

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANS FOR PROPOSED
FEDERAL AID HIGHWAY

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS
836	115 BR	EDGAR	30
F.H.A. REG. ILLINOIS PROJECT BR-F-836(13)			

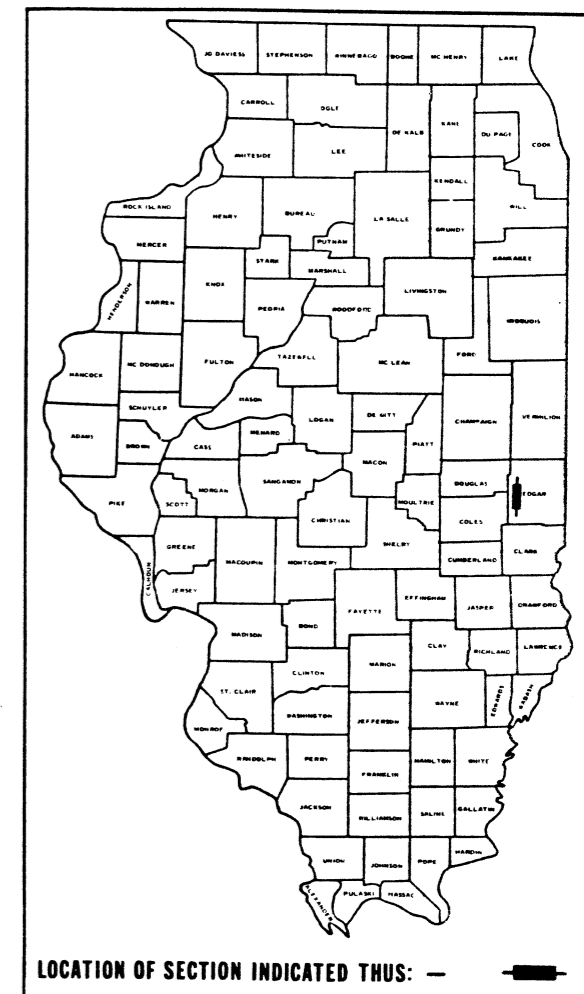
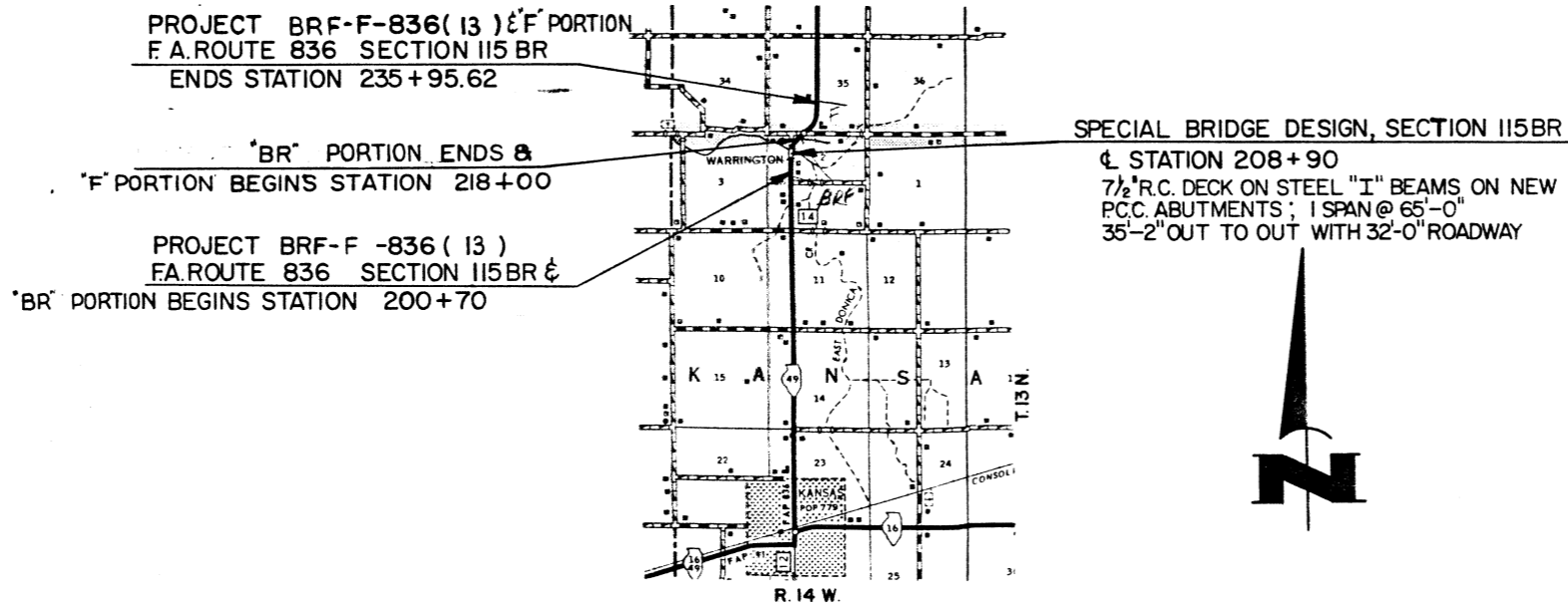
P-95-198-70

FOR INDEX OF SHEETS, SEE SHEET NO. 7
 FOR SUMMARY OF QUANTITIES, SEE SHEET NO. 8 & 9

SCALES (PLAN 1" = 50'
 PROFILE HORIZ. 1" = 50'
 PROFILE VERT. 1" = 5'
 CROSS SECTIONS 1" = 10' (HORIZ) 1" = 5' (VERT.)

F.A. ROUTE 836
SECTION 115 BR
EDGAR COUNTY
PROJECT BR F-F-836(13)

C - 95 - 015 - 84
 BRIDGE REPLACEMENT



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED January 24 19 84

EXAMINED 2-14 19 84 DISTRICT ENGINEER

PASSED 2-14 19 84 ENGINEER OF PLANS AND CONTRACTS

APPROVED 2-14 19 84 ENGINEER OF DESIGN

DIRECTOR, DIVISION OF HIGHWAYS

DESIGN DESIGNATION
 100 (03) Area Service 028(Bit20)

TOTAL LENGTH OF SECTION 115 BR = 3525.62 FEET = .668 MILES
 NET LENGTH OF SECTION 115 BR = 3525.62 FEET = .668 MILES
 NET LENGTH OF PROJECT 'BR' PORTION = 173000 FEET = 3.28 MILES
 NET LENGTH OF PROJECT 'F' PORTION = 1795.62 FEET = 3.40 MILES

TOLL FREE J.U.L.I.E. TELEPHONE NO.
 1-800-892-0123
 KANSAS AND EMBARRASS TOWNSHIPS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

