STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	21

PROJECT NUMBER

F-61-2(3)--20-29

FN-61-2(5)--21-29 R.O.W.

DES MOINES COUNTY

BRIDGE

PROJECT NO. F-61-2(3)--20-29

LETTING DATE Sept. 16-1969

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line — Old / New — Sta. / Ref. Point
Profile Grade
Railroad
Field Tile — Old / New
Underground Lines — G Gas / T Tel.
Culverts — Old / New
Utility Poles — Power / Tel.
Fences — Barb. / Mesh
Trees Or Brush
Stream
Dike — Old / New
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM
DES MOINES COUNTY
BRIDGE

LEE COUNTY LINE N.

SCALES: AS NOTED

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT
(Plus current Special Provisions, and Supplemental Specifications)

All welding shall meet the requirements of the 1966 Seventh Edition of Specifications for Welded Highway and Railway Bridges of the American Welding Society except as modified by the Standard Specifications.

DESIGN STRESSES:

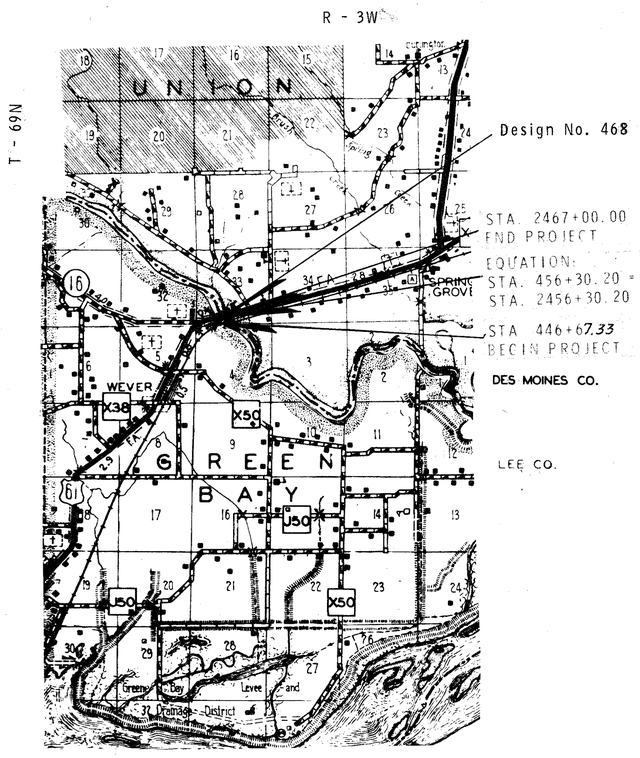
Design stresses for the following materials are in accordance with AASHO Standard Specifications for Highway Bridges, Series of 1965:
Concrete in accordance with Section 1.5.1 f'c = 3500 psi.
Reinforcing Steel in accordance with Section 1.5.1.
Structural Steel in accordance with Section 1.7.1.
ASTM A-36, fs = 20,000 psi.

Contr.: Schmidt Const. Co.
Winfield, Iowa
Superintendent: Dan Shaw
Project Inspector: Charles Phelps
Completion Date:
Contract Starting Date: Nov. 3, 1969
Contract Completion Date: may 15, 1971
Actual Starting Date: Dec. 1, 1969

INDEX OF SHEETS

105-3

NO.	DESCRIPTION
1	TITLE SHEET
1A	REVISION SHEET
2	ESTIMATE SHEET
3-21	BRIDGE DESIGN NO. 468



LOCATION MAP

STATE CONTROL SECTION NUMBER
29-0400

LOCATION MAP SCALE
0 1 2 3
miles

29 32.7 5061

MILEAGE SUMMARY

105-1

DIV.	LOCATION	LIN. FT.	MILES	STATE CONTROL SECTION NO.
	BRIDGE AT STA. 450+12.5	690.333	.131	

101.4

DESIGN DATA RURAL

196 9 AADT 4100 V.P.D.
198 9 AADT 5680 V.P.D.
198 9 DHV 650 V.P.H.
DIRECTIONAL 60 %
TRUCKS 11 %
DESIGN V 70 M.P.H.
PARTIAL ACCESS CONTROL

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
ONE COPY PREPARED BY J. K. Dewitt (RES. CONST. ENGR.) DATE 1/4/72
ONE COPY APPROVED AND FORWARDED TO AMES
James W. Edgeton (DISTRICT ENGINEER) DATE 3-16-72
TWO COPIES TO BE MADE AND RETURNED TO:
VIRGIL BUTLER DISTRICT ENGINEER
FRED PFAFF U.S. MAINT. ENGINEER

REVISED:
SEE FOLLOWING SHEET 1A

APPROVED
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION
DATE 7/24/69

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.
DATE 7-22 19 69 IOWA REG. NO. 7795

DEPARTMENT OF TRANSPORTATION
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER DATE

Rev. (35)

BM

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
Oct. 15, '69		Design 468
	Sheet 1A of 21	This sheet added (Revision Sheet).
	Sheet 18 of 21	Note added.
	Sheet 1 of 21	Sheet 1A added to "Index of Sheets"

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS

REVISION SHEET

Fold

DES MOINES COUNTY FILE NO. 23016

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		1-A	21

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

July 18, 1969 — DATE

William A. Lundquist — WM. A. LUNDQUIST — REG. NO. 4449

IN LETTING OF SEPTEMBER 16, 1969

DESIGN NO. 468
DES MOINES COUNTY
SECTION 33 — T - 69N — R - 3W

U.S. #61 OVER SKUNK RIVER

STA. 450+12.5

UNION & GREEN BAY TOWNSHIPS

DESIGN FOR 15° SKEW

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

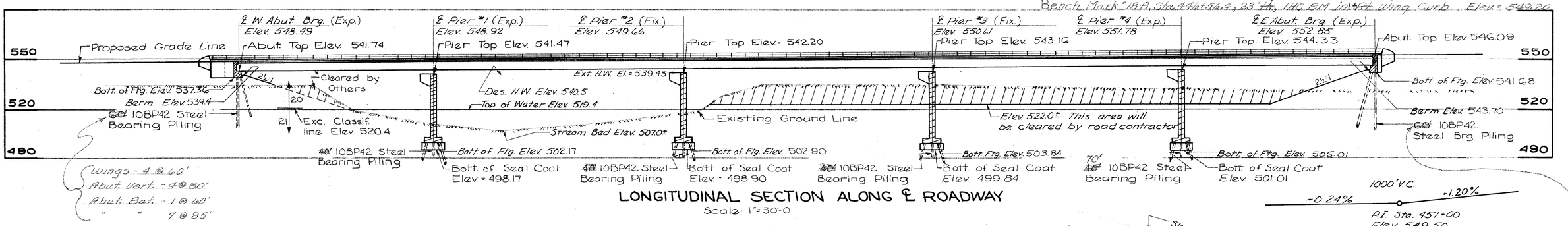
ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL	
(1)Structural Concrete		Cu. Yds.	~~1 780.8~~	1778.6
Reinforcing Steel		Lbs.	~~454 896~~	454,872
Structural Steel		Lbs.	1 067 420	
Aluminum Handrail		L.F.	1 417.0	
~~Steel Handrail~~		L.F.	~~1 417.0~~	
Granular Backfill		Cu. Yds.	218	
Class 20 Excavation		Cu. Yds.	260	
Class 21 Excavation		Cu. Yds.	1 475	
10BP42 Steel	Furnish	L.F.	~~9 040~~	14,014.4
Bearing Piling	Drive	L.F.	~~9 040~~	14,014.4
4"ø Tile Subdrain		L.F.	280	
Concrete Seal Coat - Class X		Cu. Yds.	352.8	
Removal of Existing Structure		L. S.	LumpSum	

(1) Includes 902.4 cu. yds. of Class "D" in Superstructure and 878.4 cu. yds. of Class "C" in Substructure.

THIS BRIDGE WILL REQUIRE BRIDGE SIGN ASSEMBLIES, FURNISHED AND PLACED BY OTHERS, AS SPECIFIED IN SECTION 2 C-5 OF THE I.S.H.C. MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES", DATED JANUARY 1963.

Bench Mark #18 Sta. 446+88 Set R.R. Spk. in N. side 30" Cottonwood at ℄ Elev. = 534.91
Bench Mark 18B, Sta. 447+56.4, 23' Rt., IHC BM in Rt. Wing Curb. Elev. = 549.20

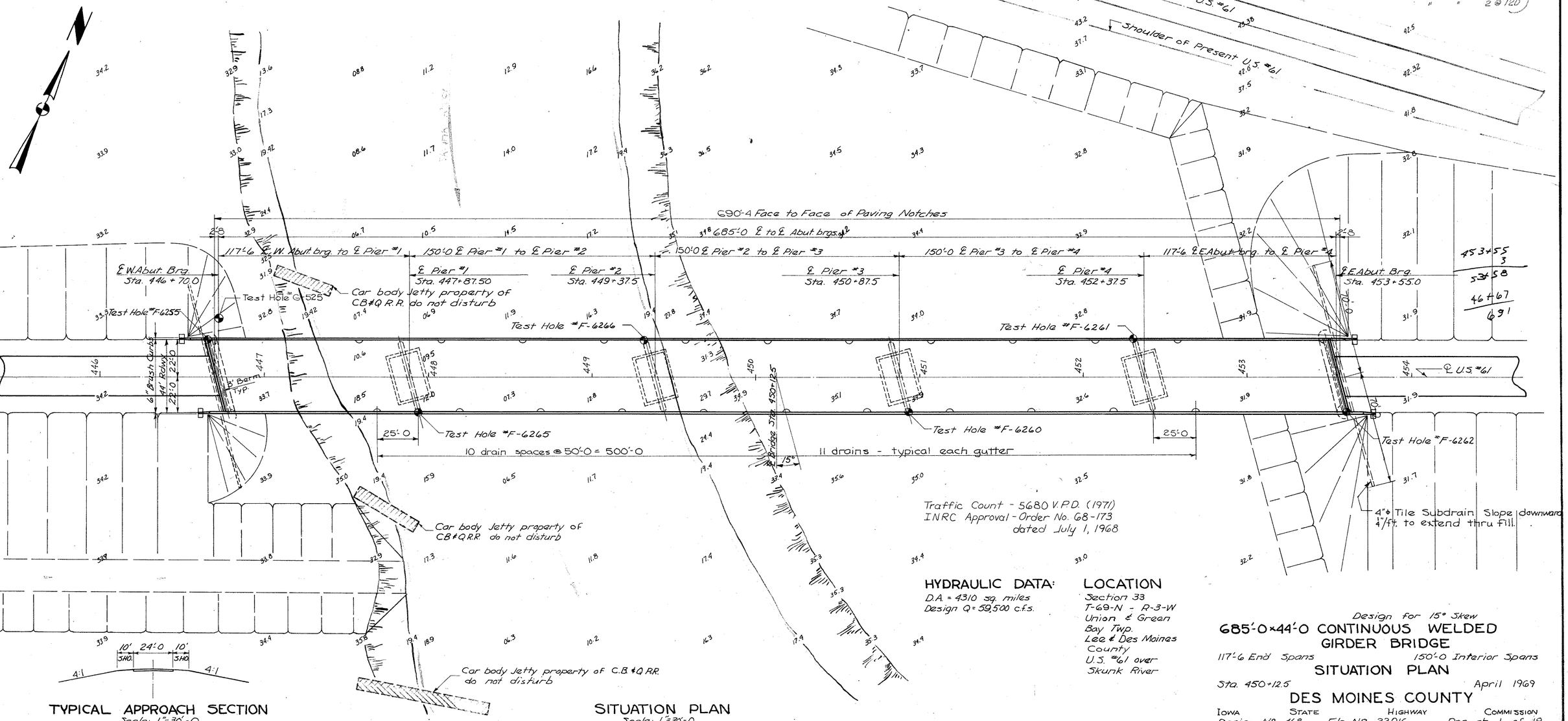


LONGITUDINAL SECTION ALONG ℄ ROADWAY

Scale: 1" = 30'-0

VERTICAL CURVE DATA U.S. #61

Wings - 4 @ 60'
Abut. Vert. - 4 @ 80'
Abut. Bat. - 6 @ 100'
" " 2 @ 120'



SITUATION PLAN

Scale: 1" = 30'-0

TYPICAL APPROACH SECTION

Scale: 1" = 30'-0

Traffic Count - 5680 V.P.D. (1971)
INRC Approval - Order No. 68-173 dated July 1, 1968

HYDRAULIC DATA:
D.A. = 4310 sq. miles
Design Q = 59,500 c.f.s.

LOCATION
Section 33
T-69-N - R-3-W
Union & Green Bay Twp.
Lee & Des Moines County
U.S. #61 over Skunk River

Design for 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans — 150'-0 Interior Spans

SITUATION PLAN

Sta. 450+12.5

April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

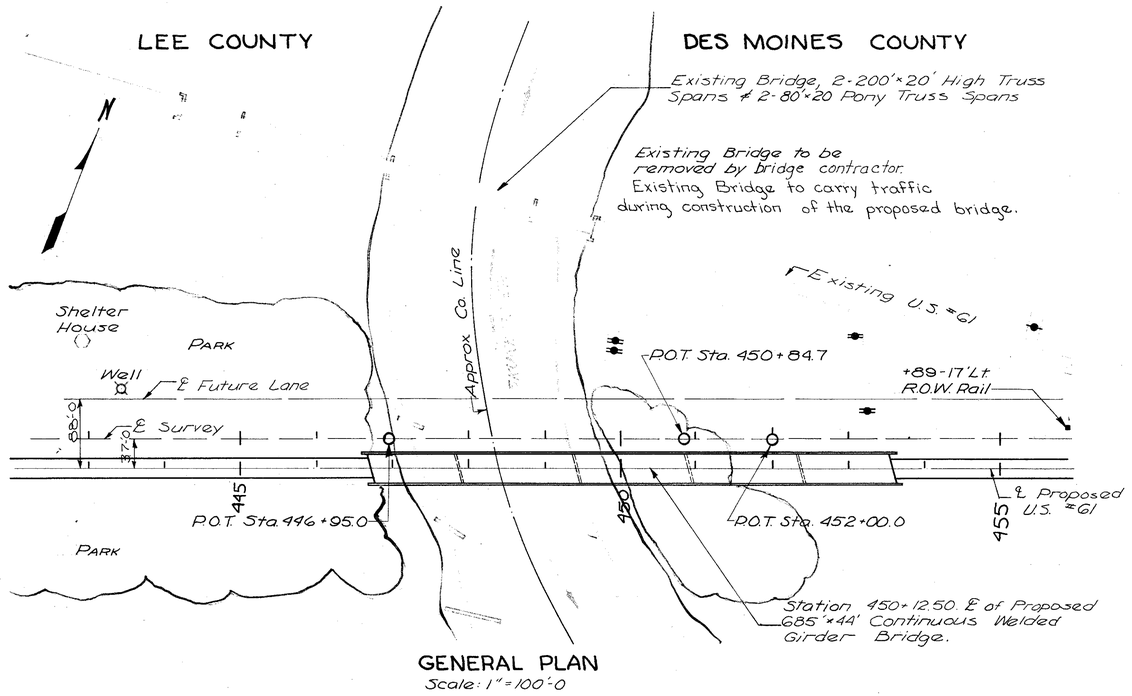
Design № 468 File № 23016 Des. sh. 1 of 19

DESIGNED BY: V.J.A. Lundquist
DETAILED BY:
TRACED BY: T.G.P. Mitchell
CHECKED BY: M. Jones
SECTION LEADER William A. Lundquist
DES MOINES COUNTY
PROJECT NUMBER F-61-2(13)--EJ-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		3	21

Bench Mark #18-B. Sta. 446+56.4, 23' Lt., 1HC BM in Lft. Wing Curb. Elev.= 549.20

~~Bench Mark #18 Sta. 446+88 Set R.R. Spk. in Northside of 30" Cottonwood on ℄ Elev.= 534.91~~



GENERAL PLAN
Scale: 1"=100'-0

GENERAL NOTES:

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

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

The Bridge Contractor is to install tile subdrain behind each abutment as detailed. The price bid for " 4"ϕ Tile Subdrain" is to include the excavation necessary for the installation.

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

East Abutment piles are to be driven in oversize holes drilled thru the Fill to Elev. 530.0. The minimum diameter of the drilled holes is to be 20 inches. Voids around the piles are to be filled with dry sand. No separate payment will be made for drilling holes or filling voids since it is considered incidental to driving piles.

No construction shall be started on the West Abutment until the approach fill has been in place at least 60 days.

The existing bridge shall not be removed until the proposed new bridge is carrying traffic.

The bid item "Removal of Existing Structure" shall include the removal of the existing bridge consisting of 2 - 200' x 20' High Truss Spans and 2 - 80' x 20' Pony Truss Spans and located at Station 352+40. Items to be removed are the concrete floor, steel superstructure, and all substructure except the East Abutment. Removal shall be in accordance with Section 2401 of the Specifications. All portions of the substructures to be removed shall be removed to 1'-0 below finish ground line. All broken concrete and rubble removed from the structure shall be disposed of off the highway right of way on a waste area provided by the contractor. The wasted material must not create an unsightly condition when viewed from public highways.

All structural steel from the existing structure shall become the property of the bridge contractor.

The East Abutment and approach roadway shall be removed by others.

Pier excavation quantities are based on the assumption that the channel excavation to Elev. 522± shall be completed prior to commencement of pier construction.

TOTAL ESTIMATED QUANTITIES

Item		Unit	2 Abut	4 Piers	Super	Total
Reinforcing Steel		lb.	~~45,000~~ 14,976	116,126	~~323,770~~	~~454,896~~ 454,872
Structural Steel		lb.	—	—	1,067,420	1,067,420
Aluminum Handrail	or	L.F.	—	—	—	1417.10
~~Steel Handrail~~	or	L.F.	—	—	—	~~1417.10~~
Granular Backfill		C.Y.	218	—	—	218
Class 20 Excavation		C.Y.	190	70	—	260
Class 21 Excavation		C.Y.	—	1475	—	1475
*Structural Concrete		C.Y.	~~1416~~ 139.4	736.8	902.4	~~1780.8~~ 1779.6
10BP42 Steel	Furnish	L.F.	~~32 @ 60~~	~~178 @ 40~~	—	~~9040~~ 14,014.4
Bearing Piling	Drive	L.F.	~~32 @ 60~~	~~178 @ 40~~	—	~~9040~~ 14,014.4
4"ϕ Tile Subdrain		L.F.	—	—	—	280
Concrete Seal Coat - Class X		C.Y.	—	352.8	—	352.8
Removal of Existing Struct		L.S.	—	—	—	Lump Sum

*Includes 902.4 c.y. of Class D in Superstructure and ~~878.4~~ c.y. of Class C in Substructure.

DESIGN STRESSES:

Design stresses for the following materials are in accordance with AASHO Standard Specifications for Highway Bridges, Series of 1965:

Concrete in accordance with Section 1.5.1 f'c = 3500 psi.

Reinforcing Steel in accordance with Section 1.5.1 "Reinforcement" for Intermediate, Hard or Rail Steel Grade.

Structural Steel in accordance with Section 1.7.1 ASTM A-36, fs = 20,000 psi.

SPECIFICATIONS:

Design: AASHO, Series of 1965.

Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1964, plus current Special Provisions and Supplemental Specifications. All welding shall meet the requirements of the 1966 Seventh Edition of Specifications for Welded Highway and Railway Bridges of the American Welding Society except as modified by the Standard Specifications.

Design for 15° Skew

685'-0×44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans — 150'-0 Interior Spans

GENERAL PLAN

Station: 450+12.5 — April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Nº 468 — File Nº 23016 — Des. Sh. 2 of 19

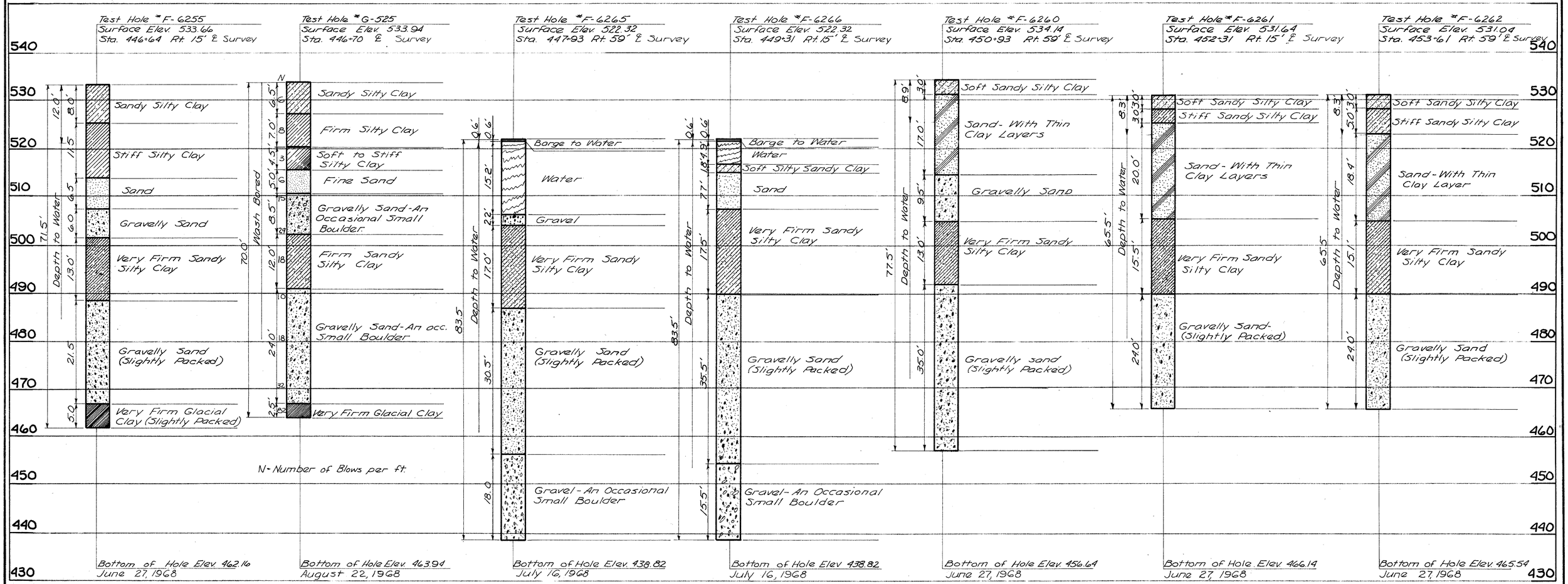
DESIGNED BY: William A. Lundquist — TRACED BY:

DETAILED BY: [signature] — CHECKED BY: H. Tsai

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		9	21

Bench Mark #18 Sta. 446+88 Set R.R. Spk. in Northside of 30" Cottonwood on ℄ Elev. 534.91
Bench Mark #18-B, Sta. 446+56.4, 23' lt., I.H.C. B.M. in Aft. wing curb, Elev. 549.20



SOUNDING DATA
Scale: 1"=10'-0

Design for 15° Skew
685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE
117'-6 End Spans 150'-0 Interior Spans
SOUNDING DATA
Station: 450+12.5 April 1969
DES MOINES COUNTY
IOWA STATE HIGHWAY COMMISSION
Design № 968 File № 23016 Des. Sh. 3 of 19

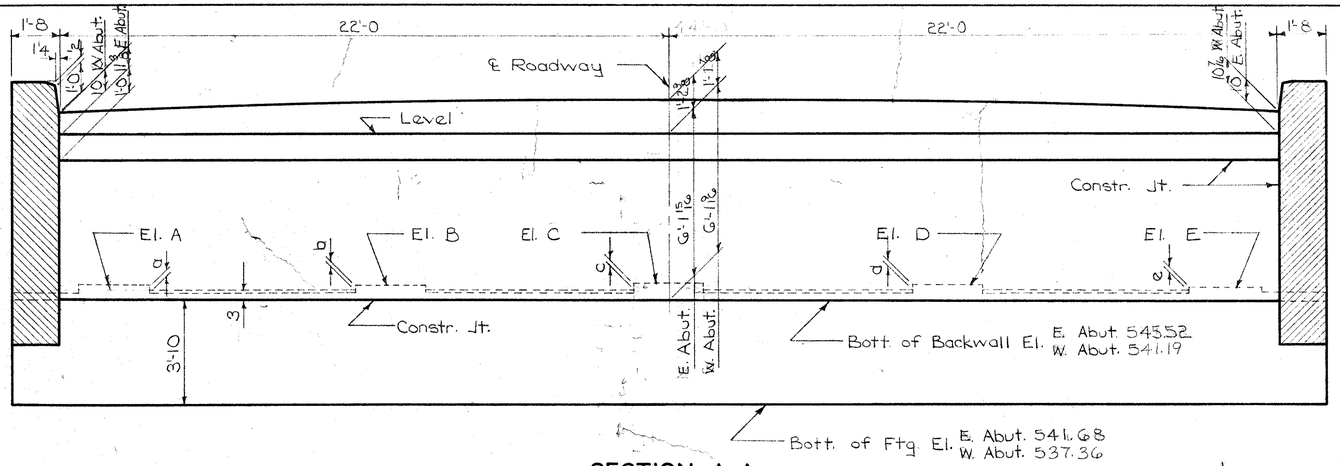
DESIGNED BY: W. A. Lundquist
DETAILED BY: M. A. Wurtele
TRACED BY:
CHECKED BY: H. Trai

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	3		5	21

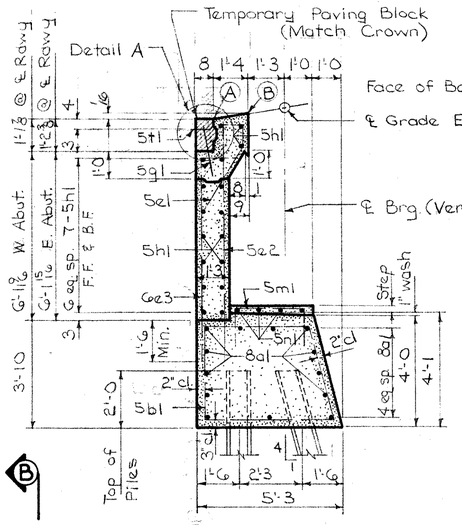
Bench Mark No. 18 Sta. 446+88 Set RR Spike in N. Side 30" Cottonwood on ℄ Elev. 534.91
Bench Mark No 18-B, Sta 446+56.4, 23' Lt., IHC BM in top wing curb Elev. = 549.20

TABLE OF ELEVATIONS		
	E. Abut.	W. Abut.
℄ Grade El.	552.85	548.49
Point A	552.87	548.48
Point B	552.86	548.49



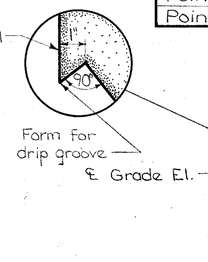
SECTION A-A

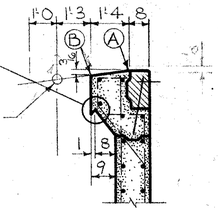
East Abut. Looking West
West Abut. Looking East



SECTION ℄

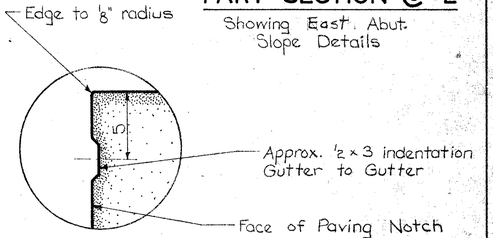
Showing West Abut. Slope Details



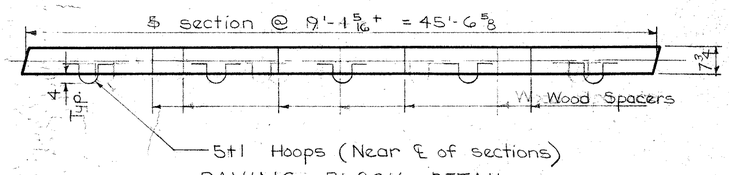


PART SECTION ℄

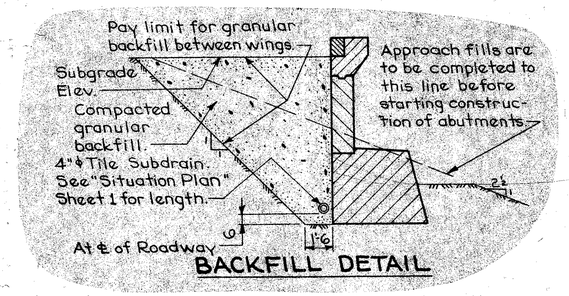
Showing East. Abut. Slope Details



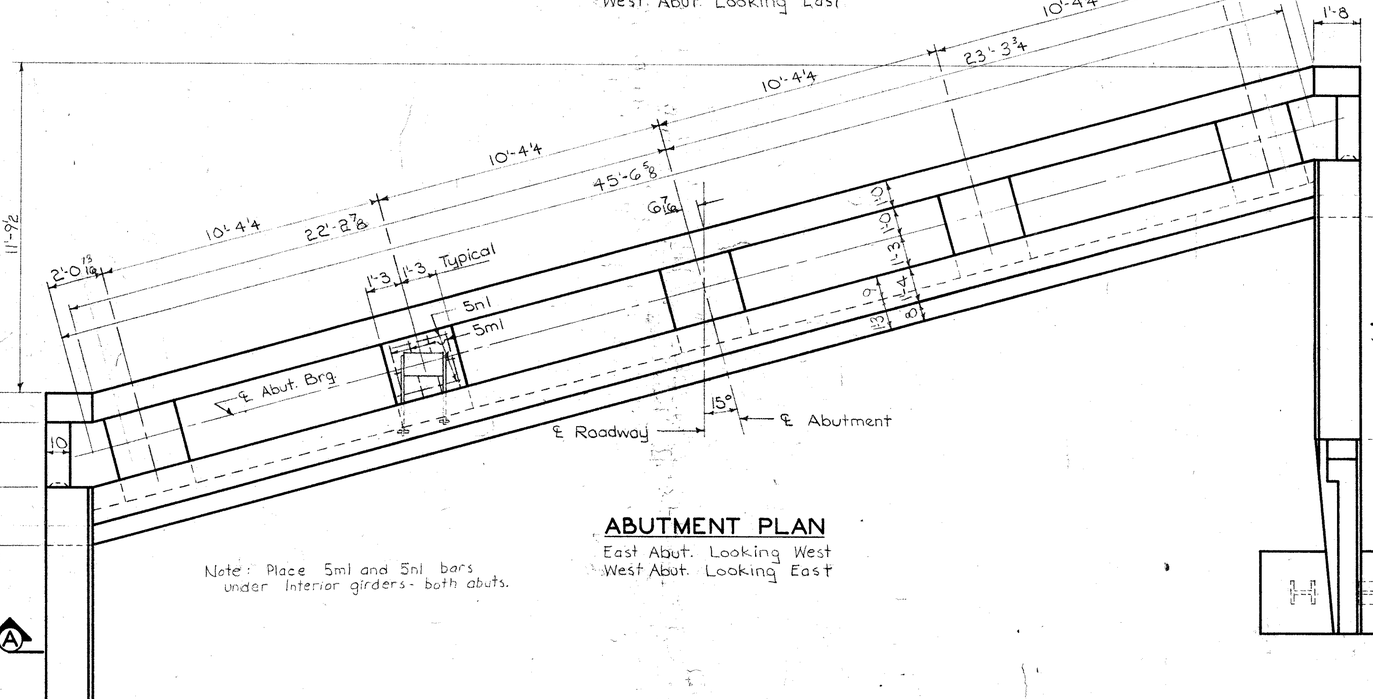
DETAIL A



PAVING BLOCK DETAIL



BACKFILL DETAIL



ABUTMENT PLAN

East Abut. Looking West
West Abut. Looking East

Note: Place 5m1 and 5n1 bars under interior girders - both abuts.

TABLE OF ELEVATIONS		
Elevation	West Abut.	East Abut.
A	541.44	545.87
B	541.60	545.99
*C	541.74	546.09
D	541.62	545.94
E	541.48	545.77
a	0	1/4
b	1 15/16	2 3/4
c	3 1/2	3 15/16
d	2 1/8	2 1/8
e	3/8	0

* Abut. top Elev.

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

ABUTMENT DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

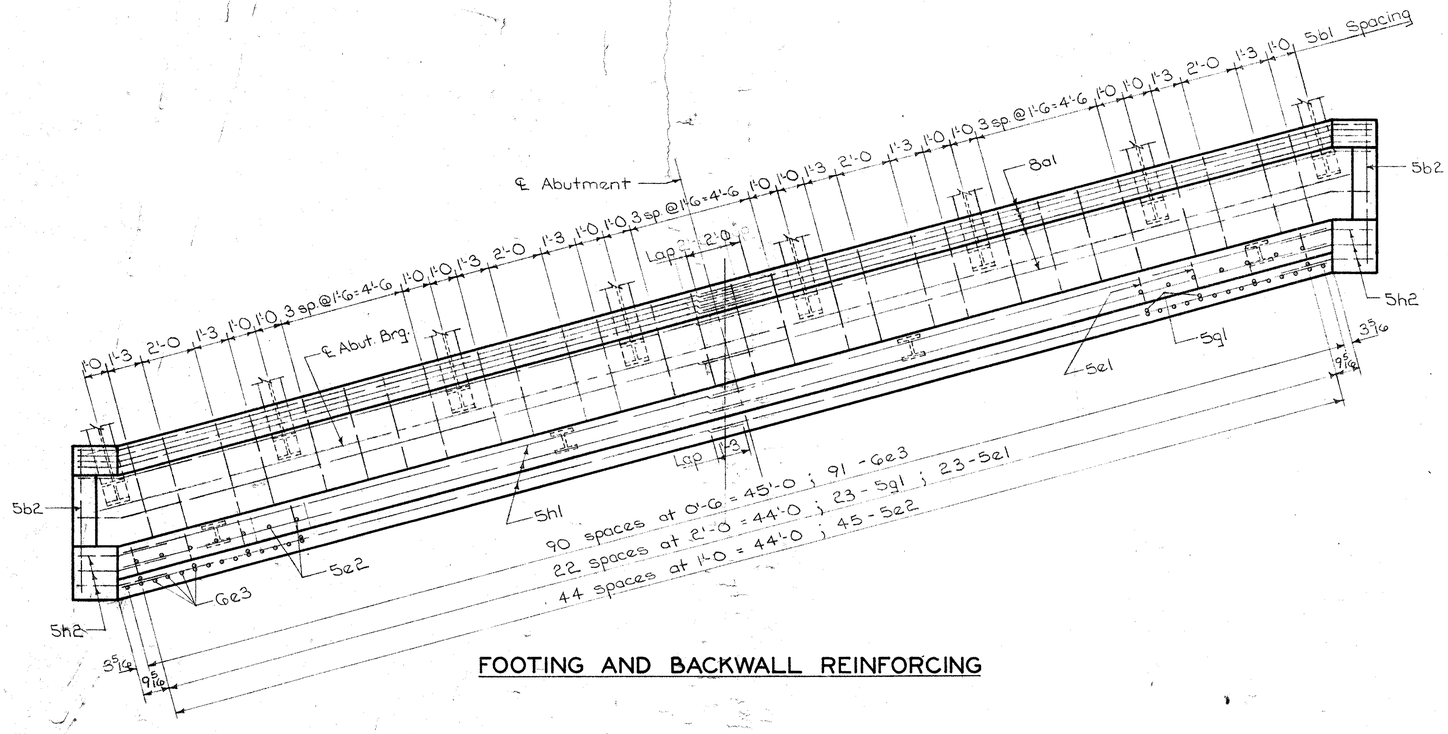
Design Sheet No: 4 Of 19 File No: 23016 Design No: 468

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Thai

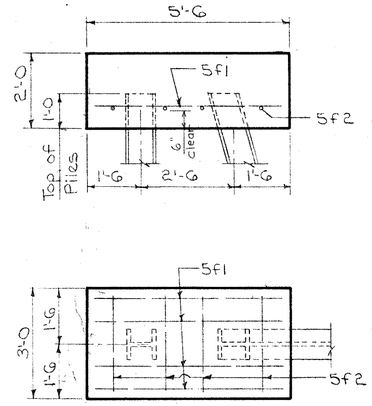
DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(5)--20-29	IOWA	5		6	21

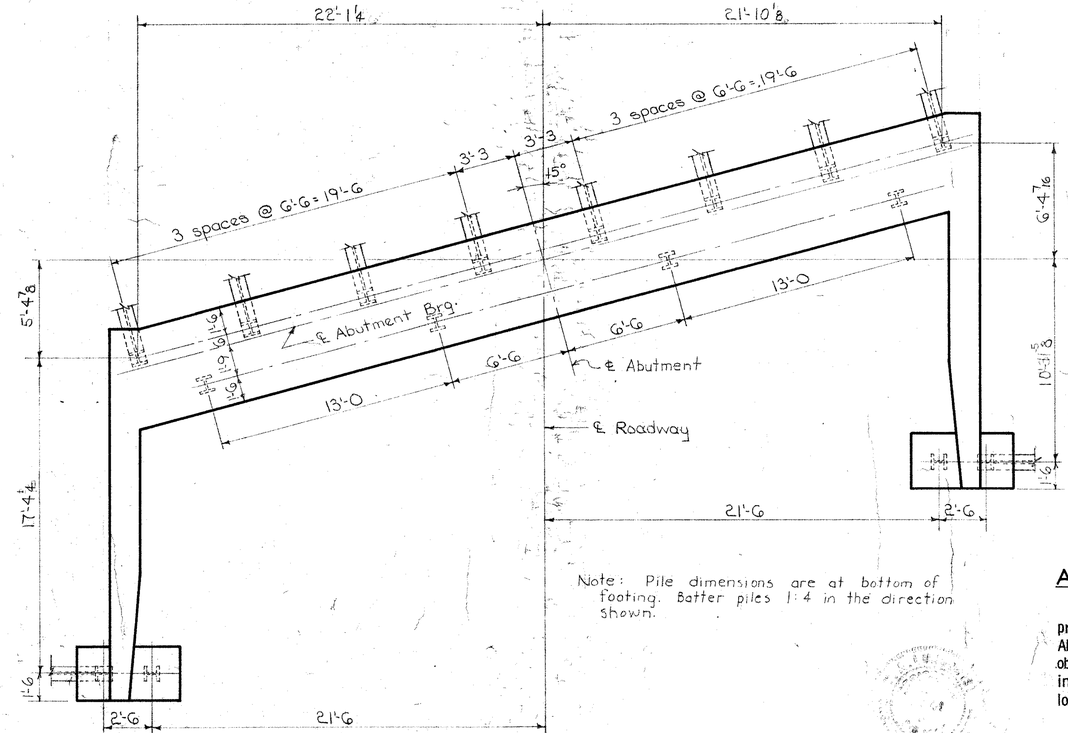
Bench Mark No 18 Sta 446+88 Set R.R. Spike in N. Side 30" Cottonwood on ℄ Elev. 534.91
Bench Mark No 18-B, Sta. 446+56.4, 23' Lt, IHC BM in Lft. wing curb, Elev = 549.20



FOOTING AND BACKWALL REINFORCING



WING FOOTING DETAILS



PILE PLAN

Note: Pile dimensions are at bottom of footing. Batter piles 1:4 in the direction shown.

ABUTMENT PILING NOTE

10BP42 steel bearing piling for East Abutment shall be driven to full penetration if practicable but to a minimum bearing value of 37 tons per pile. Design load for the West Abutment piles is 37 ton. A yield bearing of 93 ton, including drag load, shall be obtained. The yield bearing will be determined by either the pile driving formula bearing multiplied by the appropriate correlation factor for the foundation soil, or by test load. 16 piles are required at each abutment.

Design For 15° Skew
G85'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE
117'-6 End Spans 150'-0 Interior Spans
ABUTMENT DETAILS
Station 450 + 12.5 April 1969
DES MOINES COUNTY
IOWA STATE HIGHWAY COMMISSION
Design Sheet No: 5 Of 19 File No: 23016 Design No: 468

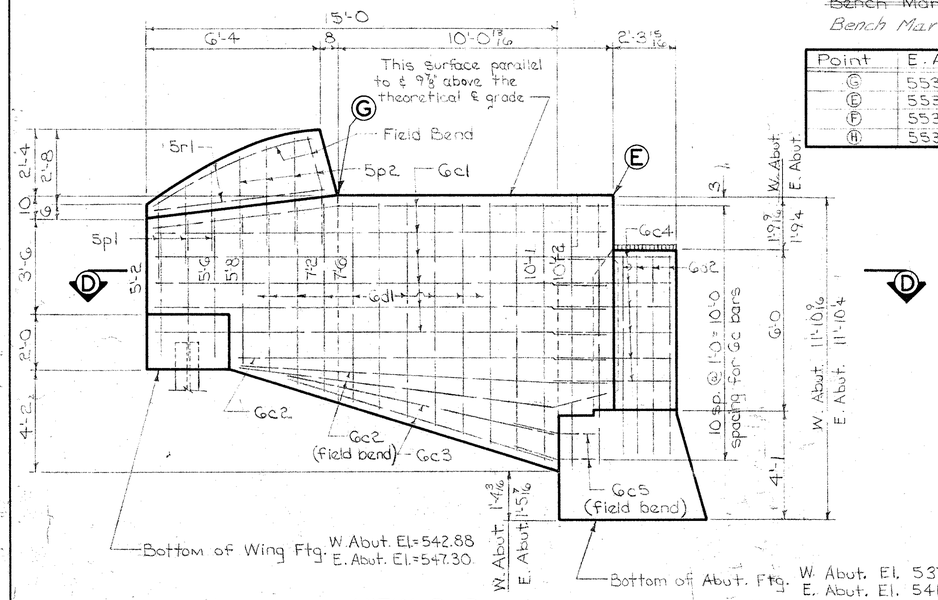
DESIGNED BY: William A. Lundquist
DETAILED BY: Darwin Backaus
TRACED BY:
CHECKED BY: H. Tsai

DES MOINES COUNTY

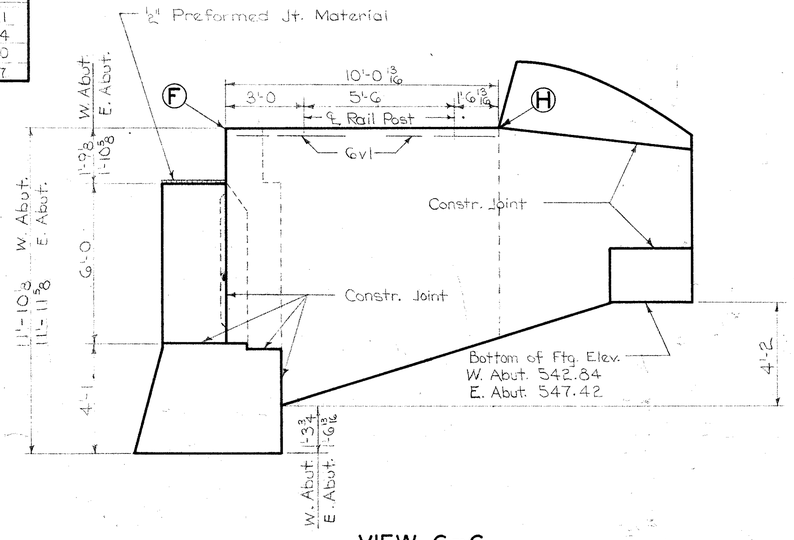
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		7	21

~~Bench Mark No. 18 Sta. 446+66 Set R.R. Spike in N. Side 30" Cottonwood on ℄ Elev. 534.91~~
Bench Mark No. 20C Sta. 453+68.6 IHC B.M. in Rt. Wing Curb. Elev. 553.71

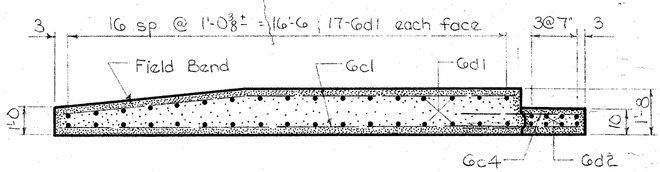
Point	E. Abut.	W. Abut.
G	553.64	549.21
E	553.54	549.24
F	553.68	549.20
H	553.75	549.17



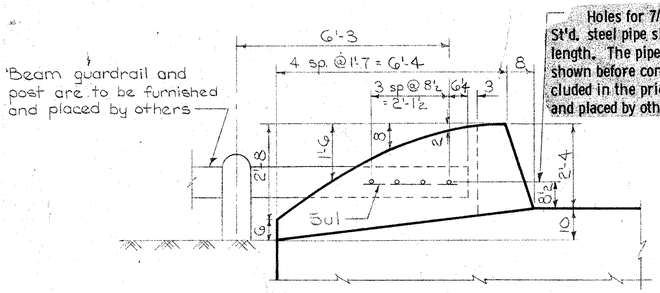
VIEW B-B



VIEW C-C

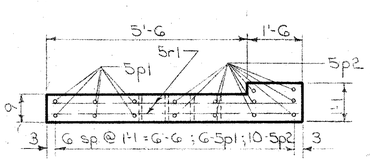


SECTION D-D



Holes for 7/8" ϕ bolts are to be formed with 1" ϕ (nominal dia.) St'd. steel pipe sleeves which are to be galvanized after cutting to proper length. The pipe sleeves shall be securely fixed in exact location as shown before concrete is poured. The cost of pipe sleeves is to be included in the price bid for concrete. The 7/8" ϕ bolts are to be furnished and placed by others.

ELEVATION OF END POST



PLAN OF END POST

* Paving Block may be Class "C" or Class "D" concrete.

ABUTMENT NOTES:

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

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

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

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

The Mask Wall is to be poured before the superstructure slab is poured.

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

The backwall is to be placed after the girders are erected and the masonry plates are properly aligned.

Masonry plates are included in the superstructure estimate.

Cost of all preformed joint and compressible materials is to be included in price bid for concrete.

The concrete paving block is to be placed after the backwall is in place. Bend down 5g1 dowels (structural grade) and line the notch with tarpaper to prevent bond. Block is to be removed and bar straightened before pavement is placed.

CONCRETE PLACEMENT QUANT.-ONE ABUT.

Item	Unit	Quantity
Footing and Steps	Cu.Yd.	34.7
Backwall Below Constr. Joint	Cu.Yd.	10.9
Backwall Above Constr. Joint	Cu.Yd.	5.0
Wings and Wing Footings	Cu.Yd.	17.4
Maskwalls	Cu.Yd.	0.9
End Posts	Cu.Yd.	0.8
~~* Paving Block~~	Cu.Yd.	~~11.~~
		68.7
Total	Cu.Yd.	~~70.8~~

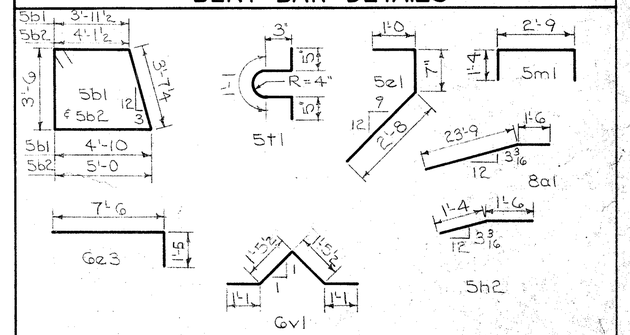
ESTIMATED QUANTITIES-TWO ABUTMENTS

Item			Unit	Quantity	
Structural Concrete Class C			Cu.Yd.	~~15.4~~ 14.6	1384
Reinforcing Steel			Lbs.	~~15,000~~	14,976
10BP42 Steel	Furnish	~~32 @ 60'~~	L.F.	~~1920~~	2539
Bearing Piling	Drive	~~32 @ 60'~~	L.F.	~~1920~~	2539
Class 20 Excavation			Cu.Yd.	190	
Granular Backfill			Cu.Yd.	218	

REINFORCING BAR LIST - ONE ABUTMENT

Bar	Location	Shape	No.	Length	Weight
8a1	Footing Longitudinal	—	26	25'-3	1753
5b1	" Hoops	▭	28	16'-7	484
5b2	" " Ends	▭	2	16'-11	35
Gc1	Wing Horizontal	—	24	16'-8	601
Gc2	" "	—	12	13'-8	246
Gc3	" "	—	8	10'-0	120
Gc4	Maskwall "	—	24	4'-5	159
Gc5	Wing Dowels	—	8	4'-0	48
Gd1	Wing Vertical	—	68	Shown	796
Gd2	Maskwall Vertical	—	16	7'-4	176
5e1	Backwall Transverse	⌐	23	4'-2	100
5e2	" Vertical F.F.	—	45	8'-8	407
Ge3	" " B.F.	⌐	91	8'-10	1207
5f1	Wing Footing	—	8	5'-2	43
5f2	" "	—	8	2'-8	22
*5g1	Paving Dowels	—	23	2'-0	48
5h1	Backwall Horizontal	—	34	23'-5	830
5h2	" to Wing Dowels	⌐	34	2'-10	100
5m1	Girder Steps Transverse	⌐	12	5'-3	66
5n1	Girder Steps Longitudinal	—	12	2'-2	27
5p1	End Post Vertical	—	12	3'-3	41
5p2	" " "	—	20	3'-10	80
5r1	End Post Horizontal	—	8	6'-8	56
~~5t1~~	~~Paving Block Lifting Hook~~	U	~~5~~	~~2'-3~~	~~12~~
5u1	End Post Horizontal	—	4	3'-0	13
Gv1	Rail Post Anchor	⌒	4	5'-0	30
* Structural Grade			Total	lbs.	~~7500~~ 7488

BENT BAR DETAILS



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

Design For 15° Skew

685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

ABUTMENT DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

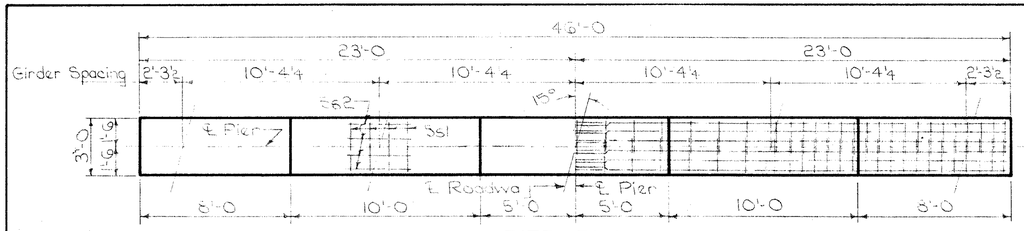
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 6 Of 19 File No: 23016 Design No: 468

DESIGNED BY: W.A. Lindquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

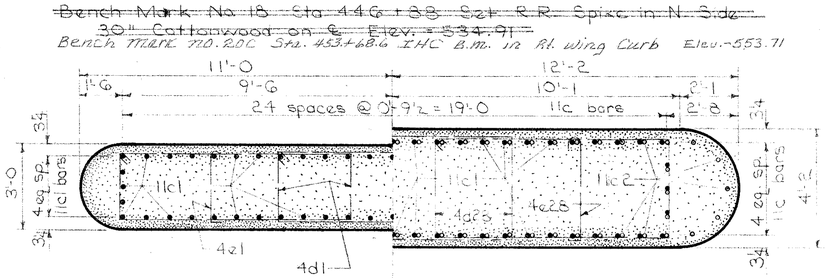
DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		8	21



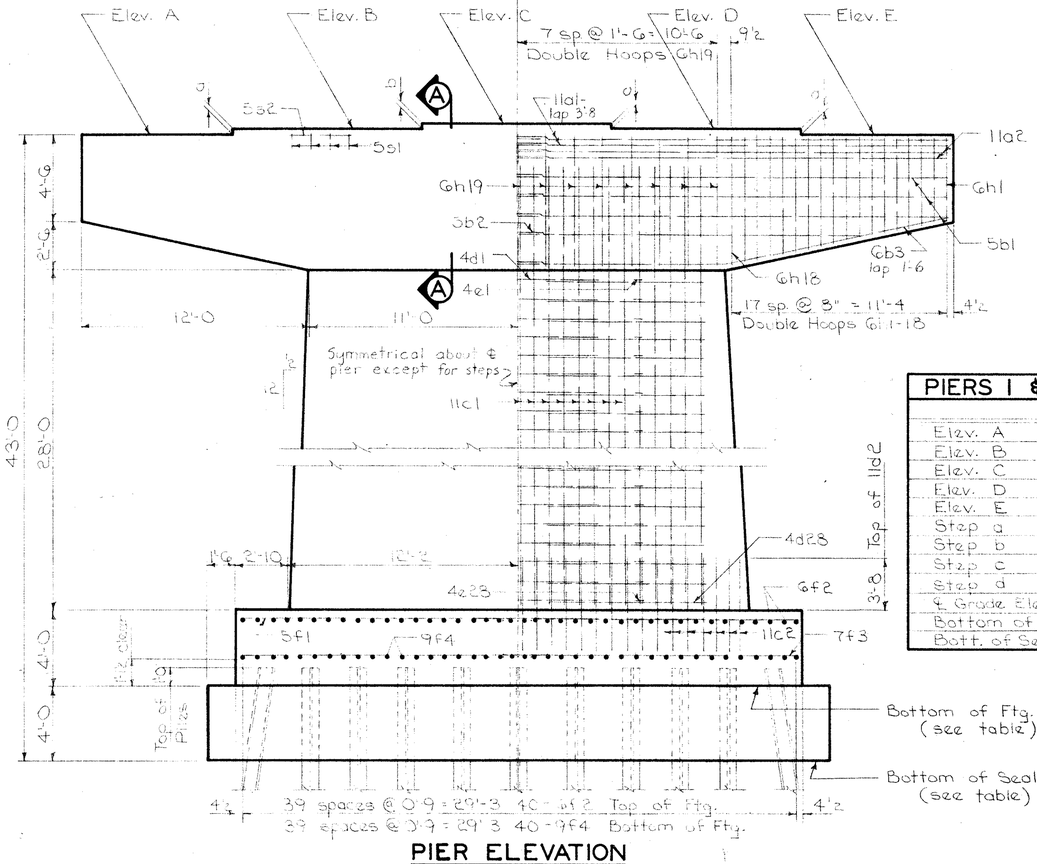
PIER PLAN

NOTE: Place mat of 5s1 & 5s2 bars under interior beams only.



TOP OF COLUMN BOTTOM OF COLUMN

COLUMN PLAN

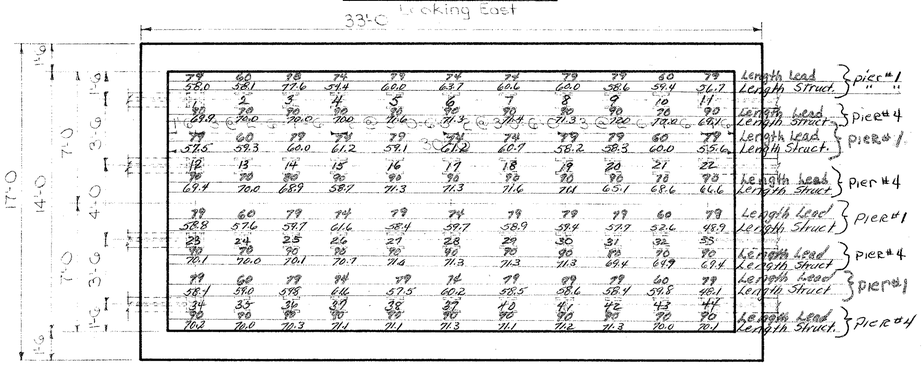


PIER ELEVATION

looking East

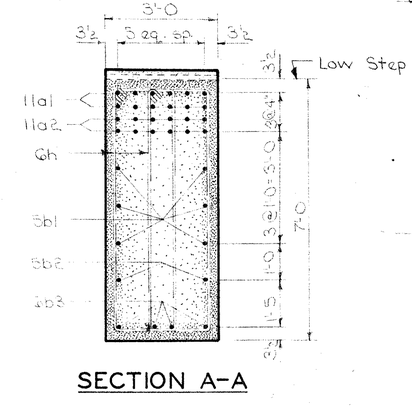
PIERS 1 & 4 ELEVATIONS

	Pier 1	Pier 4
Elev. A	541.17	544.01
Elev. B	541.33	544.18
Elev. C	541.47	544.33
Elev. D	541.35	544.23
Elev. E	541.21	544.10
Step a	1 5/16	2 1/16
Step b	1 5/8	1 3/4
Step c	1 3/8	1 1/4
Step d	1 1/16	1 3/16
℄ Grade Elev.	546.92	551.78
Bottom of Ftg.	502.17	505.01
Bott. of Seal Coat	498.17	501.01

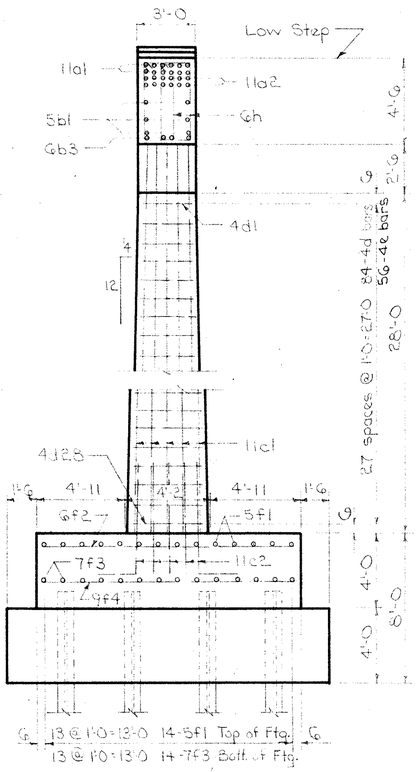


FOOTING PLAN

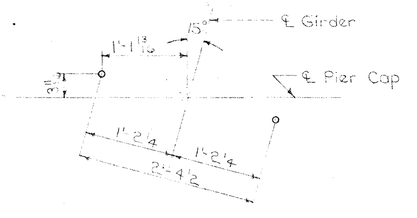
Note: Pile spacing shown is at bottom of footing
Batter piles 1:4 in the direction shown.



SECTION A-A



END ELEVATION

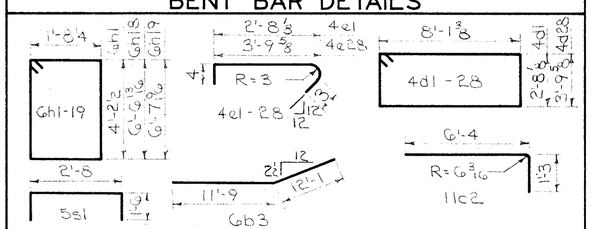


ANCHOR BOLT LOCATION

REINFORCING BAR LIST - ONE PIER

Bar	Location	Shape	No.	Length	Weight
11a1	Cap Longit. Top	—	24	24'-8	3145
11a2	" "	—	24	24'-8	3145
5b1	" " Middle	—	12	23'-6	294
5b2	" "	—	4	19'-8	82
Gb3	" " Bottom	⌒	8	23'-10	286
11c1	Column Vertical	—	56	33'-6	9967
11c2	" " Dowel	⊓	66	7'-4	2571
4d1-28	" Hoops	▭	84	Varies	1314
4e1-28	" Ties	▭	56	Varies	140
5f1	Footing Top Longit.	⌐	14	29'-8	433
6f2	" - " Trans.	—	40	13'-8	821
7f3	" Bottom Longit.	—	14	29'-8	849
9f4	" " Trans.	—	40	13'-8	1859
Gh1-18	Cap Hoops	▭	72	Varies	1622
Gh19	" "	▭	30	17'-6	789
5s1	Pier Cap Trans.	⌐	12	5'-6	69
5s2	" " Longit.	—	12	3'-6	44
				Total	27,450

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANTITIES

Cap	33.2 Cu. Yd.
Column	83.9 Cu. Yd.
Footing	62.2 Cu. Yd.
Total	179.3 Cu. Yd.

ESTIMATED QUANTITIES - TWO PIERS

Item		Quantity
Structural Concrete Class C		358.6 Cu. Yd.
Reinforcing Steel		54,860 Lbs.
Concrete Seal Coat Class X		166.2 Cu. Yd.
10BP42 Steel	Furnish 88 @ ~~40~~ ~~35'-0~~ ~~35'-6~~ ~~35'-0~~	L. F.
Bearing Piling	Drive 88 @ ~~40~~ ~~35'-0~~ ~~35'-6~~ ~~35'-0~~	L. F.
Class 20 Excavation		33 Cu. Yd.
Class 21 Excavation		576 Cu. Yd.

PIER NOTES

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

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

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

Anchor bolts are to be preset in piers in accordance with the Standard Specifications. The weight of anchor bolts is included in the structural steel quantity.

All piling shall be driven to full penetration if practicable but to at least 37 ton bearing value per pile.

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

Design For 15° Skew

G85'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

PIERS 1 & 4 DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

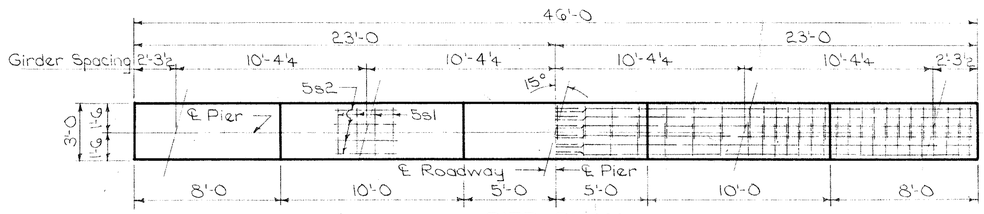
IOWA STATE HIGHWAY COMMISSION

Des. Sh. No. 7 of 19 File No 23016 Des. No. 468

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: M. Trai

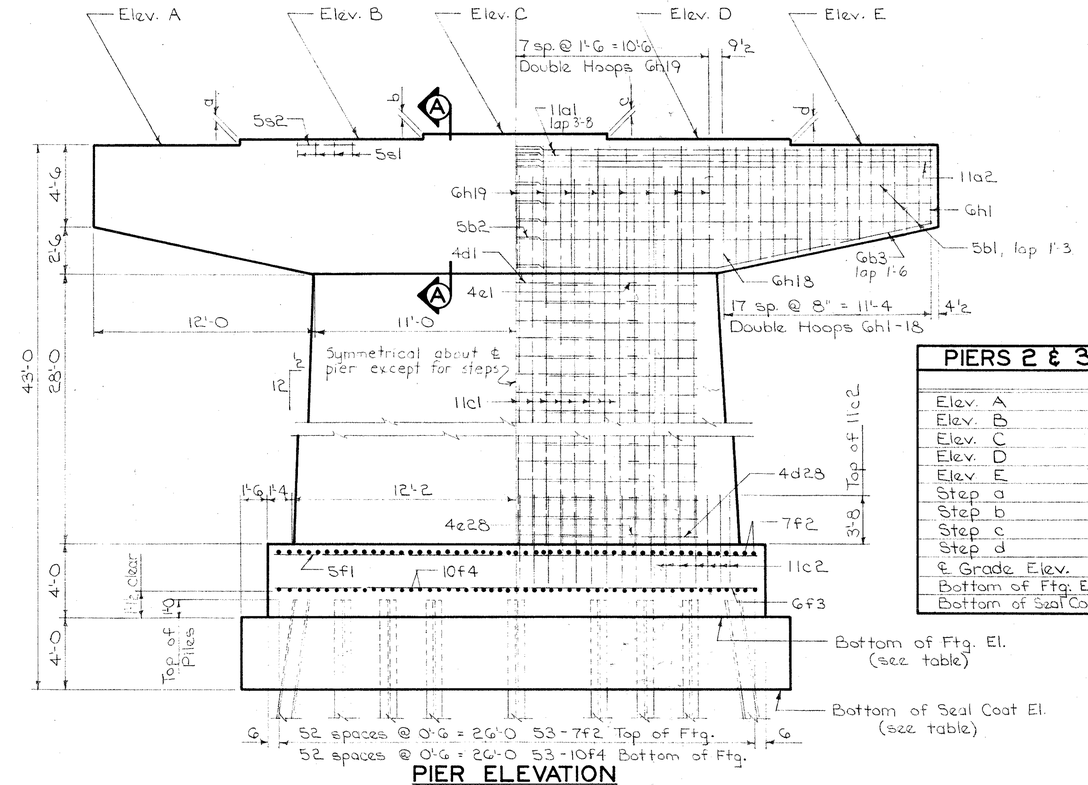
DES MOINES COUNTY | PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		9	27



PIER PLAN

NOTE: Place mat of 5s1 & 5s2 bars under interior beams only.

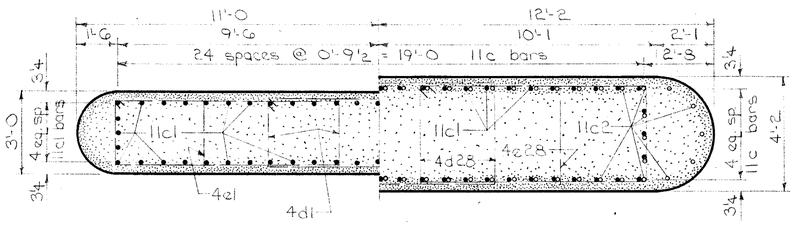


PIER ELEVATION

Looking East

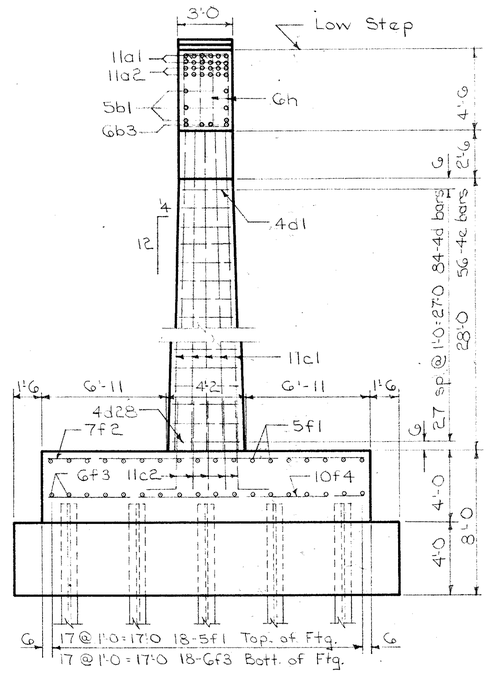
PIERS 2 & 3 ELEVATIONS		
	Pier 2	Pier 3
Elev. A	541.90	542.84
Elev. B	542.06	543.01
Elev. C	542.20	543.16
Elev. D	542.09	543.05
Elev. E	541.96	542.92
Step a	2	2 1/16
Step b	1 1/16	1 3/4
Step c	1 5/16	1 5/16
Step d	1 5/8	1 9/16
℄ Grade Elev.	549.66	550.61
Bottom of Ftg. El.	502.90	503.84
Bottom of Seal Coat	498.90	499.84

~~Bench Mark No. 15 Sta. 446+88 Set R.R. Spike in N. Side 30" Cottonwood on ℄ Elev. 534.91~~

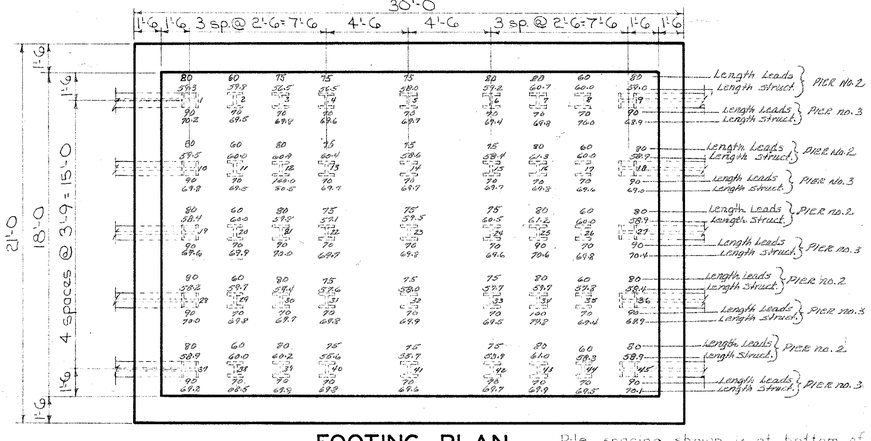


TOP OF COLUMN BOTTOM OF COLUMN

COLUMN PLAN

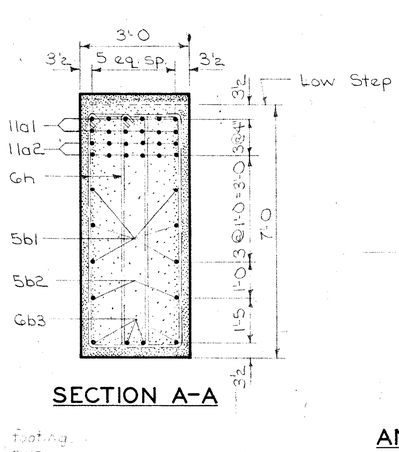


END ELEVATION

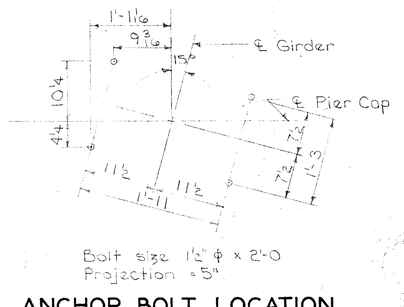


FOOTING PLAN

Pile spacing shown is at bottom of footing. Batter piles 1:4 in the direction shown.



SECTION A-A



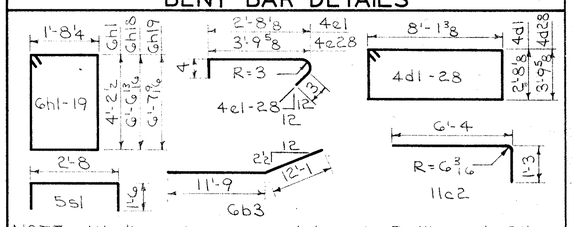
Bolt size 1½" ϕ x 2'-0
Projection = 5"

ANCHOR BOLT LOCATION

REINFORCING BAR LIST - ONE PIER

Bar	Location	Shape	No.	Length	Weight
11a1	Cap Longit. Top	—	24	24'-8	3145
11a2	" "	—	24	24'-8	3145
5b1	" " Middle	—	12	23'-6	294
5b2	" "	—	4	19'-8	82
Gb3	" " Bottom	—	8	23'-10	286
11c1	Column Vertical	—	56	33'-6	9967
11c2	" " Dowel	⌐	66	7'-4	2571
4d1-28	" Hoops	▭	84	Varies	1314
4e1-28	" Ties	⌐	56	Varies	140
5f1	Footing Top Longit.	—	18	26'-8	501
7f2	" " Trans.	—	53	17'-8	1914
Gf3	" Bottom Longit	—	18	26'-8	721
10f4	" " Trans	—	53	17'-8	4029
Gh1-18	Cap Hoops	▭	72	Varies	1622
Gh19	" "	▭	30	17'-6	789
5s1	Pier Cap Trans	⌐	12	5'-6	69
5s2	" " Longit.	—	12	3'-6	44
				Total lbs.	30,633

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANTITIES

Cap	33.2	Cu.Yd.
Column	83.9	Cu.Yd.
Footing	72.0	Cu.Yd.
Total	189.1	Cu.Yd.

ESTIMATED QUANTITIES - TWO PIERS

Item		Quantity	
Structural Concrete Class C		378.2	Cu.Yd.
Reinforcing Steel		61,266	Lbs.
Concrete Seal Coat Class X		186.6	Cu.Yd.
10BP42 Steel	Furnish 90 @ ~~40~~	3,~~600~~	L.F.
Bearing Piling	Drive 90 @ ~~40~~	3,~~600~~	L.F.
Class 20 Excavation		37	Cu.Yd.
Class 21 Excavation		899	Cu.Yd.

PIER NOTES

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

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

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

Anchor bolts are to be preset in piers in accordance with the Standard Specifications. The weight of anchor bolts is included in the structural steel quantity.

Reinforcing bars may be shifted slightly to clear anchor bolts.

All piling shall be driven to full penetration if practicable but to at least 40 ton bearing value per pile.

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

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

PIERS 2 & 3 DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

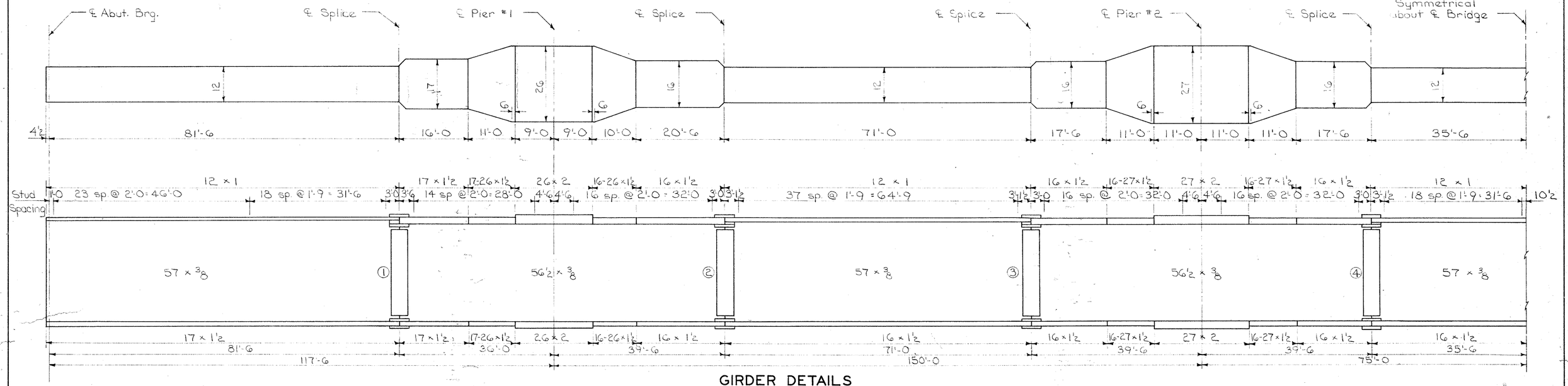
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 8 Of 19 File No: 23016 Design No: 468

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

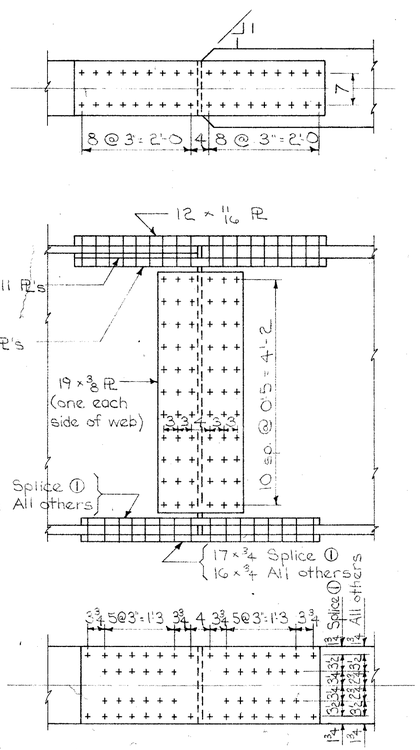
DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-GI-2(3)--20-29	IOWA	5		10	21

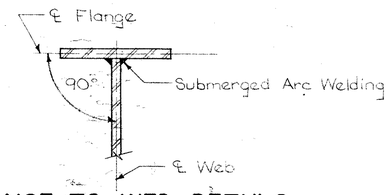


GIRDER DETAILS

NOTE: Encircled figures indicate splice number.

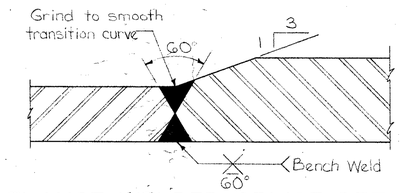


GIRDER SPLICE DETAILS



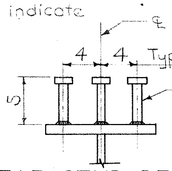
FLANGE TO WEB DETAILS

FLANGE TO WEB WELD SIZE	
Size of Fillet Weld	Flange Thickness
5/16	1 to 1½
3/8	2

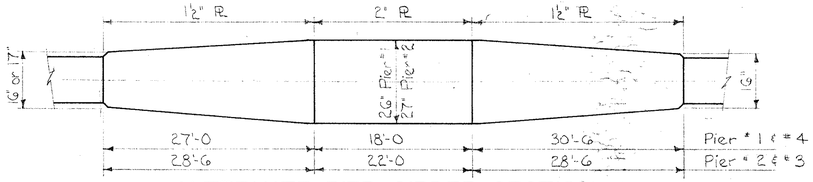


FLANGE WELDED SPLICE DETAIL

NOTE: All flange butt-welded joints are to be radiographed full width.



SHEAR STUD DETAIL



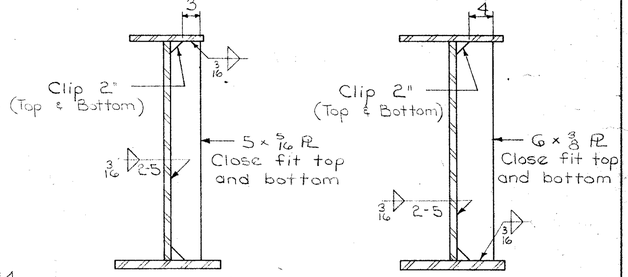
ALTERNATE PIER GIRDER SECTION

May be used at the fabricaters option. The pay weight of structural steel shall be as shown on the plans. Any additional cost by using this alternate shall be adsorbed by the fabricator.

ROCKER AND EXPANSION PLATE SETTINGS

Temp. at time of setting	West Abut	Pier 1	Pier 2	Pier 3	Pier 4	East Abut
10°	4	-1/16	0	0	-1/16	4
50°	3	0	0	0	0	3
90°	2	1/16	0	0	1/16	2

NOTE: Tilt rockers in direction shown for temp. below 50°, and in opposite direction for temp. above 50°. Settings for other temp. are proportional.



STIFFENER "A"

STIFFENER "B"

INTERMEDIATE STIFFENER DETAILS

Continuous 3/16" fillet welds may be substituded for the intermittent stiffener to web welds shown.

