

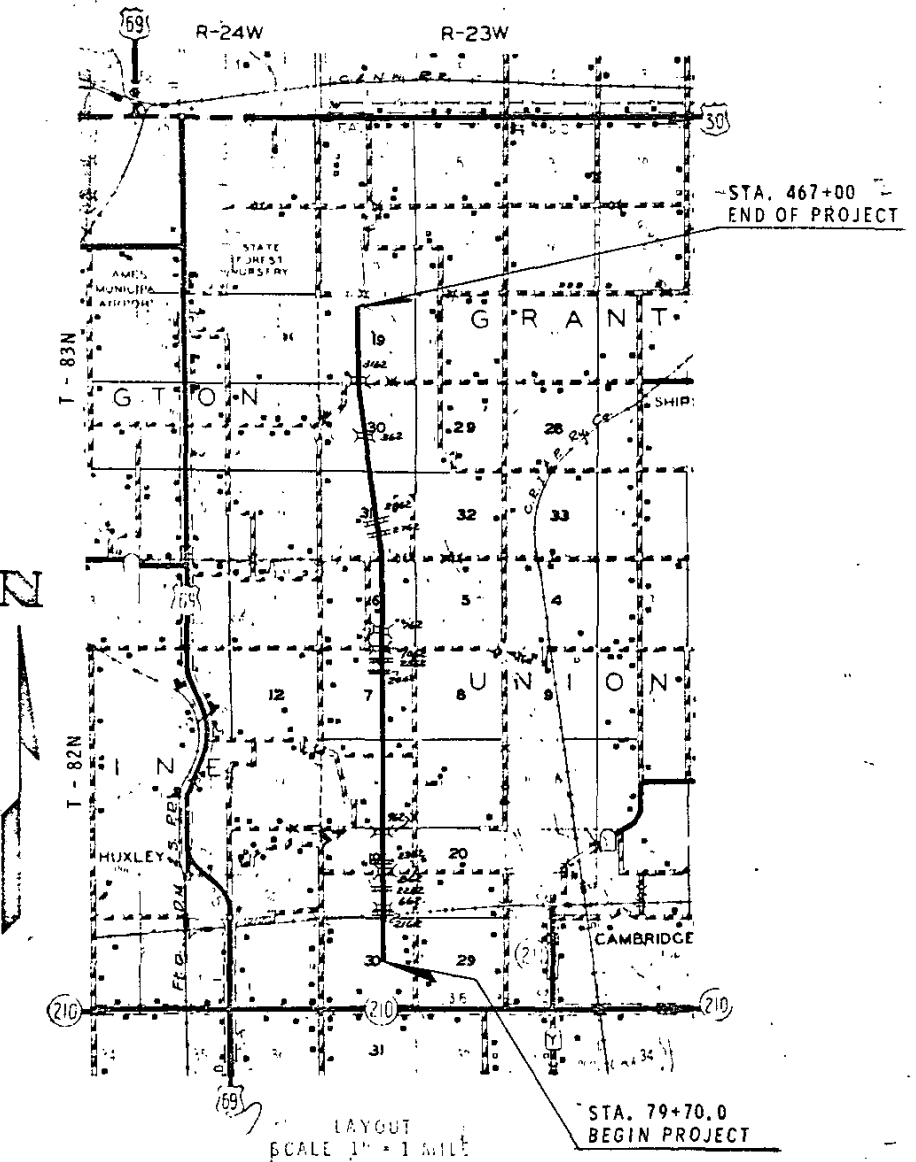
BRIDGES & CULVERTS STORY COUNTY I-16-35-4(8)103 OCTOBER 8, 1963 LETTING

Story I-35 #9

DESIGN NO. 362 T-83N R-23W STATION 392+15.00
SECTION NO. 30 INTERSTATE NO. 35 OVER SKUNK RIVER GRANT TOWNSHIP

DUAL 320'-0" X 30' CONTINUOUS WELDED GIRDER BRIDGES 15° SKEW

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	1,261.8
Reinforcing Steel	Lbs.	265,908
Structural Steel	Lbs.	571,670
Class 20 Excavation	Cu. Yds.	1,152
Class 21 Excavation	Cu. Yds.	599
Crested Piling 96 at 35'	Lin. Ft.	3,360
Untreated Piling (Oak or Gumwood) 192 at 35'	Lin. Ft.	6,720
Aluminum Handrail (Q-Q End Posts)	Lin. Ft.	1,238.0
Steel Handrail (Q-Q End Posts)	Lin. Ft.	1,254.0
Granular Backfill	Tons	870
Porous Backfill	Cu. Yds.	45



STATE OF IOWA
STATE HIGHWAY COMMISSION
DESIGN FOR
BRIDGES AND CULVERTS
INTERSTATE ROAD SYSTEM
PROJECT NO. I-16-35-4(8)103
STORY COUNTY

DESIGN NO. 3162 LOCAL ROAD STA. 5422+49.85 ON LOCAL ROAD
SECTIONS 19 & 30 OVER INTERSTATE #35 STA. 423+73.42 ON INTERSTATE #35
T 83N--R 23W GRANT TOWNSHIP

215'-5" X 24'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	201.1
Reinforcing Steel	Lbs.	42,833
Prestressed Concrete Beams B1-42' 6"	Only	8
Crested Piling 48 at 30'; 18 at 50'	Lin. Ft.	2,340
Class 20 Excavation	Cu. Yds.	237
Granular Backfill	Tons	130
Concrete Slope Protection	Sq. Yds.	342
Aluminum Handrail (Q-Q End Posts)	Lin. Ft.	413.8 or
Steel Handrail (Q-Q End Posts)	Lin. Ft.	413.8
4" Tile Subdrains	Lin. Ft.	448

DESIGN NO. 662 T-82N R-23W STA. 110+59.12 INTERSTATE #35
SECTION 19 INTERSTATE NO. 35 OVER C.M. ST. P. & P. R. R. UNION TOWNSHIP

DUAL 142'-6" X 40' PRETENSIONED PRESTRESSED CONCRETE BEAM OVERHEAD CROSSING

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	653.6
Reinforcing Steel	Lbs.	144,492
Aluminum Handrail (Q-Q End Posts)	Lin. Ft.	269.2
Steel Handrail (Q-Q End Posts)	Lin. Ft.	269.2
Prestressed Concrete Beams 46'-8" (A-5)	Only	54
Crested Piling 84 at 30'; 28 at 45'; 28 at 50'	Lin. Ft.	5,180
Class 20 Excavation	Cu. Yds.	612
Granular Backfill	Tons	348
4" Tile Subdrain	Lin. Ft.	264

SPECIFICATIONS:

CONSTRUCTION: Standard Specifications of the Iowa State Highway Commission, Series of 1960, plus current Supplemental Specifications and Special Provisions.

