

INDEX OF SHEETS

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4. GENERAL PLAN & ELEVATION
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8. ABUTMENTS
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13. CROSS SECTIONS
14. EROSION CONTROL PLAN

LIST OF HIGHWAY STANDARDS

- STD.000001-06 Standard Symbols, Abbreviations, and Patterns
- STD.280001-07 Temporary Erosion Control Systems
- STD.515001-03 Name Plate for Bridges
- STD.701006-04 Off Road Operations, ect
- STD.701011-03 Off Road Moving Operations, ect
- STD.701301-04 Lane Closure, 2L 2W, Short time Operations
- STD.701901-02 Traffic Control Devices
- BLR.21-9 Typical Applications of Traffic Control Devices

SCALES:

- PLAN: 1"=N/A
- PROFILE HOR.: 1"=N/A
- PROFILE VERT: 1"=N/A'
- CROSS SECTIONS VERT: 1"=N/A
- CROSS SECTIONS HOR.: 1"=N/A

DESIGN INFORMATION

- NET LENGTH OF SECTION: 500.00' (0.094mi)
- ADT= 25
- FUNCTIONAL CLASSIFICATION: LOCAL ROAD
- DESIGN SPEED: 35 MPH
- DESIGN POLICY: RURAL
- VARIANCES GRANTED: NONE
- COMMITMENTS: NONE

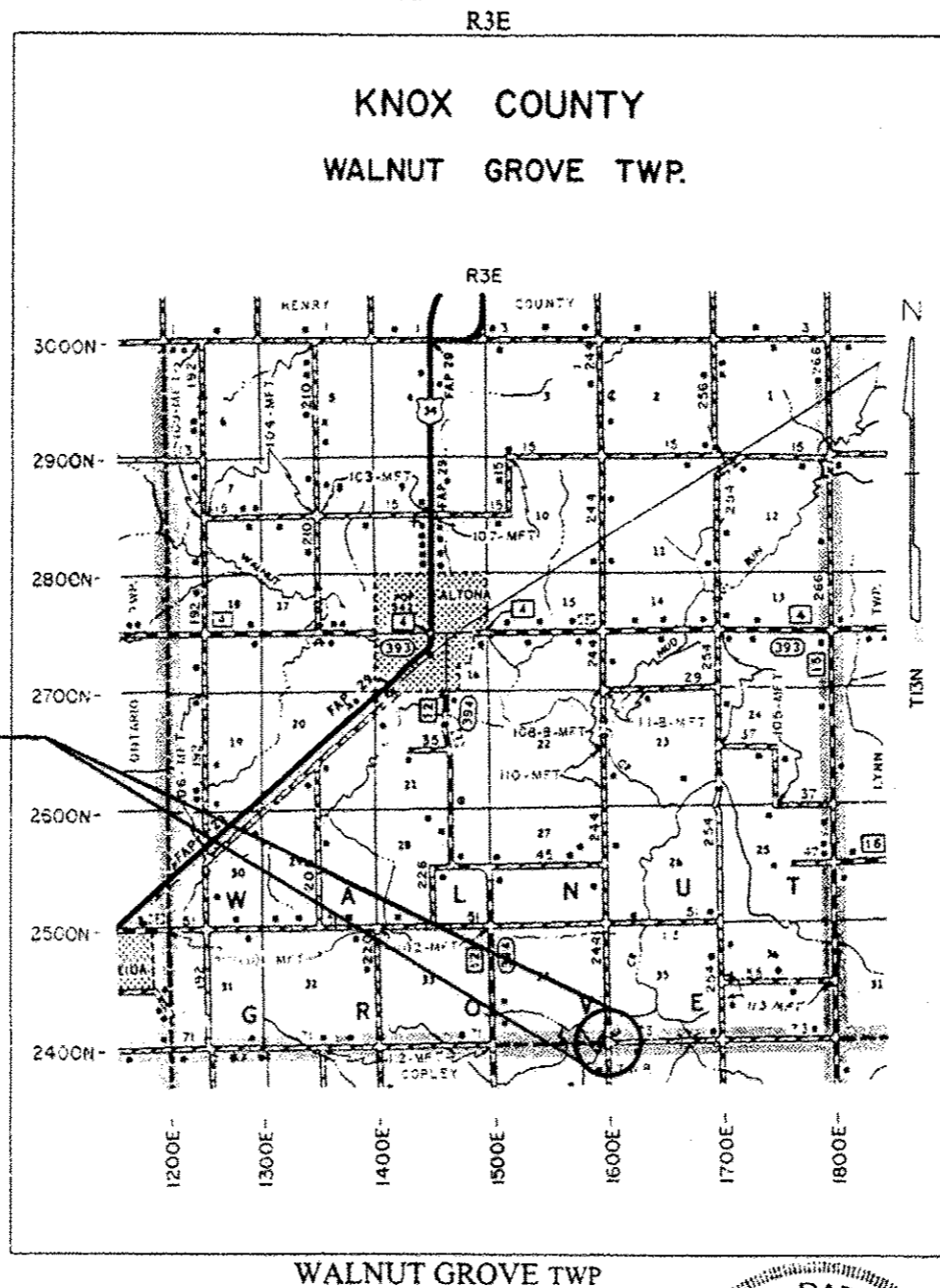
CATALOG # 034786-00

J.U.L.I.E. 1-800-892-0123

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED COUNTY HIGHWAY IMPROVEMENTS

TR-244 OVER FOREMAN CREEK
SECTION 11-21121-00-BR
PROJECT # BROS-0095(135)
Walnut Grove Road District
Knox County
C-94-070-12

COUNTY	ROUTE	CONTRACT	SEC.	SHEET
KNOX	TR-244	89620	11-21121-00-BR	1 OF 14



End Construction STA.107+80
Construct P.P.C. Deck Beam Bridge
Centerline STA.104+82.50
Existing Structure #048-3143
Proposed Structure #048-3400
Begin Construction STA.102+80

PROJECT LOCATION



APPROVED February 28 2013

James L. Clifford
Road Commissioner

APPROVED February 28 2013

Duane J. Ratermann
County Engineer

PASSED 03/14 2013

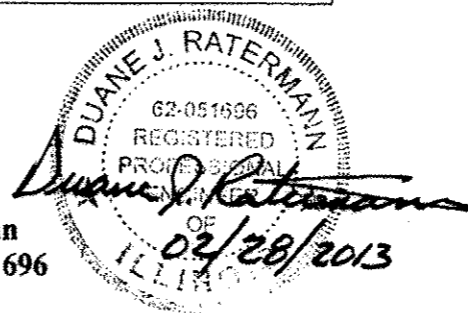
[Signature]
District Four Engineer of Local Roads & Streets

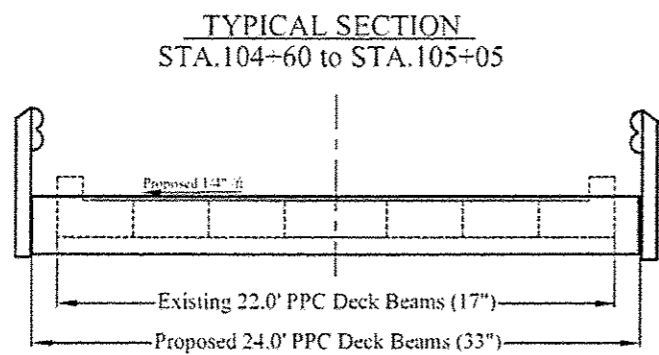
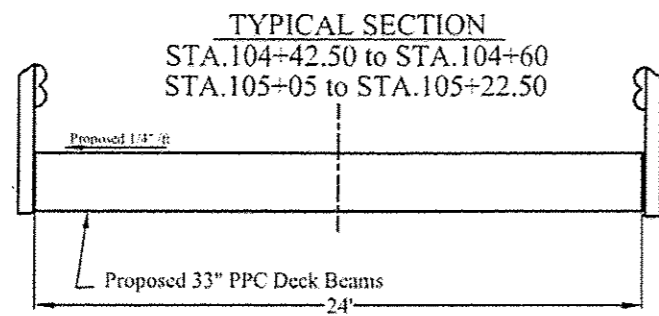
Releasing for Bid Based on March 15 2013
Limited Review

[Signature]
Deputy Director of Highways, Region Three Engineer

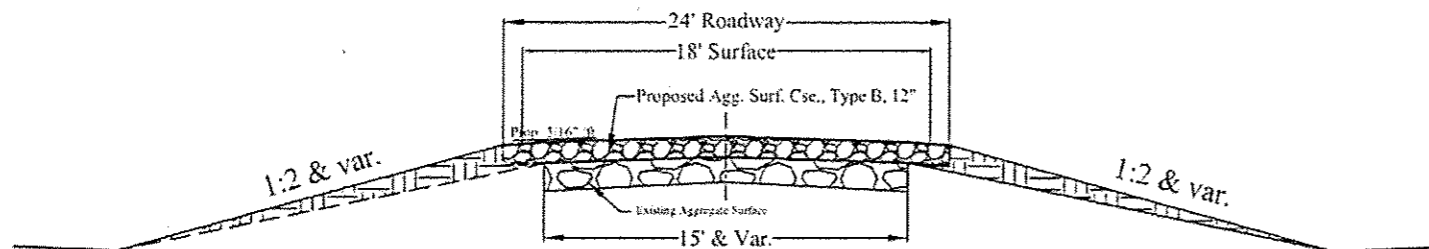
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Duane J. Ratermann
Il. Prof. Eng. #062-051696
Expires 11-30-13





TYPICAL SECTION
STA.102+80 to STA.104+42.50
STA.105+22.50 to STA.107+80
(WORK TO BE DONE BY OTHERS)



SUMMARY OF QUANTITIES

CODE NUMBER	ITEMS	UNIT	QUANT.
28000250	Temporary Erosion Control Seeding	POUND	25
28000305	Temporary Ditch Checks	FOOT	54
X2810110	Stone Riprap, Class A5 (Special)	SQYD	552
40200800	Aggregate Surface Course B	TON	370
50100100	Removal of Existing Structures	EACH	1
50300225	Concrete Structures	CU YD	33.2
50300280	Concrete Encasements	CU YD	3.5
50400605	Precast Prestressed Concrete Deck Beams (33" Depth)	SQ FT	1867
50800205	Reinforcement Bars, epoxy coated	POUND	2990
Δ 50900205	Steel Railing, Type S1	FOOT	160
51201600	Furnishing Steel HP 12 x 53	FOOT	522
51202305	Driving Piles	FOOT	522
51203600	Test Pile Steel HP 12 x 53	EACH	1
51500100	Name Plates	EACH	1
67100100	Mobilization	L SUM	1
70101830	Traffic Control & Protection BLR 21	L SUM	1

