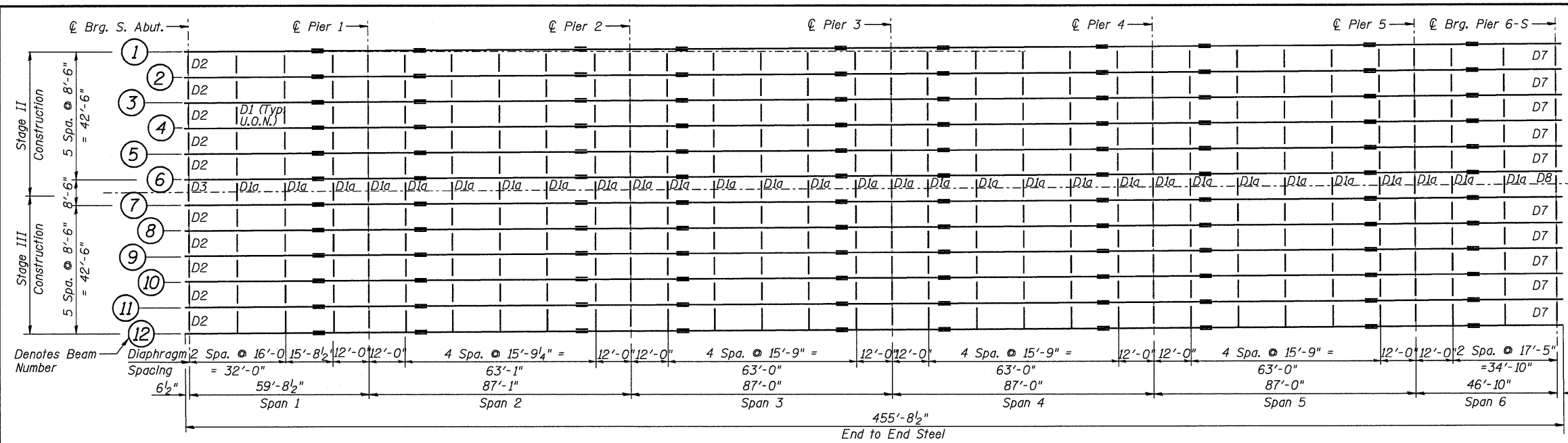
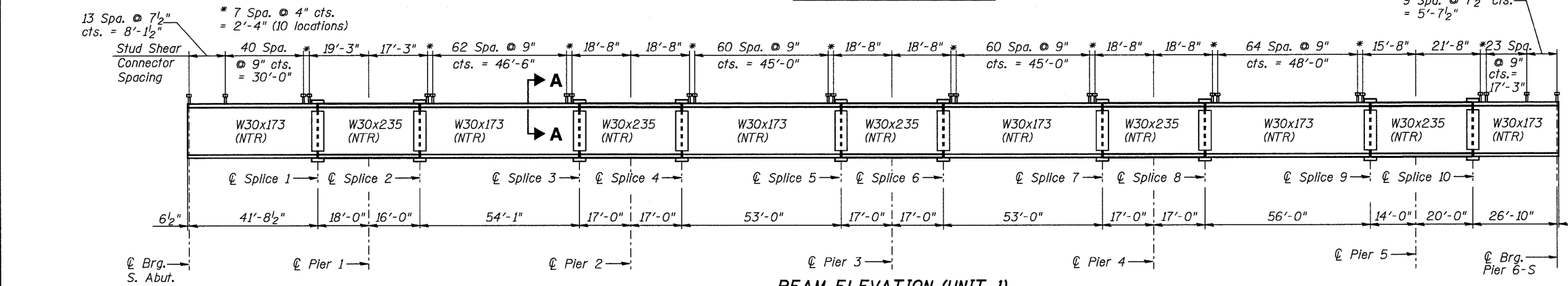


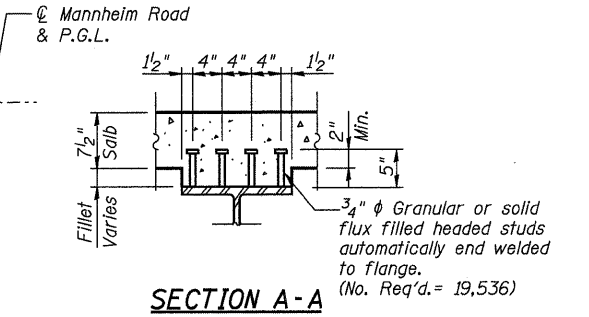
F.A.P.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
330	465 (HB&VB) F	COOK	31	25
STA. 173+50 TO STA. 195+00		FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT		
Contract # 60121		SHEET NO. S24 of S30		



FRAMING PLAN (UNIT 1)



BEAM ELEVATION (UNIT 1)



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).