DESIGN STRESSES for the following materials are in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

Concrete in accordance with Section 1.4.11 f'c = 3500 psi.
Reinforcing Steel in accordance with Section 1.4.12 "Reinforcement" for Intermediate, Hard, or Rail Steel Grade.
Structural Steel in accordance with INT. 716(2); 1.4.2 "Structural Steel".
Prestressed Concrete in accordance with Section 1.13.7 f'c = 5000 psi.
Prestressing Steel in accordance with Section 1.13.7 f'c = 250,000 psi.

This bridge will require Bridge Sign assemblies furnished and placed by others as specified in Traffic and Highway Planning Instruction No. 11, revised October 1, 1961.

Revised 4-9-64, Design No. 1062 Roadway changed to 26'. Quantities changed.
Revised 4-1-64, Design No. 3162 Roadway changed to 26'. Quantities changed.
Revised 5-18-64, Design No. 862, Roadway changed to 28'. Quantities changed.
Revised 1-8-64, Design No. 662, Reinforcing quantity corrected.
Revised 12-16-63, Design No. 662, Class 20 Excavation quantities corrected.
Revised 12-16-63, Design No. 362, Class 21 Excavation quantities corrected.
Revised 11-21-63, Design No. 2362, Concrete & Reinforcing Steel quantities corrected.
Design 662 Revised 10-22-63: Handrail quantities corrected.

DESIGN NO. 862 T-82N R-23W STA. 132+63.4 ON LOCAL ROAD
SECTION 19 ON LOCAL ROAD STA. 2129+00.8 ON LOCAL ROAD
OVER INTERSTATE NO. 35 UNION TOWNSHIP

219'-7" X 24'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	292.2
Reinforcing Steel	Lbs.	64,884
Steel Handrail (Q-Q End Posts)	Lin. Ft.	418.5
Aluminum Handrail (Q-Q End Posts)	Lin. Ft.	418.5
Prestressed 38'-4" (Special)	Only	4
Prestressed 42'-6" (B1)	Only	4
Concrete Beams 67'-6" (B7)	Only	8
Crested Piling 81 at 30'	Lin. Ft.	2,430
Class 20 Excavation	Cu. Yds.	290
Granular Backfill	Tons	130
Concrete Slope Protection	Sq. Yds.	382
4" Tile Subdrains	Lin. Ft.	160
Crested Test Piling 1 at 30'	L.S.	Lump Sum

DESIGN NO. 1062 LOCAL ROAD STA. 265+06.7 ON INTERSTATE #35
SECTIONS 7 & 6 OVER INTERSTATE #35 STA. 3265+05.5 ON LOCAL ROAD
T 82N - R 23W UNION TOWNSHIP

215'-5" X 24'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 1°-43' SKEW

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	294.8
Reinforcing Steel	Lbs.	64,594
Prestressed Spec. 38'-4"	Only	4
Prestressed B-2 46'-8"	Only	4
Concrete Beams 8-6 63'-4"	Only	8
Crested Piling 56 at 25'; 9 at 30'	Lin. Ft.	1,670
Class 20 Excavation	Cu. Yds.	267
Granular Backfill	Tons	130
Concrete Slope Protection	Sq. Yds.	364
Aluminum Handrail (Q-Q End Posts)	Lin. Ft.	413.8
Steel Handrail (Q-Q End Posts)	Lin. Ft.	413.3
4" Tile Subdrain	Lin. Ft.	148
Crested Test Piling 1 at 25'	L.S.	Lump Sum

MILEAGE SUMMARY 105-1			
DIV.	LOCATION	LIN. FT.	MILES
	BRIDGE AT STA. 110+59.12	145,333	.028
	STRUCTURE AT STA. 151+10	46.0	.009
	STRUCTURE AT STA. 274+10.00	52,800	.010
	BRIDGE AT STA. 392+15.00	324,656	.061
	TOTAL		.108

APPROVED
R. M. Tustin AUG 3, 1963
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER

IN LETTING OF OCT. 8, 196

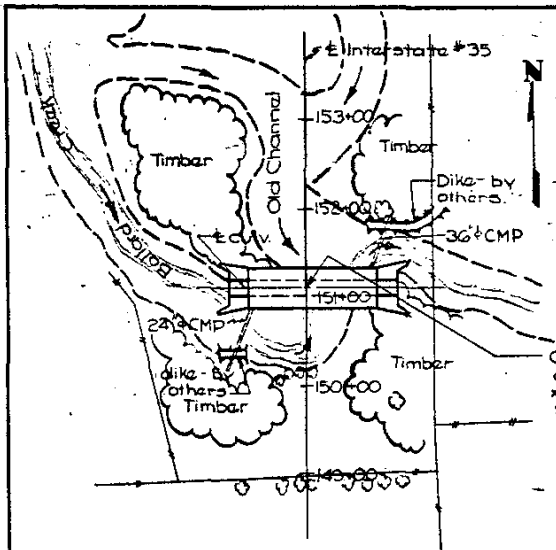
DESIGN	LOCATION			DESCRIPTION	ESTIMATE OF QUANTITIES													REMOVALS	
	SECTION	TOWNSHIP	STATION		SIZE AND TYPE	CONCRETE CUBIC YARDS	REINFORCING STEEL LBS.	EXCAVATION — CUBIC YARDS			CONCRETE ROADWAY PIPE CULV. LIN. FT.			CONCRETE APRON			TEE SECTION — Conc. Pipe		
								CLASS 20	CLASS 24	CLASS 10 CHANNEL	30"Ø	48"Ø		30"Ø	48"Ø		15"Ø		24"Ø
2162	19	UNION	108+00	2' X 3' X 231' R. C. B. Culv.	84.6	4,844	85												
2262	19	UNION	124+20	12' X 12' X 223' R. C. B. Culv. - 5° Sk.	724.2	119,457	1437												
2362	19	UNION	139+00	4' X 4' X 219' R. C. B. Culv. - 45° Sk.	20.7	1104	312												
2462	7	UNION	252+40	48"Ø X 266.0' Conc. Rdwy. Pipe Culv. & 4' X 4' Stub Flume 45° Skew	24.4	1,544	176			258									AS PER PLAN
2562	7	UNION	261+30	48"Ø X 156.0' Conc. Rdwy. Pipe Culv. & 4' X 4' Stub Flume 30° Skew	19.7	1,241	183			67									
2762	31	GRANT	333+00	30"Ø X 140.16' Conc. Rdwy. Pipe Culv. 3' X 2' Stub Flume	20.1	1,214	239	126		46	134								
2862	30	GRANT	338+75	6' X 6' X 193' R. C. B. Culv. S. Flume 15° Skew	181.4	27,536	497												

