

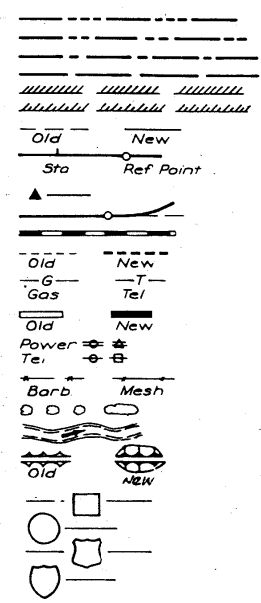
12
I-IR-35-4(43 III--14-85)
BRIDGE REPAIR

STORY COUNTY

Story I-35 # 54

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.



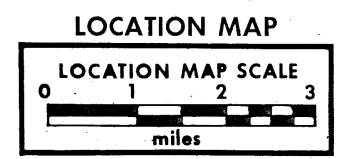
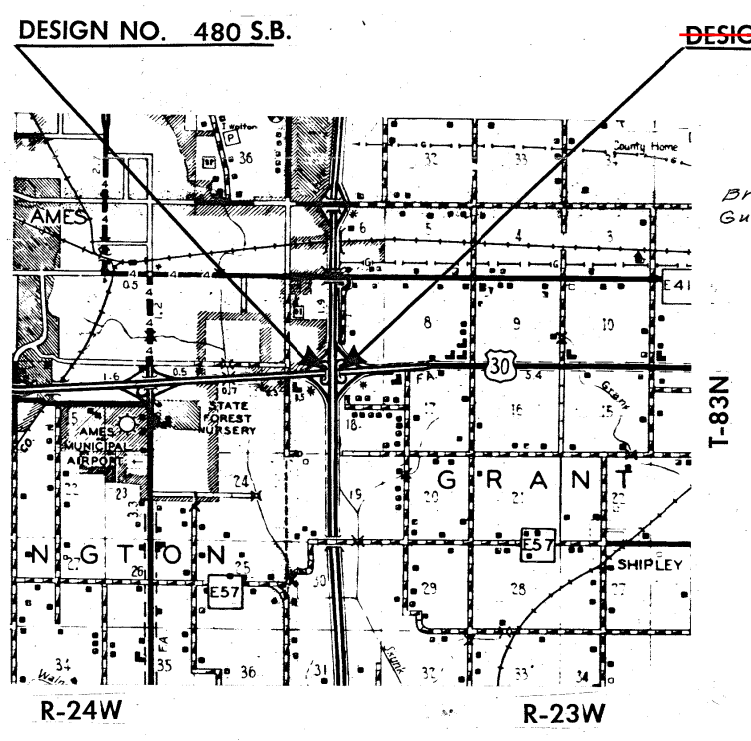
IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE
INTERSTATE ROAD SYSTEM
STORY COUNTY
BRIDGE REPAIR

ON INTERSTATE 35 OVER US 30
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)

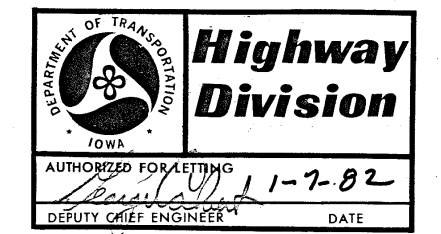
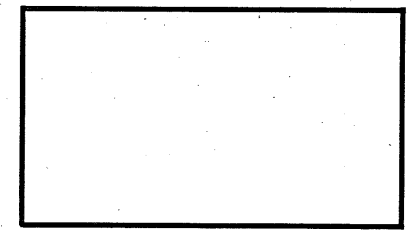
CONSTRUCTION PLANS
SHOWING PROJECT AS BUILT
Plan Preparation Supervised By: E. J. B. B. B. Date 12/27/83
Reviewed & Forwarded to Area By: Ray Kuba Date
No. of Copies (Full 3 50%) to be made & returned to: Bob Humphrey District Engineer
After Microfilming Return Original to District No.



THIS PLAN INCLUDES
Bridge Repair Hallett Const. 1982
Guardrail Installation Shaver Const. 1982
INSPECTORS
Dick Eccles Proj. Supt.
Ken Johnson Proj. Insp.
Harry Fortney Insp. on Nuclear Density
Corrected by Ken Johnson
Checked by Dick Eccles

STANDARD ROAD PLANS					
The following Standard Road Plans shall be considered applicable to construction work on this project.					
IDENT	DATE	IDENT	DATE	IDENT	DATE
RE-2	8-16-74	RE-47	8-24-79	RE-57	6-8-79
RE-7	5-16-75	RE-48A	9-18-81	RE-58	10-5-79
RE-12	4-20-79	RE-52	12-5-80	RF-2	12-7-73
		RE-53	8-24-79	RL-12	12-28-79

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



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
E. J. B. B. B.
IOWA REGISTRATION NUMBER 2792 DATE 12-28-81

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

RECEIVED
MAY 30 1984
IOWA DEPARTMENT OF TRANSPORTATION
AGENCY 11 OFFICE

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.

Dec 24, 1981

JAMES R. SASSAMAN

REG. NO. 2663

DESIGN NO. 480 OVER US 30 STA. 573+83.63 (I-35)
STORY COUNTY MAINT. NO. 8511.8R035
SECTION 7 & 8 T-83N R-23W GRANT TWP.

DESIGN FOR REPAIRS TO 4° 50' 30" SKEW
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
(S.B.)

ESTIMATE OF QUANTITIES

NO.	ITEM	UNIT	TOTAL
1	Bridge Floor Overlay	Sq. Yds.	1953.74
2	Class A Floor Repair	Sq. Yds.	27.27
3	Traffic Control	L.S.	2500
4	Curb Drain Modification	L.S.	3200
5	Temporary Barrier Rail-Combination	Lin. Ft.	443.5
6	Pavement Marking	Sta.	80.99
7	Removal of Existing Structures-as per plan	L.S.	4500
8	Removal of Pavement	Sq. Yds.	49
9	Structural Concrete	Cu. Yds.	26.2
10	Reinforcing Steel	Lbs.	4,226
11	Steel Extrusion Joints with Neoprene	Lin. Ft.	82.6
12	Epoxy Sealer for Concrete	Sq. Ft.	1374.6
13	Class 20 Excavation	Cu. Yds.	31
14	Granular Backfill	Cu. Yds.	31
15	Reinforced Bridge Approach Sect., as per plan	Sq. Yds.	45
16	Cast in Place Barrier Rail	Lin. Ft.	472.2

ESTIMATE OF ROADWAY QUANTITIES			
NO.	ITEM	UNIT	TOTAL
1	Guardrail, Formed Steel Beam	Lin. Ft.	225
2	Guardrail Posts, Beam	No.	45
3	Guardrail, End Anchorage, Beam RE-52	No.	1
4	Guardrail, End Anchorage, Beam RE-53	No.	1
5	Delineators, Triple Amber Vertical	No.	6
6	Object Markers, Type 3	No.	2
7	Removal of Formed Steel Beam Guardrail	Lin. Ft.	325
8	Removal of Posts	No.	60
9	Removal of Anchor Section, RE-9	No.	1
10	Remove & Reinstall Formed Steel Beam Guardrail	Lin. Ft.	25
11	Excavation, Class 10, Roadway and Borrow	Cu. Yds.	350

ESTIMATE REFERENCE INFORMATION100.4

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

ITEM NO.	DESCRIPTION
18	Includes 6 posts 10" x 10", 34 posts 8" x 8" and 5 posts 6" x 8".
23, 24, 25	To be disposed of as per std. notation 213-1.
27	To be used for shaping median as per Std. Rd. Plan RL-12. Quantity is estimate only and payment will be made on actual volume of material required. Article 1109-03 of the Current Std. Specifications shall not apply. Includes 1 - 30" C-1 connection for the median drain at Sta. 575+75. Contractor shall use due caution to maintain present drainage conditions. Contractor shall provide material as required for this bid item.

DESIGN NO. 480 QUANTITIES			
NO.	ITEM	UNIT	TOTAL
17	Guardrail, Formed Steel Beam	Lin. Ft.	226.3
18	Guardrail, Posts, Beam	No.	44
19	Guardrail, End Anchorage, Beam RE-52	No.	1
20	Guardrail, End Anchorage, Beam RE-53	No.	1
21	Delineators, Triple Amber Vertical	No.	6
22	Object Markers, Type 3	No.	2
23	Removal of Formed Steel Beam Guardrail	Lin. Ft.	390.30
24	Removal of Posts	No.	61
25	Removal of Anchor Section, RE-9	No.	1
26	Remove & Reinstall Formed Steel Beam Guardrail	Lin. Ft.	19.2
27	Excavation, Class 10, Roadway & Borrow	Cu. Yds.	350
800	Furnish & Install Signs	as 480 & 580	666.43
800	Galvanized, Expansion Fittings	480 & 580	4

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.

Dec 24, 1981

JAMES R. SASSAMAN

REG. NO. 2663

DESIGN NO. 580 OVER US 30 STA. 573+83.63 (I-35)
STORY COUNTY MAINT. NO. 8511.8R035
SECTION 7 & 8 T-83N R-23W GRANT TWP.

DESIGN FOR REPAIRS TO 4° 50' 30" SKEW
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
(N.B.)

ESTIMATE OF QUANTITIES

NO.	ITEM	UNIT	TOTAL
28	Bridge Floor Overlay	Sq. Yds.	1953.74
29	Class A Floor Repair	Sq. Yds.	35.80
30	Traffic Control	L.S.	2500
31	Curb Drain Modification	L.S.	3200
32	Temporary Barrier Rail-Combination	Lin. Ft.	443.5
33	Pavement Marking	Sta.	88.42
34	Removal of Existing Structures - as per plan	L.S.	4500
35	Removal of Pavement	Sq. Yds.	49
36	Structural Concrete	Cu. Yds.	26.2
37	Reinforcing Steel	Lbs.	4,226
38	Steel Extrusion Joints with Neoprene	Lin. Ft.	82.6
39	Epoxy Sealer for Concrete	Sq. Ft.	1374.6
40	Class 20 Excavation	Cu. Yds.	31
41	Granular Backfill	Cu. Yds.	31
42	Reinforced Bridge Approach Sect., as per plan	Sq. Yds.	45
43	Cast in Place Barrier Rail	Lin. Ft.	472.2

ESTIMATE REFERENCE INFORMATION100.4

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

ITEM NO.	DESCRIPTION
29	Participating with I.R. Funds.
31	Includes cost of concrete removal, labor and all materials (3.2 cu. yds. concrete, 303 lbs. reinforcing steel, and 12 3/4 feet 10" I.D. PVC pipe plus anchorages).
33	Includes placement of 44.7 stations (24.4 stations white and 20.3 stations yellow) and removal of 36.4 stations.
34, 35, 36, 37	Federal Non-participating.
36	All Structural Concrete to be Class "D" Concrete.
38	Includes all necessary hardware and accessories including the anchorage system and temporary erection materials.
39	Includes 266 sq. ft. of bridge seat sealer for abutment bridge seats. This amount is to be federal non-participating.
42	Includes cost of all equipment, labor, and material (including the 1" preformed joint filler).

ESTIMATE OF ROADWAY QUANTITIES			
NO.	ITEM	UNIT	TOTAL
44	Guardrail, Formed Steel Beam	Lin. Ft.	162.5
45	Guardrail Posts, Beam	No.	44
46	Guardrail, End Anchorage, Beam RE-52	No.	1
47	Guardrail, End Anchorage, Beam RE-53	No.	1
48	Delineators, Triple Amber Vertical	No.	6
49	Object Markers, Type 3	No.	2
50	Removal of Formed Steel Beam Guardrail	Lin. Ft.	391.0
51	Removal of Posts	No.	61
52	Removal of Anchor Section, RE-9	No.	1
53	Remove & Reinstall Formed Steel Beam Guardrail	Lin. Ft.	87.5
54	Excavation, Class 10, Roadway and Borrow	Cu. Yds.	350

ESTIMATE REFERENCE INFORMATION100.4

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

ITEM NO.	DESCRIPTION
45	Includes 6 posts 10" x 10", 34 posts 8" x 8" and 5 posts 6" x 8".
49, 50, 51, 52	To be disposed of as per standard notation 213-1.
54	Quantity is estimate only and payment will be made on the actual volume of material required. Article 1109.03 of the Current Std. Specifications shall not apply. Contractor shall provide required material.

FILE NO. 26338

STORY COUNTY

PROJECT NUMBER I-IR-35-4(43)M-44-85

SHEET NO. 2 TOTAL SHEETS 40

ESTIMATE SHEET

SPECIFICATION

Construction-Iowa D.O.T. Specifications, Series 1977, plus current Supplemental Specifications and Special Provisions including:
 Spec. 854 "Supplemental Specifications for Traffic Controls"
 Spec. 875 "Supplemental Specifications for Pavement Marking."

NOTE: SEE DESIGN SHEET 19 OF 19 FOR "ESTIMATED ROADWAY QUANTITIES".

TOTAL		ESTIMATED	BRIDGE	QUANTITIES
Item No.	Item	Units	Quantity	
1	Bridge Floor Overlay	sq. yds.	1048	
2	Class A Floor Repair	sq. yds.	15	
3	Traffic Control	l.s.	Lump Sum	
4	Curb Drain Modification	l.s.	Lump Sum	
5	Temporary Barrier Rail-Combination	lin. ft.	4435	
6	Pavement Marking	stations	81.1	
7	Removal of Existing Structures-as per plan	l.s.	Lump Sum	
8	Removal of Pavement	sq. yds.	49	
9	Structural Concrete	cu. yds.	26.2	
10	Reinforcing Steel	lbs.	4226	
11	Steel Extrusion Joints with Neoprene	lin. ft.	826	
12	Epoxy Sealer for Concrete	sq. ft.	1425	
13	Class 20 Excavation	cu. yds.	31	
14	Granular Backfill	cu. yds.	31	
15	Reinforced Bridge Approach Section, as per plan	sq. yds.	45	
16	Cast in Place Barrier Rail	lin. ft.	4722	

- Item No. Estimate Reference Information:
- Participating with I.R. Funds
 - Includes cost of concrete removal, labor and all materials (3.2 cu.yds. concrete, 303 lbs. reinforcing steel, and 12 3/4 feet 10" I.D. PVC pipe plus anchorages).
 - Includes placement of 44.7 stations (24.4 stations white and 20.3 stations yellow) and removal of 36.4 stations.
 - 7,8,9,10,13,14,15 Federal Non-participating.
 - All Structural Concrete to be Class "D" Concrete.
 - Includes all necessary hardware and accessories including the anchorage system and temporary erection materials.

GENERAL NOTES

This design is for repairs to the North Bound Lane of the Dual 232'-1 x 40' Pretensioned Prestressed Concrete Beam Bridges, original Design Number 1162, Story County. Plans of the existing structure may be obtained at the Ames office of the Iowa D.O.T. - Highway Division. Repairs shall consist of the following:

- Bridge floor overlay.
- Bridge floor repair.
- Removal of a portion of superstructure slab, the concrete diaphragm, a portion of abutment backwall and approach pavement.
- Reconstruct portion of superstructure slab, concrete diaphragm, abutment backwall, approach pavement and place new strip seal at each end of bridge.
- Reconstruct curb drains and extend.
- Add epoxy sealer to gutters, face of curbs, part of cast in place barrier rails and part of both abutments.
- Remove existing approach guardrail and build new approach guardrail.

STAGE CONSTRUCTION

Construction shall be done in stages with at least one lane of traffic maintained at all times in accordance with "Traffic Control Plan" and "Traffic Control Layout" sheet.

TRAFFIC CONTROL PLAN

See this sheet for "Traffic Control Plan" notes and Design Sheet 18 of 19 for Traffic Control Layout.

BRIDGE FLOOR REPAIR

Plan quantity of floor repair is based on the "Survey Plan" as shown on Design Sheet 12 of 19. Hatched portions represent Class "A" Bridge Floor Repair. Actual spalled and hollow areas, as determined by the engineer at the time of the construction, shall be repaired.

The entire concrete surface of the floor, including areas over Class A repair, shall have Bridge Floor Overlay. Surface raise as shown on the plans shall be considered a minimum. In order to limit additional dead load, surface raise shall be restricted to a maximum of 1/2 inch more than that shown on the plans. Profile shall be adjusted to the extent possible within these limits.

Present floor thickness is about 6 1/16 inches. The contractor will be required to exercise care in removing concrete in order to prevent unnecessary unbonding of reinforcing steel.

The top of the abutment backwall between gutter lines is to have Bridge Floor Overlay. If machine finish for the top of backwall is not practical, a manual type screed or metal plate, with approved vibrators attached, shall be used.

The exposed top of abutment backwall areas have been included in the quantities shown for Bridge Floor Overlay.

EPOXY SEALER FOR CONCRETE

In addition to requirements of Art. 2413.09, an epoxy sealer shall be applied to the curbs. The epoxy sealer material and application shall comply with Materials I.M. 491.12. Before application of epoxy, new concrete surfaces must be cured and all surfaces must be sound, clean and dry. As directed by the engineer, old surfaces may require removal of unsound material by sandblast and/or hand methods. Epoxy sealer shall be applied prior to any other surface treatment application. For portland cement concrete floor repair, Par. 2413.02A., the epoxy sealer shall be applied along each gutter line, extending one foot onto the roadway and up the batter face of the curb, and to top of curb on roadway side of cast in place barrier rail and 4 inches up the face of cast in place barrier rail (See detail on Design Sheet 11 of 19). For latex-modified concrete floor repair, 2413.02B., the epoxy sealer shall be applied to the batter face of each curb and top of curb on roadway side of existing cast in place barrier rail and 4 inches up the face of cast in place barrier rail (See detail on Design Sheet 11 of 19), but it shall not be applied on the roadway. Other areas requiring epoxy sealer may be designated elsewhere on these plans. Quantity of "Epoxy Sealer for Concrete," in square feet, to be paid for will be computed from measurements of areas actually covered and Art. 1109.03 shall not apply. Plan quantity is based on PC Concrete floor repair.

Abutments shall have sealer as shown and noted in accordance with the fifth paragraph of sub-article 2403.23C. The note "Epoxy Sealer for Concrete", shall apply to areas to be sealed. Amounts for all areas to be epoxy sealed are included in the estimated quantity of "Epoxy Sealer for Concrete".

- Includes 266 sq.ft. of bridge seat sealer for abutment bridge seats. This amount is to be federal non-participating.
- Includes cost of all equipment, labor, and material (including the 1" preformed joint filler).

REMOVAL OF EXISTING STRUCTURES

The lump sum bid "Removal of Existing Structures" shall include all costs associated with removal and disposal of portion of superstructure slab, concrete diaphragm, concrete end posts, approach guardrail anchor block and portion of abutment backwall at each end of bridge as shown or noted.

REMOVAL OF EXISTING APPROACH PAVEMENT

The lump sum bid "Removal of Pavement" shall include all costs associated with removal and disposal of a portion of bridge approach pavement at each end of bridge as shown or noted.

BRIDGE APPROACH SECTION

The Bridge Contractor is to construct a new bridge approach section at each end of bridge as detailed on Design Sht. 849 of 19. The unit price bid for "Reinforced Bridge Approach Section, As Per Plan" shall be considered full compensation for furnishing all materials (including all joint material), excavation and labor necessary to construct the reinforced bridge approach section.

CURB DRAIN MODIFICATION

The lump sum bid for "Curb Drain Modification" is to include all costs involved in removing the existing concrete as shown on the Curb Drain Modification Details. It shall also include the cost of furnishing new reinforcing steel, structural concrete and 10" I.D. PVC drain pipe plus anchors and all labor to construct the drain intake and drain extension as shown on these plans.

