STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	6		1	23

PROJECT NUMBER
BRF-44-2(13)--38-83

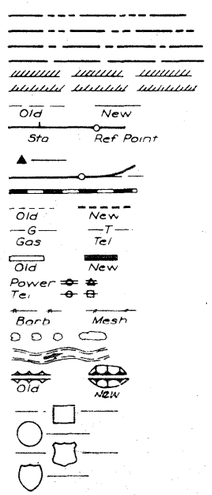
R.O.W. PROJECT NUMBER

BRIDGE
BRF-44-2(13)--38-83

SHELBY COUNTY
83-49-118
#2013

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line
Sec. Corner
Profile Grade
Railroad
Field Tile
Underground Lines
Culverts
Utility Poles
Fences
Trees Or Brush
Stream
Dike
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.



IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
SHELBY COUNTY
BRIDGE

ON IOWA #44 OVER W. NISHNABOTNA RIVER

SCALES AS NOTED

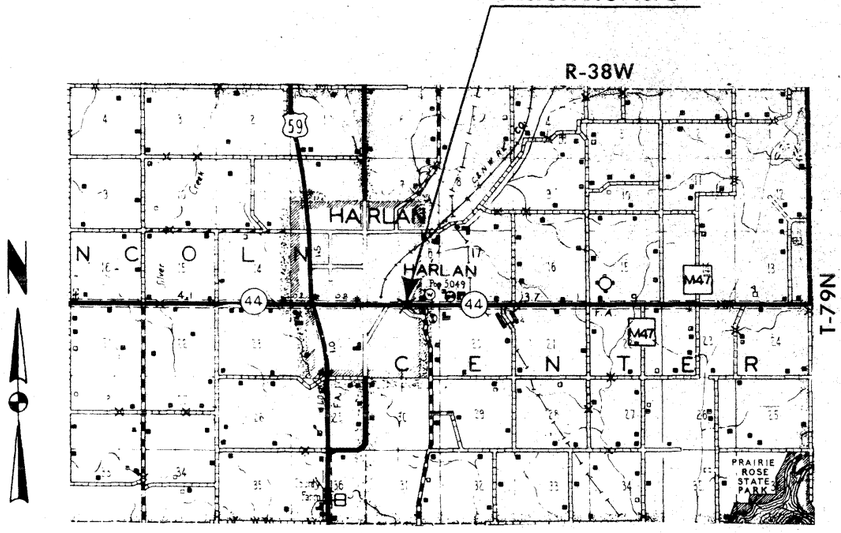
THE STANDARD SPECIFICATIONS, SERIES OF 1972,
OF THE IOWA STATE HIGHWAY COMMISSION,
SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

DESIGN STRESSES
Design stresses for the following materials are in accordance with AASHO's Standard Specifications for Highway Bridges, Series of 1973.

Concrete in accordance with Section 1.5.1., f'c=3,500 psi.
Reinforcing Steel in accordance with Section 1.5.1.(D), fs=20,000 psi.
Prestressed Concrete in accordance with Section 1.6.6., f'c=5,000 psi.
Prestressing Steel in accordance with Section 1.6.6., f's=270,000 psi.
Structural Steel in accordance with Section 1.7.1, ASTM A-36, f's = 20,000 psi.

DESIGN NO. 1875



LOCATION MAP

105.1
MILEAGE SUMMARY

DIV.	LOCATION	LIN. FT.	MILES
	Bridge at Sta. 673+11	295.43	.056

101-6
DESIGN DATA

RURAL			URBAN		
1977 AADT	1530	V.P.D.	1977 AADT	3590	V.P.D.
1997 AADT	2100	V.P.D.	1997 AADT	4950	V.P.D.
1997 DHV	243	V.P.H.	1997 DHV	504	V.P.H.
DIRECTIONAL	55	%	DIRECTIONAL	55	%
TRUCKS	9	%	TRUCKS	10	%
DESIGN V	55	M.P.H.	DESIGN V	35	M.P.H.
CLASS 4 ACCESS CONTROL			CLASS 4 ACCESS CONTROL		

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET
3-23	DESIGN NO. 1875

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: _____
Resident Construction Engineer
Date _____ Iowa Reg. No. 6028

REVIEWED AND FORWARDED TO AMES

James E. Klein
District Construction Engineer
Date 1/28/80

One Set Reproduced and Two Full-Size Prints To Be Made and Returned To

Von R. Snyder
District Engineer

AFTER MICROFILMING RETURN ORIGINAL TO DISTRICT NO. 4

THIS AS BUILT PLAN INCLUDES

YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1978	Bridge	A.M. Cohron & Son	M. Anderson

DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
STANDARDS REQUIRED (Available at Bridge Design Services)

STANDARD	ISSUED	REVISED
C4J	1959	10-10-72
CHP2.5-65	1765	8-25-67
C5J	1959	10-10-72
C3J	1959	10-10-72

-110-

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.

D. Pestotnik
2792 11-16-76
IOWA REGISTRATION NUMBER DATE

DEPARTMENT OF TRANSPORTATION IOWA — Highway Division

APPROVED 11/22/76
DEPUTY CHIEF ENGINEER DATE

U.S. DEPT. TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER DATE

MASTERS PRINTED

LETTING DATE JAN. 4, 1977 | STATE CONTROL SECTION NUMBER 83-0200 | FILE NO. 25682 | SHELBY COUNTY | PROJECT NO. BRF-44-2(13)--38-83 | SHEET NO. 1 OF 23

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Nov. 16, 1976 — William A. Lundquist — REG. NO. 4449

DATE — WM. A. LUNDQUIST

IN LETTING OF JAN. 4, 1977

DESIGN NO 1875 IA. 44 OVER W NISHNABOTNA RIVER STATION 673+11
SHELBY COUNTY

SECTION 19 T-79N R-38W CENTER TOWNSHIP

DESIGN FOR 45° SKEW

28'-0x44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES

NO.	ITEM		UNIT	TOTAL	
1	Concrete, Structural		Cu. Yd.	~~930.6~~ 987.4	
2	Steel, Reinforcing		Lbs.	~~167052~~ 166,994	
3	Steel, Structural		Lbs.	10709	
4	Pretensioned Prestressed Concrete Beams	D95	No	21	
5	HP 10x42 Steel Bearing Piling	Furnish	L.F.	~~4914~~	5050
		Drive	L.F.	~~4914~~	4960.4
6	Granular Backfill		Cu. Yd	246	
7	Excavation, Class 20		Cu. Yd	~~325~~	446.6
8	Excavation, Class 21		Cu. Yd.	302	
9	Subdrain		L.F.	~~191~~	181
10	Bridge Seat Sealer		Sq. Ft.	~~745~~	613.01
11	Bridge Floor Surfacing		Sq. Yd.	~~1404~~	1421.6
12	Removal of Existing Structure		L.S.	lump sum	
13	2"ø Rigid Steel Conduit		L.F.	658	
8001	Retarder (Test area)		Cu. Yd.	364.4	
8002	Special Shaping Rip-rap		Ton	lump sum	
8003	Excavation for Rip-rap		Cu. Yd.	42.7	
8004	Piling Furnished Ext.		Ensola	lump sum	
8005	Pile Load Test		L.S.	lump sum	
8006	Welds		Each	20	

ESTIMATE REFERENCE INFORMATION

100.4

Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
1	Includes 467.4 (4773) Cu. Yd. Class D Structural Concrete for Superstructure, and 523.2 Cu. Yd. Class C Structural Concrete for Substructure.
3	Quantity includes 255 lbs. of lubricated bronze PL.
13	Quantity includes 652 L.F. of 2"ø conduit and 6 L.F. of 1"ø conduit.

FOUNDATION NUMBER	PILING LOG	KIND OF PILING
~~East Abutment~~ West Abutment		HP 10 42 H

For layout of both abutments see sheet 6 of 23

West Abutment

PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
1b	52.4	23.2
2b	52.4	30.2
3b	52.3	20.4
4b	52.3	22.3
5b	52.4	24.2
6b	52.3	19.2
7b	52.3	19.8
8b	52.1	21.1
9b	52.1	18.7
10b	51.8	19.8
11	52.6	20.4
12	52.4	18.7
13	52.3	21.8
14	52.2	21.1
15	52.1	19.0
16	52.2	21.8
17	52.1	19.2
18	52.6	17.2
19	52.3	18.7
20	53.0	21.1
21b	53.0	22.3

East Abutment

PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
1b	50.0	21.4
2b	50.4	15.8
3b	50.5	16.5
4b	49.6	17.4
5b	49.7	19.5
6b	50.0	19.5
7b	49.8	18.4
8b	50.2	15.8
9b	50.4	18.9
10b	50.6	16.5
11	50.6	16.5
12	50.4	16.5
13	50.6	15.6
14	50.4	22.1
15	50.1	17.0
16	50.5	22.1
17	50.6	20.7
18	50.5	17.4
19	49.8	20.7
20	50.3	20.0
21b	50.0	22.8

FOUNDATION NUMBER	PILING LOG	KIND OF PILING
Pier #1 & Pier #2.		HP 10 42 H

Pier #1 see sheet 9 of 23 for Piling layout

Pier #2 see sheet 10 of 23 for Piling Layout

Pier #1

PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
1b	34.1	20.5
2b	34.0	21.1
3b	34.0	23.1
4b	34.0	22.4
5b	34.4	25.6
6b	34.4	26.6
7b	34.1	24.7
8b	34.2	32.6
9b	34.2	34.2
10b	34.2	28.7
11	34.0	39.9
12	34.2	27.9
13	34.3	33.0
14	34.4	26.2
15b	32.8	55.2
16b	34.2	27.6
17	34.2	29.2
18	34.2	38.7
19	34.1	29.7
20	34.4	33.0
21	34.4	32.3
22	34.3	30.3
23	34.2	28.1
24b	34.1	26.6
25b	34.1	37.8
26	34.2	36.1
27	34.2	39.9
28	34.3	33.0
29	34.0	36.1
30b	34.2	33.4
31b	34.0	32.6
32b	34.1	34.2
33b	34.1	32.6
34b	34.2	32.6
35b	33.5	34.2
36b	34.2	35.0
37b	34.3	35.0

Pier #2

PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
38b	34.4	34.2
39b	34.2	34.2
1b	33.9	35.2
2b	33.7	41.0
3b	33.7	47.2
4b	33.6	44.8
5b	33.6	41.0
6b	33.9	32.8
7b	33.8	41.0
8b	33.5	44.8
9b	33.4	43.8
10b	33.1	51.3
11	33.0	51.3
12	32.5	37.0
13	34.0	37.0
14	34.1	37.0
15b	33.8	34.5
16b	33.6	37.8
17	33.7	44.6
18	33.7	41.0
19	33.8	42.6
20	34.0	36.9
21	33.9	41.1
22	33.7	35.3
23	33.0	36.4
24b	33.6	42.2
25b	33.7	37.8
26	33.0	46.0
27	33.9	36.9
28	33.3	44.6
29	33.2	42.1
30b	32.5	42.2

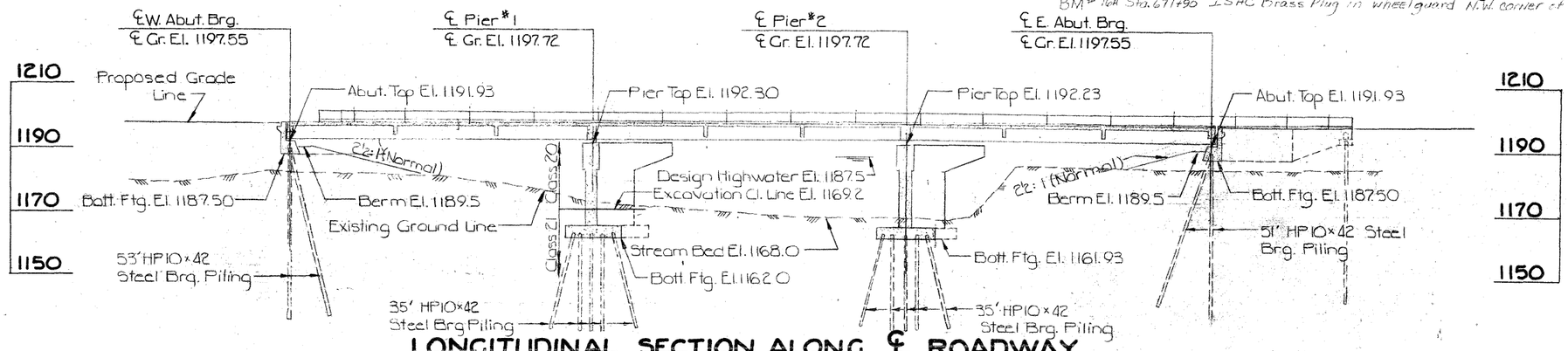
ESTIMATE SHEET

FILE NO. 25682 SHELBY COUNTY

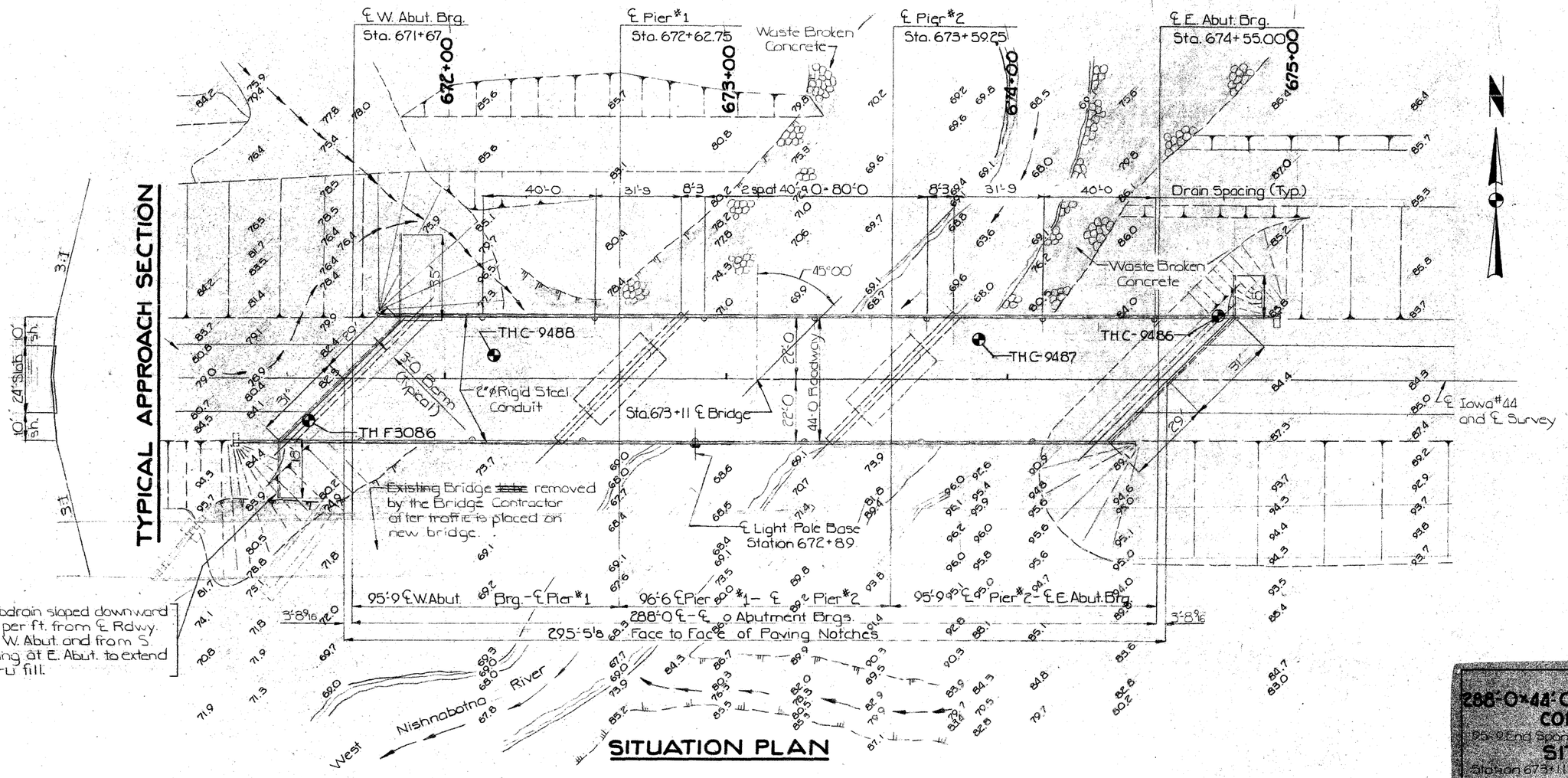
PROJECT NUMBER BRF-44-2(12)--38--83

STATE	FED ROAD DIST NO	FISCAL YEAR	SHEET NO	SHEETS
...	...	...	2	23

B.M. #17 Sta. 673+56, Rt. 70' "X" on S.E. Cor. of wheelguard of High truss Br. El. = 1197.53
B.M. #16A Sta. 671+90 ISHC Brass Plug in wheelguard N.W. corner of Bridge El. = 1200.07



LONGITUDINAL SECTION ALONG ℄ ROADWAY

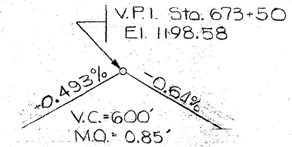


TYPICAL APPROACH SECTION

SITUATION PLAN

I.N.R.C.

Approval Nº 75-109
Dated May 5, 1975



PROPOSED GRADE ON IOWA #44

TRAFFIC COUNT

3700 V.P.D. - 1993

HYDRAULIC DATA

Drainage Area = 330 sq. mi.
Q_{50} = 17,500 cfs.
Q_{100} = 20,500 cfs.
Q_{50} Natural Stage = 1186.3
Q_{100} Natural Stage = 1187.5
Extreme Highwater = 1189.76
Discharge 27,000 c.f.s.
Date of Occurence Sept., 1972

LOCATION

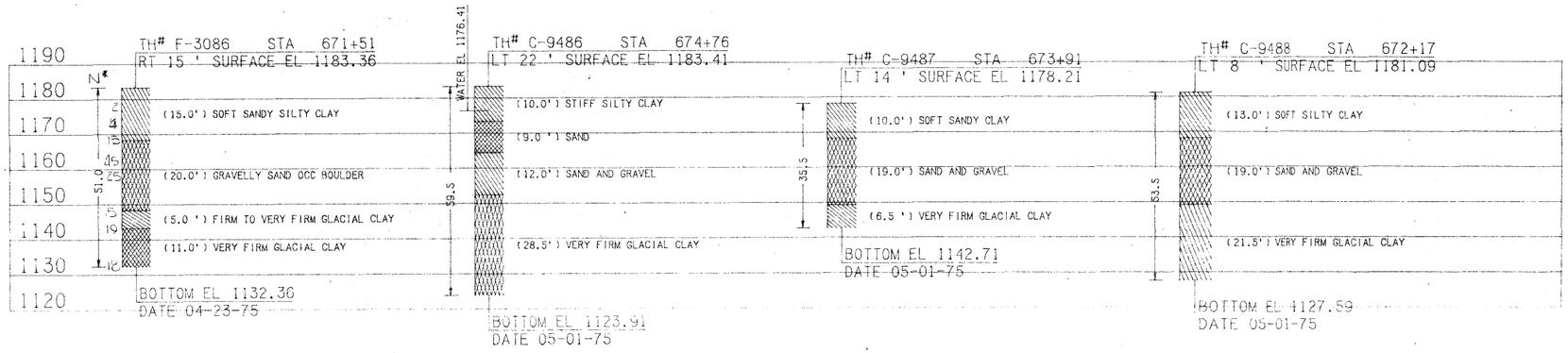
Iowa #44 over
West Nishnabotna River
Section 19
T-79N R-38W
Center Twp.
Shelby County

Design for 45° Skew
288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
95'-9 End Spans 96'-6 Center Span
SITUATION PLAN
Station 673+11
April, 1976
SHELBY COUNTY
Iowa Department of Transportation, Highway Division
Design Sheet No.: 1 Of 20 File No.: 25662 Design No.: 1875

DESIGNED BY: R. P. Henning
DETAILED BY: C. F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Reece
Section Leader William A. Lundquist
Shelby COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
				2	23

~~Bench Mark Nº 17 Sta 673+56 Rt 70' "X" on S.E. Cor. of wheelguard of High Truss Br. El 1197.53~~
Bench Mark Nº 16A Sta. 671+90 ISHC Brass Plug in wheelguard N.W. corner of Bridge El.= 1200.07



SOUNDING DATA

*N= Number of blows / ft.

TOTAL ESTIMATED QUANTITES

Item Nº	Item		Unit	2 Piers	2 Abuts.	Superstr	Total	
1	Structural Concrete		Cu.Yd.	361.8	161.4	~~467.4~~ 464.2	~~990.6~~ 987.4	
2	Reinforcing Steel		Lbs.	56462	16474	~~94096~~ 94058	~~167032~~ 166994	
3	Structural Steel		Lbs.	———	———	10709	10709	
4	Pretensioned Prestressed Concrete Beams	D95	No.	———	———	21	21	
5	HP10×42 Steel Bearing Piling	Furnish	L.F.	78 at 35	2 at 53; 2 at 51	———	4914	5050
		Drive	L.F.	78 at 35	2 at 53; 2 at 51	———	4914	4960.4
6	Granular Backfill		Cu.Yd.	———	246	———	246	
7	Class 20 Excavation		Cu.Yd.	91	234	———	~~325~~	446.6
8	Class 21 Excavation		Cu.Yd.	302	———	———	302	
9	Subdrain		L.F.	———	———	———	~~191~~	181
10	Bridge Seat Sealer		Sq.Ft.	———	540	203	~~743~~	623.01
11	Bridge Floor Surfacing		Sq.Yd.	———	———	1404	~~1404~~	1421.7
12	Removal of Existing Structure		L.S.	———	———	———	Lump Sum	
13	2"ø Rigid Steel Conduit		L.F.	———	———	———	658	

ESTIMATE REFERENCE INFORMATION

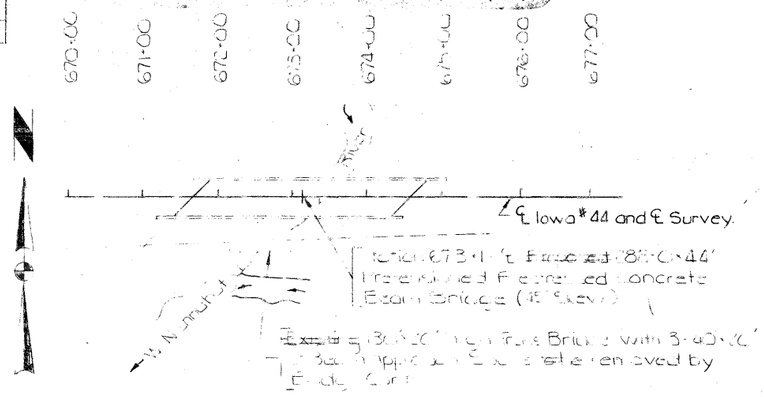
Item Nº 1 Includes ~~467.4~~ Cu.Yd. Class D Structural Concrete for Superstructure, and 523.2 Cu.Yd. Class C Structural Concrete for Substructure.
3 Quantity includes 255 lbs. of lubricated bronze PL
13 Quantity includes 652 L.F. of 2"ø conduit and 6 L.F. of 1"ø conduit.

