

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INTERIOR GIRDER MOMENT TABLE
(SB PROPOSED BEAMS 1A & 1B, COMPOSITE)

	0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
I_s (in ⁴)	5630	5630	5630
I_c (in ⁴)	14996		14996
I_c (3n) (in ⁴)	10570		10570
S_s (in ³)	411	411	411
S_c (in ³)	609		609
S_c (3n) (in ³)	542		542
Z (in ³)			
ϕ (k/ft.)	0.710	1.090	0.710
$M\phi$ (k)	128	299	96
$s\phi$ (k/ft.)	0.380		0.380
$M_s\phi$ (k)	73		65
M_t (k)	264	145	269
M (Imp) (k)	76	41	73
$\phi_3[M_t + M(imp)]$ (k)	567	309	571
M_a (k)	998	790	951
M_u (k)	1901		2193
$f_s\phi$ non-comp (k.s.i.)	3.7	8.7	2.8
$f_s\phi$ (comp) (k.s.i.)	1.6		1.4
$f_s\phi_3(\phi + imp)$ (k.s.i.)	11.2	9.0	11.3
f_s (Overload) (k.s.i.)	16.5	17.8	15.5
f_s (Total) (k.s.i.)		23.1	
VR (k)	45.5		34.2

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET	SHEET NO.
FAJ-55	**	WILL	505	315	44 SHEETS

** SECTION 2006-032 BY
CONTRACT NO. 60886

INTERIOR GIRDER MOMENT TABLE
(SB PROPOSED BEAM 7A, COMPOSITE)

	0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
I_s (in ⁴)	6710	6710	6710
I_c (in ⁴)	18645		18645
I_c (3n) (in ⁴)	13365		13365
S_s (in ³)	406	406	406
S_c (in ³)	617		617
S_c (3n) (in ³)	552		552
Z (in ³)			
ϕ (k/ft.)	0.740	1.120	0.740
$M\phi$ (k)	133	306	100
$s\phi$ (k/ft.)	0.380		0.380
$M_s\phi$ (k)	74		66
M_t (k)	291	158	297
M (Imp) (k)	84	44	81
$\phi_3[M_t + M(imp)]$ (k)	625	336	630
M_a (k)	1081	835	1035
M_u (k)	1903		2169
$f_s\phi$ non-comp (k.s.i.)	3.9	9.0	3.0
$f_s\phi$ (comp) (k.s.i.)	1.6		1.4
$f_s\phi_3(\phi + imp)$ (k.s.i.)	12.2	10.0	12.3
f_s (Overload) (k.s.i.)	17.7	19.0	16.7
f_s (Total) (k.s.i.)		24.7	
VR (k)	48.9		37.7

INTERIOR GIRDER REACTION TABLE
(SB PROPOSED BEAMS 1A & 1B, COMPOSITE)

	Abut.	Pier
$R\phi$ (k)	21.0	64.8
R_t (k)	32.6	37.9
Imp. (k)	9.4	10.5
R (Total) (k)	63.0	113.2

INTERIOR GIRDER REACTION TABLE
(SB PROPOSED BEAMS 7A, COMPOSITE)

	Abut.	Pier
$R\phi$ (k)	21.5	66.5
R_t (k)	35.0	40.8
Imp. (k)	10.0	11.3
R (Total) (k)	66.6	118.6

INTERIOR GIRDER MOMENT TABLE
(SB EXISTING BEAMS, COMPOSITE)