TRAFFIC CONTROL PLAN

- Traffic control on this project shall be in accordance with Supplemental Specification 854, special layout sheet and Detail Sheets 521-2B and 521-4, contained in these plans.
- If work in progress or unfinished work adjacent to the traveled way is not protected by temporary barrier rail, Detail Sheet 521-2B and 521-4 shall be used respectively for traffic control.
- It is the intent that Detail Sheet 521-2B be used only for necessary, short term (1-2 hours) lane closure. Temporary barrier rail should be used during most work, including guardrail and cast-in-place barrier rail installation.
- All traffic control devices shall be furnished, erected, maintained, and removed by the contractor.
- The location for storage of equipment by the contractor during non-working hours will be as approved by the engineer in charge of construction.
- Conflicting permanent edgelines or lanelines shall be removed and replaced with appropriate temporary lines. Permanent edgelines and lanelines shall be restored before the roadway is opened to normal traffic.
- Proposed sign spacing may be modified, as approved by the engineer, to meet existing field restrictions, or to prevent obstruction of the motorist's view of permanent signing.
- Proposed changes in the Traffic Control Plan (includes layout sheets) shall be reviewed with the Office of Construction before changes are made.
- Cost of traffic control measures required of the contractor, except pavement markings, and temporary barrier rail, shall be bid "Lump Sum."

Location:
 I-35 North Bound Bridge
 over U.S. 30
 Sections 7 & 8
 T-83 N R-23 W
 Grant Township

TRAFFIC COUNT: 6920 ADT (1980)

Design for Repairs to 4° 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (North Bound Bridge)
 43'-1/2 & 51'-5/2 End Spans 2-68'-9 Center Spans
 Bridge Maintenance No. 8511.BR035
GENERAL NOTES & TOTAL ESTIMATED QUANTITIES
 Station 573+83.63 (I-35) December, 1981
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 1 Of 19 File No.: 26338 Design No.: 580

DESIGNED BY: M. J. Lemmer
 DETAILED BY: D. A. Wright

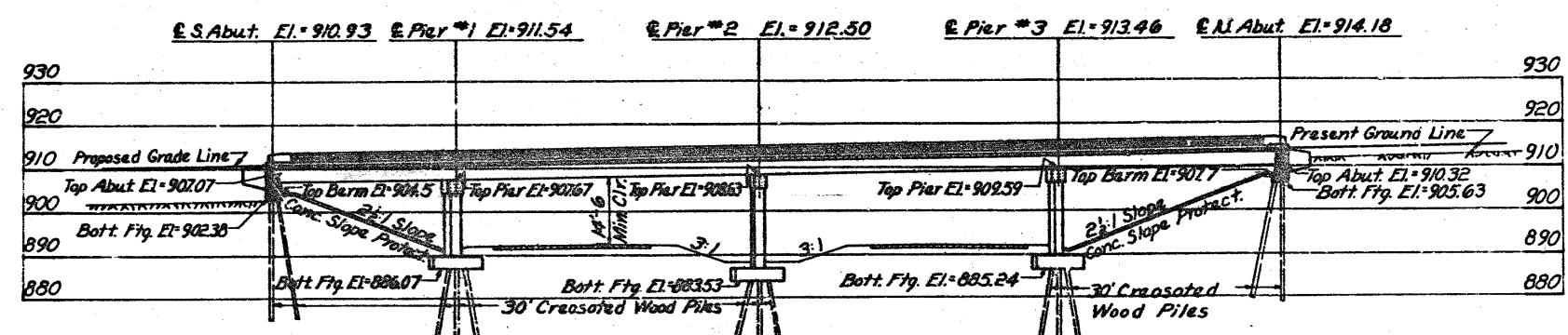
TRACED BY: L. Phillips
 CHECKED BY: L. Phillips

Section Leader J. Bassaman

STORY COUNTY

PROJECT NUMBER
 I-IR-35-4(43)III-14-85

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	6		22	40



Sta. 572+89 Lt. 37'

Depth to Water: 110'

Soil Layers (from top):

- Sand (approx. 110' to 102.5')
- Firm Sandy Gla. Clay (approx. 102.5' to 98.5')
- Very Sandy Gla. Clay (approx. 98.5' to 88.5')
- Very Firm Sandy Gla. Clay (approx. 88.5' to 65.5')
- Very Firm Gla. Clay With Occ. Boulder (approx. 65.5' to 32.0')

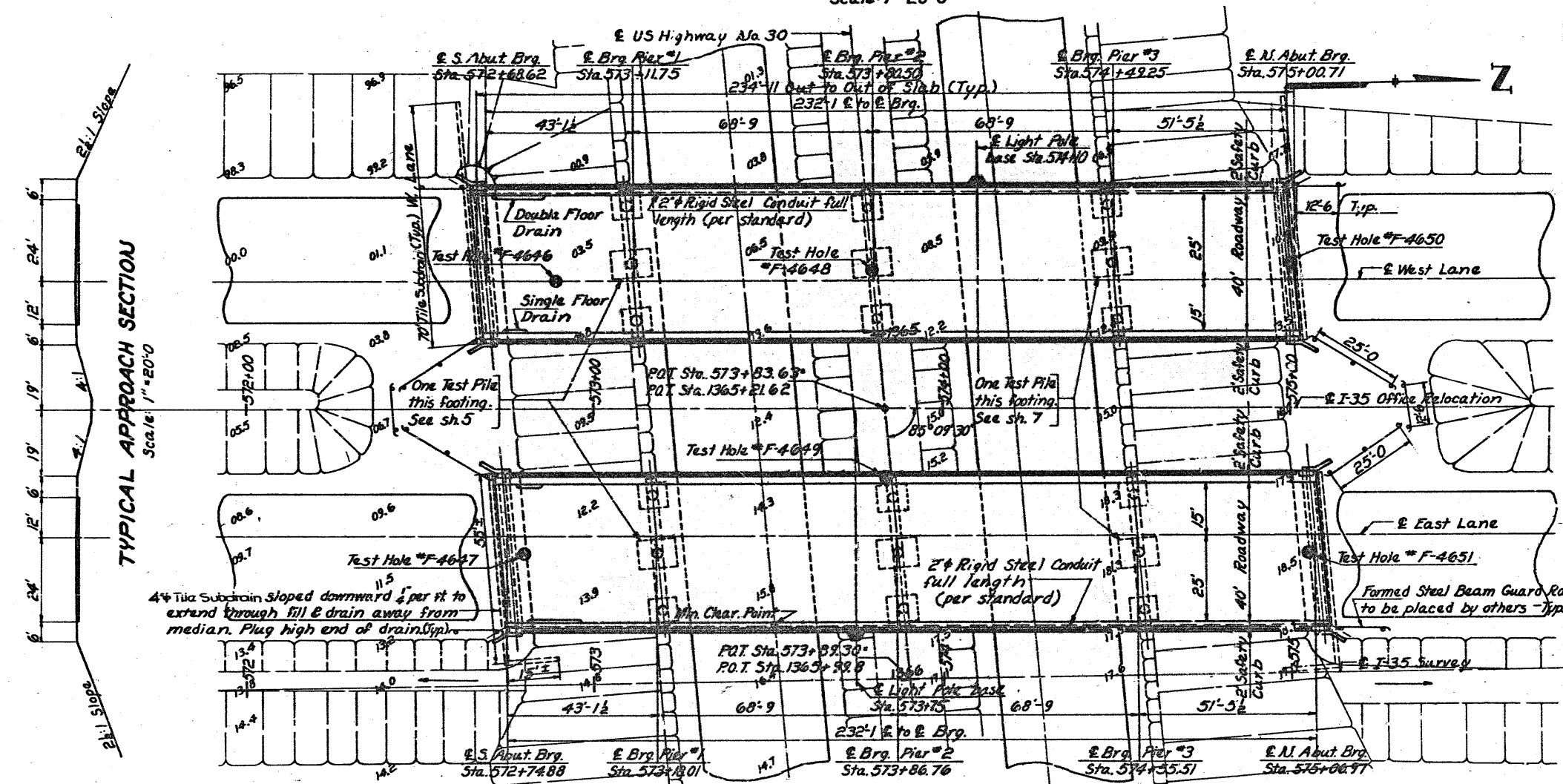
Sta. 573+80 Lt. 42'

Depth to Water: 125'

Soil Layers (from top):

- Sand (approx. 125' to 102.5')
- Firm Sandy Gla. Clay With Occ. Boulder (approx. 102.5' to 87.5')
- Very Firm Sandy Gla. Clay (approx. 87.5' to 77.5')
- Very Sandy Gla. Clay (approx. 77.5' to 67.5')
- Very Firm Sandy Gla. Clay with Occ. Boulder (approx. 67.5' to 42.5')
- Very Firm Gla. Clay (approx. 42.5' to 11.5')

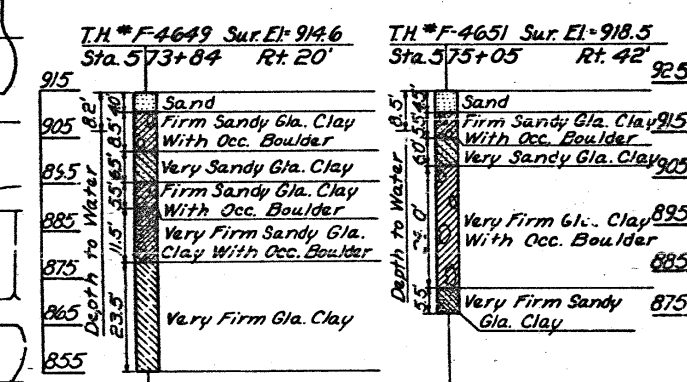
Bott. of Hole El.=857.4 Bott. of Hole El.=847.4



T.H. F-4650 Sur. El.: 911.2		T.H. F-4647 Sur. El.: 913.0	
91.5	Sta. 575+00 Lt. 42'	Sta. 572+80 Rt. 42'	91.5
90.5	Sand Firm Sandy Gla. Clay With Occ. Boulder	Same	90.5
89.5			89.5
88.5	Very Firm Gla. Clay With Occ. Boulder	Very Firm Sandy Gla. Clay With Occ. Boulder	88.5
87.5			87.5
86.5		Very Firm Gla. Clay	86.5

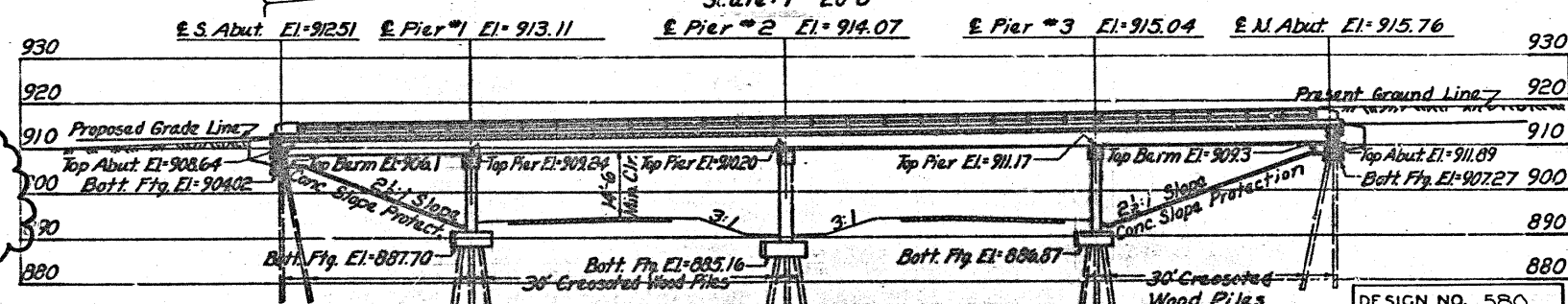
Depth to Water: 82.5' (left), 80' (right)

Bott. of Hole El.=863.7 Bctt. of Hole El.=865.5



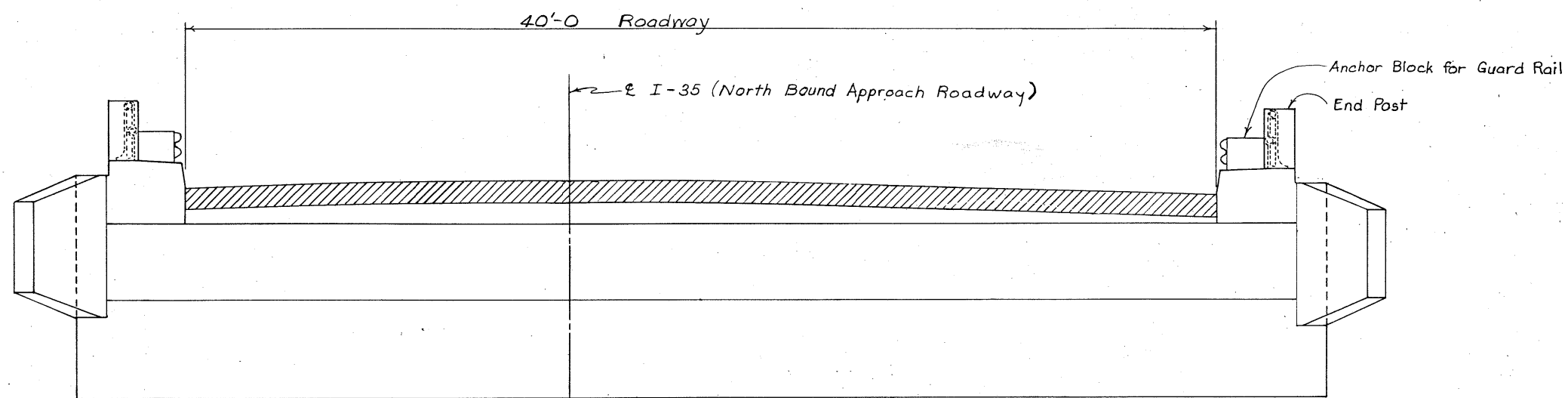
Bott. of Hole El.=855.1 Bott. of Hole El.=871.0

LOCATION:
Section 7 & 18
T-93N R-23W
Grant TWP
Story County
On I-#35
Over US #30

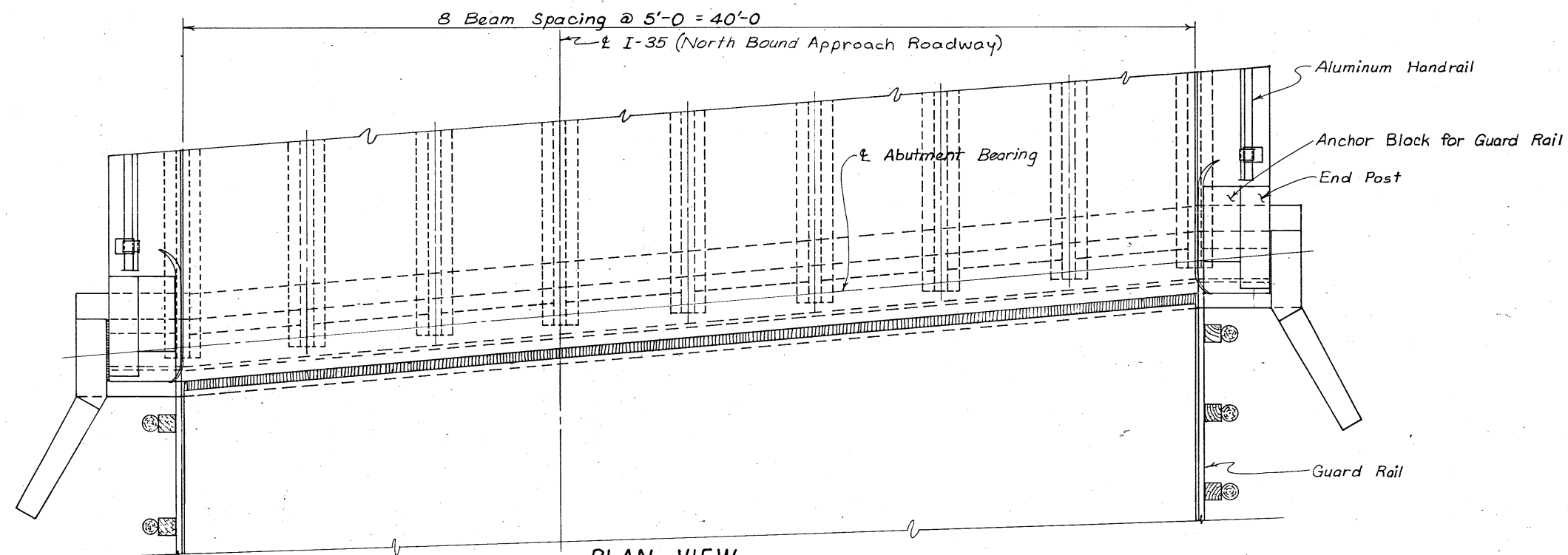


DESIGN NO. 580
FILE NO. 26338
DES. SH. NO. 2 OF 19

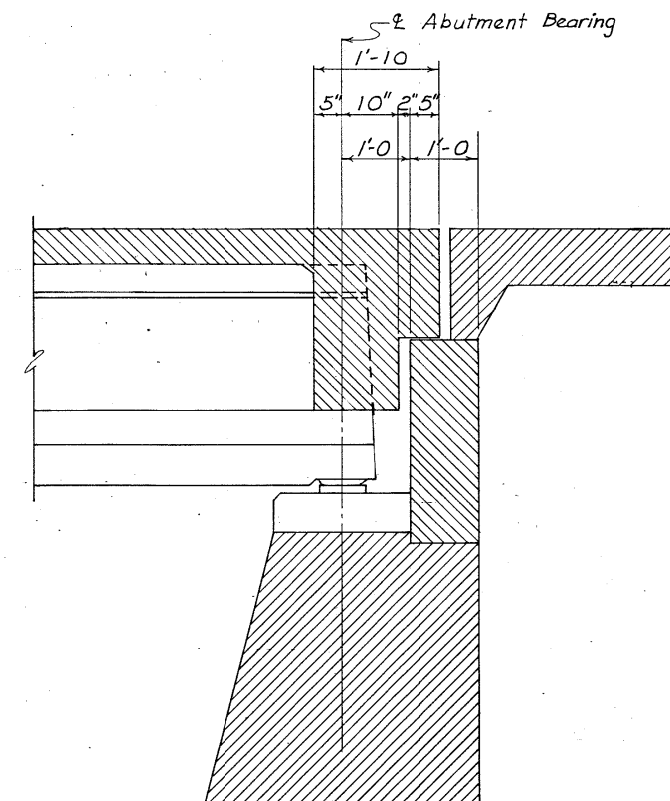
Design For 4° 50' 30" Skew
DUAL 232'-1x40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES
 43'-1/2 & 51'-5/2 End Spans 68'-9 Center Spans
 Concrete Floor & Substructure Tubular Rails
SITUATION PLAN
 Station: 573+83.63 on Interstate *35
 Station: 1365+21.62 on US *30 Proj. No. I-35-4(9) 110
STORY COUNTY
 Iowa State Highway Commission
 November 1962 Sheet 2 of 14
 Design No. 1162 Story County File No. 21522



REAR ELEVATION OF ABUTMENT
(Looking North at South Abutment)



PLAN VIEW
(Showing South Abutment details of existing bridge)



TYPICAL SECTION NEAR I ROADWAY
(Normal to I Abutment)
Showing existing diaphragm and abutment details

Design for Repairs to 4° 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1 1/2 & 51'-5 1/2 End Spans 2-68'-9 Center Spans
Bridge Maintenance No. 8511.8R035
REPAIR DETAILS
Station 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 3 Of 19 File No.: 26338 Design No.: 580

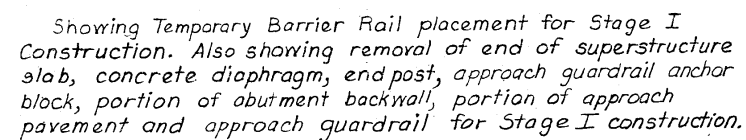
DESIGNED BY: M. L. Elmer
CHECKED BY: L. H. H. H.

TRACED BY: M. Louper
CHECKED BY: L. H. H. H.

STORY COUNTY

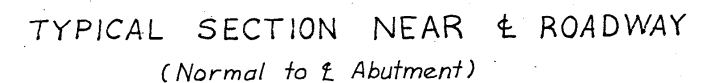
PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		24	40



NOTE Stage construction necessitates excavating very close to the traffic lane. The earth embankment under the traffic lane is to be adequately supported so that it will safely carry the highway traffic during stage construction.

The cost of furnishing, placing and removing materials required to retain embankment are considered incidental to the cost of construction and no direct payment will be made therefor. All materials furnished to retain embankment are to remain the property of the Bridge Contractor.



