

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**PROPOSED  
HIGHWAY PLANS**

FOR INDEX OF SHEETS, SEE SHEET NO. 2

PROJECT LOCATED IN THE VILLAGE OF WADSWORTH

FAI ROUTE 94: INT 94/US 41 AT RUSSELL ROAD  
SECTION 2011-056-F

BRIDGE FABRICATION  
LAKE COUNTY  
C-91-605-11

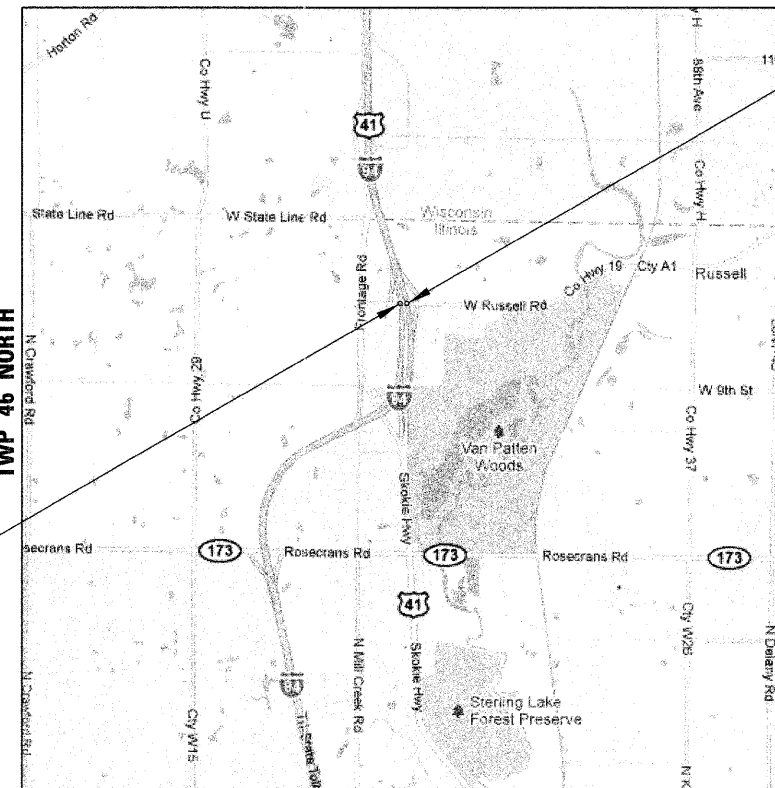
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
94	2011-056-F	LAKE	19	1
		ILLINOIS	CONTRACT NO. 60P69	

D-91-019-11



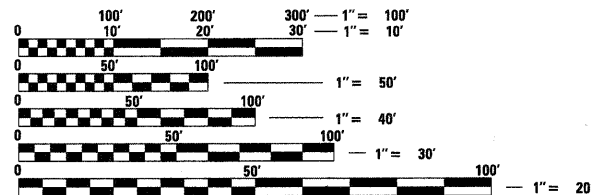
LOCATION OF SECTION INDICATED THUS: - [black rectangle] -

RANGE 11E, 3RD PRINCIPAL MERIDIAN



SN 049-0534  
PROPOSED SINGLE  
SPAN BRIDGE  
BEGIN STA 13 + 75.28  
END STA 15 + 11.28

SN 049-0533  
PROPOSED SINGLE  
SPAN BRIDGE  
BEGIN STA 11 + 77.02  
END STA 13 + 00.56



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
1-800-892-0123  
OR 811

~~PROJECT ENGINEER: MICHELLE AQUINO (847)705-4606~~  
PROJECT MANAGER: RAJENDRA SHAH (847)705-4555

CONTRACT NO. 60P69

GROSS LENGTH = 259.54 FT. = 0.049 MILE  
NET LENGTH = 259.54 FT. = 0.049 MILE



SIGNED: *Brian L. Umbright*  
DATE: July 5, 2011  
EXPIRES: NOVEMBER 30, 2012  
SHEETS: 1-11



SIGNED: *Clifton A. Gladstone*  
DATE: 7/5/2011  
EXPIRES: NOVEMBER 30, 2012  
SHEETS: 12-19

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED August 29, 2011  
*Devin M. O'Keefe*  
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER  
December 9 2011  
*Scott E. Stitt P.E.*  
acting ENGINEER OF DESIGN AND ENVIRONMENT  
December 9 2011  
*William R. Fies*  
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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OF THE STATE OF ILLINOIS

**GENERAL NOTES**

~~AASHTO M164 TYPE 1, MECHANICALLY GALVANIZED BOLTS.~~  
Fasteners shall be high strength bolts. Bolts 3/4"  $\phi$  Holes 15/16"  $\phi$ , unless noted otherwise.

~~All structural steel shall be AASHTO M270 Grade 50 unless noted otherwise.~~

Calculated weight of Structural Steel =

SN 049-0533:  
AASHTO M 270 Grade 36 = 26,580 lb.  
AASHTO M 270 Grade 50 = 318,150 lb.

SN 049-0534:  
AASHTO M 270 Grade 36 = 26,450 lb.  
AASHTO M 270 Grade 50 = 401,760 lb.

The structural steel bearing plates of the Elastomeric Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.

The Organic Zinc Rich Primer/Epoxy/Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception of the exterior surfaces and bottom of the bottom flange of the fascia beams, masked-off connection surfaces, and field-installed fasteners, all of which shall be touched up and finish-coated in the field. The color of the final finish coat for all interior steel surfaces shall be Gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be Reddish-Brown, Munsell No. 2.5YR 3/4. See Special Provision for "Cleaning and Painting New Metal Structures" - see Section 506 of the Standard Specifications.

**INDEX OF STATE STANDARDS**

000001-06 Standard Symbols, Abbreviations and Patterns

001006 Decimal of an Inch and of a Foot

**INDEX OF SHEETS**

SHEET NO.	TITLE
1	Title Sheet
2	General Notes, Index of Sheets and Summary of Quantities
3-11	SN 049-0533 General Plan & Elevation Construction Staging Top of Slab Elevations Layout Top of Slab Elevations I Top of Slab Elevations II Top of Slab Elevations III Framing Plan Beam Details Bearing Details
12-19	SN 049-0534 General Plan & Elevation Construction Staging Top of Slab Elevations I Top of Slab Elevations II Top of Slab Elevations III Framing Plan & Beam Details Cross Frame Details Bearing Details

**SUMMARY OF QUANTITIES**

CODE NO.	ITEM	UNIT	URBAN TOTAL QUANTITY	100% STATE	
				0010	0010
				SN 049-0533	SN 049-0534
50500205	Furnishing Structural Steel	L Sum	1	0.45	0.55
50500455	Storage of Structural Steel	Cal Da	90	45	45
52100110	Furnishing Elastomeric Bearing Assembly, Type I	Each	22	11	11
52100300	Storage of Elastomeric Bearing Assemblies	Cal Da	90	45	45

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		CHECKED - TL	REVISIONS
		DRAWN - MTR	REVISIONS
		CHECKED - DF	REVISIONS

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**GENERAL NOTES, INDEX OF DRAWINGS AND SUMMARY OF QUANTITIES**  
**STRUCTURE NO'S. 049-0533 & 049-0534**  
 SHEET NO. OF SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	2
CONTRACT NO. 60P69			Rev.	
ILLINOIS FED. AID PROJECT				

Bench Marks: Chiseled "□" on light pole foundation at S.W. corner Russell Road & I-94 NB exit. Elev. 742.89.  
 Chiseled "□" on N. curb of Russell Road approximately 90 feet W. of I-94 SB exit. Elev. 753.76

Existing Structure: S.N. 049-0089 was built in 1959 by the Illinois Department of Transportation. The existing structure has three simple spans, with a length of 147'-10<sup>3</sup>/<sub>4</sub>" from back-to-back of abutments, and a constant out-to-out width of 35'-2". The superstructure consists of a 9" thick reinforced concrete deck built composite with 42" deep PPC I-beams. The substructure consists of two stub abutments on concrete piles and two multi-column shoulder piers on spread footings. The existing bridge is to be removed and replaced. Russell Road is to be closed to traffic during construction of new bridge.

No Salvage.



**APPROVED**  
 FOR STRUCTURAL ADEQUACY ONLY  
*Brian L. Umbright*  
 ENGINEER OF BRIDGES AND STRUCTURES

SIGNED: *Brian L. Umbright*

DATE: November 29, 2011

EXPIRES: November 30, 2012

**DESIGN SPECIFICATIONS**

2010 AASHTO LRFD Bridge Design Specifications with 2010 Interims

**DESIGN STRESSES**

**FIELD UNITS**

$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (Reinforcement)  
 $f_y = 36,000$  psi (AASHTO M270 Grade 36)  
 $f_y = 50,000$  psi (AASHTO M270 Grade 50)

**LOADING HL-93**

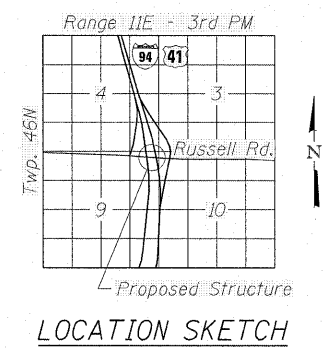
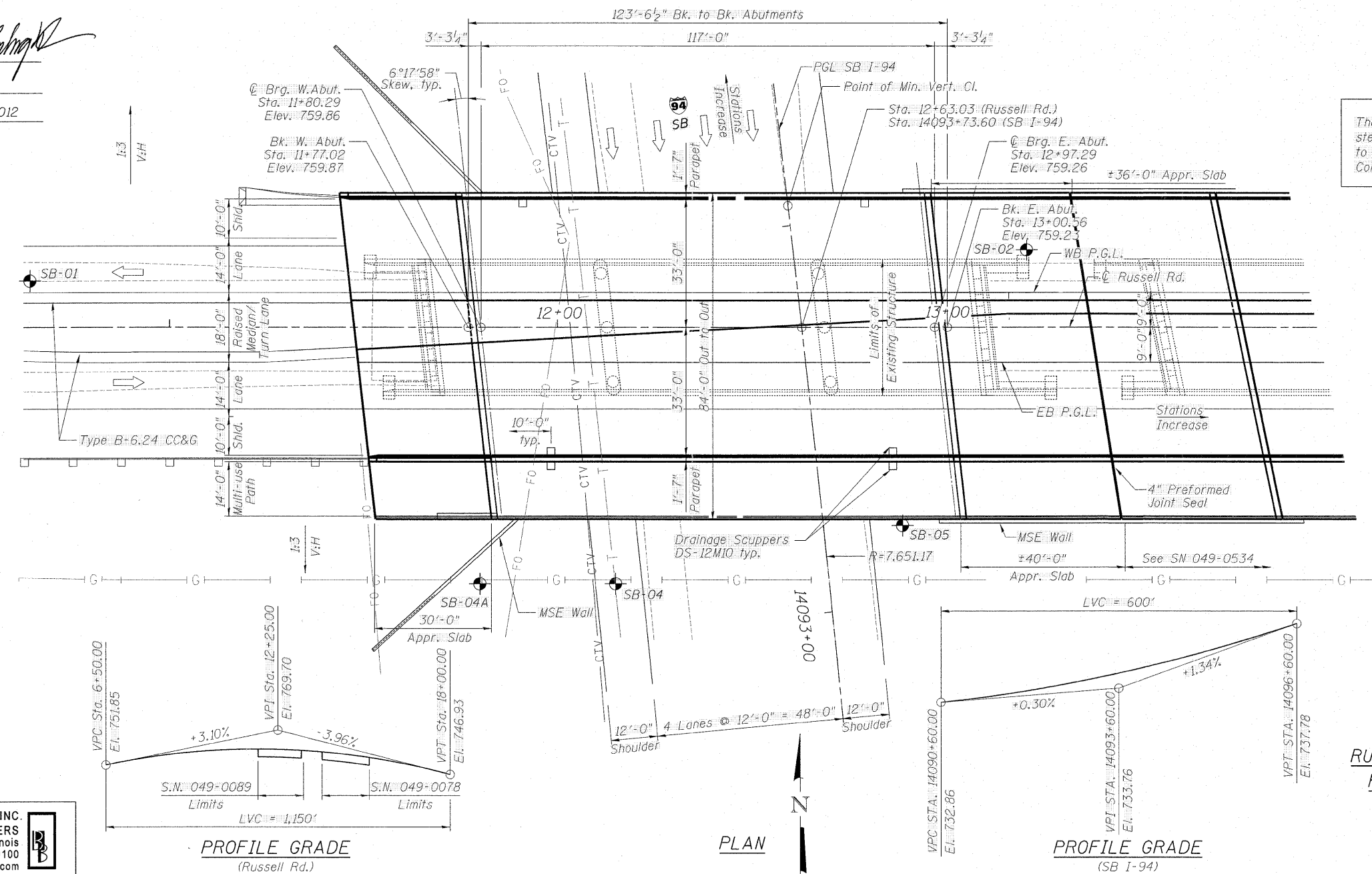
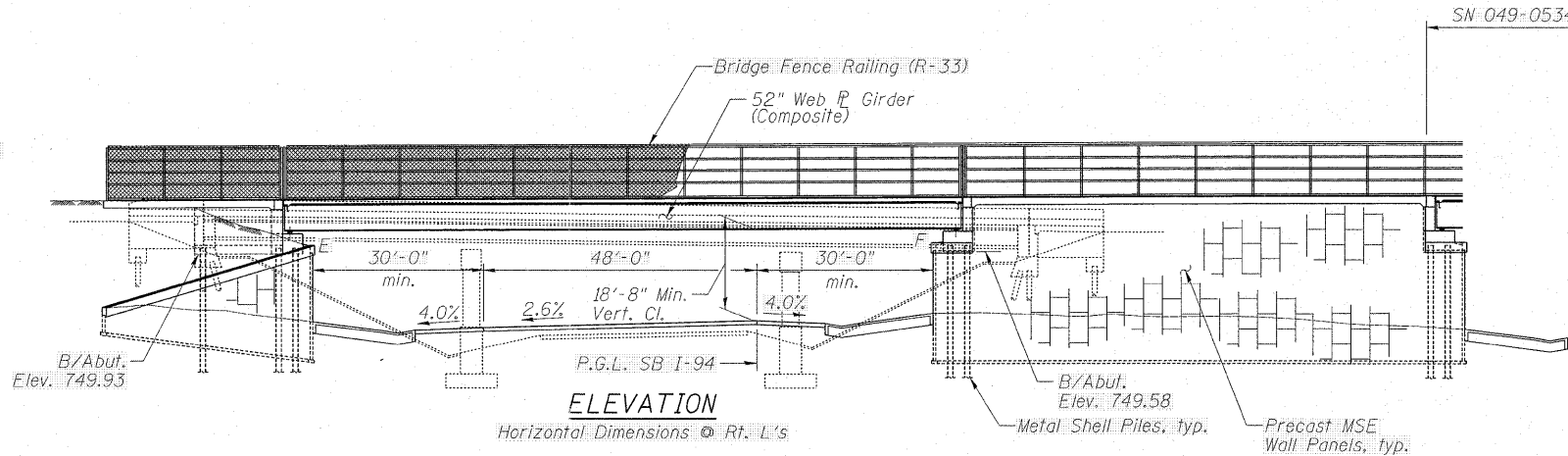
Allow 50#/sq. ft. for future wearing surface.