SPECIFICATIONS:

Design: AASHO series of 1973.
Construction: Iowa State Highway Commission Standard Specifications, Series of 1972, with current Supplemental Specifications, and Special Provisions of the Iowa Department of Transportation - Highway Division.

DESIGN STRESSES:

Design stresses for the following materials are in accordance with A. A. S. H. O. Standard Specifications for Highway Bridges, Series of 1973.
Concrete in accordance with Section 1. 5. 1(C), f'c = 3500 psi.
Reinforcing Steel in accordance with Section 1. 5. 1(D), fs = 20, 000 p. s. i.
Prestressing Steel in accordance with Section 1. 6. 6(A), f's = 270, 000 p. s. i.
Prestress Concrete in accordance with Section 1. 6. 6(B), f'c = 5000 p. s. i.
Structural steel in accordance with Section 1. 7. 1 ASTM A-36, fs=20, 000 psi.



GENERAL PLAN

GENERAL NOTES:

This bridge is designed for HS20-44 loading plus an allowance of 20 lbs. per square foot of roadway for future wearing surface.

The bridge contractor is to remove the existing bridge (Shelby Co. Design No. 1930 and 1851) after the proposed bridge is completed and open to traffic. The existing bridge is a 130' x 20' High Truss Bridge with 3 - 40' x 20' I-Beam approach spans. The existing bridge has a concrete floor and concrete piers and abutments. The bridge was built under design no. 1930 and an additional East approach span was added under design no. 1851. Copies of the original design plans will be available to the contractor at the Ames office of the D. O. T., Highway Division.

The bid item "Removal of Existing Structure" shall include all costs associated with removing the existing bridge. The existing piers are to be removed down to a point 1'-0 below streambed elevation, and the existing abutments removed to a point 1'-0 below final ground line (Elev. 1190.0±).

Broken concrete removed from the existing bridge shall be wasted on the stream banks as shown on the "Situation Plan" on Des. Sh. 1. All exposed reinforcing bars are to be cut flush. The cost of placing the broken concrete is to be included in the price bid for "Removal of Existing Structure."

Removal of the existing structure shall be in accordance with Section 2401 o of the Standard Specifications. All structural steel removed from the existing bridge (approximately 213, 445 lbs.) is to become the property of the bridge contractor and removed from the site by him.

The approach fills as shown are not a part of this contract, but are to be in place before abutment piles are driven. The bridge contractor is to level off and shape the berms to the elevations and dimensions shown. In shaping the berm at the South wing of the East abutment, the contractor need only meet the existing roadway embankment which will remain in place after removal of the existing bridge and be used for borrow at a future date. Dressing of slopes outside the bridge area not disturbed by the Bridge Contractor shall be paid for as extra work.

The Bridge Contractor is to install subdrain behind each abutment as detailed. The subdrain may be either drain tile or perforated plastic pipe with a minimum nominal diameter of 4" and a maximum nominal diameter of 6". The price bid for "Subdrain" is to include the excavation necessary for the installation.

Bridge seat sealer is to be applied to the exposed bridge seat surface at the abutments. The bridge seat surface is to include all surfaces of the bridge seat steps, the wash between steps, and the edge fillets. The sealer is to extend six inches up the front face of the backwall. The sealer is also to be applied to the top of the backwall and the strip of concrete adjacent to the expansion device as shown on sheet 12, and also to the depressed area around the drains as shown on sheet 11. The bridge seat protective coating shall be an approved sealer per Materials I. M. 491. 12 and applied in accordance with the Manufacturer's recommendations at a rate of 100 square feet per gallon when the temperature of the concrete surface is above 60° F.

The existing roadway will be open to traffic during construction. The Contractor is to take all necessary precaution that equipment and operations does not interfere with traffic on the existing roadway.

Red lines on tracings and faint lines on prints indicate existing structure.

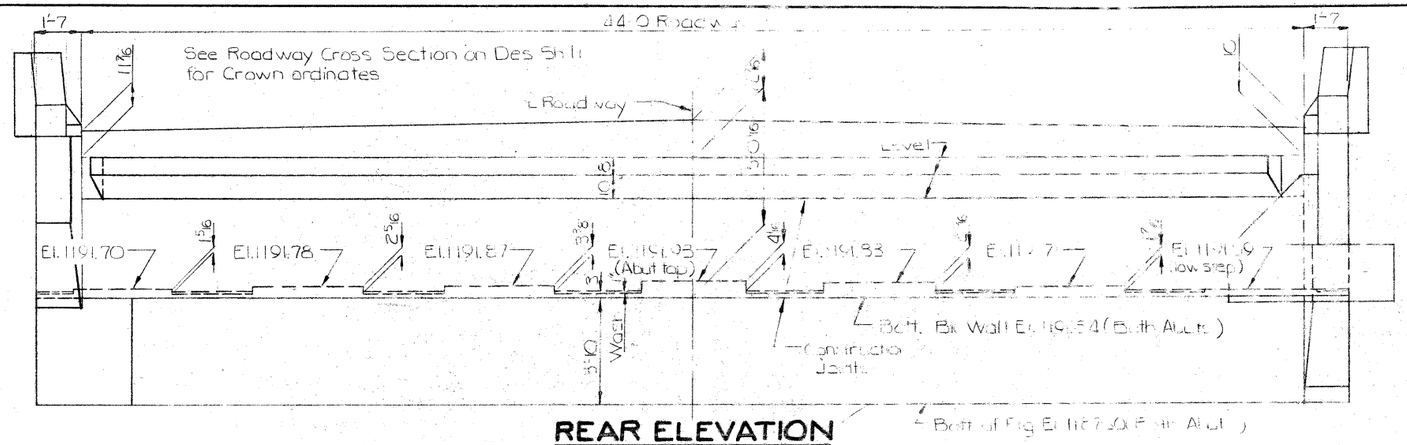
Design for 45°Skew
288'-0×44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
95'-9 End Spans 96'-6 Center Span
SOUNDING DATA AND GENERAL NOTES
Station 673+11 April, 1976
SHELBY COUNTY
Iowa Department of Transportation, Highway Division
Design Sheet No.: 2 of 20 File No.: 25682 Design Nº 1875

DETAILED BY: C.F. Bellamy CHECKED BY: Gary A. Novey
DESIGNED BY: R.A. Henning TRACED BY: ———

Shelby COUNTY

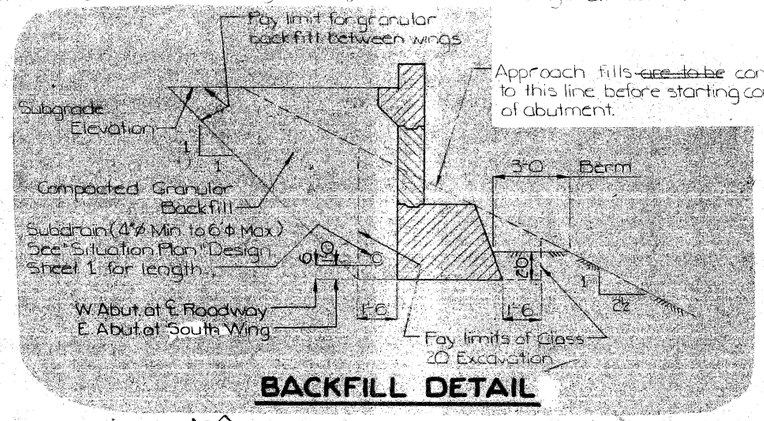
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		4	23

~~Bench Mark No 17 Sta 673+56 Rt 20' "X" on S.E. Cor of wheelguard of High Truss Br El 1197.53~~
Bench Mark No. 16A Sta 671+90 I.S.H.C. Brass Mug in wheelguard 4 R.W. center of Bridge El. = 1200.07

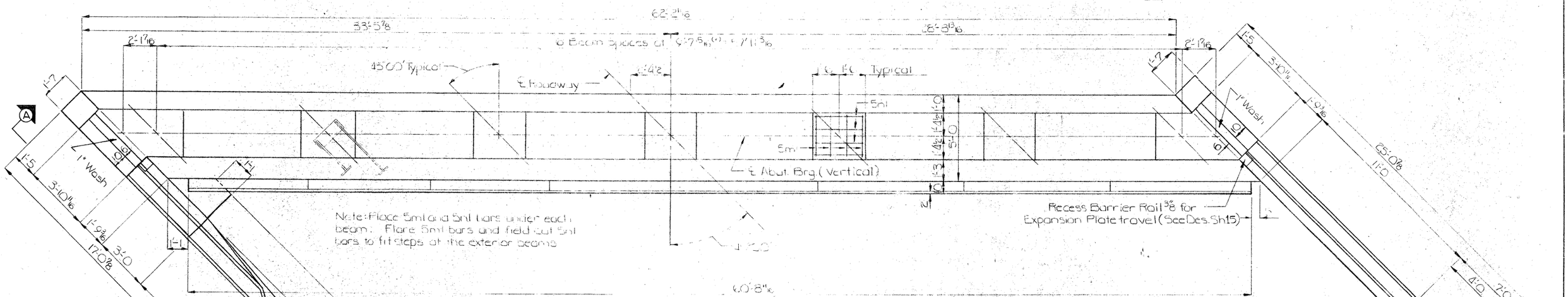


REAR ELEVATION

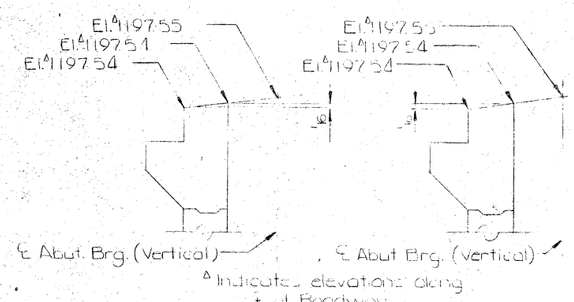
(Note: Step elevations are same for both abutments)



BACKFILL DETAIL

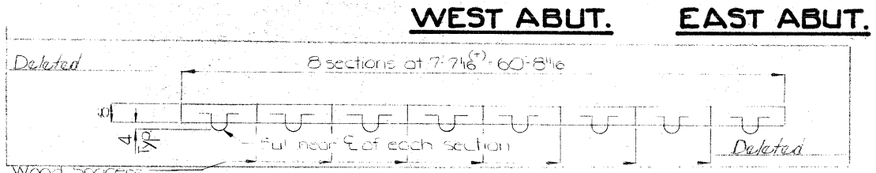


PLAN VIEW

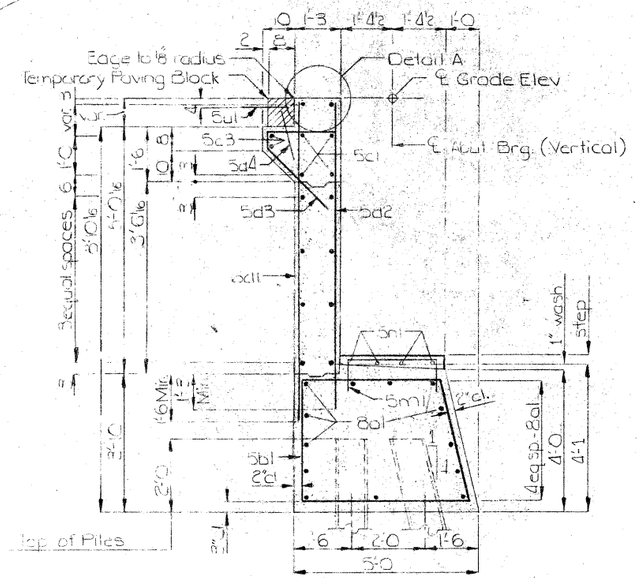


DETAIL A WEST ABUT.

DETAIL A EAST ABUT.



PAVING BLOCK DETAIL



SECTION THRU ABUTMENT

Note: See Des. Sh 5 for Views A-A and B-B

Design for 45° Skew

288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

ABUTMENT DETAILS

Station 673+11 April , 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

Design Sheet No.: 3 Of 20 File No.: 25682 Design No.: 1875

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		5	23

DESIGNED BY: R.B. Manning
DETAILED BY: C.F. Bellamy
TRACED BY:
CHECKED BY: Glenn A. Reeves

Shelby COUNTY

ABUTMENT NOTES:

All exposed corners 90° or sharper are to be filleted with a 3/4" dressed and beveled strip.

Reinforcing steel is to be securely wired in place before concrete is poured.

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

All backfill behind the abutment between wings is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil.

Cost of preformed exp. joint matl. is to be included in price bid for concrete.

The Maskwall is to be poured before the superstructure slab is poured.

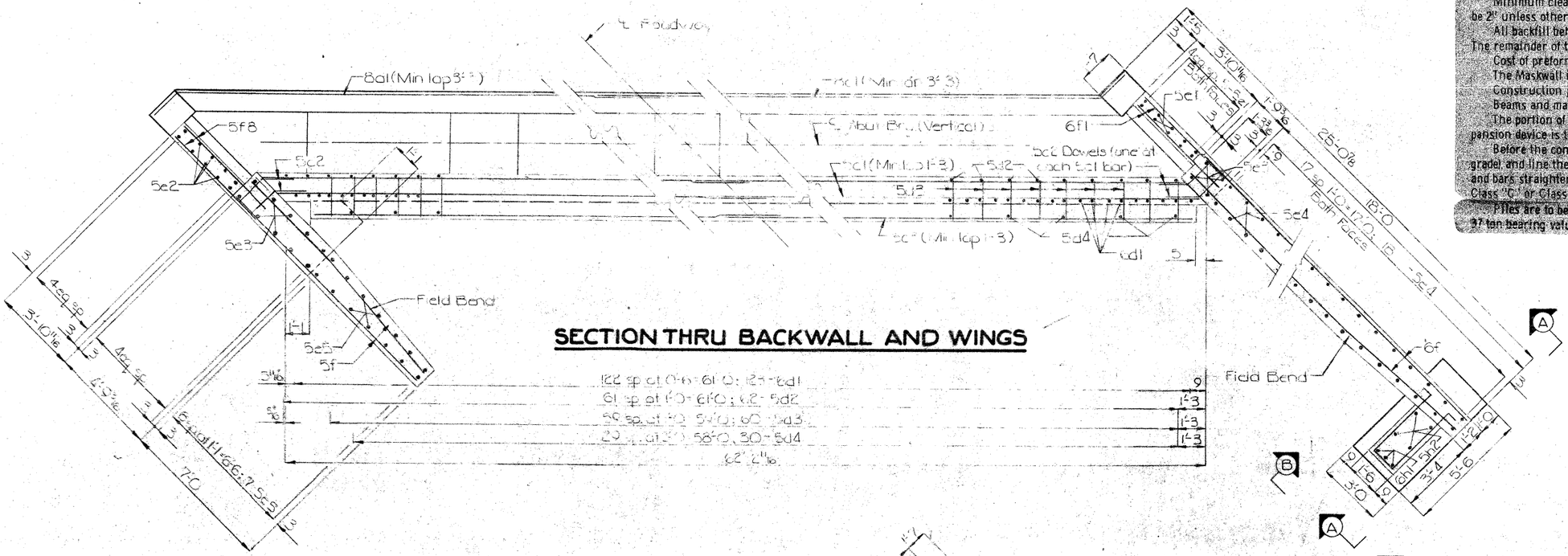
Construction joint keyways are to be formed with beveled 2 x 6's.

Beams and masonry plates are to be set before backwall is placed.

The portion of the backwall containing the abutment anchorage of the expansion device is to be poured after the superstructure slab is placed.

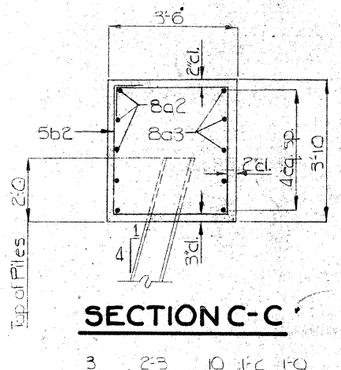
Before the concrete paving block is poured bend down dowels (structural grade) and line the notch with tarpaper to prevent bond. Block is to be removed and bars straightened before pavement is placed. Paving block may be made of Class "C" or Class "D" concrete.

Piles are to be driven to full penetration if practicable but to at least 37 ton bearing value per pile.

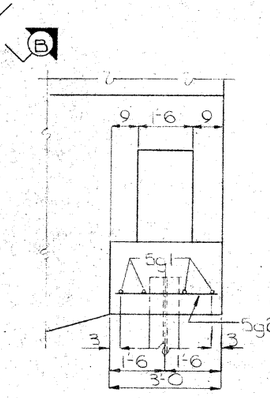


SECTION THRU BACKWALL AND WINGS

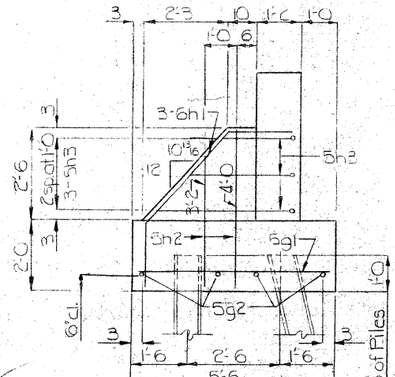
122 sp. at 0'-6 = 61'-0 ; 123 - 5d1
61 sp. at 1'-0 = 61'-0 ; 62 - 5d2
59 sp. at 1'-0 = 59'-0 ; 60 - 5d3
29 sp. at 2'-0 = 58'-0 ; 30 - 5d4
62' 2 1/16



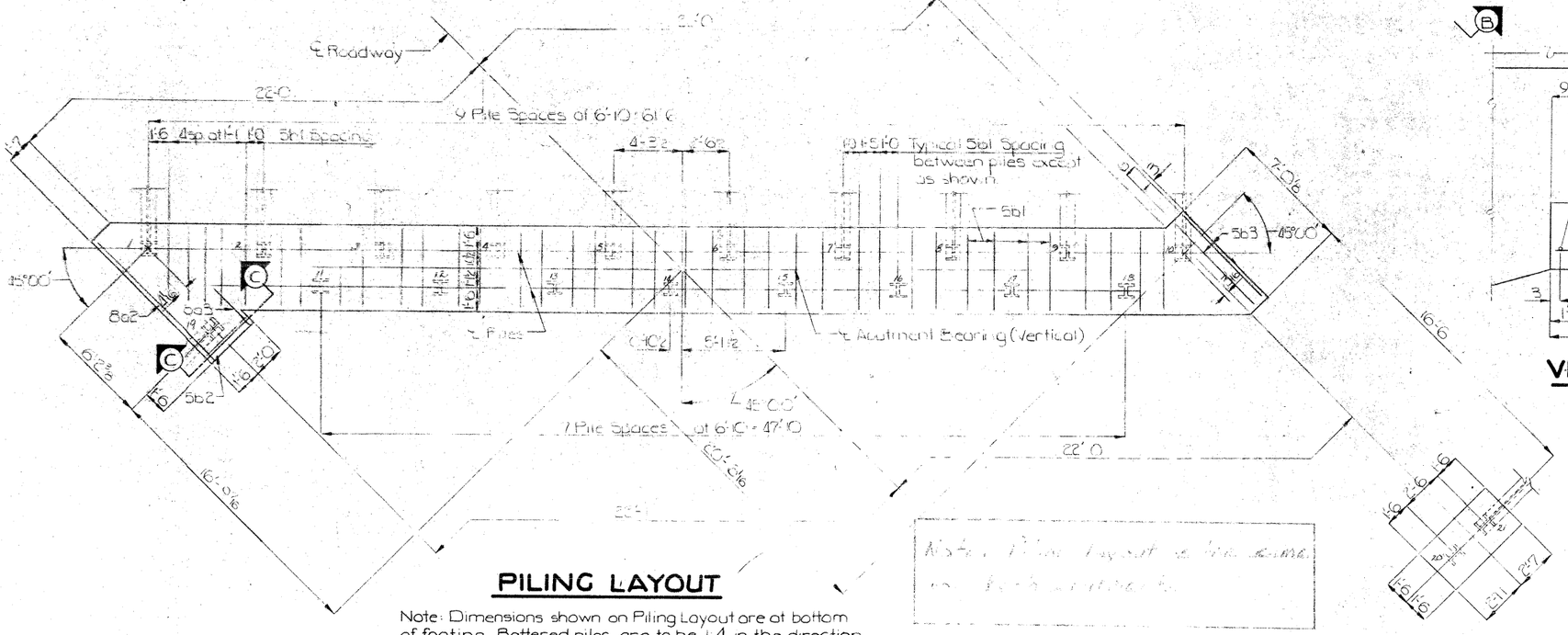
SECTION C-C



VIEW B-B



VIEW A-A



PILING LAYOUT

Note: Dimensions shown on Piling Layout are at bottom of footing. Battered piles are to be 1:4 in the direction shown.

21-53' HP10×42 Steel Piling required at the West Abut. Ftg.

21-51' HP10×42 Steel Piling required at the East Abut. Ftg.

