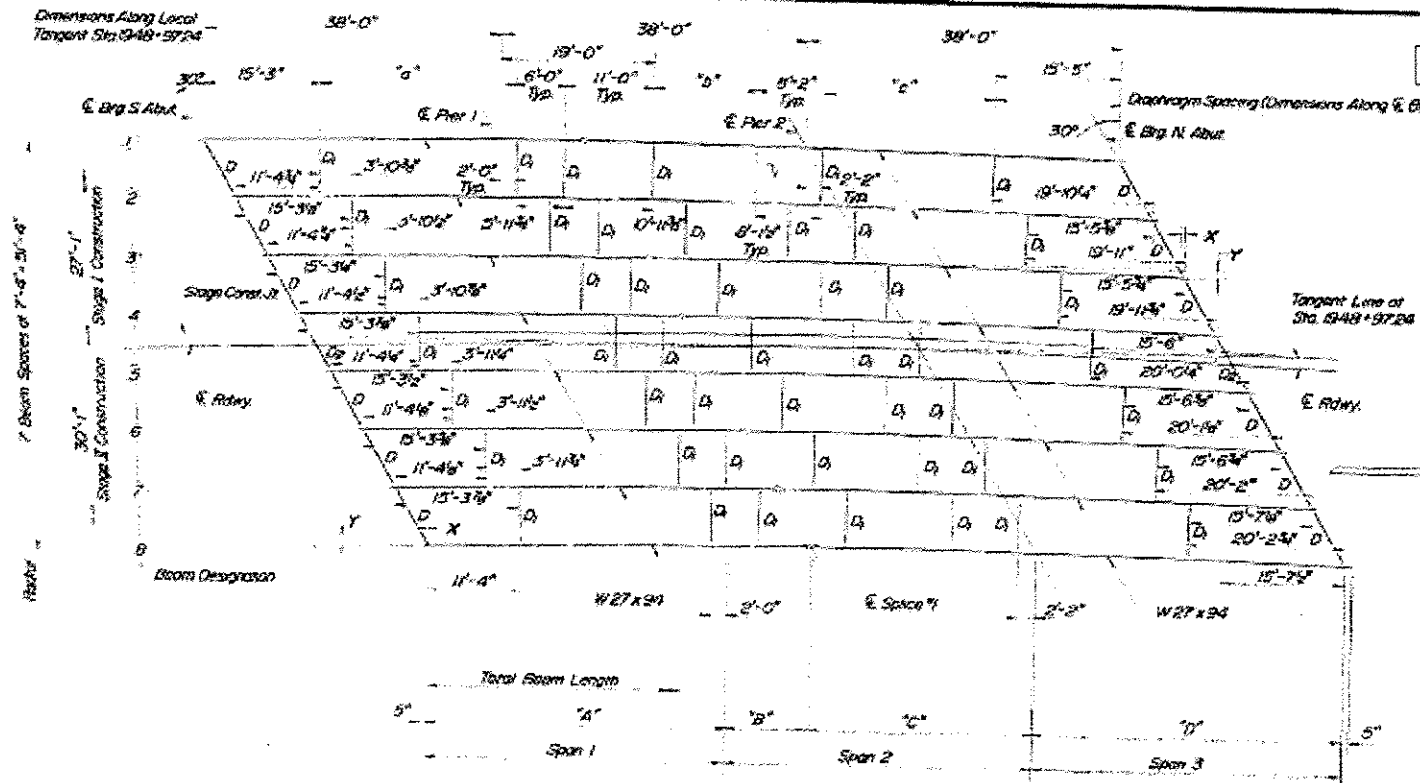


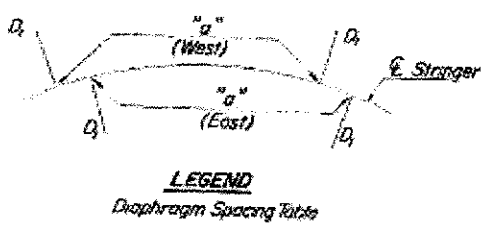
FOR INFORMATION ONLY

PROJECT NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
EA 742	#	OGLE	40	22
SHEET 8 OF 16 SHEETS				