IN LITTING OF OCT. 8, 1963

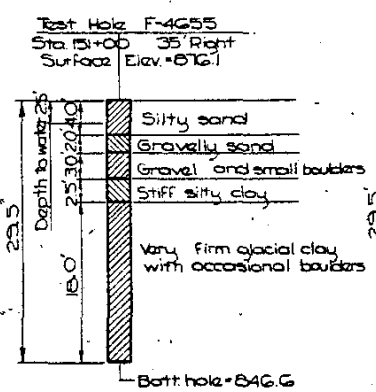
DESIGN NO. 762	T - 82N R - 23W	STATION 274+10.00
SECTION 6	INTERSTATE NO. 35 OVER WALNUT CREEK	UNION TOWNSHIP
TRIPLE 15'-18'-15' X 12' X 133'-0" REINFORCED CONCRETE BOX CULVERT 10° SKEW		
ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	1025.3
Reinforcing Steel	Lbs.	145,272
Class 20 Excavation	Cu. Yds.	215

IN LITTING OF OCTOBER 8, 1963	DESIGN NO. 962	T - 82N -- R - 23W	STATION 151+10 ON INTERSTATE #35
	SECTION 19	UNION TOWNSHIP	
	TRIPLE 13'-16'-13' X 12' X 145'-0" REINFORCED CONCRETE BOX CULVERT		
	ESTIMATE OF QUANTITIES		
	ITEM	UNIT	TOTAL
Concrete	Cu. Yds.	941.7	
Reinforcing Steel	Lbs.	153,057	
Class 20 Excavation	Cu. Yds.	2,690	

Revised 11-21-63 Des No 2362 Conc. & Reinf Steel Quantities Controlled
Revised 11-21-63 Sheet 65 of 63 Des No 2362 Conc. & Reinf Steel Quantities Controlled



GENERAL PLAN
Scale: 1"=100'



SOUNDING DATA
Dated 7-11-62
Scale: 1"=10'

GENERAL NOTES:
This culvert is designed for an earth fill of 100 lbs per cu ft and H20-S16-44 live loading as well as for alternate loading designated in BPR's PPM 20-4, section 4c.
The 24" and 36" CMP to be furnished and placed by others. Culvert contractor is to provide holes in exterior walls large enough to receive CMP size details sheet 4 of 4.
Road contractor is to ditch inlet and outlet for the culvert.
All floor and slab reinforcing is to be supported by bar chairs at intervals not to exceed 3'0" in both directions.
All reinforcing bars are to be securely wired in place before concrete is poured.
Longitudinal bars are not to extend through construction joints except 5" slab dowel bars.
Floor of culvert is to be finished smooth. Sides of footing are to be formed to insure correct line and grade.
All exposed corners of 90° or sharper are to be filleted with a 3" dressed and beveled strip.
Minimum clear distance from face of concrete to near bar is to be 1 1/2" unless otherwise shown.
Construction joints are to be formed with 2"x6" beveled keys.
Culvert contractor is to place one fence anchor in each fillet wing as shown on Sheet 4.

DESIGN STRESSES:

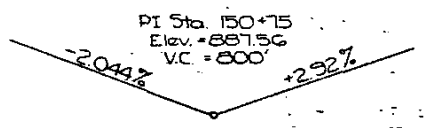
Design stresses for the following materials are in accordance with AASHTO Standard Specifications for Highway Bridges Series of 1961.
Reinforcing Steel in accordance with Section 14.12.
Reinforcement for Intermediate, Hard, or Rail Steel Grade.
Concrete in accordance with Section 14.11.
fc = 3500 psi.

SPECIFICATIONS:

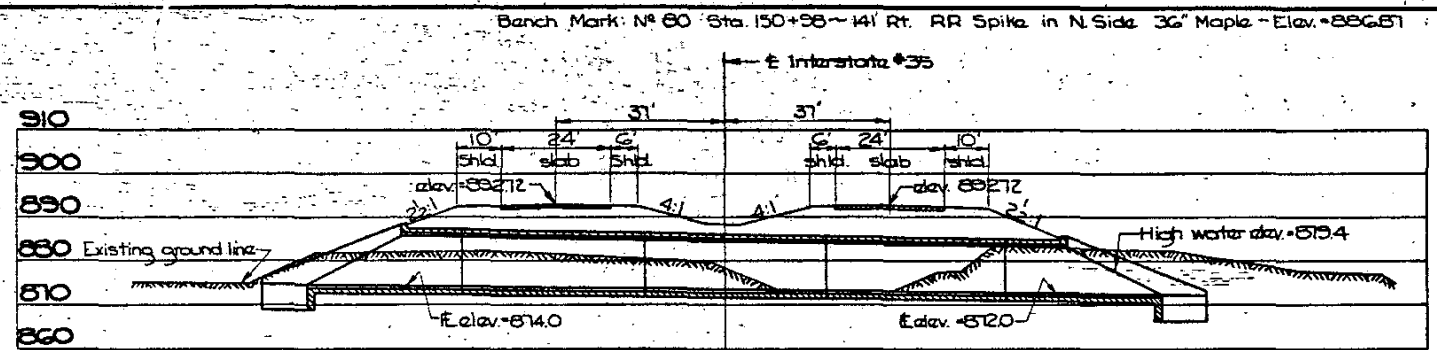
Design: AASHTO Series of 1961.
Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1960, plus current Supplemental Specifications and Special Provisions.