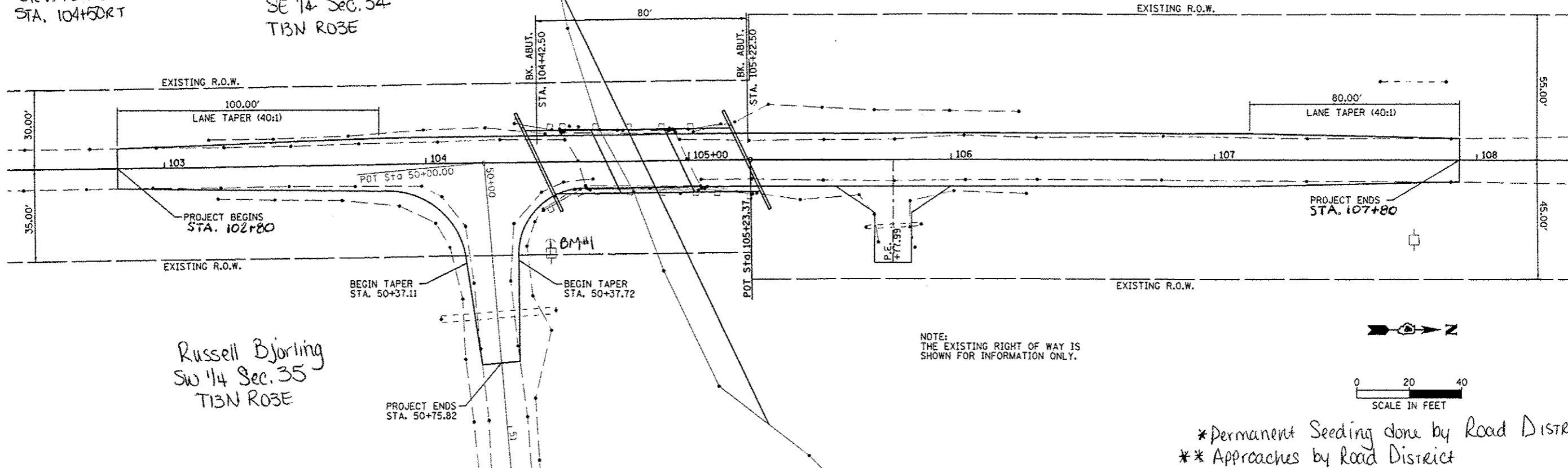
Δ SPECIALTY ITEMS

SECTION	COUNTY	ROUTE	SHEET NO.
11-21121-00-BR	KNOX	TR-244	2 of 14
CONTRACT NO. 89620			

BM #1: Spike in PP
Elev. 723.99
STA. 104+50 RT

Charles + Beverly Nelson
SE 1/4 Sec. 34
T13N R03E

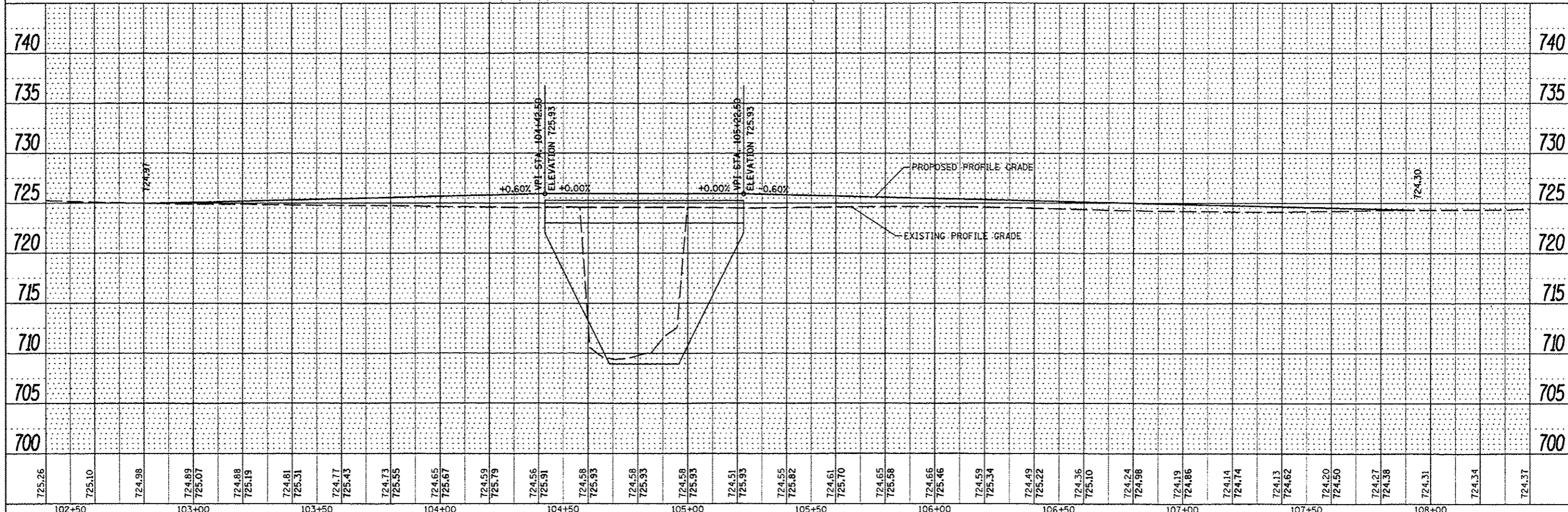
Russell Bjorling
SW 1/4 Sec. 35
T13N R03E



* Permanent Seeding done by Road District
** Approaches by Road District

PLAN	DATE
REVISED	
NO. 1	
NO. 2	
NO. 3	
NO. 4	
NO. 5	

PROFILE	DATE
REVISED	
NO. 1	
NO. 2	
NO. 3	
NO. 4	
NO. 5	



725.26	725.10	724.98	724.89	725.07	724.88	725.19	724.81	725.31	724.77	725.43	724.73	725.55	724.65	725.67	724.59	725.79	724.56	725.91	724.58	725.93	724.58	725.93	724.51	725.93	724.55	725.82	724.61	725.70	724.65	725.58	724.66	725.46	724.59	725.34	724.49	725.22	724.36	725.10	724.24	724.98	724.19	724.86	724.14	724.74	724.13	724.62	724.20	724.50	724.27	724.38	724.31	724.34	724.37
102+50			103+00			103+50			104+00			104+50			105+00			105+50			106+00			106+50			107+00			107+50			108+00																				

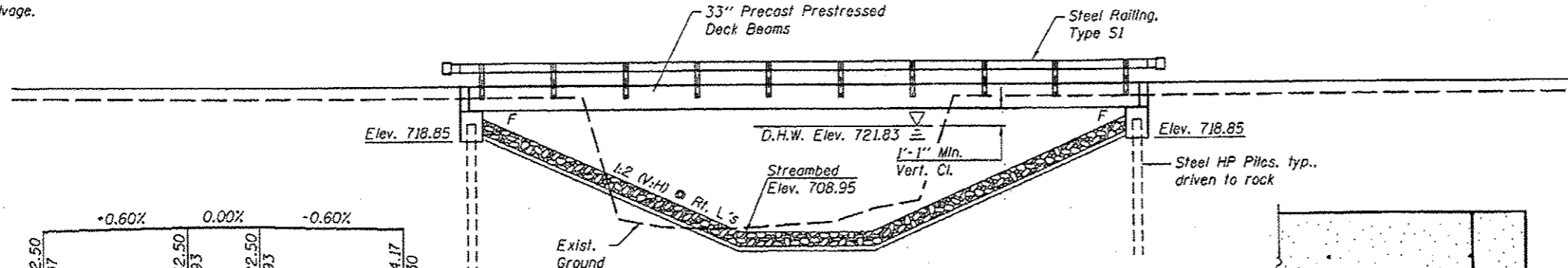
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

KNOX COUNTY COPELY TOWNSHIP - SN 048-3143				F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
SCALE: _____					11-21121-00-BR	KNOX	14	3
SHEET NO. OF SHEETS STA. TO STA.				CONTRACT NO. 89620				
ILLINOIS FED. AID PROJECT								

Benchmark: RR spike in PP, SE Corner of Bridge - Elev. 723.99.
 Existing Structure: Structure No. 048-3143 was constructed in 1967 as Section CA-11-10. The existing structure consists of 17" PPC Deck Beams on timber pile bent closed abutments. The structure measured 45' back to back of abutments and 22.2 feet out to out of deck. No salvage.

GENERAL NOTES

Reinforcement bars designated (E) shall be epoxy coated.
 Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

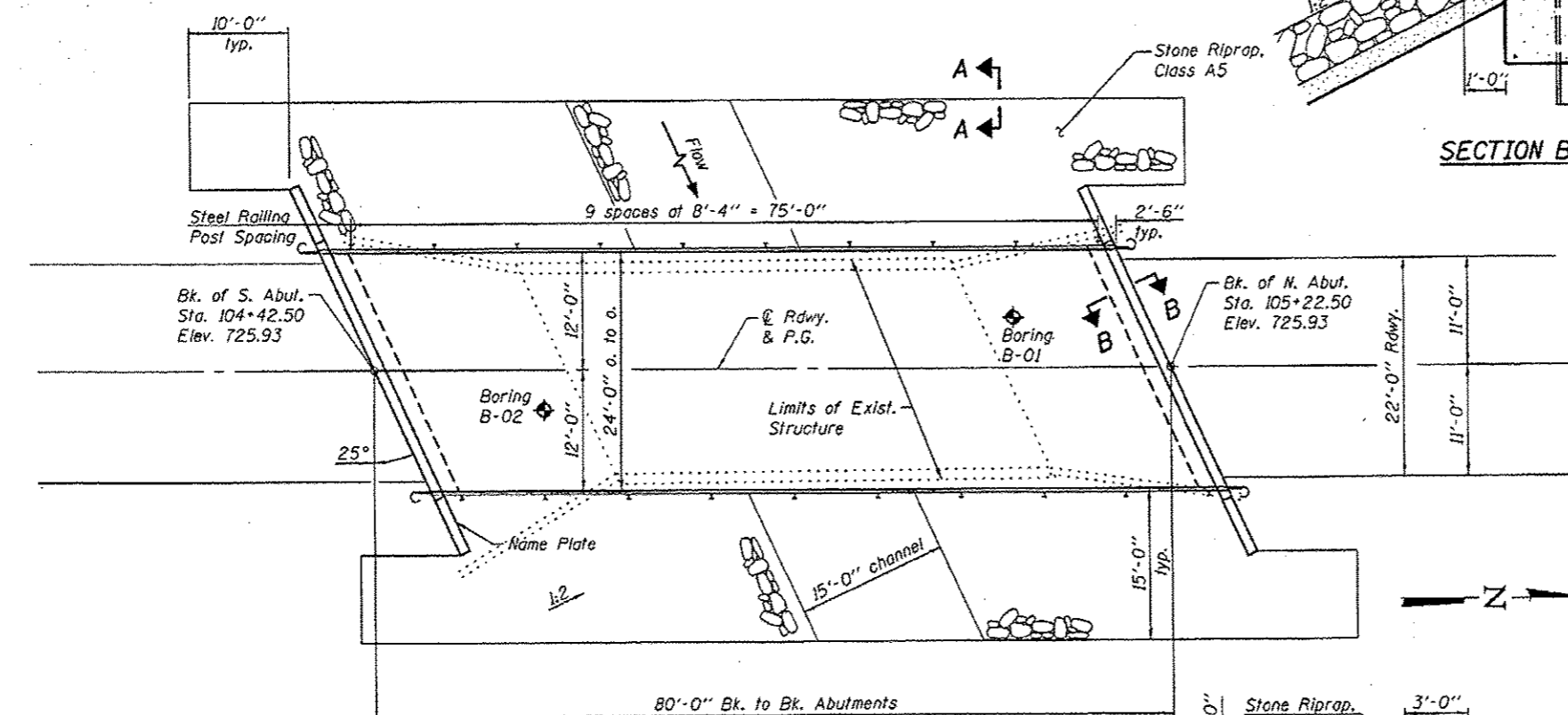
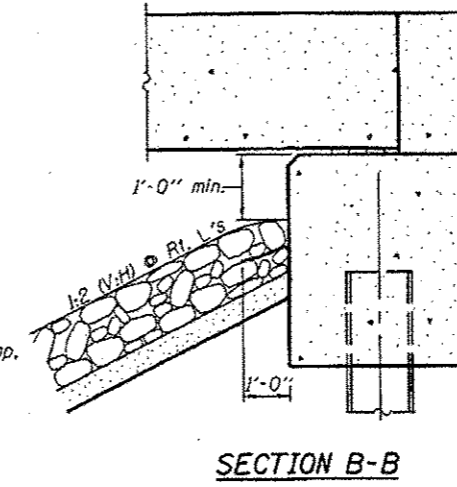


PROFILE GRADE
(Along E. Roadway)

Sta. 102+82.50 Elev. 724.97	Sta. 104+42.50 Elev. 725.93	Sta. 105+22.50 Elev. 725.93	Sta. 107+94.17 Elev. 724.30
--------------------------------	--------------------------------	--------------------------------	--------------------------------

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Riprap, Class A5	Sq. Yd.		552	552
Removal of Existing Structures	Each			1
Concrete Structures	Cu. Yd.		33.2	33.2
Concrete Encasement	Cu. Yd.		3.5	3.5
Precast Prestressed Concrete Deck Beams (33" Depth)	Sq. Ft.	1867		1867
Reinforcement Bars, Epoxy Coated	Pound		2990	2990
Steel Railing, Type S1	Foot	160		160
Furnishing Steel Piles HP12x53	Foot		522	522
Driving Piles	Foot		522	522
Test Pile Steel HP12x53	Each		1	1
Name Plates	Each			1



INDEX OF SHEETS

- General Plan and Elevation
- Deck Beam Details
- Steel Railing, Type S-1
- Abutments
- HP Pile Details
- Soil Borings

LOADING HL-93
 Allow 50#/sq. ft. for future wearing surface.
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)

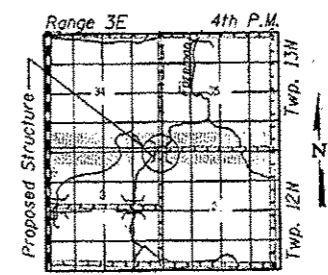
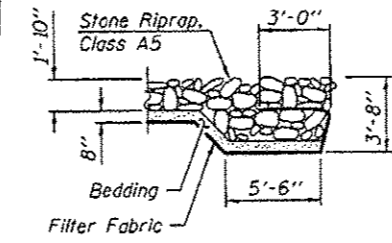
PRECAST PRESTRESSED UNITS
 $f'_c = 6,000$ psi
 $f'_{ci} = 5,000$ psi
 $f_s = 270,000$ psi ($\frac{1}{2}$ " Strands)
 $f_{si} = 201,960$ psi ($\frac{1}{2}$ " Strands)

T.R. 244 OVER FOREMAN CR.
 BUILT 20 BY
 WALNUT GROVE ROAD DISTRICT
 KNOX COUNTY
 SEC. 11-21121-00-BR
 STATION 104+82.50
 STR. NO. 048-3400 LOADING HL-93

NAME PLATE
 See Std. 515001

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
 Design Spectral Acceleration at 1.0 sec. (S_{d1}) = 0.099
 Design Spectral Acceleration at 0.2 sec. ($S_{d0.2}$) = 0.150
 Soil Site Class = D



WATERWAY INFORMATION

Drainage Area - 18.7 sq. mi. Low Grade Elev. 724.30 @ Sta. 107+93.42

Flood	Freq. Yr.	Q	Opening Sq. Ft.		Not. H.W.E.	Head - Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
10	2370	401	486	721.23	0.53	0.41	721.86	721.64	
Design	25	3150	423	525	721.83	1.07	0.71	722.90	722.54
Base	100	4360	448/222	572	722.53	2.23	1.62	724.76	724.15
Overtopping	500	5850	458/749	604/414	723.23	2.04	1.91	725.27	725.14

