

SN: 089-0066

K-81

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED
FEDERAL AID HIGHWAY

FAS ROUTE 1087 (IL. ROUTE 73)

SECTION 106 BR-2

~~PROJECT BRS-1087~~

STEPHENSON COUNTY

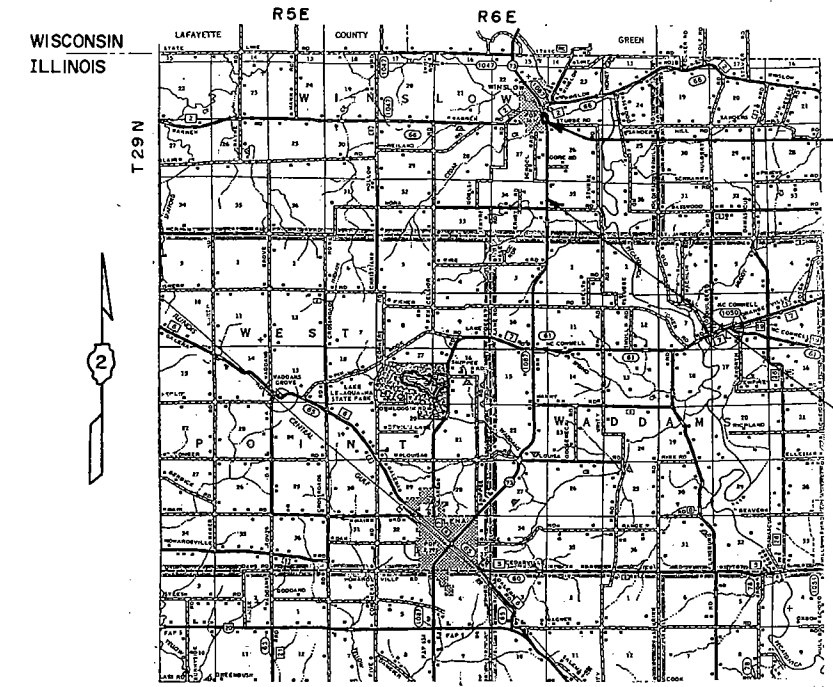
C-92-183-89

RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1087	106 BR-2	STEPHENSON	20	1
FINRA REG. 4	ILLINOIS	PROJECT		

P-92-036-84



LOCATION OF SECTION INDICATED THUS:—



PROJECT
SECTION 106 BR-2
BEGINS STA 82+00
ENDS STA. 89+50

SECTION 106 BR-2 INCLUDES A SINGLE SPAN
STEEL BEAM STRUCTURE (CARRYING ILLINOIS
ROUTE 73 OVER CEDAR CREEK) ON PILE BENT
ABUTMENTS, 1 SPAN AT 68'-0". STRUCTURE
NUMBER 089-0066.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED November 22 19 89

EXAMINED 12-29 19 89 William S. D. DISTRICT ENGINEER

PASSED 12-29 19 89 Harry B. Gould ENGINEER OF PLANS AND CONTRACTS

APPROVED 12-29 19 89 William S. D. ENGINEER OF DESIGN

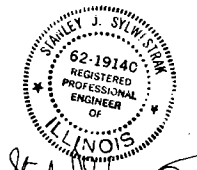
Joseph A. D. DIRECTOR, DIVISION OF HIGHWAYS

DISTRICT 2
DIXON

"CALL J.U.L.I.E.
BEFORE YOU DIG"
800-892-0123
WINSLOW TOWNSHIP
SECTION 22

NET LENGTH OF PROJECT = 750' = .1421 MILES

CONTRACT NO. 84177



FIELD BOOK # 10 (SBI 73)

CONSULTANT: HAZELT & ERDAL, INC.
SQUAD LEADER: BRENT HASENAUER
PROJECT ENGINEER: BILL McWETHY

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 1
FAS 1087	106 BR-2	STEPHENSON	20	5	11 SHEETS
FEDERAL ROAD DIST. NO. ILLINOIS FEDERAL AID PROJECT-					

See Proposal for Boring Data.

Fasteners shall be high strength bolts. Bolts $\frac{3}{4}$ " ϕ , open holes $\frac{1}{16}$ " ϕ , unless otherwise noted.

The Zinc-silicate and vinyl paint system shall be used for shop and field painting of Structural Steel except where otherwise noted. The color of the final finish coat shall be Munsell 7.5 G 4/6 Interstate Green.

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.

The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These components are wide flange beams.

Reinforcement bars shall conform to the requirements of AASHTO M31, M42 or M53 Grade 60.

The contractor shall drive 1 steel test pile in permanent location at North abutment as directed by the Engineer before ordering the remainder of piles.

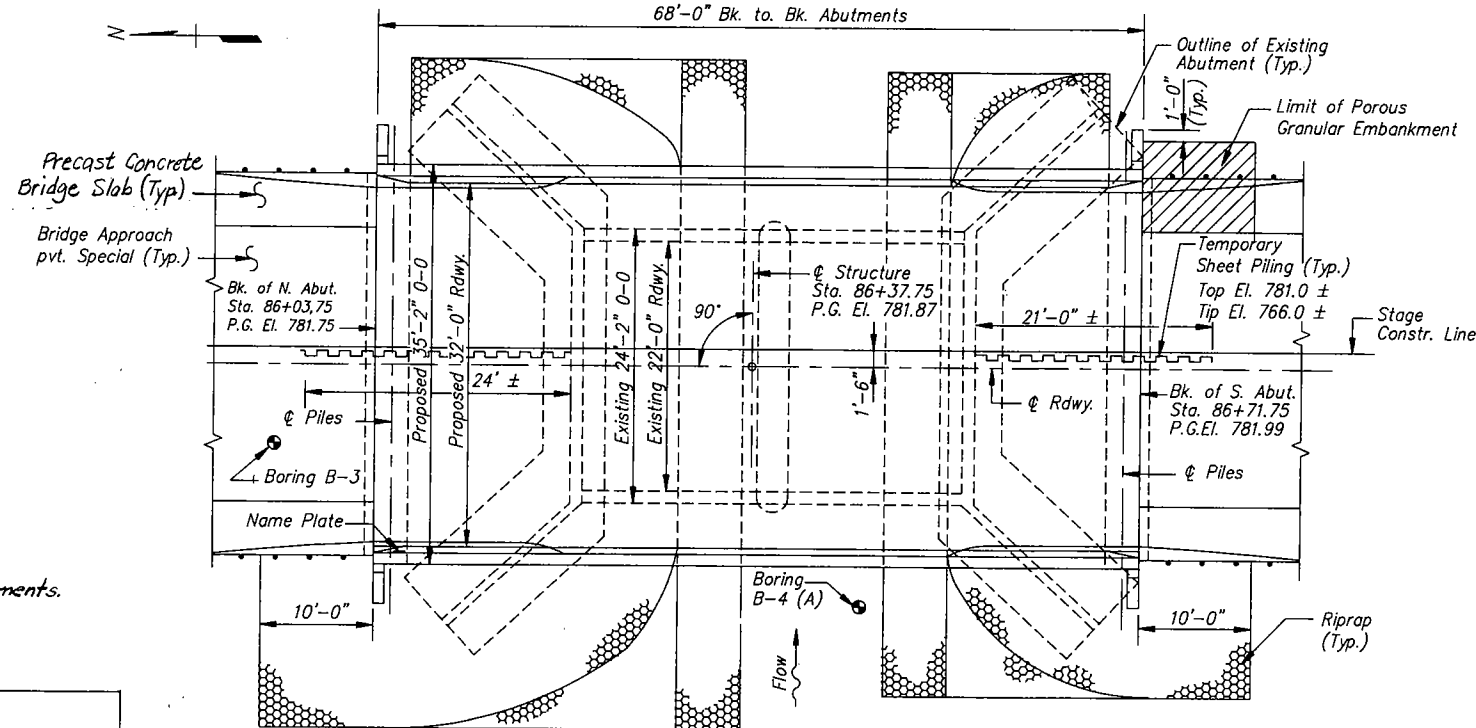
Layout of stone riprap may be varied in the field to suit the ground conditions as directed by the Engineer.

The embankment configuration shown shall be the minimum embankment that must be constructed prior to construction of the abutments.

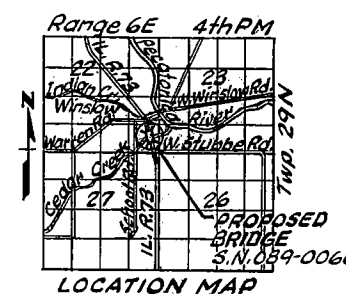
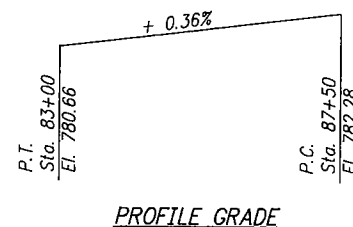
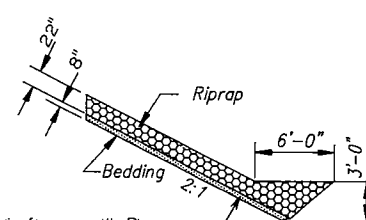
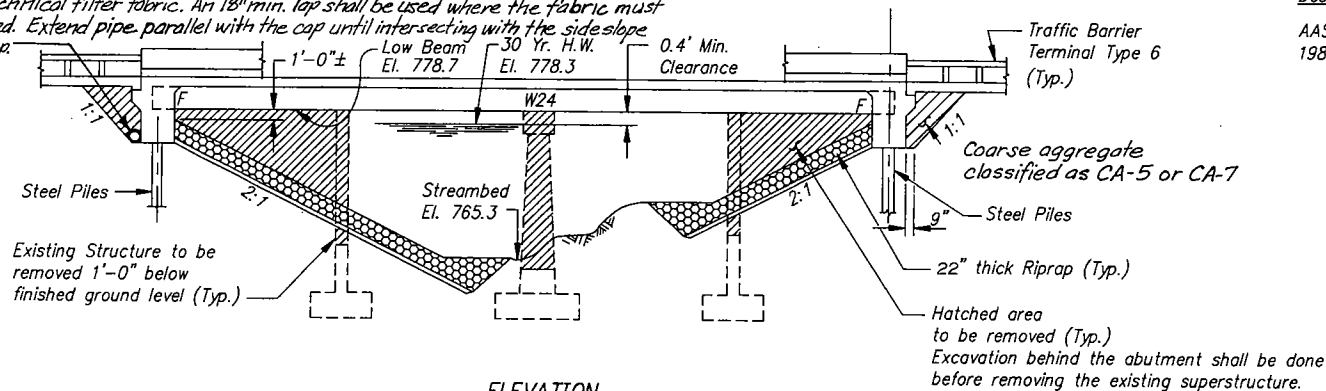
For cantilever forming brackets see Special Provisions.

TOTAL BILL OF MATERIAL				
ITEM	UNITS	SUPER.	SUBSTR.	TOTAL
Filter Fabric for use with Riprap	Sq.Yd.		400	400
Class X Concrete Superstructure	Sq.Yd.	84.7		84.7
Structure Excavation	Cu.Yd.		130	130
Steel Piles (HP10 x 42)	Lin.Ft.		326	326
Test Piles (HP10 x 42)	Each		1	1
Name Plates	Each	1		1
Class X Concrete	Cu.Yd.	28.1		28.1
Protective Coat	Sq.Yd.	1000		1000
Floor Drains	Each	10		10
Temporary Sheet Piling	Sq.Ft.	585		585
Reinforcement Bars	Lb.	3720		3720
Reinforcement Bars, Epoxy Coated	Lb.	13740		13740
Furnishing and Erecting Structural Steel	L.S.	1		1 *
Stud Shear Connectors	Each	1200		1200
Stone Riprap Class A 5	Sq.Yd.	400		400
Removal of Existing Structures	L.S.	1		1 **
Temporary Bridge Rail	Lin.Ft.	68		68
Precast Concrete Bridge Slab	Sq.Ft.	320		320
Metal Shoes	Each		11	11
Porous Granular Embankment	Cu. Yd.		15	15
Pipe Underdrains 6"	Lin. Ft.		104	104

* Calculated Wt of Structural Steel = 58,770 Lbs. (M223) Gr. 50 & 2,370 Lbs. (M183).
** Includes approx. 44 Cu.yds. Concrete Deck Removal, 90 Sq.yds. Bituminous Surface Removal, and 73 Lin.ft. Steel Railing Removal.



