2-149,111 R

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	BRS-9-999(325)	18265	1	1

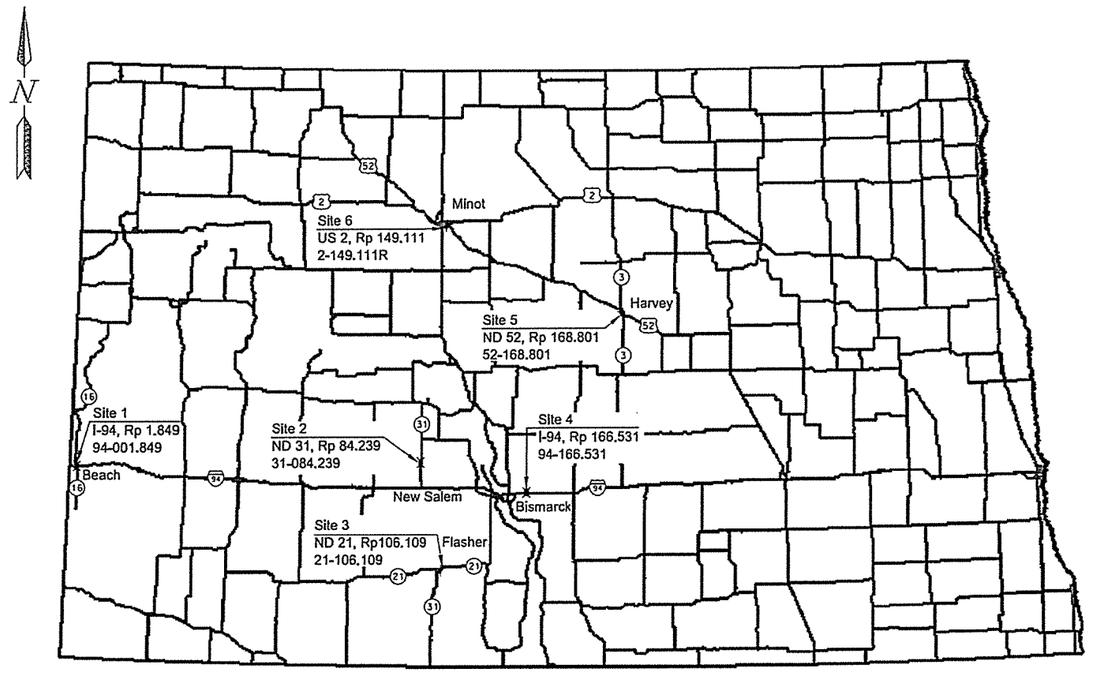
JOB # 21
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

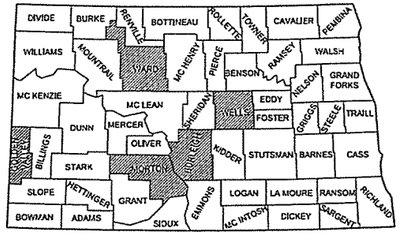
BRS-9-999(325)

GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
BRS-9-999(325)	NA	NA

Burleigh, Golden Valley, Morton, Ward, & Wells
Beach Interchange, Sweet Briar Creek, Louse Creek
Apple Creek Separation, Sheyenne River, NE Jct. U.S. Hwy 2 & 52
Structural Painting





STATE COUNTY MAP

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 12/1/15

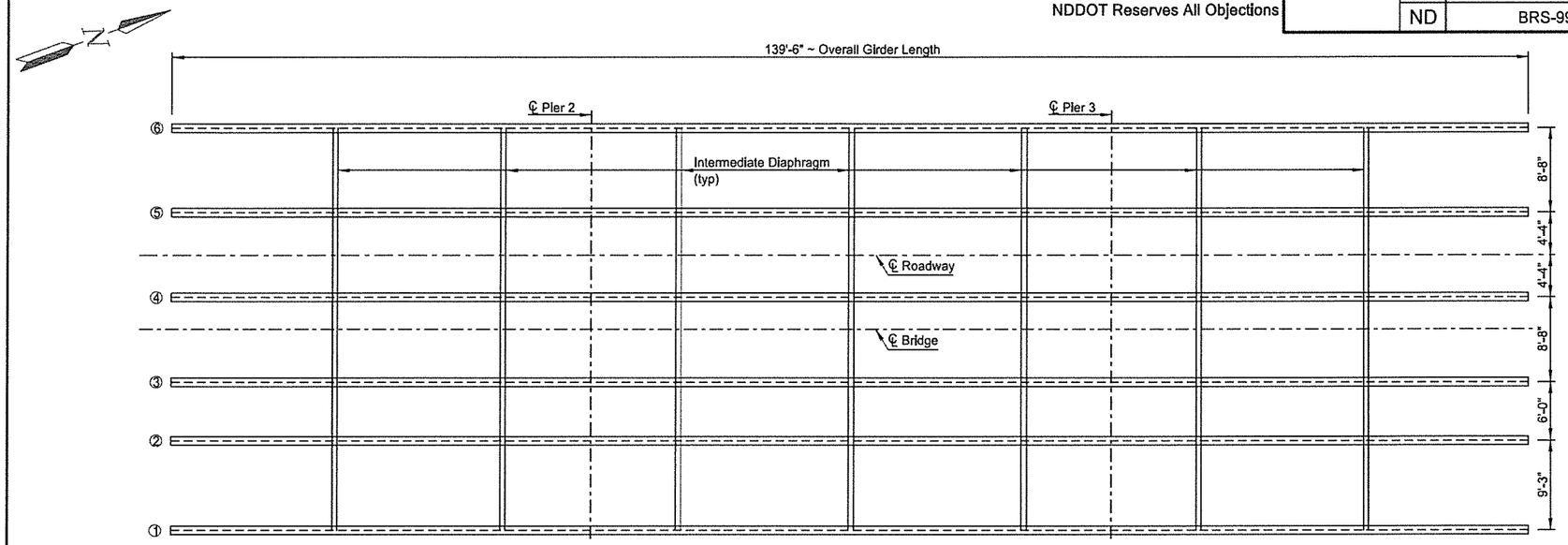
Terrence R. Udland
BRIDGE DIVISION

This document was originally issued and sealed by Terrence R. Udland Registration Number PE- 2674, on 12/1/15 and the original document is stored at the North Dakota Department of Transportation

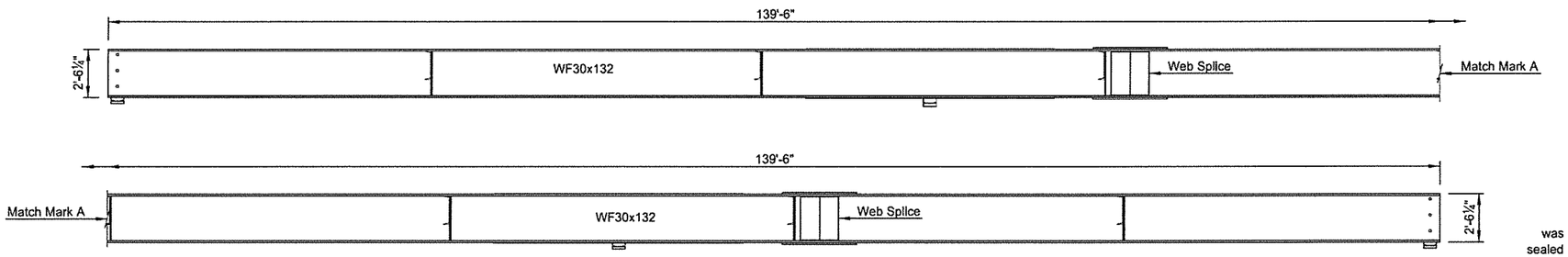
12/1/2015 10:10:55 AM acahln R:\project\90999000.325\bridge\170BR_001_TITLE.dgn

23 U.S.C. 409
NDDOT Reserves All Objections

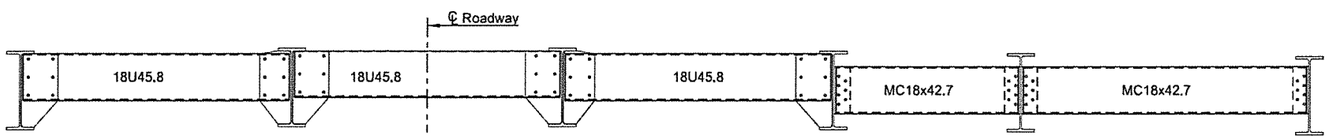
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	BRS-9999(325)	170	7



GIRDER LAYOUT



GIRDER ELEVATION



INTERMEDIATE DIAPHRAGM

This document was originally issued and sealed by Lindsay Bossert, Registration Number PE 8395, on 11/18/2015,and the original document is stored at the North Dakota Department of Transportation

CP RAILWAY
NE OF JCT US 2 & 52E

STRUCTURAL STEEL
PAINTING DETAILS

2-149.111L

FHWA REGION	STATE	PROJECT	SHEET NO.
8	N.D.	F-FG-4-002(10)147	1

DESIGN DATA

Traffic	Average Daily			Est. 30th Max. Hr.
Current Traffic (1980)	3350 Pass.	650 Trucks	4000 Total	600
Traffic Forecast (2000)	6800 Pass.	1200 Trucks	8000 Total	880
Design Speed	70	MPH		
Traffic Classification "M"				
Minimum Sight Distance (Stopping)	850'			

Bridges

Sta.	Clear Rdwy. Width	Design Loading
63+69.6	45'	H.S. 20
92+79.8	40'	H.S. 20
374+33.65	40'	H.S. 20

Mile Point	Stationing
147.00	368+82.6
148.00	4+05.24
149.00	56+85.24
150.00	110+34.44
151.00	163+14.44
152.00	216+14.64
153.00	268+94.64
154.00	321+74.64
155.00	374+54.64
156.00	427+34.64
156.482	452+79.6 Bk.

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

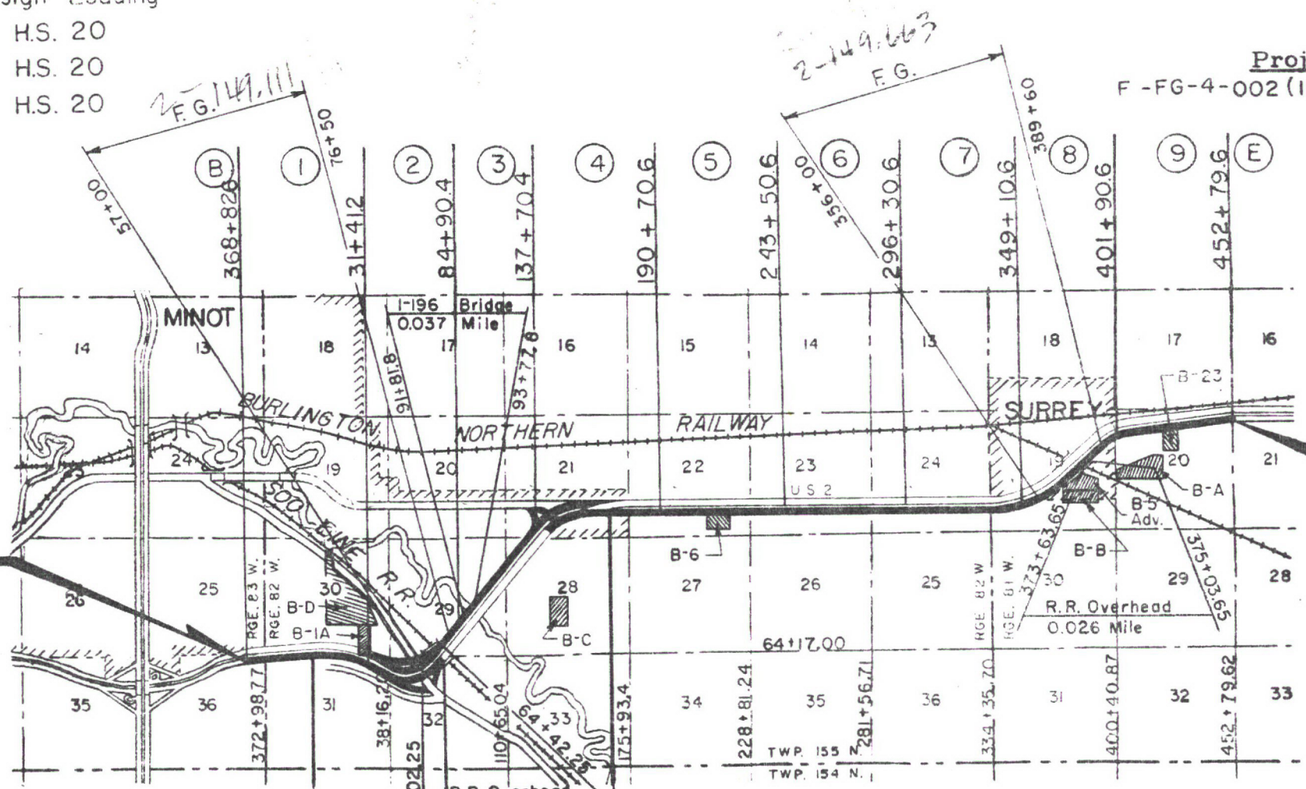
GRADING
IN WARD COUNTY
FEDERAL AID PROJECT F-FG-4-002(10)147
Grading And Structural

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway Department, Oct. 1976, and approved by the Federal Highway Administration on December 17, 1976, and other Contract Provisions submitted herewith.

LENGTH OF PROJECT

Project	Miles-Gross	Miles-Net
F-FG-4-002(10)147	8.963	8.963



BEG. PROJ. F-FG-4-002(10)147
STA. 368+82.6
SEC 36, Twp. 155 N., Rge. 82 W.

END PROJ. F-FG-4-002(10)
STA. 452+79.62
SEC 20, Twp. 155 N., Rge. 81 W.

EQUATION:
390+21.39 Bk. =
0+00 Ahd.

EQUATION:
164+56.23 Bk. =
164+76.43 Ahd.

EQUATION:
62+023 Bk. =
62+71.5 Ahd.

BORROW AREAS

B-5 Adv.
B-6
B-23
B-A
B-B
B-C
B-D
B-1A

LIMITED CONTROL ACCESS

Access Limited to Point Designated Thus.
No access except those shown on plans. Access Points as shown may be shifted slightly during construction if necessary to better serve property owners and traffic.