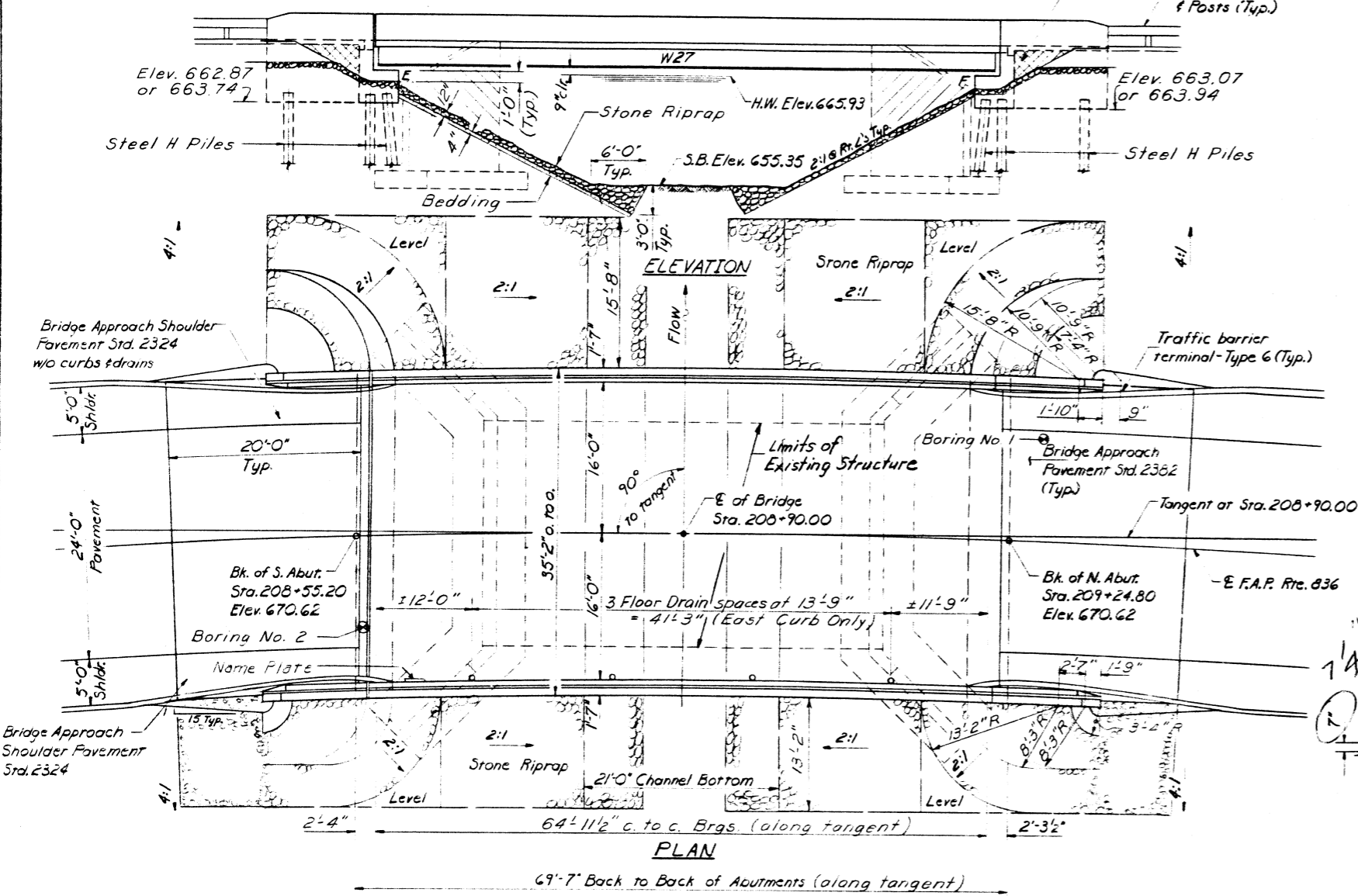
CONTRACT NO. 36887 023-0026

5-123

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
			30	13
F.A.P. PROJECT BRF-F-836(13)			10 SHEETS	

Bench Mark: North bolt on N.W. corner of West handrail at existing bridge Elev. 668.62.
Existing Structure: Built as S.B.I. Pte. 49 Sec. 115 in 1928. R.C.D.G. on closed abutments, 24'-4" o. to o. and 43'-0" Bk. to Bk. abutments Superstructure and portions of substructure to be removed by contractor. Traffic shall be detoured during construction.
No salvage.
Structure No.: 023-0020 (old) 023-0026 (new)



STATION 208+90.00
BUILT 198 BY
STATE OF ILLINOIS
F.A.P. RT. 836 SEC. 115BR
LOADING HS20
Str. No. 023-0026

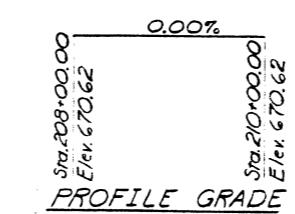
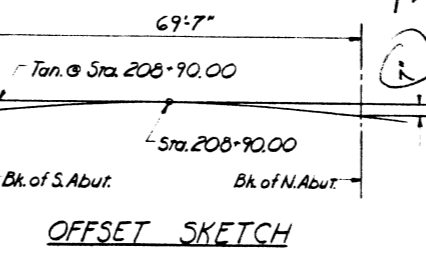
NAME PLATE
(See Std. 2113)

GENERAL NOTES

See Proposal for Boring Data.
Calculated weight of Structural Steel = 7,200 lbs. (M183)
53,880 lbs. (M223-Grade 50)
The Zinc-silicate and vinyl paint system shall be used for shop and field painting of Structural Steel except where otherwise noted.
Expansion joint angles, attached bars, diaphragms, diaphragm angles and connecting plates shall be AASHTO M 183.
Field welding of construction accessories will not be permitted to the bottom flange of beams. Field welding in other areas will be permitted only when approved by the Engineer.
Anchor bolts shall be set before bolting diaphragms over supports.
The structural steel bearing plates of the Elastomeric Bearing Assembly shall conform to the requirements of AASHTO M 223-Grade 50.
The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These components are the wide flange beams.
Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-53 Grade 60.
Layout of stone riprap may be varied in the field to suit ground conditions as directed by the Engineer.
The embankment configuration shown shall be the minimum embankment that must be constructed prior to construction of the abutments.
The contractor shall drive one steel HPI0x42 test pile in a permanent location at the North Abutment as directed by the Engineer before ordering the remainder of piles.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.	Total
Structure Excavation	Cu. Yd.		68	68
Floor Drains	Each	4		4
Protective Coat	Sq. Yd.			310
Class X Concrete	Cu. Yd.	74.5	69.6	144.1
Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	1140		1140
Reinforcement Bars	Lbs.		6660	6660
Reinforcement Bars (Epoxy Coated)	Lbs.	16,220		16,220
Steel Piles HPI0x42	Lin. Ft.		756	756
Test Piles Steel (HPI0x42)	Each		1	1
Name Plates	Each	1		1
Stone Riprap	Sq. Yd.		760	760
Preformed Joint Seal (2 1/2")	Lin. Ft.	36		36
Elastomeric Bearing Assembly, Type I	Each	5		5
Removal of Existing Structures	Each			1