**SEISMIC DATA**

Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. ( $S_{D1}$ ) = 0.074g  
 Design Spectral Acceleration at 0.2 sec. ( $S_{D5}$ ) = 0.117g  
 Soil Site Class = D

A SUE investigation is being performed. All utilities will be relocated as necessary.

These plans are for the fabrication of the structural steel and bearings. All work shown that is not related to the fabrication is identified as "Not Included in this Contract" or "For Information Only".



**GENERAL PLAN & ELEVATION**  
**RUSSELL ROAD OVER SOUTHBOUND I-94**  
**F.A.U. RTE. 1199 - SEC. 2011-056-F**  
**LAKE COUNTY**  
**STATION 12+63.03**  
**STRUCTURE NO. 049-0533**

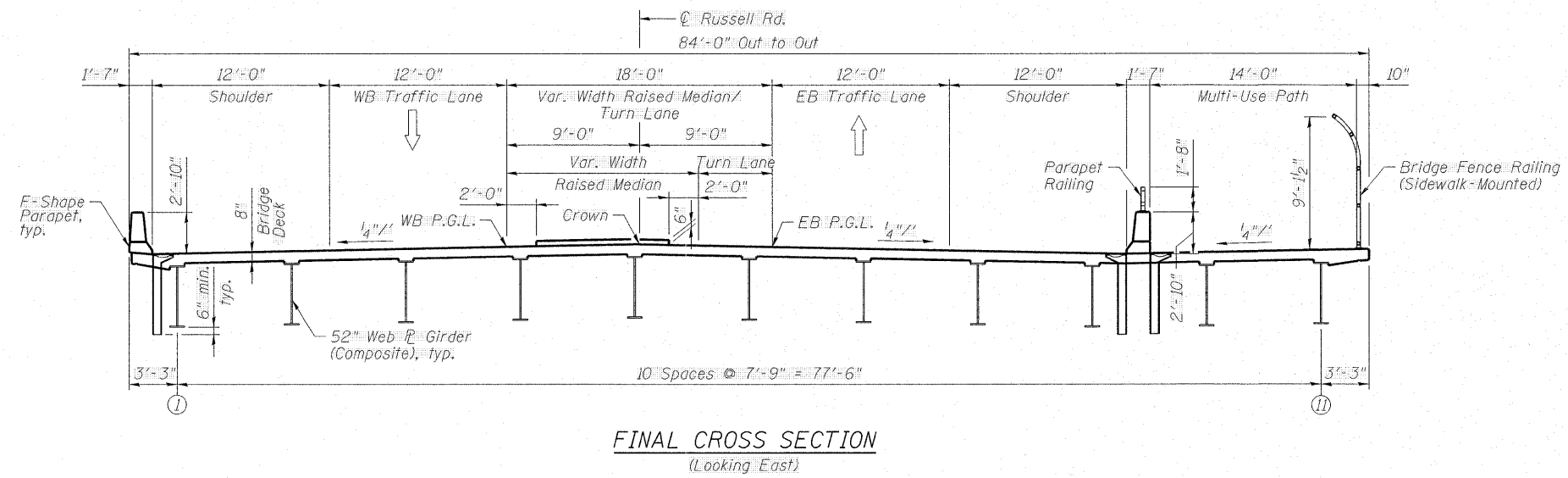
**CURVE DATA**  
 (SB I-94)

P.I. = Sta. 14096+54.48  
 $\Delta = 20^\circ 33' 20''$  LT  
 $D = 0^\circ 44' 56''$   
 $R = 7,651.17'$   
 $L = 2,744.97'$   
 $T = 1387.40'$   
 $E = 124.77'$   
 $e = 2.6\%$   
 P.C. = Sta. 14082+67.09  
 P.T. = Sta. 14110+12.05

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PLOT SCALE = N.T.S.	DRAWN - MTR	CHECKED - TL	REVISIONS -		SHEET NO. OF SHEETS				
PLOT DATE = 12/6/2011	CHECKED - DF	DRAWN - MTR	REVISIONS -		CONTRACT NO. 60P69				
		CHECKED - DF	REVISIONS -		ILLINOIS FED. AID PROJECT				



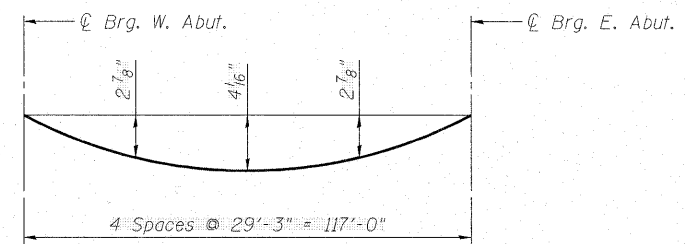
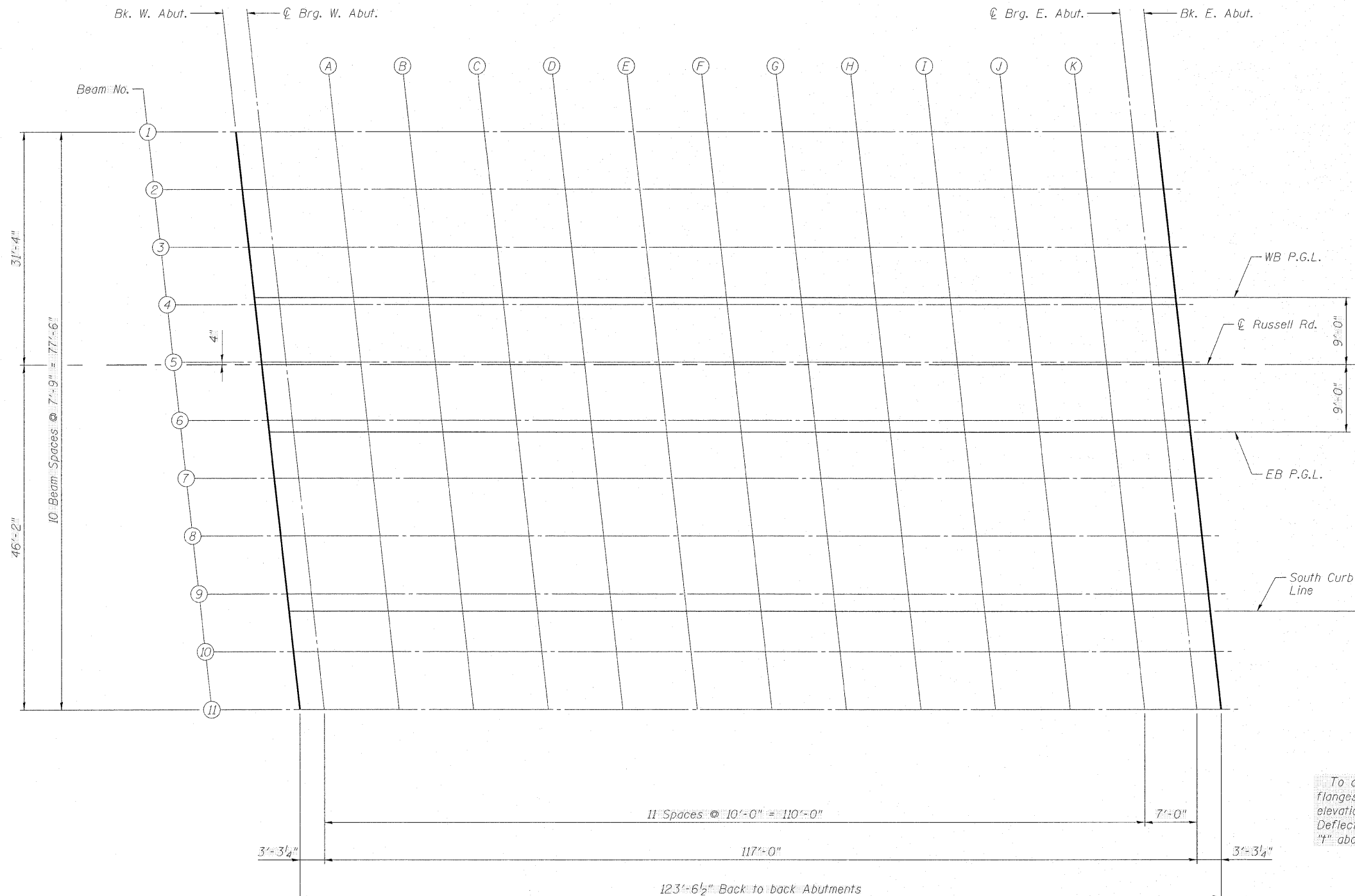
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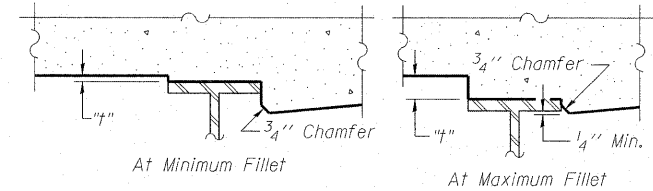


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		CHECKED - TL	REVISED -			1199	2011-056-F	LAKE	19	4	
	PLOT SCALE = N.T.S.	DRAWN - MTR	REVISED -			CONTRACT NO. 60P69					
	PLOT DATE = 12/6/2011	CHECKED - DF	REVISED -			[ILLINOIS] FED. AID PROJECT					
					SHEET NO. OF SHEETS						



**DEAD LOAD DEFLECTION DIAGRAM**

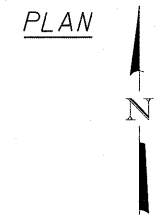
Note: (Includes weight of concrete only.)  
 The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on sheets 6 thru 8.



To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown on this sheet. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheets 6 thru 8, minus slab thickness, equals the fillet heights "t" above top flange of beams.

**FILLET HEIGHTS**

FOR INFORMATION ONLY  
 NOT IN CONTRACT



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	PLOT DATE = 12/6/2011	CHECKED - DF	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS LAYOUT  
 STRUCTURE NO. 049-0533**

SHEET NO. OF SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	5
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P69	

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+73.56	-31.33	759.22	759.22
⊕ W. Abut.	11+76.83	-31.33	759.22	759.22
A	11+86.83	-31.33	759.20	759.29
B	11+96.83	-31.33	759.18	759.35
C	12+06.83	-31.33	759.15	759.39
D	12+16.83	-31.33	759.11	759.41
E	12+26.83	-31.33	759.07	759.40
F	12+36.83	-31.33	759.03	759.36
G	12+46.83	-31.33	758.97	759.30
H	12+56.83	-31.33	758.91	759.20
I	12+66.83	-31.33	758.85	759.07
J	12+76.83	-31.33	758.78	758.93
K	12+86.83	-31.33	758.70	758.76
⊕ Brq. E. Abut.	12+93.83	-31.33	758.64	758.64
Bk. E. Abut.	12+97.10	-31.33	758.61	758.61

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+74.42	-23.58	759.38	759.38
⊕ W. Abut.	11+77.69	-23.58	759.38	759.38
A	11+87.69	-23.58	759.36	759.45
B	11+97.69	-23.58	759.34	759.51
C	12+07.69	-23.58	759.31	759.55
D	12+17.69	-23.58	759.27	759.57
E	12+27.69	-23.58	759.23	759.56
F	12+37.69	-23.58	759.18	759.52
G	12+47.69	-23.58	759.13	759.45
H	12+57.69	-23.58	759.07	759.35
I	12+67.69	-23.58	759.00	759.23
J	12+77.69	-23.58	758.93	759.08
K	12+87.69	-23.58	758.85	758.92
⊕ Brq. E. Abut.	12+94.69	-23.58	758.79	758.79
Bk. E. Abut.	12+97.96	-23.58	758.77	758.77

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+75.27	-15.83	759.54	759.54
⊕ W. Abut.	11+78.54	-15.83	759.54	759.54
A	11+88.54	-15.83	759.52	759.61
B	11+98.54	-15.83	759.49	759.67
C	12+08.54	-15.83	759.47	759.71
D	12+18.54	-15.83	759.43	759.73
E	12+28.54	-15.83	759.39	759.71
F	12+38.54	-15.83	759.34	759.68
G	12+48.54	-15.83	759.29	759.61
H	12+58.54	-15.83	759.23	759.51
I	12+68.54	-15.83	759.16	759.38
J	12+78.54	-15.83	759.09	759.24
K	12+88.54	-15.83	759.01	759.07
⊕ Brq. E. Abut.	12+95.54	-15.83	758.95	758.95
Bk. E. Abut.	12+98.81	-15.83	758.92	758.92

WESTBOUND PROFILE GRADE LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+76.03	-9.00	759.68	759.68
⊕ W. Abut.	11+79.30	-9.00	759.68	759.68
A	11+89.30	-9.00	759.66	759.75
B	11+99.30	-9.00	759.64	759.81
C	12+09.30	-9.00	759.61	759.85
D	12+19.30	-9.00	759.57	759.86
E	12+29.30	-9.00	759.53	759.85
F	12+39.30	-9.00	759.48	759.81
G	12+49.30	-9.00	759.42	759.75
H	12+59.30	-9.00	759.36	759.65
I	12+69.30	-9.00	759.30	759.52
J	12+79.30	-9.00	759.22	759.37
K	12+89.30	-9.00	759.14	759.21
⊕ Brq. E. Abut.	12+96.30	-9.00	759.08	759.08
Bk. E. Abut.	12+99.57	-9.00	759.06	759.06

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+76.13	-8.08	759.70	759.70
⊕ W. Abut.	11+79.40	-8.08	759.70	759.70
A	11+89.40	-8.08	759.68	759.77
B	11+99.40	-8.08	759.65	759.83
C	12+09.40	-8.08	759.62	759.87
D	12+19.40	-8.08	759.59	759.88
E	12+29.40	-8.08	759.55	759.87
F	12+39.40	-8.08	759.50	759.83
G	12+49.40	-8.08	759.44	759.76
H	12+59.40	-8.08	759.38	759.66
I	12+69.40	-8.08	759.31	759.54
J	12+79.40	-8.08	759.24	759.39
K	12+89.40	-8.08	759.16	759.23
⊕ Brq. E. Abut.	12+96.40	-8.08	759.10	759.10
Bk. E. Abut.	12+99.67	-8.08	759.07	759.07