Design for 45° Skew

288'-0×44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

ABUTMENT DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

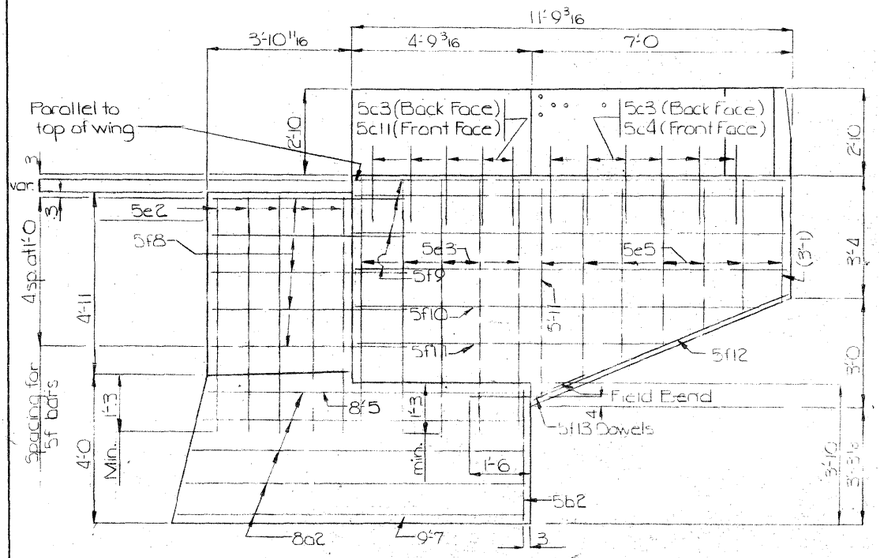
Design Sheet No.: 4 Of 20 File No.: 25682 Design No.: 1875

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		6	23

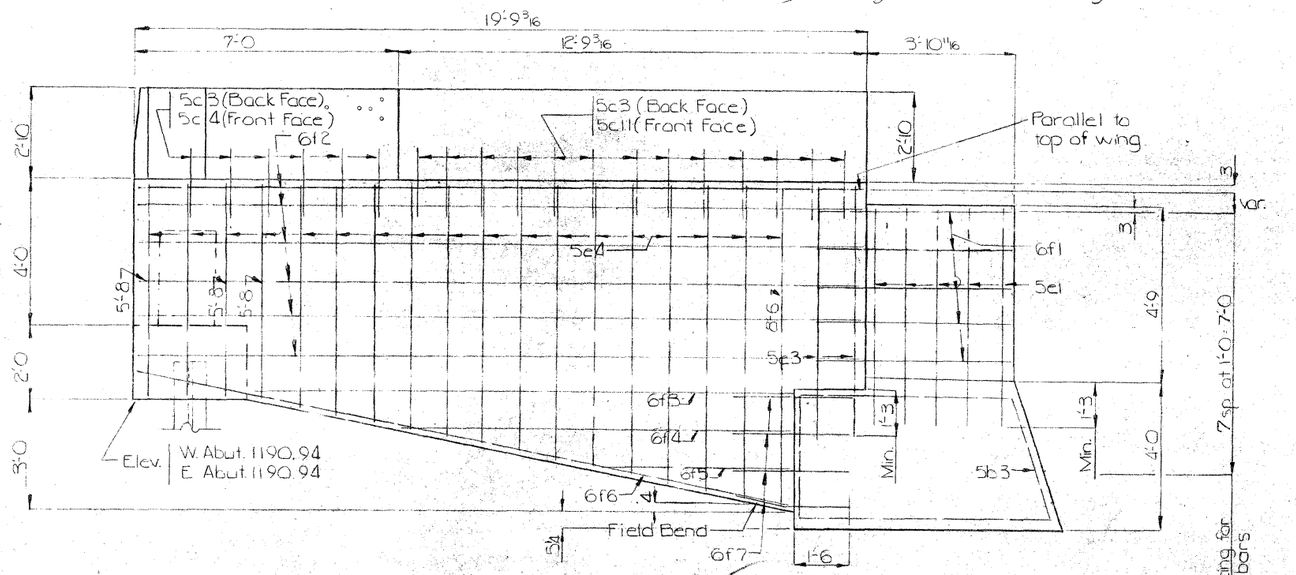
DESIGNED BY: R. A. Nenning
DETAILED BY: C. F. Bellamy
TRACED BY:
CHECKED BY: Glenn A. Rowen

Shelby COUNTY

B.M. #17 Sta. 673+56 Rt. 70' "X" on S.E. Cor. of wheelguard of High truss Br. El. 1197.53
B.M. #16A Sta. 671+90 1 3/4" Brass Plug in wheelguard N.W. corner of Bridge El. 1200.07

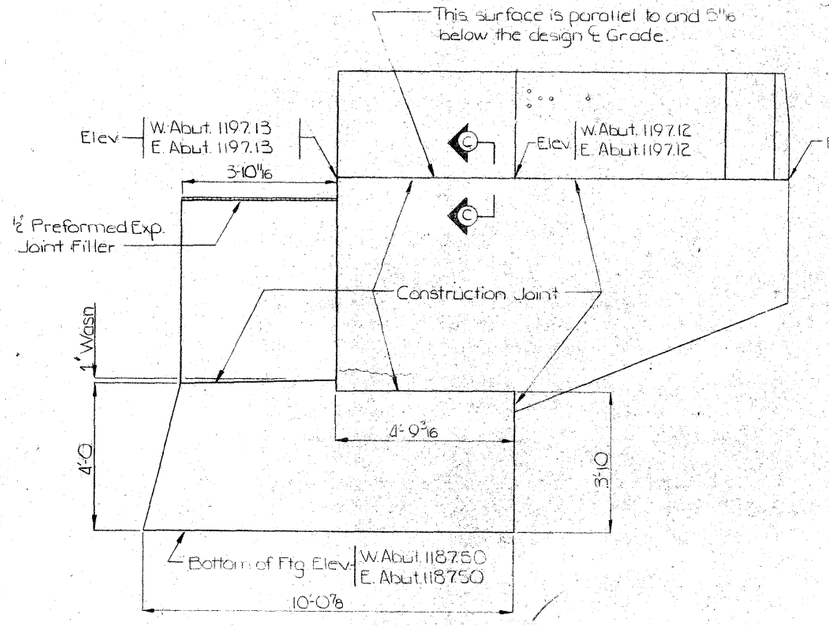


VIEW A-A



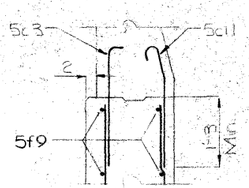
VIEW B-B

Note: See Des. Sh. 18 for details of barrier rail. Reinforcing bars 5c3, 5c4 and 5c11 are included in barrier rail quantities. See Des. Sh. 18 for spacing of 5c bars.

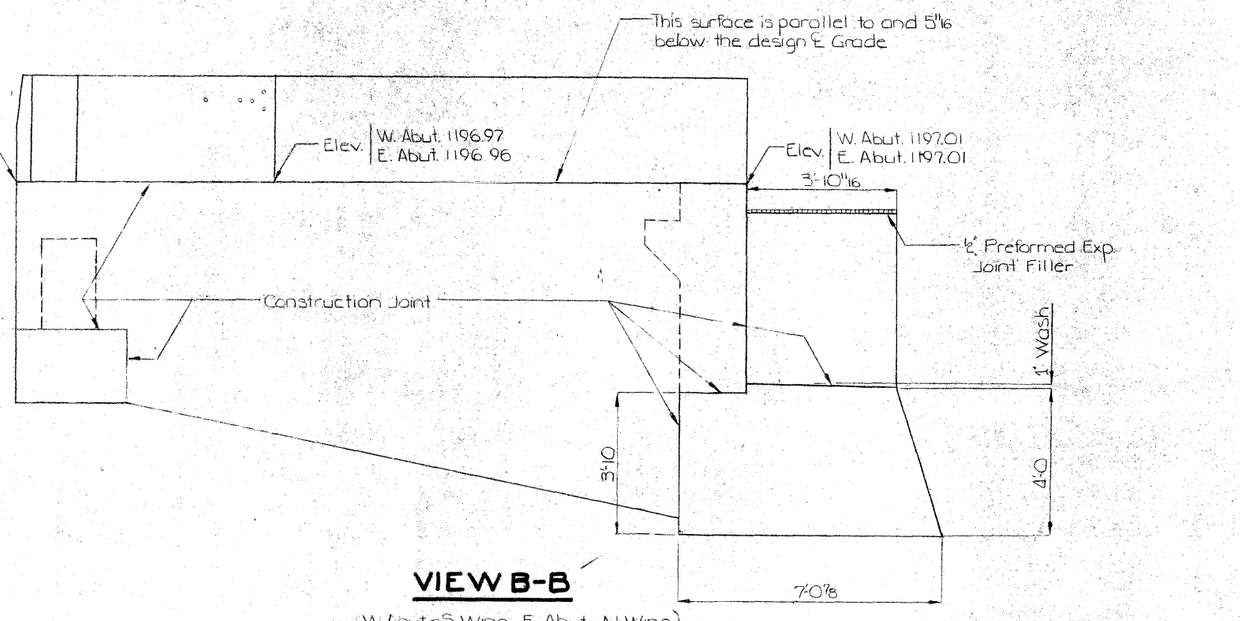


VIEW A-A

(W. Abut.-N. Wing, E. Abut - S. Wing)



SECTION C-C



VIEW B-B

(W. Abut - S. Wing, E. Abut. - N. Wing)

Note: See Des. Sh. 3 for location of Views A-A and B-B.

Design for 45° Skew

288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans — 96'-6 Center Span

ABUTMENT DETAILS

Station 673+11 — April, 1976

SHELBY COUNTY

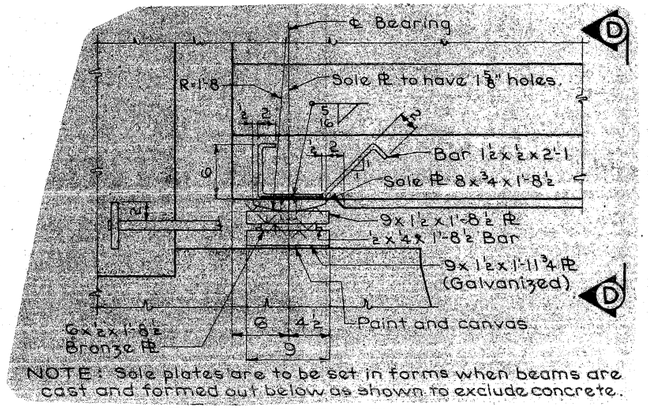
Iowa Department of Transportation, Highway Division

Design Sheet No.: 5 Of 20 File No.: 25682 Design No.: 1875

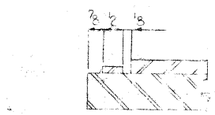
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		7	23

DESIGNED BY: R. A. Nemming
DETAILED BY: C.F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Rovers

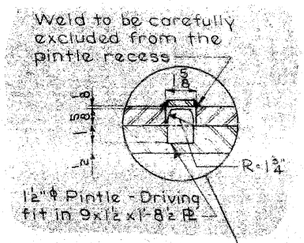
Shelby COUNTY

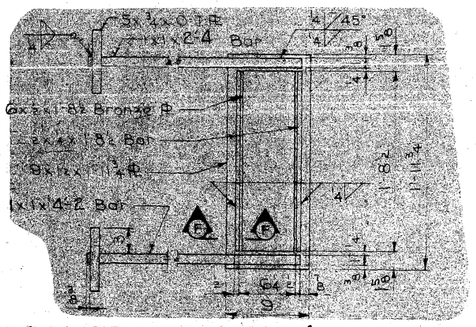


PART ELEVATION

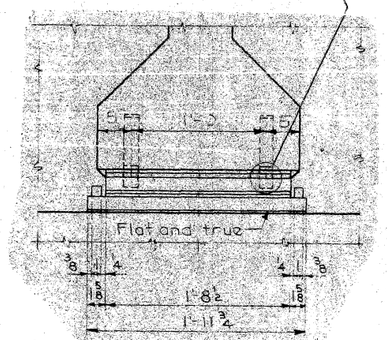


SECTION F-F





PLAN OF MASONRY ℙ AND BRONZE ℙ



SECTION D-D

ABUTMENT BEARING DETAILS

ABUTMENT BEARING NOTES

Bronze ℙ shall be lubricated in accordance with I. S. H. C. Specifications Article 4190.03 (Sliding surface only). Top edges of bronze ℙ shall be beveled 1/8". Masonry plates to be galvanized after welding.

Surfaces marked "V" shall be finished A. N. S. I. 250 and surfaces marked "F" shall be finished A. N. S. I. 125. Masonry plates are to be set in paint and canvas.

Pintle plates and masonry plates are a part of the superstructure Structural Steel Quantity. Unit price bid for Structural Steel shall include allowance for cost of bronze plates. Cost of anchored curved sole plates is to be included in price bid for Pretensioned Prestressed Concrete Beams.

Bronze metal shall be cast bronze meeting the requirements of ASTM B22, Alloy 913, 911, or 863, or ASTM B100.

TOTAL ESTIMATED QUANTITIES - BOTH ABUTS.

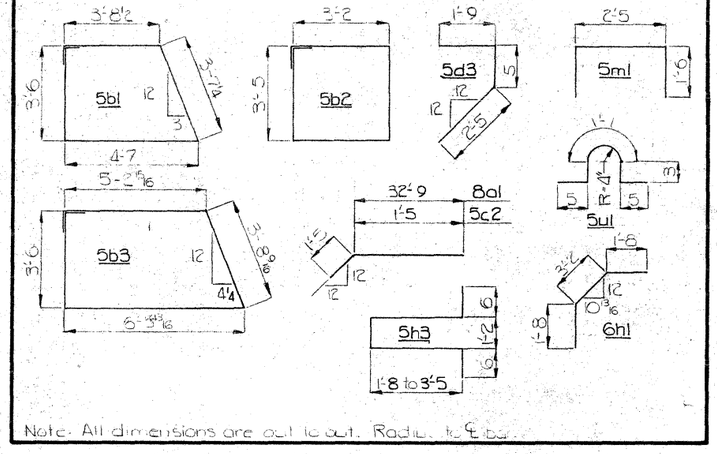
Item		Unit	West Abut.	East Abut.	Total
Structural Concrete, Class C		Cu.Yd.	~~80.7~~ 79.1	~~80.7~~ 79.1	~~161.4~~ 158.2
Reinforcing Steel		Lb.	~~8237~~ 8218	~~8237~~ 8218	~~16474~~ 16436
Class "C" Excavation		Cu.Yd.	117	117	234
Granular Backfill		Cu.Yd.	123	123	246
HP10 x 42 Steel	Furnish	L.F.	2 at 53'	2 at 51'	208
Bearing Piling	Drive	L.F.	2 at 53'	2 at 51'	~~208~~ 206
Bridge Seat Border		Sq.Ft.	270	270	~~540~~ 540

CONCRETE PLACEMENT QUANTITIES

Location	Unit	West Abut.	East Abut.
Footing and Steps	Cu.Yd.	46.0	46.0
Backwall Below Construction Joint	Cu.Yd.	10.1	10.1
Backwall Above Construction Joint	Cu.Yd.	9.4	9.4
North Wing	Cu.Yd.	3.3	7.6
North Wing Maskwall	Cu.Yd.	0.6	0.6
South Wing	Cu.Yd.	7.6	3.3
South Wing Maskwall	Cu.Yd.	0.6	0.6
Wing Footing and Counterfort	Cu.Yd.	1.5	1.5
*Paving Block	Cu.Yd.	~~1.6~~	~~1.6~~
Total (Cu.Yd.)		~~80.7~~	~~80.7~~
		79.1	79.1

* May be Class "C" or Class "D" Concrete.

BENT BAR DETAILS



REINFORCING BAR LIST - ONE ABUT.

Bar	Location	Shape	№	Length	Weight
8a1	Footing Longitudinal	⌒	26	34'-2	2372
8a2	Wing Footing Longit.	—	5	shown	120
8a3	Wing Footing Longit.	—	5	4'-0	53
5b1	Footing Hoops	⊓	37	15'-10	611
5b2	Wing Footing Hoop	□	1	13'-8	14
5b3	Wing Footing Hoops - End	⊓	2	19'-4	40
5c1	Backwall Longit.	—	28	31'-7	922
5c2	Backwall to Wing dowels	⌒	28	2'-10	83
5c3	Paving Notch Longit.	—	4	30'-10	129
6d1	Backwall Vertical B.F.	—	123	7'-7	1401
5d2	Backwall Vertical F.F.	—	62	7'-4	474
5d3	Paving Notch	⊂	60	4'-6	282
*5d4	Paving Notch-Dowel	—	30	2'-0	63
5e1	Maskwall Vertical-Long Wing Both F.	—	10	5'-10	61
5e2	Maskwall Vertical-Short Wing Both F.	—	10	6'-0	63
5e3	Wingwalls Vertical - Both F.	—	14	6'-9	99
5e4	Wingwall Vertical-Long Wing Both F.	—	36	shown	257
5e5	Wingwall Vertical-Short Wing Both F.	—	14	shown	66
6f1	Maskwall Horiz. L-Wing Both Faces	—	10	5'-3	79
6f2	Wing Horiz.-Both Faces Long Wing	—	12	19'-5	350
6f3	Wing Horiz.-Both Faces Long Wing	—	2	14'-1	42
6f4	Wing Horiz.-Both Faces Long Wing	—	2	9'-1	27
6f5	Wing Horiz.-Both Faces Long Wing	—	2	4'-1	12
6f6	Wing Horiz. Both Faces Long Wing	—	2	17'-11	54
6f7	Wing to Footing Dowels Long Wing	⌒	2	3'-0	9
5f8	Maskwall Horiz.-Both Faces Short Wing	—	10	5'-3	55
5f9	Wing Horiz.-Both Faces Short Wing	—	8	11'-5	95
5f10	Wing Horiz.-Both Faces Short Wing	—	2	9'-8	20
5f11	Wing Horiz.-Both Faces Short Wing	—	2	7'-4	15
5f12	Wing Horiz.-Both Faces Short Wing	—	2	7'-3	15
5f13	Wing to Footing Dowels Short Wing	⌒	2	3'-0	6
5g1	Wing Footing - Longitudinal	—	4	5'-2	22
5g2	Wing Footing - Transverse	—	4	2'-8	11
6h1	Counterfort Vertical	⌐	3	6'-6	29
5h2	Counterfort Vertical	—	4	shown	15
5h3	Counterfort Horizontal	⊏	3	varies	21
5m1	Beam Steps - Transv.	⌐	28	5'-3	153
5n1	Beam Steps - Longit.	—	28	2'-8	78
5u1	Paving Block Hoops	∩	8	2'-3	19
* Structural Grade				Total (lbs.)	~~8237~~ 8218

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

ABUTMENT DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

Design Sheet No.: 6 Of 20 File No.: 25682 Design No.: 1875

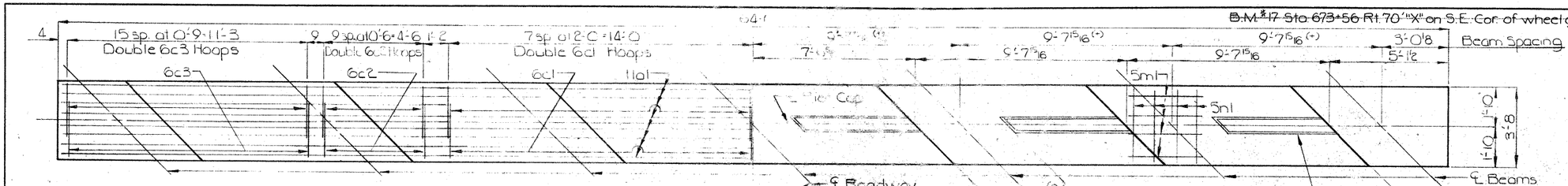
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA				

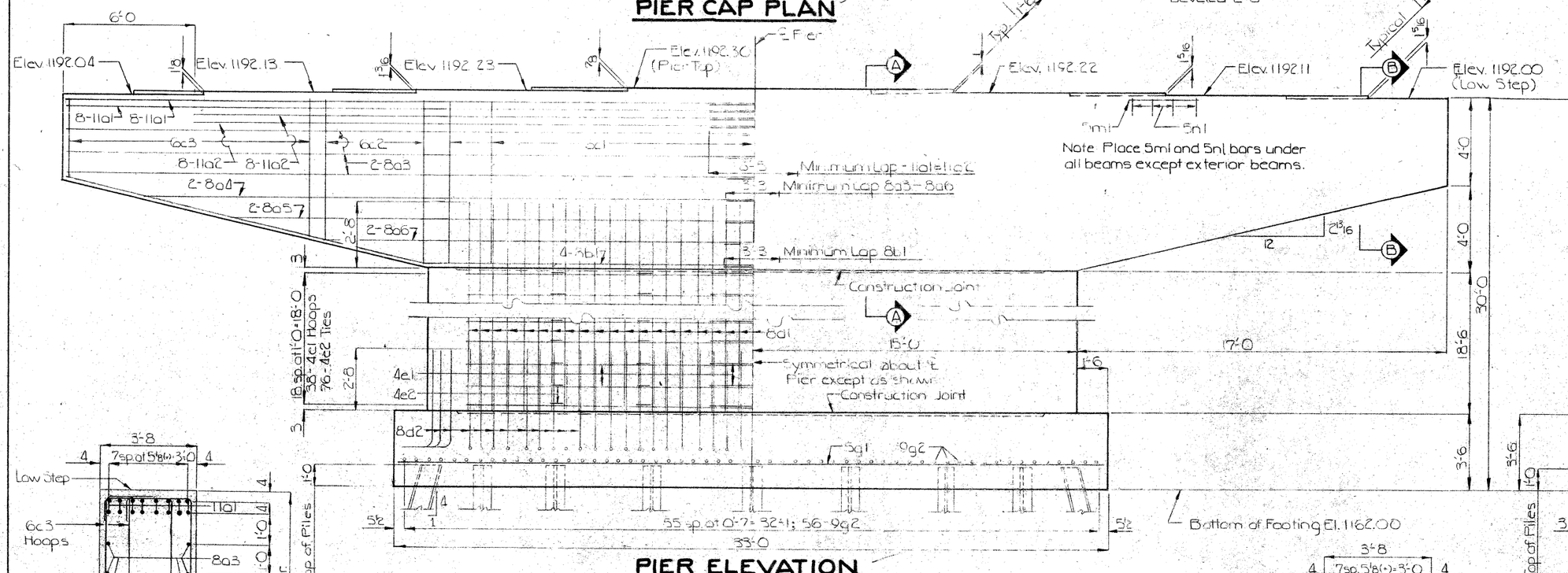
DESIGNED BY: R. P. Nenning
DETAILED BY: C. F. Bellamy
TRACED BY:
CHECKED BY: Glenn A. Powers

Shelby COUNTY

B.M. #17 Sta. 673+56 Rt. 70' "X" on S.E. Cor. of wheelguard of High truss Br. El. 1197.53

PIER CAP PLAN

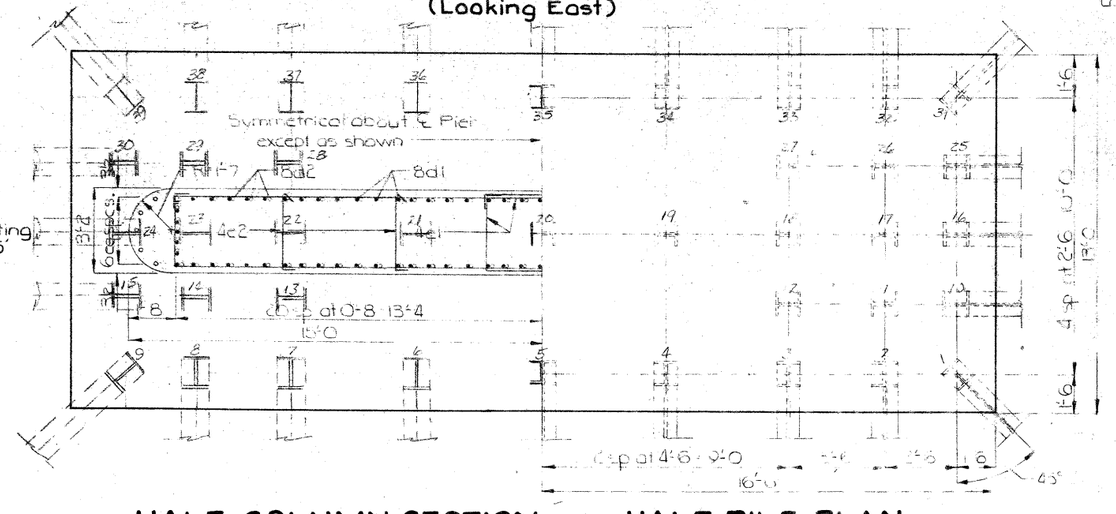




SECTION B-B

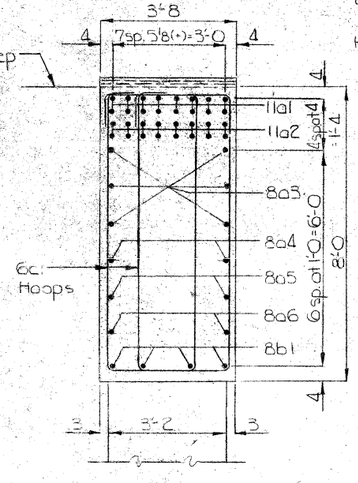
Note: Pile spacing shown at bottom of footing. Batter pile 1:4 in direction shown. 30 - 35' HP 10x42 Steel Piling required.