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

SUPERSTRUCTURE DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

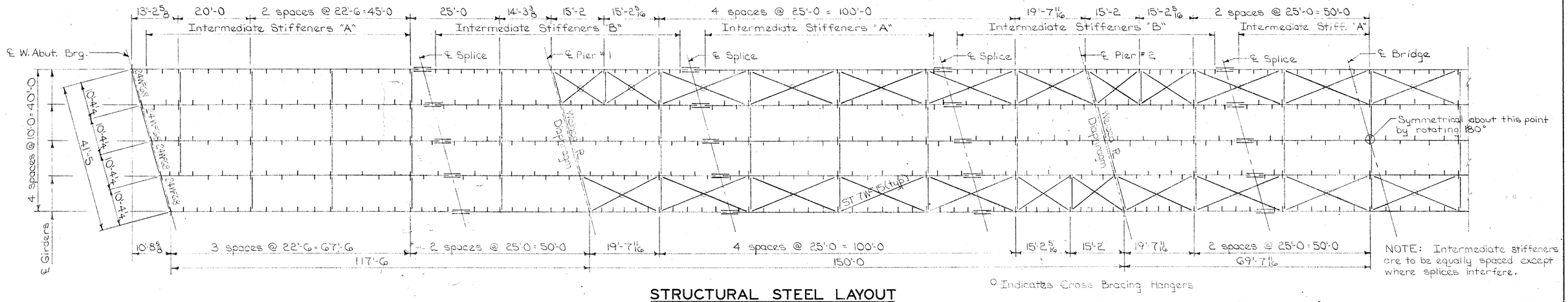
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 9 Of 19 File No: 23016 Design No: 468

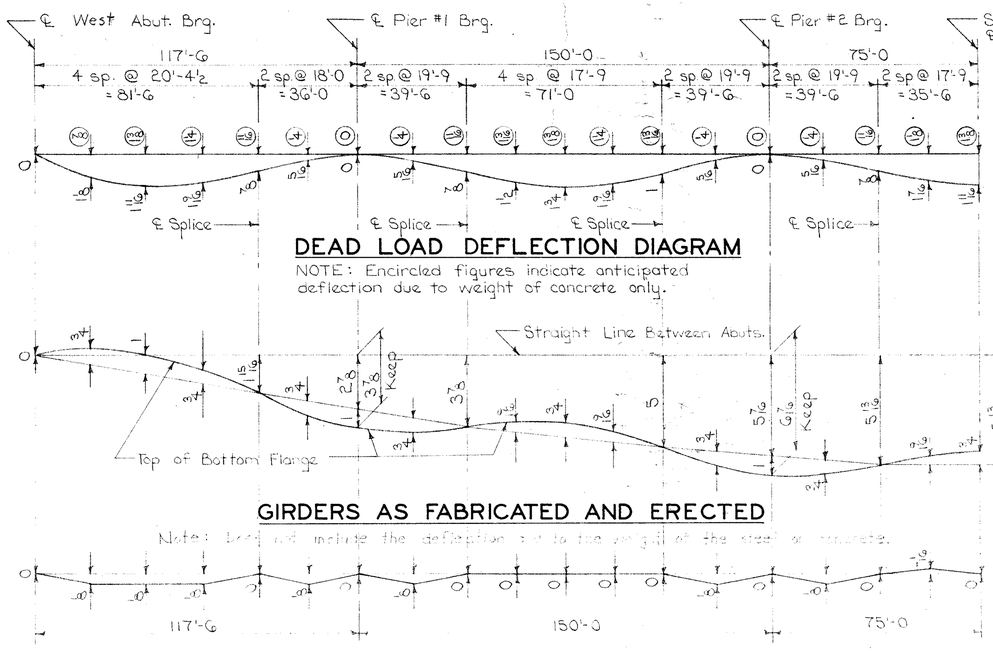
DESIGNED BY: W.A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-GI-2(9)--20-29	IOWA	5		11	21



STRUCTURAL STEEL LAYOUT



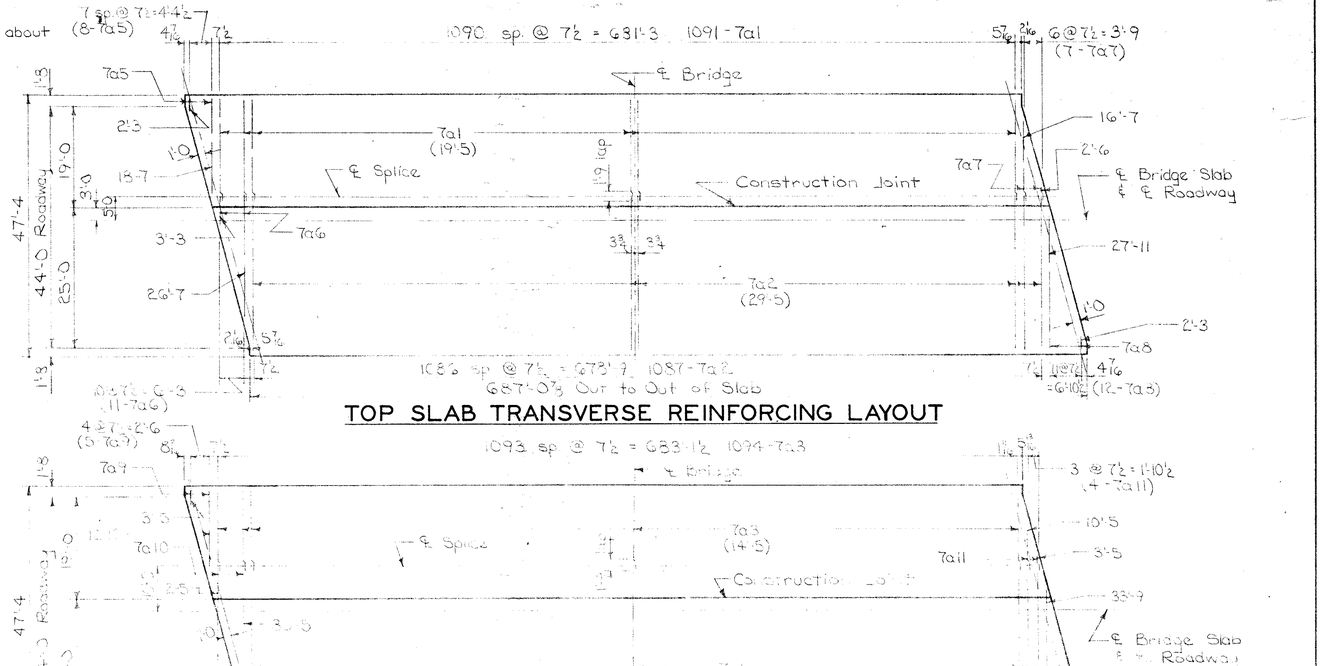
DEAD LOAD DEFLECTION DIAGRAM

NOTE: Encircled figures indicate anticipated deflection due to weight of concrete only.

GIRDERS AS FABRICATED AND ERECTED

Note: Increase or decrease the deflection given to the weight of the steel or concrete.

SLAB THICKENING DIAGRAM



MOMENT AND REACTION TABLE (Moment in Foot-Kips Reaction in Kips)

Load			Positive Mom. End Spans		Negative Mom. Pier #1 & #2		Positive Mom. Int. Spans		Negative Mom. Pier #1 & #2		Positive Mom. Center Span		Adj. Girder Reaction		Pier #1 & #2 Reaction		Pier #3 Reaction	
	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.
D.L. #1	1.160	1.300	986	1049	2465	2762	786	881	2485	2783	775	866	47.2	52.9	176.0	197.2	174.8	195.2
D.L. #2	.430	.200	+32	187	776	361	415	195	812	378	397	185	15.7	6.7	60.3	23.7	64.7	30.1
U.L.L.	.492	.582	——	——	1061	1255	——	——	1193	1411	——	——	——	——	79.5	94.4	54.6	100.0
*C.L.L.	13.90	16.86	——	——	334	394	——	——	351	415	——	——	——	——	——	——	——	——
	20.09	23.64	——	——	——	——	——	——	——	——	——	——	——	——	20.0	23.6	20.0	23.6
n520-44	24.58	27.09	1159	1370	——	——	1203	1425	——	——	1215	1436	50.0	59.1	——	——	——	——
Impact	——	——	239	282	269	318	219	259	281	332	224	265	10.2	12.2	19.5	22.5	19.0	22.5
Total	——	——	——	——	4905	5090	——	——	5125	5324	——	——	126.2	132.9	353.0	367.7	332.9	371.4

NOTE:
* Upper figure is for moment ; Lower is for shear.

Design For 15° Skew

685'-0 × 44'-0 CONTINUOUS WELDED GIRDER DETAILS

117'-6 End Spans 150'-0 Interior Spans

SUPERSTRUCTURE DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

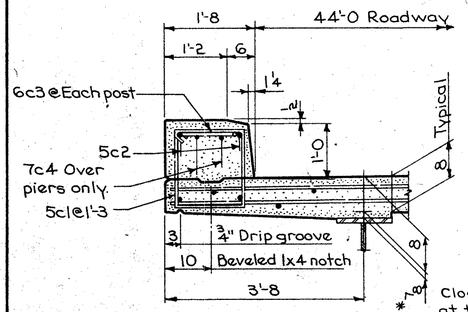
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 10 Of 21 File No: 23016 Design No: 468

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
(3)--2C-23	IOWA	5		12	21



CURB DETAILS

SUPERSTRUCTURE NOTES:

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

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

The floor slab as shown includes ½" of wearing surface.

All field connections are to be bolted using "High Tensile Strength Bolts". Unless otherwise noted, all open holes are to be 15/16" ϕ and all bolts are to be ⅞" ϕ.

Bottom flanges are to be perpendicular to webs at the reaction points.

All paint is to be omitted on tops of top flanges and on other steel surfaces in contact with concrete. Parts inaccessible after erection are to be given three coats of paint in the shop.

Forms for the slab and curb are to be supported by the girders.

Fill thicknesses shown on plans are based on the nominal girder dimensions. These thicknesses are to be verified or adjusted during fabrication to secure a close fit. Each fill plate shall fit to the nearest 1/16" in thickness and single plates are required at any fill location. Girders are to be truly square at splice points with flanges perpendicular to webs.

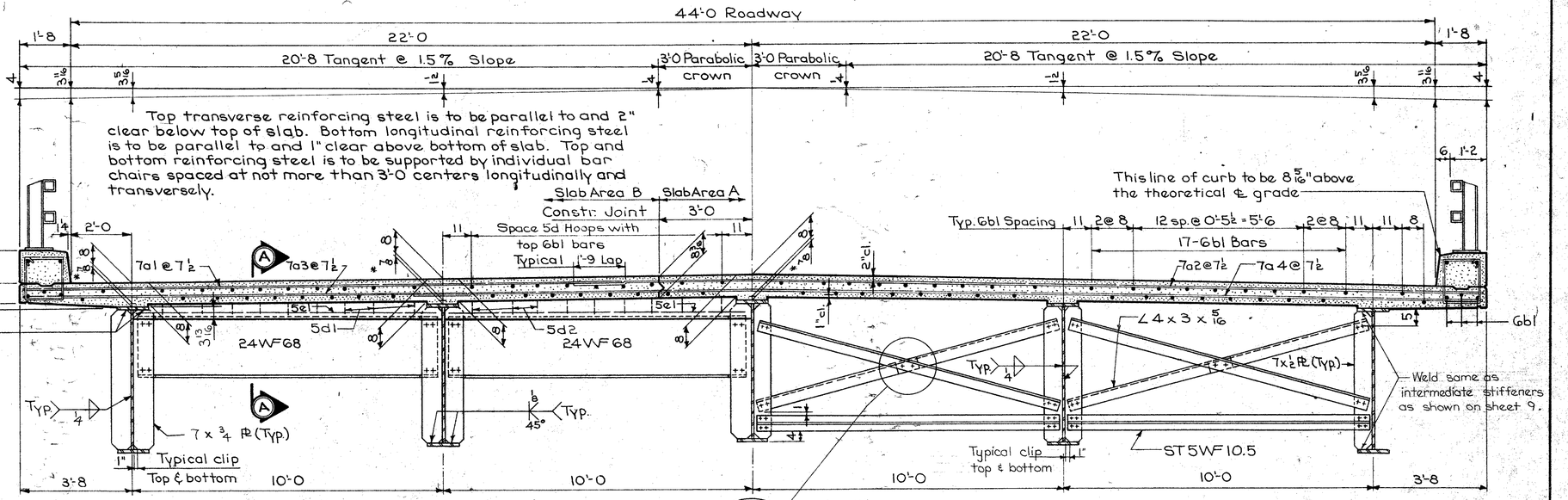
The design drawings indicate AWS prequalified welded joints, and unless otherwise noted the design joint details are for manual shielded metal-arc welding. Alternate joint details may be submitted for approval.

The stiffener to flange welds are not to intersect the longitudinal flange to web welds.

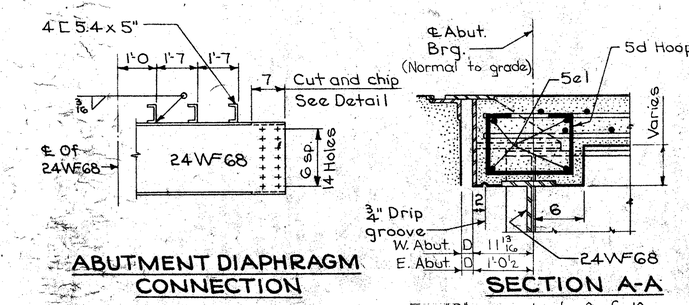
Magnetic particle inspection of welds, in accordance with Article 2408.15 of the Standard Specifications, will be required for the web to flange welds and the bearing stiffener welds of the girders.

The stiffener to flange welds are not to intersect the longitudinal flange to web welds.

Faying surfaces of diaphragm connections are to be given the shop coat of paint.



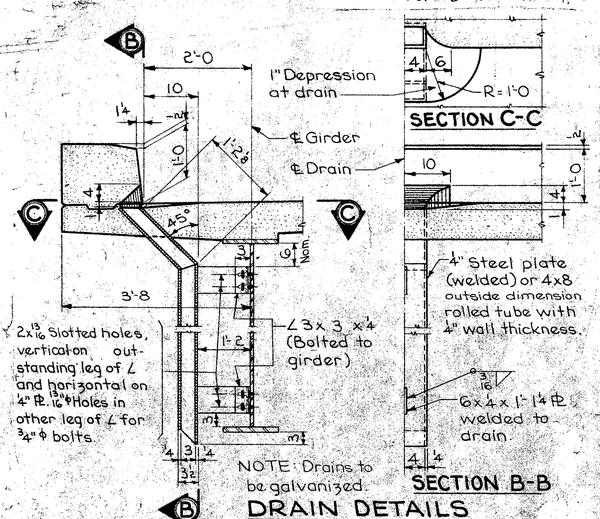
HALF SECTION NEAR ABUTMENT



ABUTMENT DIAPHRAGM CONNECTION

SECTION A-A

For "D" see sheet 9 of 19

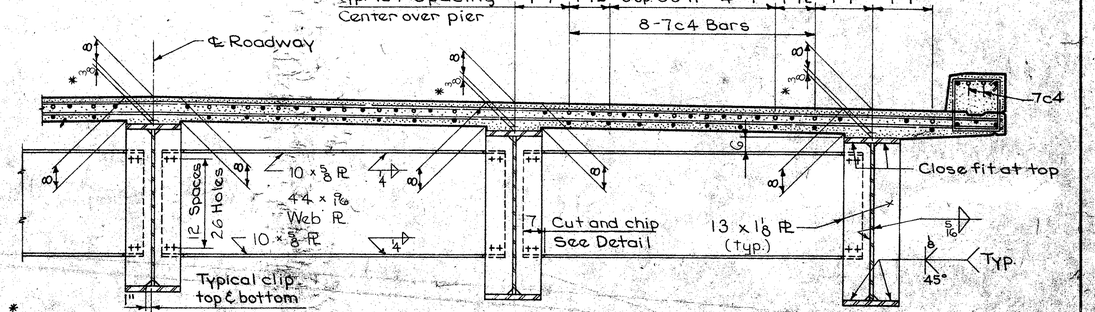


SECTION B-B

DRAIN DETAILS

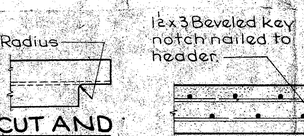
HALF INTERMEDIATE SECTION

NOTE: Bottom of slab is a straight line between tops of haunches.



* The haunch dimensions shown are nominal haunch dimensions at bearings. For the slab thickness over the beam at any location the nominal haunch dimension is to be increased by the amount indicated on the "Haunch Thickening Diagram" shown on Sheet 10 and may be further increased or decreased a maximum of ¼" due to beam camber inaccuracies.

PART SECTION NEAR PIER



TYPICAL CUT AND CHIP DETAIL

CONSTRUCTION JOINT DETAIL

AREA OF SLAB:
Area A = 18.056 sq. ft.
Area B = 13.937 sq. ft.
AREA OF ONE CURB = 1.689 sq. ft.

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

SUPERSTRUCTURE DETAILS

Station 450+12.5 April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 11 Of 19 File No: 23016 Design No: 468

DESIGNED BY: W. A. Lundquist TRACED BY:
DETAILED BY: Darwin Backous CHECKED BY: M. Trail

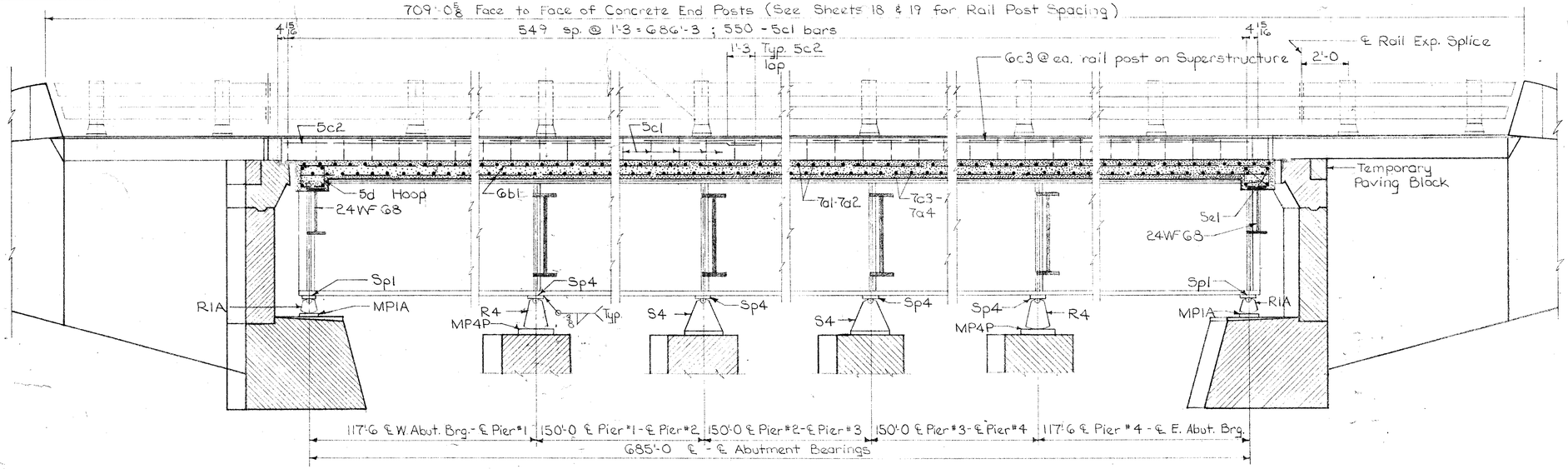
WELDED GIRDER CROSS SECTION - 44' ROADWAY

STANDARD SHEET 4072

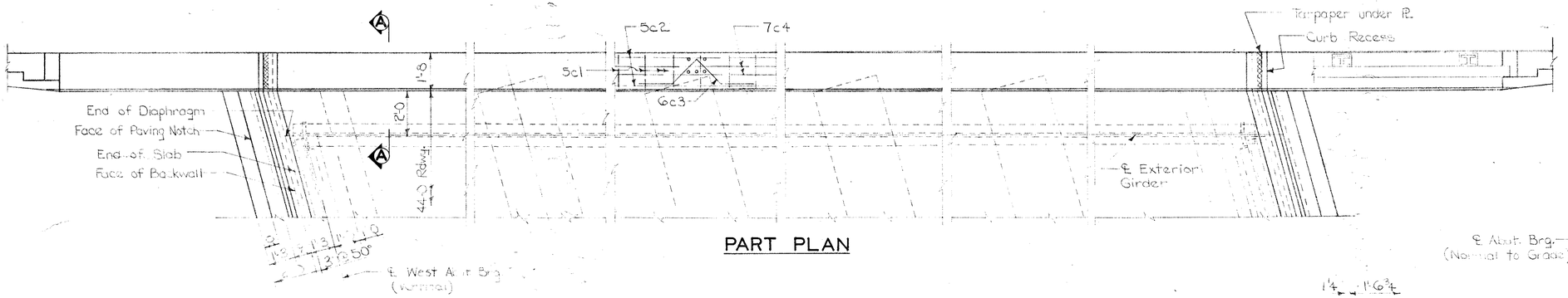
DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-612(3)--20-29	IOWA	5		13	21

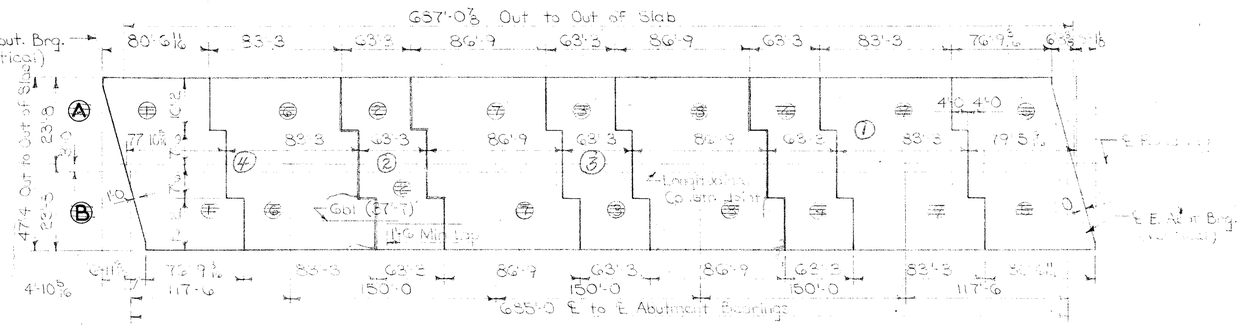
This sheet for welded girder bridges with web depths greater than 45" and skew angle of not more than 30° without intermediate web stiffeners.



PART LONGITUDINAL SECTION NEAR CURB



PART PLAN



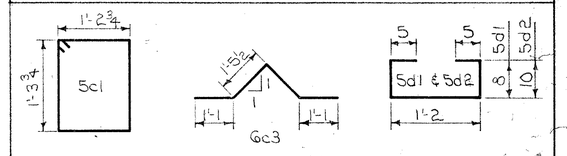
CONCRETE PLACEMENT DIAGRAM & LONGIT REINFORCING

NOTE: Roadway slab shall be placed in sections and in sequence indicated by encircled numbers on placement diagram and preferably at intervals not exceeding 24 hours. Curbs may be placed continuously. All slab reinforcing steel is to be in place before any section is poured. Alternate procedures for placing concrete may be submitted for approval, together with a statement of the proposed method, and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result.

REINFORCING BAR LIST

Bar	Location	Shape	No.	Length	Weight
7a1	Slab Transverse Top	—	1091	19'-5	43300
7a2	" " "	—	1087	29'-5	65360
7a3	" " Bottom	—	1094	14'-5	32238
7a4	" " "	—	1085	34'-5	76328
7a5	" " Top	—	8	Varies	170
7a6	" " "	—	11	Varies	335
7a7	" " "	—	7	Varies	137
7a8	" " "	—	12	Varies	370
7a9	" " Bottom	—	5	Varies	83
7a10	" " "	—	13	Varies	436
7a11	" " "	—	4	Varies	56
7a12	" " "	—	14	Varies	531
6b1	Slab Longit. Top & Bottom	—	1482	37'-7	83658
5c1	Curb Hoops	▭	1100	5'-10	6692
5c2	Curb Longitudinal	—	76	37'-5	2966
6c3	Rail Post Anchors	∧	162	5'-0	1217
7c4	Slab & Curb Longit. @ Piers	—	152	30'-0	9321
5d1	Slab Hoops @ Abut.	⊓	36	3'-0	113
5d2	" " " "	⊓	36	3'-4	125
5e1	" Trans. " "	—	32	10'-0	334
				Total (lbs.)	323770

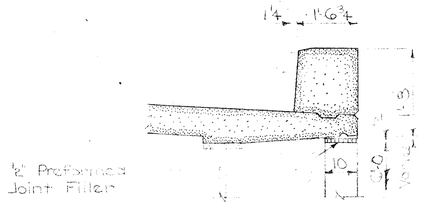
BENT BAR DETAILS



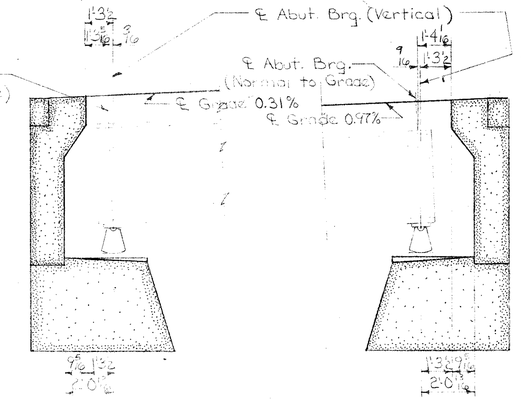
NOTE: All dimensions are out to out.

ESTIMATED QUANTITIES – SUPERSTR.

Item	Unit	Quantity
Structural Concrete - Class "D"	Cu. Yd.	902.4
Reinforcing Steel	Lbs.	323,770
Structural Steel	Lbs	1,067,420



SECTION A-A



WEST ABUT. EAST ABUT.

PART LONGITUDINAL SECTION

Showing grade variations along ℄ bridge & abutments.

CONCRETE PLACEMENT QUANTITIES

Location	Unit	A	B	Total	
1	cu. yds.	53.5	40.5	94.0	268.0
2	cu. yds.	42.3	32.6	74.9	
3	cu. yds.	53.5	40.5	94.0	280.5
4	cu. yds.	42.3	32.6	74.9	
	cu. yds.	53.5	40.5	94.0	193.0
	cu. yds.	42.3	32.6	74.9	
	cu. yds.	53.5	40.5	94.0	
	cu. yds.	42.3	32.6	74.9	
	cu. yds.	56.6	44.8	101.4	
	cu. yds.	53.8	41.5	95.3	
	cu. yds.	55.0	42.0	97.0	
Curbs 2 & 4	cu. yds.			86.0	
			Total (cu. yds.)	902.4	

Design For 33° Skew

685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

SUPERSTRUCTURE DETAILS

Station 450 + 12.5 April 1967

DES MOINES COUNTY

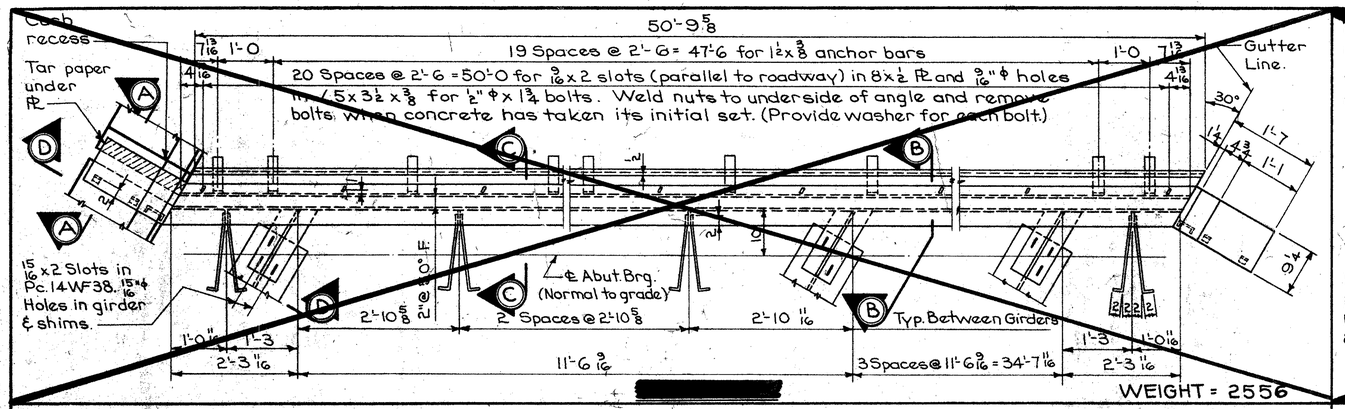
IOWA STATE HIGHWAY COMMISSION

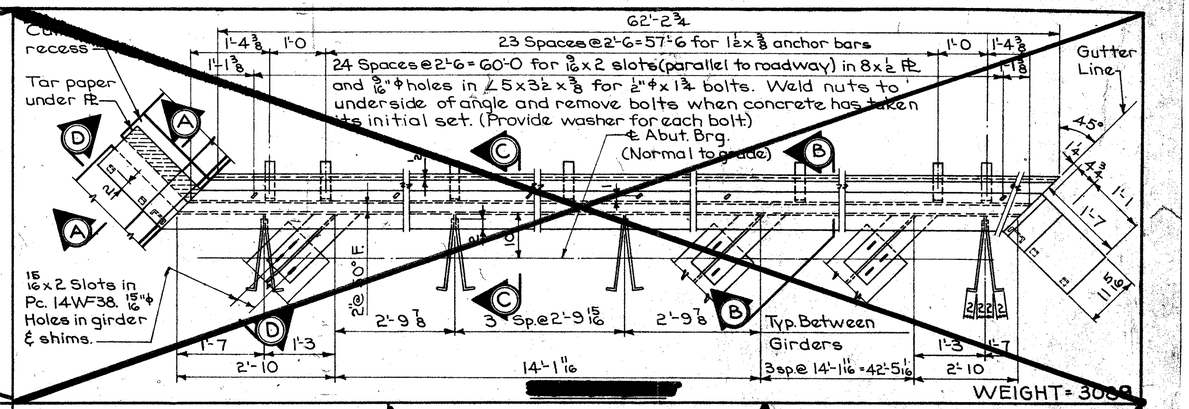
Design Sheet No: 12 Of 17 File No: 23 1/2 Design No: 463

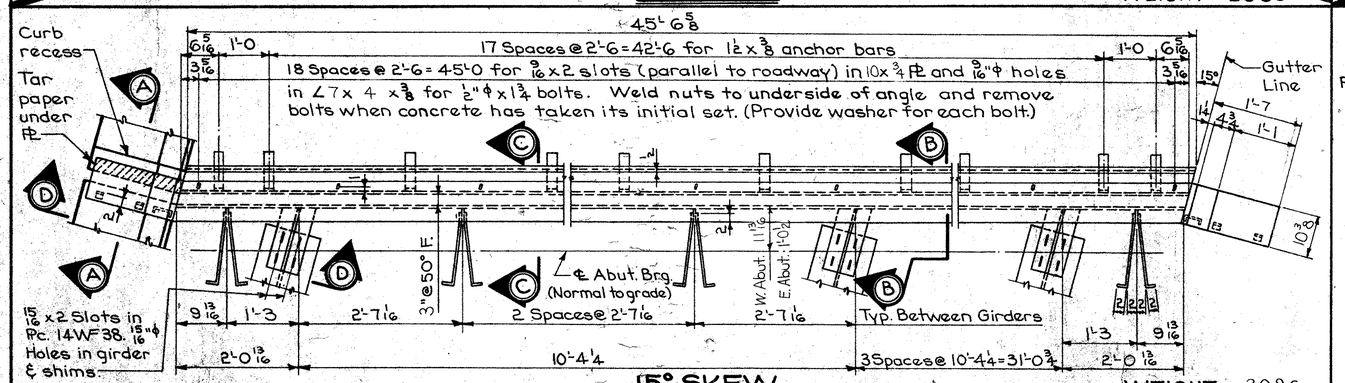
DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

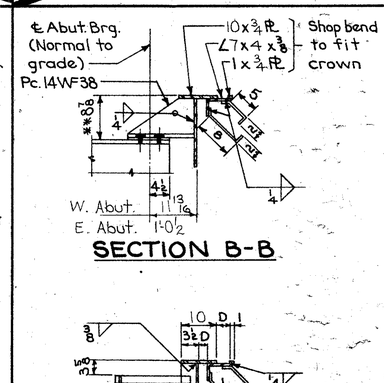
DES MOINES COUNTY

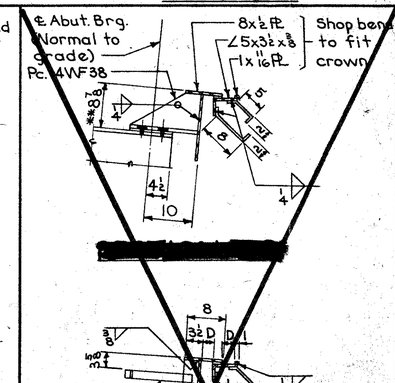
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(6)--30-87	IOWA	5		14	21

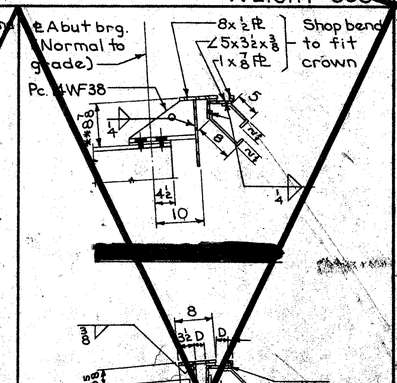


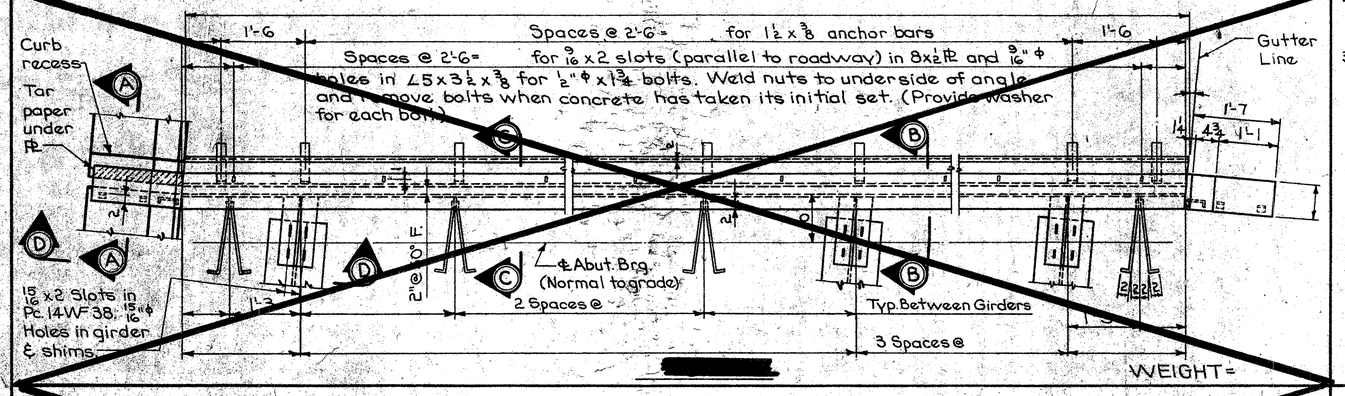


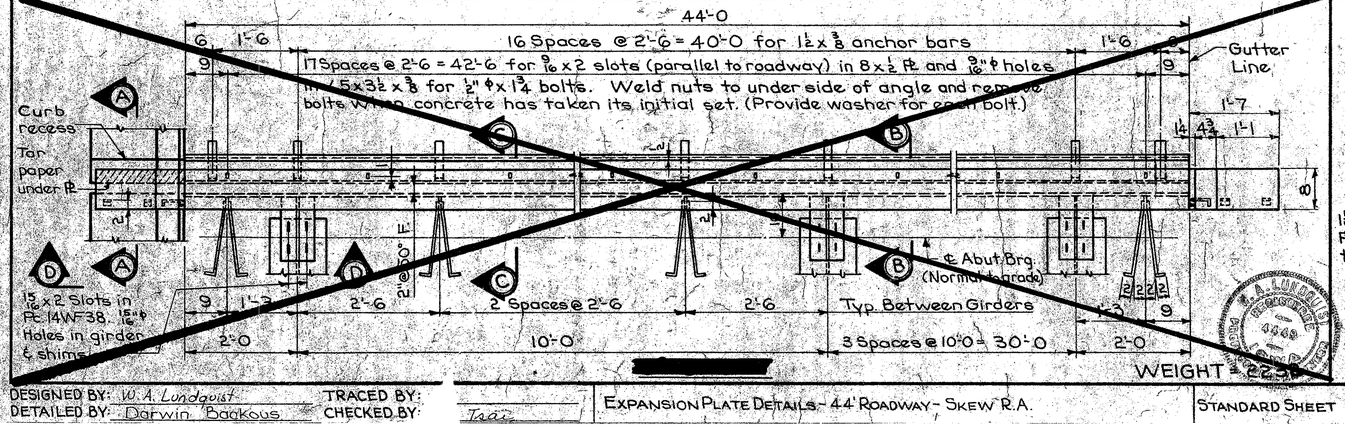


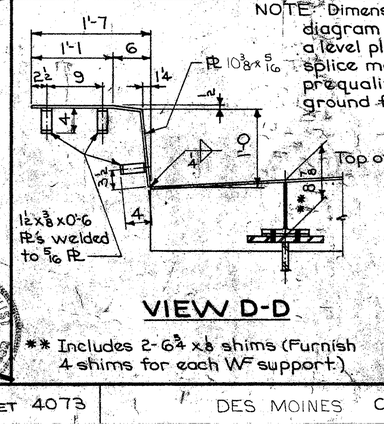












** Includes 2-6¾ x ⅛ shims (Furnish 4 shims for each WF support.)

NOTE: Dimension "D" is 3" for a temperature of 50°F. See "Rocker And Expansion Plate Setting" diagram on another sheet for settings for 10°F. and 90°F. Expansion Plate weights are for a level plate, and do not include the girder connection bolts. One permissible shop splice may be made in any expansion plate providing the pieces are joined with a prequalified single groove weld and all surfaces not in contact with concrete are ground flush.

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

EXPANSION PLATE DETAILS

Station 450 - 12.5 April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 13 Of 19 File No: 23016 Design No: 468

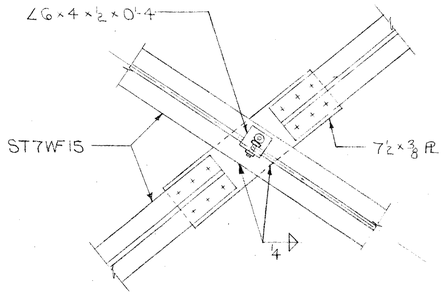
DESIGNED BY: W. A. Lundquist TRACED BY:
DETAILED BY: Darwin Backous CHECKED BY: Taa

EXPANSION PLATE DETAILS - 44' ROADWAY - SKEW R.A.

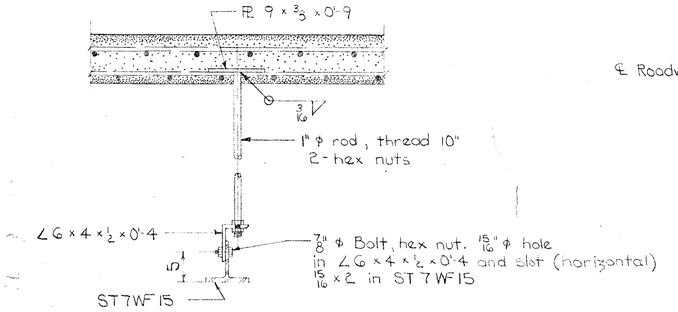
STANDARD SHEET 4073

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		15	21

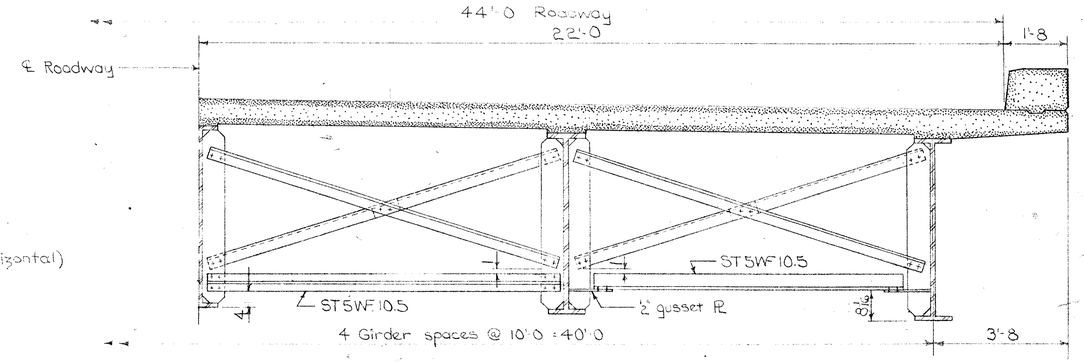


INTERSECTION DETAIL

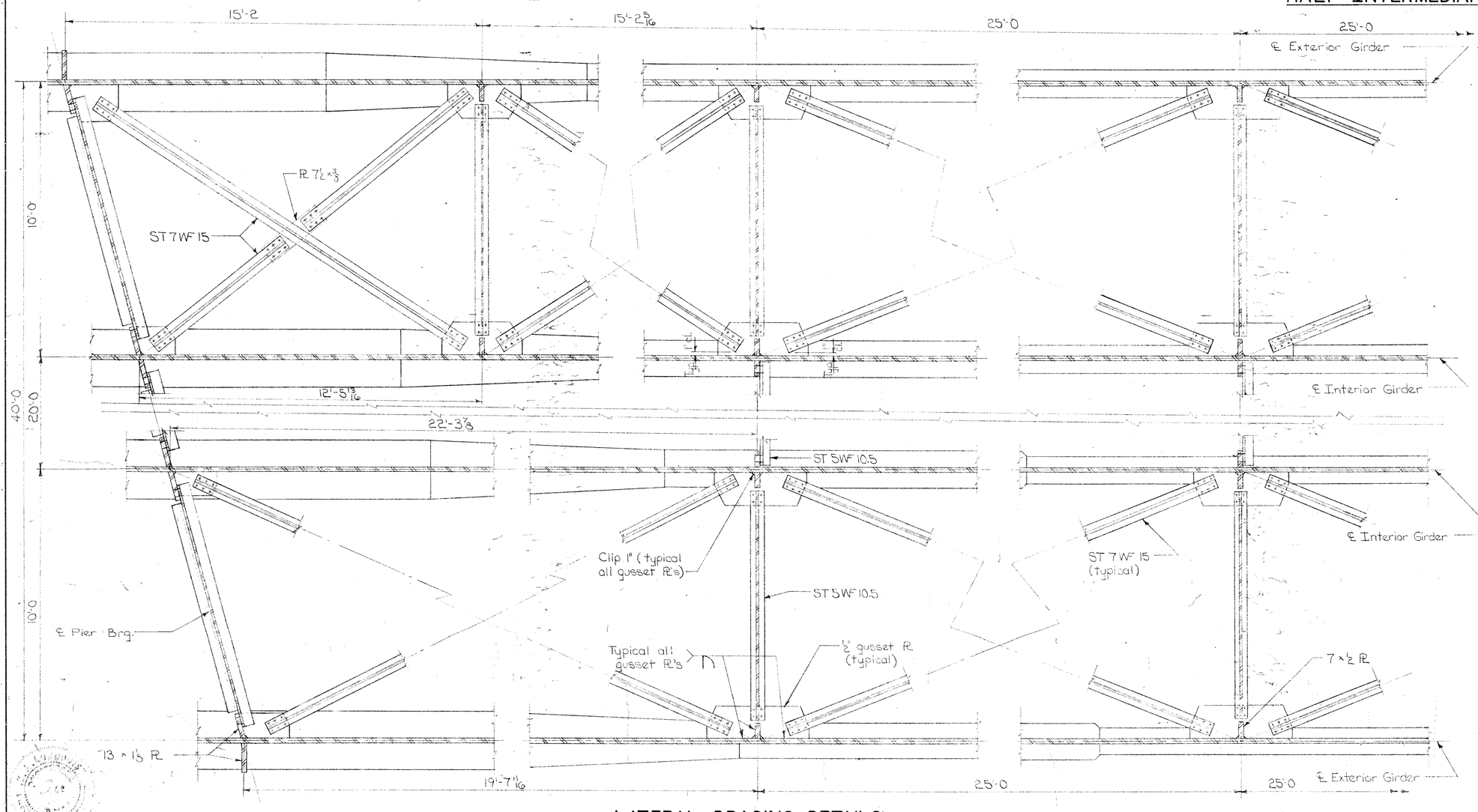


BRACING HANGER DETAILS

NOTE: See sheet 11 for crown ordinates and dimensions.



HALF INTERMEDIATE SECTION



LATERAL BRACING DETAILS

Design For 15° Skew

685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

BRACING DETAILS

Station 450+12.5 April 1969

DES MOINES COUNTY

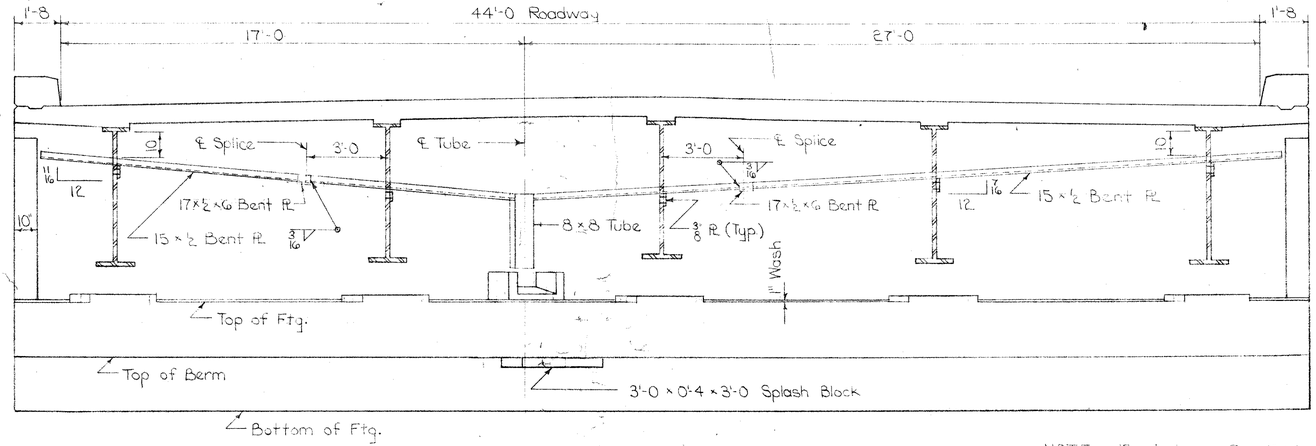
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 14 Of 19 File No: 23016 Design No: 468

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Trai

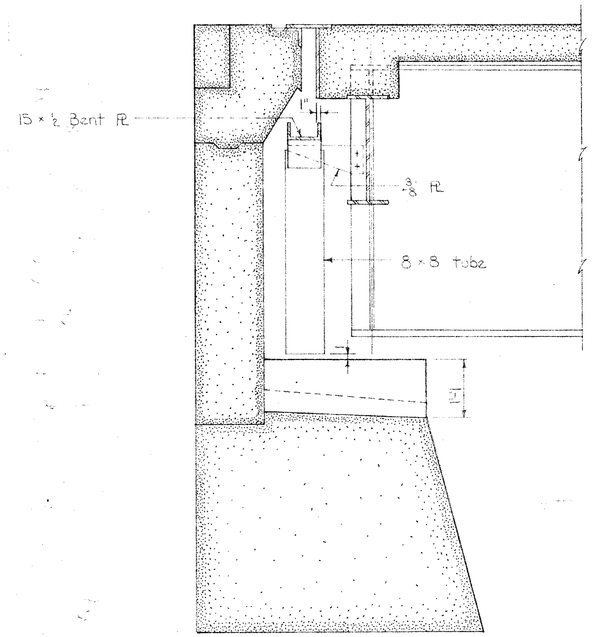
DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-G1-2(3)--20-29	IOWA	5		16	21



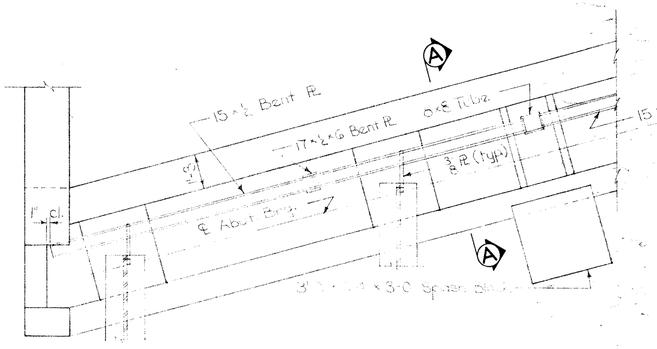
ELEVATION OF ABUTMENT BACKWALL

NOTE: 15×½ bent Pl., 17×½ bent Pl. and the 8×8×¼ tube shall be galvanized after welding.

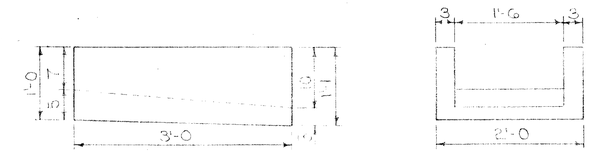


SECTION A-A

(Not

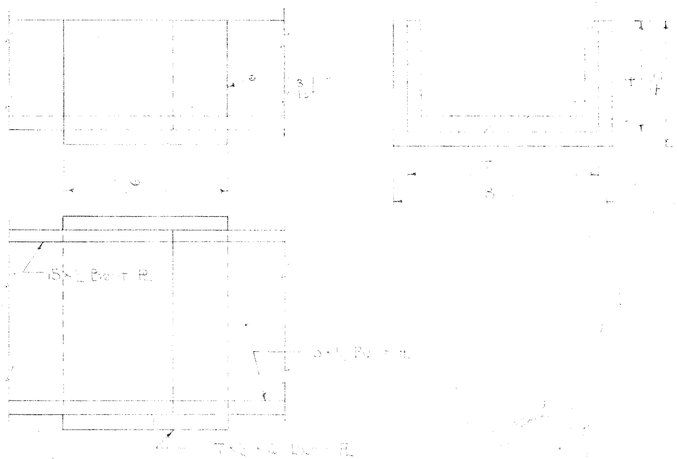


PART PLAN OF TROUGH

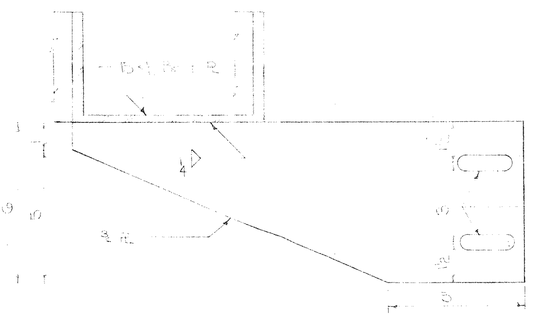


CONCRETE DRAIN SLAB

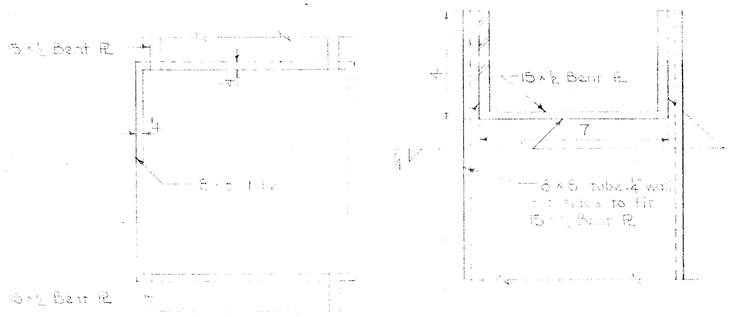
NOTE: Must be poured with fillets of this [illegible]



SPLICE DETAIL



SUPPORT PLATE



TOP VIEW SIDE VIEW

DRAIN TUBE DETAIL

Design For 15° Skew

685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6" End Spans 150'-0" Interior Spans

DRAIN DETAILS

Station 455+12.5 April 1969

DES MOINES COUNTY

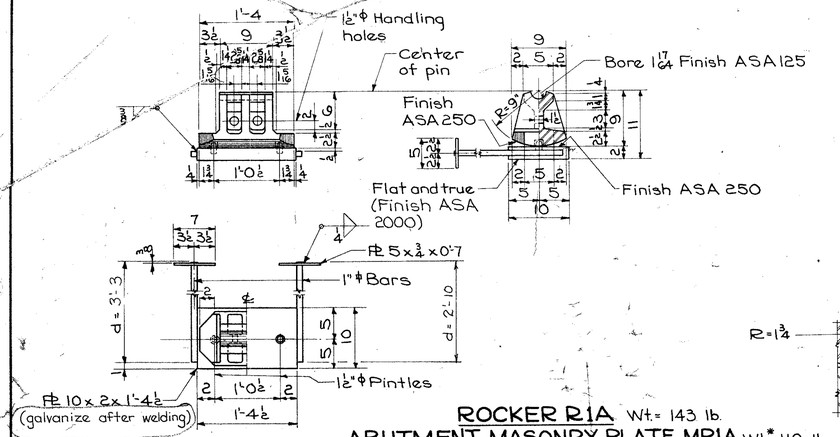
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 15 Of 17 File No: 830½ Design No: 463

DESIGNED BY W. A. Lundquist
DETAILED BY [illegible]
TRACED BY
CHECKED BY H. Trai

DES MOINES COUNTY

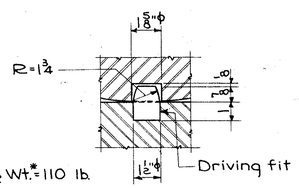
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-[illegible]-20-29	IOWA	5		17	21



ROCKER R1A Wt.= 143 lb.

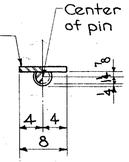
ABUTMENT MASONRY PLATE MP1A Wt.*= 110 lb.

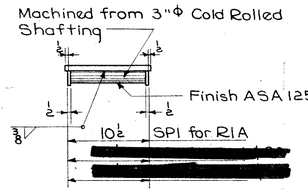
* Wt. does not include 1"□ bars



TYPICAL PINTLE DETAIL

SP1 - Pℓ 8x¾x11½ [redacted]





SOLE PLATE SP1, [redacted]

Wt. SP1 = 34 lb.

[redacted]

BEARING NOTES:

The casting of R1A, [redacted] shall comply with Article 4153.04 of the I.H.C. Standard Specifications. Castings may be Gray Iron or Nodular Iron.

The masonry plates marked MP1A, [redacted] shall comply with the requirements of ASTM A-36 steel.

The pins shall comply with Article 4153.02 of the I.H.C. Standard Specifications and with the requirements of ASTM A-108 steel.

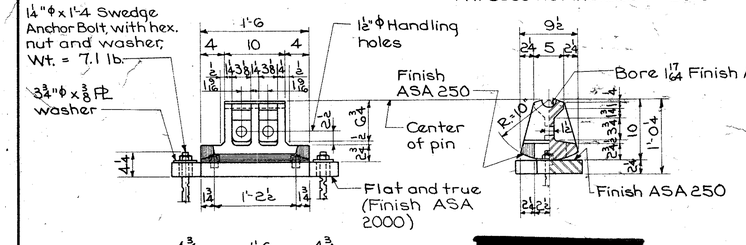
All bearings are to be set in paint and canvas.

Anchor bolts shall be set in accordance with Article 2408.47 of the I.H.C. Standard Specifications.

After masonry plates, rockers and shoes are in correct location, pour mortar around anchor bolts to fill the slotted holes.

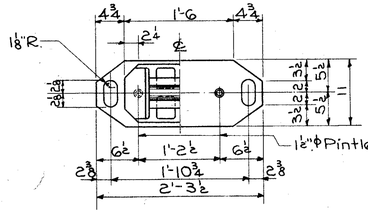
The weight of bearings shown does not include the weight of paint.

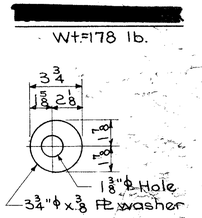
Surfaces finished with an ASA 125 finish shall be shop coated with an application of white lead and tallow as soon as the surfacing process is done. The shop coated surfaces are to be wiped clean and then a field coat of white lead and tallow is to be applied just before the erection of structural steel in the field.



[redacted]

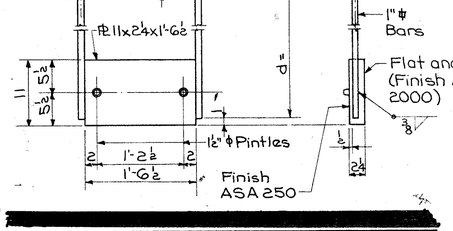
Wt.=178 lb.



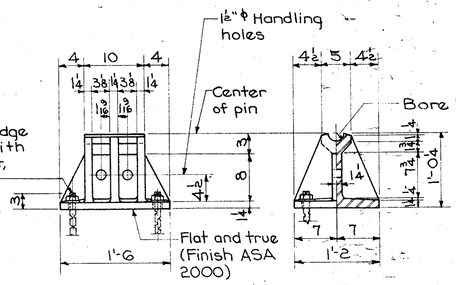


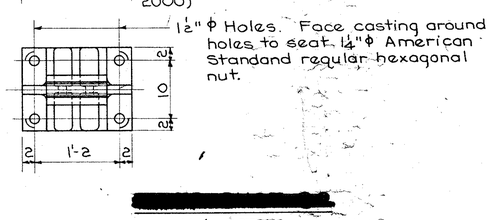
[redacted]

Wt. = 160 lb.



Wt. 146 lb. (Does not include 1"□ bars)





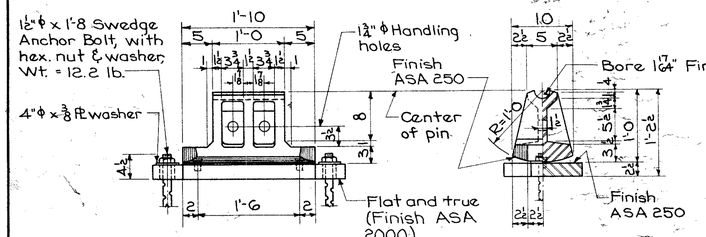
[redacted]

Wt.=222 lb.
(Similar to S2 V12-1)

DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	*D
R1A	1'-0 11/16
[redacted]	[redacted]
[redacted]	[redacted]

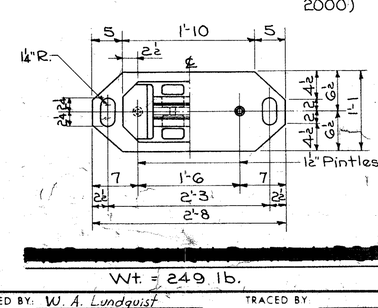
* Including 1/16" paint and canvas.

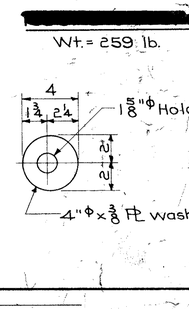
MAXIMUM REACTION (In Kips)		
R1A	[redacted]	[redacted]
132	[redacted]	[redacted]



[redacted]

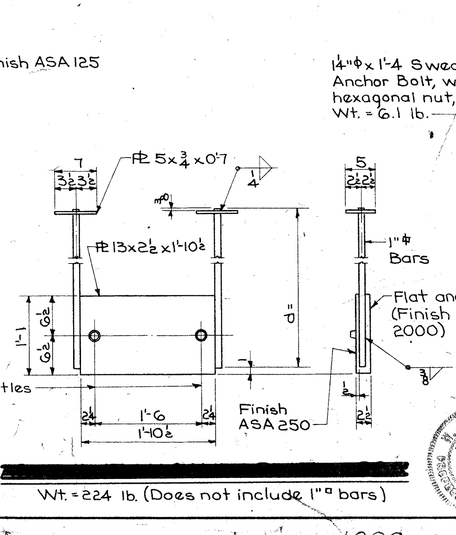
Wt.= 259 lb.



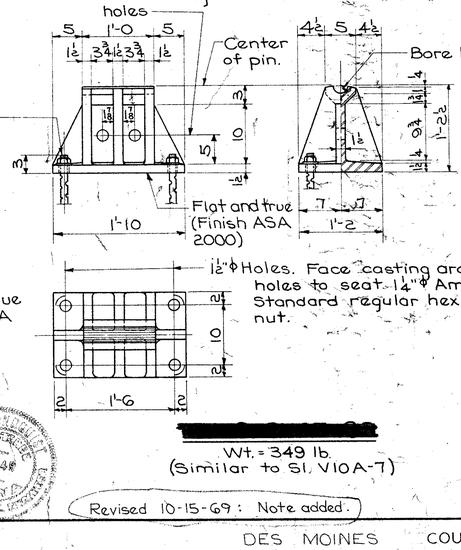


[redacted]

Wt. = 249 lb.



Wt. = 224 lb. (Does not include 1"□ bars)



[redacted]

Wt. = 349 lb.
(Similar to S1, V10A-7)

Revised 10-15-69 : Note added.

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

BEARING DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 16 Of 19 File No: 23016 Design No: 468

Revision (7-6-64) Finish on shoes and masonry plates in contact with concrete added.
Revision (6-1-65) Specifications for Rocker and Shoe material clarified.

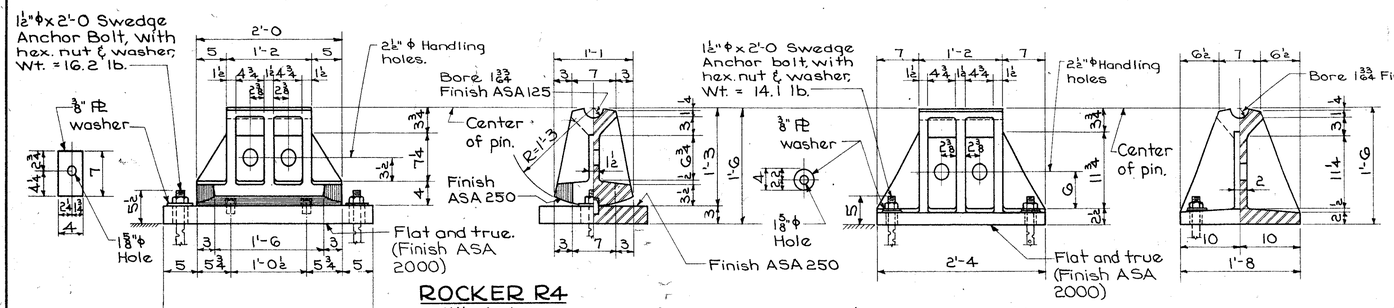
DESIGNED BY: W. A. Lundquist TRACED BY:
DETAILED BY: Darwin Backous CHECKED BY: H. Tsai

1008

DES MOINES COUNTY

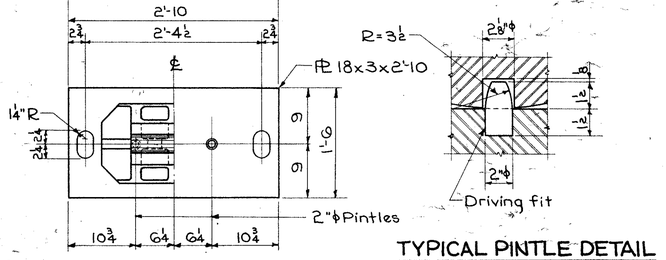
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		18	21

Revision (12-12-62) Pintle size changed
Revision (7-6-64) Finish on shoes and masonry plates in contact with concrete added.
Revision (5-27-65) Weights for MP4P, MP5Pa and MP5Pb changed.
Revision (6-20-66) Nodular Iron Casting ASTM number and grade changed.



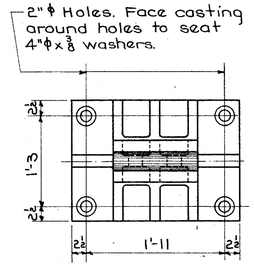
ROCKER R4

Wt.=464 lb.



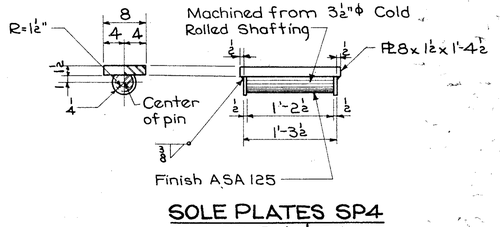
PIER MASONRY PLATE MP4P

Wt.=462 lb.



FIXED SHOE S4

Wt.=735 lb.



SOLE PLATES SP4 FOR R4 & S4

Wt. = 85 lb.

BEARING NOTES :

Nodular Iron Castings shall comply with Article 4153.04 of the Standard Specifications except ASTM A-536, Grade 65-45-12 will be required in lieu of ASTM A-339 Grade 60-45-10.

The following shall be Nodular Iron Castings:

R4 MP4P S4

All plates and bars shall comply with ASTM A-36. Pins shall comply with Article 4153.02 of the Standard Specifications and with ASTM A-108.

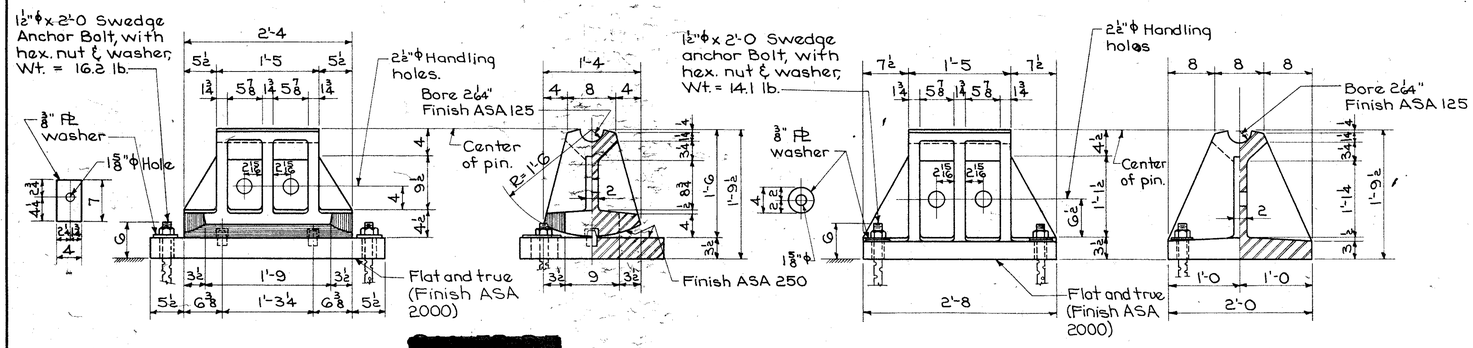
All bearings are to be set in paint and canvas.

Anchor bolts shall be set in accordance with Article 2408.47 of the Standard Specifications.

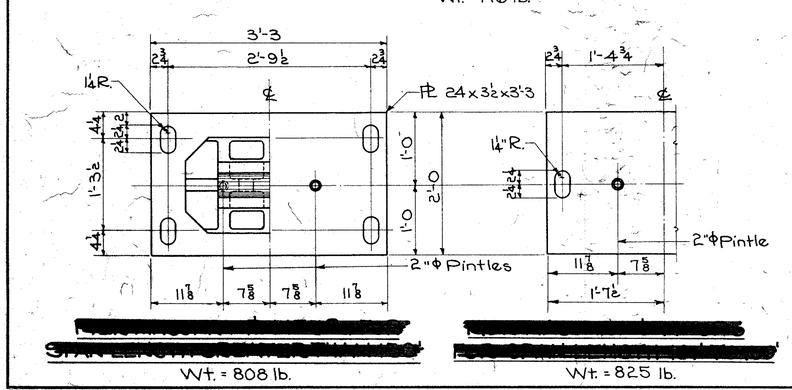
After masonry plates, rockers and shoes are in correct location, pour mortar around anchor bolts to fill slotted holes.

The weight of paint.

Surface finished with an ASA 125 Finish shall be shop coated with an application of white lead and tallow as soon as the surfacing process is done. The shop coated surfaces are to be wiped clean and then a field coat of white lead and tallow is to be applied just before the erection of structural steel in the field.

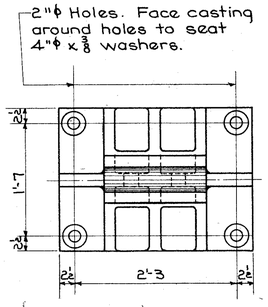


Wt.=776 lb.

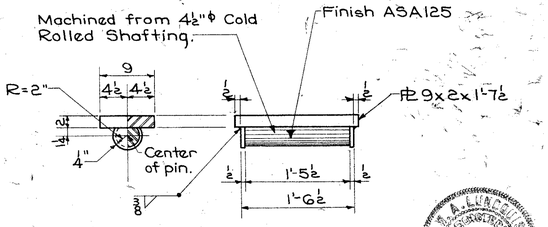


Wt. = 808 lb.

Wt. = 825 lb.



Wt. = 1274 lb.



Wt. = 159 lb.

DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	* D
R4 & S4	1'-8 9/16

* Including 1/16" paint and canvas.

MAXIMUM REACTION (In Kips)	
R4 S4	
475	

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

BEARING DETAILS

Station 450 - 12.5 April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

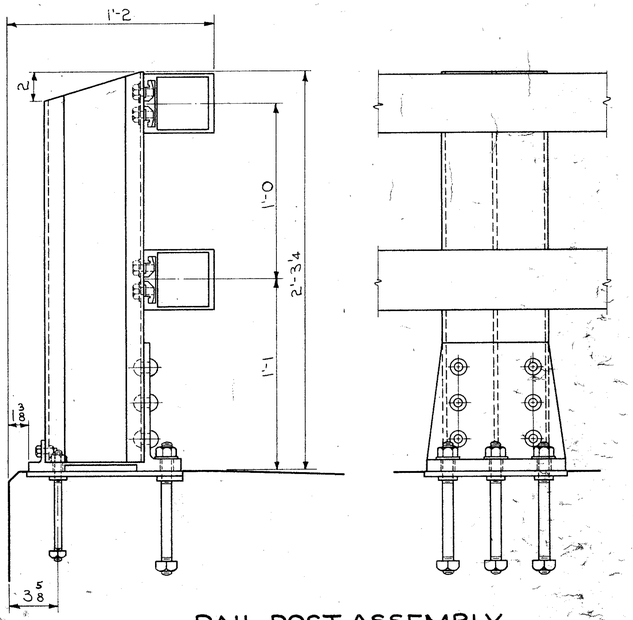
Design Sheet No: 17 Of 19 File No: 23016 Design No: 468

DESIGNED BY: W. A. Lundquist TRACED BY:
DETAILED BY: Darwin Backous CHECKED BY: H. Tsai

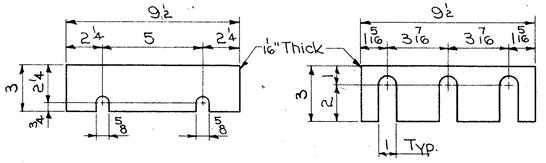
1009

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-G1-2(3)--20-29	IOWA	5		19	21

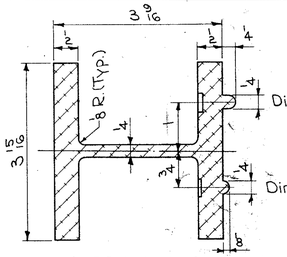


RAIL POST ASSEMBLY

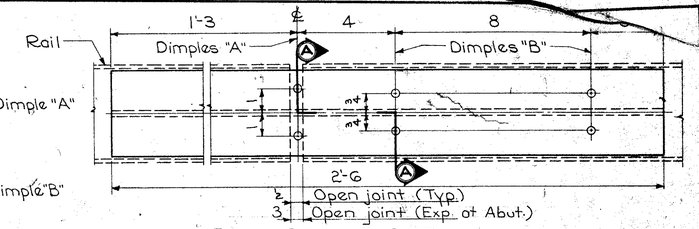


SHIM "A" DETAIL

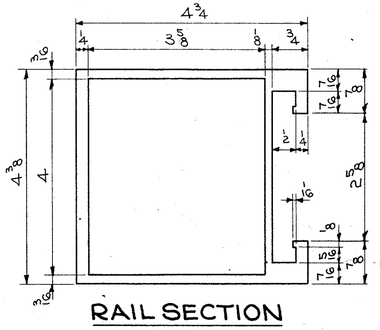
SHIM "B" DETAIL



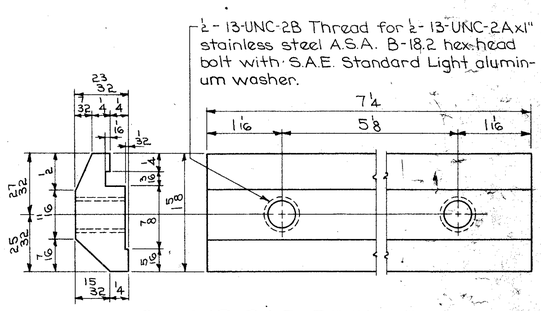
SECTION A-A



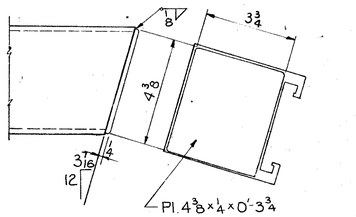
RAIL SPLICE DETAIL



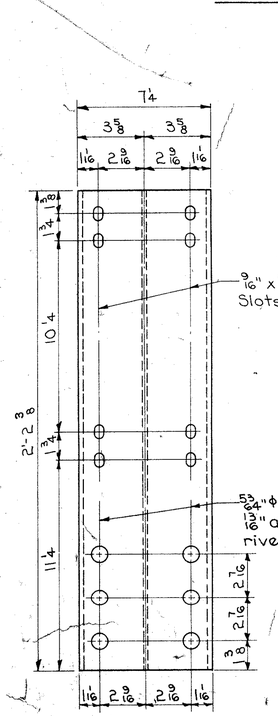
RAIL SECTION



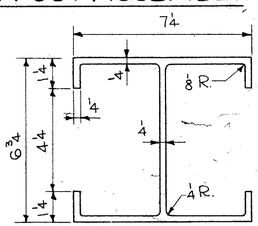
CLAMP BAR DETAILS



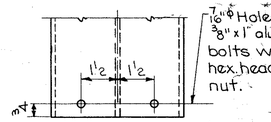
RAIL END CAP DETAILS



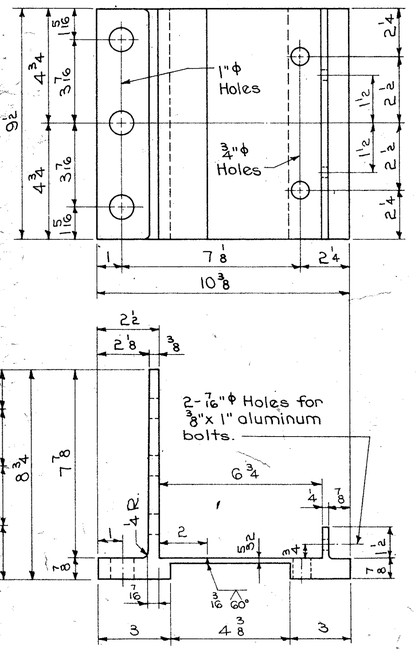
POST



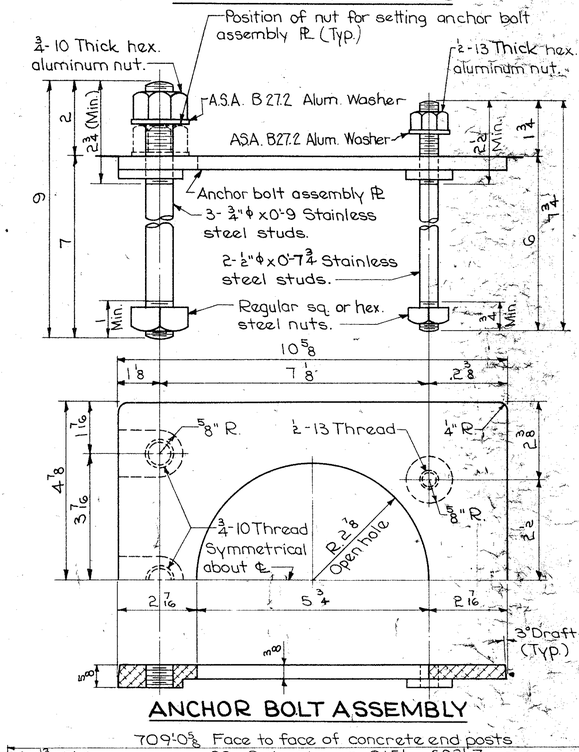
POST SECTION



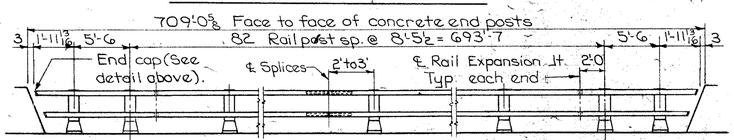
REAR VIEW OF POST



POST BASE PLATE DETAILS



ANCHOR BOLT ASSEMBLY



NOTE: Maximum rail post spacing = 8'-6.

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

ALUMINUM HANDRAIL NOTES:

The aluminum handrail is to be bid on a lineal foot basis measured from end to end of rail. The price bid for "Aluminum Handrail" shall be full compensation for furnishing all material including the anchor bolts and all of the equipment and labor required to erect the rail in accordance with these plans and specifications.

Each rail section must be attached to as many posts as possible but to at least three posts before being spliced.

Material for rails, post, post base plate, rail splice bar and clamp bar shall be ASTM B-221 Alloy 6061-T6. Material for aluminum nuts shall be ASTM B-211 Alloy 6061-T6 or 6262-T9. Material for the aluminum bolts shall be ASTM B-211 Alloy 2024-T4.

Material for aluminum washers and shims shall be ASTM B-209; Alloy Alclad 2024-T3 for washers and Alloy 1100-O for shims.

Material for anchor studs shall be an ASTM A276 Stainless steel with a minimum ultimate strength of 100,000 psi, a minimum elongation in two inches of 12% and a minimum reduction of area of 40.%. Stud thread shall conform to A.S.A. B-1.1 for UNC threads series, class 2A fit. Threads may be rolled or cut. Diameter of stud shall be not less than pitch diameter of threads. The aluminum nuts shall be thick, hexagonal, finished and shall comply with A.S.A. B-18.2. Threads shall comply with A.S.A. B-1.1 for UNC threads series, class 2B fit.

Material for steel nuts shall be A.S.T.M. A-307 Grade A, and shall conform to A.S.A. B-18.2. Threads shall comply with A.S.A. B-1.1 for UNC threads series, class 2B fit.

The anchor bolt assembly plate shall be a flat and true aluminum alloy permanent mold casting complying with ASTM B-108 Alloy SG70 A or B. Condition F is acceptable. Suitable alternates will be considered for approval.

The entire surfaces of anchor bolt assembly plate and the shims are to be given one shop coat of zinc chromate shop coat paint or red lead shop coat paint.

One shim "A" and one shim "B" is to be furnished for each post, to be used as required.

Material for clamp bar bolt shall be stainless steel A.S.T.M. A-193, Grade B8 (Carbide solution treated) or ASTM A-276 Type 430 (Annealed - hot or cold finished).

Ends of rail sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.

Handling, storage and installation of aluminum handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

Material for aluminum rivets shall be A.S.T.M. B-316 or B-221 Alloy 6061-T6. Rivets shall be button head, cone point and cold driven.

A ½" ϕ drain hole is to be provided, 3 inches in from the end, at the bottom side of the end sections of all rails.

DESIGN SPECIFICATIONS:

Designed in accordance with 1964 interim A.A.S.H.O. Specifications.

ALUMINUM HANDRAIL QUANTITIES	
Aluminum Handrail	1417.10 Lin.Ft.

Revised 12-26-68: Added explanation for material for clampbar bolt.
Revised 6-7-67: Red lead shop coat paint note added.
Revised 5-2-67: Material specifications for aluminum and stainless steel changed.
Revised 10-13-66: Note concerning ½" ϕ drain holes added.
Revised 9-23-66: Gage of holes in Post Base Plate changed.
Revised 8-19-66: Post base Plate and Anchor Bolt Assembly Plate details changed.
Revised 7-25-66: Caulking at posts eliminated.
Revised 3-14-66: Minor changes made.

