

Kansas Department of Transportation  
700 S.W. Harrison Street  
Topeka, Kansas 66603  
Attn: Bridge Design

Ref: Proposed Steel Girder Erection

Gentlemen:

Please find attached our proposed steel girder erection plan for this project.

Sincerely,

*Koering 405*

LIFTING CAPACITIES

MAXIMUM ALLOWABLE LIFTING LOADS FOR LEVEL, FIRMLY SUPPORTED MACHINE\*

Over End of Long Crawler Frame

*14' 3" Long*

LIFT CRANE

MAXIMUM MAIN BOOM 90'  
30' MAXIMUM JIB ON 80' MAIN BOOM

For high-lift work, boom jibs 15', 20', 25' & 30' with cable, are available.

The allowable load over jib sheaves at any radius from center of rotation is the same load that may be lifted over main boom sheave with the boom lowered to that radius but not to exceed 7,500 lbs.

Main boom sheave loads must be reduced as follows when jib is attached:

- 15' jib ..... 900 lbs.
- 20' jib ..... 1045 lbs.
- 25' jib ..... 1125 lbs.
- 30' jib ..... 1290 lbs.

- For loads over 12,000 lbs. use two-part line.
- For loads over 24,000 lbs. use three-part line.
- For loads over 36,000 lbs. use four-part line.

**NOTE:** In determining the lifting capacity of the machine under different conditions the weight of the hook block, slings, eveners, grapples, buckets or any device for handling the load must be considered as a part of the load.

RADIUS IN FEET	LENGTH OF BOOM IN FEET					
	40	50	60	70	80	90
10	54000					
12	45000	45000				
15	40000	40000	40000	40000		
20	28330	28130	27935	27735	27535	27335
25	20565	20370	20170	19970	19770	19575
30	16025	15830	15630	15430	15230	15035
35	13050	12850	12650	12450	12255	12055
40	10945	10745	10545	10345	10145	9950
45		9175	8980	8780	8580	8380
50		7965	7770	7570	7370	7170
60			6015	5820	5620	5420
70				4615	4415	4215
80					3355	3340
90						670

Over End or Over Side of Long and Wide Crawler Frames

*14' 3" Long  
11' 2" wide*

RADIUS IN FEET	LENGTH OF BOOM IN FEET					
	40	50	60	70	80	90
10	52000					
12	40000	39800				
15	28200	28000	27800	27600	27400	27200
20	18700	18500	18350	18170	18000	17830
25	13800	13600	13440	13270	13100	12930
30	10920	10740	10560	10380	10200	10000
35	8950	8770	8590	8410	8230	8050
40	7600	7420	7230	7040	6850	6660
45		6340	6160	5980	5800	5620
50		5500	5330	5150	4970	4790
55			4700	4520	4340	4160
60			4140	3960	3780	3600
65				3510	3330	3150

Over End or Over Side of Standard Crawler Frames

*11' 10" Long  
10' 2" 2-4" dia.  
11' 2" 30" dia.*

RADIUS IN FEET	LENGTH OF BOOM IN FEET					
	40	50	60	70	80	90
12	35800	35600				
15	25800	25610	25440	25270	25100	
20	17200	17030	16870	16710	16550	16390
25	12900	12710	12540	12370	12200	12030
30	10200	10000	9840	9670	9500	9330
35	8350	8170	8000	7820	7650	7480
40	7100	6900	6740	6570	6400	6230
45		5900	5740	5570	5400	5230
50		5150	4985	4820	4650	4480
55			4385	4210	4040	3870
60			3885	3710	3540	3370
65				3270	3100	2930

DO NOT USE JIBS FOR DRAGLINE OR CLAMSHELL BUCKET WORK

See DRAGLINE - CLAMSHELL - MAGNET SPECIFICATION SHEET

\*Note: Loads rated in accordance with the Commercial Standard C590-58 of the U.S. Department of Commerce, issued by the Office of Technical Services with the cooperation of the National Bureau of Standards. Rated loads should not be exceeded. Rated loads are based on 75 per cent of stability.

In accordance with our established policy of constant improvement, we reserve the right to amend these specifications at any time without notice.

BOOM LENGTH (FEET)	RADIUS IN FEET	BOOM ANGLE DEGREES	SIDE FRAMES RETRACTED	SIDE FRAMES EXTENDED	FEET FROM BOOM POINT TO GROUND
40'	11	80.1		120,000	44.74
	12	78.6		120,000	44.55
	15	74.2		106,290	43.83
	20	66.6		67,350	42.05
	25	58.5		48,930	39.45
	30	49.7		38,180	35.84
	35	39.5	24,340	31,140	30.76
	40	26.2	20,550	26,160	23.02
45'	12	79.9		120,000	49.64
	15	76.0		106,270	49.00
	20	69.3		67,290	47.44
	25	62.4		48,850	45.20
	30	54.9	29,500	38,090	42.15
	35	46.7	24,240	31,040	38.07
	40	37.1	20,440	26,060	32.50
	45	24.7	17,570	22,350	24.15
50'	12	80.9		120,000	54.71
	15	77.4		106,270	54.14
	20	71.5		67,260	52.75
	25	65.3		48,810	50.77
	30	58.8	29,440	38,050	48.12
	35	51.9	24,180	30,990	44.66
	40	44.2	20,380	26,010	40.16
	45	35.2	17,520	22,300	34.13
	50	23.4	15,270	19,430	25.22
55'	13	80.7		120,000	59.61
	15	78.6		106,220	59.25
	20	73.2		67,180	57.99
	25	67.7		48,720	56.22
	30	61.9	29,330	37,950	53.87
	35	55.8	24,060	30,890	50.85
	40	49.3	20,260	25,900	47.02
	45	42.0	17,400	22,190	42.13
	50	33.5	15,150	19,320	35.67
	55	22.3	13,350	17,030	26.23
60'	14	80.5		119,930	64.51
	15	79.6		106,240	64.34
	20	74.7		67,180	63.19
	25	69.6		48,700	61.58
	30	64.5	29,310	37,930	59.47
	35	59.0	24,030	30,870	56.78
	40	53.3	20,240	25,880	53.43
	45	47.1	17,370	22,170	49.26
	50	40.1	15,130	19,300	44.00
	55	32.0	13,330	17,010	37.14
	60	21.4	11,840	15,140	27.20
65'	15	80.4		106,180	69.42
	20	75.9		67,090	68.36
	25	71.3		48,600	66.89
	30	66.5	29,180	37,820	64.96
	35	61.6	23,910	30,760	62.53
	40	56.5	20,120	25,770	59.54