PIER ELEVATION
(Looking East)



HALF COLUMN SECTION

HALF PILE PLAN



SECTION A-A

END ELEVATION

Note: For pier top details see Des. sheet 9

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans — 96'-6 Center Span

PIER # 1 DETAILS

Station 673+11 — April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

Design Sheet No.: 7 Of 20 File No.: 25682 Design No.: 1875

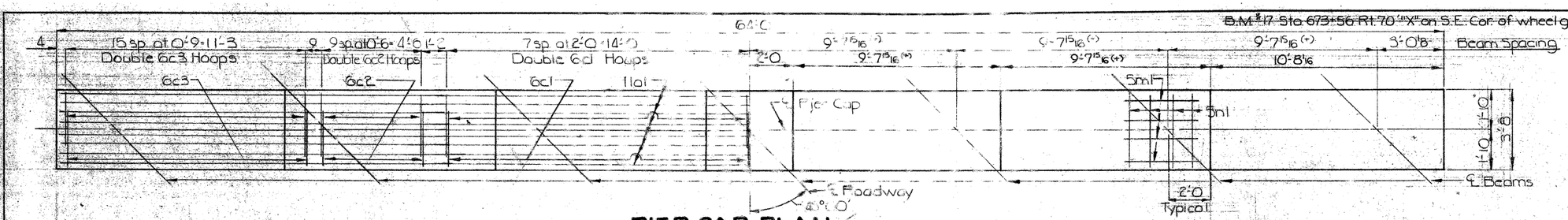
DESIGNED BY: R. A. Henning
DETAILED BY: C. F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Novey

Shelby COUNTY

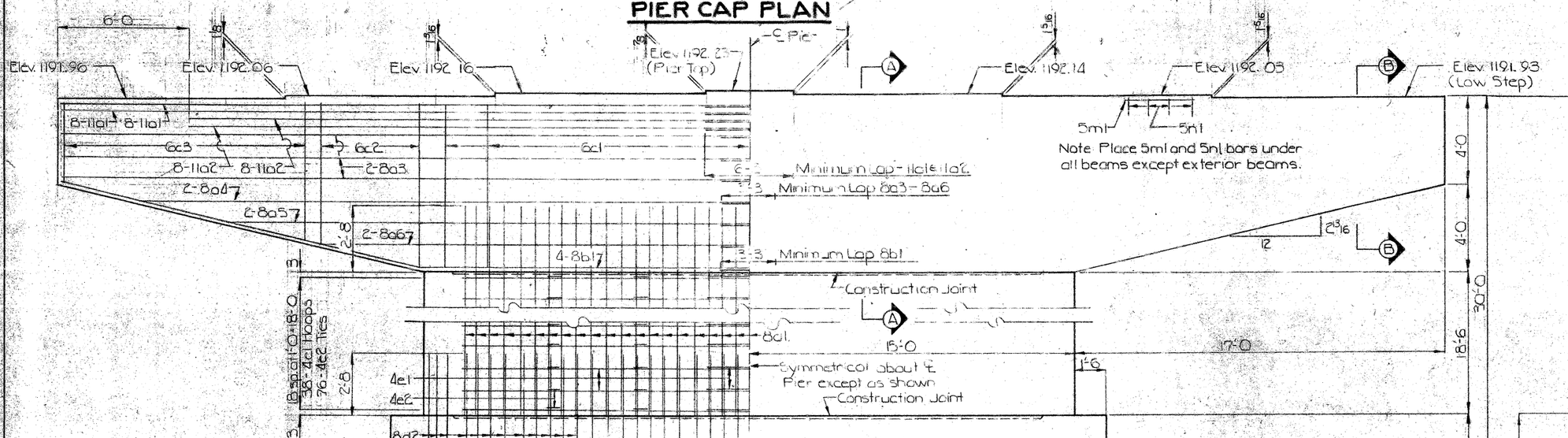
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	$		9	23

SHEET 000 316640

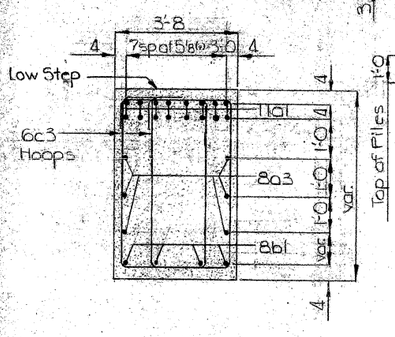
B.M. #17 Sta 673+56 Rt 70' "X" on S.E. Cor of wheelguard of High truss Br El 1197.53



PIER CAP PLAN

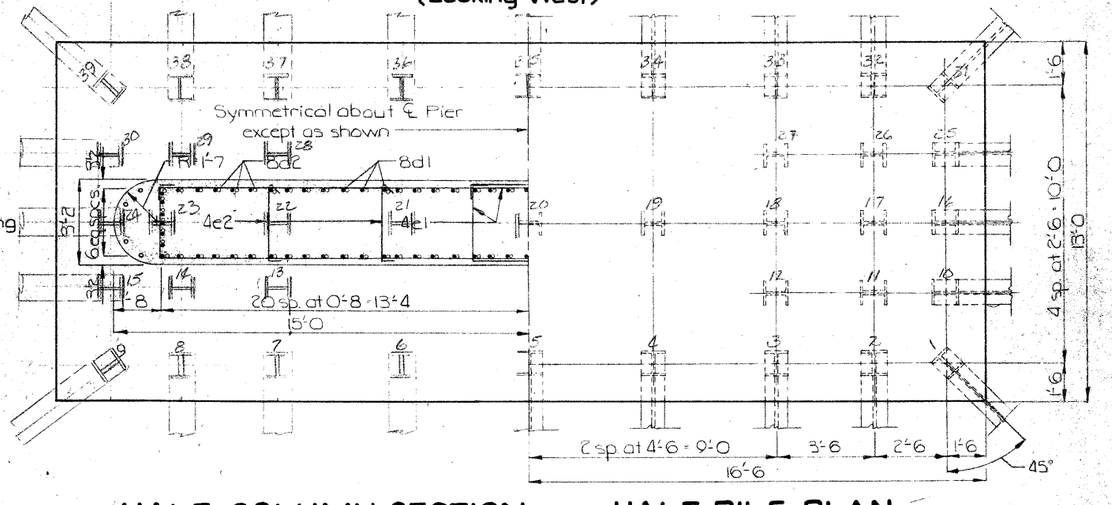


PIER ELEVATION
(Looking West)



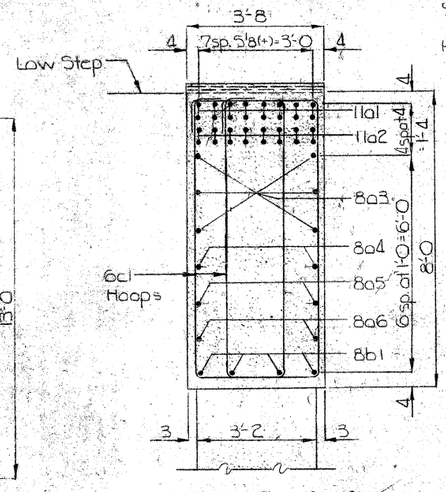
SECTION B-B

Note: Pile spacing shown at bottom of footing
Batter pile 1:4 in direction shown. 39 - 35'
HP 10x42 Steel Piling required.



HALF COLUMN SECTION

HALF PILE PLAN



SECTION A-A

Note: For pier top details see Des. sheet 9.

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

PIER #2 DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

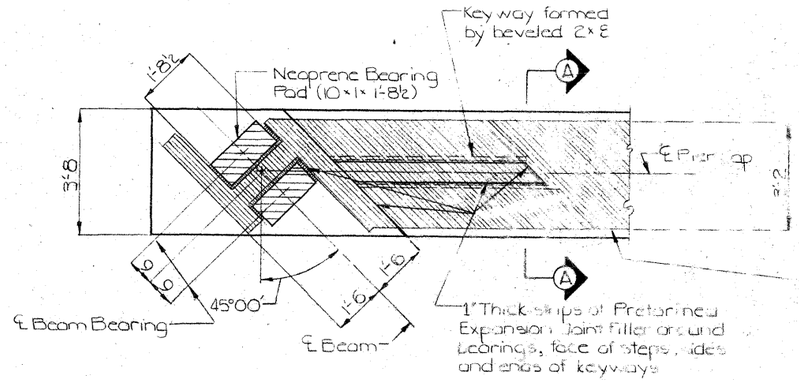
Iowa Department of Transportation, Highway Division

Design Sheet No.: 8 Of 20 File No.: 25682 Design No.: 1875

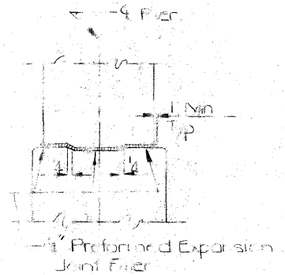
DESIGNED BY: R. A. Henning
DETAILED BY: C. F. Bellamy ✓
TRACED BY:
CHECKED BY: Barry A. Nevers

Shelby COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	5		10	23

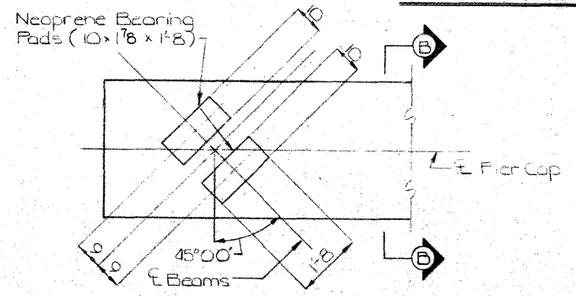


PART PLAN

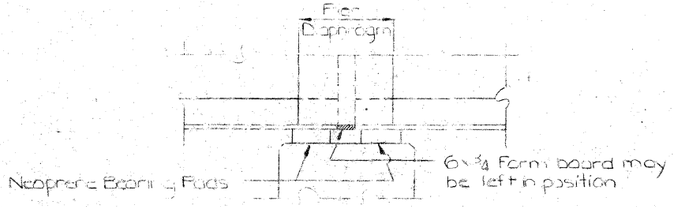


SECTION A-A

TOP OF PIER # 1 DETAILS

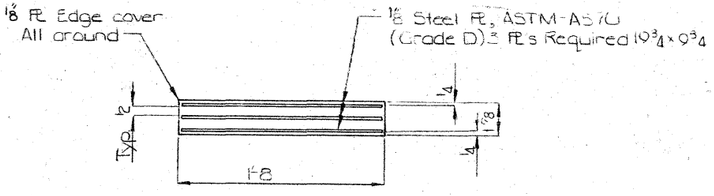


PART PLAN



SECTION B-B

TOP OF PIER #2 DETAILS



NEOPRENE BEARING PAD ELEVATION - PIER # 2

Note: Material for Neoprene Pads to be of 50 durometer Neoprene.

CONCRETE PLACEMENT QUANTITIES

Location	Unit	Pier #1	Pier #2	Total
Cap	Cu. Yd.	61.9	61.5	123.4
Column	Cu. Yd.	63.6	63.6	127.2
Footing	Cu. Yd.	55.6	55.6	111.2
Total		181.1	180.7	361.8

PIER NOTES

All exposed corners 90° or sharper are to filleted with a 3/4' dressed and beveled strip.

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

Reinforcing steel is to be securely wired in place before concrete is poured.

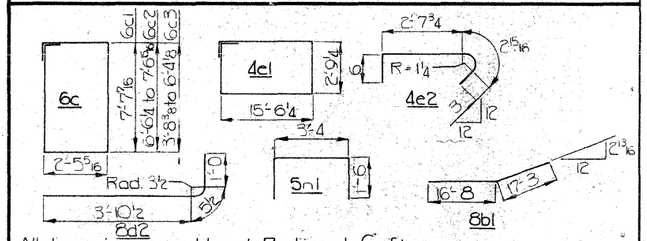
Construction joints are to be formed with a 3 x 10 x 28'-0 dressed and beveled fillet.

Piles shall be driven to full penetration if practicable, but to not less than 37 tons bearing capacity per pile.

REINFORCING BAR LIST - ONE PIER

Bar	Location	Shape	No	Length	Weight
11a1	Cap, Longit. - Top	——	32	35'-1	5965
11a2	Cap, Longit. - Top	——	32	29'-3	4973
8a3	Cap, Longit. - Sides	——	12	53'-6	1073
8a4	Cap, Longit. - Sides	——	4	30'-0	320
8a5	Cap, Longit. - Sides	——	4	25'-9	275
8a6	Cap, Longit. - Sides	——	4	21'-6	230
8b1	Cap, Longit - Bottom	——	8	33'-11	724
6c1	Cap Hoops	□	30	20'-8	931
6c2	Cap Hoops - Cantilever	□	40	varies	1169
6c3	Cap Hoops - Cantilever	□	64	varies	1481
8d1	Column Vertical	——	92	21'-2	5199
8d2	Column Vertical - Dowels	⌐	102	5'-4	1452
4e1	Column, Hoops	▭	38	36'-11	937
4e2	Column, Ties	⌓	76	3'-7	182
5g1	Footing Longit. Bottom	——	21	32'-8	716
9g2	Footing Trans. Bottom	——	56	12'-8	2412
5m1	Step, Longit.	——	20	3'-0	63
5n1	Step, Trans.	□	20	16'-2	129
				Total (Lbs.)	28231

BENT BAR DETAILS



All dimensions are out to out. Radii are to ℄ of bar

TOTAL ESTIMATED QUANT. - PIER #1 & #2

Item		Unit	Pier #1	Pier #2	Total
Structural Concrete Class "C"		Cu. Yd.	181.1	180.7	361.8
Reinforcing Steel		Lbs.	28231	28231	56462
HP10×42 Steel	Furnish	L.F.	39 at 35'	39 at 35'	2730
Bearing Piling	Drive	L.F.	39 at 35'	39 at 35'	2730
Class 20 Excavation		Cu. Yd.	91	——	91
Class 21 Excavation		Cu. Yd.	154	148	302

Design for 45° Skew

288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

PIER DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

Design Sheet No.: 9 Of 20 File No.: 25682 Design No.: 1875

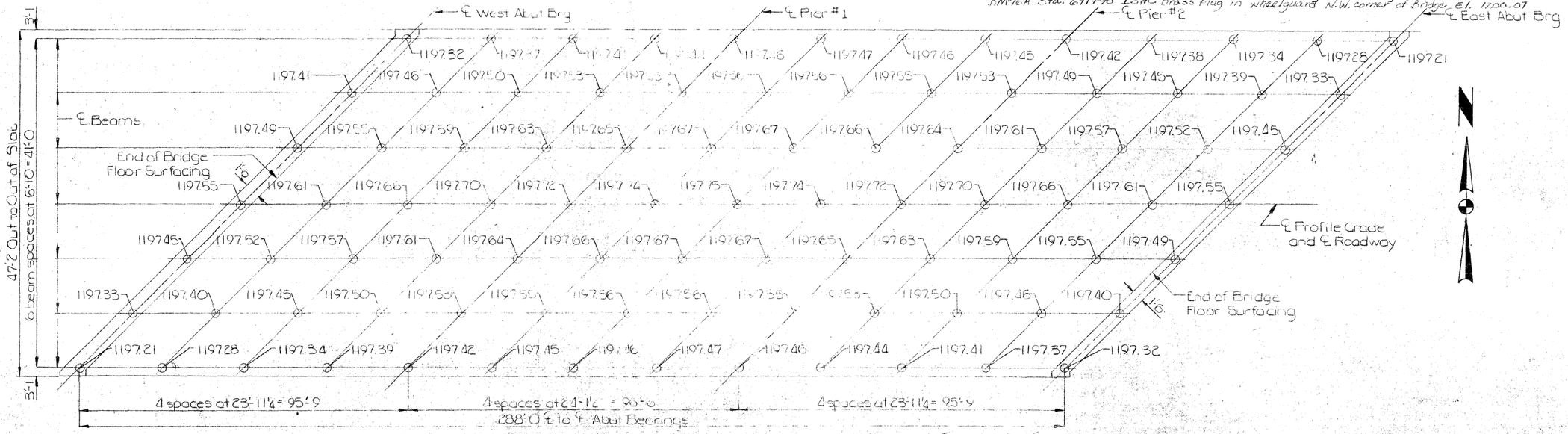
DESIGNED BY: R. A. Nemming
DETAILED BY: C. F. Bellamy ✓
TRACED BY:
CHECKED BY: Gary A. Posey

Shelby COUNTY

PROJECT NUMBER

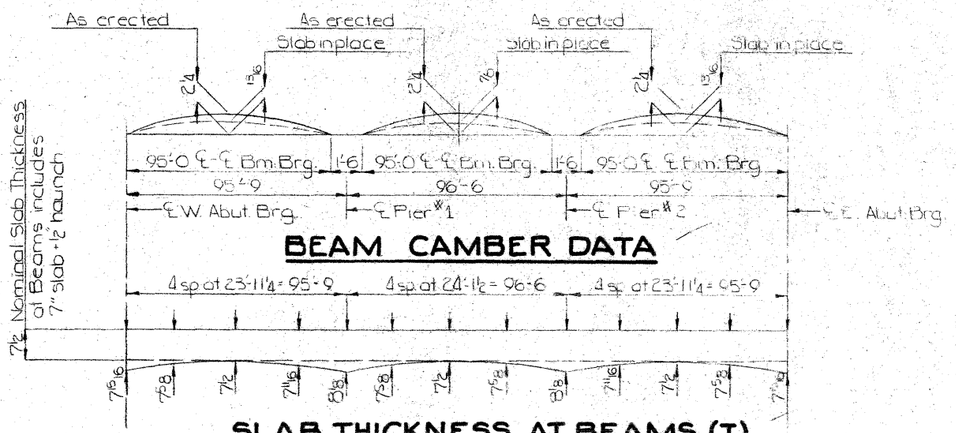
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
			11	23

BM #17 Sta. 673+56 Rt 70' "X" on S.E. Cor. of wheelguard of High truss Br. El. = 1197.53
BM #16A Sta. 671+90 ISHC Brass Plug in wheelguard N.W. corner of Bridge, El. 1200.07



TOP OF BRIDGE FLOOR SURFACING ELEVATIONS

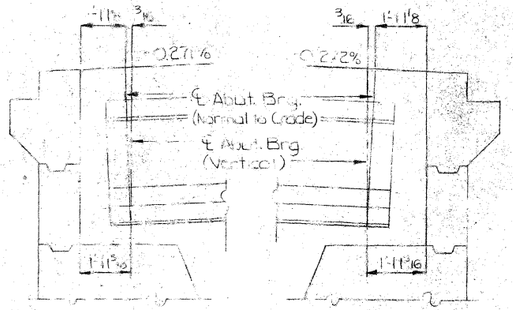
Note: For top of slab elevations subtract 2" (0.17') except at abutments.
Elevation at ℄ Abut. Brgs. indicates top of slab elevation.



BEAM CAMBER DATA

Note: The slab thickness (T) at beams is based on the anticipated beam camber remaining after placing the slab, but is not guaranteed for construction. If beam is under cambered, increase slab thickness (T) at beams to compensate. If beam is over cambered the slab thickness (T) may be decreased to a maximum of 1/2 embedment at the beam (T). If more than 1/2 embedment is required, or if the haunch exceeds 2", the grade line is to be revised.

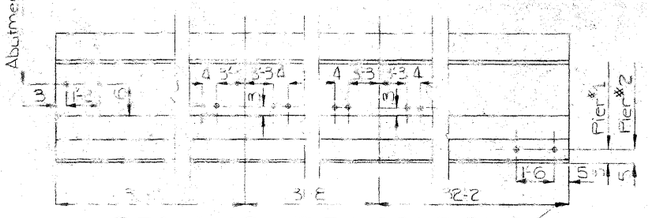
SLAB THICKNESS AT BEAMS (T)



WEST ABUT. EAST ABUT.

PART LONGITUDINAL SECTION

(Showing grade variations along ℄ Roadway at Abutments)



BEAM COIL TIE LOCATIONS

Design for 45° Skew

288'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9" End Spans 96'-6" Center Span

SUPERSTRUCTURE DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

Design Sheet No.: 10 Of 20 File No.: 2568(2) Design No.: 1875

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS

DESIGNED BY: R. B. Nanning
DETAILED BY: C. F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Novey

Shelby COUNTY

SUPERSTRUCTURE NOTES:

This bridge is designed for HS20-44 loading, plus 20 lb. per square foot of roadway for future wearing surface.

The floor slab as shown includes 1/2" integral wearing surface.

The pier diaphragm concrete is to be placed monolithically with the floor slab.

Cost of Neoprene Bearing Pads is to be included in the price bid for "Pretensioned Prestressed Concrete Beams."

Cost of all Preformed Expansion Joint Filler material is to be included in the price bid for "Structural Concrete."

All beams are to be set vertical.

Forms for the slab and barrier rail are to be supported by the prestressed concrete beams.

All exposed corners 90° or sharper are to be filleted with a 3/4" dressed and beveled strip.

Clear distance from face of concrete to near reinforcing bar shall be 2 inches unless otherwise noted or shown. All reinforcing bars are to be securely wired in place and adequately supported on bar chairs before concrete is placed.

The deck concrete for this bridge shall be placed in two (2) lifts.

1. The first lift will be class "D" concrete providing 1" of cover over the top layer of slab reinforcing. The materials, placement, finish and cure shall be in accordance with the Standard Construction Specifications and Current Supplemental Specifications except that the broom finish will not be required. Test wells for nuclear density test will be required. See note below.
2. The second lift will be a 2" thick P. C. Concrete, "Bridge Floor Surfacing" course, to be placed after the barrier rails are placed. The materials, placement, finish and cure shall be in accordance with Current Supplemental Specifications.