CURVE DATA

D = 5°-43'-46.48"
Δ = 61°-47'-45.52"
R = 1000.00'
T = 598.44'
L = 1078.54'
E = 165.39'
S.E. = 0.061'
P.I. Sta. = 213+10.00

WATERWAY INFORMATION

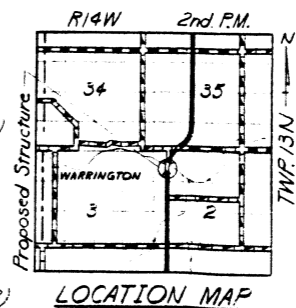
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	50	2169	291	445	665.93	1.35	0.654	667.27	666.58
Base	100	2483	291	466	666.25	1.40	0.83	667.65	667.06
Overtopping (Exist.)		2246	291		666.01	1.44		667.45	
Max. Calc. (Prop.)	500	3205		490	666.97	1.04			668.01

DESIGN STRESSES

f_c = 3500 p.s.i.
f_y = 60,000 p.s.i. (Reint.)
f_y = 50,000 p.s.i. (M223-Grade 50)
f_y = 36,000 p.s.i. (M183)
Allow 25 #/sq. ft. for future wearing surface.

LOADING HS20-44

Design Specifications AASHTO (1977) and applicable Interims (1978 thru 1983)

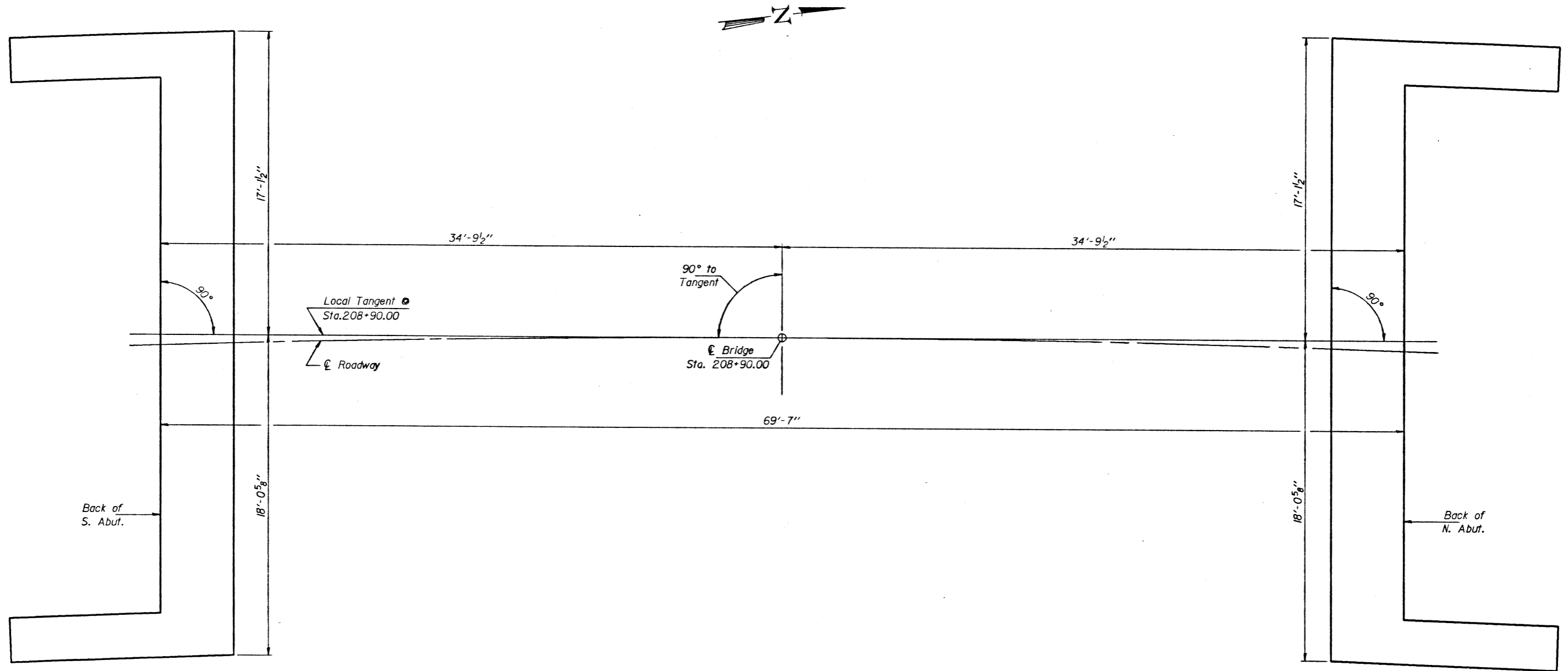


GENERAL PLAN & ELEVATION
ILLINOIS ROUTE 49 OVER
EAST DONICA CREEK
F.A.P. ROUTE 836 SECTION 115BR
EDGAR COUNTY
STATION 208+90.00

DESIGNED: A.L. Brown
CHECKED: Jim Kohout
DRAWN: R.P.S. w.c.
CHECKED: J.K.
EXAMINED: January 13, 1984
PASSED: [Signature]
APPROVED: [Signature]

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 2 10 SHEETS
			30	14	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		



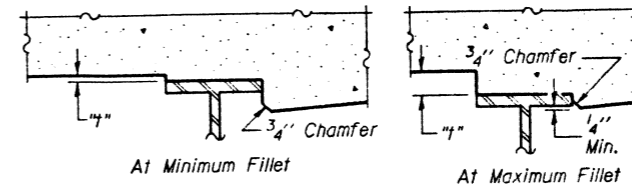
FOOTING PLAN

DESIGNED <i>R. P. Summer</i>	EXAMINED <i>James J. Rayburn</i>
CHECKED <i>JIM KOHOUT</i>	PASSED <i>James J. Rayburn</i>
DRAWN <i>R. P. Summer</i>	APPROVED <i>R. P. Summer</i>
CHECKED <i>JK</i>	DIRECTOR OF HIGHWAYS

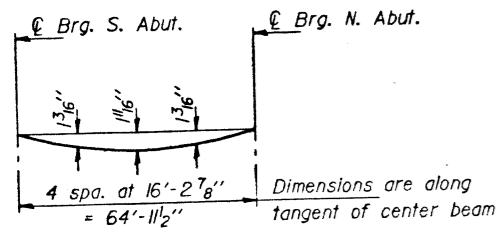
January 13, 1984

FOOTING PLAN
F.A.P. RT. 836 SEC. 115BR
EDGAR COUNTY
STA. 208+90.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ROUTE NO.	SECTION	COUNTY	SHEET NO.	3
			30	15
ILLINOIS			SHEET NO. 3	



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.