BOOM LENGTH (FEET)	RADIUS IN FEET	BOOM ANGLE DEGREES	SIDE FRAMES RETRACTED	SIDE FRAMES EXTENDED	FEET FROM BOOM POINT TO GROUND
65'	45	51.0	17,250	22,060	55.87
	50	45.1	15,010	19,180	51.38
	55	38.5	13,210	16,890	45.79
	60	30.7	11,720	15,020	38.54
	65	20.5	10,480	13,470	28.12
70'	16	80.2		95,180	74.32
	20	76.9		67,030	73.51
	25	72.6		48,530	72.15
	30	68.3	29,100	37,750	70.38
	35	63.8	23,830	30,680	68.16
	40	59.2	20,030	25,690	65.44
	45	54.3	17,160	21,970	62.16
	50	49.1	14,920	19,100	58.21
	55	43.4	13,120	16,810	53.41
	60	37.0	11,640	14,940	47.50
75'	16	80.9		95,100	79.39
	20	77.8		66,940	78.63
	25	73.8		48,430	77.37
	30	69.8	36,800	37,630	75.73
	35	65.7	28,970	30,560	73.68
	40	61.4	23,700	25,570	71.20
	45	57.0	19,900	21,850	68.22
	50	52.3	17,040	18,980	64.67
	55	47.3	14,790	16,690	60.44
	60	41.8	12,990	14,820	55.36
80'	17	80.7		86,140	84.29
	20	78.6		66,930	83.74
	25	74.9		48,420	82.56
	30	71.1	36,790	37,620	81.03
	35	67.3	28,960	30,550	79.13
	40	63.4	23,680	25,560	76.84
	45	59.3	19,890	21,840	74.10
	50	55.0	17,020	18,970	70.87
	55	50.5	14,780	16,680	67.07
	60	45.7	12,980	14,810	62.59
85'	18	80.6		78,580	89.19
	20	79.2		66,840	88.84
	25	75.8		48,310	87.73
	30	72.3	36,670	37,510	86.30
	35	68.7	28,840	30,440	84.53
	40	65.0	23,560	25,440	82.39
	45	61.3	19,760	21,720	79.86
	50	57.3	16,900	18,850	76.89
	55	53.2	14,650	16,560	73.43
	60	48.9	12,850	14,690	69.39

BOOM LENGTH (FEET)	RADIUS IN FEET	BOOM ANGLE DEGREES	SIDE FRAMES RETRACTED	SIDE FRAMES EXTENDED	FEET FROM BOOM POINT TO GROUND
85'	65	44.3	10,140	13,140	64.66
	70	39.2	9,090	11,830	59.05
	75	33.5	8,180	10,700	52.26
	80	26.8	7,390	9,730	43.65
	85	17.9	6,700	8,870	31.49
90'	19	80.5		72,190	94.10
	20	79.8		66,770	93.92
	25	76.6	36,570	48,230	92.88
	30	73.3	28,740	37,430	91.53
	35	69.9	23,460	30,350	89.87
	40	66.5	19,660	25,350	87.87
	45	63.0	16,800	21,630	85.52
	50	59.4	14,560	18,760	82.76
	55	55.6	12,760	16,470	79.57
	60	51.6	11,280	14,600	75.89
	65	47.4	10,040	13,040	71.62
	70	43.0	8,990	11,730	66.66
	75	38.0	8,090	10,610	60.80
	80	32.5	7,300	9,630	53.74
85	26.0	6,610	8,780	44.82	
90	17.4	5,990	8,020	32.27	
95'	19	81.0		72,100	99.16
	20	80.4		66,670	99.00
	25	77.3	36,450	48,130	98.01
	30	74.2	28,610	37,310	96.74
	35	71.0	23,330	30,230	95.18
	40	67.8	19,530	25,230	93.30
	45	64.5	16,670	21,510	91.09
	50	61.1	14,430	18,630	88.52
	55	57.6	12,630	16,340	85.56
	60	54.0	11,150	14,470	82.16
	65	50.1	9,910	12,920	78.27
	70	46.1	8,860	11,610	73.78
	75	41.8	7,960	10,490	68.59
	80	37.0	7,170	9,510	62.50
85	31.6	6,480	8,660	55.18	
90	25.3	5,870	7,910	45.96	
95	16.9	5,320	7,230	33.02	
100'	20	80.9		66,620	104.06
	25	78.0	36,380	48,060	103.13
	30	75.0	28,540	37,250	101.93
	35	72.0	23,260	30,160	100.45
	40	69.0	19,460	25,160	98.68
	45	65.9	16,590	21,440	96.60
	50	62.7	14,350	18,560	94.19
	55	59.4	12,550	16,270	91.42
	60	56.0	11,070	14,400	88.27
	65	52.5	9,840	12,850	84.67
	70	48.8	8,790	11,540	80.57
	75	44.9	7,890	10,410	75.88
	80	40.6	7,100	9,440	70.47
	85	36.0	6,410	8,590	64.15
90	30.8	5,800	7,840	56.57	
95	24.7	5,260	7,170	47.07	
100	16.5	4,760	6,570	33.76	

BOOM LENGTH (FEET)	RADIUS IN FEET	BOOM ANGLE DEGREES	SIDE FRAMES RETRACTED	SIDE FRAMES EXTENDED	FEET FROM BOOM POINT TO GROUND
105'	21	80.8		61,820	108.97
	25	78.5	36,260	47,960	108.24
	30	75.7	28,240	37,130	107.09
	35	72.9	23,140	30,050	105.69
	40	70.0	19,330	25,040	104.01
	45	67.1	16,470	21,320	102.05
	50	64.1	14,220	18,440	99.78
	55	61.0	12,420	16,150	97.18
	60	57.8	10,950	14,280	94.23
	65	54.6	9,710	12,730	90.89
	70	51.1	8,660	11,410	87.10
	75	47.5	7,760	10,290	82.80
	80	43.7	6,970	9,320	77.91
	85	39.6	6,290	8,470	72.30
	90	35.1	5,680	7,720	65.75
	95	30.1	5,130	7,050	57.93
100	24.1	4,640	6,450	48.15	
105	16.1	4,200	5,900	34.47	
110'	22	80.6	42,990	57,620	113.87
	25	79.1	36,160	47,870	113.33
	30	76.4	28,310	37,040	112.25
	35	73.7	23,030	29,950	110.91
	40	71.0	19,230	24,940	109.32
	45	68.2	16,360	21,220	107.46
	50	65.4	14,120	18,340	105.31
	55	62.5	12,320	16,050	102.86
	60	59.5	10,840	14,180	100.09
	65	56.4	9,600	12,620	96.95
	70	53.2	8,550	11,310	93.43
	75	49.9	7,650	10,190	89.46
	80	46.4	6,870	9,220	84.98
	85	42.7	6,180	8,370	79.89
	90	38.7	5,570	7,610	74.08
	95	34.3	5,030	6,950	67.31
100	29.4	4,540	6,350	59.26	
105	23.5	4,100	5,810	49.20	
110	15.7	3,700	5,320	35.17	
115'	23	80.6	40,350	53,880	118.77
	25	79.5	36,030	47,760	118.42
	30	77.0	28,190	36,930	117.38
	35	74.4	22,900	29,830	116.11
	40	71.8	19,100	24,820	114.59
	45	69.2	16,230	21,100	112.82
	50	66.5	13,990	18,220	110.79
	55	63.7	12,190	15,920	108.47
	60	60.9	10,710	14,050	105.85
	65	58.0	9,470	12,500	102.90
	70	55.1	8,420	11,190	99.60
	75	52.0	7,520	10,060	95.90
	80	48.7	6,740	9,090	91.75
	85	45.3	6,050	8,240	87.09
	90	41.7	5,440	7,490	81.82
	95	37.8	4,900	6,820	75.81
100	33.5	4,410	6,220	68.84	
105	28.7	3,970	5,680	60.55	
110	23.0	3,570	5,190	50.23	
115	15.4	3,200	4,750	35.86	