APPROVED DATE 3-14-80

R. E. Bradley

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

R. E. BRADLEY
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER DATE

FHWA REGION	STATE	FED AID PROJ NO	SHEET NO
8	ND	F-FG-4-002(10)147	7

SUPPLEMENTAL SPECIFICATIONS & SPECIAL PROVISIONS

Grading

No.	Name
SP-103-3	Award & Execution of Contract
SP-107-6 & 7	Legal Relations & Responsibility to Public
SP-108-9 & 19	Prosecution & Progress
SP-109-3	Measurement & Payment
SP-193	Railway Protection Insurance
SP-203-2	Excavation & Embankment (Borrow)
SP-272	Fuel Cost Adjustment
SP-273	Haul Road Maintenance
SP-302-1 & 3	Aggregate Surface Course
SP-406-7 & 8	Hot Bituminous Pavement
SP-726-23	Seeding
SP-743-10	Pavement Marking
SP-746-1	Flagging
SP-762-6	Maintenance & Protection of Traffic
SP-776-2	Temporary Striping
SP	Trainee
SP-870-4	Paints, Oils & Thinners
SP-871-4	Pavement Marking Material

Structural

No.	Name
SP-103-3	Award & Execution of Contract
SP-108-9 & 19	Prosecution & Progress
SP-193	Railway Protection Insurance
SP-208-1	Excavation for Box Culverts & Bridges
SP-299	Repair and Overlay of PCC Bridge Decks
SP-254	Epoxy Coated Reinforcing Steel
SP-610-3	Portland Cement Concrete
SP-616-1	Structural Steel
SP-622-3	Piling
SP-762-6	Maintenance & Protection of Traffic
SP-806-1	Aggregates for Portland Cement Concrete
SP-806-3	Aggregate for Portland Cement Concrete
SP-844-1	Structural Steel
SP-272	Fuel Cost Adjustment
SP-273	Haul Road Maintenance
SP-	Trainee

BASIS OF ESTIMATE

Water for Compaction:

10 Gal./C.Y. of Embankment Quantity
20 Gal./Ton of Aggregate Base Course
(Includes amount for use as a dust palliative.)

Topsoil:

Topsoil shall be removed from the entire construction area 6" deep, excepting roadway where alignment follows existing road or as directed by the Engineer.

Seeding:

Entire right-of-way and construction area in easements except roadbed, undisturbed areas and sodded areas.

Temporary Cover Crop:

75% of Above Areas

Aggregate Base Course-2" Depth:

Cl. 5-1.5 Ton/C.Y. + 25%
Private Drive
Section Line
Median X-ing

Mulching:

M.L. inslopes and ditches
Sta. 40+00 to 97+65

MAXIMUM SIZE OF AGGREGAGE

Description	Type of Aggregate	Max. Size
Aggregate Base Crse., Cl. 5	Crushed	3/4"

FHWA REGION	STATE	FED AID PROJ NO	SHEET NO
8	ND	F-FG-4-002(10)147	11

SUMMARY OF QUANTITIES (STRUCTURAL)

SPEC. NO.	CODE NO.	ITEM DESCRIPTION	UNIT	(F.G. Portion) STA. 63+72.3	(F. Portion) STA. 92+79.8	(F.G. Portion) STA. 374+33.65	GRAND TOTAL
103	0100	Contract Bond	L.Sum				1
*202	0105	Removal of Structure	L.Sum	1			1
202	0290	Removal of Slope Protection	S.Y.	45			45
208	0100	Class I Excavation	C.Y.	200	107	200	507
208	0110	Class II Excavation	C.Y.		167		167
208	0201	Foundation Preparation	Ea.	1	1	1	3
228	0100	Select Backfill	C.Y.	325	213	160	698
602	0130	Class AAE-3 Concrete	C.Y.	282.7	256.6		539
602	1110	Class AE-1 Concrete	C.Y.	188.4	300	180.2	669
602	1130	Class AE-3 Concrete	C.Y.			171.1	171
604	9610	*Prestressed Box Beam-27"	L.F.	822		684	1506
604	9620	Prestressed Box Beam-33" (15@ 64'-4")	L.F.		965		965
612	0115	Reinforcing Steel-Grade 60	LB.	55,085	57,177	32,956	145,218
612	0116	Reinforcing Steel-Grade 60 (Epoxy Coated)	LB	31,292	31,878	21,224	84,394
616	5890	**Structural Steel-A36	L.Sum				1
622	0020	Steel Piling HP 10 x 42	L.F.	4720	900	750	6370
622	0040	Steel P-ling HP 12 x 53	L.F.		1,495	780	2,275
622	*0393	Steel Test Piling HP 10 x 42	L.F.	210	170	170	550
622	1200	Steel Test Piling HP 12 x 53	L.F.		135	150	285
630	0040	15" CSP .064"	L.F.	168		288	456
630	0440	15" CSES .064"	Ea.	2		4	6
630	2375	24" RCP, Cl.II	L.F.		11		11
630	2464	24" RCP Cl. III (60° Elbow)	L.F.	8			8
630	2380	24" RCP Cl.III	L.F.	64			64
630	2470	30" RCP Cl. IV	L.F.	130	130		260
762	3798	Traffic Control	L.S.	1			1
746	0100	Flagging	M. Hrs.	100			100

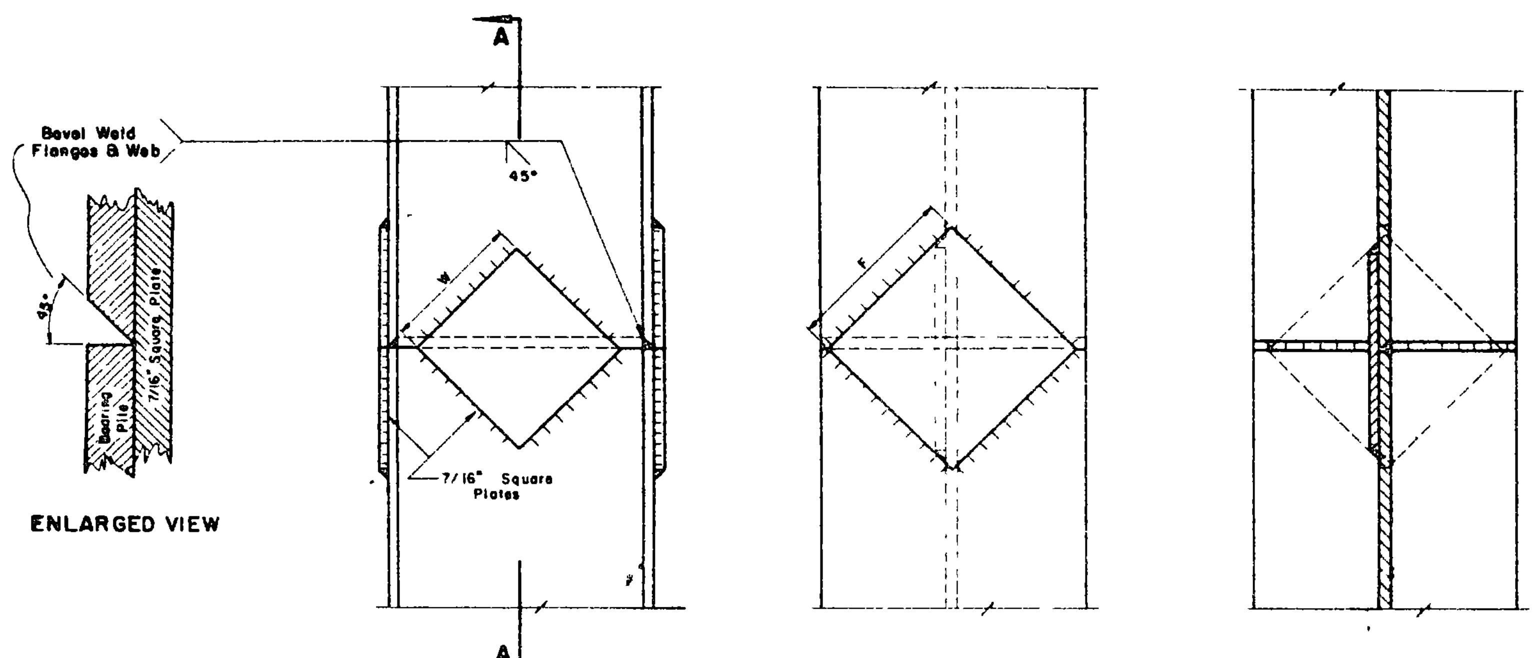
*(12 @ 42'-1", 6 @ 52'-10")-STA. 63+69.6
(10 @ 41'-9 1/8", 5 @ 53'-3½")-STA. 374+33.65

**(45241 Lbs.)-STA. 63+72.3
(2156 Lbs.)-STA. 92+79.8

FHWA REGION	STATE	FED AID PROJ NO	SHEET NO
8	ND	F-FG-4-002(10)147	12

SUMMARY OF QUANTITIES CONT'D (STRUCTURAL)

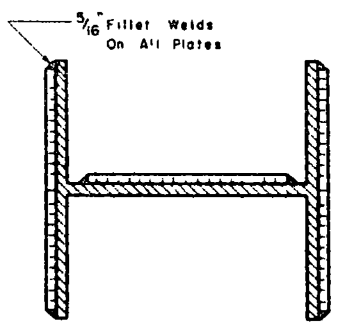
SPEC. NO.	CODE NO.	ITEM DESCRIPTION	UNIT	(F.G. Portion) STA. 63+72.2	(F. Portion) STA. 92+79.8	(F.G. Portion) STA. 374+33.65	GRAND TOTAL
630	3285	30" RCES	Ea.		1		1
702	0130	Loose Rock Riprap	C.Y.		850.2		850
703	0100	Aggregate Cushion	C.Y.		283.4		283
704	0100	Concrete Slope Protection	S.Y.	934		620	1554
705	0100	Mobilization	L.Sum				1
750	0100	Linseed Oil Treatment	Gal.	39	35	25	99
752	0100	Bridge Approach Drains	Ea.	2		4	6
756	0100	Field Laboratory-Type A	L.Sum				1
900	3000	Bridge Bench Marks	Set	1	1	1	3
900	9700	Class I Overlay	S.Y.	700			700
900	9701	Class II Overlay	S.Y.	50			50
900	9702	Class III Overlay	S.Y.	25			25
900	8505	Trainee	M.Hrs.	700	600	700	2,000
203	0101	Common Excavation, Type A	C.Y.	2638	20,120	35,783	58,541
203	0108	Topsoil - Borrow Area	C.Y.	11,700	2,300	12,000	26,000
203	0130	Muck Excavation	C.Y.	2,680	0	0	2,680
203	0140	Borrow	C.Y.	65,800	10,765	24,000	100,565
204		Avg. Haul (Not a Pay Item) (Exc.)	C.Y.		15,335	30,050	45,385
			Sta.		7.30	4.0	5.12
204		Avg. Haul (Not a Pay Item) (Borrow)	C.Y.	55,800	10,765	24,000	100,565
			Sta.	20.80	1.25	5.00	14.94
216	0100	Water	M. Gal.	684	309	598	1,591



ENLARGED VIEW

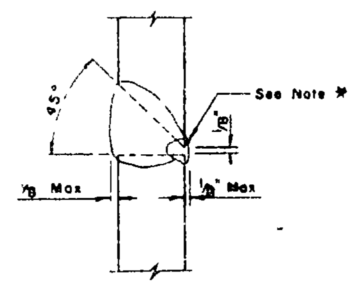
Flame Scarf Inside Of Both Flanges And One Side Of Web Of Upper Section

A - A



PILE	8"	10	12	14"
F FLANGE	5	6½"	8"	10"
W WEB	4"	5½"	6½"	8"

H-PILE SPLICE DETAIL

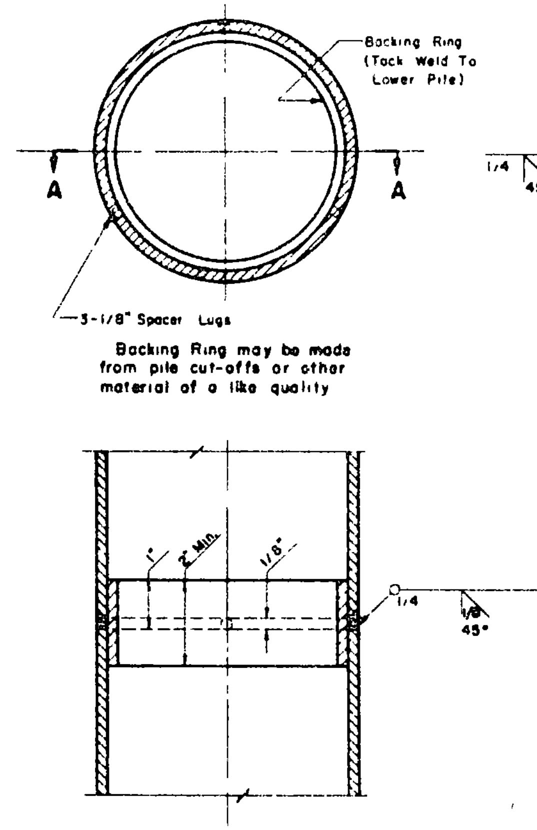


ALTERNATE H-PILE SPLICE DETAIL

Steel H-Pile may be spliced with complete penetration groove welds in both flanges and web in lieu of using the 7/16" reinforcing plates

AWS classification E70XX low hydrogen electrodes shall be used

*Welds made without the use of backing material shall have the root gouged to sound metal and welded from the second side

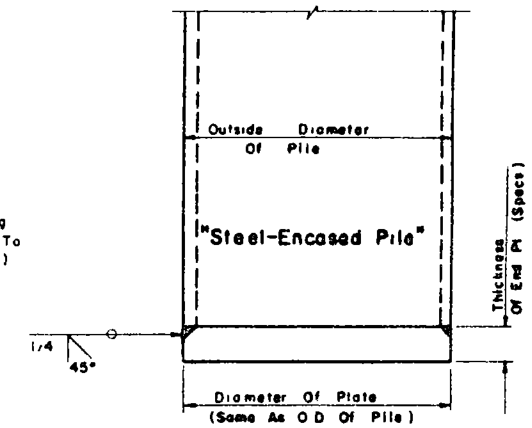


Backing Ring may be made from pile cut-offs or other material of a like quality

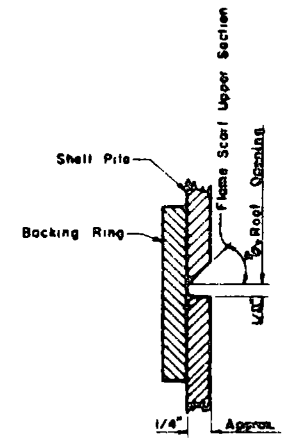
A-A

SHELL PILE SPLICE DETAIL

All welding shall conform to the current specification for "Welded Highway and Railway Bridges of the American Welding Society"