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
Back South Abut.	20855.699	-14.500	671.490	671.490
€ Brg. South Abut.	20857.999	-14.500	671.490	671.490
A	20867.857	-14.500	671.490	671.551
B	20877.714	-14.500	671.490	671.599
C	20887.571	-14.500	671.490	671.624
D	20897.428	-14.500	671.490	671.611
E	20907.285	-14.500	671.490	671.581
€ Brg. North Abut.	20922.040	-14.500	671.490	671.490
Back North Abut.	20924.300	-14.500	671.490	671.490

WEST LONGITUDINAL BONDED CONSTRUCTION JOINT

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Back South Abut.	20855.614	-12.000	671.340	671.340
€ Brg. South Abut.	20857.920	-12.000	671.340	671.340
A	20867.802	-12.000	671.340	671.401
B	20877.683	-12.000	671.340	671.449
C	20887.565	-12.000	671.340	671.474
D	20897.446	-12.000	671.340	671.461
E	20907.328	-12.000	671.340	671.431
€ Brg. North Abut.	20922.119	-12.000	671.340	671.340
Back North Abut.	20924.385	-12.000	671.340	671.340

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Back South Abut.	20855.452	-7.250	671.055	671.055
€ Brg. South Abut.	20857.769	-7.250	671.055	671.055
A	20867.697	-7.250	671.055	671.116
B	20877.625	-7.250	671.055	671.164
C	20887.553	-7.250	671.055	671.189
D	20897.481	-7.250	671.055	671.176
E	20907.409	-7.250	671.055	671.146
€ Brg. North Abut.	20922.271	-7.250	671.055	671.055
Back North Abut.	20924.547	-7.250	671.055	671.055

BEAM 3 AND € ROADWAY

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Back South Abut.	20855.201	0.000	670.620	670.620
€ Brg. South Abut.	20857.535	0.000	670.620	670.620
A	20867.535	0.000	670.620	670.681
B	20877.535	0.000	670.620	670.729
C	20887.535	0.000	670.620	670.754
D	20897.535	0.000	670.620	670.741
E	20907.535	0.000	670.620	670.711
€ Brg. North Abut.	20922.505	0.000	670.620	670.620
Back North Abut.	20924.798	0.000	670.620	670.620

BEAM 4

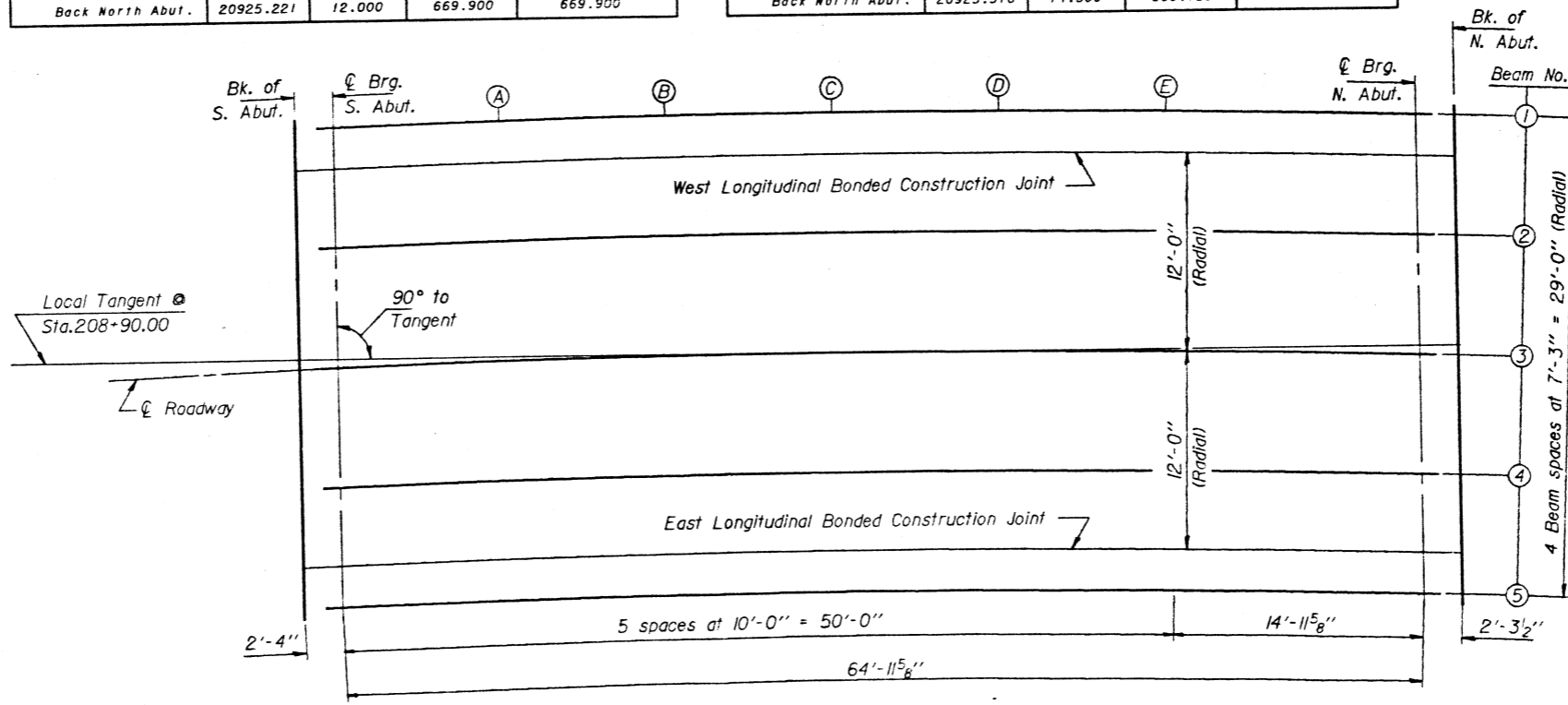
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Back South Abut.	20854.947	7.250	670.185	670.185
€ Brg. South Abut.	20857.298	7.250	670.185	670.185
A	20867.371	7.250	670.185	670.246
B	20877.444	7.250	670.185	670.294
C	20887.517	7.250	670.185	670.319
D	20897.590	7.250	670.185	670.306
E	20907.663	7.250	670.185	670.276
€ Brg. North Abut.	20922.742	7.250	670.185	670.185
Back North Abut.	20925.052	7.250	670.185	670.185