72+50.002  
 0.46 m Rebar 0.37 m Below Surface  
 S.W. to Edge of Crop Field  
 E. to Nail & Shiner W. Face 0.94 m Cir. Elm

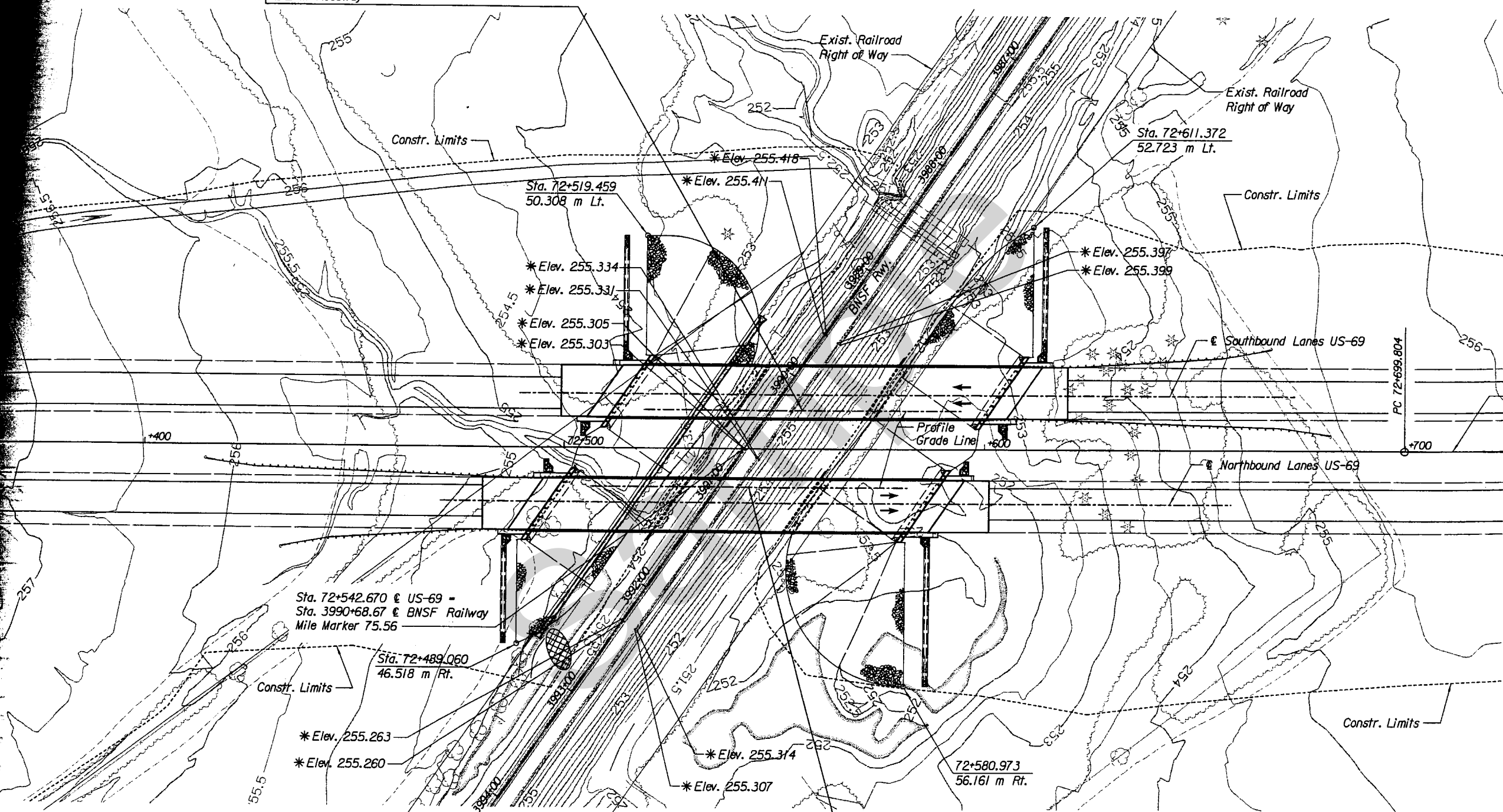
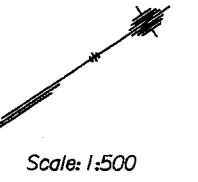
Sta. 72+556.532, 9.1 m Lt., Const.  
 Br. No. 69-54-8.29 (067)  
 27 - 35 - 27 m Cont. Comp. Steel Rolled Beam Spans,  
 34°45'44" Skew Rt.  
 Column Bent Piers, Pile Bent Type Abutments  
 12.2 m Roadway

**Curve Data**

P.I. Sta. - 73+097.127 (Bk.)  
 P.I. Sta. - (Ahd.)  
 Δ = 36°38' 23" (LT)  
 R = 1,200.000 m  
 L = 767.381 m  
 T = 397.324 m  
 E = 64.067 m  
 Super = 4.70%

€ P.C. Sta. 72+699.804  
 1. Set 0.013 m x 0.46 m Rebar 0.45 m Below Surface  
 2. 133.3 m W. to € of Northerly Railroad Track  
 3. 281.0 m E. to ±€ Underhill Rd.  
 4. N.O.R.A.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-54 K-7892-01	2006	315	1523



Sta. 72+542.670 € US-69 -  
 Sta. 3990+68.67 € BNSF Railway  
 Mile Marker 75.56

Sta. 72+489.060  
 46.518 m Rt.

