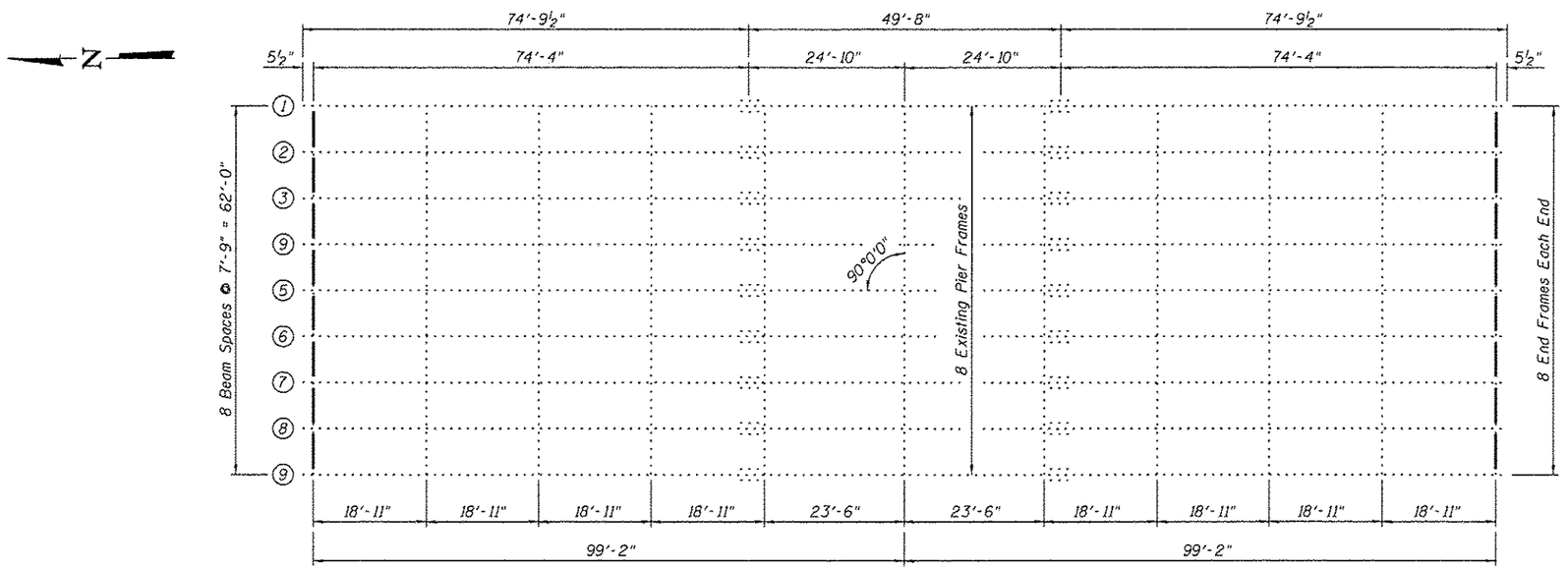
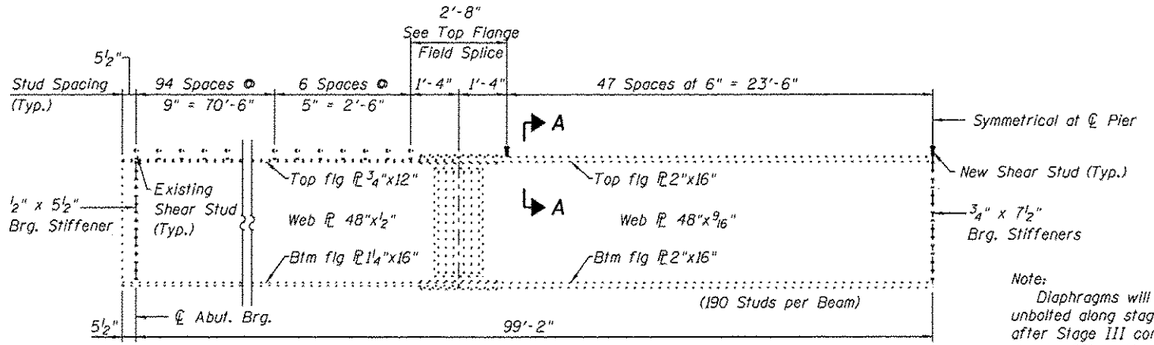


PLAN



ELEVATION OF GIRDER

(Typical All Girders)

Note:
Diaphragms will need to be unbolted along staging lines until after Stage III concrete is poured, due to differential deflections of beams.