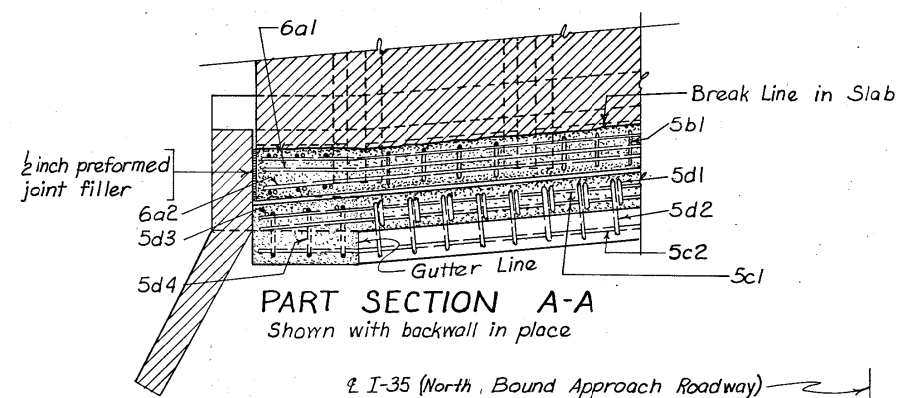
Plan details of Stage I and Stage II construction are shown for the South Abutment looking north. The details for the North Abutment are similar except the backwall and diaphragm areas (in plan view) outside the gutter line for Stage I will be the same as shown for Stage II at the South Abutment. Also the backwall and diaphragm area (in plan view) outside the gutter line for Stage II will be the same as shown for Stage I at the South Abutment.

Design for Repairs to 40' 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1 1/2 & 51'-5 1/2 End Spans 2- 68'-9 Center Spans
Bridge Maintenance No. 8511.8R035
REPAIR DETAILS - STAGE I
Station 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 4 Of 19 File No.: 26338 Design No.: 580

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		25	40

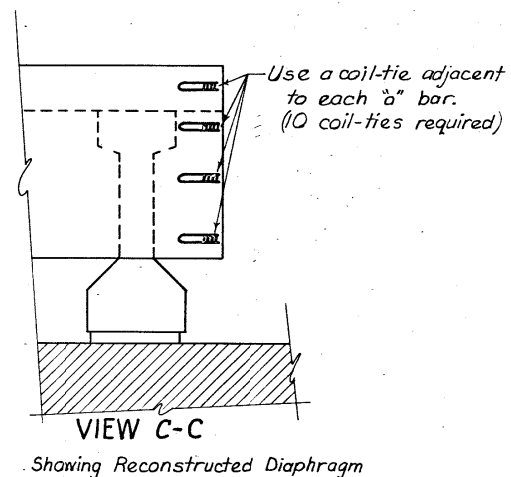
Showing superstructure slab and abutment diaphragm, for Stage I Construction, in place.

REAR ELEVATION OF ABUTMENT



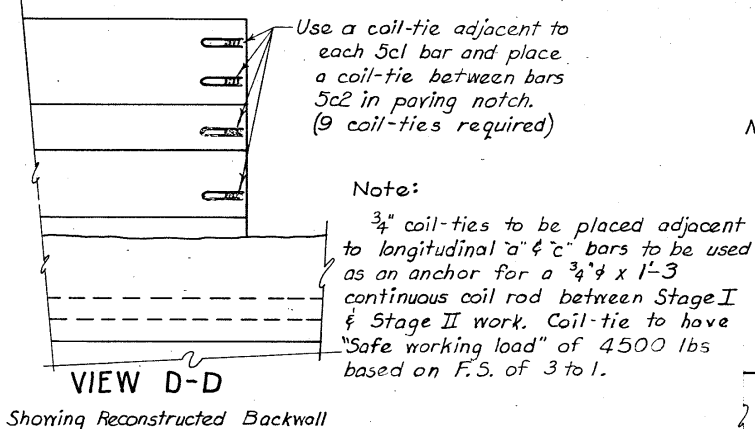
PART SECTION A-A

Shown with backwall in place



VIEW C-C

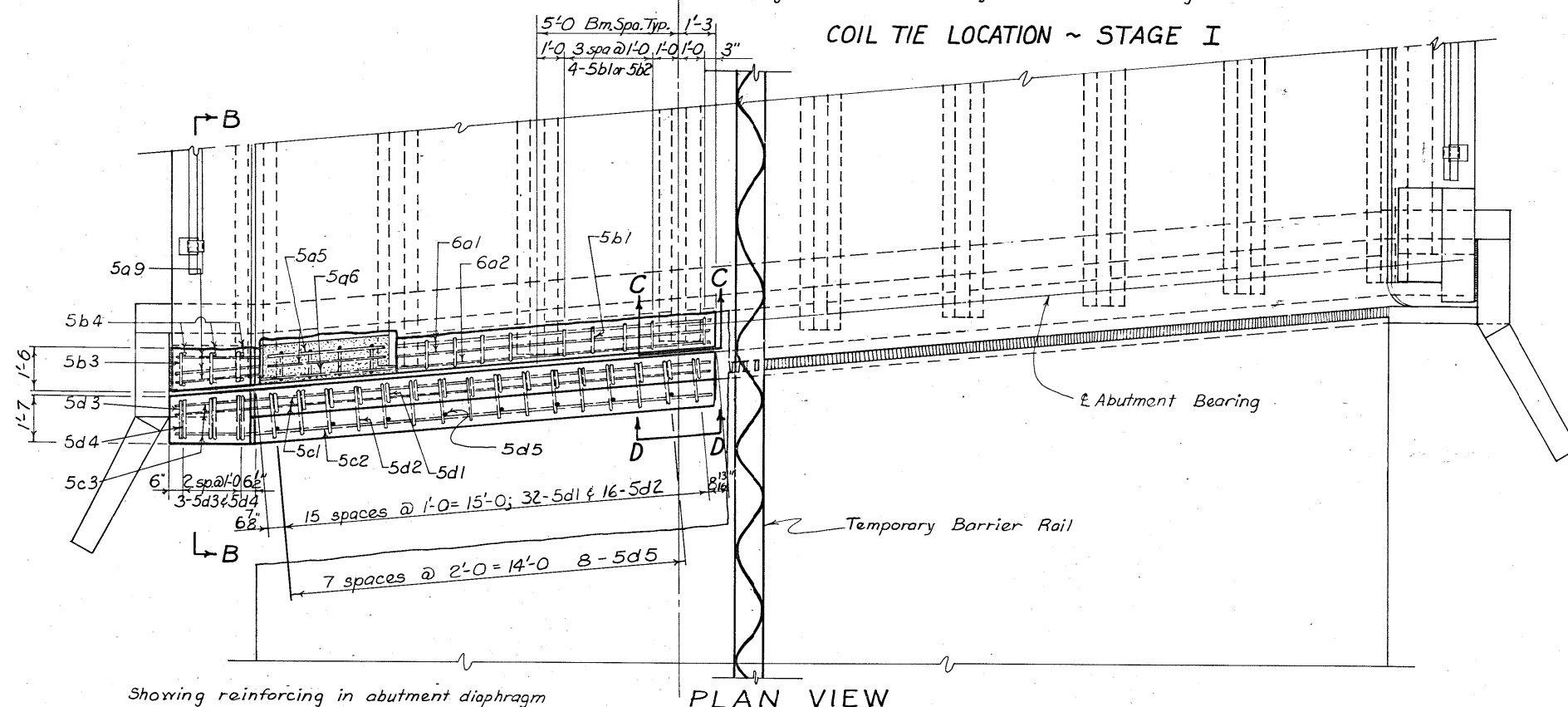
Showing Reconstructed Diaphragm



VIEW D-D

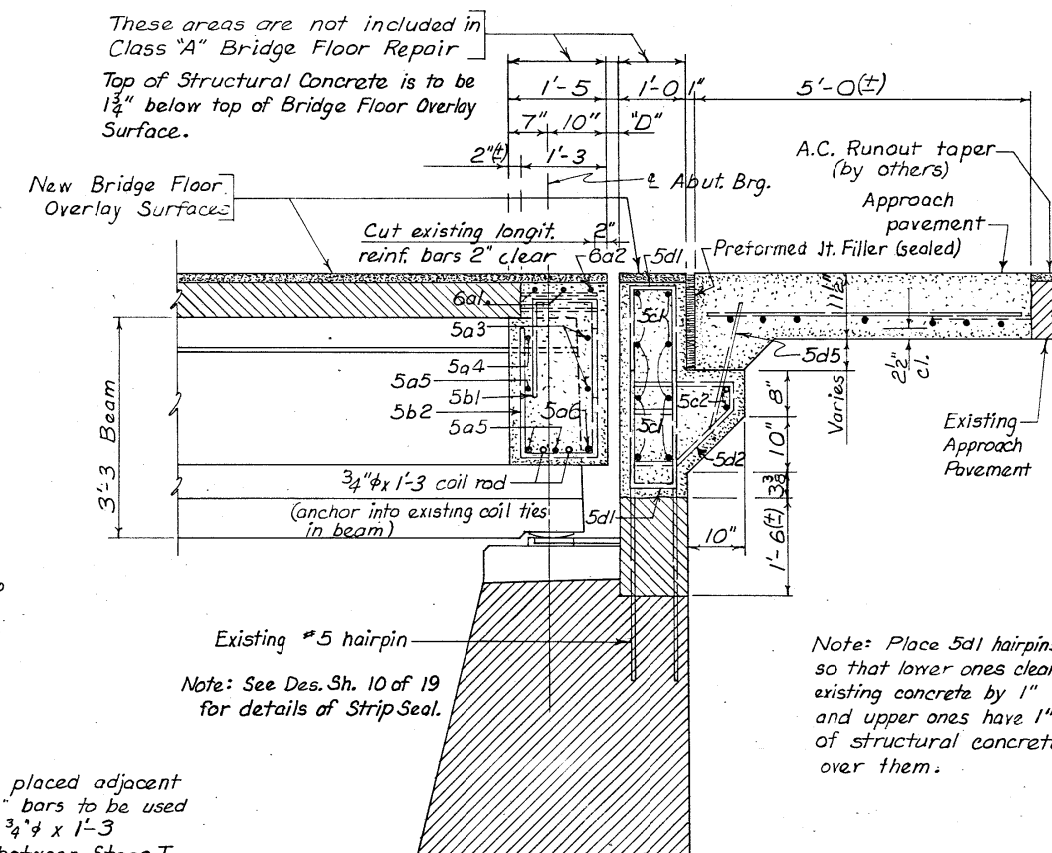
Showing Reconstructed Backwall

COIL TIE LOCATION ~ STAGE I



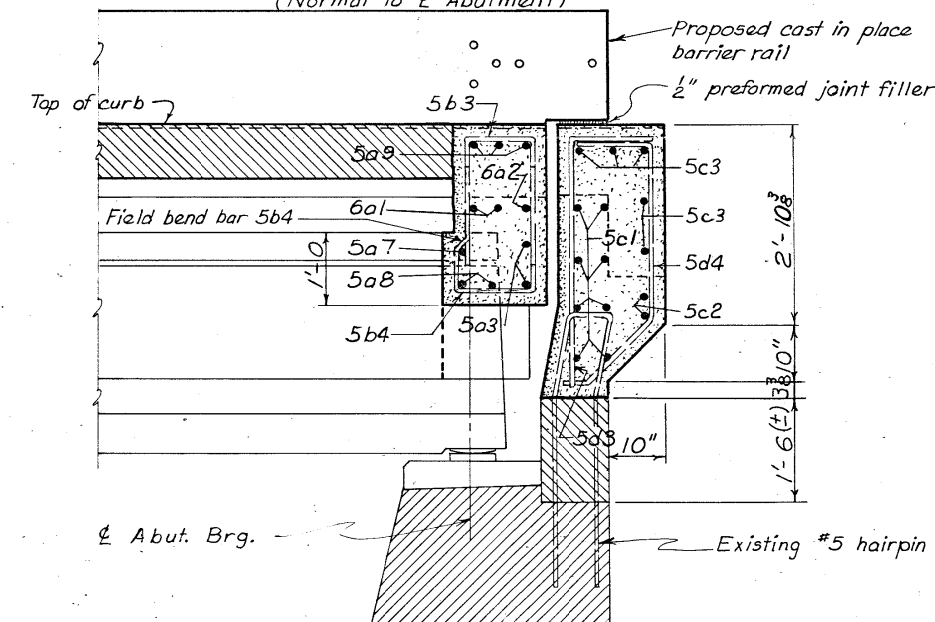
PLAN VIEW

Showing reinforcing in abutment diaphragm and abutment backwall, for Stage I Construction, in place.



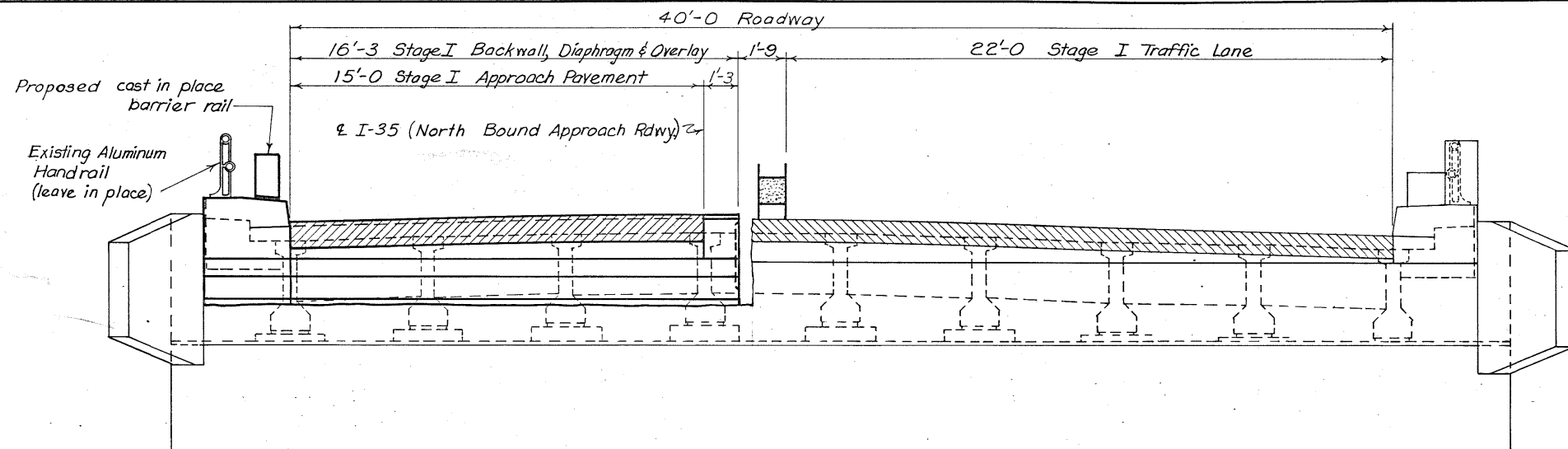
TYPICAL SECTION NEAR $\angle$ ROADWAY
(Normal to $\angle$ Abutment)

(Normal to $\angle$ Abutment



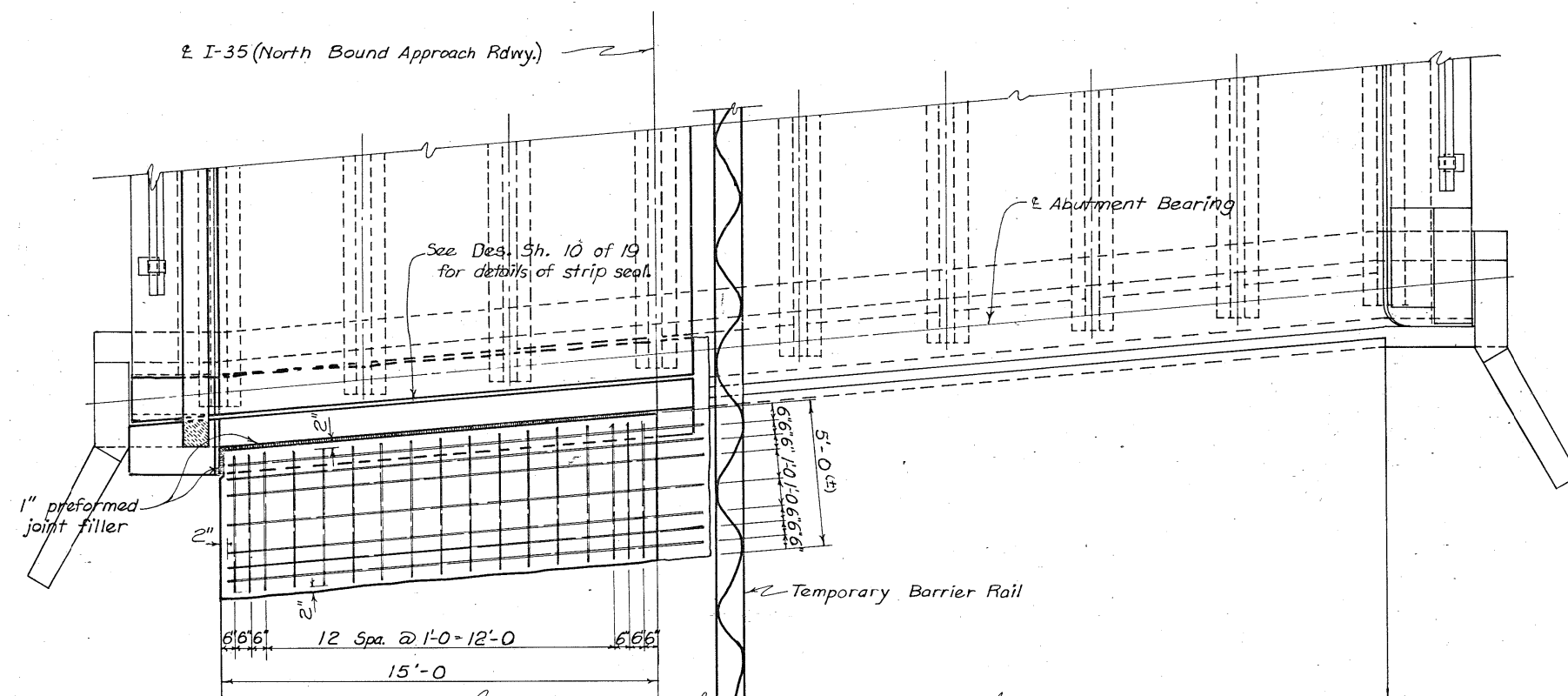
PART SECTION B-B

Design for Repairs to 4° 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1½ & 51'-½ End Spans 2-68'-9 Center Spans
Bridge Maintenance No. 8511.8R035
REPAIR DETAILS STAGE I
Station 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 5 Of 19 File No.: 26338 Design No.: 580



Showing Bridge Floor Overlay, abutment backwall, approach pavement and cast-in-place barrier rail, for Stage I construction, in place.

REAR ELEVATION OF ABUTMENT



PLAN VIEW

Showing Bridge Floor Overlay, superstructure slab, abutment diaphragm, abutment backwalls, approach pavement and cast in place barrier rail, for Stage I Construction, in place.

REINFORCED BRIDGE APPROACH SECTION:

All reinforcing steel shall be #5 bars placed as shown and held in place by approved bar supports.

The concrete used shall be Class "D" Structural Concrete placed in accordance with current specifications for concrete paying, including vibration.

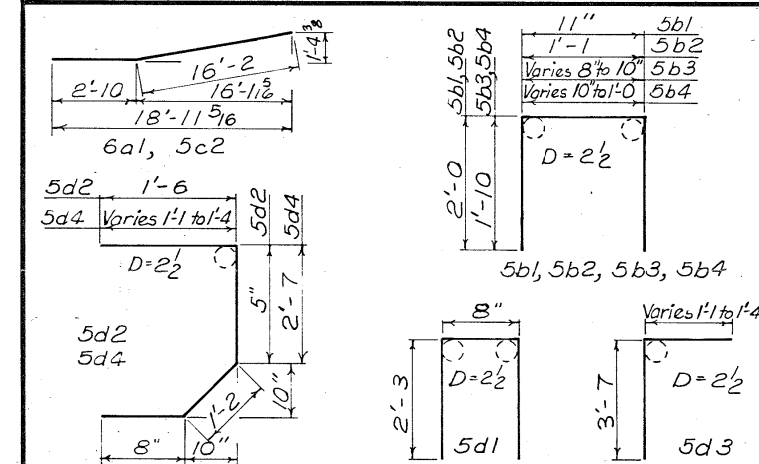
The approach pavement is to match the bridge roadway crown.