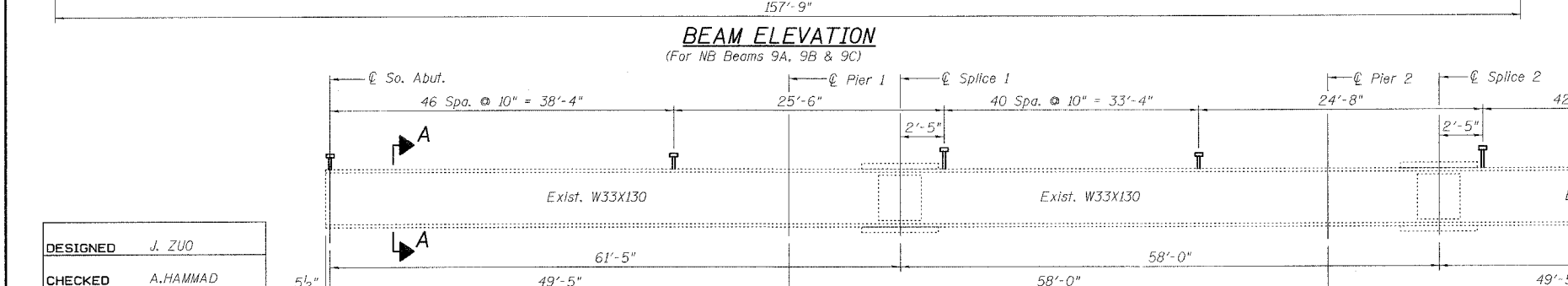
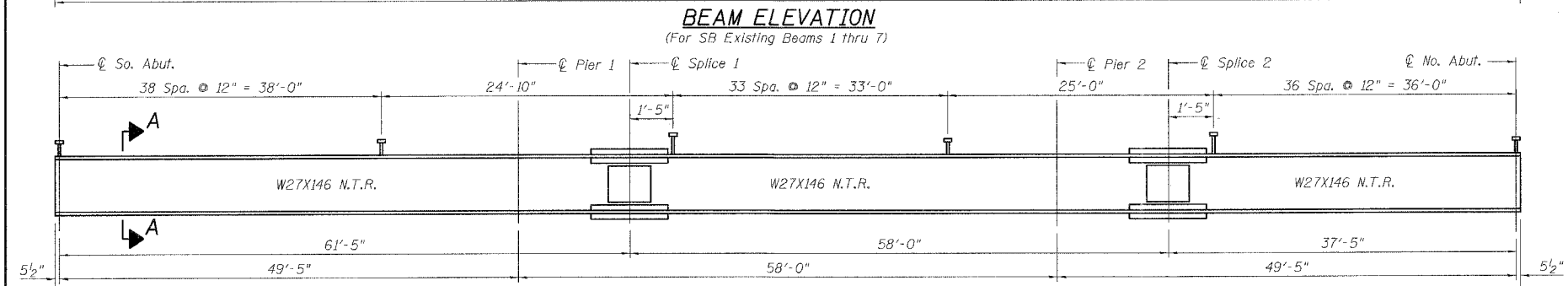
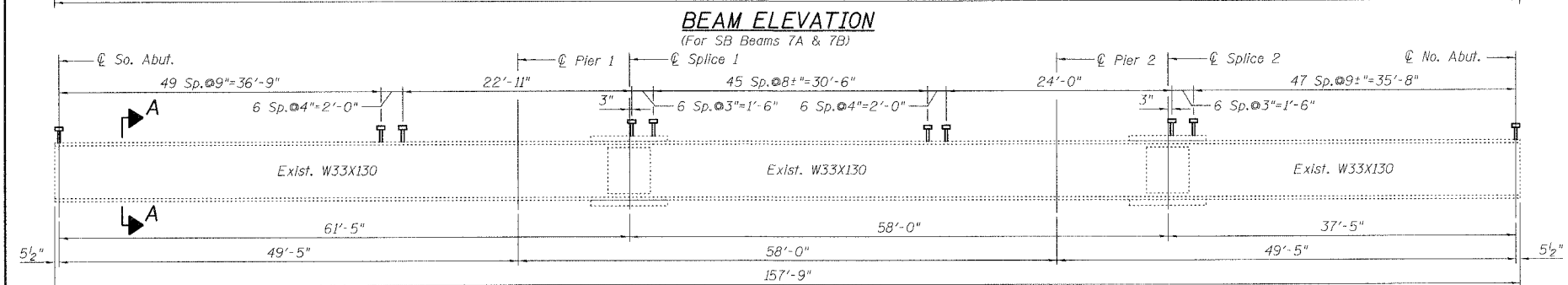
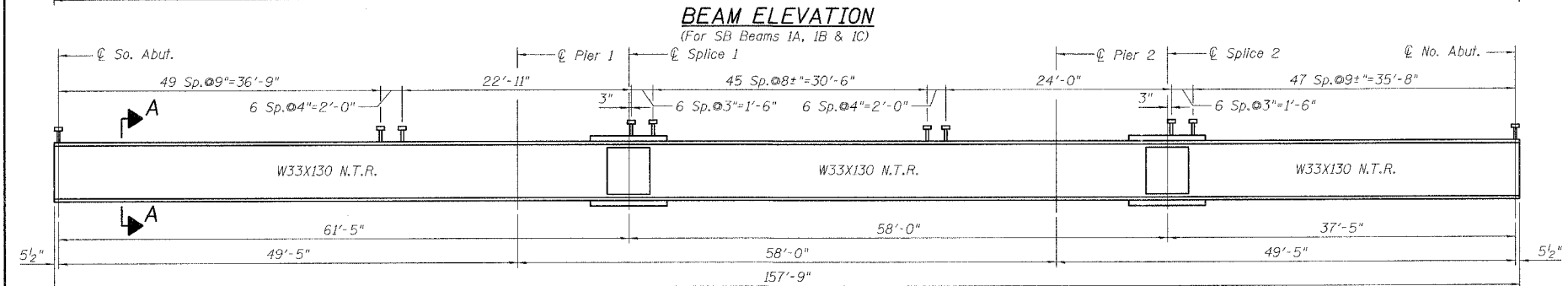
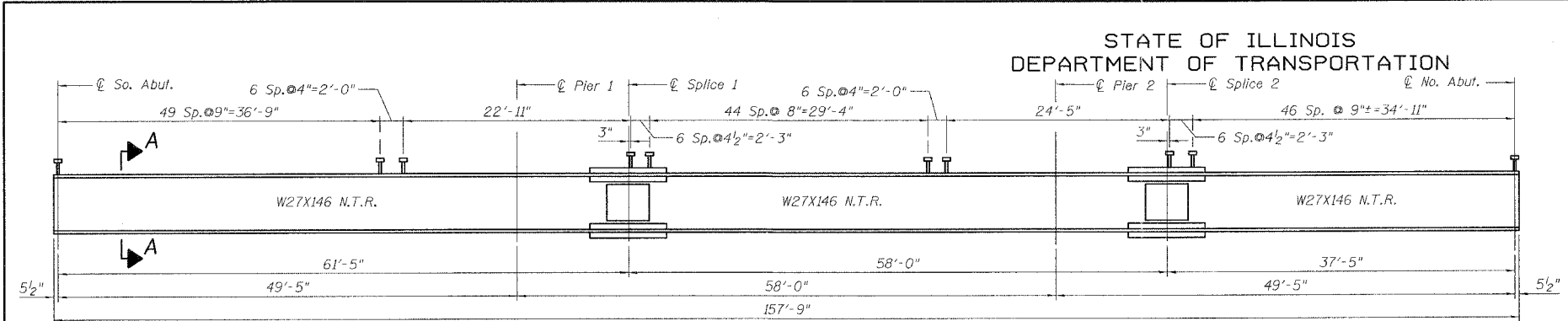
	0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
I_s (in ⁴)	6710	6710	6710
I_c (in ⁴)	18994		18994
I_c (3n) (in ⁴)	13690		13690
S_s (in ³)	406	406	406
S_c (in ³)	621		621
S_c (3n) (in ³)	557		557
Z (in ³)			
ϕ (k/ft.)	0.790	1.170	0.790
$M\phi$ (k)	140	318	105
$s\phi$ (k/ft.)	0.380		0.380
$M_s\phi$ (k)	74		67
M_t (k)	313	168	319
M (Imp) (k)	90	47	87
$\phi_3[M_t + M(imp)]$ (k)	671	359	677
M_a (k)	1151	881	1104
M_u (k)	1854		2038
$f_s\phi$ non-comp (k.s.i.)	4.2	9.4	3.1
$f_s\phi$ (comp) (k.s.i.)	1.6		1.4
$f_s\phi_3(\phi + imp)$ (k.s.i.)	13.0	10.6	13.1
f_s (Overload) (k.s.i.)	18.7	20.0	17.7
f_s (Total) (k.s.i.)		26.0	
VR (k)	52.9		39.3