Sta. 72+543.900, 9.1 m Rt., Const.  
 Br. No. 69-54-8.28 (066)  
 27 - 35 - 27 m Cont. Comp. Steel Rolled Beam Spans,  
 34°45'44" Skew Rt.  
 Column Bent Piers, Pile Bent Type Abutments  
 12.2 m Roadway

\*Top of Rail Elev.

Note:  
 All stations are in meters except as noted.  
 Stationing along railroad is in English.



**Utility Notes:**

Visual indications of utilities are as shown.  
 Underground locations shown as furnished by  
 their lessors, are approximate and should be  
 verified in the field at the time of construction.  
 For actual field locations of underground utilities,  
 call 1-800-344-7233. Verification of utilities  
 is the contractor's responsibility.

- UTILITY OWNERS**
- CASS COUNTY TELEPHONE  
 261 W. 1st Street  
 Pocahontas, MO 64078  
 Steve Collins  
 779-5110  
 1-800-999-0836
  - PEOPLES MUTUAL TELEPHONE COMPANY  
 P.O. Box 186, 210 N. Broadway  
 LaCygne, KS 66040  
 Pat Palisar  
 913-757-4735
  - ALLTEL COMMUNICATIONS  
 901 Industrial Drive  
 Moundridge, KS 67107  
 Bryan Benne  
 316-386-9169
  - RURAL WATER DISTRICT NO. 1  
 P.O. Box 215  
 LaCygne, KS 66040  
 Mark Palfance  
 913-757-2199
  - KANSAS CITY POWER & LIGHT  
 P.O. Box 159, 19950 Newton  
 Stillwell, KS 66085  
 913-681-7300

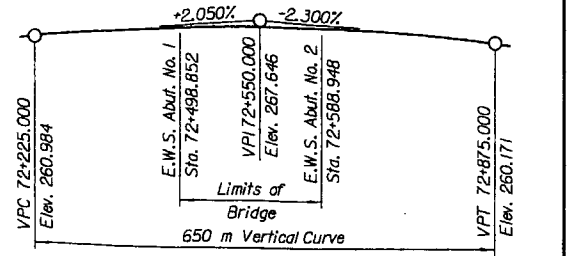
3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
BR. NO. 69-54-8.28 (066)		9.1 m Rt. STA. 72+543.900		
BR. NO. 69-54-8.29 (067)		9.1 m Lt. STA. 72+556.532		
<b>CONTOUR MAP</b>				
N.B. US-69 OVER BNSF RR S.B. US-69 OVER BNSF RR				
PROJ. NO. 69-54 K-7892-01		LINN CO.		
SHEET	3 OF 23	SCALE	APP'D	
DESIGNED	M.H.	DETAILED	D.B.R.	QUANTITIES
DESIGN CK.	D.J.G.	DETAL CK.	A.D.	QUAL. CK.
				CAAD
				CAAD CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-54 K-7892-01	2006	316	1523

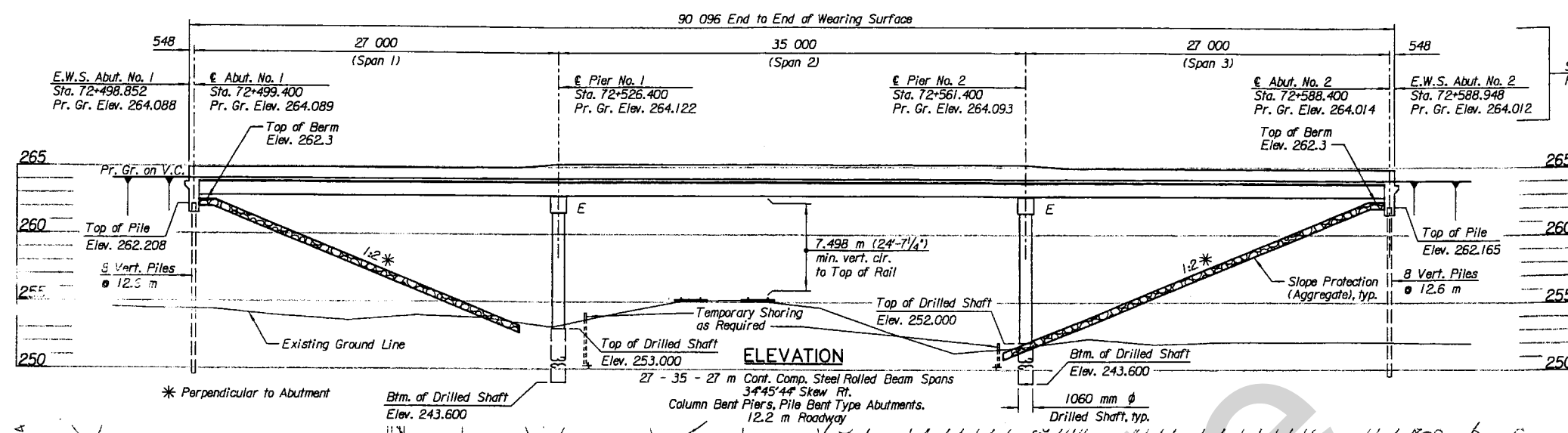
Note:  
Type "C" Expansion Joint only. (See "Expansion Joint Details", Std. No. RD662 SI).

The thermal movement at the abutment is  $\pm 30$  mm. See table below for adjusted "W" values. "W" is the formed gap. The temperatures in the table below are the average ambient temperature over the last 24 hours. (See "Concrete Bridge Approach Pavement", Std. No. RD665 SI).