Cost of 1" preformed joint filler to be included in price bid for approach pavement.

REINFORCING BAR LIST ~ STAGE I ~ ONE END

Bar	Location	Shape	No.	Length	Weight
6a1	Diaphragm, Longitudinal	—	2	19'-0	57
6a2	Diaphragm, Longitudinal	—	1	19'-0	29
5a3	Diaphragm, Longitudinal	—	2	19'-0	40
5a4	Diaphragm, Longitudinal	—	3	3'-7	11
5a5	Diaphragm, Longitudinal	—	9	4'-2	39
5a6	Diaphragm, Longitudinal	—	1	16'-3	17
5a7	Diaphragm, Longitudinal, End	—	1	2'-2	2
5a8	Diaphragm, Longitudinal, End	—	2	2'-5	5
5a9	Top Curb, Transverse	—	3	2'-7	8
5b1	Diaphragm, Hairpin	⌋	13	4'-11	67
5b2	Diaphragm, Hairpin	⌋	13	5'-1	69
5b3	Diaphragm, Hairpin, End	⌋	3	Varies	14
5b4	Diaphragm, Hairpin, End	⌋	3	Varies	14
5c1	Back wall, Longitudinal, F.F. & B.F.	—	8	19'-0	159
5c2	Back wall, Longitudinal, Paving Support	—	2	19'-0	40
5c3	Back wall, Longitudinal, Curb	—	5	2'-7	13
5d1	Back wall, Hairpin	⌋	32	5'-2	172
5d2	Paving Support	—	16	3'-9	63
5d3	Back wall, Curb Section	—	3	Varies	15
5d4	Back wall, Curb Section	—	3	Varies	18
5d5	Paving Dowel	—	8	2'-0	17
Total (lbs.)					869

BENT BAR DETAILS



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

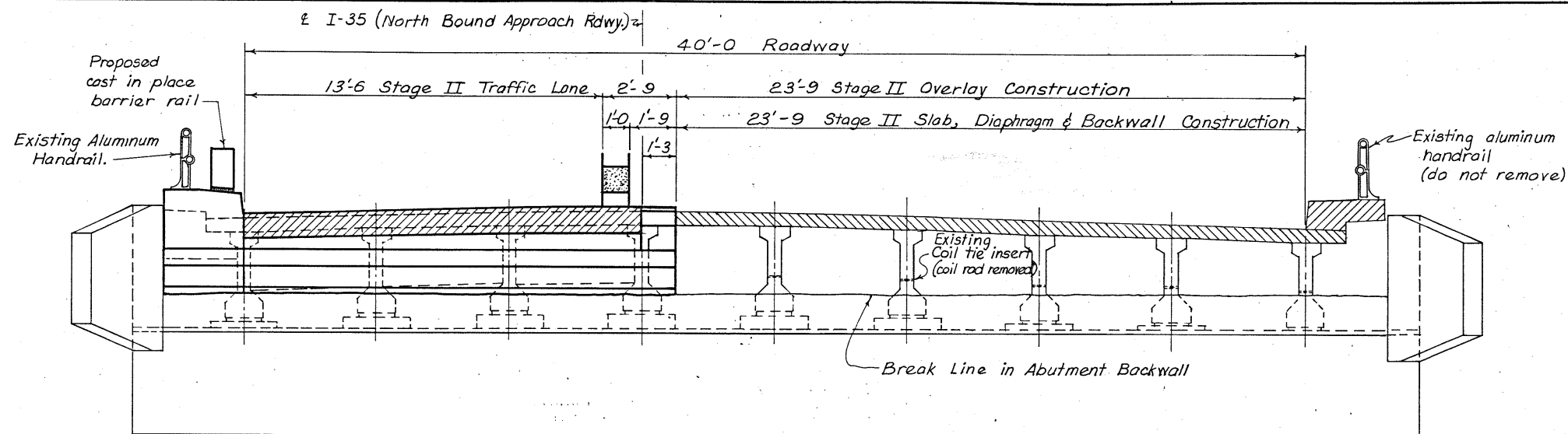
CONCRETE PLACEMENT QUANTITIES ~ ONE END

Location	Quantity
Slab & Diaphragm (Including Curb)	2.5
Back wall	3.1
Total (cu. yds.)	5.6

ESTIMATED QUANTITIES ~ STAGE I

Item	Units	Quantity
Structural Concrete Class D	Cu. Yds.	11.2
Reinforcing Steel	lbs.	1738
Excavation Class 20	Cu. Yds.	14
Granular Backfill	Cu. Yds.	14

Design for Repairs to 4° 50' 30" Skewed
232'-1 x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (North Bound Bridge)
 43'-1 1/2 & 51'-5 1/2 End Spans 2'-68'-9 Center Spans
 Bridge Maintenance No. 8511-BR035
REPAIR DETAIL STAGE I
 Station 573+83.63 (I-35) December, 1981
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 6 Of 19 File No.: 26338 Design No.: 580

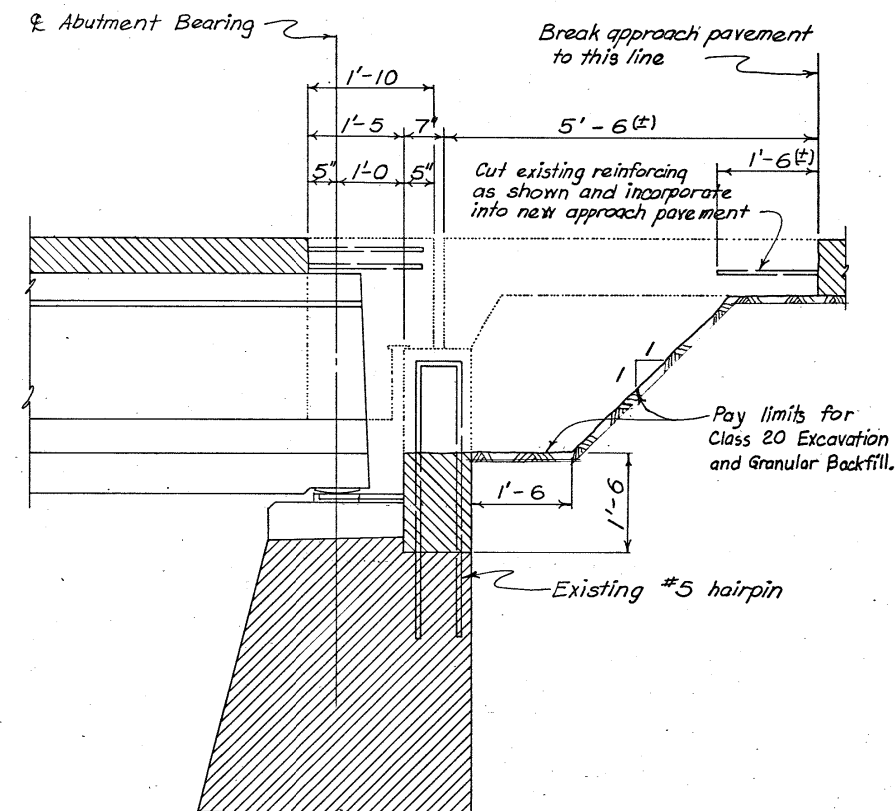


REAR ELEVATION OF ABUTMENT

Showing Stage II traffic shifted to the completed Stage I construction side (including the Bridge Floor Overlay)

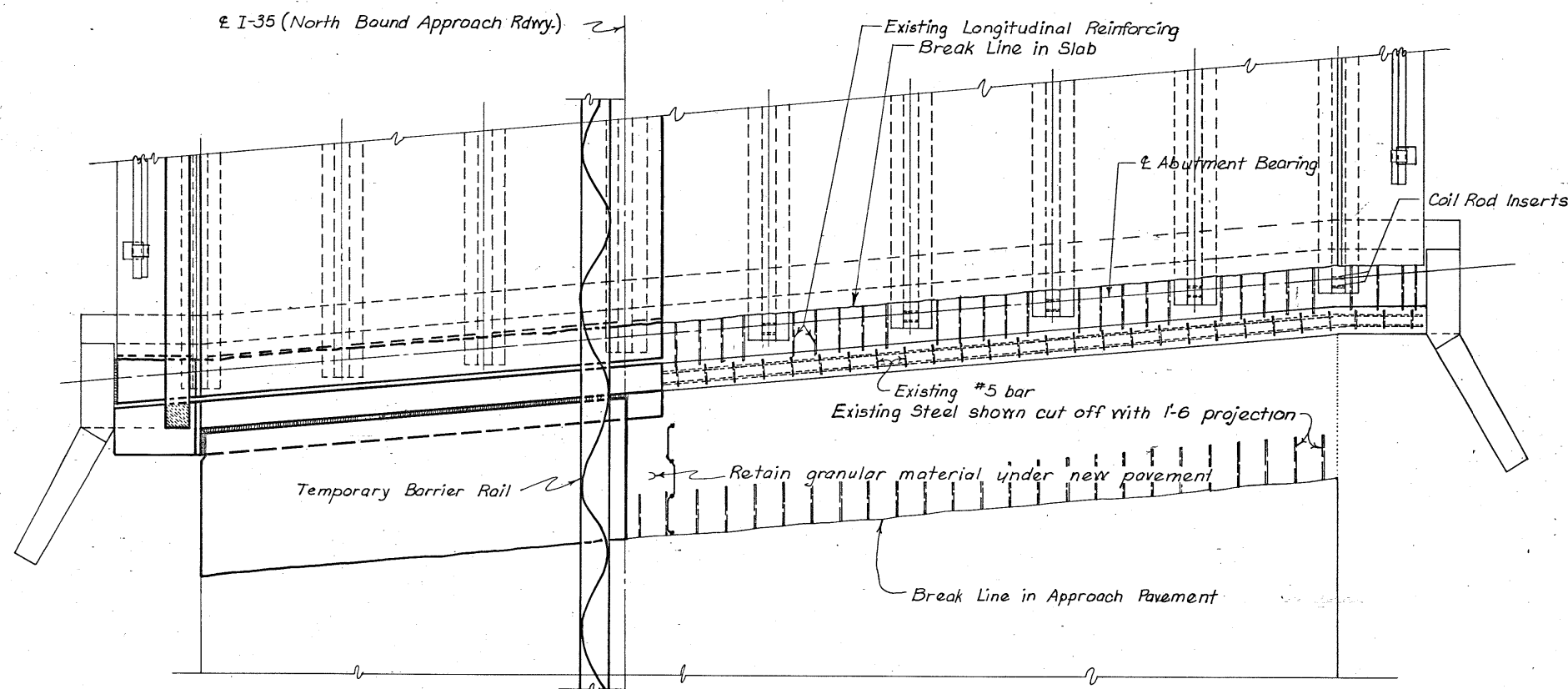
Exposed existing reinforcing not shown.

Showing abutment backwall, abutment diaphragm, end of superstructure slab, end post and approach guardrail anchor removed.



TYPICAL SECTION NEAR ROADWAY

(Normal to Abutment)



PLAN VIEW

Showing Temporary Barrier Rail placement for Stage II construction. Also showing removal of end of superstructure slab, concrete diaphragm, end post, approach guardrail anchor block, remainder of abutment backwall, remainder of approach pavement and approach guardrail for Stage II construction.

Design for Repairs to 4° 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (Northbound Bridge)
 43'-1 1/2' & 51'-5 1/2' End Spans 2- 68'-9' Center Spans
 Bridge Maintenance No. 8511.8R035
REPAIR DETAILS - STAGE II
 Station 573+83.63 (I-35) December, 1981
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 7 Of 19 File No.: 26338 Design No.: 580

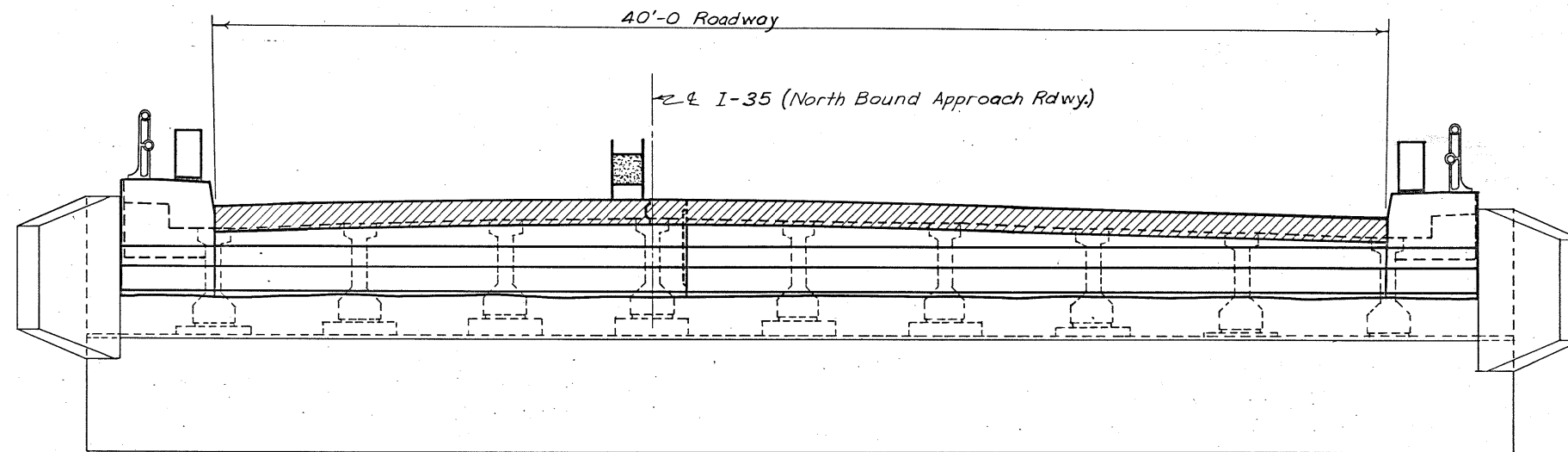
DESIGNED BY: M. J. Flemer
 DETAILED BY:

TRACED BY: M. Loupee
 CHECKED BY: J. Miller

STORY COUNTY

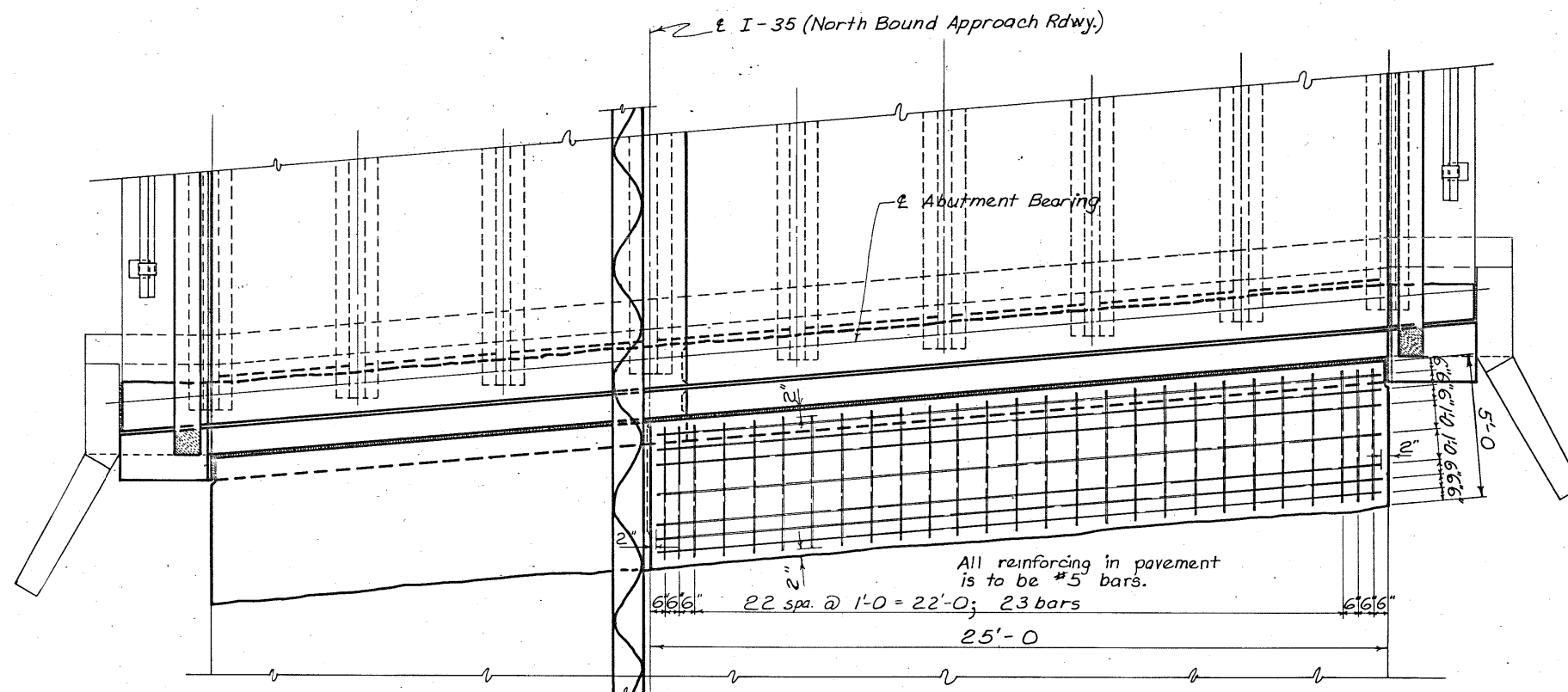
PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		28	40



REAR ELEVATION OF ABUTMENT

Showing Stage II Construction Completed



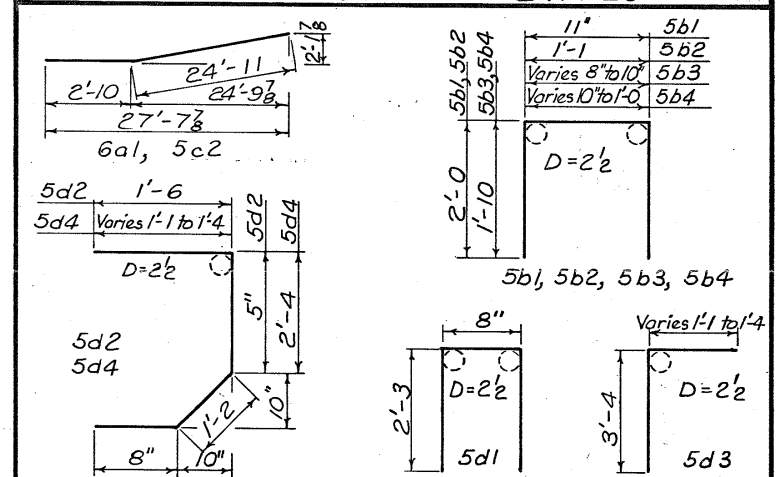
PLAN VIEW

Showing Bridge Floor Overlay, Superstructure slab, abutment diaphragm, abutment backwall, approach pavement and cast in place barrier rail in place.

