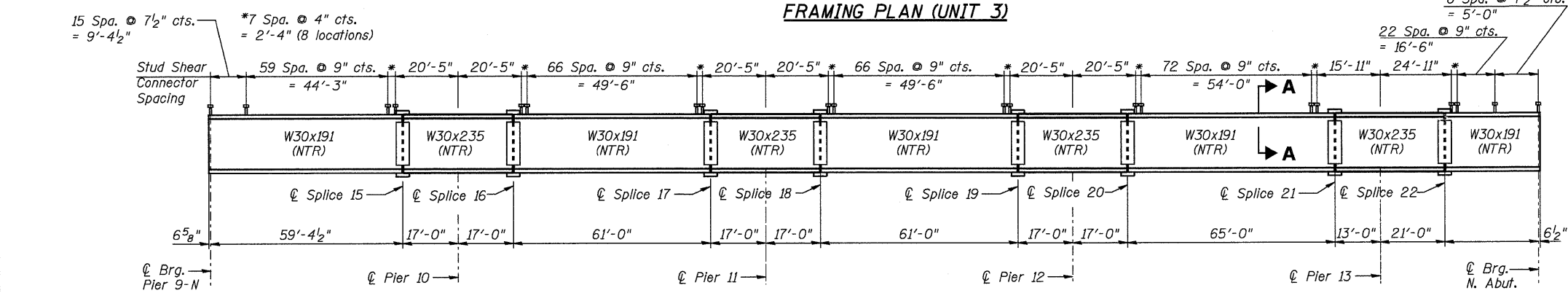


FRAMING PLAN (UNIT 3)



BEAM ELEVATION (UNIT 3)

INTERIOR BEAM MOMENT TABLE (UNIT 3)

Property	Unit	0.4 Span 10	Pier 10	0.5 Span 11	Pier 11	0.5 Span 12	Pier 12	0.5 Span 13	Pier 13	0.6 Span 14
I_s	(in^4)	9,170	11,700	9,170	11,700	9,170	11,700	9,170	11,700	9,170
I_c	(in^4)	21,580	---	21,580	---	21,580	---	21,580	---	21,580
$I_{c(3n)}$	(in^4)	15,750	---	15,750	---	15,750	---	15,750	---	15,750
S_s	(in^3)	598	748	598	748	598	748	598	748	598
$S_{c(n)}$	(in^3)	818	---	818	---	818	---	818	---	818
$S_{c(3n)}$	(in^3)	741	---	741	---	741	---	741	---	741
Z	(in^3)	---	847	---	847	---	847	---	847	---
Q	($K/'$)	1,040	1,773	1,040	1,773	1,040	1,773	1,040	1,773	1,040
M_D	($'K$)	403	1,304	369	1,298	344	1,392	425	1,022	42
s_D	($K/'$)	0.683	---	0.683	---	0.683	---	0.683	---	0.683
M_{sp}	($'K$)	289	---	294	---	274	---	330	---	47
M_L	($'K$)	718	539	773	587	774	586	759	461	393
M_{Imp}	($'K$)	179	128	176	133	176	133	172	119	113
$1.3[M_L + M_{Imp}]$	($'K$)	1,495	1,112	1,582	1,200	1,583	1,198	1,552	967	843
M_u	($'K$)	2,843	3,140	2,918	3,247	2,862	3,367	2,999	2,585	1,212
M_u	($'K$)	3,786	3,529	3,786	3,529	3,786	3,529	3,786	3,529	3,786
f_s non-comp	(Ksi)	8.09	20.92	7.40	20.82	6.90	22.33	8.53	16.40	0.84
f_s comp	(Ksi)	4.68	---	4.76	---	4.44	---	5.34	---	0.76
$1.3[M_L + M_{Imp}]$	(Ksi)	21.93	17.83	23.20	19.25	23.23	19.22	22.76	15.51	12.37
f_s (Overload)	(Ksi)	34.70	38.75	35.37	---	34.57	---	36.64	31.90	13.98
f_s (Total)	(Ksi)	---	---	---	---	---	---	---	---	---
VR	($'K$)	71.0	---	55.9	---	55.8	---	57.3	---	72.0

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

TOP OF BEAM ELEVATIONS (UNIT 3)

