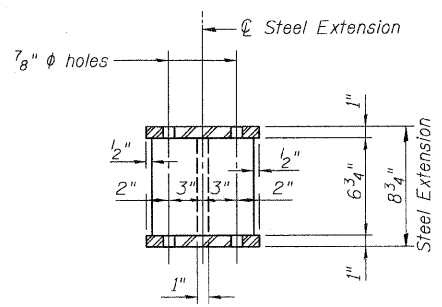
INTERIOR BEAM REACTION TABLE			
	Abut. ***	Pier	
$R\ell$	(k)	48.4 ***	60.8
$R\ell$	(k)	36.1	46.2
R_I	(k)	10.8	13.7
R_{Total}	(k)	84.6	120.7

*** Includes total reaction from approach pavement divided by 6 girders.



Note:
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

PLAN STEEL EXTENSION



ELEVATION STEEL EXTENSION: END VIEW ELEVATION STEEL EXTENSION

Fabricated from 1" Plate - Cost included with Fabrication and Erection of Structural Steel

BILL OF MATERIAL

Item	Unit	Total
Structural Steel Removal	Pound	3730



USER NAME = TERRA	DESIGNED - EA	REVISED -
FILE NAME = D430008-016-steel_details.dgn	CHECKED - OY	REVISED -
PLOT SCALE =	DRAWN - CM	REVISED -
PLOT DATE = 1/31/2012	CHECKED - JB	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS
STRUCTURE NO. 043 - 0006
SHEET NO. S16 OF S21 SHEETS

F.A.P. RTE. 301	SECTION (43B, 44B, 44HB, 45B)D	COUNTY JO DAVIESS	TOTAL SHEETS 309	SHEET NO. 156
CONTRACT NO. 64C94			ILLINOIS FED. AID PROJECT	