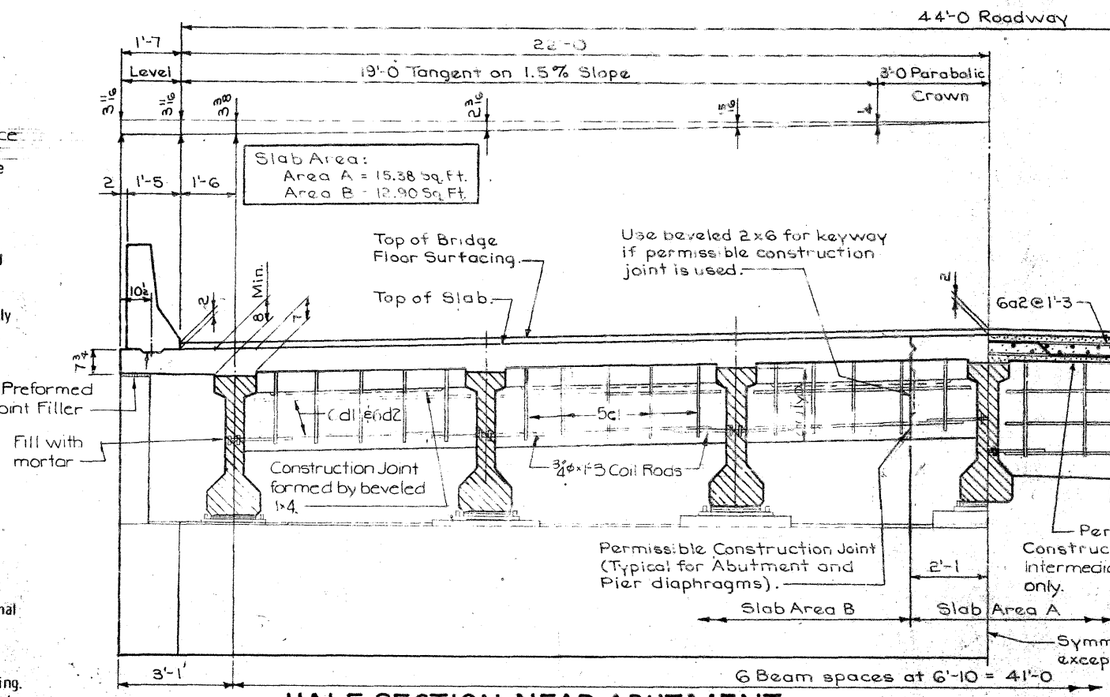
Test wells for nuclear density checks, shall be cast into the surface of the Class D concrete course. The test wells shall have nominal dimensions of 1" x 10" x 10" and shall be located, in each surfacing pass, as follows: Three (3) at each end, within 5 feet from the end joint, plus a minimum of three (3) additional test wells, equally spaced longitudinally to be not more than 50 feet apart. A total of 11 test wells will be required for each surfacing pass. All costs for constructing test wells will be considered incidental to other work.

The slab as detailed uses crankshaft bars as part of the transverse reinforcing. At the contractor's option 2 straight full length number 5 bars may be substituted for each 5a1 crankshaft bar. However, payment shall be made based upon the use of crankshaft bars and no allowance shall be made for the substitution of straight bars.

Transverse slab reinforcing may be spliced with one lap located as indicated below (lap length for number 5 bar is 1'-3, for number 6 bar is 1'-6).

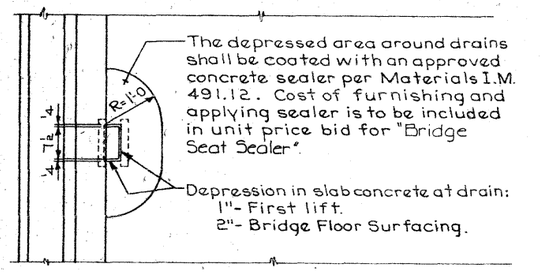
- 5a1 - lap away from either where the top or bottom bend begins.
- 6a2 - lap midway between girders.
- 5a3 - lap over girder.

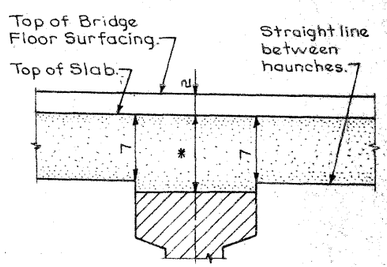
Payment for reinforcing bars shall be based on no splices, and no allowance shall be made for the additional length of bar required for the use of splices.



HALF SECTION NEAR ABUTMENT

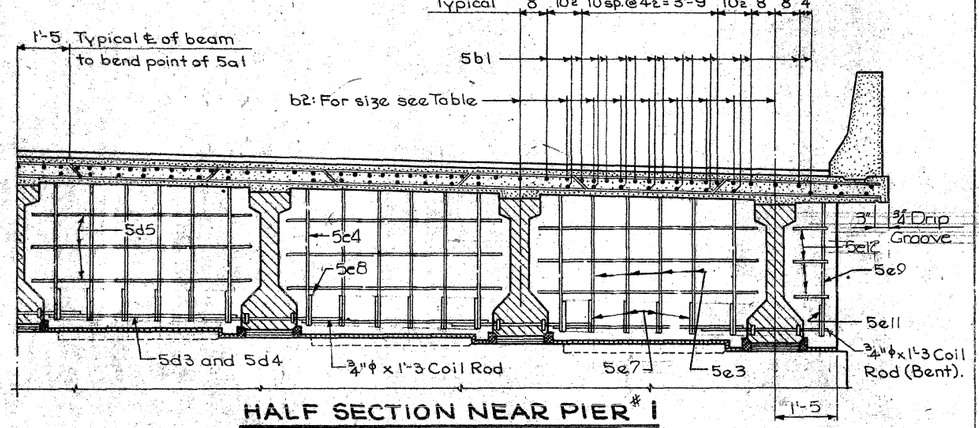
HALF INTERMEDIATE SECTION





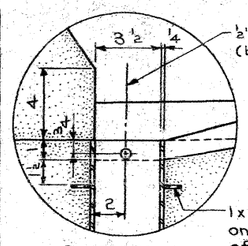
TYPICAL SLAB AND HAUNCH DETAIL

For thickness at Exterior Beam see "Half Section Near Abutment".

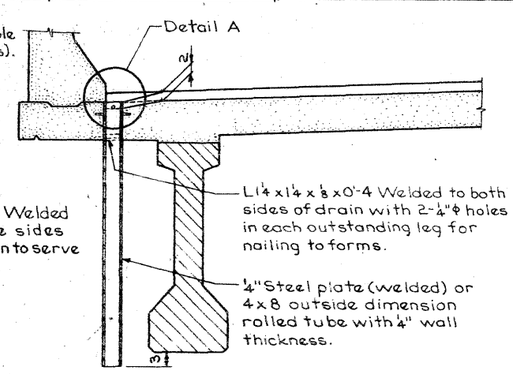


HALF SECTION NEAR PIER* 1

TABLE OF SIZE OF 'b2' BAR		
Longest Adjacent Span Beam A, B & C	Longest Adjacent Span Beam D	Bar Size
30'-0	30	5
34'-2	35	5
38'-4	40	5
42'-6	45	5
46'-8	50	5
50'-10	55	6
55'-0	60	6
59'-2	65	6
63'-4		7
67'-6		7
71'-8	70	7
75'-10	75	8
80'-0	80	8
	85	8
	90	8
	95	8

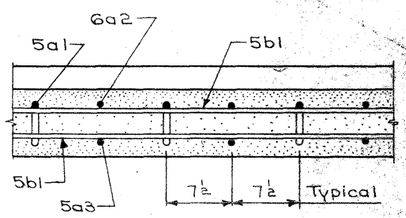


DETAIL A



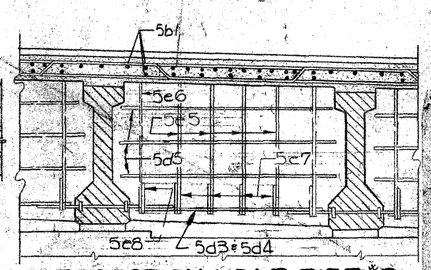
DRAIN DETAILS

NOTE:
Drains are to be galvanized. 14 Drains are required, see "Situation Plan" on sheet 1 of 20 for location. Weight= 103 pounds each. To be included in Structural Steel quantity.



SECTION A-A

Shows typical slab reinforcing pattern.



PART SECTION NEAR PIER* 2

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

SUPERSTRUCTURE DETAILS

Station 673+11

April , 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

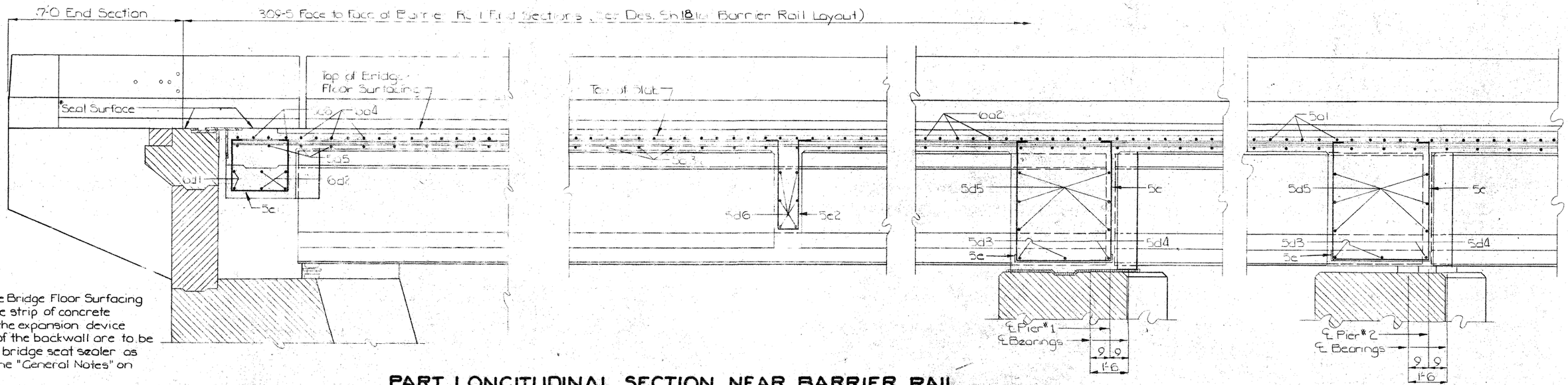
Design Sheet No.: 11 Of 20 File No.: 85682 Design No.: 1875

Issued 11-1-75

DESIGNED BY: R. A. Nenning
DETAILED BY: C. F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Novey

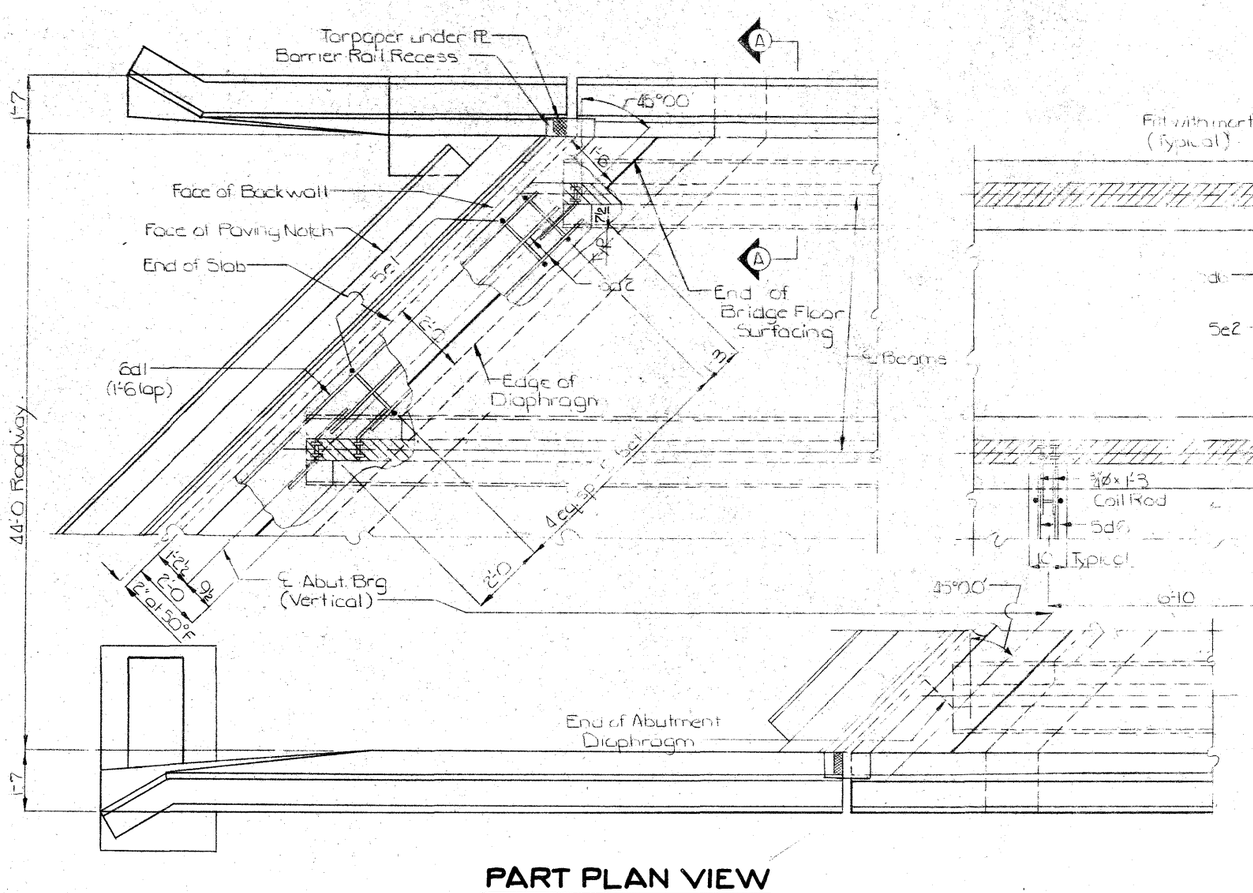
Shelby COUNTY | PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		13	23

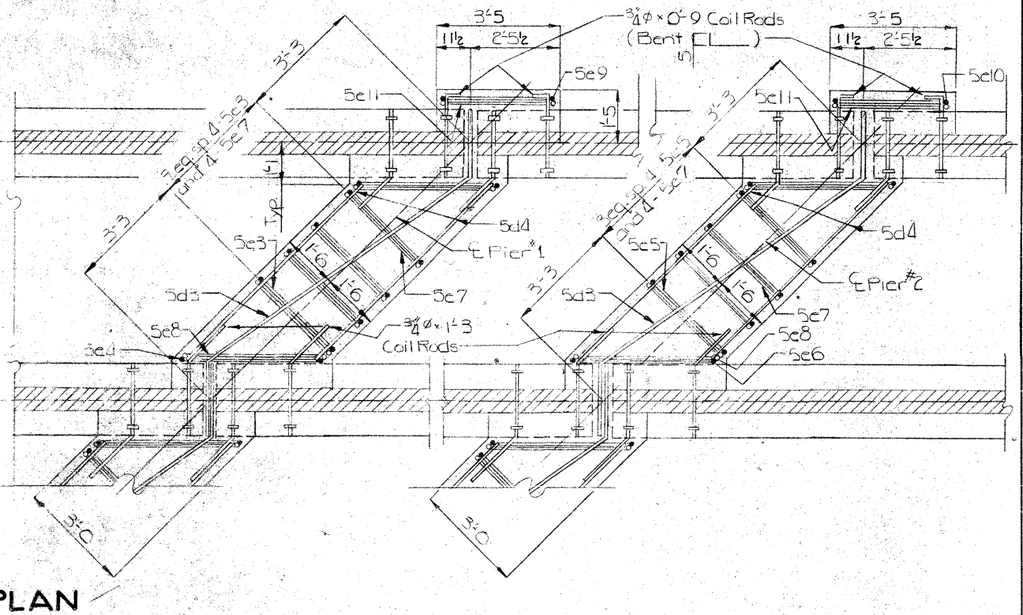


* Note: After the Bridge Floor Surfacing is in place, the strip of concrete adjacent to the expansion device and the top of the backwall are to be coated with bridge seat sealer as specified in the "General Notes" on Des. Sh. 2.

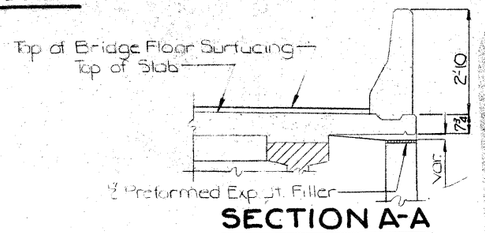
PART LONGITUDINAL SECTION NEAR BARRIER RAIL



PART PLAN VIEW



PART PLAN



SECTION A-A

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans — 96'-6 Center Span

SUPERSTRUCTURE DETAILS

Station 673+11 — April, 1976

SHELBY COUNTY

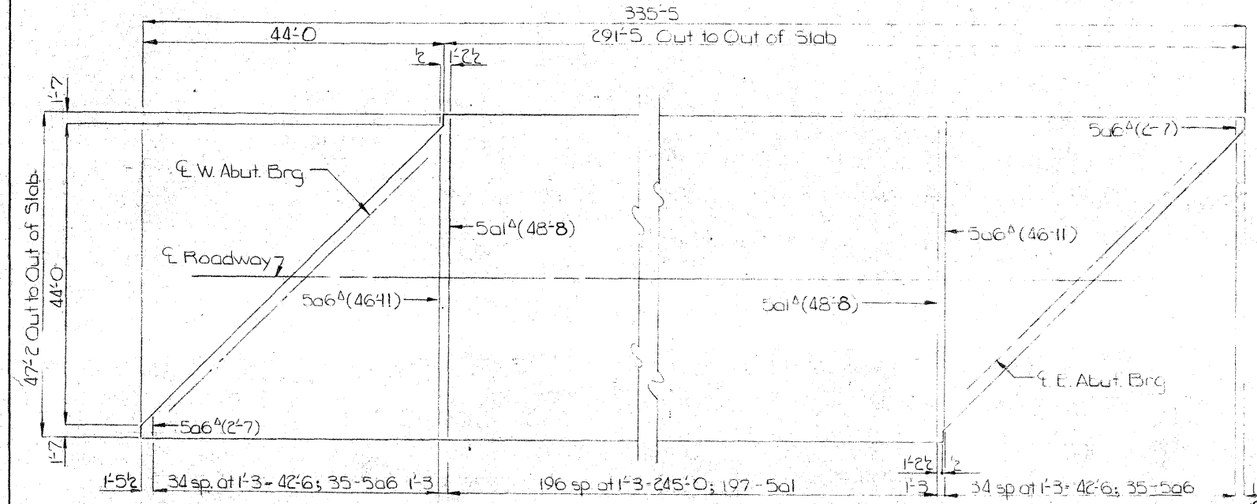
Iowa Department of Transportation, Highway Division

Design Sheet No.: 12 Of 20 File No.: 25682 Design No.: 1875

DESIGNED BY: R. A. Nemmers

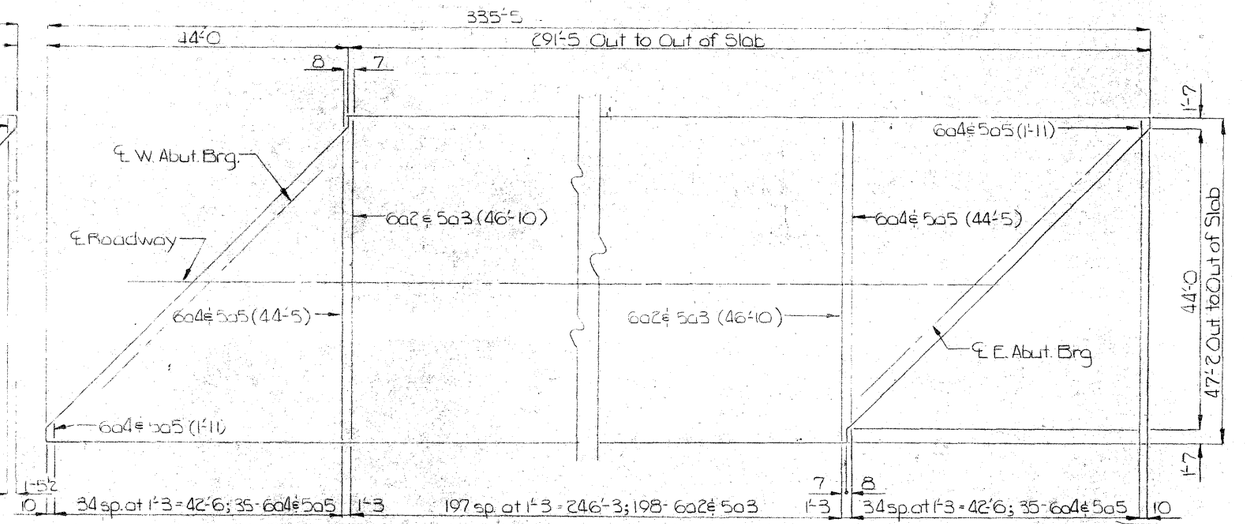
Shelby COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA			14	23

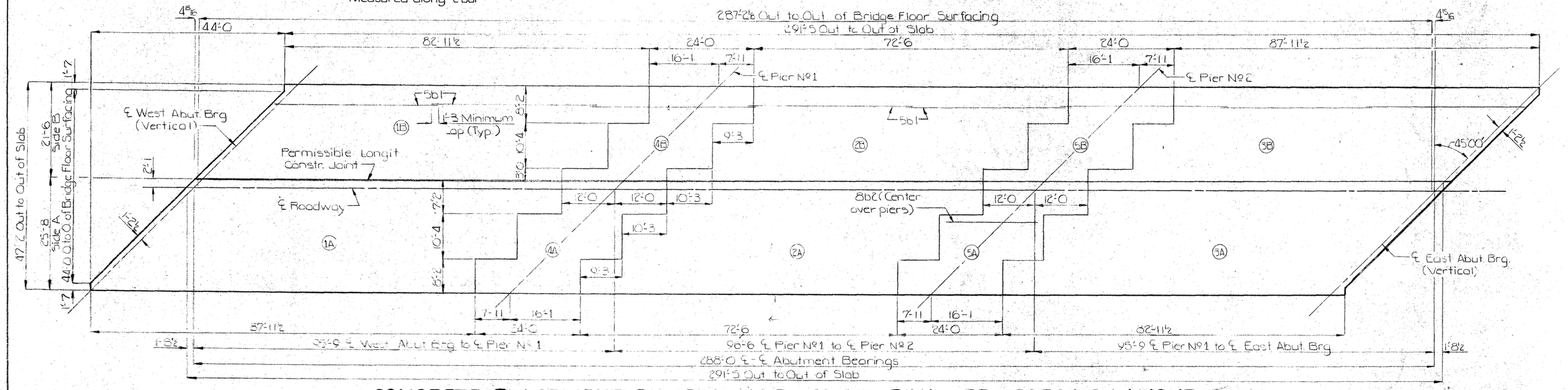


CRANKSHAFT BAR REINFORCING LAYOUT

^Measured along ℄ bar



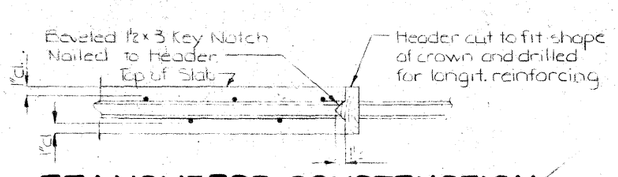
TOP AND BOTTOM SLAB TRANSVERSE REINFORCING LAYOUT



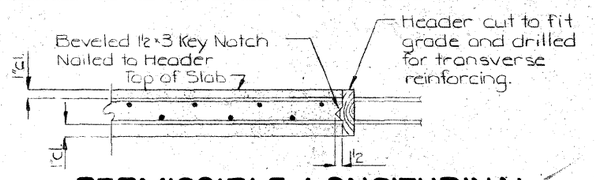
CONCRETE PLACEMENT DIAGRAM AND LONGITUDINAL REINFORCING LAYOUT

Note: Roadway slab shall be placed in sections and in sequence indicated by encircled numbers on placement diagram and preferably at intervals not exceeding 24 hours.