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+76.98	-0.33	759.86	759.86
⊕ W. Abut.	11+80.25	-0.33	759.86	759.86
A	11+90.25	-0.33	759.84	759.93
B	12+00.25	-0.33	759.81	759.99
C	12+10.25	-0.33	759.78	760.03
D	12+20.25	-0.33	759.75	760.04
E	12+30.25	-0.33	759.70	760.03
F	12+40.25	-0.33	759.65	759.99
G	12+50.25	-0.33	759.60	759.92
H	12+60.25	-0.33	759.54	759.82
I	12+70.25	-0.33	759.47	759.69
J	12+80.25	-0.33	759.40	759.55
K	12+90.25	-0.33	759.32	759.38
⊕ Brq. E. Abut.	12+97.25	-0.33	759.26	759.26
Bk. E. Abut.	13+00.52	-0.33	759.23	759.23

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	PLOT SCALE = N.T.S.	CHECKED - TL	REVISED -			SHEET NO. OF SHEETS		CONTRACT NO. 60P69				
	PLOT DATE = 12/6/2011	DRAWN - MTR	REVISED -			ILLINOIS FED. AID PROJECT						
		CHECKED - DF	REVISED -									

☉ RUSSELL ROAD

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+77.02	0.00	759.87	759.87
☉ W. Abut.	11+80.29	0.00	759.86	759.86
A	11+90.29	0.00	759.84	759.94
B	12+00.29	0.00	759.82	759.99
C	12+10.29	0.00	759.79	760.03
D	12+20.29	0.00	759.75	760.05
E	12+30.29	0.00	759.71	760.04
F	12+40.29	0.00	759.66	760.00
G	12+50.29	0.00	759.61	759.93
H	12+60.29	0.00	759.54	759.83
I	12+70.29	0.00	759.48	759.70
J	12+80.29	0.00	759.40	759.55
K	12+90.29	0.00	759.32	759.39
☉ Brg. E. Abut.	12+97.29	0.00	759.26	759.26
Bk. E. Abut.	13+00.56	0.00	759.23	759.23

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+77.84	7.42	759.71	759.71
☉ W. Abut.	11+81.11	7.42	759.71	759.71
A	11+91.11	7.42	759.69	759.78
B	12+01.11	7.42	759.66	759.84
C	12+11.11	7.42	759.63	759.88
D	12+21.11	7.42	759.59	759.89
E	12+31.11	7.42	759.55	759.88
F	12+41.11	7.42	759.50	759.84
G	12+51.11	7.42	759.45	759.77
H	12+61.11	7.42	759.38	759.67
I	12+71.11	7.42	759.32	759.54
J	12+81.11	7.42	759.24	759.39
K	12+91.11	7.42	759.16	759.23
☉ Brg. E. Abut.	12+98.11	7.42	759.10	759.10
Bk. E. Abut.	13+01.38	7.42	759.07	759.07

EASTBOUND PROFILE GRADE LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+78.01	9.00	759.68	759.68
☉ W. Abut.	11+81.28	9.00	759.67	759.67
A	11+91.28	9.00	759.65	759.75
B	12+01.28	9.00	759.63	759.80
C	12+11.28	9.00	759.60	759.84
D	12+21.28	9.00	759.56	759.86
E	12+31.28	9.00	759.52	759.84
F	12+41.28	9.00	759.47	759.80
G	12+51.28	9.00	759.41	759.73
H	12+61.28	9.00	759.35	759.63
I	12+71.28	9.00	759.28	759.51
J	12+81.28	9.00	759.21	759.36
K	12+91.28	9.00	759.13	759.19
☉ Brg. E. Abut.	12+98.28	9.00	759.07	759.07
Bk. E. Abut.	13+01.55	9.00	759.04	759.04

BEAM 7

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+78.69	15.17	759.55	759.55
☉ W. Abut.	11+81.96	15.17	759.54	759.54
A	11+91.96	15.17	759.52	759.62
B	12+01.96	15.17	759.50	759.67
C	12+11.96	15.17	759.47	759.71
D	12+21.96	15.17	759.43	759.73
E	12+31.96	15.17	759.39	759.71
F	12+41.96	15.17	759.34	759.67
G	12+51.96	15.17	759.28	759.60
H	12+61.96	15.17	759.22	759.50
I	12+71.96	15.17	759.15	759.37
J	12+81.96	15.17	759.07	759.22
K	12+91.96	15.17	758.99	759.06
☉ Brg. E. Abut.	12+98.96	15.17	758.93	758.93
Bk. E. Abut.	13+02.23	15.17	758.90	758.90

BEAM 8

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+79.55	22.92	759.39	759.39
☉ W. Abut.	11+82.82	22.92	759.38	759.38
A	11+92.82	22.92	759.36	759.45
B	12+02.82	22.92	759.34	759.51
C	12+12.82	22.92	759.30	759.55
D	12+22.82	22.92	759.26	759.56
E	12+32.82	22.92	759.22	759.55
F	12+42.82	22.92	759.17	759.51
G	12+52.82	22.92	759.11	759.44
H	12+62.82	22.92	759.05	759.33
I	12+72.82	22.92	758.98	759.20
J	12+82.82	22.92	758.91	759.05
K	12+92.82	22.92	758.82	758.89
☉ Brg. E. Abut.	12+99.82	22.92	758.76	758.76
Bk. E. Abut.	13+03.09	22.92	758.73	758.73

BEAM 9

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+80.41	30.67	759.22	759.22
☉ W. Abut.	11+83.68	30.67	759.22	759.22
A	11+93.68	30.67	759.20	759.29
B	12+03.68	30.67	759.17	759.35
C	12+13.68	30.67	759.14	759.38
D	12+23.68	30.67	759.10	759.40
E	12+33.68	30.67	759.05	759.38
F	12+43.68	30.67	759.00	759.34
G	12+53.68	30.67	758.95	759.27
H	12+63.68	30.67	758.88	759.17
I	12+73.68	30.67	758.81	759.04
J	12+83.68	30.67	758.74	758.89
K	12+93.68	30.67	758.66	758.72
☉ Brg. E. Abut.	13+00.68	30.67	758.59	758.59
Bk. E. Abut.	13+03.95	30.67	758.56	758.56

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FILE NAME =	USER NAME =	DESIGNED - MRM	REVISIONS -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TOP OF SLAB ELEVATIONS II STRUCTURE NO. 049-0533</b>	F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
		CHECKED - TL	REVISIONS -			1199	2011-056-F	LAKE	19	7	
		DRAWN - MTR	REVISIONS -			CONTRACT NO. 60P69					
		CHECKED - DF	REVISIONS -			ILLINOIS FED. AID PROJECT					
				SHEET NO. OF SHEETS							

SOUTH CURB LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+80.66	33.00	759.17	759.17
⊕ W. Abut.	11+83.93	33.00	759.17	759.17
A	11+93.93	33.00	759.15	759.24
B	12+03.93	33.00	759.12	759.30
C	12+13.93	33.00	759.09	759.33
D	12+23.93	33.00	759.05	759.35
E	12+33.93	33.00	759.00	759.33
F	12+43.93	33.00	758.95	759.29
G	12+53.93	33.00	758.90	759.22
H	12+63.93	33.00	758.83	759.12
I	12+73.93	33.00	758.76	758.99
J	12+83.93	33.00	758.69	758.84
K	12+93.93	33.00	758.60	758.67
⊕ Brg. E. Abut.	13+00.93	33.00	758.54	758.54
Bk. E. Abut.	13+04.20	33.00	758.51	758.51

BEAM 10

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+81.26	38.42	759.29	759.29
⊕ W. Abut.	11+84.53	38.42	759.28	759.28
A	11+94.53	38.42	759.26	759.35
B	12+04.53	38.42	759.23	759.41
C	12+14.53	38.42	759.20	759.44
D	12+24.53	38.42	759.16	759.46
E	12+34.53	38.42	759.11	759.44
F	12+44.53	38.42	759.06	759.40
G	12+54.53	38.42	759.01	759.33
H	12+64.53	38.42	758.94	759.22
I	12+74.53	38.42	758.87	759.10
J	12+84.53	38.42	758.79	758.94
K	12+94.53	38.42	758.71	758.78
⊕ Brg. E. Abut.	13+01.53	38.42	758.65	758.65
Bk. E. Abut.	13+04.80	38.42	758.62	758.62

BEAM 11

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	11+82.12	46.17	759.45	759.45
⊕ W. Abut.	11+85.39	46.17	759.44	759.44
A	11+95.39	46.17	759.42	759.51
B	12+05.39	46.17	759.39	759.57
C	12+15.39	46.17	759.36	759.60
D	12+25.39	46.17	759.32	759.61
E	12+35.39	46.17	759.27	759.60
F	12+45.39	46.17	759.22	759.56
G	12+55.39	46.17	759.16	759.48
H	12+65.39	46.17	759.10	759.38
I	12+75.39	46.17	759.03	759.25
J	12+85.39	46.17	758.95	759.10
K	12+95.39	46.17	758.87	758.93
⊕ Brg. E. Abut.	13+02.39	46.17	758.80	758.80
Bk. E. Abut.	13+05.66	46.17	758.77	758.77

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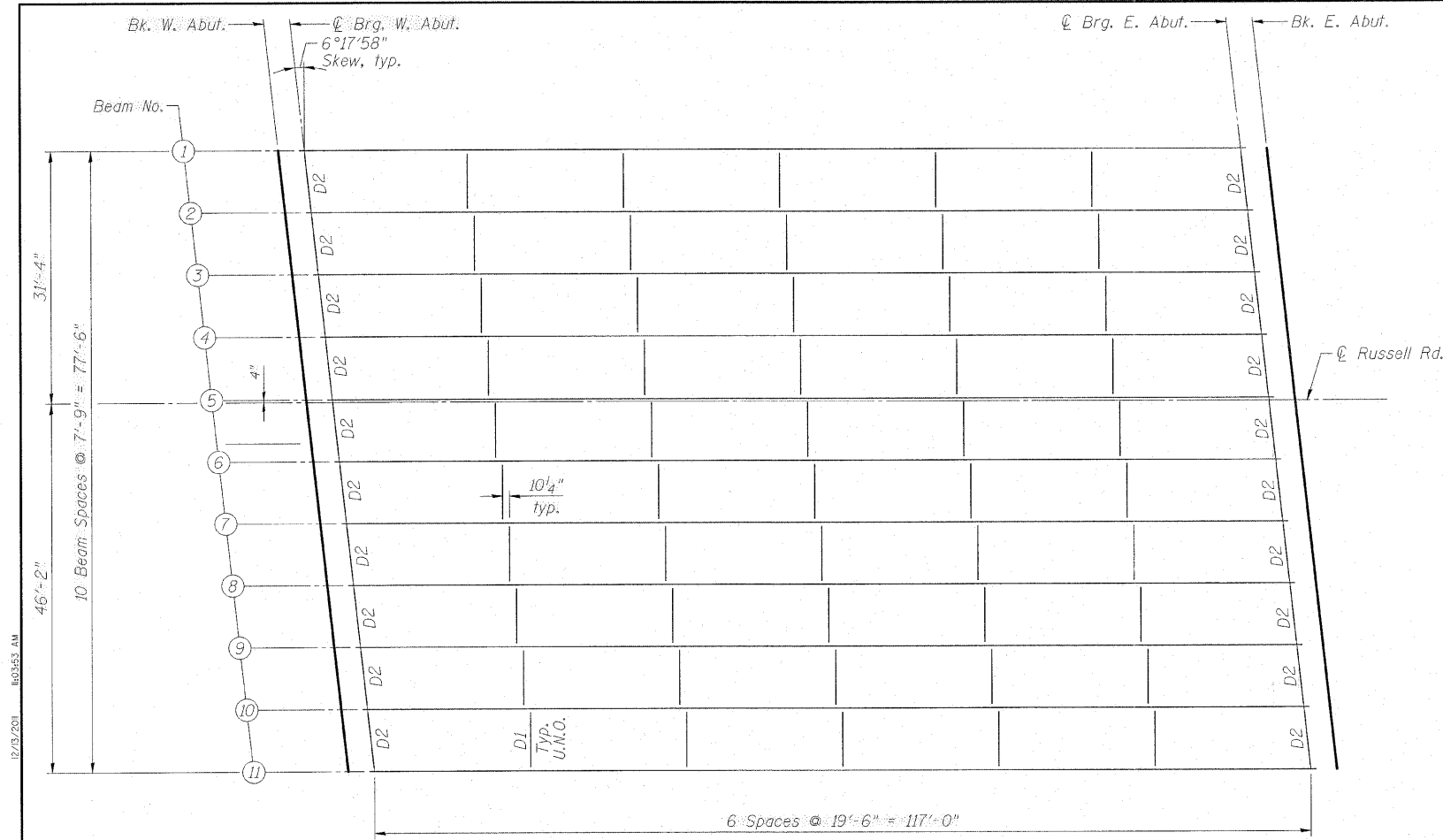
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FILE NAME =	USER NAME =	DESIGNED - MRM	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TOP OF SLAB ELEVATIONS III STRUCTURE NO. 049-0533</b>	F.A.U. RTE. 1199	SECTION 2011-056-F	COUNTY LAKE	TOTAL SHEETS 19	SHEET NO. 8
	PLOT SCALE = N.T.S.	DRAWN - MTR	REVISED -			CONTRACT NO. 60P69		ILLINOIS FED. AID PROJECT		
	PLOT DATE = 12/6/2011	CHECKED - DF	REVISED -		SHEET NO. OF SHEETS					





**INTERIOR GIRDER MOMENT TABLE**

$I_s$	(in <sup>4</sup> )	32,425
$I_c(n)$	(in <sup>4</sup> )	88,804
$I_c(3n)$	(in <sup>4</sup> )	62,252
$I_c(cr)$	(in <sup>4</sup> )	-
$S_s$	(in <sup>3</sup> )	1,512
$S_c(n)$	(in <sup>3</sup> )	2,081
$S_c(3n)$	(in <sup>3</sup> )	1,903
$S_c(cr)$	(in <sup>3</sup> )	-
DC1	(k/ft)	1.08
M <sub>DC1</sub>	(k)	1,876
DC2	(k/ft)	0.155
M <sub>DC2</sub>	(k)	265
DW	(k/ft)	0.325
M <sub>DW</sub>	(k)	556
$M_L + IM$	(k)	2,239
$M_u$ (Strength I)	(k)	7,430
$\phi_r M_n$	(k)	9,925
$f_s$ DC1	(ksi)	14.89
$f_s$ DC2	(ksi)	1.67
$f_s$ DW	(ksi)	3.51
$f_s$ ( $\phi + IM$ )	(ksi)	12.91
$f_s$ (Service II)	(ksi)	36.85
$0.95R_n F_y f$	(ksi)	47.5
$f_s$ (Total)(Strength I)	(ksi)	48.56
$\phi_r F_n$	(ksi)	-
$V_r$	(k)	28.4

**INTERIOR GIRDER REACTION TABLE**

Beam	W. Abut.	E. Abut.
R <sub>DC1</sub>	65.2	65.2
R <sub>DC2</sub>	9.6	8.6
R <sub>DW</sub>	18.7	19.3
$R_L + IM$	106.5	106.5
R <sub>Total</sub>	199.9	199.5

$I_s, S_s$ : 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<sup>4</sup> and in<sup>3</sup>).