END PLATE DETAIL

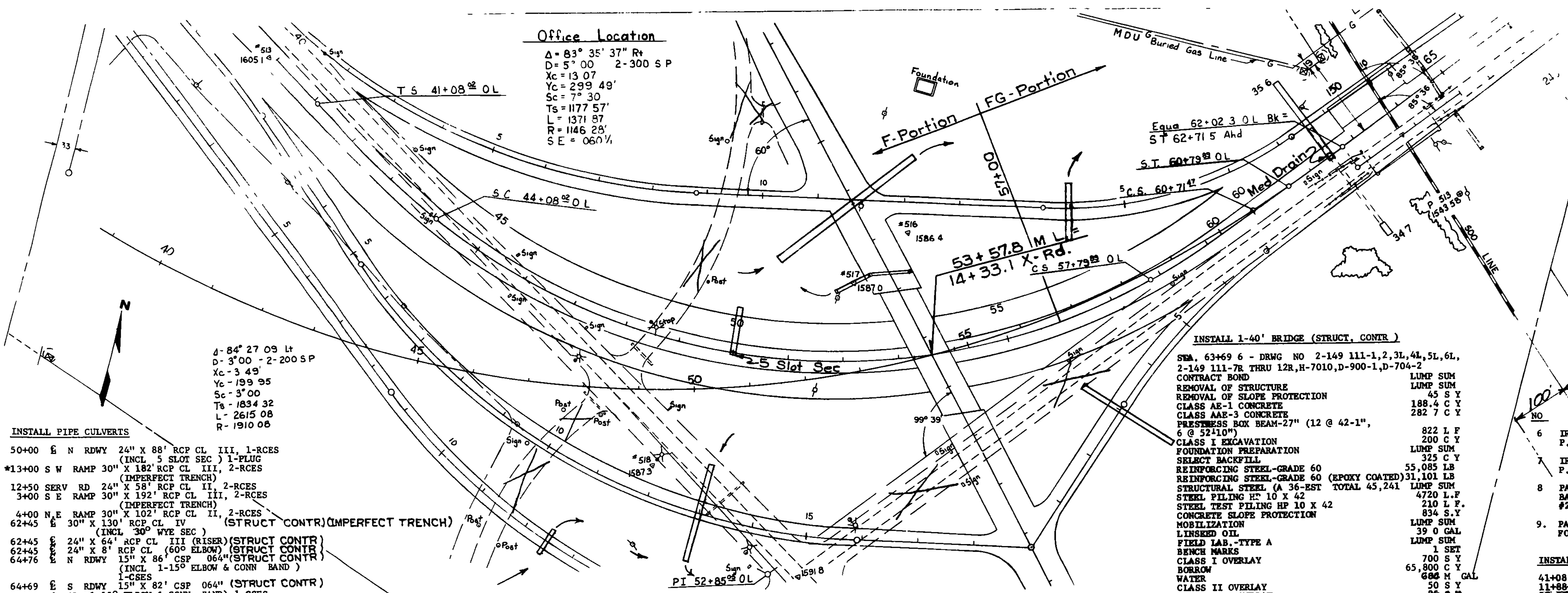


ENLARGED VIEW

PILE SPLICE DETAILS

REVISED 6-1-78
REVISED 12-12-66

H-0401



INSTALL PIPE CULVERTS

50+00 ℄ N RDWY 24" X 88' RCP CL III, 1-RCES (INCL 5 SLOT SEC) 1-PLUG
*13+00 S W RAMP 30" X 182' RCP CL III, 2-RCES (IMPERFECT TRENCH)
12+50 SERV RD 24" X 58' RCP CL II, 2-RCES
3+00 S E RAMP 30" X 192' RCP CL III, 2-RCES (IMPERFECT TRENCH)
4+00 N E RAMP 30" X 102' RCP CL II, 2-RCES
62+45 ℄ 30" X 130' RCP CL IV (INCL 30° WYE SEC) (STRUCT CONTR)(IMPERFECT TRENCH)
62+45 ℄ 24" X 64' RCP CL III (RISER)(STRUCT CONTR)
62+45 ℄ 24" X 8' RCP CL (60° ELBOW) (STRUCT CONTR)
64+76 ℄ N RDWY 15" X 86' CSP 064"(STRUCT CONTR) (INCL 1-15° ELBOW & CONN BAND) 1-CSES
64+69 ℄ S RDWY 15" X 82' CSP 064" (STRUCT CONTR) (INCL 1-15° ELBOW & CONN BAND) 1-CSES
*INSTALL 30" X 88' RCP, 1-RCES GRADING CONTRACT
30" X 94' RCP, 1-RCES, SURFACING CONTRACT

INSTALL 1-40' BRIDGE (STRUCT. CONTR)

STA. 63+69 6 - DRWG NO 2-149 111-1,2,3L,4L,5L,6L, 2-149 111-7R THRU 12R, H-7010, D-900-1, D-704-2

CONTRACT BOND	LUMP SUM
REMOVAL OF STRUCTURE	LUMP SUM
REMOVAL OF SLOPE PROTECTION	45 S Y
CLASS AE-1 CONCRETE	188.4 C Y
CLASS AAE-3 CONCRETE	282 7 C Y
PRESTRESS BOX BEAM-27" (12 @ 42-1", 6 @ 52-10")	822 L F
CLASS I EXCAVATION	200 C Y
FOUNDATION PREPARATION	LUMP SUM
SELECT BACKFILL	325 C Y
REINFORCING STEEL-GRADE 60	55,085 LB
REINFORCING STEEL-GRADE 60 (EPOXY COATED)	31,101 LB
STRUCTURAL STEEL (A 36-EST TOTAL 45,241	LUMP SUM
STEEL PILING HP 10 X 42	4720 L.F
STEEL TEST PILING HP 10 X 42	210 L F.
CONCRETE SLOPE PROTECTION	834 S.Y
MOBILIZATION	LUMP SUM
LINSEED OIL	39 0 GAL
FIELD LAB.-TYPE A	LUMP SUM
BENCH MARKS	1 SET
CLASS I OVERLAY	700 S Y
BORROW	65,800 C Y
WATER	688 M GAL
CLASS II OVERLAY	50 S Y
~~CLASS III OVERLAY~~	25 S.Y.
Borrow	65800 C.Y.
Common Exc Type A	2838 C.Y.

62+45 ℄ 30" X 216' RCP 2-RCES Ext. Lt & Rt

REMOVAL OF FOUNDATION

55+00 LT 1 EA

INSTALL CONC MED DRAIN

62+45 MED 1 EA

RELAY PIPE CULVERTS

62+45 ℄ 2-30" RCES

BENCH MARKS

NO	DESCRIPTION	LOCATION	ELEV
6	IRON MONU. 1X2 GRD BY P.P	44+13-368' LT	1612.86
7	IRON MONU 1X2 GRD. BY P.P.	DESTROYED	1591.06
8	PAINT SPOT S.W. COR. CONC BASE FOR LIGHT POLE HWY. #2	52+52-270' RT.	1588.91
9.	PAINT SPOT N.W ABUTMENT FOR R R BRIDGE	64+52-26' RT	1575.28

INSTALL R/W MARKERS

41+08	LT & RT.	2
11+88+ S RDWY	RT.	1
~~17+26+ S RDWY.~~	~~RT.~~	1
~~3+72+~~ (N.E.R.)	LT.	1
~~62+65~~	LT.	1
~~63+39~~	LT.	1
64+33	RT.	1
~~65+08~~	RT	1
64+70	LT	1
20+58+ (S. RD.)	RT	1

INSTALL BRIDGE APPROACH DRAINS (Struct. Contr.)

64+69	℄ S RDWY	1 EA	(15" X 54' CSP)	(SKEW)
64+76	℄ N RDWY	1 EA	(15" X 43' CSP)	

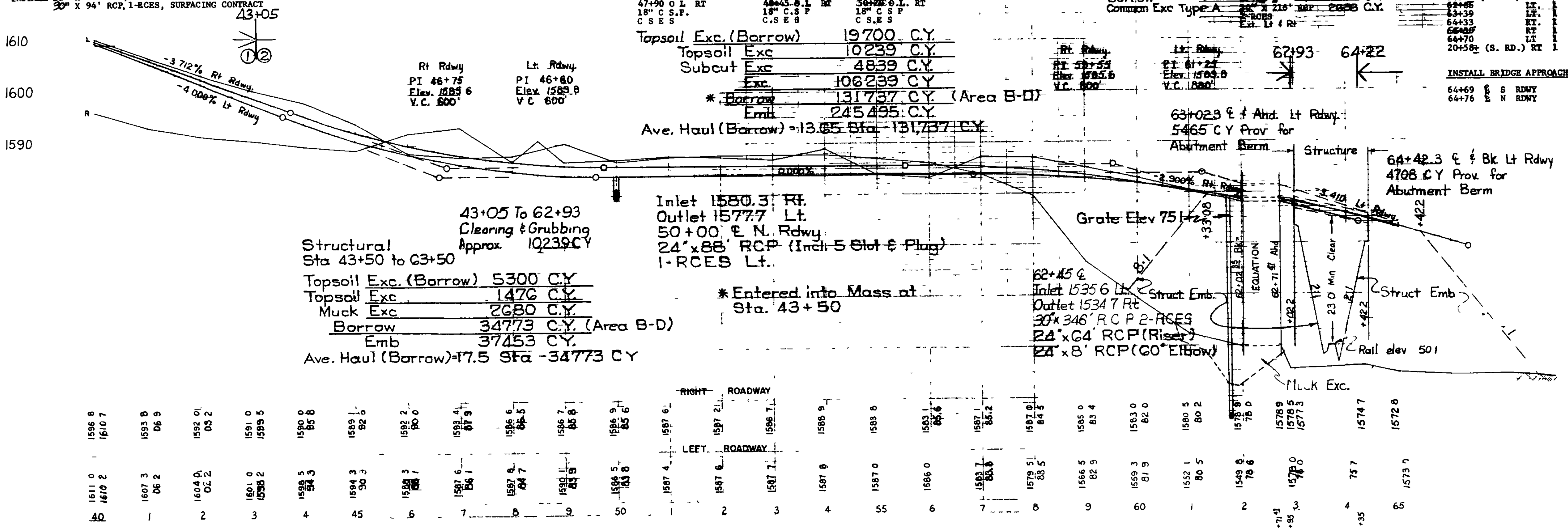
47+90 O L RT 18" C S.P. C S E S

~~48+45 O.L RT~~ 18" C.S P C.S E S

~~50+28~~ O.L. RT 18" C S P C S E S

Topsoil Exc. (Borrow)	19700 C.Y.
Topsoil Exc	10239 C.Y.
Subcut Exc	4839 C.Y.
Exc.	106239 C.Y
* Borrow	131737 C.Y. (Area B-D)
Emb	245495 C.Y.

Ave. Haul (Borrow) = 13.65 Sta. -131,737 C.Y.



43+05 To 62+93
Clearing & Grubbing
Approx. 10239 CY

Inlet 1580.3 Rt.
Outlet 1577.7 Lt.
50+00 ℄ N. Rdwy
~~24" x 88' RCP (Incl. 5 Slot & Plug)~~
1-RCES Lt.

Structural
Sta 43+50 to 63+50

Topsoil Exc. (Borrow)	5300 C.Y.
Topsoil Exc	1476 C.Y.
Muck Exc	2680 C.Y.
Borrow	34773 C.Y. (Area B-D)
Emb	37453 C.Y.

Ave. Haul (Borrow) = 17.5 Sta -34773 CY

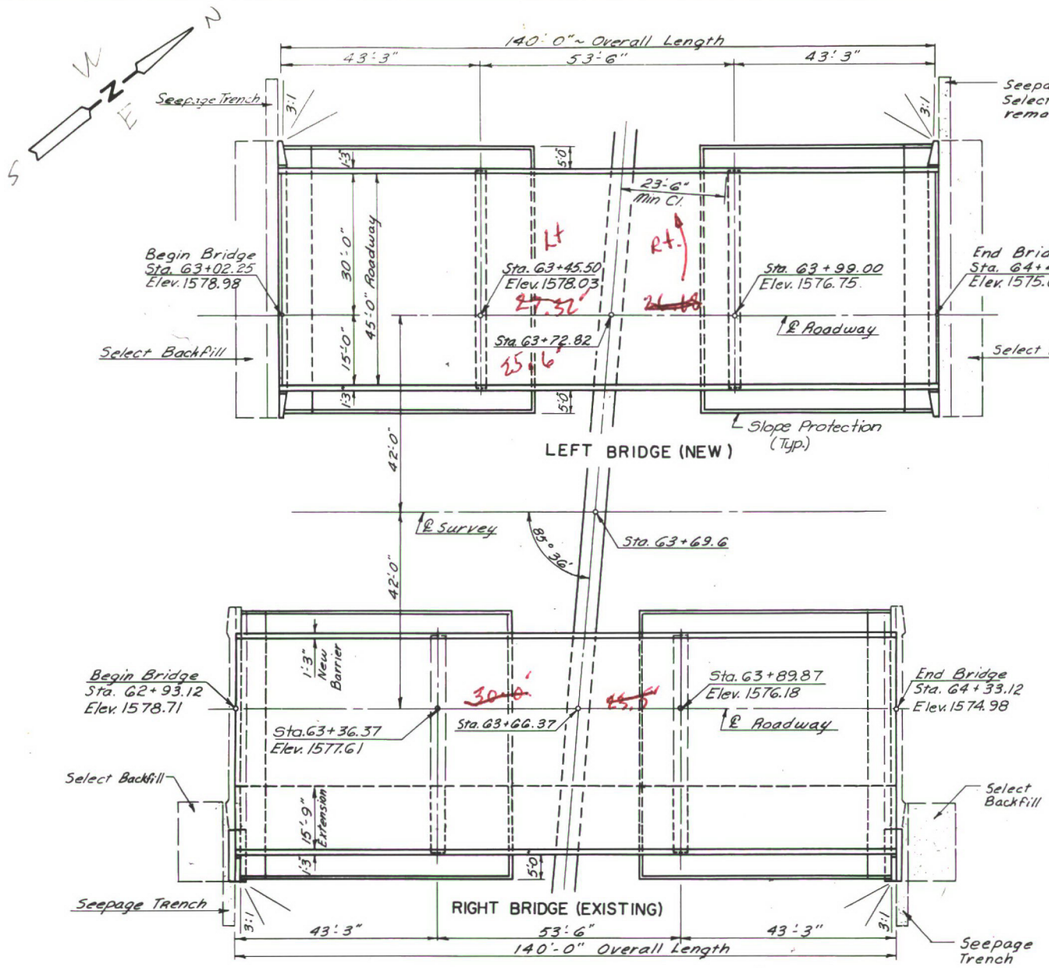
* Entered into Mass at Sta. 43+50

62+45 ℄
Inlet 1535 6 Lt
Outlet 1534 7 Rt
30" x 346' R C P 2-RCES
24" x 64' RCP (Riser)
24" x 8' RCP (60° Elbow)