Temp., (C)	-1°	4°	10°	15°	21°	27°	32°
"W" (mm)	54	51	48	45	42	39	36



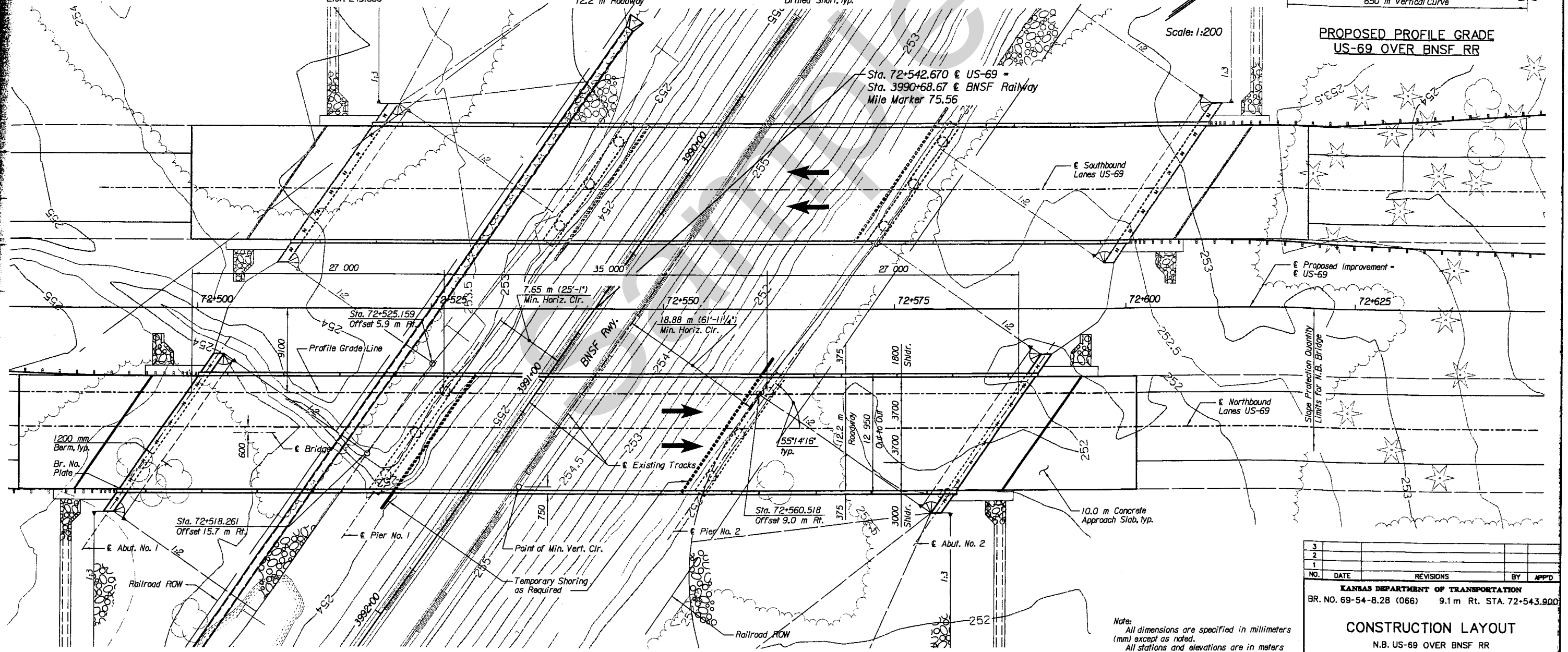
**PROPOSED PROFILE GRADE  
US-69 OVER BNSF RR**



Stations & dimensions along Profile Grade Line

\* Perpendicular to Abutment

27 - 35 - 27 m Cont. Comp. Steel Rolled Beam Spans  
3°45'44" Skew Rt.  
Column Bent Piers, Pile Bent Type Abutments.  
12.2 m Roadway



**PLAN**

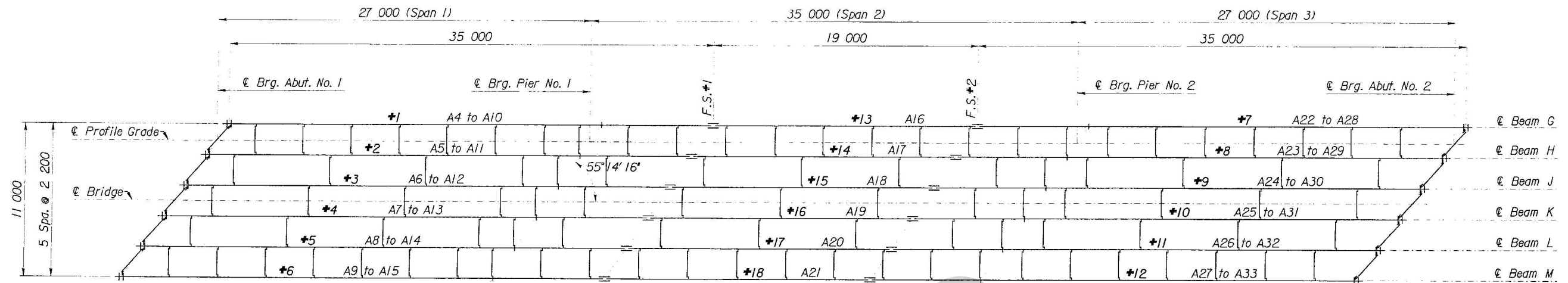
BM #45 0.018 m BOLT TOP CENTER NORTHEAST END OF WEST HUBGUARD 2.134 m x 1.829 m DOUBLE RCB, 668.03 m LT., & STA. 72+401.6, ELEV. = 258.329

BM #46 METAL "T" POST FLUSH WITH GROUND 0.32 m EAST OF METAL CORNER POST OF WEST R/W FENCE LINE, 659.75 m LT., & STA. 72+696.8, ELEV. = 259.942

Note:  
All dimensions are specified in millimeters (mm) except as noted.  
All stations and elevations are in meters except as noted.  
Stationing along railroad is in English.  
E.W.S. denotes End of Wearing Surface

3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
BR. NO. 69-54-8.28 (066) 9.1m Rt. STA. 72+543.900				
<b>CONSTRUCTION LAYOUT</b>				
N.B. US-69 OVER BNSF RR				
PROJ. NO. 69-54 K-7892-01		LINN CO.		
SHEET 4 OF 23 SCALE	APP'D	DESIGNED	MAJ. DETAILED	DBR QUANTITIES
DESIGN CK.	DWG DETAIL CK.	AJD.	QUAN. CK.	CADD CK.