EAST LONGITUDINAL BONDED CONSTRUCTION JOINT

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Back South Abut.	20854.778	12.000	669.900	669.900
€ Brg. South Abut.	20857.141	12.000	669.900	669.900
A	20867.262	12.000	669.900	669.961
B	20877.384	12.000	669.900	670.009
C	20887.505	12.000	669.900	670.034
D	20897.627	12.000	669.900	670.021
E	20907.748	12.000	669.900	669.991
€ Brg. North Abut.	20922.900	12.000	669.900	669.900
Back North Abut.	20925.221	12.000	669.900	669.900

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Back South Abut.	20854.689	14.500	669.750	669.750
€ Brg. South Abut.	20857.057	14.500	669.750	669.750
A	20867.205	14.500	669.750	669.811
B	20877.352	14.500	669.750	669.859
C	20887.499	14.500	669.750	669.884
D	20897.646	14.500	669.750	669.871
E	20907.793	14.500	669.750	669.841
€ Brg. North Abut.	20922.983	14.500	669.750	669.750
Back North Abut.	20925.310	14.500	669.750	669.750



PLAN

(All longitudinal dimensions are measured along the arc)

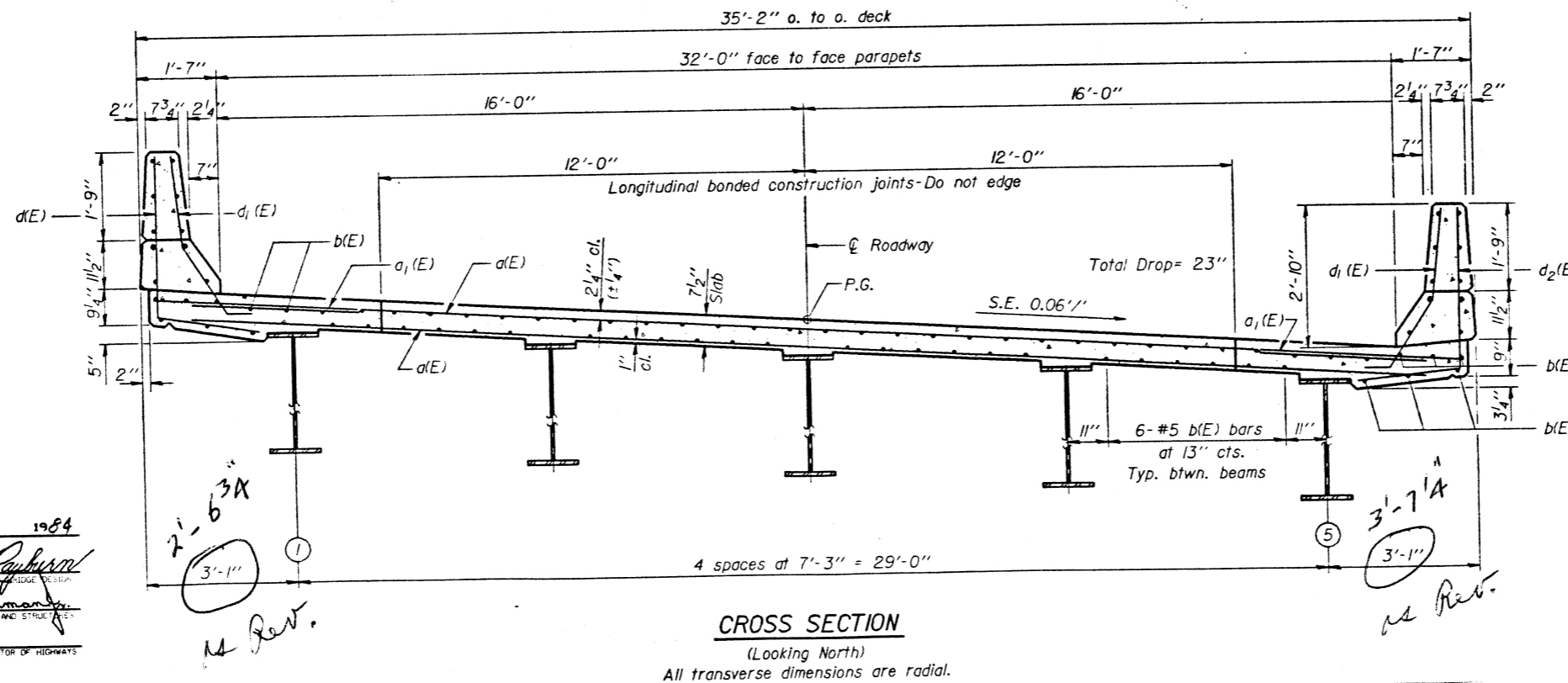
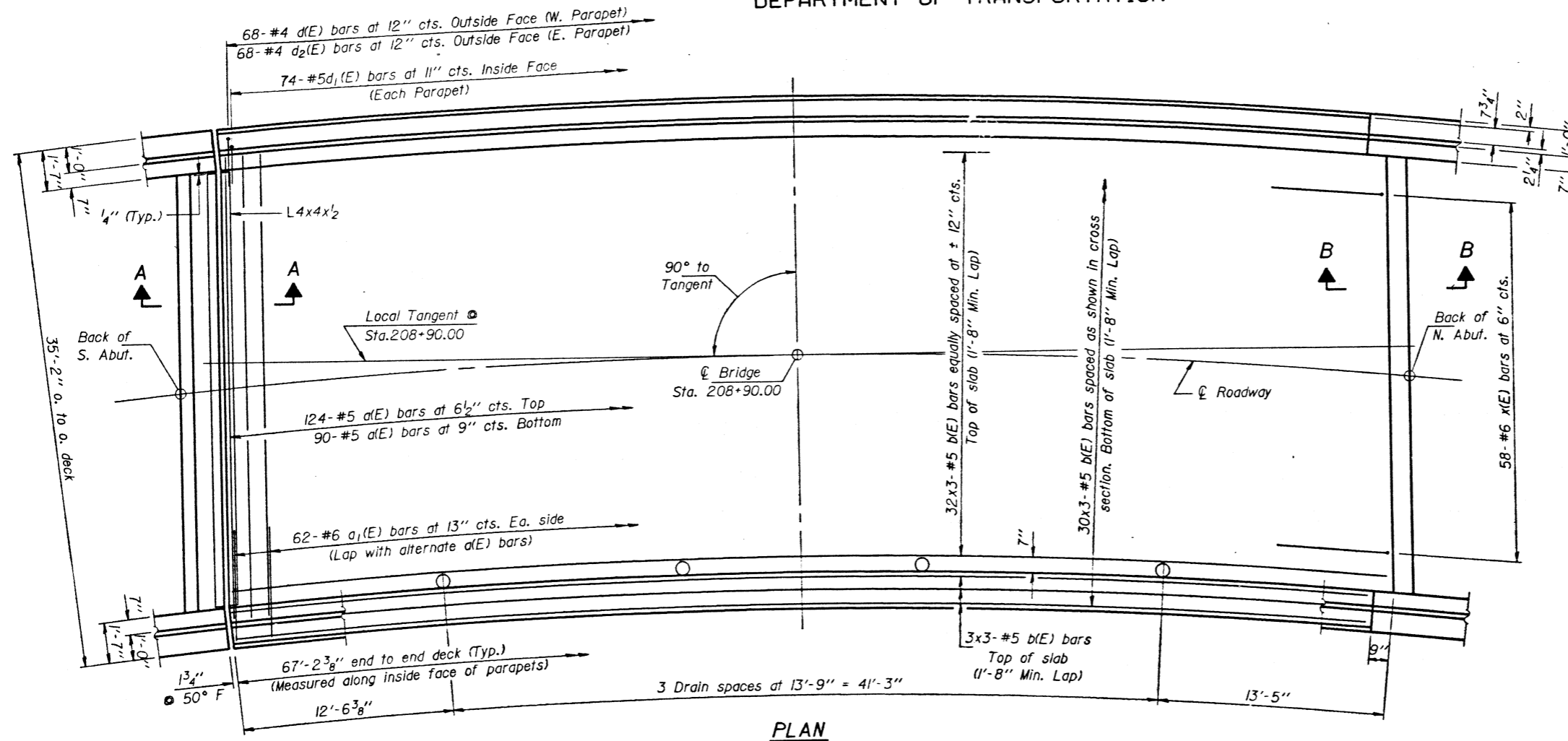
DESIGNED	<i>L. L. Brown</i>
CHECKED	<i>Jim Kohout</i>
DRAWN	<i>R. P. Summer</i>
CHECKED	<i>J. K.</i>