HYDRAULIC DATA:

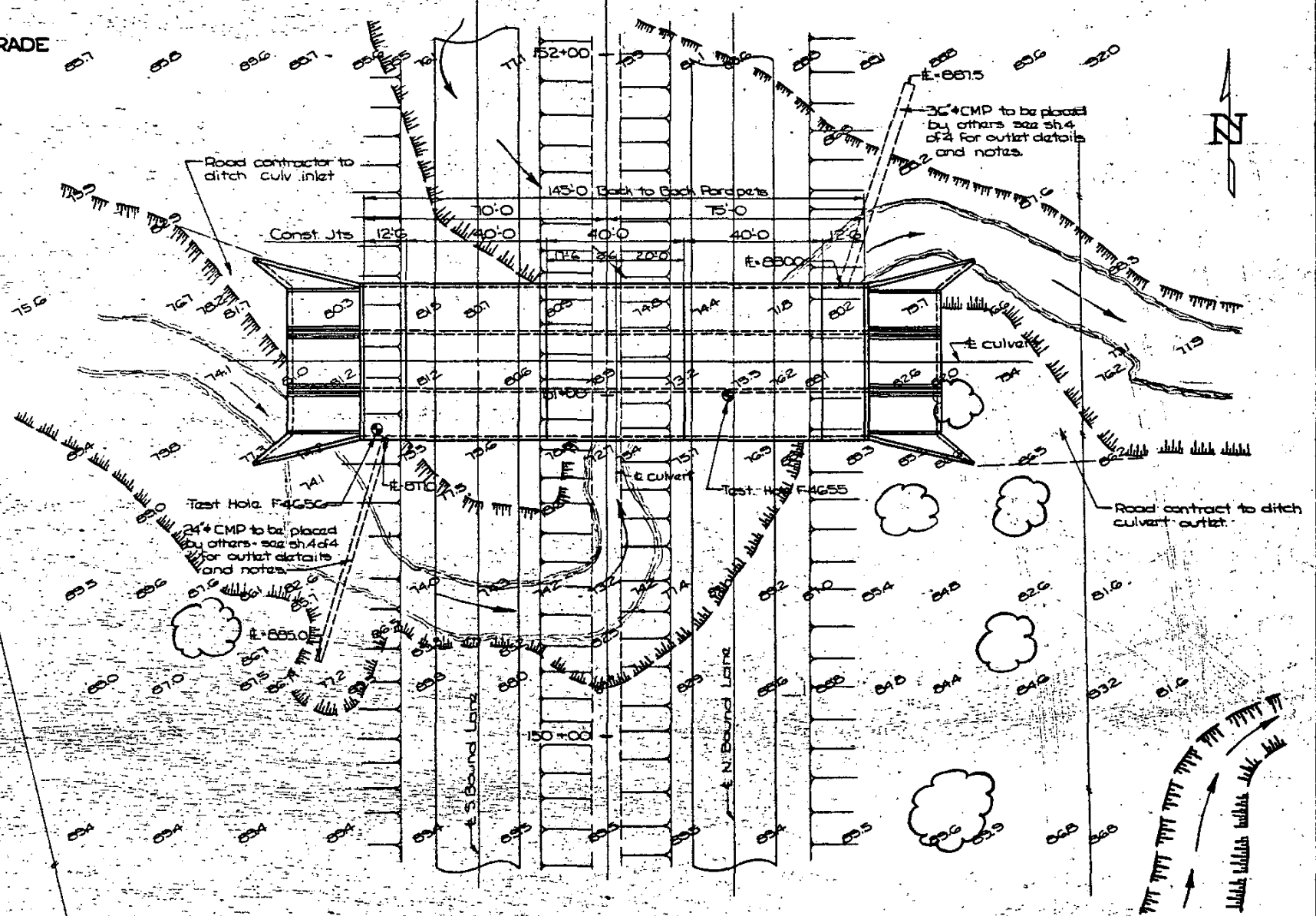
Drainage Area = 10,670 Acres - Flat to Hilly
Design Discharge = 3500 cfs.



PROPOSED INTERSTATE GRADE



LONGITUDINAL SECTION ALONG E OF CULVERT



SITUATION PLAN
Scale: 1"=20'

LOCATION:
Section 19
T82N R23W
Union Township
Story County

TOTAL ESTIMATED QUANTITIES		
Item	Units	Quantity
Concrete	c.y.	941.7
Reinforcing Steel	lbs	153,051
Class 20 Excavation	c.y.	2690

Design for
TRIPLE 13'-10" x 13' x 12' x 145'-0" REINFORCED CONCRETE BOX CULVERT

SITUATION & GENERAL PLANS

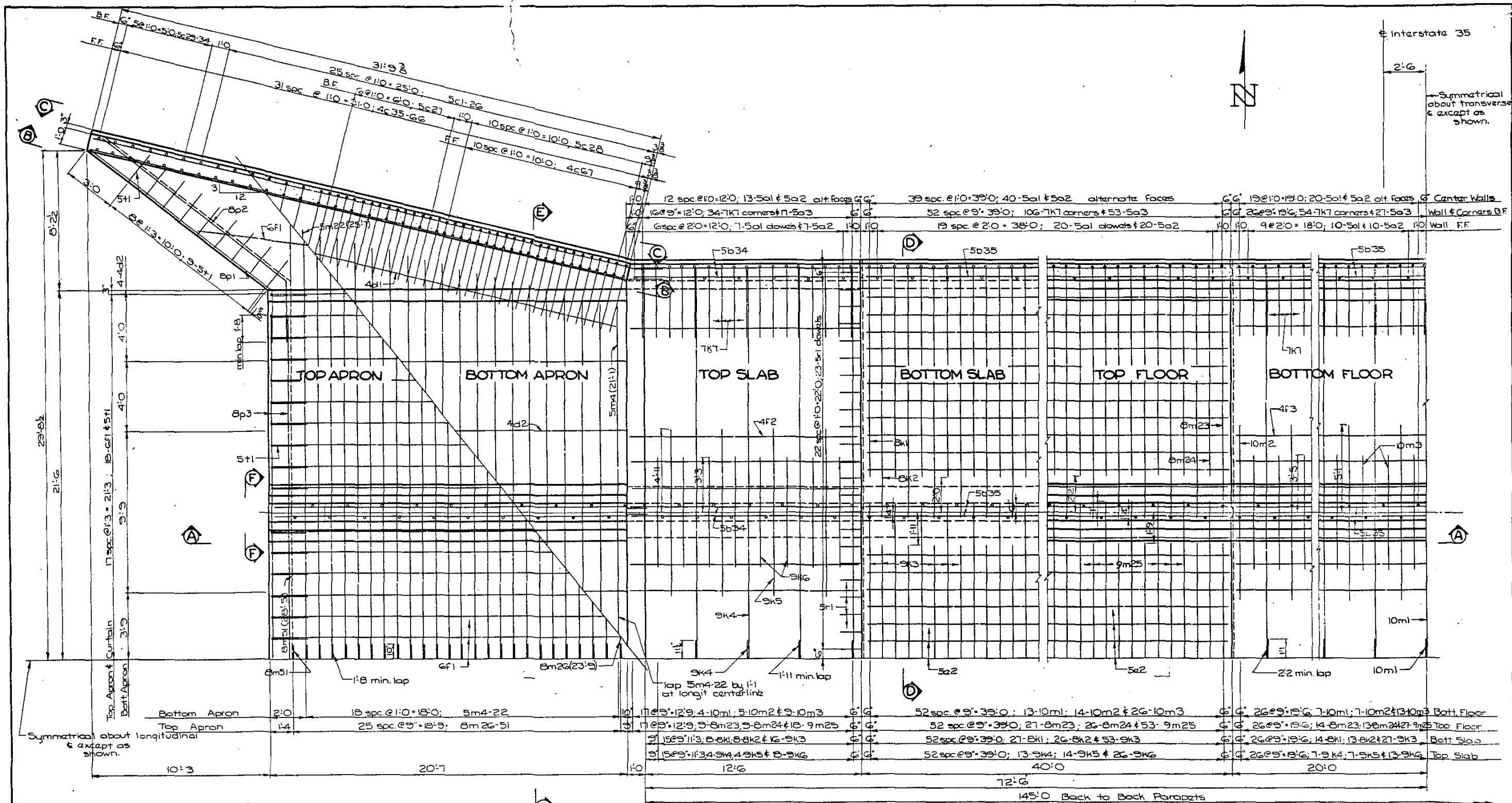
Station: 151+10 on Interstate #35 Proj. # I-16-33-4(6)103