Alternate procedures for placing concrete may be submitted for approval, together with a statement of the proposed method, and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result. Placement diagram does not apply to Bridge Floor Surfacing.



TRANSVERSE CONSTRUCTION JOINT DETAIL



PERMISSIBLE LONGITUDINAL CONSTRUCTION JOINT DETAIL

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans — 96'-6 Center Span

SUPERSTRUCTURE DETAILS

Station 673+11 — April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

Design Sheet No.: 13 Of 20 File No.: 25682 Design No.: 1875

DESIGNED BY: R.A. Nenning
DETAILED BY: C.F. Bellamy
TRACED BY:

Shelby COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		15	23

CONCRETE PLACEMENT QUANT. SUPERSTR.

Item	Unit	Side A	Side B	Total	
Section 1 Slab and Diaph.	Cu.Yd.	58.8	48.4	~~107.2~~	105.6
Section 2 Slab and Diaph.	Cu.Yd.	46.2	38.7	84.9	
Section 3 Slab and Diaph.	Cu.Yd.	58.4	48.5	106.9	
Section 4 Slab and Diaph.	Cu.Yd.	28.8	24.0	52.8	
Section 5 Slab and Diaph.	Cu.Yd.	28.3	23.6	~~51.9~~	50.3
Barrier Rail	Cu.Yd.	31.7	31.7	63.4	
Light Pole Base	Cu.Yd.	0.3	———	0.3	
			Total (Cu.Yd.)	~~4674~~	

464.2

ESTIMATED QUANTITIES-SUPERSTRUCTURE

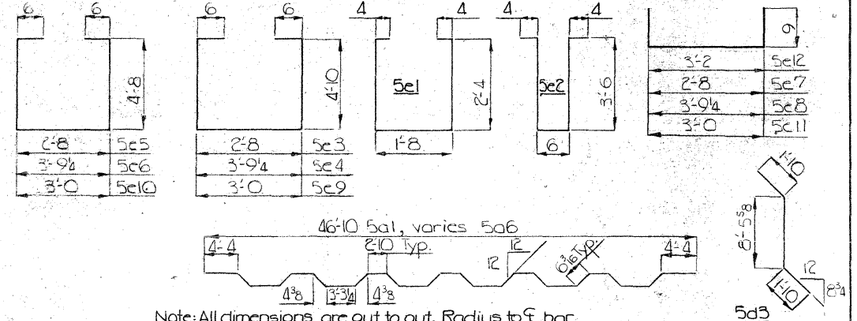
Item		Unit	Quantity	
Structural Concrete Class "D"		Cu.Yd.	~~467.4~~	464.2
Prestressed Concrete Beams	D95	Nº	21	
Reinforcing Steel		Lbs.	94096	
*Structural Steel		Lbs.	10709	
Bridge Floor Surfacing		Sq.Yd	~~1404~~	1421.2
Bridge Seat Sealer		Sq.Ft.	~~203~~	613.01

*Includes 255 lbs. of Lubricated Bronze PE.

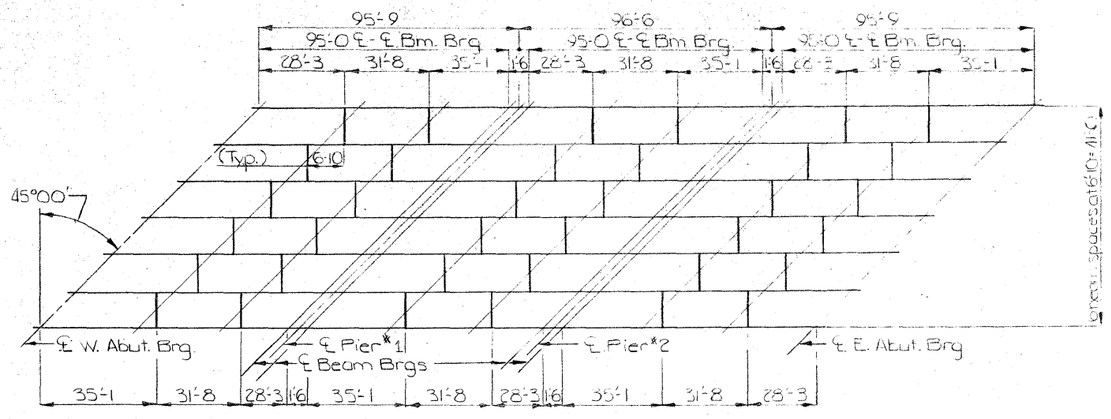
REINFORCING STEEL-SUPERSTRUCTURE

Bar	Location	Shape	Nº	Length	Weight
5a1	Slab Transv. - Crankshaft	∿	197	48'-8	10,000
6a2	Slab Transv - Top	—	198	46'-10	13928
5a3	Slab Transv. - Bottom	—	198	46'-10	9671
6a4	Slab Transv. - Top Ends	—	70	1'-11 / 44'-5	2436
5a5	Slab Transv. - Bottom Ends	—	70	1'-11 / 44'-5	1691
5a6	Slab Transv. - Crankshaft Ends	∿	70	2'-7 / 46'-11	1807
5b1	Slab Longitudinal	—	816	37'-6	31916
8b2	Slab Longitudinal over Piers	—	98	23'-8	6193
6d1	Abut. Diaph. Longit	—	8	29'-5	353
6d2	Abut. Diaph. Longit.	—	48	8'-4	601
5d3	Pier Diaph. Longit.	⟍	12	12'-2	152
5d4	Pier Diaph. Longit.	—	24	6'-7	165
5d5	Pier Diaph. Longit.	—	72	8'-4	626
5d6	Intermediate Diaph. Longit	—	216	5'-11	1333
5e1	Abut. Diaph. Hoops	⊓	60	6'-7	412
5e2	Inter. Diaph. Hoops	⊔	144	7'-9	1164
5e3	Pier1 Diaph. Hoops	⊓	24	12'-11	323
5e4	Pier1 Diaph. Hoops	⊓	12	14'-1	176
5e5	Pier2 Diaph. Hoops	⊓	24	12'-7	315
5e6	Pier2 Diaph. Hoops	⊓	12	13'-9	172
5e7	Pier Diaph. Ties	⊔	48	4'-0	200
5e8	Pier Diaph. Ties	⊔	24	5'-1	127
5e9	Pier1 Diaph. Hoops at Ends	⊓	2	13'-3	28
5e10	Pier2 Diaph. Hoops at Ends	⊓	2	12'-11	27
5e11	Pier Diaph. Ties at Ends	⊔	4	4'-4	18
5e12	Pier Diaph. Ties at Ends	⊔	12	4'-6	56
	Barrier Rail (See Des. Sh. 18)				10132
	Light Pole Base (See Des. Sh. 20)				74
			Total (Lbs.)		94096

BENT BAR DETAILS



Note: All dimensions are out to out. Radius to ℄ bar.



GENERAL LAYOUT

(Showing Intermediate Diaphragm Layout)

Design for 45° Skew

288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans — 96'-6 Center Span

SUPERSTRUCTURE DETAILS

Station 678+11 — April, 1976

SHELBY COUNTY

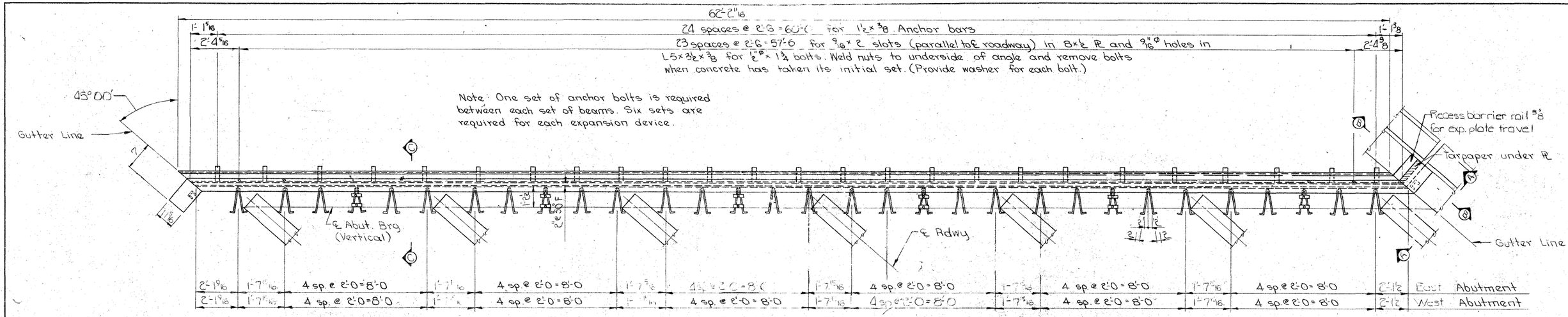
Iowa Department of Transportation, Highway Division

Design Sheet No.: 14 Of 20 File No.: 25682 Design No.: 1875

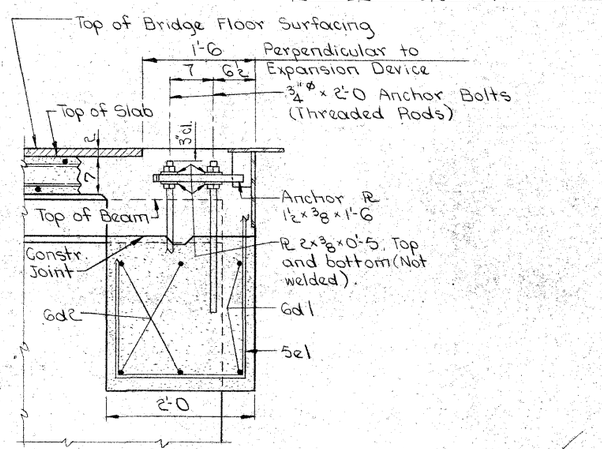
DESIGNED BY: R. B. Nevaney
DETAILED BY: C.F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Novey

Shelby COUNTY

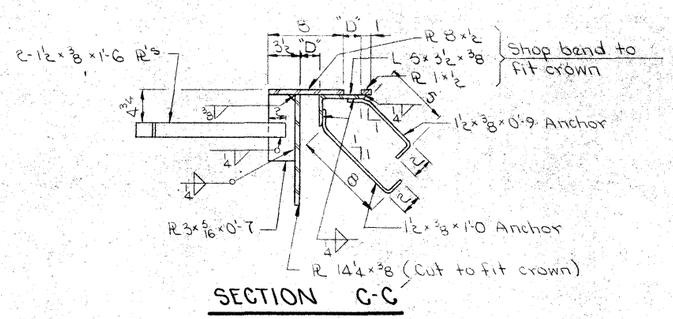
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	6		16	23



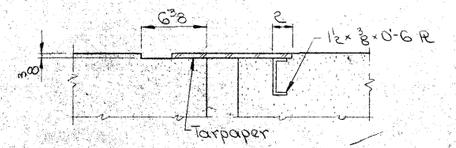
PLAN VIEW OF EXPANSION DEVICE (2 Required)



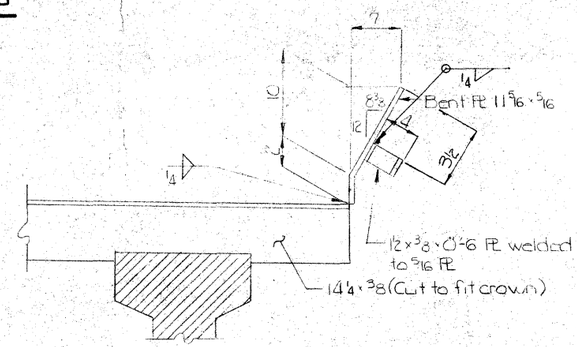
METHOD OF SUPPORTING EXPANSION DEVICE DURING CONSTRUCTION



SECTION C-C



PART SECTION B-B



PART VIEW A-A

EXP. PLATE SETTING "D"		
Temperature	West Abutment	East Abutment
10° F	2 3/16	2 3/8
50° F	2	2
90° F	1 13/16	1 3/8

Note: Settings for other temperatures are proportional.

Note: One permissible shop or field splice may be made in the expansion device providing the pieces are joined with a prequalified single groove weld, and all surfaces not in contact with concrete are ground flush.

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

EXPANSION DEVICE DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

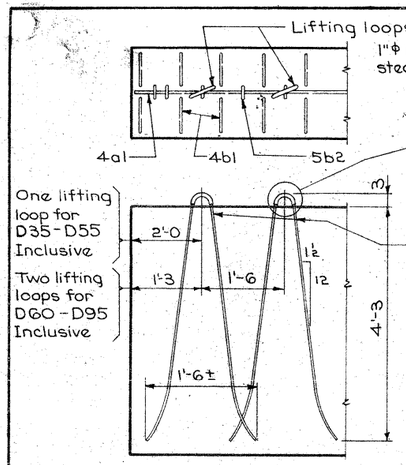
Design Sheet No 15 of 20 File No 25682 Design No 1875

DESIGNED BY R. P. Hemmens
DETAILED BY C. F. Bellamy
TRACED BY
CHECKED BY Gary J. Novey

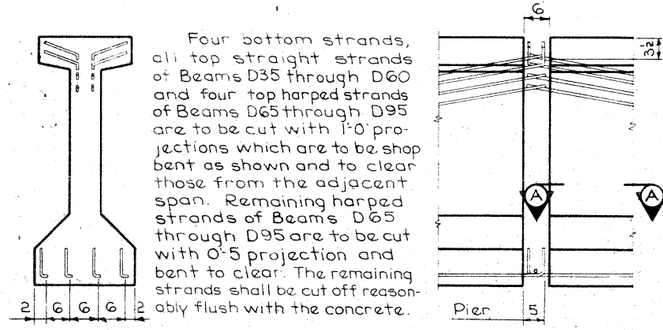
Shelby COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		17	23

Revised (2-1-69): Section A-A added. Beam Date and Reinforcing Bar List revised.
Revised 3-6-69: Beam designation numbers changed.
Revised 8-22-69: Length of Bar 4a1 and total reinforcing steel quantities for Beams D95, D90 and D85 changed.
Revised 1-14-70: Design Stresses & Specifications updated.
Revised 7-5-74: Note concerning roughening of beams at diaphragms changed.
Revised 5-2-75: Two strands added to D95. Four 5b3 bars added to D90 and D95. Tabular Beam Data and notes changed.



LIFTING LOOP DETAIL



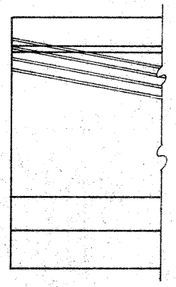
STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

BEAM DATA

Beam	Span Length ℄-℄ Bearing	Overall Beam Length (L)	Strand Size	№ Of Strands Straight	№ Of Strands Harped	Total Initial Prestress Kips	Hold Down Force - Kips	Camber (in.) At Release	Camber (in.) After Losses	Deflection (in.) Δ D Immediate① (Elastic) Δ I	Deflection (in.) Δ D Time ② (Plastic) Δ T	Permissible Spacing H20 Loading	Permissible Spacing HS20 Loading	Weight (Tons)		Concrete (C.Y.)	Reinforcing Steel - (lb)
~~D35~~	~~35'-0~~	~~36'-0~~	~~½"ϕ~~	~~14~~	~~—~~	~~404.6~~	~~—~~	~~0.08~~	~~0.12~~	~~0.03~~	~~0.01~~	~~8'-0~~	~~7'-6~~	~~12.0~~		~~5.9~~	~~451~~
~~D40~~	~~40'-0~~	~~41'-0~~	~~½"ϕ~~	~~14~~	~~—~~	~~404.6~~		~~0.10~~	~~0.13~~	~~0.05~~	~~0.01~~	~~8'-0~~	~~7'-6~~	~~13.6~~		~~6.7~~	~~495~~
~~D45~~	~~45'-0~~	~~46'-0~~	~~½"ϕ~~	~~14~~	~~—~~	~~404.6~~		~~0.11~~	~~0.14~~	~~0.07~~	~~0.02~~	~~8'-0~~	~~7'-6~~	~~15.3~~		~~7.6~~	~~568~~
~~D50~~	~~50'-0~~	~~51'-0~~	~~½"ϕ~~	~~16~~	~~—~~	~~462.4~~		~~0.16~~	~~0.21~~	~~0.11~~	~~0.03~~	~~8'-0~~	~~7'-6~~	~~17.0~~		~~8.4~~	~~561~~
~~D55~~	~~55'-0~~	~~56'-0~~	~~½"ϕ~~	~~19~~	~~—~~	~~549.1~~		~~0.17~~	~~0.22~~	~~0.16~~	~~0.04~~	~~8'-0~~	~~7'-6~~	~~18.6~~		~~9.2~~	~~636~~
~~D60~~	~~60'-0~~	~~61'-0~~	~~½"ϕ~~	~~21~~	~~—~~	~~606.9~~		~~0.23~~	~~0.29~~	~~0.23~~	~~0.06~~	~~8'-0~~	~~7'-6~~	~~20.3~~		~~10.0~~	~~680~~
~~D65~~	~~65'-0~~	~~66'-0~~	~~½"ϕ~~	~~12~~	~~6~~	~~520.2~~	~~23.4~~	~~0.41~~	~~0.53~~	~~0.33~~	~~0.08~~	~~8'-0~~	~~7'-6~~	~~22.0~~		~~10.8~~	~~875~~
~~D70~~	~~70'-0~~	~~71'-0~~	~~½"ϕ~~	~~16~~	~~6~~	~~635.8~~	~~21.8~~	~~0.62~~	~~0.82~~	~~0.43~~	~~0.11~~	~~8'-0~~	~~7'-6~~	~~23.6~~		~~11.7~~	~~968~~
~~D75~~	~~75'-0~~	~~76'-0~~	~~½"ϕ~~	~~16~~	~~8~~	~~693.6~~	~~25.3~~	~~0.68~~	~~0.88~~	~~0.56~~	~~0.14~~	~~8'-0~~	~~7'-6~~	~~25.3~~		~~12.5~~	~~1036~~
~~D80~~	~~80'-0~~	~~81'-0~~	~~½"ϕ~~	~~18~~	~~8~~	~~751.4~~	~~25.5~~	~~0.86~~	~~1.10~~	~~0.72~~	~~0.18~~	~~8'-0~~	~~7'-6~~	~~27.0~~		~~13.3~~	~~1095~~
~~D85~~	~~85'-0~~	~~86'-0~~	~~½"ϕ~~	~~20~~	~~10~~	~~867.0~~	~~30.1~~	~~1.09~~	~~1.41~~	~~0.90~~	~~0.22~~	~~8'-0~~	~~7'-6~~	~~28.8~~		~~14.1~~	~~1148~~
~~D90~~	~~90'-0~~	~~91'-0~~	~~½"ϕ~~	~~24~~	~~10~~	~~982.6~~	~~27.1~~	~~1.40~~	~~1.82~~	~~1.12~~	~~0.28~~	~~8'-0~~	~~7'-6~~	~~30.4~~		~~15.0~~	~~1315~~
D95	95'-0	96'-0	½"ϕ	28	10	1098.2	25.7	1.75	2.26	1.36	0.34	8'-0	7'-6	31.9		15.8	1505

① Deflections due to weight of slab and diaphragm. The deflections shown are for a slab weight of 656 #/ft. (7" slab and 7'-6 beam spacing) and diaphragm weight of 3190 lb. at ℄ of span for D35 to D60 inclusive and at ⅓ points for D65 to D95 inclusive. For different slab and diaphragm weights, deflections will be directly proportional.

② Total beam deflection at ℄ of span, Δ D, due to weight of slab and diaphragms for detailing purpose:
(A) Δ D = Δ I + Δ T for simple span.
(B) Δ D = Δ I + ¾ Δ T for end spans of continuous bridge.
(C) Δ D = Δ I + ½ Δ T for interior spans of continuous bridge.



The strands shall be cut off reasonably flush with the concrete.

STRAND PROJECTION AT BEAM ENDS AT THE ABUTS.

NOTES:

These beams are designed for AASHO live loads as indicated in above table with an allowance of 20 lb. per square foot of roadway for future wearing surface. In addition an allowance of 25 psf for a second lift of P.C. Concrete is included with the HS20 loading.

Hold down points for harped strands may be moved toward ends of beam a distance of .025L maximum at producer's option.

Tops of beams are to be struck off level and artificially roughened as directed by the Iowa Highway Commission Materials Department.

Bearings shall be as detailed on other design sheets.

Beams to be used in bridges made continuous by the poured in place floor are to be at least 28 days old before the floor is placed unless a shorter curing time is approved by the Bridge Engineer.

The portions of the prestress beams that are to be embedded in the abutment and pier diaphragms shall be roughened for a distance of 10" from the beam end by sandblasting or other approved methods to provide suitable bond between the beam and the diaphragm in accordance with Article 2403.15 of the specifications.

All prestressing strands are to be ½"ϕ 270K grade.

Unless otherwise noted all beams are to be increased in length by .00055L to compensate for elastic shortening, creep and shrinkage.

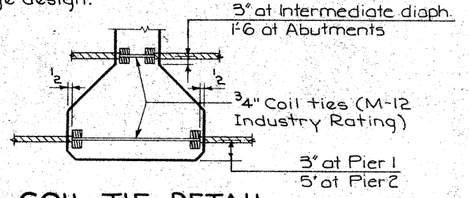
DESIGN STRESSES:

Design Stresses for the following materials are to be in accordance with AASHO Standard Specifications for Highway Bridges, Series of 1973:
Reinforcing Steel in accordance with Section 1.5.1(D), f's = 20,000 psi.
Concrete in accordance with Section 1.6.6(B), f'c = 5000 psi.
Prestressing Steel in accordance with Section 1.6.6(A), f's = 270,000 psi.

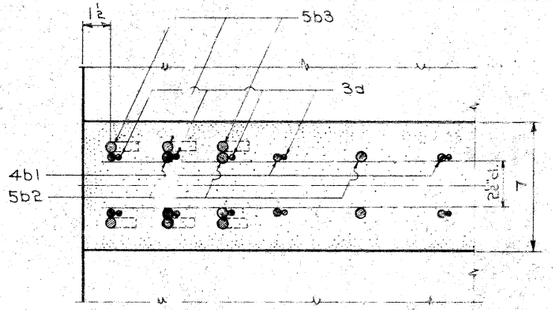
SPECIFICATIONS:

CONSTRUCTION: Standard Specifications of the Iowa State Highway Commission, Series of 1972, with current applicable Special Provisions and Supplemental Specifications.
DESIGN: AASHO, Series of 1973, with minor modifcations.

Number and exact location of coil ties to be as detailed on specific bridge design.