Design For 15° Skew
685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE
117'-6 End Spans 150'-0 Interior Spans
ALUMINUM HANDRAIL DETAILS
Station 450 + 12.5 April 1969
DES MOINES COUNTY
IOWA STATE HIGHWAY COMMISSION

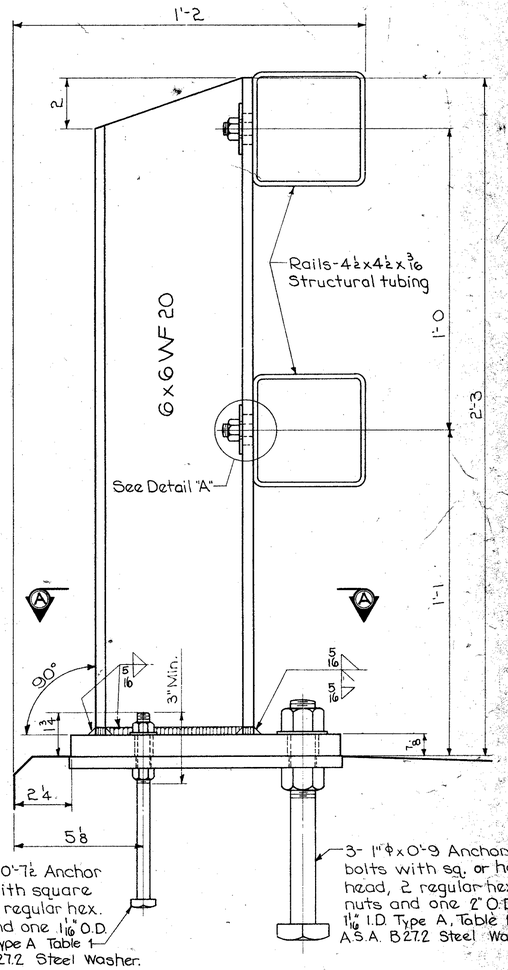
Design Sheet No: 18 Of 19 File No: 23016 Design, No: 468

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

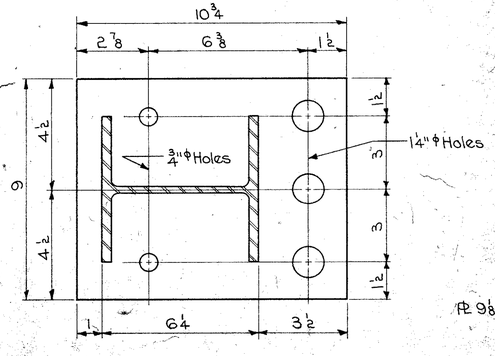
1012A

DES MOINES COUNTY

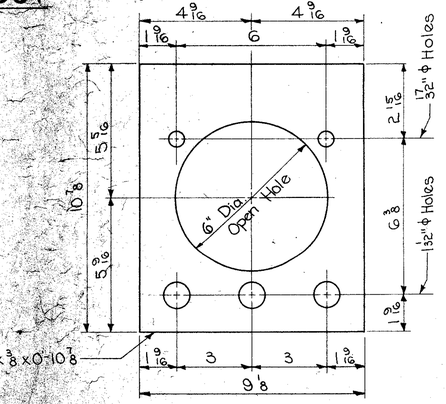
PROJECT NUMBER	STATE	FED. ROAD DIST. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		20	21



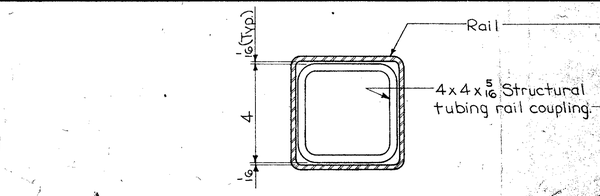
RAIL POST



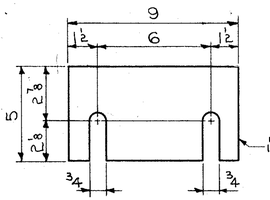
SECTION A-A



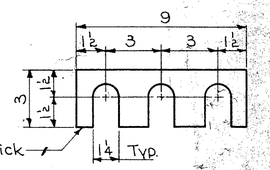
ANCHOR CAGE DETAILS



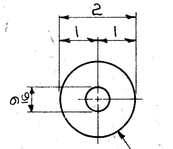
SECTION B-B

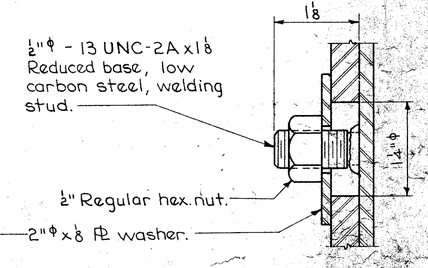


SHIM "A" DETAIL

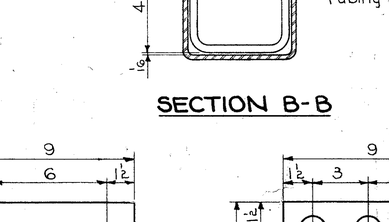


SHIM "B" DETAIL

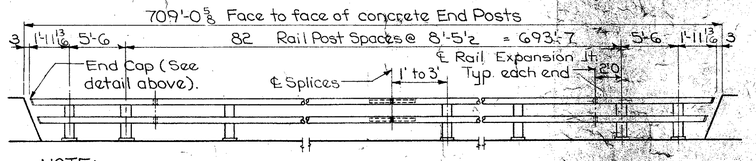




DETAIL "A"

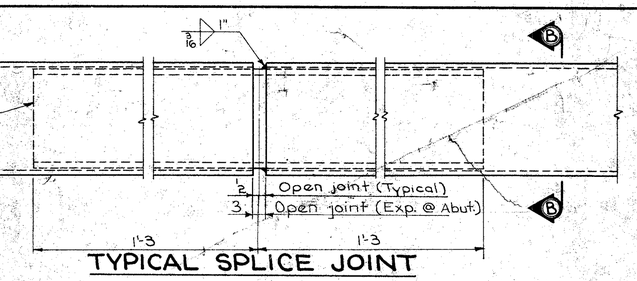


RAIL END CAP DETAILS



NOTE:
Maximum rail post spacing = 8'-6.

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT



TYPICAL SPLICE JOINT

STEEL HANDRAIL NOTES:

The steel handrail is to be bid on a lineal foot basis measured from end to end of rail. The price bid for "Steel Handrail" shall be full compensation for furnishing all material including the anchor bolts and all equipment and labor required to erect the rail in accordance with these plans and Specifications.

Each rail section must be attached to as many posts as possible, but to at least three posts before being spliced.

Material for rail tubing, post, base plate and anchor cage shall be A.S.T.M. A-36 and are to be galvanized after fabrication to A.S.T.M. A-123.

Material for anchor bolts and nuts, and rail to post attachment nuts shall be A.S.T.M. A-307 - GIT, Grade A.

Anchor bolts and nuts, rail to post attachment nuts, end caps, washers and shims are to be galvanized to A.S.T.M. A-153.

Ends of tube sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.

Welding shall be in accordance with Section 2408.15 of the Standard Specifications.

Handling, storage and installation of steel handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

One shim "A" and one shim "B" is to be furnished for each post, to be used as required.

A surface is considered to be "Flat and True" when the deviation from a straight edge placed on this surface in any position, is less than 1/16".

No painting will be required.

Rail studs shall be provided with adequate protection during shipment.

DESIGN SPECIFICATIONS:

Designed in accordance with 1964 Interim A.A.S.H.O. Specifications.

STEEL HANDRAIL QUANTITIES		
Steel Handrail	1417.10	Lin. Ft.

Design For 15° Skew

685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans @ 150'-0 Interior Spans

STEEL HANDRAIL DETAILS

Station 450 + 12.5 April 1969

DES MOINES COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 19 Of 19 File No: 23016 Design No: 468

Revised 7-25-66: Caulking at posts eliminated.

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: M. Trai

1013A

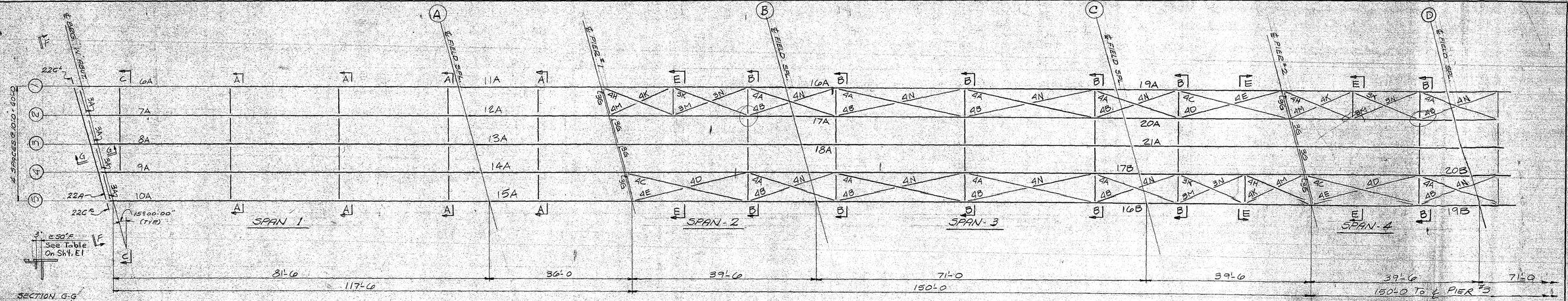
DES MOINES COUNTY

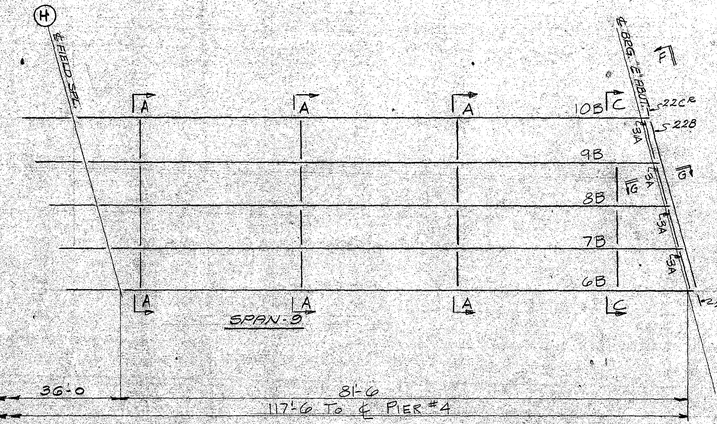
PROJECT NUMBER	STATE	FED. ROAD DIST. No.	FISCAL YEAR	SHEET No.	Total SHEETS
F-61-2(3)--20-29	IOWA	5		21	27

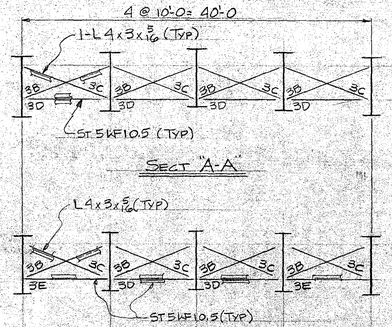
JAN 30 1970

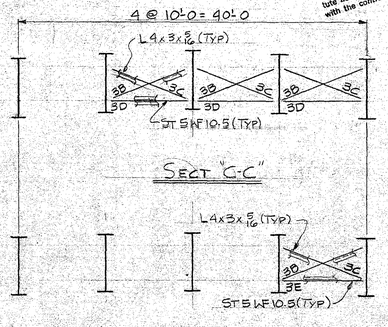
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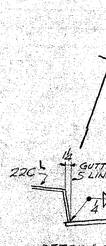
ERECTION PLAN

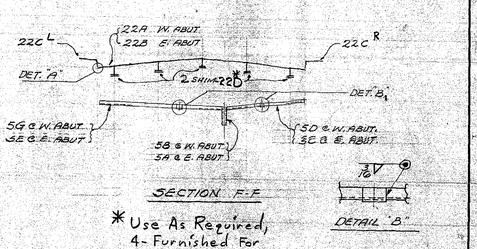












* Use As Required, 4- Furnished For Each Steel.

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JAN 28 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Neither does it constitute acceptance of material not in accordance with the contract requirements.

NOTE TO ERECTOR:
Erection marks have been placed on the steel and on the Erection Plans near one end of each member. Place the members in the structure so that the erection marks on the steel are at the same end of the members as the marks on the plans.

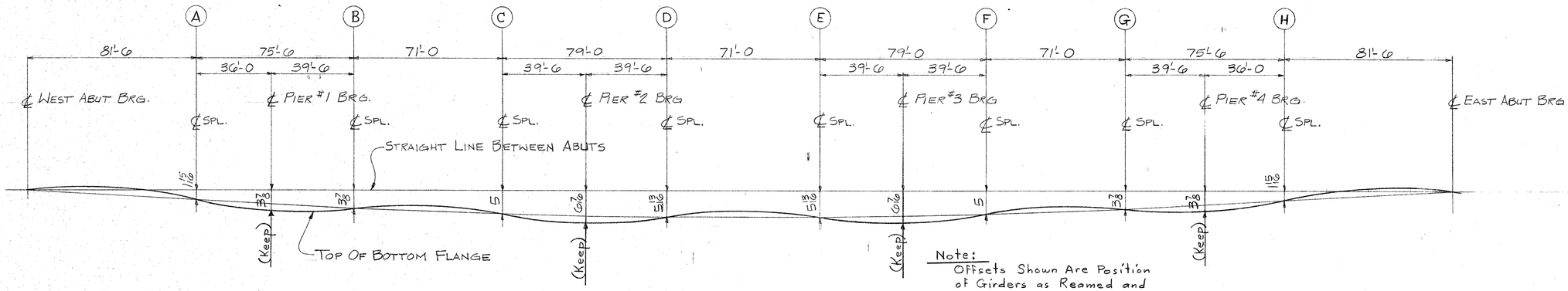
REVISIONS			
D			
C			
B			
A			

DRAWN BY LAKE DATE 12-5-69
CHECKED BY H.M. DATE 12-15-69
IN CHARGE OF L. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS:

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
3428-138TH STREET, HAMMOND, INDIANA 46320

DETAILS OF ERECTION PLAN
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION
CONTRACT 3403 | DIV. — | FABCOD — | SHEET E2

GLENNON & KERN, INC., CHICAGO



Note:
Offsets Shown Are Position of Girders as Reamed and Erected (See Shop Note).

Blocking Diagram

Typical For Girder Line 1 Thru 5

Shop Note:
After Stringers are Reamed Assembled, All Pieces Shall be Match Marked in Such a Manner as to Insure Proper Erection in the Field. This Includes all Splice and Fill Plates. Identify Each Joint By Splice Letter and Line Number, e.g. D1, F5 etc.

LOCATION	FIELD BOLTS — GRIP	LENGTH	WASHER	NO. REQ'D.	NO. SHP'D.	DIA.	TYPE
Girder Web Splices	1 1/8	2 1/2	1-Hrn'd.	2,640	2,700	7/8	A-325
Girder Flange Splices, Top	3 1/16	4 1/2		1,440	1,470		
, Bott. @ A&H	3 1/4	4 3/4		560	575		
, Bott (Other)	3 1/8	4 1/2		1,680	1,715		
3A to Girders	1 13/16	2 1/2		224	230		
3G to Girders	1 11/16	3		832	850		
3B, 3C to Girders	1 13/16	2 1/4		832	850		
3D, 3E to Girders	1 13/16	2 1/4		832	850		
Lateral Bracing to Girders	7/8	2 1/4		1,008	1,035		
to Lat. Brc'g.	3/4	2 1/4		672	685		
Hanger to Lateral Bracing	1 3/16	2 1/4		42	45		
Drains @ Abutments	3/4	2 1/4		20	25		
Expansion to Girders	2*	3 1/2	2-Hrn'd.*	40	45		
3B, 3C to 3B, 3C	1 1/8	2 1/2	1-Hrn'd.	208	215		
Fascia Drains to Girders	1/2	1 1/2	None	88	100	3/4	A-307

* Bolt Grip & Length Include Thickness of 4-3/8" Shims Under Expansion Device. Use Additional Washers to Allow for Shims Not Used.

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JAN 28 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. No claim over is considered acceptance of materials not in accordance with the contract requirements.

ALLIED
ENGINEERS
FABRICATORS
ERECTORS
STRUCTURAL STEEL COMPANY
1408-169TH STREET, HAMMOND, INDIANA 46320

REVISIONS: D C B A

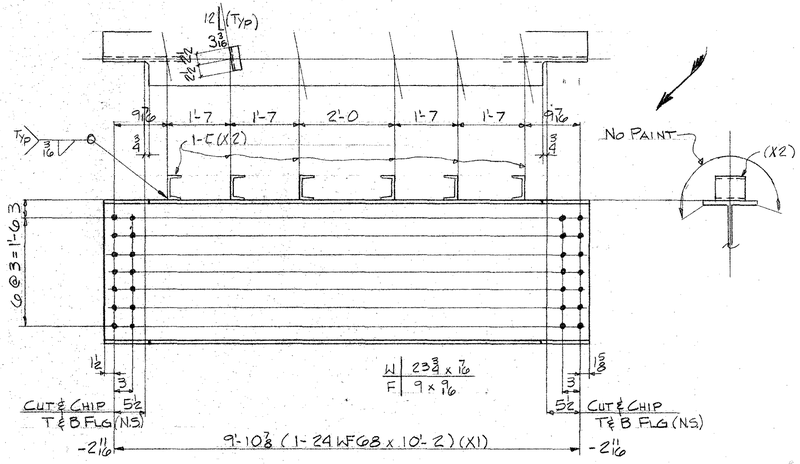
DRAWN BY MP (LAKE) DATE
CHECKED BY D.W. DATE 12-15-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2

Blocking Diagram
STRUCTURE Project No F-61-2(3)-20-29
US #61 Over Skunk River
LOCATION Lee & Des Moines County, Iowa
OWNER Iowa State Highway Commission

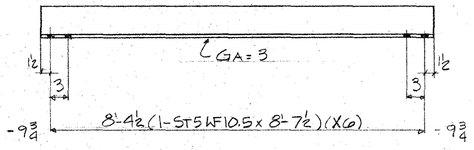
CONTRACT 3403 | DIV. — | FABCOD — | SHEET E3

GLENNON & KERN, INC., CHICAGO

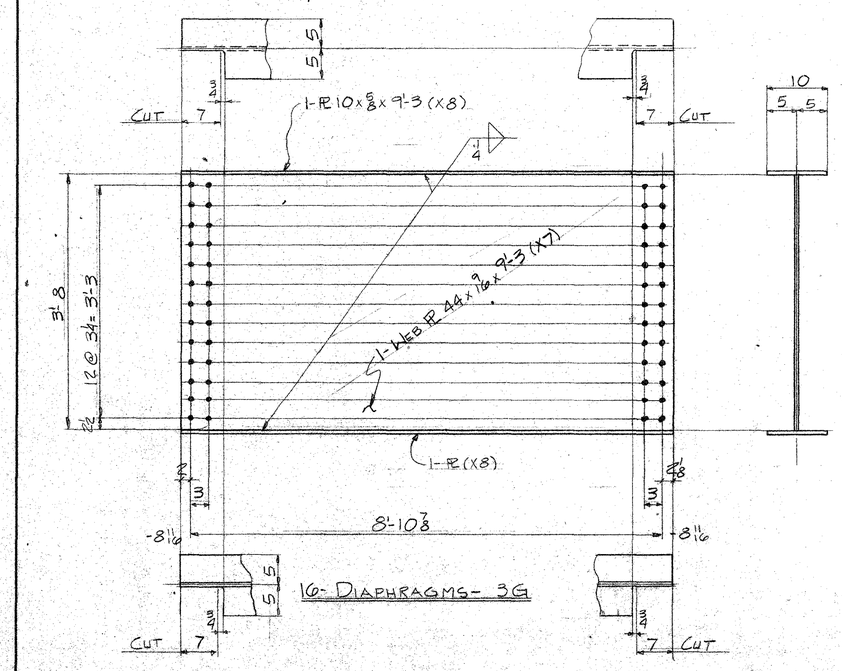
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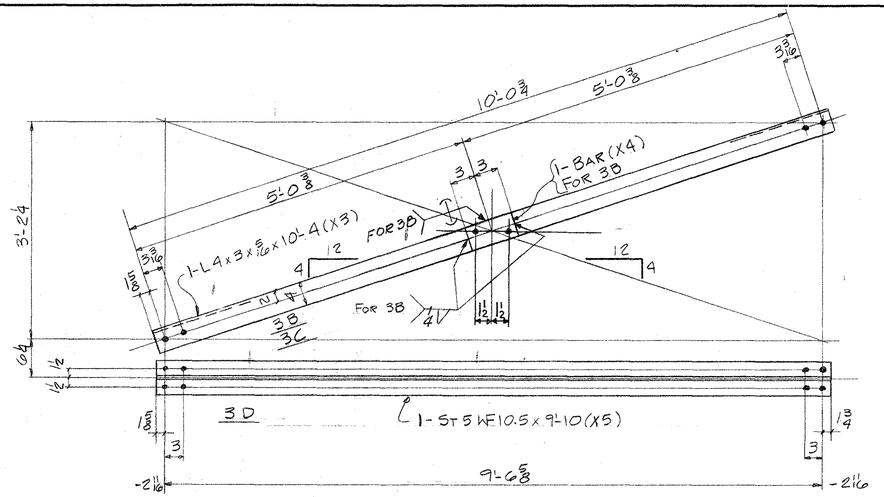
8 - DIAPHRAGMS - 3A



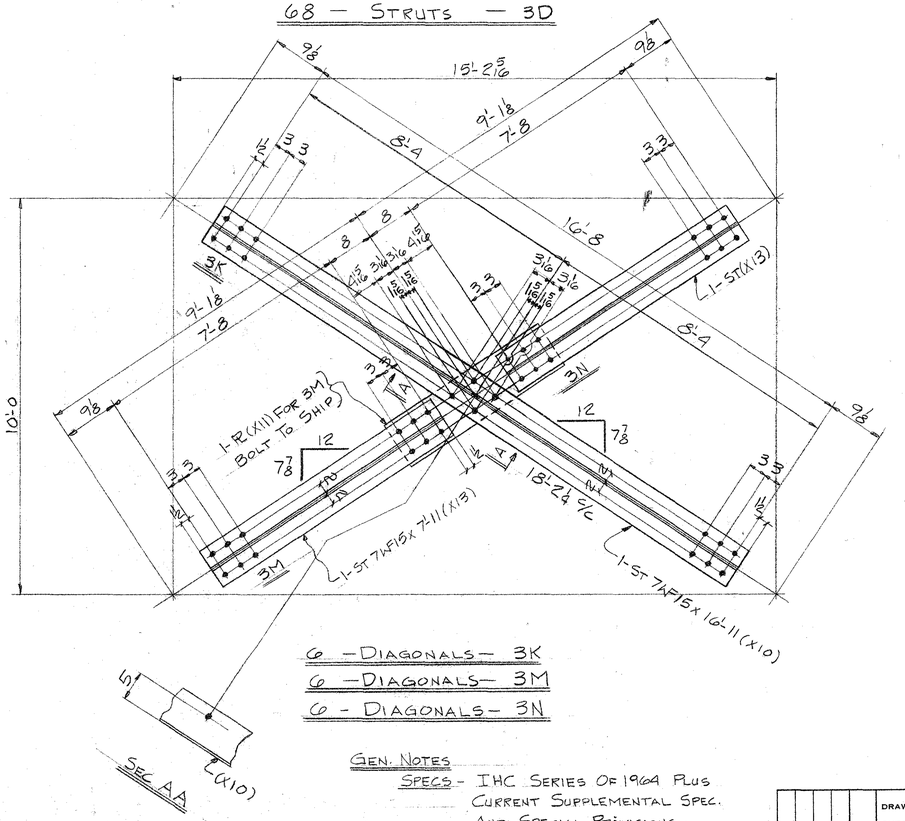
36 - STRUTS - 3E



16 - DIAPHRAGMS - 3G



104 - DIAGONALS - 3B
104 - DIAGONALS - 3C
68 - STRUTS - 3D



6 - DIAGONALS - 3K
6 - DIAGONALS - 3M
6 - DIAGONALS - 3N

GEN. NOTES

SPECS - IHC SERIES OF 1964 PLUS CURRENT SUPPLEMENTAL SPEC. AND SPECIAL PROVISIONS.

HOLES - 15/16 ø

PAINT - ONE SHOP COAT PER SHT #P1, U.N.

WELDING - SEE WELDING PROCEDURES.

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN TRIM W	ADD FIN TRIM T	ADD FIN TRIM L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	8	DIAPHRAGMS						3A		11'			
2	8	∠4 WF68	10	2				X1	A36		217		
3	48	4 C 5.4	0	5				X2	A36		418		
4	8	5/16 WLD	7	8									
5													
6													
7	104	DIAGONALS						3B		11'			
8	104	L 4 x 3 x 5/16	10	4				X3	A36		220		
9	104	BAR 9 x 1/2	0	6				X4	A36		301		
10	104	4 WLD	0	8									
11													
12	104	DIAGONALS						3C		11'			
13	104	L						X3	A36		220		
14													
15													
16	68	STRUTS						3D					
17	68	ST5WF10.5	9	10				X5	A36		221		
18													
19													
20	36	STRUTS						3E					
21	36	ST5WF10.5	8	7 1/2				X6	A36		302		
22													
23													
24	16	DIAPHRAGMS						3G					
25	8	PL 49 x 9/16	9	3				X17	A36		218		
26	32	PL 10 x 5/8	9	3				X8	A36		219		
27	16	4 WLD	37	0									
28													
29													
30													
31													
32													
33													
34													
35													
36													
37	6	DIAGONALS						3K					
38	6	ST7WF15	16	11				X10	A36		306		
39													
40													
41													
42	6	DIAGONALS						3M					
43	6	ST7WF15	7	11				X13	A36		306		
44	6	PL 7 1/2 x 3/8 x	2	7				X11	A36		312		
45	12	S.B.											
46													
47	6	DIAGONALS						3N					
48	6	ST						X13	A36		306		
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
JAN 28 1970
Date
The approval of this drawing does not relieve the contractor of responsibility for errors in materials and detail, nor does it constitute acceptance of material not in accordance with the contract requirements.

REVISIONS	
D	
C	
B	
A	

DRAWN BY M (LAKE) DATE 11-21-69
CHECKED BY H.M DATE 12-15-69
IN CHARGE OF L.K BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS. E2

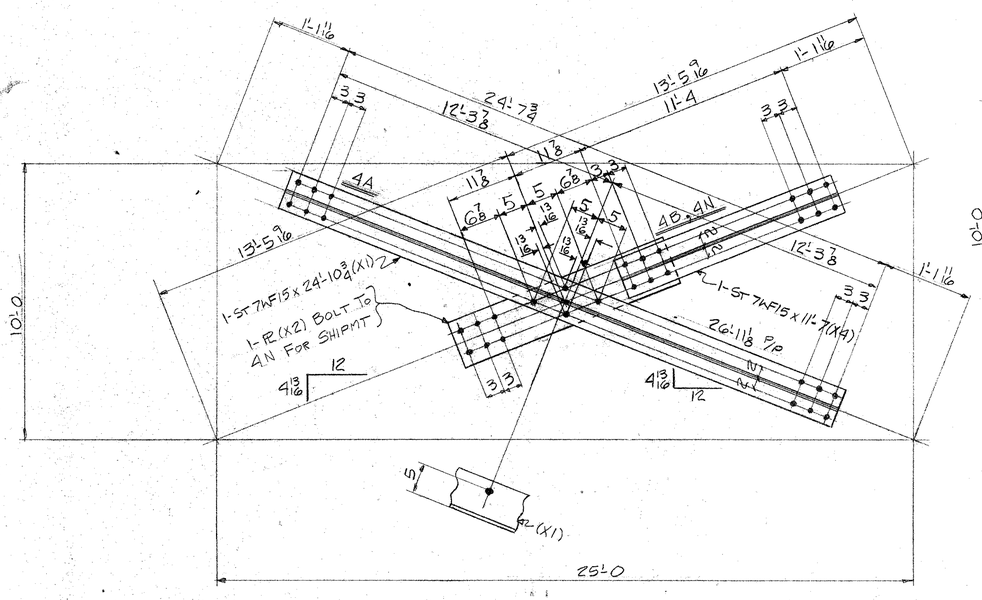
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1438-169TH STREET, HAMMOND, INDIANA 46320

DETAILS OF Cross Frames Diaphragms & Bracing
STRUCTURE Project No F-61-2(23)-20-29
US #61 Over Skunk River
LOCATION Lee & Des Moines County Iowa
OWNER Iowa State Highway Commission

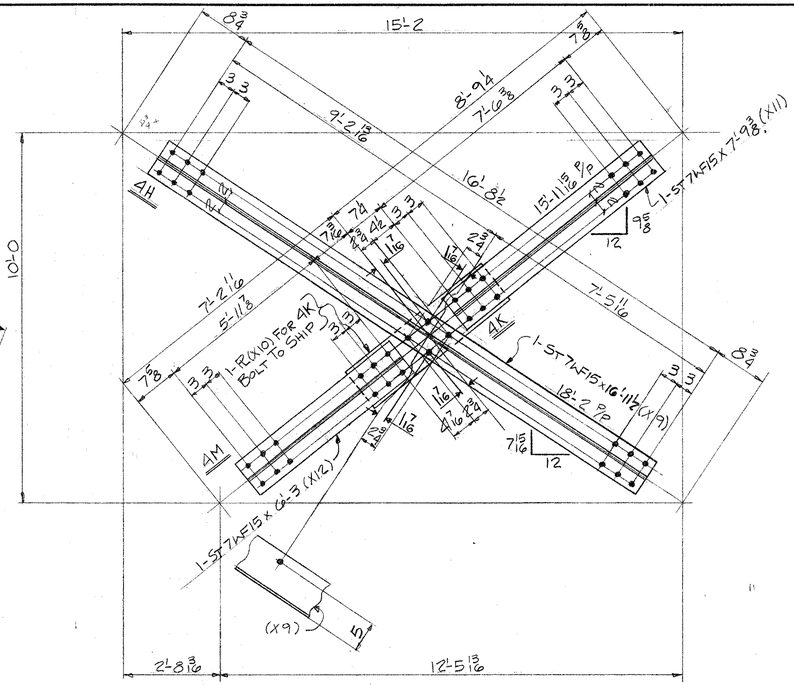
CONTRACT 3403 | DIV. | FABCOD 164 | SHEET 3

GLENNON & KEEN, INC., CHICAGO

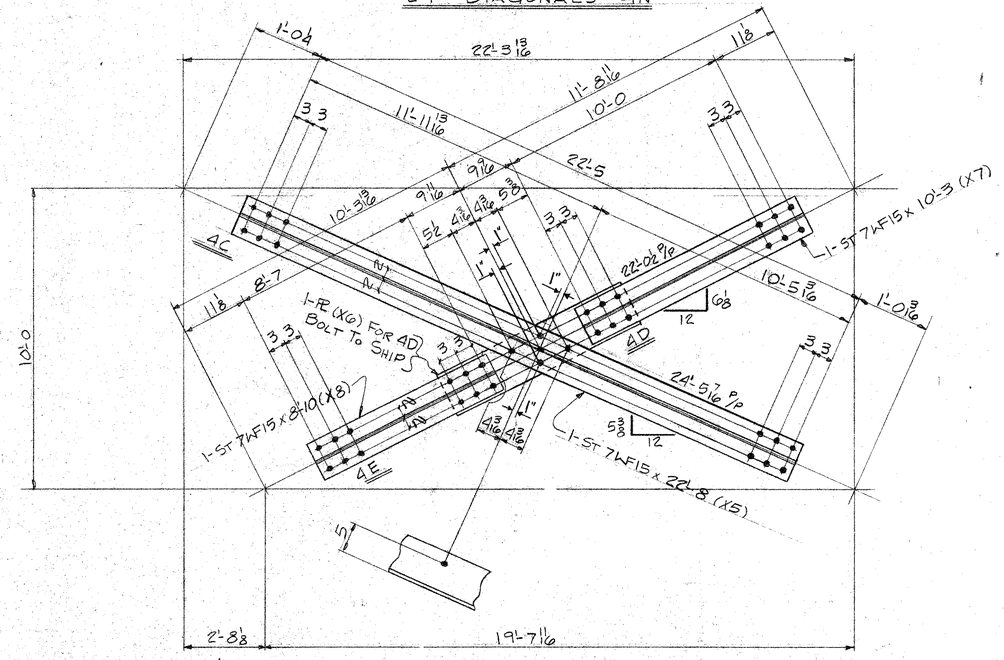
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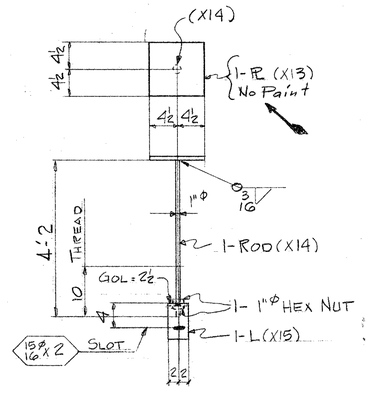
24 - DIAGONALS - 4A
24 - DIAGONALS - 4B
24 - DIAGONALS - 4N



6 - DIAGONALS - 4H
6 - DIAGONALS - 4K
6 - DIAGONALS - 4M



6 - DIAGONALS - 4C
6 - DIAGONALS - 4D
6 - DIAGONALS - 4E



42 - HANGERS - 4P

NOTES -
SPEC'S - I.H.C. SERIES OF 1964 PLUS CURRENT SUPPLEMENT SPEC. AND SPECIAL PROVISIONS
OPEN HOLES: 15/16 ϕ
PAINT - ONE COAT PER SH. # P1, U.N.

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JAN 28 1970
The approval of this drawing does not relieve the contractor of responsibility for correct dimensions and details. It conveys acceptance of material used in accordance with the contract requirements.

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
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2	24	ST 7WF15	24 10 3/4				X1	A36		303		
3												
4	24	DIAGONALS					4B		12'			
5	24	ST 7WF15	11 7				X4	A36		303		
6												
7	24	DIAGONALS					4N		12'			
8	24	ST					X4	A36		303		
9	24	R 7 1/2 x 3/8	3 2 3/4				X2	A36		309		
10	48	S.B.										
11												
12	6	DIAGONALS					4C		23'			
13	6	ST 7WF15	22 8				X5	A36		304		
14												
15												
16												
17												
18	6	DIAGONALS					4D		11'			
19	6	ST 7WF15	10 3				X7	A36		305		
20	6	R 7 1/2 x 3/8	2 10 4				X6	A36		312		
21	12	S.B.										
22	6	DIAGONALS					4E					
23	6	ST 7WF15	8 10				X8	A36		305		
24												
25												
26	6	DIAGONALS					4H		17'			
27	6	ST 7WF15	16 11 1/2				X9	A36		307		
28												
29												
30												
31												
32	6	DIAGONALS					4K					
33	6	ST 7WF15	7 9 3/8				X11	A36		308		
34	6	PL 7 1/2 x 3/8	2 5 1/2				X10	A36		311		
35	12	S.B.										
36	6	DIAGONALS					4M					
37	6	ST 7WF15	6 3				X12	A36		308		
38												
39												
40												
41	42	HANGERS					4P					
42	42	PL 9 x 3/8	0 9				X13	A36		314		
43	42	ROD 1" ϕ	4 2				X14	A36		315		
44	42	L 6x4 x 1/2	0 4				X15					
45	84	1" ϕ HEX NUT						A307		M201		
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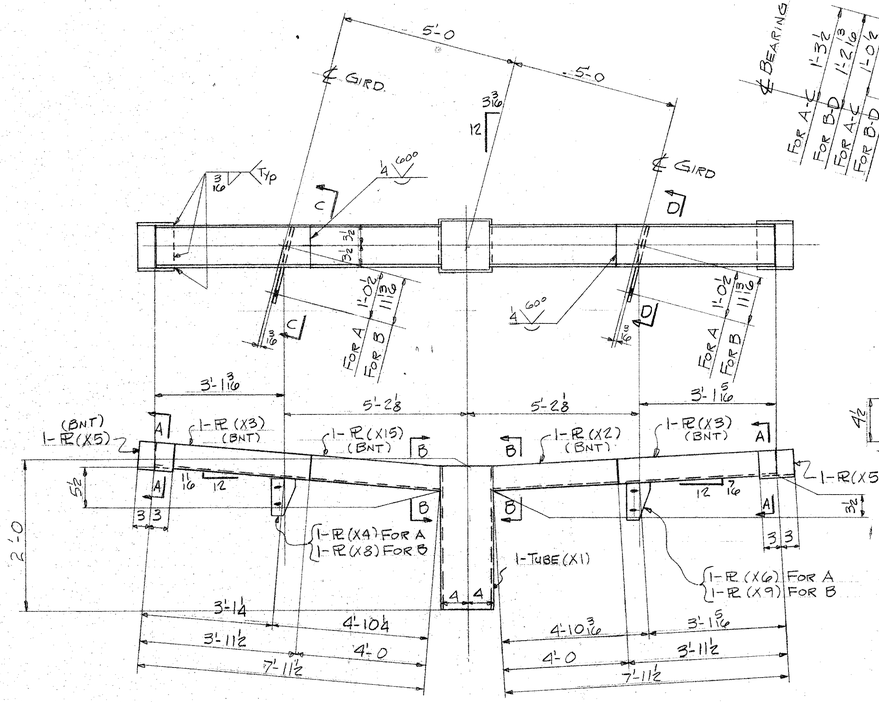
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

REVISIONS	DRAWN BY MP (LAKE) DATE 11-24-69	DETAILS OF BRACING
D	CHECKED BY H.M DATE 12-15-69	STRUCTURE PROJECT NO F-61-2(3)-20-29
C	IN CHARGE OF LK BETTENS	US #61 OVER SKUNK RIVER
B	FAB. PLANT CLINTON	LOCATION LEE & DES MOINES COUNTY IOWA
A	REFERENCE DWGS: E2	OWNER IOWA STATE HIGHWAY COMMISSION

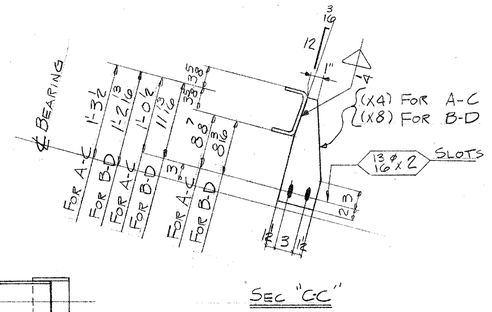
CONTRACT 3403 | DIV. | FABCOD 164 | SHEET 4

GLENNON & KERN, INC., CHICAGO.

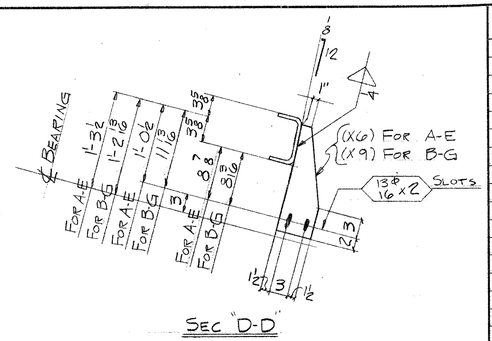
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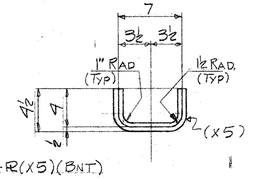
ONE-DRAIN-5A
ONE-DRAIN-5B



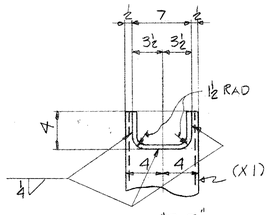
SEC "C-C"



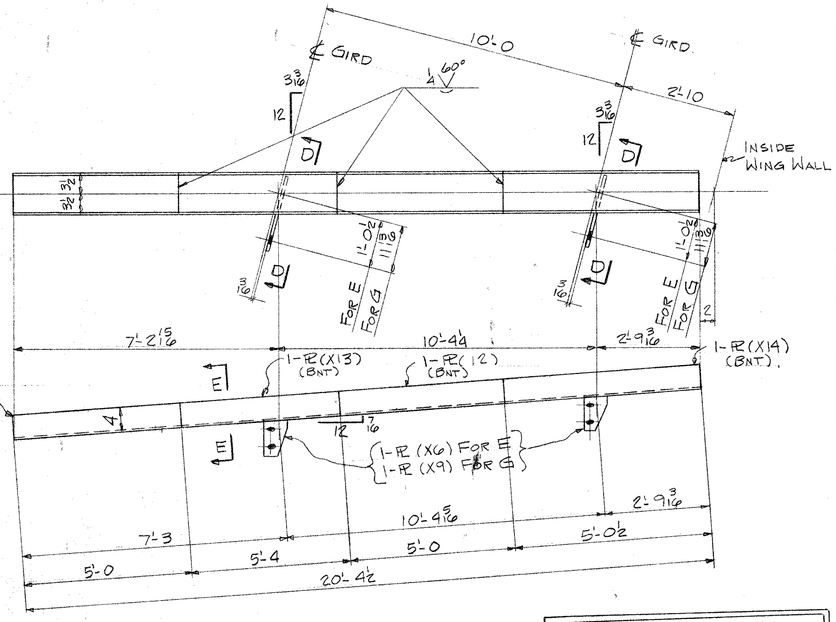
SEC "D-D"



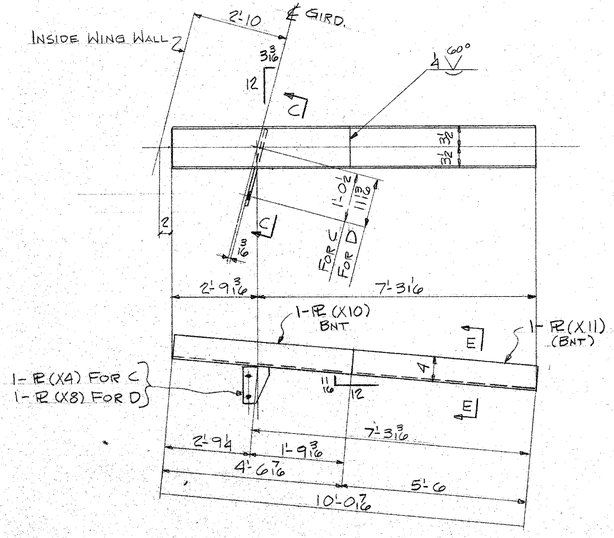
SEC "A A"
(ENLARGED)



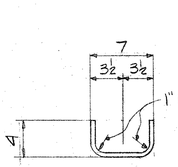
SEC "B B"
(ENLARGED)



ONE-DRAIN-5E
ONE-DRAIN-5G



ONE-DRAIN-5C
ONE-DRAIN-5D



SEC E-E
(TYP)

NOTE
ALL MATL TO BE GALVANIZED AFTER WELDING.
OPEN HOLES 13/16 ø U.N.
WELDING - SEE WELDING PROCEDURES.

PURCHASED ITEMS
SEE BILL OF MATERIAL

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	DRAIN					5A		21'			
2	1	TUBE 8x8x1/4	3 0 3/4				X1	A36		411		
3	1	℞ 12 3/8 x 1/2	4 0 1/4				X2		BNT.	406		
4	2	℞ 12 3/8 x 1/2	3 11 1/2				X3		BNT.	405		
5	1	℞ 6 x 3/8	1 5				X4			410		
6	2	℞ 6 x 1/2	1 2 1/2				X5		BNT	404		
7	1	℞ 6 1/16 x 3/8	1 5				X6			410		
8	1	℞ 12 3/8 x 1/2	4 0 1/4				X15		BNT	406		
9	1	℞ WLD	2 4									
10	1	4 WLD	1 6									
11	ONE	DRAIN					5B		21'			
12	1	TUBE					X1	A36		411		
13	1	℞					X2		BNT.	406		
14	2	℞					X3		BNT.	405		
15	2	℞					X5		BNT.	404		
16	1	℞ 6 x 3/8	1 4 1/4				X8			410		
17	1	℞ 6 1/16 x 3/8	1 4 1/4				X9			410		
18	1	℞					X15					
19	1	4 WLD	1 6									
20	1	3/16 WLD	2 4									
21												
22												
23	ONE	DRAIN					5C		10'			
24	1	℞ 12 3/8 x 1/2	4 6 7/16				X10	A36	BNT	407		
25	1	℞ 12 3/8 x 1/2	5 6				X11		BNT	409		
26	1	℞					X4			410		
27	1	4 WLD	0 9									
28												
29												
30	ONE	DRAIN					5D		10'			
31	1	℞					X10	A36	BNT	407		
32	1	℞					X11		BNT	409		
33	1	℞					X8			410		
34	1	4 WLD										
35												
36												
37	ONE	DRAIN					5E		21'			
38	2	℞ 12 3/8 x 1/2	5 0				X12	A36	BNT	407		
39	1	℞ 12 3/8 x 1/2	5 4				X13		BNT	408		
40	1	℞ 12 3/8 x 1/2	5 0 1/2				X14		BNT	409		
41	2	℞					X6			410		
42	1	4 WLD	1 6									
43												
44												
45	ONE	DRAIN					5G		21'			
46	2	℞					X12	A36	BNT	407		
47	1	℞					X13		BNT	408		
48	1	℞					X14		BNT	409		
49	2	℞					X9			410		
50	1	4 WLD	1 6									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale G. Hardy
Date JAN 28 1970
The approval of the drawings does not relieve the contractor of liability for errors and omissions and does not authorize any departure from the contract requirements.

REVISIONS	
D	
C	
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DRAWN BY MP (LAKE) DATE
CHECKED BY D.W. DATE 12-15-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2

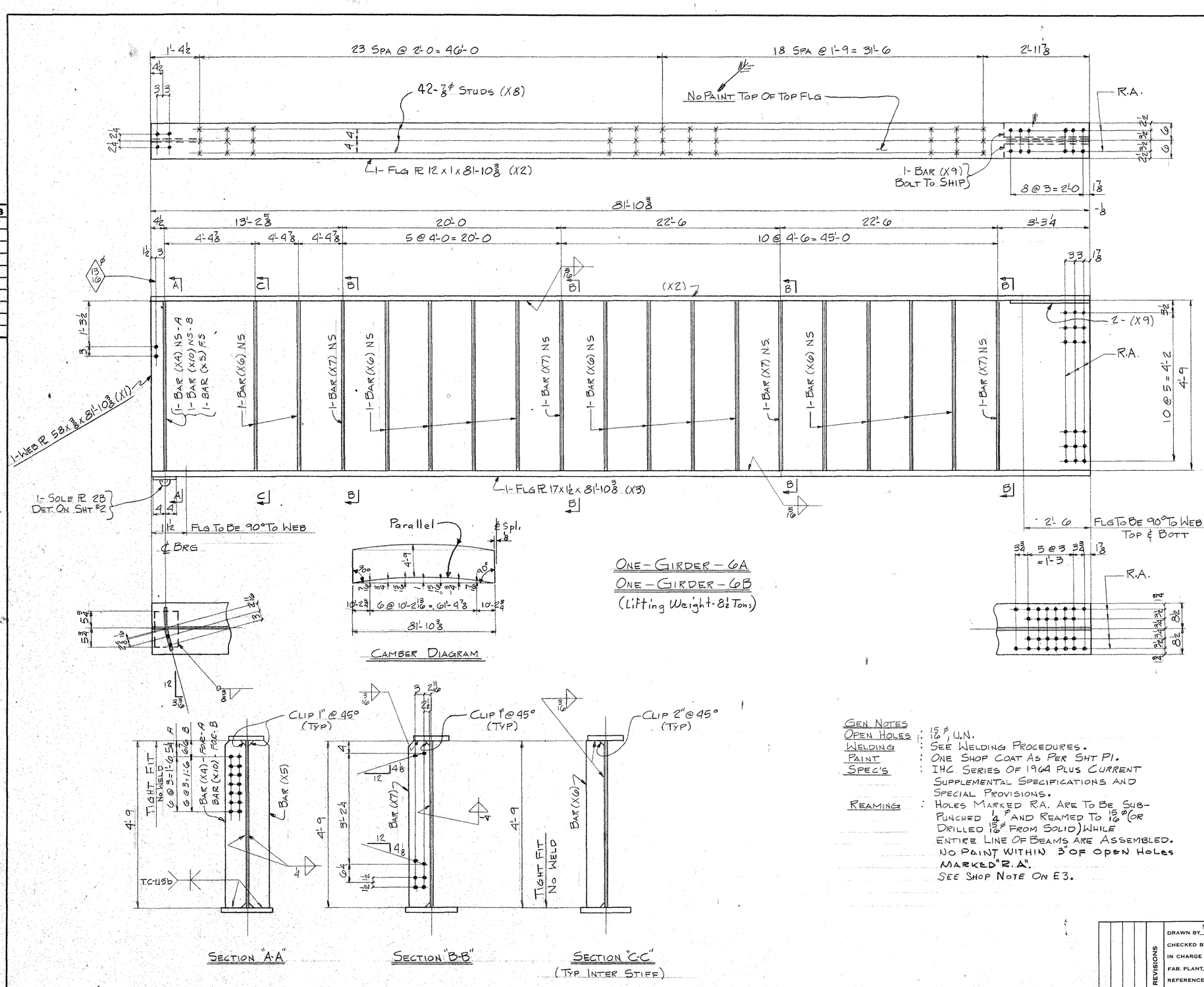
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH. STREET, HAMMOND, INDIANA 46320

DETAILS OF DRAINS
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. | FABCOD 904 | SHEET 5

GLENNON & KERN, INC., CHICAGO

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ONE – GIRDER – 6A

ONE – GIRDER – 6B

(Lifting Weight - 8½ Tons)

GEN NOTES

OPEN HOLES : 15/16ϕ, U.N.

WELDING : SEE WELDING PROCEDURES.

PAINT : ONE SHOP COAT AS PER SHT P1.

SPEC'S : IHC SERIES OF 1964 PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

REAMING : HOLES MARKED R.A. ARE TO BE SUB-PUNCHED 1/4ϕ AND REAMED TO 15/16ϕ (OR DRILLED 15/16ϕ FROM SOLID) WHILE ENTIRE LINE OF BEAMS ARE ASSEMBLED. NO PAINT WITHIN 3" OF OPEN HOLES MARKED "R.A". SEE SHOP NOTE ON E3.

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						6A		82'			
2	ONE	GIRDER						6B		82'			
3													
4													
5	2	PL 58 x ⅜	81	10⅜				(X1)	A36		101		
6	2	PL 12 x 1	81	10⅜				(X2)			106		
7	2	PL 17 x 1½	81	10⅜				(X3)			115		
8	1	BAR 7 x ¾	4	8⅜				(X4)		U.M. FOR-A	211		
9	2	BAR 7 x ¾	4	8⅜				(X5)		UM	211		
10	28	BAR 5 x 9/16	4	8 15/16				(X6)			215		
11	8	BAR 7 x ½	4	8 15/16				(X7)	A36		213		
12	252	WELDED STUDS x ⅞ϕ	0	5				(X8)		NELSON TYPE SSF	M205		
13	4	BAR 5 x ½	2	3⅜				(X9)	A36		206		
14	1	BAR 7 x ¾	4	8⅜				(X10)	A36	UM-FOR-B	211		
15													
16	2	SOLE PLS						2B		DETAILED ON SHT-2			
17													
18													
19	2	5/16 WLD	140	0									
20	2	¼ WLD	55	0									
21	2	5/16 WLD	330	0									
22	2	⅜ WLD	3	3									
23													
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date DEC 23 1970 JAN 20 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details, nor does it consider late acceptance of material not in accordance with the contract requirements.

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

REVISIONS	
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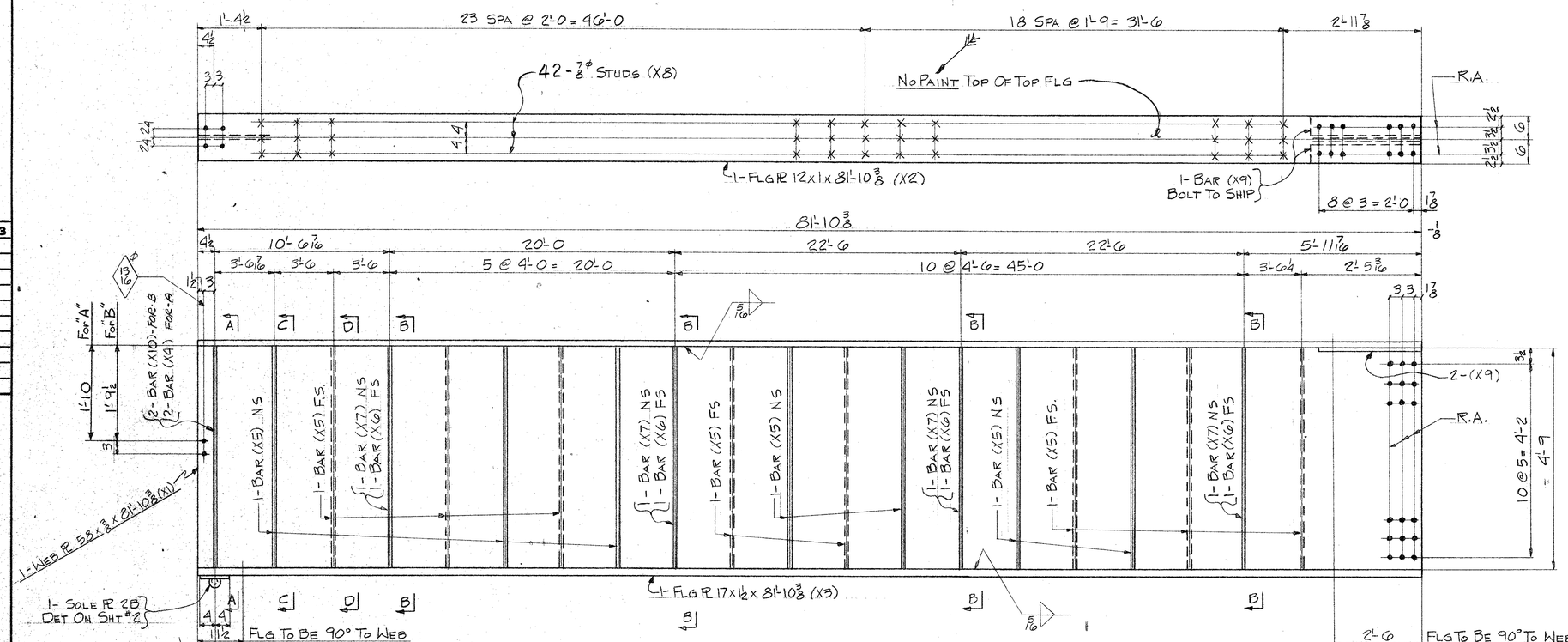
DRAWN BY MP (LAKE) DATE
CHECKED BY O.W.J DATE 12-10-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

DETAILS OF GIRDERS- 1 & 5 (SPANS 1 & 9)
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

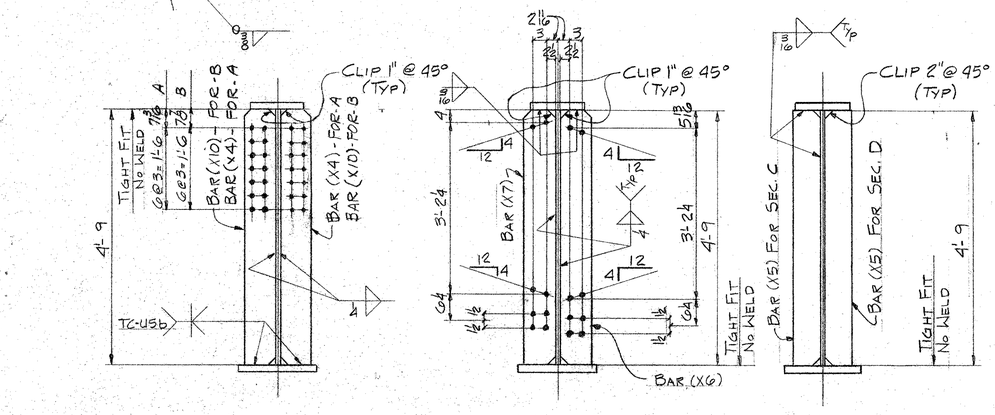
CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 6

SLENNON & KERN, INC., CHICAGO

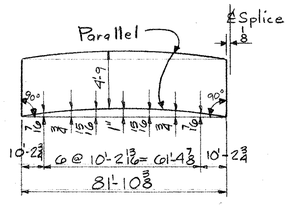
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ONE-GIRDER- 7A
ONE-GIRDER- 7B
(Lifting Weight 8½ Tons)



SECTION AA
SECTION BB
SECTION CC
SECTION DD
(TYP. INTER. STIFF)



CAMBER DIAGRAM

NOTE:
FOR GEN. NOTES SEE SHT #6

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						7A		82'			
2	ONE	GIRDER						7B		82'			
3													
4													
5	2	PL 58 x ⅜	81	10⅜				(X1)	A36		101		
6	2	PL 12 x 1	81	10⅜				(X2)			106		
7	2	PL 17 x 1½	81	10⅜				(X3)			115		
8	2	BAR 7 x ⅜	4	8⅜				(X4)		UM-FOR-A	211		
9	30	BAR 5 x 7/16	4	8 7/16				(X5)			215		
10	8	BAR 7 x ½	4	8 7/16				(X6)			213		
11	8	BAR 7 x ½	4	8 7/16				(X7)	A36		213		
12	252	WELDED STUDS x ⅞ø	0	5				(X8)		NELSON TYPE S3L	M205		
13	4	BAR 5 x ½	2	3⅜				(X9)	A36		206		
14	2	BAR 7 x ¾	4	8⅜				(X10)	A36	UM-FOR-B	211		
15													
16													
17	2	SOLE PL						2B		DETAILED ON SHT #2			
18													
19	2	3/16 WLD	155	0									
20	2	¼ WLD	92	0									
21	2	5/16 WLD	330	0									
22	2	⅜ WLD	3	3									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Oesby
Date JAN 26 1970
The approval of this detailing does not relieve the contractor of responsibility for errors in dimensions and details, neither does it constitute acceptance of material not in accordance with the contract requirements.

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

REVISIONS	
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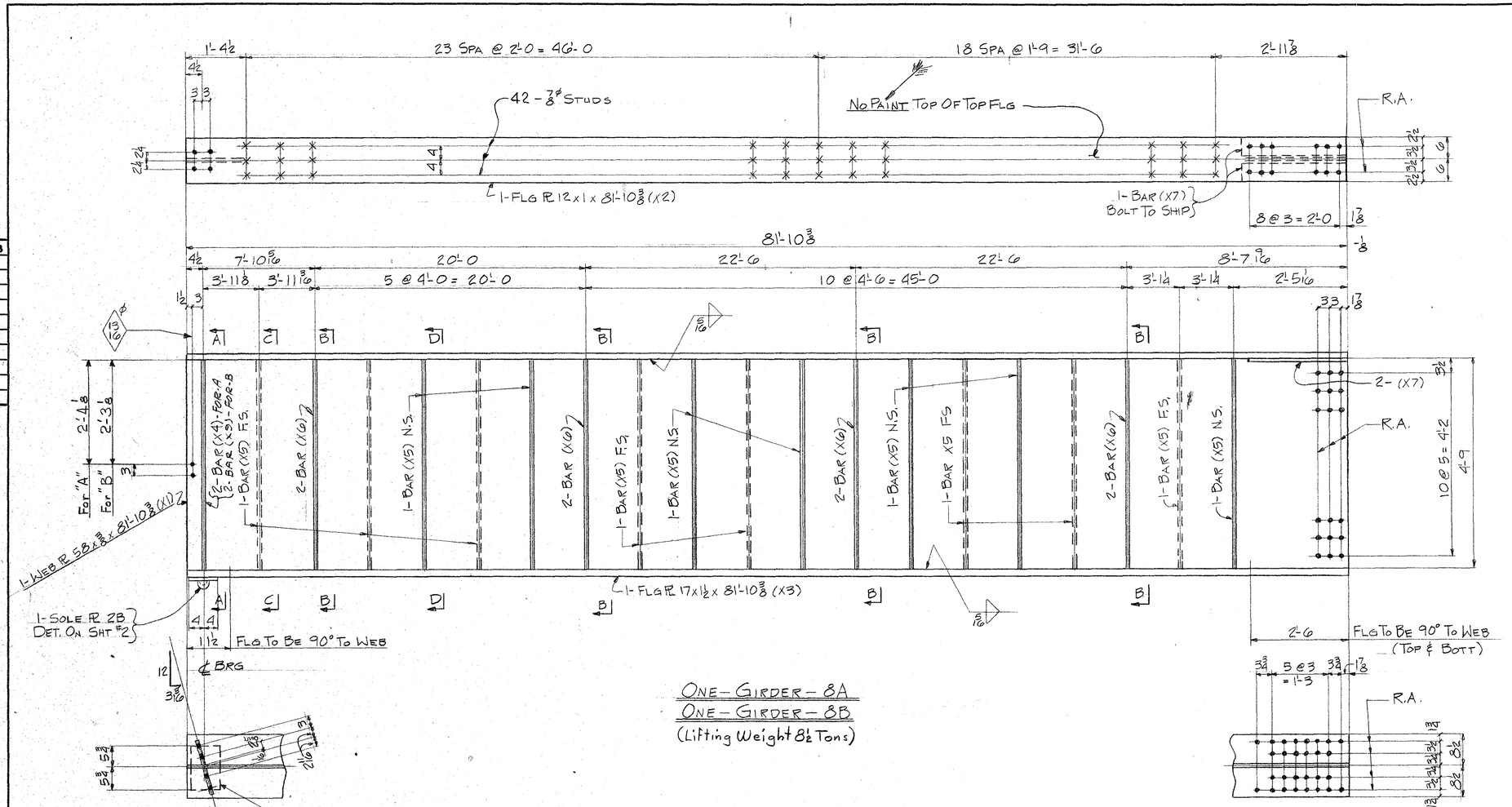
DRAWN BY MP (LAKE) DATE 12-1-69
CHECKED BY O.W. DATE 12-10-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

DETAILS OF GIRDERS 2 & 9 (SPANS 1 & 9)
STRUCTURE PROJECT NO F-61-2(3)-20-29
-US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

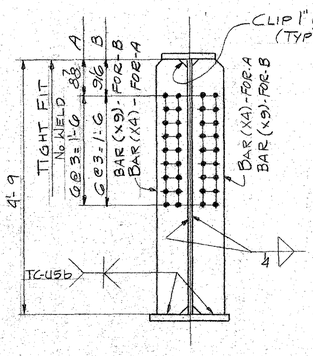
CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 7

GLENNON & KERN, INC., CHICAGO

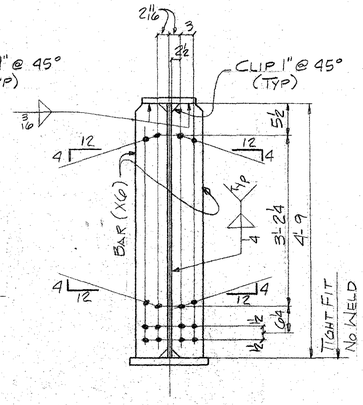
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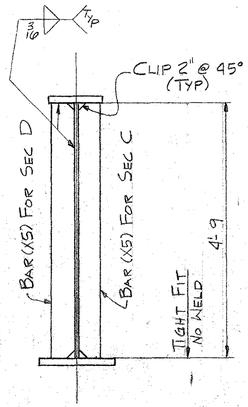
ONE-GIRDER-8A
ONE-GIRDER-8B
(Lifting Weight 8½ Tons)



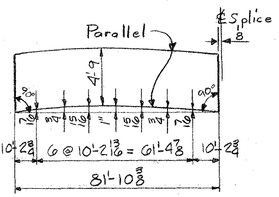
SECTION AA



SECTION BB



SECTION CC
SECTION DD
(Typ Inter Stiff)



CAMBER DIAGRAM

NOTE.
FOR GENERAL NOTES SEE SHT. #6

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						8A		82'			
2	ONE	GIRDER						8B		82'			
3													
4													
5	2	PL 58 x ⅜	81	10⅜				(X1)	A36		101		
6	2	PL 12 x 1	81	10⅜				(X2)	"		106		
7	2	PL 17 x 1½	81	10⅜				(X3)	"		115		
8	2	BAR 7 x ⅜	4	8⅞				(X4)		UM-FOR A	211		
9	30	BAR 5 x 5⁄16	4	8⅞				(X5)			215		
10	16	BAR 7 x ½	4	8⅞				(X6)			213		
11	4	BAR 5 x ½	2	3⅜				(X7)	A36		206		
12	252	WELDED STUDS x ⅞	0	5				(X8)		NELSON TYPE S3F	M205		
13	2	BAR 7 x ⅜	4	8⅞				(X9)	A36	U.M. FOR B	211		
14													
15	2	SOLE PL						2B		DETAILED ON SHT 2			
16													
17													
18													
19	2	3⁄16 WLD	155	0									
20	2	¼ WLD	98	0									
21	2	5⁄16 WLD	330	0									
22	2	⅜ WLD	3	3									
23													
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APPROVED
IOWA STATE HIGHWAY COMMISSION
BY Dale E. Darby
Date 12 28 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Neither does it constitute acceptance of material not in accordance with the contract requirements.

REVISIONS				
D	C	B	A	

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

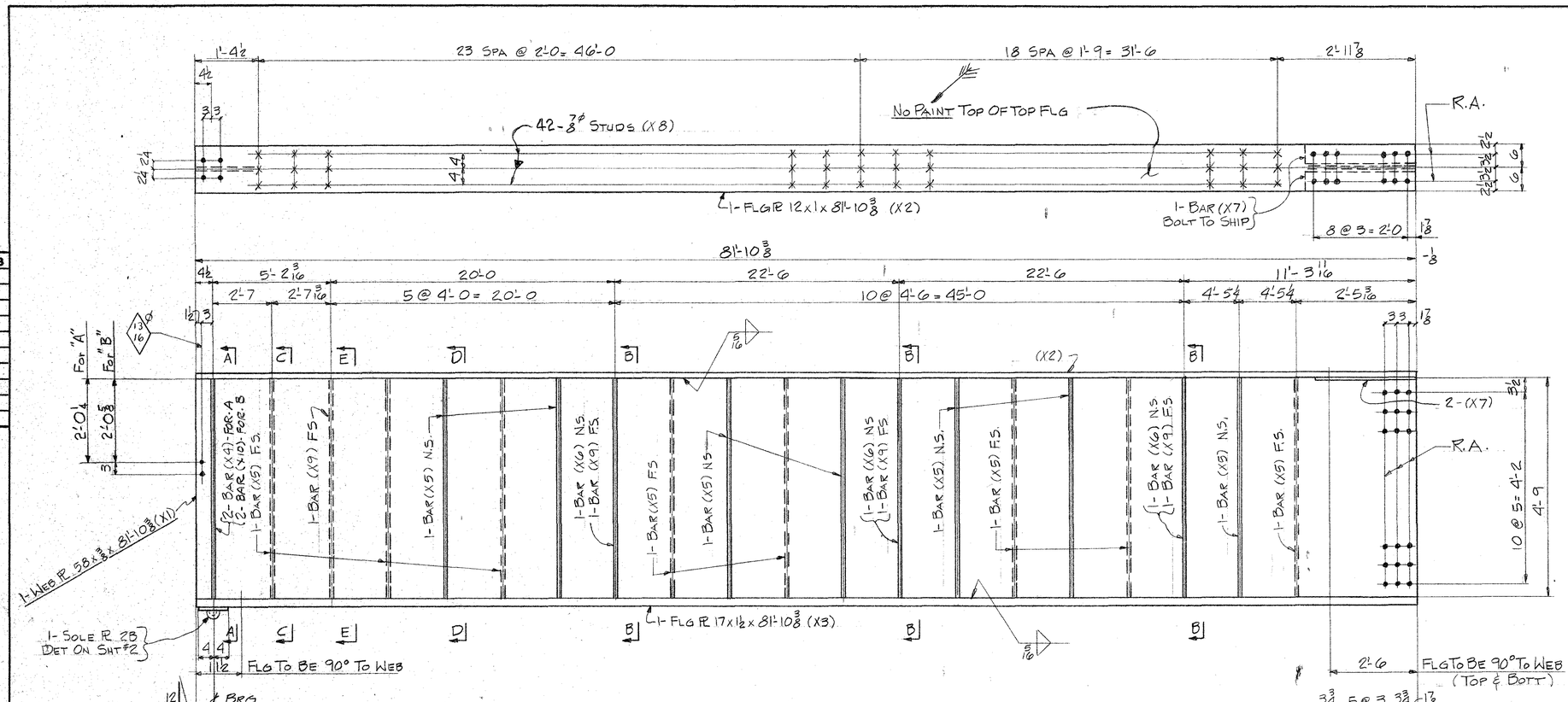
DRAWN BY MP (LAKE) DATE
CHECKED BY D.W. DATE 12-10-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

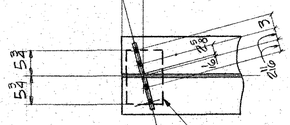
DETAILS OF GIRDERS #3 (SPANS 1 & 9)
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

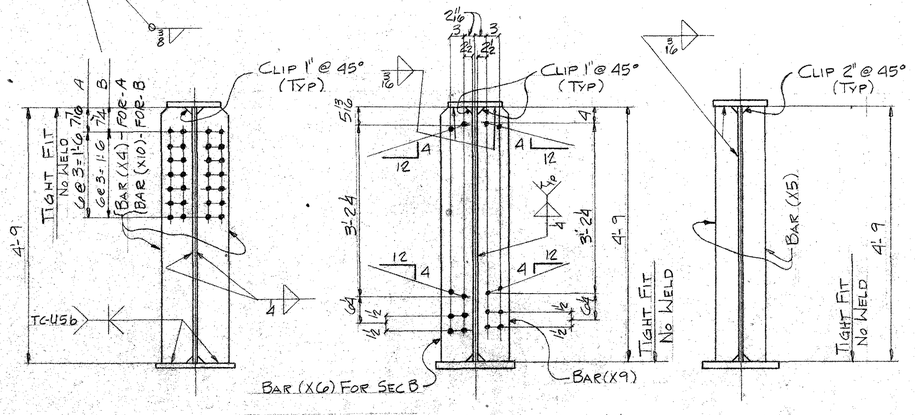
CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 8

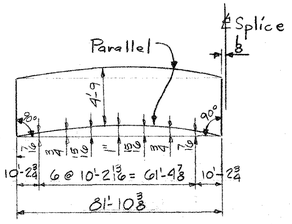
GLENNON & KERN, INC., CHICAGO

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One-Girder-9A
One-Girder-9B
(Lifting Weight 8½ Tons)

Section AA

Section BB
Section EE

Section CC
Section DD
(Typ Inter. Stiff)

Camber Diagram

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						9A		82'			
2	ONE	GIRDER						9B		82'			
3													
4													
5	2	R 58 x ⅜	81	10⅜				(X1)	A36		101		
6	2	R 12 x 1	81	10⅜				(X2)			106		
7	2	R 17 x 1½	81	10⅜				(X3)			115		
8	2	Bar 7 x ¾	4	8⅞				(X4)		UM-For-A	211		
9	30	Bar 5 x 5/16	4	8 15/16				(X5)			215		
10	6	Bar 7 x ½	4	8 15/16				(X6)			213		
11	4	Bar 5 x ½	2	3⅜				(X7)	A36		206		
12	252	Welded Studs x ⅞	0	5				(X8)		Nelson Type S3L	M205		
13	8	Bar 7 x ½	4	8 15/16				(X9)	A36		213		
14	2	Bar 7 x ¾	4	8⅞				(X10)	A36	UM-For-B	211		
15													
16													
17	2	Sole R						2B		Detail on Sht 2			
18													
19	2	5/16 WLD	153	0									
20	2	4 WLD	84	0									
21	2	5/16 WLD	330	0									
22	2	⅜ WLD	3	3									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JAN 23 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Nor does it constitute acceptance of material not in accordance with the contract requirements.

Note:
For General Notes
See Sht # 6

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

REVISIONS			
D	C	B	A

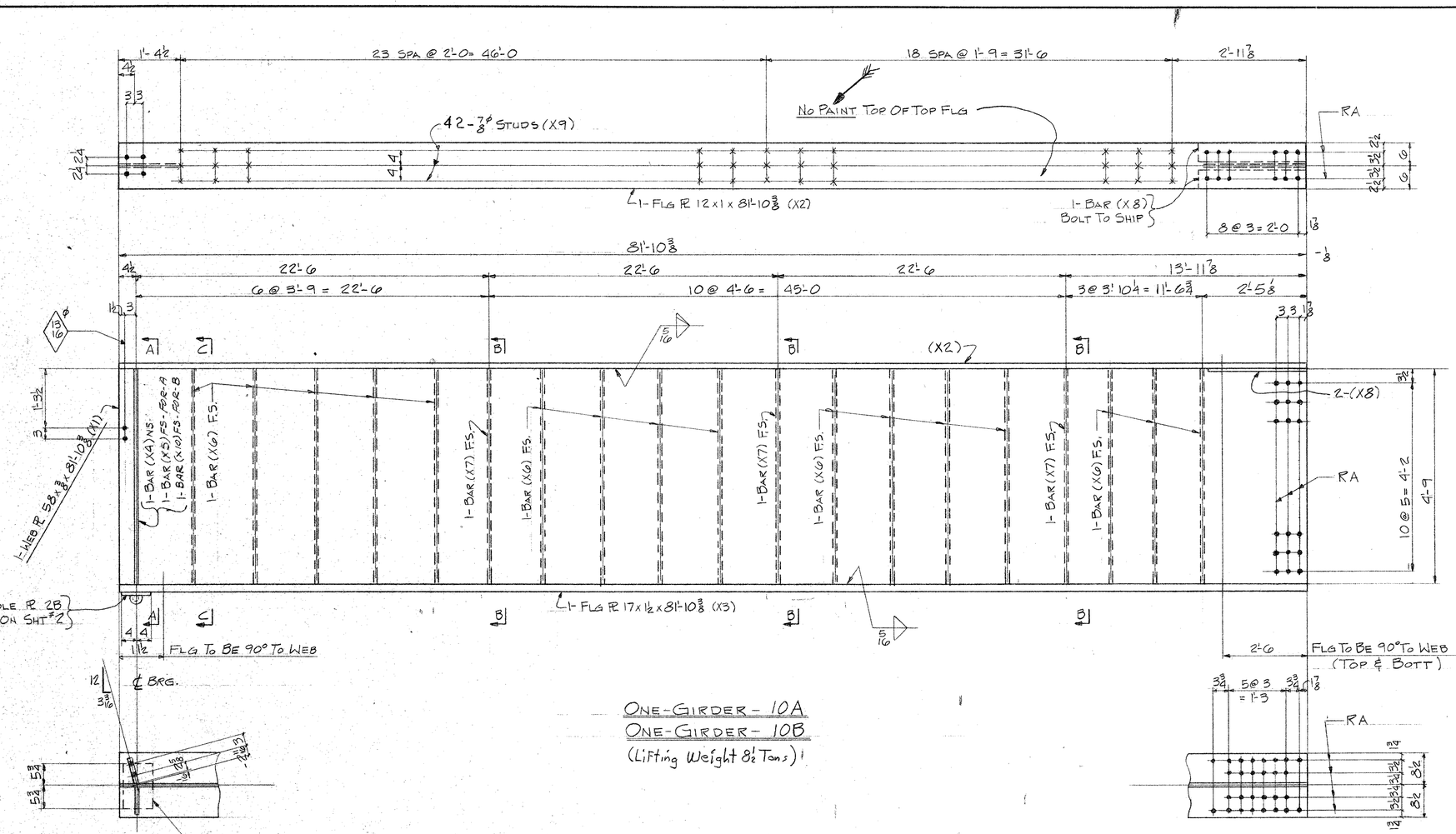
DRAWN BY MP (LAKE) DATE
CHECKED BY O.W. DATE 12-10-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS. E2 & E3

DETAILS OF Girders 2 & 9 (Spans 1 & 9)
STRUCTURE Project No F-61-2(3)-20-29
US #61 Over Skunk River
LOCATION Lee & Des Moines County, Iowa
OWNER Iowa State Highway Commission

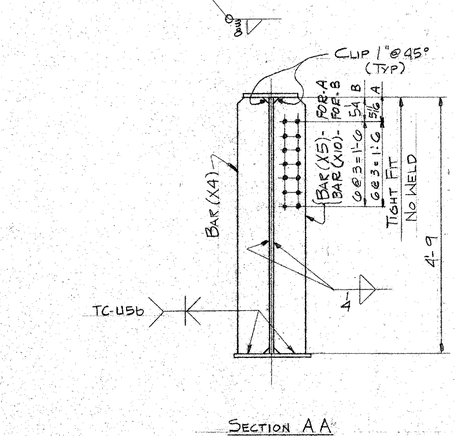
CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 9

GLENNON & KERN, INC., CHICAGO

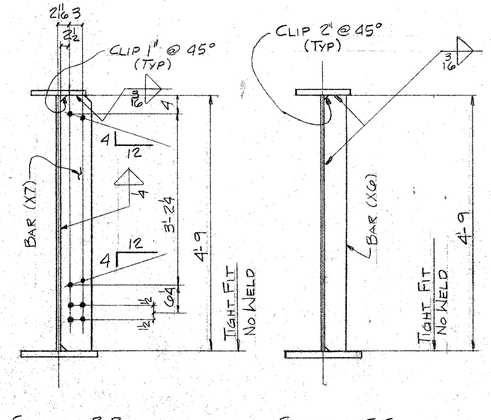
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ONE-GIRDER - 10A
ONE-GIRDER - 10B
(Lifting Weight 8½ Tons)

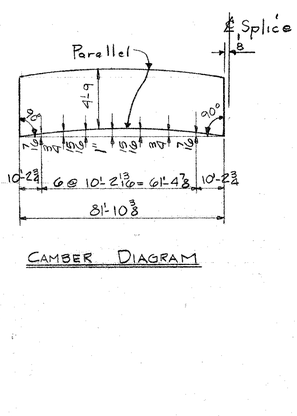


SECTION AA



SECTION BB

SECTION C-C
(TYP INTER. STIFF)



CAMBER DIAGRAM

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER					10A		82'			
2	ONE	GIRDER					10B		82'			
3												
4												
5	2	PL 58 x ⅜	81 10⅜				(X1)	A36		101		
6	2	PL 12 x 1	81 10⅜				(X2)			106		
7	2	PL 17 x 1½	81 10⅜				(X3)			115		
8	2	BAR 7 x ⅜	4 8⅞				(X4)		UM	211		
9	1	BAR 7 x ⅜	4 8⅞				(X5)		UM-FOR-A	211		
10	32	BAR 5 x 5/16	4 8⅞				(X6)			215		
11	6	BAR 7 x ½	4 8⅞				(X7)			213		
12	4	BAR 5 x ½	2 3⅜				(X8)	A36		206		
13	252	WELDED STUDS x ⅞"	0 5				(X9)		NELSON TYPE-S3L	M205		
14	1	BAR 7 x ¾	4 8⅞				(X10)	A36	UM-FOR-B	211		
15												
16	2	SOLE PL					2B		DETAILED ON SHT 2			
17												
18												
19	2	5/16 WLD	160 0									
20	2	¼ WLD	47 0									
21	2	5/16 WLD	330									
22	2	⅜ WLD	3 3									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JUN 10 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Neither does it constitute the acceptance of material not in accordance with the contract requirements.

