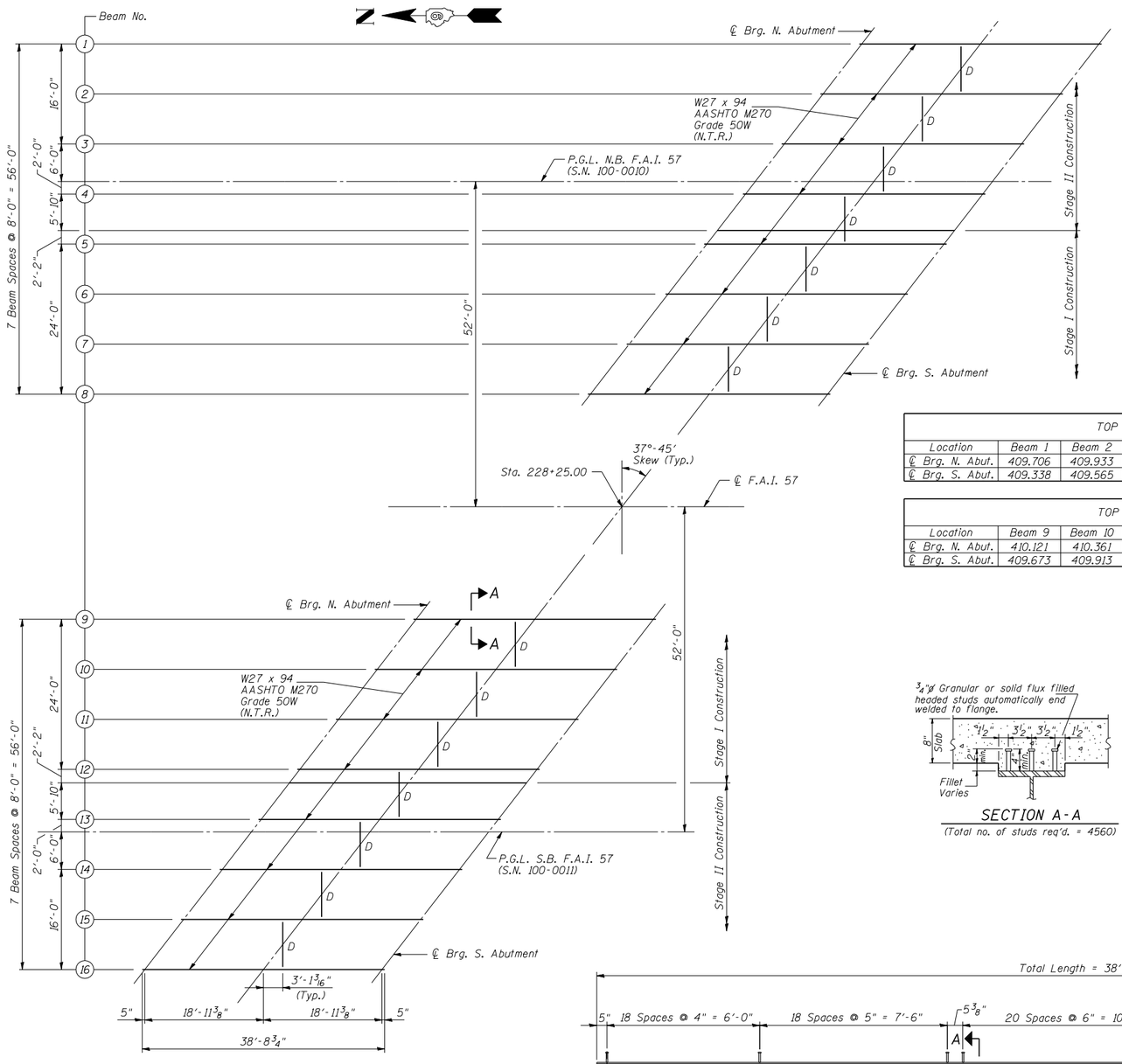
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



FRAMING PLAN

LRFD BEAM REACTION TABLE		
		Abut. 1 & 2
R_{DC1}	(k)	18.5
R_{DC2}	(k)	2.5
R_{DW}	(k)	7.6
R_{L+Imp}	(k)	79.4
R_{Total}	(k)	107.9

