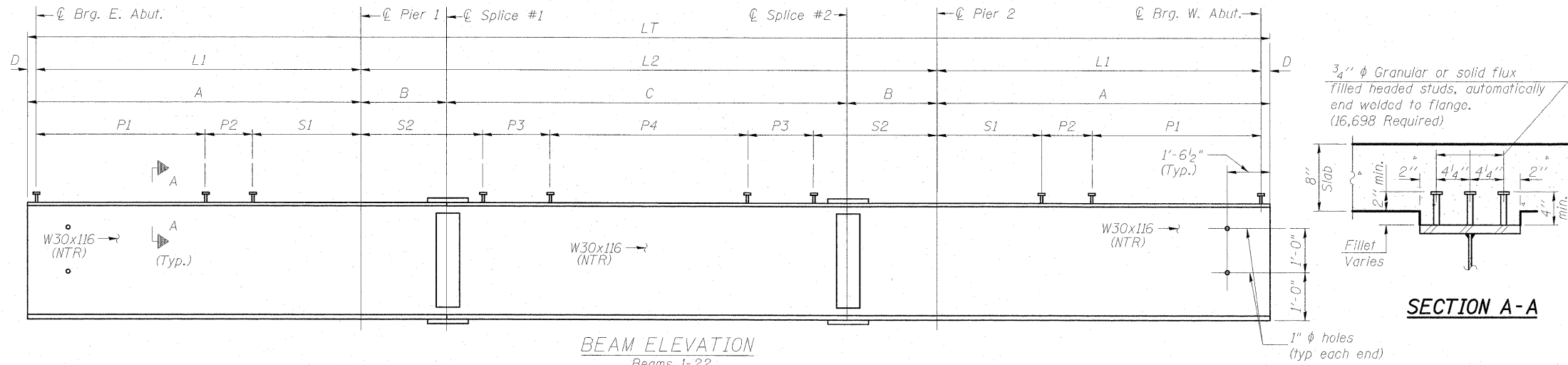


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



INTERIOR BEAM REACTION TABLE

	E. Abut.	Pier 1	Pier 2	W. Abut.
R _D (k)	28.9	100.5	100.5	28.9
R _L (k)	40.5	47.7	47.7	40.5
Imp. (k)	11.6	13.0	13.0	11.6
R _{Total} (k)	81.0	161.2	161.2	81.0

INTERIOR BEAM MOMENT TABLE

	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I _s (in ⁴)	4862	4862	4862	4862	4862
I _c (n) (in ⁴)	14946		14946		14946
I _c (3n) (in ⁴)	11124		11124		11124
S _s (in ³)	324	324	324	324	324
S _c (n) (in ³)	511		511		511
S _c (3n) (in ³)	463		463		463
Z (in ³)		373		373	
Q (k/')	0.959	1.547	0.959	1.547	0.959
M _D (k)	153	492	205	492	153
s _D (k/')	0.591		0.591		0.591
M _{sD} (k)	116		179		116
M _L (k)	384	221	488	221	384
M _{Imp} (k)	110	60	127	60	110
P ₃ [M _L + M _{Imp}] (k)	823	468	1025	468	823
M _a (k)	1420	1248	1832	1248	1420
M _u (k)	1998		1951		1998
f _s Q non-comp (ksi)	5.7	18.2	7.6	18.2	5.7
f _s Q (comp) (ksi)	3.0		4.6		3.0
f _s S ₃ [M _L + M _{Imp}] (ksi)	19.4	17.4	24.1	17.4	19.4
f _s (Overload) (ksi)	28.1	35.6	36.3	35.6	28.1
f _s (Total) (ksi)		46.3		46.3	
VR (k)	41.1		45.2		41.1