**TABLE DIAPHRAGM SPACING**

Beam	"a" (East)	"a" (West)	"b" (East)	"b" (West)	"c" (East)	"c" (West)
1	25'-10 1/2"		12'-5"		20'-8 1/2"	
2	24'-0 1/4"	23'-10 1/2"	12'-9 1/4"	12'-7 1/4"	20'-8 1/4"	20'-8 1/4"
3	24'-0 1/4"	23'-11 1/4"	12'-10 1/2"	12'-7 1/4"	20'-9 1/4"	20'-9 1/4"
4	24'-1 1/4"	24'-0 1/4"	12'-11 1/4"	12'-8 1/4"	20'-10 1/4"	20'-9 1/4"
5	24'-1 1/4"	24'-1 1/4"	12'-11 1/4"	12'-9 1/4"	20'-11"	20'-9 1/4"
6	24'-2 1/4"	24'-1 1/4"	13'-0 1/4"	12'-9 1/4"	20'-11 1/4"	20'-9 1/4"
7	24'-2 1/4"	24'-2 1/4"	13'-1 1/4"	12'-11"	21'-0"	20'-9 1/4"
8		24'-3 1/4"		12'-11 1/4"		20'-9 1/4"



**NOTES**  
 All dimensions are along E. beam except as noted.  
 Dimensions X and Y are given from the respective Local Tangent of each beam at Sta. 194B+97.24.  
 Beams shall be fabricated to their respective radii.  
 All dimensions are along the curve except as noted.  
 Work this sheet with sheet nos. 9 & 10.  
 All diaphragms between Beams 4 & 5 shall be installed during Stage II Construction.  
 All stringers (W27 x 94) and splice plates shall be A.A.S.H.T.O. M 223 Grade 50.  
 All diaphragms, connection angles, plates and bearing plates - A.A.S.H.T.O. M 163.

**FRAMING PLAN**  
 Note: Notch Toughness Requirements are required for beams 1 thru 8 and all flange and web field splice plates.

**BEAM DIMENSIONS**

Beam	Radius	"A"	"B"	"C"	"D"	TOTAL BEAM LENGTH (ft)
1	1458.07'	37'-3 3/4"	10'-6"	27'-3"	38'-3 1/2"	113'-3 1/2"
2	1450.73'	37'-3 3/4"	10'-6"	27'-3 3/4"	38'-4 1/2"	113'-5 1/4"
3	1443.40'	37'-4"	10'-6"	27'-4 1/4"	38'-5 1/4"	113'-8"
4	1436.07'	37'-4 1/4"	10'-6"	27'-5 1/4"	38'-6 1/4"	113'-10 1/4"
5	1428.73'	37'-5 1/4"	10'-6"	27'-6 1/4"	38'-7 1/4"	114'-2 1/4"
6	1421.40'	37'-6"	10'-6"	27'-7 1/4"	38'-8 1/4"	114'-5 1/4"
7	1414.07'	37'-6 3/4"	10'-6"	27'-8 1/4"	38'-9 1/4"	114'-8 1/4"
8	1406.73'	37'-7 1/4"	10'-6"	27'-9 1/4"	38'-10"	114'-11 1/4"

**LAYOUT DIMENSIONS**

Beam	E. Abut. S	E. Pier 1	E. Pier 2	E. Abut. N
1	7'-0 1/2"	1'-0"	0'-3 1/2"	0'-5 1/2"
2	0'-11 1/2"	1'-7 1/2"	0'-2 1/2"	0'-4 1/2"
3	0'-10 1/2"	1'-5 1/2"	0'-1 1/2"	0'-3 1/2"
4	0'-9 1/2"	1'-3 1/2"	0'-1 1/2"	0'-2 1/2"
5	0'-8 1/2"	1'-1 1/2"	0'-1 1/2"	0'-1 1/2"
6	0'-7 1/2"	1'-0"	0'-1 1/2"	0'-1 1/2"
7	0'-6 1/2"	0'-11 1/2"	0'-1 1/2"	0'-1 1/2"
8	0'-5 1/2"	0'-9 1/2"	0'-1 1/2"	0'-1 1/2"

**SPAN LENGTH TABLE**

Beam	Span 1	Span 2	Span 3
1	37'-2 1/4"	37'-3"	38'-3 1/2"
2	37'-3 3/4"	37'-9 1/4"	38'-4 1/4"
3	37'-4"	37'-10 1/4"	38'-5 1/4"
4	37'-4 1/4"	37'-11 1/4"	38'-6 1/4"
5	37'-5 1/4"	37'-12 1/4"	38'-7 1/4"
6	37'-6"	38'-0 1/4"	38'-8 1/4"
7	37'-6 3/4"	38'-1 1/4"	38'-9 1/4"
8	37'-7 1/4"	38'-2 1/4"	38'-10"