INTERIOR GIRDER REACTION TABLE
(SB EXISTING BEAMS, COMPOSITE)

	Abut.	Pier
$R\phi$ (k)	22.4	69.0
R_t (k)	37.9	44.1
Imp. (k)	10.9	12.3
R (Total) (k)	71.1	125.4

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s (Total & Overload).
 I_c and S_c are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.
 $I_c(3n)$ and $S_c(3n)$ are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)
 VR is the maximum Live Load + Impact shear range in span.
 Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.
 M_a (Applied Moment) = $1.3[M\phi + M_s\phi + \phi_3(M_t + M(imp))]$.
 The Plastic Moment capacity (M_u) is computed according to AASHTO 10.48.1 and 10.50.1.1.
 f_s (Overload) is the sum of the stresses due to $M\phi + M_s\phi + \phi_3(M_t + M(imp))$.
 f_s (Total) (Non-compact section) is the sum of the stresses due to $1.3[M\phi + M_s\phi + \phi_3(M_t + M(imp))]$.

- Notes:
- N.T.R. denotes members subject to the supplemental requirements for notch toughness (Zone 2).
 - Verify all existing dimensions in field prior to fabrication.
 - Work this Sheet with Sheet Nos. 17 & 19.
 - For section A-A. See Sheet No. 17.



DESIGNED	J. ZUO
CHECKED	A. HAMMAD
DRAWN	J. ZUO
CHECKED	J. GRAINAWI

Date: 6/30/2006



STRUCTURAL STEEL DETAILS I
I-55 OVER E&E R.R.
FAI ROUTE 55-SEC. 2006-032 BY
WILL COUNTY
STA. 609+29.37
STRUCTURE NO. 009-0018 (NB)
STRUCTURE NO. 009-0019 (SB)

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