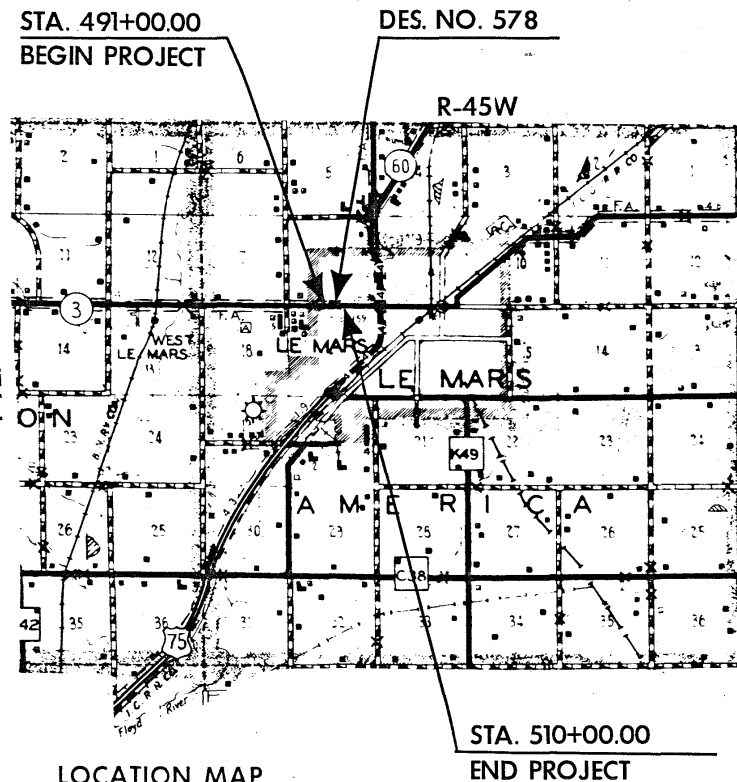
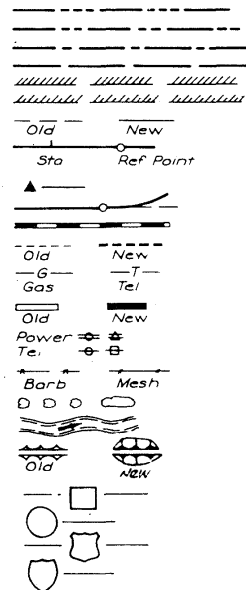


CONVENTIONAL SIGNS

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



LOCATION MAP



JANUARY 20, 1981

IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division
PLANS OF IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
PLYMOUTH COUNTY

BRIDGE

IA. 3 OVER FLOYD RIVER IN LE MARS

SCALES AS NOTED

THE STANDARD SPECIFICATIONS, SERIES OF 1977
OF THE IOWA DEPARTMENT OF TRANSPORTATION,
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 the
AASHTO Standard Specifications for Highway Bridges, Series of 1977.
Reinforcing Steel in accordance with Section 1.5, Grade 40 and Grade 60.
Concrete in accordance with Section 1.5, $f'c = 3,500$ 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.

MILEAGE SUMMARY				105.1
DIV.	LOCATION	LIN. FT.	MILES	
(URBAN)	STA. 491+00.00 TO STA. 510+00.00	1,900.00		
	OMIT BRIDGE AT STA. 500+50.00	348.50		
	NET LENGTH OF ROADWAY	1,551.50	0.294	
	NET LENGTH OF BRIDGE	348.50	0.066	
	TOTAL LENGTH OF PROJECT	1,900.00	.360	

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: ROGER RIERBAUM *Roger E. Rierbaum*
Resident Construction Engineer

Date Feb. 11, 1982 Iowa Reg. No. 8269

REVIEWED AND FORWARDED TO AMES

James E. De Witte Date 10-3-83
District Construction Engineer

One 50% Reduced and Two Full-Size Prints To Be Made and Returned To

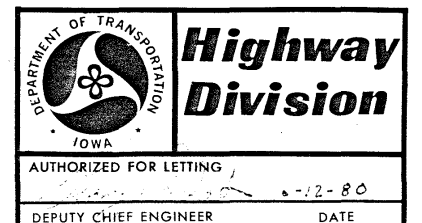
James R. Bump
District Engineer

RETURN ORIGINAL
TO DISTRICT NO. 3

THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1981	BRIDGE	GRAVES	L. HARMON

DESIGN DATA URBAN			
1980	AADT	2070	V.P.D.
2000	AADT	2690	V.P.D.
2000	DHV	309	V.P.H.
TRUCKS		8	%
CLASS	4	ACCESS CONTROL	

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.
7.792 4-1-80
IOWA REGISTRATION NUMBER DATE



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

PROJECT NUMBER	
BRF-3-1(20)--38-75	
R.O.W. PROJECT NUMBER	
FN-3-1(21)--21-75	
PRELIMINARY ENGINEER NUMBER	
F-3-1(900)--20-75	

INDEX OF SHEETS	
NO.	DESCRIPTION
1	TITLE SHEET
2	QUANTITIES SHEET
3-16	BRIDGE DESIGN NO. 578 & PILING LOG

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

LETTING DATE

STATE CONTROL SECTION NUMBER 75-0200

FILE NO. 26075

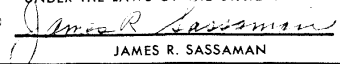
PLYMOUTH COUNTY

PROJECT NO. BRF-3-1(20)--38-75

SHEET NO. 1 OF 16

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. 17/1980



REG. NO. 2663

DATE

JAMES R. SASSAMAN

IN LETTING OF

January 20, 1981

DESIGN NO. 578
PLYMOUTH COUNTY
SECTION 8

OVER FLOYD RIVER
T-92N R-45W

STATION: 500 + 50.00
AMERICA TOWNSHIP

DESIGN FOR
343'-6 X 44' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

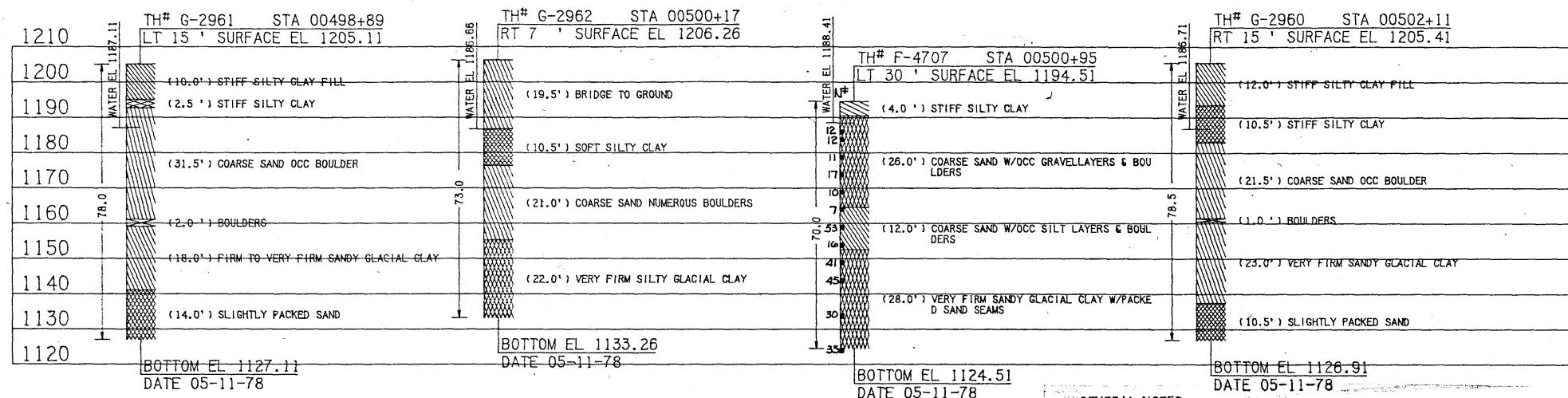
FINAL QUANTITIES

NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yds.	956.1
2	Reinforcing Steel	Lbs.	118,669
3	Reinforcing Steel - Epoxy Coated	Lbs.	68,449
4	Preten. Prestressed Concrete Beam B67R	No.	35
5	Concrete Barrier Rail	Lin. Ft.	744
6	Steel Extrusion Joint with Neoprene	Lin. Ft.	91
7	HP10 x 42 Steel	Furnish	3824.80
8	Bearing Piling	Drive	3779.20
9	Creosoted Piling	Lin. Ft.	1390.20
10	Subdrain	Lin. Ft.	212.00
11	Granular Backfill	Cu. Yds.	132.00
12	Class 10 Channel Excavation	Cu. Yds.	1650.00
13	Class 20 Excavation	Cu. Yds.	335.14
14	Class 21 Excavation	Cu. Yds.	386.00
15	Bridge Seat Sealer	Sq. Ft.	300.00
16	Structural Steel	Lbs.	2987.00
17	Removal of Existing Structures	\$	12000.00
8001	PRICE ADJ. FOR NON-COMPLYING CONC.	\$	185.02
8002	INCREASE PILE LENGTH	\$	457.80
8003	PILE ORDERED & NOT DRIVEN	\$	1500.00
8004	RETARDER	\$	1142.50

REFERENCE INFORMATION

100.4

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



SOUNDING DATA

Scale: 1"=20'0" ; Dated as Shown
N* = Number of blows per foot of penetration.

DESIGN STRESSES:

Design stresses for the following materials are in accordance with the AASHTO Standard Specifications for Highway Bridges, Series of 1977.
Reinforcing Steel in accordance with Section 1.5, Grade 40 and Grade 60.
Concrete in accordance with Section 1.5, $f'_c = 3,500$ psi.
Prestressed Concrete Beams, see Design Sheet 12 of 14.

SPECIFICATIONS:

Design: AASHTO Series of 1977.
Construction: Iowa Department of Transportation Specification, Series of 1977, plus current Supplemental Specifications and Special Provisions.

GENERAL NOTES:

It is the intent of this design to replace the existing 246'-0" x 20' Multiple Span Girder Bridge with a 343'-6" x 44' Prestensioned Prestressed Concrete Beam Bridge. The road will be closed during construction of the bridge.

BRIDGE LOADING

This bridge is designed for HS20-44 loading plus an allowance of 20 Lbs. per sq. ft. of roadway for future wearing surface.

CLASS 10 CHANNEL EXCAVATION

The Bridge Contractor shall clear the channel within the limits of the shaded area as shown on the "Situation Plan" and "Longitudinal Section A-long Roadway", Design Sheet 2 of 14. When Channel Excavation is done by others, the item of "Class 10 Excavation" will be deleted from the bridge contract. No payment will be made for work deleted.

BRIDGE SEAT SEALER

Bridge seat sealer applied to the exposed bridge seat and top of backwalls at the abutments. The bridge seat surface includes all surfaces of the bridge seat steps, the wash between the steps and the edge fillets. Sealer extends six inches up the front face of the backwall and maskwalls.

The bridge seat protective coating is an approved sealer per Materials I.M. 491.12, and applied in accordance with the manufacturer's recommendations.

GUARD RAIL

Guard Rail by others.

STRUCTURAL STEEL

The unit price bid for Structural Steel includes all costs associated with furnishing and installing the abutment bearing material as noted and shown on sheet 10 of 14.

SUBDRAIN

The Bridge Contractor install subdrains behind each abutment as detailed. The subdrain may be either drain tile or perforated plastic pipe with a minimum 4" and maximum 6" nominal diameter. The price bid for "Subdrain" includes all material, labor and excavation necessary for installation.

BEAM PREPARATION

The portions of the prestressed beams to be embedded in the abutment and pier diaphragms roughened by sand blasting or other approved method to provide suitable bond between the beam and the diaphragm in accordance with Article 2403.15 of the Standard Specifications.

STRIP SEAL EXPANSION DEVICE

A Wabo-Maurer or an Acme strip sealing system is used at the abutments. The unit price bid for "Steel Extrusion Joints with Neoprene" to include all materials and labor necessary for the installation as detailed on these plans.

REINFORCING NOTE

Unless otherwise specified, the reinforcement supplied for this structure may be grade 40, 50 or 60 reinforcement in accordance with the Standard Specifications. The design stresses for all grades are based on 40 grade reinforcement.

If 60 grade reinforcement is specified in the superstructure, pier or abutment notes then only 60 grade reinforcement supplied for the part of the structure designated, and the design stresses are for 60 grade.

TOTAL		BRIDGE QUANTITIES				
Item No.	Item	Units	2 Abutments	4 Piers	Superstruc.	Total
1	Structural Concrete	Cu. Yds.	104.4	377.2	474.5	956.1
2	Reinforcing Steel	Lbs.	12,410	55,208	51,051	118,669
3	Reinforcing Steel-Epoxy Coated	Lbs.			68,449	68,449
4	Presten. Prestressed Concrete Beam B67R	No.			35	35
5	Concrete Barrier Rail	Lin. Ft.				744
6	Steel Extrusion Joint With Neoprene	Lin. Ft.			91	91
7	HPD10x42 Steel Furnish	Lin. Ft.		96 @ 40'		3824.80
8	Bearing Piling Drive	Lin. Ft.		96 @ 40'		3779.20
9	Creosoted Piling	Lin. Ft.				1390.20
10	Subdrain	Lin. Ft.				212
11	Granular Backfill	Cu. Yds.	132			132
12	Class 10 Channel Excavation	Cu. Yds.				1650
13	Class 20 Excavation	Cu. Yds.	171.12	164.03		335.15
14	Class 21 Excavation	Cu. Yds.		386		386
15	Bridge Seat Sealer	Sq. Ft.	300			300
16	Structural Steel	Lbs.			2987	2987
17	Removal of Existing Structures	L.S.				12000.00

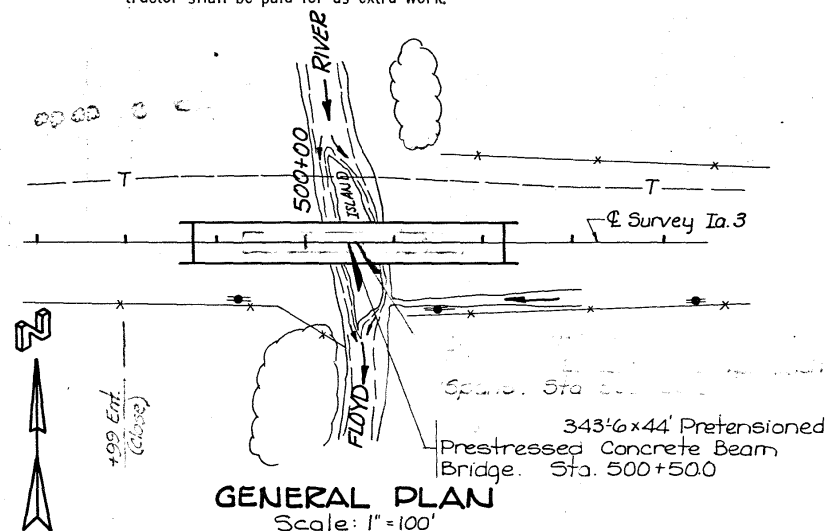
Item No.

Reference Information

The slab and diaphragms, 474.5 cu. yds. is to be Class "D" Concrete. The remainder, 481.6 cu. yds. is to be Class "C" Concrete.
Includes 32,386 lin. ft. #5 bar, 18,637 lin. ft. #6 bar, 3267 lin. ft. #7 bar.
Includes 224 lbs. of Lubricated Bronze Plate and 141 lbs. of Lead Sheet.

APPROACH FILLS

The approach fills are not a part of this estimate, but in place before the abutment piles driven. The Bridge Contractor is to level off and shape the berms to the elevations and dimensions shown. Dressing of slopes outside the bridge area not disturbed by the Bridge Contractor shall be paid for as extra work.