SHEAR STUD SPACING TABLE

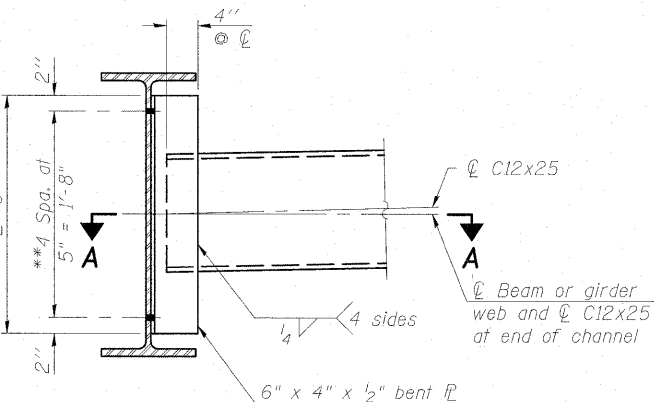
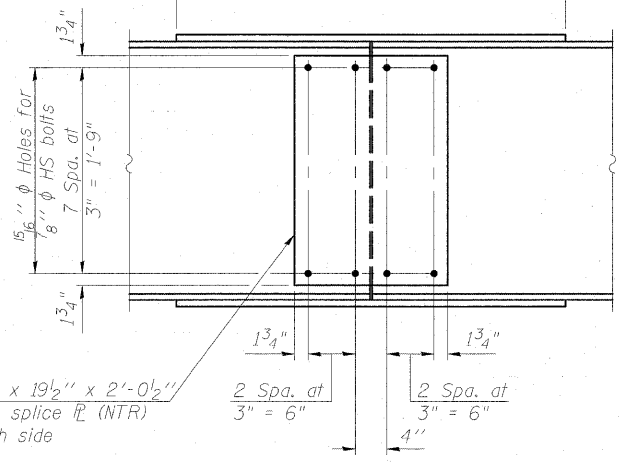
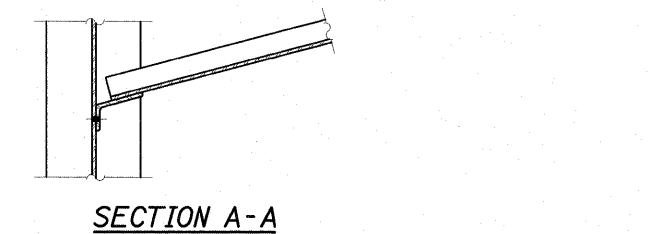
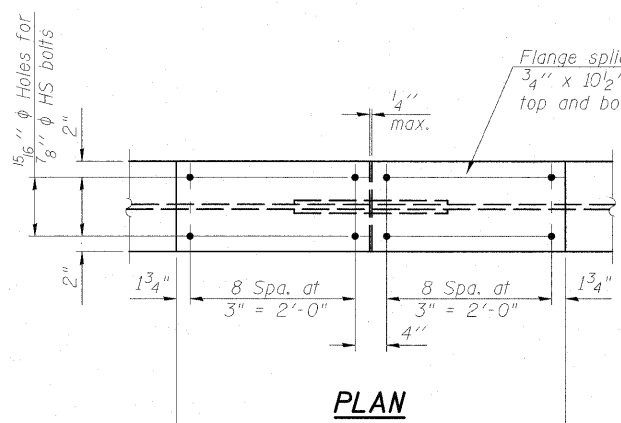
BEAM	S1	S2	P1	P2	P3	P4
1	13'-1 ¹ / ₈ "	12'-6 ¹ / ₈ "	67 Spaces at 6" cts.	14 Spaces at 3" cts.	13 Spaces at 3" cts.	62 Spaces at 7" cts.
2	13'-3 ³ / ₈ "	12'-5 ⁵ / ₈ "	67 Spaces at 6" cts.	14 Spaces at 3" cts.	13 Spaces at 3" cts.	62 Spaces at 7" cts.
3	13'-2"	12'-4 ³ / ₄ "	67 Spaces at 6" cts.	14 Spaces at 3" cts.	13 Spaces at 3" cts.	62 Spaces at 7" cts.
4-21	13'-0 ⁷ / ₈ "	12'-4"	67 Spaces at 6" cts.	14 Spaces at 3" cts.	13 Spaces at 3" cts.	62 Spaces at 7" cts.
22	12'-11 ¹ / ₈ "	12'-3 ⁵ / ₈ "	67 Spaces at 6" cts.	14 Spaces at 3" cts.	13 Spaces at 3" cts.	62 Spaces at 7" cts.