STORY COUNTY

Iowa State Highway Commission
October 1962 Sheet 1 of 4

Design 562 Story County File No. 21495

Designed by [Signature] Checked by [Signature]



PLAN VIEW
Scale: 3/8" = 1'-0"

Note: Use one 8k1, 8k3 & 8k2 (bott slab) and one 8m23, 9m25 & 8m24 (top floor) per transverse reinforcing line. Alternate 8k1 & 8k2 (bott slab) and 8m23 & 8m24 (top floor) in 13' spans. Alternate positioning of 8k3 (bott slab) and also 9m25 (top floor) as shown in 16' span.

Design For
**TRIPLE 13'6" x 12' x 145'0" REINFORCED
CONCRETE BOX CULVERT**
STRUCTURAL DETAILS

Station: 151+10 on Interstate 35 Proj. No. IIG-35-4(B)103

STORY COUNTY

Iowa State Highway Commission

October 1962

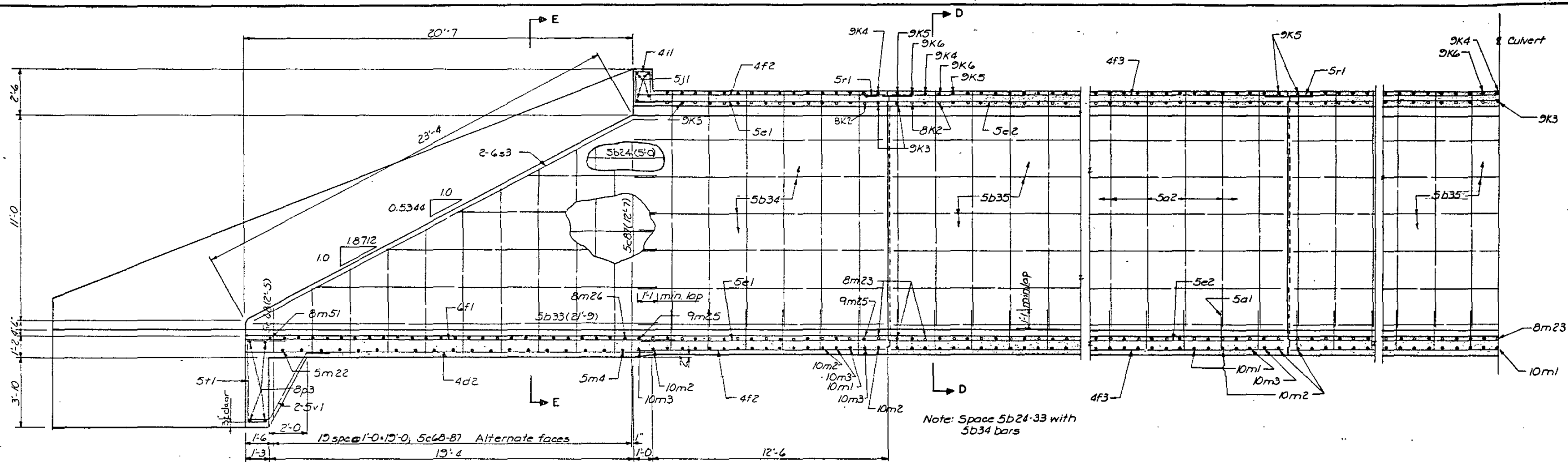
Sheet 2 of 4

Design 962

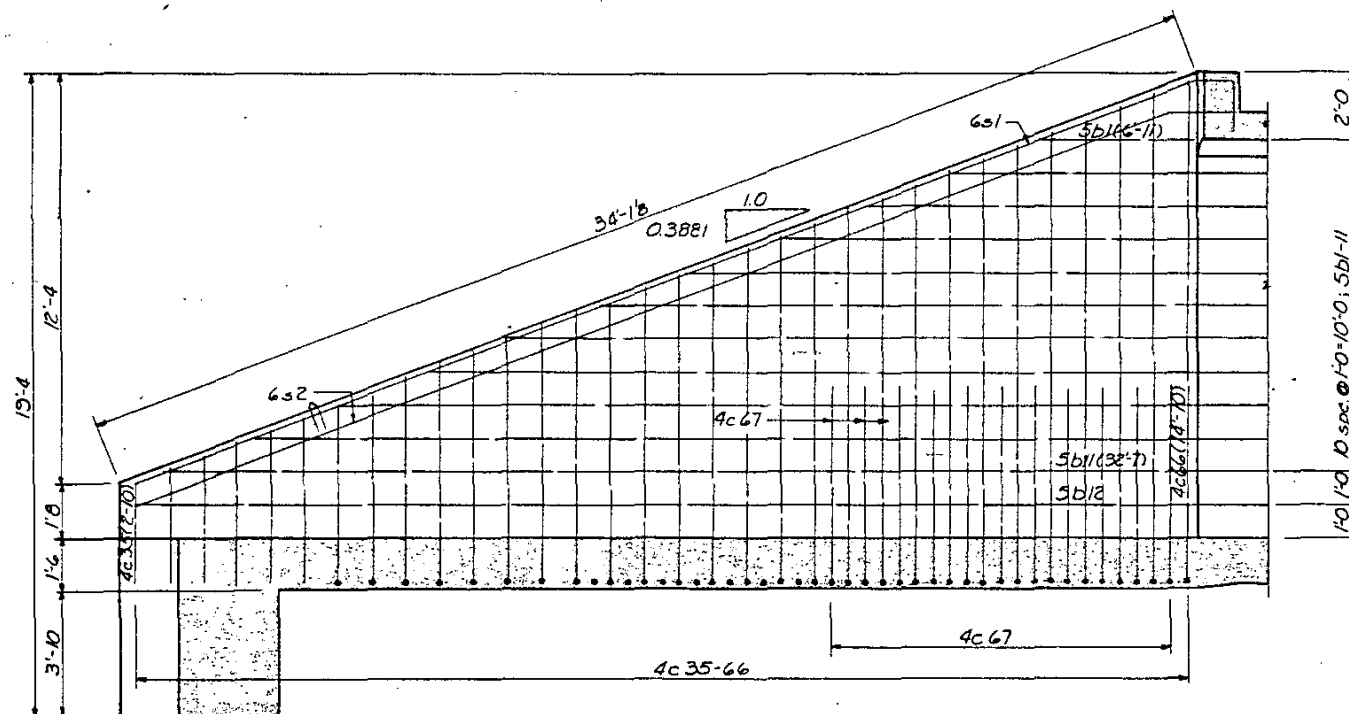
Story County

File No. 21495

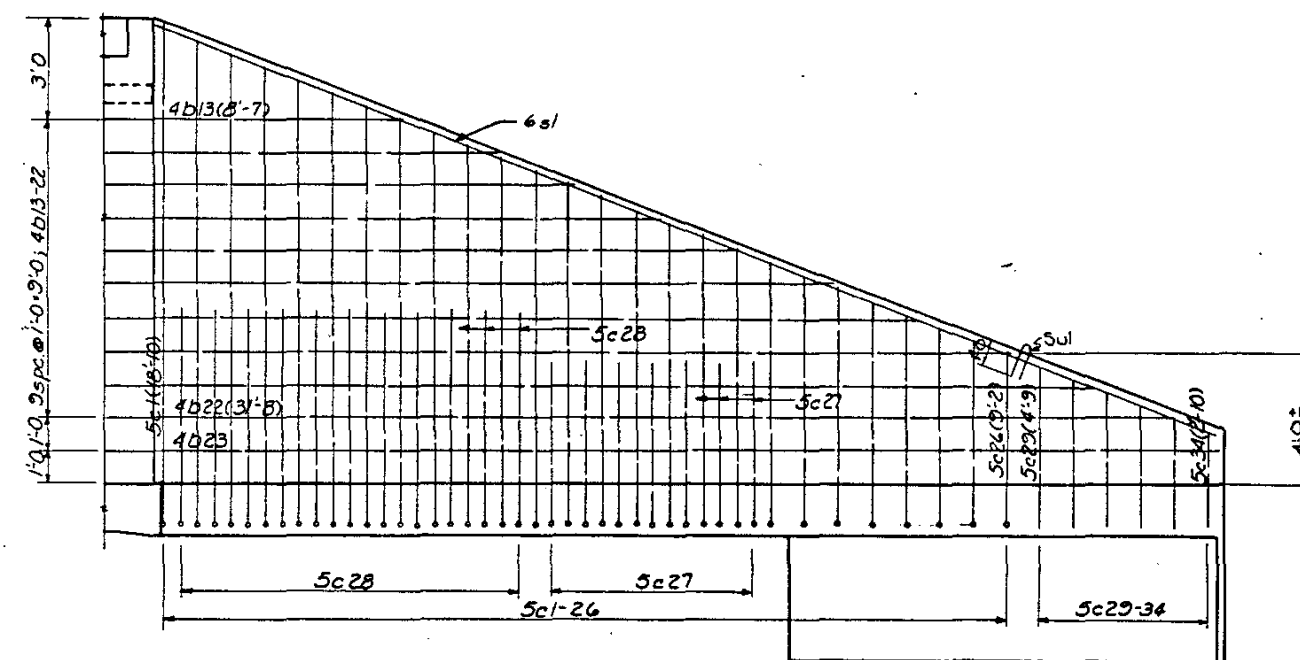
Designed by: *AE* Traced by: *GB* Checked by: E.M.



SECTION A-A
Scale: 8" = 1'-0"