LEGEND
T Central Tel. Co.
Not Given

LOCATION:

La. #3 over Floyd River
T-92N R-45W
America Twp.
Section 8
Plymouth County
TRAFFIC COUNT: 2690 V.P.D. (2000)

Design For
343'-6x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3" End Spans 36'-9" Interior Spans

SOUNDING DATA
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 1 of 14 File No. 26075 Design No. 578

DESIGNED BY: E. Conner

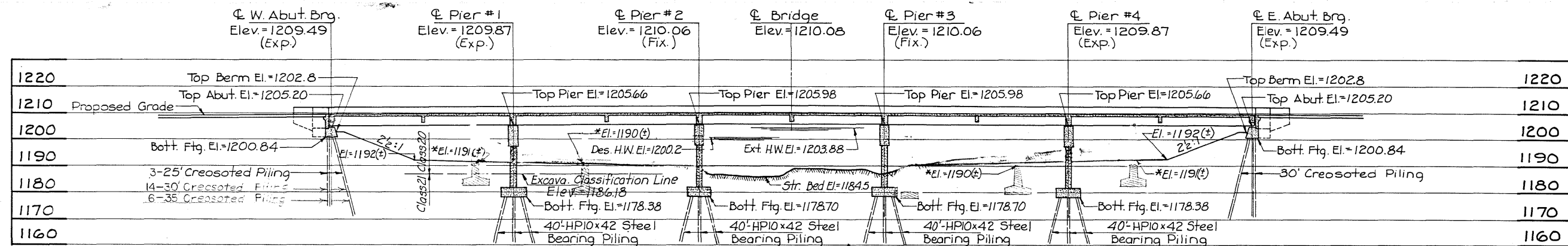
TRACED BY: Stanley Lins

SECTION LEADER

PLYMOUTH COUNTY

BRF-3-1 (20)--38-75

STAT. 500+00 500+100 500+200 500+300 500+400 500+500
IOWA 6 3 16

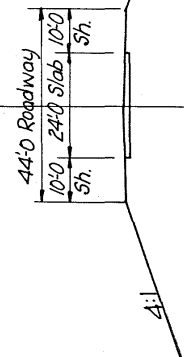


LONGITUDINAL SECTION ALONG E ROADWAY

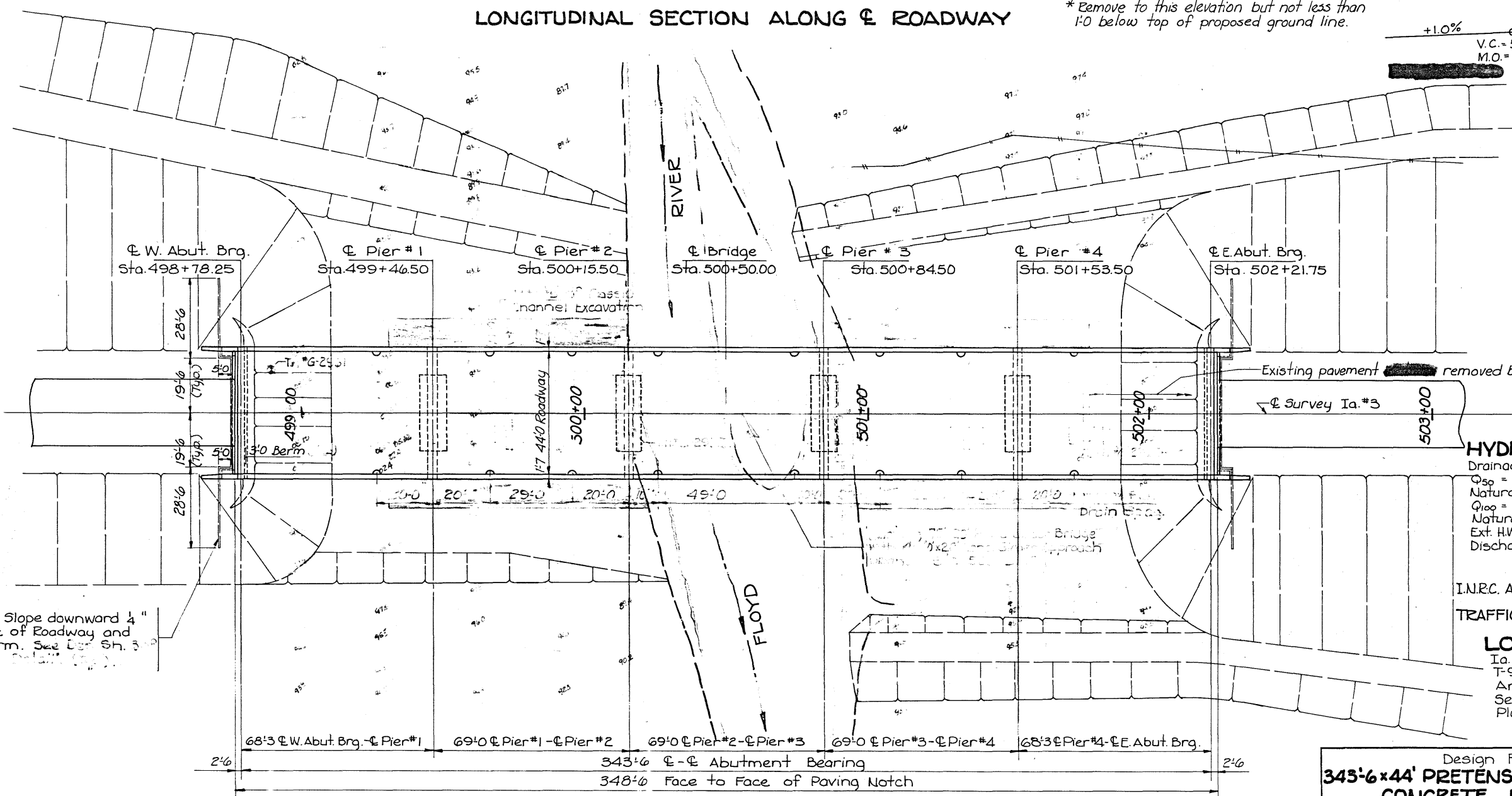
* Remove to this elevation but not less than 1:0 below top of proposed ground line.

PI Sta. 500+50
Elev. = 1211.33
+1.0%
V.C. = 500'
M.O. = 1.25'
GRADE Ia #3

TYPICAL APPROACH SECTION



Note: Subdrain. Slope downward 4" per foot from E of Roadway and extend thru berm. See Det. Sh. 3-14 for details.



SITUATION PLAN

Scale: 1" = 20'-0"

HYDRAULIC DATA:
Drainage Area = 480 Sq. Mi. R-H
Q₅₀ = 20,000 C.F.S.
Natural Stage El. = 1200.2
Q₁₀₀ = 23,000 C.F.S.
Natural Stage El. = 1200.8
Ext. H.W. El. = 1203.88 (1953) From USGS
Discharge = 60,000 C.F.S.

I.N.R.C. APPROVAL: N-80-70 Dated 3-25-80

TRAFFIC COUNT: 2690 VPD (2000)

LOCATION:
Ia #3 over Floyd River
T-92N R-45W
America Twp.
Section 8
Plymouth County

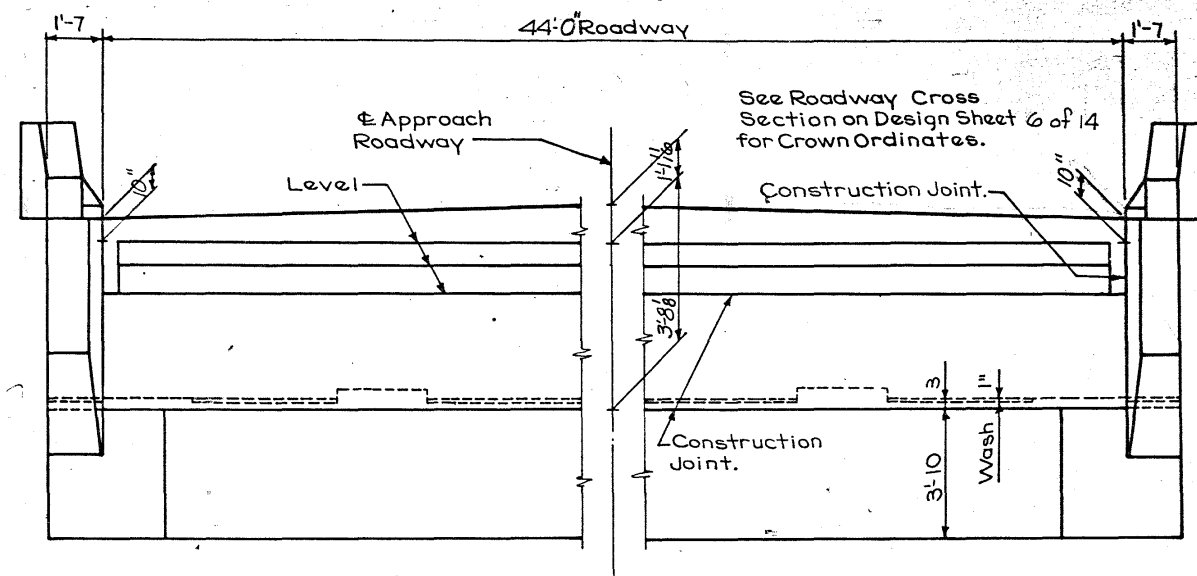
Design For
343'-6" x 44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3" End Spans 3-69'-0" Interior Spans
SITUATION PLAN
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 2 Of 14 File No.: 26075 Design No.: 578

DESIGNED BY: E. Ogawa
TRACED BY: R. Ryan
CHECKED BY: R. Ryan

PLYMOUTH COUNTY

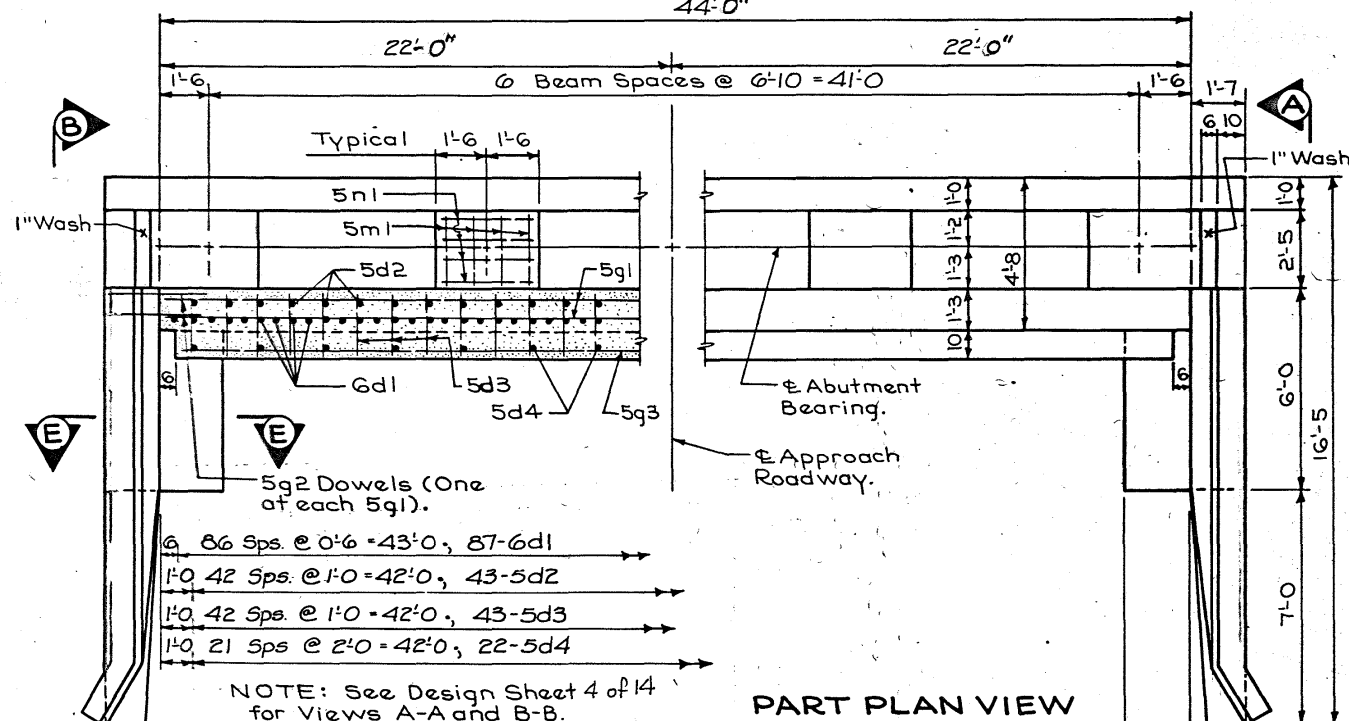
PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		4	16



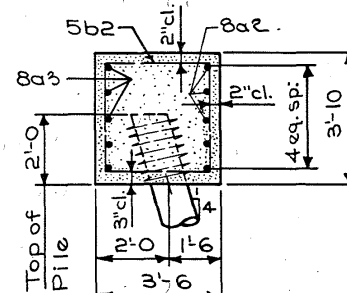
REAR ELEVATION

NOTE: Place 5m1 and 5n1 bars under each beam except exterior beams.

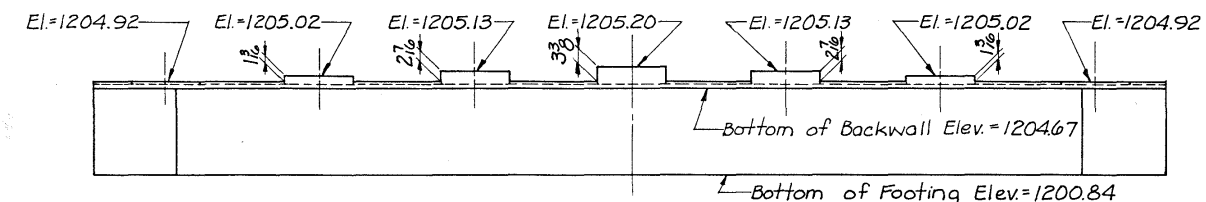


PART SECTION THROUGH BACKWALL

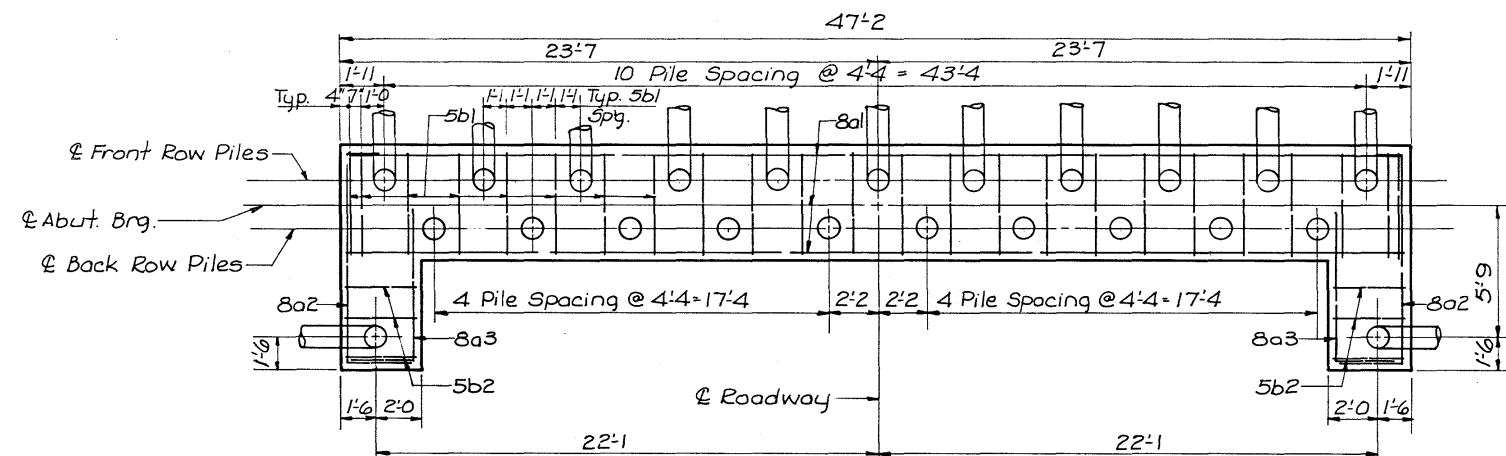
PART PLAN VIEW



SECTION E-E

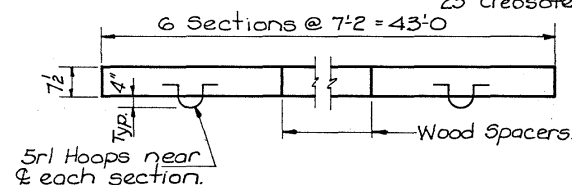


ABUTMENT STEP DIAGRAM ~ REAR ELEVATION

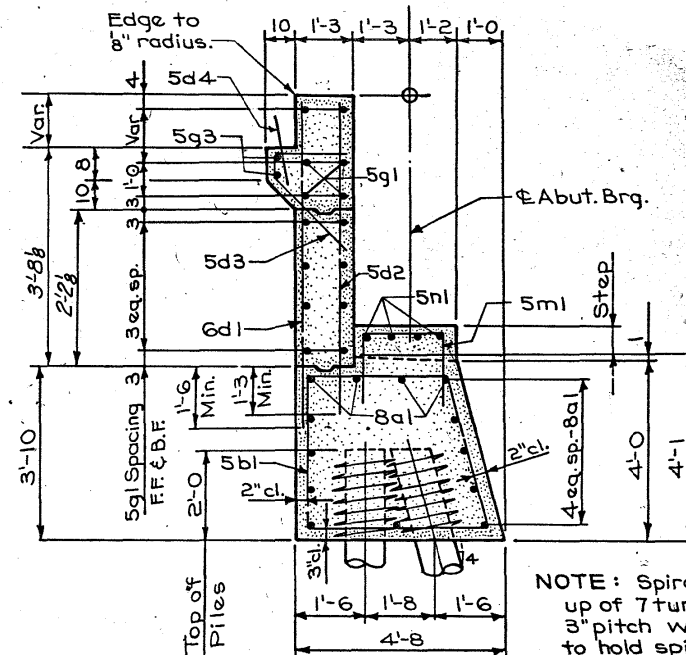


PILING LAYOUT

NOTE: Dimensions shown on Piling Layout are at the bottom of footing. Batter piles in direction shown. 23 Creosoted Piling required at each abutment.