FOR GEN NOTES SEE SHT #6

REVISIONS	DRAWN BY	CHECKED BY	IN CHARGE OF	FAB. PLANT	REFERENCE DWGS.
D C B A	M (LAKE) DATE	D.W. DATE 12-10-69	L K BETTENS	CLINTON	E2 & E3

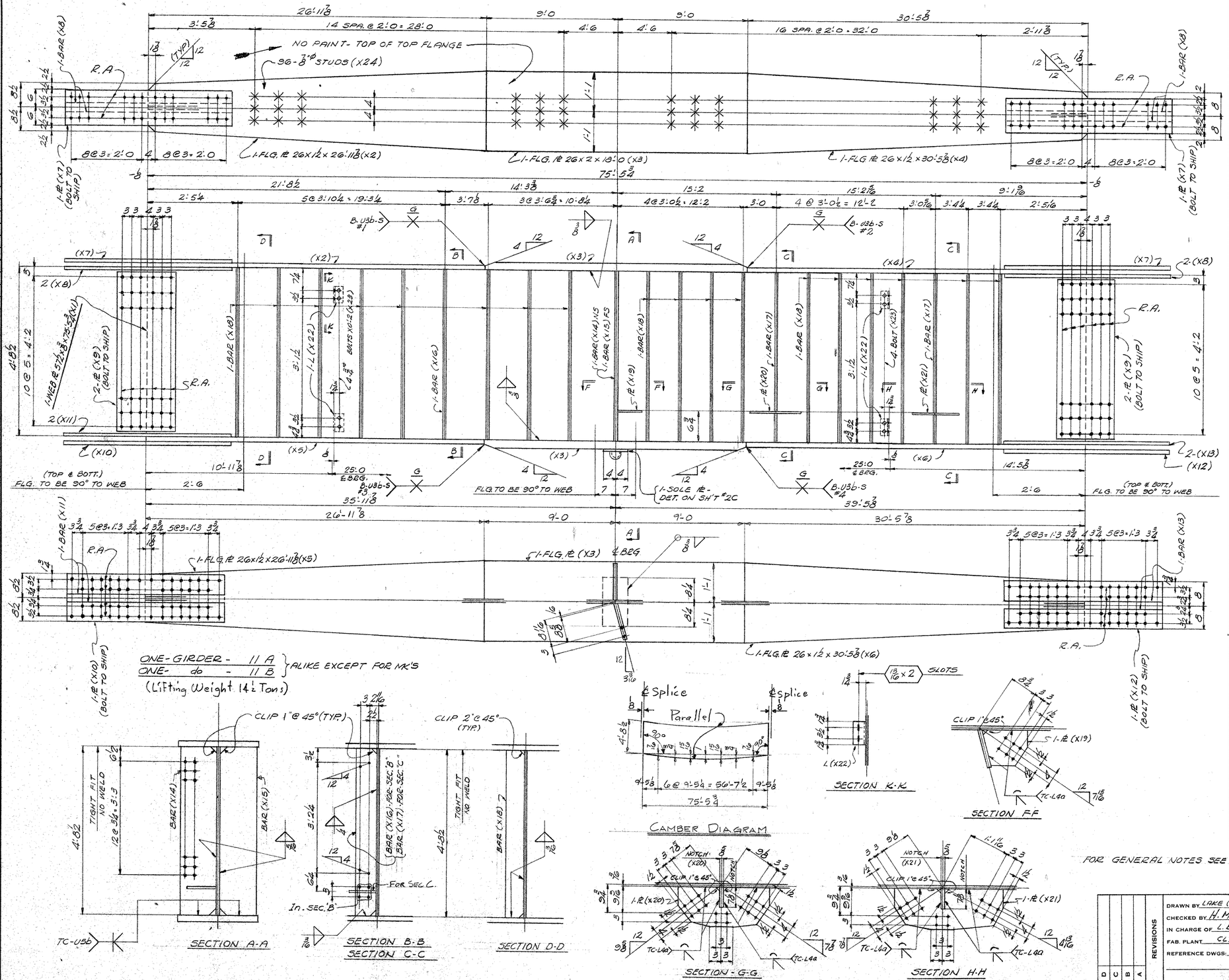
ALLIED ENGINEERS FABRICATORS ERECTORS — STRUCTURAL STEEL COMPANY
1428-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF GIRDERS 5 & 1 (SPANS 1 & 9)
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 10

GLENNON & KERN, INC., CHICAGO

X	0	1	2	3
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ONE - GIRDER - 11 A
ONE - do - 11 B
} ALIKE EXCEPT FOR MK'S

(Lifting Weight 14½ Tons)

CAMBER DIAGRAM

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1													
2	ONE	GIRDER						11A					
3	ONE	GIRDER						11B					
4													
5	2	PL 57½ x ⅜	75	5¾				(X1)	A36		106		
6	2	PL 26 x ½	26	11⅞				(X2)		See Design For Pay Weight	107		
7	4	PL 26 x 2	18	0				(X3)			108		
8	2	PL 26 x ½	30	5⅜				(X4)		See Design For Pay Weight	109		
9	2	PL 26 x ½	26	11⅞				(X5)			107		
10	2	PL 26 x ½	30	5⅜				(X6)			109		
11	4	PL 12 x 11/16	4	7				(X7)		U/M	204		
12	8	BAR 5 x ⅜	4	7				(X8)			205		
13	8	PL 19 x ⅜	4	5				(X9)			203		
14	2	PL 17 x ¾	4	4				(X10)			207		
15	4	BAR 7 x 1	4	4				(X11)			208		
16	2	PL 16 x ¾	4	4				(X12)			209		
17	4	BAR 7 x ⅜	4	4				(X13)			210		
18	2	PL 13 x 1⅛	4	8⅜				(X14)			212		
19	2	PL 13 x 1⅛	4	8⅜				(X15)		U/M	212		
20	2	BAR 7 x ½	4	8 7/16				(X16)			213		
21	4	BAR 7 x ½	4	8 7/16				(X17)			213		
22	30	BAR 6 x ⅜	4	8 1/16				(X18)			216		
23	2	PL 11⅞ x ½	1	3				(X19)			403		
24	2	PL 14⅝ x ½	2	5½				(X20)			320		
25	2	PL 14⅝ x ½	3	1				(X21)	A36		319		
26	8	L 3 x 3 x ¼	0	7				(X22)	A36		504		
27	16	⅞"ø BOLTS	0	2				(X23)	A307	H.H.E.N.	M101		
28													
29	182	WELDED STUD x ⅞"	0	5				(X24)		NELSON TYPE S3F	N1205		
30													
31													
32	2	SOLE PL.						2C		DETAILED ON SH'T #2			
33													
34													
35	2	⅜ WLD	180	0									
36	2	¼ WLD	27	3									
37	2	5/16 WLD	18	6									
38	2	⅜ WLD	306	0									
39	2	BWD @ 5.1 #/FT	8	8						B-U36-S			
40	24	S.B.											
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JAN 28 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details of material. It must be in accordance with the contract requirements.

FOR GENERAL NOTES SEE SHT# 6

REVISIONS				
D	C	B	A	

DRAWN BY LAKE (DMW) DATE
CHECKED BY H.M DATE 12-15-69
IN CHARGE OF L. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

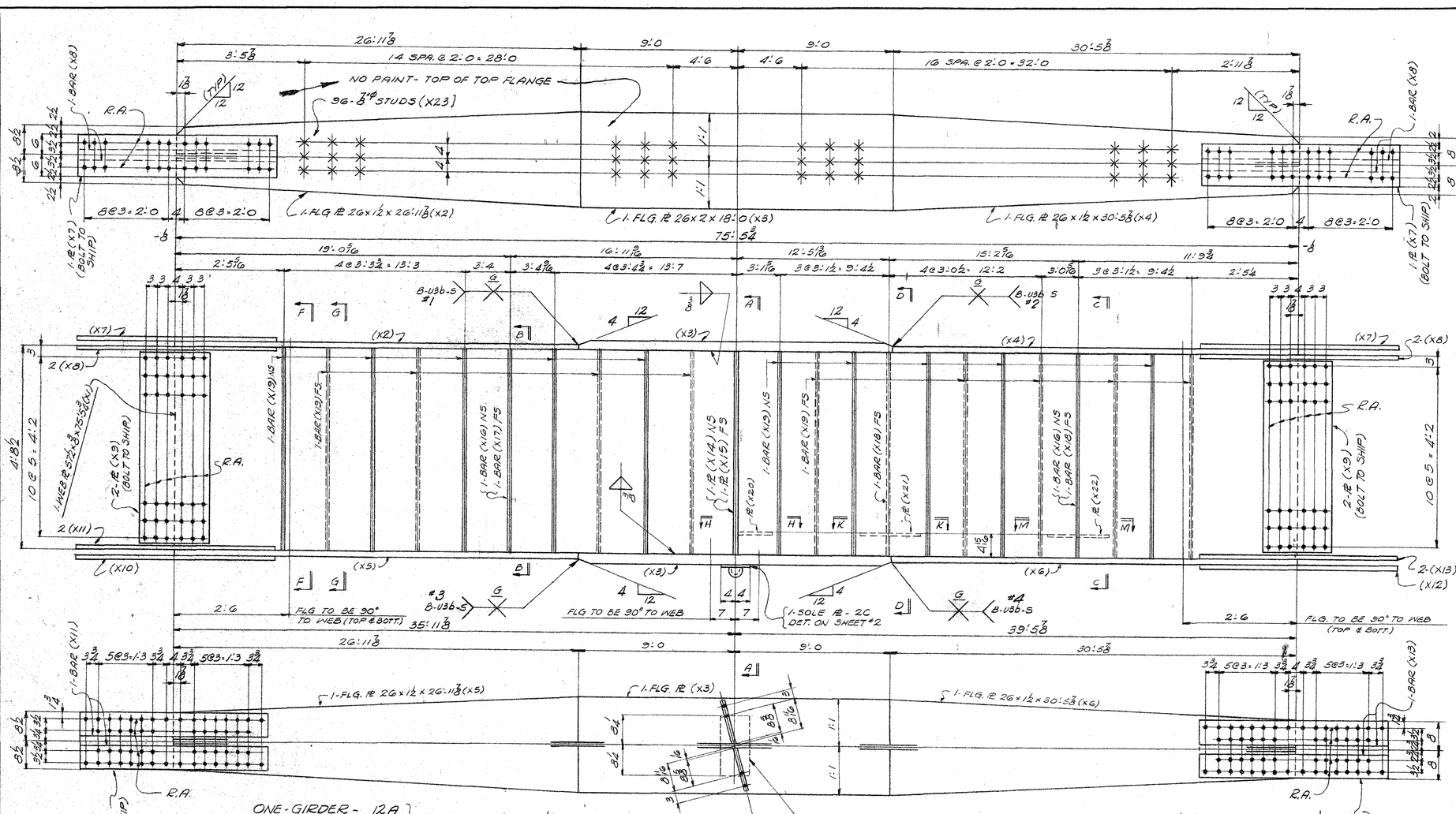
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1438-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF Fascia Girders Lines 1 & 5 (Spans 2 & 8)
STRUCTURE Project No F-61-2(3)-20-29
US #61 Over Skunk River
LOCATION Lee & Des Moines County Iowa
OWNER Iowa State Highway Commission

CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 11

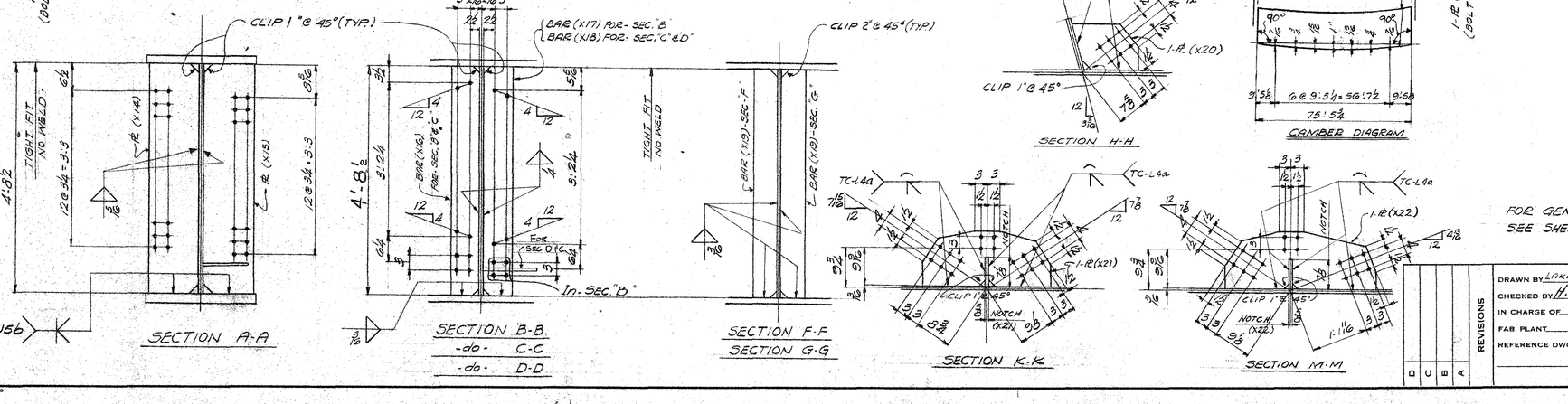
GLENNON & SONS, INC., CHICAGO

X	0	1	2	3
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ONE - GIRDER - 12A
ONE - GIRDER - 12B
} ALIKE EXCEPT FOR MK'S

(Lifting Weight 14½ Tons)



FOR GENERAL NOTES SEE SHEET #G

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1												
2	ONE	GIRDER					12A		76'			
3	ONE	GIRDER					12B		76'			
4												
5												
6	2	PL 57½ x ⅜	75 5¾				(X1)	A36		102		
7	2	PL 2G x 1½	2G 11⅞				(X2)	A	See Designs For Pay Weight	107		
8	4	PL 2G x 2	18 0				(X3)			108		
9	2	PL 2G x 1½	30 5⅞				(X4)		See Designs For Pay Weight	109		
10	2	PL 2G x 1½	2G 11⅞				(X5)			107		
11	2	PL 2G x 1½	30 5⅞				(X6)			109		
12	4	PL 12 x 1/16	4 7				(X7)		UM	204		
13	6	BAR 5 x ⅜	4 7				(X8)			205		
14	8	PL 19 x ⅜	4 5				(X9)			203		
15	2	PL 17 x ¾	4 4				(X10)			207		
16	4	BAR 7 x 1	4 4				(X11)			208		
17	2	BAR 16 x ¾	4 4				(X12)			209		
18	4	PL 7 x ⅜	4 4				(X13)			210		
19	2	PL 13 x 1⅝	4 8⅜				(X14)			212		
20	2	PL 13 x 1⅝	4 8⅜				(X15)		UM	212		
21	4	BAR 7 x ½	4 8 1/16				(X16)			213		
22	2	BAR 7 x ½	4 8 1/16				(X17)			213		
23	4	BAR 7 x ½	4 8 1/16				(X18)			213		
24	38	BAR 6 x ⅜	4 8 1/16				(X19)			216		
25	2	PL 12 1/16 x ½	1 5 13/16				(X20)			402		
26	2	PL 14⅝ x ½	2 7¾				(X21)			319		
27	2	PL 14⅝ x ½	3 0 1/16				(X22)	A36		319		
28	192	WELDED STUDS x ⅞"	0 5				(X23)		NELSON TYPE 33E	M225		
29	24	S.B.										
30	2	Sole PL					2C		Detailed On Sheet # 2			
31												
32	2	3/16 WLD	184 0									
33	2	¼ WLD	45 6									
34	2	5/16 WLD	18 6									
35	2	⅜ WLD	306 0									
36	2	BNDG 5.1 #/FT	8 8						B-U36-S			
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Early
Date JAN 28 1970
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Further, such approval is not an acceptance of material not in accordance with the contract requirements.

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

DRAWN BY LAKE (DMW) DATE
CHECKED BY H. M DATE 9-15-69
IN CHARGE OF L. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

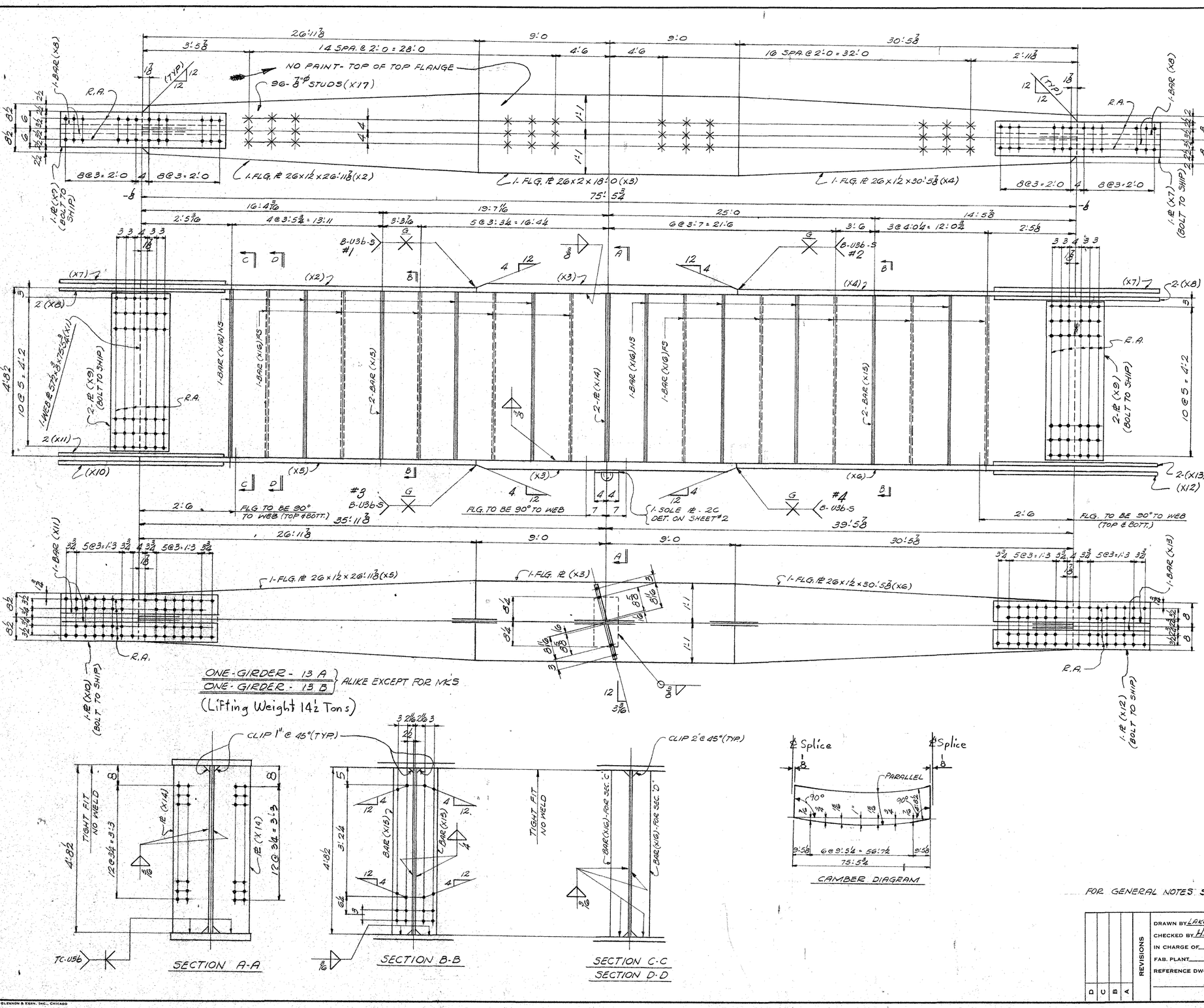
REVISIONS
D U B A

DETAILS OF GIRDERS - LINE 2 & 2 - SPAN 2 & 8
STRUCTURE 685:0 x 44:0 CONTINUOUS WELDED GIRDER BRIDGE
PROJECT NO F-61-2(3)-20-29
LOCATION DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 12

GLENNON & KERN, INC., CHICAGO

X	0	1	2	3
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ONE - GIRDER - 13 A
ONE - GIRDER - 13 B
} ALIKE EXCEPT FOR MK'S

(Lifting Weight 14½ Tons)

CAMBER DIAGRAM

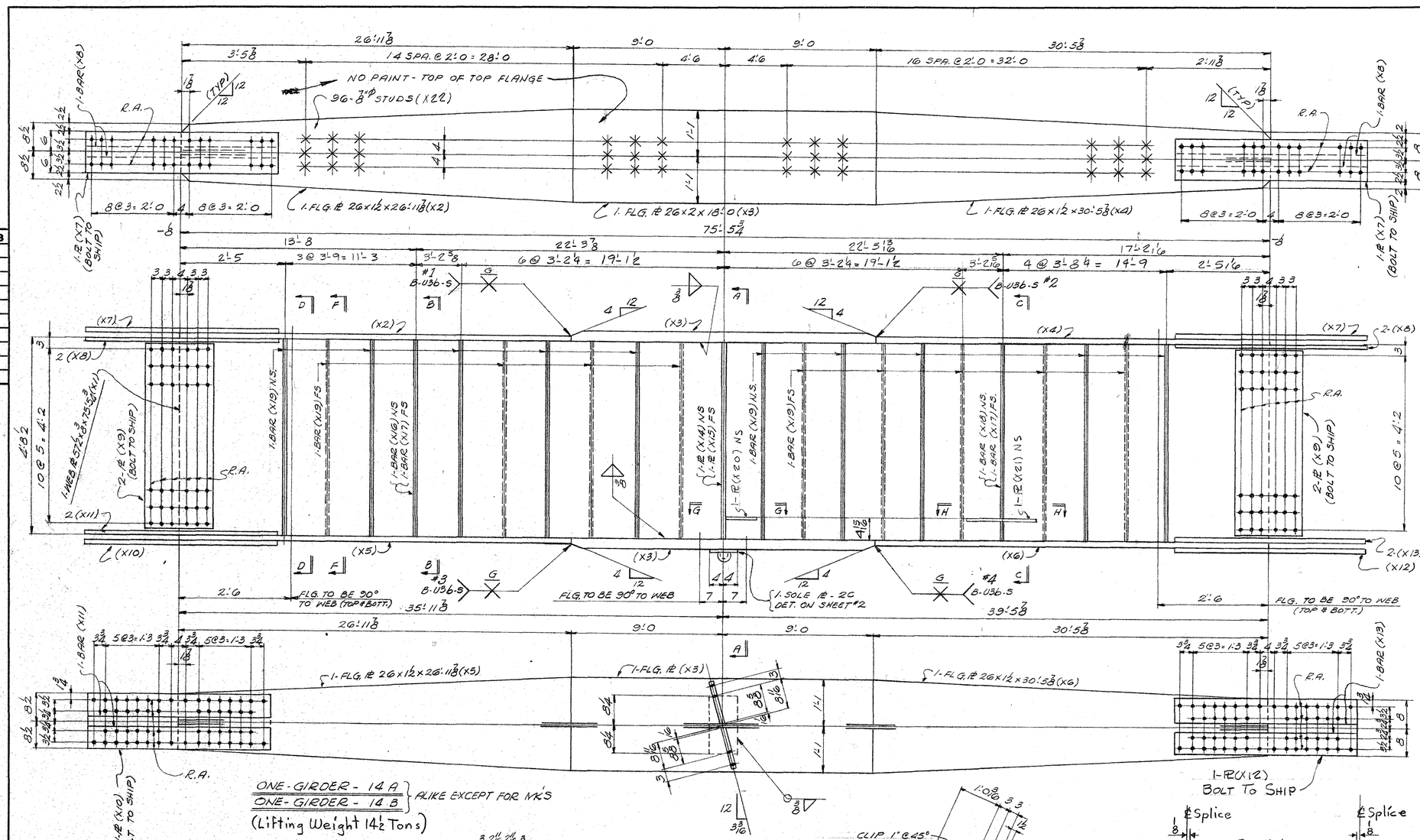
FOR GENERAL NOTES SEE SHEET #6

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1												
2	ONE	GIRDER					13 A		76'			
3	ONE	GIRDER					13 B		76'			
4												
5												
6	2	PL 57½ x 3/8	75 5 3/4				(X1)	A36		102		
7	2	PL 26 x 1½	26 11 3/8				(X2)		See Design's For Pay Weight	107		
8	4	PL 26 x 2	18 0				(X3)			108		
9	2	PL 26 x 1½	30 5 3/8				(X4)		See Design's For Pay Weight	109		
10	2	PL 26 x 1½	26 11 3/8				(X5)			107		
11	2	PL 26 x 1½	30 5 3/8				(X6)			109		
12	4	PL 12 x 1/16	4 7				(X7)		LIM	204		
13	6	BAR 5 x 3/8	4 7				(X8)			205		
14	8	PL 19 x 3/8	4 5				(X9)			203		
15	2	PL 17 x 3/4	4 4				(X10)			207		
16	4	BAR 7 x 1	4 4				(X11)			208		
17	2	PL 16 x 3/4	4 4				(X12)			209		
18	4	BAR 7 x 7/8	4 4				(X13)			210		
19	4	PL 13 x 1 3/8	4 8 3/8				(X14)		LIM	212		
20	8	BAR 7 x 5/8	4 8 1/16				(X15)			214		
21	36	BAR 6 x 3/8	4 8 1/16				(X16)	A36		216		
22	192	WELDED STUD x 3/4"	0 5				(X17)		NELSON TYPE 3SF	W205		
23												
24												
25												
26	2	SOLE PL					2C		DETAILED ON SHT 2			
27												
28												
29												
30												
31	2	5/16 WLD	171 0									
32	2	¼ WLD	36 4									
33	2	5/16 WLD	18 2									
34	2	3/8 WLD	306 0									
35	2	BWD @ 5.1 #/FT	8 8						B-U36-S			
36	24	S.B.										
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
JAN 28 1970
Date
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions or design, nor does it relieve him of responsibility for material not in accordance with the contract requirements.

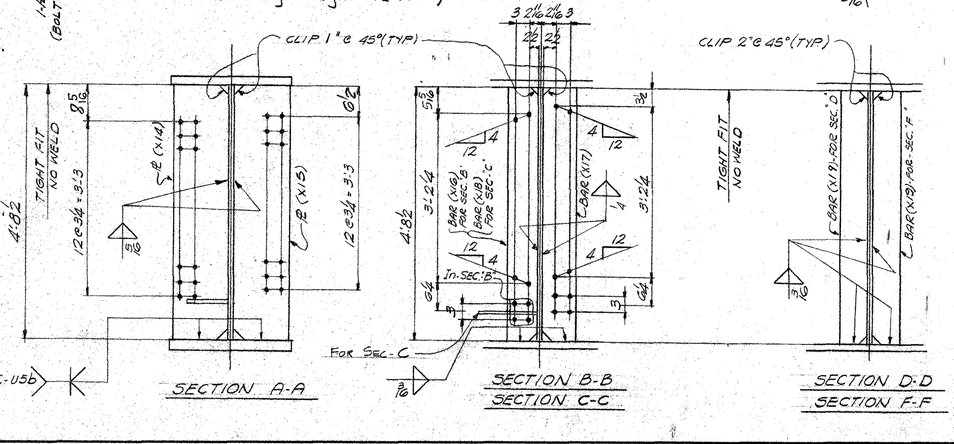
REVISIONS	DRAWN BY LAKE (DMW) DATE	ALLIED ENGINEERS FABRICATORS ERECTORS — STRUCTURAL STEEL COMPANY 1825-165TH STREET, HAMMOND, INDIANA 46320
D U B A	CHECKED BY H.M DATE 1-15-69	DETAILS OF GIRDER LINE #3 SPANS 2 & 8
	IN CHARGE OF L. BETTENS	STRUCTURE PROJECT NO F-61-2(3)-20-29 US #61 OVER SKUNK RIVER
	FAB. PLANT CLINTON	LOCATION LEE & DES MOINES COUNTY, IOWA
	REFERENCE DWGS: E2 & E3	OWNER IOWA STATE HIGHWAY COMMISSION
		CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 13

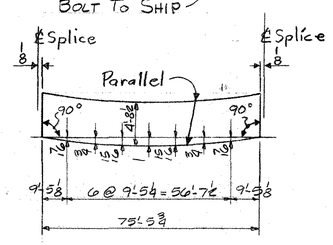
GLENNON & SONS, INC., CHICAGO



ONE-GIRDER - 14 A
ONE-GIRDER - 14 B
} ALIKE EXCEPT FOR MK'S

(Lifting Weight 14½ Tons)





LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1													
2	ONE	GIRDER						14A		76'			
3	ONE	GIRDER						14B		76'			
4													
5													
6	2	PL 57½x⅜	75	5¾				(X1)	A36		102		
7	2	PL 26x1½	26	11⅞				(X2)		See Designs For Pay Weight	107		
8	4	PL 26x2	18	0				(X3)			108		
9	2	PL 26x1½	30	5⅞				(X4)		See Designs For Pay Weight	109		
10	2	PL 26x1½	26	11⅞				(X5)			107		
11	2	PL 26x1½	30	5⅞				(X6)			109		
12	4	PL 12x⅜	4	7				(X7)		U.M.	204		
13	3	BAR 5x⅜	4	7				(X8)			205		
14	3	PL 19x⅜	4	5				(X9)			203		
15	2	PL 17x¾	4	4				(X10)			207		
16	4	BAR 7x1	4	4				(X11)			208		
17	2	PL 16x¾	4	4				(X12)			209		
18	4	BAR 7x⅜	4	4				(X13)			210		
19	2	PL 13x⅛	4	8⅜				(X14)			212		
20	2	PL 13x⅛	4	8⅜				(X15)		U.M.	216		
21	2	BAR 7x½	4	8⅛				(X16)			213		
22	4	BAR 7x½	4	8⅛				(X17)			213		
23	2	BAR 7x½	4	8⅛				(X18)			213		
24	38	BAR 6x⅜	4	8⅛				(X19)			216		
25	2	PL 11⅛x½	1	6⅛				(X20)			321		
26	2	PL 14⅛x½	3	3⅛				(X21)	A36		318		
27	192	WELDED STUDS x⅞"	0	5				(X22)		NELSON TYPE 33F	MP05		
28													
29	2	SOLE PL						2C		DETAILED ON SHT #2			
30													
31	2	⅛ WLD	183	4									
32	2	¼ WLD	36	10									
33	2	⅜ WLD	18	2									
34	2	⅝ WLD	306	0									
35	2	BWD C5.1 #/FT	8	8						B-036-S			
36	24	S.B.											
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APPROVED
IOWA STATE HIGHWAY COMMISSION
BY Jake E. Kelly
JAN 28 1970
Date
The approval of this drawing does not relieve the contractor of responsibility for errors in it or necessary deviations of materials not in accordance with the contract requirements.

FOR GENERAL NOTES SEE SHEET #6

REVISIONS	DRAWN BY	DATE
	CHECKED BY HM	DATE 12/15/69
	IN CHARGE OF L. BETTENS	
	FAB. PLANT CLINTON	
	REFERENCE DWGS. E2 & E3	

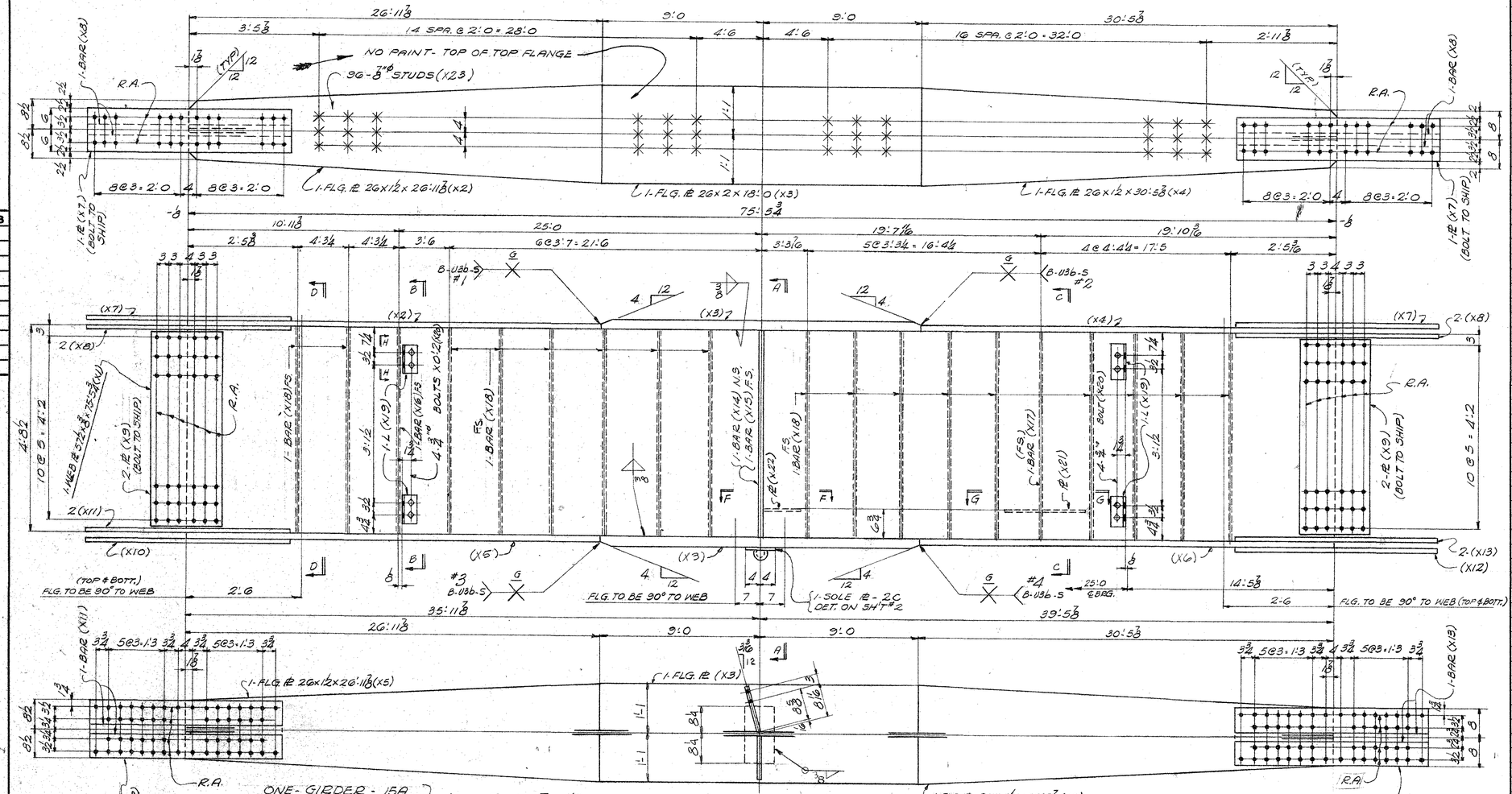
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1439-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF Girders 4 & 2 (Spans 2 & 8)
STRUCTURE Project No F-61-2(3)-20-29
US #61 Over Skunk River
LOCATION Lee & Des Moines County, Iowa
OWNER Iowa State Highway Commission

CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 14

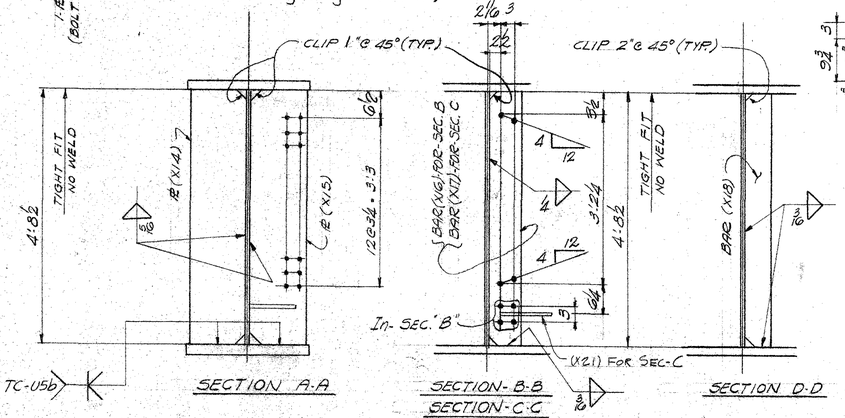
GLENNON & KERN, INC., CHICAGO

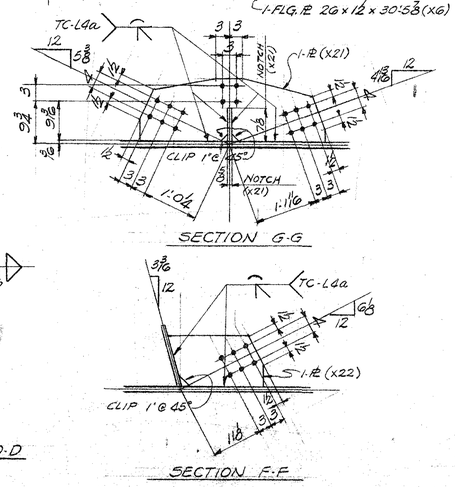
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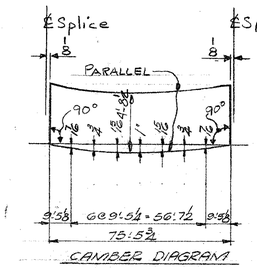


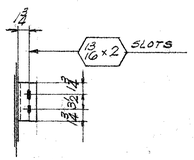
ONE - GIRDER - 15A
ONE - GIRDER - 15B
} ALIKE EXCEPT FOR MKS

(Lifting Weight 14½ Tons)









LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1												
2	ONE	GIRDER					15A		76'			
3	ONE	GIRDER					15B		76'			
4												
5												
6	2	PL 57½ × ⅜	75 5⅜				(X1)	A36		102		
7	2	PL 26 × ½	26 11⅜				(X2)		See Designs For Pay Weight	107		
8	4	PL 26 × 2	18 0				(X3)			108		
9	2	PL 26 × ½	30 5⅜				(X4)		See Designs For Pay Weight	109		
10	2	PL 26 × ½	26 11⅜				(X5)			107		
11	2	PL 26 × ½	30 5⅜				(X6)			109		
12	4	PL 12 × 7/16	4 7				(X7)		UM	204		
13	8	BAR 5 × ⅜	4 7				(X8)		P	205		
14	8	PL 19 × ⅜	4 5				(X9)			203		
15	2	PL 17 × ¾	4 4				(X10)			207		
16	4	BAR 7 × 1	4 4				(X11)			208		
17	2	PL 16 × ¾	4 4				(X12)			209		
18	4	BAR 7 × ⅞	4 4				(X13)			210		
19	2	PL 13 × 1⅛	4 8⅜				(X14)		P	212		
20	2	PL 13 × 1⅛	4 8⅜				(X15)		UM	212		
21	2	BAR 7 × ½	4 8 3/16				(X16)			213		
22	2	BAR 7 × ½	4 8 3/16				(X17)			213		
23	34	BAR G × ⅜	4 8 3/16				(X18)			216		
24	8	L 3 × 3 × ¼	0 7				(X19)	A36		504		
25	16	⅞" M, BOLT	0 2				(X20)	A307	H.H. & N.	M401		
26	2	PL 14⅛ × ½	3 4 3/16				(X21)	A36		317		
27	2	PL 11⅝ × 2	1 9¼				(X22)	A36		401		
28	192	WELDED STUD ⅞"	0 5				(X23)		NELSON TYPE S3L	M205		
29												
30												
31												
32	2	SOLE PL					2C		DETAILED ON SHT #2			
33												
34												
35												
36	2	3/16 WLD	162 0									
37	2	¼ WLD	18 6									
38	2	5/16 WLD	18 6									
39	2	⅜ WLD	306 0									
40	2	BWD @ 5.1 #/FT	8 8						B-U36-S			
41	24	S.B										
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APPROVED
IOWA STATE HIGHWAY COMMISSION
BY Dale G. Mullay
JAN 28 1970
DATE

The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Notify the engineer if corrections are required. If it contains no exceptions or corrections noted, it complies with the contract requirements.

FOR GENERAL NOTE SEE SHEET #6

REVISIONS	DRAWN BY	CHECKED BY	IN CHARGE OF	FAB. PLANT	REFERENCE DWGS
D C B A	LAKE (OMN) DATE	H.M DATE 1-15-69	L. BETTENS	CLINTON	E2 & E3

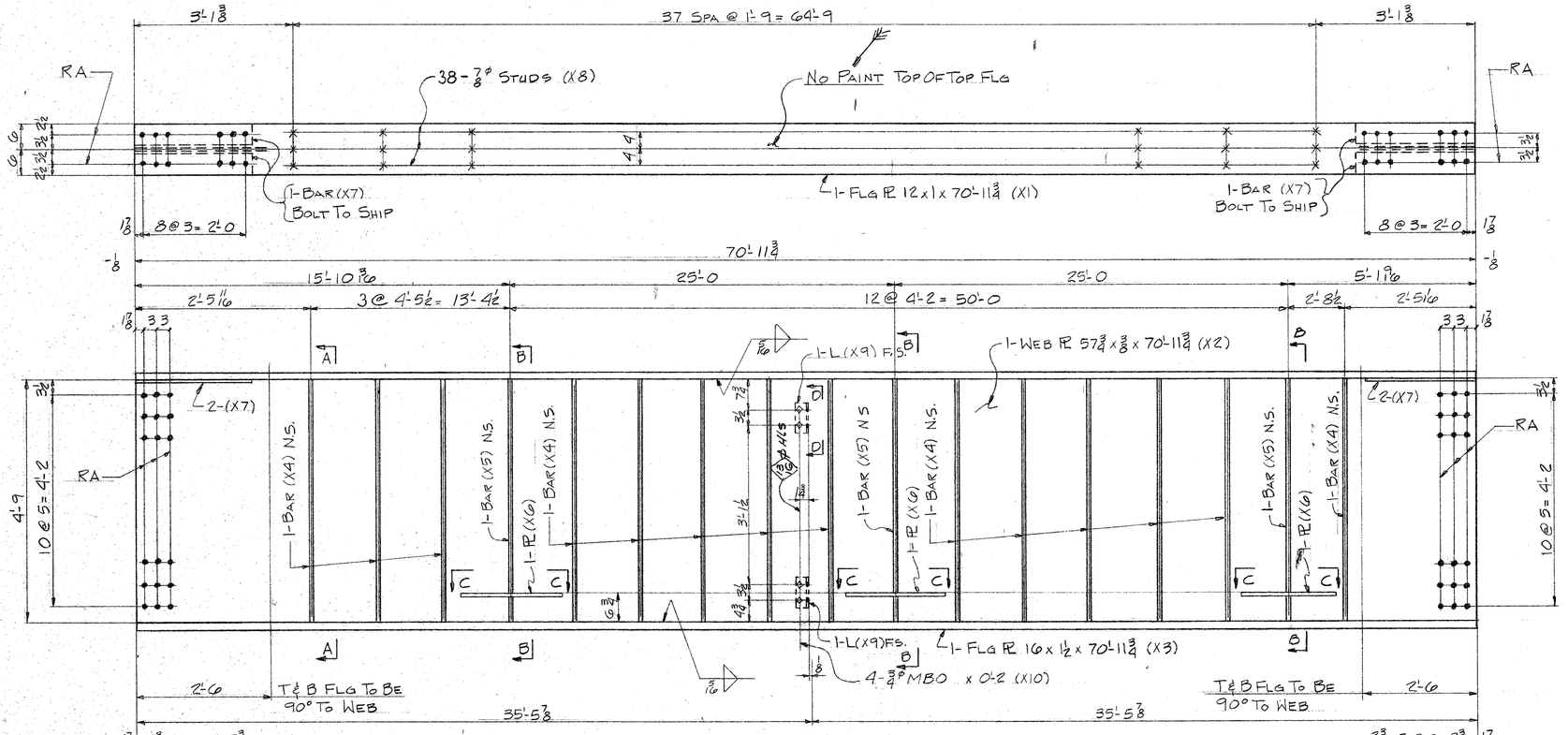
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1400-145TH STREET, HAMMOND, INDIANA 46320

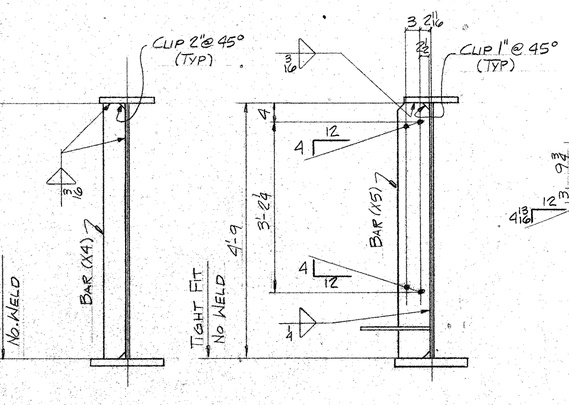
DETAILS OF FASCIA GIRDERS LINE 1 & 5 - SPAN 2 & 8
STRUCTURE PROJECT NO F-61-2 (3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 15

GLENNON & KERN, INC., CHICAGO

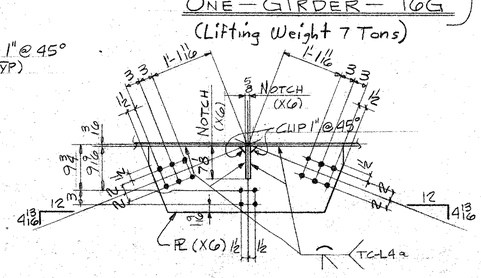
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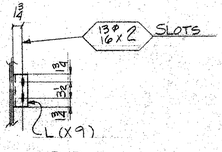


SECTION "A-A"
(TYP INTER. STIFF)

SECTION "B-B"



SECTION "C-C"

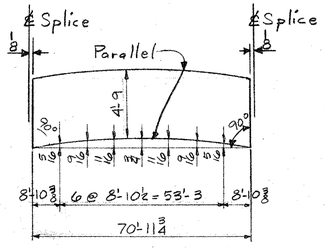


SECTION D-D

ONE — GIRDER — 16A
ONE — GIRDER — 16B
ONE — GIRDER — 16C
ONE — GIRDER — 16D
ONE — GIRDER — 16F
ONE — GIRDER — 16G

ALIKE EXCEPT FOR MKS

(Lifting Weight 7 Tons)



CAMBER DIAGRAM

FOR GEN NOTES SEE SHT #6

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER					16A		71'			
2	ONE	GIRDER					16B					
3	ONE	GIRDER					16C					
4	ONE	GIRDER					16D					
5	ONE	GIRDER					16F					
6	ONE	GIRDER					16G					
7												
8												
9												
10	6	PL 12 x 1	70 11 3/4				(X1)	A36		110		
11	6	PL 57 3/4 x 3/8	70 11 3/4				(X2)			103		
12	6	PL 16 x 1 1/2	70 11 3/4				(X3)			119		
13	84	BAR 5 x 5/16	4 8 13/16				(X4)			215		
14	18	BAR 7 x 1/2	4 8 13/16				(X5)			213		
15	18	PL 14 1/8 x 1/2	3 6				(X6)			316		
16	24	BAR 5 x 1/2	2 3 3/8				(X7)	A36		206		
17	684	WELDED STUDS x 7/8"	0 5				(X8)		NELSON TYPE S3F	M203		
18	12	L 3 x 3 x 4	0 7				(X9)	A36		504		
19	24	3/4" MBO	0 2				(X10)	A307	H H & N	M401		
20												
21												
22												
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25												
26	6	3/16 WLD	140 0									
27	6	4 WLD	39 0									
28	6	5/16 WLD	284 0									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Ashby
JAN 28 1970
Date
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and quantities and does not constitute acceptance of materials not in accordance with the contract requirements.

REVISIONS	
D	
C	
B	
A	

DRAWN BY MP (LAKE) DATE
CHECKED BY D.W. DATE 12-11-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

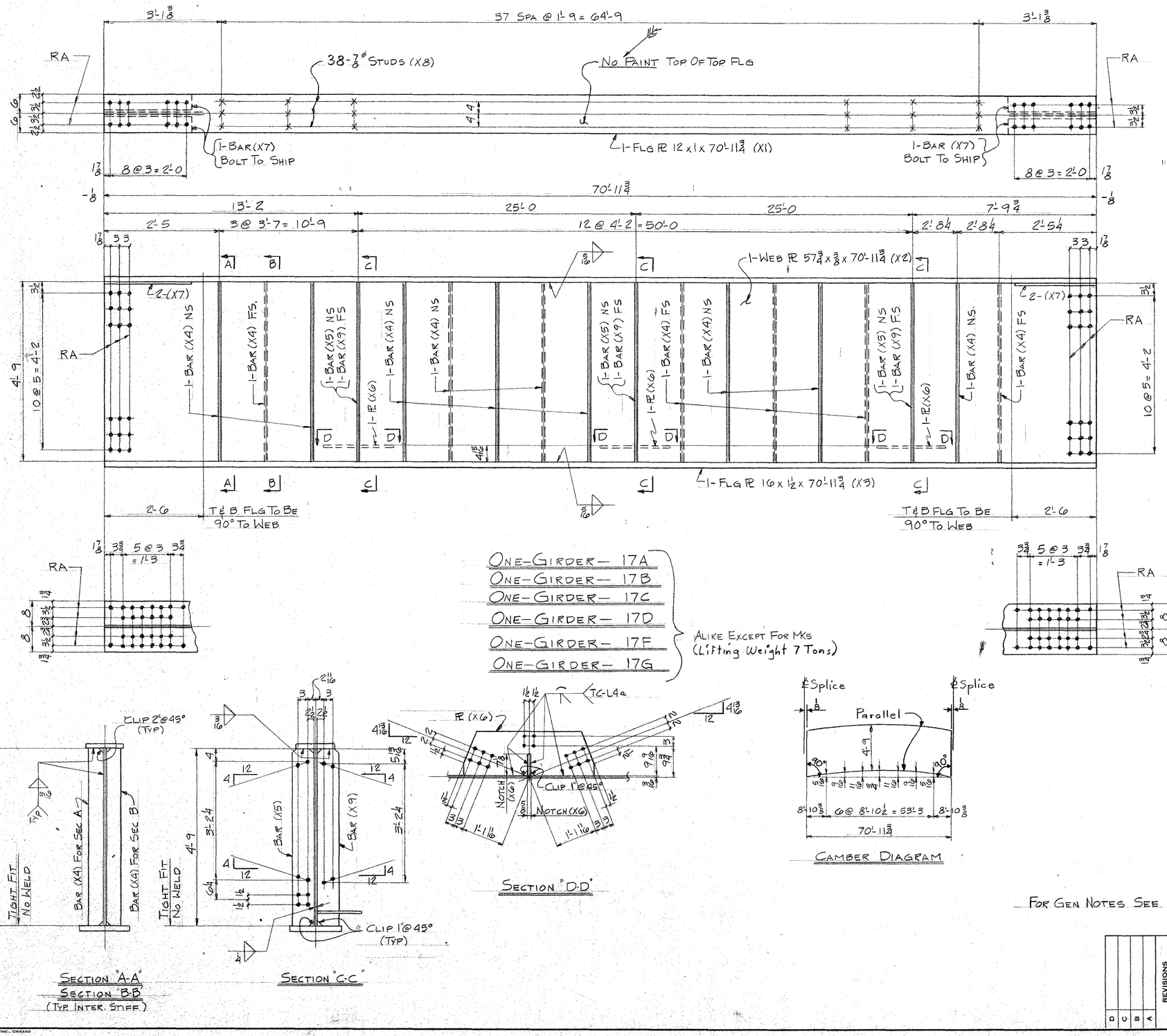
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF GIRDERS LINE E2 (SPANS 3, 5 & 7)
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 16

GLENNON & KERN, INC., CHICAGO

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ONE-GIRDER— 17A
ONE-GIRDER— 17B
ONE-GIRDER— 17C
ONE-GIRDER— 17D
ONE-GIRDER— 17F
ONE-GIRDER— 17G

ALIKE EXCEPT FOR MKS (Lifting Weight 7 Tons)

SECTION "A-A"
SECTION "B-B"
(TYP INTER. STIFF)

SECTION "C-C"

SECTION "D-D"

CAMBER DIAGRAM

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						17A		71'			
2	ONE	GIRDER						17B					
3	ONE	GIRDER						17C					
4	ONE	GIRDER						17D					
5	ONE	GIRDER						17F					
6	ONE	GIRDER						17G					
7													
8	6	PL 12 x 1	70	11 3/4				(X1)	A36		110		
9	6	PL 57 3/4 x 3/8	70	11 3/4				(X2)			103		
10	6	PL 16 x 1/2	70	11 3/4				(X3)			119		
11	90	BAR 5 x 5/16	4	8 15/16				(X4)			215		
12	18	BAR 7 x 1/2	4	8 15/16				(X5)			213		
13	18	PL 14 3/8 x 1/2	3	6				(X6)			316		
14	24	BAR 5 x 1/2	2	3 3/8				(X7)	A36		206		
15	684	WELDED x 7/8" STUDS	0	5				(X8)		NELSON TYPE S3S=	M205		
16	18	BAR 7 x 1/2	4	8 15/16				(X9)	A36		213		
17													
18													
19													
20													
21	6	5/16 WLD	150	0									
22	6	4 WLD	55	0									
23	6	5/16 WLD	284	0									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
JAN 29 1970
Date
The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. Neither is it a contractual acceptance of materials not in accordance with the contract requirements.

FOR GEN NOTES SEE SHT #6

REVISIONS			
D			
C			
B			
A			

DRAWN BY MP (LAKE) DATE
CHECKED BY D.W DATE 12-11-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS E2 & E3

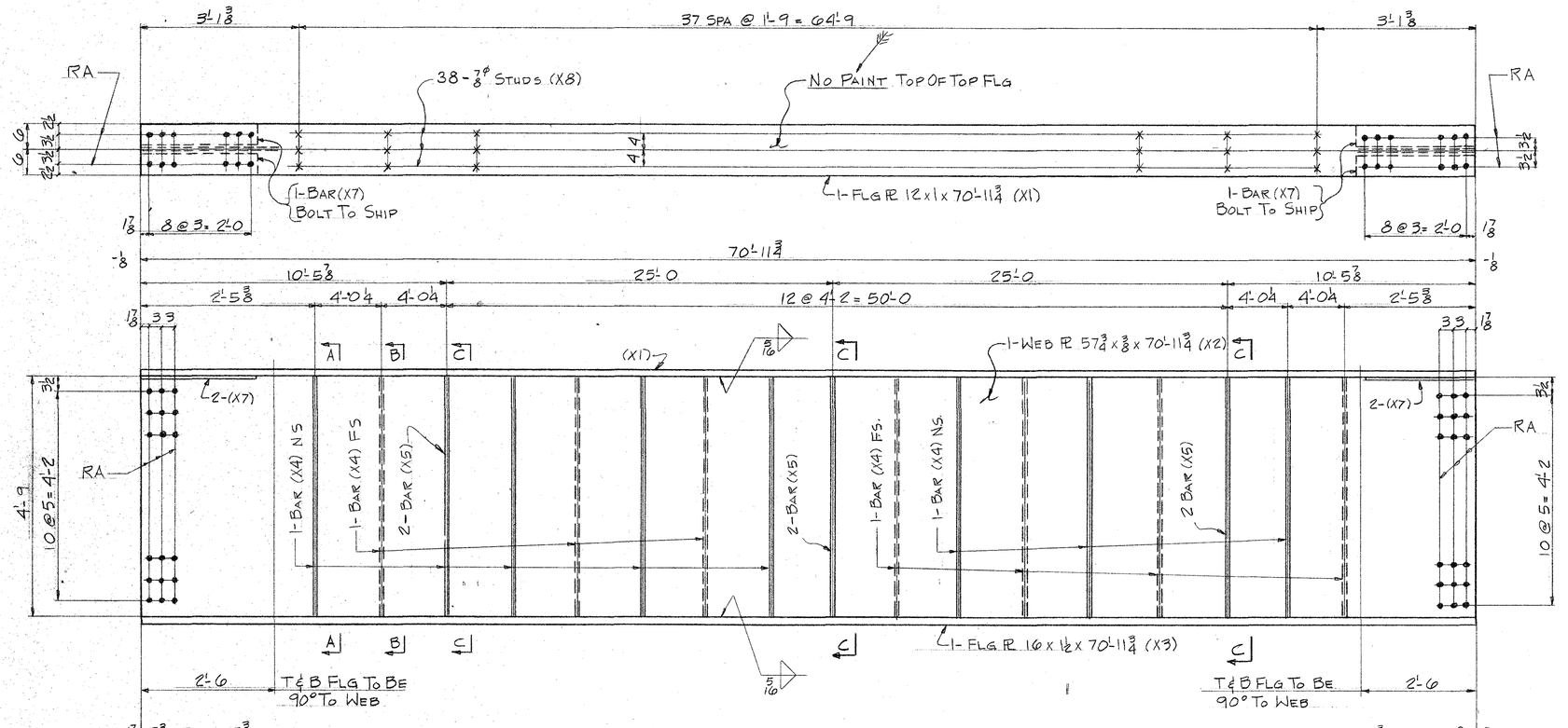
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1425-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF GIRDERS LINE 2 & 4 (SPANS 3, 5 & 7)
STRUCTURE PROJECT NO F-61-2(3)-80-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. | FABCOD 144 | SHEET 17

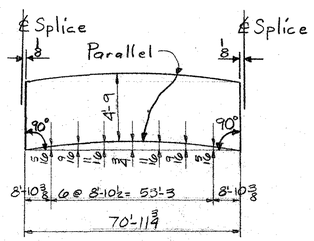
GLENNON & KERN, INC., CHICAGO

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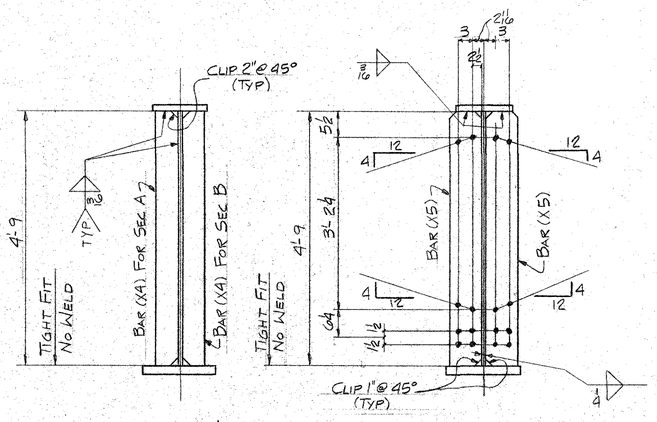


ONE-GIRDER— 18A
ONE-GIRDER— 18B
ONE-GIRDER— 18C
(Lifting Weight 7 Tons)

ALIKE EXCEPT FOR MKS



CAMBER DIAGRAM



SECTION A A
SECTION B B
(TYP INTER STIFF)

SECTION C C

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						18A		71'			
2	ONE	GIRDER						18B					
3	ONE	GIRDER						18C					
4													
5													
6	3	PL 12 x 1	70	11 3/4				(X1)	A36		101		
7	3	PL 57 3/4 x 3/8	70	11 3/4				(X2)			103		
8	3	PL 16 x 1 1/2	70	11 3/4				(X3)			119		
9	42	BAR 5 x 5/16	4	8 13/16				(X4)			215		
10	18	BAR 7 x 1/2	4	8 13/16				(X5)			213		
11													
12	12	BAR 5 x 1/2	2	3 3/8				(X7)			206		
13	342	WELDED STUDS x 7/8"	0	5				(X8)		NELSON TYPE S3F	MCOS		
14													
15													
16													
17													
18	3	3/16 WLD	140	0									
19	3	1/4 WLD	55	0									
20	3	5/16 WLD	284	0									
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APPROVED
IOWA STATE HIGHWAY COMMISSION
BY Dale E. Darby
JAN 28 1970
Date
The approval of this drawing does not relieve the contractor or manufacturer of responsibility for errors in dimensions and details, the necessity of furnishing complete information, or of responsibility for the proper fitting of his work with the contract requirements.

FOR GEN NOTES SEE SHT #6

REVISIONS				
A	B	U	D	

DRAWN BY MP (LAKE) DATE
CHECKED BY D.W. DATE 12-11-69
IN CHARGE OF L K BETTENS
FAB. PLANT CLINTON
REFERENCE DWGS: E2 & E3

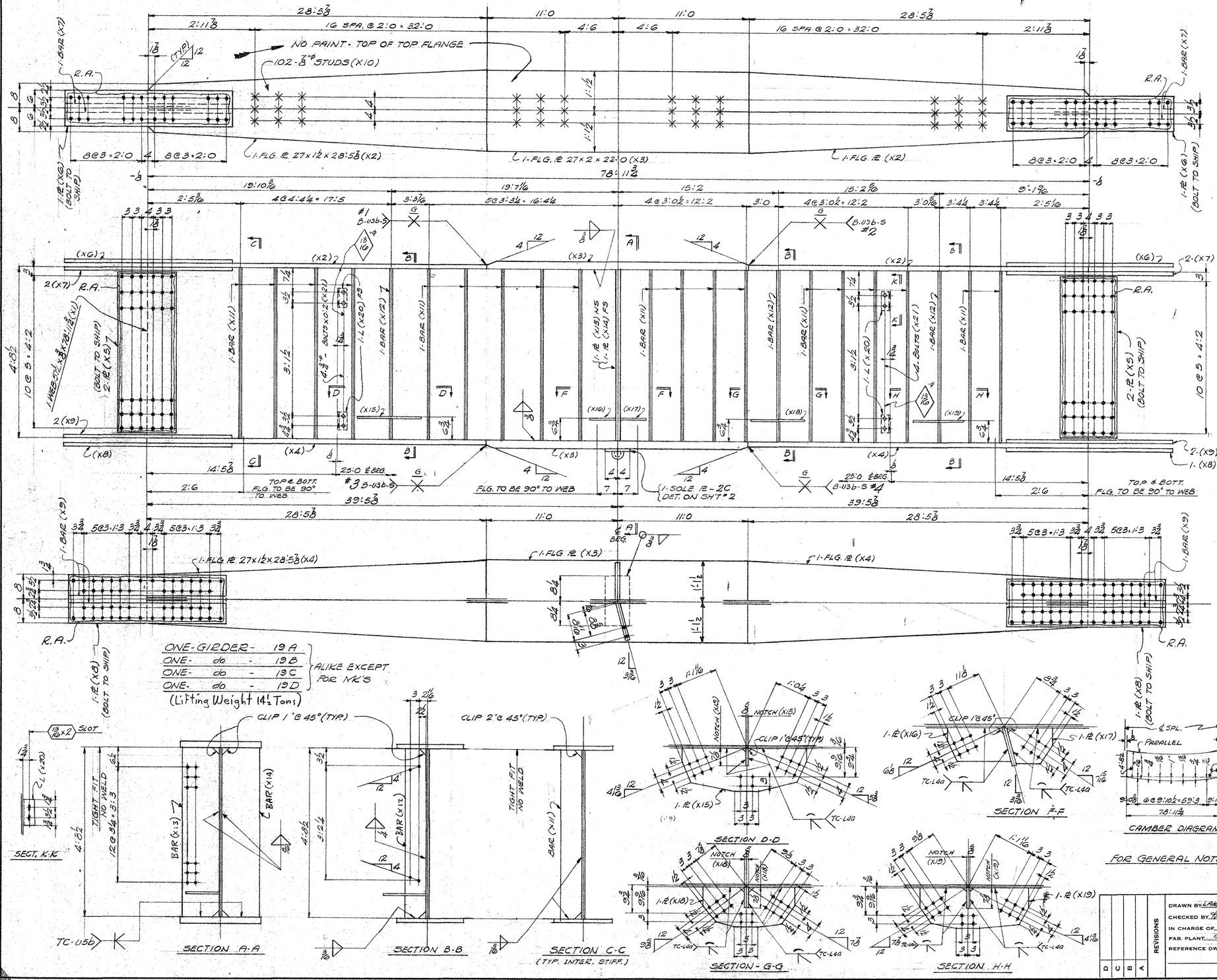
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF GIRDERS LINE 3 (SPANS 3, 5 & 7)
STRUCTURE PROJECT NO F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 5403 | DIV. | FABCOD 144 | SHEET 18

GLENNON & KERN, INC., CHICAGO

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FOR GENERAL NOTES SEE SHT #6

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
JAN 28 1970
Note — The approval of this drawing does not relieve the contractor of responsibility for errors in the members and details of construction, but it covers only the acceptance of the finished work in accordance with the contract requirements.

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN. TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	GIRDER						19A		79'			
2	ONE	do						19B					
3	ONE	do						19C					
4	ONE	do						19D					
7	4	PL 57 1/2 x 3/8	78	11 3/4				(X1)	A36		104		
8	8	PL 27 x 1/2	28	5 7/8				(X2)		See Design For Pay Weight	111		
9	8	PL 27 x 2	22	0				(X3)			112		
10	8	PL 27 x 1/2	28	5 7/8				(X4)		See Design For Pay Weight	111		
11	16	PL 19 x 3/8	4	5				(X5)		U.M.	203		
12	8	PL 12 x 1/16	4	7				(X6)			204		
13	16	BAR 5 x 3/8	4	7				(X7)			205		
14	8	PL 16 x 3/4	4	4				(X8)			209		
15	16	BAR 7 x 3/8	4	4				(X9)	A36	U.M.	210		
16	608	WELDED STUDS x 7/8" ø	0	5				(X10)		NELSON TYPE - SH	M1205		
17	76	BAR 6 x 3/8	4	8 1/16				(X11)	A36		216		
18	12	BAR 7 x 1/2	4	8 1/16				(X12)			214		
19	4	PL 13 x 1/8	4	8 3/8				(X13)		U.M.	212		
20	4	PL 13 x 1/8	4	8 3/8				(X14)		U.M.	212		
21	4	PL 14 3/8 x 1/2	3	4 7/16				(X15)			316		
22	4	PL 11 3/8 x 1/2	1	9 1/4				(X16)			401		
23	4	PL 11 3/8 x 1/2	1	3				(X17)			403		
24	4	PL 14 3/8 x 1/2	2	5 1/2				(X18)			320		
25	4	PL 14 3/8 x 1/2	3	1				(X19)			317		
26	16	L 3 x 3 x 4	0	7				(X20)	A36		504		
27	32	3/4" ø BOLTS	0	2				(X21)	A307		M401		
32	4	5/16 WLD	180	6									
33	4	1/4 WLD	27	3									
34	4	5/16 WLD	18	2									
35	4	3/8 WLD	320	0									
36	4	BND @ 5.1 #/FT.	9	0						B-1136-S			
37	48	S.B.											

REVISIONS	DRAWN BY LAKE (DNW) DATE	
D	CHECKED BY JMC	DATE 12/15/69
C	IN CHARGE OF L. BETTENS	
B	FAB. PLANT CLINTON	
A	REFERENCE DWGS: #E2 & E3	

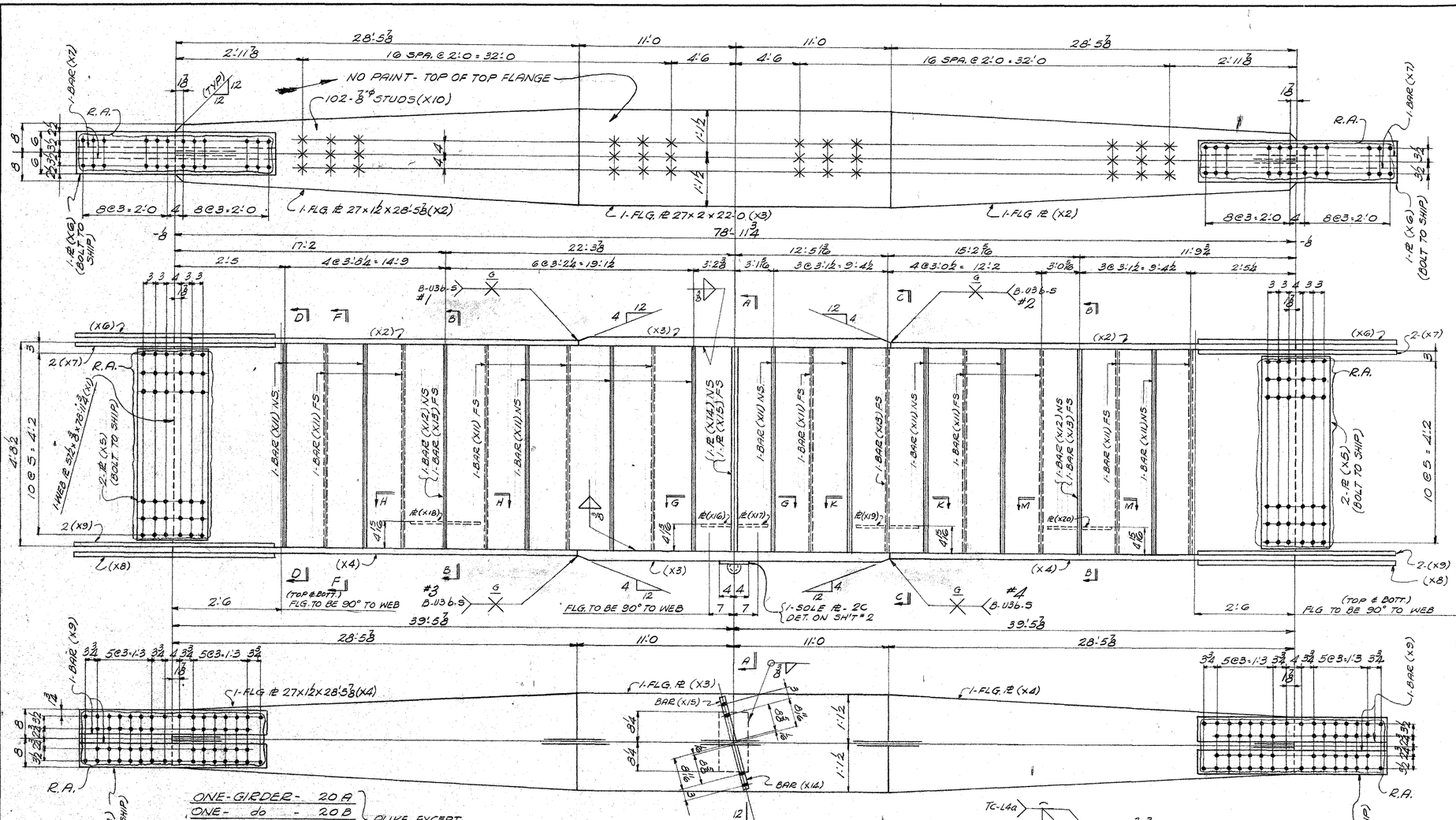
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF FASCIA GIRDERS-LINE 1 & 5 - SPAN 4 & 6
STRUCTURE G85:0 x 44:0 CONTINUOUS WELDED GIRDER BRIDGE
PROJECT NO F-61-2(3)-20-29
LOCATION DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 19

KENNON & KERN, INC., CHICAGO

X	0	1	2	3
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ONE - GIRDER -	20 A
ONE - do -	20 B
ONE - do -	20 C
ONE - do -	20 D

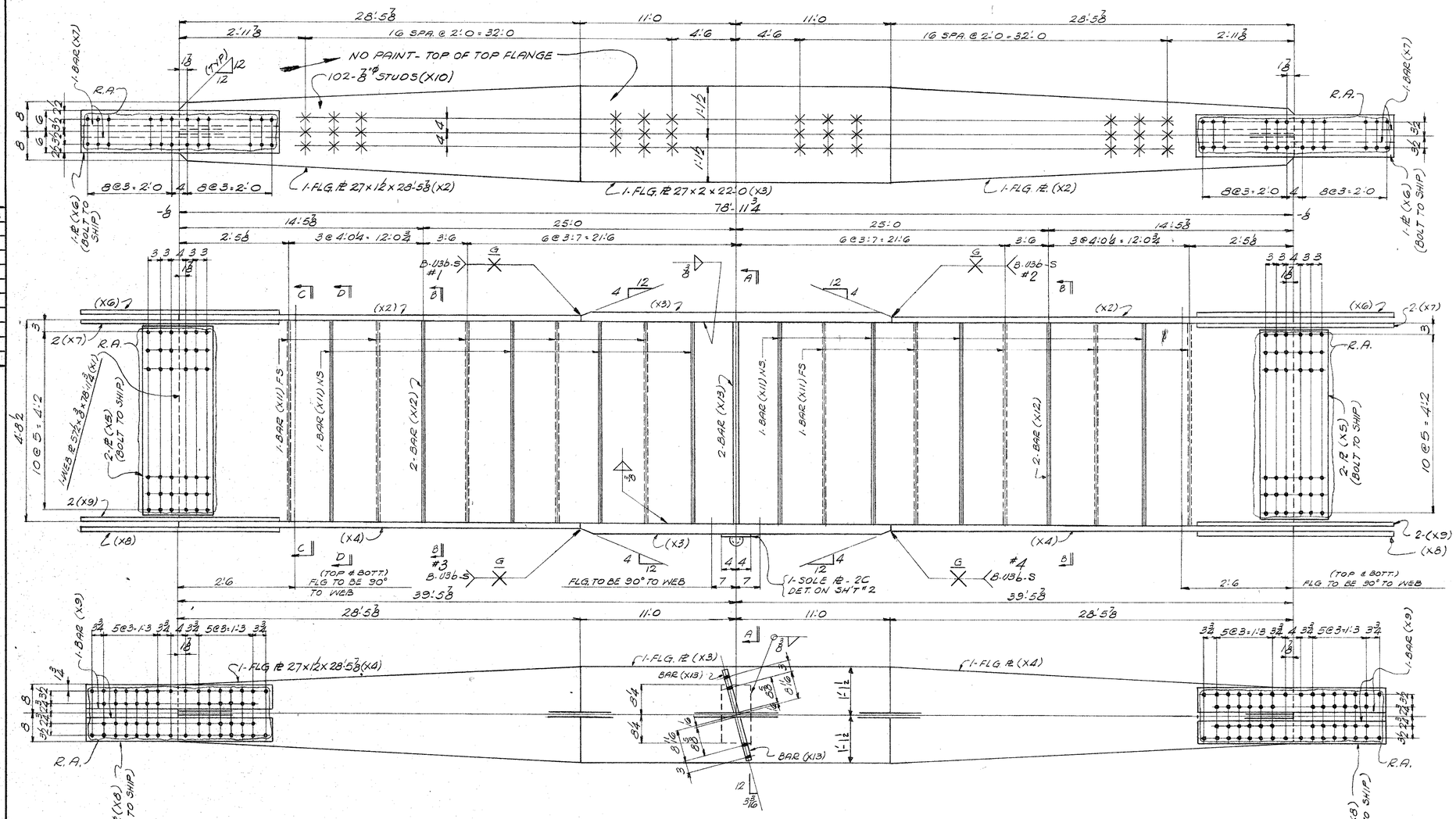
ALIKE EXCEPT FOR MK'S

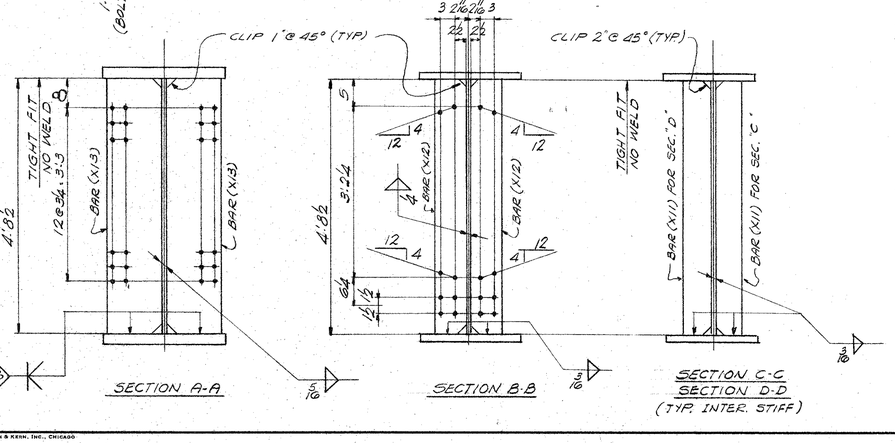
(Lifting Weight 14 1/2 Tons)

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN. TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1												
2	ONE	GIRDER					20 A		79'			
3	ONE	- do -					20 B					
4	ONE	- do -					20 C					
5	ONE	- do -					20 D					
6												
7												
8	4	PL 57 1/2 x 3/8	78 11 3/4				(X1)	A36		104		
9	8	PL 27 x 1/2	28 5 3/8				(X2)		See Designs For Fly Weight	111		
10	8	PL 27 x 2	22 0				(X3)			112		
11	8	PL 27 x 1/2	28 5 3/8				(X4)		See Designs For Fly Weight	111		
12	16	PL 19 x 3/8	4 5				(X5)		U.M.	203		
13	8	PL 12 x 1/16	4 7				(X6)		U.M.	204		
14	16	BAR 5 x 3/8	4 7				(X7)		U.M.	205		
15	8	PL 16 x 3/4	4 4				(X8)		U.M.	209		
16	16	PL 7 x 3/8	14 4				(X9)	A36	U.M.	210		
17	408	WELDED STUDS x 7/8"	0 5				(X10)		WELDSON TYPE - SSF	M205		
18	60	BAR 6 x 3/8	4 8 1/16				(X11)	A36		216		
19	8	BAR 7 x 1/2	4 8 7/16				(X12)			214		
20	12	BAR 7 x 1/2	4 8 7/16				(X13)			214		
21	4	PL 13 x 1/8	4 8 3/8				(X14)		U.M.	212		
22	4	PL 13 x 1/8	4 8 3/8				(X15)		U.M.	212		
23	4	PL 11 1/16 x 1/2	1 6 7/16				(X16)			401		
24	4	PL 12 1/16 x 1/2	1 5 7/16				(X17)			401		
25	4	PL 14 1/8 x 1/2	3 3 7/16				(X18)			316		
26	4	PL 14 1/8 x 1/2	2 7 3/4				(X19)			320		
27	4	PL 14 1/8 x 1/2	3 0 1/16				(X20)	A36		317		
28												
29												
30	4	SOLE PL					2C		DET. ON SHEET # 2			
31												
32	4	5/16 WLD	153 6									
33	4	1/4 WLD	45 9									
34	4	5/16 WLD	18 6									
35	4	3/8 WLD	320 0									
36	4	BWOC 5.1 #/FT.	9 0						B-1136-5			
37	48	S.B.										
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APPROVED
IOWA STATE HIGHWAY COMMISSION
Dale E. Updegraff
Date JAN 28 1970
The approval of plans does not relieve the contractor of responsibility for errors in the plans. It does not assume the responsibility for any deviations from the contract requirements. It does not relieve the contractor of responsibility for errors in the plans. It does not relieve the contractor of

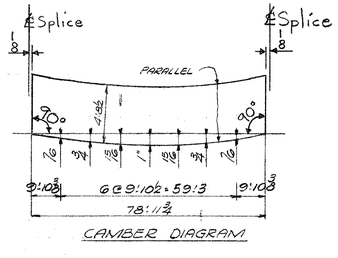
X	0	1	2	3
0	X	Y		
1	X	Y		
2	X	Y		
3	X	Y		
4	X			
5	X			
6	X			
7	X			
8	X			
9	X			





ONE - GIRDER - 21 A
ONE - GIRDER - 21 B
} ALIKE EXCEPT FOR MKS

(Lifting Weight 14 1/2 Tons)



CAMBER DIAGRAM

FOR GENERAL NOTES SEE SHT # G

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN. TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1												
2												
3	ONE	GIRDER					21 A		79'			
4	ONE	GIRDER					21 B		79'			
5												
6	2	PL 57 1/2 x 3/8	78 11 3/4				(X1)	A36		104		
7	4	PL 27 x 1 1/2	28 5 7/8				(X2)		SEE DES.	111		
8	4	PL 27 x 2	22 0				(X3)		DWG FOR	112		
9	4	PL 27 x 1 1/2	28 5 7/8				(X4)		PAY WT.	111		
10	8	PL 19 x 3/8	4 5				(X5)		U.M.	203		
11	4	PL 12 x 1/16	4 7				(X6)		U.M.	204		
12	8	BAR 5 x 3/8	4 7				(X7)		U.M.	205		
13	4	PL 16 x 3/4	4 4				(X8)		U.M.	203		
14	8	BAR 7 x 7/8	4 4				(X9)	A36		210		
15	204	WELDED STUDS 7/8"	0 5				(X10)		NELSON TYPE SRP	M205		
16	36	BAR 6 x 3/8	4 8 1/16				(X11)	A36		216		
17	8	BAR 7 x 1/2	4 8 1/16				(X12)	A36		214		
18	4	PL 13 x 1 1/8	4 8 3/8				(X13)	A36	U.M.	212		
19												
20												
21	2	SOLE PL					2C		DETAILED ON SHT # 2			
22												
23												
24	2	5/16 WLD	173 6									
25	2	1/4 WLD	36 6									
26	2	5/16 WLD	18 6									
27	2	3/8 WLD	320 0									
28	2	BND @ 5.1 #/FT.	9 0						B-U36-S			
29	24	S.B.										
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APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Hanby
Date JAN 26 1970

The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and details. The engineer does not assume responsibility for acceptance of materials not in accordance with the contract requirements.