A perforated drain pipe shall be situated within an approximate 2'x2' block of CA-5 or CA-7 coarse aggregate. The 2'x2' block of coarse aggregate shall be wrapped completely in geotechnical filter fabric. An 18" min. lap shall be used where the fabric must be lapped. Extend pipe parallel with the cap until intersecting with the sideslope and riprap.



Bench Mark #3 El. 780.465

Chiseled "Square" on West Curb of Existing Structure

Bench Mark U.S.C.G.S. "B7" El. 780.002

Chiseled "X" on East Brickwall 3' North of Southeast corner of building in Winslow 130'± West of Abandoned railroad on Northside of old Main Street, now Bridge Street 2'± higher than loading dock.

Existing Structure

The Existing Bridge #089-0031 was constructed in 1932 as SBI Route 73 Section 106B and consists of a 2 Span reinforced concrete deck on solid pier and abutments. The entire existing structure is to be removed. See original plans by IDOT for details. One lane of traffic shall be maintained at all times during construction.

Design Data

Design Loading: HS 20-44

Allowance for 25# / Sq.ft. Future Wearing Surface.

Design Stresses:

f'_c = 3500 p.s.i.

f_y = 60000 p.s.i. for Reinforcement Steel

f_y = 50000 p.s.i. for M223 (Grade 50) Structural Steel

f_y = 36000 p.s.i. for M183 Structural Steel

Design Specifications:

AASHTO 1983 & 1984 thru 1988 Interim Specifications
1988 IDOT Standard Specifications for Road and Bridge Construction

STATION 86 + 37.75
BUILT 1990 BY
STATE OF ILLINOIS
F.A.S. RT. 1087 SEC. 106BR-2

LOADING HS 20
STR. NO. 089-0066

NAME PLATE
For details see Std. 2113

WATERWAY INFORMATION

Drainage Area: 3.74 Sq. Miles Low Grade El. 780.2 @ Sta. 86+00									
Flood	Freq. (Yrs.)	Q (C.F.S.)	Opening (Sq.Ft.)		Nat. H.W.E.	Head (Ft.)		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	30	1333	313	472	778.3'	0.40	0.26	778.7	778.56
Base	100	1748	326	497	781.9'	0.06	0.06	781.96	781.96
Overtopping	50	1513	-	497	780.0'	-	0.22	-	780.22
Max. Calc.	500	-	-	-	-	-	-	-	-

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

FILE NUMBER
DRAWN BY S.O.I.
CHECKED BY GW
APPROVED BY DKG

Robert O. Smith
January 5, 1987

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

James J. [Signature]
Director of Bridges and Structures

ILL. 73 BRIDGE OVER CEDAR CREEK
GENERAL PLAN AND ELEVATION

F.A.S. RTE. 1087 (ILL. 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86+37.75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1087	106 BR-2	STEPHENSON	20	6
FEDERAL ROAD DIST. NO. [ILLINOIS] FEDERAL AID PROJECT-				

SHEET NO. 2
11 SHEETS

BEAMS 1 & 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
N. End of Deck	86+03.83	14'-7"	781.513	781.513
¢ Bearing N. Abut.	86+05.00	14'-7"	781.517	781.517
a	86+15.00	14'-7"	781.553	781.630
b	86+25.00	14'-7"	781.589	781.727
c	86+35.00	14'-7"	781.625	781.793
d	86+45.00	14'-7"	781.661	781.822
e	86+55.00	14'-7"	781.697	781.814
f	86+65.00	14'-7"	781.733	781.781
¢ Bearing S. Abut.	86+70.50	14'-7"	781.752	781.752
S. End of Deck	86+71.67	14'-7"	781.757	781.757

BEAMS 2 & 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
N. End of Deck	86+03.83	8'-9"	781.618	781.618
¢ Bearing N. Abut.	86+05.00	8'-9"	781.622	781.622
a	86+15.00	8'-9"	781.658	781.738
b	86+25.00	8'-9"	781.694	781.832
c	86+35.00	8'-9"	781.730	781.898
d	86+45.00	8'-9"	781.766	781.927
e	86+55.00	8'-9"	781.802	781.919
f	86+65.00	8'-9"	781.838	781.886
¢ Bearing S. Abut.	86+70.50	8'-9"	781.857	781.857
S. End of Deck	86+71.67	8'-9"	781.862	781.862

BEAMS 3 & 4

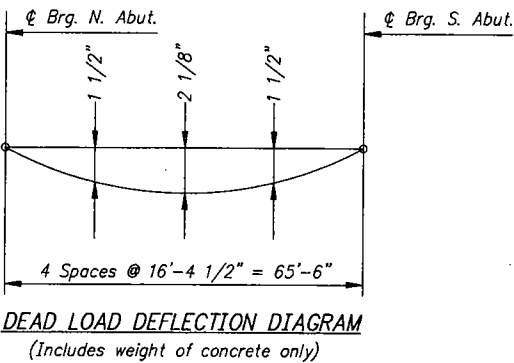
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
N. End of Deck	86+03.83	2'-11"	781.709	781.709
¢ Bearing N. Abut.	86+05.00	2'-11"	781.713	781.713
a	86+15.00	2'-11"	781.749	781.829
b	86+25.00	2'-11"	781.785	781.923
c	86+35.00	2'-11"	781.821	781.989
d	86+45.00	2'-11"	781.857	782.018
e	86+55.00	2'-11"	781.893	782.010
f	86+65.00	2'-11"	781.929	781.977
¢ Bearing S. Abut.	86+70.50	2'-11"	781.948	781.948
S. End of Deck	86+71.67	2'-11"	781.953	781.953

STAGE CONSTR. LINE & LONG. BONDED CONSTR. JT.

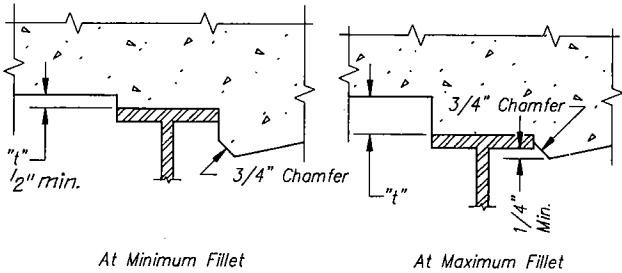
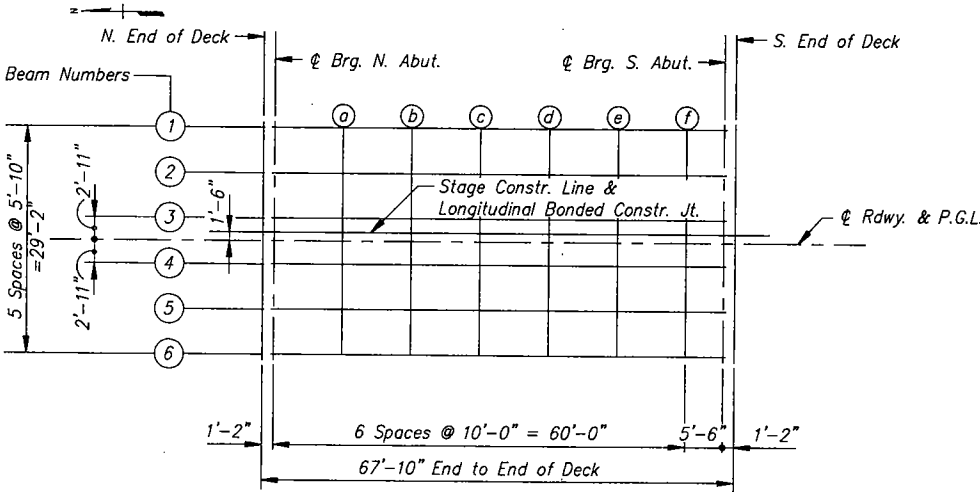
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
N. End of Deck	86+03.83	1'-6"	781.731	781.731
¢ Bearing N. Abut.	86+05.00	1'-6"	781.735	781.735
a	86+15.00	1'-6"	781.771	781.851
b	86+25.00	1'-6"	781.807	781.945
c	86+35.00	1'-6"	781.843	782.011
d	86+45.00	1'-6"	781.879	781.040
e	86+55.00	1'-6"	781.915	782.032
f	86+65.00	1'-6"	781.951	781.999
¢ Bearing S. Abut.	86+70.50	1'-6"	781.970	781.970
S. End of Deck	86+71.67	1'-6"	781.975	781.975

¢ ROADWAY & PROFILE GRADE LINE

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
N. End of Deck	86+03.83	0	781.754	781.754
¢ Bearing N. Abut.	86+05.00	0	781.758	781.758
a	86+15.00	0	781.794	781.874
b	86+25.00	0	781.830	781.968
c	86+35.00	0	781.866	782.034
d	86+45.00	0	781.902	782.063
e	86+55.00	0	781.938	782.055
f	86+65.00	0	781.974	782.022
¢ Bearing S. Abut.	86+70.50	0	781.993	781.993
S. End of Deck	86+71.67	0	781.998	781.998



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 above.



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

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS
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APPROVED BY [Signature]

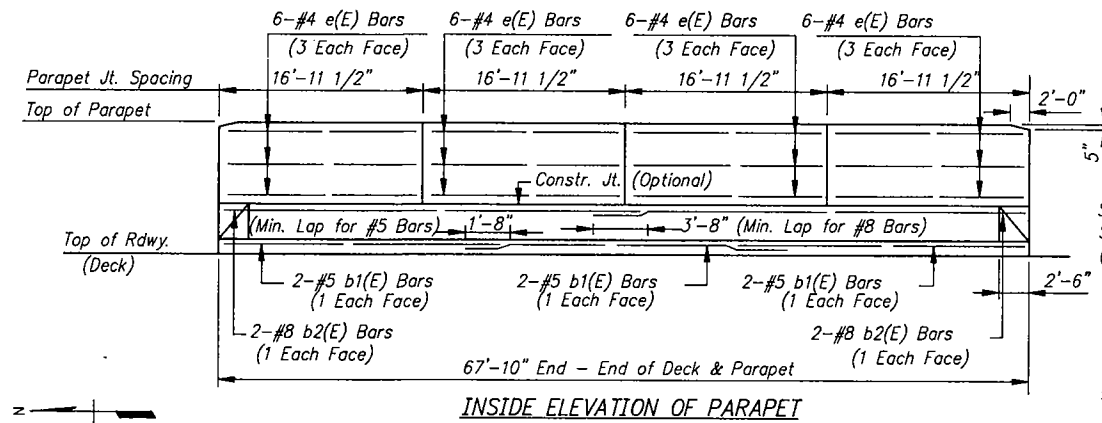
FILLET HEIGHTS

TOP OF SLAB ELEVATIONS
F.A.S. RTE. 1087 (IL 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86 + 37.75

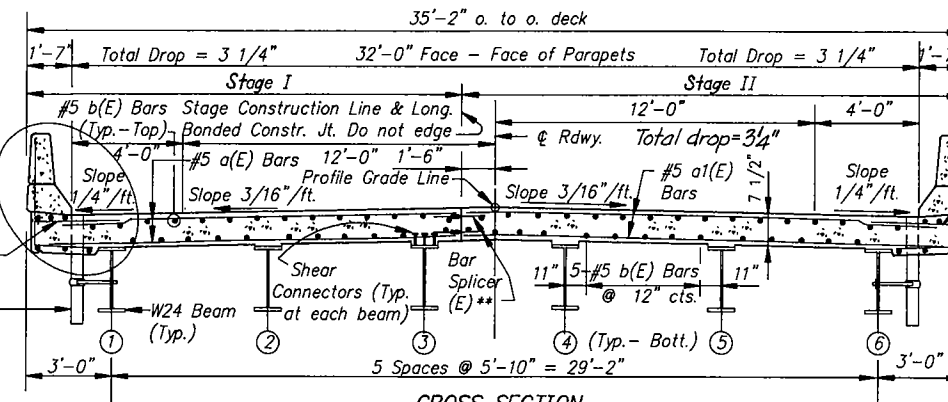
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1087	106 BR-2	STEPHENSON	20	7

11 SHEETS

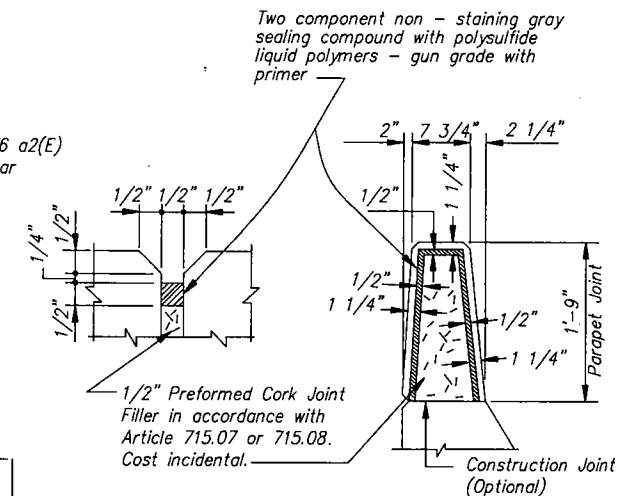


See Parapet Section Details (Typ.)