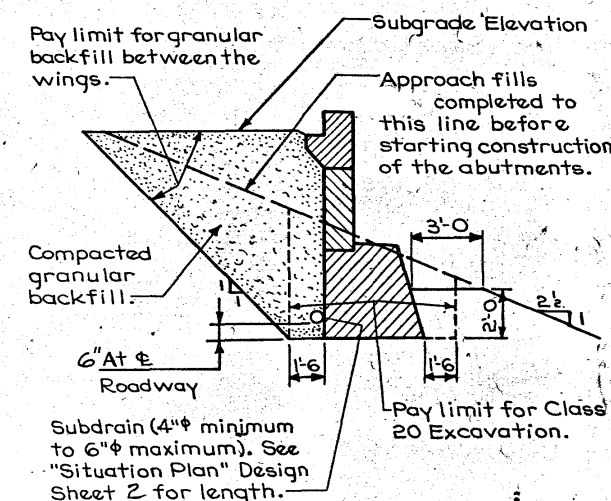
PAVING BLOCK DETAILS



NOTE: Spirals at top of each pile are made up of 7 turns of N#2 bar - 21" diameter, 3" pitch with 2-7/8" E.O.69 spacers punched to hold spiral.

SECTION THROUGH ABUTMENT

EXPANSION DEVICE NOT SHOWN



GRANULAR BACKFILL DETAIL

Design For
343'-6" x 44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
 68'-3" End Spans 3'-09'-0" Interior Spans
ABUTMENT DETAILS
 Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 3 Of 14 File No.: 26075 Design No.: 578

Revised 6-1-78: Wing footing bars changed.

DESIGNED BY: E. D. Dwyer
 TRACED BY: R. Rysavy
 CHECKED BY: R. Rysavy

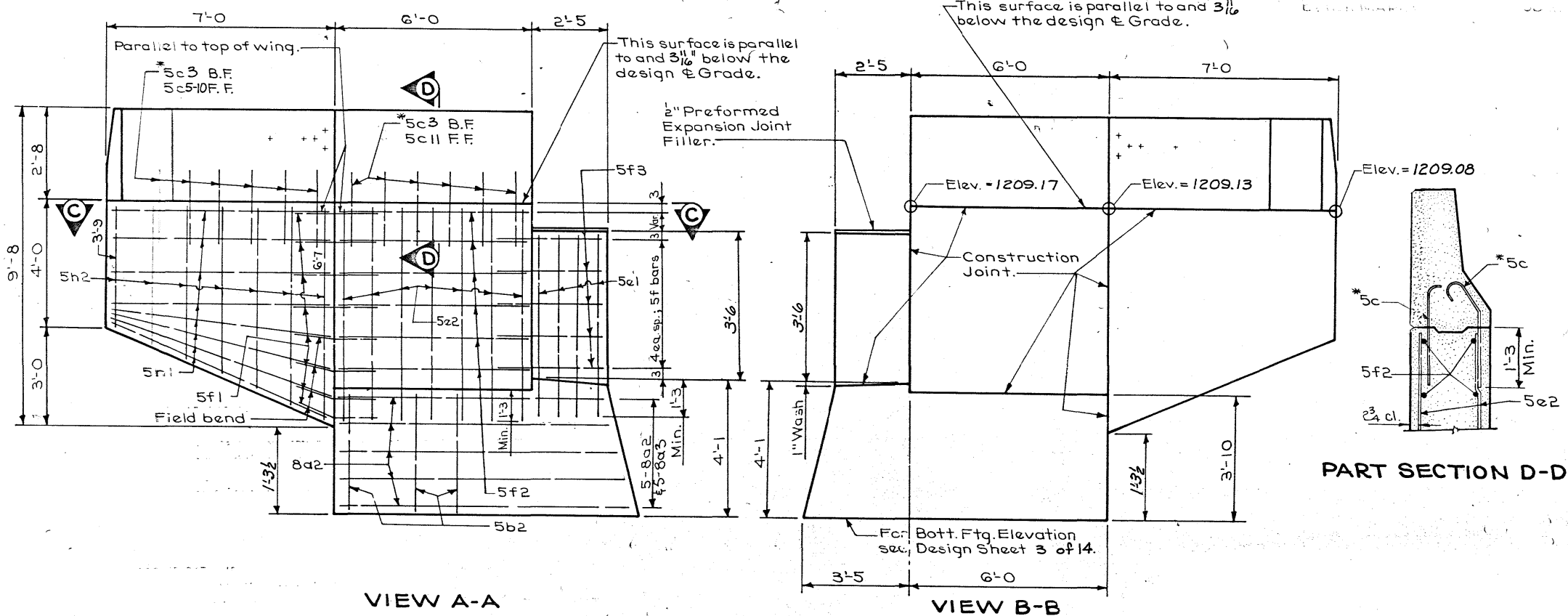
STUB ABUT. DETAILS - 0° SKEW

STANDARD SHEET 2064

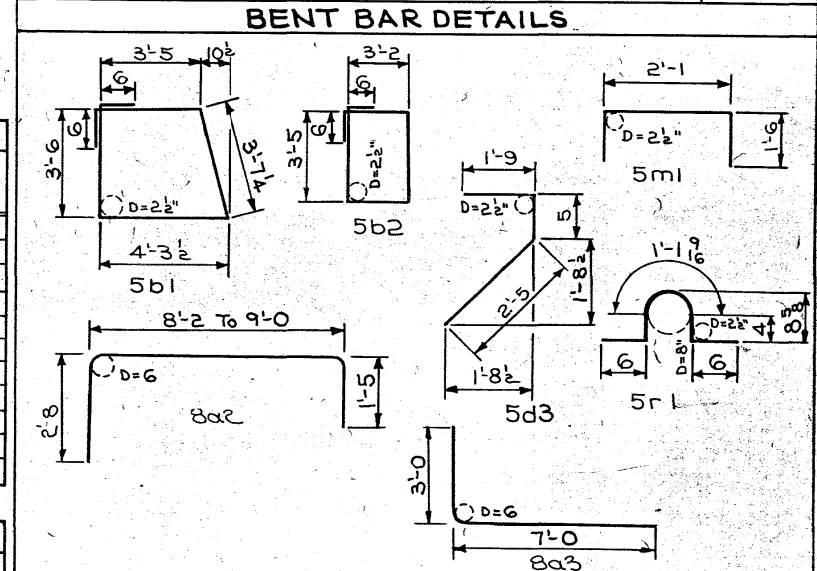
PLYMOUTH COUNTY

PROJECT NUMBER

STATE: IOWA
 FED. ROAD DIST. NO.:
 FISCAL YEAR:
 SHEET NO.: 5
 TOTAL SHEETS: 16



REINFORCING BAR LIST - ONE ABUTMENT					
Bar	Location	Shape	N ^o	Length	Weight
8a1	Footing Longitudinal	—	13	46'-10"	1626
8a2	Wing Footing	—	10	Varies	347
8a3	Wing Footing	—	10	10'-0"	267
5b1	Footing Hoops	□	24	15'-10"	396
5b2	Wing Footing Hoops	□	6	14'-2"	89
6d1	Backwall Vertical B.F.	—	87	6'-2"	806
5d2	Backwall Vertical F.F.	—	43	5'-11"	265
5d3	Paving Notch	—	43	4'-7"	206
5d4	Paving Notch Dowels	—	22	2'-0"	46
5e1	Maskwall Vertical	—	16	4'-9"	79
5e2	Wingwall Vertical	—	28	5'-8"	165
5f1	Wingwall To Wing Dowels	—	32	3'-10"	128
5f2	Wingwall Horizontal	—	24	5'-8"	142
5f3	Maskwall Horizontal	—	20	3'-6"	73
5g1	Backwall Longitudinal	—	14	43'-8"	638
5g2	Backwall Dowels	—	28	2'-10"	83
5g3	Paving Notch Longitudinal	—	2	42'-8"	89
5h1	Wing Horizontal	—	32	6'-8"	223
5h2	Wing Vertical	—	28	Varies	151
5m1	Beam Steps Transverse	—	20	5'-1"	106
5n1	Beam Steps Longitudinal	—	20	2'-8"	56
5r1	Paving Block Hoops	—	6	2'-10"	18
	Pile Spiral, 4" Φ Rod	—	23	38'-6"	148
	Spiral Spacers, 3/8" Φ O.69	—	46	1'-10"	58
Total (lb.)					6205



ABUTMENT NOTES:

- All exposed corners 90° or sharper are filleted with a 3/4" dressed and beveled strip.
- Reinforcing steel is securely wired in place before the concrete is placed.
- Minimum clear distance from face of concrete to near reinforcing bar is 2" unless otherwise noted or shown.
- All backfill behind the abutment between wings is granular backfill. The remainder of the abutment excavation is backfilled with soil.
- The maskwall is poured before the superstructure slab is poured.
- Construction joint keyways are formed with beveled 2x6's.
- Before the concrete paving block is poured bend down dowels and line notch with tarpaper to prevent bond. Block is removed and bars straightened before pavement is placed.
- Paving block may be made of Class "C" or Class "D" concrete.
- Cost of Preformed Expansion Joint Filler is included in the price bid for concrete.
- The portion of the backwall containing the abutment anchorage of the expansion device is placed after the bridge floor is placed.
- The abutment piles are driven to full penetration, if practicable, but in no case to a bearing value of less than 20 tons nor more than 40 tons per pile.
- Design bearing capacity of piling is 20 tons per pile.

* NOTE: See Design Sheet No. 14 for details of Barrier Rail. Reinforcing bars 5c3, 5c5-10 and 5c11 are included in Barrier Rail Quantities.

CONCRETE PLACEMENT QUANTITIES	
Location	One Abutment
Footing And Steps	32.6
Backwall Below Constr. Joint	4.4
Backwall Above Constr. Joint	6.5
Wings and Wingwalls 2 @ 3.6	7.2
Wing Maskwalls 2 @ 2.6	.5
** Paving Block	1.0
Total (c.y.)	52.2

** May be Class C or Class D Concrete.

QUANTITIES - BOTH ABUTMENTS				
Item	Unit	East Abutment	West Abutment	Total
Structural Concrete Class C	c.y.	52.2	52.2	104.4
Reinforcing Steel	lb.	6205	6205	12,410
Class 20 Excavation	c.y.	85.92	85.92	171.84
Granular Backfill	c.y.	66	66	132
Bridge Seat Sealer	sq. ft.	150	150	300
Crossed Piling	lin. ft.	23 @ 30' = 690'	3 @ 25' = 75'	765'
			14 @ 30' = 420'	420'
			6 @ 35' = 210'	210'

NOTE: All dimensions are out to out. D = Pin diameter.

Design For
343'-6"x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
 68'-3" End Spans 3'-69'-0" Interior Spans
ABUTMENT DETAILS
 Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 4 Of 14 File No.: 26075 Design No.: 578

Revised 5-15-79: Reinforcing bends corrected.
 Revised 6-1-78: Wing footing base changed.

DESIGNED BY: E. Ogawa
 TRACED BY: R. Rygan
 CHECKED BY: R. Rygan

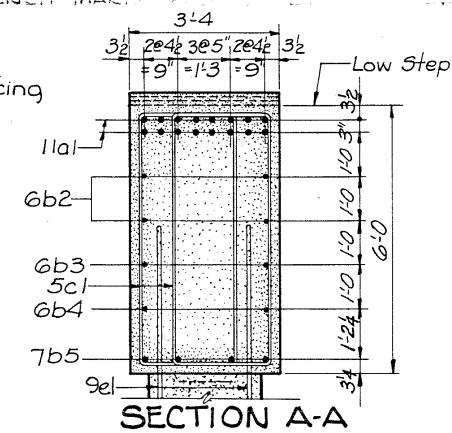
STUB ABUT. DETAILS - 0° SKEW

STANDARD SHEET 2071

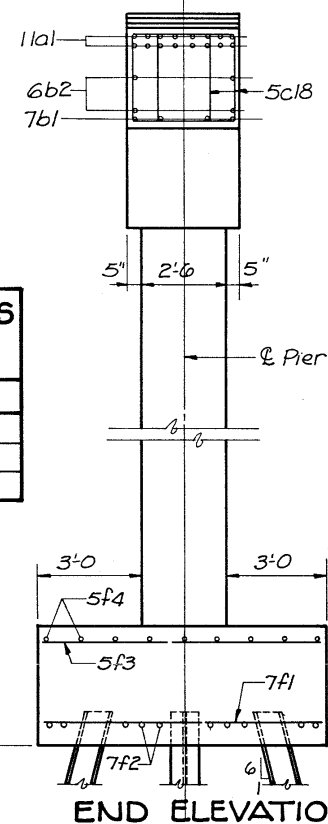
PLYMOUTH COUNTY

PROJECT NUMBER

STATE: IOWA
 DIST. NO.: 5
 FISCAL YEAR: 1980
 SHEET NO.: 6
 TOTAL SHEETS: 16



SECTION A-A



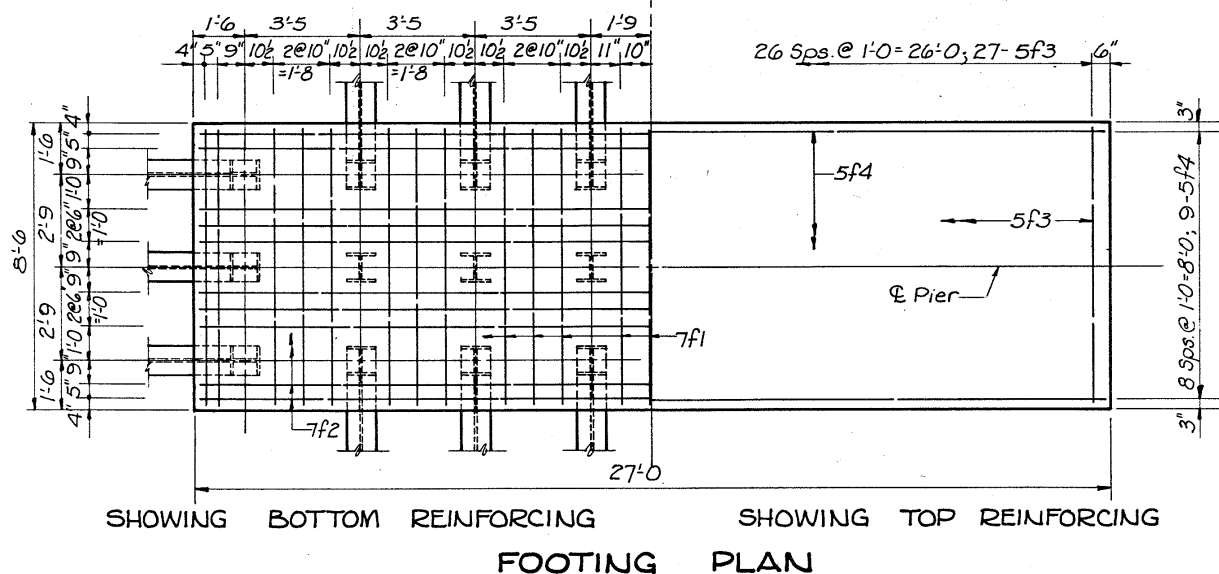
END ELEVATION

TABLE OF STEPS ALL PIERS	
Location	Step
a	$1\frac{3}{16}$
b	$1\frac{5}{16}$
c	$1\frac{13}{16}$

Location	Pier#1	Pier#2	Pier#3	Pier#4
Elev. A	1205.38	1205.70	1205.70	1205.38
Elev. B	1205.48	1205.80	1205.80	1205.48
Elev. C	1205.59	1205.91	1205.91	1205.59
Elev. D	1205.66	1205.98	1205.98	1205.66
Elev. E	1178.38	1178.70	1178.70	1178.38

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

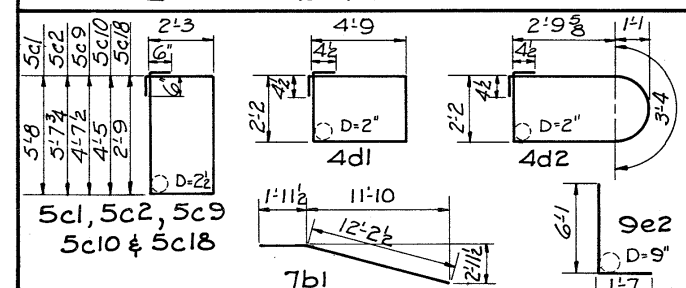
24-HP10x42 Steel
Bearing Piling required
at each pier.