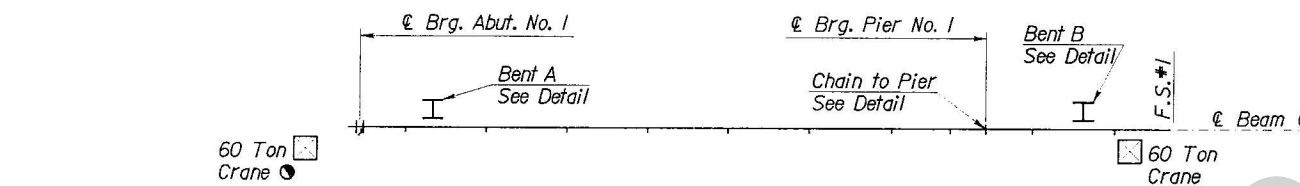


**STEEL FRAMING PLAN**  
(Erection Procedure by Numbers)

**GENERAL NOTES**

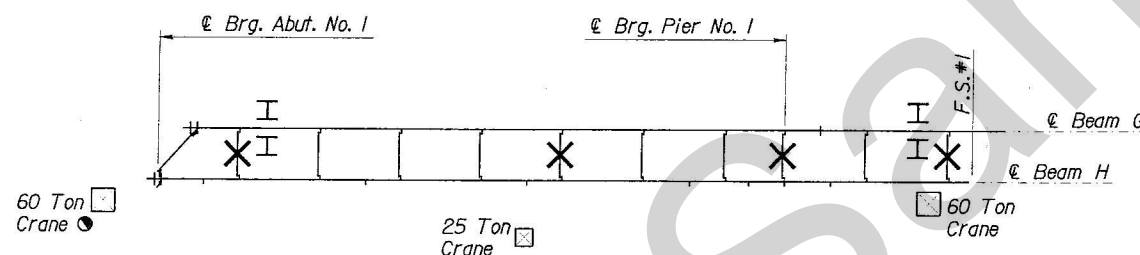
- Splices are to be bolted 100% before crane releases the beam.
- Cross frame connections as designated are to be bolted between each pair of girders before erecting next girder.
- Beam placement No. 2, as a minimum, shall be complete at the end of the work day. Other beam placements shall have the designated cross frames in place at the end of the work day. No girder shall be placed that does not have the field slices 100% bolted and the designated cross frames fully bolted at the end of the work day.
- Outriggers are to be fully extended.
- No work shall be performed if wind gusts exceed 25 mph.
- No crane will be operated in a manner that will exceed its rated capacity at any radius as specified by the crane manufacturer.
- Maximum weight of bolted beam is 13 Tons. L=35.2m L/B=117.3  
The bolted beams shall be picked up with two cranes.
- Maximum Weight of center beam is 6 Tons. L=19m L/B=63.3  
The single beam may be picked up with one crane. The pick shall be at the center of gravity of the beam.

- L = Total length of beam to be picked.
- B = Width of flange.
- A 25 ton crane will erect all diaphragms. The diaphragms marked X shall be bolted complete and 60 ton cranes shall release the beams.
- The remaining beams shall be erected in the same manner and the cranes shall hold beams until Diaphragms are bolted in place.
- The bents will remain in place until two center span beams are in place.
- Beam Placement No. 4, 5, and 6 shall proceed in the same manner as shown from Beam Placement No. 3.
- Beam Placement No. 7 shall be installed utilizing bents as shown in Beam Placement No. 1. Beam Placement No. 8, 9, 10, 11, and 12 shall be placed as shown in Beam Placement 2, 3, 4, 5, and 6.

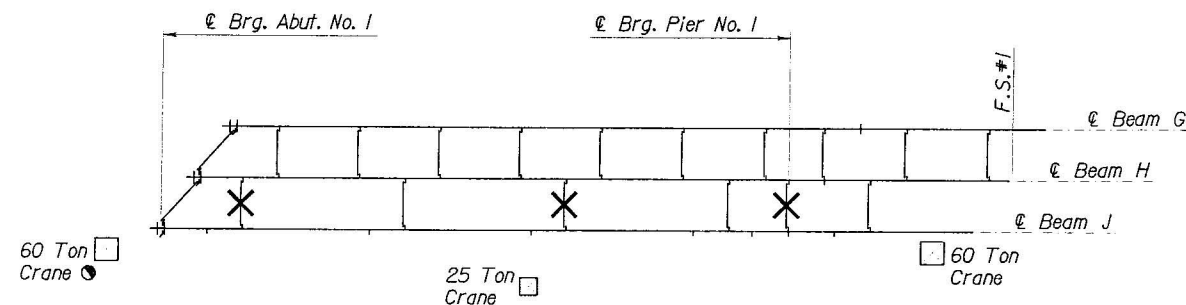


Note: 60 ton crane shall be located just south of the abutment at all times.

Note: A4 & A10 Bolted together on the ground  
Erect with two 60 ton cranes and tie off on Bents.



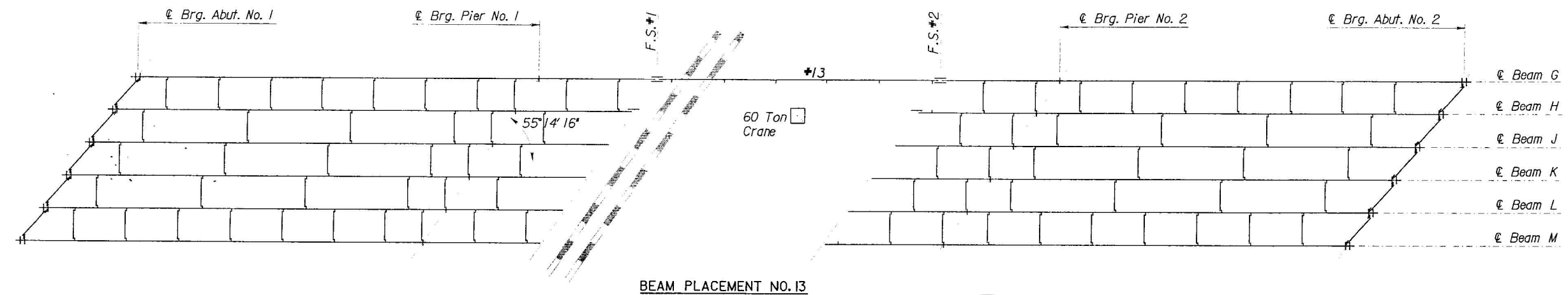
Note: A5 & A11 Bolted together on the ground  
Erect with two 60 ton cranes and held in place.



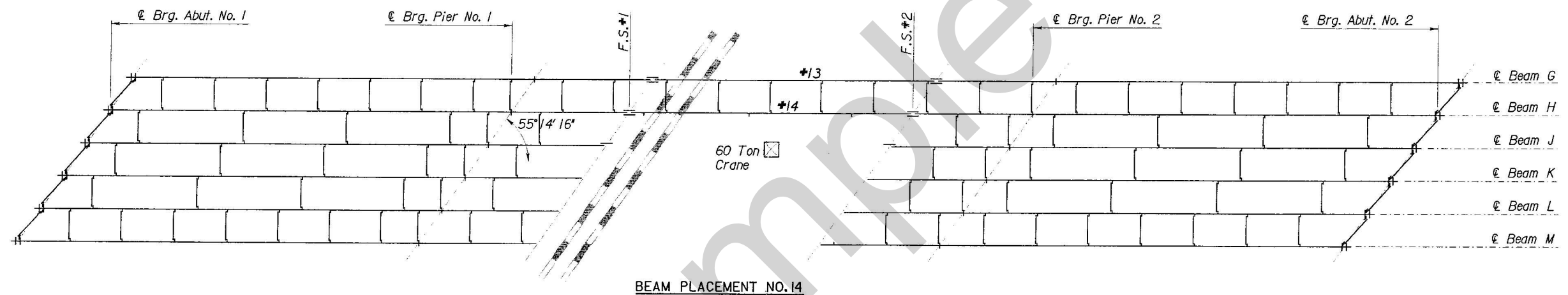
Note: A6 & A12 Bolted together on the ground  
Erect with two 60 ton cranes and held in place.