COIL TIE DETAIL

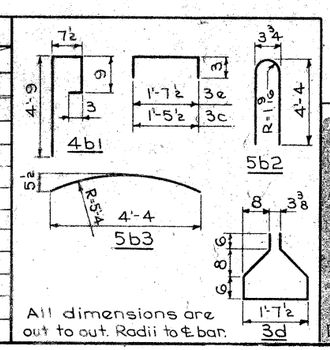


SECTION A-A SHOWING PLACEMENT OF STIRRUPS NEAR END OF BEAM

REINFORCING BAR LIST

Beam / Span		35'-0		40'-0		45'-0		50'-0		55'-0		60'-0		65'-0		70'-0		75'-0		80'-0		85'-0		90'-0		D95	95'-0
Bar	Shape	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length
4a1	—	2	4'-0	2	4'-0	2	4'-0	2	4'-0	—	—	—	—	2	4'-0	2	4'-0	2	4'-0	2	16'-0	2	18'-0	2	20'-0		
a2	—	—	—	—	—	—	—	—	—	—	—	—	—	5/4	22'-1	5/4	23'-7	5/4	25'-1	5/4	26'-7	5/4	28'-7	5/4	30'-1	6/4	31'-11
a3	—	—	—	—	—	—	—	—	—	—	—	—	—	6/2	25'-0	6/2	27'-0	6/2	29'-0	6/2	31'-0	6/2	32'-0	6/2	34'-0	6/2	36'-0
5b1	⊏	66	6'-2	74	6'-2	74	6'-2	86	6'-2	94	6'-2	102	6'-2	106	6'-2	114	6'-2	124	6'-2	132	6'-2	136	6'-2	148	6'-2	160	6'-2
5b2	⊂	6	8'-9	6	8'-9	6	8'-9	6	8'-9	8	8'-9	8	8'-9	8	8'-9	10	8'-9	10	8'-9	10	8'-9	10	8'-9	12	8'-9	12	8'-9
5b3	—	4	4'-5	4	4'-5	4	4'-5	4	4'-5	8	4'-5	8	4'-5	8	4'-5	12	4'-5	12	4'-5	12	4'-5	12	4'-5	20	4'-5	20	4'-5
3c	⊏	33	1'-11	37	1'-11	39	1'-11	43	1'-11	47	1'-11	51	1'-11	53	1'-11	57	1'-11	62	1'-11	66	1'-11	68	1'-11	74	1'-11	80	1'-11
3d	△	33	5'-5	37	5'-5	39	5'-5	43	5'-5	47	5'-5	51	5'-5	53	5'-5	57	5'-5	62	5'-5	66	5'-5	68	5'-5	74	5'-5	80	5'-5
3e	⊏	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	14	2'-1	14	2'-1	14	2'-1	16	2'-1

A/B
A=Size
B=№



Design for 45° Skew
288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
95'-9 End Spans — 96'-6 Center Span
BEAM D95 DETAILS
Station 673+11 — April, 1976
SHELBY COUNTY
Iowa Department of Transportation, Highway Division
Design Sheet № 16 Of 20 Sheets File № 25682 Design № 1875

DESIGNED BY: R. A. Nenning
DETAILED BY: C.F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Novey

PRESTRESSED BEAM DETAILS - PC 15D

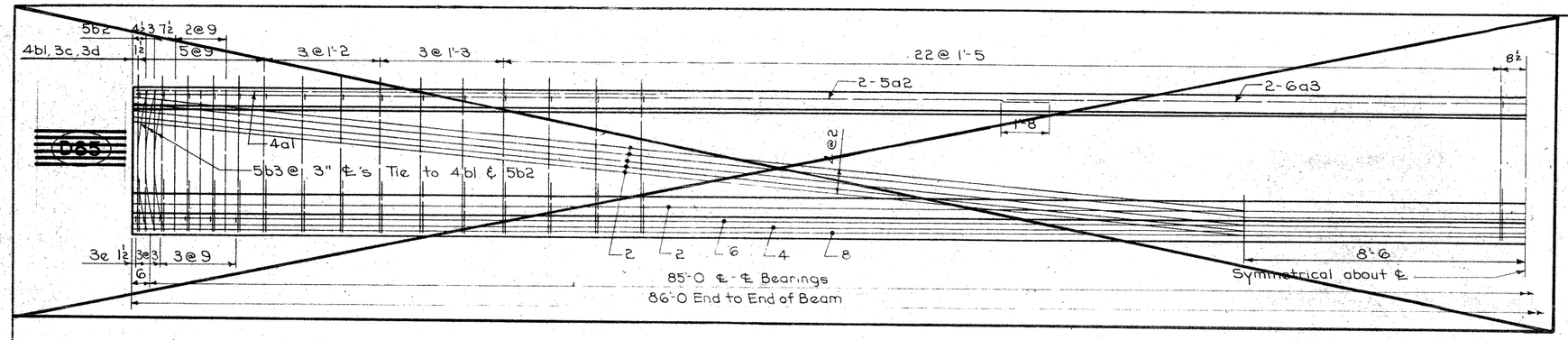
STANDARD SHEET 4070

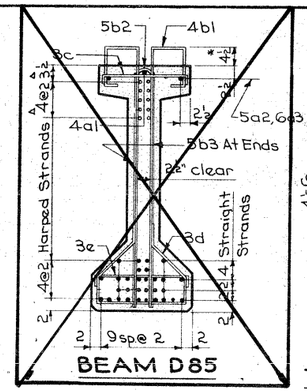
Shelby COUNTY

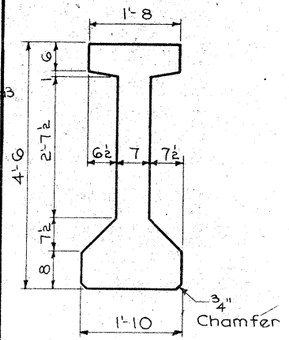
STATE	FED.ROAD DIST. №	FISCAL YEAR	SHEET №	TOTAL SHEETS
IOWA	5		18	23

SEN NO. 131 ARKWRIGHT

Revised (2-1-69): Number of strands in D11, D12 and D13 changed.
Revised 3-6-69: Beam designation numbers changed.
Revised 8-22-69: Length of Bar 4a1 in Beams D85, D90 and D95 changed.
Revised 5-2-75: Two strands added to D95, four 5b3 bars added to D90 and D95.

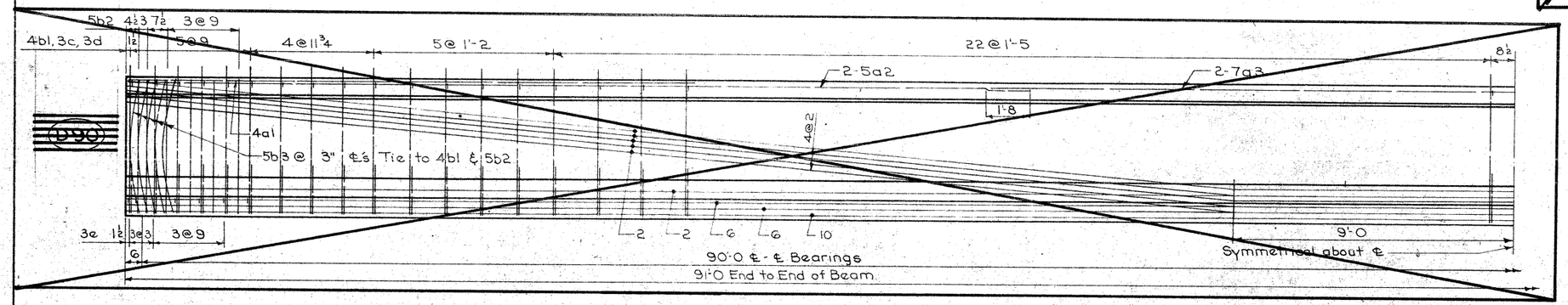


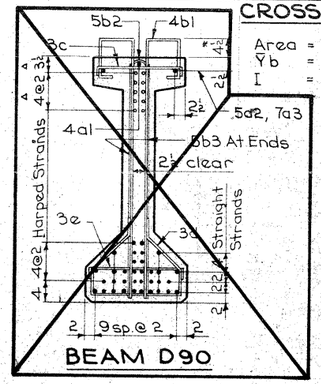


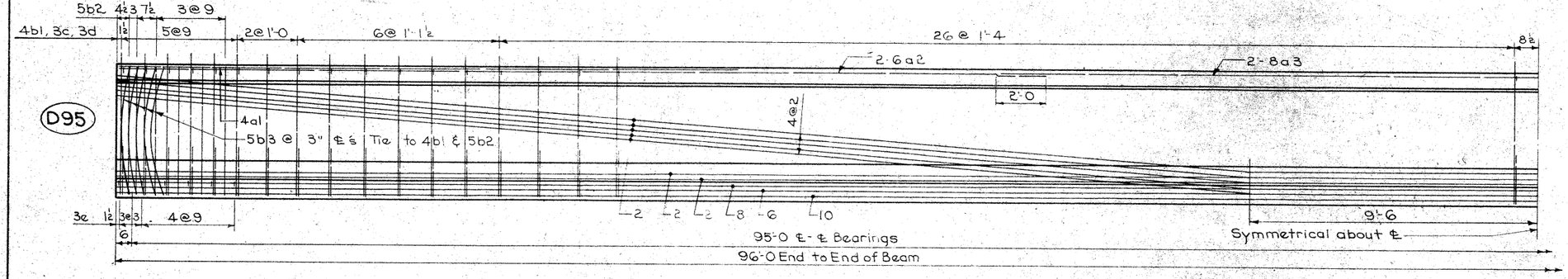


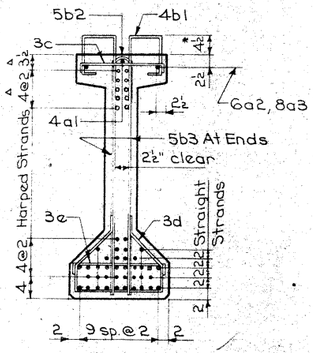
TYPICAL "D" BEAM CROSS SECTION

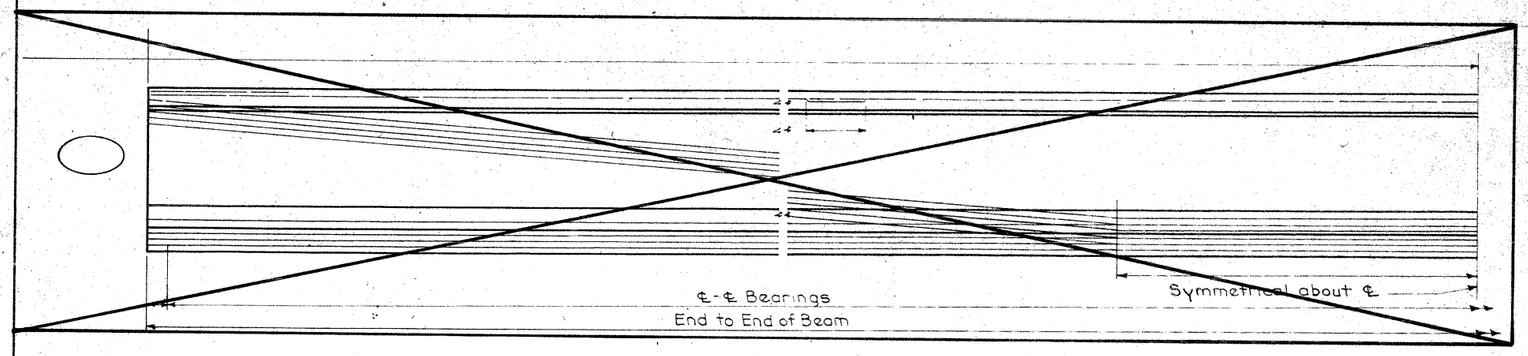
Area = 638.75 in.²
Ȳb = 24.37 in.
I = 214,974 in.⁴

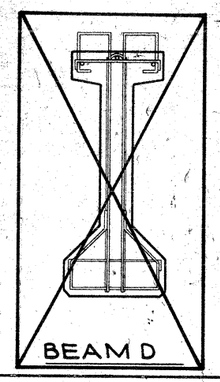












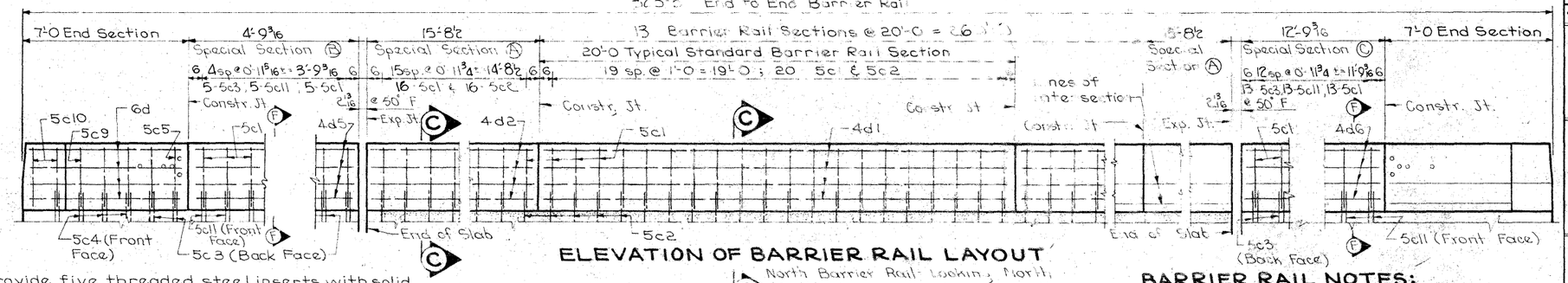
△ DIMENSIONS AT END OF BEAM
* KEEP

Design for 45° Skew
288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
95'-9 End Spans 96'-6 Center Span
BEAM D95 DETAILS
Station 673+11 April, 1976
SHELBY COUNTY
Iowa Department of Transportation, Highway Division
Design Sheet № 17 of 20 File № 25682 Design № 1875

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		19	23

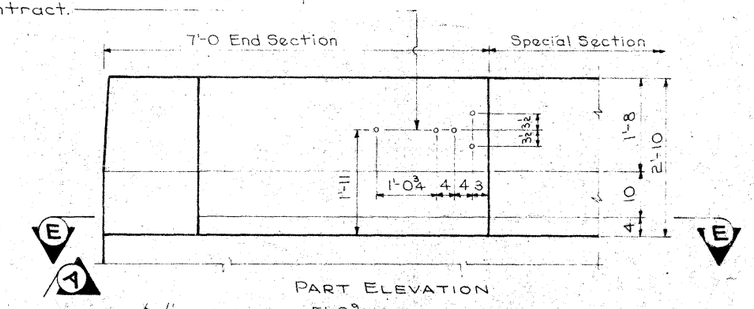
DESIGNED BY: R. B. Nanning TRACED BY:
DETAILED BY: C. F. Bellamy CHECKED BY: Gary A. Novey

PRESTRESSED BEAM DETAILS - PC 150 | STANDARD SHEET 4069 | Shelby COUNTY

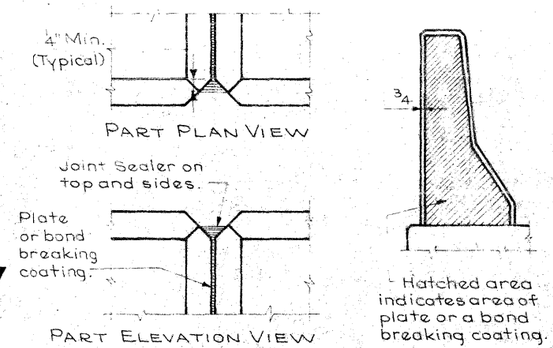


ELEVATION OF BARRIER RAIL LAYOUT

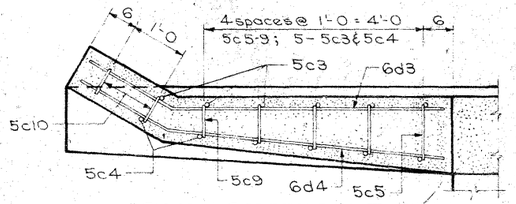
Provide five threaded steel inserts with solid bottom to fit $\frac{7}{8}$ x 2 galvanized cap screws with galvanized round washers. Cost of inserts to be included in price bid for "Structural Concrete". Screws and washers are not a part of this contract.



DETAILS OF END SECTION



BARRIER RAIL JOINT DETAILS AT CONSTRUCTION JOINTS



PART SECTION E-E

NOTE:
Cross Sectional Area of the Special Section and Standard Section of the Barrier Rail = 2.66 square feet.

BARRIER RAIL NOTES:

Minimum clear distance from face of concrete to rear reinforcing bar is to be 2" unless otherwise noted or shown.

All exposed corners 90° or sharper are to be filleted with a $\frac{3}{4}$" dressed and beveled strip.

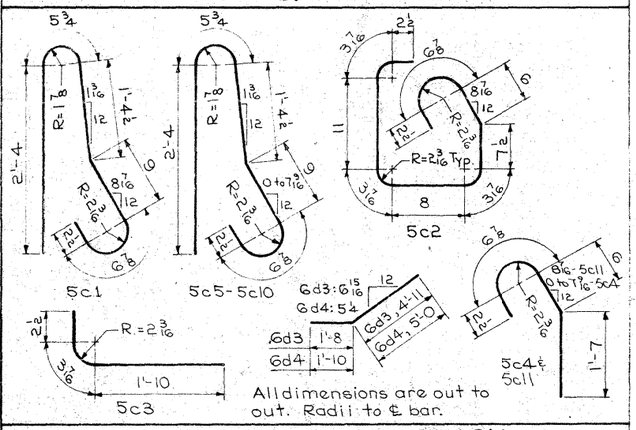
Top of the barrier rail is to be parallel to the theoretical ℄ grade.

The barrier rail may be placed in sections or continuously between expansion joints. When the barrier rail is poured continuously a $\frac{3}{8}$ inch aluminum or galvanized plate shall be placed at the joints to separate the sections. When the barrier rail is placed in sections the end of the section to be poured against is to be coated with paraffin, bituminous paint or other bond breaker approved by the Engineer and the plate separators may be omitted. Cost of joint sealer and bond breaker shall be considered incidental to other construction.

REINFORCING STEEL

Section	Bar	Location	Shape	Nº	Length	Weight
26 Standard Section	5c1	Vertical		20	5'-9	120
	5c2	Vertical		20	4'-7	96
	4d1	Longitudinal		7	19'-8	92
	Total For One Section			Total (lb.)		308
4 7'-0 End Section	5c3	Vertical		6	2'-4	15
	5c4	Vertical		6	2'-11	18
	5c5-10	Vertical		7	5'-9	42
	6d3	Longitudinal		6	6'-7	59
	6d4	Longitudinal		1	6'-10	10
	Total For One Section			Total (lb.)		144
8 Special Sections (All reinforcing read)	5c1	Vertical		100	5'-9	600
	5c2	Vertical		64	4'-7	306
	5c3	Vertical		36	2'-4	88
	5c11	Vertical		36	2'-11	110
	4d2	Longit. Special Sections (A)		28	15'-4	287
	4d5	Longit. Special Sections (B)		14	4'-5	41
	4d6	Longit. Special Sections (C)		14	12'-5	116
	Total lbs. for all Special Sections			Total (lb.)		1548

BENT BAR DETAILS



All dimensions are out to out. Radii to ℄ bar.

REINFORCING SUMMARY

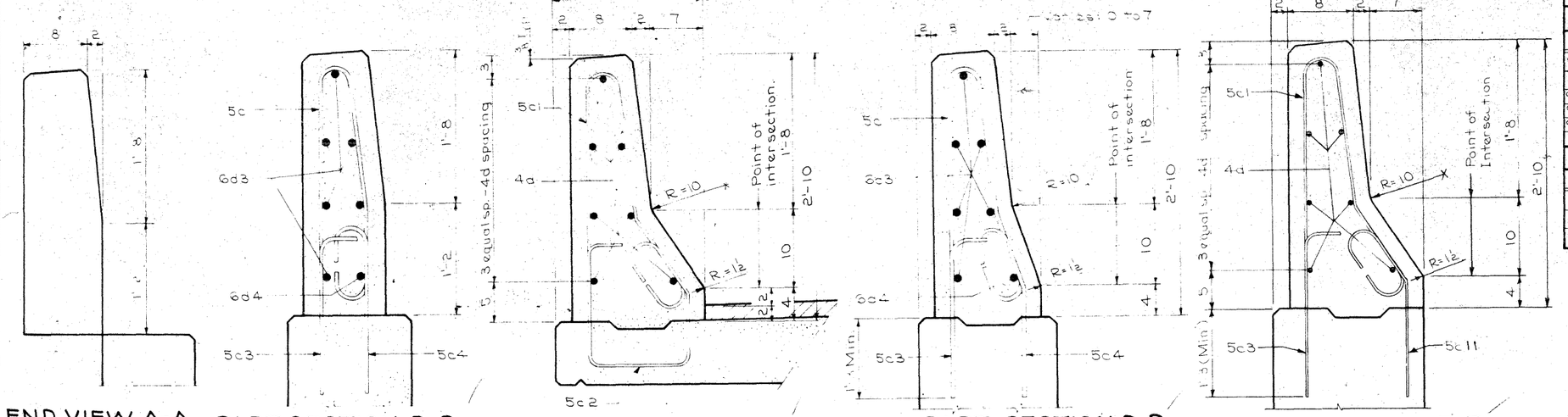
Section	Number of Sections	Reinforcing Per Section	Total
Standard	26	308	8008
End	4	144	576
Special	8		1548
		Total (lb.)	10132

CONCRETE PLACEMENT SUMMARY

Section	Number of Sections	Concrete Per Section	Total
Standard	26	1.97	51.2
End	4	.62	2.5
Special (A)	4	1.55	6.2
Special (B)	2	0.47	0.9
Special (C)	2	1.26	2.6
		Total (Cu.Yd.)	63.4

TOTAL QUANTITIES

Item	Unit	Quantity
Structural Concrete Class D	c.y.	63.4
Reinforcing Steel	lb.	10132



Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

BARRIER RAIL DETAILS

Station 673+11

April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

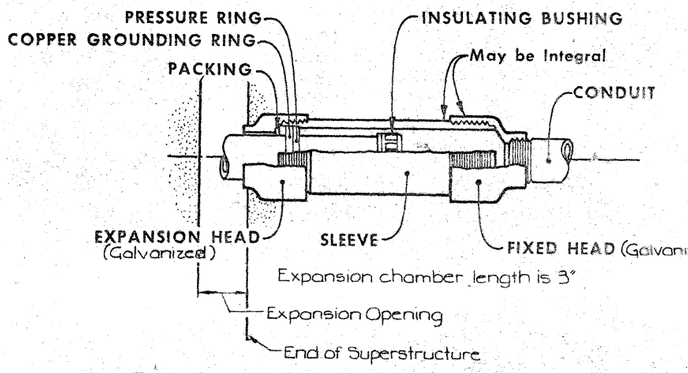
Design Sheet No.: 18 Of 20 File No.: 25682 Design No.: 1875

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		22	23

DESIGNED BY: R. B. Manning
DETAILED BY: C. F. Bellamy
TRACED BY: C. F. Bellamy
CHECKED BY: Gary A. Novey

BARRIER RAIL - Shelby COUNTY

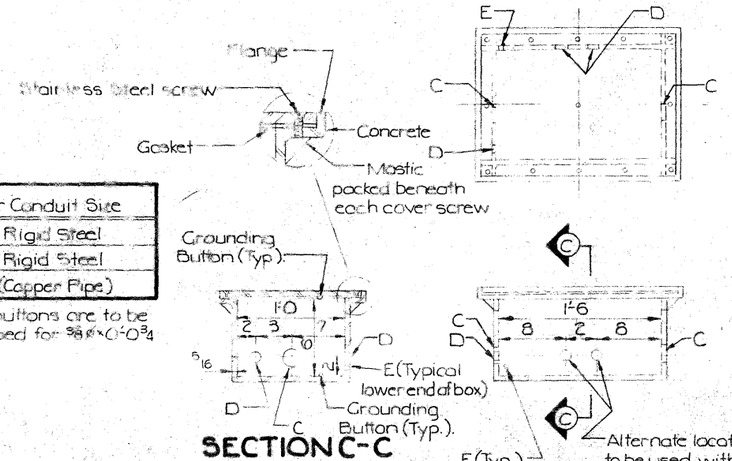
Issued 1-5-76



RM-2A, TYPE 1 EXPANSION FITTING

Bossed For	Hole	For Conduit Size
5 Threads	C	2"ø Rigid Steel
None	D	1"ø Rigid Steel
None	E	½"ø (Copper Pipe)

Note: The grounding buttons are to be blind drilled and tapped for $\frac{3}{8}$ø × 0'-0 $\frac{3}{4}$ bolts.