REINFORCING BAR LIST~STAGE II~ONE END

Bar	Location	Shape	No.	Length	Weight
6a1	Diaphragm, Longitudinal	—	2	27'-9	83
6a2	Diaphragm, Longitudinal	—	1	27'-9	42
5a3	Diaphragm, Longitudinal	—	2	27'-9	58
5a4	Diaphragm, Longitudinal	—	4	3'-7	15
5a5	Diaphragm, Longitudinal	—	12	4'-2	52
5a6	Diaphragm, Longitudinal	—	1	23'-10	25
5a7	Diaphragm, Longitudinal, End	—	1	2'-0	2
5a8	Diaphragm, Longitudinal, End	—	2	2'-5	5
5a9	Top Curb, Transverse	—	3	2'-7	8
5a10	Diaphragm, Longitudinal @ Constr. Jt.	—	1	2'-10	3
5a11	Diaphragm, Longitudinal @ Constr. Jt.	—	3	3'-2	10
5b1	Diaphragm, Hairpin	⌊	19	4'-11	97
5b2	Diaphragm, Hairpin	⌊	19	5'-1	101
5b3	Diaphragm, Hair pin, End	⌊	3	Varies	14
5b4	Diaphragm, Hair pin, End	⌊	3	Varies	14
5c1	Backwall, Longitudinal, F.F. & B.F.	—	8	27'-9	232
5c2	Backwall, Longitudinal, Paving Support	—	2	27'-9	58
5c3	Backwall, Longitudinal, Curb	—	5	2'-7	14
5d1	Backwall, Hairpin	⌊	48	5'-2	259
5d2	Paving Support	⌊	24	3'-9	94
5d3	Backwall, Curb Section	⌊	3	Varies	14
5d4	Backwall, Curb Section	⌊	3	Varies	17
5d5	Paving Dowels	—	13	2'-0	27
Total					1244

BENT BAR DETAILS



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

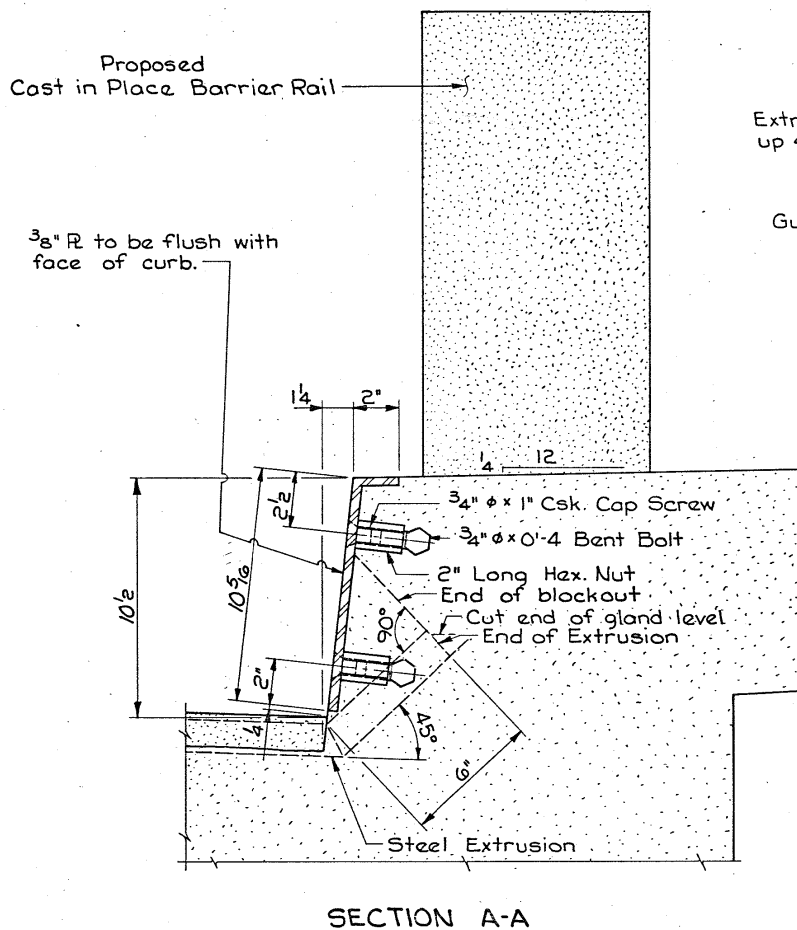
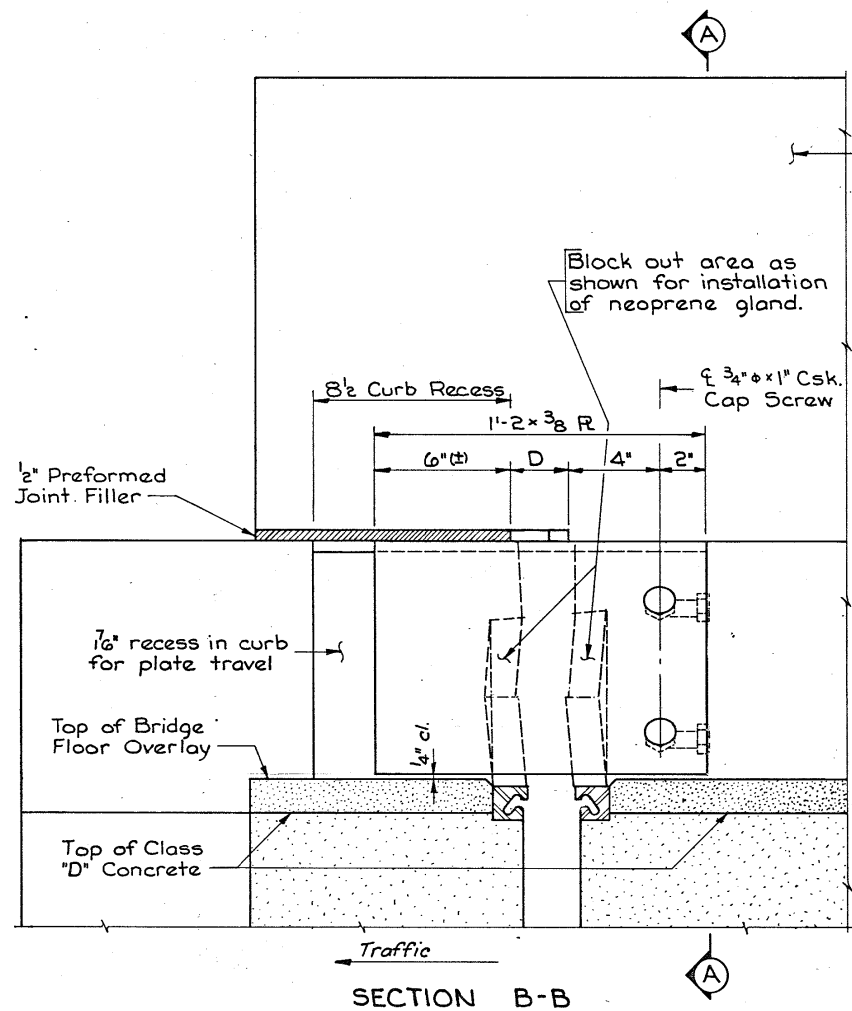
CONCRETE PLACEMENT QUANTITIES~ONE END

Location	Quantity
Slab & Diaphragm (Including Curb)	4.1
Backwall	3.4
Total (cu. yds.)	7.5

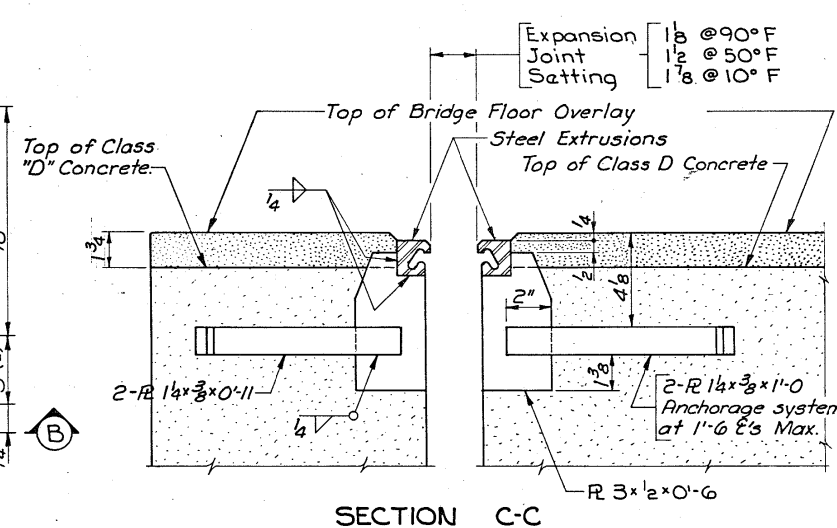
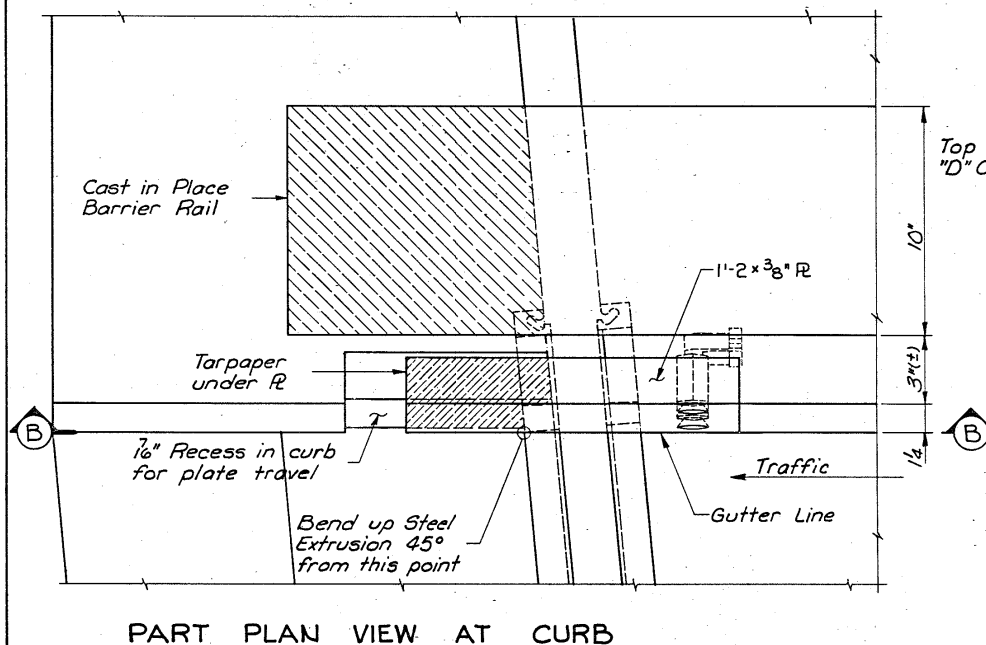
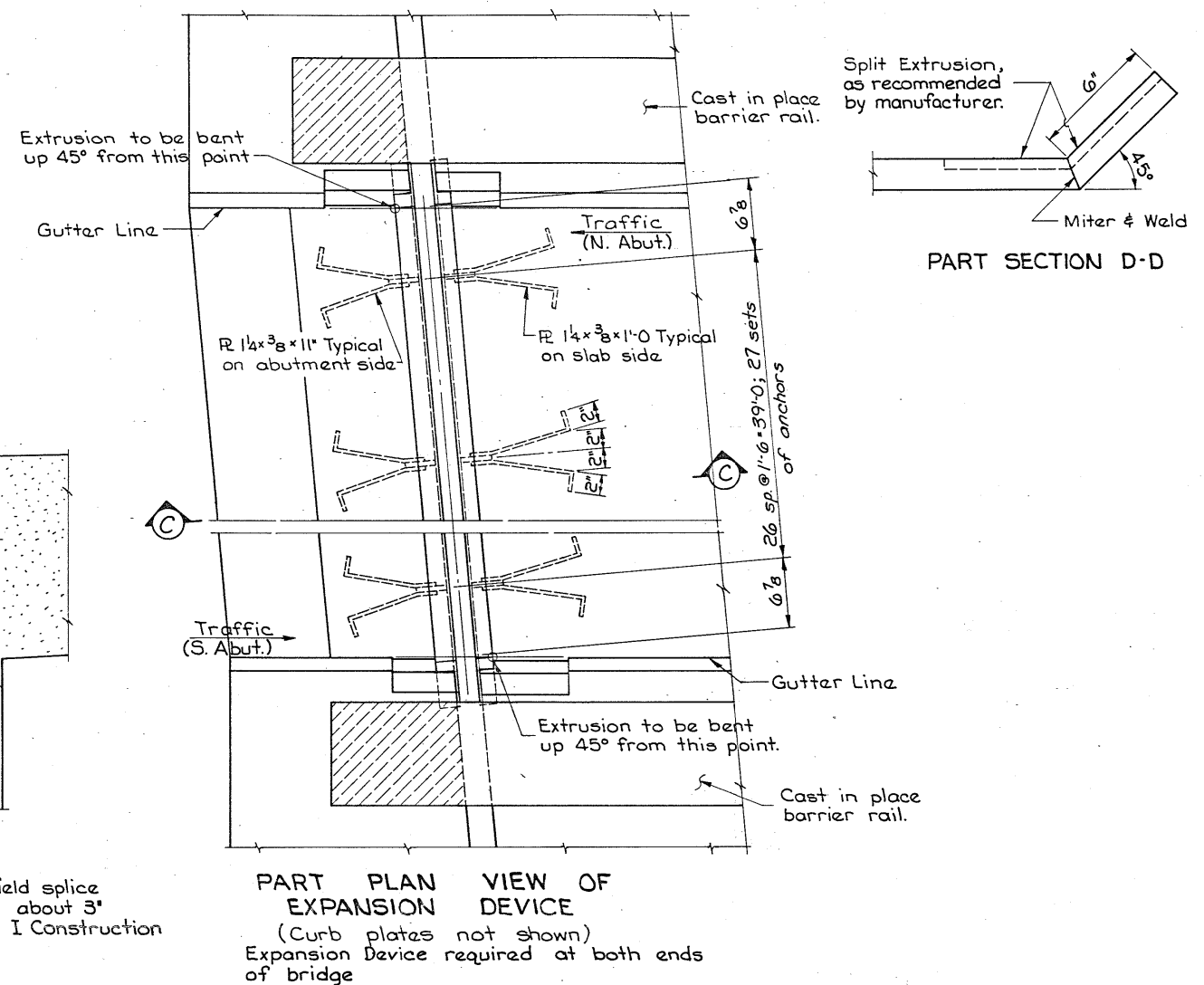
ESTIMATED QUANTITIES ~ STAGE II

Item	Units	Quantity
Structural Concrete Class D	Cu. Yds.	15.0
Reinforcing Steel	lbs.	2488
Excavation Class 20	Cu. Yds.	17
Granular Backfill	Cu. Yds.	17

Design for Repairs to 4° 50' 30" Skew
 232'-1 x 40' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGE (Northbound Bridge)
 43'-1/2 & 51'-5/2 End Spans 2-68'-9 Center Spans
 Bridge Maintenance No. 8511.8R035
 REPAIR DETAILS STAGE II
 Station 573+83.63 (I-35) December, 1981
 STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 9 Of 19 File No.: 26338 Design No.: 580



NOTE: Locate field splice for extrusions about 3' beyond Stage I Construction



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 shall be galvanized after welding except field splice weld.

The expansion device is to be parallel to grade.

Cap screws shall be countersunk 1/16" below top of the plate.

The Stage I & Stage II sections of steel extrusion are to be field welded at the construction joint as noted in these plans.

The sections are to be joined with a prequalified single groove weld, and all surfaces not in contact with concrete are to be ground flush. No weld shall be permitted in the internal section of the extrusion where the neoprene gland is to be located.

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

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

The neoprene gland shall 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.

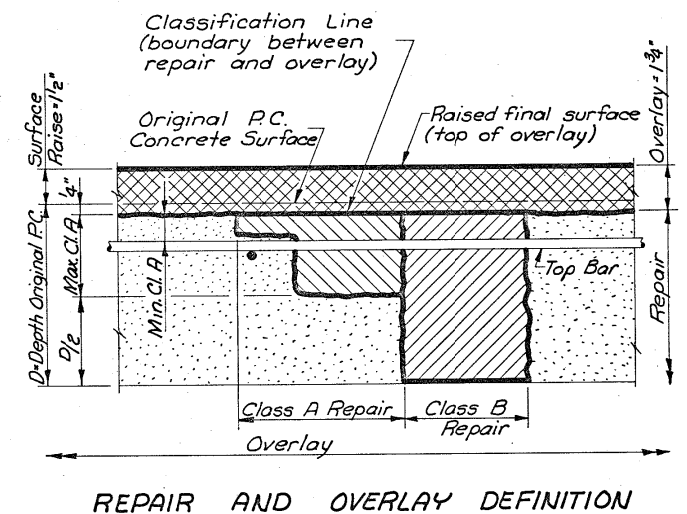
The contract unit price bid for "Steel Extrusion Joint with Neoprene" shall be full compensation for furnishing and installing the expansion joints. This work will consist of furnishing all required materials and the installation and adjustment of the expansion joints in accordance with the details shown 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 to be included in this work, including the anchorage system and any temporary erection material. All work and materials for the installation of the expansion joints are to 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.
2. ACME, Type A extrusion.
3. Approved equal.

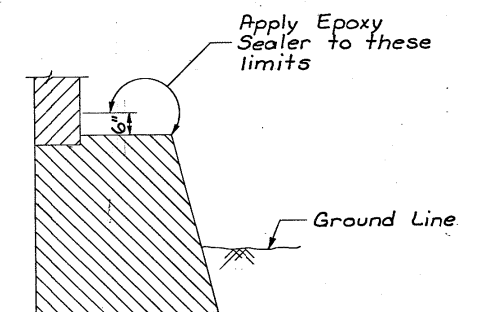
ALLOWABLE NEOPRENE GLANDS	
Manufacturer	Gland
Watson-Bowman Co.	AS-300
ACME	S-300

Design For Repairs to 4° 50' 30" Skew
232'-1" x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1/2" x 51'-5/2" End Spans 2'-68'-9" Center Spans
Bridge Maintenance No. 8511.8R035
EXPANSION DEVICE DETAILS
Station: 573+83.63 (1-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 10 OF 19 File No.: 26338 Design No.: 580



REPAIR AND OVERLAY DEFINITION

NOTE: New Bridge Floor Overlay Surface is to be 1 1/2 inches above and parallel to the Original P.C. Concrete Surface with screed guides adjusted to achieve a smooth profile. Crown Ordinates shown are from plans of existing bridge.



If latex modified concrete is used for the floor repair, the same limits apply except the sealer shall not be applied to the 1'-0" width of the roadway.

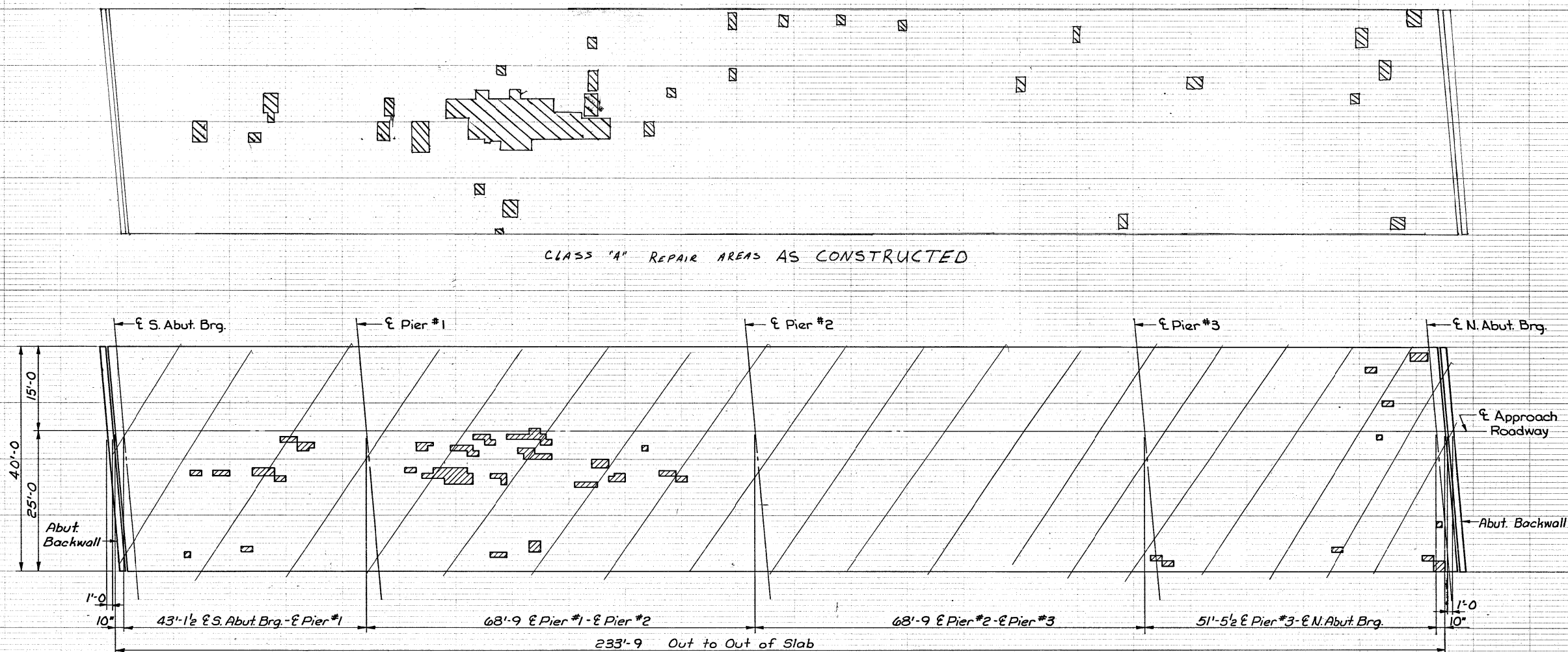
Showing limits of Epoxy
Sealer applied to abutments.