*** LFD BEAM REACTION TABLE		
		Abut. 1 & 2
R_{Q}	(k)	28.5
R_{L}	(k)	44.2
R_{I}	(k)	13.3
R_{Total}	(k)	86.0

*** For use w/abutment design

BEAM MOMENT TABLE		
		0.5 Span
I_s	(in^4)	3,270
$I_c(n)$	(in^4)	10,463
$I_c(3n)$	(in^4)	7,943
S_s	(in^3)	243
$S_c(n)$	(in^3)	388
$S_c(3n)$	(in^3)	352
Z		—
DC1	(k/')	0.94
M_{DC1}	('k)	170
DC2	(k/')	0.13
M_{DC2}	('k)	23
DW	(k/')	0.40
M_{DW}	('k)	72
M_{L+Imp}	('k)	536
Mu (Strength I)	('k)	1,288
* ØMn	('k)	2134
f_s DC1	(ksi)	8.37
f_s DC2	(ksi)	0.80
f_s DW	(ksi)	2.46
f_s 1.3(L+I)	(ksi)	21.58
f_s (Service II)	(ksi)	33.21
** f_s (Total)(Strength I)	(ksi)	42.73
Vr	(k)	28.65

* Compact, Braced Section.
** Non-Compact Section.

TOP OF BEAM ELEVATIONS STR. NO. 100-0010								
Location	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 7	Beam 8
℄ Brg. N. Abut.	409.706	409.933	410.129	410.252	410.187	410.091	409.985	409.878
℄ Brg. S. Abut.	409.338	409.565	409.760	409.883	409.818	409.722	409.616	409.510

TOP OF BEAM ELEVATIONS STR. NO. 100-0011								
Location	Beam 9	Beam 10	Beam 11	Beam 12	Beam 13	Beam 14	Beam 15	Beam 16
℄ Brg. N. Abut.	410.121	410.361	410.601	410.830	411.029	411.039	410.977	410.884
℄ Brg. S. Abut.	409.673	409.913	410.153	410.383	410.581	410.592	410.529	410.436

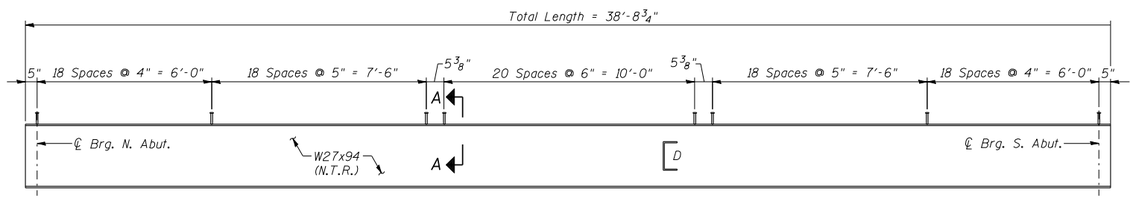
SECTION A-A
(Total no. of studs req'd. = 4560)

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Anchor Bolts, 1"	Each	64

NOTES:

1. All steel for flanges, webs, diaphragms, connection plates, and bearings shall be AASHTO M270 Grade 50W.
2. Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.



BEAM ELEVATION

I_s, S_s: Non-composite moment of inertia and section modulus of the steel section used for computing f_s(Total-Strength I, and Service II) 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-Strength I, and Service II) 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-Strength I, and Service II) due to long-term composite (superimposed) dead loads ($in.^4$ and $in.^3$).
DC1: Un-factored non-composite dead load (kips/ft.).
M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
M_{L+IM}: Un-factored live load moment plus dynamic load allowance (impact)(kip-ft.).
M_u (Strength I): Factored design moment (kip-ft.).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{L+IM}$
ØMn: Compact composite positive moment capacity computed according to Article 6.10.7.1 (Kip-ft).
f_s (Service II): Sum of stresses as computed from the moments below (ksi).
$M_{DC1} + M_{DC2} + M_{DW} + 1.3\ M_{L+IM}$
f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{L+IM}$

FRAMING PLAN & DETAILS
F.A.I. RTE. 57 OVER
LAKE CREEK BRANCH
STATION 228+25.00
STRUCTURE NO. 100-0010 (N.B.)
STRUCTURE NO. 100-0011 (S.B.)

CMT
CRAWFORD MURPHY & TILLY, INC.
CONSULTING ENGINEERS
SPRINGFIELD, IL ■ AURORA, IL ■ ST. LOUIS, MO
ROCKFORD, IL ■ PEORIA, IL ■ CHICAGO, IL
DESIGNED BY: KEH
CHECKED BY: WLB
DRAWN BY: GLD
DATE: 4/12/10

SHEET NO. 18
29 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-57	(X1-4-1) BR -1	WILLIAMSON	202	101
		CONTRACT NO. 78334		
FED. ROAD DIST. NO. 9	ILLINOIS	FED. AID PROJECT		