FOOTING PLAN

REINFORCING BAR LIST~ONE PIER					
Bar	Location	Shape	N ^o	Length	Weight
11a1	Pier Cap, Top Longitudinal	—	16	45'-8	3882
7b1	Pier Cap, Cantilever	⌋	8	14'-2	232
6b2	" " , Sides	—	4	45'-8	274
6b3	" " , "	—	2	39'-9	119
6b4	" " , "	—	2	31'-9	95
7b5	" " , Bottom	—	4	21'-8	177
5c1	Pier Cap, Hoops	⌐	44	16'-10	773
5c2-9	" " , Cantilever	⌐	32	Varies	527
5c10-18	" " , "	⌐	36	Varies	476
4d1	Stem Hoops	⌐	72	14'-7	701
4d2	" "	⌐	36	11'-11	287
9e1	Stem Vertical	—	50	20'-8	3514
9e2	" to Footing Dowels	⌋	50	7'-8	1303
7f1	Footing Transv. , Bottom	—	25	8'-2	417
7f2	" Longit. , "	—	10	26'-8	545
5f3	" Transv. , Top	—	27	8'-2	230
5f4	" Longit. , "	—	9	26'-8	250
Total (lbs.)					13,802

BENT BAR DETAIL



Note: All dimensions are out to out. D = Pin Diameter.

CONCRETE PLACEMENT QUANTITIES

Location	Pier#1	Pier#2	Pier#3	Pier#4
Footing	29.8	29.8	29.8	29.8
Stem	34.0	34.0	34.0	34.0
Cap & Steps	30.5	30.5	30.5	30.5
Total Cu. Yds.	94.3	94.3	94.3	94.3

QUANTITIES~FOUR PIERS

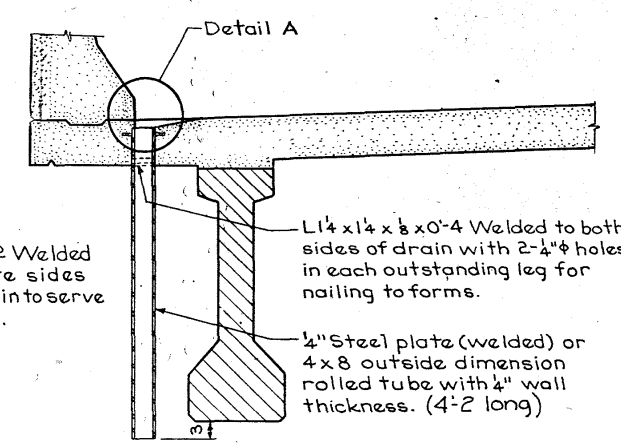
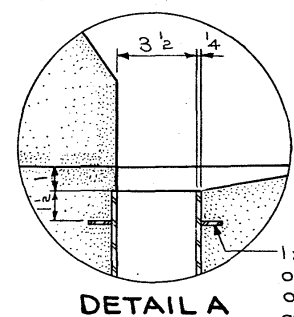
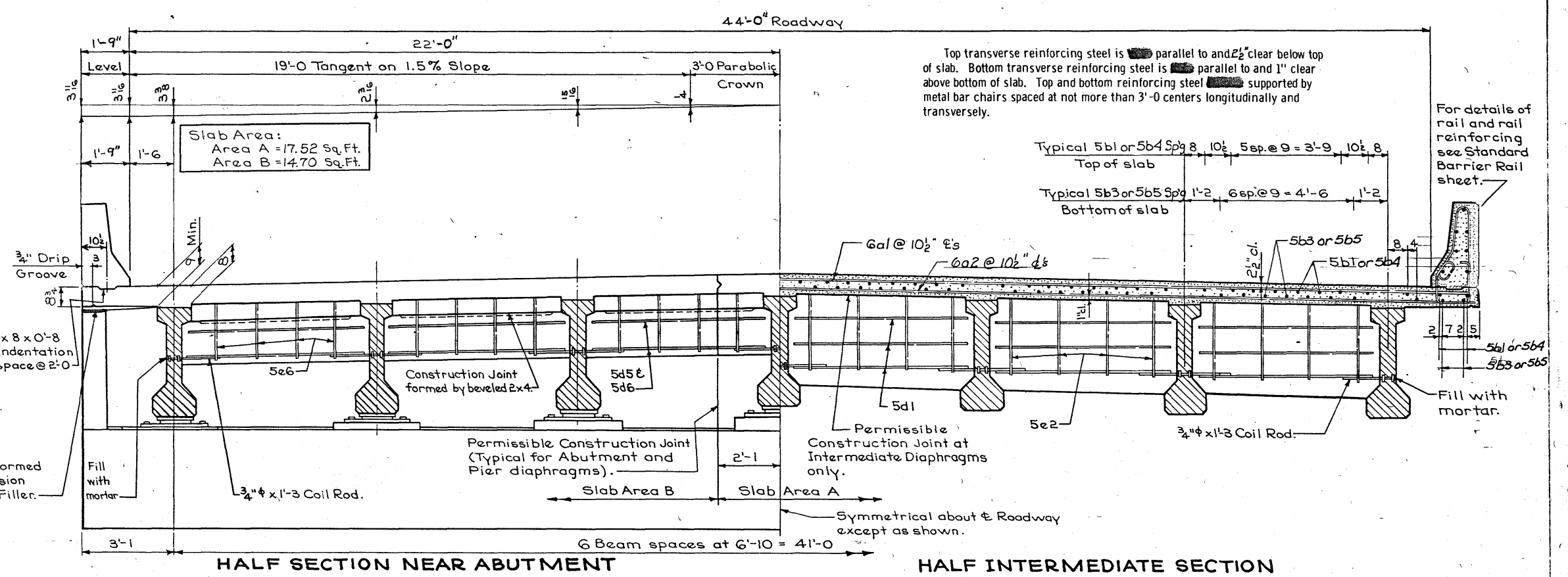
Item	Units	Quantity
Structural Concrete, Class C	Cu. Yds.	377.2
Reinforcing Steel	Lbs.	55,208
HP10x42 Steel	Lin. Ft.	3840
Bearing Piling	Lin. Ft.	3840
Class 20 Excavation	Cu. Yds.	162
Class 21 Excavation	Cu. Yds.	386

EXCAVATION QUANT.			PILE LENGTHS	
Location	Class 20	Class 21	Location	No. & Length
Pier #1	65	100	Pier #1	24 @ 40' = 960
Pier #2	25	96	Pier #2	24 @ 40' = 960
Pier #3	7	90	Pier #3	24 @ 40' = 960
Pier #4	65	100	Pier #4	24 @ 40' = 960
Total Cu.Yds	162	386	Total Lin.Ft.	3840

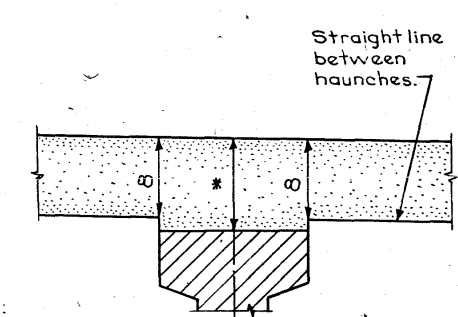
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 5 Of 14 File No.: 26075 Design No.: 576

SUPERSTRUCTURE NOTES:

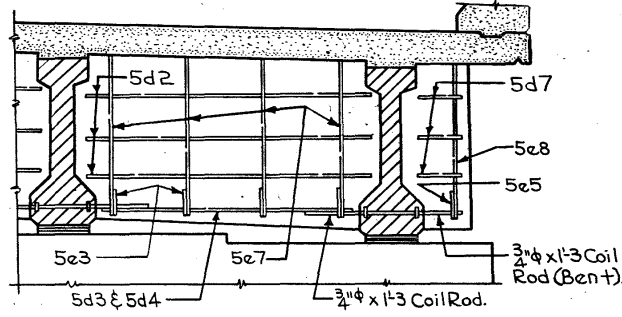
This bridge is designed for HS20-44 loading, plus 20 lb. per square foot of roadway for future wearing surface.
 The floor slab as shown includes 1/2" integral wearing surface.
 The pier diaphragm concrete placed monolithically with the floor slab.
 Cost of pier bearing material included in the price bid for "Pretensioned Prestressed Concrete Beams".
 Cost of all Preformed Expansion Joint Filler material is included in the price bid for "Structural Concrete."
 All beams are set vertical.
 Forms for the slab and barrier rail supported by the prestressed concrete beams.
 All exposed corners 90° or sharper are filleted with a 3/4" dressed and beveled strip.
 Clear distance from face of concrete to near reinforcing bar be 2 inches unless otherwise noted or shown. All reinforcing bars securely wired in place and adequately supported on bar chairs before concrete placed.
 The slab transverse and longitudinal reinforcing, "a" and "b" bars, are Grade 60 reinforcing. All other reinforcing may be Grade 40.
 The top layer of slab transverse and longitudinal reinforcing, "a" and "b" bars, are epoxy-coated. The epoxy coating be in accordance with current special provisions and supplemental specifications of the Iowa D. O. T. - Highway Division.
 Transverse slab reinforcing may be spliced with one lap located as follows:
 Top bars - lap midway between girders, (min. lap = 2'-0").
 Bottom bars - lap over girders, (min. lap = 2'-0").
 Payment for reinforcing bars based on no splices, and no allowance made for the additional length of bar required for the use of splices.



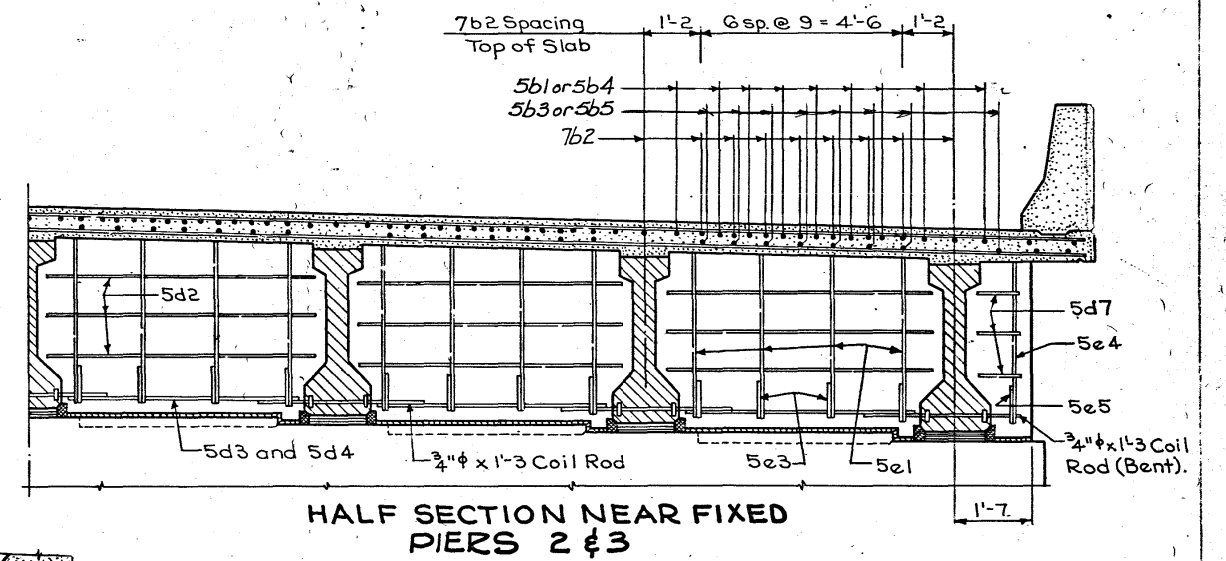
NOTE:
 Drains are galvanized. 16 Drains are required, see "Situation Plan" on sheet 2 of 14 for location. Weight= 81 pounds each. Cost of drains in price bid for concrete.



*For slab thickness over beams see "Slab Thickness Details" on des sheet 8 of 14.
 For thickness at Exterior Beam see "Half Section Near Abutment".