$I_c(n), S_c(n)$ : 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) in uncracked sections, due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : 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) in uncracked sections, due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(cr), S_c(cr)$ : Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing  $f_s$  (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite dead loads (in<sup>4</sup> and in<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).

M<sub>DC1</sub>: 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<sub>DC2</sub>: 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<sub>DW</sub>: 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.).

$1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_L + IM$

$\phi_r M_n$ : Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

$f_s$  DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

$M_{DC1} / S_{nc}$

$f_s$  DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

$M_{DC2} / S_c(3n)$  or  $M_{DC2} / S_c(cr)$  as applicable.

$f_s$  DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

$M_{DW} / S_c(3n)$  or  $M_{DW} / S_c(cr)$  as applicable.

$f_s$  ( $\phi + IM$ ): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).

$M_L + IM / S_c(3n)$  or  $M_L + IM / S_c(cr)$  as applicable.

$f_s$  (Service II): Sum of stresses as computed below (ksi).

$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3 f_s(\phi + IM)$

$0.95R_n F_y f$ : Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

$f_s$  (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.25 (f_{sDC1} + f_{sDC2}) + 1.5 f_{sDW} + 1.75 f_s(\phi + IM)$

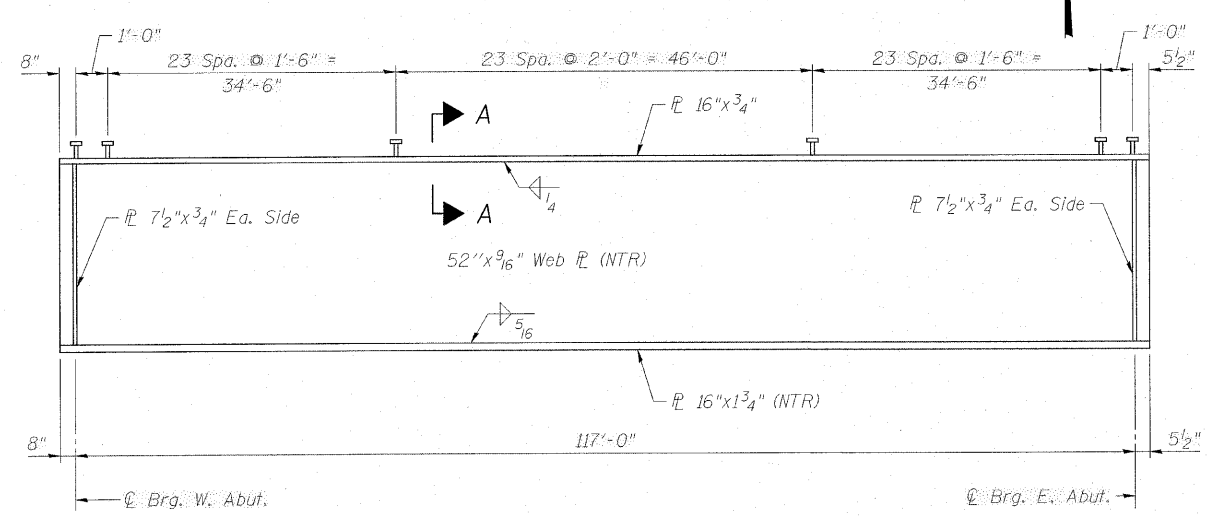
$\phi_r F_n$ : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7.2 (ksi).

$V_r$ : Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

**FRAMING PLAN**

**TOP OF WEB ELEVATIONS**  
(For Fabrication only)

Beam	☉ Brg. W. Abut.	a	b	c	☉ Brg. E. Abut.
1	758.40	758.61	758.61	758.33	757.83
2	758.56	758.77	758.77	758.48	757.98
3	758.72	758.93	758.93	758.64	758.14
4	758.88	759.09	759.09	758.79	758.29
5	759.04	759.25	759.24	758.95	758.44
6	758.89	759.10	759.09	758.79	758.29
7	758.73	758.93	758.93	758.63	758.12
8	758.57	758.77	758.76	758.46	757.95
9	758.41	758.60	758.59	758.29	757.78
10	758.47	758.66	758.65	758.35	757.84
11	758.63	758.82	758.81	758.51	757.99

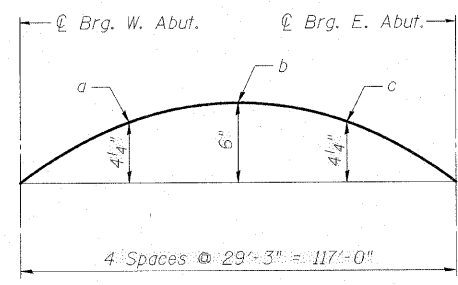


**GIRDER ELEVATION**  
"NTR" denotes plates to which notch toughness requirements are applicable.

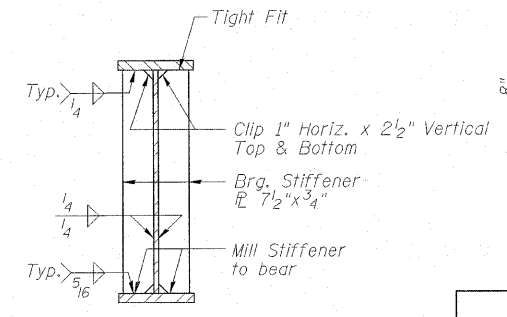
**NOTES:**

Webs, flanges, and bearing stiffeners to be AASHTO M270 Grade 50 steel.

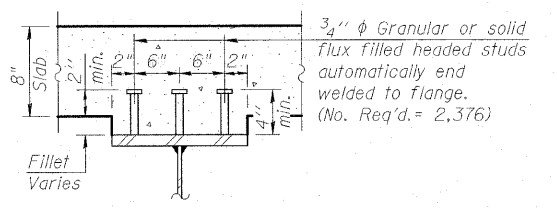
Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.



**CAMBER DIAGRAM**



**SECTION AT ABUTMENT**



**SHEAR STUDS ARE NOT INCLUDED IN THIS CONTRACT**

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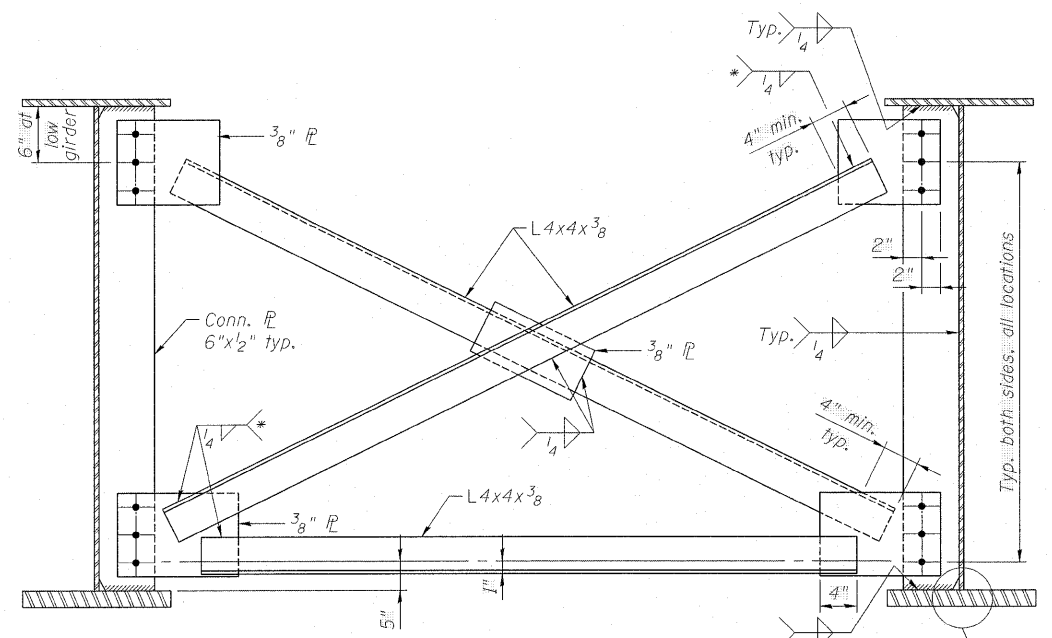
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		DRAWN - MTR	REVISED -
		CHECKED - DF	REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**FRAMING PLAN**  
**STRUCTURE NO. 049-0533**  
SHEET NO. OF SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	9
				CONTRACT NO. 60P69
ILLINOIS FED. AID PROJECT				

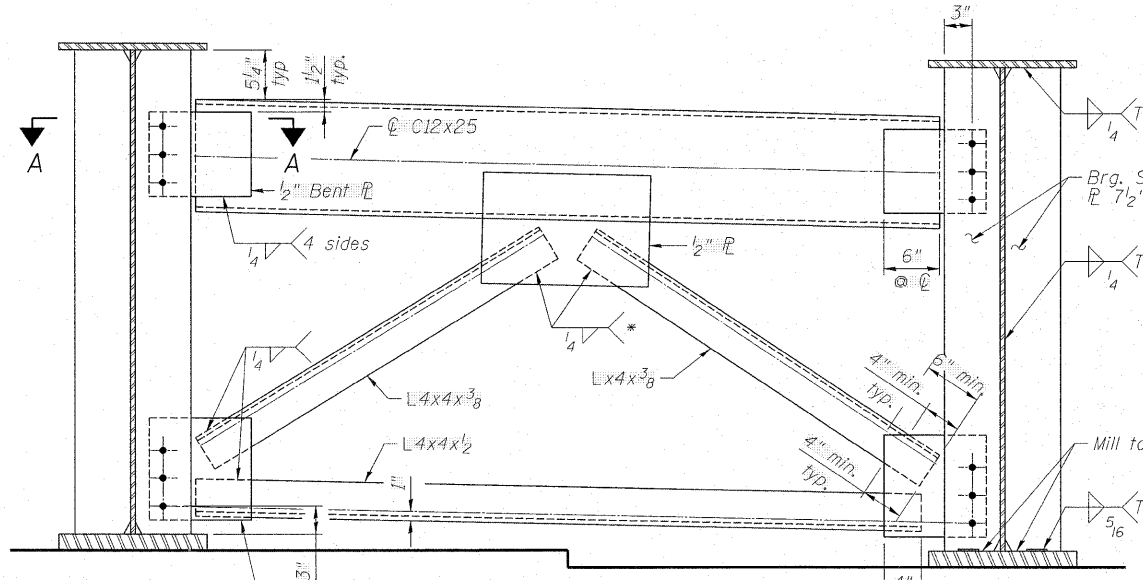
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\* Fillet weld angles along 3 sides on one face of gusset plate.

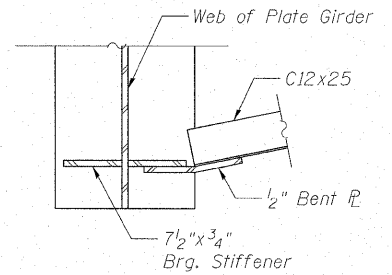
**INTERIOR CROSS FRAME D1**  
(50 Required)

See Section at Abutment (Sheet 9) for connection plate clip dimensions



\* Weld on near side of 1/2 inch PL

**END CROSS FRAME D2**  
(20 Required)



**SECTION A-A**

**NOTES:**

- Two hardened washers required for each set of oversized holes.
- Place end cross frames with channel flanges and outstanding angle legs outward from abutment backwall.
- All cross frames shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

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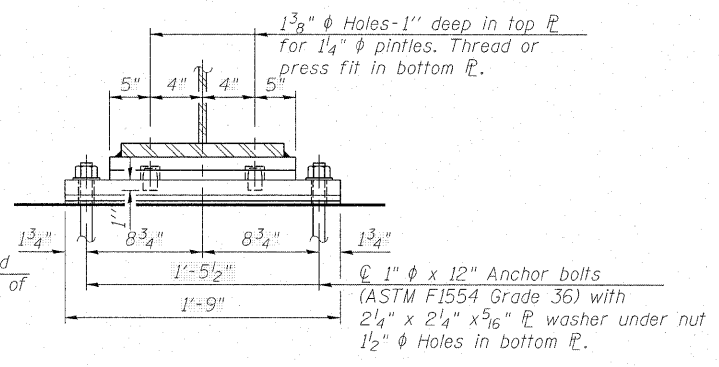
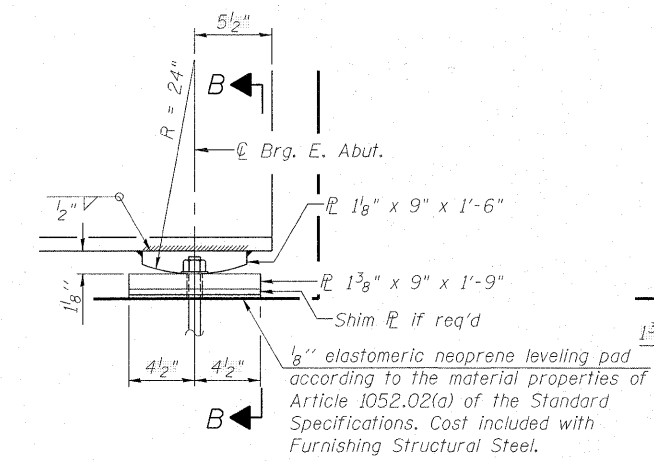
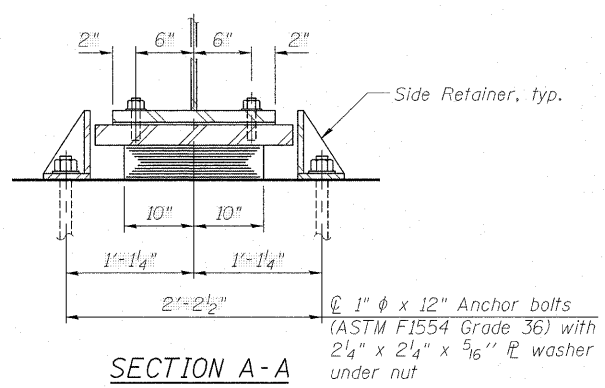
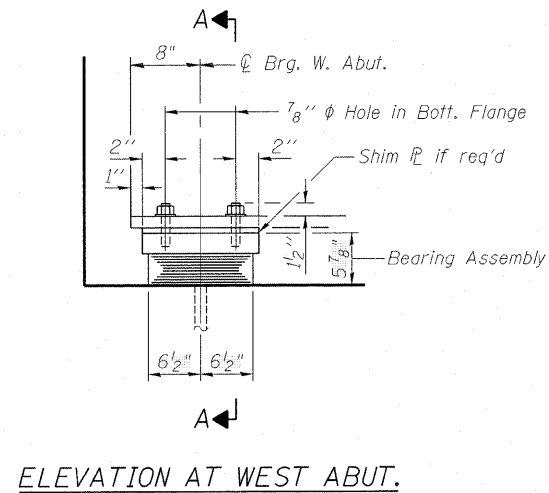