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	S. Abut.	N. Abut.
	718.9	718.9

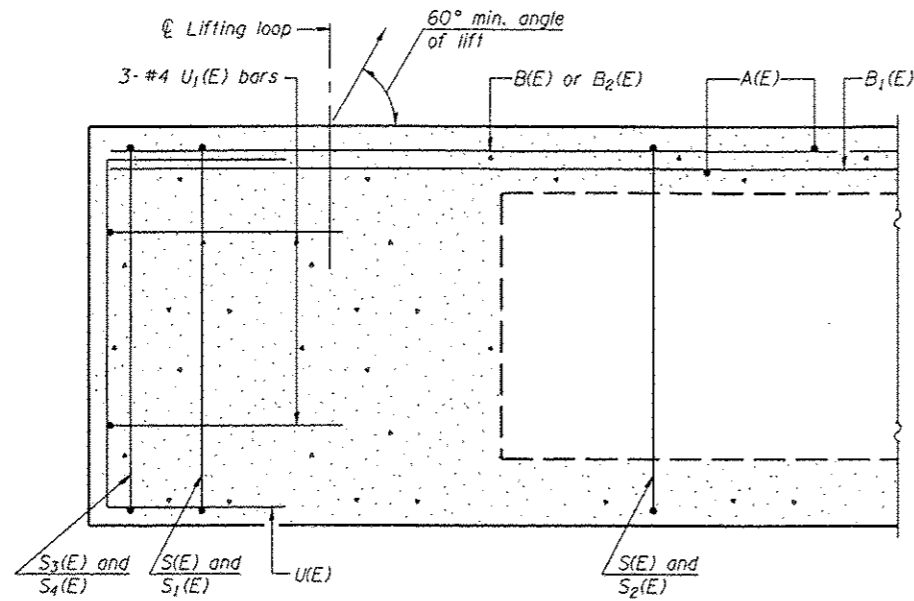
Bryana Swanson
 Date Signed: 6-26-12
 Exp. Date: 11-30-14



KNOX COUNTY HIGHWAY DEPARTMENT

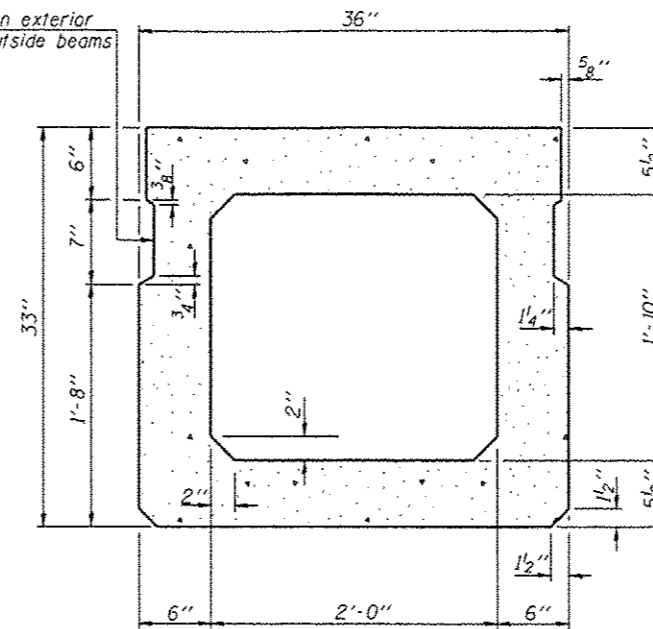
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MAURER-STUTZ ENGINEERS SURVEYORS	PLDT SCALE:	CHECKED: BAS	REVISED:
PLDT DATE: 3/1/2013 10:18:18 AM	CHECKED: BAS	REVISED:	REVISED:

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
244	11-21121-00-BR	KNOX	14	4

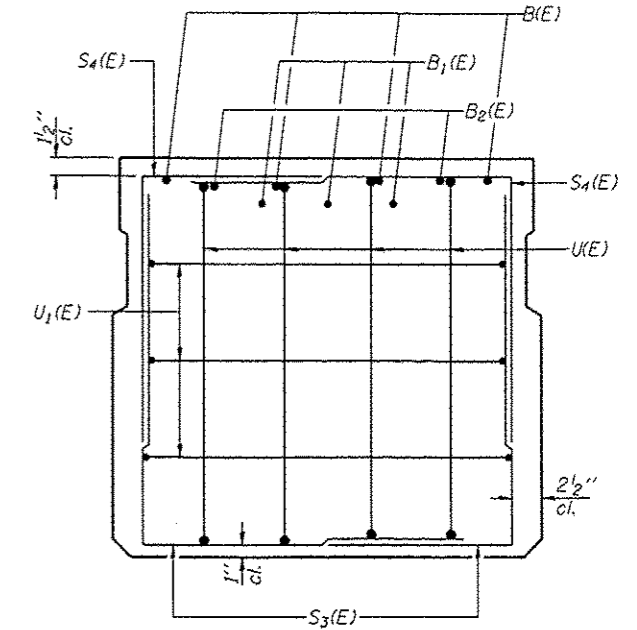


SECTION A-A

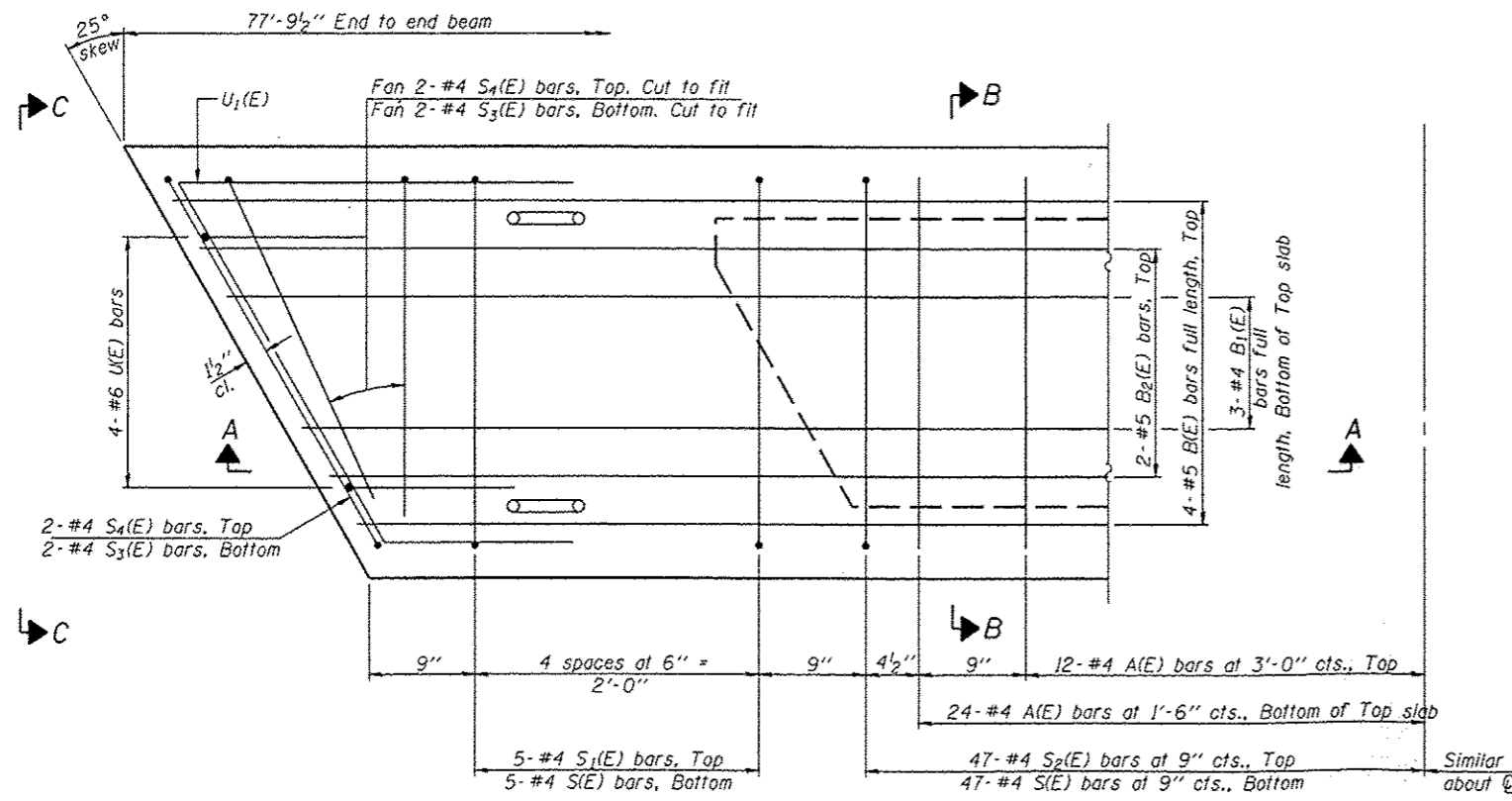
Omit key on exterior face of outside beams



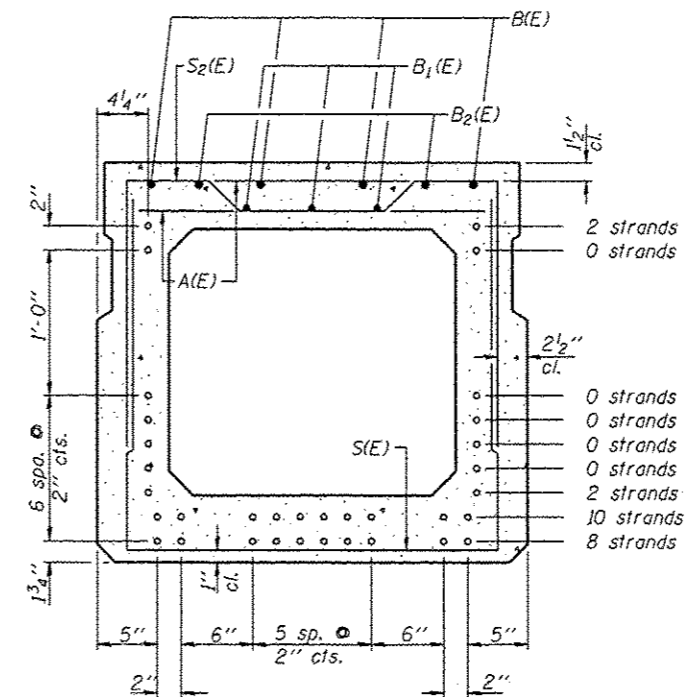
SECTION B-B
(Showing dimensions)



VIEW C-C



PLAN VIEW



SECTION B-B

(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

BAR LIST
ONE BEAM ONLY
(For information only)

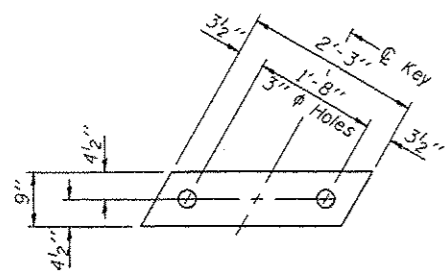
Bar	No.	Size	Length	Shape
A(E)	72	#4	2'-7"	—
B(E)	12	#5	27'-7"	—
B1(E)	12	#4	20'-11"	—
B2(E)	4	#5	10'-0"	—
S(E)	104	#4	7'-5"	U
S1(E)	10	#4	6'-3"	U
S2(E)	94	#4	6'-6"	U
S3(E)	8	#4	5'-3"	U
S4(E)	8	#4	4'-8"	U
U(E)	8	#6	5'-0"	U
U1(E)	6	#4	6'-5"	U

Note: See sheet 3 of 8 for additional details and Bill of Material.

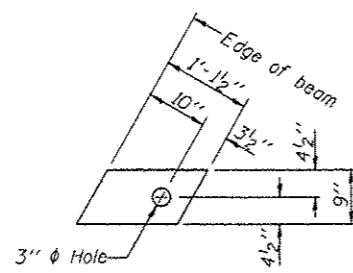
Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

MINIMUM BAR LAP

#4 bar = 2'-0"
#5 bar = 2'-6"



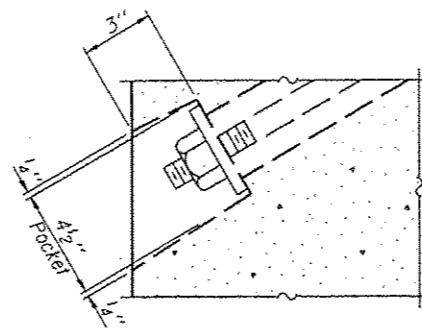
FABRIC BEARING PAD
(Interior)



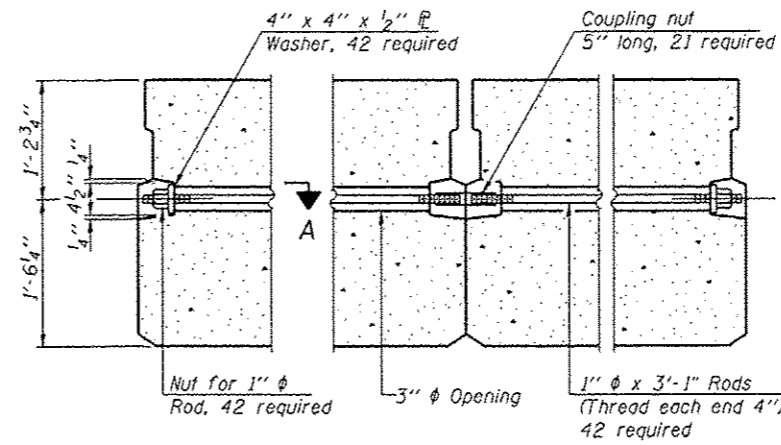
FABRIC BEARING PAD
(Exterior)

FIXED

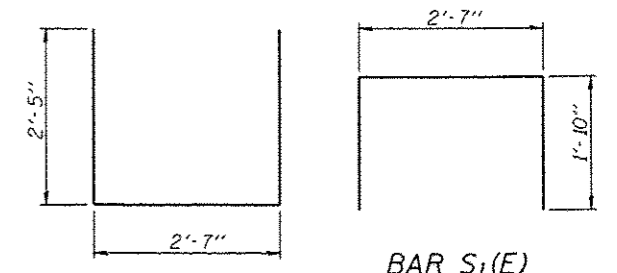
Notes:
All bearing pads shall be 1" thick.