SECTION C-C

RM-9, TYPE 1 JUNCTION BOX

Watertight Cast Iron - Flush Mount

LIGHTING NOTES:

Construction shall conform with the current Iowa State Highway Commission Standard Specifications plus current Special Provisions and current Supplemental Specifications for Highway Lighting.

Anchor bolt material shall comply with the requirements of ASTM A-325 or A-193 Grade B7. Anchor bolt nuts shall comply with ASTM A-325. Anchor bolts shall be galvanized.

After conduit runs have been installed a stiff, oversize wire brush or mandrel shall be pulled through the conduit to make certain that no appreciable foreign material remains in the conduit and that the conduit has not been flattened or otherwise blocked during construction. Each open end of the conduit shall be threaded. Threads shall be protected with an approved bituminous compound. Temporary caps or plugs shall be installed to exclude dirt and moisture.

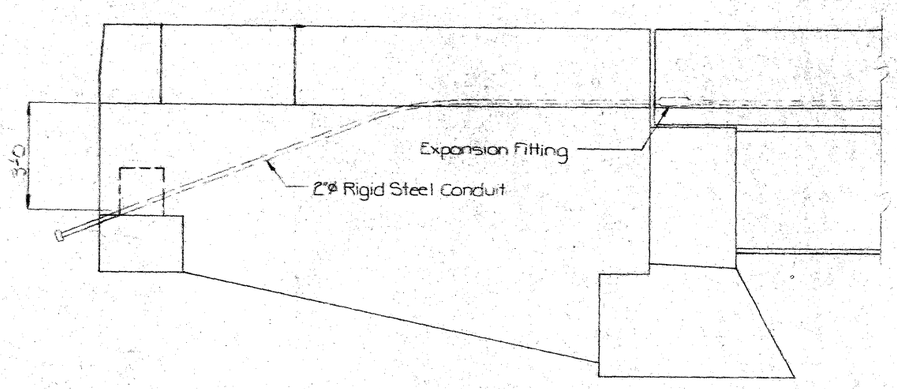
All entrance holes in junction boxes except for drain pipes shall be tapped for the specified conduit size. Grounding buttons shall be located approximately 3" from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed in the low corner of the box, with a minimum clearance of 1" between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

The contract unit price per lineal foot of conduit shall be full compensation for furnishing all material (including junction boxes and fittings) labor and any work incidental to the installation. The concrete and weight of reinforcing steel is included in the Superstructure Estimated Quantities.

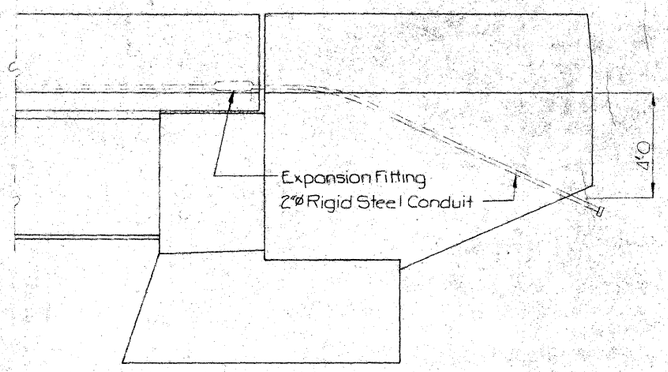
The length of conduit installed shall be measured in feet by the Engineer.

Cost of furnishing and installing poles, lights and lighting conductor is not a part of this estimate.

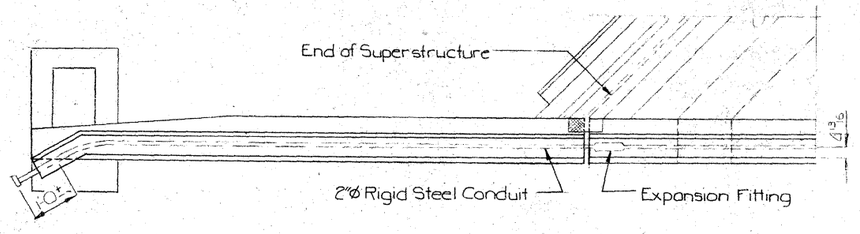
Expansion fitting shall be as specified or as approved by the Engineer. Typical details are shown on this sheet.



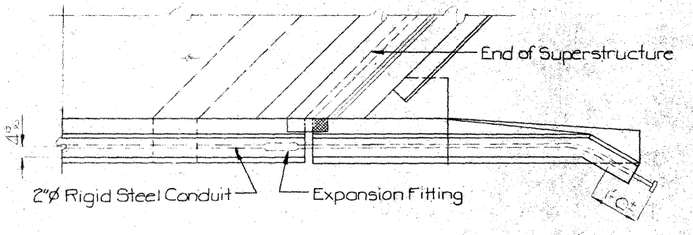
PART ELEVATION - LONG WING



PART ELEVATION - SHORT WING



PART PLAN - LONG WING



PART PLAN - SHORT WING

TOTAL ESTIMATED QUANTITIES

Item	Unit	Quantity
2" Rigid Steel Conduit*	L.F.	658
Structural Concrete Class D	Cu. Yd.	0.3
Reinforcing Steel	Lbs.	74

*Quantity includes 652 L.F. of 2"ø Conduit and 6 L.F. of 1"ø Conduit.

Design for 45° Skew

288'-0 × 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

LIGHTING DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

Iowa Department of Transportation, Highway Division

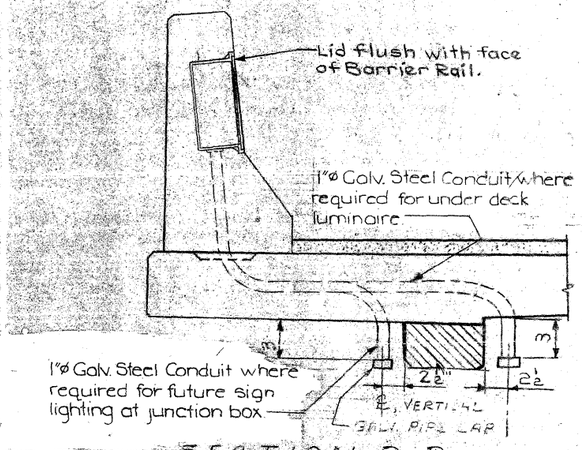
Design Sheet No.: 19 Of 20 File No.: 25682 Design No.: 1875

DESIGNED BY: L.B. Henning
DETAILED BY: C.F. Bellamy
TRACED BY:
CHECKED BY: Gary A. Novey

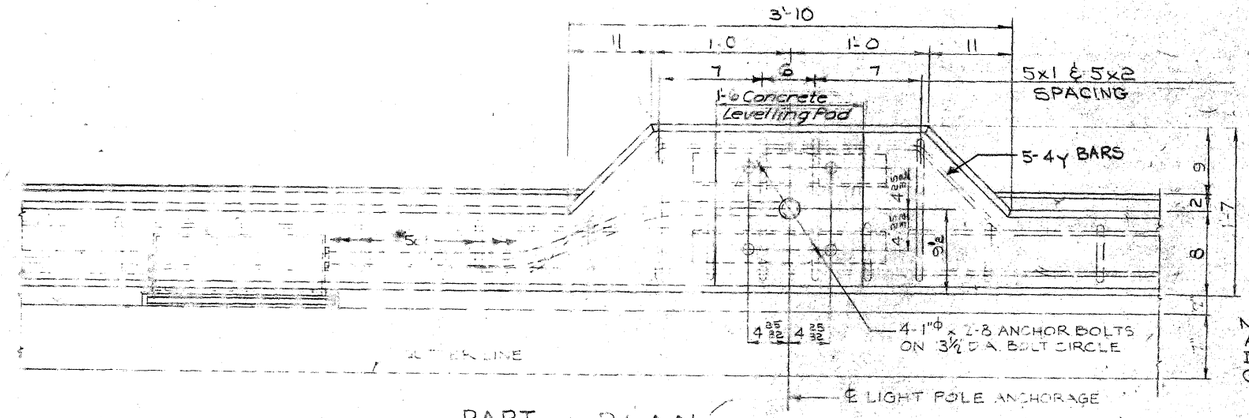
STATE	FED. ROAD DIST. NO.	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
IOWA				

Shelby COUNTY

RK SHEET 000 316640

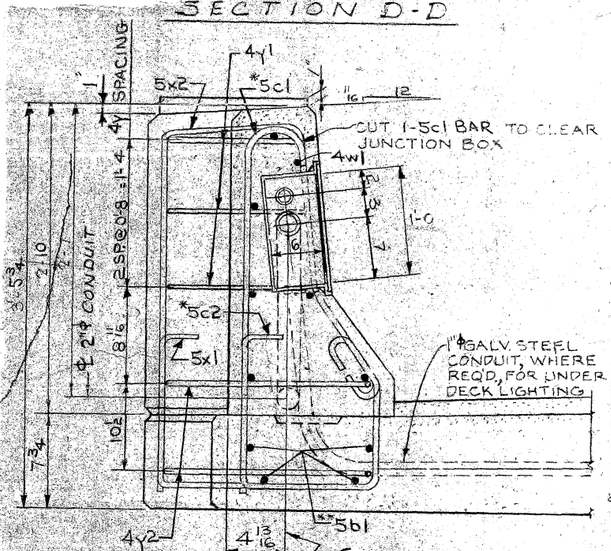


SECTION D-D



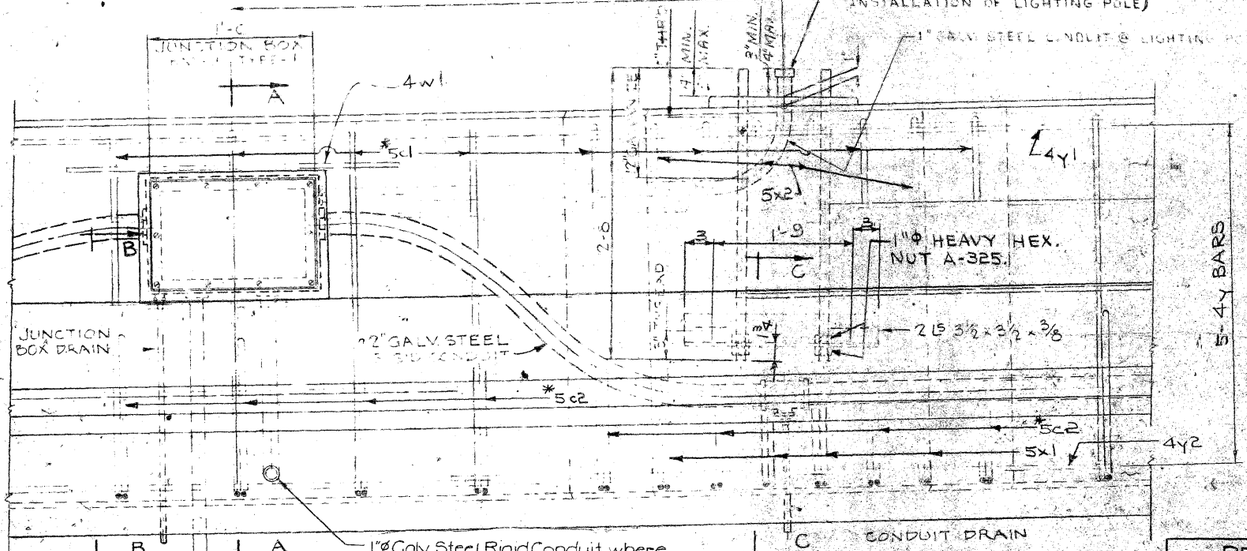
PART PLAN

NOTE: ANCHOR BOLTS ARE TO BE INCLUDED IN PRICE BID FOR CONCRETE.

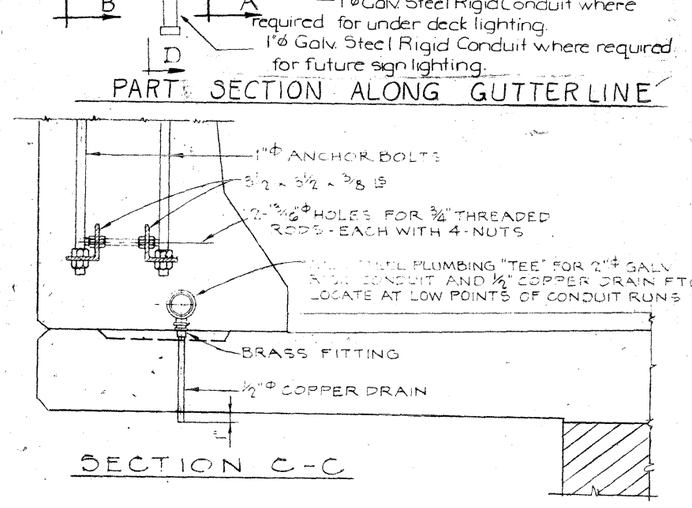


SECTION A-A

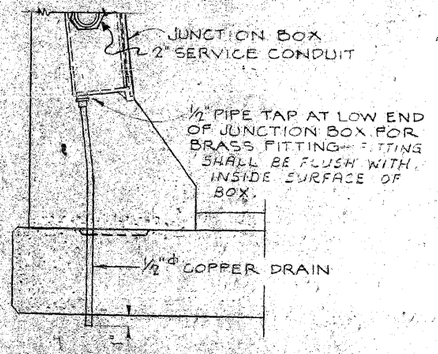
* Included with Barrier Rail reinforcing.
** Included with Slab reinforcing.



Note:
See "Situation Plan", sheet 1 for location of light pole base.



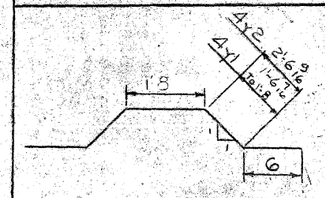
PART SECTION ALONG GUTTER LINE

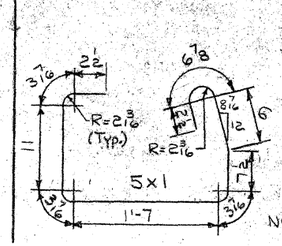


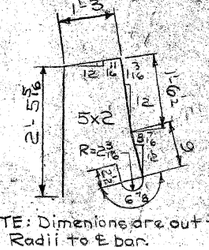
SECTION B-B

SECTION C-C

BENT BAR DETAILS







NOTE: Dimensions are out to out. Radii to ℄ bar.

REINFORCING BAR LIST - ONE BRIDGE

Bar	Location	Shape	No	Length	Weight
4w1	Horizontal at Junction Boxes	——	1	3'-6	2
5x1	Vertical	⊔	4	5'-6	23
5x2	Vertical	⊓	4	6'-7	27
4y1	Anchor - Horizontal	⌒	3	Varies	12
4y2	Anchor - Horizontal	⌒	2	7'-0	10
				Total (lb.)	74

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95'-9 End Spans 96'-6 Center Span

LIGHTING DETAILS

Station 673+11 April, 1976

SHELBY COUNTY

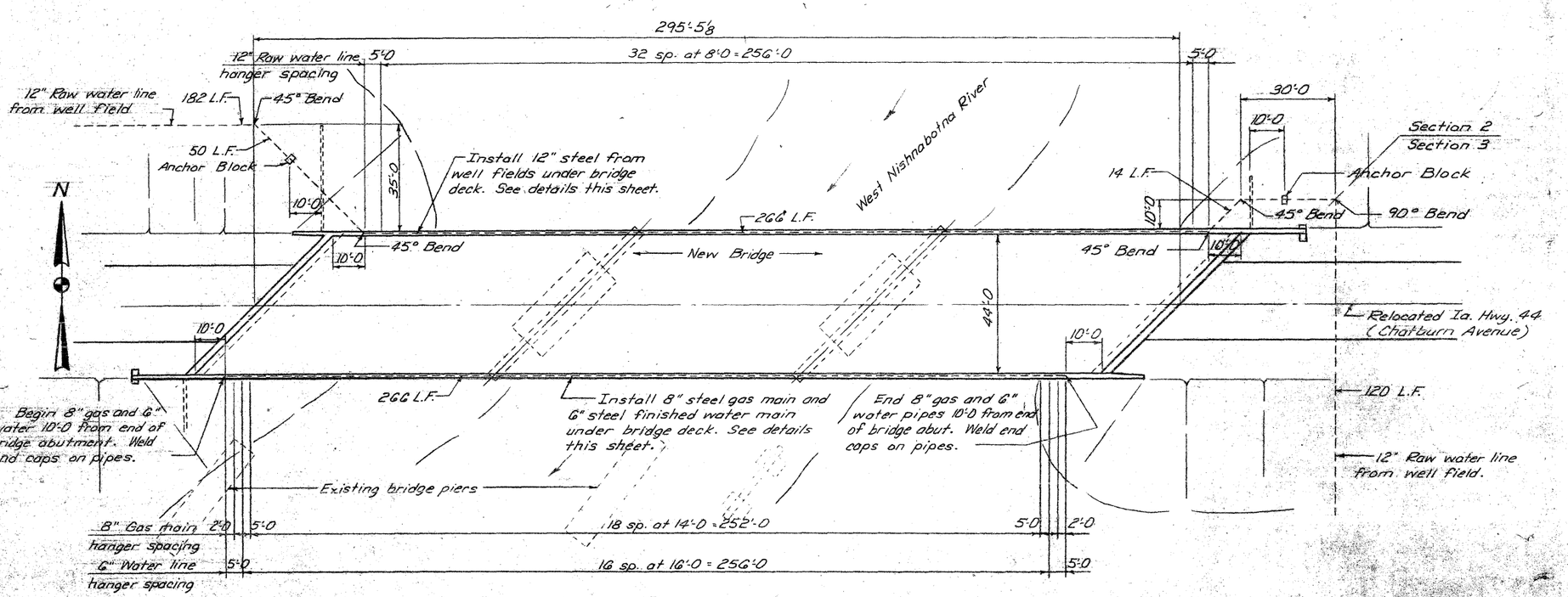
Iowa Department of Transportation, Highway Division

Design Sheet No: 20 of 20 File No. 25682 Design No: 1875

DETAILED BY: C. C. Osgerby
DESIGNED BY: [illegible]
CHECKED BY: Gary Covey
TRACED BY:

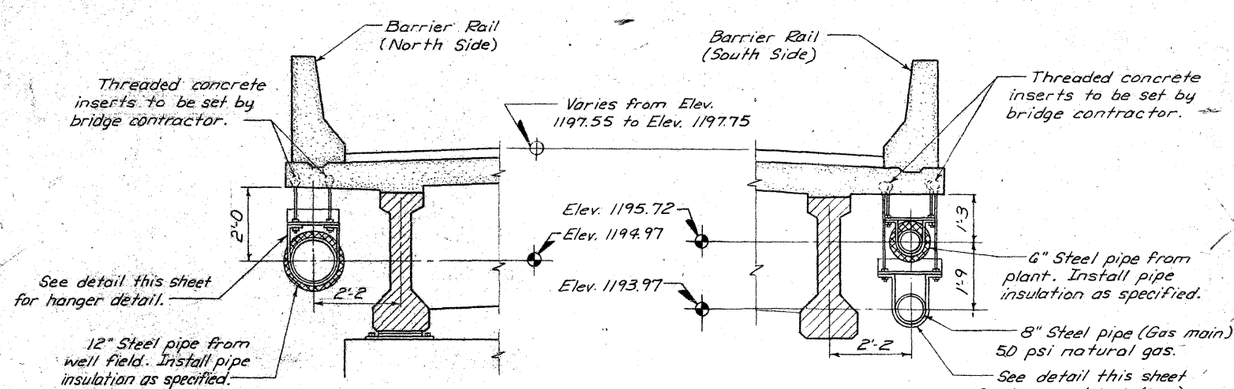
Shelby County

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		22	23



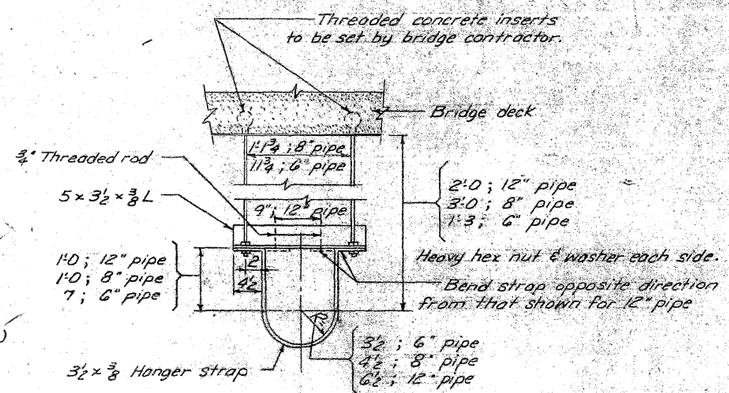
SITUATION PLAN

NOTE:
The bridge contractor is to install the concrete inserts as detailed on this sheet. Inserts will be furnished by the utility companies. The cost of installing concrete inserts will be considered incidental to other work. All other hanger materials will be furnished and placed by others at a future date.



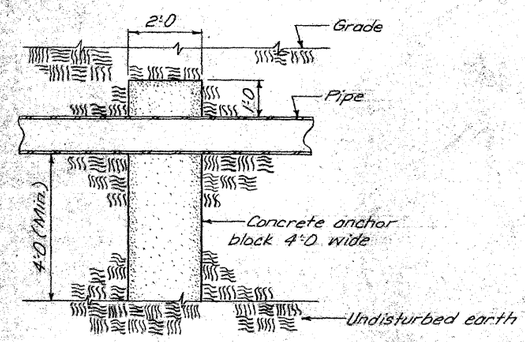
RAW WATER PIPE

GAS AND FINISHED WATER PIPES



PIPE HANGER DETAIL

NOTE:
See "Situation Plan" this sheet for hanger spacing.



ANCHOR BLOCK DETAIL

Design for 45° Skew

288'-0 x 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

95'-9 End Spans 96'-6 Center Span

UTILITY LINE DETAILS

Station: 673 +11 April 1976

SHELBY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

Design Sheet No.: 20A Of 20 File No.: 25682 Design No.: 1875

DESIGNED BY:
DETAILED BY: Darwin Backous
TRACED BY: Darwin Backous
CHECKED BY:

SHELBY COUNTY | PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA			20	25