**QUALIFIED PEOPLE FOR STEEL ERECTION**

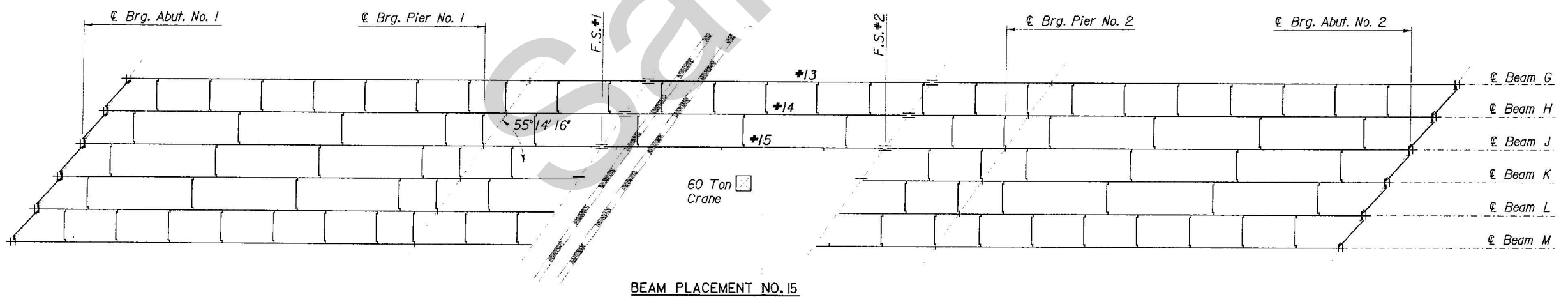
Randy Beachner  
Jamie Folkerson  
Mack Hale  
Shane Wolken  
Mike Murrow