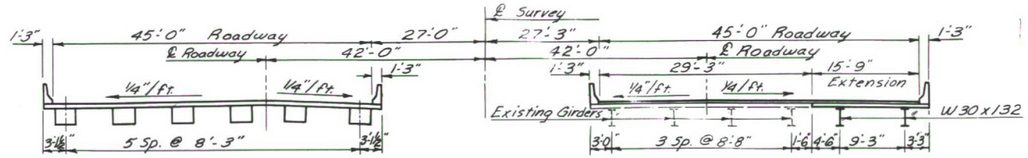
2-149-111

BRIDGE COUN.	FED ROAD DIST NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
X-181	5	N. D.	F-FG-4-002(10)	66	

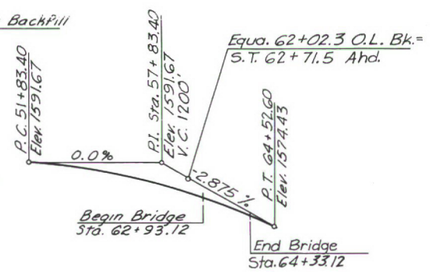
PLOTTED BY / CHECKED BY — TOPOGRAPHY
MADE BY / CHECKED BY — DETAILS
MADE BY / CHECKED BY — TRACING
MADE BY / CHECKED BY — QUANTITIES
REVISIONS — DATE / CHK'D BY



PLAN

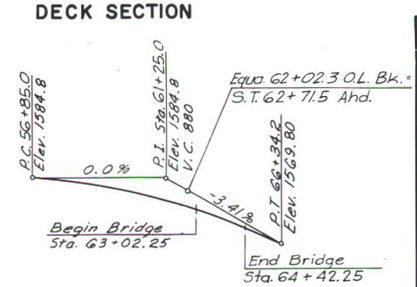


DECK SECTION

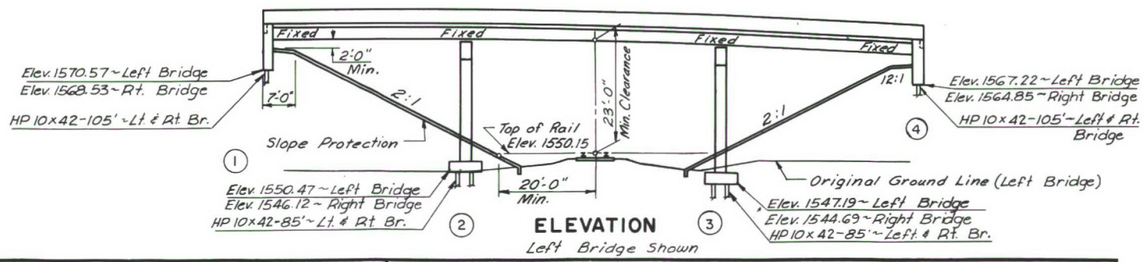


VERTICAL CURVE DATA
Right Bridge

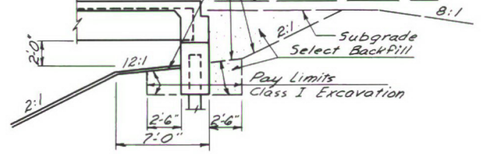
This curve data to be used for widening the existing bridge only.



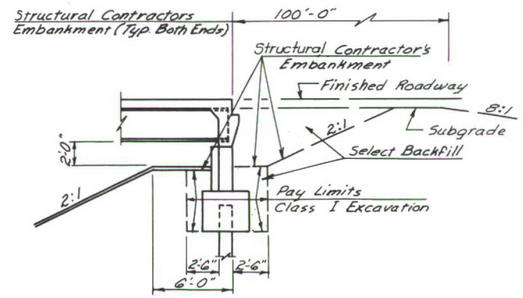
VERTICAL CURVE DATA
Left Bridge



ELEVATION
Left Bridge Shown



DETAILS AT ABUTMENT
Left Bridge



DETAILS AT ABUTMENT
Right Bridge

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
B	Paint spot S.W. cor. conc. base for light pole. Hwy. # 2	Sta. 52+52-270' Rt.	1588.91
9	Paint spot N.W. Abut for R.R. Bridge	Sta. 64+42-26' Rt.	1575.28

PILE LOADING

LOCATION	DEAD LOAD + EARTH	LIVE LOAD	MINIMUM * PENETRATION	EMBANKMENT SETTLEMENT	DESIGN LOAD	MAXIMUM REQUIRED BEARING
Abuts.	32.2 T.	11.9 T.	60'	10.9 T.	55.0 T.	55.0 T.
Piers	22.3 T.	15.6 T.	50'		37.9 T.	55.0 T.
Existing Structure						
Abuts.	18.0 T.	13.5 T.	60'	10.9 T.	42.4 T.	55.0 T.
Piers	33.3 T.	11.2 T.	50'		44.5 T.	55.0 T.

*Below bottom of footing

SPECIAL PROVISIONS

NO.	NAME
193	RAILWAY PROTECTION INSURANCE
254	EPOXY COATED REINFORCING STEEL
103-3	AWARD AND EXECUTION OF CONTRACT
208-1	EXCAVATION FOR BOX CULVERTS AND BRIDGES
610-3	PORTLAND CEMENT CONCRETE
616-1	STRUCTURAL STEEL
622-3	PILING
806-1	AGGREGATES FOR PORTLAND CEMENT CONC.
806-3	AGGREGATE FOR PORTLAND CEMENT CONCRETE
844-1	STRUCTURAL STEEL
299	REPAIR AND OVERLAY OF PCC BRIDGE DECKS

ESTIMATE OF QUANTITIES

CODE NO.	SPEC. NO.	BID ITEM		
0100	103	CONTRACT BOND	LUMP SUM	
0105	202	REMOVAL OF STRUCTURE	LUMP SUM	
0290	202	REMOVAL OF SLOPE PROTECTION	45	S.Y.
1110	602	CLASS AE-1 CONCRETE	188.4	CU. YD.
0130	602	CLASS AAE-3 CONCRETE	282.7	CU. YD.
9610	604	PRESTRESS BOX BEAM - 27" (12@42'-1", 6@52'-10")	822	L.F.
0100	208	CLASS I EXCAVATION	200	CU. YD.
0201	208	FOUNDATION PREPARATION		I EA.
0100	228	SELECT BACKFILL	325	CU. YD.
0115	612	REINFORCING STEEL - GRADE 60	55,085	LB.
0116	612	REINFORCING STEEL-GRADE 60 (EPOXY COATED)	31,292	LB.
5890	616	STRUCTURAL STEEL (A36-ESTIMATED TOTAL 45,241)	LUMP SUM	
0020	622	STEEL PILING HP 10 X 42	4720	L.F.
0393	622	STEEL TEST PILING HP 10 X 42	210	L.F.
0100	704	CONCRETE SLOPE PROTECTION	934	S.Y.
0100	705	MOBILIZATION	LUMP SUM	
0100	750	LINSEED OIL	39.0	GAL.
0100	756	FIELD LAB. - TYPE A	LUMP SUM	
3000	900	BENCH MARKS	1	SET
9700	900	CLASS I OVERLAY	700	S.Y.
0140	203	BORROW	65,800	CU. YD.
0100	216	WATER	684	M. GAL.
9701	900	CLASS II OVERLAY	50	S.Y.
9702	900	CLASS III OVERLAY	25	S.Y.

STRUCTURAL DRAWINGS

GENERAL DRAWING THIS SHEET, 2-149.111-1,2

SUBSTRUCTURE 2-149.111-3L, 4L; 2-149.111-7R THRU 10R

SUPERSTRUCTURE 2-149.111-5L, 6L; 2-149.111-11R, 12R; H-7010, D-900-1, D-704-2

DESIGN LOADING	SCALE
HS 20	1 INCH = 15 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

SOO LINE SEPARATION

BRIDGE LAYOUT

PROJECT F-FG-4-002( )147 STA. 63 + 69.6

WARD COUNTY

APPROVED

3-17-80 Stanley Haas
DATE BRIDGE ENGINEER

2-149.111

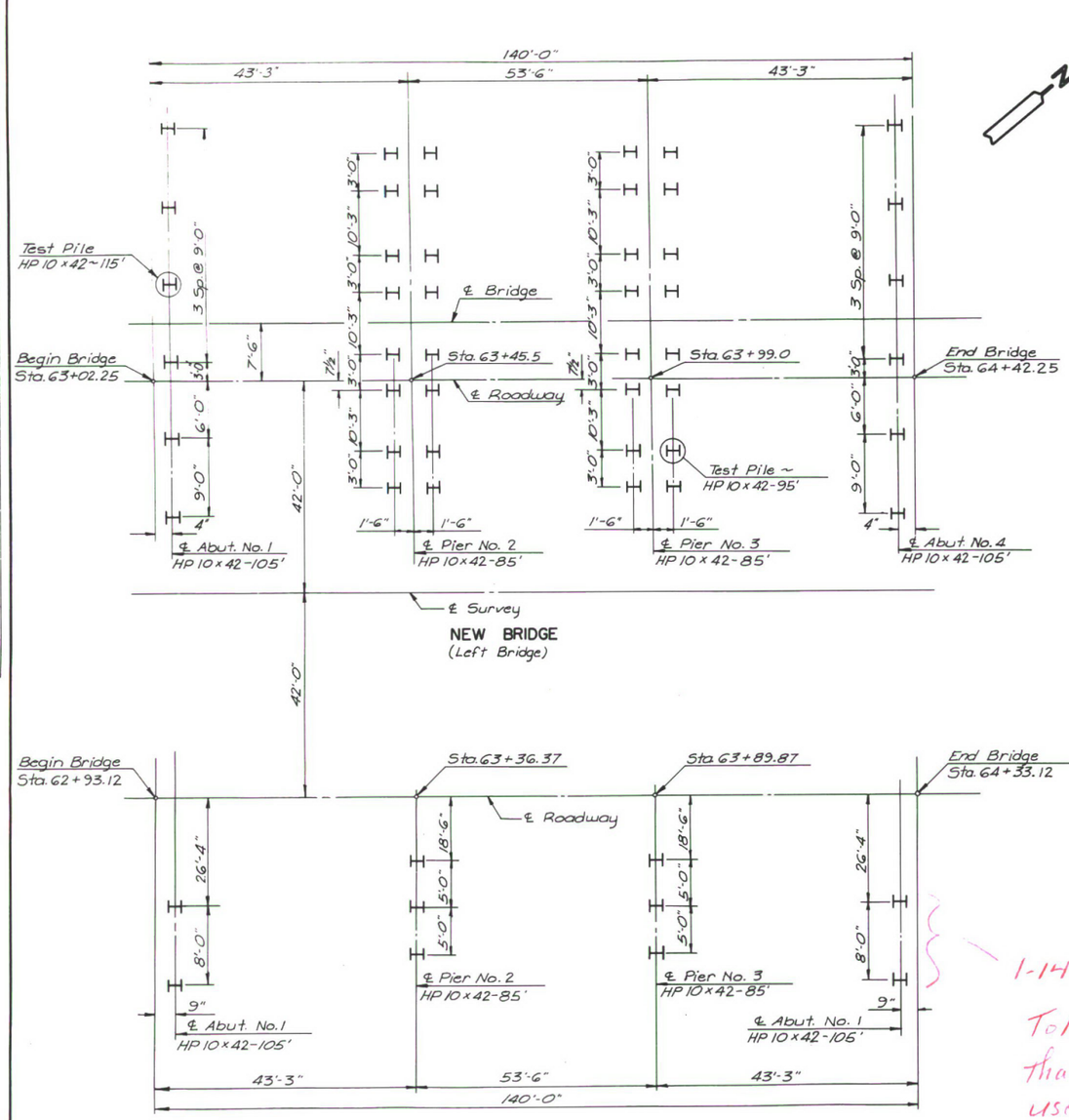
HE 17 5153

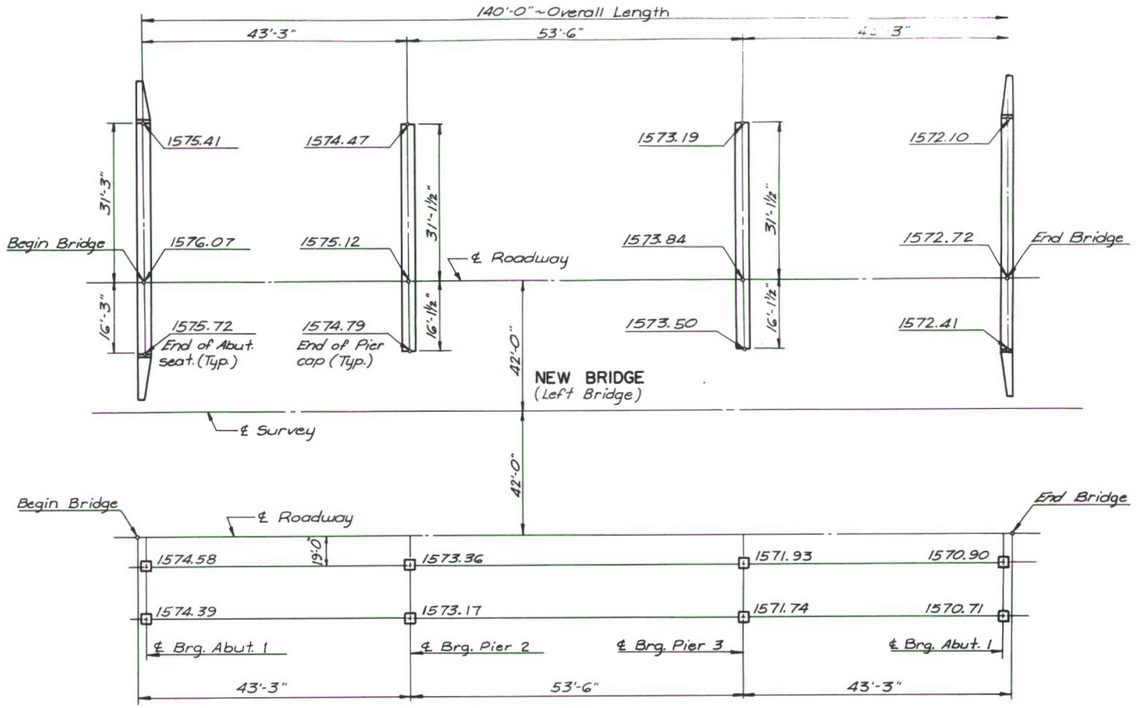
MATHISON CO 100 3-79 70426M

2-149.111

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	F-FG-4-002(10)	67	

DETAILS	CHECKED BY
	MADE BY
TRACING	CHECKED BY
	MADE BY
QUANTITIES	CHECKED BY
	MADE BY





1-14-81

Told Barry Ingerson that Contractor could use 12" pile in abut. at no additional cost to the State.