SECTION A-A

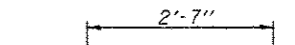


TYPICAL TRANSVERSE TIE ASSEMBLY

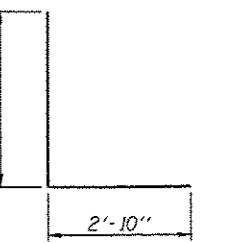


BAR S1(E)

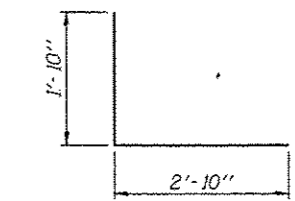
BAR S(E)



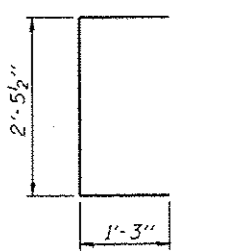
BAR S2(E)



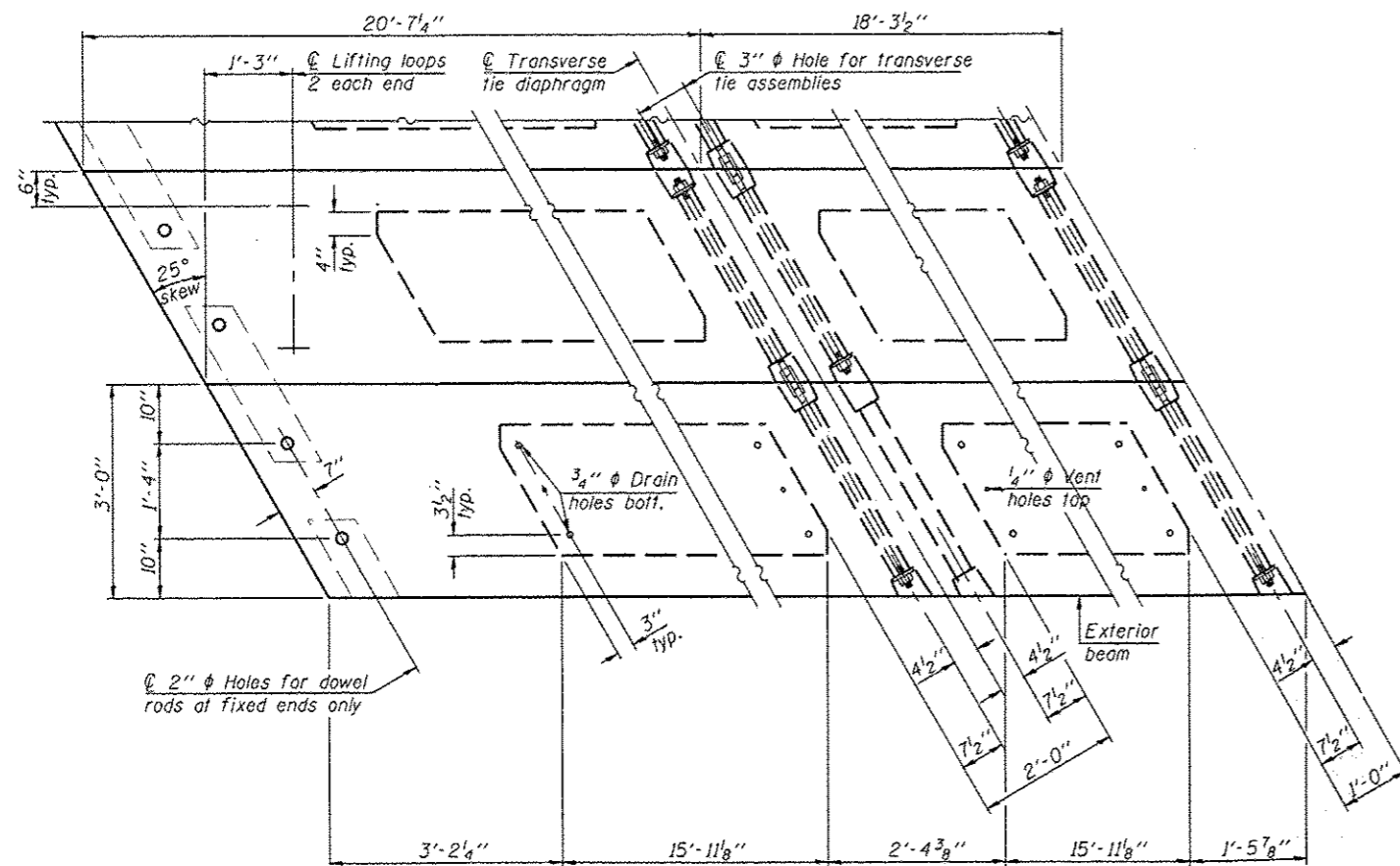
BAR S3(E)



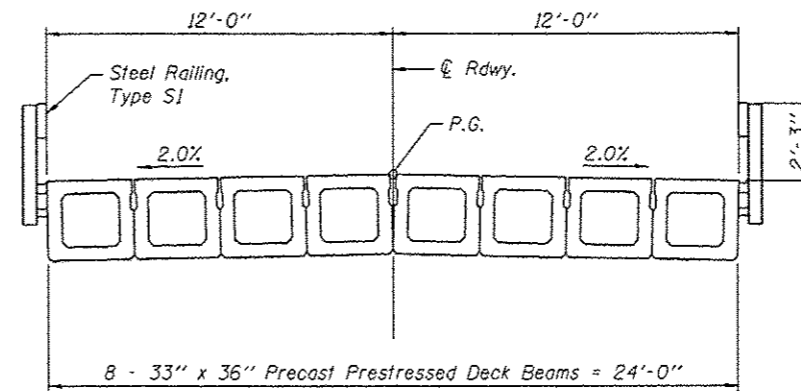
BAR S4(E)



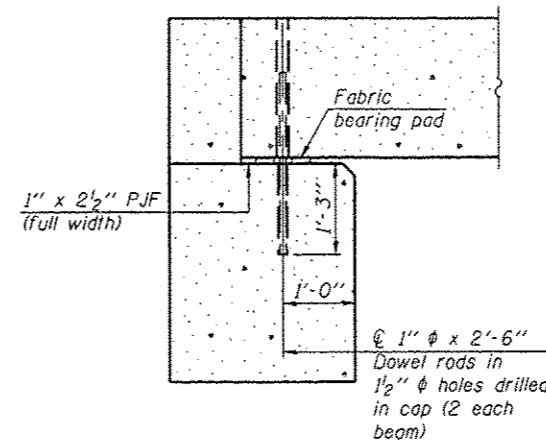
BAR U(E)



PLAN VIEW

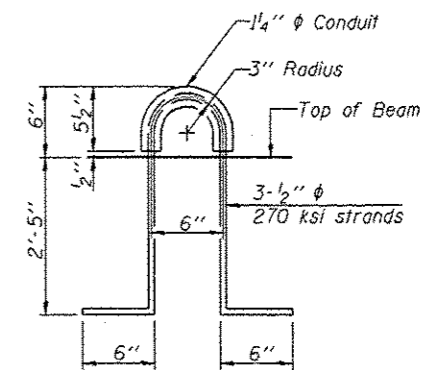


CROSS SECTION

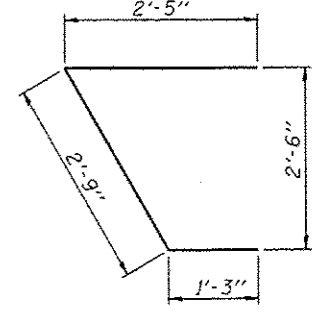


SECTION THRU ABUTMENT

Dimensions at right angles to abutment, except as shown.



LIFTING LOOP DETAIL



BAR U1(E)

NOTES

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.

Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).

Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.

Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

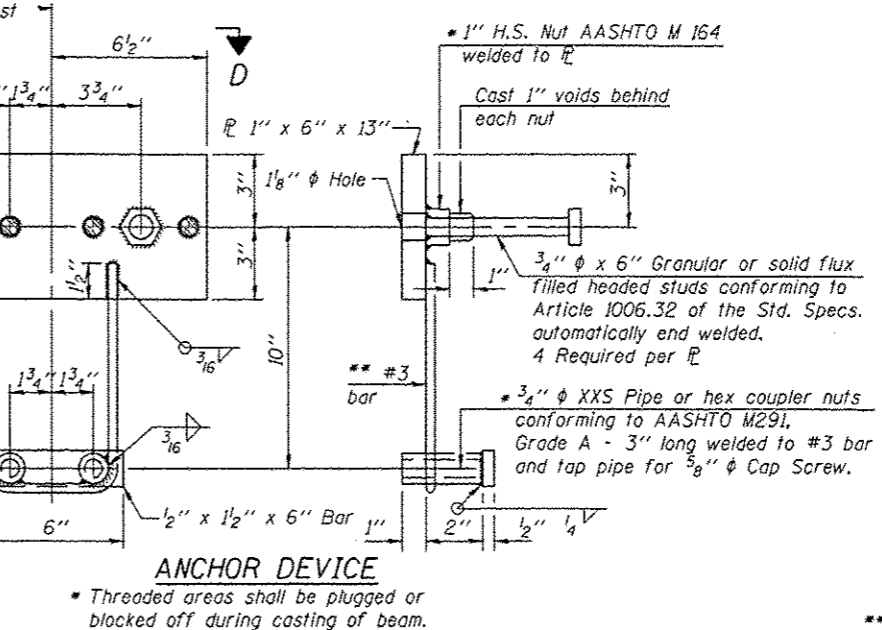
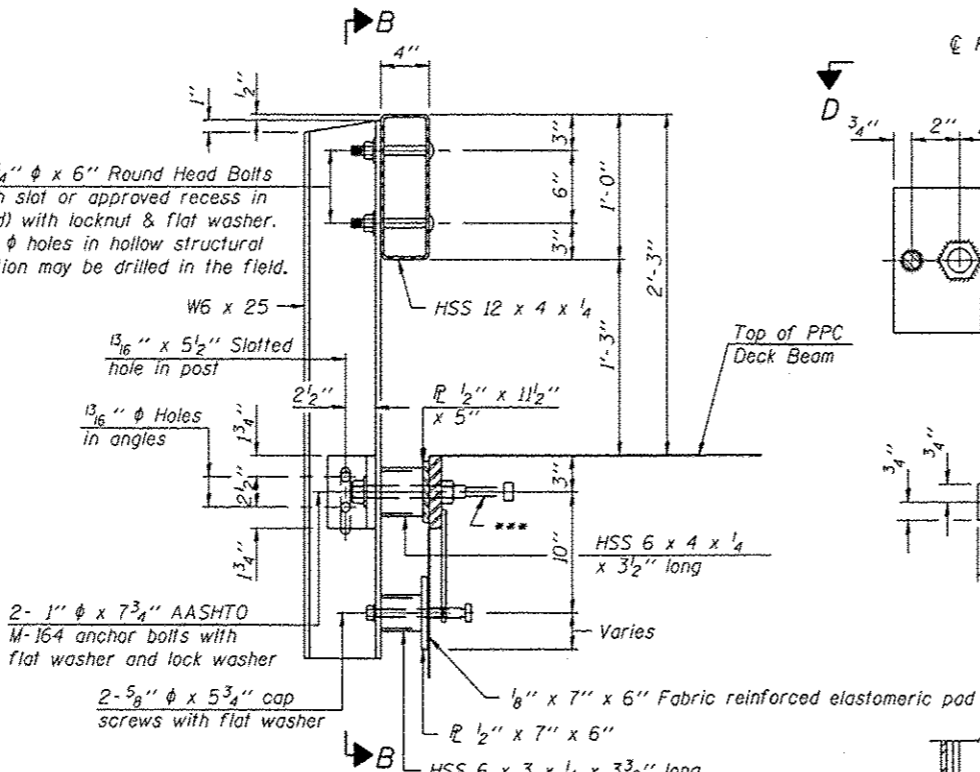
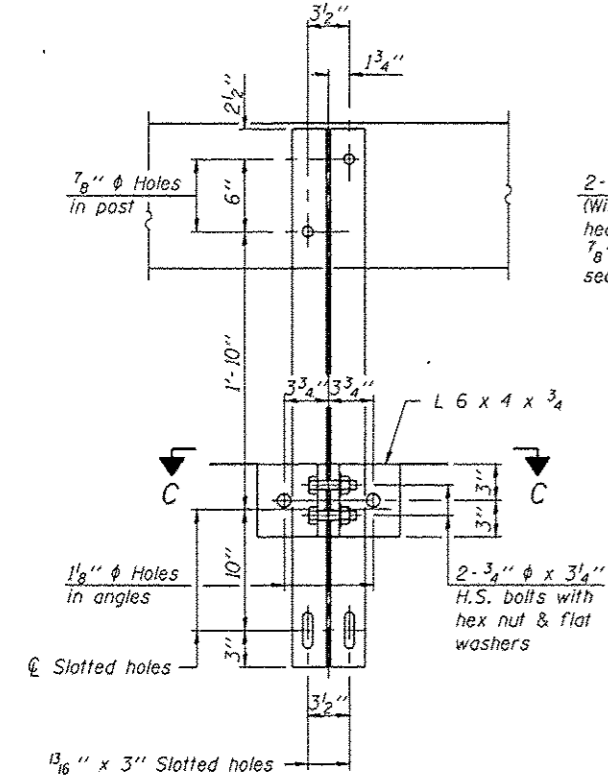
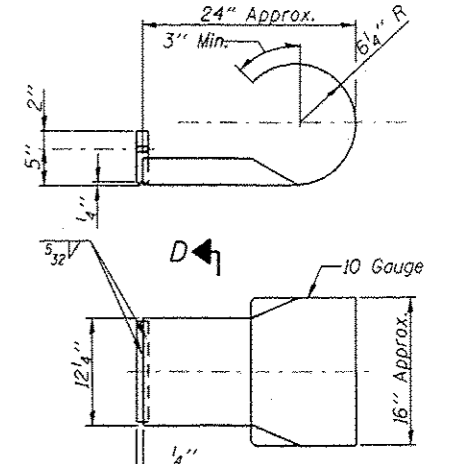
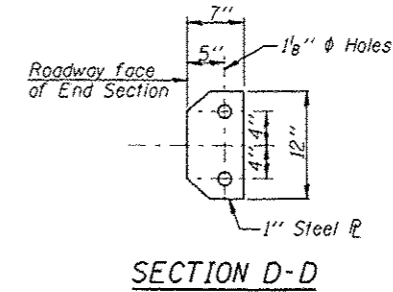
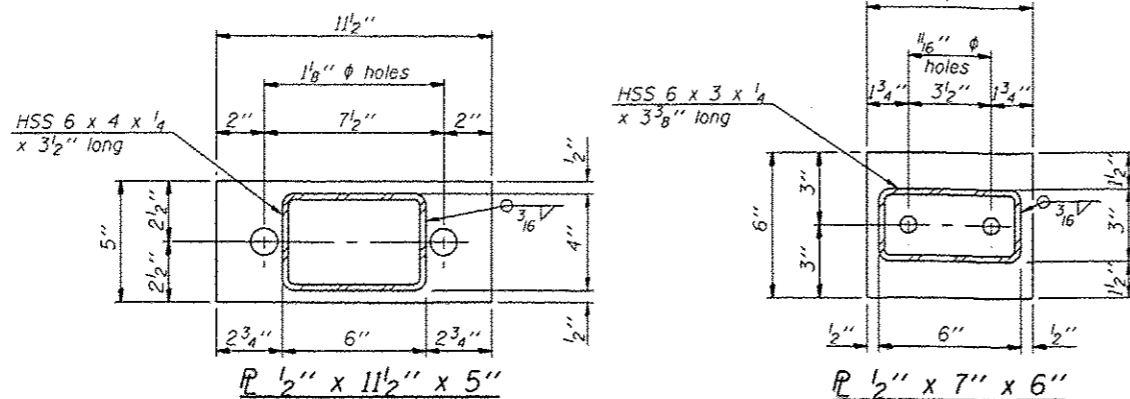
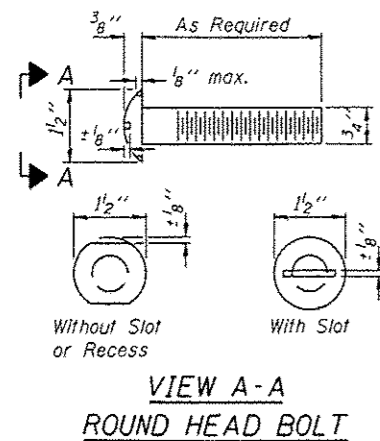
Compressive strength of prestressed concrete, f'c, shall be 6000 psi.

Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

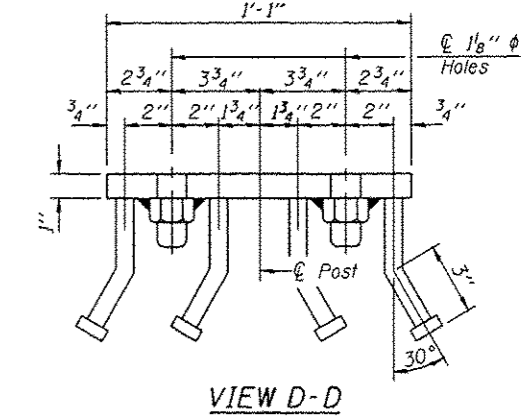
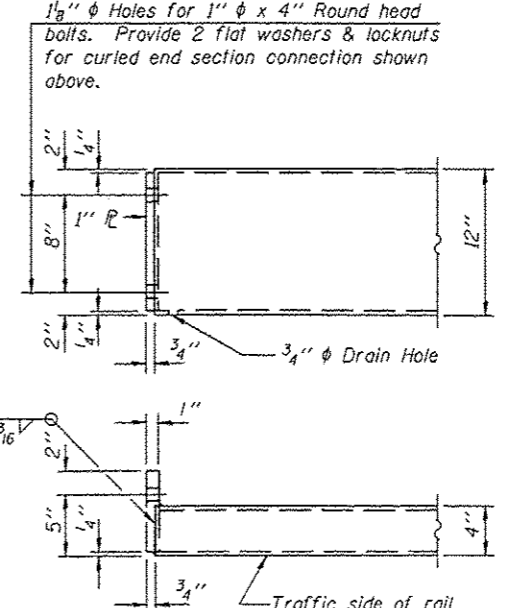
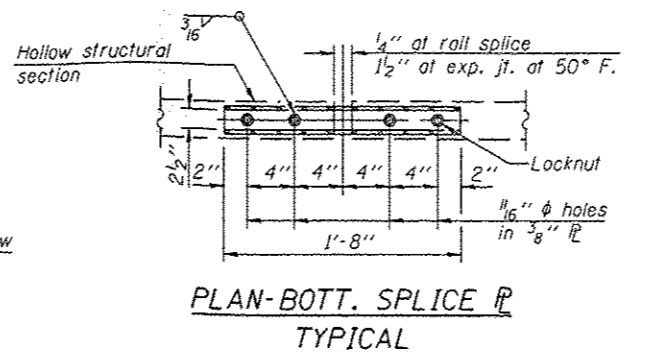
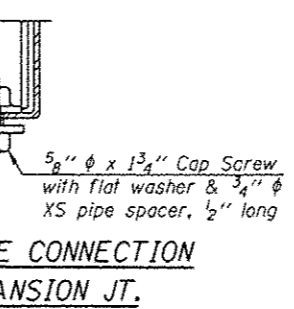
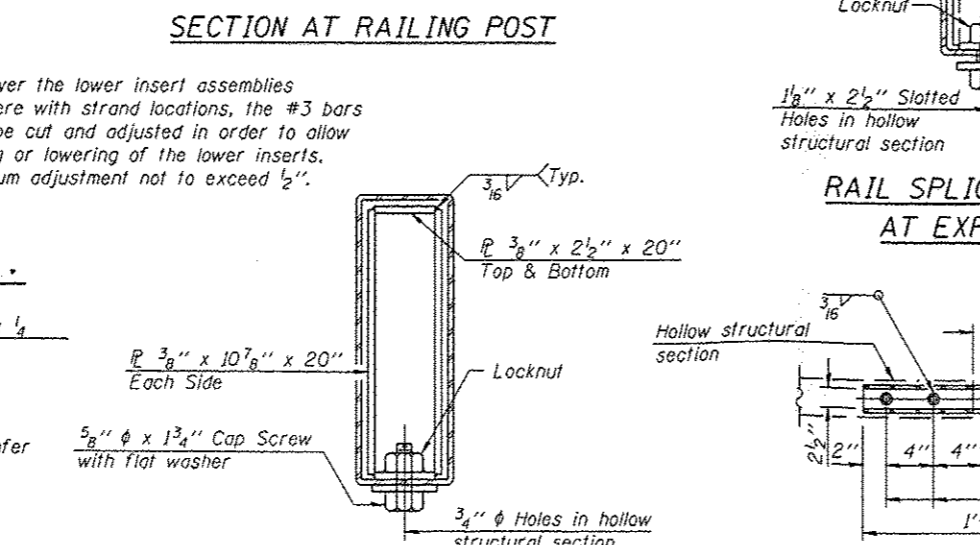
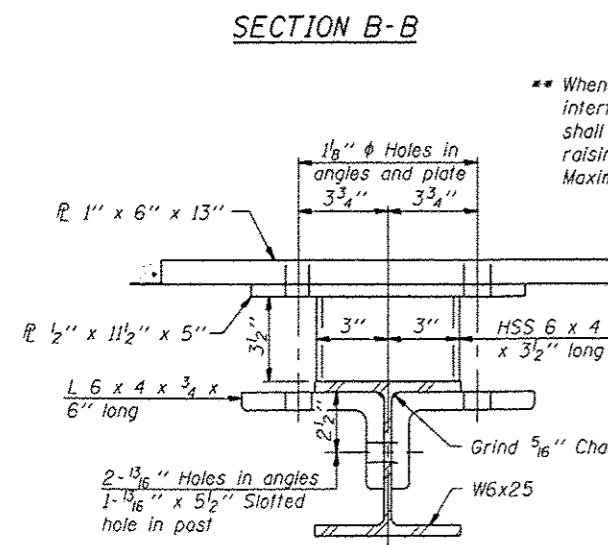
BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (33" depth)	Sq. Ft.	1867
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Note: Connect beams in pairs with the transverse tie configuration shown.



Notes:
All field drilled holes shall be coated with an approved zinc rich paint before erection.
For multi-span bridges, sufficient 1/4 inch x 6 inch x 1-2 inch galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S1.
All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
*** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.



BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type S1	Foot	160

(10'-9" Maximum Post Spacing)

FILE NAME * 2483400-004-Railing.dgn	USER NAME * bosvanson	DESIGNED - LVM	REVISIONS
MAURER-STUTZ ENGINEERS SURVEYORS	PLOT SCALE *	CHECKED - BAS	REVISED
PLOT DATE * 6/26/2012 9:15:56 AM		DRAWN - SGM	REVISED
		CHECKED - BAS	REVISED