SECTION B-B
Showing Front Face Reinforcing
Scale: $\frac{3}{8}'' = 1'-0$



VIEW C-C
Showing Back Face Reinforcing
Scale: $\frac{3}{8}'' = 1'-0''$

DESIGN FOR
TRIPLE 13'-16'-13'X12'X145'-0 REINFORCED
CONCRETE BOX CULVERT

STRUCTURAL DETAILS

STATION: 151+10 ON INTERSTATE NO.35 PROJ. NO. I-IG-35-4 (8) 103

STORY COUNTY

IOWA STATE HIGHWAY COMMISSION


OCTOBER 1962

SHEET 3 OF 4

DESIGN NO. 962

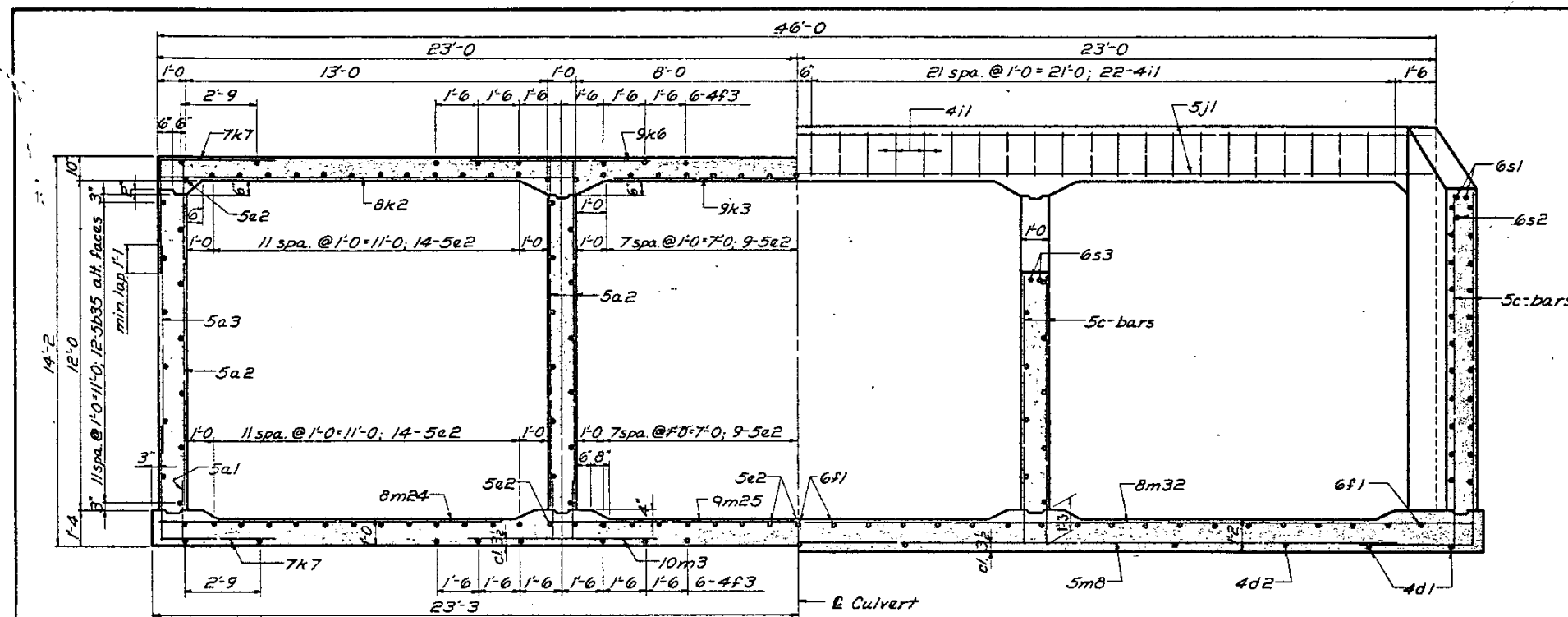
STORY COUNTY

FILE NO. 21495

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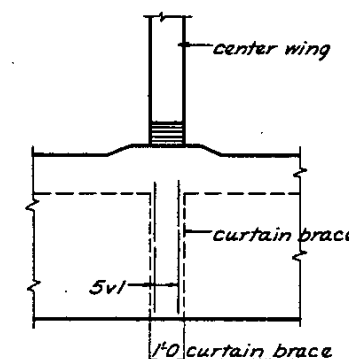
Traced by: R.W.

Checked By: E. N.



HALF SECTION D-D
Scale: $\frac{3}{8}'' = 1'-0$

HALF SECTION E-E
Scale: $\frac{3}{8}'' = 1'-0''$



PART VIEW F-F
Scale: $\frac{3}{8}'' = 1'-0$

REINFORCING BARS		LIST		
Bar	Location	Shape	No.	Length Weight
5a1	Dowels - floor to walls		440	8'-2 994
5a2	Outside wall FF & cent' - vert.		440	12'-7 5715
5a3	" " - vert. & F		386	7-9 3120
5b1-11	Wing - horiz. - FF	\	44	Varies 906
5b12	" " - " - "	\	4	33'-8 140
4b13-22	" " - " - BF	\	40	Varies 538
4b23	" " - " - "	\	4	32'-9 .88
5b24-33	Cent'r Wings - horiz. - Both Faces		40	Varies 558
5b34	Walls - horiz. - end sect. - "		96	13'-2 1318
5b35	" " - " interior - " - "		144	39'-8 5458
5c1-26	Wings - vertical - BF	J	104	Varies 1518
5c27	" " - " - "	J	28	9'-0 262
5c28	" " - " - "	J	44	10'-6 482
5c29-34	" " - " - "		24	Varies 94
4c35-66	" " - " - FF		128	" 756
4c67	" " - " - "		44	6'-0 176
5c68-87	Center Wings - vert. - Both Faces		80	Varies 622
4d1	Apron - Bottom - Longit.		8	25'-6 136
4d2	" " - " - "		14	21'-6 201
5e1	Top Floor & Bott. Slab - Longit. - end sec.		180	13'-2 2472
5e2	" " - " - " interior "		270	39'-8 11171
6f1	Apron - top - Longit.		74	22'-8 2519
4f2	Bott. Floor & Top Slab - Longit. - end sec.		64	13'-2 563
4f3	" " - " - " interior "		96	39'-8 2544
4i1	Parapet Hoop	D	88	5'-11 348
5j1	" " - Longit.		16	23'-4 589
8k1	Slab - bott. - transv.		194	12'-4 6388
8k2	" " - " - "		188	14'-8 1362
9k3	" " - " - "		191	15'-7 10120
9k4	" " - top - over walls		94	23'-10 7617
9k5	" " - " - " "		100	9'-10 3343
9k6	" " - " - " "		188	6'-6 4155
7k7	" & Floor - corners		772	8'-1 12755
10m1	Floor - bott. - transv.		94	24'-2 9113
10m2	" " - " - "		104	10'-2 4550
10m3	" " - " - "		192	6'-10 5642
5m4-22	Apron - " - "		76	Varies 1850
8m23	Floor - top		198	14'-11 1886
8m24	" " - "		192	12'-5 6365
9m25	" " - "		195	15'-10 10491
8m26-51	Apron - " - transv.		104	Varies 7143
8p1	Curtain - horiz.	\	8	16'-2 345
8p2	" " - "	\	8	16'-8 356
8p3	" " - "	\	8	40'-0 854
5r1	Slab dowels - Const. Ut. - top		184	2'-6 480
6s1	Wing Slope - Both Faces	/	8	35'-10 430
6s2	" " - FF	/	4	36'-3 218
6s3	Center Wing Slope - Both F.	/	8	24'-3 291
5t1	Curtain - vertical	E	106	7'-4 811
5u1	Fence Anchors		4	2'-7 12
5v1	Curtain Brace	/	8	6'-9 52
			Total, lbs.	153,055