JWD

SOO LINE SEPARATION

PILING LAYOUT

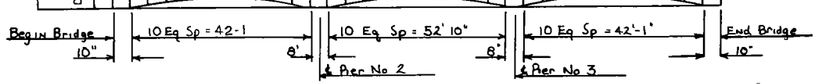
BEARING PLATE LAYOUT

2-149.111-1

2-149.111

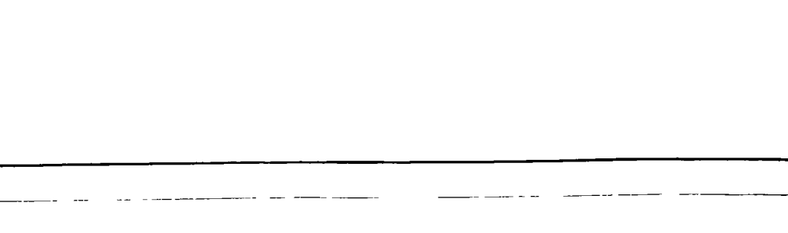
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N D	F-FG 4 002(10)	68	

	LEFT GIRDER DL Def. incl	℄ ROWY DL Def. incl	PLANT GRADE DL Def. incl
	1578.40	1578.98	1578.71
	1578.38	1578.96	1578.69
	1578.30	1578.88	1578.61
	1578.21	1578.80	1578.53
	1578.13	1578.72	1578.44
	1578.04	1578.63	1578.35
	1577.95	1578.54	1578.26
	1577.86	1578.44	1578.17
	1577.76	1578.34	1578.07
	1577.66	1578.24	1577.97
	1577.55	1578.14	1577.87
	1577.45	1578.03	1577.76
	1577.43	1578.02	1577.75
	1577.34	1577.92	1577.65
	1577.23	1577.82	1577.55
	1577.13	1577.71	1577.44
	1577.01	1577.60	1577.32
	1576.89	1577.48	1577.20
	1576.76	1577.34	1577.07
	1576.62	1577.21	1576.93
	1576.48	1577.06	1576.77
	1576.32	1576.93	1576.64
	1576.17	1576.79	1576.48
	1576.15	1576.74	1576.46
	1576.06	1576.64	1576.37
	1575.96	1576.54	1576.27
	1575.86	1576.44	1576.17
	1575.75	1576.34	1576.07
	1575.65	1576.23	1575.96
	1575.54	1576.12	1575.85
	1575.42	1576.00	1575.73
	1575.31	1575.89	1575.62
	1575.19	1575.77	1575.39
	1575.07	1575.65	1575.38
	1575.04	1575.63	1575.36



SCREED ELEVATION-LEFT BRIDGE
Elevations are to top of finished concrete

	GIRDER 19'-0" RT off ℄ ROWY	GIRDER 28.3' RT off ℄ ROWY
	1579.20	1579.00
	1579.18	1578.99
	1579.08	1578.89
	1578.98	1578.78
	1578.87	1578.68
	1578.77	1578.58
	1578.66	1578.47
	1578.56	1578.36
	1578.44	1578.25
	1578.33	1578.14
	1578.22	1578.03
	1578.11	1577.92
	1577.98	1577.78
	1577.84	1577.65
	1577.70	1577.51
	1577.57	1577.37
	1577.42	1577.23
	1577.28	1577.09
	1577.13	1576.94
	1576.98	1576.79
	1576.83	1576.64
	1576.68	1576.49
	1576.56	1576.37
	1576.45	1576.25
	1576.33	1576.14
	1576.21	1576.02
	1576.09	1575.90
	1575.97	1575.78
	1575.85	1575.66
	1575.72	1575.53
	1575.60	1575.40
	1575.47	1575.28
	1575.45	1575.28



SCREED ELEVATION-RIGHT BRIDGE
Elevations are to top of finished Concrete

CHECKED BY
QUANTITIES MADE BY CHECKED BY

SOO LINE SEPARATION
SCREED ELEVATIONS
GENERAL NOTES

2-149 111-2

GENERAL NOTES:

GENERAL: The cost of furnishing and placing asphalt curb seal, premolded joint filler, bar spacers, bar supports, screed chairs, threaded inserts and other miscellaneous items shall be included in the price bid for class AE-1 and AAE-3 concrete.

Dead load deflections have been accounted for in the screed elevations.

EMBANKMENT: The embankment at the abutments shall be in place for a minimum of 60 days before piling are driven. The contractor will be required to drill pilot holes through the fill at the abutments before driving piling.

All pilot holes not completely filled by the piles, shall be backfilled with sand or fine gravel before the substructure is placed.

The contractor may construct the structural embankment prior to the proposed starting date shown in the progress schedule. If this is done, no working days will be charged for the grading work done before the schedule starting date.

EXCAVATION: Excavation Class 1 at the abutments shall extend from the bottom of the footing to the upper limits as shown on the bridge layout drawing. Excavation Class 1 at the pier shall extend from the bottom of the footing to the bottom of the slope protection.

BACKFILL: All backfilling shall be done according to section 228 and 203.2.3.2 of the Standard Specifications. Select backfill shall not be placed above the elevation of the berm until the superstructure has cured.

REINFORCING STEEL: Dimensions for bent bars are given out to out and to tangent intersections unless otherwise noted. Bent bars shall be bent around ACI standard size pins. The bar fabricator shall add a prefix to all bar designations to differentiate between the several parts of the structure.

The top layer of transverse deck slab reinforcement shall be tied down with wire ties to the protruding shear reinforcement of the beams. The ties shall be at intervals of 5 to 6 feet along the full length of all beams to prevent the slab reinforcement from rising when the concrete is placed. The tie wires connecting the reinforcing mat to the protruding shear reinforcement shall be wrapped at least twice with 14 gage epoxy coated wire (minimum).

CONCRETE: All superstructure concrete shall be class AAE-3 Concrete for abutments and piers shall be class AE-1. The contractor may substitute class AE-3 concrete for class AE-1 concrete, but not AE-1 for AE-3. Any substitutions, however, will be at the contractor's expense, and the class of concrete paid for will be that class shown on the plans.

The "Special Surface Finish" (Section 602-3.10.5) will be required for all faces of the barrier wall and other surfaces that are visible to the motoring public. This finish shall be made with a spray application. The rate of application shall be as recommended by the manufacturer. All other surfaces shall be given the "Ordinary Surface Finish". All "Ordinary Surface Finish" shall be completed within 24 hours after removal of forms.

If the depth of the concrete risers between the tops of the girders and the bottom of the deck slab exceed the theoretical dimensions, the additional concrete required shall be furnished at no expense to the State. Type I or Type II cement may be used. In an area where class 3 aggregate is difficult to obtain, the contractor may substitute class 4 aggregate for class 3.

DIAPHRAGMS: The requirement of paragraphs 602-3.6.2.1 of the Standard Specifications may be waived.

CURING AAE-3 CONCRETE: The method of curing the deck concrete shall be in accordance with section 602-3.7.2.2. The intent is to place the covering as soon as possible without causing a significant amount of blemish to the surface. Once the covering operation has started, it shall be a continuous operation to keep pace with the finisher. All unprotected concrete shall be kept moist by a fog spray until covered and once covered kept continuously moist for 5 days.

Linseed Oil Treatment: Linseed oil treatment shall not be started until all concrete work is completed. Only one uniform application of .015 gallons per square yard shall be applied to the deck of the right bridge. Both applications shall be applied to the left bridge. A protective covering shall be used so that linseed oil is not applied to the area within 3 inches of the gutter line until after the asphalt curb seal is in place.

TEST PILE: The test piles shall be driven to a bearing not less than 125 percent of the design load as determined by the dynamic formula.

PILING: A steam, air or diesel hammer for driving piling for this structure shall have a rated energy and ram weight not less than 32,095 foot-pounds-tons as computed by the formula W(E-8,663) + 0.741E where W is the weight of the ram in tons and E is the rated hammer energy as allowed in section 622. In no case shall the ram weight be ~~more~~ less* than 4,800 pounds.

BARRIERS: The concrete barrier shall be formed for three contiguous sections. Concrete shall be placed in alternate sections and shall have a curing period of three days between placement of adjacent sections.

If the forms for the barrier railing are held in place by concrete inserts in the deck slab, the inserts shall be removed when the form removal has been completed and the cavities in the deck slab cleaned and filled flush with a non-shrink epoxy mortar approved by the engineer.

* changed by note in proposal

2-149.111

FHWA REGION	STATE	FED AID PROJ NO	SHEET
8	ND	F-FG-4-002(10)	70

GENERAL NOTES:

SHOP DRAWINGS: The contractor shall submit the following shop drawings for approval by the bridge engineer before fabrication:

1. Prestressed Concrete Girder
2. Structural Steel

These items will not be incorporated into the substructure until the shop drawings have been approved.

INSURANCE: The contractor, while working on the structure, will be required to furnish railway protection insurance for the amount specified in the Special Provision.

DESIGN STRENGTH:

F'C	3,000 PSI	CL. AE-1 CONCRETE
F'C	4,000 PSI	CL. AAE-3 CONCRETE
FY	36,000 PSI	STRUCTURAL STEEL
FY	60,000 PSI	GR.60 REINF. STEEL
F'C	5,000 PSI	PRESTRESSED GIRDER CONCRETE

STRUCTURAL STEEL: The proper alignment shall be maintained between sections while reaming the holes.

Wire rope slings shall not be used to handle the girders. They shall be handled with beam clamps designed for that purpose.

All structural steel shall be A-36, shear connectors on splice plates shall be moved to clear bolt holes.

Temporary or permanent attachments or devices that are not shown on the plans as part of the structure, shall not be welded to the structural steel members during the fabrication and construction process.

BLAST CLEANING: Commercial blast cleaning of all exposed main and secondary steel members will be required prior to painting. (Include in unit price bid for structural steel.)

PAINT: Paint and painting shall conform to the Standard Specifications, section 870-1.1 and 870-1.5.

All exposed steel surfaces shall be given one shop coat of red lead paint. One spot coat of red lead paint after erection and concrete work is completed and two finish coats of aluminum.

REMOVAL OF STRUCTURE: Includes all portions of the slab, abutments and piers required for the widening.

REMOVAL OF SLOPE PROTECTION: Includes the top panel on both ends of the existing bridge. Embankment will be added and the slope protection replaced to the proper elevation.

SEQUENCE OF CONSTRUCTION: The left bridge (new) will be completed first. Traffic will be routed over the new bridge and the existing bridge will be widened.

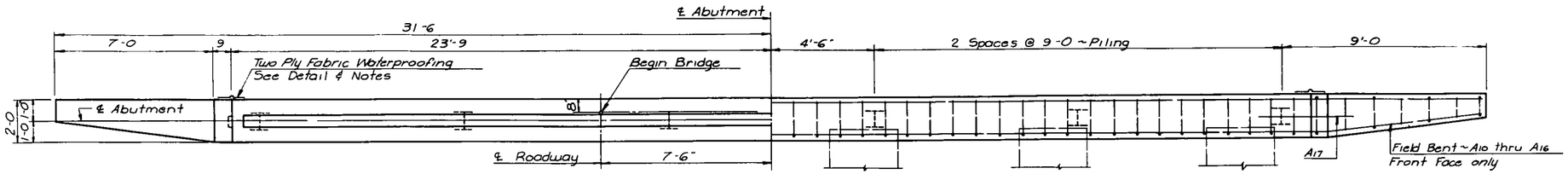
CONCRETE: A retarding admixture shall be required to be used in the concrete for bridge decks. The admixture to be used shall be submitted to the Engineer for approval before use by the Contractor.

OVERLAY: The entire deck shall be overlaid with a maximum of 2 passes of the finishing machine. Newly placed concrete shall not be overlaid until it has cured for a minimum of 7 days.