INTERIOR BEAM MOMENT TABLE			
		0.4 Sp. 1 or 0.6 Sp. 2	Pier
I_s	(in^4)	20,679	45,205
$I_c(n)$	(in^4)	60,462	52,030
$I_c(3n)$	(in^4)	42,912	52,030
S_s	(in^3)	1,029	1,739
$S_c(n)$	(in^3)	1,462	1,833
$S_c(3n)$	(in^3)	1,340	1,833
ℓ	(k/')	1.030	1.160
M_ℓ	('k)	601	1,580
$s\ell$	(k/')	0.528	0.528
$M_s\ell$	('k)	330	734
M_L	('k)	866	881
M_I	('k)	193	196
$\frac{5}{3}[M_L + I]$	('k)	1,765	1,795
M_a	('k)	3,505	5,342
* M_u	('k)	5,255	7,386
f_s ℓ non-comp	(ksi)	7.0	10.9
f_s ℓ (comp)	(ksi)	3.0	4.8
f_s $\frac{5}{3}[M_L + M_I]$	(ksi)	14.5	11.8
f_s (Overload)	(ksi)	24.5	27.5
** f_s (Total)	(ksi)	-	-
VR	(k)	48.9	58.5

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

INTERIOR BEAM REACTION TABLE			
		Abuts.	Pier
$R\ell$	(k)	53.2	206.8
R_L	(k)	45.1	74.7
R_I	(k)	10.1	16.7
R_{Total}	(k)	108.4	298.2

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).

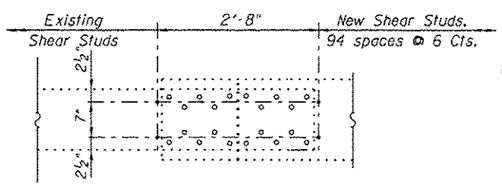
$I_c(3n)$, $S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s(Total and Overload) due to long-term composite (superimposed) dead loads (in.⁴ and in.³).

ℓ: Un-factored non-composite dead load (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_L: Un-factored live load moment (kip-ft.).
M_I: Un-factored moment due to impact (kip-ft.).
M_a: Factored design moment (kip-ft.).
$1.3\ [M\ell + M_s\ell + \frac{5}{3}(M_L + M_I)]$
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).
$M\ell + M_s\ell + \frac{5}{3}(M_L + M_I)$
f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\ [M\ell + M_s\ell + \frac{5}{3}(M_L + M_I)]$
VR: Maximum L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

BILL OF MATERIAL

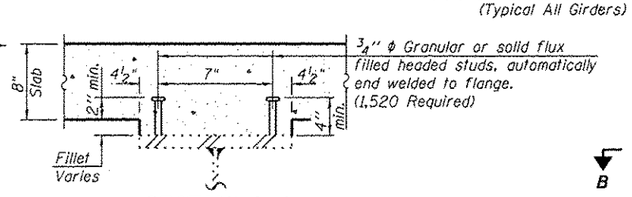
Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	5,540
Structural Steel Removal	Pound	6,900
Stud Shear Connectors	Each	1,710

Notes:
Two hardened washers required for each set of oversized holes.
Existing end diaphragms at abutments shall be removed and replaced. Cost included with Structural Steel Removal. Field drill 15/16" ϕ holes for ¾" ϕ bolts.
Contractor will be responsible for checking to see if proposed hole locations conflict with existing holes. In such a case, match existing holes.

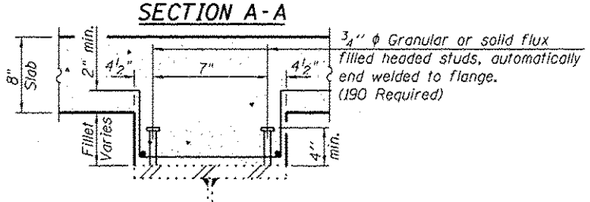


TOP FLANGE FIELD SPLICE

(Solid Circles indicate Shear Studs
Open Circles indicate Splice Plate Bolts)

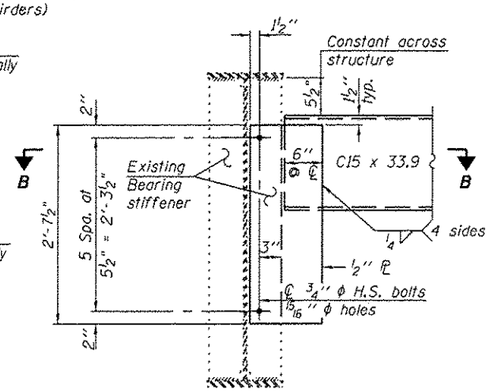


SECTION A-A



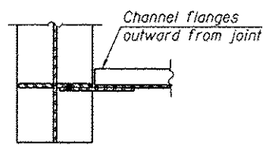
SECTION A-A

(Deep Fillet Section @ ℄ Beam 5)



END DIAPHRAGM

Note: Two hardened washers required for each set of oversized holes.



SECTION B-B

FILE NAME = TR420 over FAI-72.dgn	USER NAME =	DESIGNED - SAL	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	FRAMING PLAN & BEAM DETAILS OVERPASS RD. (TR-420) OVER F.A.I.-72 – S.N. 084-0154
		CHECKED - MTH	REVISED -		
	PLOT SCALE =	DRAWN - TJW	REVISED -		SHEET NO. 15 OF 25 SHEETS
	PLOT DATE =	CHECKED - MTH	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
72	(84-10-1,2) RS-3	SANGAMON	194	162
		CONTRACT NO. 72C90		
FED. ROAD DIST. NO. 6	ILLINOIS	FED. AID PROJECT		