BEAM PLACEMENT NO. 13



BEAM PLACEMENT NO. 14



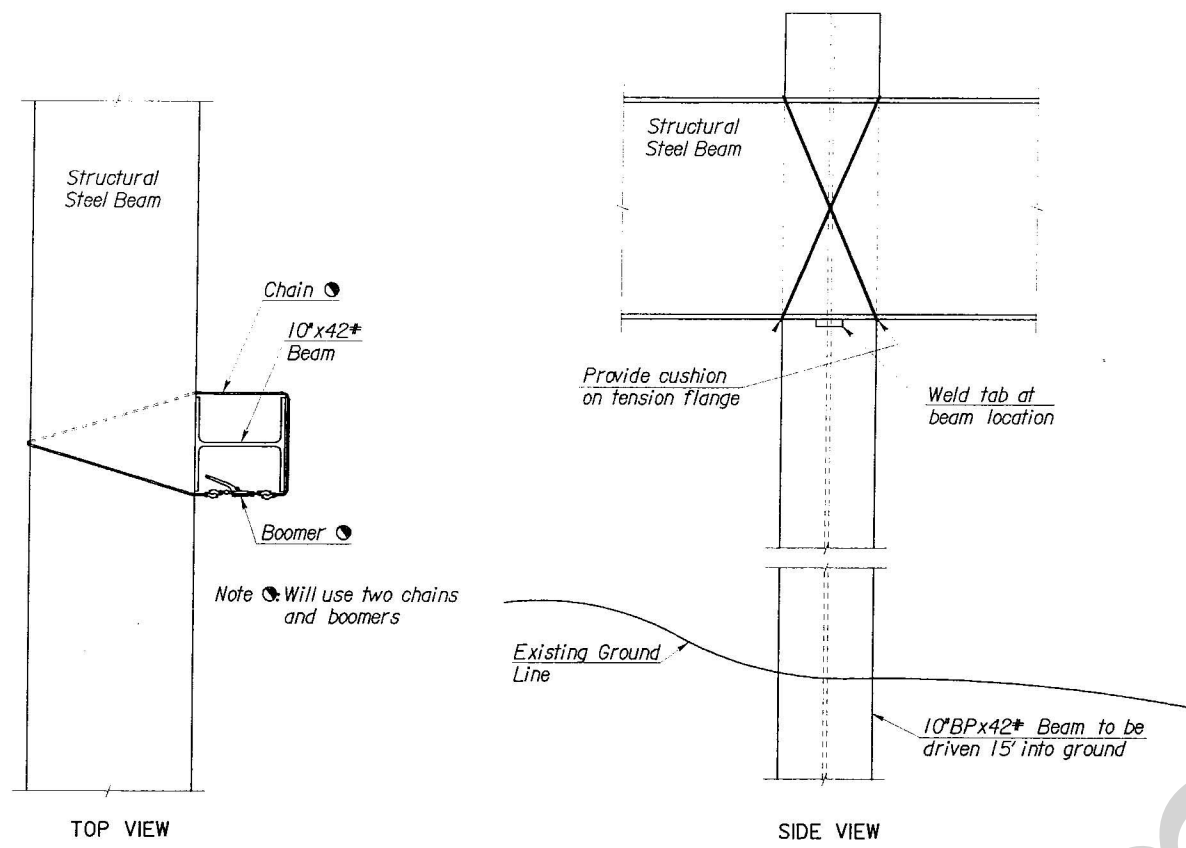
BEAM PLACEMENT NO. 15

GENERAL NOTES

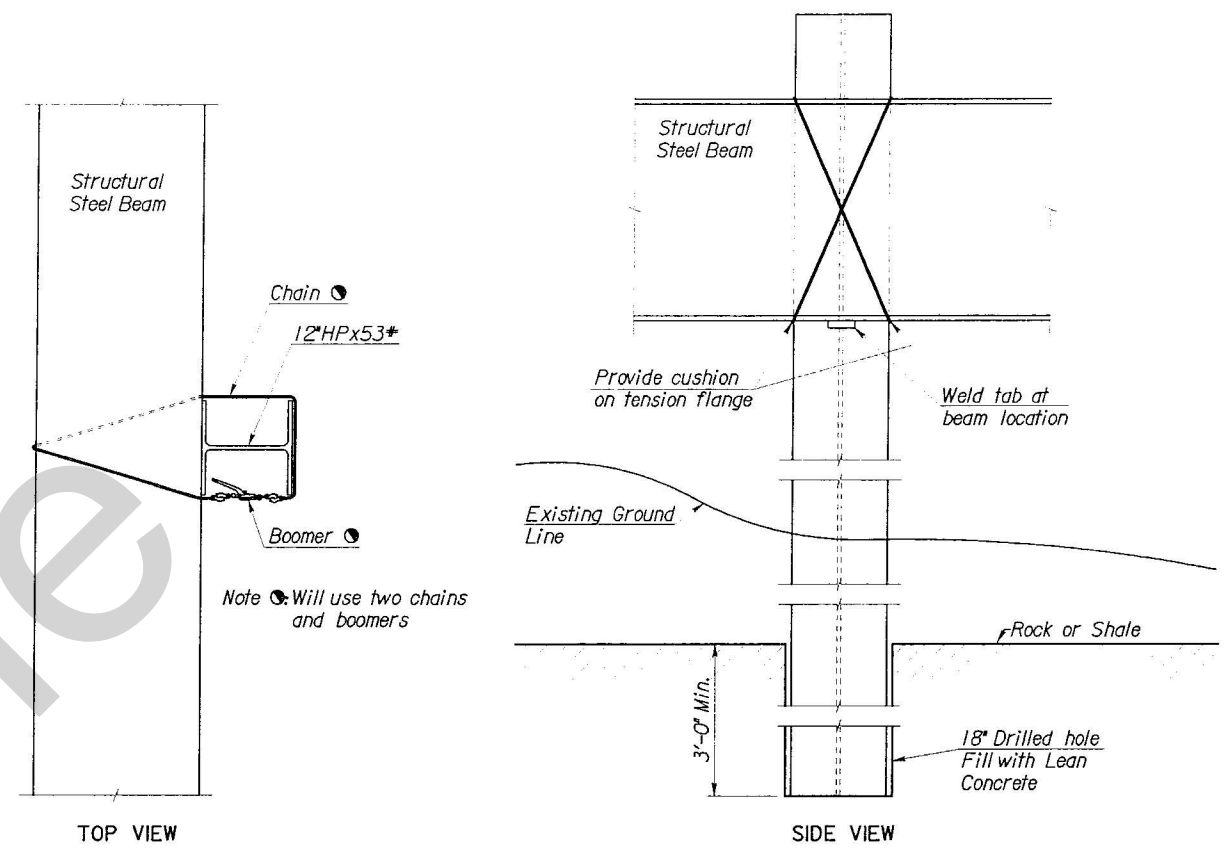
Beam Placement No. 13, Crane located North of Tracks pick up Maximum 6 ton load, 19 m long. Swing into place with pick up at center of beam. Bolt Completely.

Beam Placement No. 14, same as Beam Placement No. 13. Pick up Diaphragms and bolt in place.

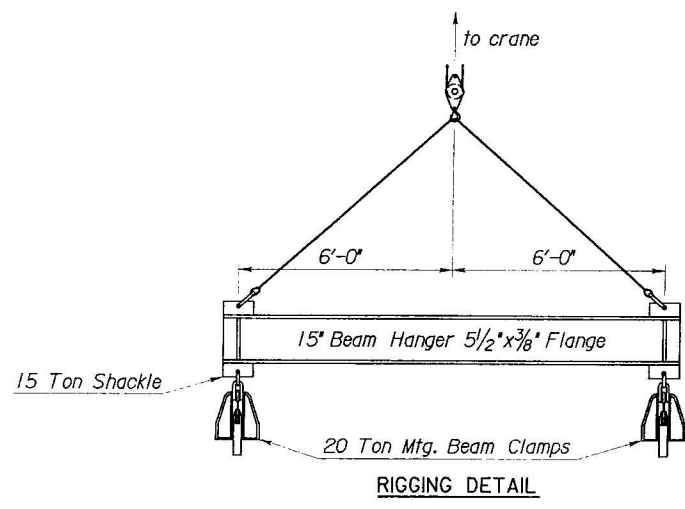
Beam Placement No. 15, 16, 17, and 18 shall proceed in the same manner as shown in Beam Placement No. 14.



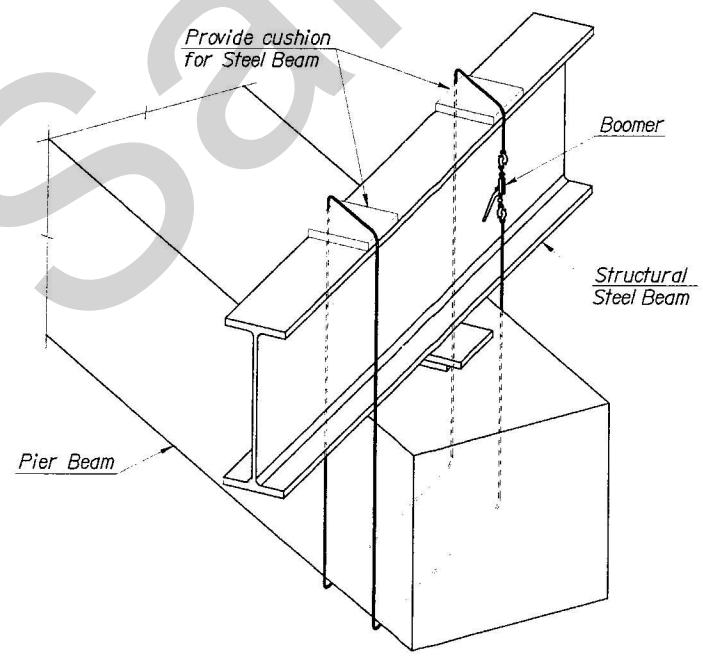
TYPICAL DETAIL OF BENT A



TYPICAL DETAIL OF BENT B



RIGGING DETAIL



TYPICAL VIEW AT PIERS

**Erection Supervisor Qualification Form**  
**(In accordance with Standard Specifications, Division 700, Section 736)**

Erection Supervisor Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Number of Years with Company: \_\_\_\_\_

Company Name	Years with Company
Previous Experience: _____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Briefly Describe Project Experience of erecting structures **over traffic (rail or road)** including project location, company, number of spans, span lengths, superstructure type, substructure type, and other relevant information pertaining to, or describing, the project's scope.

Project Experience:

1	
2	
3	
4	

Project Experience Continued:

5	
6	
7	
8	
9	
10	