Design For Repairs to 4°50'30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (N. Bound Bridge)
43'-1/2 x 51'-5/2 End Spans 2'-68'-9 Interior Spans
Bridge Maintenance No. 8511.8R035
REPAIR DETAILS
Station: 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 11 Of 19 File No.: 26338 Design No.: 580

10 X 10 = ONE INCH
- REFLECT. CROSS SECTION

ENCLOSED IN P. 12

ENCLOSED IN P. 12
10 X 10 = ONE INCH
- REFLECT. CROSS SECTION



CLASS "A" REPAIR AREAS AS CONSTRUCTED

SURVEY PLOT

Scale: 1"=10'

Date of Survey: September 18, 1981

Note: Hatched portions represent areas which have spalls and delaminations.
Plan quantity for Class A Bridge Floor Repair is based on these hatched areas.



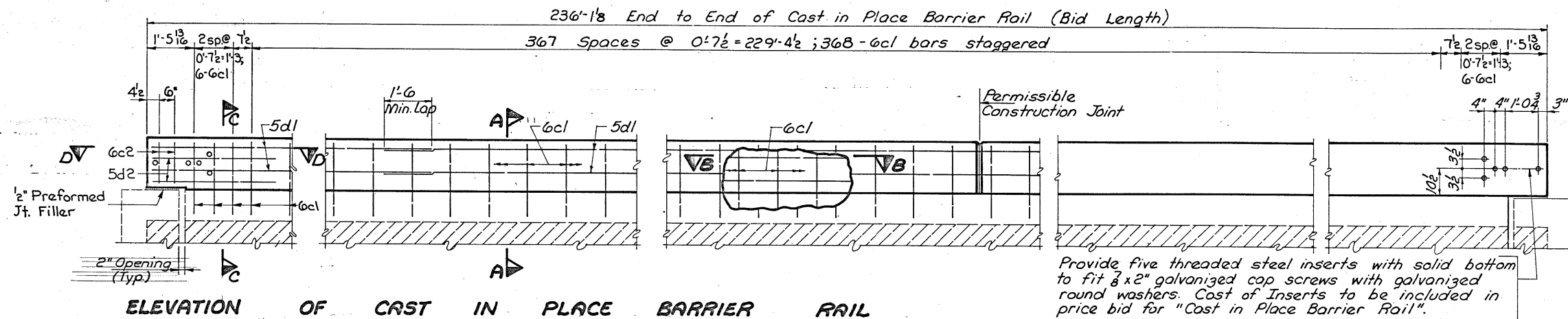
Design For Repairs to 4°50'30" Skew
232'-1" x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
43'-1 1/2' 51'-5 1/2' End Spans 2-68'-9" Interior Spans
Bridge Maintenance No. 8511.8R035
REPAIR DETAILS
Station: 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 12 Of 19 File No. 26338 Design No. 580

DESIGNED BY: M. J. Lemmer
DETAILED BY: D.A. Wright

TRACED BY:
CHECKED BY: L. Phillips

STORY COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		33	40



EPOXY REINFORCING STEEL ~ TWO RAILS					
BAR	LOCATION	SHAPE	Nº	LENGTH	WEIGHT
6cl	Rail, Vertical	—	760	2'-4	2663
6c2	Rail, Vertical, Ends	—	16	1'-4	32
5d1	Rail, Longitudinal	—	56	35'-0	2044
5d2	Rail, Longitudinal Ends	—	16	4'-0	67
TOTAL (lbs.)					4806

CONCRETE PLACEMENT SUMMARY	
CONCRETE	TOTAL
472.2' @ 0.05 cu yds per lin. ft.	23.6

ESTIMATED QUANTITIES	
ITEM	UNITS
Cast in Place Barrier Rail	lin. ft.
	472.2

CAST IN PLACE BARRIER RAIL NOTES:

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

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

Top of the cast in place barrier rail is to be parallel to the theoretical & grade.

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

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

The cast in place barrier rail is to be bid on a lineal foot basis measured from end to end of rail. The number of lineal feet of cast in place barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for cast in place barrier rail shall be full compensation for furnishing all material, including reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications.

All cast in place barrier rail concrete is to be Class D.

The joint sealer shall conform to Fed. Spec. TT-S00230 or TT-S00227 for type II, Class A or B.

All reinforcing is to be epoxy coated. The epoxy coating shall be in accordance with Article 4151.03B of the Standard Specifications.

Cap screws shall conform to requirements of ASTM A-307 and shall be galvanized in compliance with ASTM A-153. Cap screws shall be installed in threaded steel inserts held in proper position by use of an assembly set in the concrete and allowing a minimum embedment of 2" for the cap screws. The components and procedure shall be subject to the approval of the Engineer.

The cost of the RE-2 Type F terminal section, and cap screws shall be included in the price bid for "Cast in Place Barrier Rail."

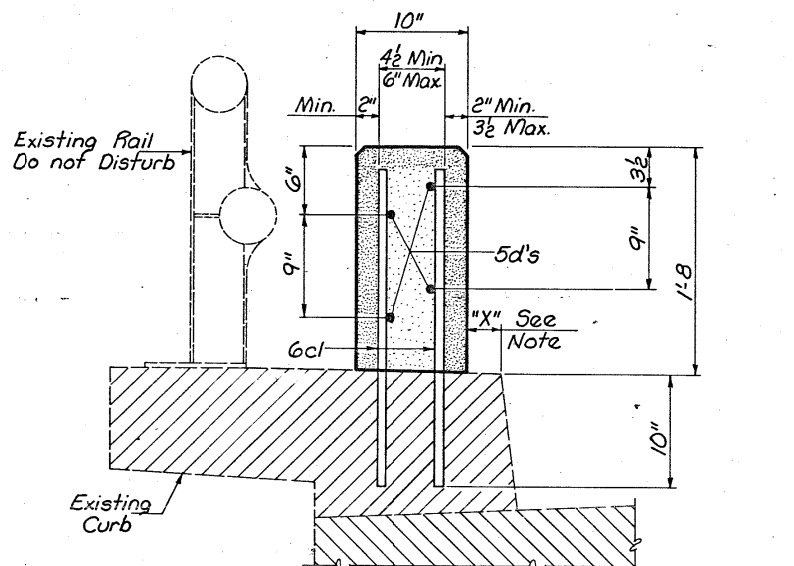
DOWEL SETTING NOTE

The 6cl bars shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations. One of the two following systems shall be used as a bonding agent for the dowels:

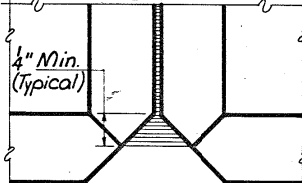
- 1) Epoxy system. Drilled holes are to be 7/8"Ø. The epoxy grout shall be one of those approved in the I.D.O.T. Materials I.M. 491.11.
- 2) Grout system. Drilled holes are to be 2"Ø. The hydraulic cement grout shall be one of those approved in Materials I.M. 491.13.

@ Floor drains

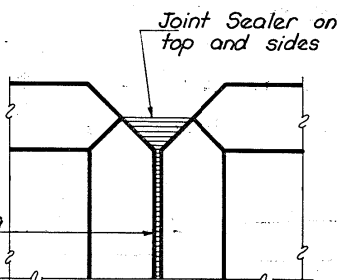
NOTE: At floor drain knockout field cut 6cl bars to 2'-0 length and set 6" into curb concrete.



PART SECTION A-A

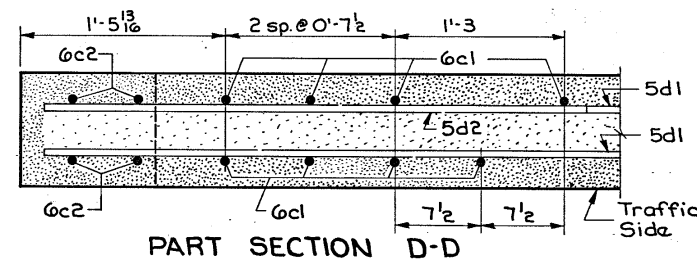
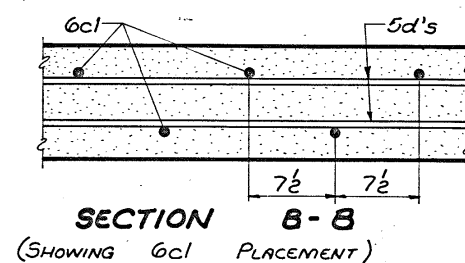


PART PLAN VIEW

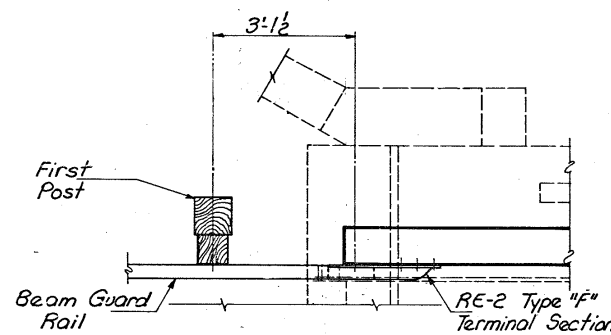


PART ELEVATION VIEW

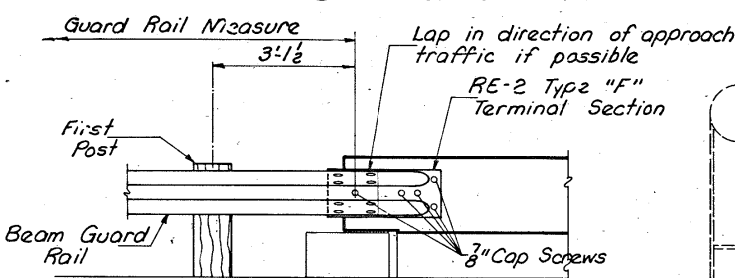
CAST IN PLACE BARRIER RAIL JOINT DETAILS



PART SECTION D-D

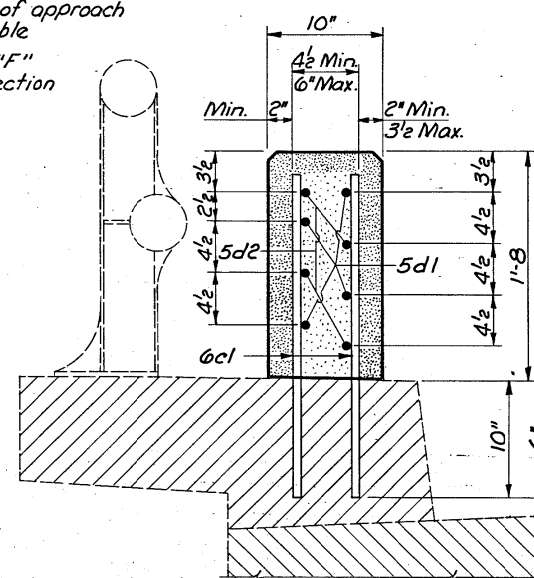


PART PLAN VIEW



PART ELEVATION VIEW

(Showing beam guard rail attachment to RE-2 Type "F" Terminal Section)



SECTION C-C

DESIGNED BY: M. J. Kemmer
DETAILED BY: D. A. Wright

TRACED BY: J. M. Wright
CHECKED BY: J. M. Wright

CAST IN PLACE BARRIER RAIL

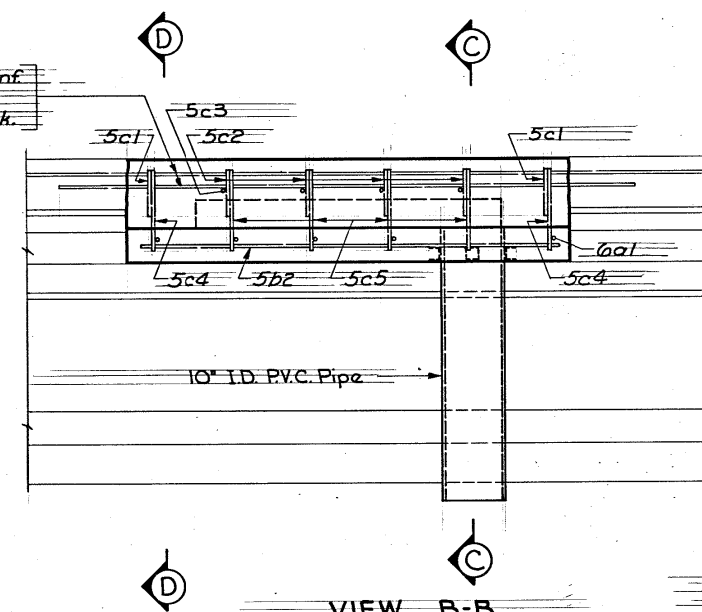
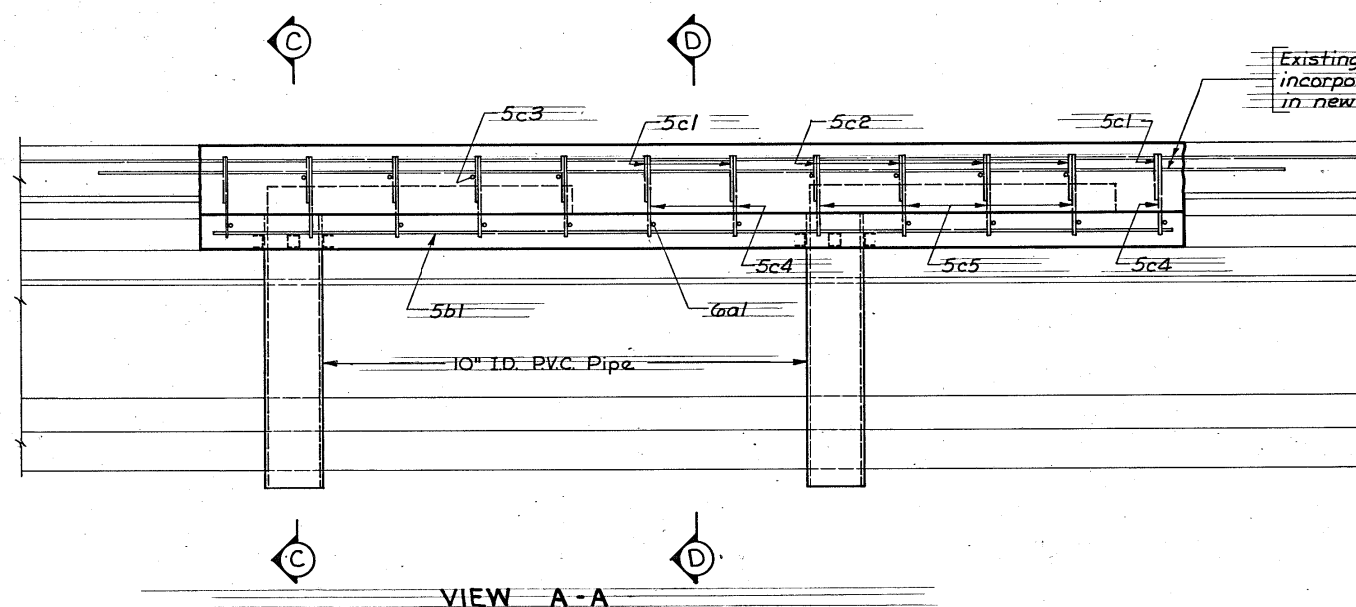
STANDARD SHEET 1031