INTERIOR BEAM REACTION TABLE (UNIT 1)

Reaction	Unit	S. Abut.	Pier 1	Piers 2-4	Pier 5	Pier 6-S
R _p	(K)	35.1	141.0	152.3	131.0	21.8
R _l	(K)	50.0	63.2	68.4	60.6	47.3
R (Imp)	(K)	13.6	16.0	16.1	16.0	13.8
R (Total)	(K)	98.7	220.2	236.8	207.6	82.9

INTERIOR BEAM MOMENT TABLE (UNIT 1)

Property	Unit	0.4 Span 1	Pier 1	0.5 Span 2	Pier 2	0.5 Span 3	Pier 3	0.5 Span 4	Pier 4	0.5 Span 5	Pier 5	0.6 Span 6
I _s	(in ⁴)	8,200	11,700	8,200	11,700	8,200	11,700	8,200	11,700	8,200	11,700	8,200
I _c	(in ⁴)	19,935	---	19,935	---	19,935	---	19,935	---	19,935	---	19,935
I _{c(3n)}	(in ⁴)	14,585	---	14,585	---	14,585	---	14,585	---	14,585	---	14,585
S _s	(in ³)	539	748	539	748	539	748	539	748	539	748	539
S _{c(in)}	(in ³)	745	---	745	---	745	---	745	---	745	---	745
S _{c(3n)}	(in ³)	677	---	677	---	677	---	677	---	677	---	677
Z	(in ³)	---	847	---	847	---	847	---	847	---	847	---
Q	(K/')	1.019	1.773	1.019	1.773	1.019	1.773	1.019	1.773	1.019	1.773	1.019
M _Q	(K)	197	977	315	1,161	283	1,087	275	1,184	335	879	52
s _Q	(K/')	0.683	---	0.683	---	0.683	---	0.683	---	0.683	---	0.683
M _{sQ}	(K)	150	---	255	---	230	---	226	---	268	---	52
M _L	(K)	520	443	679	525	686	526	685	522	671	415	370
M (Imp)	(K)	141	112	160	124	162	124	161	123	158	109	108
S ₃ [M _L + M _{Imp}]	(K)	1,102	925	1,398	1,082	1,413	1,083	1,410	1,075	1,382	873	797
M _a	(K)	1,883	2,473	2,559	2,915	2,504	2,821	2,484	2,937	2,580	2,278	1,171
M _u	(K)	3,481	3,529	3,481	3,529	3,481	3,529	3,481	3,529	3,481	3,529	3,481
f _{s p non-comp}	(Ksi)	4.39	15.67	7.01	18.63	6.30	17.44	6.12	18.99	7.46	14.10	1.16
f _{s p comp}	(Ksi)	2.66	---	4.52	---	4.08	---	4.01	---	4.75	---	0.92
f _{s 3} [M _L + M _{Imp}]	(Ksi)	17.74	14.84	22.52	17.35	22.77	17.38	22.71	17.25	22.26	14.01	12.83
f _{s (Overload)}	(Ksi)	24.79	30.51	34.06	35.98	33.14	34.82	32.84	36.24	34.46	28.11	14.91
f _{s (Total)}	(Ksi)	---	---	---	---	---	---	---	---	---	---	---
VR	(K)	70.8	---	55.0	---	54.9	---	54.9	---	57.1	---	71.1

- 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_Q: Un-factored moment due to non-composite dead load (kip-ft.).
- s_Q: Un-factored long-term composite (superimposed) dead load (kips/ft.).
- M_{sQ}: 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_a: Factored design moment (kip-ft.).
- 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.).
- 1.3 [M_Q + M_{sQ} + $\frac{5}{8}$ (M_L + M_{Imp})]
- f_s (Overload): Sum of stresses as computed from the moments below (ksi).
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
- 1.3 [M_Q + M_{sQ} + $\frac{5}{8}$ (M_L + M_{Imp})]
- VR: Maximum L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

TOP OF BEAM ELEVATIONS (UNIT 1)
For Fabrication Only

Beam No.	S. Abut.	Splice 1	Pier 1	Splice 2	Splice 3	Pier 2	Splice 4	Splice 5	Pier 3
1 & 12	660.74	662.31	663.05	663.67	665.76	666.43	667.07	669.13	669.81
2 & 11	660.91	662.48	663.22	663.83	665.93	666.60	667.24	669.30	669.98
3 & 10	661.08	662.65	663.39	664.00	666.10	666.77	667.41	669.47	670.15
4 & 9	661.25	662.82	663.56	664.17	666.27	666.94	667.58	669.64	670.32
5 & 8	661.42	662.99	663.73	664.34	666.44	667.11	667.75	669.81	670.49
6 & 7	661.59	663.16	663.90	664.51	666.61	667.28	667.92	669.98	670.66
Beam No.	Splice 6	Splice 7	Pier 4	Splice 8	Splice 9	Pier 5	Splice 10	Pier 6-S	
1 & 12	670.45	672.46	673.08	673.63	675.28	675.65	676.07	676.71	
2 & 11	670.62	672.62	673.25	673.80	675.44	675.82	676.24	676.88	
3 & 10	670.79	672.79	673.42	673.97	675.61	675.99	676.41	677.05	
4 & 9	670.96	672.96	673.59	674.14	675.78	676.16	676.58	677.22	
5 & 8	671.13	673.13	673.76	674.31	675.95	676.33	676.75	677.39	
6 & 7	671.30	673.30	673.93	674.48	676.12	676.50	676.92	677.56	

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

EARTH TECH | AECOM

REVISIONS		ILLINOIS DEPARTMENT OF TRANSPORTATION	
NAME	DATE	FRAMING PLAN & ELEVATION I	
		FAP 330 US 12/45 (MANNHEIM RD.) OVER 500 LINE RR & FRANKLIN AVE. STRUCTURE NO. 016-2815	
		SECTION 465 (HB & VB) F	COOK COUNTY
		STA. 183+33.30	DRAWN BY JHR
		DATE 6/2009	CHECKED BY CLS