Beam No.	Pier 9-N	Splice 15	Pier 10	Splice 16	Splice 17	Pier 11	Splice 18	Splice 19	Pier 12	Splice 20	Splice 21	Pier 13	Splice 22	N. Abut.
1 & 12	676.93	675.61	675.18	674.69	672.75	672.15	671.49	669.07	668.42	667.75	665.16	664.64	663.74	662.70
2 & 11	677.10	675.77	675.35	674.86	672.92	672.32	671.66	669.24	668.59	667.91	665.32	664.81	663.91	662.87
3 & 10	677.27	675.94	675.52	675.03	673.09	672.49	671.83	669.41	668.76	668.08	665.49	664.98	664.08	663.04
4 & 9	677.44	676.11	675.69	675.20	673.26	672.66	672.00	669.58	668.93	668.25	665.66	665.15	664.25	663.21
5 & 8	677.61	676.28	675.86	675.37	673.43	672.83	672.17	669.75	669.10	668.42	665.83	665.32	664.42	663.38
6 & 7	677.78	676.45	676.03	675.54	673.60	673.00	672.34	669.92	669.27	668.59	666.00	665.49	664.59	663.55

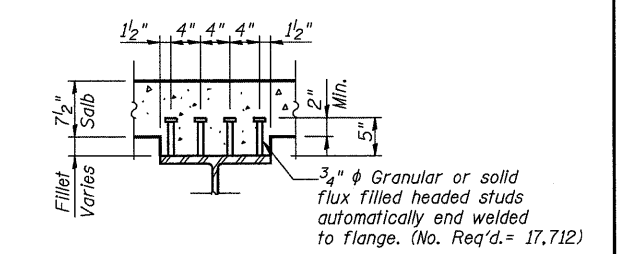
INTERIOR BEAM REACTION TABLE (UNIT 3)

Reaction	Unit	Pier 9-N	Pier 10	Piers 11-12	Pier 13	N. Abut.
R_D	($'K$)	49.1	166.0	167.2	142.1	21.6
R_L	($'K$)	52.1	69.7	72.3	63.6	47.8
R (Imp)	($'K$)	13.0	16.6	16.4	16.4	13.8
R (Total)	($'K$)	114.2	252.3	255.9	222.1	83.2

******MOMENT REDISTRIBUTION**

Property	Unit	Pier 11	Pier 12
f_s (Overload) prior to moment redistribution	(Ksi)	40.07	41.56
f_s (Overload) after moment redistribution	(Ksi)	36.07	37.40

- 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).
- Z : Plastic Section Modulus of the steel section in non-composite areas (in^3).
- Q : Un-factored non-composite dead load (kips/ft.).
- M_D : Un-factored moment due to non-composite dead load (kip-ft.).
- s_D : Un-factored long-term composite (superimposed) dead load (kips/ft.).
- M_{sp} : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- M_L : Un-factored live load moment (kip-ft.).
- M_{Imp} : Un-factored moment due to impact (kip-ft.).
- M_u : Factored design moment (kip-ft.).
 $1.3 [M_D + M_{sp} + \frac{5}{8} (M_L + M_{Imp})]$
- 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).
 $M_D + M_{sp} + \frac{5}{8} (M_L + M_{Imp})$
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M_D + M_{sp} + \frac{5}{8} (M_L + M_{Imp})]$
- VR: Maximum $L +$ impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).



SECTION A-A

- Notes:**
- See Sheets S27 & S28 for diaphragm & splice details, respectively.
 - AASHTO M270 Grade 50 steel shall be used for all wide flange beams & splice plates. AASHTO M270 Grade 36 steel may be used for all diaphragms.
 - Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness (Zone 2) including the wide flange beams & all splice plate material (except fill plates).

REVISIONS		ILLINOIS DEPARTMENT OF TRANSPORTATION	
NAME	DATE	FRAMING PLAN & ELEVATION III	
		FAP 330 US 12/45 (MANNHEIM RD.) OVER SOO LINE RR & FRANKLIN AVE. STRUCTURE NO. 016-2B15	
		SECTION 465 (HB & VB) F COOK COUNTY STA. 183+33.30 DRAWN BY JHR	
		DATE 6/2009 CHECKED BY CLS	

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