REVISIONS	DRAWN BY	CHECKED BY	IN CHARGE OF	FAB. PLANT	REFERENCE DWGS.
D					
C					
B					
A	LAKE (DMW) DATE	H. M DATE 12-15-69	L. BETTENS	CLINTON	#E2 & E3

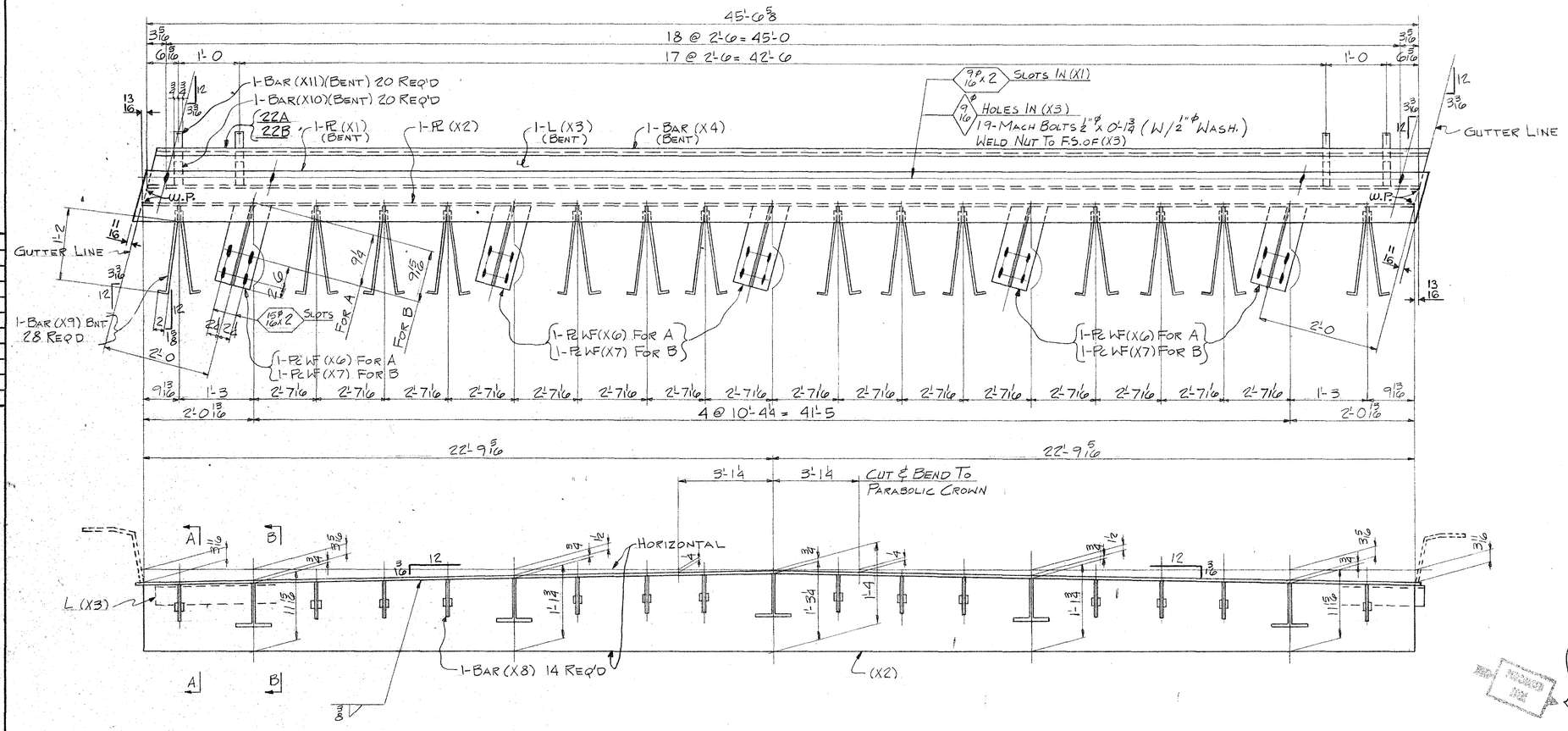
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

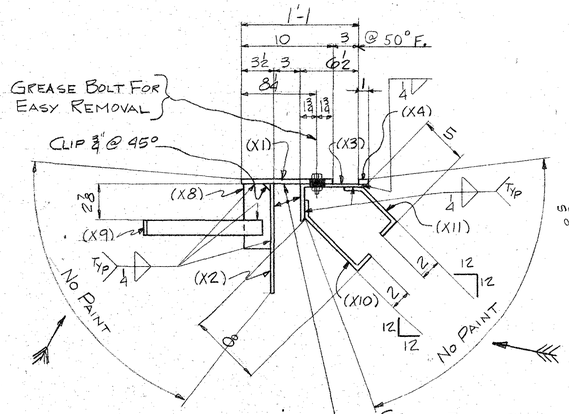
DETAILS OF GIRDER LINE #3 PIER #2 & #3 (SPAN 4 & 6)
STRUCTURE 685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE
PROJECT NO. F-61-2(3)-20-23
LOCATION DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. — | FABCOD 144 | SHEET 21

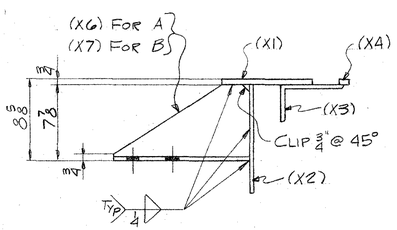
GLENNON & KEAN, INC., CHICAGO

X	0	1	2	3
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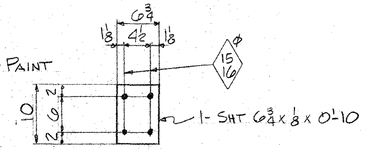




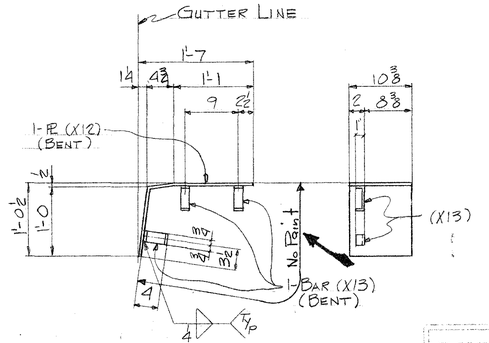
SECTION "A A"



SECTION "B B"



40 - SHIMS - 22D



2 - CURB PL - 22C R
2 - CURB PL - 22C L

PURCHASE ITEMS
SEE BILL OF MATERIAL

GEN NOTES

OPEN HOLES	:	AS NOTED
WELDING	:	SEE WELDING PROCEDURES
PAINT	:	ONE SHOP COAT AS PER SHT. P1 U.N.
SPEC'S	:	IHC SERIES OF 1964 PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

LINE	NO REQD	DESCRIPTION	LENGTH		ADD FIN TRIM W	ADD FIN TRIM T	ADD FIN TRIM L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	ONE	EXP DAM.						22A					
2	ONE	EXP DAM						22B					
3													
4	2	PL 10 x 3/8	45	10 11/16				(X1)	A36	BENT	413		
5	2	PL 15 1/4 x 3/8	45	6 5/8				(X2)	A36		414		
6	2	L 7 x 4 x 7/8	45	8 1/2				(X3)	A36	BENT	415		
7	2	BAR 1 x 3/4	45	6 3/8				(X4)	M1020	BENT	416		
8													
9	5	14 WF 38	1	6				(X6)	A36	FOR A	421		
10	5	14 WF 38	1	6 11/16				(X7)	A36	FOR B	421		
11	28	BAR 3 x 5/16	0	7				(X8)	A36		420		
12	56	BAR 1 1/2 x 3/8	1	6				(X9)	M1020	BENT	419		
13	40	BAR 1 1/2 x 3/8	1	0				(X10)	"	BENT	417		
14	40	BAR 1 1/2 x 3/8	0	9				(X11)	M1020	do	418		
15													
16	38	WASH. 1/2 ϕ							A307	FOR MACH ϕ BOLT	M403		
17	38	MACH BOLT 1/2 ϕ	0	1 3/4					A307	HH & N	M502		
18													
19	2	1/4 WLD	157	0									
20	2	5/8 WLD	46	0									
21													
22													
23													
24													
25	40	SHIMS						22D					
26	40	SHT 6 3/4 x 1/8	0	10					A570		501		
27													
28													
29													
30													
31	2	CURB PL						22C R					
32	2	CURB PL						22C L					
33	4	PL 29 3/8 x 7/16	0	10 3/8				X12	A36	BENT	502		
34	12	BAR 1 1/2 x 3/8	0	6				X13	M1020	BENT	503		
35													
36	4	1/4 WLD	0	6									
37													
38													
39													
40													
41													
42		— Field Bolts —											
43	4/10	7/8 ϕ H.S. Bolts	0	2 1/4					A325	w/1 Wash. Ea.			
44	3/15		0	2 1/2									
45	350		0	3									
46	3/185		0	4 1/2									
47	575		0	4 3/4									
48	45		0	3 1/2					A307	w/2 Wash. Ea.			
49	100	3/4 " ϕ Mach Bolts	0	1 2					A307	H.H. & N.			
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REVISED 1/72

APPROVED
IOWA STATE HIGHWAY COMMISSION
by Dale E. Daly
Date
The approval of the drawing does not relieve the engineer and detailer of responsibility for errors in dimensions and details, failure to put in accordance with the contract requirements.

REVISIONS			
D			
C			
B			
A			

DRAWN BY MP (LAKE) DATE
CHECKED BY D.W. DATE 12-15-69
IN CHARGE OF L.K. BETTERS
FAB. PLANT CLINTON
REFERENCE DWGS: E2

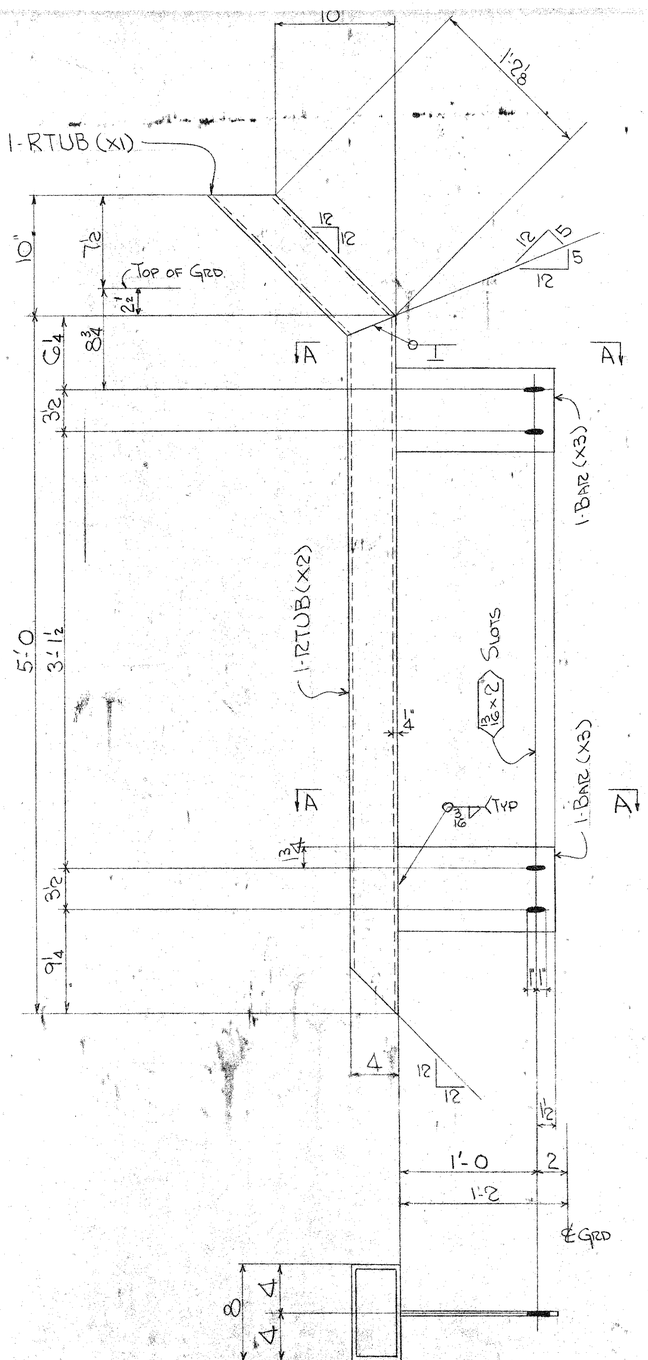
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1639-185TH STREET, HAMMOND, INDIANA 46320

DETAILS OF Expansion Dams
STRUCTURE Project No F-61-2(3)-20-29
US #61 Over Skunk River
LOCATION Lee & Des Moines County, Iowa
OWNER Iowa State Highway Commission

CONTRACT 3403 | DIV. | FABCOD 904 | SHEET 22

GLENNON & KERN, INC., CHICAGO.

X	0	1	2	3
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SECTION A-A

22 ~ DRAINS ~ 23A

GALVANIZED



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ERECTION PLAN

SECTION G-G

Section H-H

SECTION F-F

DETAIL 'A'

DETAIL 'B'

Sect "A-A"

Sect "B-B"

Sect "C-C"

Sect "E E"

* Use As Required, 4-Furnished For Each Stool.

NOTE TO ERECTOR:
Erection marks have been placed on the steel and on the Erection Plans near one end of each member. Please see members in the structure so that the erection marks on the steel are at the same end of the members as the marks on the plans.

APPROVED AS NOTED
Iowa State Highway Commission
By ____ Date Sept 9, 1970
The approval covers only those items which are shown on the plans submitted and does not relieve the fabricator of responsibility for compliance with the contract requirements.

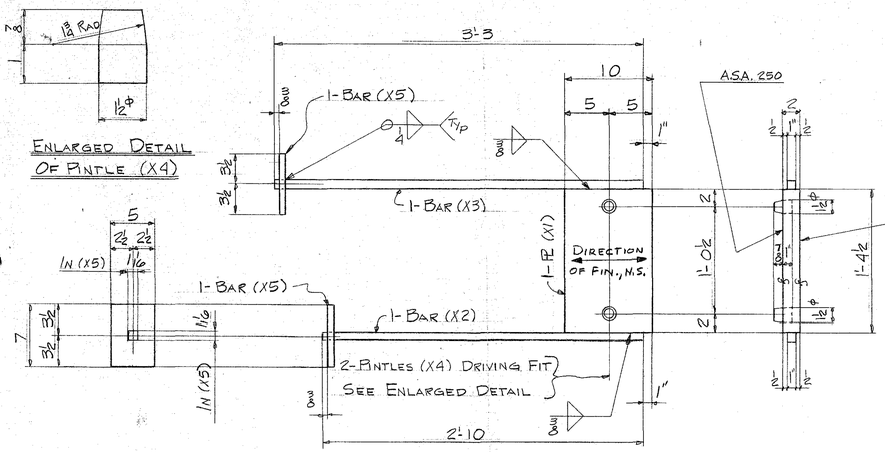
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1439-169TH STREET, HAMMOND, INDIANA 46320

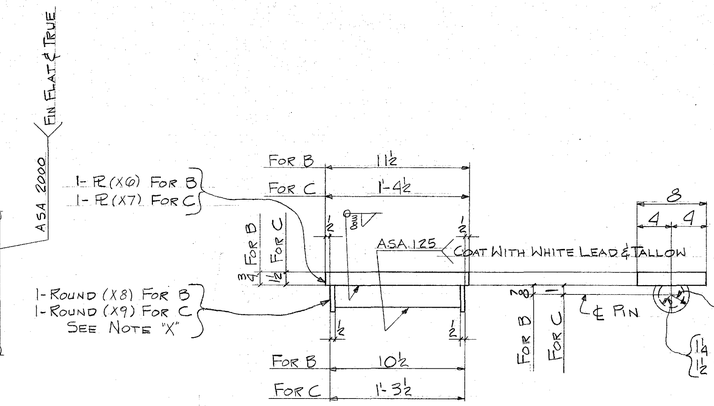
DRAWN BY	LAKE DATE 12-5-69
CHECKED BY	H.M DATE 12-15-69
IN CHARGE OF	L. BETTENS
FAB. PLANT	CLINTON
REFERENCE DWGS:	
DETAILS OF	ERECTION PLAN
STRUCTURE	PROJECT NO F-61-2(3)-20-29 US 61 OVER SKUNK RIVER
LOCATION	DES MOINES COUNTY, IOWA
OWNER	IOWA STATE HIGHWAY COMMISSION
CONTRACT	3403
DIV.	—
FABCOD	—
SHEET	E2

REVISIONS
A 12-15-69 LKB Added Drain

G. LENNON & KERN, INC., CHICAGO

X	0	1	2	3
0	X			
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DO NOT SHIP FROM THIS SHEET

10 — SOLE PL — 2B (SP1) } DO NOT SHIP
20 — SOLE PL — 2C (SP4) } FROM THIS SHT

(WELD TO GIRDERS IN SHOP, DO NOT PAINT UNTIL AFTER ASSEMBLY)

PURCHASED ITEM

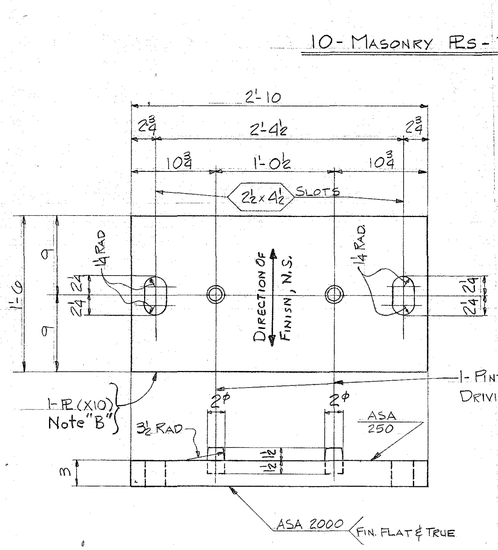
PURCHASED ITEM

PURCHASED ITEM

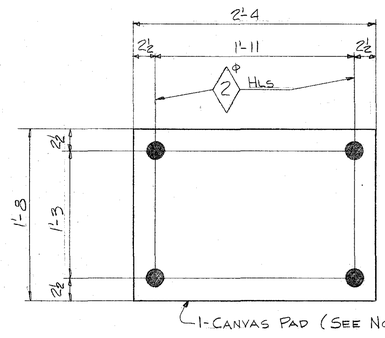
PURCHASED ITEM

LINE	NO. REQD	DESCRIPTION	LENGTH		ADD FIN-TRIM W	ADD FIN-TRIM T	ADD FIN-TRIM L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	10	MASONRY PLS						2A					
2	10	PL 10 x ⅝	1	4½		1		X1	A36	F&S	513		
3	10	BAR 1 x 1	2	10				X2			511		
4	10	BAR 1 x 1	3	3				X3			512		
5	20	RODS 1½ϕ	0	1⅜				X4		FIN ALL OVER	M104		
6	20	BAR 5 x ⅜	0	7				X5			510		
7	10	⅜ WLD	3	4									
8	10	4 WLD	1	4									
9													
10													
11	10	SOLE PL						2B					
12	10	PL 8 x ⅜	0	11½				X6	A36		509		
13	10	3° C.R. SHAFT	0	10½				X8		A 108 & NOTE "X"	M101		
14	10	⅜ WLD	2	1									
15													
16													
17	20	SOLE PL						2C					
18	20	PL 8 x 1½	1	4½				X7	A36		514		
19	20	3½° CR SHAFT	1	3½				X9		A 108 & NOTE "X"	M102		
20	20	⅜ WLD	3	4									
21													
22													
23	10	MASONRY PLS						2D		(Nodular Iron Note "B")			
24	10	PL 18 x ⅜	2	10		1		X10		F&S			
25	20	RODS 2ϕ	0	5				X11	A36	F.A.O	M107		
26													
27													
28	10	CANVAS PADS						2E					
29	10	PADS 20x *	2	4						* 3 LAYERS OF 12 TO 14 OZ DUCK			
30													
31													
32	10	CANVAS PADS						2F					
33	10	PAD 10x *	1	4½						* 3 LAYERS OF 12 TO 14 OZ DUCK			
34													
35													
36	10	CANVAS PADS						2H					
37	10	PAD 18 x *	2	10						* 3 LAYERS OF 12 TO 14 OZ DUCK			
38													
39													
40	40	WASHERS						2M					
41	40	WASH 4ϕ x ⅜							A36	1⅜ϕ HL	E03		
42													
43													
44	20	PLATE WASHERS						2P					
45	20	BAR 4 x ⅜	0	7					A36		507		
46													
47													
48	60	ANCHOR BOLTS						2T					
49	60	RODS 1½ϕ	2	0					A36		506		
50	60	HEX NUT FOR 1½ϕ BOLTS							A307		M208		
51													
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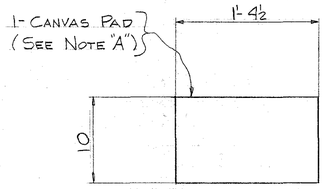
10 - MASONRY PLS - 2A



10 - CANVAS PADS - 2E

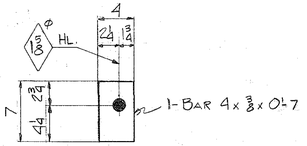


10 - CANVAS PADS - 2F



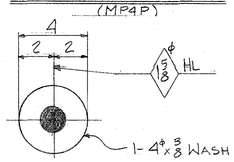
20 - PLATE WASHERS - 2P

(NO PAINT)



10 - MASONRY PL - 2D

(MP4P)



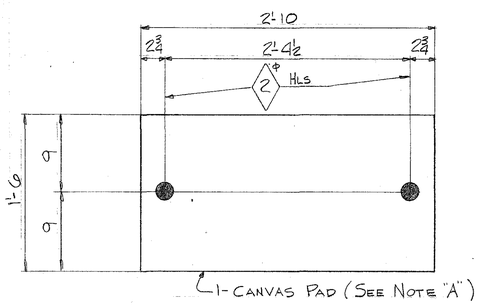
40 - WASHERS - 2M

(NO PAINT)

Note "B"
Plate (X10) to be Nodular Iron Casting and Shall Comply with Article 4153.04 of the Std. Specifications, Except A.S.T.M. A-536, Grade 65-45-10 will be Required in Lieu of A.S.T.M. A-339, Grade 60-45-10

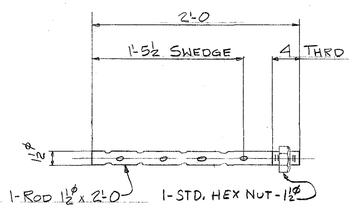
12 A

10 - CANVAS PADS - 2H



60 - ANCHOR BOLTS - 2T

(NO PAINT)



Note "X"
PINS SHALL COMPLY WITH ARTICLE 4153.02 OF THE STD. SPEC'S AND WITH ASTM A108

Note "A"
ALL CANVAS PADS TO BE MADE UP OF 3 LAYERS OF 12 TO 14 OZ DUCK

SHOP NOTES:
Mat'l. - As Noted in Bill of Material.
Welding - See Welding Proceedures.
Paint - One Shop Coat As Per Sheet P1, U.N. Finished Surfaces Are to be Painted Unless Noted to Receive White Lead & Tallow.
Spec's. - I.H.C. Series of 1964 Plus Current Supplemental Specifications and Special Provisions.

PURCHASE ITEMS
SEE BILL OF MATERIAL

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Ladby
Date DEC 22 1969
The approval of this drawing does not relieve the contractor of responsibility for errors or omissions and details of material to be in accordance with the contract requirements.

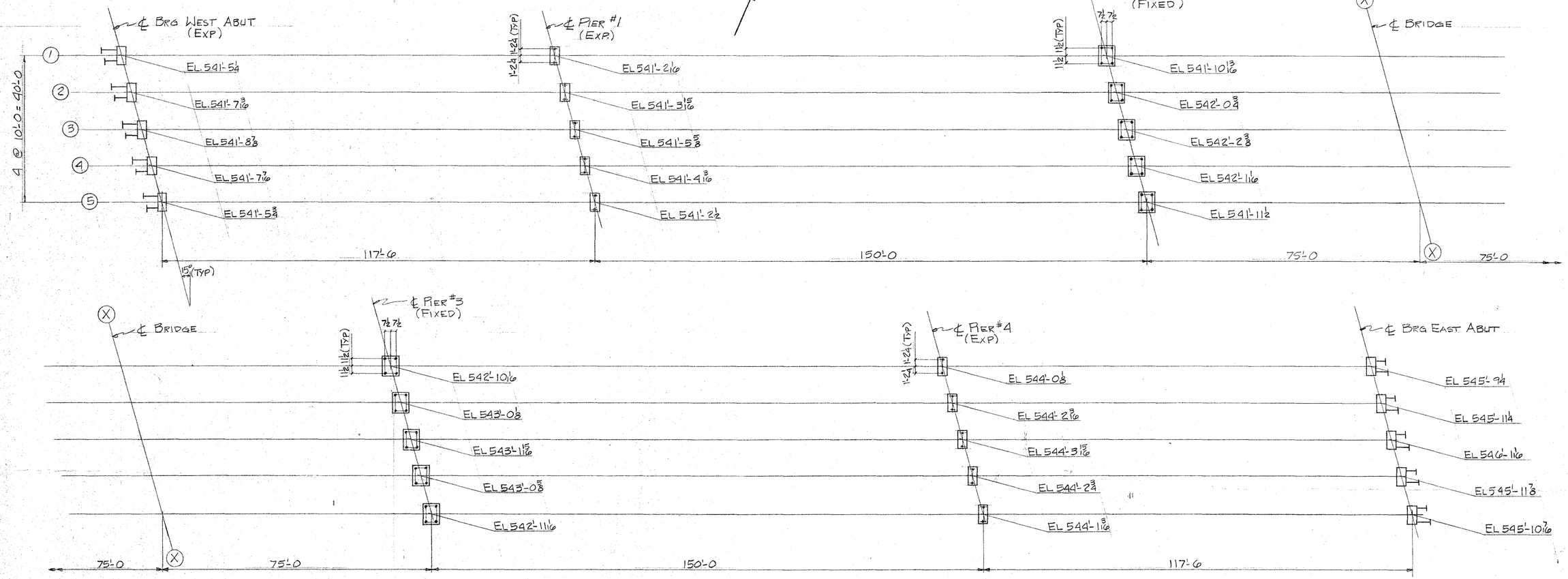
REVISIONS	DRAWN BY MP (LAKE) DATE	DETAILS OF Bearing Material
D	CHECKED BY HM DATE 11-20	STRUCTURE Project No. F 61-2(5)-20-29
C	IN CHARGE OF L.K. BETTENS	US 61 Over Skunk River
B	FAB. PLANT HAMMOND	LOCATION Lee & Des Moines County Iowa
A 12/17/69 LKB	REFERENCE DWGS: E1	OWNER Iowa State Highway Commission

ALLIED ENGINEERS FABRICATORS ERECTORS — STRUCTURAL STEEL COMPANY — 1435-165TH STREET, HAMMOND, INDIANA 46320

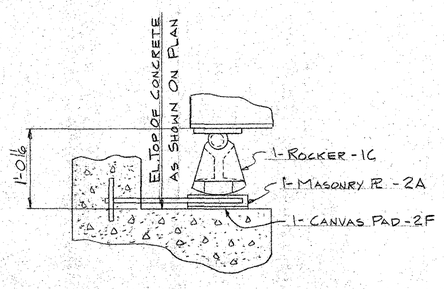
CONTRACT 3403 | DIV. | FABCOD 924 | SHEET 2

GLENNON & KERN, INC., CHICAGO

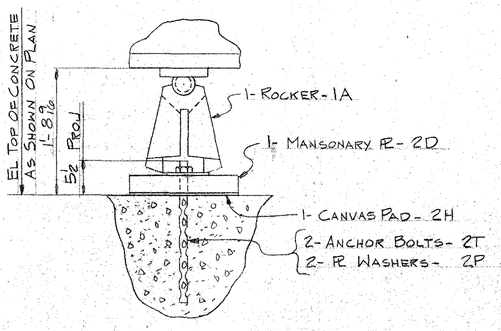
X	0	1	2	3
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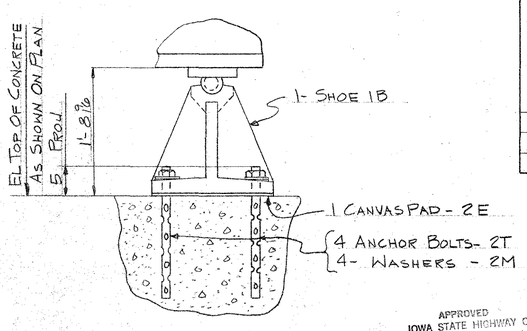
ANCHOR BOLT PLAN



TYP. SECT. THRU EAST & WEST ABUT'S



TYP. SECT. THRU PIERS #1 & 4



TYP SECT THRU PIERS #2 & 3

ROCKER AND EXPANSION PLATE SETTING

TEMP AT TIME OF SETTING	WEST ABUT		PIER 1	PIER 2	PIER 3	PIER 4	EAST ABUT	
	D	–	–			–	–	D
10°	4	- 1/16	- 1/16	0	0	- 1/16	- 1/16	4
50°	3	0	0	0	0	0	0	3
90°	2	1/16	1/16	0	0	1/16	1/16	2

NOTE: TILT ROCKERS IN DIRECTION SHOWN, OR (-), FOR TEMP BELOW 50° AND IN OPPOSITE DIRECTION, OR (+), FOR TEMP ABOVE 50° SETTINGS FOR OTHER TEMP ARE PROPORTIONAL

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
DEC 18 1969
Date

The approval of this drawing does not relieve the contractor of responsibility for errors in dimensions and detail on this drawing. It constitute acceptance of material not in accordance with the contract requirements.

REVISIONS			
D			
C			
B			
A			

DRAWN BY MP (LAKE) DATE 11-20-69
CHECKED BY [illegible] DATE 11-20-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT HAMMOND
REFERENCE DWGS:

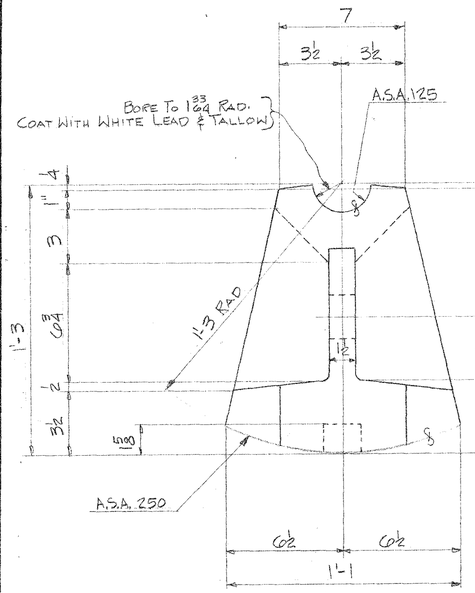
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1428-165TH STREET, HAMMOND, INDIANA 46320

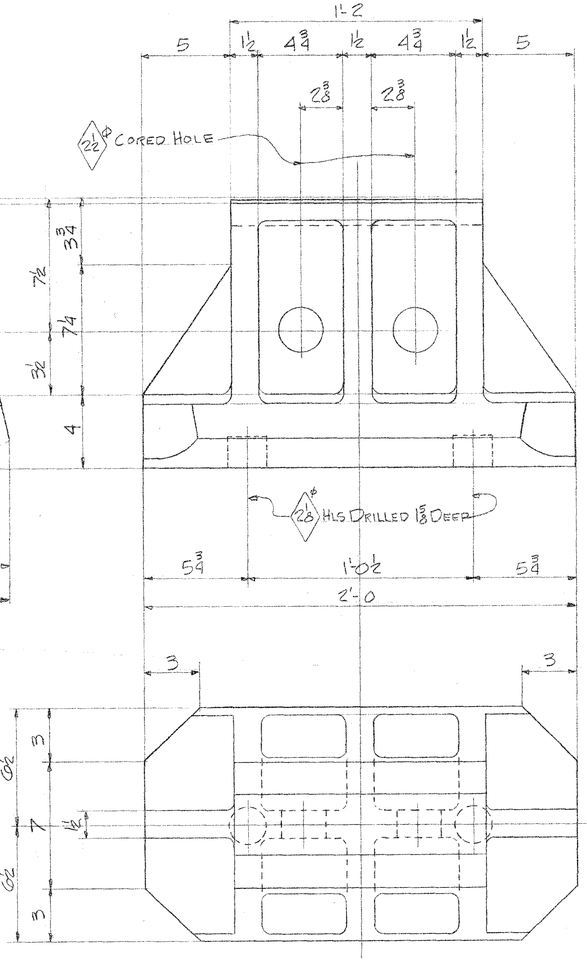
ANCHOR BOLT PLAN
STRUCTURE PROJECT NO. F-61-2(3)-20-29
U.S. #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. | FABCOD | SHEET E1

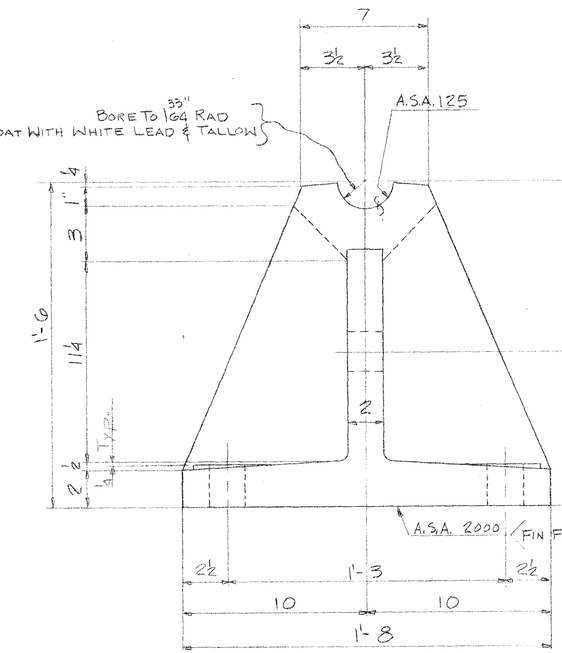
C. LENNON & KERN, INC., CHICAGO

X	0	1	2	3
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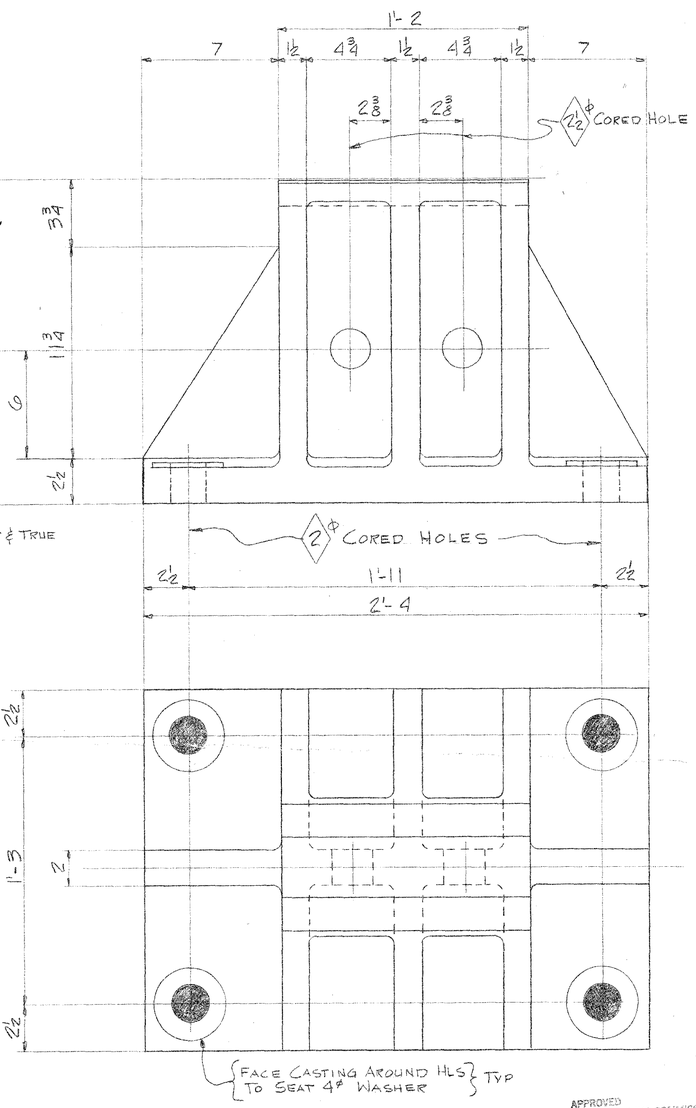




10-CAST IRON ROCKERS - 1A (R4)
(SEE MATL. NOTE "A")



10-CAST IRON FIXED SHOES - 1B (S4)
(SEE MATL NOTE "A")



APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Darby
Date JUL 8 1969

The approval of this drawing does not relieve the contractor of responsibility for errors in detail, coordination of all parts, proper fabrication or assembly of material and to accordance with the contract requirements.

ALLIED ENGINEERS FABRICATORS ERECTORS — STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

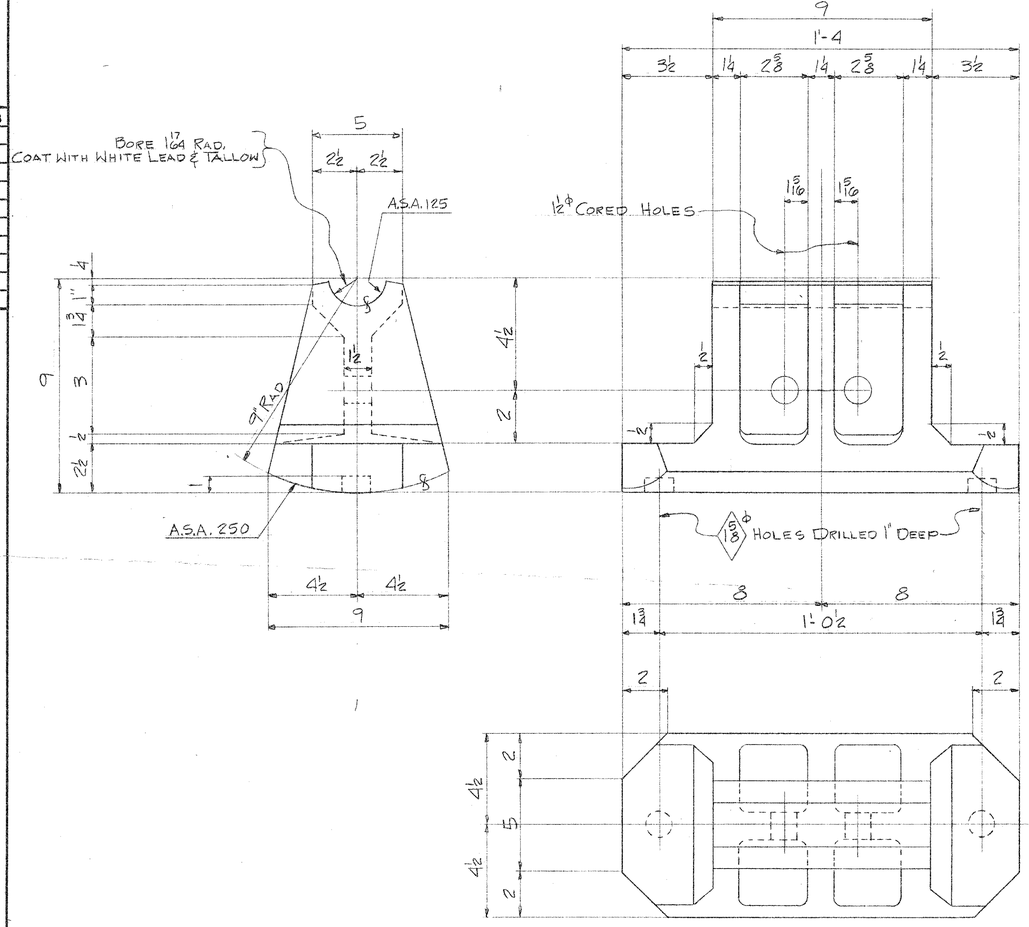
REVISIONS: D | C | B | A

DRAWN BY MP (LAKE) DATE 11-7-69
CHECKED BY [illegible] DATE 11-20-69
IN CHARGE OF L.K. BETTENS
FAB. PLANT HAMMOND
REFERENCE DWGS: E1

DETAILS OF CASTINGS
STRUCTURE PROJECT No. F-61-2(3) - 20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. | FABCOD 924 | SHEET 1AB

X	0	1	2	3
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7				
8				
9				



10- CAST IRON ROCKERS - 1C (R1A)
(SEE MATL NOTE "B")

SHOP NOTES:

MATL NOTE "A" CASTING 1A & 1B SHALL BE NODULAR IRON CASTING AND SHALL COMPLY WITH ARTICLE 4153.04 OF THE STANDARD SPECIFICATIONS EXCEPT ASTM A536 GRADE 65-45-12 WILL BE REQUIRED IN LIEU OF ASTM A339 GRADE 60-45-10

MATL NOTE "B" CASTING 1C SHALL COMPLY WITH ARTICLE 4153.04 OF THE I.H.C. STANDARD SPECIFICATIONS. CASTINGS MAY BE GRAY IRON OR NODULAR IRON

PAINT: ONE SHOP COAT AS PER SHEET P1, U.N. FINISHED SURFACES ARE TO BE PAINTED UNLESS NOTED TO RECEIVE WHITE LEAD & TALLOW.

LINE	NO. REQD.	DESCRIPTION	LENGTH	ADD FIN TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	10	CAST IRON ROCKERS					1A		MATL NOTE A			
4	10	CAST IRON ROCKERS					1B		MATL NOTE A			
7	10	CAST IRON ROCKERS					1C		MATL NOTE B			

APPROVED
IOWA STATE HIGHWAY COMMISSION
By
Date DEC 18 1969

This approval of the contract plans and proposal does not obligate the commission to approve the detailed shop drawings for the fabrication of the structural steel in accordance with the contract plans and specifications.

PURCHASE ITEMS
SEE BILL OF MATERIAL

REVISIONS	DRAWN BY	CHECKED BY	IN CHARGE OF	FAB. PLANT	REFERENCE DWGS.
D					
C					
B					
A	MP (LAKE) DATE 11-17-69	DATE 11-20	L.K. BETTENS	HAMMOND	E1

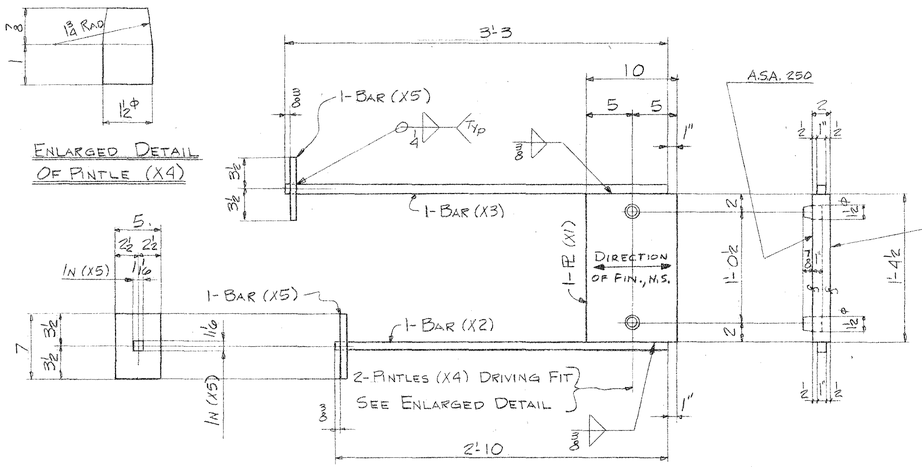
ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

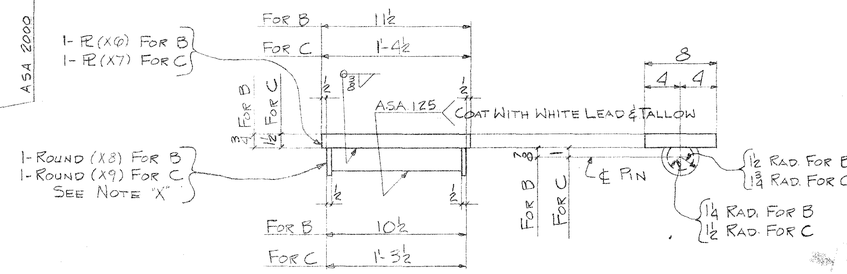
DETAILS OF CASTINGS
STRUCTURE PROJECT NO. F-61-2(3)-20-29
US #61 OVER SKUNK RIVER
LOCATION LEE & DES MOINES COUNTY IOWA
OWNER IOWA STATE HIGHWAY COMMISSION

CONTRACT 3403 | DIV. | FABCOD 924 | SHEET 1B

ULLMAN & KERN, INC., CHICAGO

X	0	1	2	3
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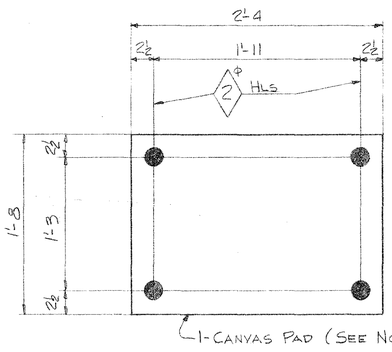




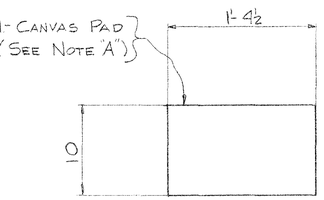
10 — Sole PL — 2B (SP1)
20 — Sole PL — 2C (SP4)
} Do Not Ship From This Sht

(Weld To Girders In Shop, Do Not Paint Until After Assembly)

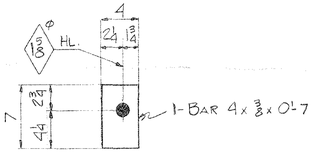
10- Masonry PLs - 2A



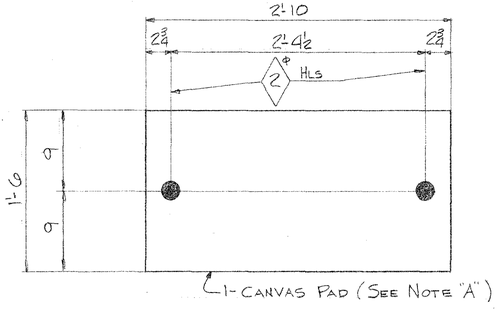
10-Canvas Pads-2E



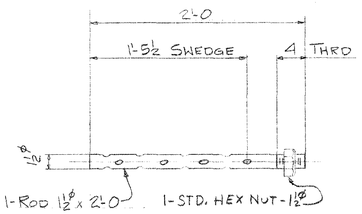
10-Canvas Pads-2F



20 - Plate Washers - 2P
(No Paint)

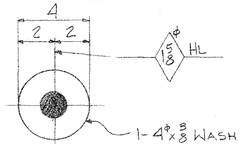


10-Canvas Pads-2H



60-Anchor Bolts - 2T
(No Paint)

10- Masonry PL - 2D
(MP4P)



40- Washers - 2M
(No Paint)

Note "B"
Plate (X10) to be Nodular Iron Casting and Shall Comply With Article 4153.04 of the Std. Specifications, Except A.S.T.M. A-536, Grade 65-45-10 will be Required in Lieu of A.S.T.M. A-339, Grade 60-45-10

Note "X"
Pins Shall Comply With Article 4153.02 Of The Std. Spec's And With ASTM A108

Note "A"
All Canvas Pads To Be Made Up Of 3 Layers Of 12 To 14 Oz Duck

SHOP NOTES:
Mat'l. - As Noted in Bill of Material.
Welding - See Welding Procedures.
Paint - One Shop Coat As Per Sheet Pl, U.N. Finished Surfaces Are to be Painted Unless Noted to Receive White Lead & Tallow.
Spec's. - I.H.C. Series of 1964 Plus Current Supplemental Specifications and Special Provisions.

LINE	NO. REQD	DESCRIPTION	LENGTH	ADD FIN-TRIM W	T	L	MARK	MATL SPEC	REMARKS	ITEM NO.	WEIGHT	PAY ITEM
1	10	Masonry PLs					2A					
2	10	PL 10 x 2	1 4 1/2		1		X1	A36	F2S	513		
3	10	Bar 1 x 1	2 10				X2			511		
4	10	Bar 1 x 1	3 3				X3			512		
5	20	Rods 1 1/2 Φ	0 1 3/8				X4		F.IN ALL OVER	M104		
6	20	Bar 5 x 3/8	0 7				X5	#		510		
7	10	3/8 WLD	3 4									
8	10	1/4 WLD	1 4									
9												
10												
11	10	Sole PL					2B					
12	10	PL 8 x 3/4	0 1 1/2				X10	A36		509		
13	10	3" C.R. Shaft	0 10 1/2				X8		A-108 & NOTE "X"	M101		
14	10	3/8 WLD	2 1									
15												
16												
17	20	Sole PL					2C					
18	20	PL 8 x 1 1/2	1 4 1/2				X7	A36		514		
19	20	3 1/2" C.R. Shaft	1 3 1/2				X9		A-108 & NOTE "X"	M102		
20	20	3/8 WLD	3 4									
21												
22									Nodular Iron			
23	10	Masonry PLs					2D		Note "B"			
24	10	PL 18 x 3	2 10		1		X10		F2S			
25	20	Rods 2 Φ	0 3				X11	A36	F.A.O	M107		
26												
27												
28	10	Canvas Pads					2E					
29	10	Pads 20 x *	2 4						* 3 LAYERS OF 12 TO 14 OZ DUCK			
30												
31												
32	10	Canvas Pads					2F					
33	10	Pad 10 x *	1 4 1/2						* 3 LAYERS OF 12 TO 14 OZ DUCK			
34												
35												
36	10	Canvas Pads					2H					
37	10	Pad 18 x *	2 10						* 3 LAYERS OF 12 TO 14 OZ DUCK			
38												
39												
40	40	Washers					2M					
41	40	Wash 4 Φ x 3/8						A36	13/16 Φ HL	508		
42												
43												
44	20	Plate Washers					2P					
45	20	Bar 4 x 3/8	0 7					A36		507		
46												
47												
48	60	Anchor Bolts					2T					
49	60	Rods 1 1/2 Φ	2 0					A36		506		
50	60	Hex Nut For 1 1/2 Φ Bolts						A307		M208		
51												
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Do Not Ship From This Sheet

APPROVED
IOWA STATE HIGHWAY COMMISSION
By D. L. E. Clark
Date DEC 18 1968
This approval only covers the general features shown on the drawings and does not relieve the fabricator of responsibility for the correctness of the details and for their successful fabrication, shipping and erection.

PURCHASE ITEMS
SEE BILL OF MATERIAL

ALLIED ENGINEERS FABRICATORS ERECTORS
STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

REVISIONS	
D	
C	
B	
A	

DRAWN BY MP(LAKE) DATE
CHECKED BY Hm DATE 11-20
IN CHARGE OF L.K. BETTENS
FAB. PLANT HAMMOND
REFERENCE DWGS: E1

DETAILS OF Bearing Material
STRUCTURE Project No. F 61-2(3)-20-29
US 61 Over Skunk River
LOCATION Lee & Des Moines County Iowa
OWNER Iowa State Highway Commission

CONTRACT 3403 | DIV. | FABCOD 929 | SHEET 2

GLENNON & KENT, INC., CHICAGO

ALL MAT'L. ON THIS SHEET ARE PURCHASED ITEMS

SHOP PAINT

PAINT: Red lead-iron oxide paint (A.A.S.H.O. Type III) as per Article 4182.03 of I.S.C.H. Standard Specifications. Quantity to be sufficient for one shop coat for approximately 522 tons.

PREPARATION OF SURFACES TO RECEIVE PAINT: Surfaces to be painted shall be blast cleaned to bare metal as per Article 2508.05 of I.S.H.C. Standard Specifications.

APPLICATION OF PAINT: No paint shall be applied to surfaces that are not entirely free from frost or when the atmosphere surrounding the metal is at a temperature below 30 degrees F., except with the specific permission of the engineer. No paint shall be applied under any conditions of weather, temperature, and humidity that, in the opinion of the engineer, are unsatisfactory for painting. Paint may be applied by hand brushes or by suitable power sprays as per Article 2508.08 of I.S.C.H. Standard Specifications.

APPROVED
IOWA STATE HIGHWAY COMMISSION
By Dale E. Lasley
Date DEC 18 1969

The approval of [illegible] the correctness of [illegible] and [illegible] with [illegible]

HAMMOND FABRICATION - Approximately 4 Tons

CLINTON FABRICATION - Approximately 518 Tons

ALLIED
ENGINEERS
FABRICATORS
ERECTORS

STRUCTURAL STEEL COMPANY
1435-165TH STREET, HAMMOND, INDIANA 46320

DETAILS OF SHOP PAINT
STRUCTURE PROJECT NO. F-61-2(3)--20-29
LOCATION BRIDGE OVER SKUNK RIVER - DES MOINES COUNTY, IOWA
OWNER IOWA STATE HIGHWAY COMMISSION
CUSTOMER SCHMIDT CONSTRUCTION COMPANY, WINFIELD, IOWA

LKB
DATE 11-12-69

	CONTRACT 3403	FABCOD	SHEET P1

DES MOINES COUNTY

GRADING-P.C.C. PAVING

F-61-2(3)--20-29

LETTING DATE Oct. 14 1969

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5			47

PROJECT NUMBER
F-61-2(3)--20-29

R.O.W. PROJECT NUMBER
FN-61-2(5)--21-29

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line — Old / New — Sta. / Ref. Point
Profile Grade
Railroad
Field Tile
Underground Lines — Old / New — G / T — Gas / Tel.
Culverts — Old / New
Utility Poles — Power / Tel.
Fences — Barb. / Mesh
Trees Or Brush
Stream
Dike — Old / New
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM
DES MOINES COUNTY
GRADING-P.C.C. PAVING

ON U.S. 61 FROM THE SKUNK RIVER SEC. 33 T-69N, R-3W NORTHEASTERLY
APPROX. ½ MILE INTO SEC. 33, T-69N, R-3W
SCALES: AS NOTED

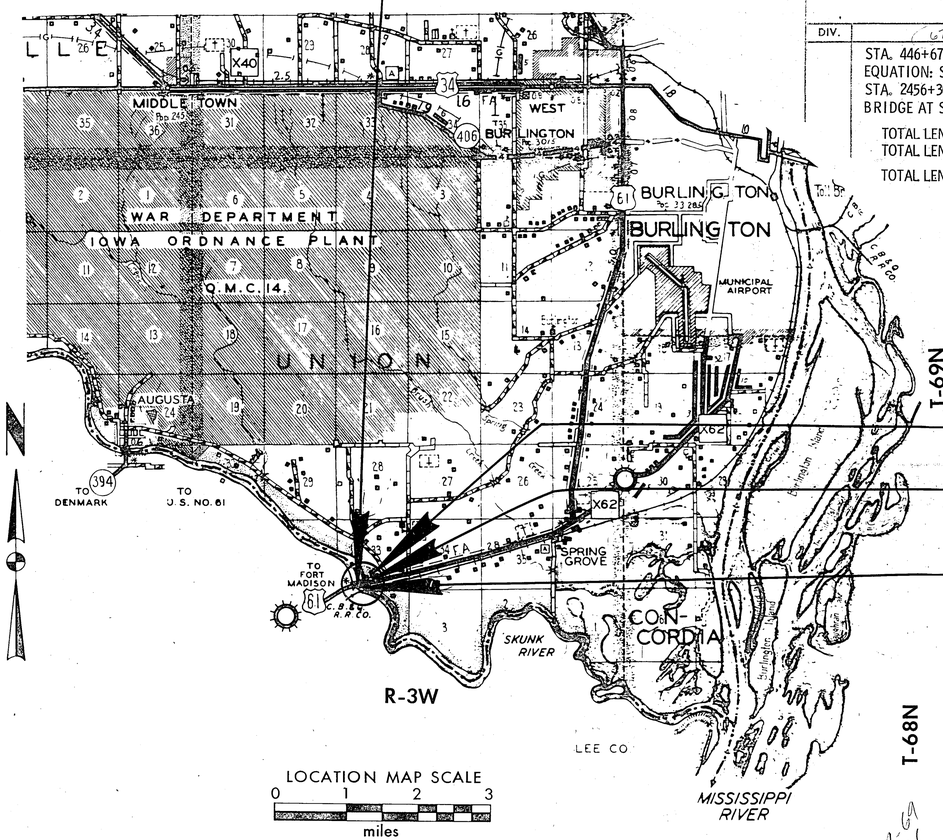
THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT

INDEX OF SHEETS

105-3

NO.	DESCRIPTION
1	TITLE SHEET
2,3	TYPICAL CROSS SECTIONS
4	ESTIMATE OF QUANTITIES
5,6	PLAN AND PROFILES STA. 453+57.0 TO STA. 2467+00.0
7	PLAN AND PROFILES OF SIDE ROADS
8,9	BENCH MARKS AND REFERENCE POINTS
10	TABULATION OF DRAINAGE STRUCTURES, DETAILS OF SUBGRADE TREATMENTS AND EMBANKMENT WITH MOISTURE AND DENSITY CONTROL
11	TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS
12	DETAILS OF SOIL SURVEY
13-37	STANDARD ROAD PLANS
38-47	CROSS SECTIONS
21	OMITTED

PROJECT LOCATION



MILEAGE SUMMARY

105-1

DIV.	LOCATION	LIN. FT.	MILES	STATE CONTROL SECTION NO.
	STA. 446+67.33 TO STA. 456+30.20	962.87		
	EQUATION: STA. 456+30.20 = STA. 2456+30.20			
	STA. 2456+30.20 TO STA. 2467+00.00	1,069.80		
	BRIDGE AT STA. 450+12.5	690.33		
	TOTAL LENGTH OF ROADWAY IN PROJECT	1,342.34	0.254	
	TOTAL LENGTH OF BRIDGE IN PROJECT	690.33	0.131	
	TOTAL LENGTH OF PROJECT	2,032.67	0.385	29-4000

STA. 2467+00.00
PROJECT END

EQUATION
STA. 456+30.20 =
STA. 2456+30.20

STA. 446+67.33
PROJECT BEGIN

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
ONE COPY PREPARED BY _____ DATE _____
RES. CONST. ENGR.
ONE COPY APPROVED AND FORWARDED TO AMES
_____ DATE _____
DISTRICT ENGINEER
TWO COPIES TO BE MADE AND RETURNED TO:
VIRGIL BUTLER ..... DISTRICT ENGINEER
FRED PFAFF ..... RES. MAINT. ENGINEER

CONTRACTORS

PRIME	GIESE CONST. CO.
P.C.C. PAVING	JACKSON CONST. CO.
EROSION	RHINEHARTS
GUARD RAIL	ARMCO STEEL CORP.

101-4

DESIGN DATA RURAL

19 71 AADT 4100 V.P.D.
19 91 AADT 5680 V.P.D.
19 91 DHV 650 V.P.H.
DIRECTIONAL 60 %
TRUCKS 14 %
DESIGN V 70 M.P.H.
PARTIAL ACCESS CONTROL

APPROVED

DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION ..... DATE

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.

DATE Dec 15 1969 IOWA REG. NO. 3976

U.S. DEPT. TRANSPORTATION
BUREAU OF PUBLIC ROADS

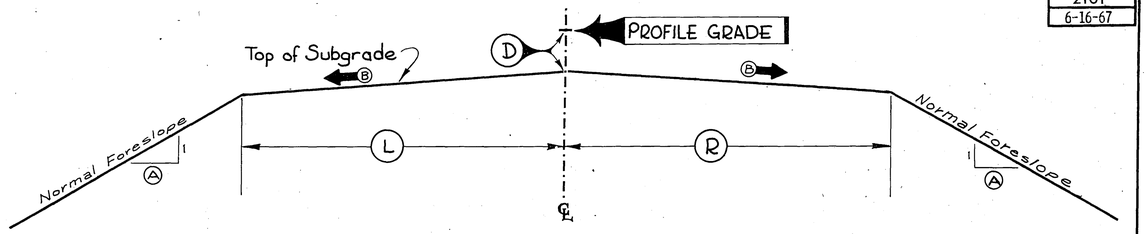
APPROVED

DIVISION ENGINEER ..... DATE

4-10-68

80

2101
6-16-67



GRADING
TYPICAL CROSS SECTION

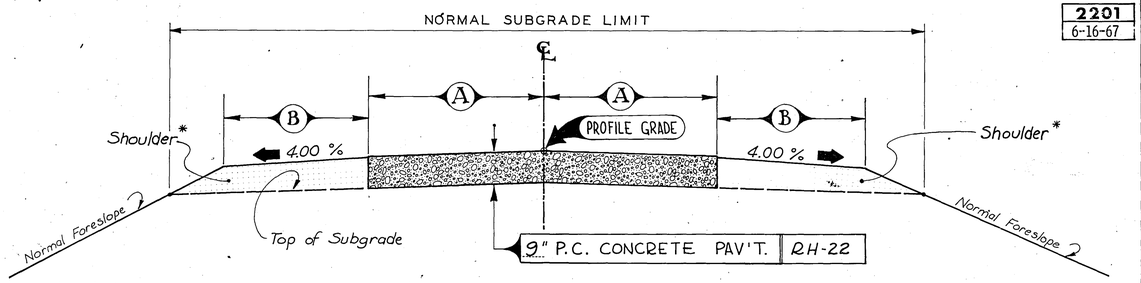
NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

See typical cross section for details of ditches and backslopes

LOCATION		DIMENSIONS			SLOPES	
Station	to Station	L	R	D	A	B%
453+57.00	456+30.20 *	26.0'	26.0'	9"	6	1.5
2456+30.20 *	2467+00.00	26.0'	26.0'	9"	6	1.5

* EQUATION:
STA. 456+30.20 = STA. 2456+30.20

2201
6-16-67



NOTE:
Normal sections shown may be appropriately modified at areas specifically designated by the engineer, such as intersections or superelevated curves.

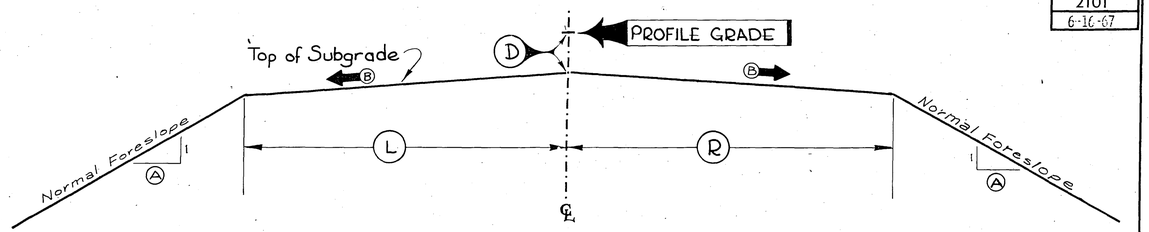
TYPICAL CROSS SECTION
PROPOSED HIGHWAY IMPROVEMENT

STATION	TO STATION	A	B
453+57.00	456+30.20 *	12'	10'
2456+30.20*	2467+00.00	12'	10'

* EQUATION:
STA. 456+30.20 = STA. 2456+30.20

* Refer to other drawings for details of shoulder design and construction. See Typical 7110 on Sheet No. 3.

2101
6-16-67



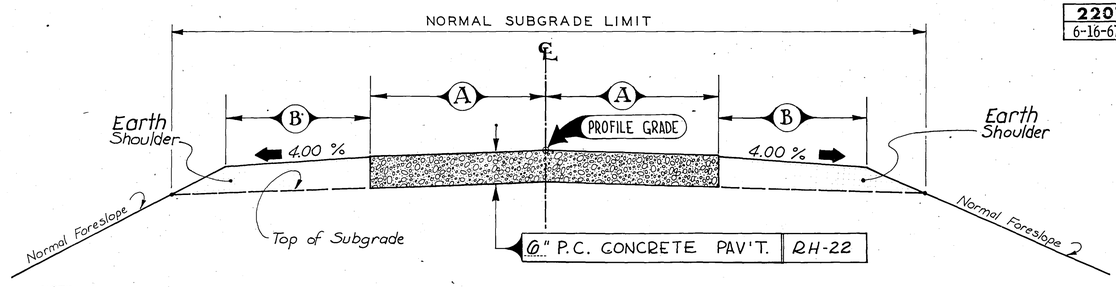
GRADING
TYPICAL CROSS SECTION
FOR DETOUR

NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

See typical cross section for details of ditches and backslopes

LOCATION		DIMENSIONS			SLOPES	
Station	to Station	L	R	D	A	B%
2459+75.00	2468+50.00	16.0'	16.0'	6"	2.5	1.5

2201
6-16-67



NOTE:
Normal sections shown may be appropriately modified at areas specifically designated by the engineer, such as intersections or superelevated curves.

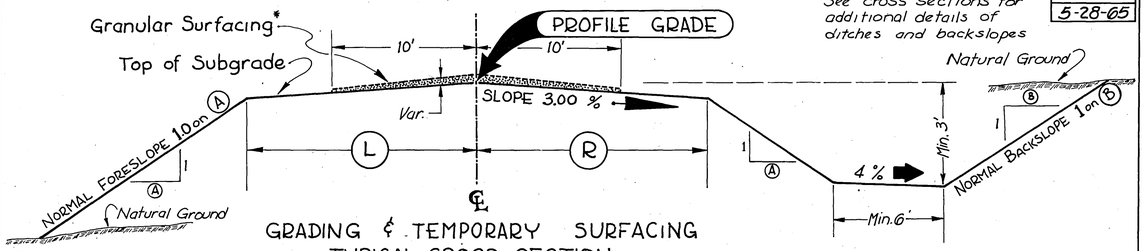
TYPICAL CROSS SECTION
PROPOSED DETOUR

STATION	TO STATION	A	B
2459+75.00	2468+50.00	12'	3'

NOTE:
Earth Shoulders require an estimated 11 cu. yds. per Station (including 60% shrinkage.)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA			3	47

2108
5-28-65



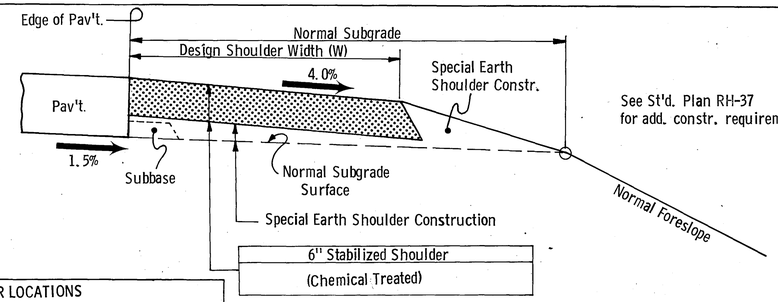
GRADING & TEMPORARY SURFACING
TYPICAL CROSS SECTION

* Granular surfacing is estimated at the rate of 1350 tons per mile, including 50 tons for access points.

LOCATION		DIMENSIONS		SLOPES	
Station	to Station	L	R	A	B
5463+15.00	5469+00.00	14.0'	14.0'	3	2 1/2
1+65.00	6+09.00	14.0'	14.0'	2	2

NOTE:
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

7110
10-15-68



NOTE:
Special earth shoulder construction requires approx. "X" cu. yds. of excavation (including 60 % for shrinkage) per Station.

See St'd. Plan RH-37 for add. constr. requirements

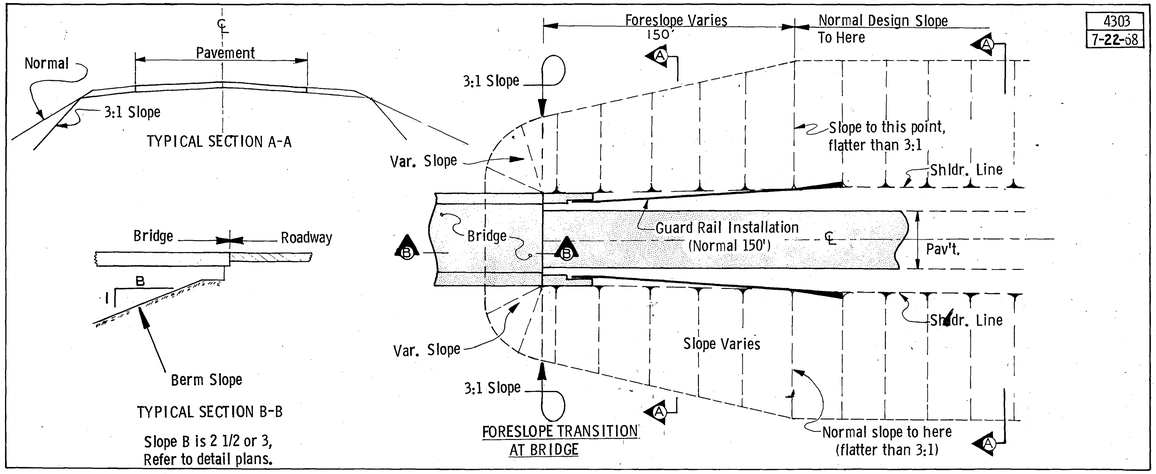
TABULATION OF SHOULDER LOCATIONS				
STATION	TO STATION	W.	SIDE	"X"
453+57.00	456+30.20*	10'	BOTH	18
2456+30.20 *	2467+00.00	10'	BOTH	18

*EQUATION
STA. 456+30.20 = STA. 2456+30.20

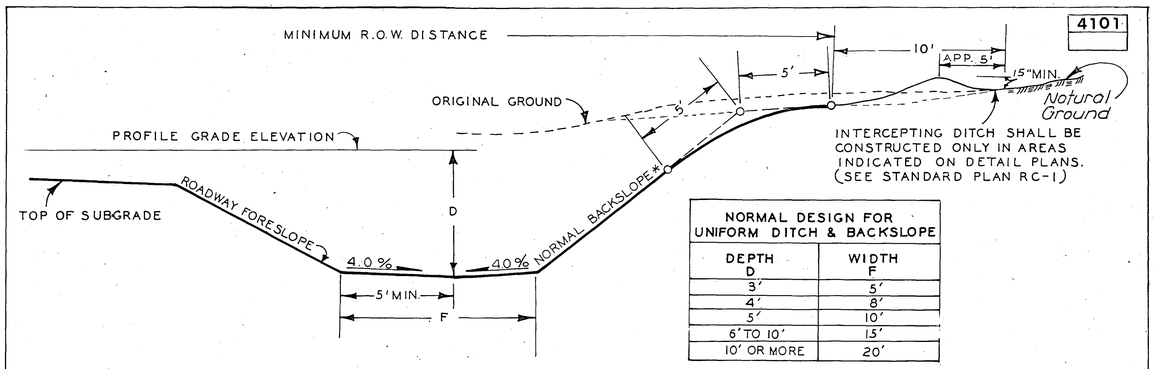
TYPICAL SECTION
6" STABILIZED SHOULDER
ADJACENT TO P. C. CONCRETE PAV'T.

DESIGN QUANTITY RATES (Tons per Shoulder per Station)	
W	Stab. Shldr. Material
10'	37.16

4303
7-22-68



4101



NORMAL DESIGN FOR UNIFORM DITCH & BACKSLOPE	
DEPTH D	WIDTH F
3'	5'
4'	8'
5'	10'
6' TO 10'	15'
10' OR MORE	20'

* BACKSLOPE SHALL BE CONSTRUCTED ON A SLOPE OF 2.50 ON 1.00 EXCEPT WHERE INDICATED OTHERWISE ON DETAIL PROJECT PLANS.

TYPICAL CROSS SECTION OF DITCHES & BACKSLOPES

109-1C

THROUGH TRAFFIC WILL BE MAINTAINED ON THE PROJECT. IF STAGED CONSTRUCTION IS REQUIRED, THE LOCATIONS WILL BE INDICATED IN THE DETAIL PROJECT PLANS.

109-4

UTILITY COMPANIES, WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN CONSTRUCTION LIMITS, SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

109-5B

EROSION CONTROL WORK WILL BE DONE ON THIS PROJECT. THE DETAILS WILL BE DETERMINED FOLLOWING COMPLETION OF THE PAVING.

109-8

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.

109-9

SOUNDING AND TEST BORING DATA SHOWN ON PLANS WERE ACCUMULATED FOR DESIGNING AND ESTIMATING PURPOSES. THEIR APPEARANCE ON THE PLAN DOES NOT CONSTITUTE A GUARANTEE THAT CONDITIONS OTHER THAN THOSE INDICATED WILL NOT BE ENCOUNTERED.

109-11

ROAD CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTORS CARELESSNESS ARE TO BE REPLACED AT HIS EXPENSE WITHOUT COST TO THE STATE OF IOWA. ANY TILE LINES BROKEN OR DISTURBED BY OUR CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE STATE OF IOWA'S EXPENSE.

109-21

EROSION CONTROL QUANTITIES INDICATED HEREON INCLUDE ALL NECESSARY ITEMS FOR SEEDING BORROW AREAS.

109-23

CONSTRUCTION IDENTIFICATION SIGNS (RD-17) TO BE ERECTED ON THIS PROJECT SHALL REMAIN IN PLACE THROUGH THE COMPLETION OF ALL SUCCEEDING CONTRACTS PROGRAMMED FOR FUTURE WORK AT THIS LOCATION.

ESTIMATE REFERENCE INFORMATION

100-4

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

ITEM NO.	DESCRIPTION
1.	Includes 193 cu. yds. (including 60% shrinkage) for earth shoulder fill for detour. No payment for overhaul will be allowed for shoulder material. Includes 100 cu. yds. of existing rip-rap to be included and considered incidental. Includes 6000 cu. yds. of existing roadbed east of present bridge to be removed and wasted in Borrow "AA".
2.	Article 1109.03, 1964 Standard Specifications shall not apply to this item.
3.	18,850 sta. yds. computed by mass diagram and 29,300 sta. yds. computed by assuming center of mass of borrow area.
8.	Transverse "CD Joints" at 20' spacing will be required.
17.	Place under proposed bridge between carbody jetties to a thickness of 5'±. If additional material is available place up stream from carbody jetties as directed by the engineer. No payment for overhaul will be allowed. Includes 48 lin. ft. of saw cut and approximately 160 sq. yds. of old bridge approach section.
23.	To be placed in accordance with 1964 Standard Specifications, Section 2315, Driveway Surfacing.
24.	Article 1109.03, 1964 Standard Specifications shall not apply to this item. For locations see tabulation on this sheet.
25.	For Detour Shoulders, Excavation required is included in "Class 10 Excavation".
7.	For paving detour. See typical cross sections.

TABULATION OF SUPERELEVATION CURVE DATA

101-1 (3-12-68)

Curve No.	P. I. Location Sta.	Curve D	St'd. Road Plan Type No.	Design Speed M. P. H.	e	S	Note
	2460+39.6	2°00'	RP-1	70	.065	240'	

POINTS OF PRIVATE ACCESS

102-1

LOCATION STATION	SIDE	TYPE	W	PIPE CULVERT REQUIRED NONE	18"	24"	
2463+02.7	RT.	"C"	24'		88'		
5466+25.0	RT.	"C"	24'		72'		

REMOVAL OF EXISTING STRUCTURES

110-2

LOCATION	DESCRIPTION	DISPOSAL
2459+00 LT.	24 x 48 Concrete Foundation	See Note 109-8
2459+60 LT.	18 x 36 Concrete Foundation	See Note 109-8

TABULATION OF BARRICADES

104-7

NO.	STATION
1	453+75

ESTIMATED PROJECT QUANTITIES

100-0

NO.	ITEM	UNIT	TOTAL
1	Class 10 Excavation (Roadway and Borrow)	Cy. Yds.	~~74 660~~ 82457
2	Class 12 Excavation (Boulders)	Cu. Yds.	~~50~~ 0
3	Overhaul	Sta. Yds.	48 150 ✓
4	Class 20 Excavation	Cu. Yds.	36 ✓
5	Select Backfill (Soil)	Cu. Yds.	2 516 ✓
6	Compacting Embankment with Moisture and Density Control	Cu. Yds.	4 622 ✓
7	6" Standard or Slip Form P.C. Concrete Pavement (Class "C")	Sq. Yds.	~~2 333~~ 1884.0
8	9" Standard or Slip Form P.C. Concrete Pavement (Class "C")	Sq. Yds.	~~3 233~~ 32275
9	Stabilized Shoulder Material (Chemical Treated)	Tons	~~998~~ 1028.05
10	24" Corrugated Metal Roadway Pipe Culvert	Lin. Ft.	122 ✓
11	24" Metal Aprons	No.	2 ✓
12	24" Corrugated Metal Type "A" Diaphragm	No.	1 ✓
13	24" Corrugated Metal Elbows (15°)	No.	1 ✓
14	24" Unclassified Roadway Pipe Culvert	Lin. Ft.	64 ✓
15	24" Unclassified Aprons	No.	2 ✓
16	18" Unclassified Entrance Pipe Culvert	Lin. Ft.	160 ✓
17	Removal of Old Pavement	Sq. Yds.	~~7 133~~ 6663
18	Reinforced Bridge Approach Section	Sq. Yds.	350 ✓
19	Formed Steel Beam Railing	Lin. Ft.	300 ✓
20	Posts, 8" x 8" x 6'	No.	52 ✓
21	RE-20 Guard Rail Bridge Connections	No.	2 ✓
22	RE-9 Anchor Sections	No.	2 ✓
23	Granular Surfacing on Road (Class "A" Crushed Stone)	Tons	~~265~~ 556.4
24	Barricades	No.	1 ✓
25	Earth Shoulder Finishing	Sta.	17.5 ✓
26	RF-23 End Drains	No.	2 ✓
27	Surface Treatment of P.C. Concrete Pavement	Sq. Yds.	~~3 583~~ 3577
28	Removal of Existing Structures	LumpSum	See Tab. ✓
29	Seeding	Acres	~~9.5~~ 9.3
30	Mulching	Acres	~~2.0~~ 3.1
31	Fertilizing	Acres	~~9.5~~ 9.3
32	Special Ditch Control (Jute Mesh)	Squares	~~189.0~~ 113.70
33	Project Sign	No.	1 ✓

REMOVAL OF OLD PAVEMENT

110-1

	STA. TO STA.	AREA SQ. YDS.	VOLUME CU. YDS.	REMARKS
STAGE 3	450+00 (LT.) 2459+60 (LT.)	2824	628	Waste in Channel as Directed by Engr.
STAGE 2	2459+60 (LT.) 2467+00	1976	439	Waste in Roadway Embankment.
	Equation: Sta. 456+30.2 = Sta. 2456+30.2			
	DETOUR:			
STAGE 3	2459+60 (LT.) 2467+60 (LT.)	2333	389	Waste in Channel as Directed by Engr.

TABULATION OF SHOULDER MATERIAL AVAILABILITY AREAS

107-7

LOCATION STATION TO STATION	SIDE	ESTIMATED QUANTITY AVAILABLE CU. YDS.
BORROW "AA"	---	676

TABULATION OF BEAM GUARD RAIL INSTALLATIONS

108-8

LOCATION No.	Station	CASE	SINGLE BEAM RAIL Lin.Ft.	SINGLE BEAM RAIL POSTS No.	DOUBLE BEAM RAIL Lin. Ft.	DOUBLE BEAM RAIL POSTS No.	TOTAL SINGLE BEAM RAIL Lin.Ft.	TOTAL DOUBLE BEAM RAIL Lin.Ft.	TOTAL POSTS No.	SPECIAL CONNECTIONS TYPE	SPECIAL CONNECTIONS No.	RE-9 ANCHOR No.	REMARKS
	450+12.5 ✓	D	300'	52			300		52	RE-20	2	2	RE-13; EAST END OF BRIDGE ✓

Des Moines COUNTY | PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		4	47

Property Owners
J-Charles & Ruth Beebe
N-Clifford & Sarah Matteson
F-County Conservation
T-Union Electric Co. of Missouri

T69N R3W
SEC. 33

T68N R3W
SEC. 4

SEC. 5

+78 APPROX. SEC. LINE

SEC. 4 - SEC. 5 LINE

℄ Future Lane

Survey

Office Relocation
Use on Construction

Sta. 424+23
D.A. = 89 Ac. H-R-F.

Sta. 431+50
D.A. = 5 Ac. F.

P.O.T. Sta. 440+57.8

LEE COUNTY
GREEN BAY TWP

DES MOINES COUNTY
UNION TWP

Existing Bridge to be removed by others

Estimated 100 Cu. Yds. of existing rip-rap to be included & considered incidental to Class 10 excavation.

Old roadbed to be removed in Stage 3. Estimated 6000 Cu. Yds. of Class 10 excavation.

Shelter Ho. 120'

Well

PARK

Rail +75

Piling 1/4'

P.O.T. Sta. 446+95.0

P.O.T. Sta. 450+84.7

Borrow "AA"

61 A.C. Over 24" Conc.

R.W. & C.A. ℄

138'

Rail +582

Jetties (Car bodies & piling)

SKUNK RIVER

APPROX. ℄

Sta. 448+30
D.A. = 4310 Sq. Mi.

P.O.T. Sta. 452+00.0

Borrow "AA"

R.W. & C.A. ℄

STA. 446 + 67.33
BEGIN PROJECT

Sta. 450+12.5
Build 685'-0 X 44'-0
Cont. Welded Gir. Bridge
Skew 15°
Design No. 468

NAME UNION ELECTRIC CO.
DATE ACQUIRED 6-9-69
CONSIDERATION $ 3,330.00
TITLE BY Warranty Deed
BOOK 307 PAGE 525
COUNTY RECORDER'S OFFICE

LEGEND
- Bell Tel. Co.
- Southeastern Ia. R.E.C.

SCALE 0 50 100

Stage 2
C = 0
Broken Conc. = 439
From Borrow "AA" = 42,389
42,828
F(33,046-439)+30% = 42,389
Concrete Fill = 439
42,828

Stage 3
C = 4846
F 30% = 0
To St Rd Sta. 5 = 4000
To Sd Rd Sta. 5464+ = 846
Prs. U.S. No. 61 4846

+0.24%

1000' V.C.