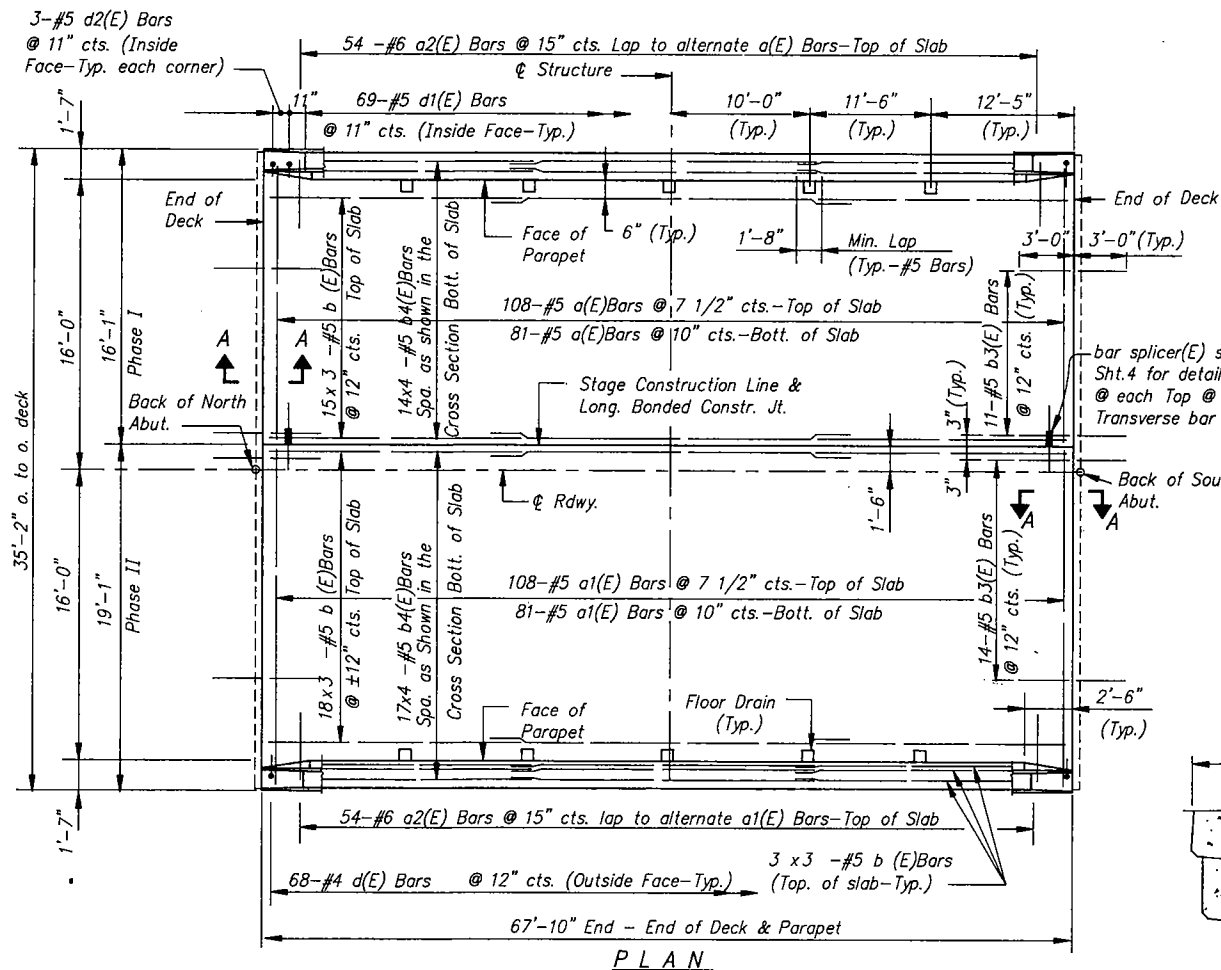
CROSS SECTION
(LOOKING SOUTH)

** Lapped bars at this location shall be tied with double the number of ties normally used.

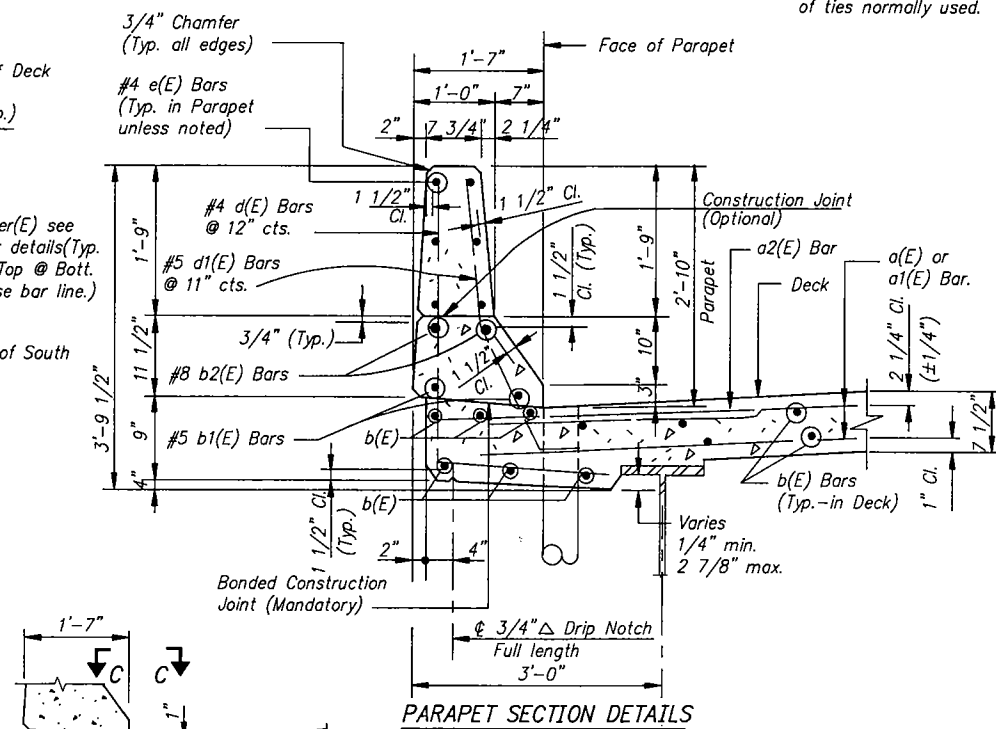


PARAPET JOINT DETAILS
SUPERSTRUCTURE
BILL OF MATERIAL

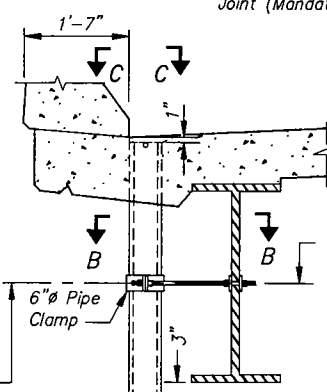
Bar	No.	Size	Length	Shape
v2(E)	25	#5	3' - 3"	
a(E)	189	#5	15' - 0"	
a1(E)	189	#5	18' - 0"	
a2(E)	108	#5	4' - 0"	
b(E)	99	#5	4' - 0"	
b1(E)	12	#5	23' - 9"	
b2(E)	8	#8	35' - 9"	
b3(E)	50	#5	10' - 0"	
b4(E)	124	#5	18' - 9"	
d(E)	136	#4	5' - 2"	
d1(E)	138	#5	3' - 11"	
d2(E)	12	#5	3' - 9"	
e(E)	48	#4	16' - 8"	
h3(E)	8	#6	15' - 10"	
h4(E)	8	#6	18' - 10"	
s1(E)	29	#4	7' - 3"	
s2(E)	29	#4	3' - 8"	
Reinforcement Bars (Epoxy Coated)			Lb.	13710
Class X Concrete Superstructure			Cu. Yd.	84.7



PLAN

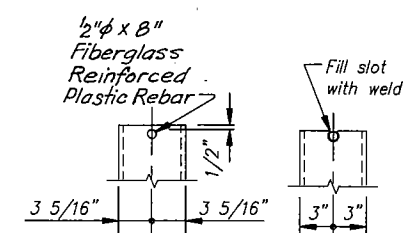


PARAPET SECTION DETAILS



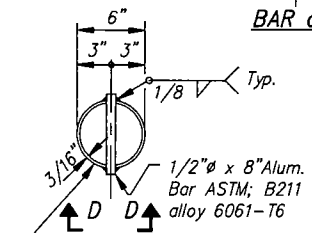
FLOOR DRAIN DETAILS

The surface of the Fiberglass pipe shall be free of bond inhibiting agents.



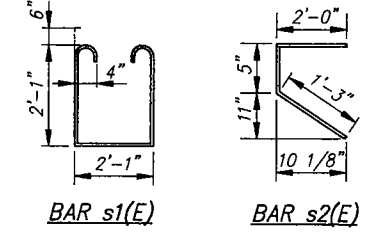
FIBERGLASS PIPE ALUMINUM TUBE
SECTION D - D

Note: Fiberglass pipe shall conform to ASTM: D2996, with short-time rupture strength hoop tensile stress of 30,000 p.s.i. minimum.



TOP PLAN - Floor Drain

(Showing Aluminum Tube)



Notes:
Reinforcement bars designated (E) shall be epoxy coated. Bars indicated thus 18 x 3 - #5 etc. indicates 18 lines of bars with 3 lengths per line. See Sheet 6 for s1(E), s2(E), h3(E) & h4(E) bar locations.

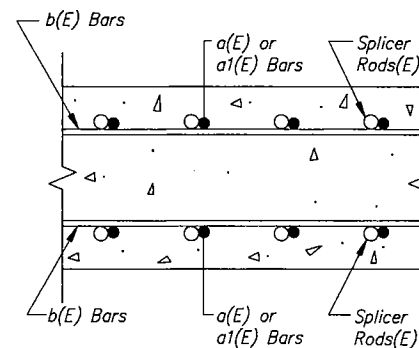
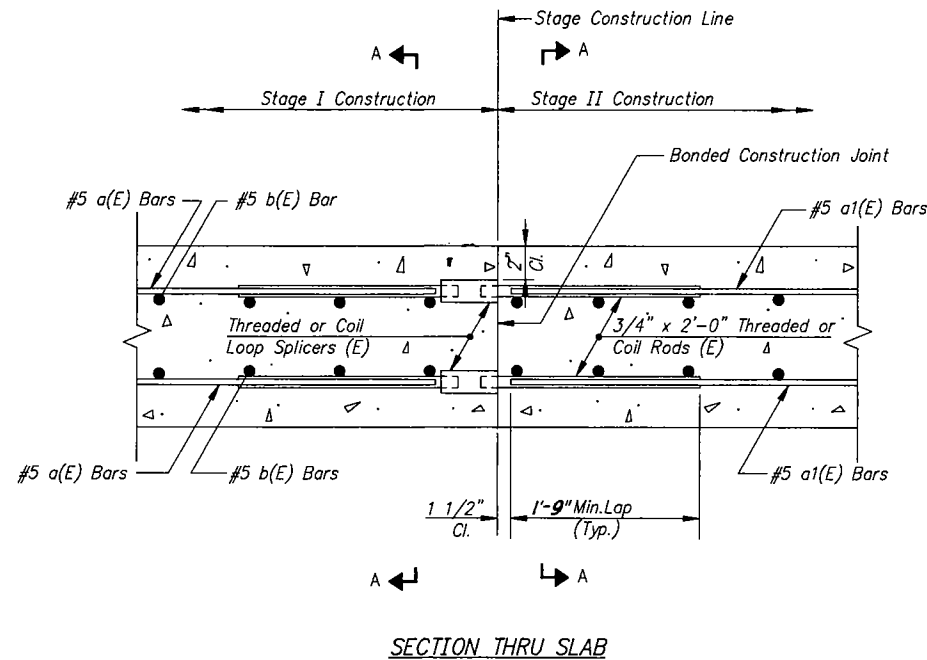
DECK & PARAPET
REINFORCEMENT & DETAILS

F.A.S. RTE. 1087 (ILL. 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86+37.75

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

FILE NUMBER
DRAWN BY: ET/GW
CHECKED BY: MR
APPROVED BY: [Signature]

150015100X



TYPICAL SPLICER DETAILS IN SLABS

No. Req'd = 189 for #5 Bars

Cost incidental to reinforcement bars (Epoxy Coated)

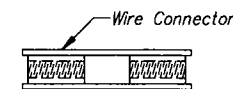
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

The dia. of this part of Splicer is the same as the dia. of the bar spliced.