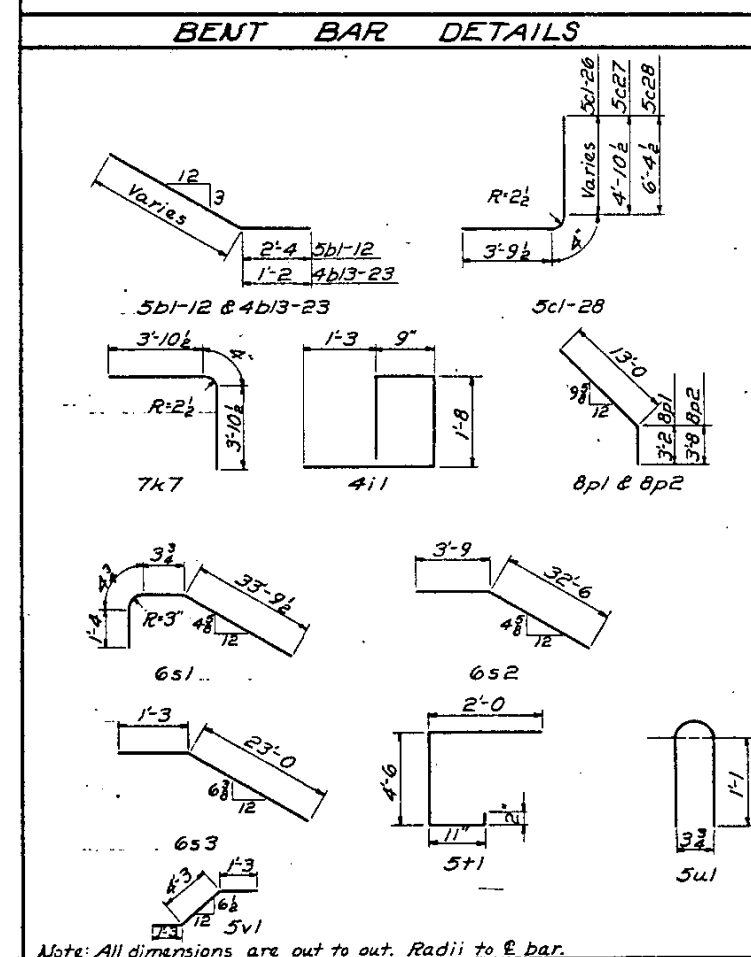
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CONCRETE PLACEMENT QUANTITIES			
Location	End Sections	Interior Sections	Totals c.u.
Floor	2 at 92.5	3 at 73.6	405.8
Walls	2 at 50.6	3 at 68.1	305.5
Slab	2 at 22.8	3 at 61.6	230.4
Totals c.u.	331.8	609.9	941.7

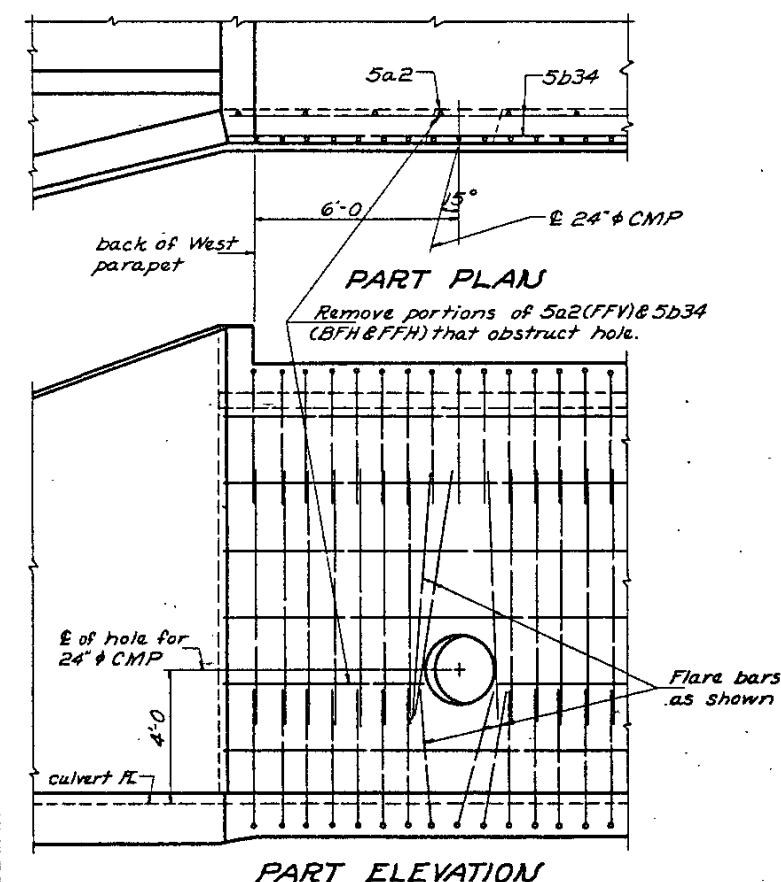
Design for
**TRIPLE 13'-16" x 12' x 145'-0" REINFORCED
 CONCRETE BOX CULVERT
 STRUCTURAL DETAILS**
 Station: 151+10 on Interstate #35 Proj. No. ITC-35-4(8)103
STORY COUNTY
 Iowa State Highway Commission
 October 1962 Sheet 4 of 4

Design No. 962 Story County File No. 21495

Designed by: AR Traced by: BBB Checked by: EN

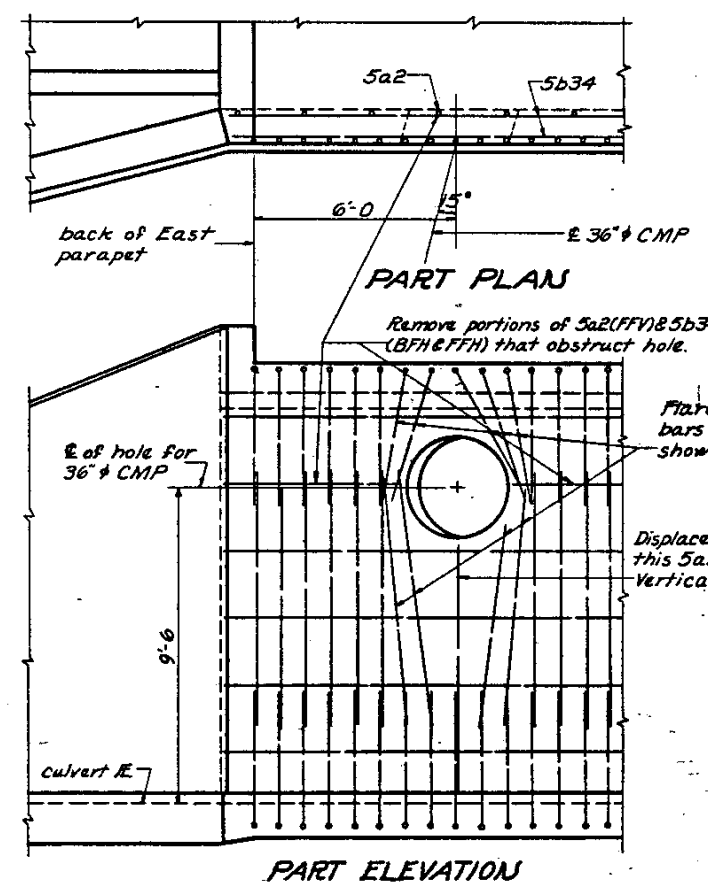


Note: All dimensions are out to out. Radii to \bar{E} bar.



PART ELEVATION

Showing hole culvert contractor is to provide in the S. exterior wall near West parapet to accommodate a 24" CMP Reinforcing steel to be placed as shown. CMP to be placed by others.



PART ELEVATION

Showing hole culvert contractor is to provide in the N exterior wall near East parapet to accommodate a 36" CMP. Reinforcing steel to be placed as shown. CMP to be placed by others.