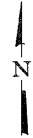


**FRAMING PLAN**



Notes:

See Sheets S-23, S-24, S-25, and S-26 for beam elevations and details.

	0.4 Sp. 1 0.6 Sp. 3	Pier 1 or 2	0.5 Sp. 2
I	(in <sup>4</sup> ) 48,647.6		48,647.6
I'	(in <sup>4</sup> ) 148,336		148,336
S <sub>b</sub>	(in <sup>3</sup> ) 3,165.1		3,165.1
S <sub>b</sub> '	(in <sup>3</sup> ) 5,564		5,564
S <sub>t</sub>	(in <sup>3</sup> ) 2,358.1		2,358.1
S <sub>t</sub> '	(in <sup>3</sup> ) 15,878		15,878
ℓ	(k/')	0.807	0.807
M <sub>ℓ</sub>	('k)	256.1	347.8
s <sub>ℓ</sub>	(k/')	0.121	0.121
M <sub>s</sub> ℓ	('k)	22.5	16.1
M <sub>ℓ</sub>	('k)	207.7	198.1
M <sub>I</sub>	('k)	56.1	53.5

	Abut.	Pier 1 Span 1 Pier 2 Span 3	Pier 1 Span 2 Pier 2 Span 2
R <sub>ℓ</sub>	(k)	20.9	23.7
R <sub>s</sub> ℓ	(k)	2.3	3.7
R <sub>ℓ</sub>	(k)	22.9	14.1
R <sub>I</sub>	(k)	15.9	3.8
R <sub>Total</sub>	(k)	62.0	45.3

\*The total R<sub>s</sub> ℓ, R<sub>ℓ</sub>, and impact reactions are assumed to be distributed evenly to each bearing line at a pier regardless of the span ratios. The bearing design at a pier is based on the maximum reactions of either span.

	0.4 Sp. 1 0.6 Sp. 3	Pier 1 or 2	0.5 Sp. 2
I	(in <sup>4</sup> ) 48,647.6		48,647.6
I'	(in <sup>4</sup> ) 168,424		168,424
S <sub>b</sub>	(in <sup>3</sup> ) 3,165.1		3,165.1
S <sub>b</sub> '	(in <sup>3</sup> ) 5,829		5,829
S <sub>t</sub>	(in <sup>3</sup> ) 2,358.1		2,358.1
S <sub>t</sub> '	(in <sup>3</sup> ) 23,695		23,695
ℓ	(k/')	0.995	0.995
M <sub>ℓ</sub>	('k)	315.8	428.8
s <sub>ℓ</sub>	(k/')	0.275	0.275
M <sub>s</sub> ℓ	('k)	51.0	36.5
M <sub>ℓ</sub>	('k)	298.9	285.1
M <sub>I</sub>	('k)	86.7	77.0

	Abut.	Pier 1 Span 1 Pier 2 Span 3	Pier 1 Span 2 Pier 2 Span 2
R <sub>ℓ</sub>	(k)	25.7	29.2
R <sub>s</sub> ℓ	(k)	5.3	8.3
R <sub>ℓ</sub>	(k)	33.0	20.3
R <sub>I</sub>	(k)	9.6	5.5
R <sub>Total</sub>	(k)	73.6	63.3

\*The total R<sub>s</sub> ℓ, R<sub>ℓ</sub>, and impact reactions are assumed to be distributed evenly to each bearing line at a pier regardless of the span ratios. The bearing design at a pier is based on the maximum reactions of either span.

- I: Non-composite moment of inertia of beam section (in<sup>4</sup>).
- I': Composite moment of inertia of beam section (in<sup>4</sup>).
- S<sub>b</sub>: Non-composite section modulus for the bottom fiber of the prestressed beam (in<sup>3</sup>).
- S<sub>b</sub>': Composite section modulus for the bottom fiber of the prestressed beam (in<sup>3</sup>).
- S<sub>t</sub>: Non-composite section modulus for the top fiber of the prestressed beam (in<sup>3</sup>).
- S<sub>t</sub>': Composite section modulus for the top fiber of the prestressed beam (in<sup>3</sup>).
- ℓ: Un-factored non-composite dead load (kips/ft.).
- M<sub>ℓ</sub>: Un-factored moment due to non-composite dead load conservatively taken at 0.5 of the span (kip-ft.).
- s<sub>ℓ</sub>: Un-factored long-term composite (superimposed) dead load (kips/ft.).
- M<sub>s</sub> ℓ: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- M<sub>ℓ</sub>: Un-factored live load moment on the composite section (kip-ft.).
- M<sub>I</sub>: Un-factored moment due to impact on the composite section (kip-ft.).

COMPANY NAME: SEC GROUP, INC.  
 PROJECT CONTACT: Robert G. Davies  
 CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION  
 DATE PLOTTED: 10/14/2011 11:02:02 AM  
 FILE NAME: 0470051-EP-09  
 PLOT DRIVER: pdf.plt  
 PEN TABLE: Struct-22x34.tbl



**BP Americas, Inc.**  
 230 WEST MONROE STREET,  
 SUITE 900  
 CHICAGO, IL 60606

USER NAME = whood	DESIGNED - MGH	REVISED -
PLOT SCALE =	CHECKED - SSM	REVISED -
PLOT DATE = 10/14/2011	DRAWN - RCB	REVISED -
	CHECKED - RGD	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - PRESTRESSED BEAM  
 STRUCTURE NO. 047-0051

SHEET NO. S-22 OF S-43 SHEETS

F.A.P. RTE. 591	SECTION 14BR-1	COUNTY KENDALL	TOTAL SHEETS 429	SHEET NO. 272
CONTRACT NO. 66985			ILLINOIS FED. AID PROJECT	