January 13, 1984
EXAMINED *James T. Ryburn*
PASSED *R. P. Summer*
APPROVED *J. K.*
DIRECTOR OF HIGHWAYS

TOP OF SLAB ELEVATIONS
F.A.P. RT.836 SEC.115BR
EDGAR COUNTY
STA.208+90.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
			30	16
10 SHEETS				
FED. ROAD DIST. NO. 7				



Notes: See sheet #5 for superstructure details and Bill of Material.
Reinforcement bars designated (E) shall be epoxy coated.
Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
Place longitudinal bars along curve.

DESIGNED	<i>G. L. Brown</i>
CHECKED	<i>JIM KORTOUT</i>
DRAWN	<i>R. P. Summer</i>
CHECKED	<i>JK</i>

January 13 1984

EXAMINED *James J. Rayburn*

PASSED *R. P. Summer*

APPROVED *R. P. Summer*

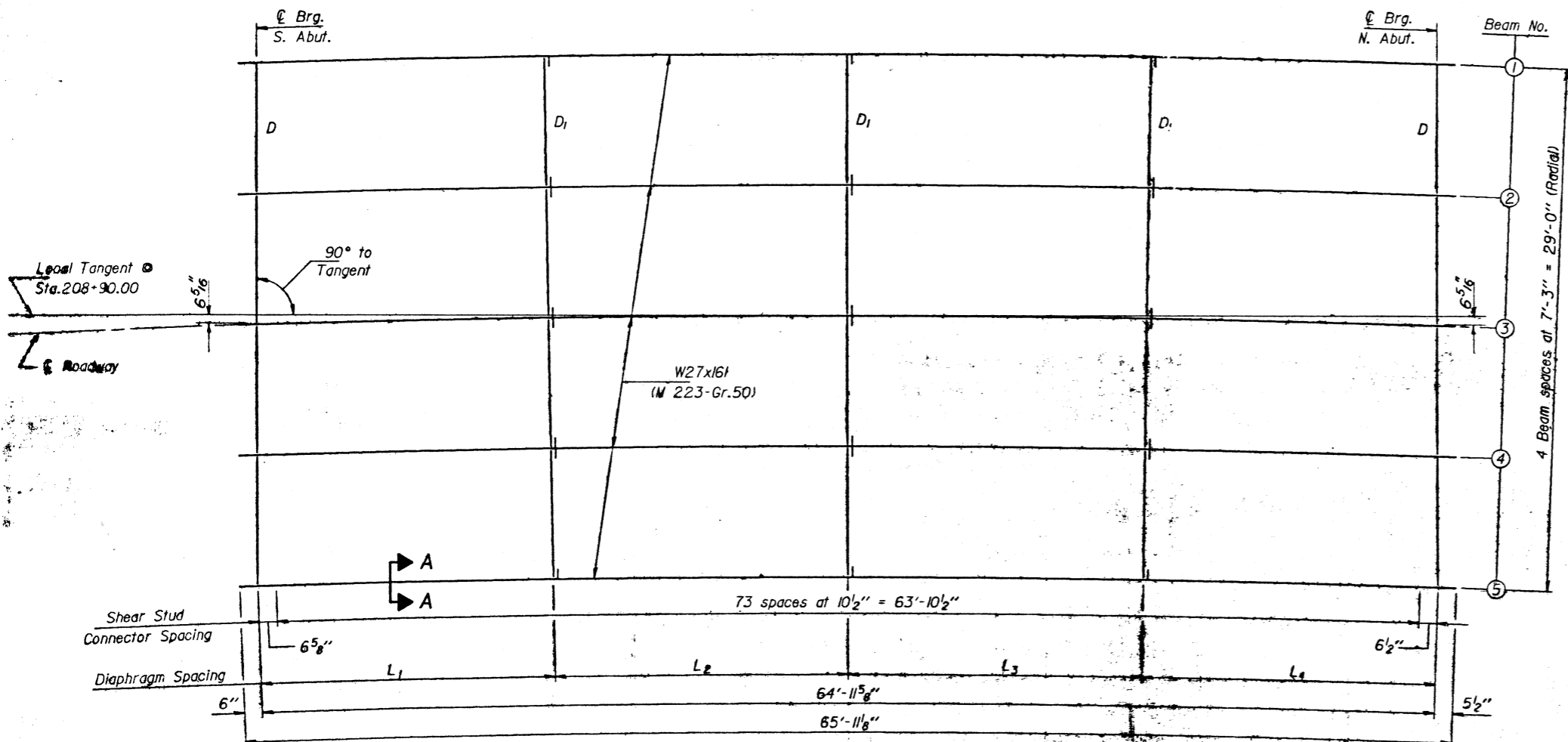
DIRECTOR OF HIGHWAYS

SUPERSTRUCTURE
F.A.P. RT.836 SEC.115BR
EDGAR COUNTY
STA.208+90.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
			30	18
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. 6
10 SHEETS