+1.20%

549.50

Ext. H.W. EL. 539.43

Top H°O El = 519.4

Borrow To EL 522.0

Treatment No. 1

No Ditch
No Ditch

48.30 48.36 48.43 48.51 48.59 48.67 48.77 48.87 48.97 49.08 49.20 49.32 49.45 49.59 49.73 49.87 50.03 50.19 50.35 50.52 50.70 50.88 51.07 51.27 51.47 51.67 51.89 52.11 52.33 52.56 52.80 53.04 53.29 53.55 53.81 54.07 54.35

425 430 435 440 445 450 455

DES MOINES CO.

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

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		5	47

PLAN — DATE — BY — SURVEYED — DRAWN — ALIGNMENT CHECKED — RT. OF WAY CHECKED — NOTE BOOK — NO.

PROFILE — DATE — BY — SURVEYED — DRAWN — GRADES CHECKED — B. M.'s NOTED — STRUCTURE NO. & TYP'S CHK'D — NOTE BOOK — NO.

Property Owners
Q-Vern H. & Marjorie Johnson
R-Richard & Eileen Conner
S-Homer & Mildred Wagner
T-Union Electric Co. of Missouri

NAME Vern H. & Marjorie Johnson
DATE ACQUIRED Sept. 18, 1968
CONSIDERATION 7,100.00
TITLE BY Warranty Deed
BOOK 302 PAGE 271
COUNTY RECORDER'S OFFICE

NAME Homer D. and Mildred F. Wagner
DATE ACQUIRED
CONSIDERATION
TITLE BY Condemnation
BOOK PAGE
COUNTY RECORDER'S OFFICE

DES MOINES COUNTY
UNION TWP
T69N R3W
SEC. 33

Pre-determined Access
Sta. 2463+02.7

Equation:
P.O.T. Sta. 456+30.2
= P.C. Sta. 2456+30.2
= P.O.T. Sta. 456+30.2
Profile Line

Prop. Type "C" Ent to Property Line
Right of Entry
& Frontage Road
Sta. 5466+25.0 (Side Road)
Close
Farm Ent.
Res. Ent.
Oil Sta.
R.W.f.C.A.
A.C. Over 24' Conc.
Use Saw Cut
Survey
231.45' Ahead on Tangent of P.C. Sta. 2456+30.70
Type "F" Dike
El.
Off. Reloc.
Use on Constr.
Sta. 456+30-45' Rt.
D.A. = Side Ditch
Install 24" C.M.P.
F.L. N. 551.0
S 532.0
P.O.C. Sta. 2463+02.7
Type "C" Prop.
Right of Entry
Δ = 16°16' Rt.
D = 2°00'
T = 409.4'
L = 813.4'
E = 29.1'
R = 2864.9'
P.I. Sta. 2460+39.6
83°46'00" (Solid Rock)
80°07' Tan to Curve
15"x20' Corr. Pipe
Field Ent.
& Future Lane
& Prop. Future Lane
STA. 2467+00.00
END OF PROJECT
P.O.T. Sta. 2470+00.0
& Detour
Butt Joint
Sta. 2468+50.00
End Detour
P.I. 40' Lt. Sta. 2466+85.16
& Survey
Use Saw Cut Sta. 2467+00.00
P.T. Sta. 2464+43.6
+85 Field Ent.
Tie-in +00 563.30
Local Road
Stage 2
Stage 1
Stage 3

Curve Data
Δ = 20°30'
D = 18°11'20.89"
T = 56.96'
L = 112.70'
E = 5.11'
R = 315.00'

DETAIL OF DETOUR TIE IN

Scale: 1"=50'

LEGEND
Bell Tel. Co.
Southeastern Ia. R.E.C.

0 50 100
SCALE

NAME EILEEN E. CONNER
DATE ACQUIRED
CONSIDERATION
TITLE BY Condemnation
BOOK PAGE
COUNTY RECORDER'S OFFICE

NAME UNION ELECTRIC Co.
DATE ACQUIRED June 2, 1969
CONSIDERATION $4,326.00
TITLE BY Warranty Deed
BOOK 307 PAGE 525
COUNTY RECORDER'S OFFICE

C = F + 30% = 7375
C = 314 F + 30% = 881
From Borr. "AA" = 567
881
C = F + 30% = 1267

Farm Ent.
Res. Ent.
1000' V.C.
900' V.C.
+1.20%
0.00%
Pres. U.S. No. 61
Detour Profile Same as Old Pav't. See X-Sections
Vertical Equation:
Back Elev. 557.1
Forward Elev. 557.1
Subgrade Treatment No. 1
Rt. 559.3
Fl. Lt. 558.4
Equation: P.O.T. Sta. 456+30.2 = P.O.T. Sta. 2456+30.2
No Ditch
5' Ditch
Vari.

455	54.35	54.63	54.91	55.20	55.50	56.70	57.90	58.20	58.48	58.76	59.03	59.30	59.55	59.80	60.03	60.26	60.48	60.70	60.90	61.10	61.28	61.46	61.63	61.80	61.95	62.10	62.23	62.36	62.48	62.60	62.70	62.80	62.88	62.96	63.03	63.10	63.15	63.20	63.23	63.26	63.28	63.30	63.30
	540																																										
	550																																										
	560																																									

2460	2465	2470

Stage Construction

Stage 1 Construction of Detour

Stage 2 All Construction including Paving of Relocation not interfering with Traffic on Detour and Present U.S. No. 61

Stage 3 Removal of Detour and Completing Construction after Traffic is Established on Stage 2.

PLAN: SURVEYED, DRAWN, ALIGNMENT CHECKED, RT. OF WAY CHECKED, NOTE BOOK, NO., BY, DATE

PROFILE: SURVEYED, DRAWN, GRADES CHECKED, B.M.'s NOTED, STRUCTURE NO. & STA'S CHKD

DES MOINES CO.

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

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		6	47

Property Owners
S-Homer & Mildred Wagner

231.40' Ahead on Tangent of P.C. Sta. 2456+30.20

DES MOINES COUNTY
UNION TWP
T69N R3W
SEC. 33

℄ 330'(M.L.)

℄ 275'(M.L.)

Maintenance Turn-around

Survey

5465

℄ Frontage Road

R.W.&C.A.

Sta. 5469+00.00
End Construction

P.O.T. Sta. 5467+18.6

63°48'20.99"

80°07' Tan To Curve +11

P.O.T. Sta. 5468+00.0

LOCAL ROAD (Crushed Rock)

RW

Sta. 5466+25.0

Pl. Sta. 5463+02.7
P.O.C. Sta. 2463+02.7
Main Line Survey

15"x20' Corr. Pipe

Close

+62 Field Ent.

℄ 5465

AC Over 24" Conc.

℄ 110'

R.W.&C.A.

Future Lane

Future Lane

88'

℄ 69'

+25 Prop. Type "C" Ent.

NAME Homer D. Wagner and Mildred E.
DATE ACQUIRED
CONSIDERATION
TITLE BY Condemnation
BOOK PAGE
COUNTY RECORDER'S OFFICE

Sta. 5469+47
6'X6'X37.2' Wood Culv.
D.A. =
Use as Constructed

NAME Verle H. and Margaris Johnson
DATE ACQUIRED Sept. 12, 1968
CONSIDERATION 2,100.00
TITLE BY Warranty Deed
BOOK 307 PAGE 271
COUNTY RECORDER'S OFFICE

(Q)

(S)

NAME Homer D. and Mildred E. Wagner
DATE ACQUIRED
CONSIDERATION Condemnation
TITLE BY
BOOK PAGE
COUNTY RECORDER'S OFFICE

Maintenance Turn-around

RW&CA

Road

Sta. 1+65±

Sta. 6+25.0
= Sta. 5466+25.0
(Side Road)

83°48'20.99"

210'

90°

Mainline Tangent

231.40' Ahead on Tangent of P.C. Sta. 2456+30.20

Sta. 5+75
D.A. -
Install 24" Uncl.
Lt. 549.4
F.L.
Rt. 550.8

LEGEND
Bell Tel. Co.
Southeastern Ia. R.E.C.

0 50 100
SCALE

SIDE ROAD CONNECTION LT. STA. 2463+02.7

FRONTAGE ROAD AT STA. 5466+25

PLAN
SURVEYED
PLOTTED
CHECKED
ALIGNMENT CHECKED
R/W NOTED
RT. OF WAY CHECKED
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
PLOTTED
CHECKED
R/W NOTED
STRUCTURE NOTATING CHKD
NOTE BOOK
NO.

C = 1192 Ft 30% = 8555
Stage 3
From Borrow "A A" = 6517
From Stage 3 At M.L. Sta. 456± = 846
8555

+75 +47

Field Ent.
+62

Tie in Edge Slab +15
563.01

0.00%
563.01
200' V.C.
-6.80%
200' V.C.
Tie-in +00
548.31
-2.00 Lt. Ft. Rt. Ditch
-1.10%
550.40
546.40
549.41

Future Lane

Rt. 538.5
Lt. 538.0

No Ditch Vari | No Ditch | Ditch Grade | Ditch Grade | Vari Vari

63.01 63.01 63.01 62.90 62.58 62.05 61.31 60.35 59.18 57.80 56.21 54.60 53.17 51.91 50.83 49.93 49.22 48.67 48.31

+15 5465 5470

C = 0
Stage 3
From Stage 3 Sta. 456± = 4000
4,000
Ft 30% = 4000

+09
559.87
557.69
+2.0%
+4.0%
150' V.C.
150' V.C.
+65
551.69
0.0%
+50
551.69

No Ditch
No Ditch
Lt.
Rt.

51.69 51.69 51.77 52.02 52.44 53.02 53.77 54.69 55.65 56.52 57.31 58.02 58.65 59.19 59.69

0 5

DES MOINES CO.	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		IOWA	5			

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		7	47

ALL REFERENCES PLUMB DISTANCES

DATUM INFORMATION

The datum plane for this survey is identical with the as built constr. Lee Co. F-61-1(5)--20-56.

B.M. No. 10 this survey El. 541.91 = B.M. No. 10 LEE Co. F-61-1(5)--20-56 1966 constr. El. 541.91.

There are no equations to other datums within the bounds of this survey.

BENCH MARKS

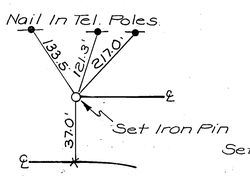
	ELEV
~~No. 10 Sta. 330+69.1 61' Lt. Found R.R. Spk. S. Side Tel. Pole~~	~~541.91~~
~~No. 11 Sta. 342+16.4 4' Rt. Set R.R. Spk. W. Side 24" Maple~~	~~562.37~~
~~No. 12 Sta. 362+47.4 5' Rt. Set R.R. Spk. W. Side Tel. Pole~~	~~563.36~~
~~No. 13 Sta. 380+76.1 05' Lt. Set R.R. Spk. E. Side Tel. Pole~~	~~560.91~~
~~No. 14 Sta. 393+11.1 24' Lt. Set R.R. Spk. E. Side Po. Pole~~	~~554.94~~
~~No. 15 Sta. 411+42.1 68' Lt. Cut "a" On Inlet Hdwl. 4'X3' R.C.B.~~	~~545.86~~
No. 16 Sta. 423+32.2 20' Rt. Set R.R. Spk. N. Side Tel. Pole	534.65
~~No. 17 Sta. 440+54.2 0' Lt. Set R.R. Spk. S. Side 24" Walnut~~	~~536.00~~
~~No. 18 Sta. 446+88.0 on ℄ Set R.R. Spk. N. Side 30" Ctwd.~~	~~534.91~~
~~No. 19 Sta. 447+40.1 4' Lt. Set R.R. Spk. E. Side Water Control Piling~~	~~521.90~~
~~No. 20 Sta. 453+25.3 7' Lt. Set R.R. Spk. S. Side Po. Pole~~	~~533.04~~
~~No. 21 Sta. 2463+08.3 8' Rt. Set R.R. Spk. N. Side Po. Pole~~	~~562.53~~
~~No. 22 Sta. 483+16.3 9' Lt. Set R.R. Spk. S. Side 30" Hackberry~~	~~557.49~~
~~No. 23 Sta. 500+60.2 5' Rt. Set R.R. Spk. W. Side Fe. Post~~	~~559.77~~
~~No. 24 Sta. 520+10.1 28' Rt. Set R.R. Spk. N. Side 24" Hackberry~~	~~560.83~~
~~No. 25 Sta. 537+54.1 83' Rt. Set R.R. Spk. N. Side Po. Pole~~	~~555.10~~
~~No. 26 Sta. 558+31.1 27' Lt. Set R.R. Spk. E. Side 18" Pine~~	~~554.76~~
~~No. 27 Sta. 578+57.1 6' Lt. Set R.R. Spk. S. Side Tel. Pole~~	~~557.22~~
~~No. 28 Sta. 586+67.0 8' Rt. Set R.R. Spk. S. Side Po. Pole~~	~~546.87~~
~~No. 29 Sta. 599+17.0 3' Rt. Set R.R. Spk. S.E. Side 36" Hackberry~~	~~550.43~~
~~No. 30 Sta. 608+82.1 22' Rt. Set R.R. Spk. N. Side 15" Locust~~	~~560.14~~
~~No. 31 Sta. 617+18.1 02' Rt. Set R.R. Spk. W. Side Po. Pole~~	~~556.71~~

SIDE ROADS

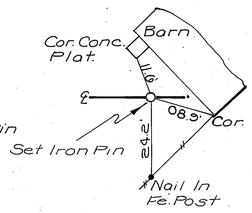
~~No. 17 "A" Sta. 3428+54.3 06' Rt. Set R.R. Spk. S. Side Po. Pole~~	~~538.84~~
~~No. 18 "A" Sta. 3440+32.6 4' Lt. Set R.R. Spk. N. Side Po. Pole~~	~~618.03~~

NO. 14A STA. 400+90 CUT □ INLET 5'X8'	548.81
NO. 16A STA. 421+84 I HC.B.M. HDWL 8'X5' LT. 60	539.47
NO. 17A STA. 441+30 110' LT. RR. SPK. 18" ASH	533.10
NO. 17B STA. 440+30 I HC.B.M. HDWL 8'X5' RCB 100' RT.	533.10
NO. 18A STA. 446+16 139' LT. RR. SPK. 24" COTTONWOOD	535.34
NO. 20B STA. 453+95 230' RT. RR. SPK. 24" COTTONWOOD	531.85
NO. 21A STA. 2459+12 180' RT 18" COTTONWOOD	562.61
NO. 21B STA 2464+43 TOP RAIL LT 196'	555.64
NO. 18B STA 446+56 I HC.B.M. IN LT. WING CURB	549.20
NO. 20C STA 453+68 I HC.B.M. IN RT WING CURB	553.71
SIDE ROAD	
NO. 17 "A-1" STA 3430+38 TOP. ROW. RAIL RT 100'	546.81
NO. 18 "B" STA 3439+50 TOP ROW RAIL LT 100.2'	605.10

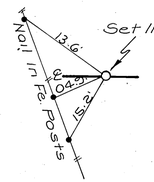
P.O.T. Sta 331+15.4



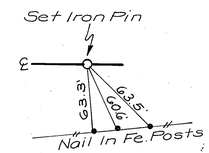
P.O.T. Sta 341+64.6



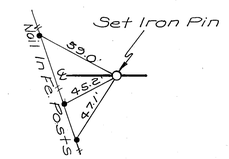
P.O.T. Sta 343+29.6



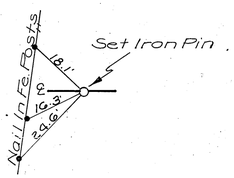
P.O.T. Sta 345+29.6



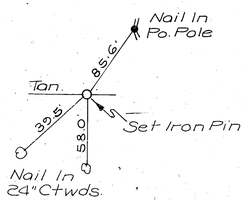
P.O.T. Sta 361+98.9



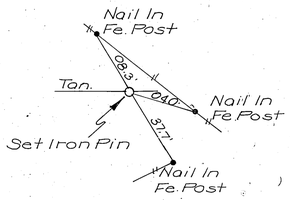
P.O.T. Sta 380+55.2



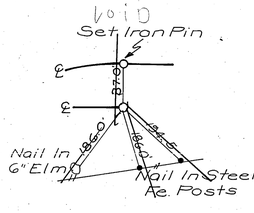
P.O.S.T. Sta 392+90.9



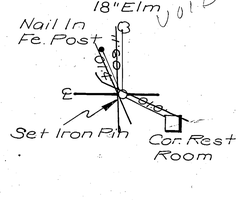
P.O.S.T. 67.7 G Ahead Of P.I. Sta 404+09.4'



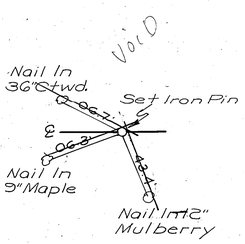
~~P.T. Sta. 420+91.6~~
= ~~P.O.T. Sta. 1420+91.6-37 Rt.~~



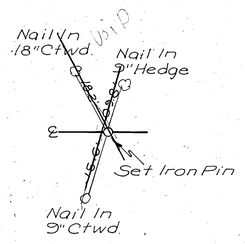
~~P.O.T. Sta. 440+57.8~~



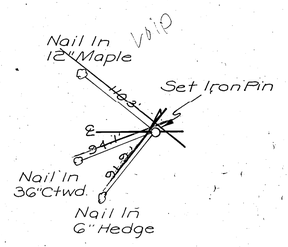
~~P.O.T. Sta. 446+95.0~~



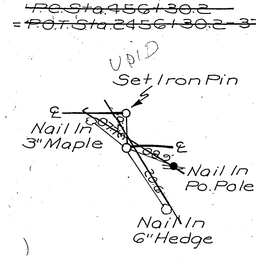
~~P.O.T. Sta. 450+84.7~~



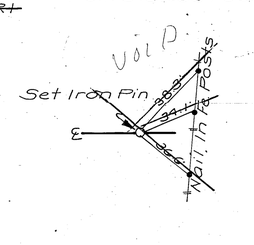
~~P.O.T. Sta. 452+00.0~~



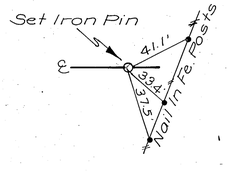
~~P.C. Sta. 456+30.2~~
= ~~P.O.T. Sta. 2456+30.2-37 Rt.~~



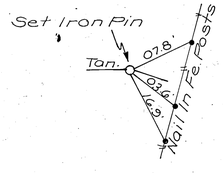
~~P.O.T. Sta. 463+03.7~~



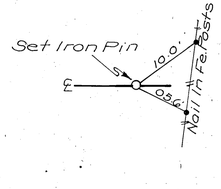
P.O.T. Sta 483+36.3



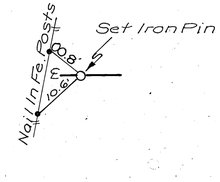
P.I. Sta. 500+87.9



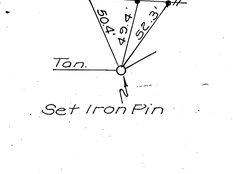
P.O.T. Sta 537+70.6



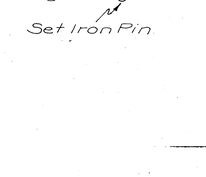
P.O.T. Sta. 564+84.0



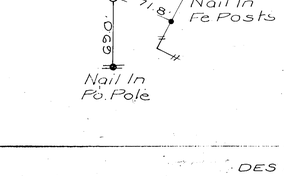
P.I. Sta. 587+14.0



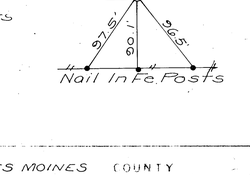
P.O.T. Sta. 597+38.0



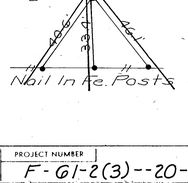
P.I. Sta. 611+84.6



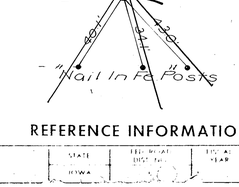
P.T. Sta. 620+81.0



~~P.O.T. Sta. 1400+000~~



~~P.C. Sta. 1403+32.8~~



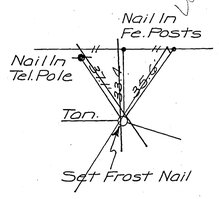
REFERENCE INFORMATION DETAILS

DES MOINES COUNTY

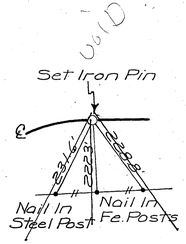
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA			8	47

ALL REFERENCES PLUMB DISTANCES

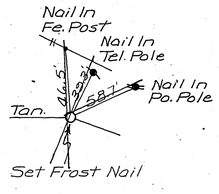
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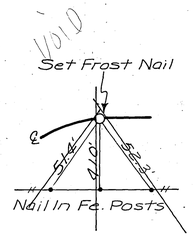
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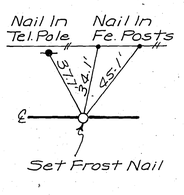
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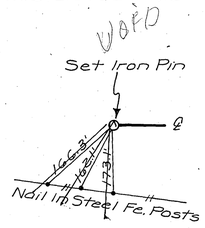
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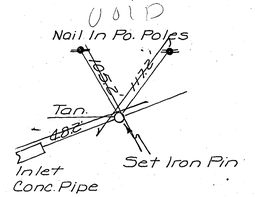
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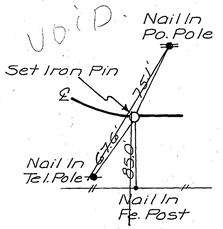
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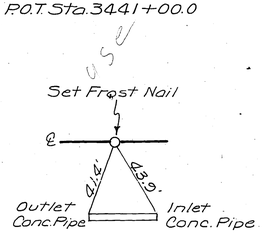
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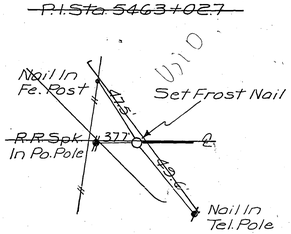
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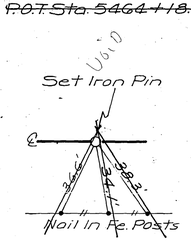
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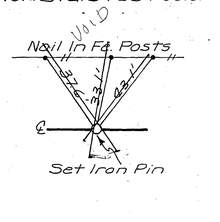
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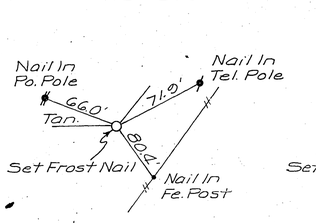
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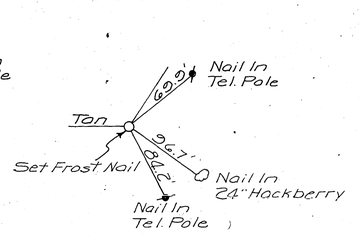
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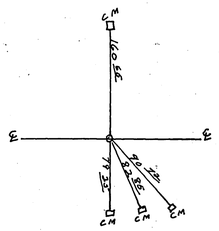
P.I. Sta. 1348+87.9



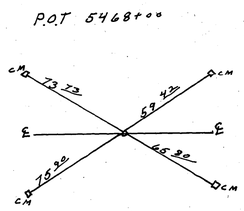
P.I. Sta. 1606+41.4



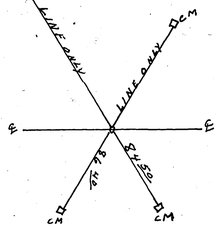
P.C. 456+30.2



P.O.T 5468+00

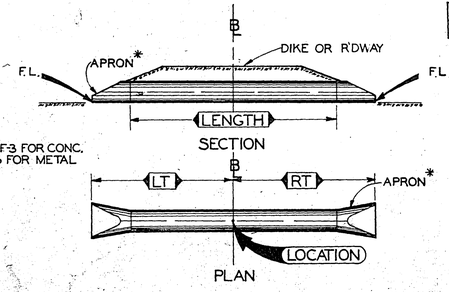


P.T. 2464+43.6



REFERENCE INFORMATION DETAILS

1101

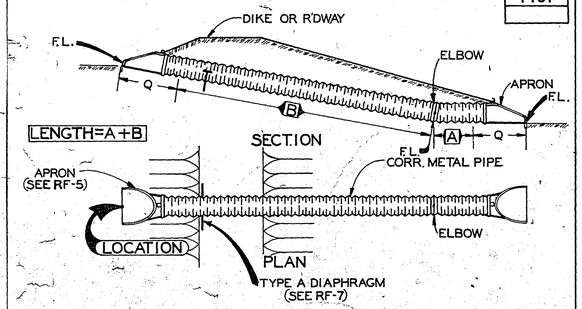


(1) ℄ shall be ℄ of roadway, dike, survey, or other; as detailed on plans.

(2) Skew angle is the angle which one end of the pipe is ahead (by stationing) of a line perpendicular to the ℄ (example skew Rt. ahead 30°).

(3) Refer to tabular listing and other plans for additional information.

1401



(1) Refer to tabular listing and other plans for additional information.

DRAINAGE STRUCTURES BY ROAD CONTRACTOR

104-3

TYPE	LOCATION	D SIZE	LENGTH L.F.	KIND	SKEW AHEAD LT.	SKEW AHEAD RT.	APR. NO.	DIMENSIONS LT.	DIMENSIONS RT.	FLOW LINE ELEV. LT.	FLOW LINE ELEV. RT.	FLOW LINE ELEV. OTHER	FLOW LINE ELEV. OTHER	CL. 20 EXCAV. CU. YDS.	DIKE TYPE	DIKE LOCATION	DIKE TOP EL.	REMARKS
1401	456+30 -45°RT.	24"	122'	CMP	45°	-	2	-	-	N551.0	S 532.0	535.0		36	F	RT. 456+05	753.0	A=75', B=47', 15° Elbow "A"
																		Diaphragm
1101	5+75	24"	64'	UNCL	9°	-	2	26'	38'	549.4	550.8			0				Frontage Road

PROPOSED SUBGRADE TREATMENT

FOR ADDITIONAL DETAILS REFER TO SOILS SURVEY SHEET NO. 12

103-3

NO.	LOCATION STATION TO STATION	DESCRIPTION SIDE	DEPTH	WIDTH	TYPE MATERIAL + SHRINK %	VOLUME CU. YDS.	VOLUME TONS	AVAILABLE FROM VOLUME	AVAILABLE FROM STATION TO STATION	REMARKS
	END OF BRIDGE									
1	453+57± 2467+00		1.5	26 Trench	SAND F+30	2516		2777	2460+25 2467+00	* Trench: 1 Ft. Outside Pav't. Edge.

EMBANKMENT WITH MOISTURE AND DENSITY CONTROL

(SEE ART. 2107.05 ST'D. SPEC'S. FOR 1964) 103-1

MOISTURE CONTENT SHALL BE WITHIN THE LIMITS OF MINUS 3 AND PLUS 1* PERCENTAGE POINTS OF OPTIMUM FOR MAXIMUM DENSITY WITHIN THE AREA DESCRIBED AND LISTED BELOW.

LOCATION STATION TO STATION	DEPTH FT.	COMPACTION CU. YDS.	REMARKS
BRIDGE END			
453+57± 2467+00	1.5	4622	
			* Except Clean Sands
			Which Shall Have No Upper
			Limit.

DES MOINES COUNTY PROJECT NUMBER F-61-2(3)--20--29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		10	47

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

STATION	EARTH TEMP. CUT	APP. GRAD. +C	SUB. TREAT. +C	M & D +C	ADDIT. QUANT +C	SUB. QUANT −C	SELECT SOIL −C	RECL. SURF. −C	ADJ. CUT	UNSUIT C-3	UNSUIT C-5	ROCK CUT	ADD ROCK CUT +C	SELECT ROCK	% SWELL	ADJ. ROCK+ SWELL
STAGE 1																
2459+75	1								1							
2461+00	4								4							
2462+00	36								36							
2463+00	83						83		0							
2464+00	241						150		91							
2465+00	211						150		61							
2466+00	152						68		84							
2467+00	67						30		37							
2468+00																
STAGE 2																
453+57	0		0	0					0							
454+00	0		0	0					0							
455+00	0		0	0					0							
456+00	1897		122	196					2215							
2457+00	1778		138	193					2109							
2458+00	304		61	89					454							
2459+00	191		0	21					212							
2460+00	191		0	132			191		132							
2461+00	407		68	110			407		178							
2462+00	468		139	218			468		357							
2463+00	289		142	213			289		355							
2464+00	228		144	195			228		339							
2465+00	346		144	184			300		374							
2466+00	341		144	230			152		563							
2467+00	87								87							
2467+50																
STAGE 3																
453+57	1288								1288							
454+00	2456								2456							
455+00	1052								1052							
456+00	125								125							
2457+00	59								59							
2458+00	35								35							
2459+00	73								73							
2460+00	72								72							
2461+00	124								124							
2462+00	124								124							
2463+00	72								72							
2464+00	196								196							
2465+00	185								185							
2466+00	170								170							
2467+00	82								82							
2468+00																
SIDE ROAD LT. MAINLINE STA. 2463+02.7																
5463+15	44								44							
5464+00	13								13							
5465+00	37								37							
5466+00	293								293							
5467+00	478								478							
5468+00	327								327							
5469+47																
FRONTAGE ROAD LT. SIDE ROAD STA. 5466+25																
01+65	0								0							
05+09																

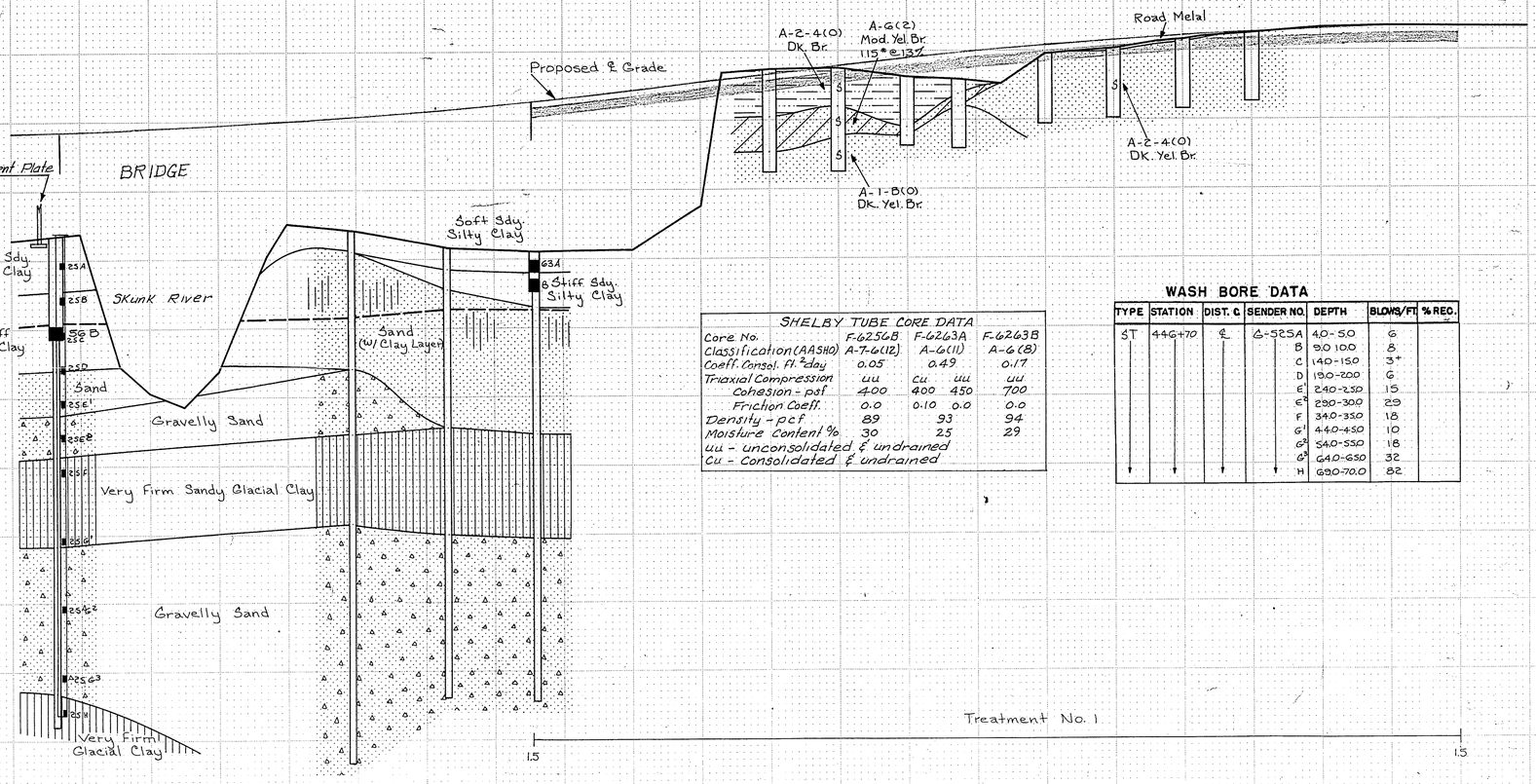
EARTH TEMP. FILL	APP. GRAD. +F	SUB. TREAT. −F	M & D +F	RECLM SURF. +F	ADDIT. QUANT +F	SUB. QUANT −F	ADJ. FILL	FILL FOR UNSUIT	FILL FOR ROCK	% SHRINK	SUIT F + SHRINK	UNSUIT F + SHRINK		M.D. ORD. SUIT	M.D. ORD. UNSUIT	BALANCE
53							53			30%	69					
157							157				204					
110							110				143					
76							76				99					
82							82				107					
78							78				101					
85							85				110					
37							37				48					
5832	2552	62	0				3322			30%	10819					
14137		144	0				13993				18191					
12082		144	0				11938				15519					
1160	150	22	196				1484				1929					
37		6	193				224				291					
237		83	89				243				316					
448		144	21				325				422					
448		144	132				436				567					
198		76	110				232				302					
63		5	218				276				359					
99	100	2	213				410				533					
139		0	195				334				434					
41		0	184				225				292					
41		0	230				271				352					
7							7				9					
0							0			30%	0					
0							0				0					
0							0				0					
0							0				0					
11							11				14					
228							228				296					
194							194				252					
193							193				251					
52							52				68					
108							108				140					
189							189				246					
0							0				0					
0							0				0					
0							0				0					
0							0				0					
739							739			30%	961					
1398							1398				1817					
2046							2046				2660					
1643							1643				2136					
730							730				949					
25							25				32					
3077							3077			30%	4000					

CUT MOISTURE
CUT DENS. LB./FT.³
PLASTIC LIMIT

17,14,N.P.

13,14,N.P.

N.P.



SHELBY TUBE CORE DATA

Core No.	F-6256B	F-6263A		F-6263B
Classification (AASHO)	A-7-6(12)	A-6(11)		A-6(8)
Coeff. Consol. Ft.²/day	0.05	0.49		0.17
Triaxial Compression	uu	cu	uu	uu
Cohesion - psf	400	400	450	700
Friction Coeff.	0.0	0.10	0.0	0.0
Density - pcf	89	93		94
Moisture Content %	30	25		29

uu - unconsolidated & undrained
Cu - Consolidated & undrained

WASH BORE DATA

TYPE	STATION	DIST. C	SENDER NO.	DEPTH	BLOWS/FT.	% REC.
ST	446+70	℄	G-525A	40-50	6	
			B	90 100	8	
			C	140-150	3+	
			D	190-200	6	
			E¹	240-250	15	
			E²	290-300	29	
			F	340-350	18	
			G¹	440-450	10	
			G²	540-550	18	
			G³	640-650	32	
			H	690-700	82	



Additional borings not on Cross Sections.

R-6859
All Rt. 150

G0	G1	G2
2472 2473	2474 2475	2476 2477 2478

NOTE:
No construction shall be started on the abutments until the approach fill has been in place at least 60 days.

Place a settlement Plate at Sta. 446+40 -Lt. 22'
See Standard RL-6. Plate No. 1.

L-525
56
F-6255
Rt. 15

B.O.P. Sta. 446+76.0

Equation:
37+4 Sta. 456+30.2 (O.R. =
Sta. 24-56+30.2 (Survey)

E.O.P. Sta. 2467+00

VOLUME CHANGE
CUT TO PROCTOR

SENDER'S NO.																					
DIST. FROM C-LINE	All	(O.R.)					F-6260 Rt. 59	F-6261 Rt. 15	63 F-6262 Rt. 59			81	82	83	84	89 Lt. 15	90 Rt. 10	91 Rt. 15	92 Rt. 15			
STATION NO.	446	447	448	449	450	451	452	453	454	455	456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467

ROAD: U.S. 61 DATE: NOV. 1967
SOIL SURVEY
STA. 446+76.00 TO STA. 2467+00.00

SILTY CLAY LOAM	GRAV. SANDY LOAM
SILTY CLAY	GRAVELLY SAND
SILTY LOAM	GRAVELLY LOAM
CLAY LOAM	SANDY LOAM
CLAY	LOAMY SAND
SILT	LOAM
WATER	SAND

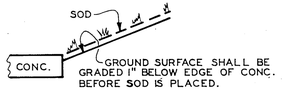
ORIGINAL SURVEY — SURVEYED BY: D. Kruse, D. Bishop; DATE: 1967; PLOTTED; TEMPLATE; AREAS; AREAS CHECKED; NOTE BOOK; NO. E

FINAL SURVEY — SURVEYED; PLOTTED; TEMPLATE; AREAS; AREAS CHECKED; NOTE BOOK; NO.; DATE; BY

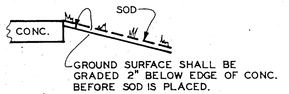
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		12	47

DES MOINES COUNTY

HYWY CROSS SECTION 317040 STANDARD BLUE PRINT CO.

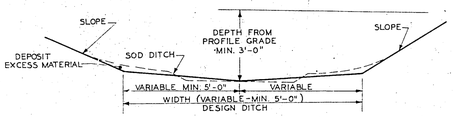


CASE 1
NATURAL GROUND SLOPES TOWARD CONCRETE

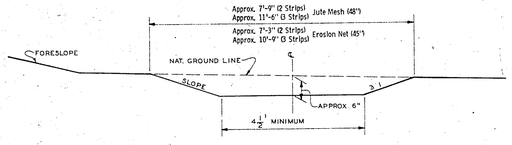


CASE 2
NATURAL GROUND SLOPES AWAY FROM CONCRETE

SODDING ADJACENT TO CONCRETE



TYPICAL DITCH SECTION 'A'



TYPICAL DITCH SECTION 'B'

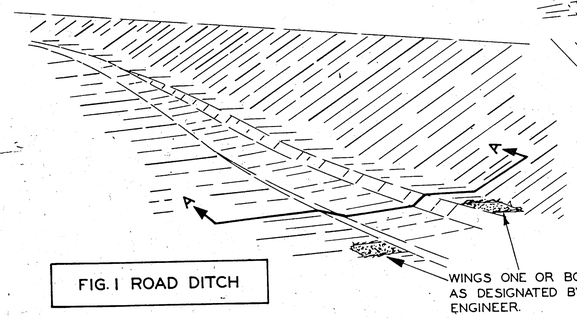


FIG. 1 ROAD DITCH

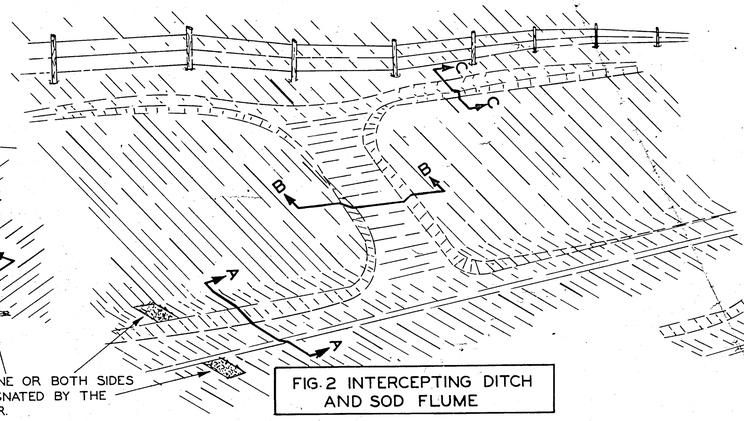
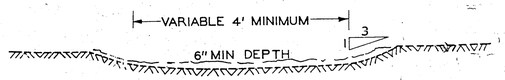


FIG. 2 INTERCEPTING DITCH AND SOD FLUME



CROSS SECTION B-B

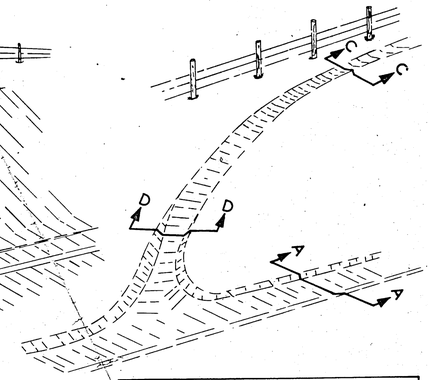
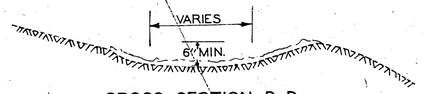


FIG. 3 INTERCEPTING DITCH AND FLUME AT END OF SLOPE



CROSS SECTION D-D

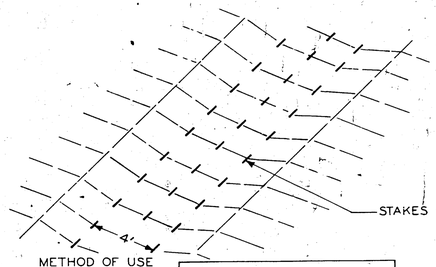
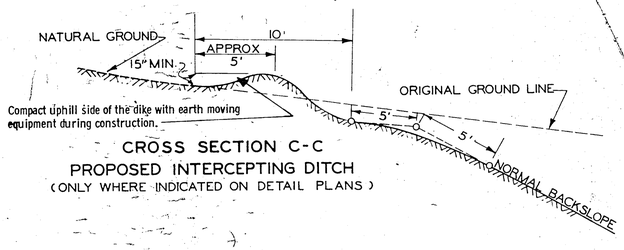


FIG. 4 WIRE STAKES



CROSS SECTION C-C
PROPOSED INTERCEPTING DITCH
(ONLY WHERE INDICATED ON DETAIL PLANS)

NOTE:
For construction of Special Ditch Control and at culvert outlets or other locations where silting in of the Design Ditch has occurred, the contractor shall be required to excavate the area to the original design ditch elevation, and dispose of the excavated material in the adjacent area by depositing on the foreslopes, in gullies, or low spots and otherwise shaping the area to a smooth contour as directed by the Engineer. (See Ditch Section "A").

At locations where silt conditions require shaping of a dtich to provide a proper type of area for installation of special ditch control, necessary excavation shall be done by the contractor with the excavated material disposed of in adjacent areas at the direction of the Engineer (See Ditch Section "B").

The work of providing proper ditches shall not be paid for directly but shall be considered incidental to other work on the project.

NORMAL DEPTH	WIDTH
3'	5'
4'	8'
5'	10'
6- 10'	15'
> 10'	20'

NOTES:
Fig. 1 Through ditches or borrow areas sod channels should be constructed at the low point. All excavated material should be wasted to fill low areas and otherwise facilitate the free flow of surface water into the channel. Alignment should be smooth and abrupt changes should be avoided. Sod wings shall be not less than 30" long and shall not be extra pieces of sod merely added to the regular channel.

Fig. 3 Sod Flumes at the end of a slope shall gradually change from a flat bottom to rounded bottom as they progress up the slope.

Fig. 4 Wire stakes shall be staggered as shown. Minimum 33 stakes per square. Wooden stakes shall be used in sod flumes when designated by the Engineer.

DATE: 6-11-68
LAST REVISION: Sodding Adjacent to Conc.

IOWA HIGHWAY COMMISSION
STANDARD ROAD PLAN RC-1

RECOMMENDED
Jack C. Dallbridge 6-6-68
ROAD ENGINEER DATE
K. B. McDonald 6-6-68
DESIGN ENGINEER DATE

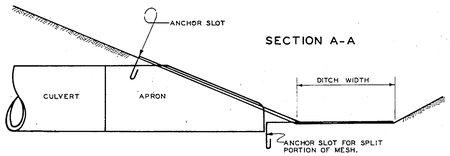
APPROVED
DEPUTY CHIEF ENGINEER DATE

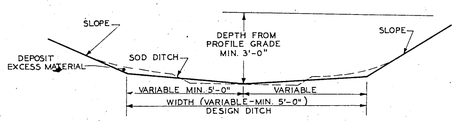
EROSION CONTROL DETAILS (DITCHES)

DES MOINES COUNTY

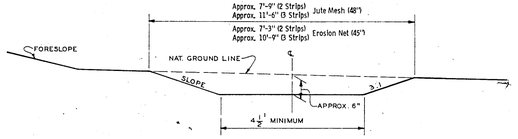
PROJECT NUMBER F-61-2,3,---20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		13	47

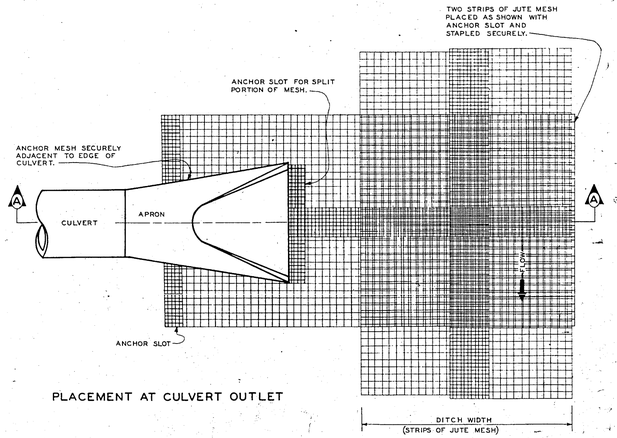




TYPICAL DITCH SECTION 'A'



TYPICAL DITCH SECTION 'B'

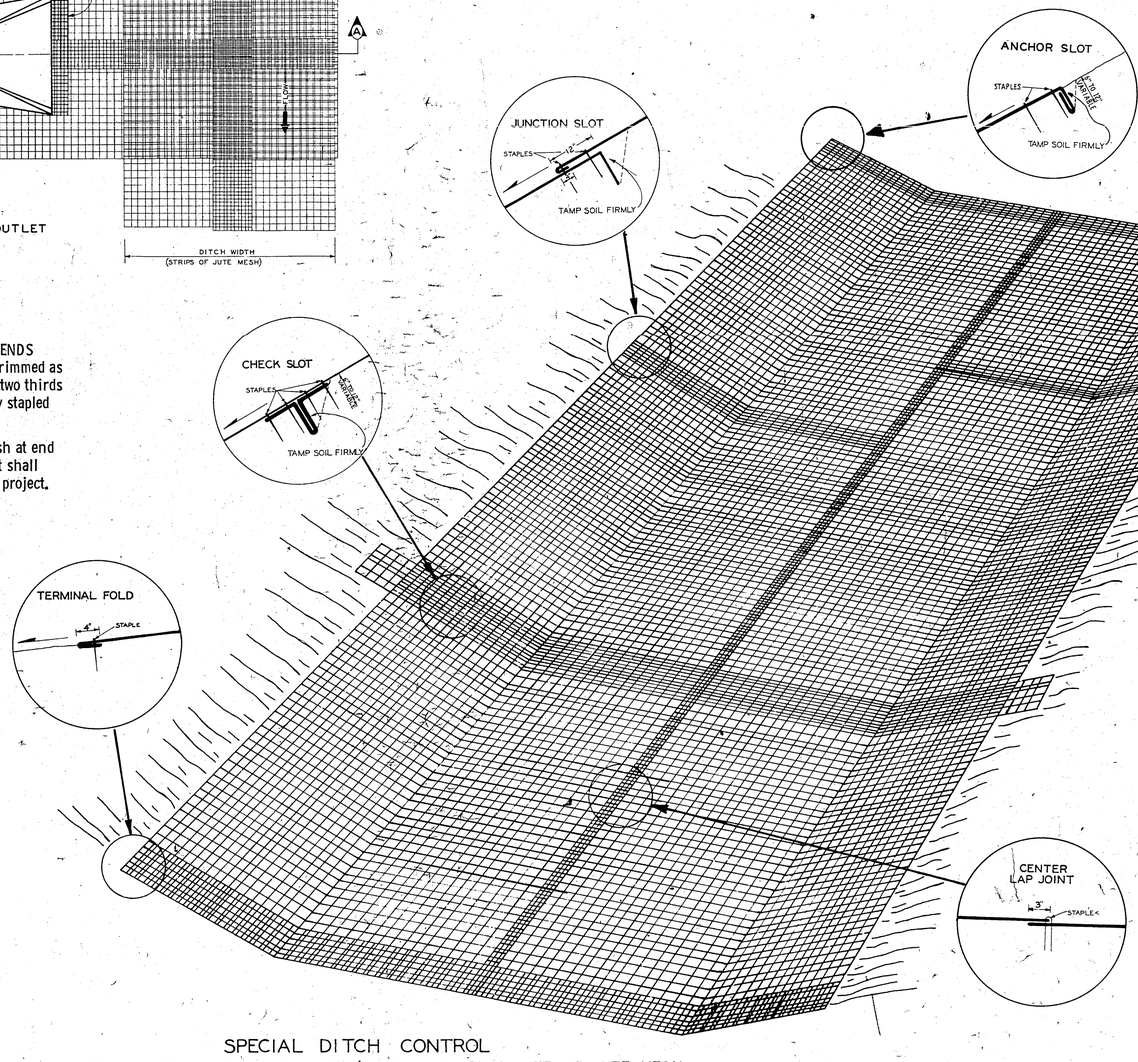


PLACEMENT AT CULVERT OUTLET

PLACING SUPPLEMENTAL MESH AT CULVERT ENDS

Install at least two strips of mesh, split and trimmed as necessary with sides of slope covered at least two thirds (2/3) the height of culvert with mesh securely stapled in place.

The installation of supplemental pieces of mesh at end of culverts shall not be paid for separately but shall be considered incidental to other work on the project.



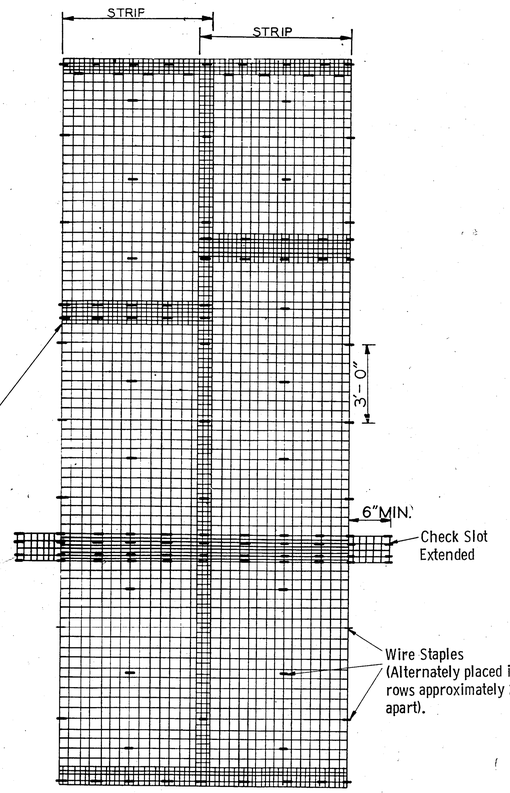
SPECIAL DITCH CONTROL

DETAILS FOR INSTALLATION OF EROSION CONTROL NET OR JUTE MESH

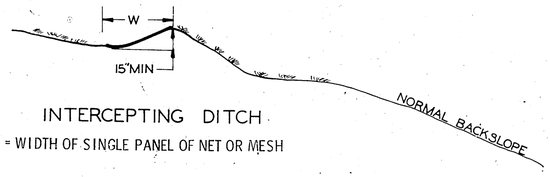
NOTE:
Stagger Splicer Joints

Approximately 800 Staples required per 3' - 9" x 750' roll of Erosion Net (28.125 sq. ft.)

Approximately 250 Staples required per 4' x 225' roll of Jute Mesh (9.0 sq. ft.)



PLAN VIEW — STAPLING DIAGRAM
(TWO STRIPS SHOWN - THREE MAY BE USED)



INTERCEPTING DITCH

W = WIDTH OF SINGLE PANEL OF NET OR MESH

NOTE:
For construction of Special Ditch Control and at culvert outlets or other locations where silting in of the Design Ditch has occurred, the contractor shall be required to excavate the area to the original design ditch elevation, and dispose of the excavated material in the adjacent area by depositing on the foreslopes, in gullies, or low spots and otherwise shaping the area to a smooth contour as directed by the Engineer. (See Ditch Section "A").

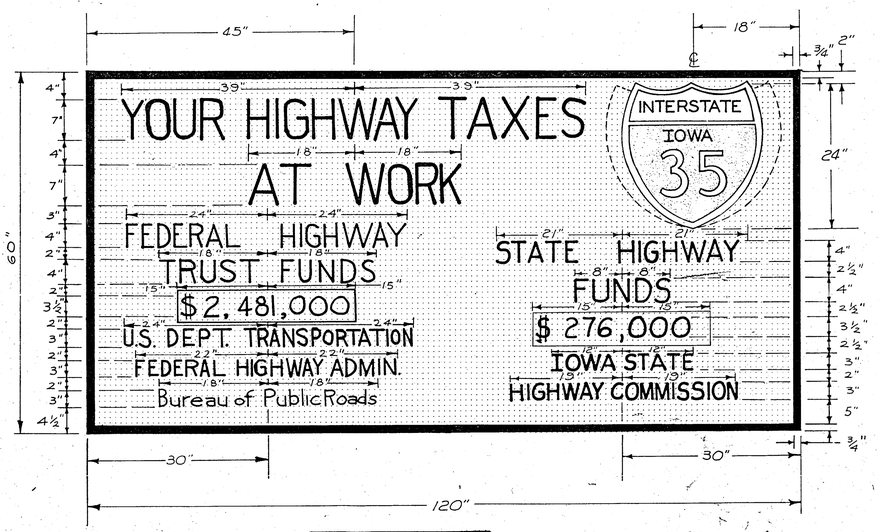
At locations where silt conditions require shaping of a ditch to provide a proper type of area for installation of special ditch control, necessary excavation shall be done by the contractor with the excavated material disposed of in adjacent areas at the direction of the Engineer (See Ditch Section "B").

The work of providing proper ditches shall not be paid for directly but shall be considered incidental to other work on the project.

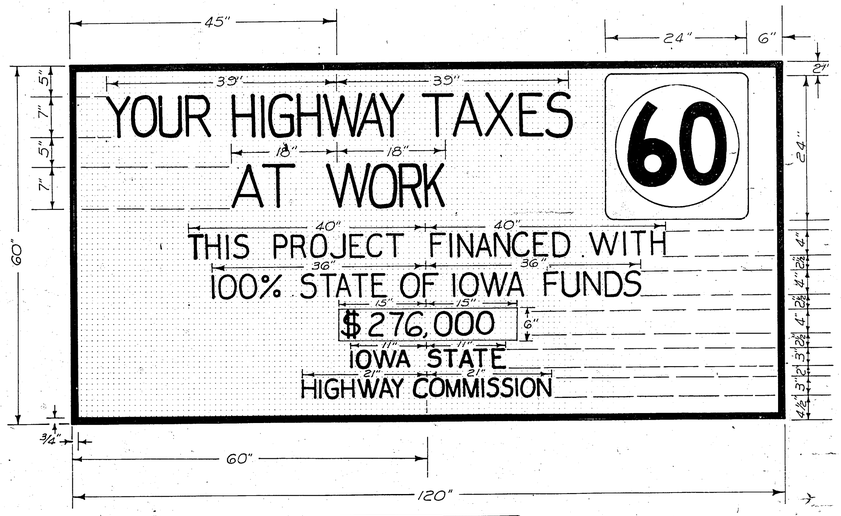
DATE 6-11-68	IOWA HIGHWAY COMMISSION	
	STANDARD ROAD PLAN	RC-2
LAST REVISION Add Supplemental Mesh	RECOMMENDED	Jack C. Debbridge 6-6-68 ROAD ENGINEER DATE
		K. H. McLaughlin 6-4-68 DESIGN ENGINEER DATE
	APPROVED	DEPUTY CHIEF ENGINEER DATE
	DETAILS OF SPECIAL DITCH CONTROL	

Des Moines COUNTY

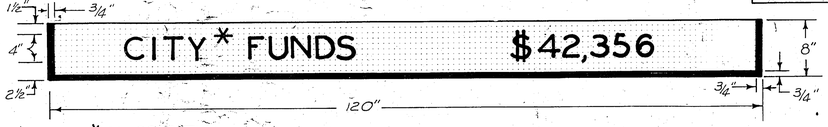
PROJECT NUMBER					
F-61-2(3)--20-29				14	47



TYPE 1 SIGN

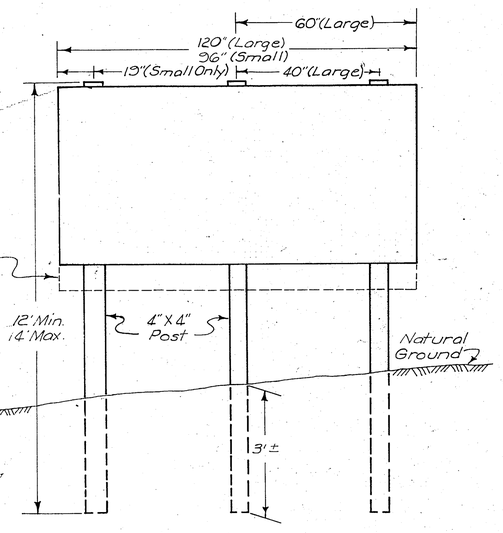


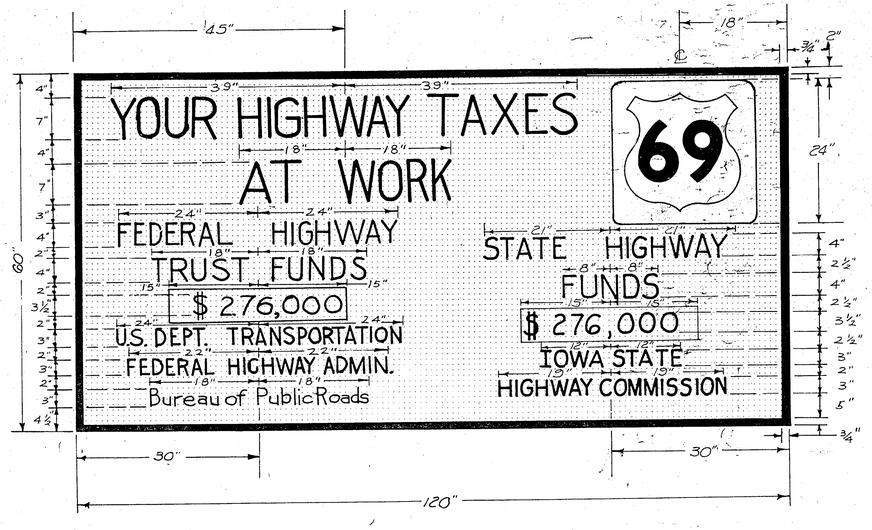
TYPE 3 SIGN



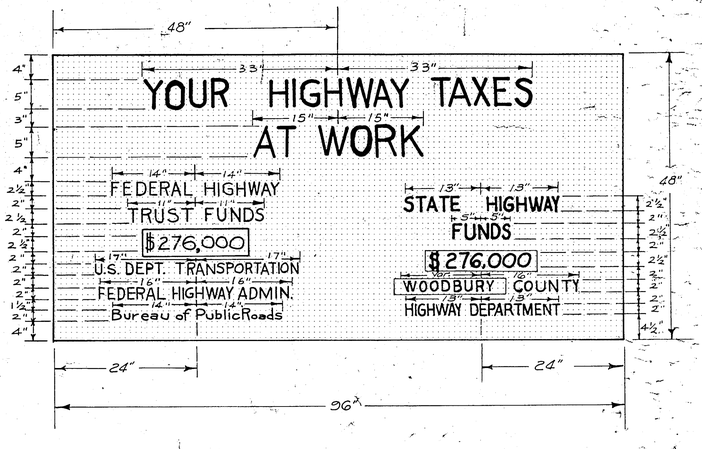
SUPPLEMENT BOARD

NOTE:
"Supplement Board" shall be constructed similar to "Project Sign". One or more supplement boards shall be provided and installed when so directed by the engineer. Cost of necessary supplement boards shall not be paid for directly but shall be considered incidental to other work on the project.





TYPE 2 SIGN



TYPE 4 SIGN

GENERAL REQUIREMENTS

Signs shall be constructed of 3/4" thick exterior grade plywood or an approved equivalent material.

Posts shall be 4" X 4" wood posts or approved equivalent.

Appropriate route markers shall be furnished to the contractor for attachment as indicated to the sign.

Sign shall have 2 coats white enamel with message in black sign enamel block letters approximately to dimensions indicated.

A removable panel, appropriately constructed, may be used to modify cost figure when necessary.

Contractor shall furnish and install signs as directed by the Engineer. Sign message and location shall be as directed by the Engineer. General condition and acceptability of the complete sign assembly shall be subject to the approval of the Engineer. The contractor shall be responsible for maintaining the sign in acceptable condition through the extent of his contract. Upon completion of project and when released by the Engineer, the complete sign assembly (except route markers) shall become the property of the contractor.

"Project Signs" shall not be paid for directly but shall be considered incidental to other work on the project.

IOWA HIGHWAY COMMISSION
STANDARD ROAD PLAN RD-17

DATE 10-13-67
LAST REVISION MODIFY SIGN MESSAGE

RECOMMENDED	Jack Delbridge	8/5/66
	ROAD ENGINEER	DATE
	F. P. Weidmayer	8/5/66
	DESIGN ENGINEER	DATE
APPROVED	D. J. Mc Carp	8-5-66
	DIRECTOR OF ENGINEERING	DATE

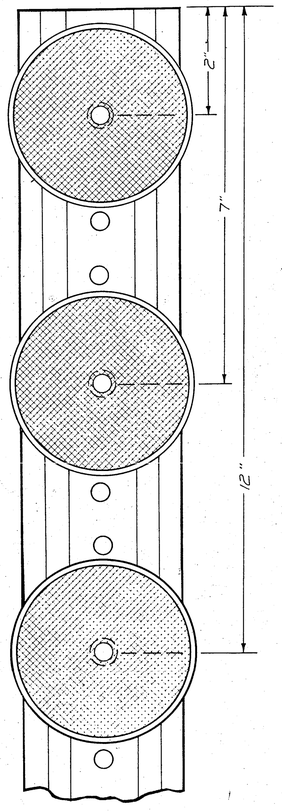
CONSTRUCTION IDENTIFICATION PROJECT SIGNS

DES MOINES COUNTY

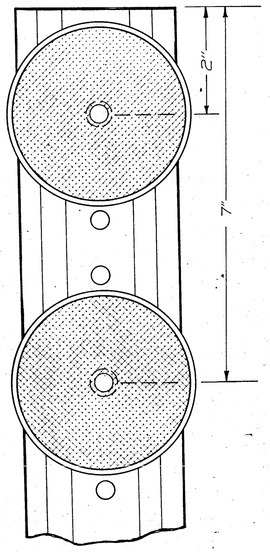
PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. AID DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	-5-		15	17

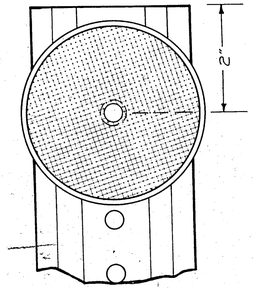
DELINEATOR TYPES
FRONT VIEW



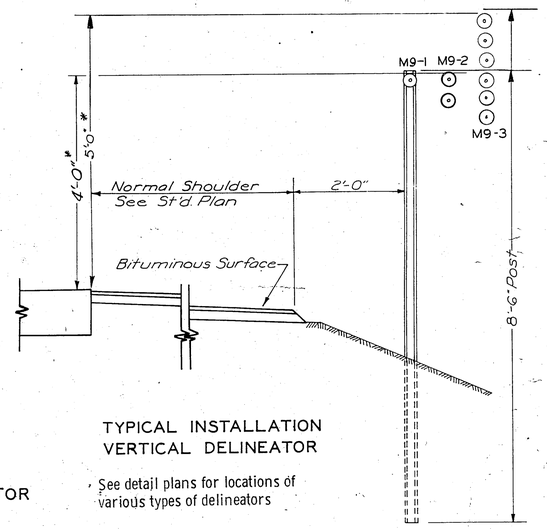
TRIPLE AMBER
M9-3
(Vertical)



DOUBLE AMBER
M9-2



SINGLE WHITE
M9-1



TYPICAL INSTALLATION
VERTICAL DELINEATOR

* See detail plans for locations of various types of delineators

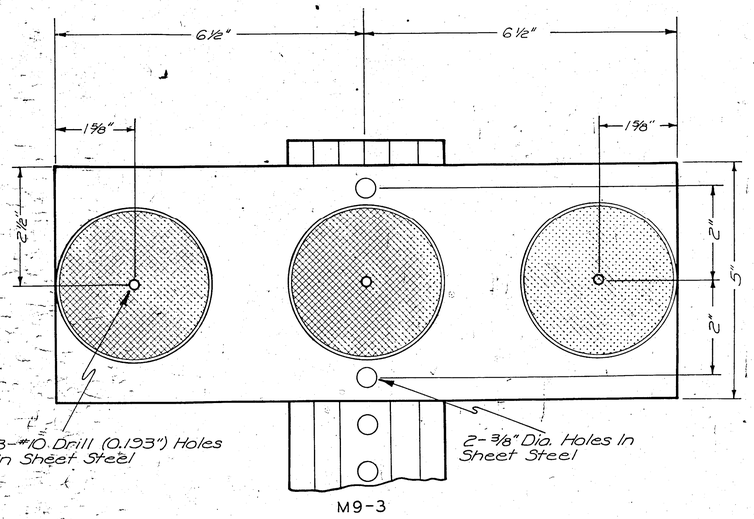
GENERAL NOTES:

Materials, Fabrication and Installation of delineators and delineator posts shall be in conformance with current ISHC Standard Specifications and applicable Special Provisions, as supplemented by details hereon.

* Normal mounting height for delineators is 4'-0 as shown.

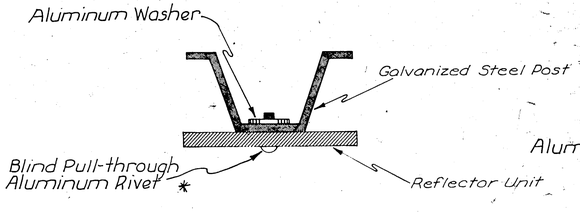
M9-3 shall be mounted at 5'-0' when installed at bridge ends or when so specified on detail project plans.

FRONT VIEW OF 3" AMBER
TRIPLE HORIZONTAL DELINEATOR

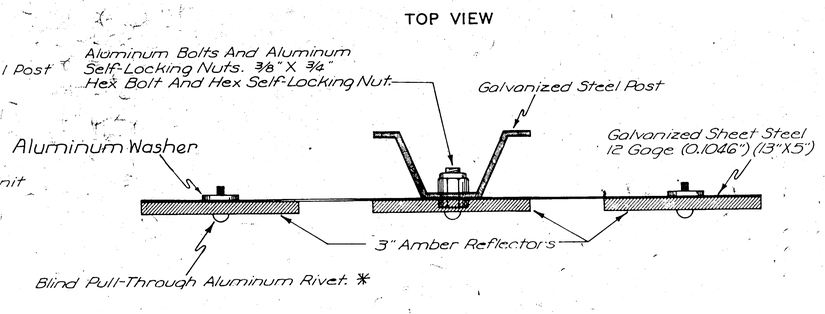


M9-3
(Horizontal)

TOP VIEW



TOP VIEW



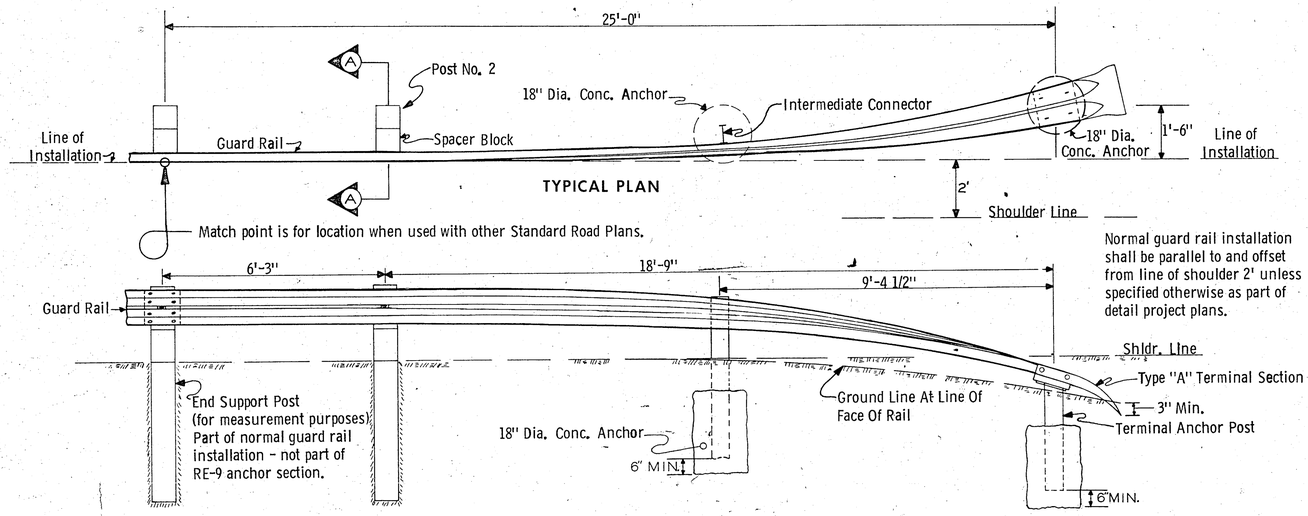
* Other tamper resistant type fasteners may be used upon the approval of the engineer.

DATE	3-25-66	IOWA HIGHWAY COMMISSION
LAST REVISION	Redesign of Guard Rail	STANDARD ROAD PLAN RE-7
RECOMMENDED	Jack Delbridge	10/28/66
	ROAD ENGINEER	DATE
	A. R. Mortensen	10/28/66
	DESIGN ENGINEER	DATE
APPROVED	D. M. Grant	5-31-66
	DIRECTOR OF ENGINEERING	DATE

DETAILS OF DELINEATOR INSTALLATION

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)---20--29	IOWA	5		16	47

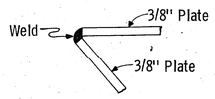


TYPICAL PLAN

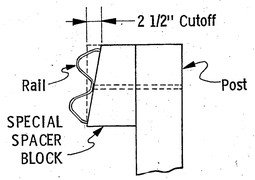
Normal guard rail installation shall be parallel to and offset from line of shoulder 2' unless specified otherwise as part of detail project plans.

TYPICAL LONGITUDINAL SECTION

DETAILS OF ANCHOR SECTION

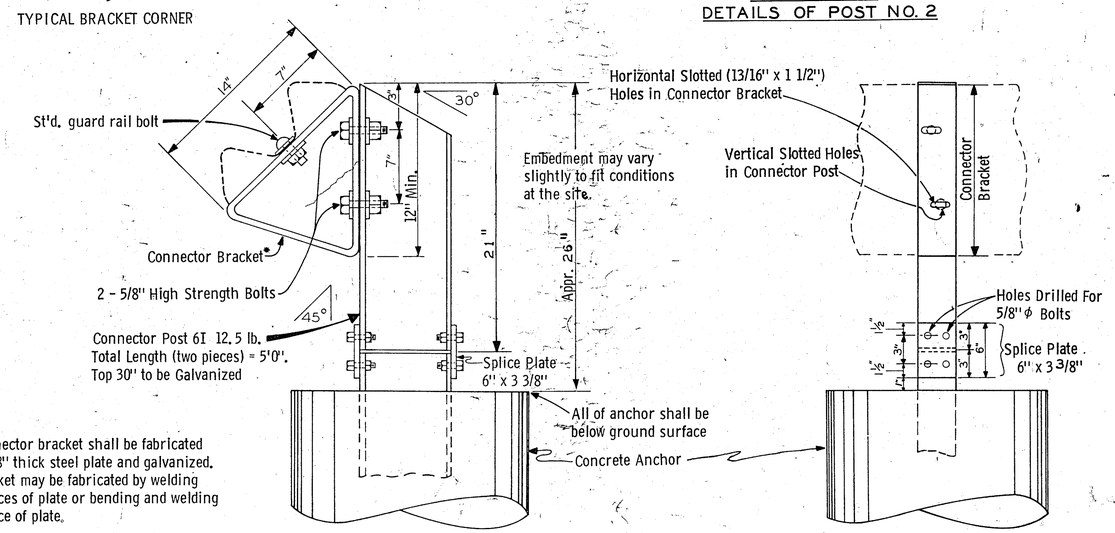


TYPICAL BRACKET CORNER



SECTION A-A
DETAILS OF POST NO. 2

The spacer block for Post No. 2 shall be cut off as indicated. The face of the cut off portion of the block shall be coated with an approved wood preservative before installation of the rail.

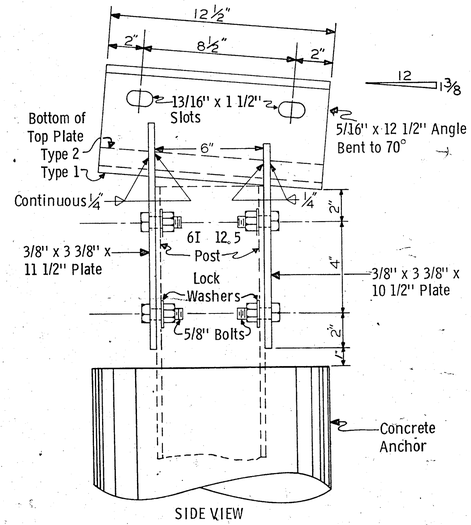


SIDE VIEW FRONT VIEW

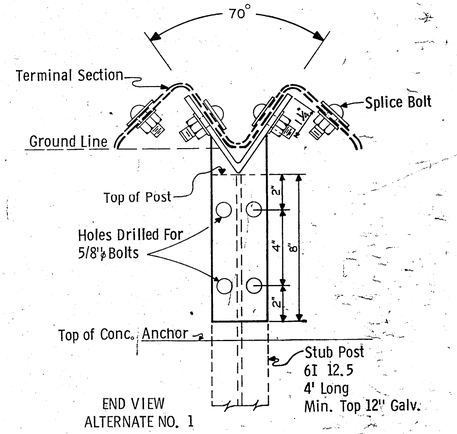
*Connector bracket shall be fabricated of 3/8" thick steel plate and galvanized. Bracket may be fabricated by welding 3 pieces of plate or bending and welding 1 piece of plate.

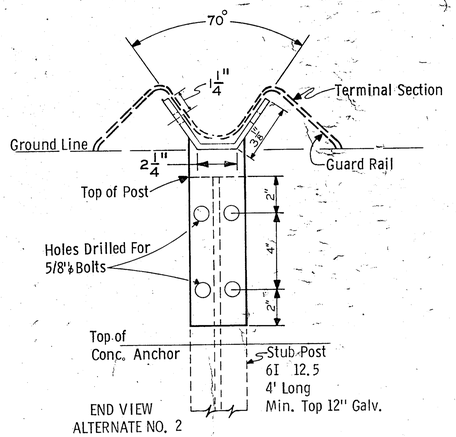
NOTE:
Intermediate Connector Post Assembly shall be installed in proper position after the normal shape of the rail installation is established by construction of the terminal anchor post and guard rail posts No. 1 and No. 2 and attachment.

DETAILS OF INTERMEDIATE CONNECTOR ASSEMBLY



SIDE VIEW





DETAILS OF TERMINAL ANCHOR ASSEMBLY

GENERAL NOTES

Beam rail and other components of the complete anchor section assembly shall be constructed in accordance with the requirements of current applicable ISHC Specifications. Details of construction features not shown hereon shall be as indicated on applicable other Standard Road Plans covering installation of guard rail on the project.

Intermediate connector post and terminal anchor post shall be fabricated and installed as detailed hereon unless specific approval is received from the engineer for any variation.

Necessary excavation for anchors shall be disposed of in the immediate area by smoothly shaping onto foreslopes. Any asphaltic material removed shall be replaced as near original location as possible.

Price bid for each "RE-9 Anchor Section" shall be considered full compensation for furnishing all materials, for fabrication and installation of the complete anchor section as described hereon.

List of materials for, and to be included with the price bid for the RE-9 anchor unit.

1 25 ft. section of 12 gage beam rail with one terminal section.
1 8" x 8" x 6' wood post with special spacer block and bolt assembly (Post #2).
1 intermediate connector post assembly fabricated as shown and necessary hardware.
1 terminal anchor post assembly fabricated as shown with necessary hardware.
0.514 cu. yd. of concrete (for two anchors)

GALVANIZING:
All hardware, steel posts and incidental steel posts used in construction of anchor section shall be galvanized in accordance with the General Provisions of current ISHC Standard Specifications.

DATE 7-17-68
LAST REVISION Modify Post No. 2

IOWA HIGHWAY COMMISSION
STANDARD ROAD PLAN RE-9

RECOMMENDED
ROAD ENGINEER DATE 3-19-68
DESIGN ENGINEER DATE

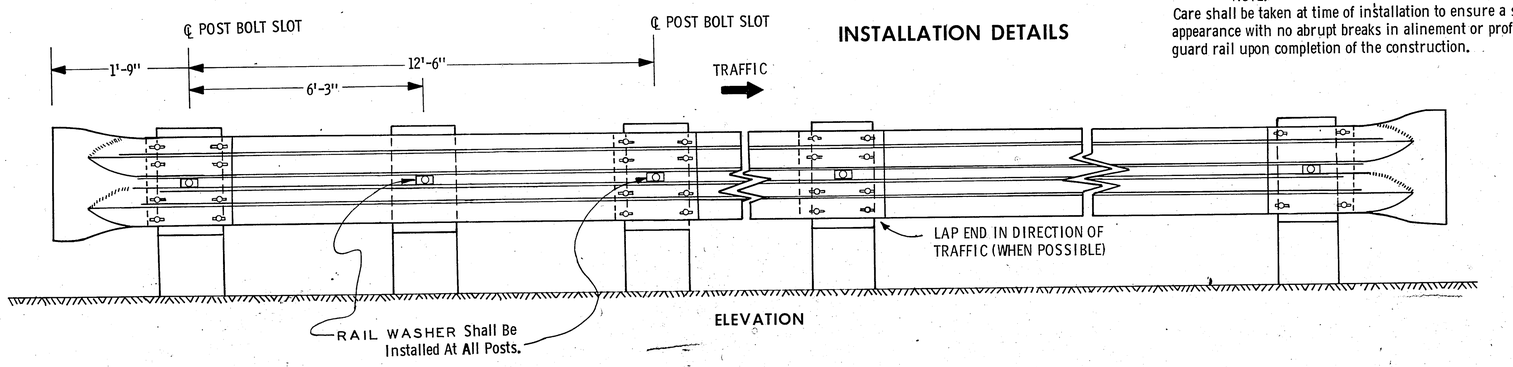
APPROVED
DEPUTY CHIEF ENGINEER DATE

BEAM GUARD RAIL ANCHOR SECTION

DES MOINES COUNTY PROJECT NUMBER F-61-2(3)--20-29

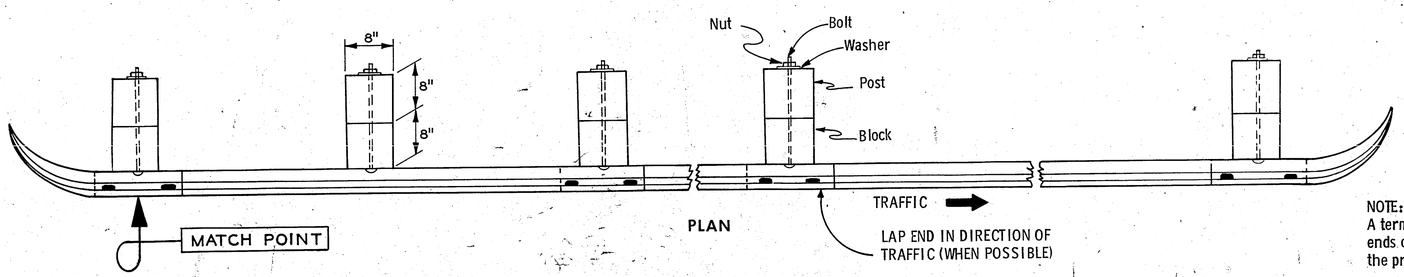
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		17	47

INSTALLATION DETAILS



ELEVATION

NOTE:
Care shall be taken at time of installation to ensure a smooth appearance with no abrupt breaks in alinement or profile of guard rail upon completion of the construction.