**KNOX COUNTY
HIGHWAY DEPARTMENT**

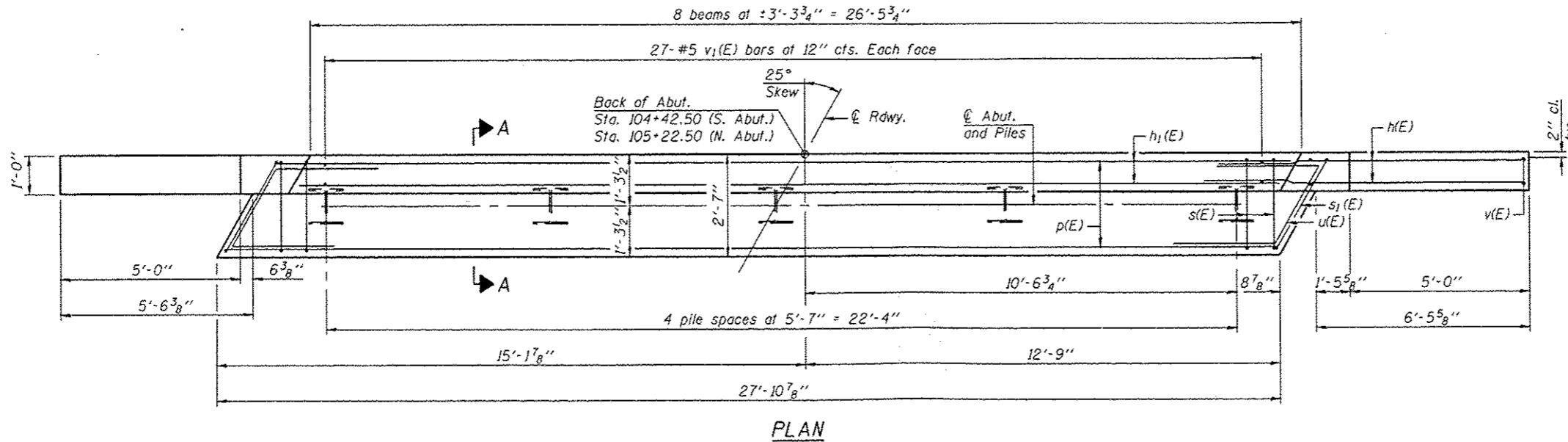
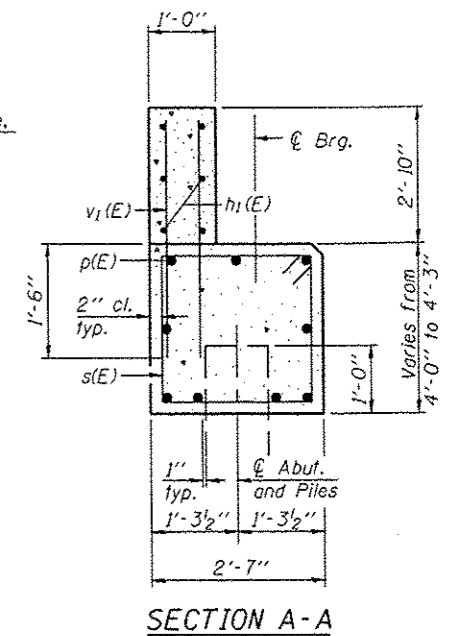
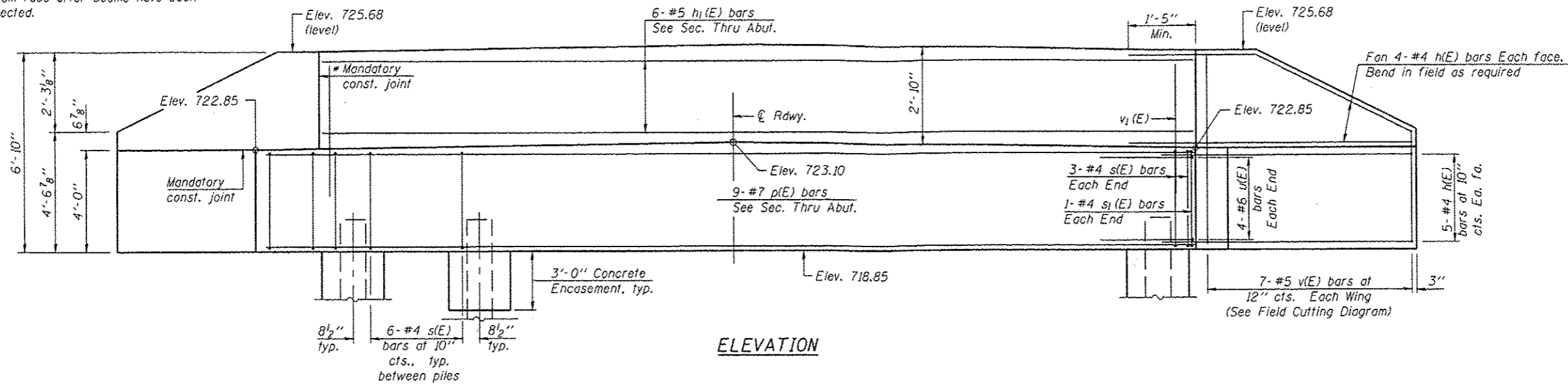
**STEEL RAILING, TYPE S1
STRUCTURE NO. 048-3400**

SHEET NO. 4 OF 8 SHEETS

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
244	11-21121-00-BR	KNOX	14	7

ILLINOIS FED. AID PROJECT

* Cast top of wingwall flush with exterior beam face after beams have been erected.

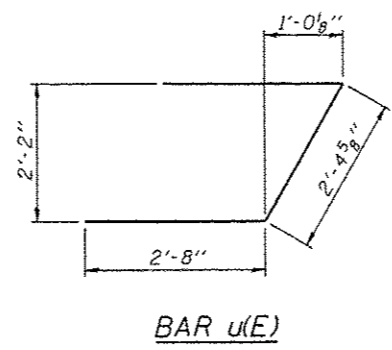
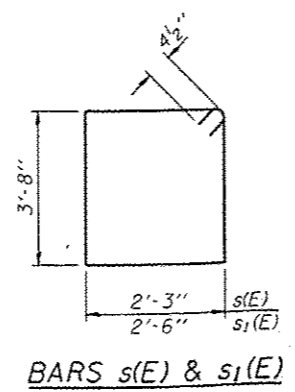
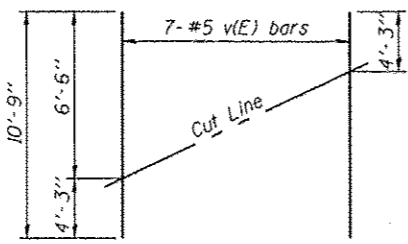


BILL OF MATERIAL TWO ABUTMENTS

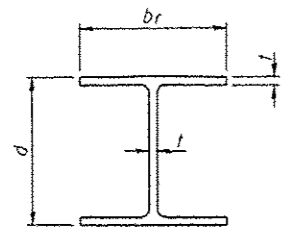
Bar	No.	Size	Length	Shape
$h(E)$	72	#4	8'-5"	—
$h_1(E)$	12	#5	26'-1"	—
$p(E)$	18	#7	27'-6"	—
$s(E)$	30	#4	12'-7"	□
$s_1(E)$	4	#4	13'-1"	□
$u(E)$	16	#6	7'-9"	┘
$v(E)$	28	#5	10'-9"	—
$v_1(E)$	108	#5	4'-1"	—
Concrete Structures		Cu. Yd.	33.2	
Reinforcement Bars, Epoxy Coated		Pound	2990	
Furnishing Steel Piles HP12x53		Foot	522	
Driving Piles		Foot	522	
Test Pile Steel HP12x53		Each	1	
Concrete Encasement		Cu. Yd.	3.5	

PILE DATA

(Two Abutments)
 Type: Steel - HP12x53
 Nominal Required Bearing: 419 kips
 Factored Resistance Available: 230 kips
 Est. Length: 58 ft
 No. Production Piles: 9
 No. Test Piles: 1 (at North Abutment)

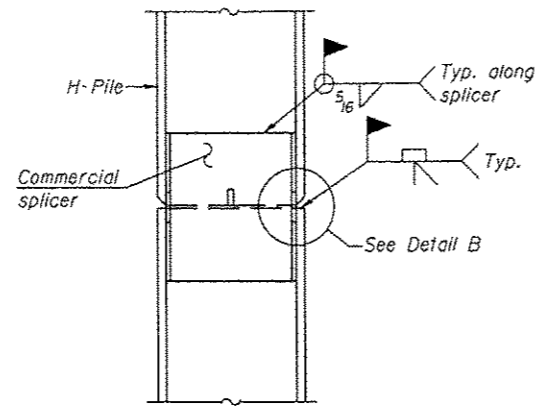


Notes:
 For details of piles and Concrete Encasement, see sheet 6 of 8.
 Cast backwall after beams have been erected.

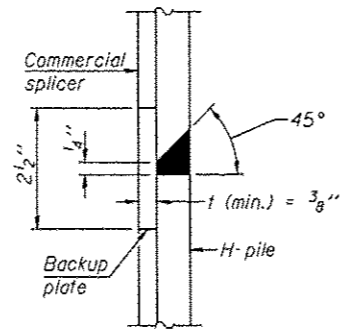


STEEL PILE TABLE

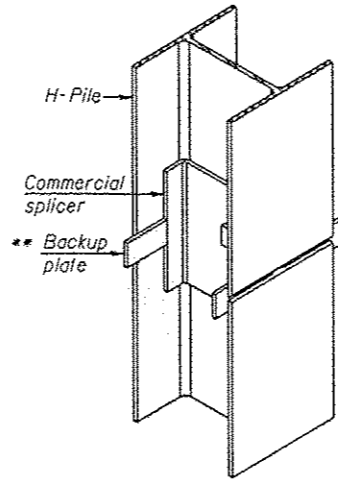
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1 1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1 1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



ELEVATION

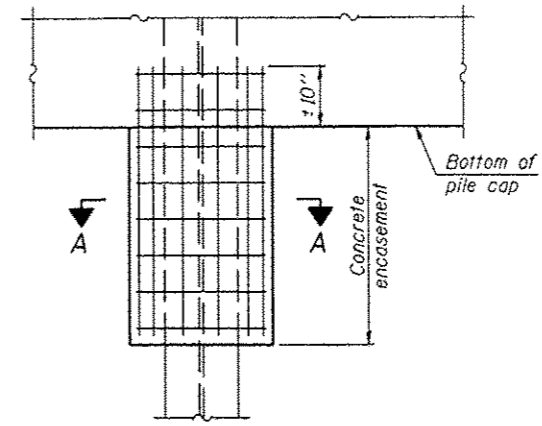


DETAIL "B"



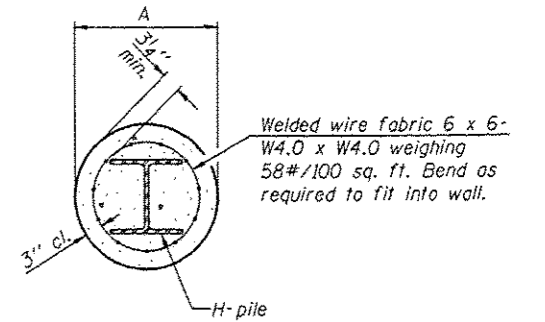
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE



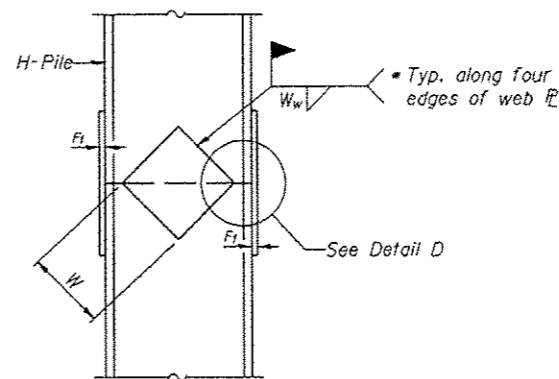
ELEVATION

PILE ENCASEMENT

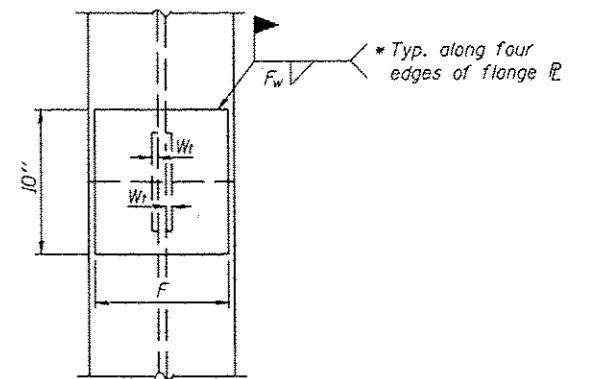


Note:
Forms for encasement may be omitted when soil conditions permit.

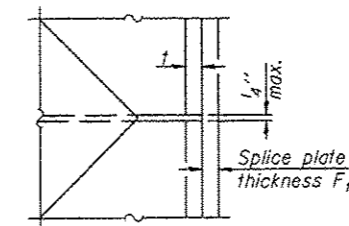
SECTION A-A



ELEVATION



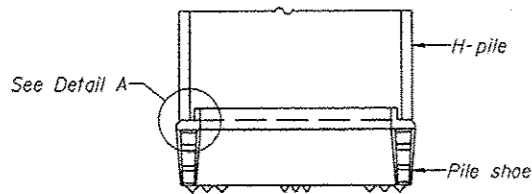
END VIEW



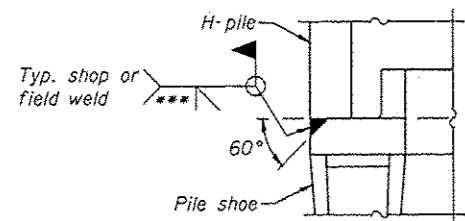
DETAIL D

WELDED PLATE FIELD SPLICE

Designation	F	F ₁	F _w	W	W ₁	W _w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1/2"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1/2"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1/2"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