FRAMING PLAN

(All longitudinal dimensions are measured along the arc)

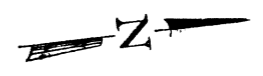


TABLE OF DIMENSIONS

Beam	Radius	L ₁	L ₂ &L ₃	L ₄
1	1014'-6"	16'-0"	16'-5 ⁵ / ₈ "	16'-0 ³ / ₈ "
2	1007'-3"	16'-1 ³ / ₈ "	16'-4 ¹ / ₄ "	16'-1 ³ / ₈ "
3	1000'-0"	16'-2 ³ / ₄ "	16'-2 ⁷ / ₈ "	16'-3 ¹ / ₈ "
4	992'-9"	16'-4 ¹ / ₄ "	16'-1 ³ / ₈ "	16'-4 ⁵ / ₈ "
5	985'-6"	16'-5 ⁵ / ₈ "	16'-0"	16'-6"

INTERIOR BEAM MOMENT TABLE

	5 Sp. #1
I _s (in ⁴)	6,280
I _c (in ⁴)	15,389
S _s (in ³)	455
S _c (in ³)	634
φ	.880
* M _ℓ (K)	507
s _ℓ (K/ft.)	.345
** M _s ℓ (K)	194
*** M _ℓ (K)	700
M (Imp) (K)	155
5 ₃ (M _ℓ +1) (K)	1,425
M _a (K)	2,764
M _u (K)	3,148
f _s ℓ non-comp(k.s.i.)	13.4
f _s ℓ (comp) (k.s.i.)	3.7
f _s 5 ₃ (ℓ+1) (k.s.i.)	27.0
f _s (Overload) (k.s.i.)	44.1
VR (K)	51.4

*Includes secondary ℓ moments & moments due to lateral flange bending.
**includes secondary s_ℓ moments.
***includes secondary ℓ moments & moment due to centrifugal force.

**** Top of Beam Elevations

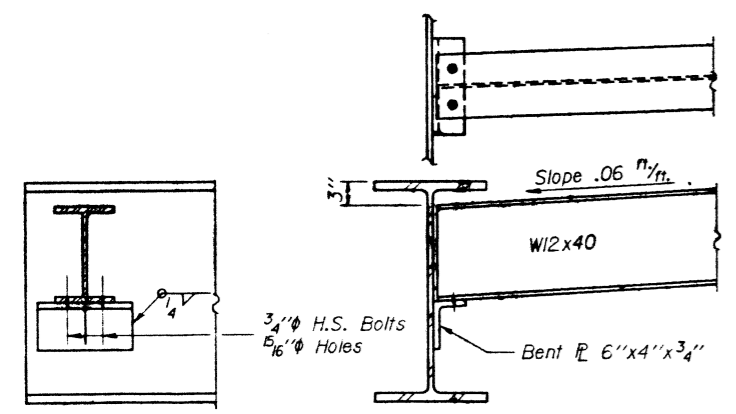
ℓ Brg. S. or N. Abut.	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5
	670.82	670.39	669.95	669.52	669.08

**** (For Fabrication Only)

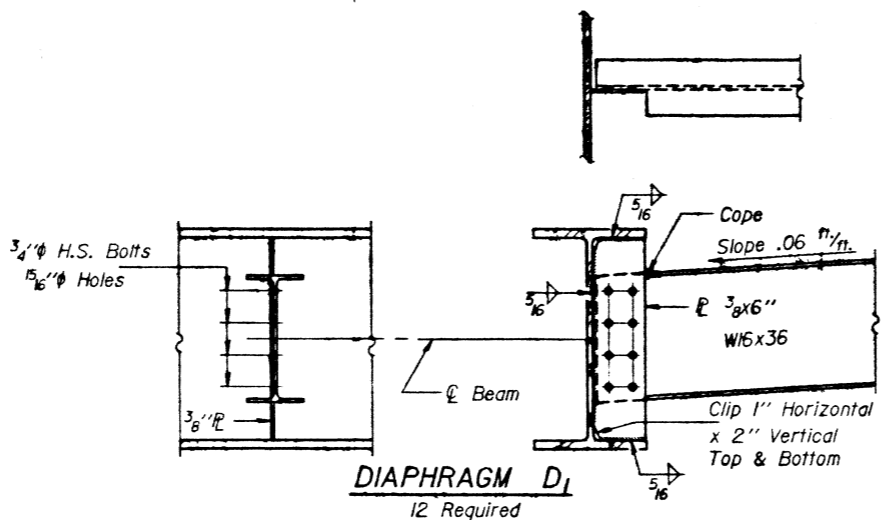
INTERIOR BEAM REACTION TABLE

	Abuts.
R _ℓ (K)	39.8
R _ℓ (K)	40.6
Imp. (K)	10.7
R (Totl) (K)	91.1

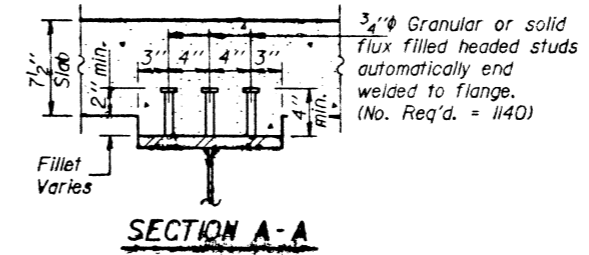
I_s and S_s are the moment of Inertia and section modulus of the steel section used in computing f_s (Overload).
I_c and S_c are the moment of inertia and section modulus of the composite section used in computing f_s (Overload).
VR is the maximum Live Load + Impact shear range in span.
M_a (Applied Moment)=1.3[M_ℓ + M_sℓ + 5₃(M_ℓ + 1)].
M_u is the Fully Plastic Moment Capacity for Compact, Braced section.
f_s (Overload) is the sum of the stresses due to M_ℓ + M_sℓ + 5₃(M_ℓ + 1).



DIAPHRAGM D
8 Required



DIAPHRAGM D1
12 Required



SECTION A-A

DESIGNED *[Signature]*
CHECKED *[Signature]*
EXAMINED *[Signature]*
APPROVED *[Signature]*
January 13 1984
DIRECTOR OF HIGHWAYS

Notes: Two hardened washers shall be required over all 5/16" holes.
All contact surfaces of joints shall be free of paint or lacquer.
All beams shall be fabricated to their respective radii.
Interior diaphragms D₁ are radial.

Note: All structural steel shall be AASHTO M 103, except as noted.