STORY COUNTY

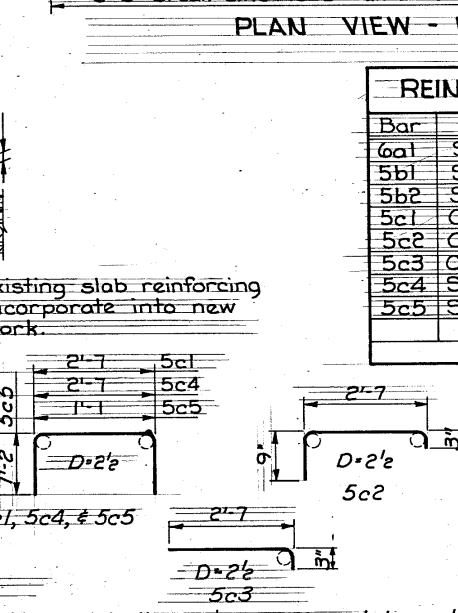
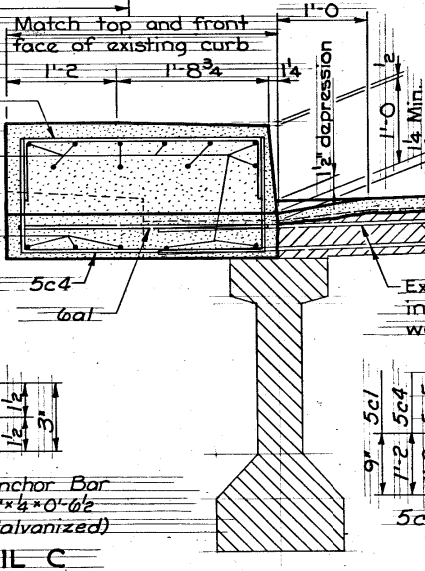
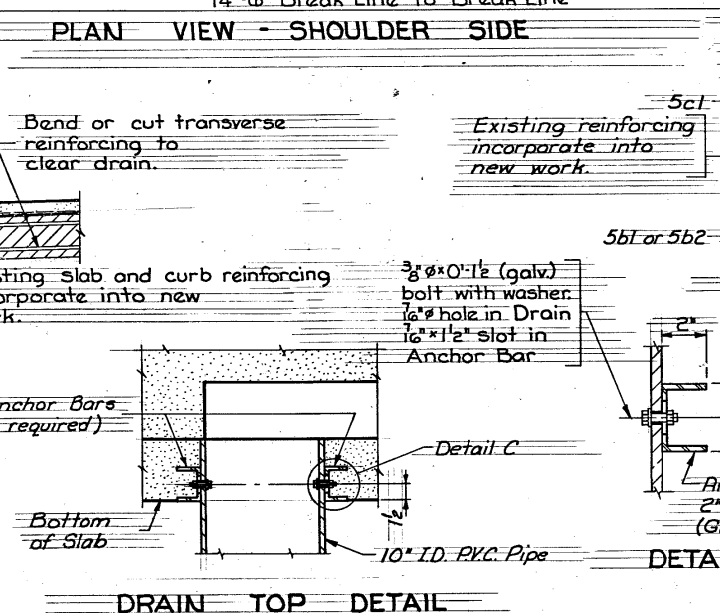
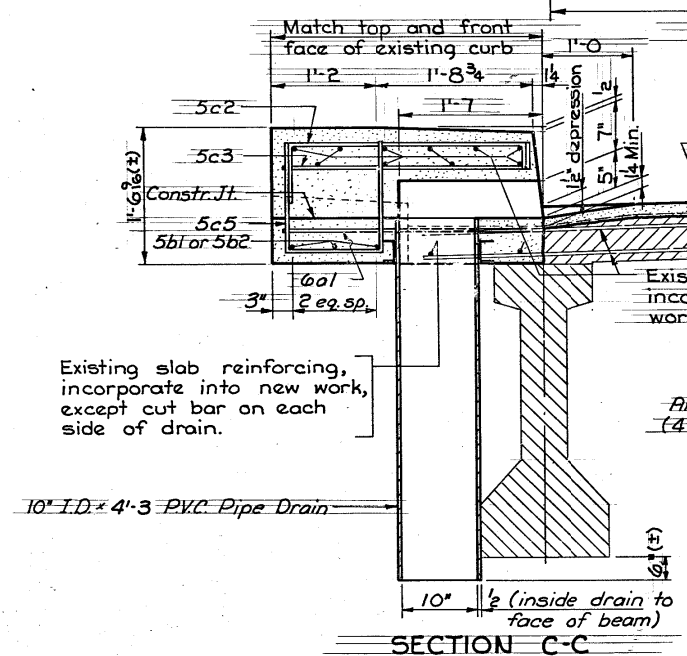
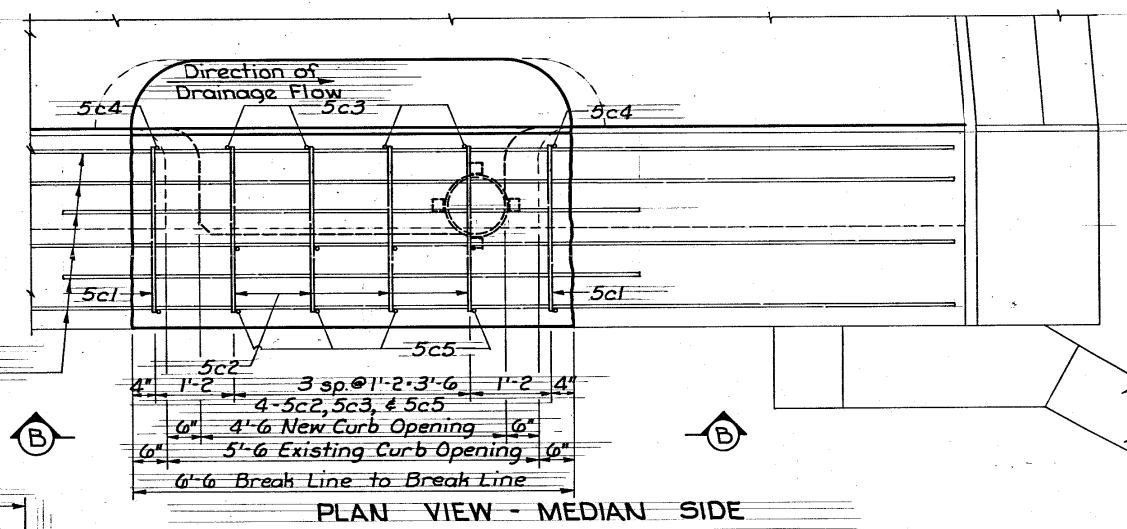
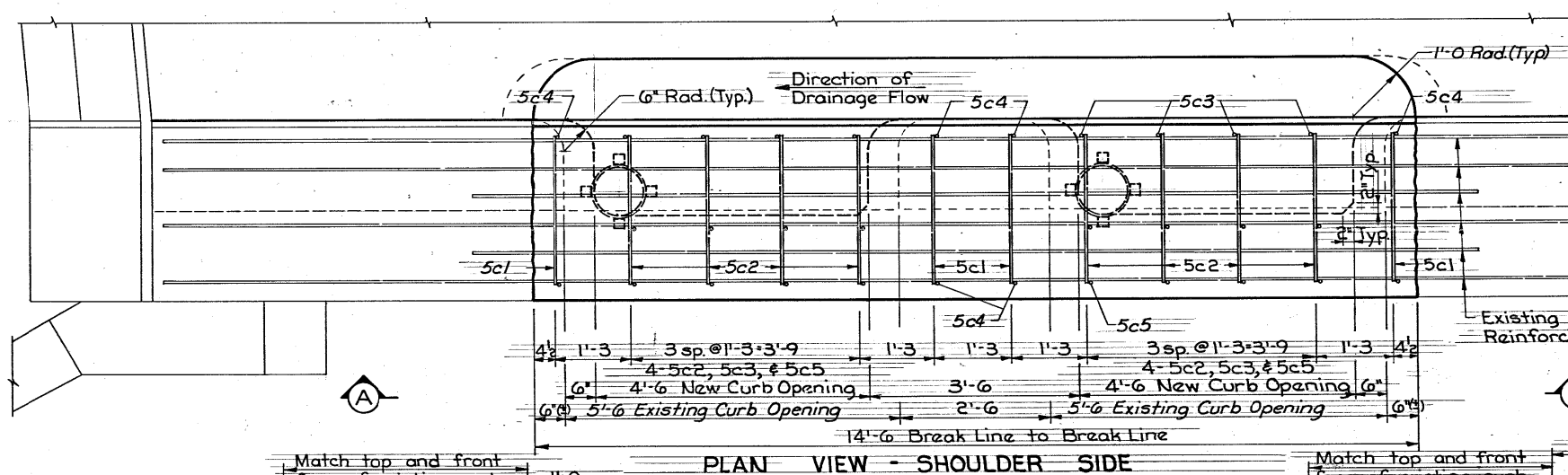
Design For Repairs to 4° 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1 1/2 x 51'-5 1/2 End Spans 2-68'-9 Interior Spans
Bridge Maintenance Nº. 8511.8R035
CAST IN PLACE BARRIER RAIL DETAILS
Station: 573 + 83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 13 Of 19 File No.: 26338 Design No.: 580

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		34	40

Revised: 7-17-81, Grout requirement changed.
Revised: 4-16-1980, This sheet re-drawn.



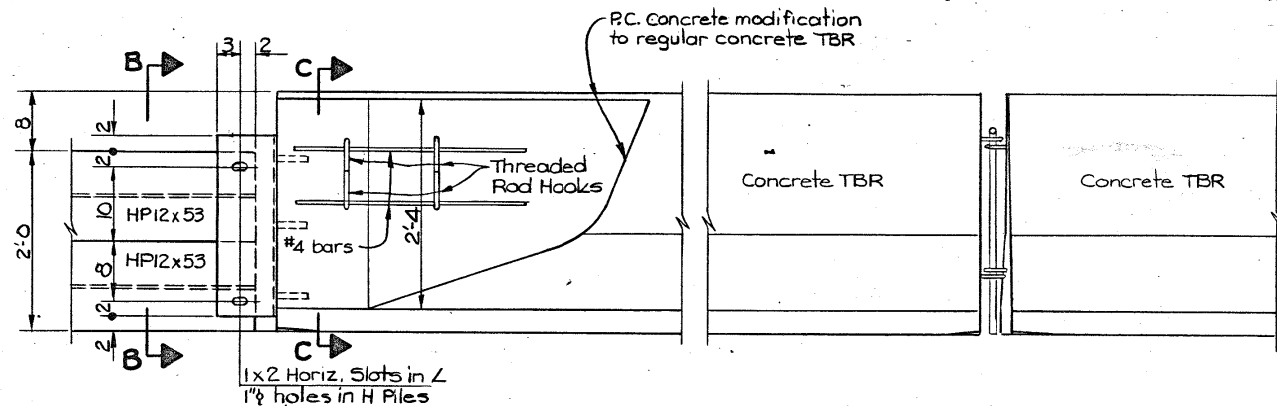
The 6a1 bar (not shown) for Cast in Place Barrier Rail are to be placed in area of curb drain repair prior to the placement of curb concrete. See Cast in Place Barrier Rail on Design Sheet 13 of 19.



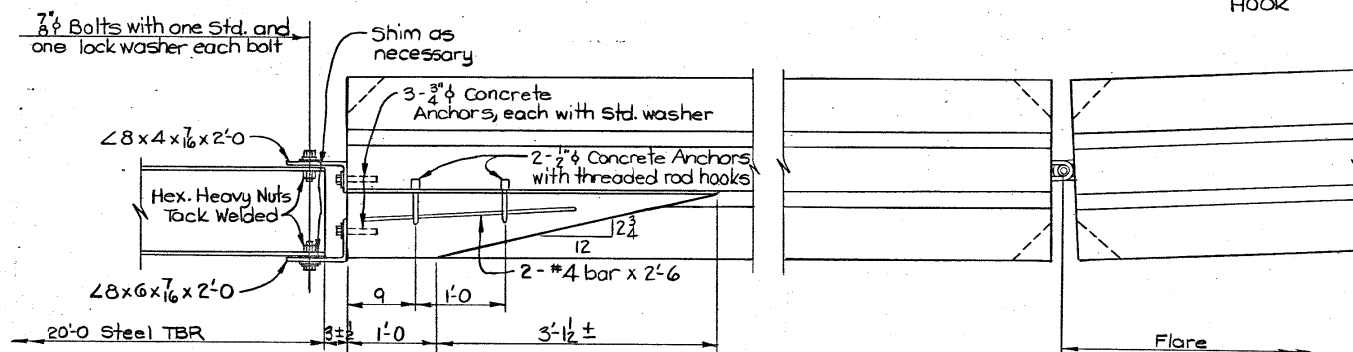
REINFORCING BAR LIST					
Bar	Location	Shape	No.	Length	Weight
6a1	Slab, Transv.		15	2'-8"	60
5b1	Slab, Longit., Shld. Side		3	14'-2"	44
5b2	Slab, Longit., Median Side		3	6'-2"	19
5c1	Curb, Top, Transv.		6	4'-1"	26
5c2	Curb, Top, Transv.		12	3'-7"	45
5c3	Curb, Top, Transv.		12	2'-10"	35
5c4	Slab to Curb, Transv.		6	4'-11"	31
5c5	Slab to Curb, Transv.		12	3'-5"	43
Total ~ lbs.					303

Design For Repairs to 4°50'30" Skew
232'-1" x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (North Bound Bridge)
 43'-1 1/2" x 51'-5 1/2" End Spans 2'-68'-9" Interior Spans
 Bridge Maintenance No. 8511.BR035
CURB DRAIN MODIFICATION DETAILS
 Station: 573+83.63 (I-35) December, 1981
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 14 Of 19 File No. 26338 Design No. 580

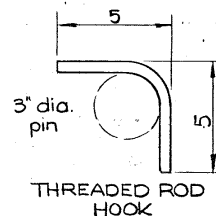
Note: All dimensions are out to out.
 D = Pin Diameter.



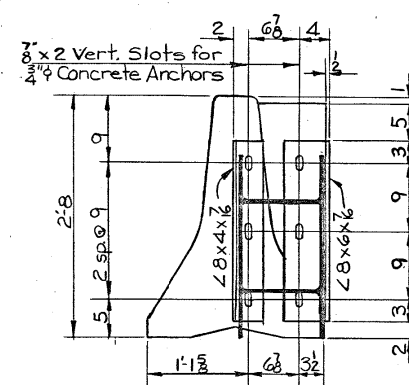
PART ELEVATION
SPECIAL CONCRETE TBR SECTION



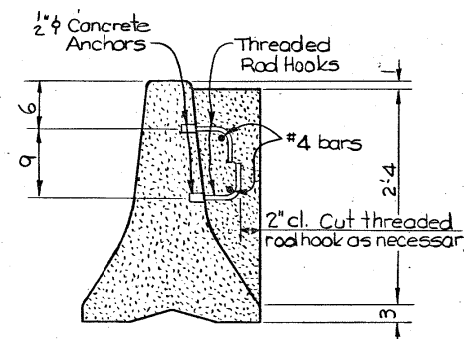
PART PLAN
SPECIAL CONCRETE TBR SECTION



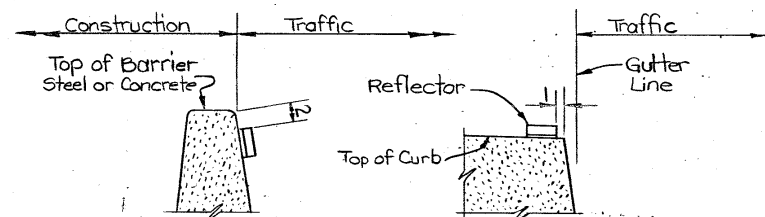
NOTE FOR SPECIAL TBR SECTIONS:
Definition: TBR = Temporary Barrier Rail
Regular TBR sections are detailed on Std. Sheet 2 of 2.
Except for modification and bolted connection, the special concrete TBR section is to be the same as the regular concrete TBR section. Except for the connection detail, the steel TBR section at the flare junction is to be the same as the regular steel TBR section.



SECTION B-B



SECTION C-C



REFLECTOR DETAIL

NOTE:

The price bid per linear foot for "Temporary Barrier Rail-Combination" shall include all costs for material, installation, repositioning and removal as detailed on this sheet and elsewhere on these plans. The price bid shall also include costs for reflectors, connections and tie-downs. Plan quantity is based on lengths of 10'-3" for concrete sections and 20'-0" for steel sections and it includes the minimum number of sections required to accomplish transition from Stage 1 traffic control to Stage 2 traffic control.

Refer to other details, notes and quantity items, elsewhere on these plans, for traffic control to be established in conjunction with the temporary barrier rail.

The contractor may provide extra rail sections at each end of the bridge in order to provide additional storage and work area. The extra rail sections are to be paid for by the contractor. The signing is to be shifted by the contractor as directed by the engineer to accommodate the additional rail sections.

No stationary equipment or construction material is to be placed in front of the temporary barrier at any time.

Barrier is to become the property of the contractor at the completion of work and removed from the site by him.

Details on this sheet show construction of a special concrete Temporary Barrier Rail section by modification of a regular concrete Temporary Barrier Rail section. After installation of 1/2 inch diam. anchors and reinforcement, the interfacing surface for the addition shall be thoroughly sandblasted. Grout shall be scrubbed on the prepared surface just prior to concrete placement. Grout and P.C. concrete shall be as for floor repair, 2413.02A of Standard Specifications, except that concrete slump shall be as specified by 2403.03E. The modification shall be cured according to appropriate requirements of 2403.11 except that cure time shall be 72 hours. After removal of forms and before applying curing compound, the construction joints shall be sealed with grout. The 3/4 inch diam. concrete anchors shall not be installed until after cure except that approved inserts may be substituted for incorporation in fresh concrete.

The contractor may submit details for monolithic construction of the complete section of special Concrete Temporary Barrier Rail for approval.

Section 2403 of the Standard Specifications shall not apply for the regular Concrete Temporary Barrier Rail or for the monolithic construction of the special Concrete Temporary Barrier Rail. However, minimum concrete strength for any construction shall be $f'_c = 3000$ psi.

Concrete anchors are to be approved and as listed in current Materials I.M. 453.09. 3/4 inch diameter anchors shall have a minimum pull-out strength of 14,000 lbs. and shall be flush type with cap screws. 1/2 inch diameter anchors shall have minimum pull-out strength of 7,000 lbs. As noted above, approved inserts may be substituted for incorporation in fresh concrete.

Traffic reflectors shall be a retro-reflective type, approved by the engineer, and they shall be located as shown on this sheet. The contractor shall maintain the reflectors and shall promptly replace any missing or damaged units. All costs for furnishing, installing and maintaining reflectors shall be included in the price bid for "Temporary Barrier Rail".

Note: See Design Sheet 17 of 19 for Barrier Rail Layout.

Design For Repairs to 4° 50' 30" Skew
232'-1" x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1 1/2' & 51'-5 1/2' End Spans 2'-68'-9" Interior Spans
Bridge Maintenance No. 8511.8R035
TEMPORARY BARRIER RAIL COMBINATION
WITH TIE DOWN
Station: 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 15 Of 19 File No. 26338 Design No. 580

DESIGNED BY: M. L. Zimmerman
CHECKED BY: D. A. Wright

TRACED BY:
CHECKED BY: L. Blakes

TEMPORARY BARRIER RAIL-COMBINATION (1 of 2)
WITH TIE DOWN

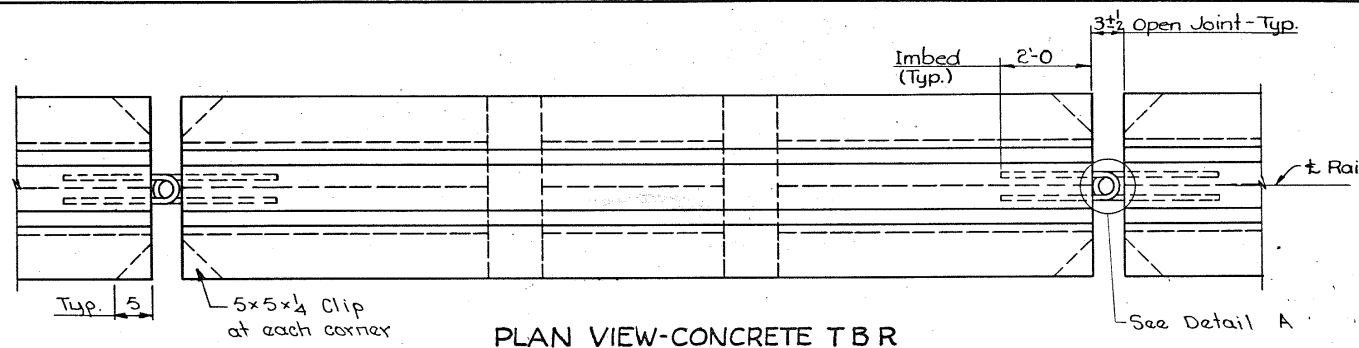
STANDARD 1034A

STORY COUNTY

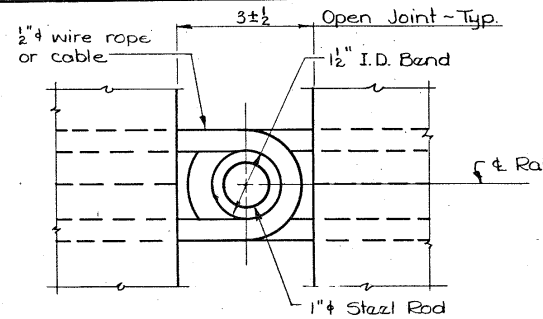
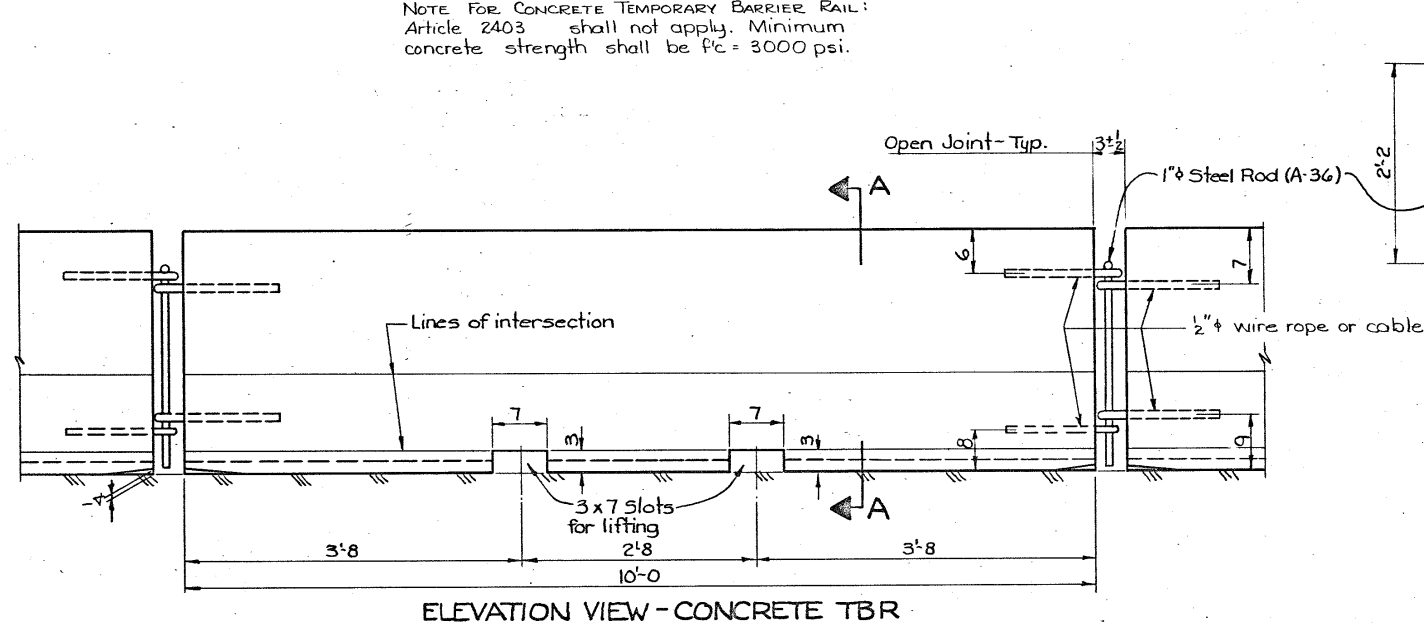
PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		36	40

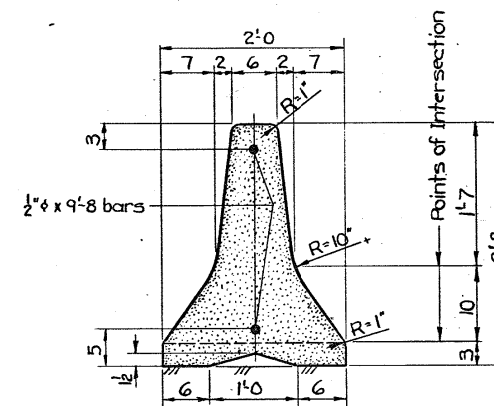
Revised: 7-17-81; Reflector requirement changed.
Revised: 10-25-79



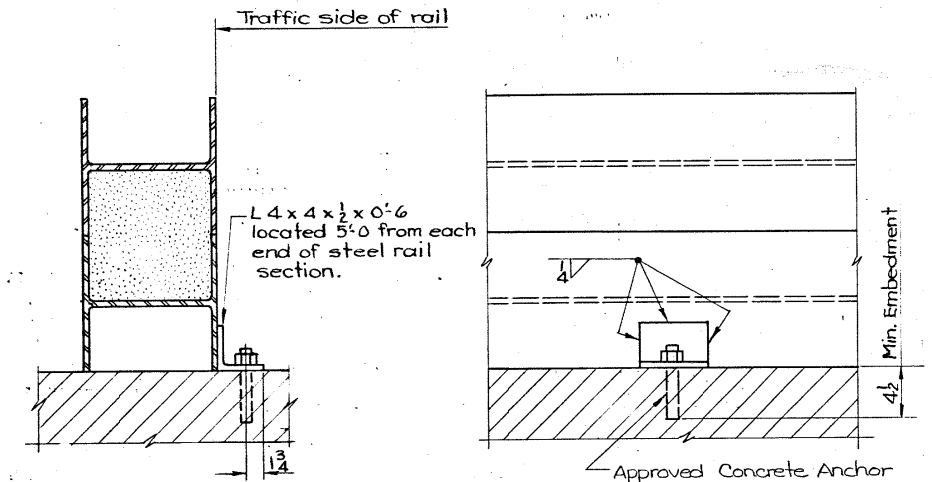
NOTE FOR CONCRETE TEMPORARY BARRIER RAIL:
Article 2403 shall not apply. Minimum
concrete strength shall be $f'_c = 3000$ psi.