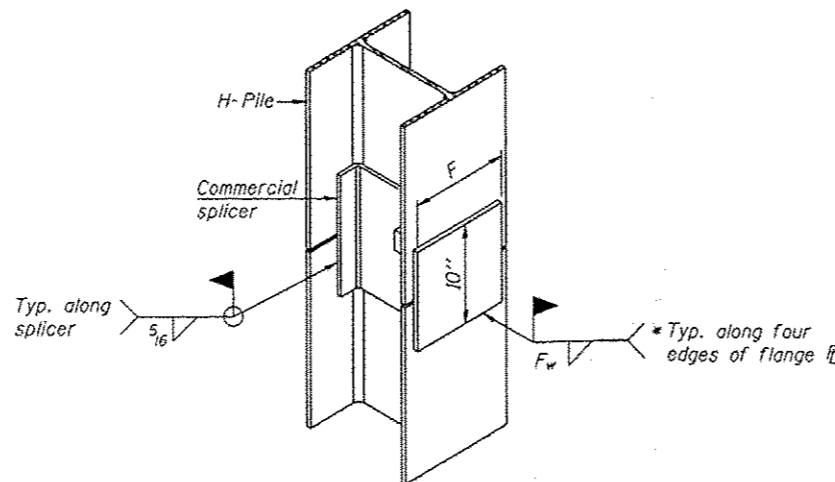


ELEVATION



DETAIL A

H-PILE SHOE ATTACHMENT

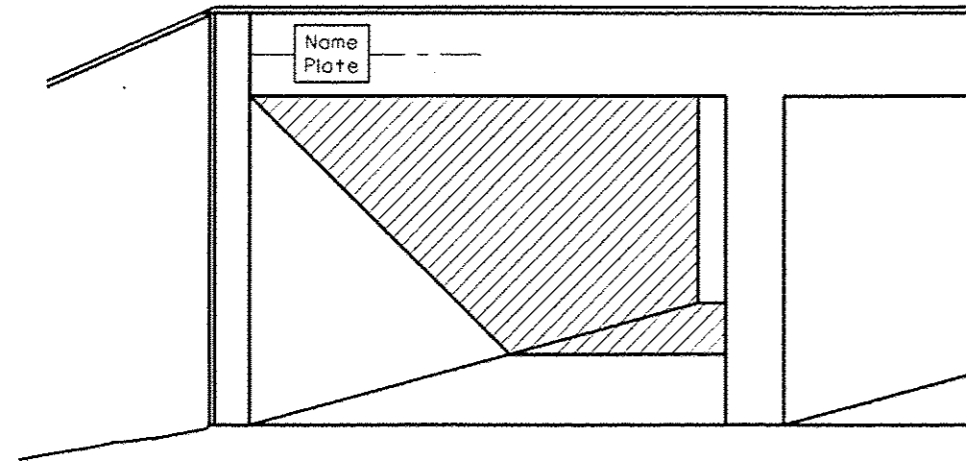


ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

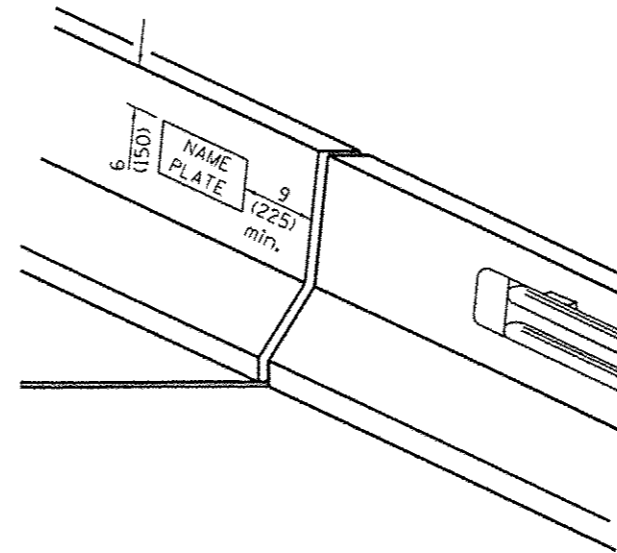
- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).

Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.

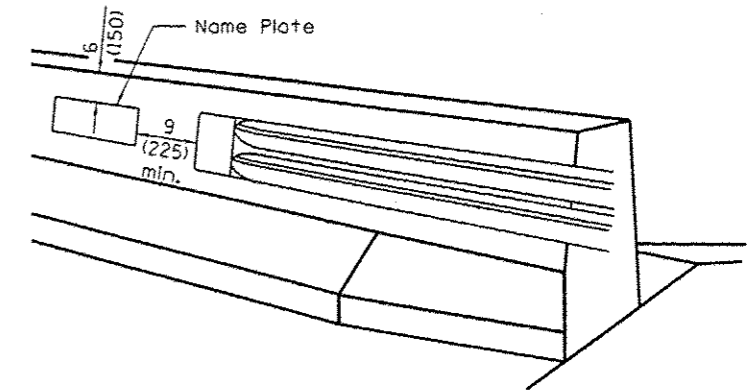


FOR MULTI-SPAN CULVERTS

(Unless otherwise noted on the plans, name plates are not required for structures less than 20' (6.1 m) in length)

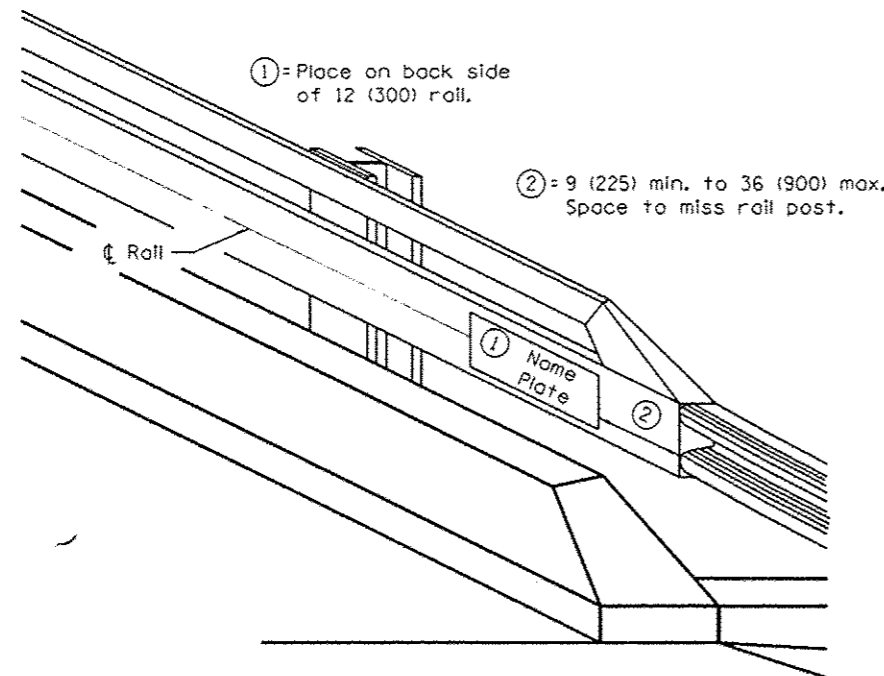


FOR PARAPET AND END POST MOUNTED

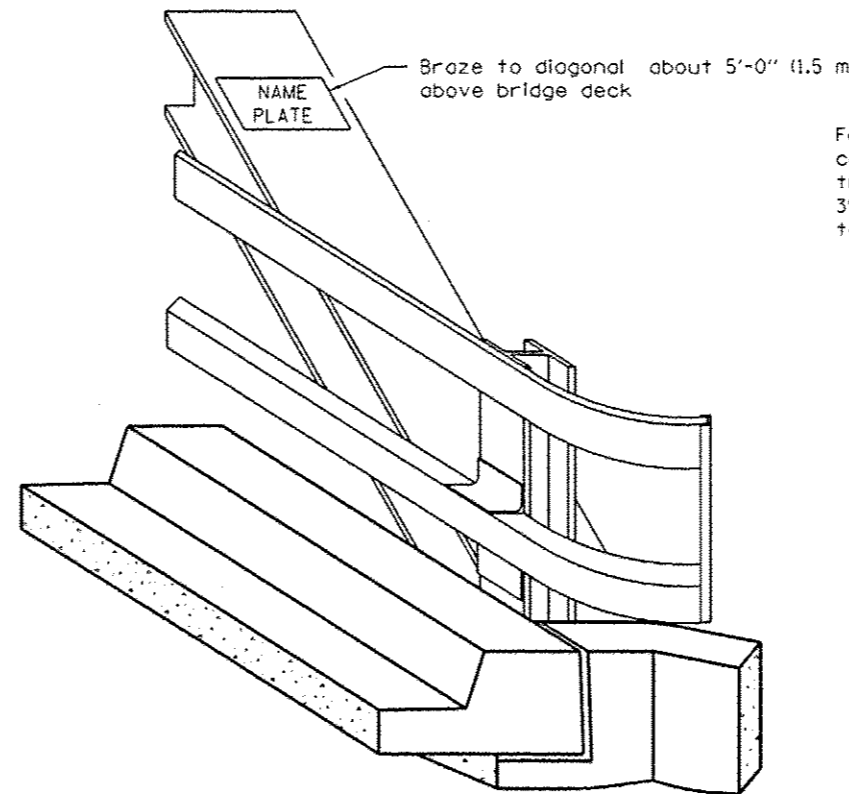


FOR PARAPET

(When Dog Ear Wing is used)



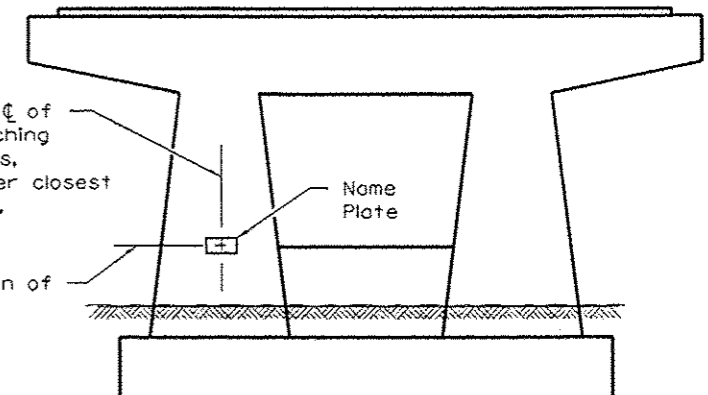
FOR STEEL RAILS



FOR TRUSSES

For column type piers, ϕ of column nearest approaching traffic. For solid piers, 3'-0" \pm from end of pier closest to approaching traffic.

4'-0" \pm above crown of roadway elevation.



FOR PIERS ON FAI ROUTES

GENERAL NOTES

On one-way traffic structures, place name plate on right side of approach end. On two-way traffic structures, place name plate on right side of approach end while looking in the direction of increasing stationing.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED January 1, 2009
Ralph E. Anderson
 ENGINEER OF BRIDGES AND STRUCTURES

ISSUED 1-1-97

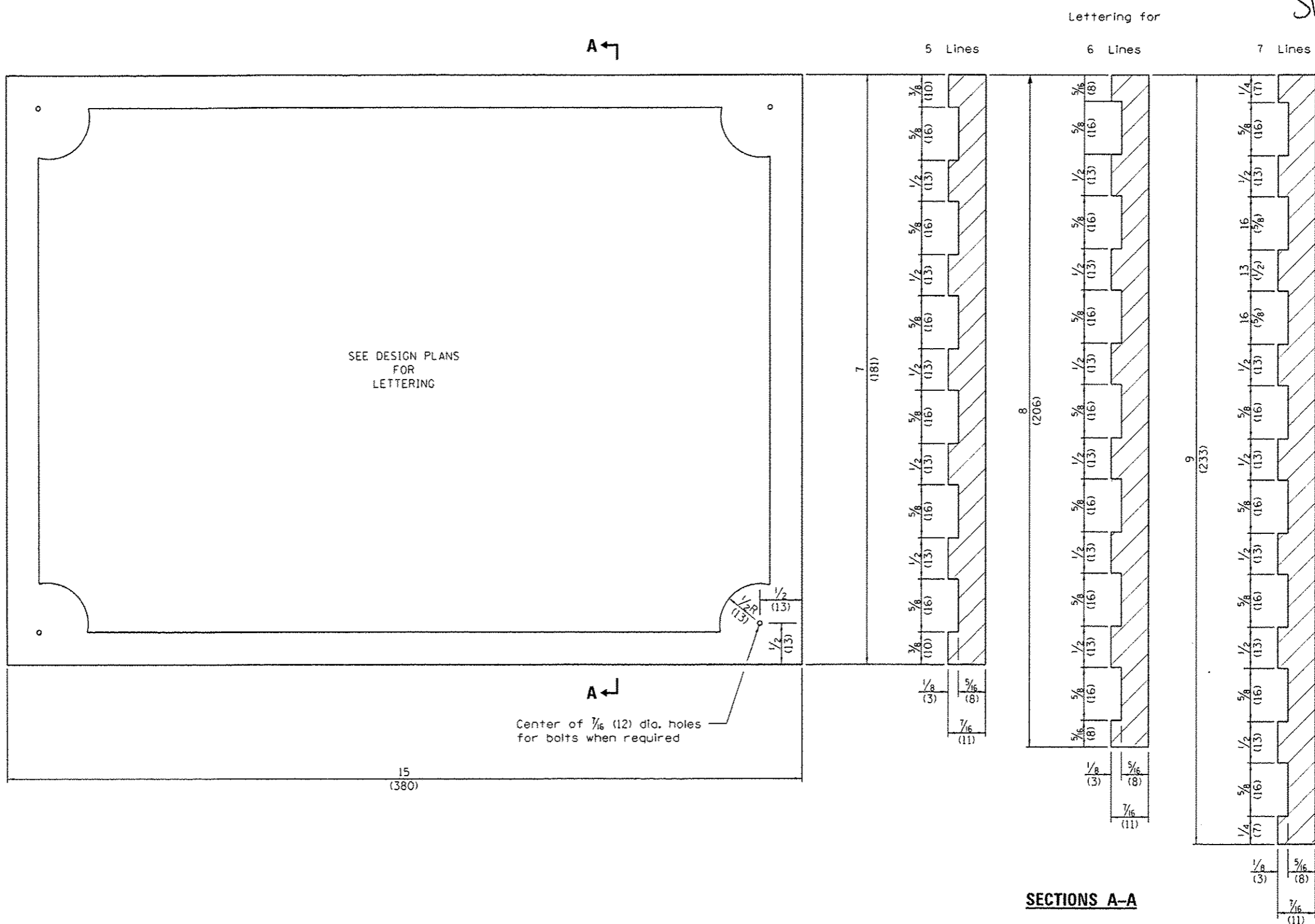
APPROVED January 1, 2009
W. S. Han
 ENGINEER OF DESIGN AND ENVIRONMENT

DATE	REVISIONS
1-1-09	Switched units to English (metric). Added pier detail.
1-1-02	Remove Placing note on sht. 2. Added Braze to diag. note on sht. 1.