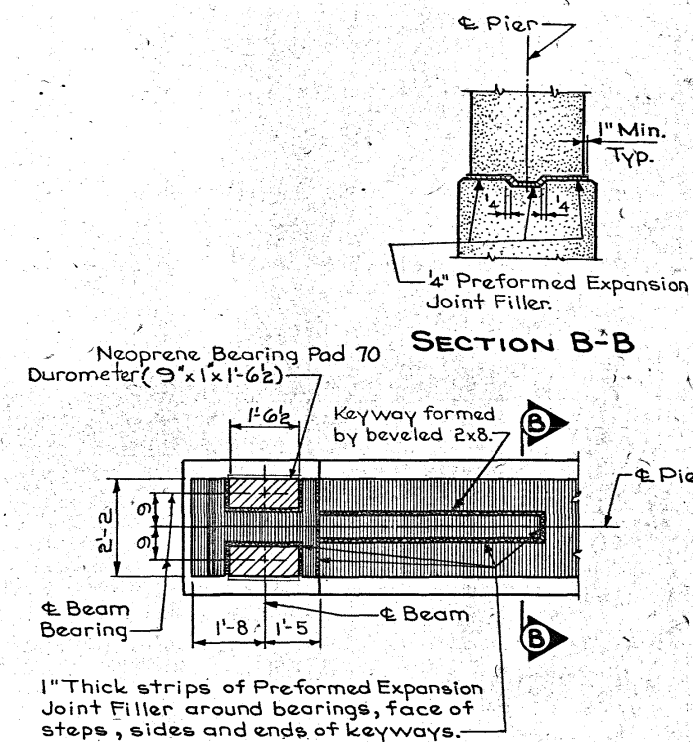
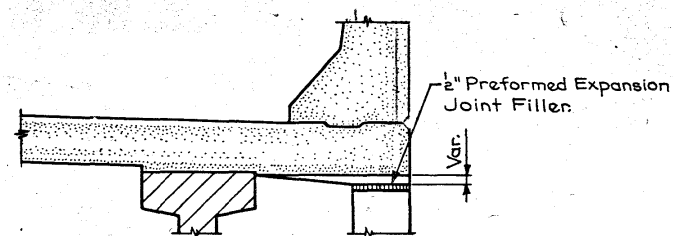
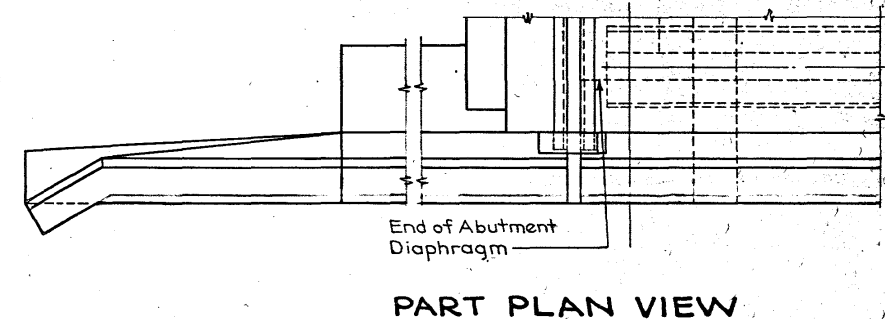
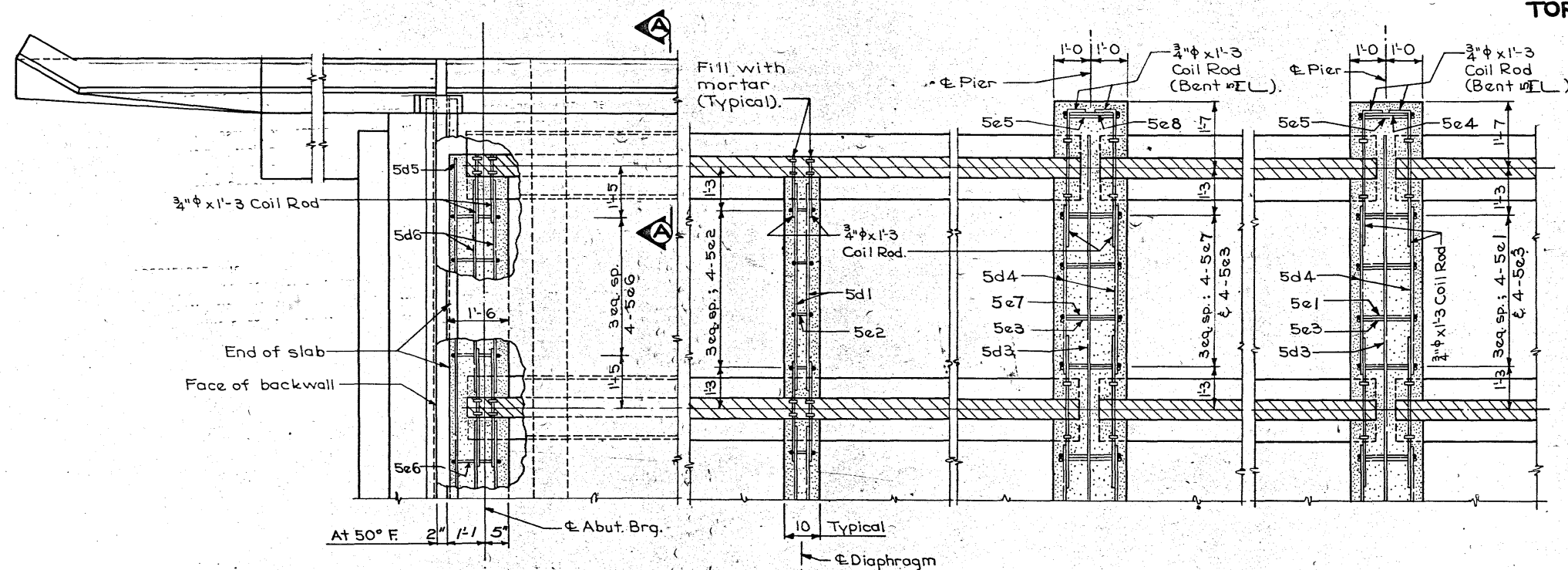
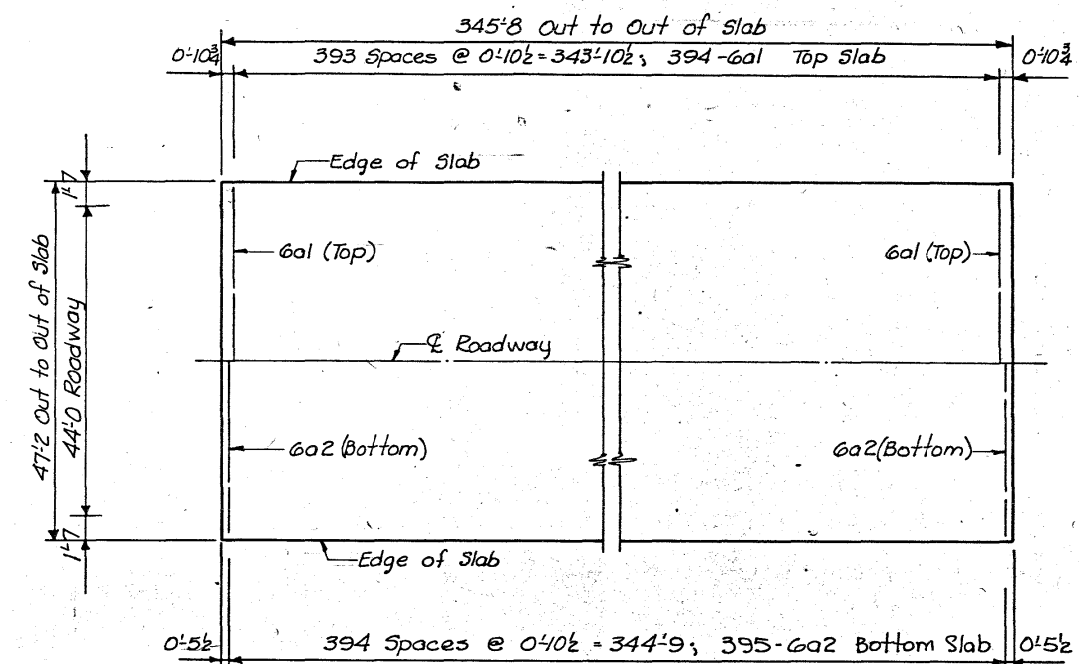
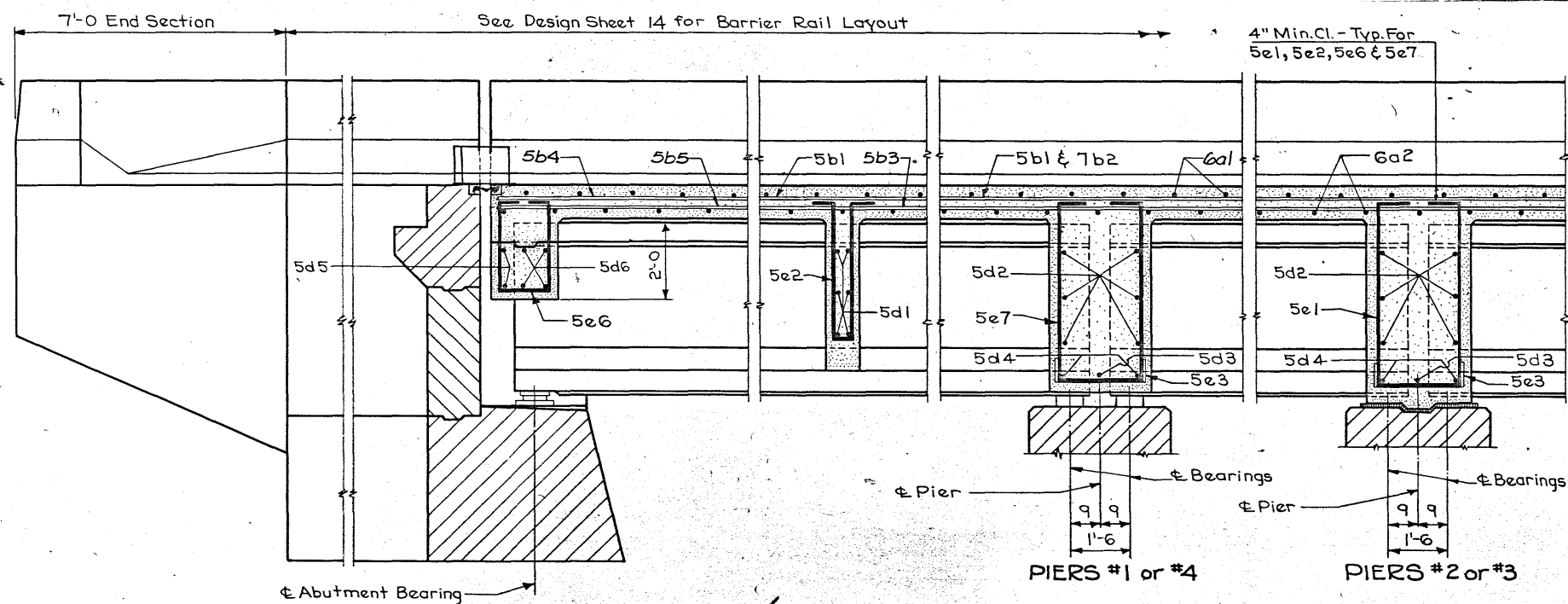
PART SECTION NEAR EXPANSION PIERS 1 & 4



HALF SECTION NEAR FIXED PIERS 2 & 3

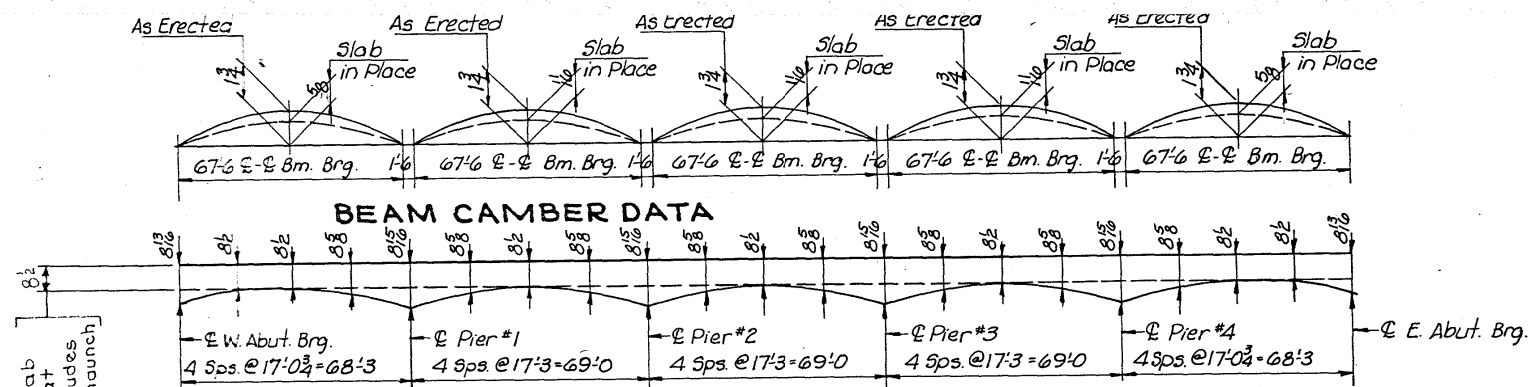
Design For
343'-6" x 44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
 68'-3" End Spans 3'-69'-0" Interior Spans
SUPERSTRUCTURE DETAILS
 Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION
 Design Sheet No.: 6 Of 14 File No.: 26075 Design No.: 578

Revised 6-1-78. Min. lap length note added in "Superstructure Notes". Issued 8-1-77

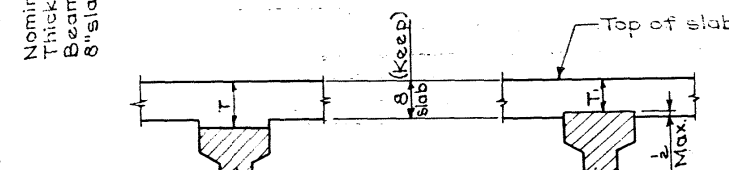


PART PLAN
PIERS 2 & 3 TOP DETAILS

Design For
**343'-6"x44' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE**
68'-3 End Spans 3-69'-0 Interior Spans
SUPERSTRUCTURE DETAILS
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 7 Of 14 File No.: 26075 Design No.: 578

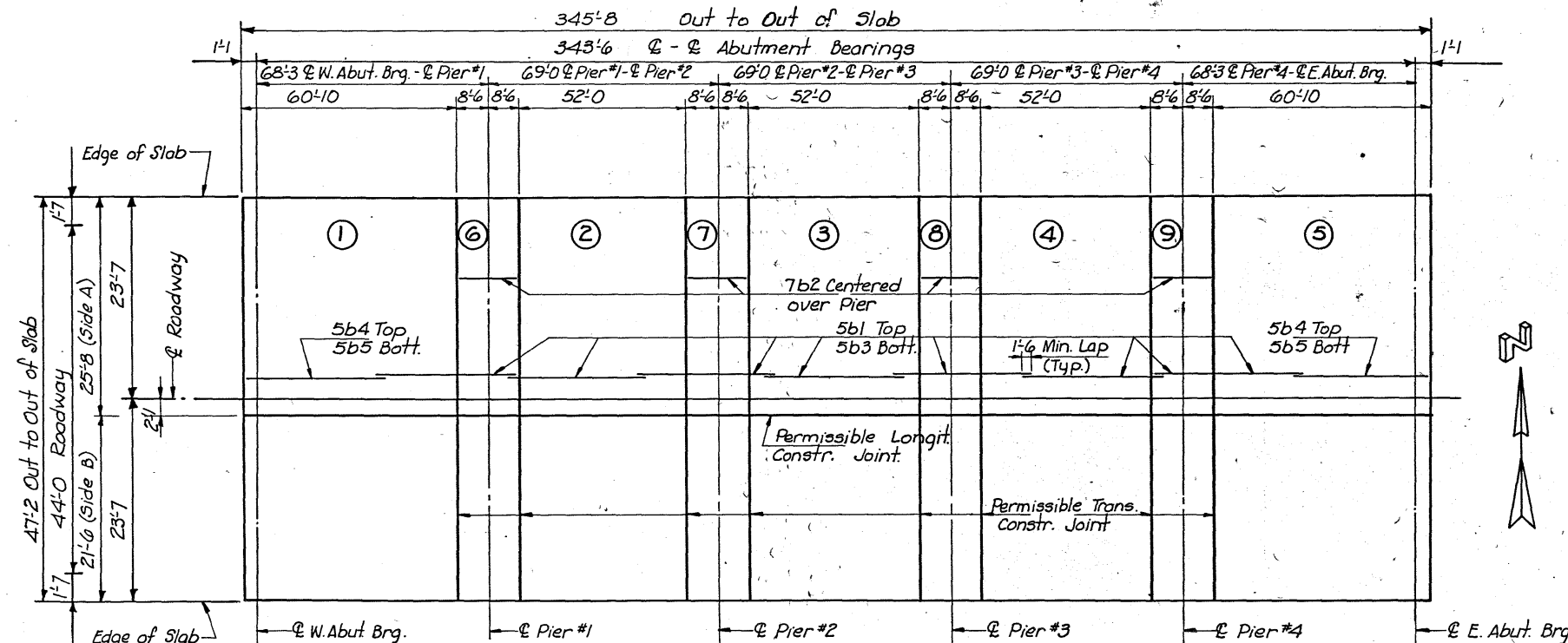


BEAM CAMBER DATA



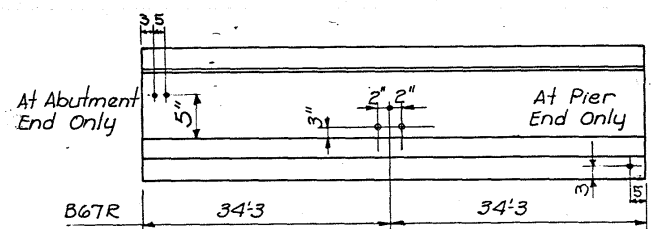
SLAB THICKNESS AT BEAMS (T)

NOTE: The slab thickness (T) at beams is based on the anticipated beam camber remaining after placing the slab, but it 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 a maximum of 2" embedment at the beam (T). If more than 2" embedment is required or if the haunch exceeds 2", the grade line is to be revised.

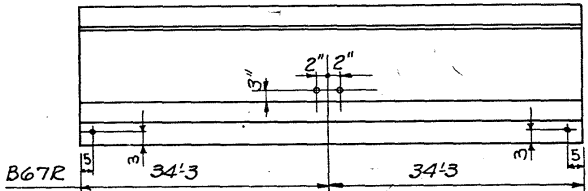


CONCRETE PLACEMENT DIAGRAM AND LONGITUDINAL REINFORCING LAYOUT

NOTE: Roadway slab shall be placed in sections and sequences indicated and preferably at intervals not exceeding 24 hours. Alternate procedures for placing slab 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 results.



END SPAN



INTERIOR SPAN BEAM COIL TIE LOCATION CONC. PLACEMENT QUANTS.