STRUCTURAL STEEL
F.A.P. RT.836 SEC.115BR
EDGAR COUNTY
STA.208+90.00

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
			30	20
F.A.P. PROJECT -		ILLINOIS PROJECT -		

The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

The anchor bolt shall be fabricated from cold drawn or hot finished seamless carbon steel mechanical tubing conforming to ASTM A519, Grade 1026 and supplied with hexagonal nuts and cut washers.
The coil wire shall be made of any suitable soft steel wire.
The finished anchor bolt shall be cleaned of rust and other foreign materials and wrapped or packaged to prevent contamination until they are installed.
The epoxy grout shall be a two-component, epoxy resin bonding system conforming to ASTM C881, Type I, Grade I and of a Class suitable for the temperature at installation.

GENERAL NOTES

Holes in the masonry for anchor bolts shall be drilled through the base plates to the diameter and depth shown or in accordance with the manufacturer's recommendation after beams or girders have been erected and adjusted.
Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.
The anchor bolts, furnished and installed and including the epoxy grout or capsules shall not be paid for separately but shall be included in the unit bid price for "Structural Steel."

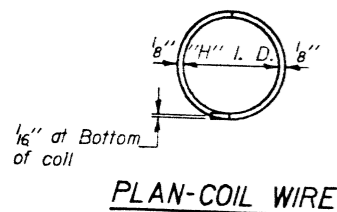
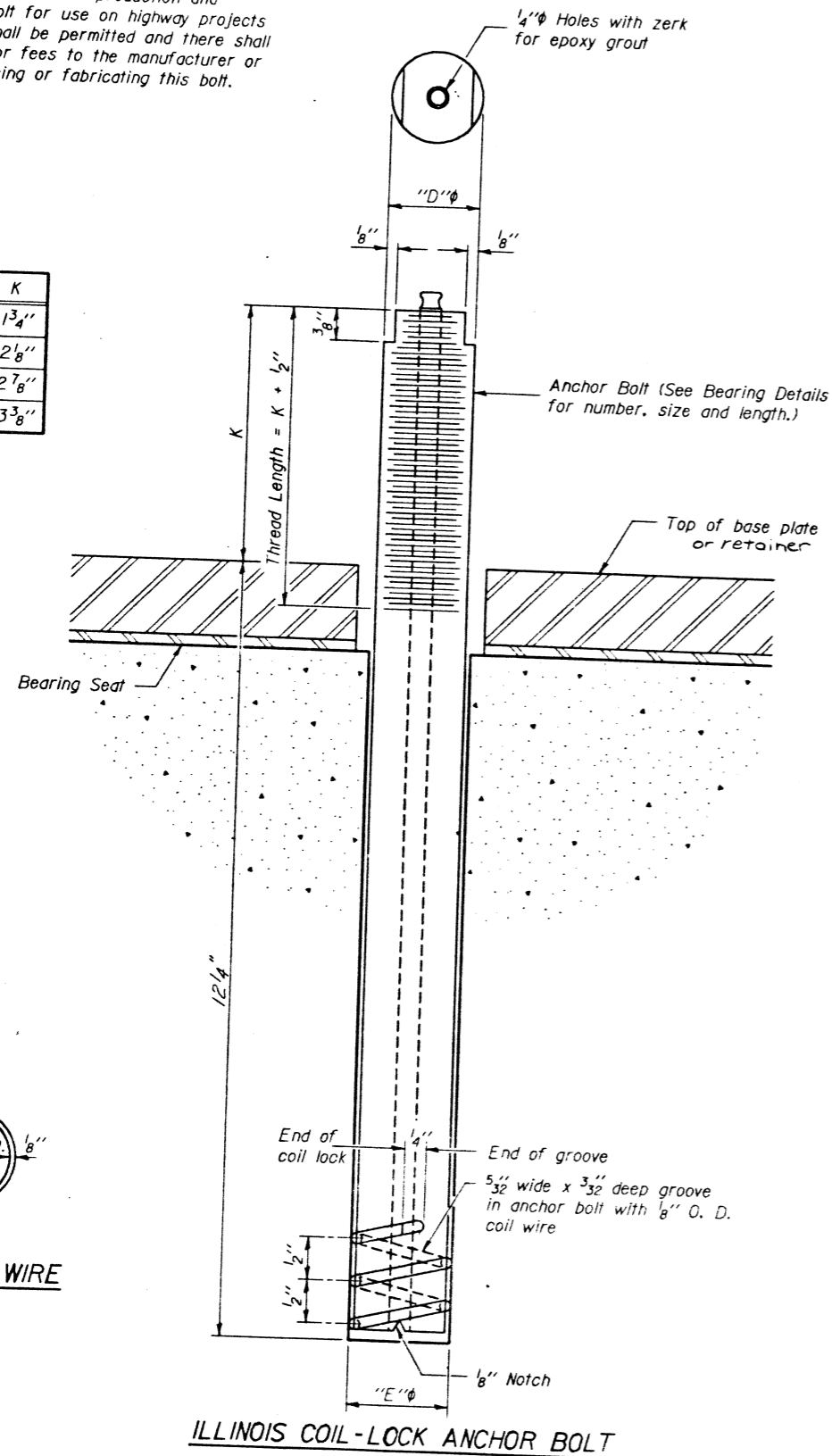
INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

1. With the coil wire in place, the bolt shall be inserted into the hole and turned clockwise to a snug fit in the hole. Nut and washer shall be placed on the bolt. The nut shall be tensioned until the steel base plates are held securely to the concrete bearing seat.
2. Epoxy grout shall be pumped through the zerk fitting with a pressure gun. Pumping shall continue until the epoxy overflows the hole around the bolt shank. After pumping is discontinued, excess epoxy shall be immediately wiped off.

ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes in accordance with the manufacturer's recommendations and procedures.
The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:
1. A threaded rod stud with nut and washer conforming to ASTM A307.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

D	E	H	K
1"	1 1/8"	1 3/16"	1 3/4"
1 1/2"	1 5/8"	1 5/16"	2 1/8"
2"	2 1/8"	1 3/16"	2 7/8"
2 1/2"	2 5/8"	2 5/16"	3 3/8"



ILLINOIS COIL-LOCK ANCHOR BOLT

DESIGNED	<i>A.S. Brown</i>
CHECKED	<i>JIM KUHOUT</i>
DRAWN	<i>R.P. Summer</i>
CHECKED	<i>JK</i>
EXAMINED	<i>January 13, 1984</i> <i>James J. Karstner</i> ENGINEER OF BRIDGE DESIGN
PASSED	
APPROVED	ENGINEER OF BRIDGES AND STRUCTURES DIRECTOR OF HIGHWAYS

ANCHOR BOLT DETAILS
FOR BEARINGS
F.A.P. RT. 836 SEC. 115BR
EDGAR COUNTY
STA. 208 + 90.00