The diameter of this part is equal or larger than the diameter of bar spliced.

ROLLED THREAD DOWEL BAR

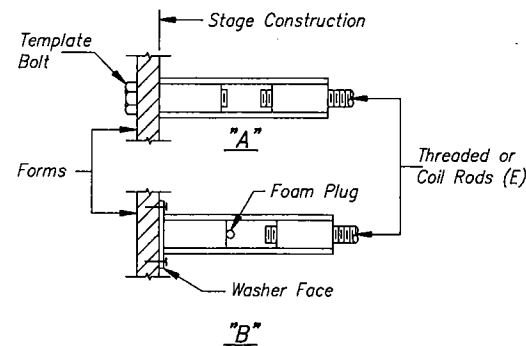
**** ONE PIECE**



WELDED SECTIONS

SPLICER ALTERNATIVES

**Heavy Hex Nuts conforming to ASTM A563, Grade C,D or DH may be used.



INSTALLATION AND SETTING METHODS

"A": Set splicer by means of a template bolt.
"B": Set splicer by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating, see Special Provisions.

NOTES

Steel Splicer (Coupler) assembly shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.
Steel Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length and have effective tensile stress area equal to or greater than that of the lapped reinforcement bars.
Splicer rods shall extend minimum 1 1/2 inches into the couplers.
All reinforcement bars shall be lapped and tied to the splicer rods.
Splicer (Coupler) assembly in the slab shall be epoxy coated in accordance with the requirements for reinforcement bars.
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed splicer (Coupler) assembly satisfies the following requirements:

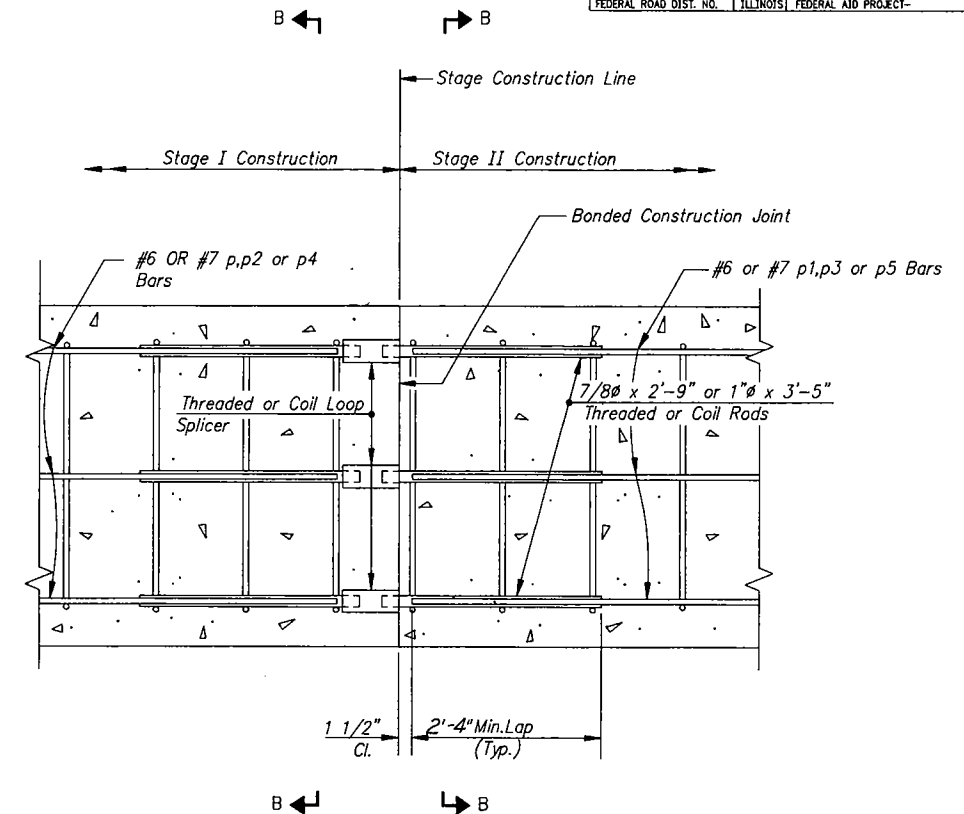
- Minimum Capacity = $1.25 \times f_y \times A_t$ (Tension in kips)
- Minimum Pull-out Strength = $1.25 \times f_s \text{ allow} \times A_t$ (Tension in kips)

Where f_y = yield strength of lapped reinforcement bars in k.s.i.
 $f_s \text{ allow}$ = Allowable tensile stress in lapped reinforcement bars in k.s.i. (Service Load)

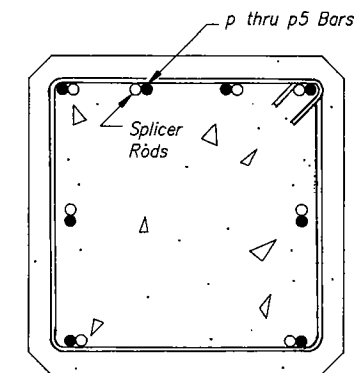
A_t = Tensile stress area of lapped reinforcement bars.
* 28 days concrete

Typical Splicer (Coupler) Assembly Sizes:

In Slabs	#5 bars lap with 3/4" Splicer (Coupler) x 2'-0" Splicer Rods	Minimum Capacity = 23.0 kips - tension
		Minimum Pull - out Strength = 9.2 kips - tension
In Sub-structures	#6 bars lap with 7/8" Splicer (Coupler) x 2'-9" Splicer Rods	Minimum Capacity = 34.1 kips - tension
		Minimum Pull - out Strength = 13.6 kips - tension
	#7 bars lap with 1" Splicer (Coupler) x 3'-5" Splicer Rods	Minimum Capacity = 45.1 kips - tension
		Minimum Pull - out Strength = 18.0 kips - tension



SECTION THRU ABUTMENTS
No epoxy coating required.



SECTION B-B

TYPICAL SPLICER DETAILS IN SUBSTRUCTURES

(No. Req'd 8)
Cost incidental to reinforcement bars.

BAR SPLICER (COUPLER) DETAILS AT STAGE CONSTRUCTION

F.A.S. RTE. 1087 (IL 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86 + 37.75

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

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CHECKED BY GW
APPROVED BY

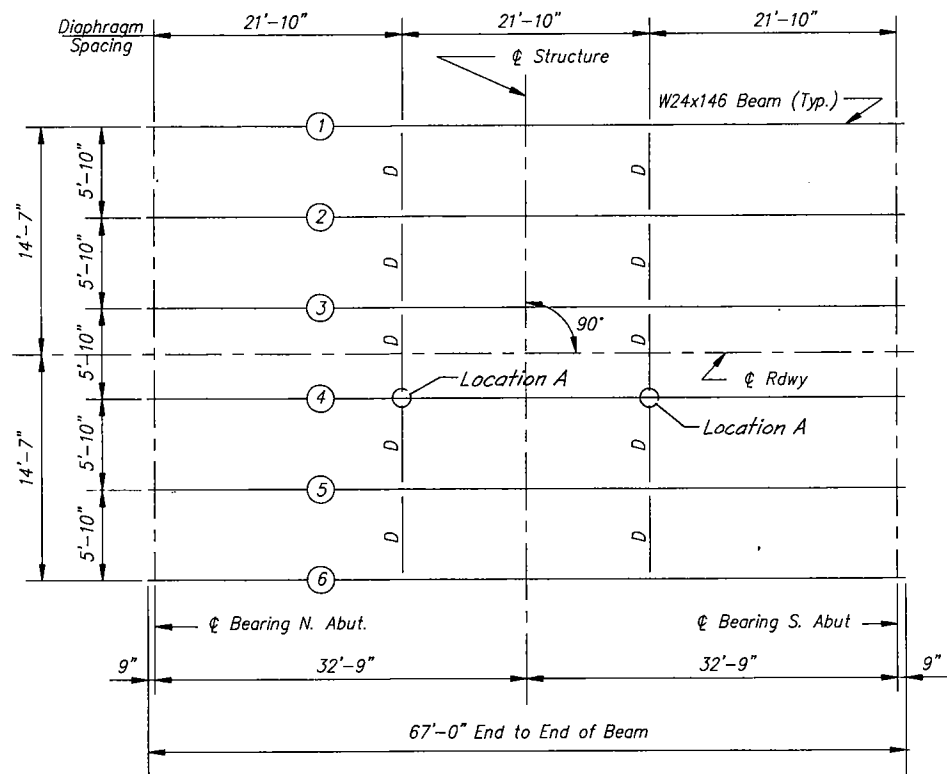
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1087	106 BR-2	STEPHENSON	20	9
FEDERAL ROAD DIST. NO.		ILLINOIS	FEDERAL AID PROJECT-	

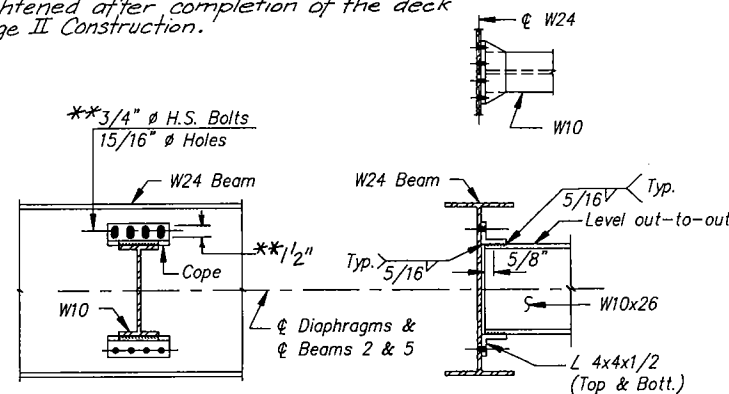
SHEET NO. 5

11 SHEETS

** Use $13/16"$ x $1/2"$ slotted holes in Bm. #4, Location "A" only. Provide $5/16"$ structural plate washers for slotted holes. Bolts shall be finger-tightened prior to the deck pour for Stage II Construction and then be fully tightened after completion of the deck pour for Stage II Construction.



FRAMING PLAN



DIAPHRAGM D
(10 required)

Two hardened washers shall be required over each $15/16"$ hole in diaphragm connection.