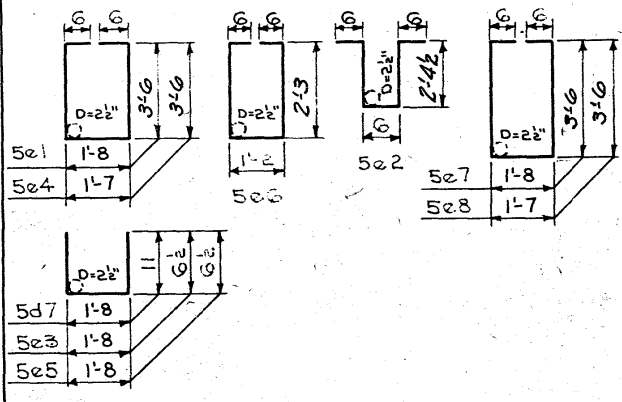
Location	Side A	Side B	Total
Section 1, Slab & Diaph.	43.5	36.5	80.0
Section 2, Slab & Diaph.	35.4	29.7	65.1
Section 3, Slab & Diaph.	35.4	29.7	65.1
Section 4, Slab & Diaph.	35.4	29.7	65.1
Section 5, Slab & Diaph.	43.5	36.5	80.0
Section 6, Slab & Diaph.	16.1	13.5	29.6
Section 7, Slab & Diaph.	16.3	13.7	30.0
Section 8, Slab & Diaph.	16.3	13.7	30.0
Section 9, Slab & Diaph.	16.1	13.5	29.6
Total, c.y.	474.5		

SUPERSTRUCTURE ESTIMATED QUANTITIES		
Item	Unit	Quantity
Structural Concrete, Class D	c.y.	474.5
Reinforcing Steel	lb.	51,051
Reinforcing Steel - Epoxy-coated	lb.	68,449
Prestressed Concrete Beams	Nº	35
Structural Steel	lb.	29,87
Steel Extrusion Joint With Neoprene	L.F.	91

REINFORCING BAR LIST - SUPERSTR.				
Bar	Location	Shape	Nº	Length
6a1	Slab Transverse-Top	—	394	46'-10"
6a2	Slab Transverse-Bottom	—	395	46'-10"
5b1	Slab Longitudinal-Top	—	378	40'-0"
7b2	Slab Longitudinal At Piers	—	196	10'-8"
5b3	Slab Longitudinal-Bottom	—	336	40'-0"
5b4	Slab Longitudinal-Top	—	108	38'-8"
5b5	Slab Longitudinal-Bottom	—	96	38'-8"
5d1	Intermediate Diaph. Longit.	—	180	5'-9"
5d2	Pier Diaphragm Longit.	—	144	5'-9"
5d3	Pier Diaphragm Longit.	—	4	42'-8"
5d4	Pier Diaphragm Longit.	—	48	4'-10"
5d5	Abutment Diaphragm	—	48	5'-9"
5d6	Abutment Diaphragm Longit.	—	4	41'-5"
5d7	Pier Diaphragm Ends	□	24	3'-6"
5e1	Pier Diaphragm Hoops	□	48	9'-8"
5e2	Intermediate Diaph. Hoops	□	120	6'-3"
5e3	Pier Diaphragm Ties	□	96	2'-9"
5e4	Pier Diaph. Hoops, Ends	□	4	9'-7"
5e5	Pier Diaph. Ties, Ends	□	8	2'-9"
5e6	Abutment Diaph. Hoops	□	48	6'-8"
5e7	Pier Diaph. - Expan. Pier	□	48	9'-8"
5e8	Pier Diaph. Ends - Expan. Pier	□	4	9'-7"

4 See Epoxy-Coated Notes on this sheet.
4 Barrier Rail (See Design Sheet 14) 13,931
Reinforcing Steel-Epoxy Coated Total (lbs) 68,449
Reinforcing Steel Total (lbs) 51,051

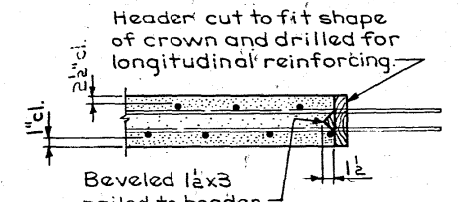
BENT BAR DETAILS



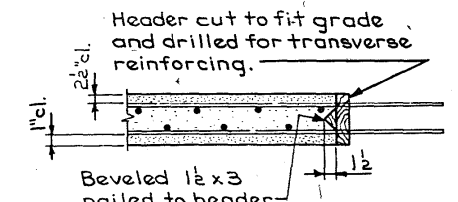
NOTE: All dimensions are out to out, D=Pin diameter.

EPOXY-COATING NOTES:

All top of slab reinforcing, both longitudinal and transverse bars, epoxy-coated in accordance with current Special Provisions and Supplemental Specifications of the Iowa D.O.T. Highway Division.
From the reinforcing bar list shown on this sheet, the following bars epoxy-coated:
All of the 6a1 = 27,715 lbs., 18,452 L.F.
All of the 5b1 = 15,770 lbs., 15,120 L.F.
All of the 7b2 = 6,677 lbs., 3,267 L.F.
All of the 5b4 = 4,356 lbs., 4,176 L.F.
Barrier Rail = 13,931 lbs., 13,090 L.F., 185 L.F.
Total = 68,449 lbs. (epoxy-coated)



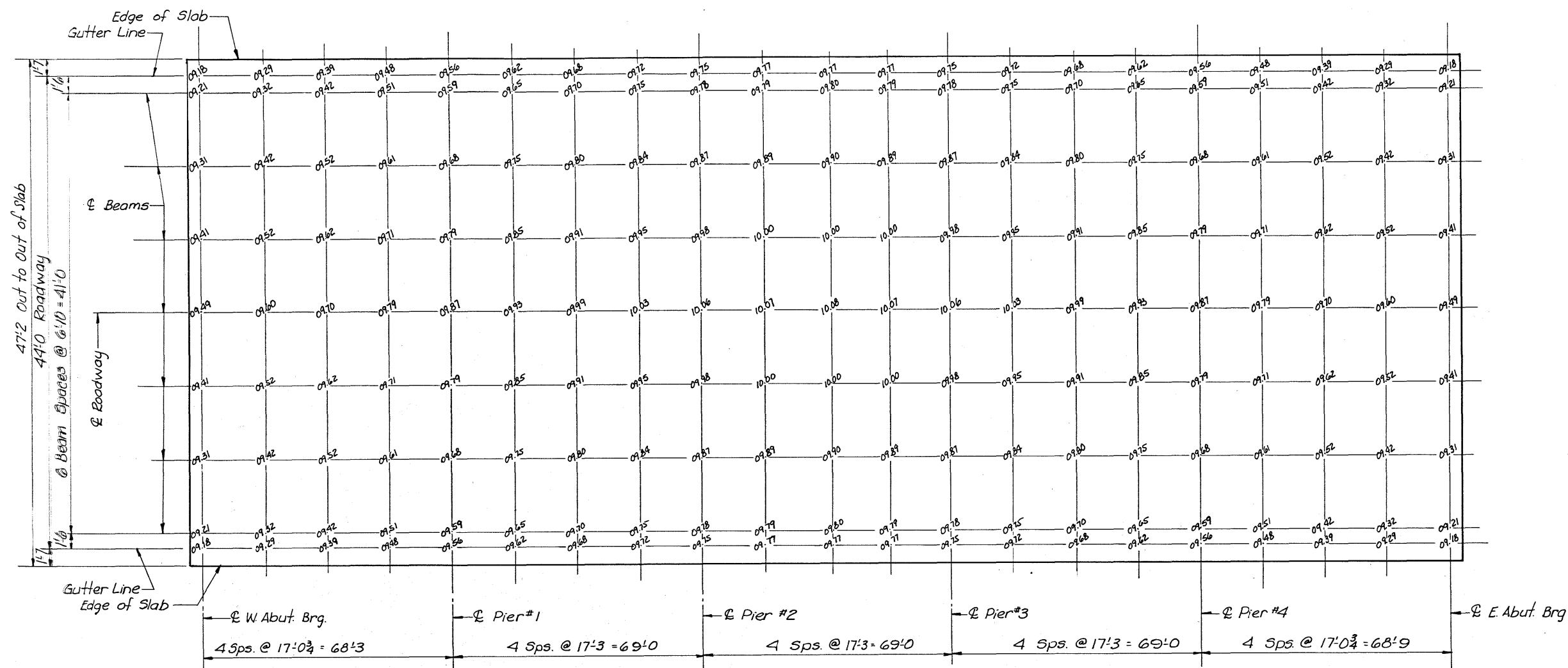
TRANSVERSE SLAB CONSTRUCTION JOINT



LONGITUDINAL SLAB CONSTRUCTION JOINT

Design For
343'-6x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3 End Spans 3-69'-0 Interior Spans
SUPERSTRUCTURE DETAILS
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 8 Of 14 File No. 26075 Design No. 578

Revised 5-15-79: Reinforcing bends corrected.
Issued 8-1-77



TOP OF SLAB ELEVATION
NOTE: Add 1200.00 to Elevations shown.



Design For
343'-6"x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3" End Spans 3-69'-0" Interior Spans
SUPERSTRUCTURE DETAILS
Station: 500+5000 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 9 Of 14 File No.: 26075 Design No.: 578

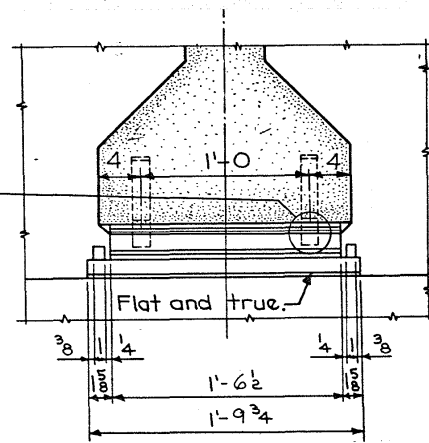
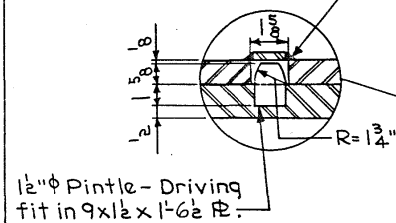
DESIGNED BY: E. D. DAWSON
DETAILED BY: E. D. DAWSON
TRACED BY: R. RYAN
CHECKED BY: R. RYAN

PLYMOUTH COUNTY

PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		11	16

Weld to be carefully excluded from the pintle recess.



SECTION A-A

ABUTMENT BEARING NOTES:

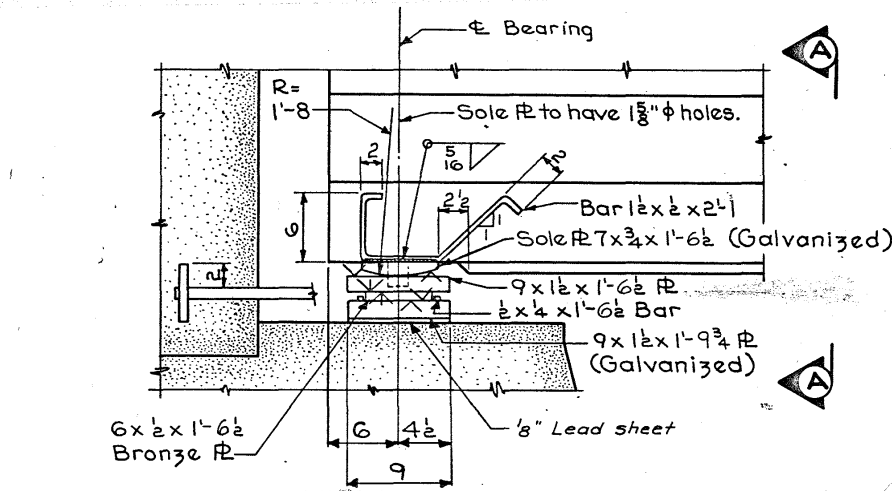
Bronze plate lubricated in accordance with I.S.H.C. Specifications Article 4190.03 (Sliding surface only). Top edges of bronze plate beveled 1/8". Plates to be galvanized welded first.

Surfaces marked "V" be finished ANSI 250 and surfaces marked "V" be finished ANSI 125. Masonry plates are set on a 1/8" lead sheet as per 2408.38 of the Specifications.

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

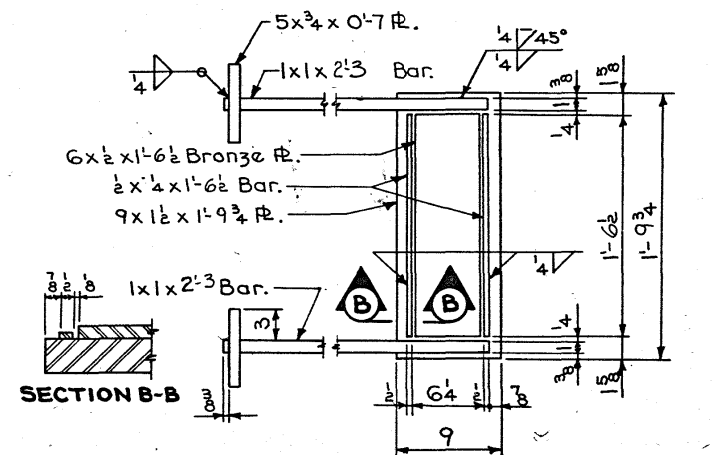
Bronze metal be cast bronze meeting the requirements of ASTM B22, Alloy 913, 911 or 863, or ASTM B100.

The 9x1 1/2x1-6 1/2 pintle plate painted in accordance with the Standard Specifications.



NOTE: Sole plates set in forms when beams cast and formed out below as shown to exclude concrete.

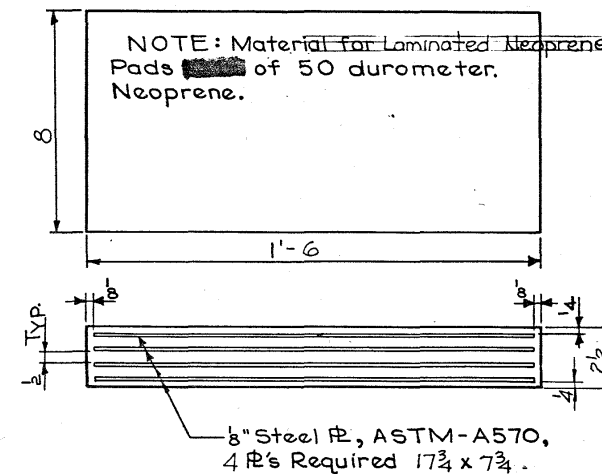
PART ELEVATION



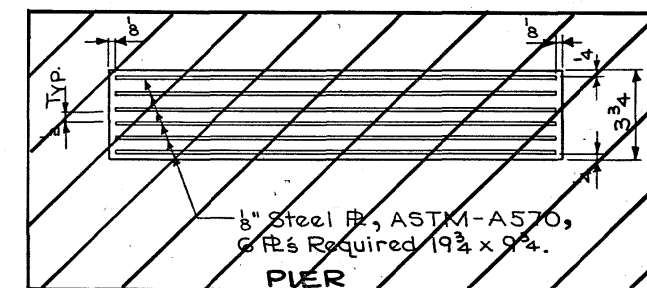
SECTION B-B

PLAN OF MASONRY PLATE AND BRONZE PLATE

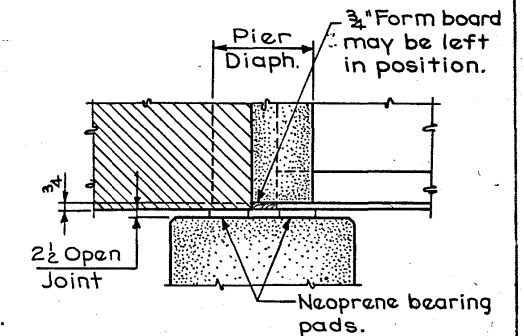
ABUTMENT BEARING DETAILS



PIERS 1 & 4



PIER BEARING DETAILS



PART SECTION THROUGH PIER DIAPHRAGM AT PIERS 1 & 4

NOTE: For neoprene bearing pads for Piers 2 & 3, see Des. Sh. 7 of 14.

Revised 10-1-79: Pintle plate to be painted.
Revised 5-31-79: Curved Sole Plate and Pintle Plate galvanized.
Revised 1-18-78: Size of Sole Plate changed. Seating of bearings changed.
Issued 8-1-77

DESIGNED BY: E. G. G. G.

TRACED BY: R. R. R. R.

PPCBAM BRIDGES - BEARING DETAILS (STUB ABUT - EPOXY BARS)

STANDARD SHEET 4541

PLYMOUTH COUNTY

PROJECT NUMBER

STATE

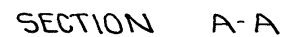
FED. ROAD DIST. NO.

FISCAL YEAR

SHEET NO.