2-149.111-2B

2.149.111

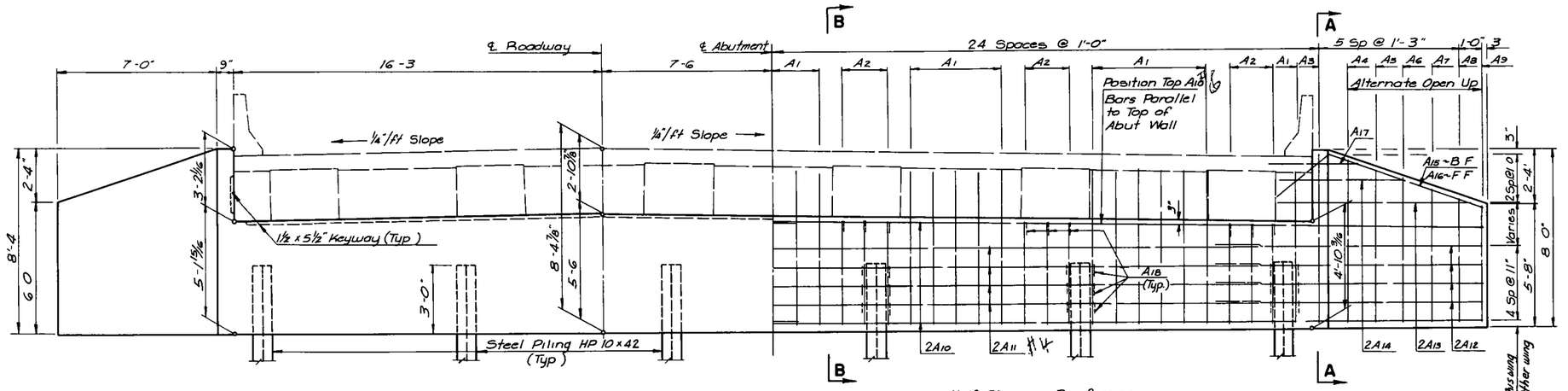
FED. ROAD DIST NO.	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F FG 4 002(10)	71	



Half Showing Dimensions

Half Showing Reinforcing

PLAN



Half Showing Dimensions

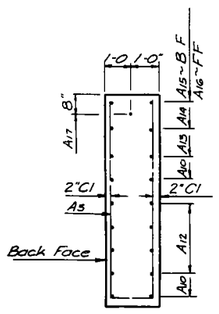
ELEVATION

Half Showing Reinforcing

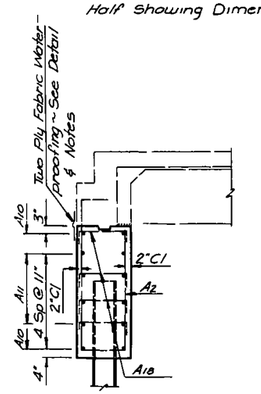
BAR LIST (ONE ABUT)

MARK	NO	SIZE	LENGTH	SHAPE
A1	29	5	16-1"	Bent
A2	18	5	13-3"	"
A3	2	5	16'-10	"
A4	2	4	16-3"	"
A5	2	4	15-3"	"
A6	2	4	14-2"	"
A7	2	4	13-2"	"
A8	2	4	12-2	"
A9	2	4	11'-4"	"
A10	8	6	32 6"	Str
A11	8	4	42-6"	"
A12	16	5	11-7	"
A13	4	5	8'-5"	"
A14	4	5	5-6	"
A15	2	6	12'-0	Bent
A16	2	6	10-0"	"
A17	2	6	5-0	Str
A18	54	4	2-8	Bent
* SR4	1	4	3-8	Str
* SR5	1	5	4'-0"	"
* SR6	1	6	4-6"	"

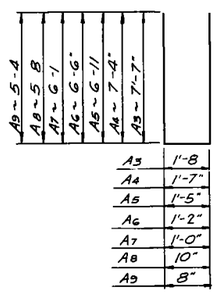
* Sample replacement bars to be spliced to bar from which 2'-0" sample has been cut Furnish only one set for the entire bridge This is not a pay item and shall be in the unit price bid for reinforcing steel



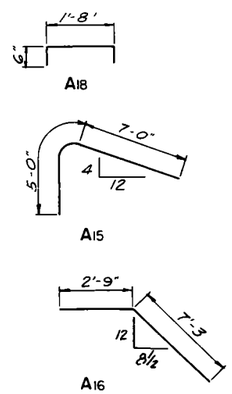
A-A



B-B

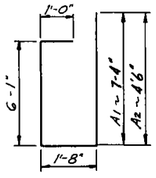


A3 – A9

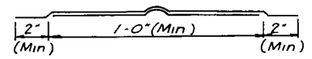


BENT BAR DETAILS

Dimensions shown are out to out



A1 & A2



FABRIC WATERPROOFING DETAIL

Two ply fabric waterproofing shall be applied over the construction joint on the back face as shown on the detail

Two ply fabric waterproofing shall consist of furnishing materials and placing dampproofing and fabric waterproofing at areas designated on this sheet in accordance with Sec 736 of the Standard Specifications for Two Ply Fabric Waterproofing

All materials and work shall be considered incidental to the pay item for Class AE-1 Concrete

QUANTITIES (ONE ABUT)

Class AE-1 Concrete	24 6	C Y
Reinforcing Steel	1986	lbs
Piling (See Layout)		

SOO LINE SEPARATION

ABUTMENT NO 1 & 4

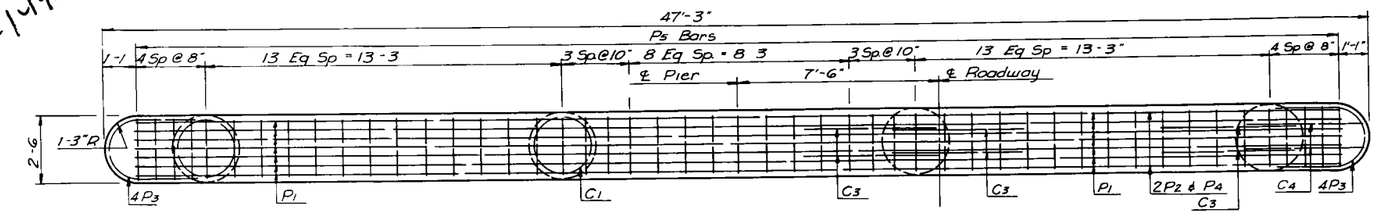
LEFT BRIDGE

DETAILS MADE BY / CHECKED BY
TRACING MADE BY / CHECKED BY
QUANTITIES MADE BY / CHECKED BY

2-149 111-3 L

2-149.111

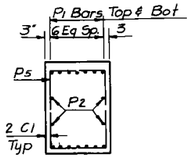
FED. ROAD DIST NO.	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F-FG-4-002(10)	72	



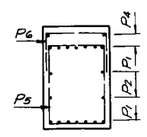
Half Showing Reinforcing Bottom of Cap

PLAN

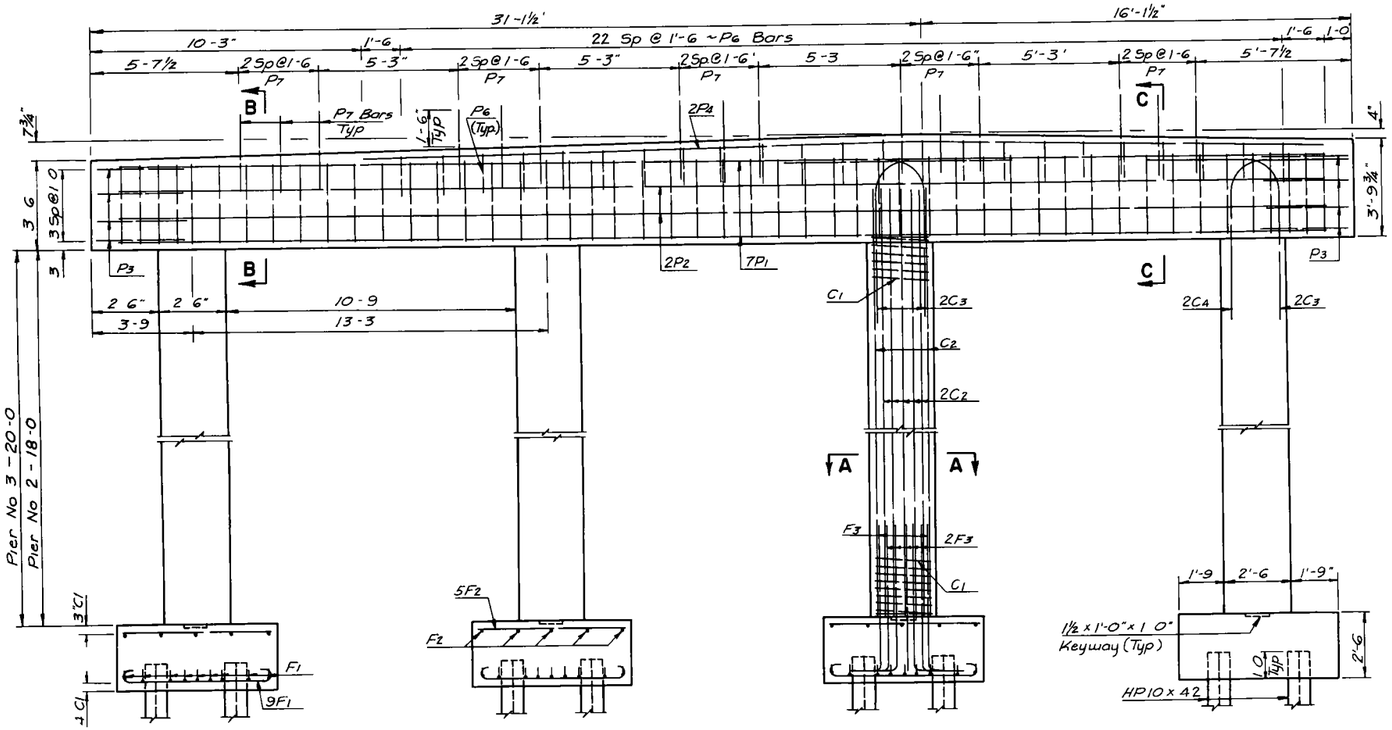
Half Showing Reinforcing Top of Cap



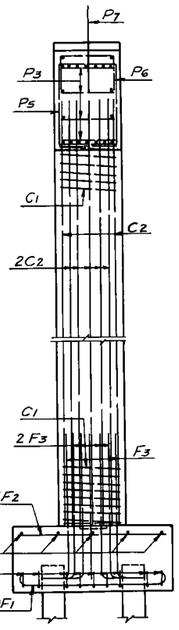
B-B



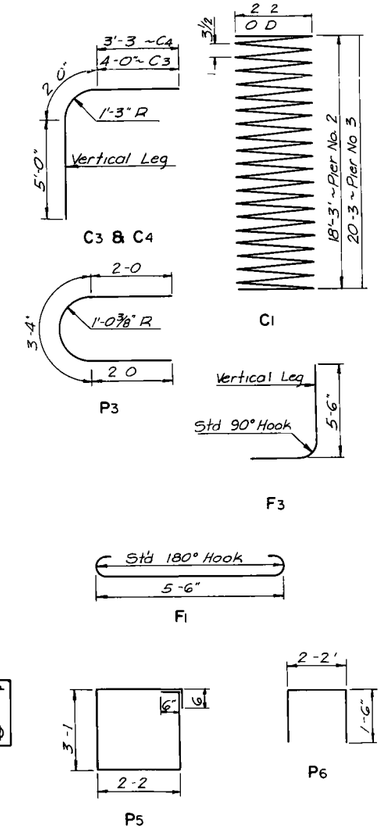
C-C



ELEVATION

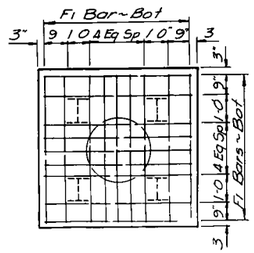


END VIEW

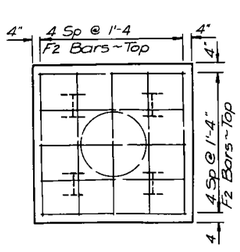


BENT BAR DETAILS

Dimensions shown are out to out

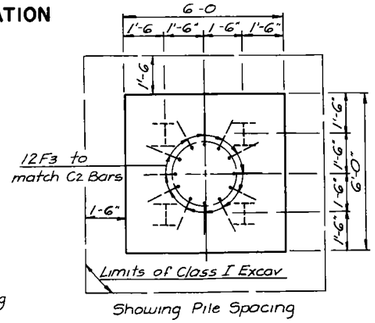


Showing Reinforcing Bot. of Ftg

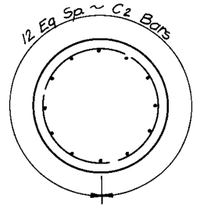


Showing Reinforcing Top of Ftg

FOOTING PLAN



Showing Pile Spacing



A-A

BAR LIST (PIER NO 2)

MARK	NO	SIZE	LENGTH	SHAPE
C1	4	4	441'-7	Spiral
C2	48	7	20-3	Str
C3	12	7	11 0	Bent
C4	4	7	10-3	
F1	72	6	6-10	Bent
F2	40	6	5-8	Str
F3	48	7	6-8"	Bent
P1	14	7	45'-2	Str
P2	4	5	45' 2'	"
P3	8	5	7-4'	Bent
P4	2	6	36-0	Str
P5	49	4	11-6	Bent
P6	23	4	5 2	"
P7	15	5	3-0	Str

BAR LIST (PIER NO 3)

MARK	NO	SIZE	LENGTH	SHAPE
C1	4	4	487-10"	Spiral
C2	48	7	22'-3	Str
C3	12	7	11'-0	Bent
C4	4	7	10'-3"	"
F1	72	6	6'-10'	Bent
F2	40	6	5'-8	Str
F3	48	7	6-8'	Bent
P1	14	7	45'-2	Str
P2	4	5	45'-2	"
P3	8	5	7'-4'	Bent
P4	2	6	36-0	Str
P5	49	4	11'-6"	Bent
P6	23	4	5'-2"	"
P7	15	5	3-0	Str

NOTE

The concrete in the columns shall be allowed to set at least two (2) hours before pier cap reinforcing is placed and concrete poured

All exposed edges shall be beveled with ¾ triangular molding

QUANTITIES

Pier No 2		
Class AE-1 Concrete	432	CY
Reinforcing Steel	7407	Lbs
Pier No 3		
Class AE-1 Concrete	446	CY
Reinforcing Steel	7727	Lbs
Piling (See Layout)		
Excavation (See Layout)		