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	PLOT DATE = 12/16/2011	CHECKED - DF	REVISED -

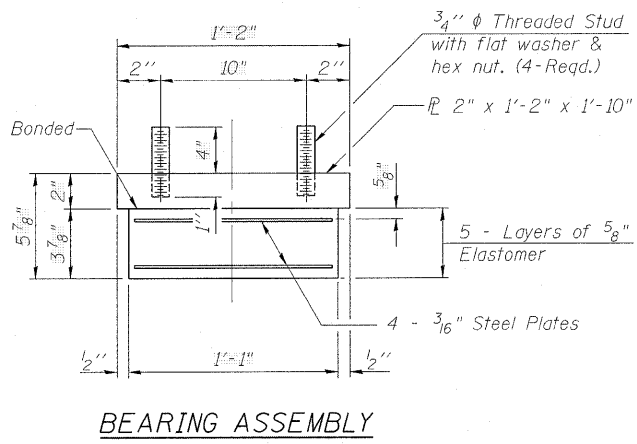
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**BEAM DETAILS**  
**STRUCTURE NO. 049-0533**  
 SHEET NO. OF SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	10
CONTRACT NO. 60P69				
ILLINOIS FED. AID PROJECT				



**TYPE I ELASTOMERIC EXP. BRG.**  
(11 Required)



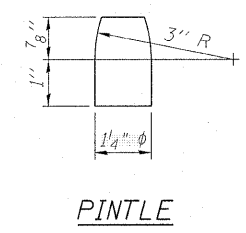
Note:  
Shim plates shall not be placed under Bearing Assembly.

Notes:  
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.  
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.  
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
All bearing assembly plates and pintles shall be AASHTO M270 Grade 50 steel.  
Side retainers and other steel members required for the elastomeric bearing assembly shall be included in the cost of Furnishing Elastomeric Bearing Assembly, Type I.  
Furnishing of the fixed bearing assemblies, including shim plates and neoprene pads, shall be included in the cost of Furnishing Structural Steel.

**ELEVATION AT EAST ABUT.**

**SECTION B-B**

**FIXED BEARING**  
(11 Required)



**BEARING SEAT ELEVATIONS**

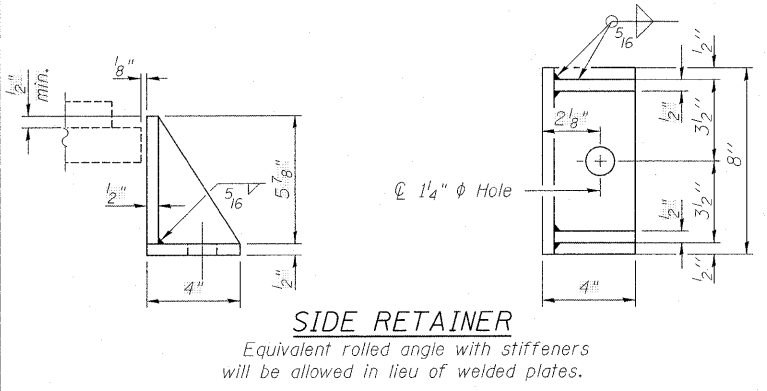
Beam	W. Abut.	E. Abut.
1	753.43	753.13
2	753.59	753.28
3	753.75	753.44
4	753.88	753.59
5	754.07	753.74
6	753.92	753.59
7	753.76	753.42
8	753.60	453.25
9	753.44	753.08
10	753.50	753.14
11	753.66	753.29

\* Provide 5/8" thick Shim

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly, Type I	Each	11
* Anchor Bolts, 1"	Each	44

\* Not in Contract



**SIDE RETAINER**  
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

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FILE NAME =	USER NAME =	DESIGNED - MRM	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>BEARING DETAILS STRUCTURE NO. 049-0533</b>	F.A.U. RTE. 1199	SECTION 2011-056-F	COUNTY LAKE	TOTAL SHEETS 19	SHEET NO. 11	
	PLOT SCALE = N.T.S.	CHECKED - TL	REVISED -			SHEET NO. OF SHEETS					
	PLOT DATE = 12/16/2011	DRAWN - MTR	REVISED -			ILLINOIS FED. AID PROJECT					
		CHECKED - DF	REVISED -			CONTRACT NO. 60P69					

Bench Mark: BM\_RR\_01: Square cut on light pole foundation at SW corner of Russell Rd. and I-94 NB exit Elev. 742.887.  
 BM\_RR\_02: Square cut on north curb Russell Rd. ± 90 ft west of I-94 SB exit Elev. 753.758.

Existing Structure : S.N. 049-0078 was built in 1959 with two lane roadway under FAI-94 Section 49-1 HB at Sta. 14+52.377. The existing structure has three simple spans, with a length of 151'-5 1/4" back-to-back of abutments, and a constant out-to-out width of 35'-2". The superstructure consists of a 9" thick reinforced concrete deck built composite with 42" deep PPC I-beams. The substructure consists of two stub abutments on concrete piles and two multi-column shoulder piers on spread footings.

The existing bridge is to be removed and replaced. Traffic shall be maintained using a detour.

No Salvage.

These plans are for the fabrication of the structural steel and bearings. All work shown that is not related to the fabrication is identified as "Not included in this contract" or For information only."

**SEISMIC DATA**

Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. (S<sub>D1</sub>) = 0.074g  
 Design Spectral Acceleration at 0.2 sec. (S<sub>D5</sub>) = 0.117g  
 Soil Site Class = D

**DESIGN SPECIFICATIONS**

2010 AASHTO LRFD Bridge Design Specifications with 2010 Interims

**LOADING HL-93**

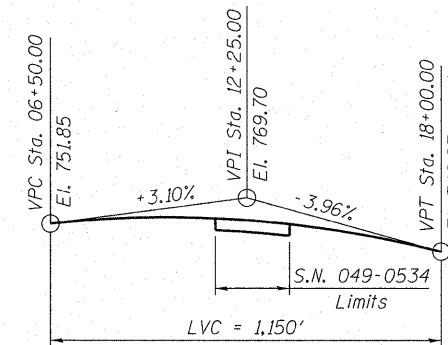
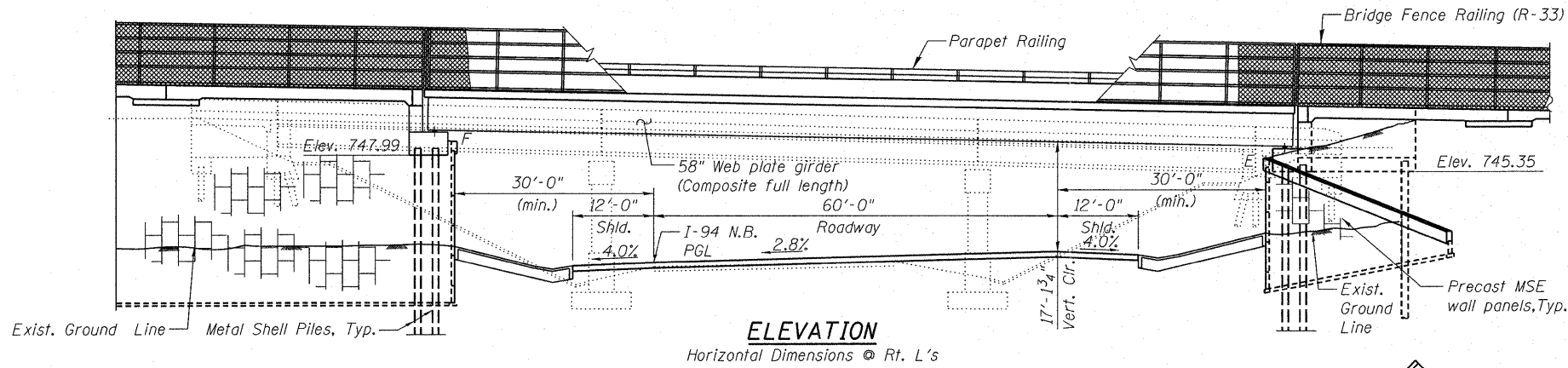
Allow 50#/sq. ft. for future wearing surface.

**CURVE DATA**

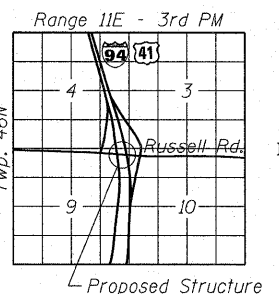
(NB I-94)  
 P.I. = Sta. 4094+52.48  
 Δ = 15° 57' 58" (LT)  
 D = 0° 45' 08"  
 R = 7,617.18'  
 L = 2,122.61'  
 T = 1,068.23'  
 E = 74.54'  
 e = 2.8%  
 P.C. STA. = 4083+84.25  
 P.T. STA. = 4105+06.86

**DESIGN STRESSES**  
**FIELD UNITS**

f'<sub>c</sub> = 3,500 psi  
 f<sub>y</sub> = 60,000 psi (Reinforcement)  
 f<sub>y</sub> = 50,000 psi (AASHTO M270 Grade 50)  
 f<sub>y</sub> = 36,000 psi (AASHTO M270 Grade 36)



**PROFILE GRADE**  
 (Northbound I-94)

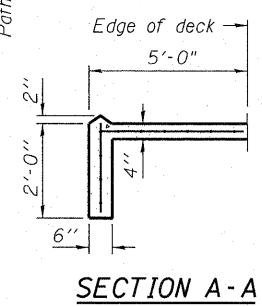
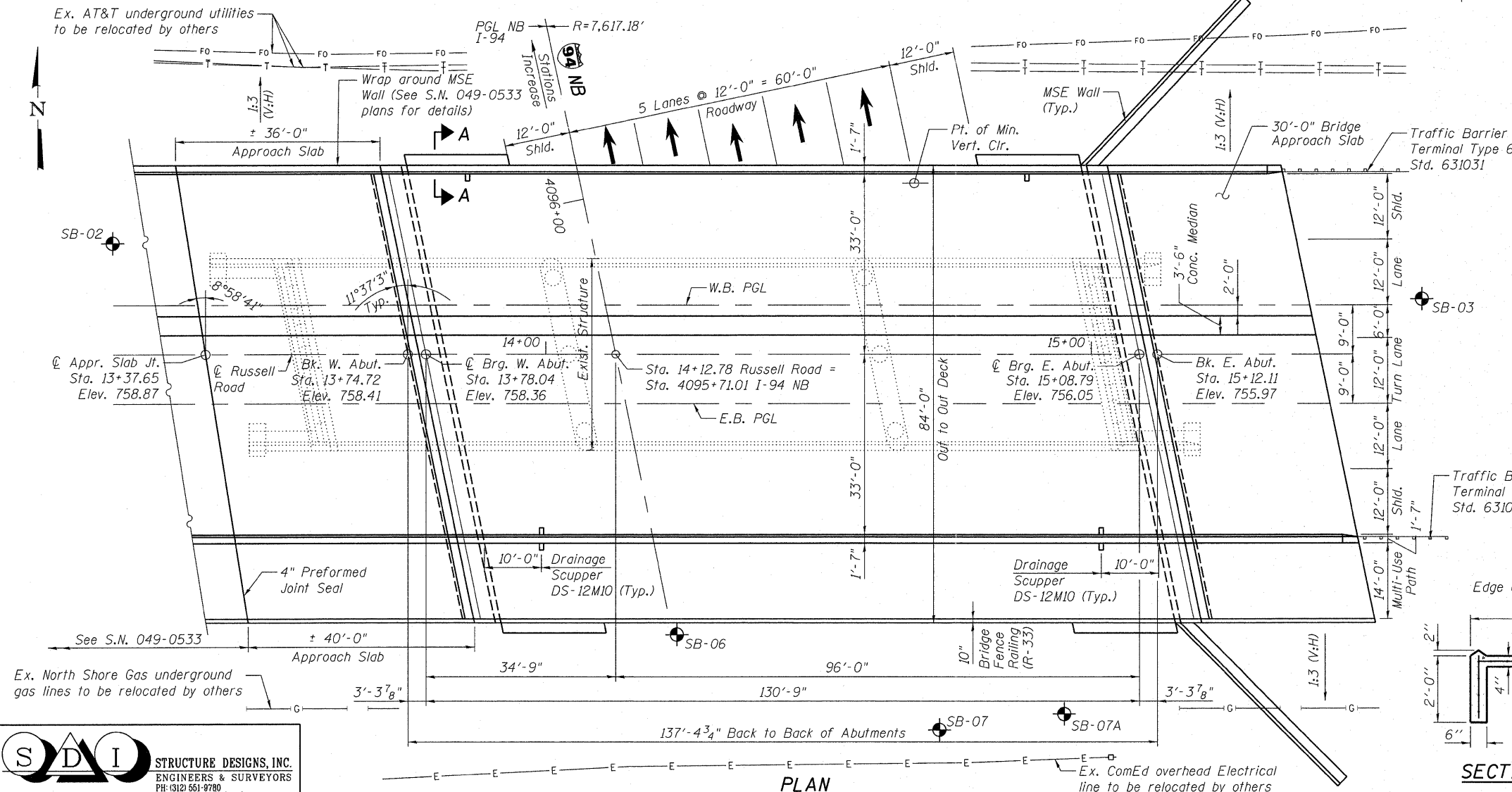


STATION 14+12.78  
 BUILT 2012 BY  
 STATE OF ILLINOIS  
 FAU RTE. 1199 SEC. 49-1HBR  
 LOADING HL-93  
 STR. NO. 049-0534