TOTAL SHEETS

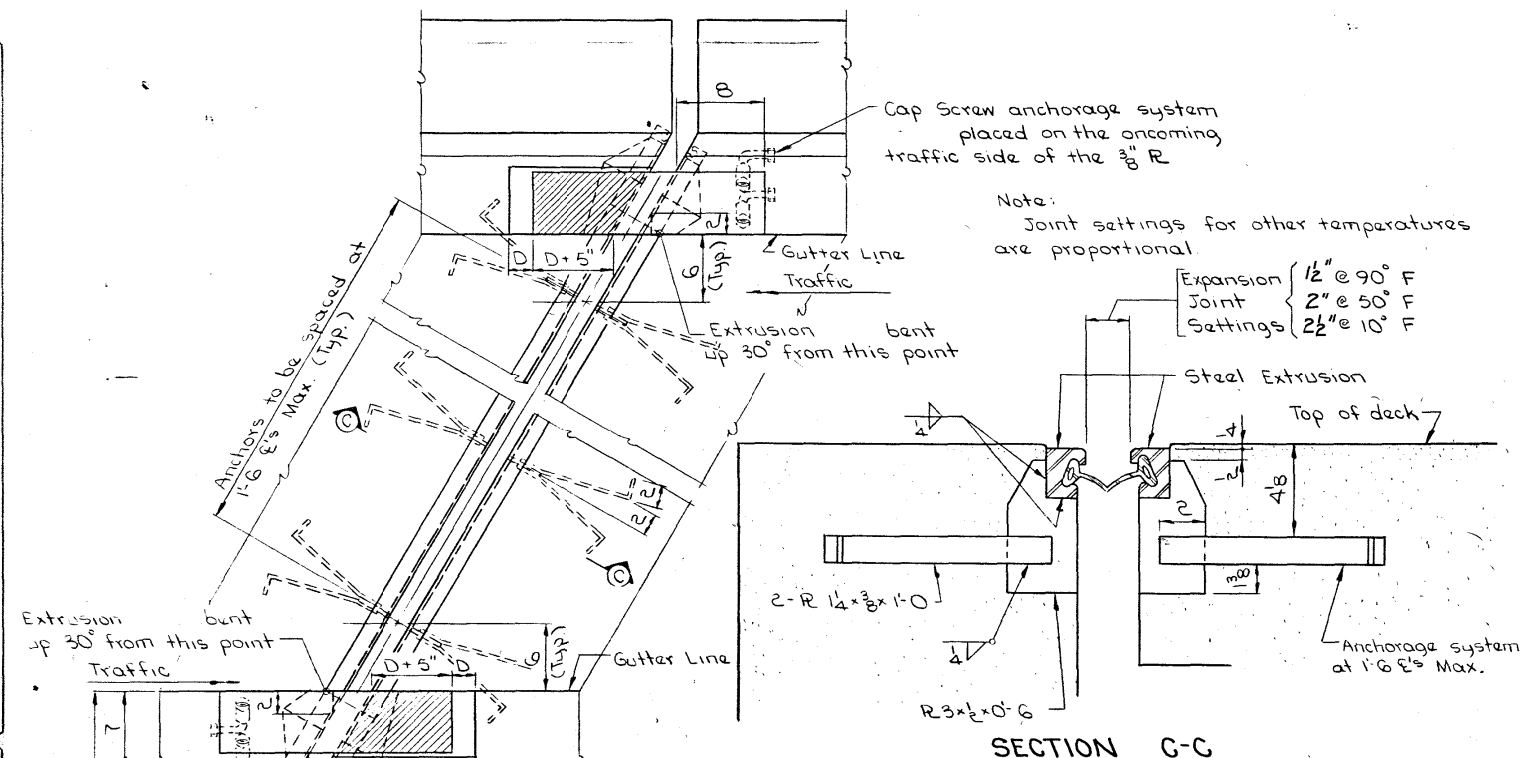
Design For
343'-6"x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3 End Spans 3-69'-0 Interior Spans
BEARING DETAILS
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 10 Of 14 File No.: 26075 Design No.: 578



Technical drawing showing a cross-section of a steel extrusion assembly. The drawing includes the following dimensions and labels:

- Dimensions:**
 - Overall width: $5 \frac{5}{8}$
 - Top flange thickness: 2
 - Vertical distance from top flange to centerline: 80
 - Horizontal distance from left edge to centerline: 7
 - Vertical distance from centerline to bottom flange: 6
 - Bottom flange thickness: $1 \frac{1}{2}$
 - Angle of the bottom flange: 30°
 - Angle of the extrusion: 30°
- Labels:**
 - "D" is to be the expansion shown for 50° F
 - $\frac{3}{8} \text{ R}$ to flush with the face of barrier
 - $\frac{3}{4} \times 1$ Oak Cap Screw
 - $2''$ long Hex. Nut
 - $\frac{3}{4} \times 0.4$ bent Bolt
 - Cut end of gland level
 - Edge of Blockout
 - End of Extrusion
 - Steel Extrusion

SECTION B-B



PART PLAN VIEW OF
EXPANSION DEVICE
(SHOWN FOR SKEWED BRIDGE)
DETAILS FOR 0° SKEW ARE SIMILAR
SEE PART PLAN VIEW

EXPANSION DEVICE NOTES:

The contractor shall submit for approval shop drawings of the expansion devices showing layout, materials to be used, and provisions for holding device during placement of concrete.

The expansion device [REDACTED] galvanized after welding.

The expansion device is [REDACTED] parallel to grade.

Cap screws [REDACTED] countersunk 1/16" below top of the plate.

One permissible shop or field splice may be made in the steel extrusions providing the pieces are joined with a prequalified single groove weld, and all surfaces not in contact with concrete are ground flush. No weld [REDACTED] permitted in the internal section of the extrusion where the neoprene gland is [REDACTED] located.

The neoprene gland is [REDACTED] placed as one continuous piece from end to end of the steel extrusions.

The minimum grade of Structural Steel for the expansion device [REDACTED] be ASTM A-36.

The neoprene gland [REDACTED] conform to ASTM D-2628 modified to exclude recovery tests.

Blockout details may be altered from those shown provided the gland may be installed and removed if necessary.

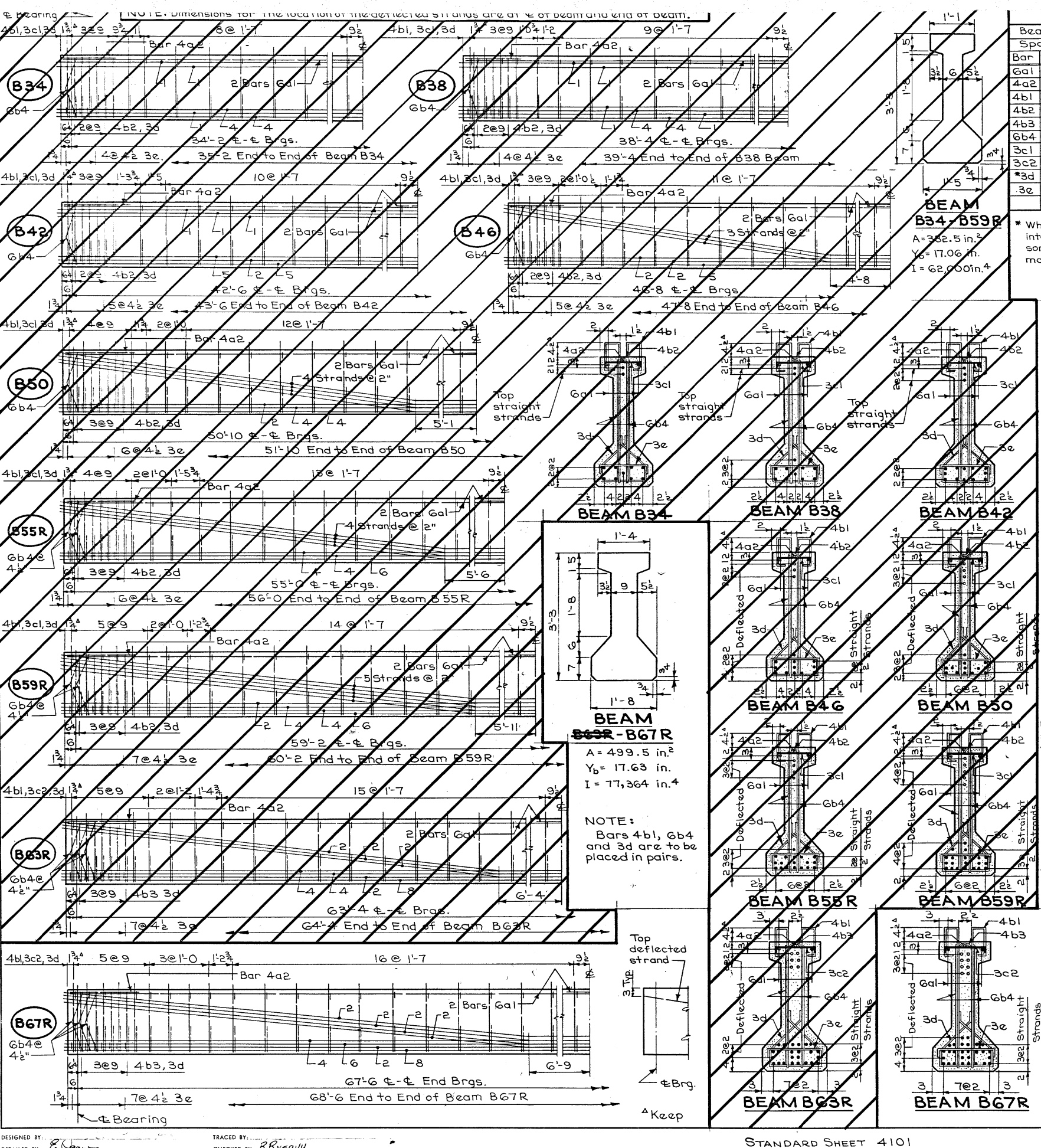
The contract unit price bid for "Steel Extrusion Joint with Neoprene" [REDACTED] be full compensation for furnishing and installing the expansion joints. This work will consist of furnishing all required materials and the installation and adjustment of the expansion joints in accordance with the details shown on the plans and as directed by the engineer. The furnishing and installation of all necessary hardware and accessories as supplied by the expansion joint manufacturer are [REDACTED] included in this work, including the anchorage system and any temporary erection material. All work and materials for the installation of the expansion joints [REDACTED] comply with the written recommendations of the expansion joint manufacturer.

The following devices are approved for use.

1. Watson-Bowman Co., Type A-2 extrusion with S-400 gland.
2. ACME, Type A extrusion with AS400 gland.
3. Approved equal.

Design For
**343'-6"x44' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGE**
 68'-3 End Spans 3-69'-0 Interior Spans
EXPANSION DEVICE DETAILS
 Station : 500+50.00 March , 1980
PLYMOUTH COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 11 Of 14 File No.: 26075 Design No.: 578

Revised 6-8-79: Lengths of bent bars changed to conform with ACI 308-7. Beam deflections for 8" slab shown. Revised 1-22-79: Beam deflections for 8" slab shown. Revised 1-25-79: Beam deflections for 8" slab shown. Revised 6-1-78: Design Stresses & Specifications updated. Revised 8-29-77: Agency updated. Revised 5-2-75: Beams B63-67 widened. R Designation added to revised beams. Revised 5-10-72: New sheet made. Revised 2-7-72: Note concerning roughening of beams at diaphragms changed.



REINFORCING BAR LIST										
Beam	B34	B38	B42	B46	B50	B55R	B59R	B63R	B67R	
Span	34'-2"	38'-4"	42'-6"	46'-8"	50'-10"	55'-0"	59'-2"	63'-4"	67'-6"	
Bar Shape	No. Length	No. Length	No. Length	No. Length	No. Length	No. Length	No. Length	No. Length	No. Length	
6a1	2 34'-11"	2 39'-1"	2 22'-7"	2 24'-8"	2 26'-9"	2 28'-10"	2 30'-11"	2 33'-0"	2 35'-1"	
4a2	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	
4b1	56 4'-11"	60 4'-11"	64 4'-11"	72 4'-11"	80 4'-11"	84 4'-11"	92 4'-11"	96 4'-11"	104 4'-11"	
4b2	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	
4b3	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	
6b4	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	
3c1	28 1'-3"	30 1'-3"	32 1'-3"	36 1'-3"	40 1'-3"	42 1'-3"	46 1'-3"	48 1'-3"	52 1'-3"	
3c2	2 2'-0"	2 2'-0"	2 2'-0"	2 2'-0"	2 2'-0"	2 2'-0"	2 2'-0"	2 2'-0"	2 2'-0"	
*3d	63 2'-0"	72 2'-0"	76 2'-0"	84 2'-0"	96 2'-0"	100 2'-0"	108 2'-0"	112 2'-0"	120 2'-0"	
3e	0 1'-8"	0 1'-8"	0 1'-8"	0 1'-8"	0 1'-8"	0 1'-8"	0 1'-8"	0 1'-8"	0 1'-8"	

NOTE: All dimensions are out to out.

BEAM DATA										
Beam	B34	B38	B42	B46	B50	B55R	B59R	B63R	B67R	
Initial Prestress	Kips	318	347	434	347	405	520	607	694	809
Size Strands		1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Straight Strands		11	12	5	9	10	4	6	8	20
Deflected Strands										
Hold Down Force	Kips			11.2	13.8	12.7	13.7	16.8	19.5	
Camber @		.14	.19	.13	.25	.26	.35	.42	.58	.77
① D.L. Deflection @ in. (7'-6" Spc.)		.07	.02	.14	.04	.28	.05	.31	.08	.41
② D.L. Deflection @ in. (8'-0" Spc.)		.10	.02	.15	.04	.28	.06	.32	.08	.43
③ D.L. Deflection @ in. (8'-6" Spc.)		.11	.03	.16	.04	.29	.06	.33	.09	.44
Reinforcing Steel	lb.	428	459	497	545	610	660	710	770	821
Concrete	cy.	3.47	3.87	4.28	4.69	5.10	5.51	5.92	6.33	6.80

① Due to weight of 8" slab and diaphragms.
② Upper figure is the beam camber at release. Lower figure is the beam camber just before slab is placed.
③ Upper figure is the elastic deflection of beam due to weight of 8" slab. Lower figure is the deflection due to the combined effect of creep due to weight of slab and shrinkage of slab. Total deflection of the beam is upper figure + 75% of lower figure for end spans and upper figure + 50% of lower figure for interior spans.

LIFTING LOOP DETAILS
Lifting loops are to be structural grade steel. Alternate types may be substituted with the approval of the Engineer.

COIL TIE DETAILS
Number and location of coil ties to be as detailed on specific designs.

BEAM END DETAIL AT PIER AND ABUTMENT
MAXIMUM SPACING OF BEAMS FOR SPANS SHOWN

Loading	Future W.S.	Slab Thickness	Maximum Spacing
H520 (Primary)	20 psf	8"	7'-6"
H20 (Primary)	20 psf	8"	8'-0"
H15 (Secondary)		8"	8'-6"

DETAILS AT PIER BEFORE PLACING PIER DIAPHRAGM

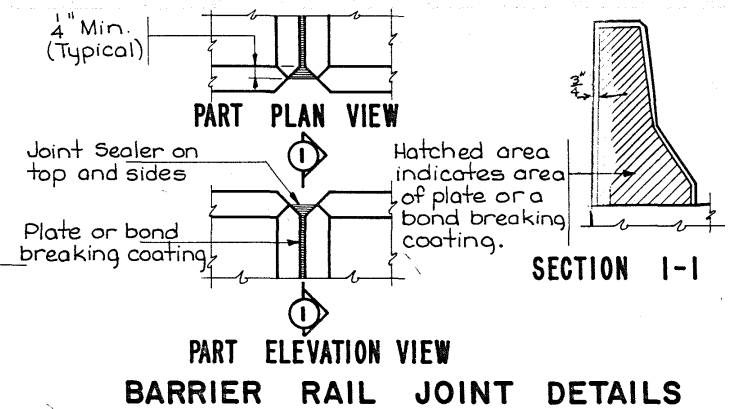
At abutment all strands shall be cut off reasonably flush with the end of beam.

DESIGN STRESSES:
Design stresses for the following materials are to be in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 1977:
Reinforcing steel in accordance with Section 1.5.2.6 (f_s = 20,000 psi).
Concrete in accordance with Section 1.6.6 (f_c = 5000 psi).
Prestressing steel in accordance with Section 1.6.6 (A), f_s = 270,000 psi.

SPECIFICATIONS:
DESIGN: AASHTO, Series of 1977.
CONSTRUCTION: Standard Specifications of the Iowa Department of Transportation, current Series, plus current special provisions and supplemental specifications.

Design For
343'-6"x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3" End Spans 3'-69'-0" Interior Spans
BEAM DETAILS PC 75 B
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
Design Sheet No.: 12 Of 14 File No.: 26075 Design No.: 578

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		14	16



part of this contract.