DIMENSIONS ALONG Q OF BEAM

BEAM	A	B	C	D	L1	L2	LT
1	50'-11 ³ / ₄ "	9'-9 ³ / ₄ "	48'-1 ¹ / ₈ "	6 ¹ / ₈ "	50'-4 ¹ / ₈ "	67'-9 ³ / ₈ "	169'-8 ¹ / ₈ "
2	50'-10 ⁵ / ₈ "	9'-9 ¹ / ₂ "	48'-0 ¹ / ₄ "	6 ³ / ₄ "	50'-3 ³ / ₈ "	67'-7 ¹ / ₄ "	169'-3 ¹ / ₂ "
3	50'-8 ⁵ / ₈ "	9'-9 ¹ / ₄ "	47'-11"	6 ⁵ / ₈ "	50'-2"	67'-5 ¹ / ₂ "	168'-10 ³ / ₄ "
4-21	50'-7 ³ / ₈ "	9'-9"	47'-10"	6 ¹ / ₂ "	50'-0 ⁷ / ₈ "	67'-4"	168'-6 ³ / ₄ "
22	50'-6 ¹ / ₄ "	9'-8 ³ / ₄ "	47'-9 ¹ / ₈ "	6 ³ / ₈ "	49'-11 ¹ / ₈ "	67'-2 ⁵ / ₈ "	168'-3 ¹ / ₈ "

TOP OF BEAM ELEVATIONS (FOR FABRICATION ONLY)

Beam No.	Q Brg. E. Abut.	Q Pier 1	Q Splice 1	Q Splice 2	Q Pier 2	Q Brg. W. Abut.
1	707.73	707.49	707.45	707.26	707.23	707.07
2	707.88	707.63	707.58	707.38	707.34	707.16
3	708.03	707.77	707.71	707.49	707.45	707.25
4	708.19	707.90	707.84	707.61	707.57	707.35
5	708.33	708.05	707.99	707.76	707.71	707.50
6	708.47	708.19	708.13	707.90	707.85	707.64
7	708.58	708.30	708.24	708.00	707.96	707.74
8	708.56	708.27	708.21	707.98	707.93	707.72
9	708.44	708.15	708.09	707.86	707.82	707.60
10	708.29	708.00	707.94	707.71	707.66	707.45
11	708.07	707.79	707.73	707.50	707.45	707.23
12	707.77	707.48	707.42	707.19	707.15	706.93
13	707.77	707.48	707.42	707.19	707.14	706.93
14	708.08	707.79	707.73	707.50	707.45	707.24
15	708.28	708.00	707.94	707.70	707.66	707.44
16	708.43	708.14	708.08	707.85	707.81	707.59
17	708.54	708.26	708.20	707.97	707.92	707.71
18	708.52	708.23	708.17	707.94	707.89	707.68
19	708.39	708.11	708.05	707.82	707.77	707.56
20	708.23	707.95	707.89	707.66	707.61	707.39
21	708.07	707.79	707.73	707.50	707.45	707.23
22	707.90	707.63	707.58	707.36	707.32	707.12



SPLICE DETAIL
(44 Required)

Note:
Two hardened washers required for each set of oversized holes.
Load carrying components designated "NTR" shall conform to the supplemental requirements for notch toughness, zone 2.
*Alternate channel C12x30 is permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.
The alternate, if utilized, shall be provided at no additional cost to the Department.
**3/4" φ HS bolts, 5/16" φ holes

All splice steel shall be AASHTO M270 Grade 50.

DESIGNED	PMH
CHECKED	JCE
DRAWN	PMH
CHECKED	BB

* 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 (in⁴ and in³).
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 (in⁴ and in³).
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 (in⁴ and in³).
Z: Plastic Section Modulus of the steel section in non-composite areas (in³).
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_{sD}: 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.).
1.3 [M_D + M_{sD} + 5/3 (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_{sD} + 5/3 (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_{sD} + 5/3 (M_L + M_{Imp})]
VR: Maximum L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

STEEL DETAILS
STRUCTURE NO. 046-0146 (S.B.)
& STRUCTURE NO. 046-0147 (N.B.)

McDonough Associates Inc.
Engineers / Architects
130 East Randolph Street
Chicago, Illinois 60601
(312) 946-8600

SHEET NO. SR-30 SHEETS SR-48	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	57	(46-2) VBR	KANKAKEE	558	357
	CONTRACT NO. 66409				
FED. ROAD DIST. NO. 3 ILLINOIS FED. AID PROJECT					