**NAME PLATE**  
 See Std. 515001

**FOR INFORMATION ONLY**

**LOCATION SKETCH**



Signed: *Olufemi A. Oladeinde* 12/06/2011  
 OLUFEMI A. OLADEINDE, P.E., S.E. Date  
 LICENSE EXPIRES 11-30-2012

**GENERAL PLAN & ELEVATION**  
**RUSSELL ROAD OVER NORTHBOUND I-94**  
**F.A.U. RTE. 1199 - SEC. 2011-056-F**  
**LAKE COUNTY**  
**STATION 14+12.78**  
**STRUCTURE NO. 049-0534**

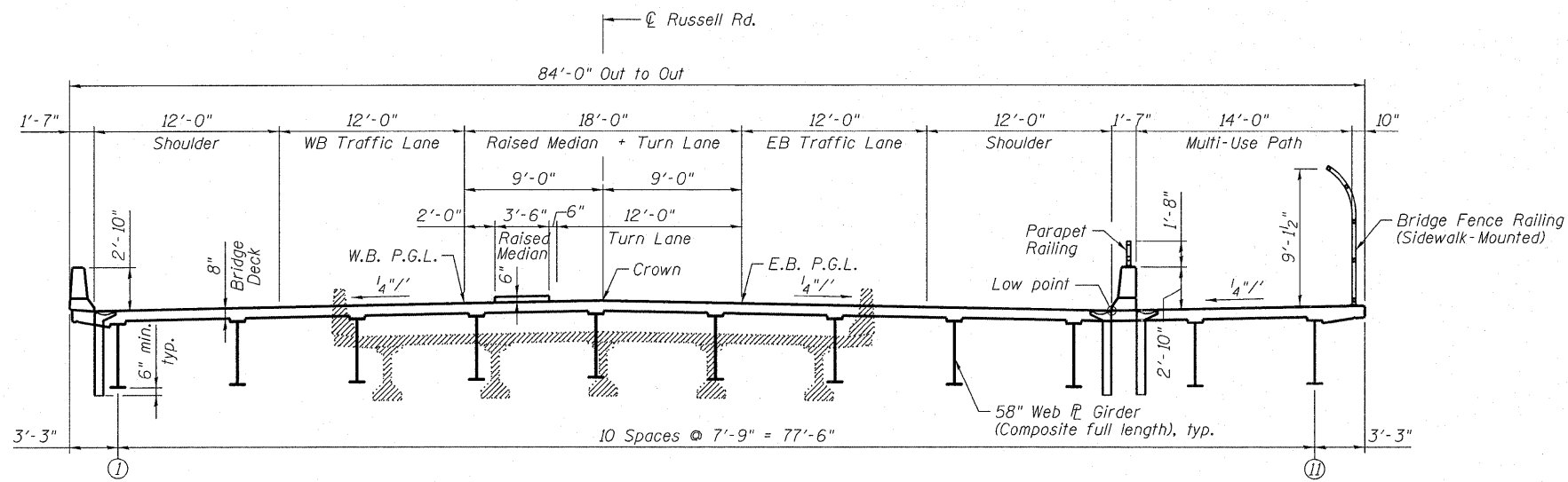
**SADI** STRUCTURE DESIGNS, INC.  
 ENGINEERS & SURVEYORS  
 PH: (312) 551-9780  
 www.structuredesignsinc.com

FILE NAME =	USER NAME =	DESIGNED - LRT / AG	REVISIONS -
		CHECKED - OAO / LRT	REVISIONS -
	PLOT SCALE = N.T.S.	DRAWN - TCS / AG	REVISIONS -
	PLOT DATE = 09/01/2011	CHECKED - AG	REVISIONS -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

SHEET NO. OF SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	12
CONTRACT NO. 60P69			ILLINOIS FED. AID PROJECT	



**CROSS SECTION**  
(Looking East)



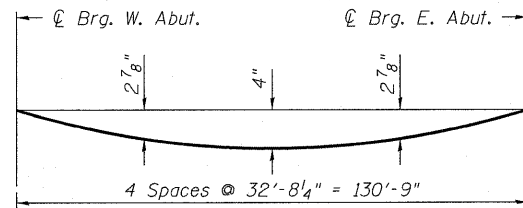
FILE NAME =	USER NAME =	DESIGNED - LRT / AG	REVISED -
		CHECKED - DAO / LRT	REVISED -
	PLOT SCALE = N.T.S.	DRAWN - TCS / AG	REVISED -
	PLOT DATE = 09/01/2011	CHECKED - AG	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**CONSTRUCTION STAGING  
STRUCTURE NO. 049-0534**

SHEET NO. OF SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	13
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P69	

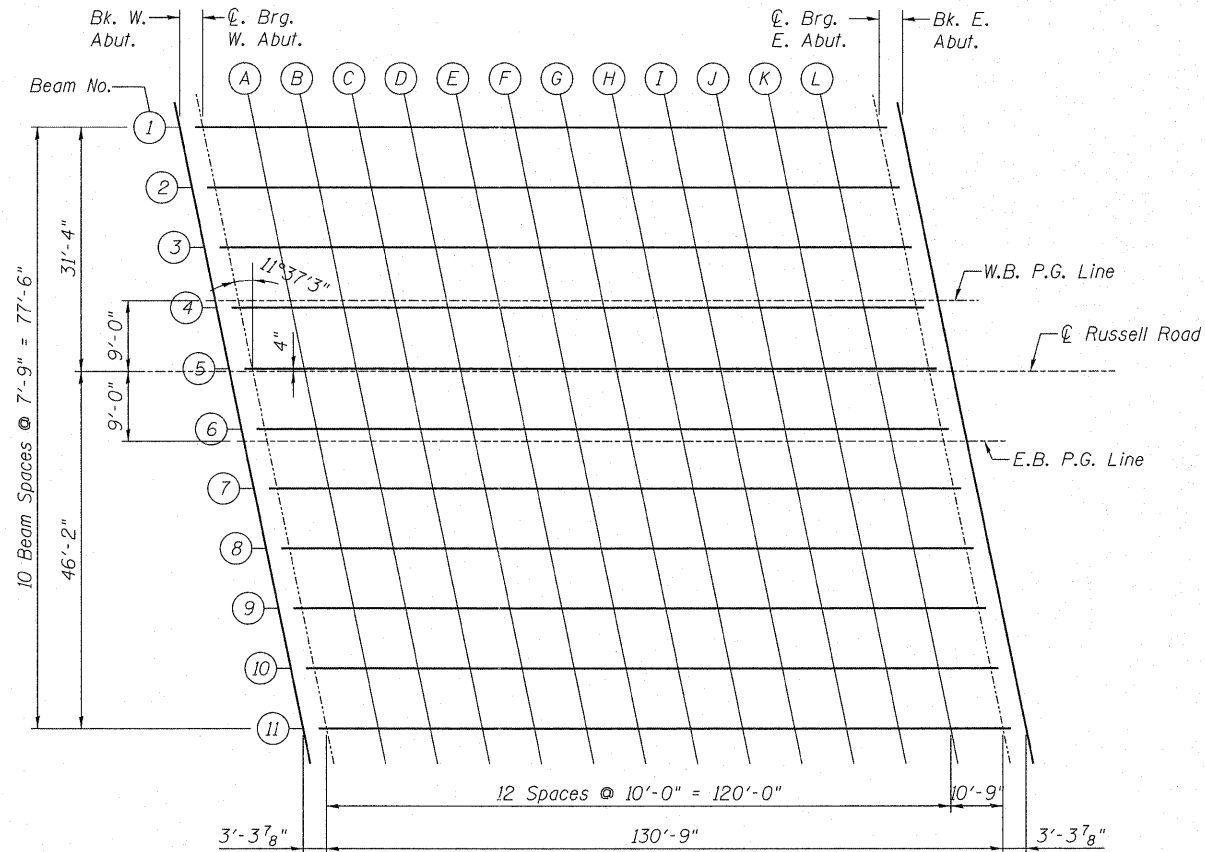


**DEAD LOAD DEFLECTION DIAGRAM**

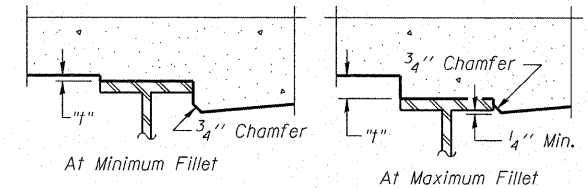
(Includes weight of concrete only.)

**Note:**

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below & sheet 05 & 06.



**PLAN**



To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown below, minus slab thickness, equals the fillet heights "t" above top flange of beams.

**FILLET HEIGHTS**

**BEAM 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+68.28	-31.33	757.84	757.84
CL. BRG. W. ABUT.	13+71.60	-31.33	757.80	757.80
A	13+81.60	-31.33	757.66	757.74
B	13+91.60	-31.33	757.52	757.67
C	14+01.60	-31.33	757.37	757.59
D	14+11.60	-31.33	757.22	757.49
E	14+21.60	-31.33	757.05	757.37
F	14+31.60	-31.33	756.89	757.22
G	14+41.60	-31.33	756.72	757.05
H	14+51.60	-31.33	756.54	756.85
I	14+61.60	-31.33	756.35	756.63
J	14+71.60	-31.33	756.16	756.38
K	14+81.60	-31.33	755.96	756.12
L	14+91.60	-31.33	755.76	755.84
CL. BRG. E. ABUT.	15+02.35	-31.33	755.53	755.53
BK. E. ABUT.	15+05.67	-31.33	755.46	755.46

**BEAM 2**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+69.87	-23.58	757.98	757.98
CL. BRG. W. ABUT.	13+73.19	-23.58	757.94	757.94
A	13+83.19	-23.58	757.80	757.88
B	13+93.19	-23.58	757.66	757.81
C	14+03.19	-23.58	757.51	757.73
D	14+13.19	-23.58	757.35	757.62
E	14+23.19	-23.58	757.19	757.50
F	14+33.19	-23.58	757.02	757.35
G	14+43.19	-23.58	756.85	757.18
H	14+53.19	-23.58	756.67	756.98
I	14+63.19	-23.58	756.48	756.76
J	14+73.19	-23.58	756.29	756.51
K	14+83.19	-23.58	756.09	756.25
L	14+93.19	-23.58	755.89	755.97
CL. BRG. E. ABUT.	15+03.94	-23.58	755.66	755.66
BK. E. ABUT.	15+07.26	-23.58	755.59	755.59

**BEAM 3**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+71.52	-15.58	758.13	758.13
CL. BRG. W. ABUT.	13+74.84	-15.58	758.08	758.08
A	13+84.84	-15.58	757.94	758.02
B	13+94.84	-15.58	757.80	757.95
C	14+04.84	-15.58	757.65	757.87
D	14+14.84	-15.58	757.49	757.76
E	14+24.84	-15.58	757.33	757.64
F	14+34.84	-15.58	757.16	757.49
G	14+44.84	-15.58	756.99	757.32
H	14+54.84	-15.58	756.80	757.12
I	14+64.84	-15.58	756.62	756.89
J	14+74.84	-15.58	756.42	756.65
K	14+84.84	-15.58	756.22	756.38
L	14+94.84	-15.58	756.02	756.10
CL. BRG. E. ABUT.	15+05.59	-15.58	755.79	755.79
BK. E. ABUT.	15+08.91	-15.58	755.72	755.72



FILE NAME =	USER NAME =	DESIGNED - LRT / AG	REVISED -
		CHECKED - DAO / LRT	REVISED -
	PLOT SCALE = N.T.S.	DRAWN - TCS / AG	REVISED -
	PLOT DATE = 09/01/2011	CHECKED - AG	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS SHEET 1 OF 3  
STRUCTURE NO. 049-0534

SHEET NO. OF SHEETS

FOR INFORMATION ONLY

F.A.U. RTE. 1199	SECTION 2011-056-F	COUNTY LAKE	TOTAL SHEETS 19	SHEET NO. 14
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P69	

**WEST BOUND P.G. LINE**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+72.87	-9.00	758.24	758.24
℄. BRG. W. ABUT.	13+76.19	-9.00	758.20	758.20
A	13+86.19	-9.00	758.06	758.14
B	13+96.19	-9.00	757.92	758.07
C	14+06.19	-9.00	757.76	757.98
D	14+16.19	-9.00	757.61	757.88
E	14+26.19	-9.00	757.44	757.75
F	14+36.19	-9.00	757.27	757.61
G	14+46.19	-9.00	757.10	757.43
H	14+56.19	-9.00	756.92	757.23
I	14+66.19	-9.00	756.73	757.00
J	14+76.19	-9.00	756.53	756.76
K	14+86.19	-9.00	756.33	756.49
L	14+96.19	-9.00	756.13	756.21
℄. BRG. E. ABUT.	15+06.94	-9.00	755.90	755.90
BK. E. ABUT.	15+10.26	-9.00	755.83	755.83

**BEAM 4**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+73.06	-8.08	758.26	758.26
℄. BRG. W. ABUT.	13+76.38	-8.08	758.22	758.22
A	13+86.38	-8.08	758.08	758.15
B	13+96.38	-8.08	757.93	758.08
C	14+06.38	-8.08	757.78	758.00
D	14+16.38	-8.08	757.62	757.90
E	14+26.38	-8.08	757.46	757.77
F	14+36.38	-8.08	757.29	757.62
G	14+46.38	-8.08	757.11	757.45
H	14+56.38	-8.08	756.93	757.25
I	14+66.38	-8.08	756.74	757.02
J	14+76.38	-8.08	756.55	756.77
K	14+86.38	-8.08	756.35	756.51
L	14+96.38	-8.08	756.14	756.23
℄. BRG. E. ABUT.	15+07.13	-8.08	755.91	755.91
BK. E. ABUT.	15+10.45	-8.08	755.84	755.84

**BEAM 5**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+74.65	-0.33	758.40	758.40
℄. BRG. W. ABUT.	13+77.97	-0.33	758.36	758.36
A	13+87.97	-0.33	758.22	758.29
B	13+97.97	-0.33	758.07	758.22
C	14+07.97	-0.33	757.92	758.14
D	14+17.97	-0.33	757.76	758.03
E	14+27.97	-0.33	757.59	757.91
F	14+37.97	-0.33	757.42	757.75
G	14+47.97	-0.33	757.25	757.58
H	14+57.97	-0.33	757.06	757.38
I	14+67.97	-0.33	756.88	757.15
J	14+77.97	-0.33	756.68	756.90
K	14+87.97	-0.33	756.48	756.64
L	14+97.97	-0.33	756.27	756.35
℄. BRG. E. ABUT.	15+08.72	-0.33	756.04	756.04
BK. E. ABUT.	15+12.04	-0.33	755.97	755.97