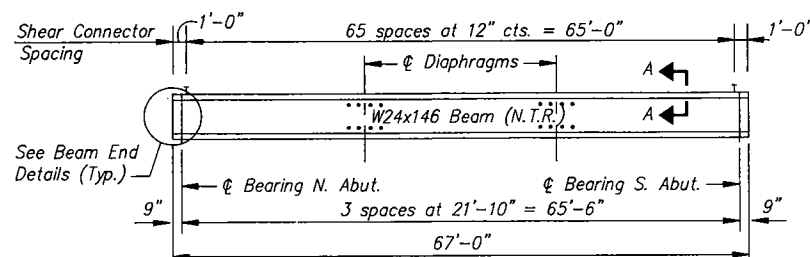
TOP OF BEAM ELEVATIONS (For Fabrication Only)		
Beam	¢ Brg. N. Abut.	¢ Brg. S. Abut.
1	780.85	781.09
2	780.96	781.19
3	781.05	781.28
4	781.05	781.28
5	780.96	781.19
6	780.85	781.09

INTERIOR BEAM MOMENT TABLE		
		0.5 span
I_s	(in. ⁴)	4580
I_c	(in. ⁴)	11654
$I_c (3n)$	(in. ⁴)	8314
S_s	(in. ³)	371
S_c	(in. ³)	534
$S_c (3n)$	(in. ³)	477
$\bar{Q}$	(k/ft.)	0.732
$M \bar{Q}$	(ft.-k)	400
$S \bar{Q}$	(k/ft.)	0.283
$M_s \bar{Q}$	(ft.-k)	152
$M \bar{Q}$	(ft.-k)	478
$M \text{ Imp.}$	(ft.-k)	124
$5/3 (M \bar{Q} + \text{Imp.})$	(ft.-k)	1003
M_a	(ft.-k)	2022
M_u	(ft.-k)	2814
$f_s \bar{Q}$ (non-comp.)	(ksi)	13.0
$f_s \bar{Q}$ (comp.)	(ksi)	3.8
$f_s 5/3 (\bar{Q} + \text{Imp.})$	(ksi)	22.6
f_s (Overload)	(ksi)	39.4
VR	(k)	41.3

INTERIOR BEAM REACTION TABLE	
	Abutments
$R \bar{Q}$ (k)	33.7
$R \bar{Q}$ (k)	32.7
$R \text{ Imp.}$ (k)	8.6
$R \text{ Total}$ (k)	75.0

Notes:

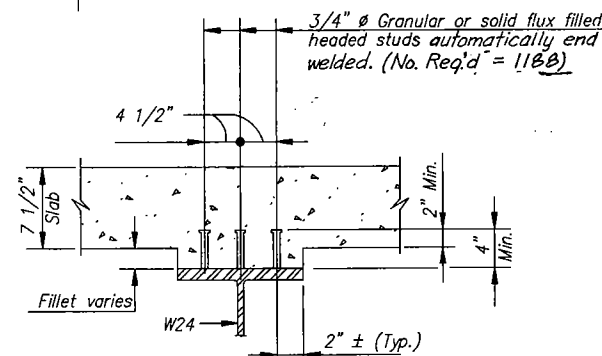
I_s & S_s are the moment of inertia and section modulus of the steel section used in computing $f_s \bar{Q}$ (non-comp.)
 I_c & S_c are the moment of inertia and section modulus of the composite section used in computing $f_s 5/3 (\bar{Q} + \text{Imp.})$
 $I_c (3n)$ & $S_c (3n)$ are the moment of inertia and section modulus of the composite section used in computing $f_s \bar{Q}$ (comp.)
 VR is the maximum $\bar{Q}$ + impact shear range in span for stud spacing.
 $M \bar{Q}$, $M_s \bar{Q}$ & $M \bar{Q}$: Moments due to non-comp. DL, composite DL & LL.
 Imp. : Live Load impact.
 M_a : Ultimate applied moment = $1.3 [M \bar{Q} + M_s \bar{Q} + 5/3 (M \bar{Q} + \text{Imp.})]$
 M_u : The fully plastic moment capacity which is computed according to AASHTO 10.50.1.1.
 f_s (overload): Sum of the stresses due to $[M \bar{Q} + M_s \bar{Q} + 5/3 (M \bar{Q} + \text{Imp.})]$



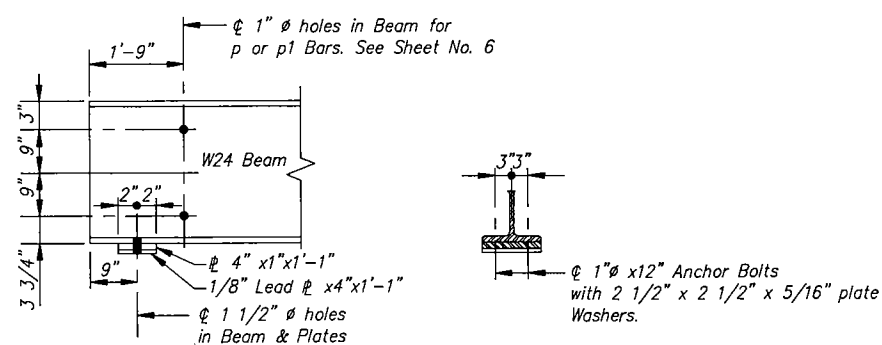
TYPICAL BEAM ELEVATION

"NTR" denotes notch toughness requirements are applicable.

Note: W24 x 146 Beams shall be M223 (Grade 50)



SECTION A-A



BEAM END DETAILS

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

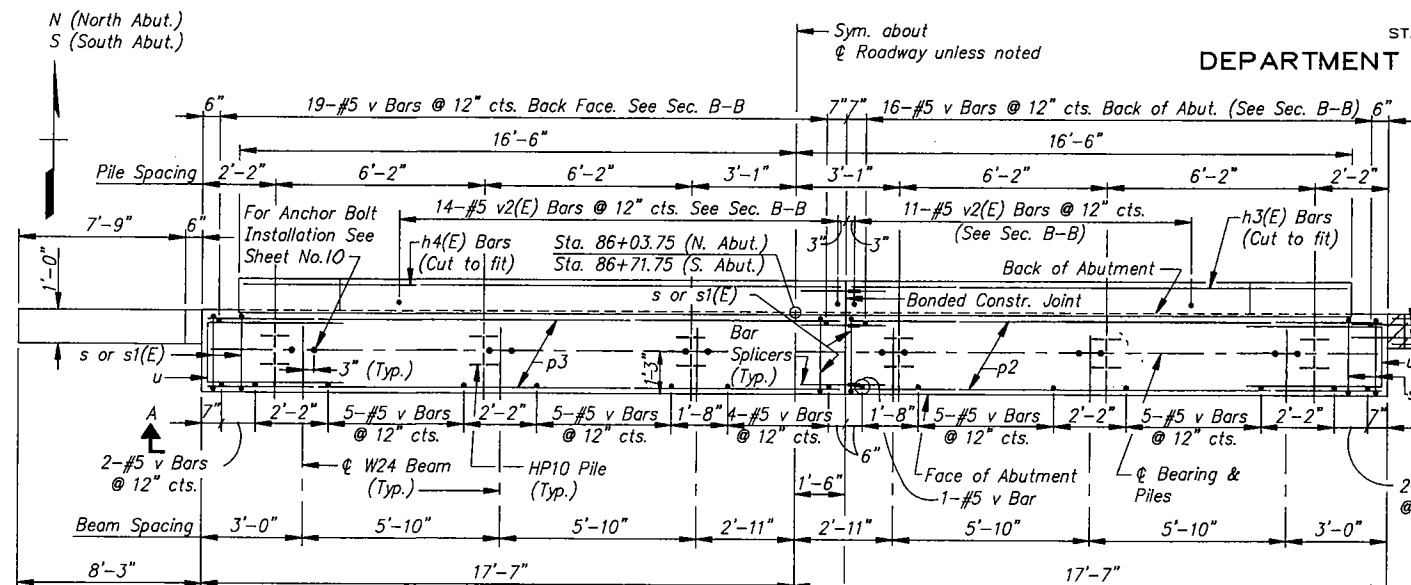
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DRAWN BY S.O.I./MJR
CHECKED BY GW
APPROVED BY [Signature]

STRUCTURAL STEEL FRAMING
AND DETAILS

F.A.S. RTE. 1087 (ILL. 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86+37.75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

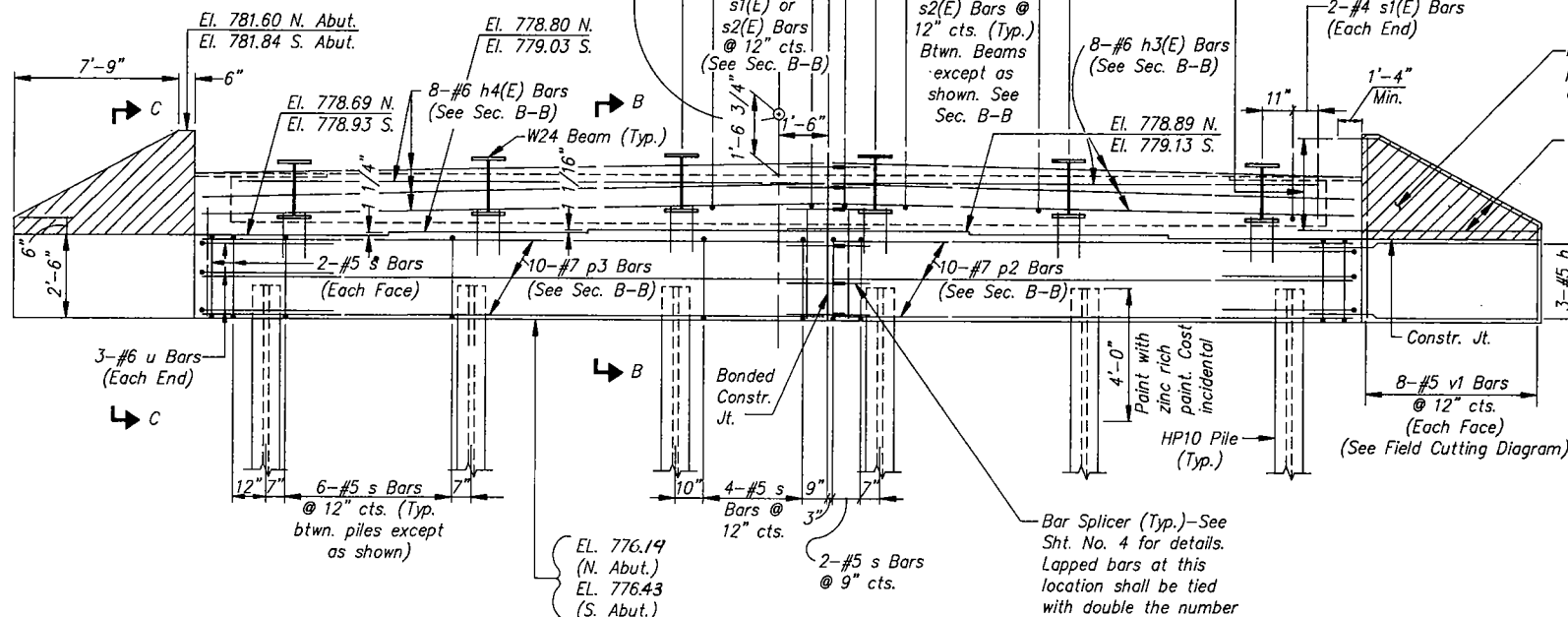
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FAS 1087	106 BR-2	STEPHENSON	20	10	11 SHEETS
FEDERAL ROAD DIST. NO.	ILLINOIS	FEDERAL AID PROJECT			



PLAN
(North Abutment - As Shown)
(South Abutment - Opp. Hand)

FIELD CUTTING DIAGRAM

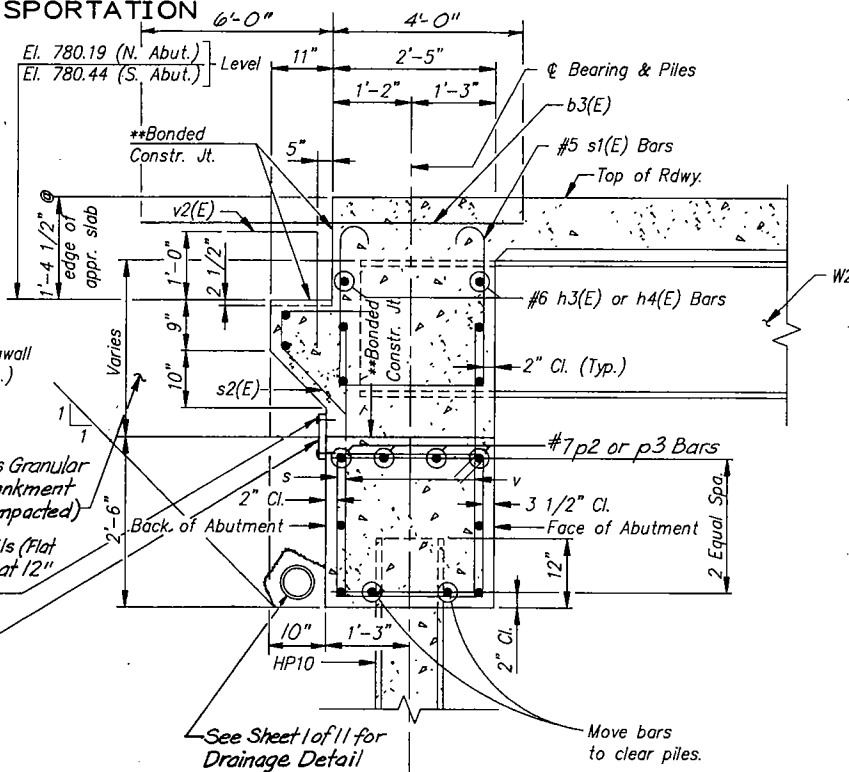
Order v1 bars full length.
Cut to fit and use the
remainder in opposite face.