SOO LINE SEPARATION

PIER NO 2 & 3

LEFT BRIDGE

MADE BY / CHECKED BY — TRACING

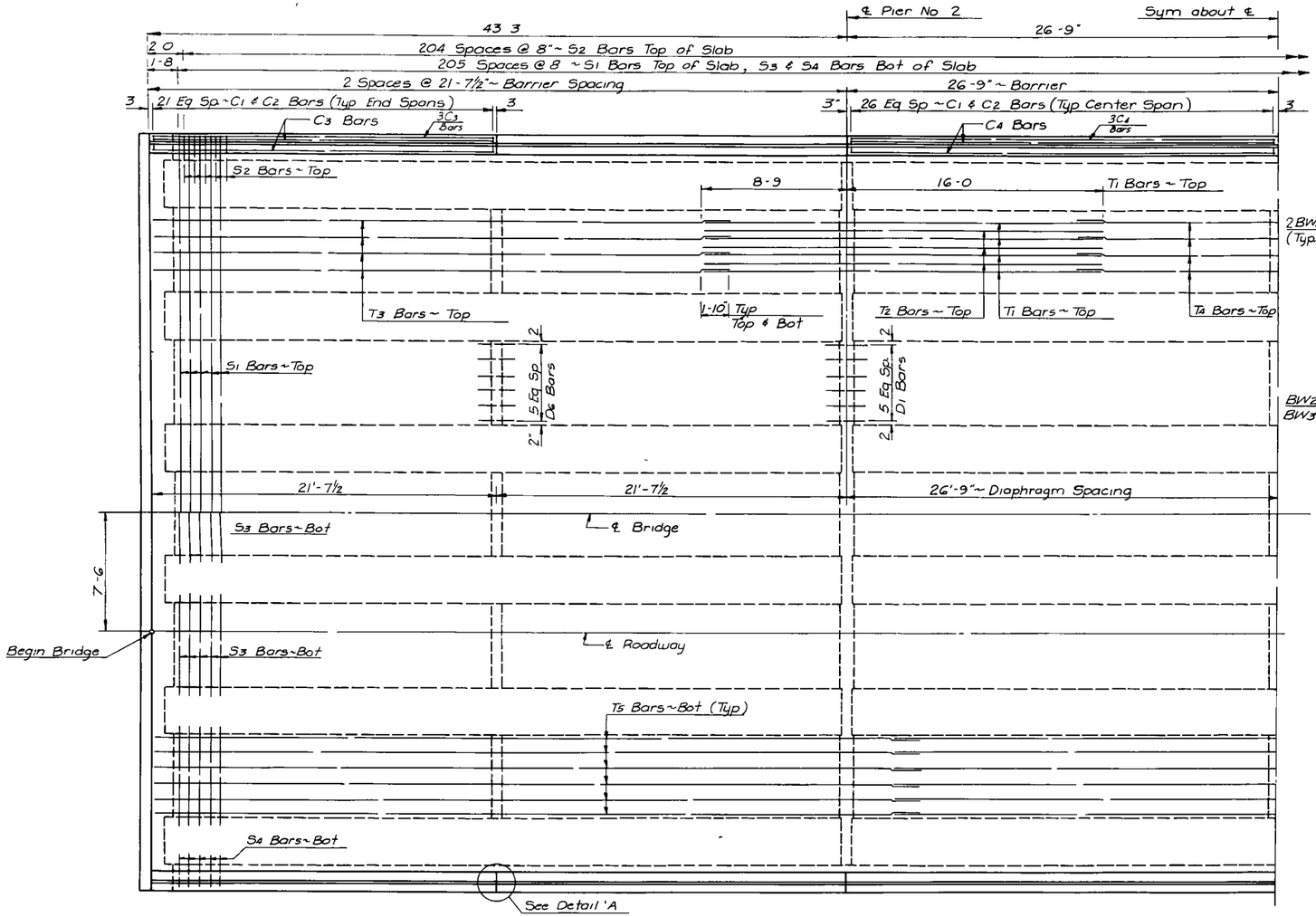
MADE BY / CHECKED BY — QUANTITIES

2-149.111-4L

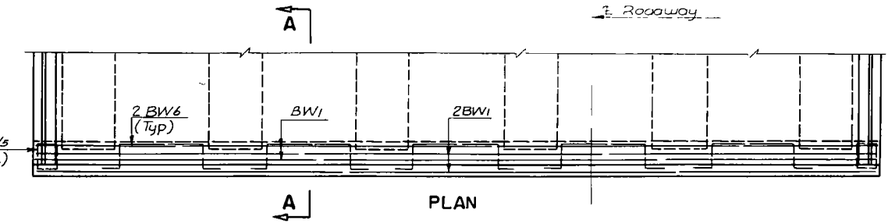
2-149 111

FED ROAD DIST NO.	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F FG 4-002(110)	73	

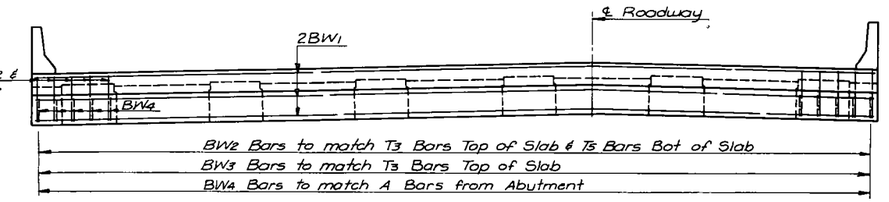
DESIGN — CHECKED BY
DETAILS — MADE BY — CHECKED BY
TRACING — MADE BY — CHECKED BY
QUANTITIES — MADE BY — CHECKED BY



HALF PLAN
Top quarter showing top Reinforcing Steel
Bot quarter showing Bot Reinforcing Steel

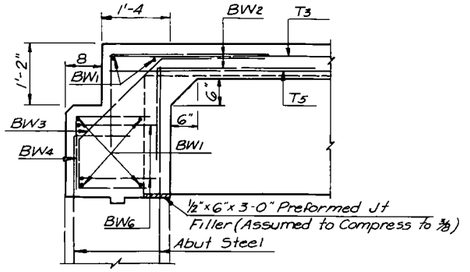


PLAN

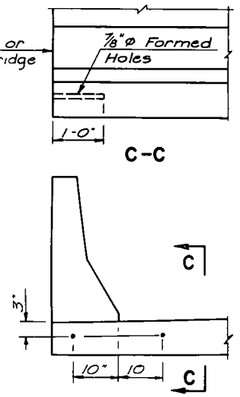


ELEVATION

ENDWALL DETAIL

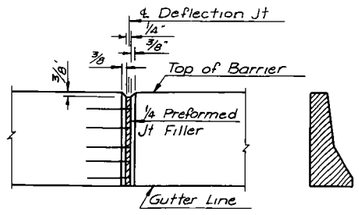


A-A



C-C

CURB SLEEVE DETAIL

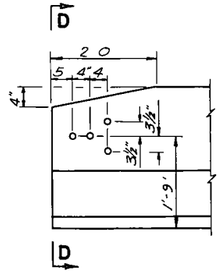


DETAIL "A"

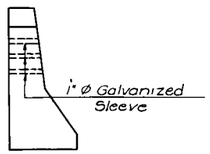
BARRIER DEFLECTION JOINT
Use nails to hold preformed joint filler in place. Provide adequate tie wires on the barrier forms to avoid any shifting during the placement

Note
Form a ¾ triangular groove at the midpoint of each barrier section Groove both vertical faces and across top.

PLAN



ELEVATION



D-D

BARRIER END DETAILS

QUANTITIES
See Dwg 2-149 111- 6 L

SOO LINE SEPARATION

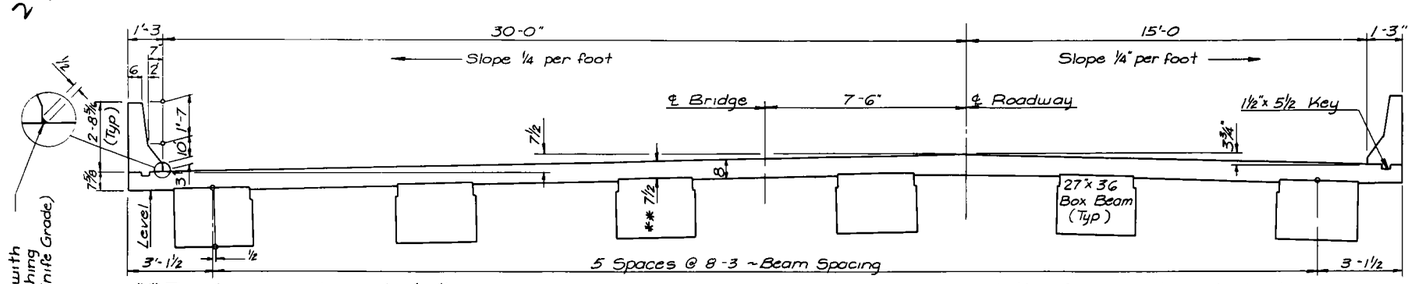
SUPERSTRUCTURE DETAILS

LEFT BRIDGE

2-149111-5L

2-149.111

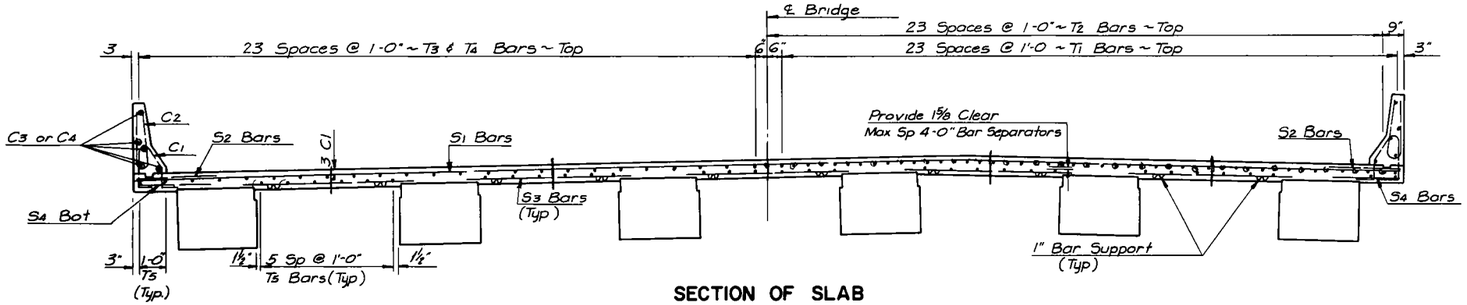
FED. ROAD DIST. NO.	STATE	PROJ. NO	SHEET NO.	TOTAL SHEETS
8	N D	F-FG-4-002(10)	74	



** This dimension will vary due to the varible camber of the prestressed box girder

SECTION OF SLAB
Showing Dimensions

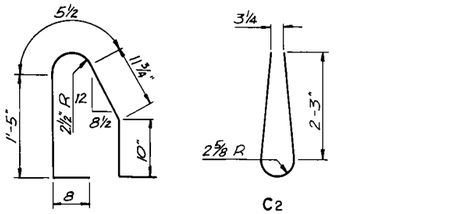
Bottom forms must be adjusted to proper elevation to assure the 8" design thickness of concrete



SECTION OF SLAB

Showing Reinforcing Bars between supports

Showing Reinforcing Steel over Piers

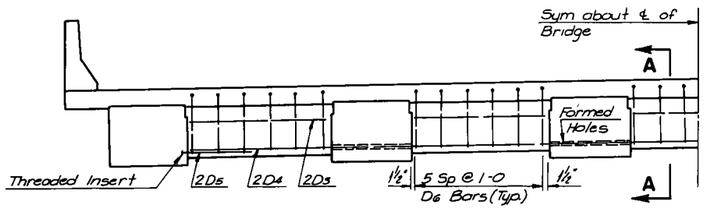


BENT BAR DETAILS
Dimensions shown are out to out

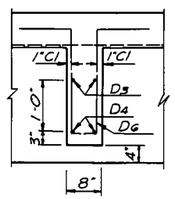
BAR LIST

	MARK	NO	SIZE	LENGTH	SHAPE
	BW1	12	6	47'-0	Str
	BW2	164	5	4'-9"	Bent
	BW3	96	6	6 2	
	BW4	94	5	2-3	'
	BW5	8	6	6'-8"	
	BW6	20	6	10'-4"	
*	C1	284	5	5'-0"	Bent
	C2	284	5	5'-2"	"
	C3	40	4	21'-3	Str
	C4	20	4	26'-5"	"
	D1	60	4	7'-2"	Bent
	D2	8	6	43'-11"	Str
	D3	30	4	5'-0	"
	D4	6	6	37'-11'	
	D5	12	¾"Ø	2 6	'
	D6	90	4	6'-6	Bent
*	S1	206	5	47'-0"	Str
*	S2	410	4	2-10	'
	S3	1030	5	6-4	
	S4	412	4	2-4	'
*	T1	96	5	24'-9"	Str
*	T2	94	6	24'-9"	'
*	T3	96	4	36'-2	
*	T4	96	4	25'-2"	
	T5	102	4	47'-9"	"

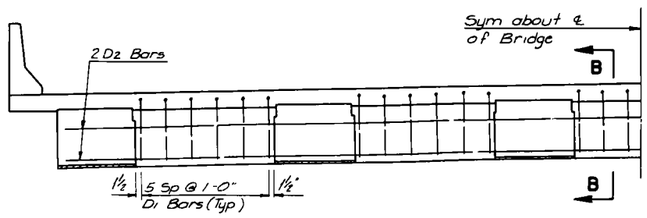
*Reinforcing Bar shall be Epoxy coated (See Special Provisions)



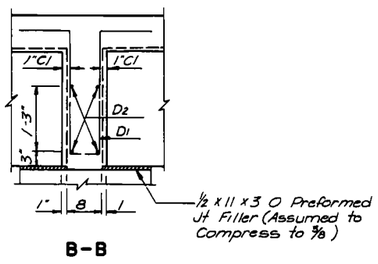
INTERMEDIATE DIAPHRAGM



A-A



PIER DIAPHRAGM



B-B

QUANTITIES

Class AAE-3 Concrete	204.4	C.Y.
Reinforcing Steel	18,001	Lbs.
Reinforcing Steel (Epoxy)	22,260	Lbs.