**℄ RUSSELL ROAD**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+74.72	0.00	758.41	758.41
℄. BRG. W. ABUT.	13+78.04	0.00	758.36	758.36
A	13+88.04	0.00	758.22	758.30
B	13+98.04	0.00	758.08	758.23
C	14+08.04	0.00	757.92	758.14
D	14+18.04	0.00	757.77	758.04
E	14+28.04	0.00	757.60	757.91
F	14+38.04	0.00	757.43	757.76
G	14+48.04	0.00	757.25	757.58
H	14+58.04	0.00	757.07	757.38
I	14+68.04	0.00	756.88	757.16
J	14+78.04	0.00	756.69	756.91
K	14+88.04	0.00	756.48	756.64
L	14+98.04	0.00	756.28	756.36
℄. BRG. E. ABUT.	15+08.79	0.00	756.05	756.05
BK. E. ABUT.	15+12.11	0.00	755.97	755.97

**BEAM 6**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+76.25	7.42	758.23	758.23
℄. BRG. W. ABUT.	13+79.57	7.42	758.19	758.19
A	13+89.57	7.42	758.05	758.12
B	13+99.57	7.42	757.90	758.05
C	14+09.57	7.42	757.75	757.96
D	14+19.57	7.42	757.59	757.86
E	14+29.57	7.42	757.42	757.73
F	14+39.57	7.42	757.25	757.58
G	14+49.57	7.42	757.07	757.40
H	14+59.57	7.42	756.89	757.20
I	14+69.57	7.42	756.70	756.97
J	14+79.57	7.42	756.50	756.72
K	14+89.57	7.42	756.30	756.46
L	14+99.57	7.42	756.09	756.17
℄. BRG. E. ABUT.	15+10.32	7.42	755.86	755.86
BK. E. ABUT.	15+13.64	7.42	755.79	755.79

**EAST BOUND P.G. LINE**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+76.57	9.00	758.19	758.19
℄. BRG. W. ABUT.	13+79.89	9.00	758.15	758.15
A	13+89.89	9.00	758.01	758.09
B	13+99.89	9.00	757.86	758.01
C	14+09.89	9.00	757.71	757.93
D	14+19.89	9.00	757.55	757.82
E	14+29.89	9.00	757.38	757.69
F	14+39.89	9.00	757.21	757.54
G	14+49.89	9.00	757.03	757.36
H	14+59.89	9.00	756.85	757.16
I	14+69.89	9.00	756.66	756.93
J	14+79.89	9.00	756.46	756.68
K	14+89.89	9.00	756.26	756.42
L	14+99.89	9.00	756.05	756.13
℄. BRG. E. ABUT.	15+10.64	9.00	755.82	755.82
BK. E. ABUT.	15+13.96	9.00	755.75	755.75



**FOR INFORMATION ONLY**

FILE NAME =	USER NAME =	DESIGNED - LRT / AG	REVISD -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TOP OF SLAB ELEVATIONS SHEET 2 OF 3 STRUCTURE NO. 049-0534</b>	F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
		CHECKED - OAD / LRT	REVISD -			1199	2011-056-F	LAKE	19	15	
		DRAWN - TCS / AG	REVISD -			CONTRACT NO. 60P69					
		CHECKED - AG	REVISD -			ILLINOIS FED. AID PROJECT					
		PLOT SCALE = N.T.S.		SHEET NO. OF SHEETS							
		PLOT DATE = 09/01/2011									

**BEAM 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+77.84	15.17	758.05	758.05
℄. BRG. W. ABUT.	13+81.16	15.17	758.00	758.00
A	13+91.16	15.17	757.86	757.94
B	14+01.16	15.17	757.71	757.87
C	14+11.16	15.17	757.56	757.78
D	14+21.16	15.17	757.40	757.67
E	14+31.16	15.17	757.23	757.54
F	14+41.16	15.17	757.06	757.39
G	14+51.16	15.17	756.88	757.21
H	14+61.16	15.17	756.70	757.01
I	14+71.16	15.17	756.50	756.78
J	14+81.16	15.17	756.31	756.53
K	14+91.16	15.17	756.10	756.26
L	15+01.16	15.17	755.89	755.98
℄. BRG. E. ABUT.	15+11.91	15.17	755.66	755.66
BK. E. ABUT.	15+15.23	15.17	755.59	755.59

**BEAM 8**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+79.43	22.92	757.87	757.87
℄. BRG. W. ABUT.	13+82.75	22.92	757.82	757.82
A	13+92.75	22.92	757.68	757.75
B	14+02.75	22.92	757.53	757.68
C	14+12.75	22.92	757.37	757.59
D	14+22.75	22.92	757.21	757.48
E	14+32.75	22.92	757.04	757.35
F	14+42.75	22.92	756.87	757.20
G	14+52.75	22.92	756.69	757.02
H	14+62.75	22.92	756.50	756.82
I	14+72.75	22.92	756.31	756.59
J	14+82.75	22.92	756.11	756.34
K	14+92.75	22.92	755.91	756.07
L	15+02.75	22.92	755.70	755.78
℄. BRG. E. ABUT.	15+13.50	22.92	755.47	755.47
BK. E. ABUT.	15+16.82	22.92	755.39	755.39

**BEAM 9**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+81.03	30.67	757.68	757.68
℄. BRG. W. ABUT.	13+84.35	30.67	757.64	757.64
A	13+94.35	30.67	757.49	757.57
B	14+04.35	30.67	757.34	757.49
C	14+14.35	30.67	757.19	757.40
D	14+24.35	30.67	757.02	757.30
E	14+34.35	30.67	756.85	757.17
F	14+44.35	30.67	756.68	757.01
G	14+54.35	30.67	756.50	756.83
H	14+64.35	30.67	756.31	756.63
I	14+74.35	30.67	756.12	756.40
J	14+84.35	30.67	755.92	756.14
K	14+94.35	30.67	755.72	755.87
L	15+04.35	30.67	755.50	755.59
℄. BRG. E. ABUT.	15+15.10	30.67	755.27	755.27
BK. E. ABUT.	15+18.42	30.67	755.20	755.20

**BEAM 10**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+82.62	38.42	757.72	757.72
℄. BRG. W. ABUT.	13+85.94	38.42	757.68	757.68
A	13+95.94	38.42	757.53	757.61
B	14+05.94	38.42	757.38	757.53
C	14+15.94	38.42	757.22	757.44
D	14+25.94	38.42	757.06	757.33
E	14+35.94	38.42	756.89	757.20
F	14+45.94	38.42	756.72	757.05
G	14+55.94	38.42	756.53	756.87
H	14+65.94	38.42	756.35	756.66
I	14+75.94	38.42	756.15	756.43
J	14+85.94	38.42	755.95	756.18
K	14+95.94	38.42	755.75	755.90
L	15+05.94	38.42	755.53	755.62
℄. BRG. E. ABUT.	15+16.69	38.42	755.30	755.30
BK. E. ABUT.	15+20.01	38.42	755.22	755.22

**BEAM 11**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. W. ABUT.	13+84.21	46.17	757.86	757.86
℄. BRG. W. ABUT.	13+87.53	46.17	757.82	757.82
A	13+97.53	46.17	757.67	757.75
B	14+07.53	46.17	757.52	757.67
C	14+17.53	46.17	757.36	757.58
D	14+27.53	46.17	757.20	757.47
E	14+37.53	46.17	757.03	757.34
F	14+47.53	46.17	756.85	757.18
G	14+57.53	46.17	756.67	757.00
H	14+67.53	46.17	756.48	756.79
I	14+77.53	46.17	756.28	756.56
J	14+87.53	46.17	756.08	756.30
K	14+97.53	46.17	755.87	756.03
L	15+07.53	46.17	755.66	755.74
℄. BRG. E. ABUT.	15+18.28	46.17	755.42	755.42
BK. E. ABUT.	15+21.60	46.17	755.35	755.35



FILE NAME =	USER NAME =	DESIGNED - LRT / AG	REVISED -
		CHECKED - DAO / LRT	REVISED -
	PLOT SCALE = N.T.S.	DRAWN - TCS / AG	REVISED -
	PLOT DATE = 09/01/2011	CHECKED - AG	REVISED -

STATE OF ILLINOIS  
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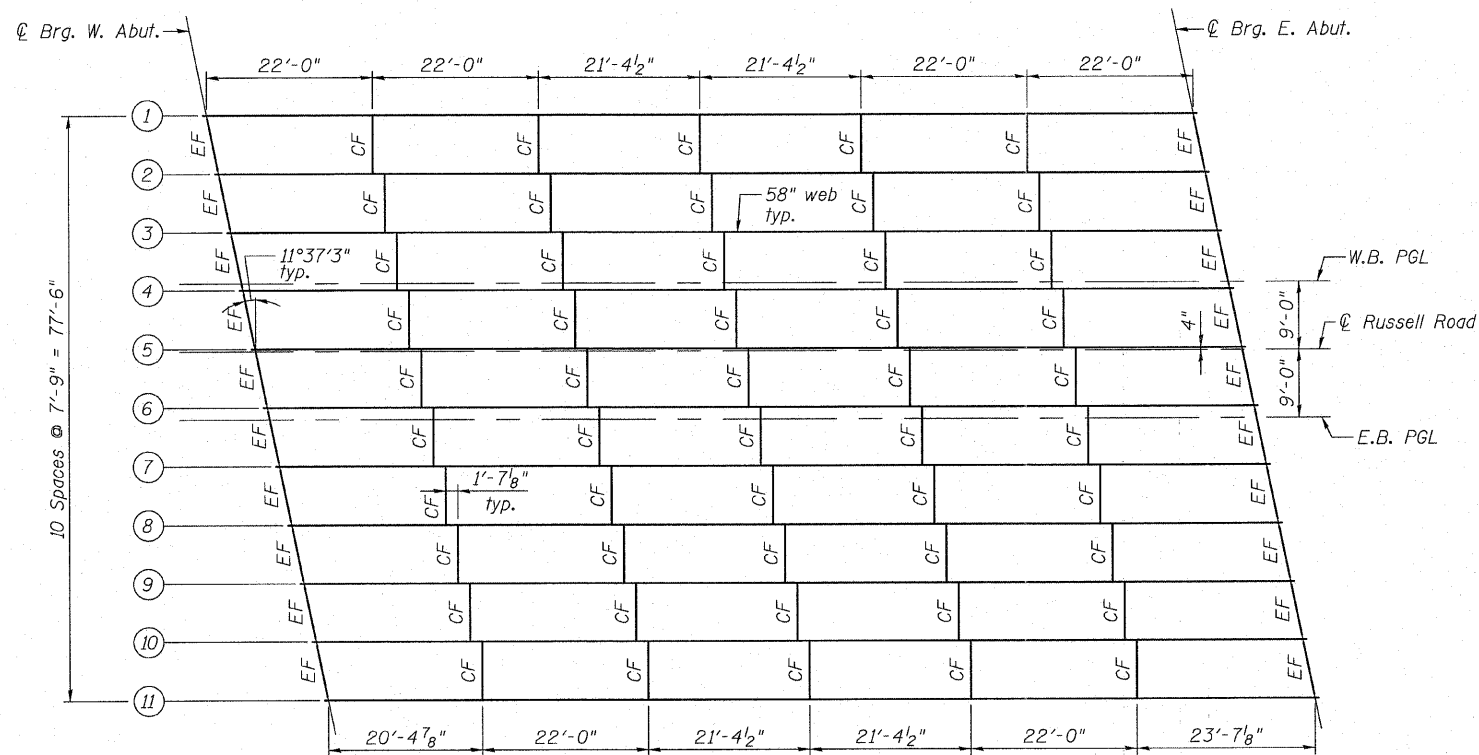
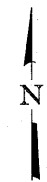
TOP OF SLAB ELEVATIONS SHEET 3 OF 3  
STRUCTURE NO. 049-0534

SHEET NO. OF SHEETS

FOR INFORMATION ONLY

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	16
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60P69	

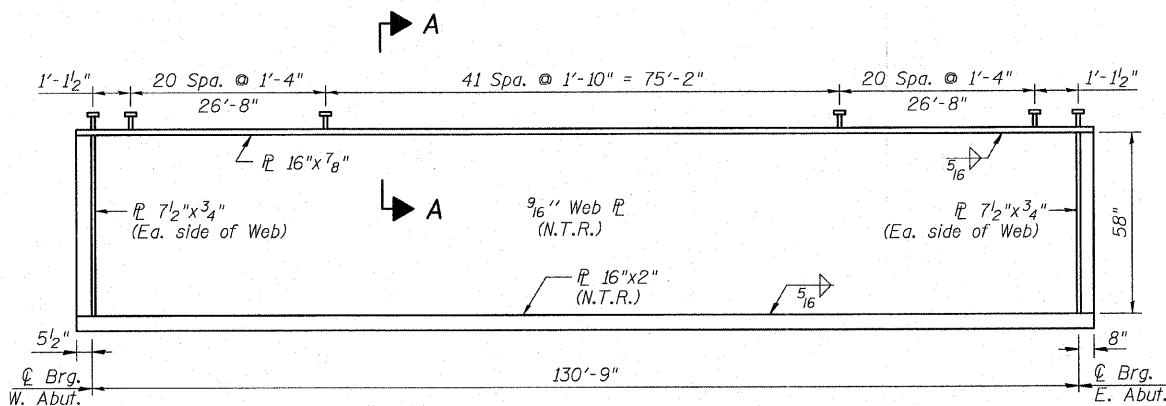




**FRAMING PLAN**

INTERIOR GIRDER REACTION TABLE		
		Abut.
$R_{DC1}$	(k)	72.3
$R_{DC2}$	(k)	7.7
$R_{DW}$	(k)	24.5
$R_{L+IM}$	(k)	104.2
$R_{Total}$	(k)	208.7

INTERIOR GIRDER MOMENT TABLE		
		0.5 Sp.
$I_s$	(in <sup>4</sup> )	46,272
$I_c(n)$	(in <sup>4</sup> )	117,268
$I_c(3n)$	(in <sup>4</sup> )	82,144
$S_s$	(in <sup>3</sup> )	1925.4
$S_c(n)$	(in <sup>3</sup> )	2578.6
$S_c(3n)$	(in <sup>3</sup> )	2354.3
$DC1$	(k/')	1.093
$M_{DC1}$	(k)	2336.3
$DC2$	(k/')	0.116
$M_{DC2}$	(k)	248.7
$DW$	(k/')	0.367
$M_{DW}$	(k)	785.3
$M_L + IM$	(k)	2425.9
$M_u$ (Strength I)	(k)	8654
$\phi_r M_n$	(k)	11,745
$f_s$ DC1	(ksi)	14.56
$f_s$ DC2	(ksi)	1.30
$f_s$ DW	(ksi)	4.0
$f_s$ (L+IM)	(ksi)	14.7
$f_s$ (Service II)	(ksi)	34.60
$0.95R_n F_v$	(ksi)	47.5
$f_s$ (Total)(Strength I)	(ksi)	50
$\phi_r F_n$	(ksi)	50
$V_r$	(k)	29.8



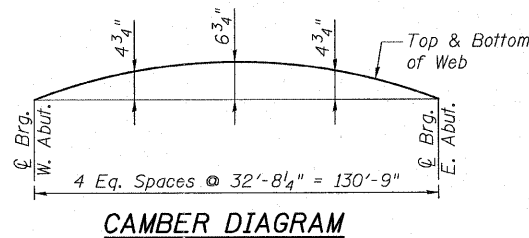
**GIRDER ELEVATION**

"N.T.R." denotes plates to which notch toughness requirements are applicable. All plate Girders including Webs, Top and Bottom Flanges and stiffeners are to be AASHTO M270 Grade 50.