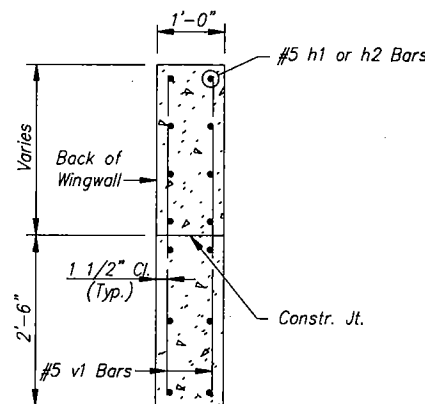
ELEVATION A-A
(North Abutment - As Shown)
(South Abutment - Opp. Hand)

PILE DATA

Type: HP 10 x 42 *
Capacity: Drive to Refusal
Est. Length: 34' N. Abut.; 26' S. Abut.
No. Required: 5 + 1 Test Pile at N. Abut.
6 at S. Abut.
* Provide Steel Pile Points ("Metal Shoes" - cast steel) at
each Abutment. See Special Provisions.



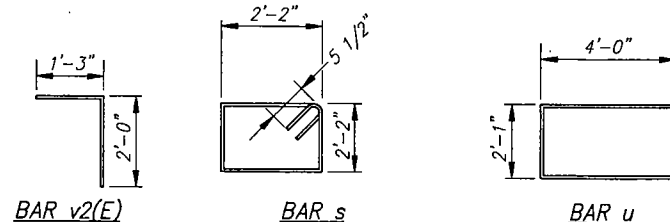
SECTION B-B



SECTION C-C

BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h	12	#5	10'-9"	—
h1	16	#5	2'-0"	—
h2	16	#5	8'-3"	—
p2	10	#7	15'-10"	—
p3	10	#7	18'-10"	—
s	34	#5	9'-7"	□
u	6	#6	10'-1"	—
v	64	#5	4'-4"	—
v1	16	#5	8'-0"	—
Reinforcement Bars			Lb.	1060
Class X Concrete			Cu. Yd.	11.2



ABUTMENTS

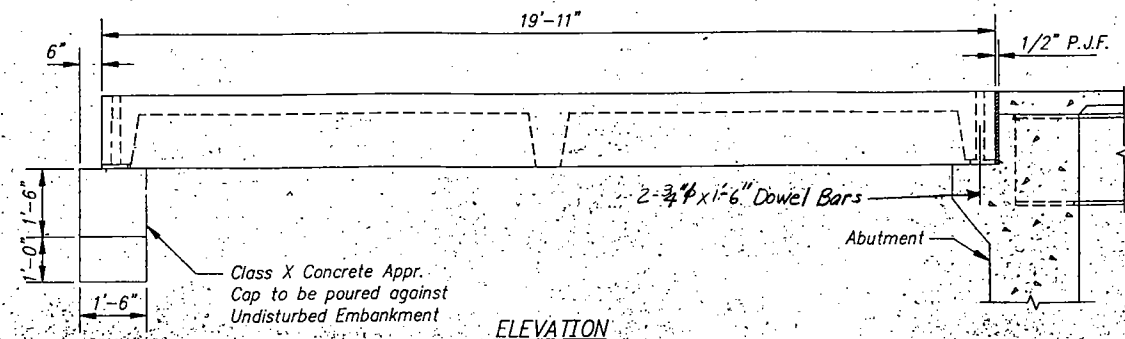
F.A.S. RTE. 1087 (IL. 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86 + 37.75

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

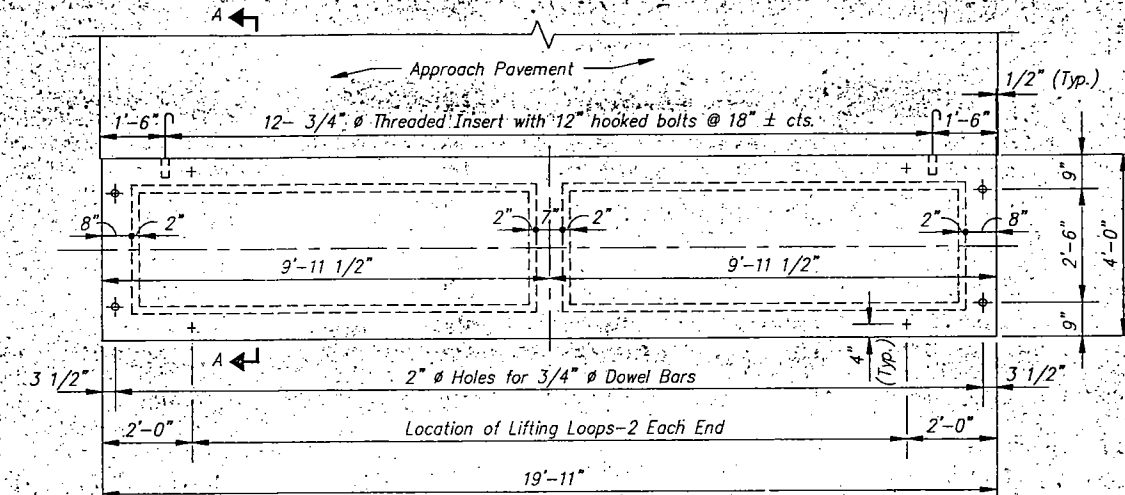
FILE NUMBER
DRAWN BY D.C.
CHECKED BY MR
APPROVED BY Dia

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

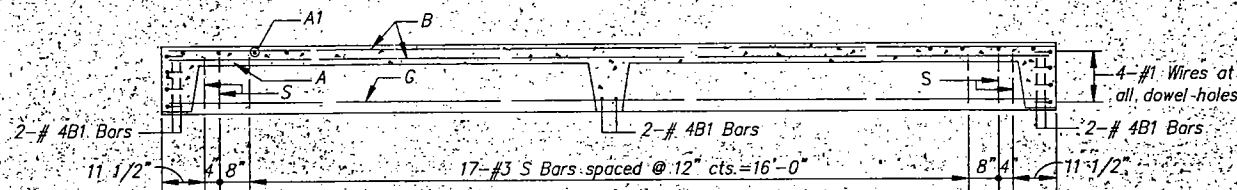
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FAS 1087	106 BR-2	STEPHENSON	20	II	11 SHEETS
FEDERAL ROAD DIST. NO. ILLINOIS FEDERAL AID PROJECT-					



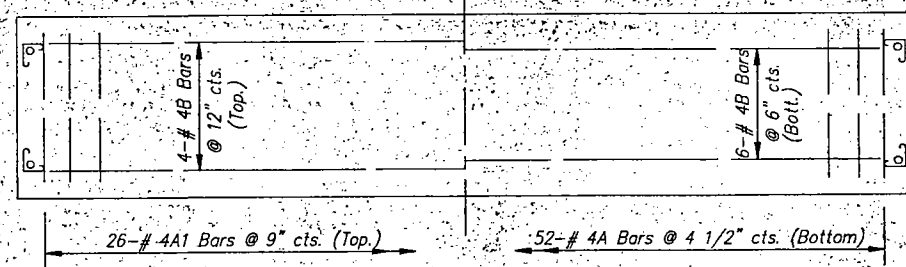
ELEVATION



PARTIAL PLAN OF APPROACH

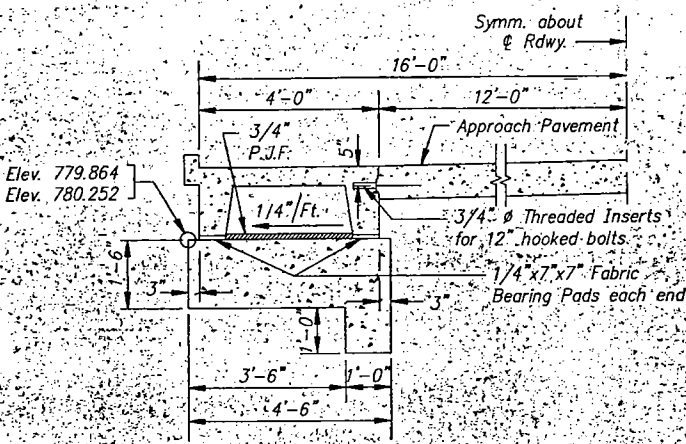


LONGITUDINAL SECTION

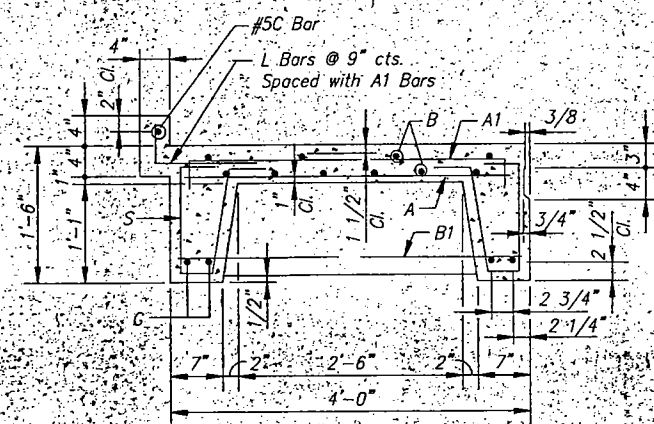


SLAB REINFORCEMENT

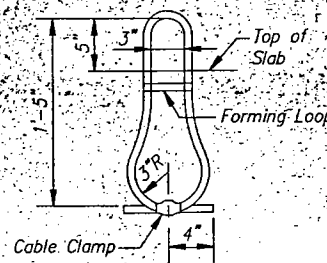
N.E. & N.W. Cap Elev. 779.864
S.E. & S.W. Cap Elev. 780.252



SECTION A-A



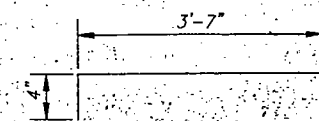
SECTION THRU PRECAST UNIT



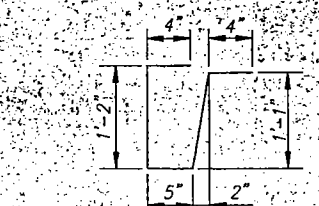
LIFTING LOOP DETAIL

BAR LIST - ONE UNIT
Reinforcement to be cast into slab

Bar	No.	Size	Length	Shape
A	52	#4	3'-8"	
A1	26	#4	4'-3"	
B	10	#4	19'-7"	
B1	6	#4	3'-6"	
C	1	#5	19'-7"	
L	48	#5	1'-8"	
G	4	#10	19'-7"	
S	42	#3	3'-4"	



BAR A1



BAR S

BAR L

BILL OF MATERIAL

Item	Unit	Quantity
Precast Concrete Bridge Slab	Sq. Ft.	320
Class X Concrete	Cu. Yd.	5.7

NOTES

Unless otherwise approved by the Engineer, lifting loops shall be 1/2" ϕ 6x25 class wire rope with fiber core and shall have a minimum ultimate strength of 21,000 lbs. Loops shall be burned off after slab has been erected. Holes shall be drilled and anchor dowels grouted in place. Cost of reinforcement and accessories cast into the slab unit, bearing pads, furnishing, drilling for, placing and grouting anchor dowels and 3/4" ϕ hooked bolts is included in Unit bid price for "Precast Concrete Bridge Slab." The Precast Concrete Bridge Slab shall be erected and aligned with the exterior face of the Bridge Parapet.