PLAN

GENERAL NOTES:

Sections of beam rail, and all hardware necessary for its installation shall be in accordance with current ISHC Standard Specifications and as detailed hereon.

Beam rail installed on curvilinear alinement of a radius less than 150 ft. shall be shop curved to the proper radius by the fabricator.

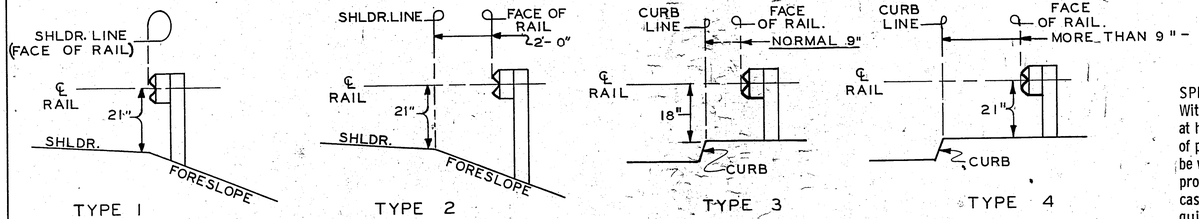
Post spacing shall be 6'-3" C-C unless otherwise specified as part of project plans. Where detail plans call for guard rail to be installed so that normal post spacing cannot be used, the rail may be cutoff or additional holes drilled as necessary. Affected portions of the rail shall be repaired by treating the damaged area with zinc dust paint conforming to the requirements of Federal Specification TT-P-6413.

Sawed Wood Posts and Spacer Blocks shall be of dimensions indicated hereon (Rough Stock), conforming to current Iowa State Highway Commission Standard Specifications for "Sawed Wood Posts (Common Grade)" and treated with pentochlorophenol as per ISHC Standard Specifications for "Preservative Treatment". Posts shall be free from bends in more than one plane and free from short or reversed bends. A straight line from center of tip to center of butt shall not deviate from center of the post by more than 2 percent of the length of the post. Bolt holes shall be as indicated hereon.

Price bid for "Formed Steel Beam Railing" and " 8" x 8" x 6' Posts" shall be considered full compensation for furnishing all necessary materials and installing guard rail as indicated hereon. The Spacer Block shall be considered incidental to the price bid for posts.

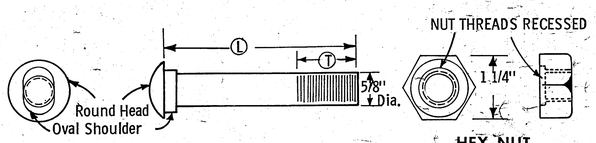
NOTE:
A terminal section (See Standard Road Plan RE-2) shall be required at the ends of all guard rail installations unless otherwise specified as part of the project plans.

Refer to "Tabulation of Guard Rail Installations" and applicable Standard Road Plans for additional details regarding installation of guard rail.



TYPICAL SECTIONS OF VARIOUS TYPES OF INSTALLATIONS

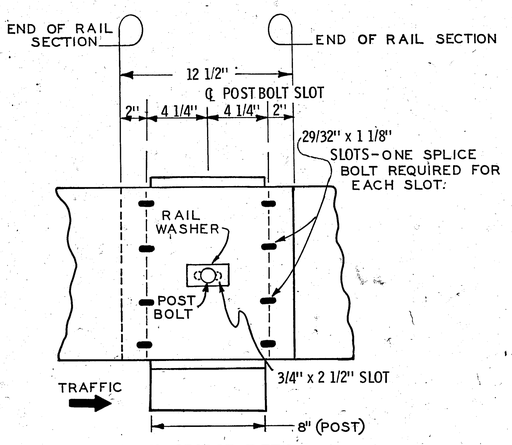
SPECIAL NOTE:
With approval of the engineer the contractor may, at his option, drive the guard rail posts in lieu of placing them in drilled post holes. Approval may be withdrawn, if in the judgement of the engineer, proper workmanship is not maintained, in which case installing by drilling post holes will be required.



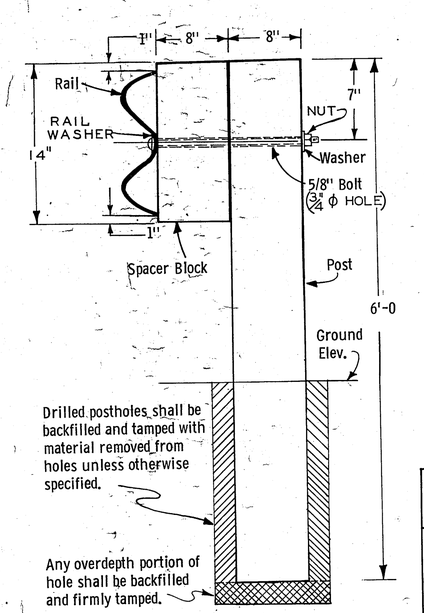
DETAILS OF HARDWARE

RAIL WASHER
8 GAGE GALV. STEEL

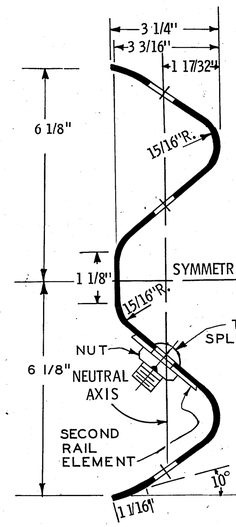
NOTE:
For any case requiring bolts other than as indicated, the bolt lengths shall be of a proper length to accomplish the intended purpose.



RAIL SPLICE DETAIL



DETAILS OF POST AND SPACER BLOCK



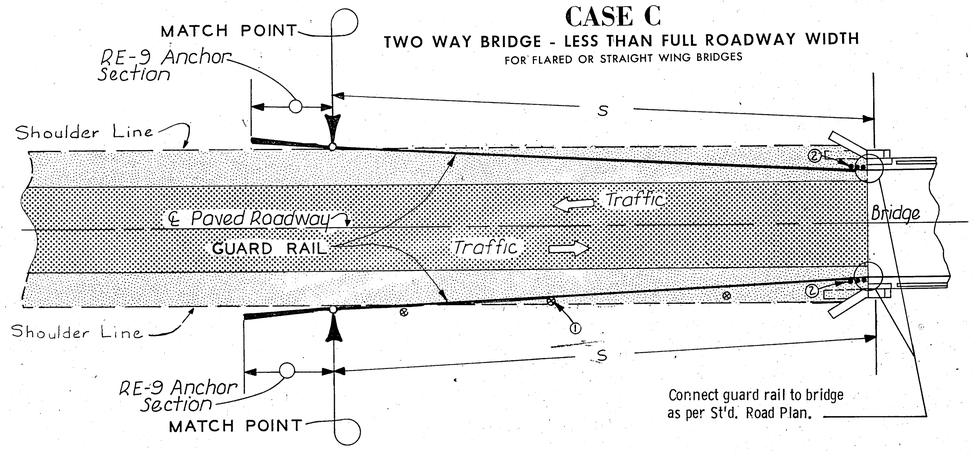
SECTION THRU RAIL

DATE 9-17-68	IOWA HIGHWAY COMMISSION	
	STANDARD ROAD PLAN	RE-12
LAST REVISION	RECOMMENDED	Jack C. Delbridge 9/26/67 ROAD ENGINEER DATE
		A. P. McLaughlin 9/26/67 DESIGN ENGINEER DATE
REMOVE BACKING PLATE	APPROVED	R. M. Owen 10/3/67 DEPUTY CHIEF ENGINEER DATE
	FORMED STEEL BEAM RAILING AND POSTS FOR BLOCKED-OUT GUARD RAIL	

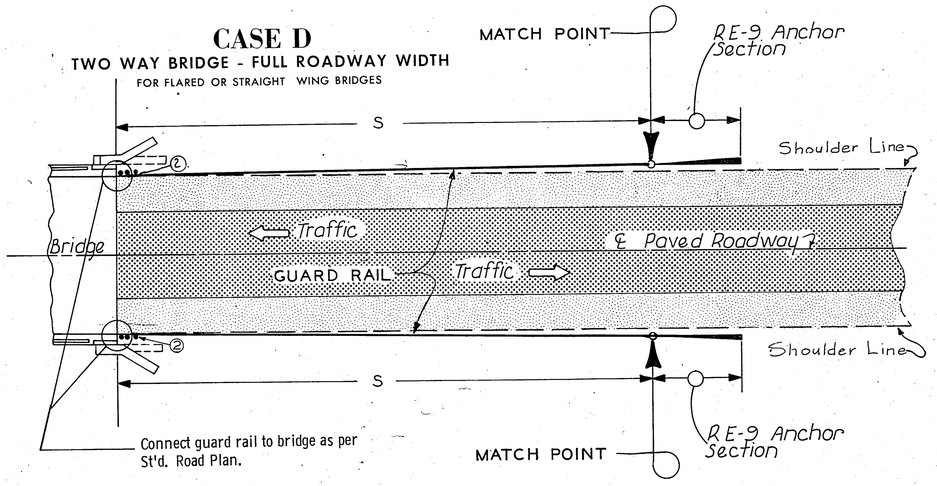
Des Moines COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		18	47

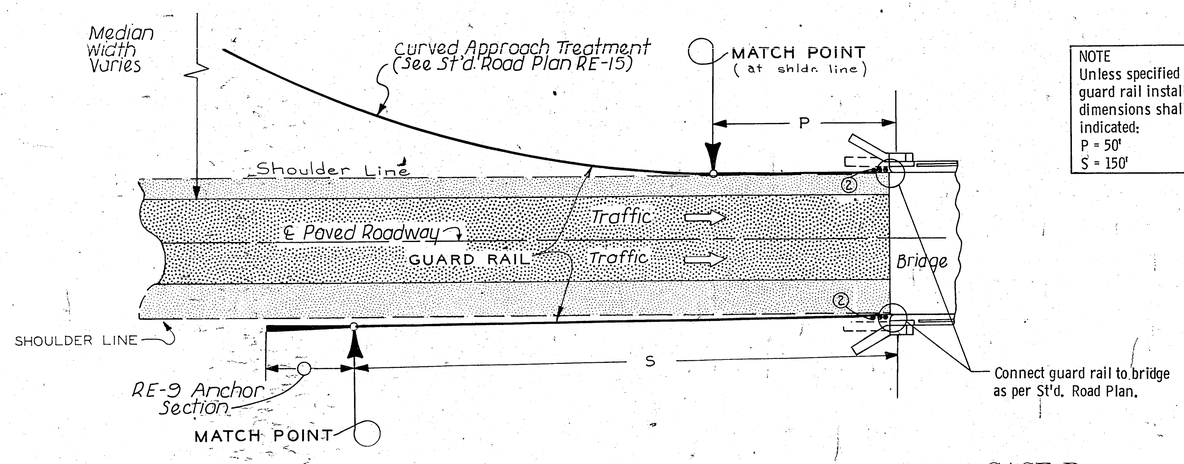
CASE C
TWO WAY BRIDGE - LESS THAN FULL ROADWAY WIDTH
FOR FLARED OR STRAIGHT WING BRIDGES



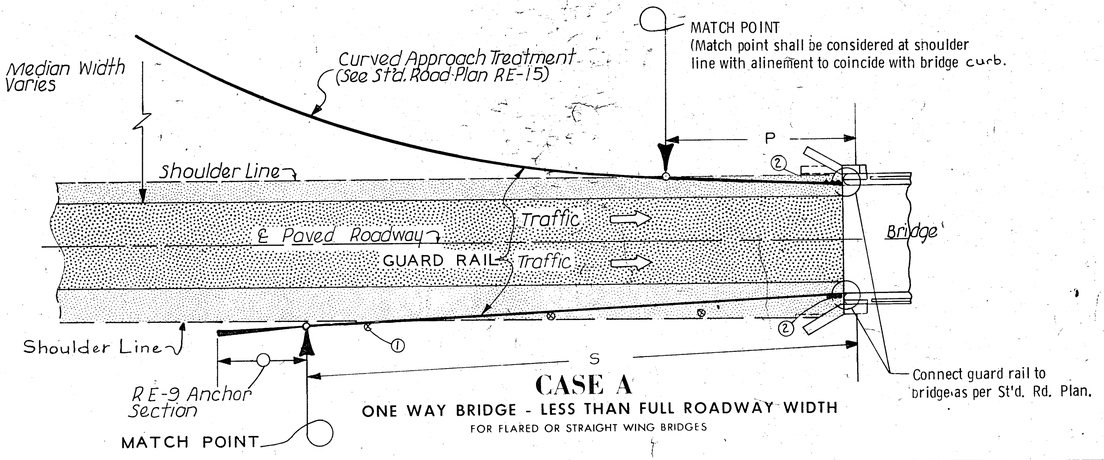
CASE D
TWO WAY BRIDGE - FULL ROADWAY WIDTH
FOR FLARED OR STRAIGHT WING BRIDGES



CASE B
ONE WAY BRIDGE - FULL ROADWAY WIDTH
FOR FLARED OR STRAIGHT WING BRIDGES



CASE A
ONE WAY BRIDGE - LESS THAN FULL ROADWAY WIDTH
FOR FLARED OR STRAIGHT WING BRIDGES



① 3" single white delineator (M9-1) 4 are required to be installed at quarter points of each (Rt. side) bridge approach guard rail installation for bridges less than full roadway width. None are required for full roadway width bridges.

② One M9-3 (vertical) amber delineator shall be required at each side of all bridge ends (as indicated) for approach traffic (2 at one-way, 4 at two-way).

NOTE
Unless specified otherwise, guard rail installation dimensions shall be as indicated:
P = 50'
S = 150'

RE-13 GENERAL NOTES:

Details are indicated hereon for the normal installation of guard rail at bridge approaches. Refer to the Standard Road Plans indicated for additional details of the connection of guard rail to the bridge proper, for the anchor section, and the curved approach treatment. Refer to "Tabulation of Guard Rail Installations" for complete data regarding specific locations.

Delineators shall be placed in conjunction with guard rail installation as indicated. Refer to Standard Road Plan RE-7 for details of delineators.

Appropriate adjustment in method of installation shall be made at the direction of the engineer for curved roadway, skewed bridges or other conditions not shown.

See other Standard Road Plans for details of guard rail. Price bid for "Formed Steel Beam Railing" and "Posts" to be placed at bridge approaches shall be considered full compensationfor furnishing all materials (including necessary delineators) and constructing guard rail essentially as indicated.

Guard Rail Installations shall be similar at both ends of bridges for two-way traffic. Guard rail shall be placed only at the approach end of bridges for one-way traffic.

SPECIAL NOTE:
Horizontal and vertical alinement of the guard rail in the area immediately adjacent to the bridge shall, where necessary, be adjusted to a smoothly curved line with no abrupt changes. Exact details of the installation shall be as directed by the Engineer.

DATE 7-10-68
LAST REVISION Rail Alinement

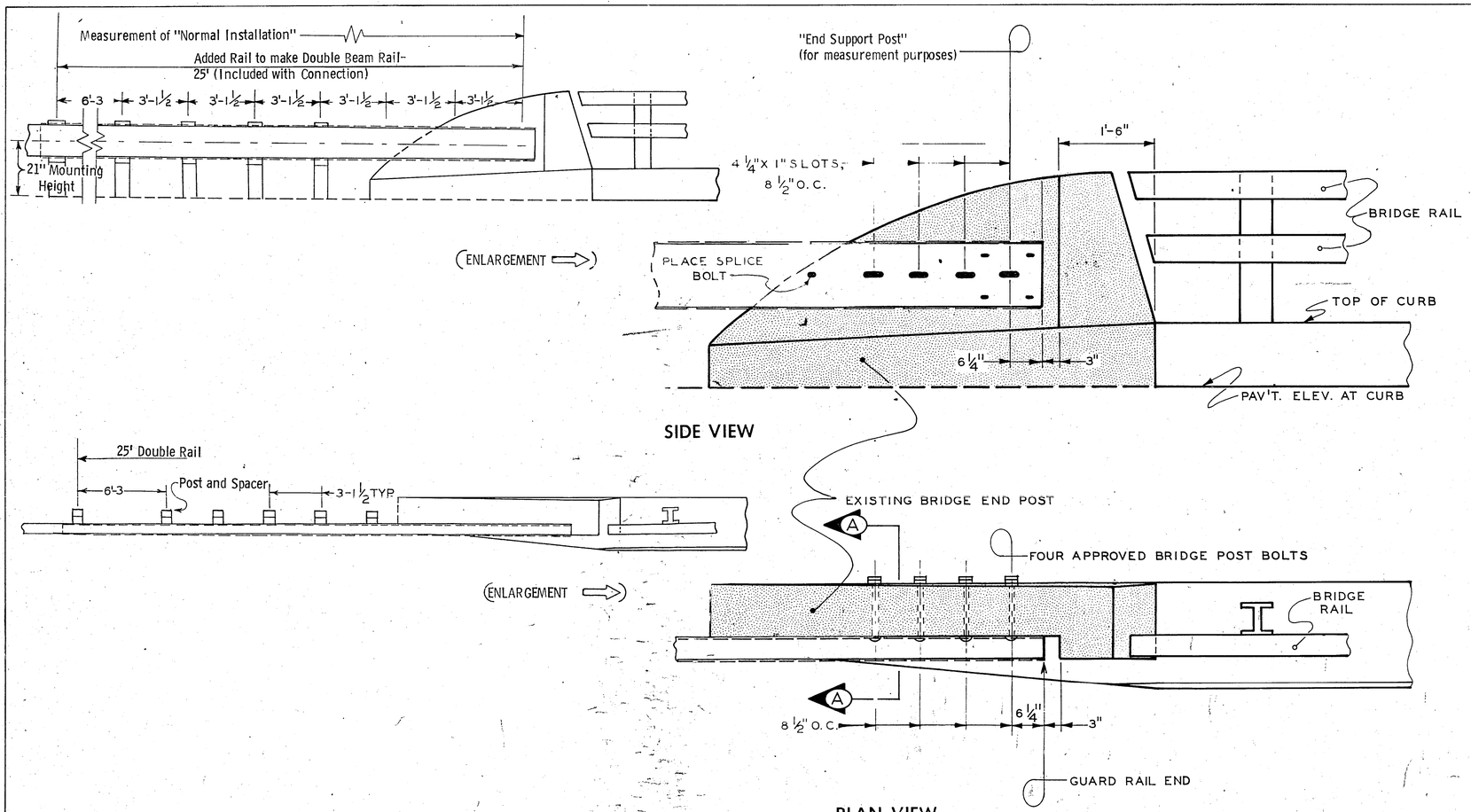
IOWA HIGHWAY COMMISSION
STANDARD ROAD PLAN RE-13

RECOMMENDED	Jack C. Delbridge	9/26/67
	ROAD ENGINEER	DATE
	K. R. McLaughlin	9/26/67
	DESIGN ENGINEER	DATE
APPROVED	T. H. Erwin	9/29/67
	DEPUTY CHIEF ENGINEER	DATE

GUARD RAIL PLACEMENT AT BRIDGE APPROACHES

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20--29	IOWA	5		19	47



GENERAL NOTES:
Details shown hereon are for making a positive connection between approach guard rail and the bridge post. This type may be used at either end of any bridge (one-way or two-way) having "brush curb" and end post construction as shown.

One 25' Section of formed steel beam rail shall be installed as part of each "guard rail-bridge connection." This will be in addition to the guard rail listed in the tabulation of installations and identified on bridge approach guard rail. The completed installation will result in being double thickness of rail in the 25 ft. section attached to the bridge. Both sections of rail making up the double thickness of rail require special punching of additional bolt holes as shown hereon. The fabrication of these extra bolt holes shall be considered incidental.

The bolts for attaching the rail to the concrete end post shall be of a type and manufacture approved by the Engineer. Bolts shall be 7/8" diameter and galvanized or otherwise satisfactorily rustproof. Bolts shall be installed in drilled holes. All installation shall be done at manufacturer's recommendation, if applicable and shall be subject to the approval of the Engineer.

Formed Steel Beam Railing, Post, hardware, other necessary materials not specifically covered hereon shall be in accordance with appropriate other Standard Road Plans as well as current ISHC Standard Specifications.

The price bid for "RE-20 Guard Rail Bridge Connections" shall be considered full compensation for the complete construction described hereon, exclusive of any work or materials covered by other bid items.

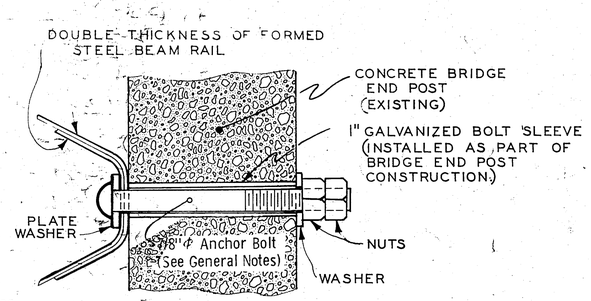
List of Materials required for and to be included with the price bid for RE-20.

25' of formed steel beam railing (10 ga.) with special hole punching as shown, and hardware.

4 approved anchor bolts with nuts and washers.

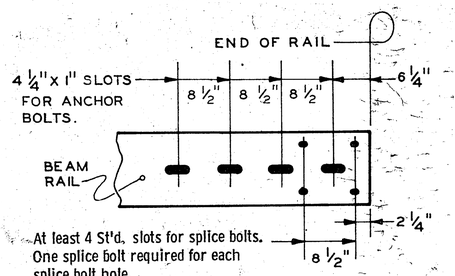
Exact details of blocks may vary slightly with different bridges. Face of blocks may be tapered a maximum of 3" if necessary to facilitate placement of approach guard rail essentially as indicated.

Horizontal and vertical alinement of the approach guard rail in the area immediately adjacent to the bridge shall be adjusted to a smooth line with no abrupt changes. Exact details of the installation shall be as directed by the engineer.



Rail elements shall be bolted to conc. block as shown with first nut tightened so as to allow expansive movement of rail and then locked with second nut.

SECTION A-A
ANCHOR BOLT
FASTENING DETAILS



At least 4 St'd. slots for splice bolts. One splice bolt required for each splice bolt hole.

DETAILS FOR
END OF RAIL AT CONNECTION

DATE 5-28-68	IOWA HIGHWAY COMMISSION	
	STANDARD ROAD PLAN	RE-20
LAST REVISION PROVIDE FOR 25' DOUBLE BEAM	RECOMMENDED: Jack C. Delbridge, ROAD ENGINEER	9/26/67
	K. P. McLaughlin, DESIGN ENGINEER	9/26/67
	APPROVED: R. K. Swan, DEPUTY CHIEF ENGINEER	9/28/67
	GUARD RAIL-BRIDGE CONNECTION	

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		20	47

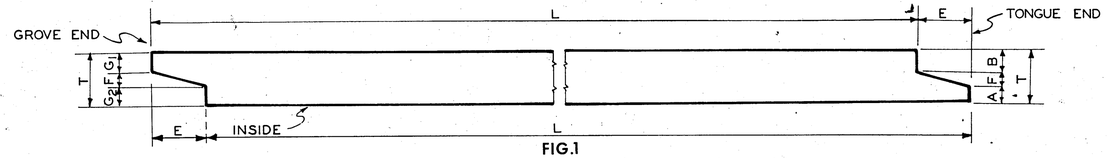


FIG.1

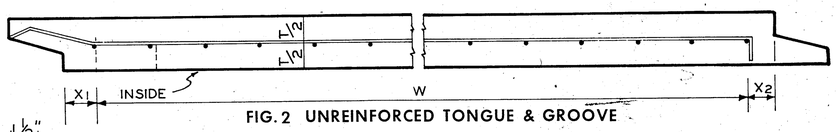


FIG. 2 UNREINFORCED TONGUE & GROOVE

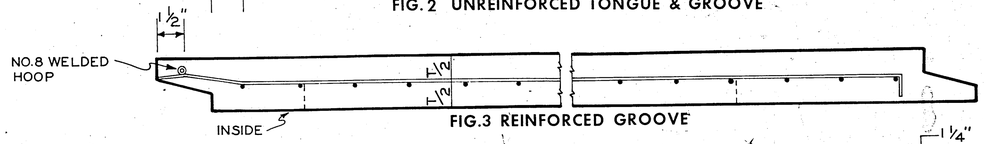


FIG.3 REINFORCED GROOVE

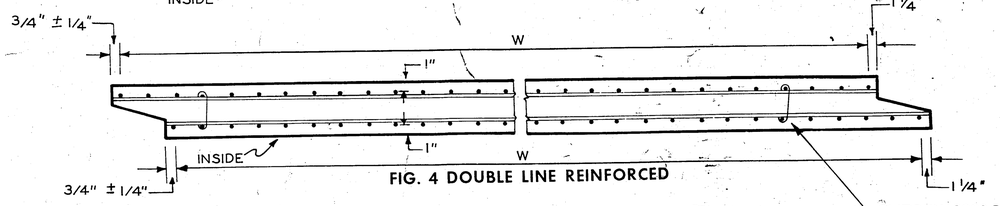
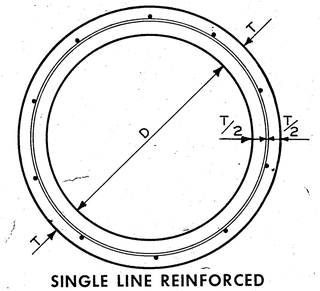
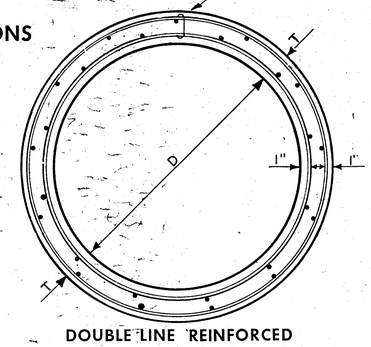


FIG. 4 DOUBLE LINE REINFORCED

LONGITUDINAL SECTIONS



SINGLE LINE REINFORCED



DOUBLE LINE REINFORCED

CROSS SECTIONS

GENERAL NOTES:

The wall thickness and reinforcement shown are minimum requirements. If the wall thickness is increased, only dimensions indicated by T, B, & G1 shall be changed. 1500 D pipe, in 12", 15", 18" and 21" diameters, when made with wall thickness for 2000 D pipe need not be reinforced if strength requirement can be met. All other 2000 D pipe shall have the minimum reinforcement specified.

No circumferential reinforcement shall be required in tongues or grooves of 12", 15", 18" and 21" pipe of all classes or 24" pipe of 1500 D class. See Fig. 2.

All other pipe with single line reinforcement shall have the grooves reinforced by one welded hoop of not less than 8 gage wire. This hoop shall be secured to the cage by welding or by twisting the transverse wire around the hoop a minimum of 300° as in Fig. 3.

Pipe having two lines of reinforcement shall have circumferential wires extending into tongues and grooves as shown in Fig. 4.

The difference between X1 and X2 shall not be more than 1/2".

The spacing of transverse wires shall not exceed 8" and the size shall be that specified by the U. S. Department of Commerce Simplified Practice Recommendation No. 234-48 effective August 1, 1948. The spacing of circumferential rings shall not exceed 4".

The overhangs specified are approximate and may need to be changed due to the tightness of bends, wire diameter, cage width, and the exact location of cage within the tolerances permitted. The bend as shown in Fig. 2 requires approximately 1/8" extra overhang for all sizes except the 30" pipe which will require about 1/4".

When the groove end hoop is welded to the transverse wires, approximately 1 1/8" less overhang will be required. Tongue end overhang is required only when it is used for placement of reinforcement.

All material and construction to conform to the Iowa State Highway Commission Specifications and welded wire fabric shall conform to A. S. T. M. A-185.

GENERAL DIMENSIONS

D	AREA OF OPENING	2000 AND 3000 D APPR. WT/FT.	*T	*A	*B	*G1	*G2	C x	+E	F	1500 D APPROX. WT/FT.	T	A	B	G1	G2	C	E	F	D
12	.78	92	2	5/8	3/4	5/8	3/4	1/8	2	5/8										12
15	1.23	127	2 1/4	3/4	1	7/8	7/8	1/8	2	1/2	111	2	3/4	7/8	3/4	7/8	1/8	2	3/8	15
18	1.77	168	2 1/2	7/8	1 1/8	1	1	1/8	2 1/2	1/2	149	2 1/4	7/8	1	7/8	1	1/8	2	3/8	18
21	2.41	210	2 3/4	1	1 3/8	1 1/4	1 1/8	1/8	2 1/2	3/8	192	2 1/2	1	1 1/8	1	1 1/8	1/8	2 1/2	3/8	21
24	3.15	265	3	15/16	1 5/16	1 1/8	1 1/8	3/16	3	3/4	229	2 5/8	1	1 3/16	1	1 3/16	3/16	2 1/2	7/16	24
27	3.98	327	3 1/4	1 1/16	1 7/16	1 1/4	1 1/4	3/16	3 1/4	3/4	280	2 3/4	1 1/16	1 1/4	1	1 1/4	3/16	2 3/4	1/2	27
30	4.91	384	3 1/2	1 3/16	1 9/16	1 3/8	1 3/8	3/16	3 1/2	3/4	324	3	1 1/8	1 5/16	1 1/8	1 5/16	3/16	3	9/16	30
33	5.94	452	3 3/4	1 1/4	1 11/16	1 1/2	1 1/2	1/4	3 3/4	3/4	385	3 1/4	1 1/8	1 3/8	1 1/8	1 3/8	1/4	3 1/4	5/8	33
36	7.07	524	4	1 3/8	1 7/8	1 5/8	1 5/8	1/4	4	3/4	435	3 3/8	1 3/16	1 7/16	1 3/16	1 7/16	1/4	3 1/2	3/4	36
42	9.62	685	4 1/2	1 5/8	2 1/8	1 7/8	1 7/8	1/4	4	3/4	562	3 3/4	1 3/8	1 5/8	1 3/8	1 5/8	1/4	3 1/2	3/4	42
48	12.57	867	5	1 5/8	2 5/8	2 3/8	1 7/8	1/4	4	3/4	727	4 1/4	1 5/8	1 7/8	1 5/8	1 7/8	1/4	4	3/4	48
54	15.90	1071	5 1/2	1 13/16	2 15/16	2 11/16	2 1/16	1/4	4 1/2	3/4	888	4 5/8	1 13/16	2 1/16	1 13/16	2 1/16	1/4	4 1/2	3/4	54
60	19.64	1296	6	2	3 1/4	3	2 1/4	1/4	5	3/4	1064	5	2	2 1/4	2	2 1/4	1/4	5	3/4	60
66	23.76	1542	6 1/2	2 1/4	3 1/2	3 1/4	2 1/2	1/4	5	3/4	1272	5 1/2	2 1/4	2 1/2	2 1/4	2 1/2	1/4	5	3/4	66
72	28.27	1810	7	2 1/2	3 3/4	3 1/2	2 3/4	1/4	5	3/4	1532	6	2 1/2	2 3/4	2 1/2	2 3/4	1/4	5	3/4	72
84	38.48	2409	8	2 7/8	4 3/8	4	3 1/4	3/8	5	3/4	2085	7	3	3 1/4	3	3 1/4	1/4	5 1/2	3/4	84

* Permissible variations from dimensions given for old molds (sizes 48" to 84") shall be ± 1/4".

\+ Permissible variations from dimensions given for old molds (sizes 48" to 84") shall be ± 1/2".

x C is clearance between edges of adjacent tongue and groove (G2 - A).

REINFORCEMENT-WELDED STEEL WIRE FABRIC

D	MINIMUM CIRCUMFERENTIAL SQ. INCH PER FT. OF PIPE 1500 D SINGLE	1500 D DOUBLE	2000 D SINGLE	2000 D DOUBLE	3000 D SINGLE	3000 D DOUBLE	MINIMUM CAGE WIDTH (W) +L - (INCHES) SHOWN BELOW 1500 D	2000 D	3000 D	SUGGESTED OVERHANG GROOVE END - STD. WALL 2000 D 3000 D	GROOVE END - THIN WALL 1500 D	TONGUE END STD. WALL 2000 D 3000 D	TONGUE END STD. WALL 1500 D	TONGUE END THIN WALL 1500 D
12	.062	---	.062	---	.062	---	5	5	5					
15	.062	---	.062	---	.087	---	5	5	5	3 1/2	3 1/2	1 3/8	1 3/8	1 1/4
18	.062	---	.098	---	.116	---	5	5	5	3 3/4	3 1/2	1 1/2	1 1/2	1 3/8
21	.074	---	.116	---	.148	---	5	5	5	3 3/4	3 3/4	1 5/8	1 5/8	1 1/2
24	.087	---	.148	---	.187	---	6	6	6	3 3/4	4 1/4	1 3/4	1 3/4	1 5/8
27	.098	---	.159	---	.216	---	---	6	6	5 3/4	4 7/8	2	1 7/8	1 5/8
30	.116	---	.187	---	---	.174	6	6	3	5 7/8	5 5/8	2	2	1 3/4
33	.148	---	.239	---	---	.174	---	6	3	5 7/8	5 3/4	1 3/4	2 1/8	1 7/8
36	.148	---	---	.174	---	.187	6	3	3	3/4	5 7/8	1 3/8	2 1/4	2
42	---	.174	---	.187	---	.239	3	3	2	3/4	3/4	1 1/2	1 3/8	1 3/8
48	---	.187	---	.239	---	.280	3	2	2	3/4	3/4	1 1/2	1 1/2	1 1/2
54	---	.239	---	.280	---	.325	2	2	2	3/4	3/4	1 1/2	1 3/8	1 3/8
60	---	.280	---	.325	---	.377	2	2	2	3/4	3/4	1 1/2	1 1/2	1 1/2
66	---	.325	---	.377	---	.443	---	2	2	3/4	3/4	1 1/2	1 1/2	1 1/2
72	---	.325	---	.443	---	.443	2	2	2	3/4	3/4	1 5/8	1 1/2	1 1/2
84	---	.377	---	.516	---	.516	2	2	2	3/4	3/4	1 5/8	1 1/2	1 1/2

NOTE:

When so specified for individual pipe culvert installations identified within the project plans, the joints between sections of concrete pipe shall be sealed. This seal shall be accomplished by application of a product commercially produced for such purpose. The seal shall be of a type as to remain in a flexible state after application, shall be of a type and manufacture approved by the engineer and shall be installed according to methods recommended by the manufacturer and approved by the engineer.

DATE 7-11-67

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RF-1

RECOMMENDED: Jack C. Delbridge, ROAD ENGINEER, 7/12/67 DATE

A. B. McLaughlin, DESIGN ENGINEER, 7/12/67 DATE

APPROVED: R. M. Owen, DEPUTY CHIEF ENGINEER, 7/13/67 DATE

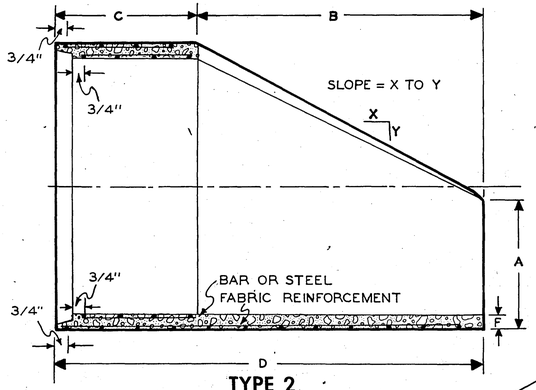
Change Note for Joint Sealer — LAST REVISION

CONCRETE CULVERT PIPE

Des Moines COUNTY

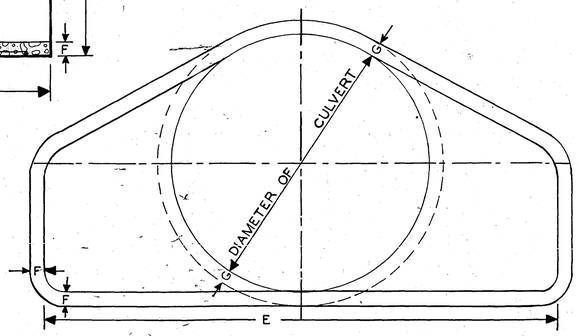
PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		22	47

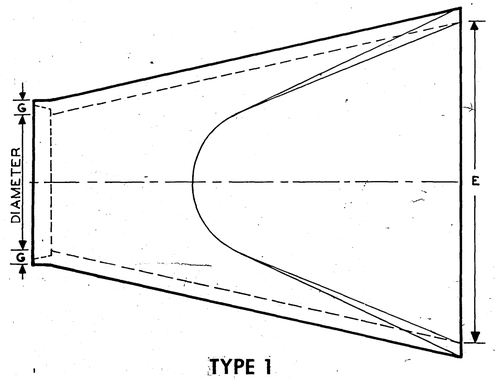


TYPE 2

Details are indicated hereon for groove end aprons.
Tongue end aprons are also required.
Details for tongue and groove shall be as indicated on Standard RF-1.

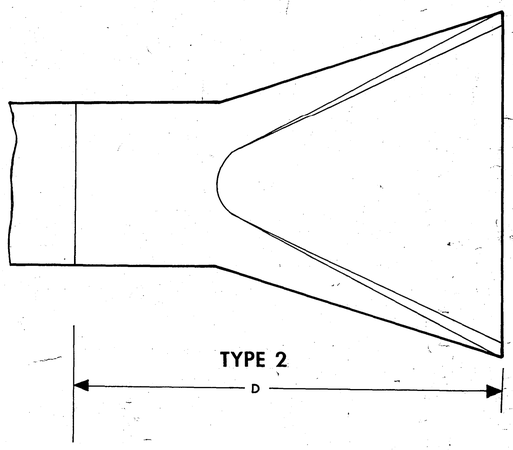


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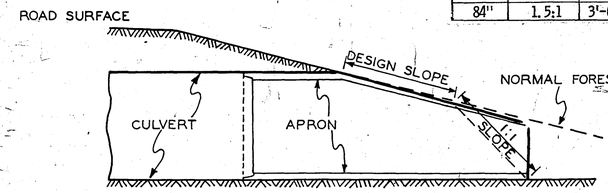


TYPE 1

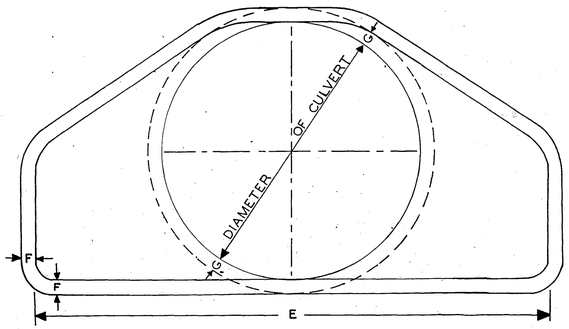
APRON DIMENSIONS								
				MIN.				
DIAM.	SLOPE	A	B	C	D	E	F	G
12"	3:1	6"	2'-0"	4'-7/8"	6'-7/8"	2'-0"	2"	2"
15"	3:1	8 1/4"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	2 1/4"
18"	3:1	11 1/2"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	2 1/2"
24"	3:1	12 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3"	3"
30"	3:1	1'-3 1/2"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3 1/2"	3 1/2"
36"	3:1	1'-7"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	3:1	2'-1 1/2"	5'-3"	2'-9"	8'-0"	6'-6"	4 1/2"	4 1/2"
48"	3:1	2'-5"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	2.5:1	2'-8 1/2"	5'-0"	3'-0"	8'-0"	7'-6"	5 1/2"	5 1/2"
60"	2:1	2'-11"	5'-0"	3'-0"	8'-0"	8'-0"	5 1/2"	6"
72"	2:1	3'-0"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
84"	1.5:1	3'-0"	6'-9"	2'-6 1/2"	9'-3 1/2"	10'-0"	6 1/2"	8"



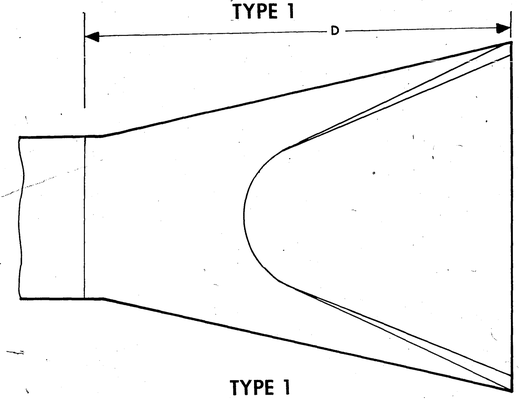
TYPE 2



TYPE 1 or 2

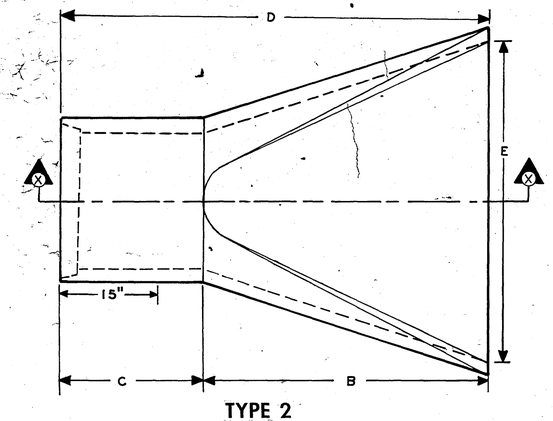


TYPE 1

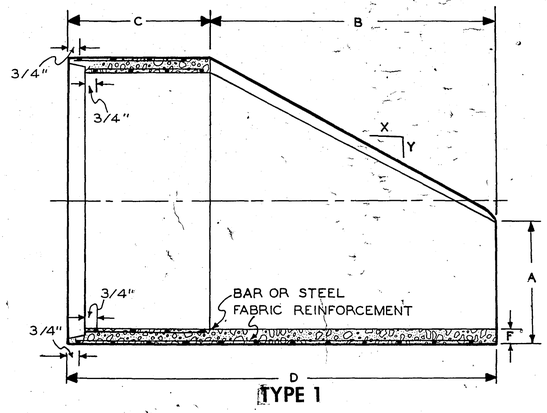


TYPE 1

APRON DIMENSIONS.								
				MIN.				
DIAM.	SLOPE	A	B	C	D	E	F	G
12"	3:1	6"	2'-0"	4' -7/8"	6'-7/8"	2'-0"	2"	2"
15"	3:1	8 1/4"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	2 1/4"
18"	3:1	11 1/2"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	2 1/2"
24"	3:1	12 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3"	3"
30"	3:1	1'-3 1/2"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3 1/2"	3 1/2"
36"	3:1	1'-7"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	3:1	2'-1 1/2"	5'-3"	2'-9"	8'-0"	6'-6"	4 1/2"	4 1/2"
48"	3:1	2'-5"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	2.4:1	2'-6"	5'-5"	2'-7"	8'-0"	7'-6"	5 1/2"	5 1/2"
60"	2:1	2'-6"	5'-0"	3'-0"	8'-0"	8'-0"	5 1/2"	6"
72"	1.86:1	2'-6"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
84"	1.5:1	2'-6"	7'-6 1/2"	1'-9"	9'-3 1/2"	10'-0"	6 1/2"	8"



TYPE 2



TYPE 1

NOTES: (ALL TYPES)

Design of barrel portion of concrete aprons shall conform to standard reinforced sectional concrete culvert pipe. See Design Standard RF-1. If double line reinforcing is required in the barrel, only single line reinforcing is required in the flare of the apron.

Tie bolts and bolt holes if necessary, are required only when specified in the detail plans.

Alternate designs for concrete pipe aprons may be submitted for approval.

Any difference between length of concrete aprons installed, and the dimensions indicated hereon shall be appropriately adjusted for the length of concrete pipe furnished.

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN **RF-3**

DATE: 11-16-60

LAST REVISION: Latest Issue

RECOMMENED — DESIGN ENGINEER — DATE

J P McLaughlin 11/16/60

ROAD ENGINEER — DATE

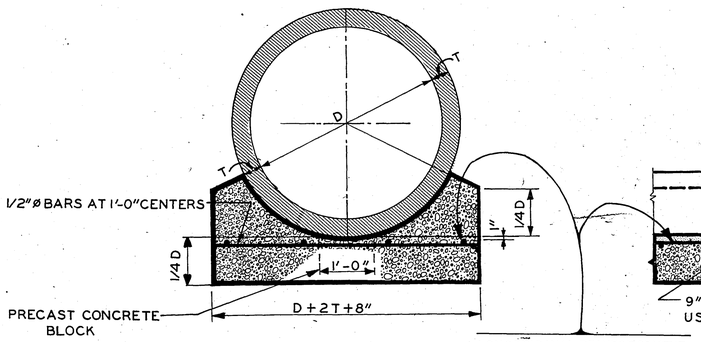
APPROVED — DEPUTY CHIEF ENGINEER — DATE

CONCRETE PIPE APRONS

Des Moines COUNTY

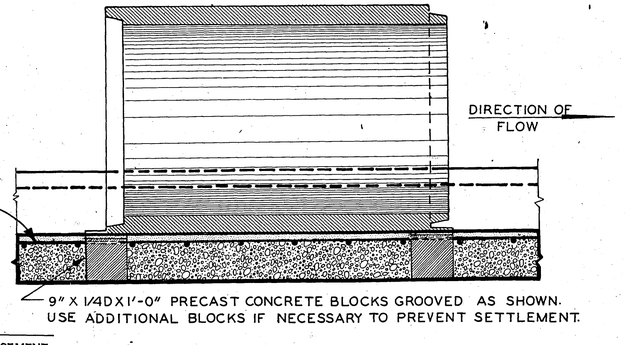
PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		23	47



CROSS SECTION OF PIPE CRADLE

TYPE "B"



LONGITUDINAL SECTION OF PIPE CRADLE

TYPE "B"

LONGITUDINAL REINFORCEMENT:

For 21" pipe use 4 1/2" bars.
For 24" and 30" pipe use 4 5/8" bars.
For 36" pipe use 6 5/8" bars.
For 42" pipe use 10 5/8" bars
For 48" pipe use 12 5/8" bars.
For 54" pipe use 13 5/8" bars.
For 60" pipe use 14 5/8" bars.
For 66" pipe use 15 5/8" bars.
For 72" pipe use 16 5/8" bars.

DEPTH TABLE				
CLASS PIPE	NORMAL		IMPERFECT TRENCH	
	MAX. COVER	MIN. COVER	MAX. COVER	MIN. COVER
1500 D	15'	6'	20'	6"
2000 D	20'	1'	28'	1'
3000 D	30'	2'	42'	2'

GENERAL NOTES:

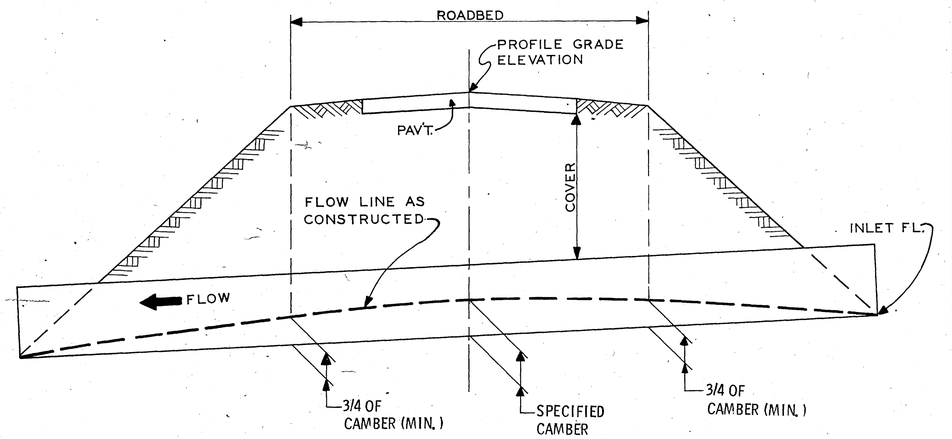
Pipe of the 1500 D class may be used for entrance culverts only. Pipe of the 2000 D and 3000 D class may be used for roadway culverts, or for farm entrance culverts, where the fill conditions require pipe of this class. See Standard RF-1 for details of pipe.

In general, pipe laying is to proceed upstream, starting at outlet end with tongue (top) end always downstream.

Where available, boulders or old concrete may be used to pave outlet and lay up rubble headwalls.

All material and construction to conform to the current Standard Specifications of the Iowa State Highway Commission.

Maximum depth of cover may be made 75% greater than given in maximum depth table by using pipe cradles. For type B the pipe is to be supported in correct alignment on precast concrete blocks before concrete is placed. The concrete is to be carefully worked under the pipe to secure complete embedment and prevent formation of air pockets.



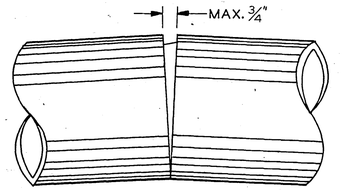
NOTE:
Where pipe culverts are installed on yielding soil conditions, the pipe culvert should be placed on a cambered flow line as shown. Camber amounts of not more than the "normal" values indicated may be used to fit various soil conditions, unless a particular camber is specified as part of detail project plans, in which case that value shall be used. Camber may be accomplished by placing abutting pipe sections tight at the bottom of the joint with not more than 3/4" opening at the top of any joint.

TYPICAL CAMBERED FLOW LINE

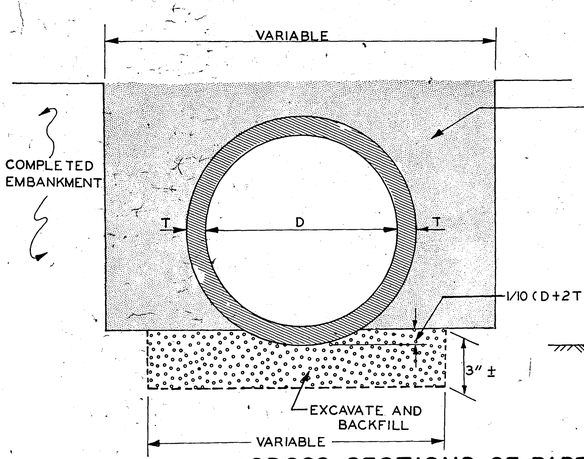
COVER	NORMAL CAMBER
5'	.08'
10'	.17'
15'	.25'
20'	.33'
25'	.42'
30'	.50'
35'	.58'

PIPE SIZE D	MAX. CAMBER F.T.
24"	1.1'
30"	1.2'
36"	1.3'
42"	1.4'
48"	1.5'

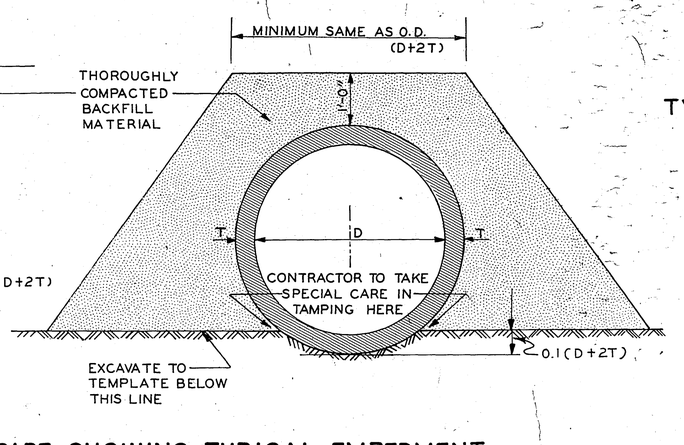
Camber is to be attained by adjustment of joint openings as indicated throughout length of pipe.



TYPICAL JOINTS IN CAMBERED PIPE



TYPE 1



TYPE 2

CROSS SECTIONS OF PIPE SHOWING TYPICAL EMBEDMENT

DATE	LAST REVISION
3-4-68	Modify Camber Diagram Remove Type D

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RF-4

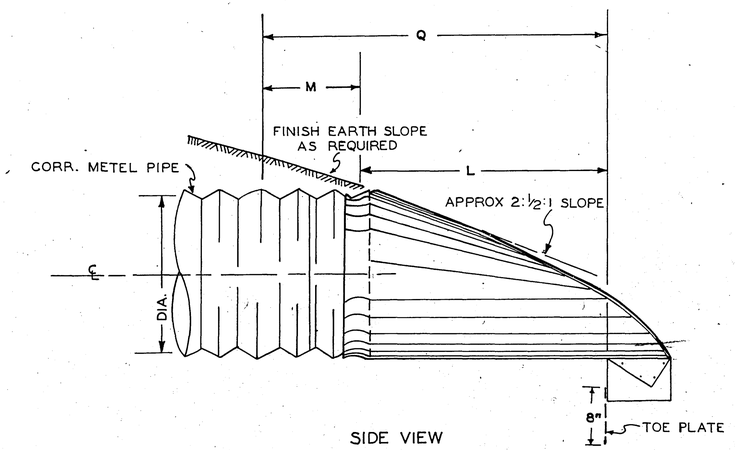
RECOMMENDED
Jack C. Dalbridge 3/8/68
ROAD ENGINEER DATE
K.F. McLaughlin 3/4/68
DESIGN ENGINEER DATE

APPROVED
R.H. Rawson 3/7/68
DEPUTY CHIEF ENGINEER DATE

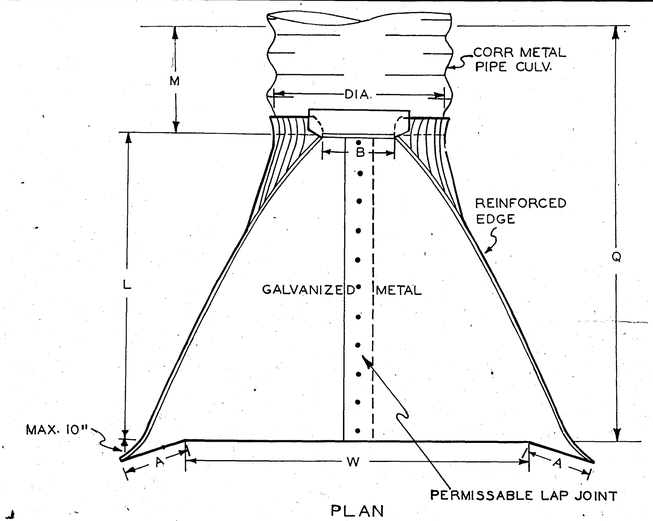
CONCRETE PIPE CULVERT DETAILS

Des Moines COUNTY

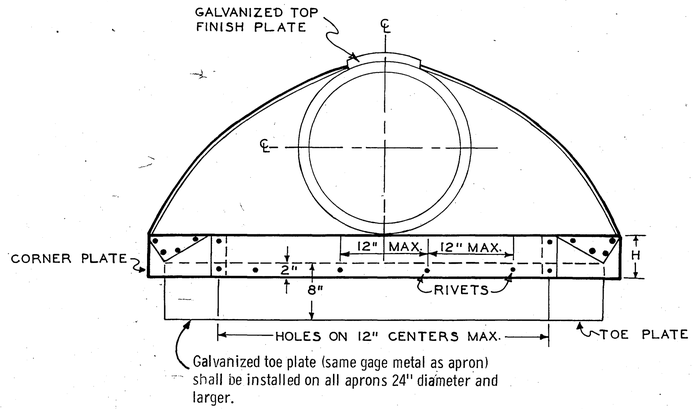
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		24	47



SIDE VIEW



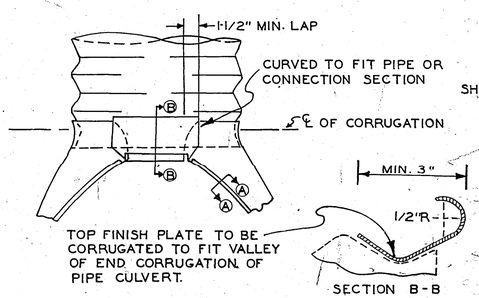
PLAN

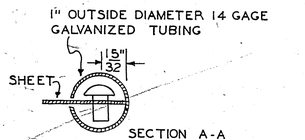


END VIEW

NOTE:
Corrugated metal pipe culvert of length "M" (See Table of Dimensions) shall be furnished and installed in addition to specified length of corrugated metal pipe culvert. This length "M" shall be considered an integral part of the "Apron" and shall not be measured or paid for as culvert pipe but shall be considered incidental to the item of "Aprons".
Dimension "Q" shall be considered the "LENGTH" of the apron.

PIPE DIAM.	DIMENSIONS A 1"±	B MAX.	H 1"±	L 1 1/2"±	W 2"±	M°	Q°
12"	4 3/4"	6"	6"	21"	24"	48"	69"
15"	6"	8"	6"	26"	30"	48"	74"
18"	7"	9"	6"	31"	36"	48"	79"
21"	8 1/4"	11"	6"	36"	42"		
24"	9 1/2"	12"	6"	42"	48"	36"	78"
30"	12"	15"	7 1/2"	52 1/2"	60"	24"	76 1/2"
36"	14"	18"	9"	63"	72"	48"	111"
42"	16"	21"	10 1/2"	73 1/2"	84"	48"	121 1/2"
48"	18"	27"	12"	84"	90"	36"	120"
54"	18"	30"	12"	84"	102"	36"	120"
60"	18"	33"	12"	87"	114"	36"	123"





3/8"X1/2" GALVANIZED BUTTONHEAD RIVETS SPACED 6" CENTER TO CENTER OVERALL LENGTH OF RIVETS -0.78"

DETAILS OF TOP FINISH PLATE
(Optional)

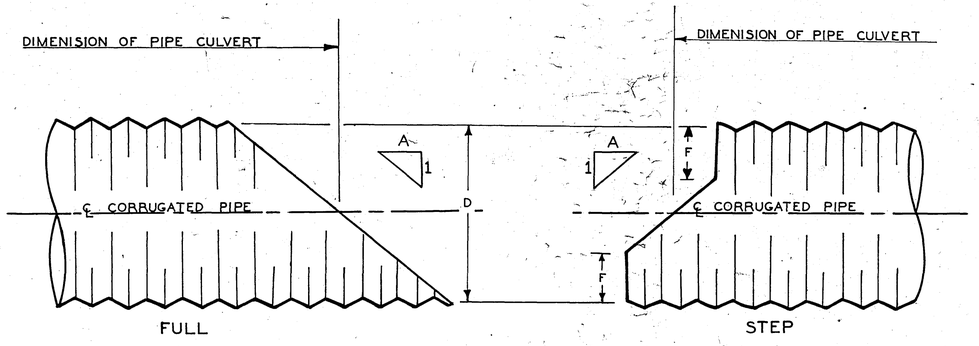
GENERAL NOTES:

(1) Aprons shall be attached to the circular pipe culvert section by any appropriate method of bolts, clamps, or other; securely connecting the two; subject to the approval of the Engineer. Aprons for pipe culverts 30" diameter and larger may be made in two pieces securely joined together with a tight lap joint with at least 3/8" rivets or bolts at minimum 6" spacing at or near the ℄ of apron as indicated.

(2). "Toe plates" and "corner plates" as specified may be attached to the apron by any appropriate method which will securely connect the plates to the apron; subject to the approval of the Engineer.

(3) The "top finish plate" shall be attached to the apron and culvert pipe by any appropriate clamp arrangement securely connecting the parts; subject to the approval of the Engineer. All miscellaneous metal culvert parts shall be at least the same weight or gage as culvert pipe.

(4) All metal culvert parts and hardware shall be galvanized as per current ISHC Specifications. Any damage to spelter coat resulting from installation of culvert shall be repaired as required in current ISHC Specifications or as directed by the Engineer.



D	F
54"	3"
60"	6"
66"	9"
72"	12"
78"	15"
84"	18"

BEVELLED ENDS FOR CORRUGATED METAL PIPE

NOTE:
When specifically required as part of detail project plans, ends of pipe culverts may be provided with bevelled ends as shown. Either full bevel or step bevel may be used unless one type is specified. Unless specified otherwise the slope of the bevel shall be 2 1/2 to 1 (A = 2 1/2).

NOTE:
Details shown on this plan are for a typical apron for corrugated metal pipe culvert. Other designs or alternate details may be submitted to the engineer for approval. General requirements detailed hereon must be retained.

Where the corrugated metal apron is to be used with bituminous coated corrugated metal pipe culvert, the pipe portion (Dimension "M") of this apron shall be bituminous coated, same as the culvert.

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RF-5

DATE: 3-28-68

LAST REVISION: Add Bit. Coating Note

RECOMENDED
A. P. Mastin 8-4-67
DESIGN ENGINEER DATE
Jack Tolbridge 8-8-67
ROAD ENGINEER DATE

APPROVED
R. H. Cook 8-11-67
DEPUTY CHIEF ENGINEER DATE

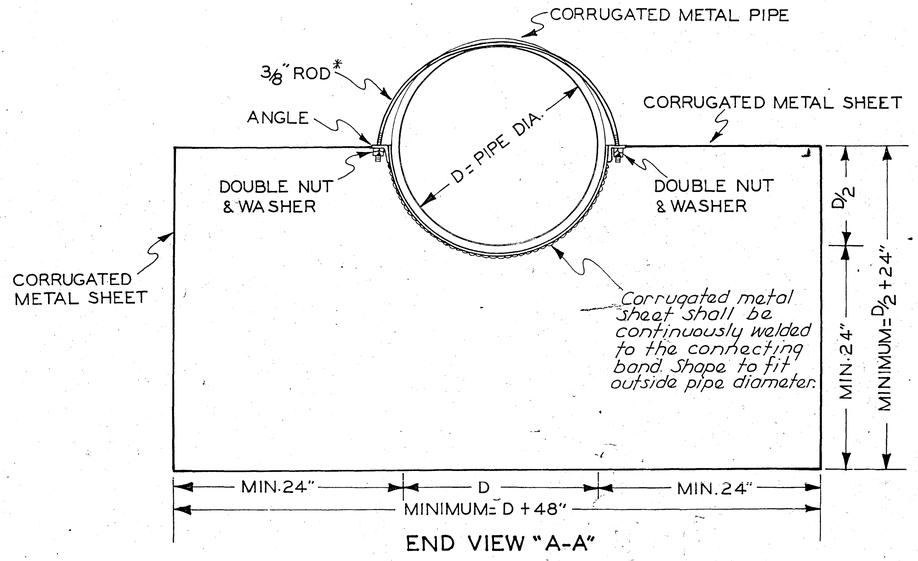
METAL PIPE APRONS AND BEVELLED ENDS

D1

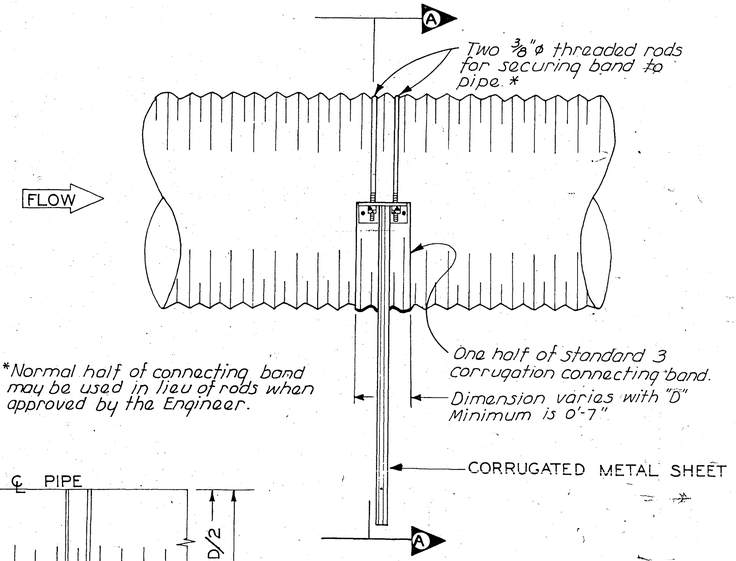
Des Moines COUNTY

PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		25	47

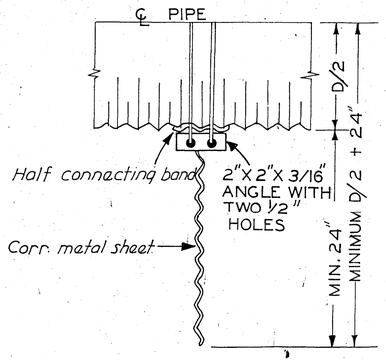


END VIEW "A-A"

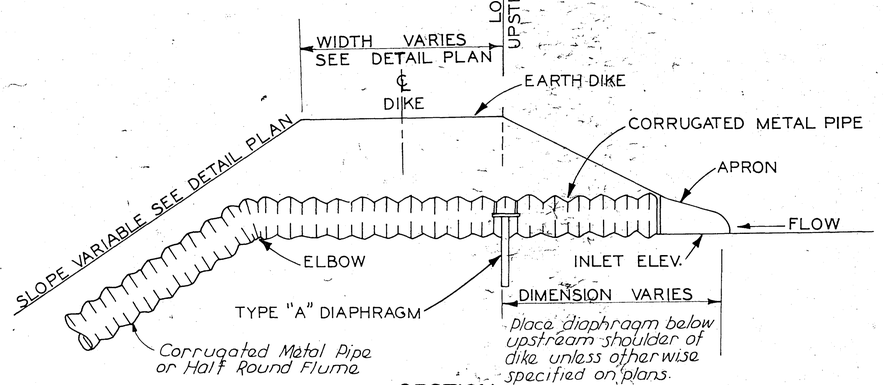


*Normal half of connecting band may be used in lieu of rods when approved by the Engineer.

SIDE VIEW



HALF PLAN



SECTION
TYPICAL INSTALLATION

GENERAL NOTES

Type "A" Diaphragm is an anti-seep device for use on let-down structures and shall be installed directly below the upstream shoulder of the dike.

Type "A" diaphragm shall consist of a sheet of corrugated metal of the dimensions indicated hereon and of the same weight gage as the pipe used for the culvert pipe.

This sheet may be fabricated from one or more sheets of corrugated metal. If two or more sheets are used, they shall be lapped a minimum of one corrugation and welded or riveted 3" (min.) centers along the seam. The sheet shall be welded on both sides to a standard half connecting band of the dimensions indicated hereon. This assembly shall then be securely attached to the pipe by means of two 3/8" ϕ rods of appropriate length placed in two adjacent valleys of the corrugated pipe and threaded with double nut and washer.

Bid price for "Type "A" Diaphragm" shall include furnishing all material and labor necessary as well as any excavation, backfilling, or other work required to complete the installation as indicated hereon.

Current I. S. H. C. Standard Specifications covering corrugated metal pipe culvert, shall apply to the construction of the Type "A" Diaphragm.

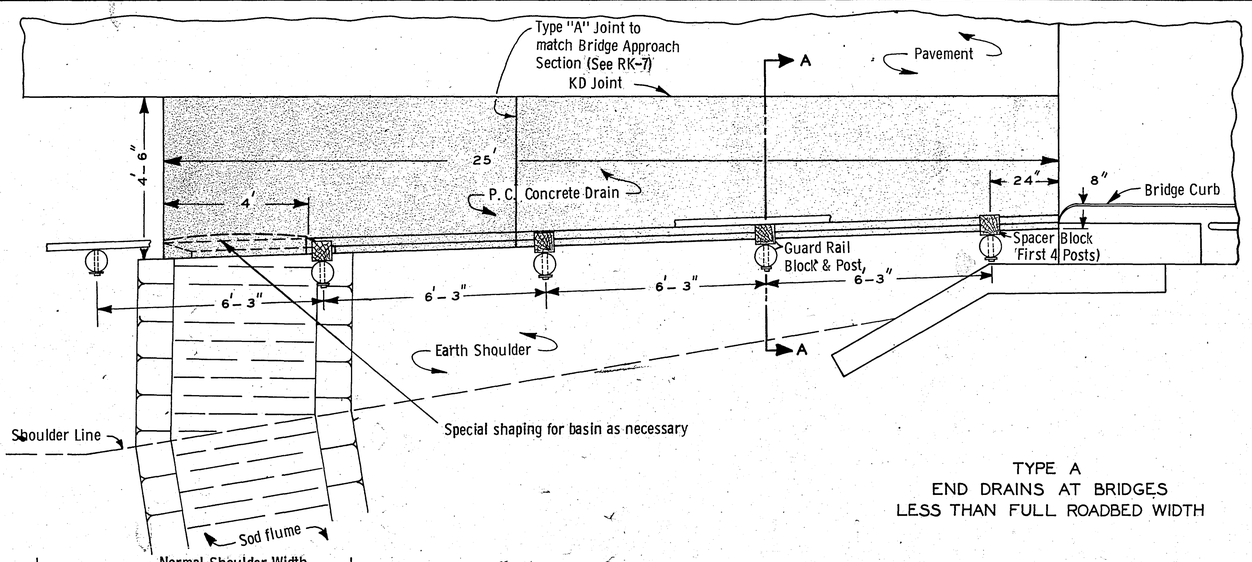
LAST REVISION	DATE	IOWA HIGHWAY COMMISSION	
Change Connecting Band Note	4-2-65	STANDARD ROAD PLAN	RF-7
		RECOMMENDED: ROAD ENGINEER	7-1-63 DATE
		RECOMMENDED: DESIGN ENGINEER	11-3-61 DATE
		APPROVED: DEPUTY CHIEF ENGINEER	DATE

CORRUGATED METAL TYPE "A" DIAPHRAGM

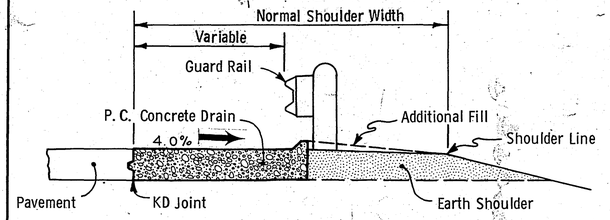
D-1

DES MOINES COUNTY

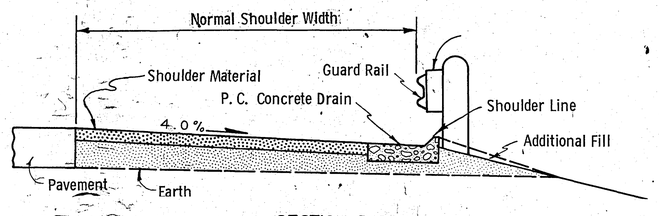
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61--2(3)--20-29	IOWA	5		26	47



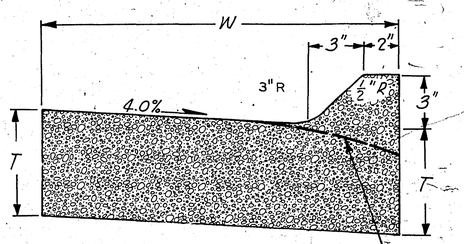
TYPE A
END DRAINS AT BRIDGES
LESS THAN FULL ROADBED WIDTH



SECTION A-A

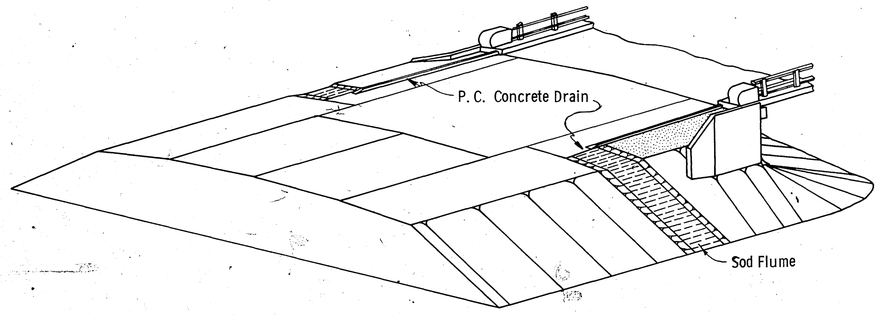


SECTION B-B



TYPICAL SECTION
P.C. CONCRETE END DRAIN

For Type A, W is variable and T = 10".
For Type B, W = 2'-0"; T = 6".
Curb may require special shaping at bridge.



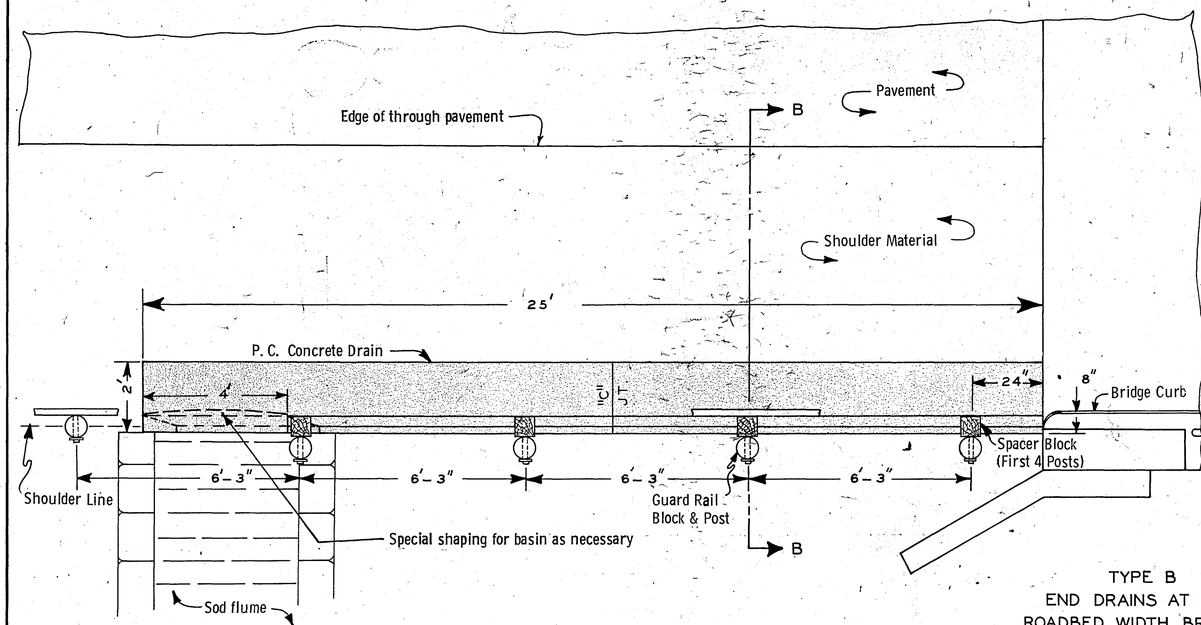
GENERAL NOTES

Normal procedure shall be to place one end drain on each side of each end of a bridge. None are required on the high side of superelevated curves. Where drainage flow is away from bridge, special shaping to develop a basin for the flume is required. Where drainage flow is toward the bridge, the basin is not required and straight curb is to be constructed.

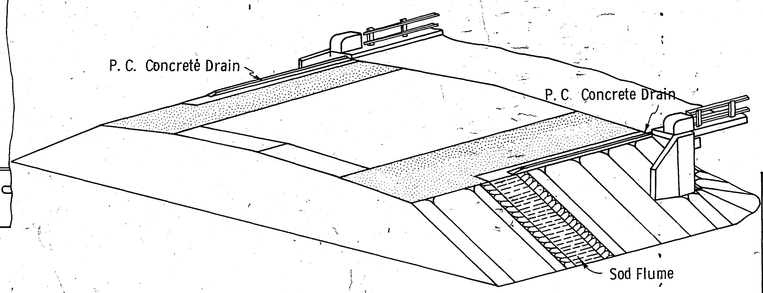
Details indicated are for a bridge less than full roadway width (Type A) and for a bridge of full roadway width (Type B). For end drains at skewed bridges, minor modifications of dimensions may be required as directed by the engineer.

Price bid for each "RF-23 End Drain" shall be considered full compensation for construction as detailed hereon (as per current specifications for "Concrete Pavement") and including any site preparation and finishing.

Sod flume and guard rail shall be placed by others unless specifically included as part of this work.



TYPE B
END DRAINS AT FULL
ROADBED WIDTH BRIDGES



TABULATION OF BRIDGE END DRAINS

BRIDGE LOCATION STATION	TYPE A NO.	TYPE B NO.	REMARKS
453+57.00	2		

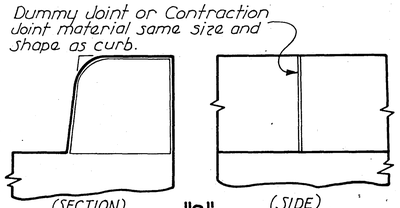
DATE	9-15-66	IOWA HIGHWAY COMMISSION
LAST REVISION	New Issue	STANDARD ROAD PLAN RF-23
RECOMMENDED	Jack Delbridge 9/3/66	ROAD ENGINEER DATE
	A. P. McLaughlin	DESIGN ENGINEER DATE
APPROVED	W. H. Peay 10-18-66	DIRECTOR OF ENGINEERING DATE

P.C. CONCRETE
BRIDGE END DRAINS

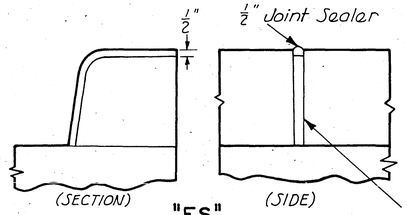
Des Moines COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	3		27	47

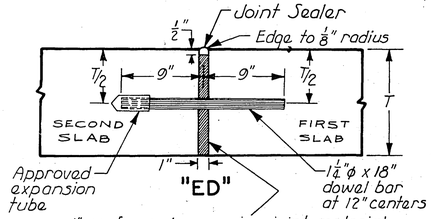
D1



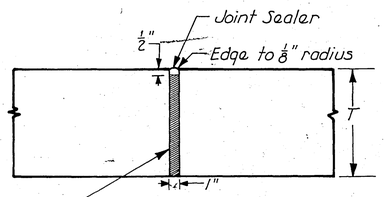
"S"
(Shear Joint in Curb or Barrier)
(Exact shape of curb may vary)



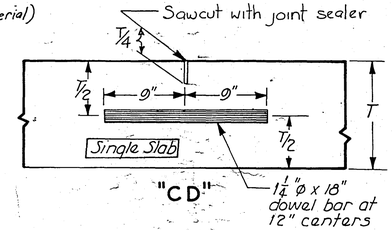
"ES"
(Expansion Joint in Curb)
(Exact shape of curb may vary)



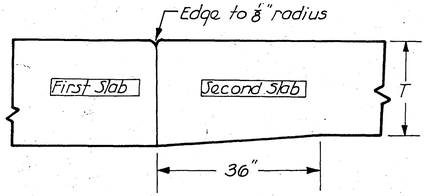
"ED"
1" preformed expansion joint material. with holes same size as dowels.