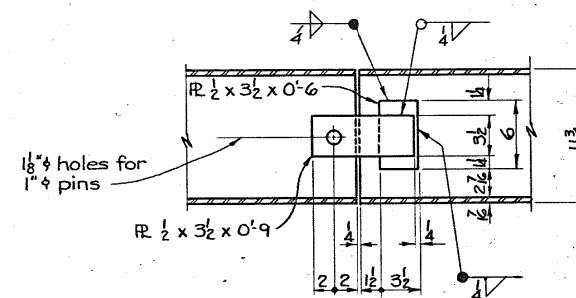
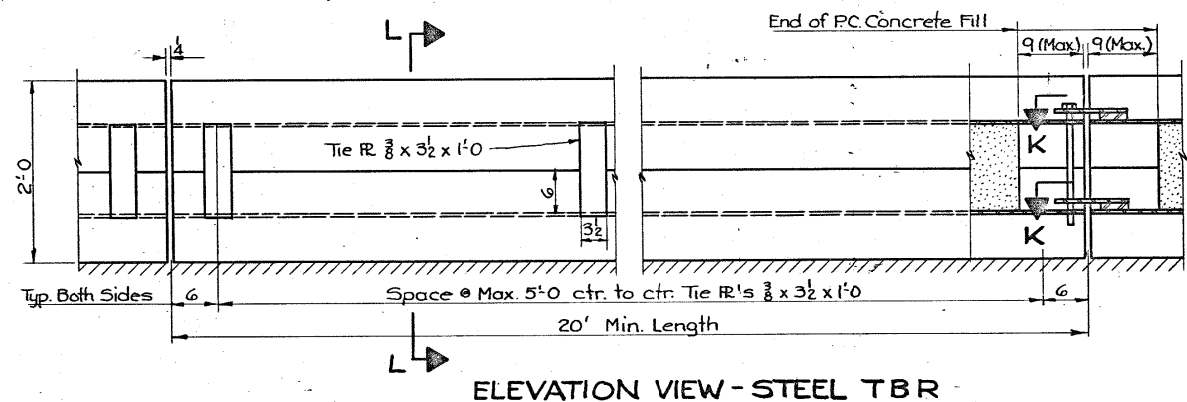
DETAIL A
Wire rope or cable to be 1/2" with a minimum breaking strength of 20,000 pounds.



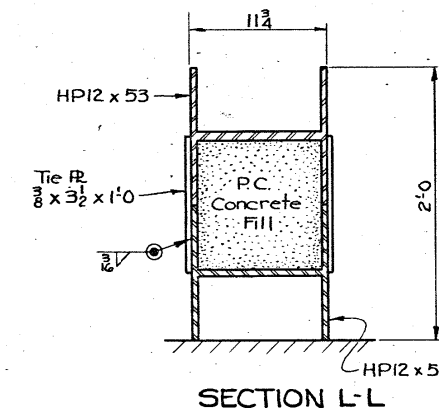
SECTION A-A
Contractor may add extra reinforcing bars to increase the service life of concrete rail sections.



TEMPORARY BARRIER RAIL TIE-DOWN DETAILS
Note: Tie-downs are required only where the temporary Barrier Rail is adjacent to a drop-off. Holes for concrete anchors may be drilled after positioning the Temporary Barrier Rail. The concrete anchors are to be set so that the anchors can be removed at least 12 inches below the concrete surface and the remaining hole filled with a neat mixture of sand-cement grout. The concrete anchors are to be removed, without damaging the surrounding concrete, only after the temporary Barrier Rail is no longer needed at the particular location.
Concrete anchors are to be a minimum of 3/4" and as otherwise specified in the current Office of Materials I.M. 453.09 with a pull-out strength of 16,000 lbs. based on 4,000 p.s.i. concrete.



SECTION K-K



SECTION L-L

*NOTE FOR STEEL TEMPORARY BARRIER RAIL:

HP12x53 sections are to be joined before P.C. concrete fill is placed. HP sections may be joined by tie plates as detailed or by other means approved by the engineer. HP sections shall be free from excessive sweep and camber; straightening may be required by the engineer in order to produce a stable barrier.

Concrete mix for the P.C. fill may be any Highway Division Specification mix or may be a commercial ready-mix with a minimum $f'_c = 2500$ psi. The fill may be deposited by a method acceptable to the engineer. Joints are to be reasonably mortar tight, and mortar extrusions shall be cleaned flush with the outside of the barrier. Limits of fill shown are approximate and may be rough or slumped depending on the method of bulk heading.

Care shall be taken in moving the barrier for stage 2 construction so that the new concrete of stage 1 will not be damaged. Any damage shall be repaired at the contractor's expense.

See Std. Sheet 1 of 2 for additional notes.

Design For Repairs to 4° 50' 30" Skew
232'-1" x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1 1/2' & 51'-5 1/2' End Spans 2'-68'-9" Interior Spans
Bridge Maintenance No. 8511.8R035
TEMPORARY BARRIER RAIL-COMBINATION
WITH TIE DOWN
Station: 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 16 Of 19 File No.: 26338 Design No.: 580

DESIGNED BY: M. L. Elmer
CHECKED BY: D. A. Wright

TRACED BY: L. Phillips
CHECKED BY: L. Phillips

TEMPORARY BARRIER RAIL-COMBINATION (2 of 2)
WITH TIE DOWN

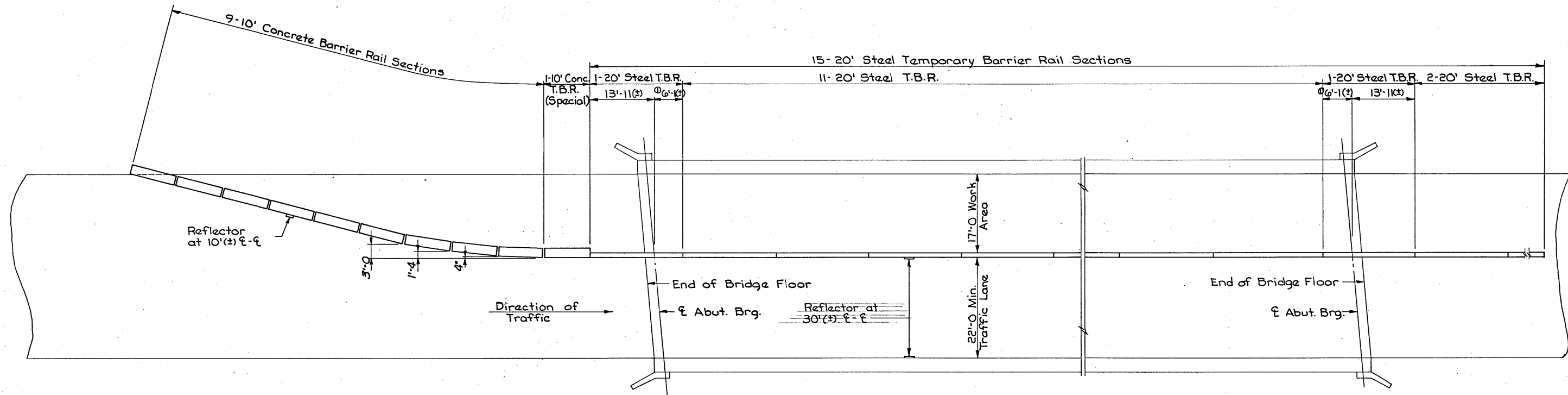
STANDARD 1034A

STORY COUNTY

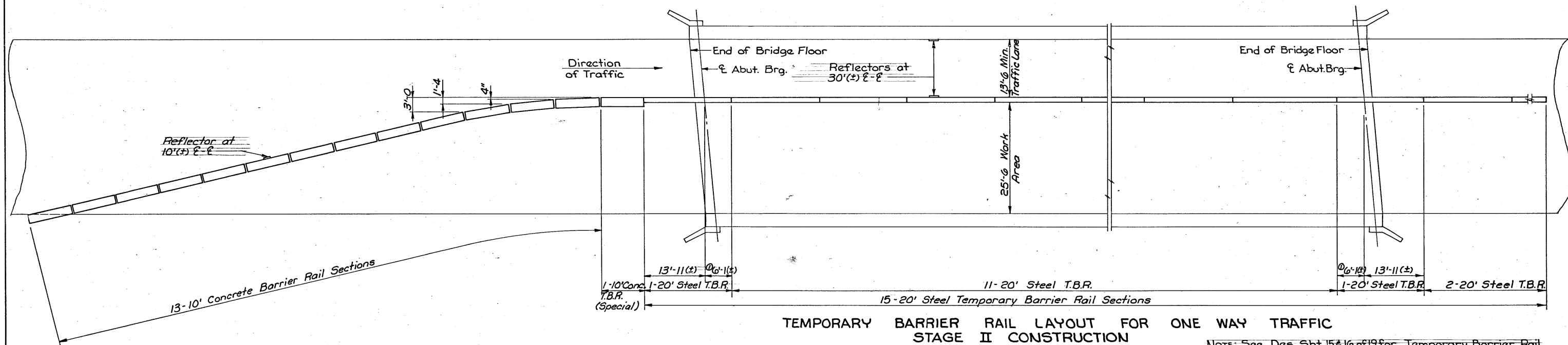
PROJECT NUMBER

STATE: IOWA
FED. ROAD DIST. NO.: 1
FISCAL YEAR: 1981
SHEET NO.: 37
TOTAL SHEETS: 40

Revised: 07-05-79
Issued: 07-25-78



TEMPORARY BARRIER RAIL LAYOUT FOR ONE WAY TRAFFIC
STAGE I CONSTRUCTION



TEMPORARY BARRIER RAIL LAYOUT FOR ONE WAY TRAFFIC
STAGE II CONSTRUCTION

NOTE: See Des. Sht. 15 & 16 of 19 for Temporary Barrier Rail details.

① Position rail as shown to allow 1-20' Steel T.B.R. Section to bridge area of drop off where end of bridge deck and approach pavement will be removed.

ESTIMATED QUANTITIES	
Item	Quantity
Temporary Barrier Rail-Combination, Stage I	402.5 L.F.
Temporary Barrier Rail-Combination, Stage II	443.5 L.F.

Quantity for bidding purposes is length required for Stage II.

Design For Repairs to 4° 50' 30" Skew
232'-1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE (North Bound Bridge)
43'-1/2 & 51'-5/2 End Spans 2-68'-9 Interior Spans
Bridge Maintenance No. 8511.8R035
TEMPORARY BARRIER RAIL-COMBINATION
Station: 573+83.63 (I-35) December, 1981
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 17 Of 19 File No.: 26338 Design No.: 580

DESIGNED BY: M. J. F. Fenneman
DETAILED BY: D. A. Wright

TRACED BY: J. M. F. Fenneman
CHECKED BY: J. M. F. Fenneman

STORY COUNTY

PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		38	40

The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers shall be scheduled subject to the approval of the engineer. The contractor may be required to place temporary warning devices at certain locations where replacement features are not installed the same day during which any such removals take place.

204-1

For each continuous piece of guardrail to be installed the following shall apply, unless otherwise modified by the engineer.:

Grading work, if necessary, shall be completed prior to the removal of any existing guardrail or the installation of new guardrail. The removal of any existing guardrail and installation of new posts and beam rail, except for the approach end section, shall be completed on the same working day. Beam rail shall be fully connected to all posts and protected with a Type E terminal section plus Type II barricade with Type A warning light. On the next working day the concrete for the end anchorage (RE-52 or RE-53) shall be poured. Within 3 working days after the concrete is cured, the installation shall be completely functional.

213-1

IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL WHICH IS NOT DESIRABLE TO BE INCORPORATED IN THE WORK INVOLVED ON THIS PROJECT (EXCAVATION OR BROKEN CONCRETE) NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

211-2

Overhaul will not be measured or paid for but shall be considered incidental to roadway excavation on this project.

EROSION CONTROL:

232-3

FOLLOWING COMPLETION OF WORK ON THIS PROJECT SEEDING AND FERTILIZING OF ALL DISTURBED AREAS SHALL BE DONE AS DIRECTED BY THE ENGINEER.

SEEDING:

3 LBS. OF FESCUE, KENTUCKY 31 PER 1,000 SQ. FT.

FERTILIZER:

15 LBS. OF 13-13-13 (OR EQUIVALENT) CHEMICALLY COMBINED FERTILIZER PER 1,000 SQ. FT.

MECHANICAL ROTARY TILLAGE EQUIPMENT SHALL BE REQUIRED FOR THE PREPARATION OF THE SEEDBED. HAND EQUIPMENT SHALL BE REQUIRED IN AREAS INACCESSIBLE TO FIELD EQUIPMENT.

THE PREPARATION OF THE SEEDBED, FURNISHING AND APPLICATION OF SEED AND FERTILIZER TO ALL DISTURBED AREAS ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL TO WORK ON THIS PROJECT AND NO EXTRA COMPENSATION WILL BE ALLOWED.

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
2.	Includes 6 posts 10" x 10", 34 posts 8" x 8" and 5 posts 6" x 8".
7, 8, 9.	To be disposed of as per standard notation 213-1.
11.	Quantity is estimate only and payment will be made on the actual volume of material required. Article 1109.03 of the Current Std. Specifications shall not apply. Contractor shall provide required material.

ESTIMATE OF ROADWAY QUANTITIES

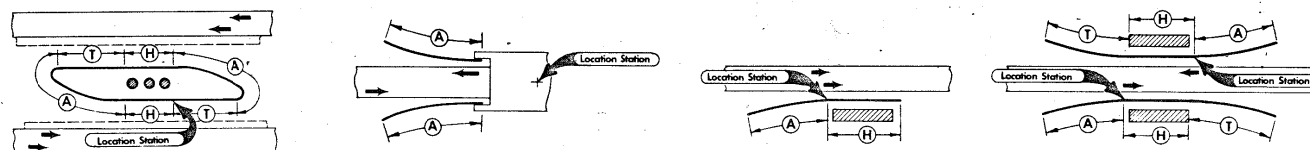
No.	ITEM	UNIT	TOTAL
1	Guardrail, Formed Steel Beam	Lin. Ft.	162.5
2	Guardrail Posts, Beam	No.	45
3	Guardrail, End Anchorage, Beam RE-52	No.	1
4	Guardrail, End Anchorage, Beam RE-53	No.	1
5	Delineators, Triple Amber Vertical	No.	6
6	Object Markers, Type 3	No.	2
7	Removal of Formed Steel Beam Guardrail	Lin. Ft.	262.5
8	Removal of Posts	No.	60
9	Removal of Anchor Section, RE-9	No.	1
10	Remove & Reinstall Formed Steel Beam Guardrail	Lin. Ft.	87.5
11	Excavation, Class 10, Roadway and Borrow	Cu. Yds.	350

TABULATION OF "W" BEAM GUARDRAIL INSTALLATIONS

(Refer to appropriate Standard Road Plans)

108-8

12-28-79



LOCATION		STANDARD ROAD PLAN	FORMED STEEL "W" BEAM GUARDRAIL				BEAM GUARDRAIL POSTS				BEAM GUARDRAIL BRIDGE END ANCHORAGE		BEAM GUARDRAIL END ANCHORAGE		SPECIAL CONNECTION (Non-Bid Item)		L2 (Feet)	REMARKS	
NO.	STATION		Case	A	H	T	TOTAL	10"x10" SINGLE SPACER	8"x8" SINGLE SPACER	8"x8" NO SPACER	6"x8" NO SPACER	Type	No.	Type	No.	Type			No.
				Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.												
2	572+78	RE-57	H	62.5			62.5	3	8		2			RE-52	1				

TABULATION OF "W" BEAM GUARDRAIL BETWEEN DUAL BRIDGES

(Refer to appropriate Standard Road Plans)

108-19

6-15-79

LOCATION		STANDARD ROAD PLAN	FORMED STEEL BEAM RAIL								BEAM GUARD RAIL POSTS				SPECIAL CONNECTION		END ANCHORAGE		BRIDGE END ANCHORAGE		REMARKS
No.	Station		Ⓐ				Ⓙ				8"×8"		10"×10"								
			12.5' Curve	Section for Skewed Bridge	Curve Ⓚ	RE-53 Section	Tangent Section	Curve Ⓜ	Variable Tangent Section	Total	Single Spacer	No Spacer	Single Spacer	No Spacer							
Type	No.	Type	No.	Type	No.																
1	572+70±	RE-58			87.5	12.5	37.5	37.5	12.5	187.5	26		3	3			RE-53	1			

TABULATION OF GRADING FOR GUARD RAIL INSTALLATIONS

107-23

8-4-78

HAZARD LOCATION (Station)	LOCATION POINT (Station)	INSTALLATION (Type)	"Y" DISTANCE (Lin. Ft.)	CLASS 10 EXCAVATION (Cu. Yds.)	PIPE			REMARKS
					Size (Inches)	Type	Length (Lin. Ft.)	
572+70	571+86	5	--	350				

TABULATION OF DELINEATORS AND OBJECT MARKERS

Refer to Standard Road Plan RE-48A-B and RE-29 C.

108-17

9-22-78

LOCATION STATION	TYPE	SINGLE WHITE DELINEATOR	TRIPLE AMBER VERTICAL DELINEATOR	TYPE 3 OBJECT MARKERS	REMARKS
572+70	4		3	1	
572+78	1		3	1	

REMOVAL OF BEAM GUARDRAIL

110-7

1-19-79

LOCATION	BEAM GUARDRAIL		POSTS					END ANCHORAGE		REMARKS
	Remove	Remove & Reinstall	ROUND	8''x8''		10''x10''		NO.	TYPE	
			Remove	Remove	Remove & Reinstall	Remove	Remove & Reinstall			
572+70	200			33						
572+78	62.5	87.5	27					1	RE-9	

DESIGN NO. 580
FILE NO. 26338
DES. SH. NO. 19 OF 19

ROADWAY DESIGN

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.
Richard W. Winkler
4989 Nov. 12, 1981
IOWA REGISTRATION NUMBER DATE

STORY COUNTY

PROJECT NUMBER

STATE IOWA
FED. ROAD DIST. NO. 5
FISCAL YEAR 40
SHEET 40