STRESSES

$f_c = 4500$ Psi
 $f_c = 1800$ psi
 $f_s = 20000$ psi
 $n = 8$

Loading HS-20

APPROACH DETAILS

F.A.S. RTE. 1087 (ILL. 73) SECTION 106 BR-2
STEPHENSON COUNTY
STA. 86+37.75

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

FILE NUMBER

DRAWN BY S.O.I. / DD

CHECKED BY GW

APPROVED BY DW

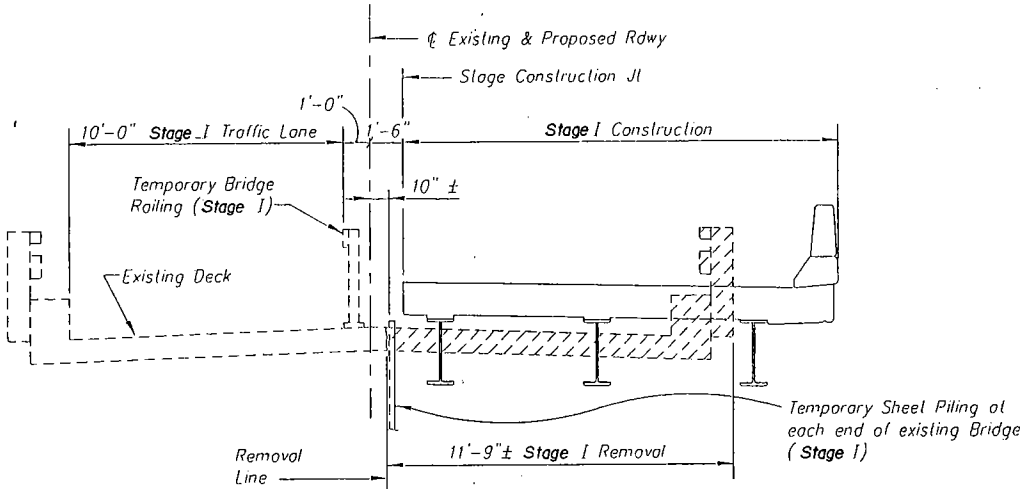
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

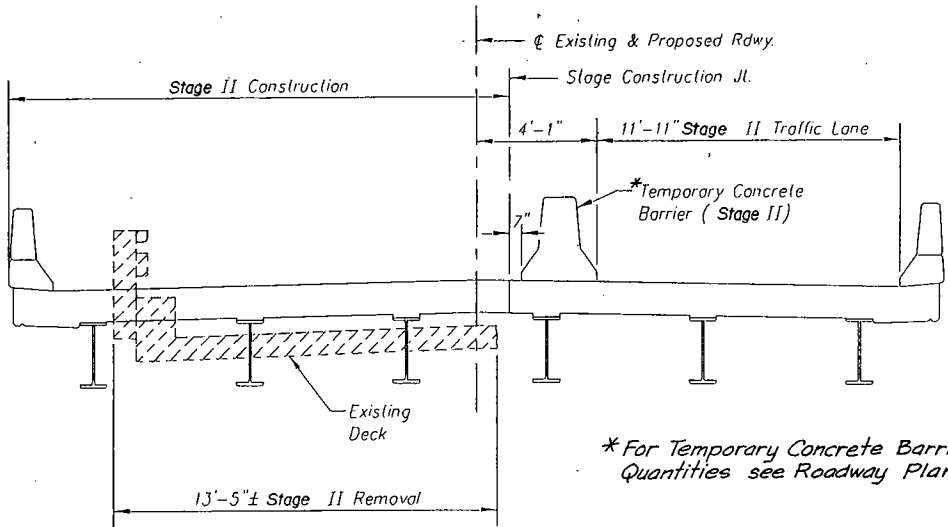
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FAS 1087	106 BR-2	STEPHENSON	20	12
FEDERAL ROAD DIST. NO.		ILLINOIS	FEDERAL AID PROJECT	

SHEET NO 8

11 SHEETS



STAGE I CONSTRUCTION
(Looking North)



*For Temporary Concrete Barrier
Quantities see Roadway Plans

STAGE II CONSTRUCTION
(Looking North)

Note: The temporary Bridge Rail erected during Stage I Construction shall not be removed until after the temporary concrete barrier for Stage II Construction has been erected and traffic routed through Stage II Roadway.

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

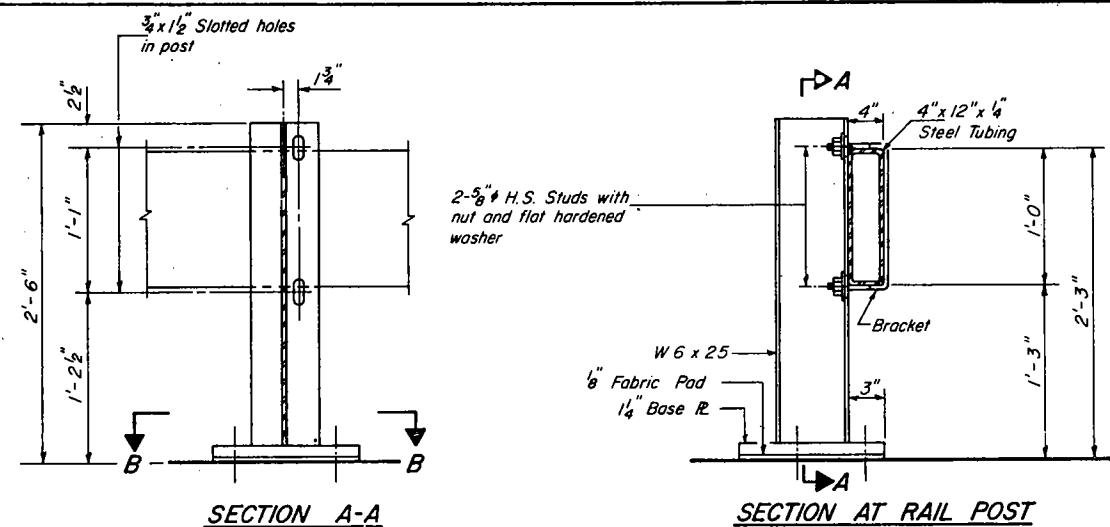
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DRAWN BY D.C.
CHECKED BY GW
APPROVED BY Dia

STAGE CONSTRUCTION DETAILS

F.A.S. RTE. 1087 (IL 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86 + 37.75

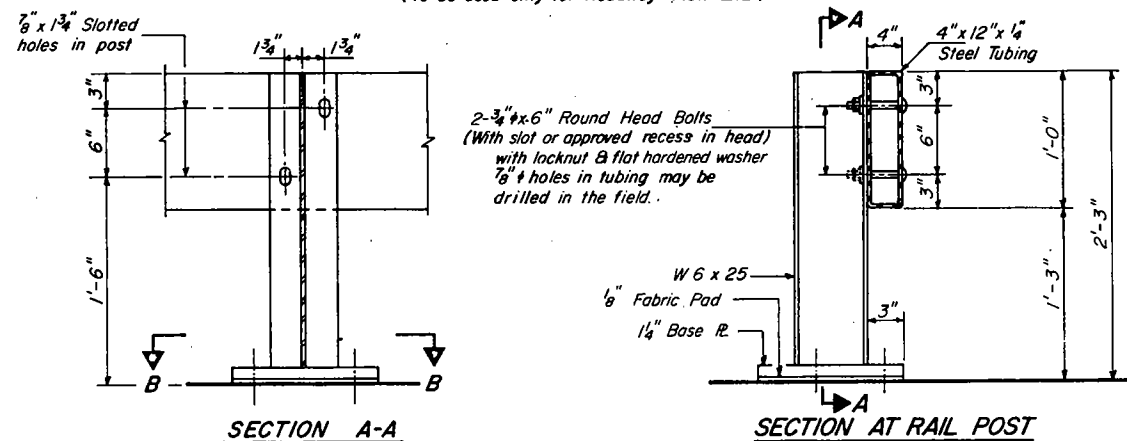
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO.
FAS 1087	BR-2	STEPHENSON	20	13	11
FED. ROAD DIST. NO. 7					

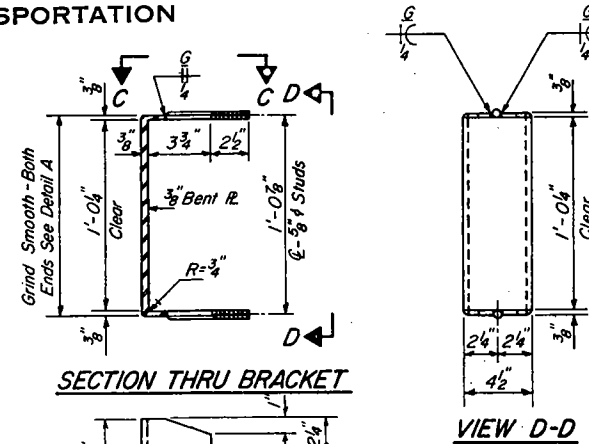
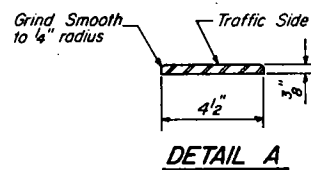
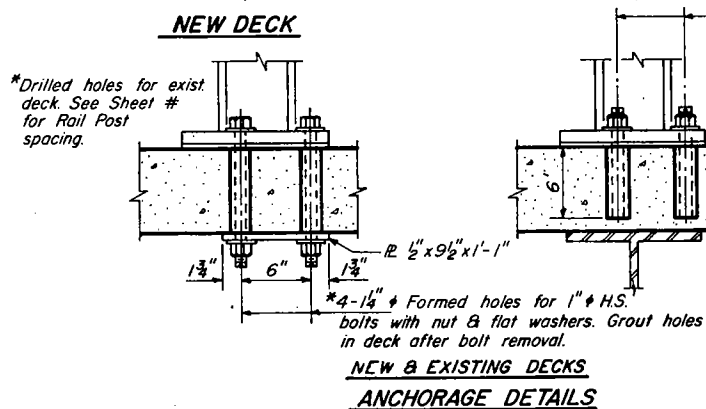
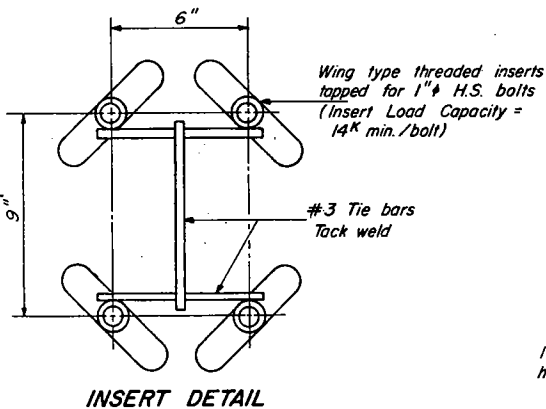
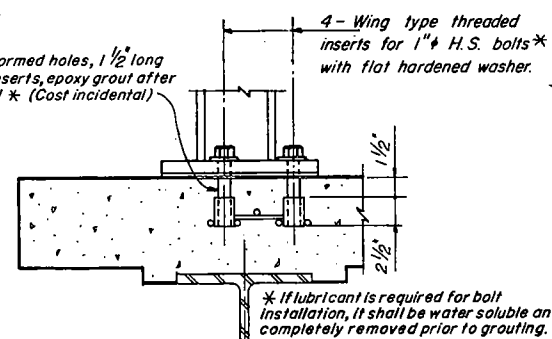
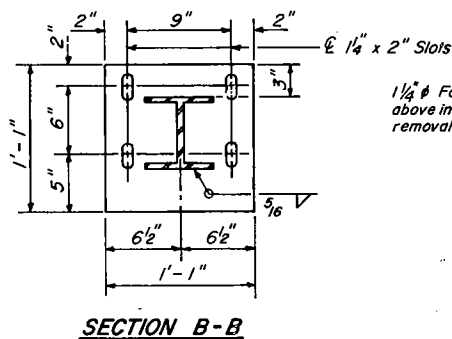