NAME PLATE FOR BRIDGES

(Sheet 1 of 2)

STANDARD 515001-03



SEE DESIGN PLANS FOR LETTERING

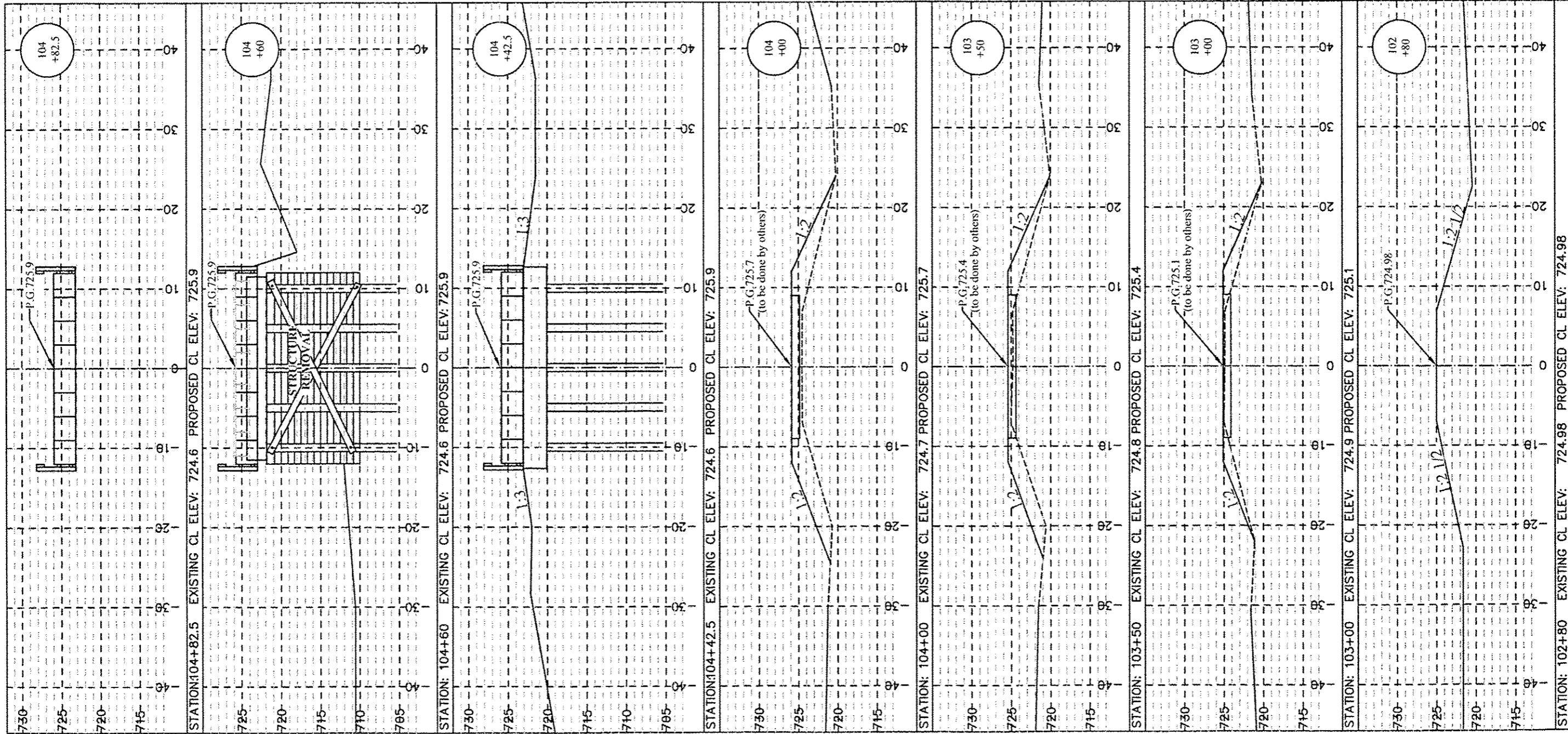
Center of $\frac{1}{16}$ (12) dia. holes for bolts when required

SECTIONS A-A

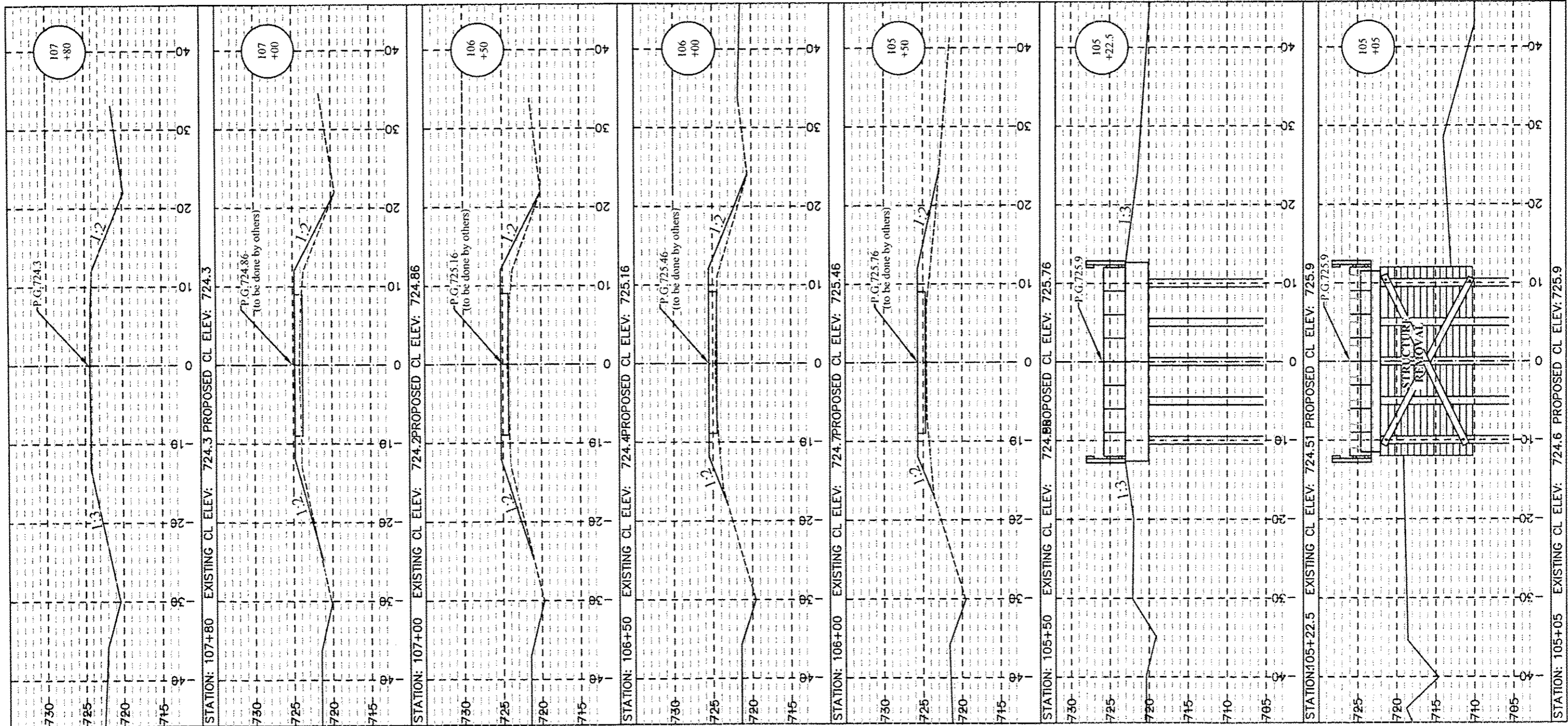
NOTE
 Border and lettering:
 Raised $\frac{1}{8}$ (3), square cut and not tapered.

Illinois Department of Transportation	
APPROVED <u>January 1, 2009</u> <i>Ralph E. Anderson</i> ENGINEER OF BRIDGES AND STRUCTURES	ISSUED 1-1-09
APPROVED <u>January 1, 2009</u> <i>Ken E. Han</i> ENGINEER OF DESIGN AND ENVIRONMENT	

NAME PLATE FOR BRIDGES
(Sheet 2 of 2)
STANDARD 515001-03

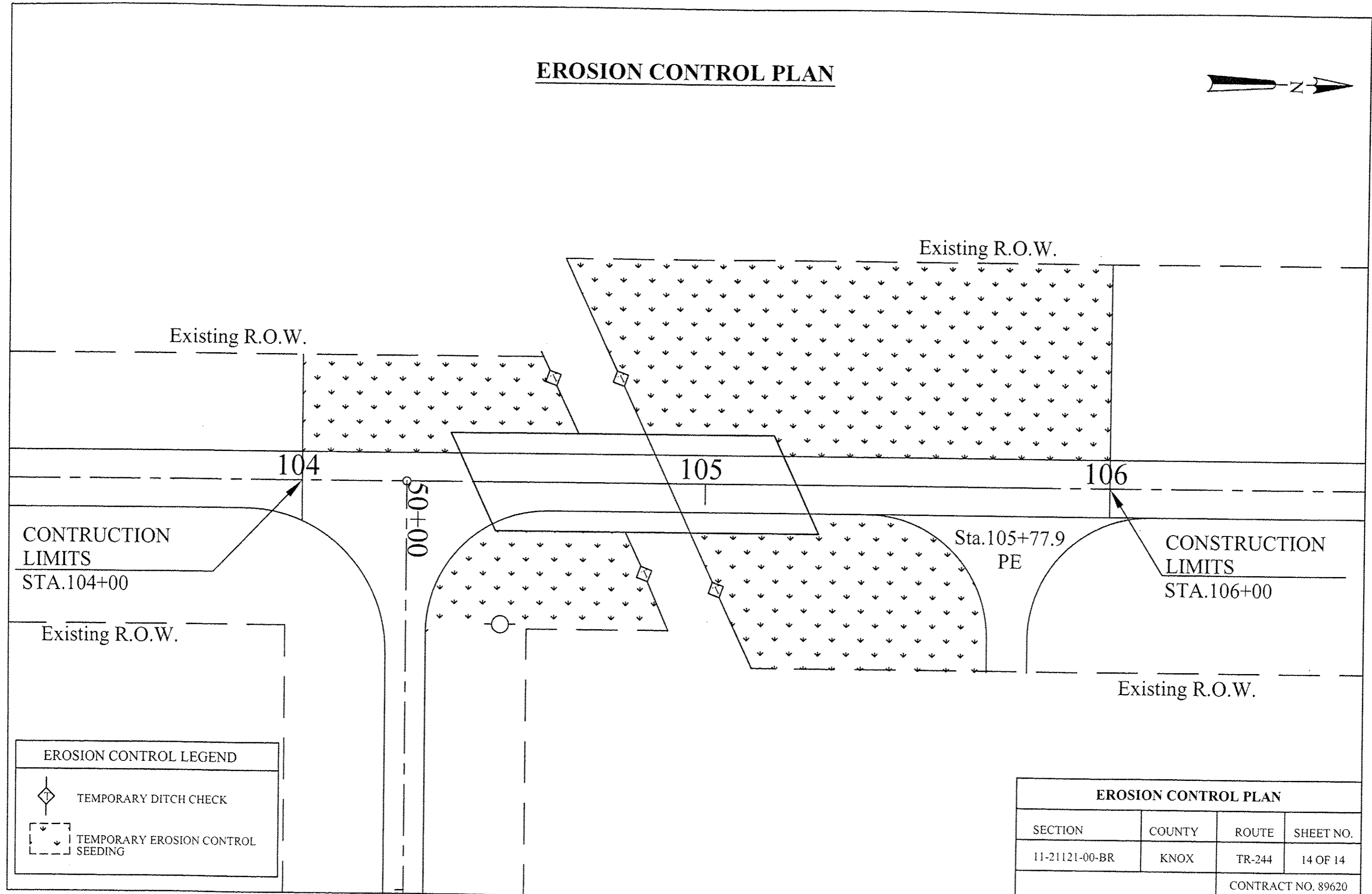
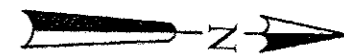


SECTION	COUNTY	ROUTE	SHEET NO.
11-21121-00-BR	KNOX	TR-244	12 of 14
CONTRACT NO. 89620			



SECTION	COUNTY	ROUTE	SHEET NO.
11-21121-00-BR	KNOX	TR-244	13 of 14
CONTRACT NO. 89620			

EROSION CONTROL PLAN



CONSTRUCTION
LIMITS
STA. 104+00

CONSTRUCTION
LIMITS
STA. 106+00

EROSION CONTROL LEGEND	
	TEMPORARY DITCH CHECK
	TEMPORARY EROSION CONTROL SEEDING

EROSION CONTROL PLAN			
SECTION	COUNTY	ROUTE	SHEET NO.
11-21121-00-BR	KNOX	TR-244	14 OF 14
			CONTRACT NO. 89620