7'0 End Section

Special Section A

Slope 2 to 19

Slope 2 to 19

Vertical

Slope 7 to 10

Vertical

9'6"

1'9"

1'0 3/4"

4"

4"

1'3"

3/2"

3/2"

1'7"

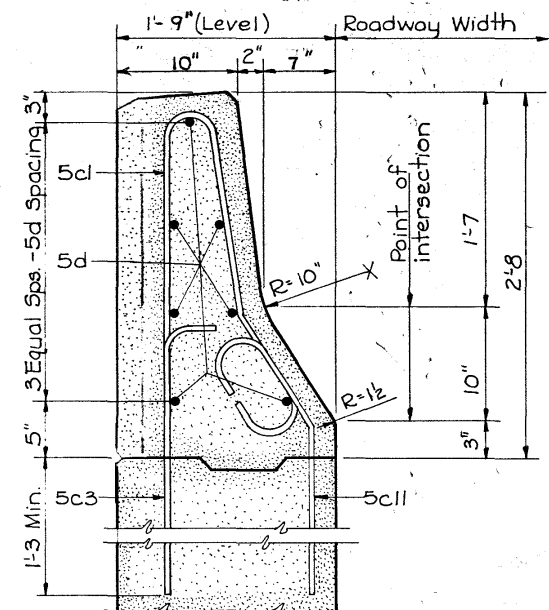
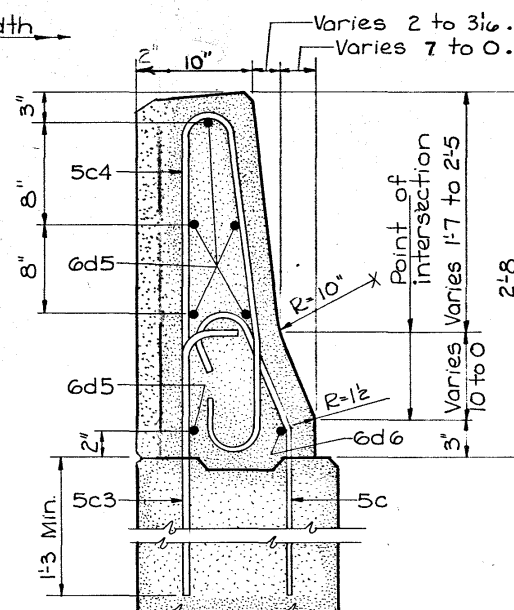
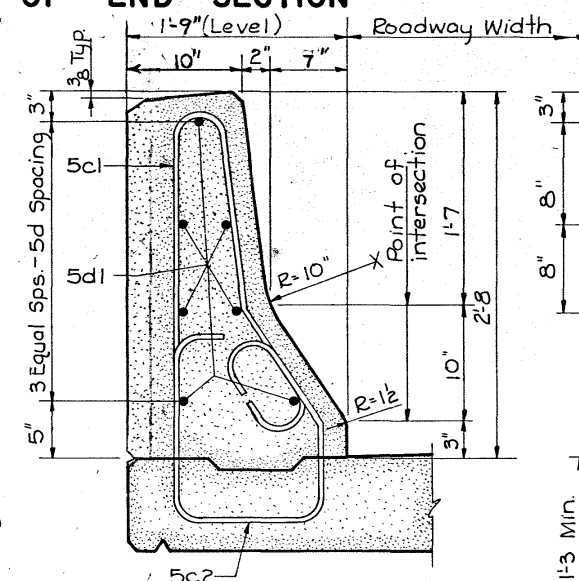
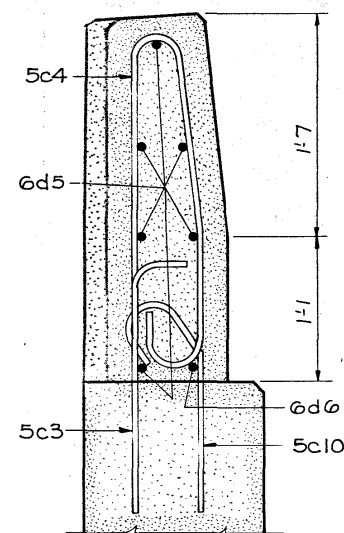
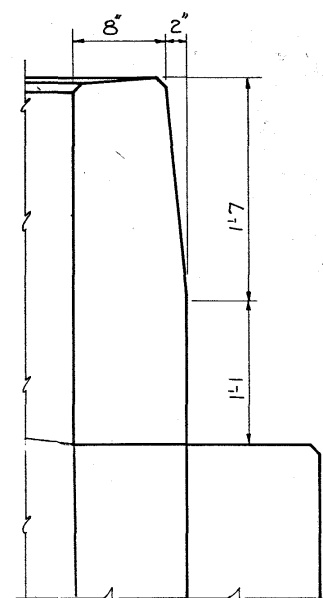
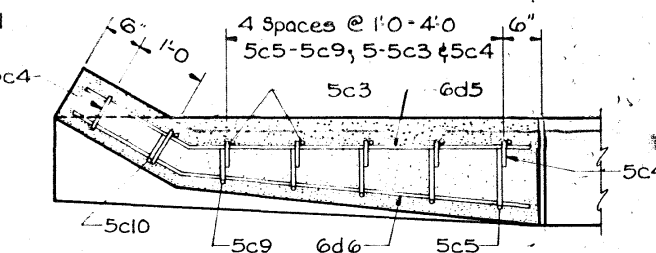
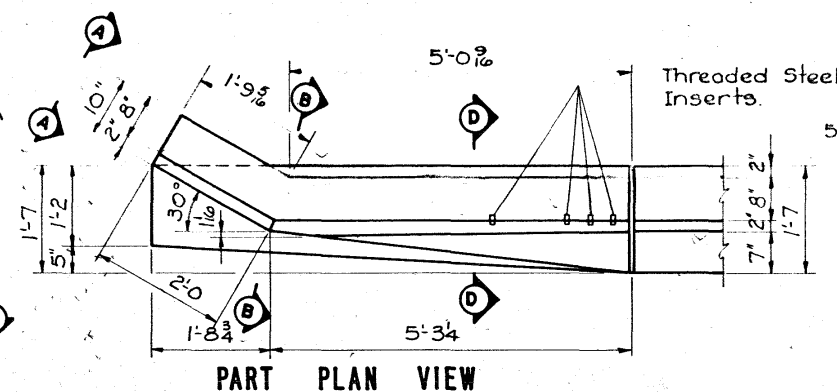
10"

3"

2'8"

PART ELEVATION

DETAIL A



Design For
343'-6"x44" PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
68'-3" End Spans 3-69'0" Interior Spans
CONCRETE BARRIER RAIL DETAILS
Station: 500+50.00 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 13 Of 14 File No.: 26075 Design No.: 578

BARRIER RAIL NOTES:

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

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

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

The permissible construction joints are placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are coated with an approved bond breaker.

Cost of the joint sealer and bond breaker considered incidental to other construction.

All barrier rail concrete is Class D.

All barrier rail reinforcing steel is epoxy coated.

The concrete barrier rail is bid on a lineal foot basis measured from end to end of rail. The number of lineal feet of barrier rail installed paid for at the contract price per lineal foot based on plan quantities. Price bid for Concrete Barrier Rail be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. All barrier rail reinforcing steel is included with the superstructure reinforcing steel.

The joint sealer conform to Fed. Spec. TT-5 TT-500230 or TT-500227 for Type II, Class A or B.

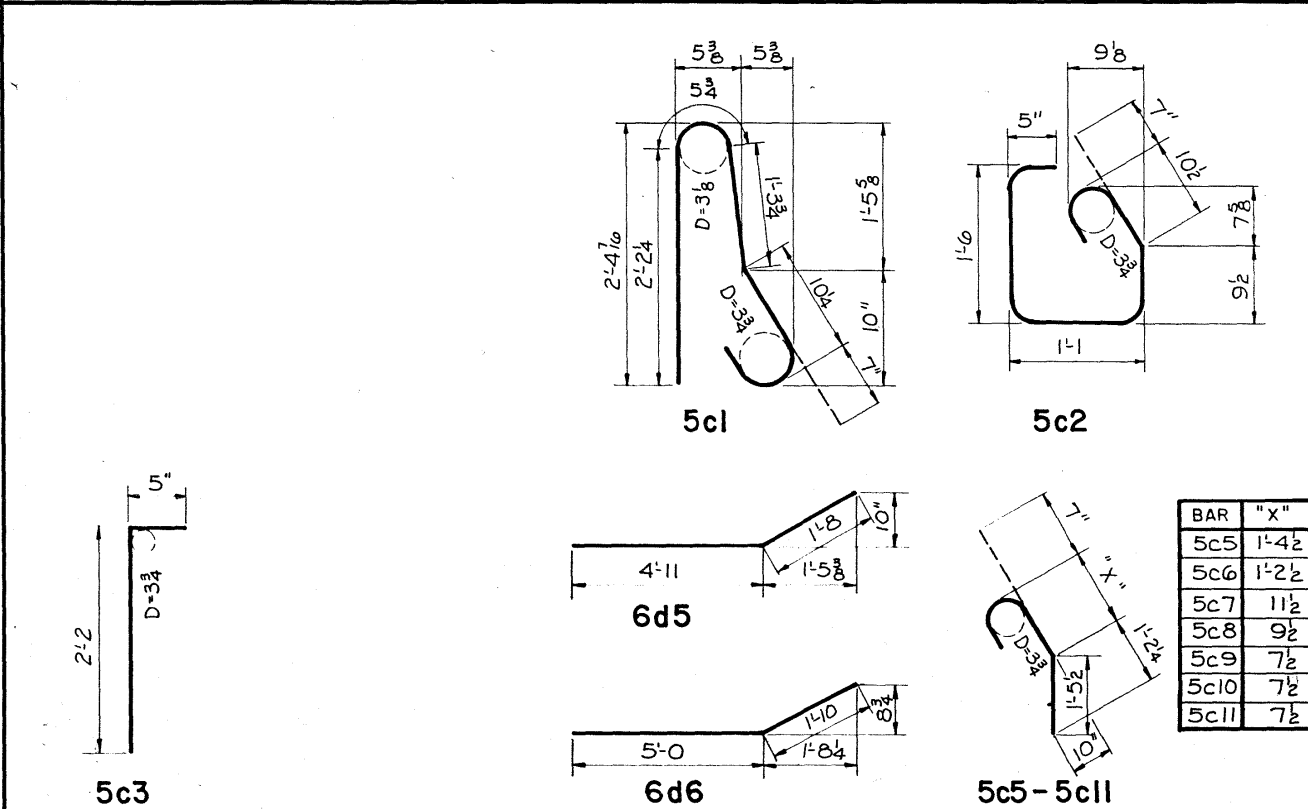
FOUNDATION NUMBER
1-2-3-4

PILING LOG

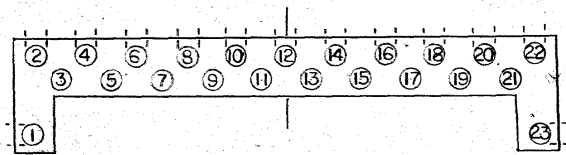
KIND OF PILING
H P 10 X 42 STEEL

PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
PIER NO. 1			PIER NO. 2			PIER NO. 3		
1	38.5	54.4	1	37.4	77.8	1	39.7	60.5
2	39.6	54.4	2	39.7	38.9	2	39.5	68.1
3	39.3	54.4	3	39.1	54.4	3	39.6	54.4
4	39.5	60.5	4	38.8	45.4	4	39.9	60.5
5	39.8	45.4	5	37.1	38.9	5	39.9	78.2
6	38.8	49.5	6	39.0	38.9	6	39.9	60.5
7	39.6	60.5	7	38.9	54.4	7	39.9	78.2
8	39.4	49.4	8	39.1	49.5	8	39.8	68.1
9	39.4	45.4	9	39.4	54.4	9	39.6	68.1
10	40.0	45.4	10	38.8	36.3	10	39.8	68.1
11	40.0	41.9	11	38.5	38.9	11	39.9	60.5
12	40.0	45.4	12	38.1	45.4	12	39.9	54.4
13	40.0	38.9	13	38.7	49.5	13	40.0	54.4
14	39.8	49.5	14	39.1	45.4	14	40.0	54.4
15	39.8	41.9	15	38.2	54.4	15	40.0	60.5
16	39.8	54.4	16	39.5	32.0	16	36.5	54.4
17	38.7	49.5	17	39.7	54.4	17	39.9	68.1
18	39.0	60.5	18	39.4	45.4	18	39.4	78.2
19	39.3	54.4	19	39.0	68.1	19	39.7	60.5
20	39.6	45.4	20	38.9	68.1	20	39.7	60.5
21	39.5	54.4	21	37.6	43.6	21	39.7	60.5
22	39.8	60.5	22	39.1	60.5	22	39.7	60.5
23	39.8	60.5	23	38.5	60.5	23	39.8	49.5
24	39.5	45.4	24	38.5	41.9	24	38.0	90.7
PIER NO. 4			PIER NO. 4			PIER NO. 4		
1	39.6	60.5	9	39.0	77.8	17	39.4	60.5
2	39.7	55.7	10	40.0	54.4	18	39.7	60.5
3	39.8	49.5	11	40.0	49.5	19	39.7	49.5
4	39.4	51.2	12	39.5	60.5	20	38.3	90.7
5	39.6	60.5	13	39.5	54.4	21	39.7	60.5
6	39.5	54.4	14	39.5	45.4	22	39.6	60.5
7	39.4	60.5	15	39.5	54.4	23	39.5	60.5
8	39.5	68.0	16	39.5	54.4	24	39.7	54.4

BENT BAR DETAILS



NOTE: All dimensions are out to out. D = Pin diameter.

FOUNDATION NUMBER		PILING LOG	KIND OF PILING					
WEST ABUT.			WOOD CREOSOTED					
EAST ABUT.								
								
PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
WEST ABUT.			EAST ABUT.					
1	24.4	19.2	1	28.7	23.5			
2	29.8	26.0	2	29.0	24.7			
3	30.0	19.3	3	29.8	9.5			
4	30.0	19.7	4	28.8	27.4			
5	29.6	21.7	5	28.8	34.3			
6	29.6	21.5	6	29.1	19.7			
7	29.6	19.3	7	28.9	40.1			
8	33.6	23.7	8	28.7	30.8			
9	29.8	20.9	9	29.1	32.6			
10	34.8	23.7	10	28.8	23.0			
11	24.5	17.1	11	29.0	25.0			
12	34.4	22.5	12	27.9	24.0			
13	29.5	20.1	13	29.4	27.7			
14	34.7	19.7	14	28.9	24.0			
15	28.8	19.3	15	29.3	30.7			
16	34.5	33.2	16	29.1	21.5			
17	29.8	24.2	17	28.7	21.7			
18	29.7	19.4	18	28.0	19.7			
19	30.0	20.9	19	29.1	24.3			
20	29.7	24.7	20	29.5	21.5			
21	29.5	34.8	21	29.1	25.0			
22	29.3	22.4	22	29.2	22.4			
23	25.0	17.9	23	28.8	23.0			
NOTE			NOTE					
3 @ 25'			23 @ 30'					
14 @ 30'								
6 @ 35'								

EPOXY REINFORCING STEEL – TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	Vertical	B	692	5'-5	3910
	5c2	Vertical	B	692	5'-3	3789
	5d1	Longitudinal	—	126	39'-9	5224
4 END SECTIONS	5c3	Vertical	F	24	2'-7	65
	5c4	Vertical	Q	28	5'-5	158
	5c5-10	Vertical	Y	24	Varies	74
	6d5	Longitudinal	—	24	6'-7	237
	6d6	Longitudinal	—	4	6'-10	41
4 SPECIAL SECTION A	5c1	Vertical	B	24	5'-5	136
	5c3	Vertical	F	24	2'-7	65
	5c11	Vertical	Y	24	2'-8	67
	5d2	Longitudinal	—	28	5'-8	105
(INCLUDED WITH SUPERSTRUCTURE REINFORCING) TOTAL (LBS.)						13,931
CONCRETE PLACEMENT SUMMARY						
SECTION					TOTAL	
STANDARD SECTION					63.2	
END SECTIONS					4 At 0.58	
SPECIAL SECTION A					4 At 0.55	
					67.7	
CONCRETE BARRIER RAIL QUANTITIES						
ITEM				UNIT	QUANTITY	
CONCRETE BARRIER RAIL				LIN. FT.	7440	

Design For
343'-6"x44' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
68'-3 End Spans 3-69'-0 Interior Spans
CONCRETE BARRIER RAIL DETAILS
Station: 500+5000 March, 1980
PLYMOUTH COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 14 Of 14 File No.: 26075 Design No.: 578