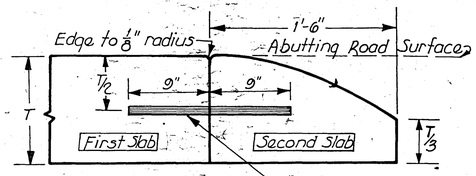
"E"



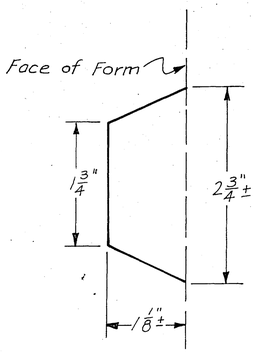
"CD"



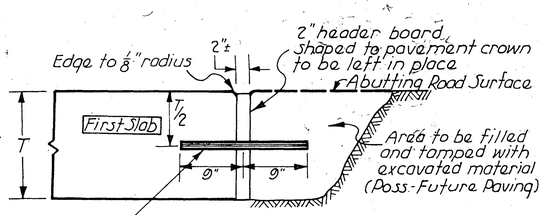
"TE"
(Method for abutting pavement slabs of different thickness)



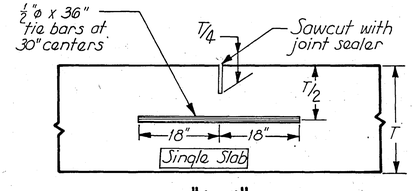
"HD"



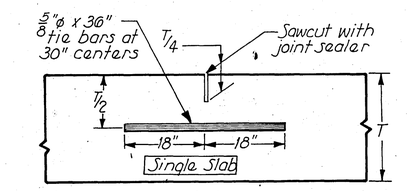
Typical Keyway



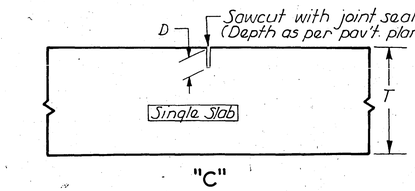
HB (Omit the tie bars)
HB-1 (Use the tie bars)



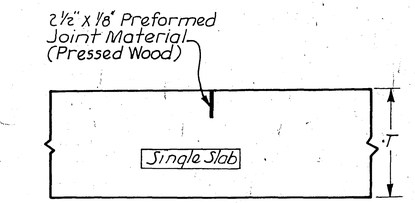
"L-1"



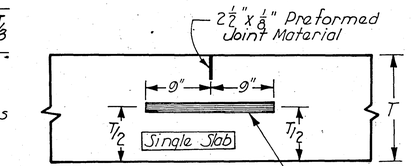
"L-2"



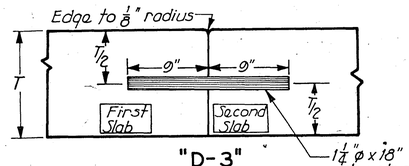
"C"



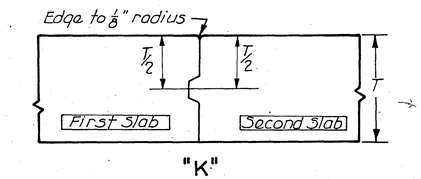
"DC"



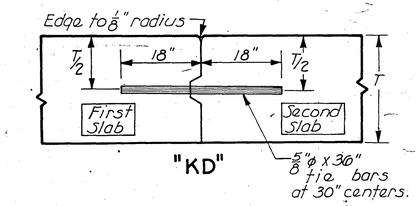
"CD-2"



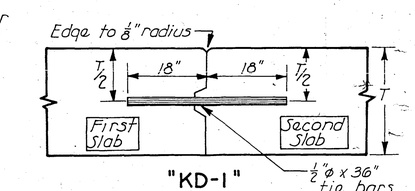
"D-3"
(Use for end of run joint)
(See general notes)



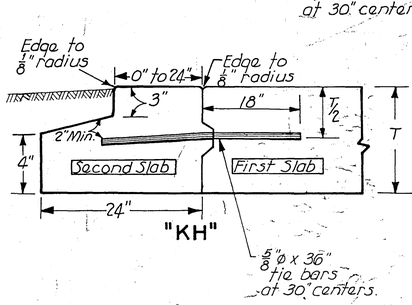
"K"



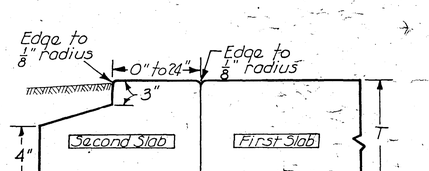
"KD"



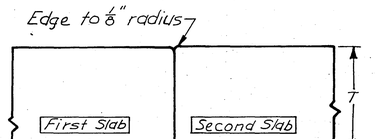
"KD-1"



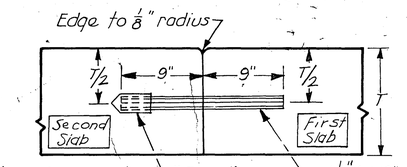
"KH"



"BH"



"B"



"D-4"

Alternate methods for construction of joints or methods of jointing layout may be submitted to the engineer for consideration. Joint alternates must be approved by the engineer. All methods used in construction of pavement joints shall be such that a finished joint substantially as detailed hereon results.

All dowels and tie bars shall conform to current I. S. H. C. Standard Specifications for Steel Reinforcement. CD and ED joints shall have the dowels positioned by means of a dowel support assembly of a type or manufacture approved by the engineer. Such assemblies shall provide for alternate ends of bars to be free moving for CD joints and only forward ends to be free moving for ED joints. Metal keyways, expansion tubes, etc. shall conform to current I. S. H. C. Standard Specifications. Joint fillers, joint sealers, expansion joint material and dummy joint material shall conform to current I. S. H. C. Standard Specifications.

Width of saw cuts in concrete pavement shall be a minimum of 1/8".

Reinforcing bars placed after concrete slab is poured shall be installed prior to vibration of the total slab.

All dowel bars for CD, ED, and D-4 joints shall have the free end half of the bar coated with heavy grease to prevent bond of the concrete to that portion of the bar. Care shall be exercised to ensure that dowel bars remain parallel to road ℄ and to pavement profile upon completion of the joint.

All preformed expansion material for "E" and "ED" joints shall be installed perpendicular to the pavement surface and extra care shall be exercised through the construction to ensure that the expansion material remains in the correct position upon completion of the joint.

An "End of Run" joint shall be constructed by a method approved by the engineer which will ensure a resultant joint such as that detailed hereon for a D-3 joint. When an "End of Run" joint is required in multiple lane pavement adjacent to and opposite an existing joint, smooth dowels shall be used and the full portion of the dowel in the "second slab" shall be coated with heavy grease.

For details of approved dowel bar and reinforcing bar supports, refer to Standard Road Plan RH-15.

SPECIAL NOTE:

Where "poly foam" type compression material is specified as a joint filler a product of the dimensions indicated, resistant to petroleum derivatives, and approved by the Engineer shall be used. The compression material shall comply with the requirements of AASHO M-153 except the limit for compression to 50% thickness shall be 45 lbs. per sq. in.

Unless otherwise specified, joints using a poly foam filler shall be sealed as shown on the plans or as directed by the Engineer. Sealer for such joints shall be of the two component, synthetic polymer type, of a manufacture approved by the Engineer and applied in a recommended manner. Joint edges shall be cleaned and dry before sealer is applied.

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RH-2

DATE: 4-19-68

CHANGE D-3 REQUIREMENTS
LAST REVISION

RECOMMENDED
ROAD ENGINEER — DATE
DESIGN ENGINEER — DATE

APPROVED
DEPUTY CHIEF ENGINEER — DATE 6/5/67

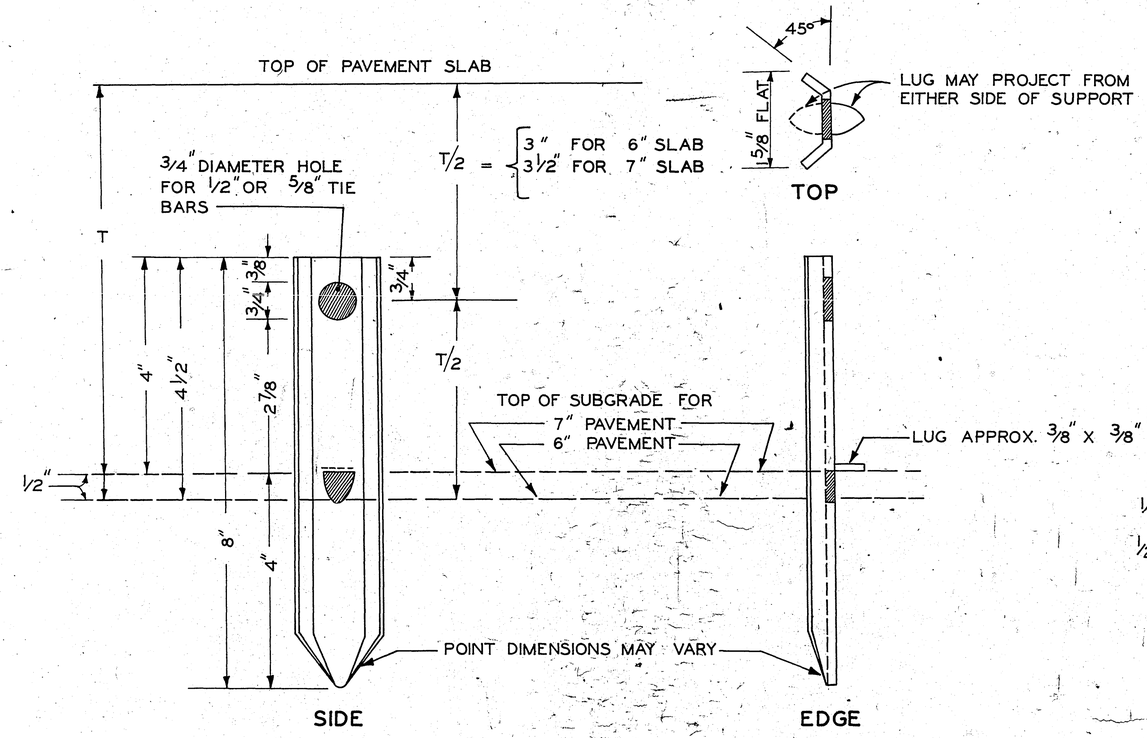
P.C. CONCRETE PAVEMENT JOINTS

D-1

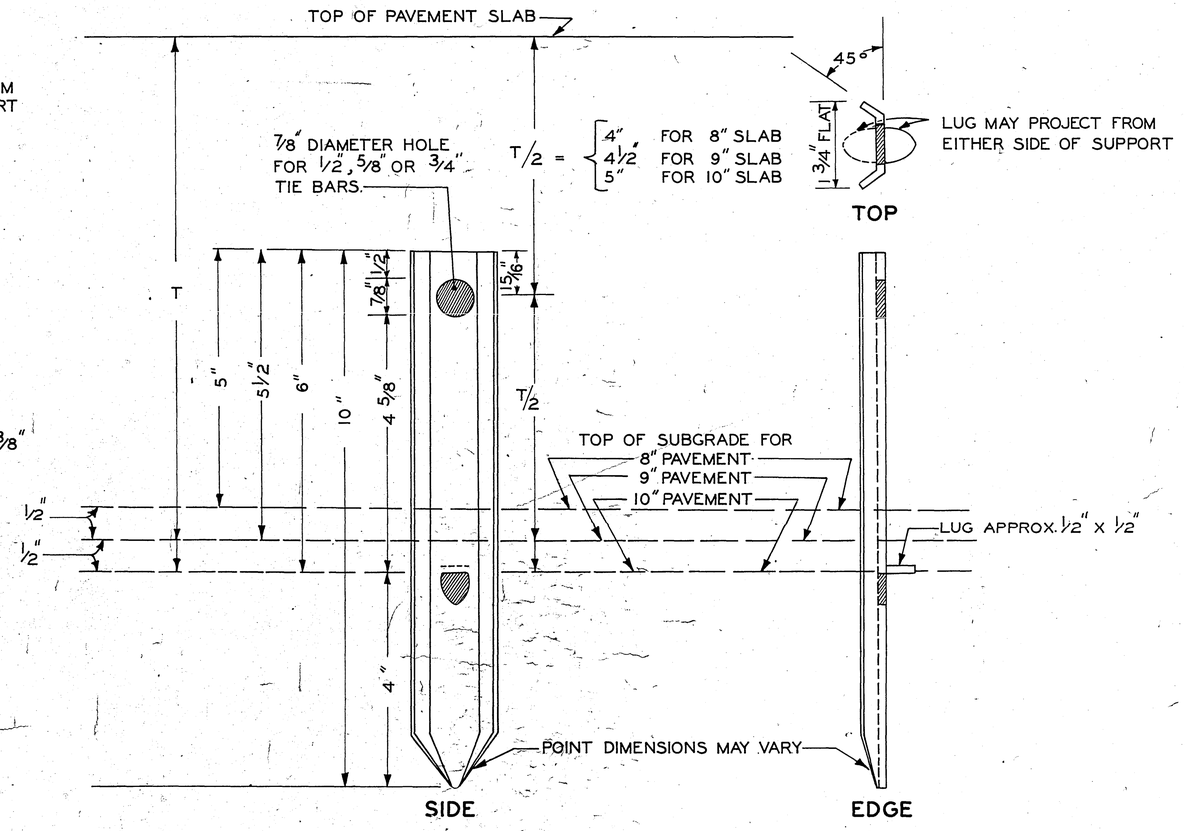
DES MOINES COUNTY

PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		28	47



BC-7 SUPPORT CHAIR FOR DOWEL TIEBAR



BC-8 SUPPORT CHAIR FOR DOWEL TIEBAR

SUPPORT TYPE	GUAGE STEEL	PAVEMENT FOR USE
BC-7	16	6" & 7"
BC-8	12	8"-9"OR 10"

11-22-61 DATE

Latest issue. LAST REVISION

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RH-15

RECOMMENDED

K. R. McLaughlin 11/22/61
ROAD ENGINEER DATE

DESIGN ENGINEER DATE

APPROVED

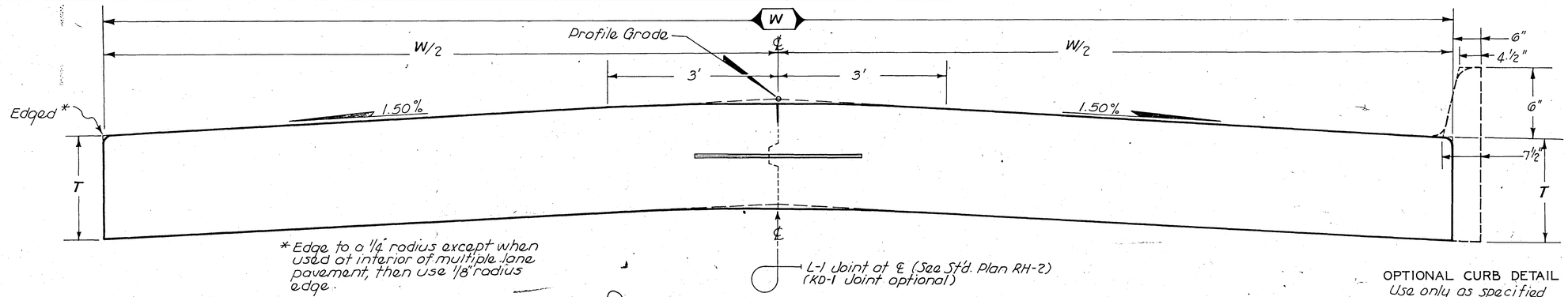
DEPUTY CHIEF ENGINEER DATE

DETAILS OF APPROVED DOWEL SUPPORT CHAIRS

D-1

Des Moines COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		29	47



* Edge to a 1/4" radius except when used at interior of multiple lane pavement, then use 1/8" radius edge.

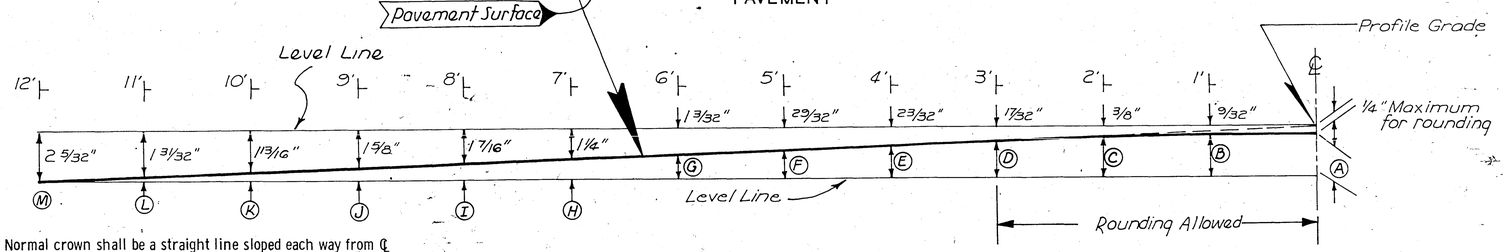
TYPICAL CROSS SECTION
PAVEMENT

PER STATION
DESIGN VALUES FOR
OPTIONAL 6" CURB

	SECTION AREA	CONCRETE VOLUME	SURFACE AREA
	Sq. Ft.	Cu. Yds.	Sq. Yds.
T = 6"	0.5000	1.852	5.5556
T = 7"	0.5416	2.006	5.5556
T = 8"	0.5833	2.160	5.5556
T = 9"	0.6250	2.315	5.5556
T = 10"	0.6650	2.468	5.5556

OPTIONAL CURB DETAIL
Use only as specified on detail plans.

CROWN DIMENSIONS		
Point Loc.	Pav't. Width 22'	24'
Ⓐ	1 23/32"	1 29/32"
Ⓑ	1 11/16"	1 7/8"
Ⓒ	1 19/32"	1 25/32"
Ⓓ	1 7/16"	1 5/8"
Ⓔ	1 1/4"	1 7/16"
Ⓕ	1 1/16"	1 1/4"
Ⓖ	7/8"	1 1/16"
Ⓗ	23/32"	29/32"
Ⓘ	17/32"	23/32"
Ⓙ	11/32"	17/32"
Ⓚ	5/32"	11/32"
Ⓛ	0	3/16"
Ⓜ	—	0



Normal crown shall be a straight line sloped each way from ℄ profile grade at the rate of 0.015 ft. per ft. Rounding to a maximum depth of 1/4" below profile grade will be allowed as indicated. This crown may be varied through superelevated curves (See St'd. Road Plan RH-), intersection areas where special shaping is required, or other areas specifically authorized by the Engineer.

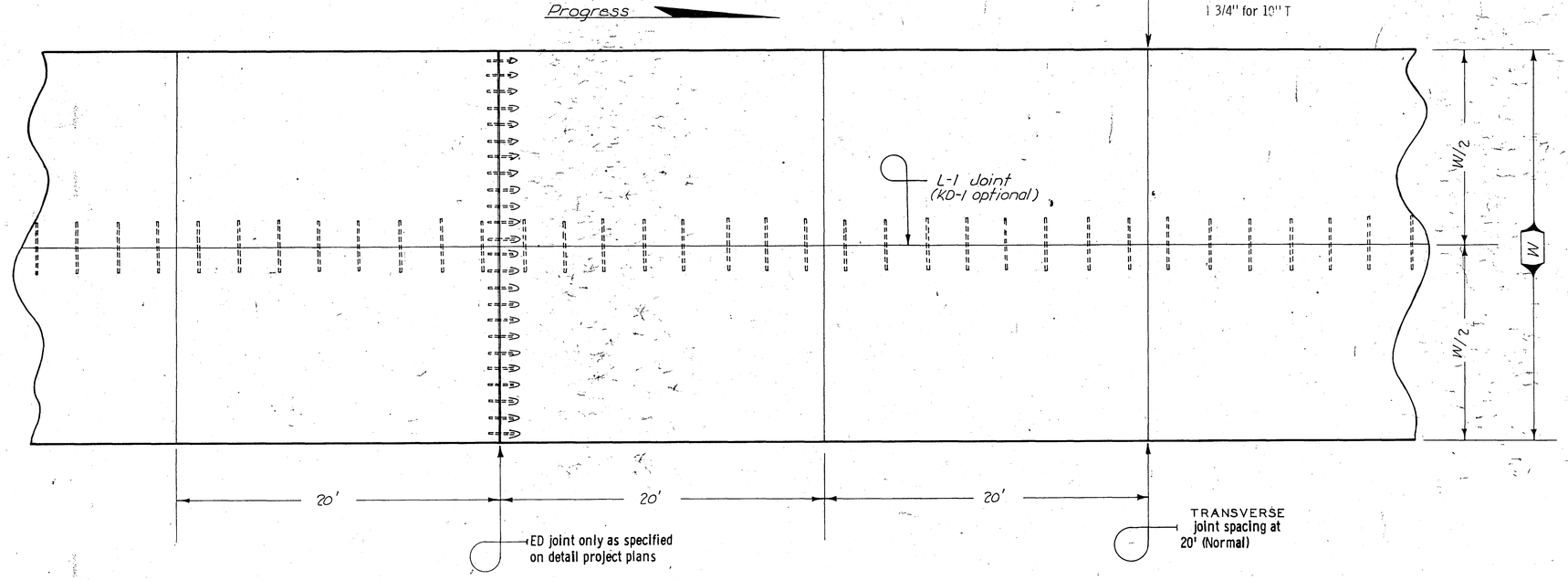
TYPICAL HALF SECTION
NORMAL CROWN

NON REINFORCED P.C. CONCRETE PAVEMENT

PER STATION DESIGN VALUES FOR
PAVEMENT AS DETAILED HEREON

W = 22 ft.						
ITEM	UNIT	T = 6"	T = 7"	T = 8"	T = 9"	T = 10"
SECTION AREA	Sq. Ft.	11.0000	12.8333	14.6667	16.5000	18.3333
CONC. VOLUME	Cu. Yds.	40.7407	47.5309	54.3211	61.1113	67.9015
SURFACE AREA	Sq. Yds.	244.444	244.444	244.444	244.444	244.444

W = 24 ft.						
ITEM	UNIT	T = 6"	T = 7"	T = 8"	T = 9"	T = 10"
SECTION AREA	Sq. Ft.	12.0000	14.0000	16.0000	18.0000	20.0000
CONC. VOLUME	Cu. Yds.	44.4444	51.8519	59.2593	66.6667	74.0741
SURFACE AREA	Sq. Yds.	266.667	266.667	266.667	266.667	266.667



TYPICAL PLAN OF PAVEMENT

NOTE:
Refer to Standard Road Plan RH-2 for details of construction of joints in pavement. Joint layout shall be as indicated hereon except at intersections, bridges, or other locations specifically designated by the Engineer. Transverse joints will be "C" except when "CD" joints are specifically required as a part of detail project plans.

DATE	LAST REVISION
2-6-68	Change Curb Quantities

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN **RH-22**

RECOMMENDED
Jack C. Dellbridge 2-7-68
ROAD ENGINEER DATE
T. P. McLaughlin 2-7-68
DESIGN ENGINEER DATE

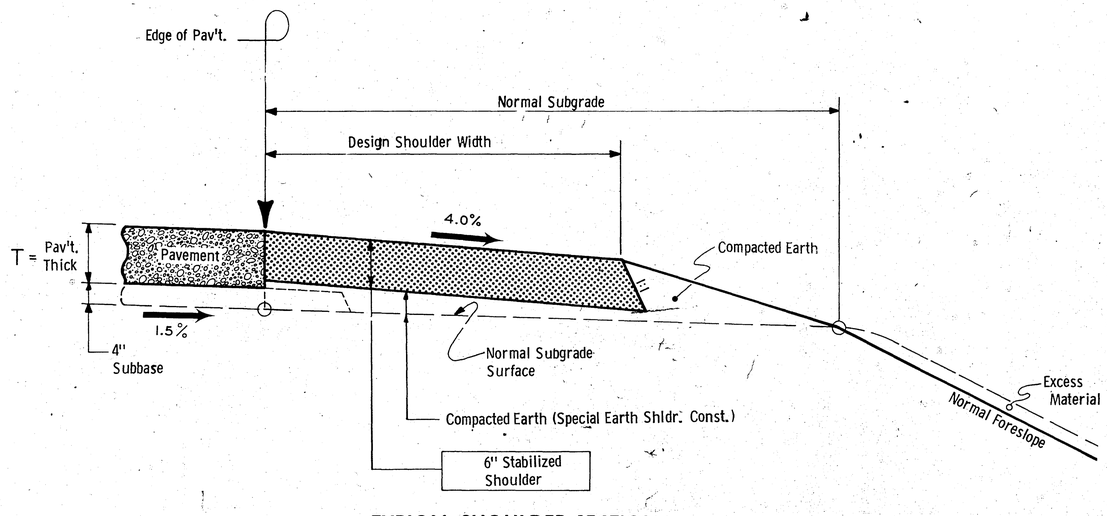
APPROVED
R H Rivers 2/8/68
DEPUTY CHIEF ENGINEER DATE

P.C. CONCRETE PAVEMENT
1.50% CROWN - 22 & 24 FT.

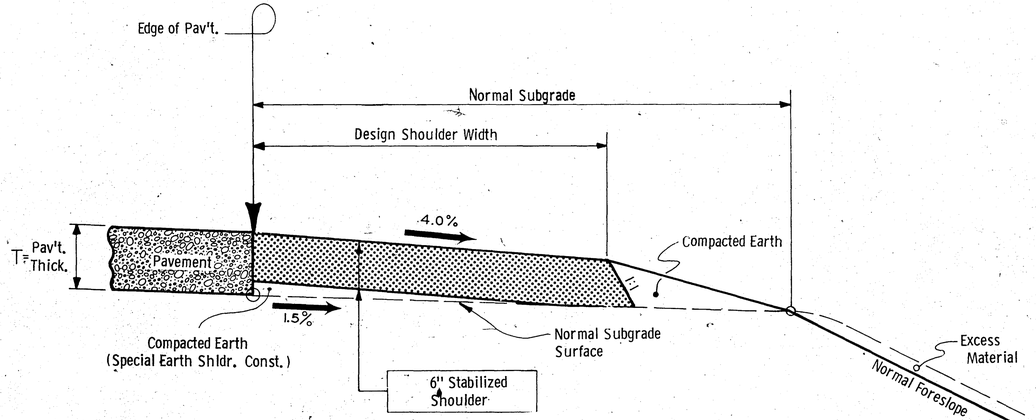
D-1

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		30	47



TYPICAL SHOULDER SECTION
WITH SUBBASE
TYPE 1



TYPICAL SHOULDER SECTION
WITHOUT SUBBASE
TYPE 2

TABLE OF DESIGN QUANTITIES			
	4' SHLDR.	6' SHLDR.	10' SHLDR.
STABILIZED SHLDR. (TONS/STA)	15.41	22.66	37.16

Quantities have been determined on the basis of a design weight of 145 lbs. per cubic foot.

Design rates indicated are for design purposes. These rates may be adjusted at time of construction when so directed by the Engineer.

NOTE:
For details of stabilized shoulders on superelevated curves, refer to Typical Section 2012. Refer to detail project plans and typical cross section for additional information.

FORESLOPES NOTE:

For locations within a project where the design normal foreslope is modified (steepened) to compensate for high fill conditions, subgrade widths and design quantity rates shall remain constant.

NOTE:
For details of stabilized shoulders on superelevated curves, refer to Typical Section 2012. Refer to detail project plan and typical cross section for additional information.

GENERAL NOTES:

Construction of the Stabilized Shoulder shall conform to the requirements of current Iowa State Highway Commission Specifications for the items involved.

Stabilized Shoulder material shall be treated as required by current ISHC Specifications for the type of material specified in detail project plans.

Any Special Shaping of subgrade necessary prior to construction of stabilized Shoulder shall be accomplished as directed by the Engineer. Any material removed due to this special shaping shall be uniformly spread on the foreslopes or otherwise disposed of in the adjacent area.

Natural subgrade prior to placement of stabilized shoulder material shall be adequately compacted and smoothed for proper construction of shoulder.

Special Earth Shoulder construction, including material to be placed beneath the stabilized shoulder as well as the fillet to be placed along the outside edge of shoulder, as indicated, shall be done in accordance with the requirement of current specifications. This work shall not be paid for separately but shall be included with and considered incidental to other work.

The price bid for Stabilized Shoulder Material shall be considered full compensation for complete construction of the shoulder as detailed hereon.

NEW ISSUE / LAST REVISION — DATE: 12-2-68

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RH-37

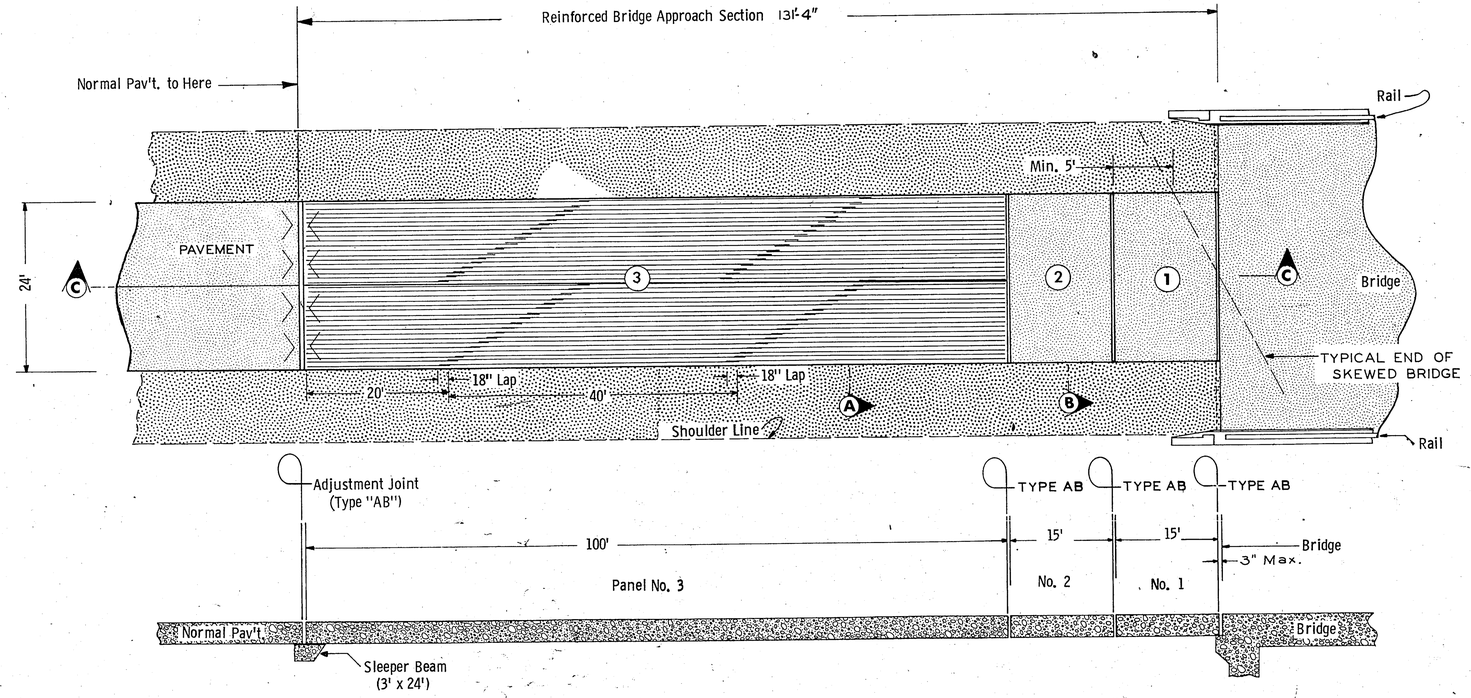
RECOMMENDED
Jack Dalbridge 11-7-68
ROAD ENGINEER DATE
H.O. Brunkhorst 11-7-68
DESIGN ENGINEER DATE

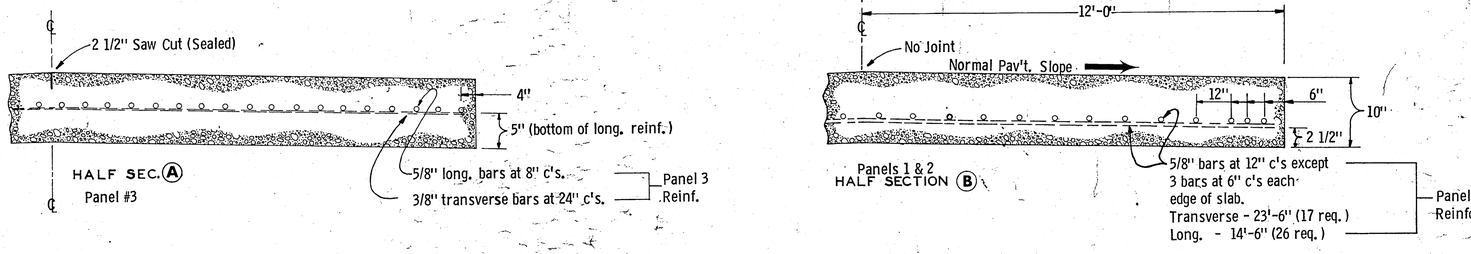
APPROVED
R.H. Rowen 12/10/68
DEPUTY CHIEF ENGINEER DATE

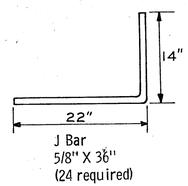
STABILIZED SHOULDERS
ADJACENT TO P.C. CONC. PAVEMENTS

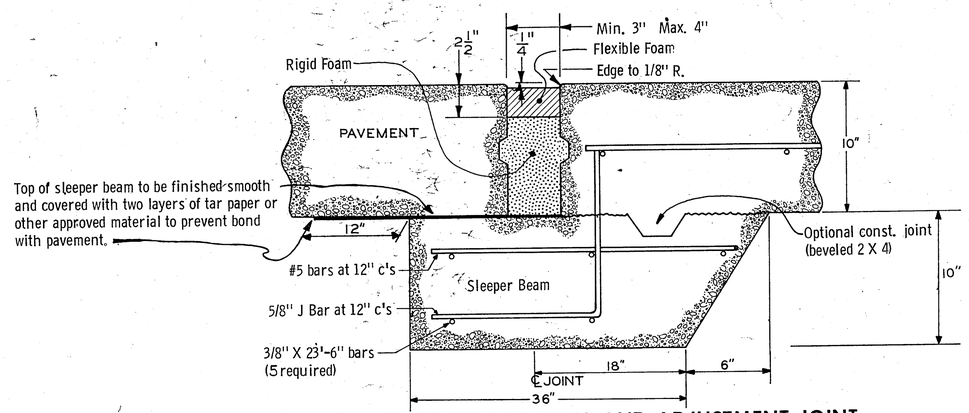
Des Moines COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		31	47



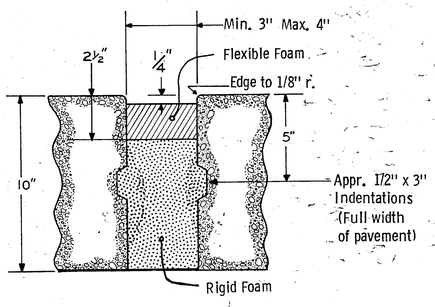






DETAIL OF SLEEPER BEAM AND ADJUSTMENT JOINT

Type A B joint is similar except omit sleeper beam



DETAIL OF FOAM PLACEMENT TYPE 'AB' COMPRESSION JOINT

GENERAL NOTES FOR BRIDGE APPROACH SECTION

Details indicated hereon are typical and shall be used for all situations where directly applicable. In the case of a multiple lane bridge approach or other modification, the details and methods of construction shall be similar to those outlined hereon, as well as conforming to any plan for construction of individual bridge approaches which may be a part of detail project plans.

℄ length of skewed bridge approach section (Panel No. 1) shall be a minimum of 15 ft. Short side length Panel No. 1 shall be a minimum of 5 ft.

The excavation for the sleeper beam shall be made in compacted subgrade to the minimum neat lines indicated hereon. Any sloughed off earth shall be removed and replaced with concrete. The use of forms for the sides of the sleeper beam will not be allowed. Forming of the ends will be permitted, provided such forms are placed outside the limits of the approach section pavement.

All reinforcing shall be of a size as described hereon, placed as indicated and held in proper position by means of approved bar supports placed beneath each transverse bar, unless otherwise approved by the Engineer.

The layout shown is for 40 ft. longitudinal reinforcing bars, with 18 inch laps in a 20 ft. staggered lap pattern. Other bar lengths may be used if necessary. Minimum bar length shall be 10 ft. Only No. 5 bars at 8 inch centers may be used.

The concrete used in the bridge approach section shall be pavement mix, and placed in accordance with current specifications for concrete paving, including vibration.

Construction of the 100 ft. section (Panel No. 3) shall conform to current Iowa State Highway Commission Standard Specifications for the construction of continuous reinforced concrete pavement (587) insofar as applicable with the following exception: The yield point may be 50,000 p. s. i. in lieu of the 60,000 p. s. i. specified for longitudinal reinforcing.

The Type AB Joint and Adjustment Joint shall be "foamed in place" joints, constructed by methods approved by the Engineer and in conformance with Iowa State Highway Commission Supplemental Specification No. 635 insofar as applicable. Any variation from procedures outlined in 635 shall be approved by the Engineer before any such work is begun. The particular requirements of 635 regarding sawing of the pavement, traffic accommodations (pouring joint 1/2 pavement width at a time), method of measurement, and basis of payment shall not apply to this work. The completed joint shall be essentially as indicated hereon with the compression material (foam) straight and perpendicular to the pavement surface and the line of the joint straight and perpendicular to ℄ of pavement - excepting only the end joint at a skewed bridge.

The contractor shall scribe into the fresh concrete on both sides of the "Adjustment Joint" as indicated, a series of four V's. The V's shall be approximately 1/2 inch deep with the point of the V about 1 ft. from the joint. These V's shall be for the purpose of identifying the proper joint to be sawed out for future maintenance purposes.

Refer to other appropriate Standard Road Plans for details of construction of "Bridge End Drains" for various types of bridges and shoulders, some of which may require minor modification of the "Reinforced Bridge Approach Section" as shown hereon.

SPECIAL NOTE:

The contractor shall submit a proposed plan of construction for the complete bridge approach section to the Engineer for approval. Such approval, including methods and materials for joint construction, must be received before the contractor begins work on the approach section.

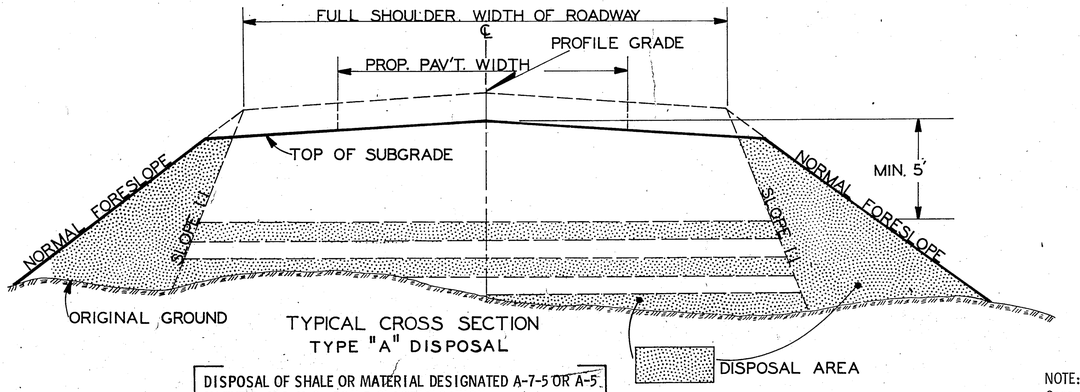
Price bid per sq. yd. for Reinforced Concrete Bridge Approach Section shall be considered full compensation for furnishing all material and labor and constructing the Bridge Approach Section as described hereon.

LAST REVISION	DATE	IOWA HIGHWAY COMMISSION	
Change Spec. No. in Gen. Note	6-3-68	STANDARD ROAD PLAN	RK-8
		RECOMMENDED: Jack C. Detbridge, ROAD ENGINEER	11-13-67 DATE
		R. P. McLaughlin, DESIGN ENGINEER	11-13-67 DATE
		APPROVED: R. A. Owen, DEPUTY CHIEF ENGINEER	11/15/67 DATE

REINFORCED CONCRETE BRIDGE APPROACH SECTION

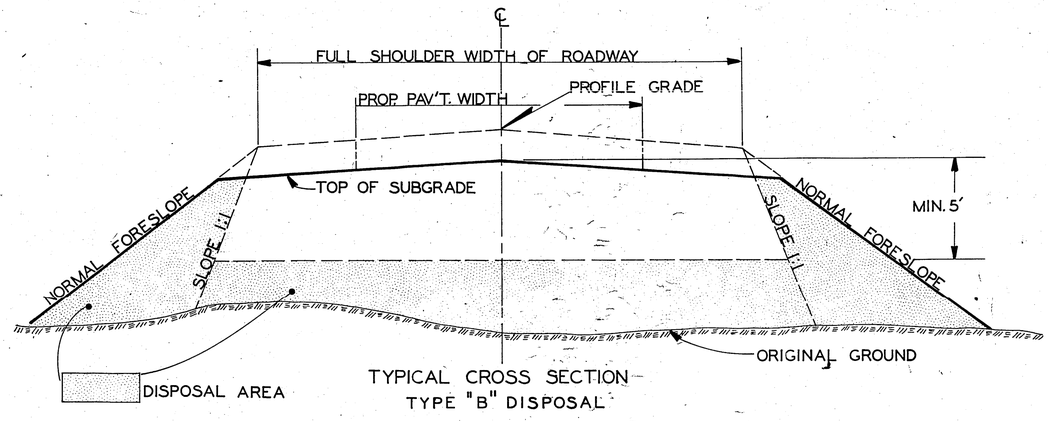
DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		32	47



TYPICAL CROSS SECTION
TYPE "A" DISPOSAL

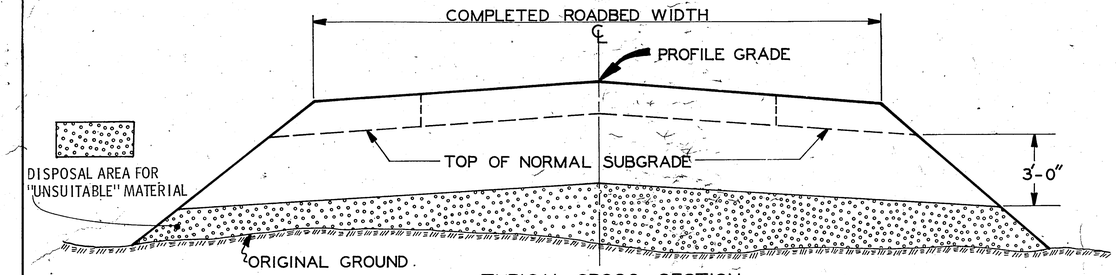
DISPOSAL OF SHALE OR MATERIAL DESIGNATED A-7-5 OR A-5 IN THE A.A.S.H.O. SOILS CLASSIFICATION.



TYPICAL CROSS SECTION
TYPE "B" DISPOSAL

DISPOSAL OF DESIGNATED MATERIAL SUCH AS CLAY PAN, GUMBO, RESIDUAL SHALEY CLAY OR MATERIAL CLASSIFIED AS A7-6 (19-20) IN THE AASHO SOILS CLASSIFICATION.

REFER TO COLUMN C-5 ON EARTH WORK TABULATION



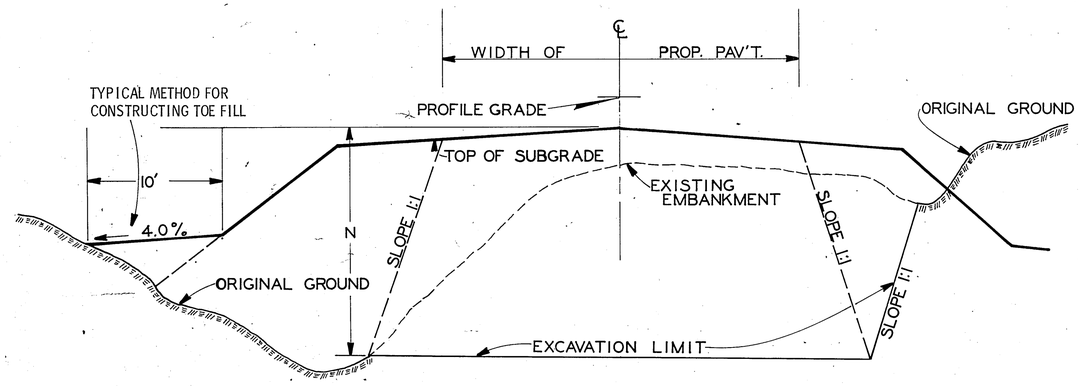
TYPICAL CROSS SECTION
TYPE "C" DISPOSAL

REFER TO QUANTITY LISTING AND BALANCES FOR DETAILS OF DISTRIBUTION OF "UNSUITABLE" MATERIAL.

DISPOSAL OF SOILS DESIGNATED AS UNSUITABLE TOPSOIL OR CLASSIFIED BY COLOR AS BLACK OR BROWNISH BLACK IN THE AASHO SOILS CLASSIFICATION A-4, A-6 OR A7-6 UNSUITABLE FOR USE IN CONSTRUCTION OF THE UPPER 3 FEET OF ANY EMBANKMENT.

REFER TO COLUMN C-3 ON EARTH WORK TABULATION.

NOTE:
Care should be exercised in setting toe fills so that proper drainage in side ditches is maintained. Material listed as "unsuitable" in the tabulation of earthwork quantities shall be disposed of as detailed hereon for the particular soil types identified. Refer also to the project cross sections and plan soil survey sheets for additional information.

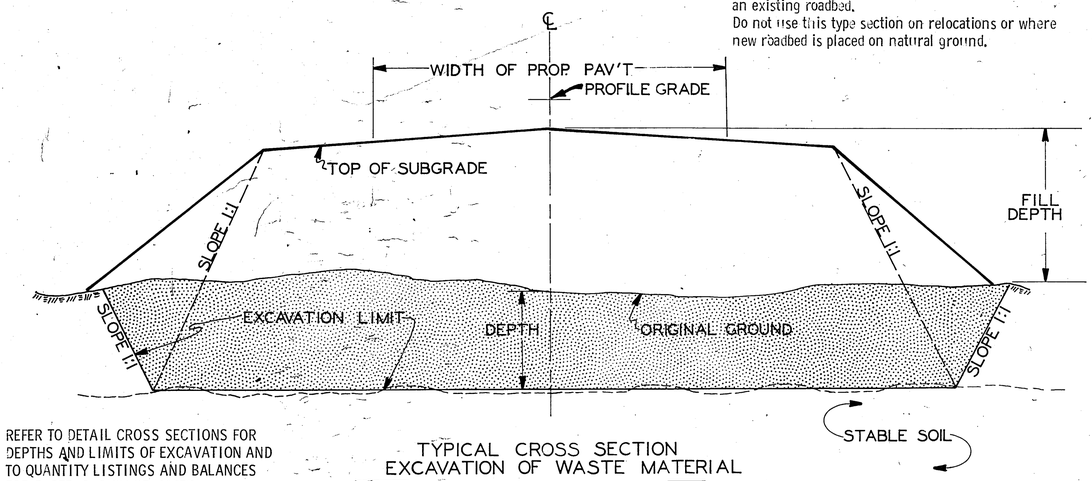


TYPICAL CROSS SECTION
REBUILDING EMBANKMENTS
(PLOWING & SHAPING)

NOTE:
Material excavated in rebuilding embankments may be redesposited in the same area or any adjacent embankment approved by the engineer. No payment for overhaul will be allowed on material excavated in "Rebuilding Embankments".

N MAXIMUM = 5'-0"

Excavate from grade down on 1:1 slope to natural ground or to five feet below grade whichever is less. This will insure that new pavement will rest completely on uniformly stable bearing soil.
Rebuild embankments only when new roadbed overlaps an existing roadbed.
Do not use this type section on relocations or where new roadbed is placed on natural ground.



REFER TO DETAIL CROSS SECTIONS FOR DEPTHS AND LIMITS OF EXCAVATION AND TO QUANTITY LISTINGS AND BALANCES FOR DISTRIBUTION OF MATERIAL.

TYPICAL CROSS SECTION
EXCAVATION OF WASTE MATERIAL

PEAT & MUCK OR OTHER MATERIAL WHICH MUST BE WASTED AND IN NO CASE USED IN CONSTRUCTION OF EMBANKMENT.

IOWA HIGHWAY COMMISSION
STANDARD ROAD PLAN RL-1

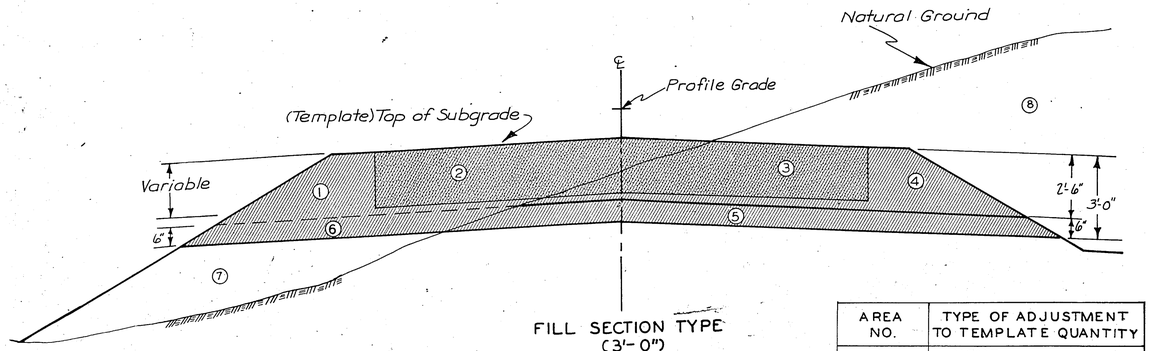
DATE: 3-31-67
LAST REVISION: MOD. DISPOSAL TYPES

RECOMMENDED	Jack Delbridge	4/5/67
	ROAD ENGINEER	DATE
	T. P. McLaughlin	4/6/67
	DESIGN ENGINEER	DATE
APPROVED	R. H. Rowen	4/7/67
	DEPUTY CHIEF ENGINEER	DATE

DETAILS OF EMBANKMENTS
(DISPOSAL OF UNSUITABLE MATERIAL)

Des Moines COUNTY
PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		33	97



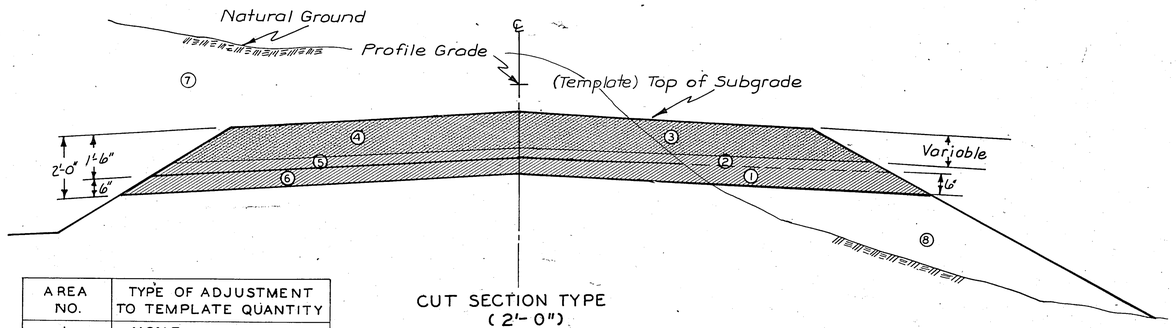
FILL SECTION TYPE
(3'-0")

WITH TRENCH TREATMENT

TREATMENT LESS THAN THICKNESS OF MOISTURE & DENSITY CONTROL

AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	- FILL
3	+ CUT
4	+ CUT, + FILL & SHRINK
5	+ F (SHRINKAGE ONLY)
6	NONE

TYPE WORK	AREA NO.
EXCAVATION	8,4,3
EMBANKMENT	7
M&D EMBANKMENT (90 %	6
SCARIFY WITH M&D EMB. (90 %)	5
M & D EMBANKMENT (95 %)	1,2,3,4
SUBGRADE TREATMENT	2,3
PAY AREA M&D EMBANKMENT	1,2,3,4,5,6



CUT SECTION TYPE
(2'-0")

WITH FULL WIDTH TREATMENT

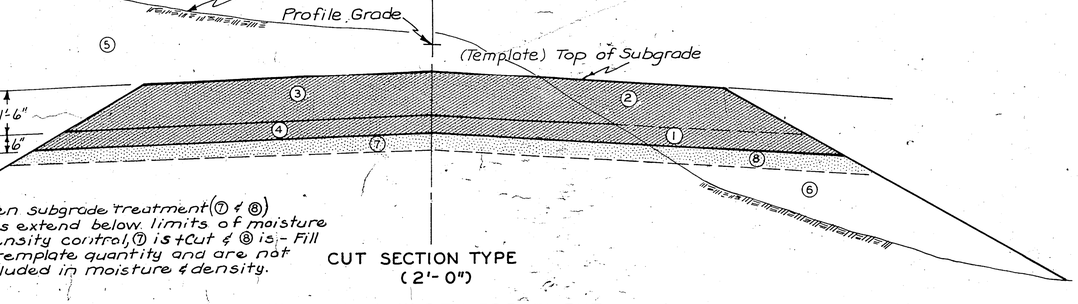
TREATMENT LESS THAN THICKNESS OF MOISTURE & DENSITY CONTROL

AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	- FILL
4	+ CUT
5	+ CUT, + FILL & SHRINK
6	+ F (SHRINKAGE ONLY)

TYPE WORK	AREA NO.
EXCAVATION	7,4,5
EMBANKMENT	8
M&D EMBANKMENT (90 %	1
SCARIFY WITH M&D EMB. (90%)	6
M & D EMBANKMENT (95 %)	2,3,4,5
SUBGRADE TREATMENT	3,4
PAY AREA M&D EMBANKMENT	1,2,3,4,5,6

General Information regarding "Construction of Embankment with Moisture and Density Control

1. Fill Section type 3'0" in depth shall normally be used when profile grade is above existing ground at ℄ roadway.
2. Cut Section type 2'0" in depth shall normally be used when profile grade is below existing ground at ℄ roadway.
3. Moisture and Density Control shall be at a uniform depth for the complete width of a roadway.
4. Minimum length for use of either type shall be 50 ft.



* Note:
When subgrade treatment (⑦ & ⑧) does extend below limits of moisture & density control, ⑦ is +Cut & ⑧ is - Fill to template quantity and are not included in moisture & density.

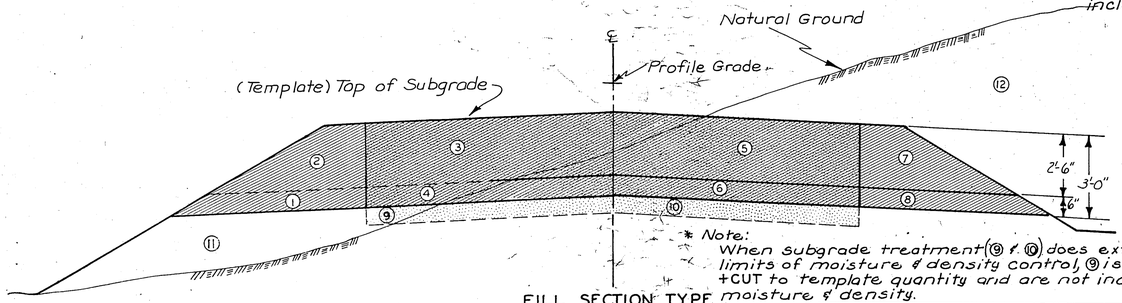
CUT SECTION TYPE
(2'-0")

WITH FULL WIDTH TREATMENT

TREATMENT SAME THICKNESS OR MORE THAN THICKNESS OF MOISTURE & DENSITY CONTROL

AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	- FILL
2	- FILL
3	+ CUT
4	+ CUT

TYPE WORK	AREA NO.
EXCAVATION	3,4,5
EMBANKMENT	6
M&D EMBANKMENT (90 %	1,4
M & D EMBANKMENT (95 %)	2,3
SUBGRADE TREATMENT *	1,2,3,4
PAY AREA M&D EMBANKMENT	1,2,3,4



* Note:
When subgrade treatment (⑨ & ⑩) does extend below limits of moisture & density control, ⑨ is - FILL & ⑩ is +CUT to template quantity and are not included in moisture & density.

FILL SECTION TYPE
(3'-0")

WITH TRENCH TREATMENT

TREATMENT SAME THICKNESS OR MORE THAN THICKNESS OF MOISTURE & DENSITY CONTROL

AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	- FILL
4	- FILL
5	+ CUT
6	+ CUT
7	+ CUT, + FILL & SHRINK
8	+ F (SHRINKAGE ONLY)

TYPE WORK	AREA NO.
EXCAVATION	10,7,5,6,12
EMBANKMENT	11
M&D EMBANKMENT (90 %)	1,4,6
SCARIFY WITH M&D EMB. (90 %)	8
M & D EMBANKMENT (95 %)	2,3,5,7
SUBGRADE TREATMENT *	3,4,5,6
PAY AREA M&D EMBANKMENT	1,2,3,4,5,6,7,8

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RL-2

DATE	LAST REVISION
11-16-61	Latest Issue

RECOMMENDED — ROAD ENGINEER — DATE 11-16-61

DESIGN ENGINEER — DATE

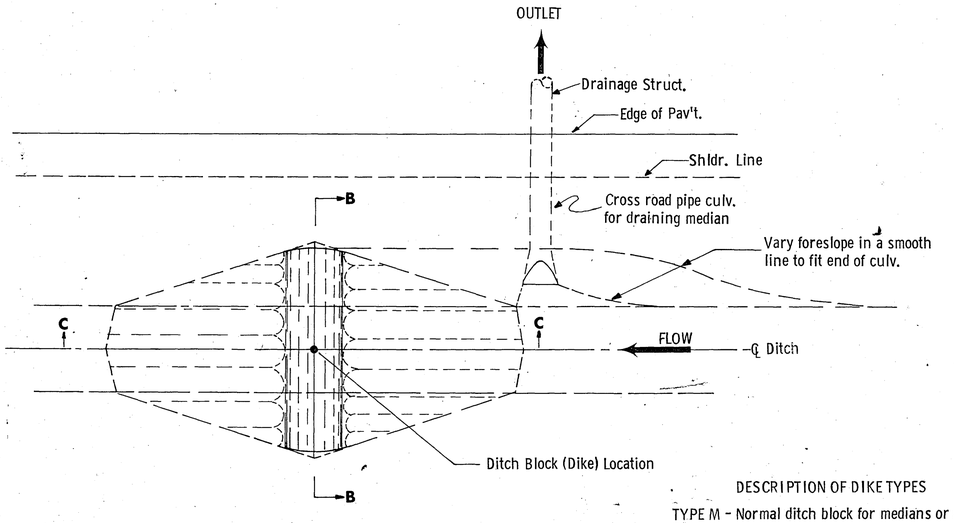
APPROVED — DEPUTY CHIEF ENGINEER — DATE

TYPICAL CONSTRUCTION OF EMBANKMENT WITH MOISTURE & DENSITY CONTROL

DES MOINES COUNTY

PROJECT NUMBER F-61-2(3)--20-23

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		34	47



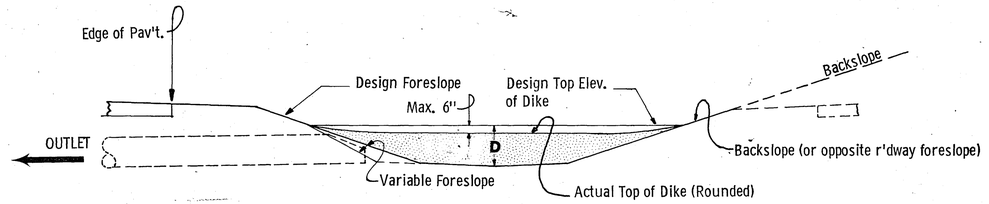
TYPICAL PLAN FOR DITCH BLOCK (DIKE)
TYPE M & G

DESCRIPTION OF DIKE TYPES

TYPE M - Normal ditch block for medians or roadway side ditches.

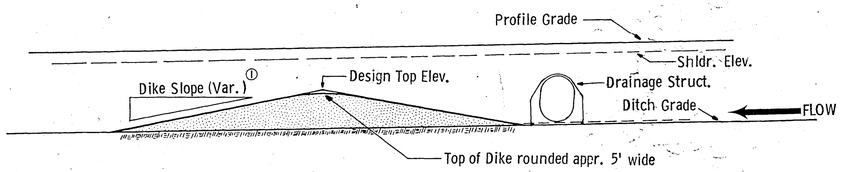
TYPE G - Ditch block using established ditch grades. For median or side ditches.

TYPE F - Dike for letdowns or other structures away from roadway area. Refer to project plans for details.



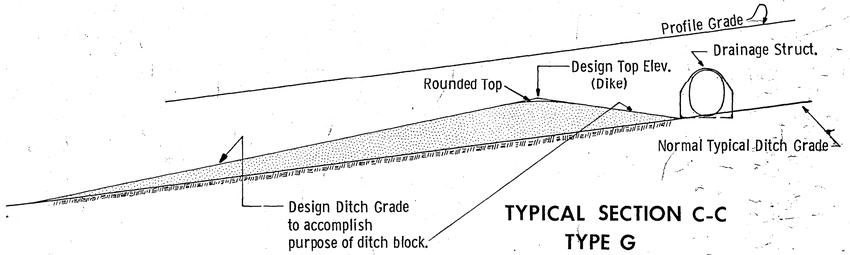
TYPICAL SECTION B-B
TYPE M & G

For medians Min. D=18" Max. D=24"
For side ditches Min. D=18" Max. D=36"
See tabulation of Drainage Structures for top elev. of dikes.
(Use Min. D's unless otherwise specified)

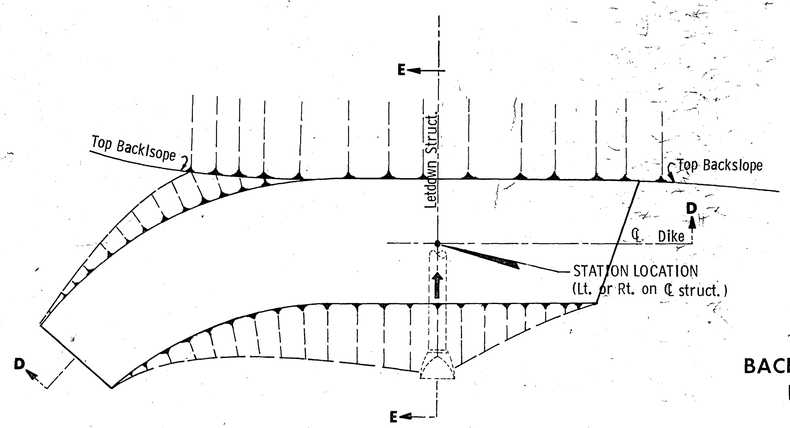


① Dike slope may vary. Design slope shall be 8:1 Minimum actual slope shall be 12:1, Maximum actual slope shall be 8:1.

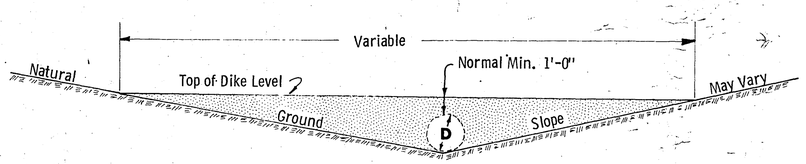
TYPICAL SECTION C-C
TYPE M



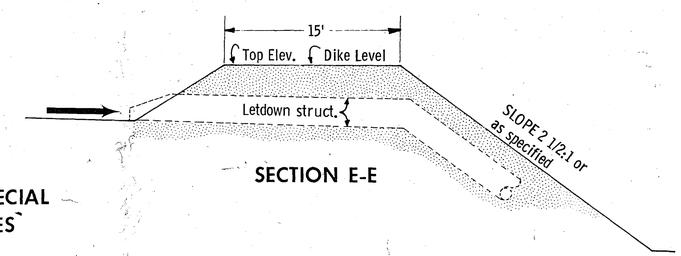
TYPICAL SECTION C-C
TYPE G



TYPE F
BACKSLOPE OR SPECIAL LETDOWN DIKES



SECTION D-D



SECTION E-E

GENERAL NOTES FOR DIKES

Dikes of the Types indicated hereon shall be constructed essentially as shown. Some variation will be allowed to adapt to local conditions when necessary.

Type "F" dike for letdown structures may vary in length and plan in different locations. Ends of dikes shall ordinarily tie into natural ground at the elevation of top of dike.

Necessary material for construction of dikes is included in "Estimate of Quantities" for excavation. Price bid for excavation shall be full compensation for construction of dikes as indicated hereon and in accordance with current Standard Specifications for roadway embankment.

Refer to detail road plans and tabulation of drainage structures for exact information on location, top elevation, shape, or any variation from this standard for dikes.

CHANGE DIKE DESIGN — DATE 10-13-67

LAST REVISION

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RL-4

RECOMMENDED
Jack C. Detlefsen 10-11-67
ROAD ENGINEER DATE
A. P. McLaughlin 10-11-67
DESIGN ENGINEER DATE

APPROVED
K. Owen 10/2/67
DEPUTY CHIEF ENGINEER DATE

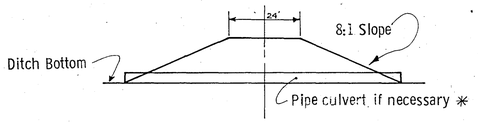
DITCH BLOCKS AND DIKES

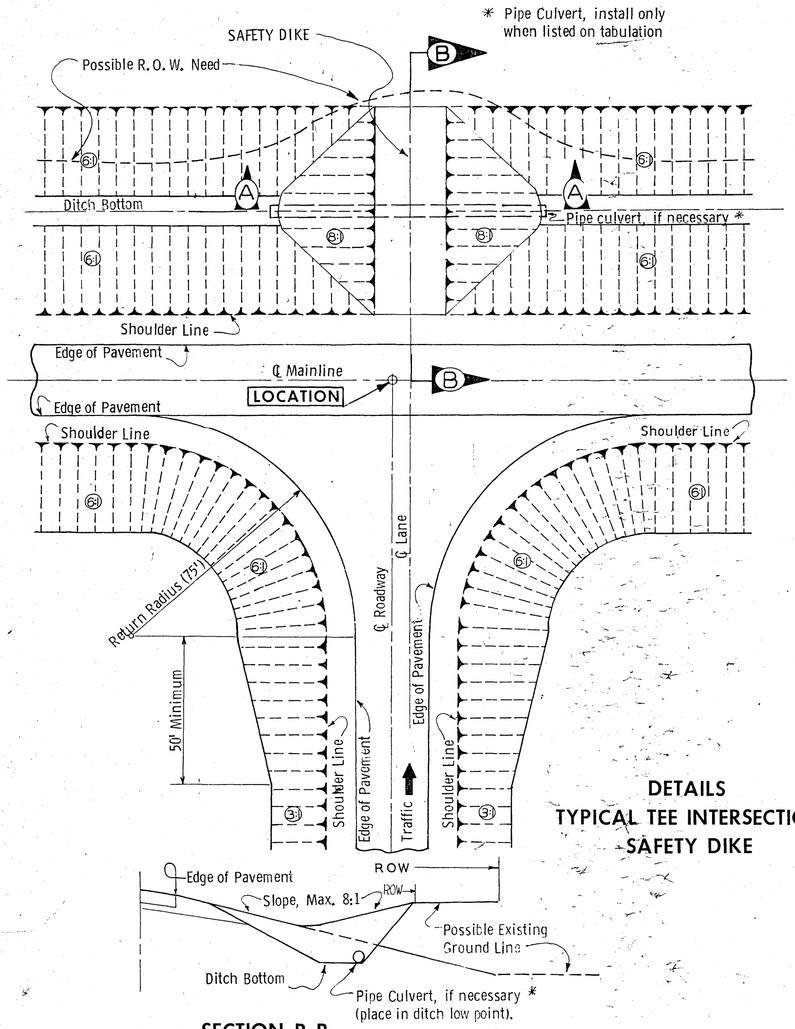
D-1

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F-61-2(3)--20-29	IOWA	5		35	47

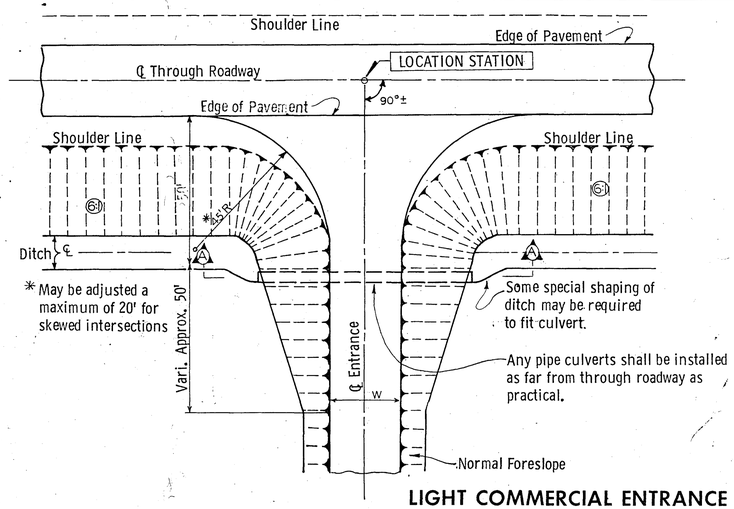
SAFETY DIKE SECTION A-A



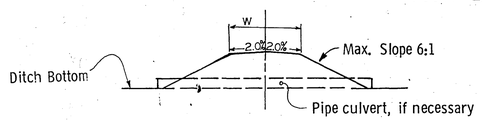


DETAILS TYPICAL TEE INTERSECTION SAFETY DIKE

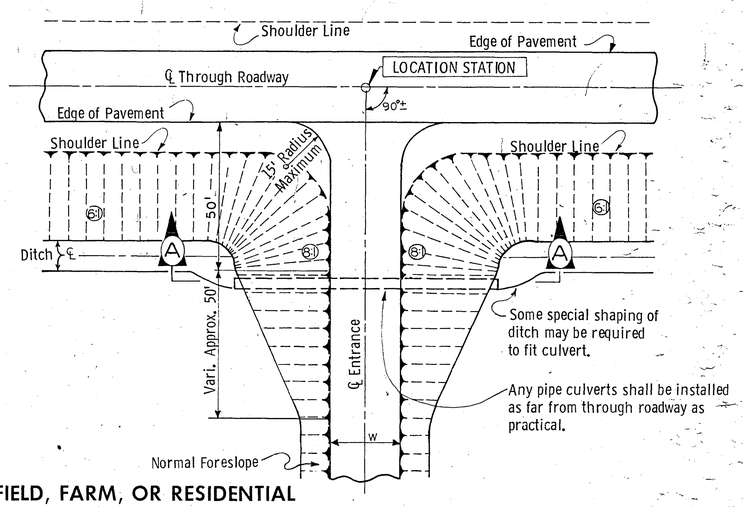
SECTION B-B



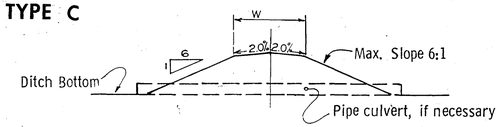
LIGHT COMMERCIAL ENTRANCE TYPE B



SECTION A-A



FIELD, FARM, OR RESIDENTIAL ENTRANCE TYPE C



SECTION A-A

GENERAL NOTES:
Construction of entrance facilities and safety dikes as indicated in project plans and as detailed hereon shall be considered incidental to construction of roadway and the cost shall be included with the price bid for appropriate earthwork for the project.

Safety Dike: The intent of the safety dike shall be to provide an area where an out-of-control vehicle passing through the "tee" intersection could be directed to normal terrain without undue damage to the vehicle. Surface and side slopes shall be smoothly shaped to contours which would facilitate the intent of the dikes.

Entrances: Side slopes of entrances shall be constructed with slopes of at least 6:1 and a desirable slope of 8:1 for distances from the through roadway as indicated. Surface and slopes of entrances shall be smoothly shaped and rounded where practical to provide minimal hazard to an out-of-control vehicle from the through roadway.

Refer to tabular listings and detail project plans for exact locations, dimensions, and other data for individual entrances and safety dikes.

Details shown hereon are typical and shall be modified appropriately at the direction of the Engineer to fit site conditions of skewed angle intersections and other variations.

MODIFY TITLES — DATE 7-2-68

LAST REVISION

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RL-7

RECOMMENDED: Jack C. Detbridge 6-6-68 — ROAD ENGINEER — DATE

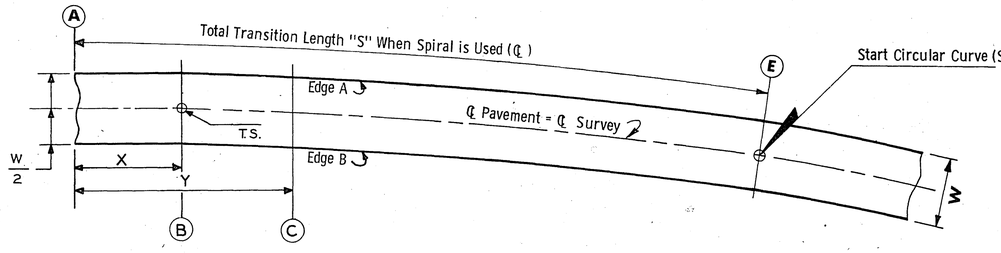
T. R. McLaughlin 6-6- — DESIGN ENGINEER — DATE

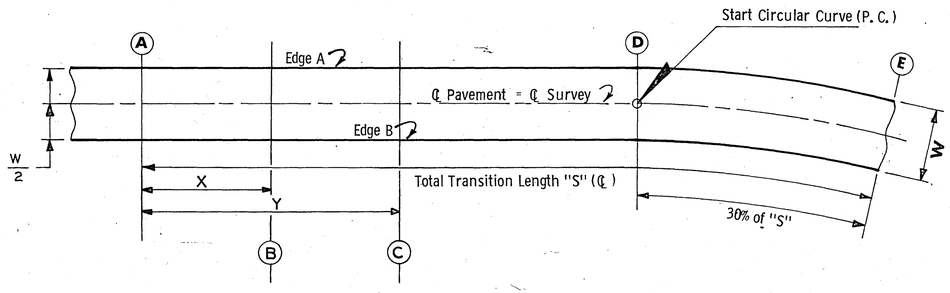
APPROVED — DEPUTY CHIEF ENGINEER — DATE

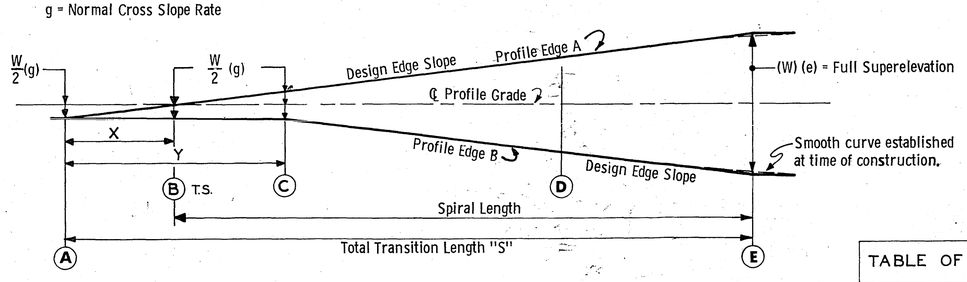
DETAILS OF TYPICAL ENTRANCES AND SAFETY DIKE

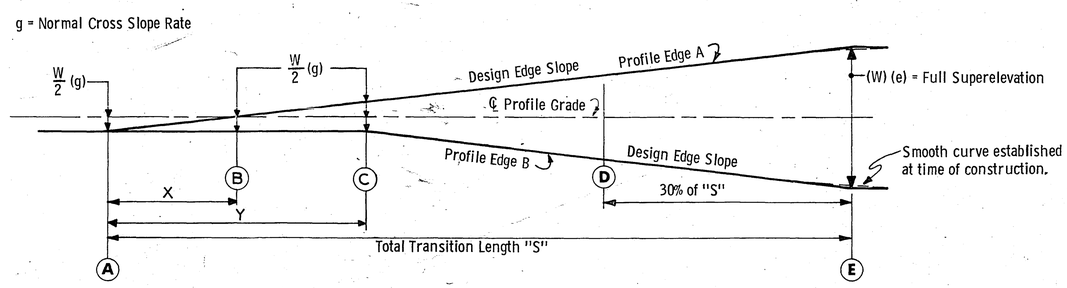
DES MOINES COUNTY

PROJECT NUMBER F-61-2(3)--20-29









TRANSITION DETAILS WHEN SPIRAL IS USED

PAVEMENT CROWN SHALL BE REMOVED WITHIN DISTANCE "Y"

TRANSITION DETAILS WHEN SPIRAL IS NOT USED

PAVEMENT CROWN SHALL BE REMOVED WITHIN DISTANCE "Y"

TABLE OF DESIGN DATA

DESIGN SPEED	DESIGN EDGE SLOPE RATIO	DIMEN. X *
40	1:175	31.5
50	1:200	36.0
60	1:225	40.5
70	1:250	45.0

* FOR CURVES WHERE Y= 2X.

TABLE OF VALUES FOR TRANSITIONS

D	DESIGN SPEED 40 M. P. H. e	S	Y	50 M. P. H. e	S	Y	60 M. P. H. e	S	Y	70 M. P. H. e	S	Y
0° 15'	NC	0	0	NC	0	0	NC	0	0	NC	0	0
0° 30'	NC	0	0	NC	0	0	.015	180	⑤180	.015	210	210⑤
0° 45'	NC	0	0	.015	150	⑤150	.022	180	⑤146	.029	210	143⑤
1° 00'	.015	120	120⑤	.021	150	⑤125	.029	180	⑤123	.038	210④	119⑤
1° 30'	.021	120	100⑤	.030	150②	⑤100	.040	180③	⑤98	.053	220	90
2° 00'	.027	120	86⑤	.038	150②	⑤94	.051	180	81	.065	240	90
2° 30'	.033	120①	75⑤	.046	150	72	.060	200	81	.073	260	90
3° 00'	.038	120①	68⑤	.053	160	72	.067	220	81	.078	280	90
3° 30'	.043	120	63	.058	170	72	.073	240	81	.080	280	90
4° 00'	.047	130	63	.063	190	72	.077	250	81			
5° 00'	.055	150	63	.071	210	72	.080	260	81			
6° 00'	.061	160	63	.077	220	72						
7° 00'	.067	170	63	.079	230	72						
8° 00'	.071	180	63	.080	230	72						
9° 00'	.075	190	63									
10° 00'	.077	190	63									
11° 00'	.079	200	63									
12° 00'	.080	200	63									

① Use a spiral length of 150'

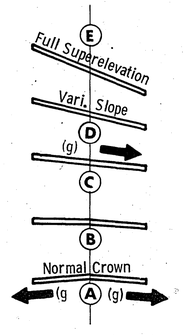
② Use a spiral length of 150'

③ Use a spiral length of 150'

④ Use a spiral length of 200'

⑤ Do not use "X" shown in Table of Design Data; use X = Y/2

NOTE: Interpolate directly for any curves not listed.



AXIS OF ROTATION AT CENTER LINE

MAXIMUM SUPERELEVATION RATE (e) = 0.08'/ft. (8.0%)

GENERAL NOTES:

Unless specifically required otherwise as part of the detail project plans, normal practice shall be to utilize spiral transitions for all curves listed below the heavy line in the table. For all curves where spiral transitions are not used, normal practice shall be to place 70% of the transition on the tangent and 30% of the transition within the curve.

For details of shoulder treatment in area of superelevated curves, refer to appropriate Typical Cross Sections.

Design edge slope is the ratio of the longitudinal slope of one edge of a traffic lane compared to the longitudinal slope of the opposite edge of that lane.

"S" distances in the table are obtained by using the design edge slope and the indicated "e" cross slope in the following formula:

$$S = X + \left(\frac{W}{2}\right)(e)\ \text{(Design Slope)}$$

For convenience, "S" values are rounded up to nearest 10 ft. increment. Minimum "S" values have been established for each design speed.

"X" dimension, shown in table, has been determined using a normal cross slope crown rate (g) of 1.50%. If other rates are used, the "X" distance may be adjusted accordingly.

Where spiral transitions are used, the length of spiral plus the indicated "X" shall be at least equivalent to the indicated "S". Example = for a 2°30' curve, design speed 70 - a 250ft. spiral should be used with a 45 ft. "X" distance for a total of 295 ft. compared to the 260 ft. "S" indicated.

MODIFY TABLE OF TRANSITIONS — LAST REVISION — DATE 4-15-68

IOWA HIGHWAY COMMISSION

STANDARD ROAD PLAN RP-1

RECOMMENDED
Louis C. Dalbridge 3/8/68
ROAD ENGINEER DATE
K. P. McSmith 3/11/68
DESIGN ENGINEER DATE

APPROVED
DEPUTY CHIEF ENGINEER DATE

SUPERELEVATION DETAILS
TWO LANE ROADWAYS

D-1

DES MOINES COUNTY

PROJECT NUMBER F-61-2(3)--20-29

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		37	47