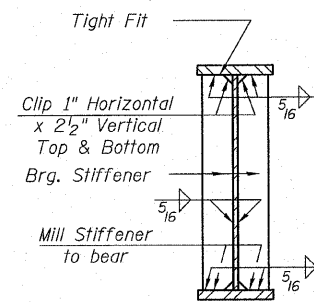
**TOP OF WEB ELEVATIONS**

(For Fabrication Only)

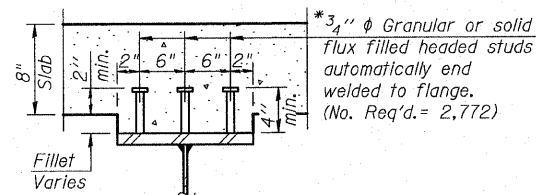
Beam Number	☐ Brg. W. Abut.	☐ Brg. E. Abut.
1	756.97	754.70
2	757.11	754.83
3	757.25	754.96
4	757.39	755.08
5	757.53	755.21
6	757.36	755.03
7	757.17	754.83
8	756.99	754.64
9	756.81	754.44
10	756.85	754.47
11	756.99	754.59



**CAMBER DIAGRAM**



**SECTION AT ABUTMENT**



**SECTION A-A**

\* Stud Shear Connectors not included in this Contract

**NOTES:**

Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.

- $I_s, S_s$ : 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<sup>4</sup> and in<sup>3</sup>).
- $I_c(n), S_c(n)$ : 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) in uncracked sections, due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(3n), S_c(3n)$ : 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) in uncracked sections, due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).
- $DC1$ : 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.).  
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_L + IM$
- $\phi_r M_n$ : Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).
- $f_s$  DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).  
 $M_{DC1} / S_{nc}$
- $f_s$  DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).  
 $M_{DC2} / S_c(3n)$  or  $M_{DC2} / S_c(cr)$  as applicable.
- $f_s$  DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).  
 $M_{DW} / S_c(3n)$  or  $M_{DW} / S_c(cr)$  as applicable.
- $f_s$  (L+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).  
 $M_L + IM / S_c(3n)$  or  $M_L + IM / S_c(cr)$  as applicable.
- $f_s$  (Service II): Sum of stresses as computed below (ksi).  
 $f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3 f_s(L+IM)$
- $0.95R_n F_v$ : Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).
- $f_s$  (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).  
 $1.25 (f_{sDC1} + f_{sDC2}) + 1.5 f_{sDW} + 1.75 f_s(L+IM)$
- $\phi_r F_n$ : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7.2 (ksi).
- $V_r$ : Maximum factored shear range in composite portion of span computed according to Article 6.10.10.



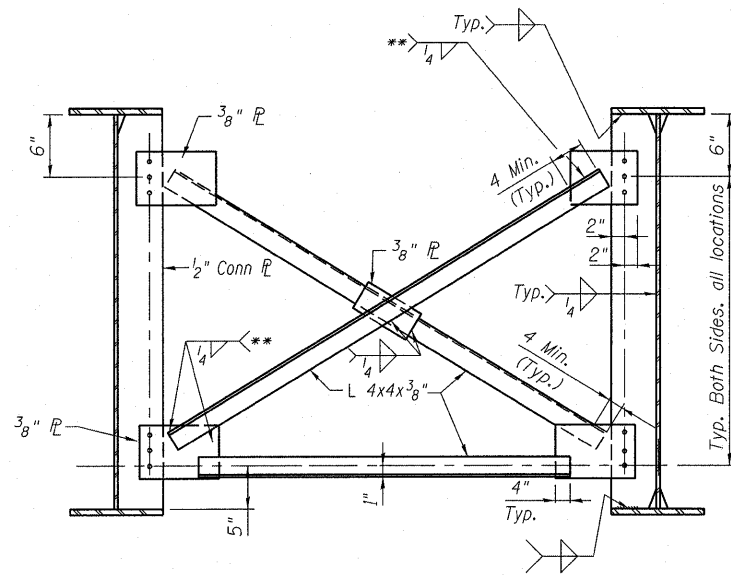
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	PLOT SCALE = N.T.S.	DRAWN - TCS / AG	REVISED -
	PLOT DATE = 07/01/2011	CHECKED - AG	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN & BEAM DETAILS  
STRUCTURE NO. 049-0534

SHEET NO. OF SHEETS

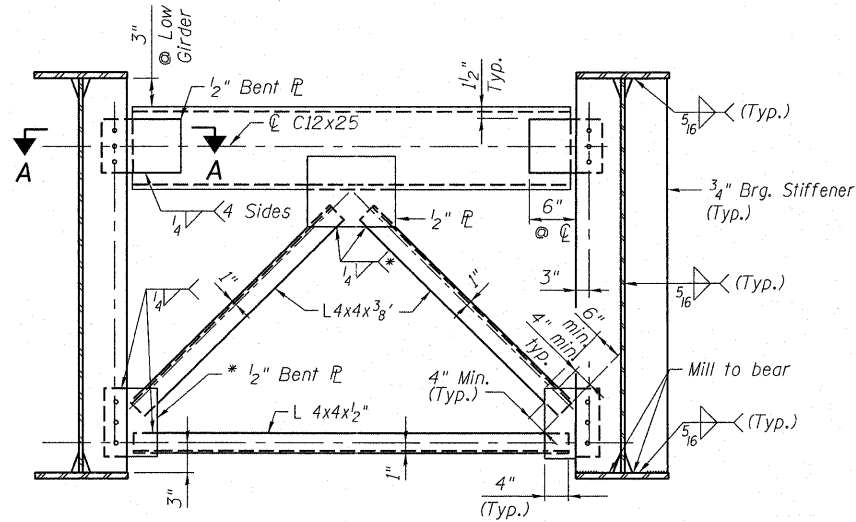
F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1199	2011-056-F	LAKE	19	17
CONTRACT NO. 60P76				
ILLINOIS FED. AID PROJECT				



**TYPICAL INTERIOR CROSS FRAMES (CF)**

(50 Required)

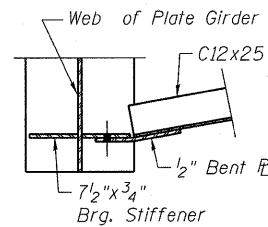
\*\*Fillet weld angles along 3 sides on one face of gusset plate



**END CROSS FRAMES (EF)**

(20 Required)

\* Weld on near side of 1/2" plate



**SECTION A-A**

**Notes:**

Two Hardened Washers Required for Each set of Oversized Holes.

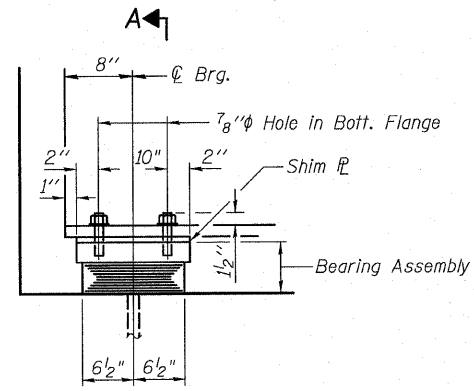
Place diaphragm with channel flanges and outstanding angle legs outward from abutment backwall.

All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

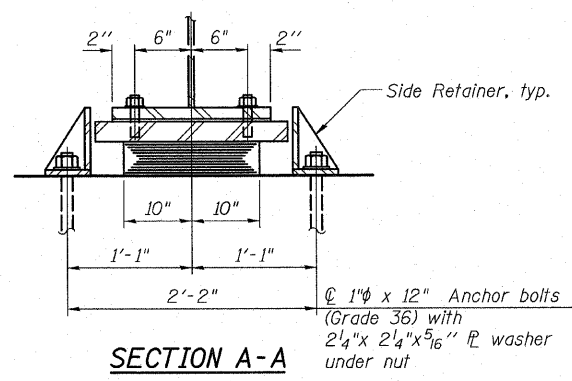


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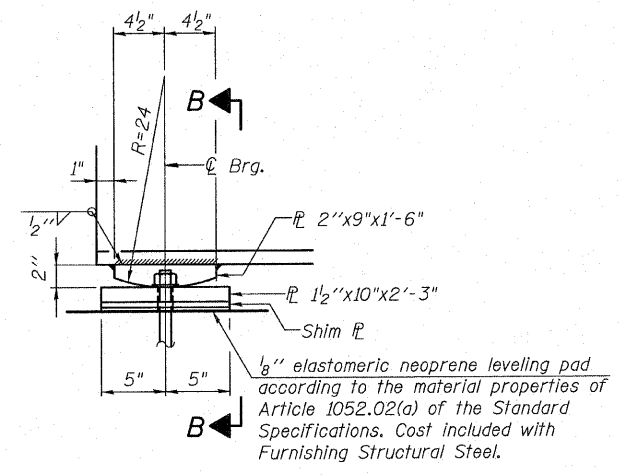
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		CHECKED - OAD / LRT	REVISED -			1199	2011-056-F	LAKE	19	18	
		DRAWN - TCS / AG	REVISED -			CONTRACT NO. 60P69					
		CHECKED - AG	REVISED -			ILLINOIS FED. AID PROJECT					
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		PLOT DATE = 09/01/2011									



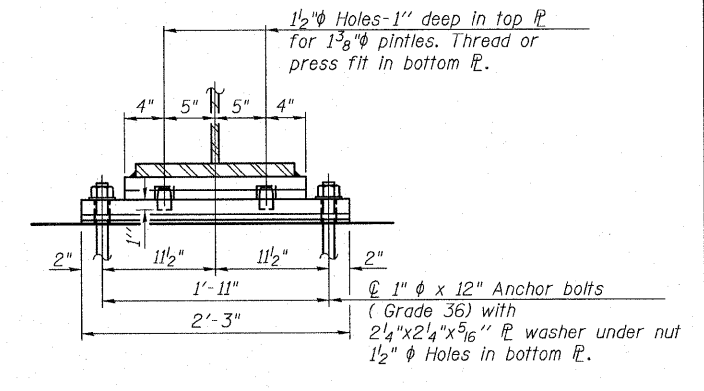
**ELEVATION AT EAST ABUT.**



**SECTION A-A**

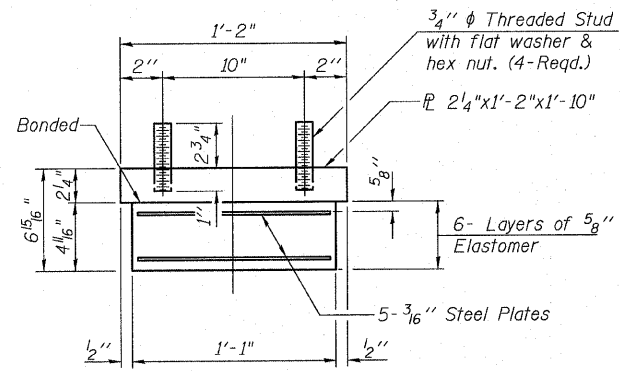


**ELEVATION AT WEST ABUT.**



**SECTION B-B**

**TYPE I ELASTOMERIC EXP. BRG.**



**BEARING ASSEMBLY**

Note:  
Shim plates shall not be placed under Bearing Assembly.

Notes:  
Side retainers and other steel members required for the elastomeric bearing assembly shall be included in the cost of Furnishing Elastomeric Bearing Assembly, Type I.  
Furnishing of the Fixed bearing assemblies including shim plates & neoprene pads, shall be included in the cost of Furnishing Structural Steel.  
The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50

**FOR INFORMATION ONLY**

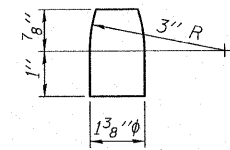
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified, ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.

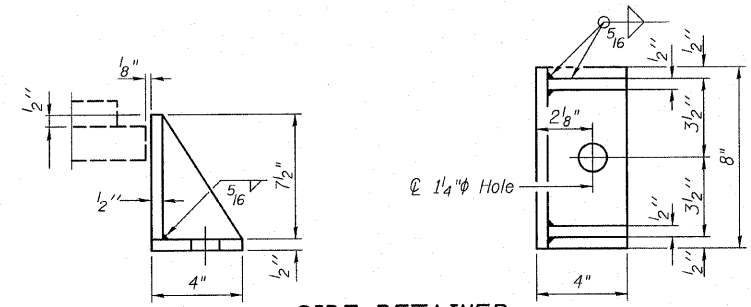
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

**FIXED BEARING**  
(AASHTO M270 Grade 50)



**PINTLE**



**SIDE RETAINER**

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

**BEARING SEAT ELEVATIONS**

Beam	W. Abut.	E. Abut.
1	751.67	749.12
2	751.81	749.25
3	751.95	749.38
4	752.09	749.50
5	752.23	749.63
6	752.06	749.45
7	751.87	749.25
8	751.69	749.06
9	751.51	748.86
10	751.55	748.89
11	751.69	749.01

\* Provide 5/8" thick Shim PL

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing Elastomeric Bearing Assembly, Type I	Each	11
* Anchor Bolts, 1"	Each	44

\* Anchor Bolts not included in this Contract



I-2E-1 7-1-10

FILE NAME =	USER NAME =	DESIGNED - LRT / AG	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BEARING DETAILS STRUCTURE NO. 049-0534 SHEET NO. OF SHEETS	F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	PLOT SCALE = N.T.S.	CHECKED - OAO / LRT	REVISED -			1199	2011-056-F	LAKE	19	19	
	PLOT DATE = 09/01/2011	DRAWN - TCS / AG	REVISED -			CONTRACT NO. 60P76					
		CHECKED - AG	REVISED -			ILLINOIS FED. AID PROJECT					