ALTERNATE I

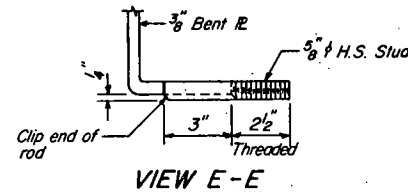
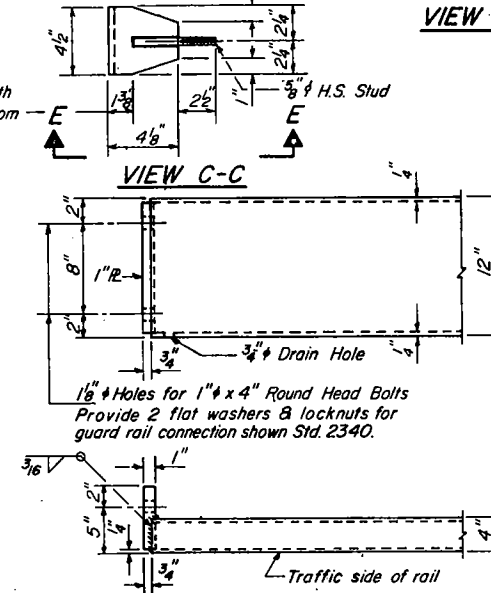
(To be used only for Roadway width $\geq 12'$)



ALTERNATE II

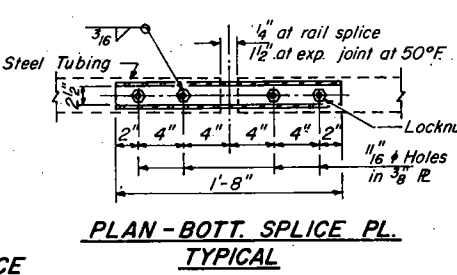
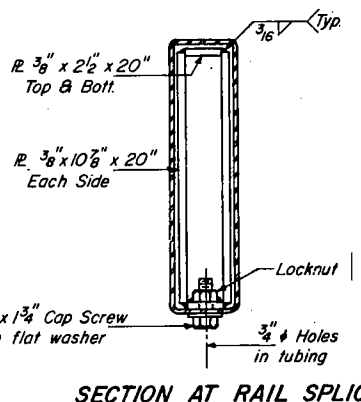
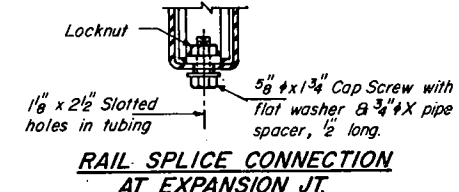
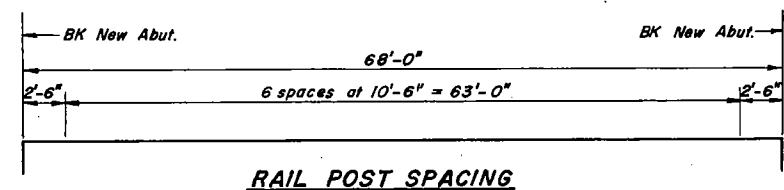


Grind Smooth Both Ends Top & Bottom See Detail A



NOTES

Hollow structural steel tubing shall conform to the requirements of A.S.T.M. designation A-500 Grade B Structural Steel Tubing.
All other steel shapes and plates shall conform to the requirements of A.A.S.H.T.O. M-183 except posts and brackets shall conform to A.A.S.H.T.O. M-223 Grade 50.
Bolts, cap screws, and nuts shall conform to the requirement of A.S.T.M. designation A-307 except for high strength bolts, threaded rods, studs, nuts and washers noted which shall conform to A.A.S.H.T.O. M-164.
The bridge rail shall receive one shop coat of a steel prime paint.
The 1 inch high strength bolts or threaded rods used to connect the railposts shall be tightened in accordance with Article 507.04(g)(3) of the Standard Specification.
See Special Provisions for Temporary Bridge Rail.
The contact surfaces between post flange, rail and inside face of bracket for Alternate J shall be free of all lubricants.
The nut for 5/8 inch high strength studs used in Alternate I to connect bracket to post shall be tightened to a snug fit and given an additional one half turn.



BILL OF MATERIAL

Item	Unit	Quantity
Temporary Bridge Rail	Lin. Ft.	68

TEMPORARY BRIDGE RAIL

F.A.S. RTE. 1087 (IL. 73) SECTION 106BR-2
STEPHENSON COUNTY
STA. 86 + 37.75

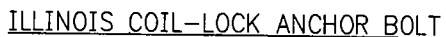
HAZELET + ERDAL, INC.
DRAWN BY EI
CHECKED BY GW
APPROVED BY D.H.A.

STATE OF ILLINOIS

D	E	H	K
1"	1 1/8"	13/16"	1 3/4"
1 1/2"	1 5/8"	1 5/16"	2 1/8"
2"	2 1/8"	1 13/16"	2 7/8"
2 1/2"	2 5/8"	2 5/16"	2 3/8"

SHEET NO. 10

11 SHEETS

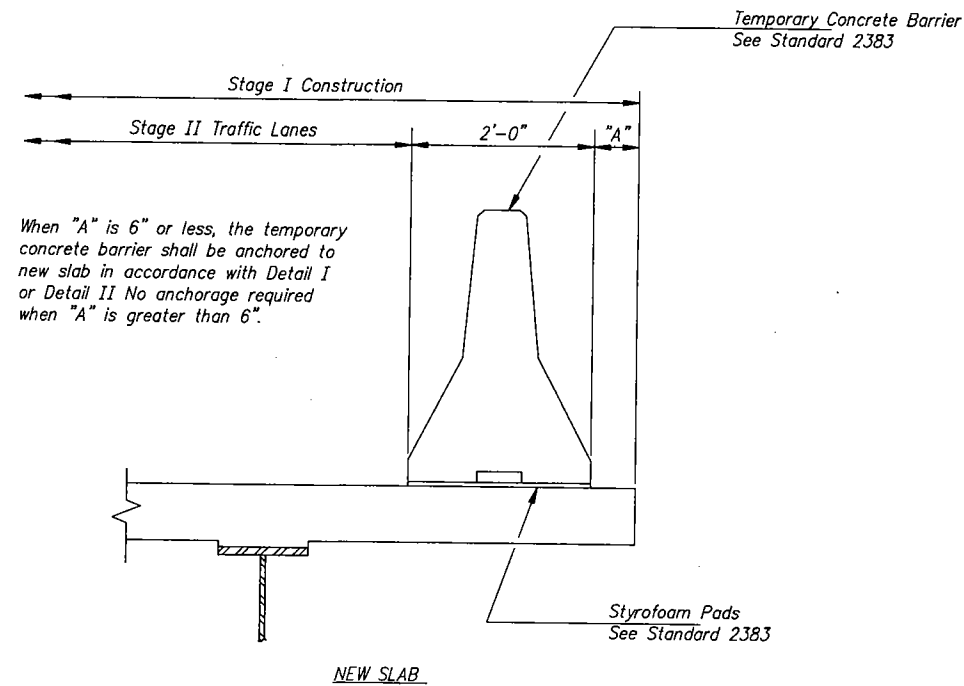


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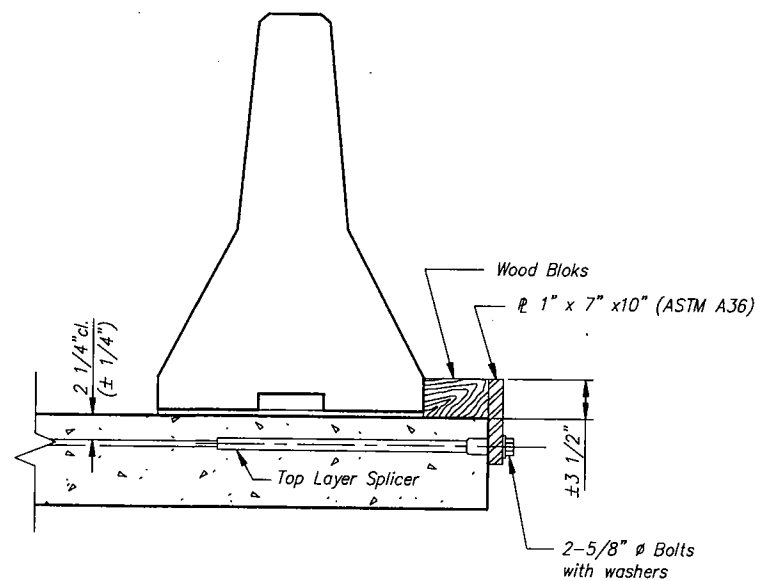
F.A.S. RTE. 1087 (ILL. 73) SECTION 106 BR-2
STEPHENSON COUNTY
STA. 86+37.75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO.
FAS 1087	106 BR-2	STEPHENSON	20	15	11
FEDERAL ROAD DIST. NO. ILLINOIS FEDERAL AID PROJECT-					

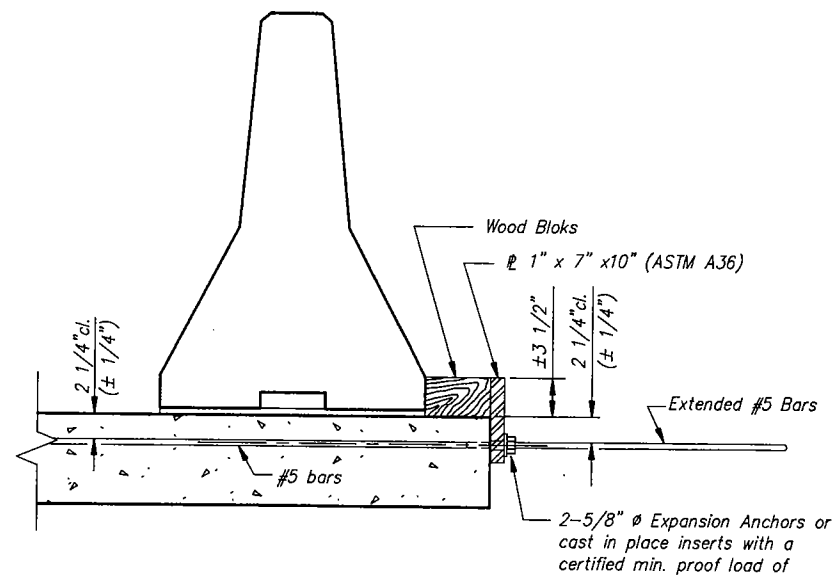


SECTIONS THRU SLAB



DETAIL I

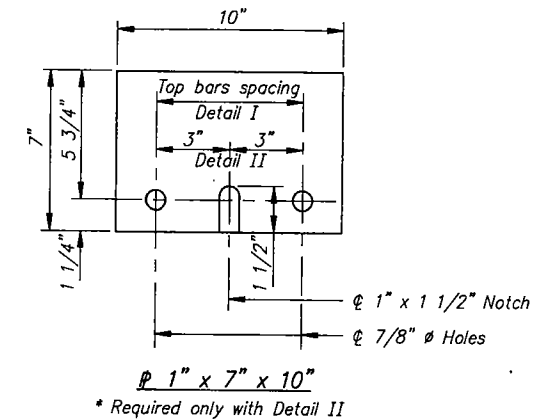
The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place.



DETAIL II

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed.

- NOTES**
- Detail I—With Bar Splicer or Couplers:
Connect one (1) 1" x 7" x 10" steel ϕ to the top layer of couplers with 2-5/8" ϕ bolts screwed to coupler at approximate ϕ of each 10'-0" barrier panel.
- Detail II—With Extended Reinforcement Bars
Connect one (1) 1" x 7" x 10" steel ϕ to the concrete slab with 2-5/8" ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate ϕ of each 10'-0" barrier panel.
- Cost of anchorage is incidental to Temporary Concrete Barrier.



1" x 7" x 10"
* Required only with Detail II

HAZELET + ERDAL, INC.
CONSULTING ENGINEERS

FILE NUMBER
DRAWN BY S.O.I.
CHECKED BY MEH
APPROVED BY [Signature]
2001/11/15/12-17-28

TEMPORARY CONCRETE BARRIER FOR
STAGE CONSTRUCTION

F.A.S. RTE. 1087 (ILL. 73) SECTION 106 BR-2
STEPHENSON COUNTY
STA. 86+37.75