**INTERIOR BEAM MOMENT TABLE**

	0.4 Span 1	Pier 1	0.5 Span 2	Pier 2	0.4 Span 3
$I_2$ (in <sup>4</sup> )	3270	3270	3270	3270	3270
$S_x$ (in <sup>3</sup> )	243	243	243	243	243
$S_y$ (in <sup>3</sup> )	124	124	124	124	124
$R$ (in)	1099	1099	1099	1099	1099
$M_d$ (ft-k)	124.0	155.0	155.0	155.0	155.0
$M_e$ (ft-k)	213.6	198.8	173.6	152.5	223.9
$M_{imp}$ (ft-k)	64.1	47.7	32.7	48.8	67.2
$M_a$ (ft-k)	462.8	344.2	380.0	359.2	485.2
$M_o$ (ft-k)	762.8	649.0	547.1	671.6	603.0
$M_{tot}$ (ft-k)	6.4	1.2	2.0	3.8	8.9
$f_s$ (ksi)	6.1	7.8	2.0	8.1	6.5
$f_s$ (ft-k/in <sup>3</sup> )	22.85	17.00	18.75	17.39	23.06
$f_w$ (ksi)	6.19	1.16	1.94	3.68	8.61
$f_s$ (total) (ksi)	33.7	25.5	22.3	28.3	37.1
$f_s$ (total) (ft-k)	37.67	32.05	27.00	35.17	39.60
$f_s$ (total) + $f_w$	43.9	33.2	29.0	36.8	48.3
$F_b$ (ksi)	50	47.5	50	47.5	50

**INTERIOR BEAM REACTION TABLE**

	Abutments	Piers
$R_2$ (k)	17.1	48.7
$R_4$ (k)	34.2	39.0
Impact (k)	10.3	12.0
Total (k)	61.6	102.6

**MOMENT TABLE LEGEND**  
 $I_2$  and  $S_x$  are the moment of inertia and section modulus of the section used in computing  $f_s$  (Total and Overload).  
 $M_d$  - Moment due to dead loads on section.  
 $M_e$  - Moment due to live loads on section.  
 $M_{imp}$  - Moment due to impact loads on section.  
 $M_a$  - Live load impact (I).  
 $M_o$  (Applied Moment) =  $1.3(M_d + M_s) + 5/8(M_e + I)$ .  
 $M_{tot}$  (Total) - Sum of stresses due to  $1.3(M_d + M_s) + M_s + 5/8(M_e + I)$ .  
 $f_s$  (Overload) - Sum of stresses due to  $M_d + M_s + 5/8(M_e + I)$ .  
 $F_b$  - Maximum allowable stress  $F_{bx}$  or  $F_{by}$  computed according to A.A.S.H.T.O. Guide Specifications for Horizontally Curved Highway Bridges Section 2.12 (B) and 2.15.1.  
 $f_s$  -  $f_{wL}$  (Overload) is the sum of the stress due to  $M_d + M_s + 5/8(M_e + I) + 5/8 M_{imp} / L$ .  
 $S_b$  is the section modulus for one flange plate for lateral flange bending.  
 $M_{fl}$  is the lateral bending moment for flange plate (factored).  
 $f_w$  is the calculated normal stress at the edge of flange due to lateral bending (factored).

**TOP OF BEAM ELEVATIONS \***

Loc.	E. Abut. S	E. Pier 1	E. Span 1	E. Pier 2	E. Abut. N
1	686.89	686.89	686.89	686.89	686.89
2	686.45	686.45	686.45	686.43	686.43
3	686.01	686.01	686.01	686.01	686.01
4	685.57	685.57	685.57	685.57	685.57
5	685.13	685.13	685.13	685.13	685.13
6	684.69	684.69	684.69	684.69	684.69
7	684.25	684.25	684.25	684.25	684.25
8	683.81	683.81	683.81	683.81	683.81

\* For fabrication only

STRUCTURAL STEEL  
 IL ROUTE 2 OVER MUD CREEK  
 EA ROUTE 742  
 SECTION 37 BR-3  
 SN 071-0025  
 OGLE COUNTY

ALLEN HENDERSON & ASSOCIATES

CONSULTING CIVIL AND STRUCTURAL ENGINEERS

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

EXISTING BRIDGE PLANS  
 SN: 071-0025

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 2 D2	BRIDGE PAINTING 2014-1	LEE / OGLE	25	23
CONTRACT NO. 64J52				

DESIGNED -	REVISED -
DRAWN -	REVISED -
CHECKED -	REVISED -
DATE -	REVISED -