SOO LINE SEPARATION

SUPERSTRUCTURE

LEFT BRIDGE

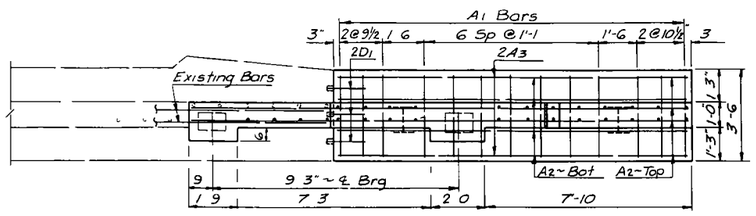
2-149 111-6 L

MATHISON CO 100 5-79 704284

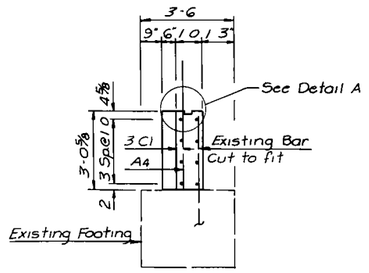
REVISIONS | MADE BY | CHECKED BY | DATE

DESIGN | TRACING | QUANTITIES | MADE BY | CHECKED BY

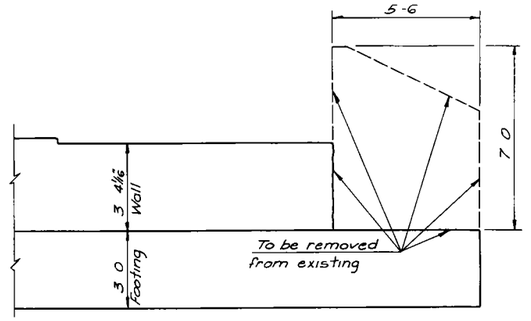
FED ROAD DIST NO.	STATE	PROJ NO	SHEET NO	TOTAL SHEETS
8	N D	F-FG 4 002(10)	73	



PLAN

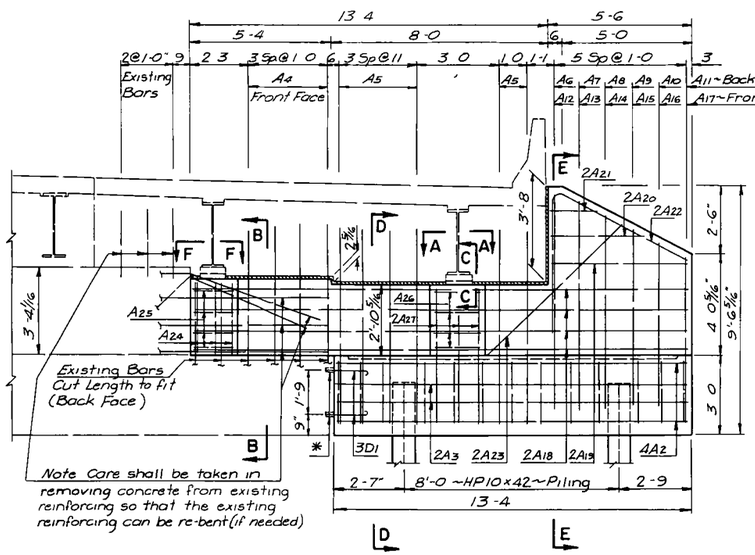


B-B



ABUTMENT REMOVAL DETAIL

BAR LIST (ONE ABUT)				
MARK	NO	SIZE	LENGTH	SHAPE
A1	13	4	11'-6	Bent
A2	8	10	13'-0	Str
A3	4	6	13' 0	"
A4	4	4	5 0	"
A5	6	4	13 1	Bent
A6	1	4	8 3"	Str
A7	1	4	7 9	"
A8	1	4	7 3"	"
A9	1	4	6'-9"	"
A10	1	4	6'-3"	"
A11	1	4	5 9"	"
A12	1	4	6' 3"	"
A13	1	4	5' 9"	
A14	1	4	5 3"	"
A15	1	4	4'-9	"
A16	1	4	4 3"	
A17	1	4	3 9"	"
A18	8	4	18'-6"	"
A19	2	4	5'-0	"
A20	2	4	3 6"	"
A21	2	4	1'-6"	"
A22	2	6	11' 0"	Bent
A23	2	6	7 0"	Str
A24	3	6	2'-10"	
A25	4	5	6'-2"	Bent
A26	4	5	6'-8"	"
A27	6	6	5 2"	Str
D1	6	5	2'-3	Bent

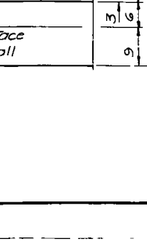


ELEVATION

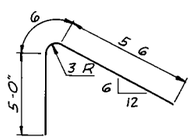
D-D

E-E

A1, A25 & A26



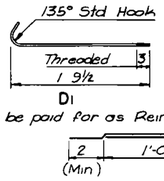
A5



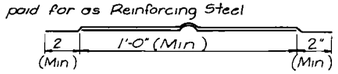
A22

BENT BAR DETAILS

Dimensions shown are out to out



To be paid for as Reinforcing Steel



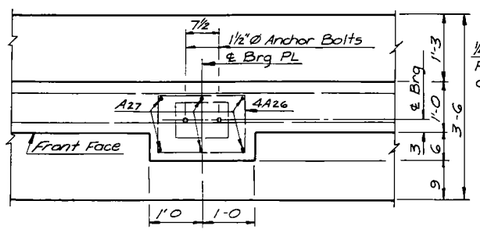
FABRIC WATERPROOFING DETAIL

Two ply fabric waterproofing shall be applied over the construction joint on the back face as shown on the detail

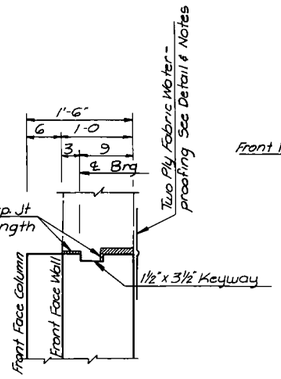
Two ply fabric waterproofing shall consist of furnishing materials and placing damproofing and fabric waterproofing at areas designated on this sheet in accordance with Sec 736 of the Standard Specifications for Two Ply Fabric Waterproofing

All materials and work shall be considered incidental to the pay item for Class AE-1 Concrete

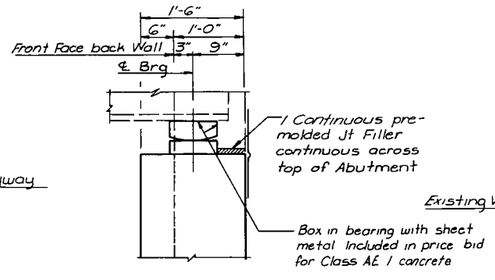
* Triple Anchorage Units
(See Std No D-708-9)
Pay item incidental to
AE-1 Concrete



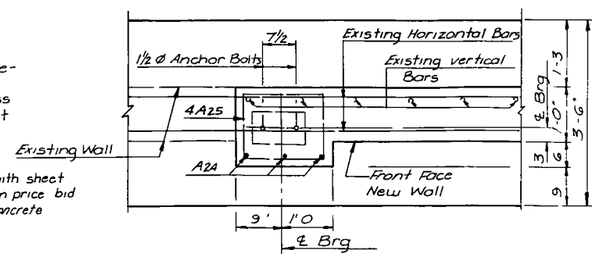
A-A



DETAIL "A"



C-C



F-F

QUANTITIES (ONE ABUT)	
Class AE-1 Concrete	79 CY
Reinforcing Steel	1032 Lbs
Piling (See Layout)	
Excavation (See Layout)	

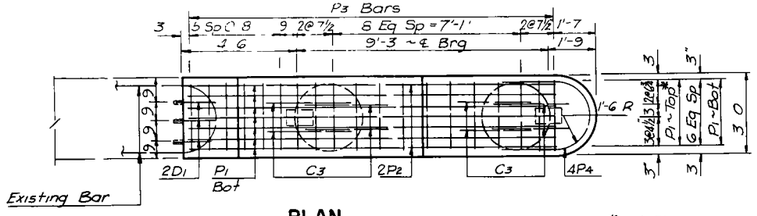
SOO LINE SEPARATION

ABUTMENT-EXTENSION

RIGHT BRIDGE

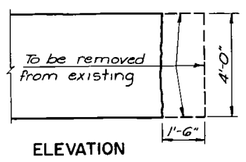
FED. ROAD DIST NO.	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F-FG 4-002(10)	76	

2-149.111

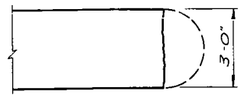


PLAN

*Not Shown

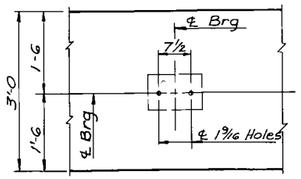


ELEVATION

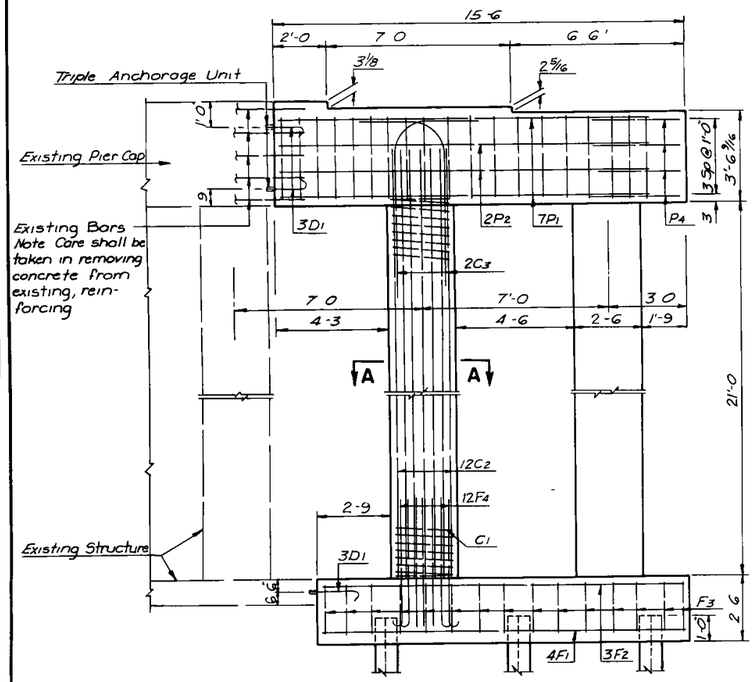


PLAN

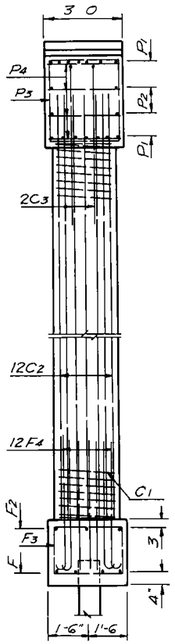
PIER CAP REMOVAL DETAIL



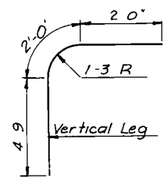
BEARING DETAIL



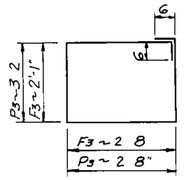
ELEVATION



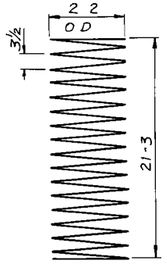
END VIEW



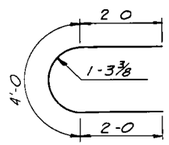
C3



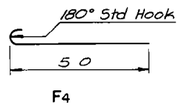
F3 & P3



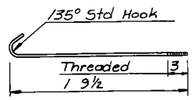
C1



P4



F4



D1

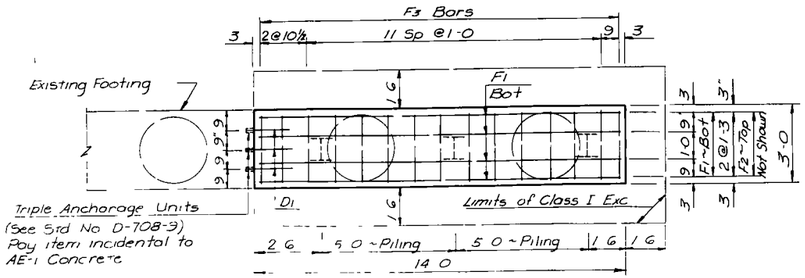
To be paid for as Reinforcing Steel

NOTE

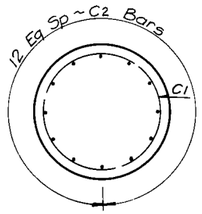
The concrete in the columns shall be allowed to set at least two(2) hours before pier cap reinforcing is placed and concrete poured

All exposed edges shall be beveled with ¾ triangular molding

BAR LIST (ONE PIER)				
MARK	NO	SIZE	LENGTH	SHAPE
F1	4	8	13 8"	Str
F2	3	6	13 8"	"
F3	15	5	10'-6"	Bent
F4	24	7	5'-9	"
C1	2	4	505 1	Spiral
C2	24	7	23 0	Str
C3	8	7	8 9"	Bent
P1	14	7	14 2	Str
P2	4	4	14 2	"
P3	19	4	12 8	Bent
P4	4	5	8 0'	"
D1	9	5	2 3	Bent



FOOTING PLAN



A-A

BENT BAR DETAILS

Dimensions shown are out to out

QUANTITIES	
Class AE 1 Concrete	178 C.Y.
Reinforcing Steel	32591bs.
Piling (See Layout)	
Excavation (See Layout)	

SOO LINE SEPARATION

PIER - EXTENSION

RIGHT BRIDGE

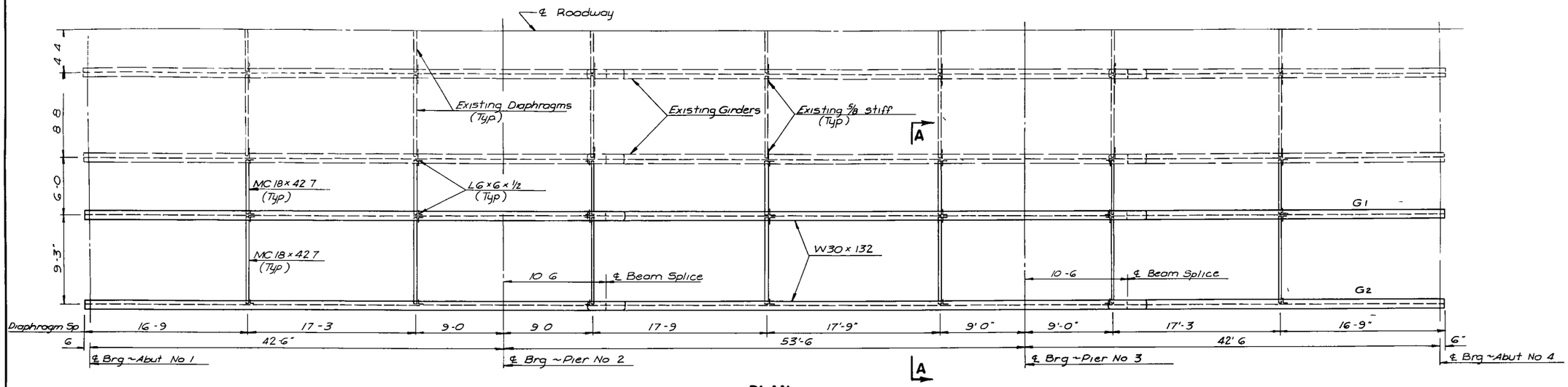
DESIGNED BY
DETAILED BY
CHECKED BY
QUANTITIES CHECKED BY
TRACING

2-149111-8R

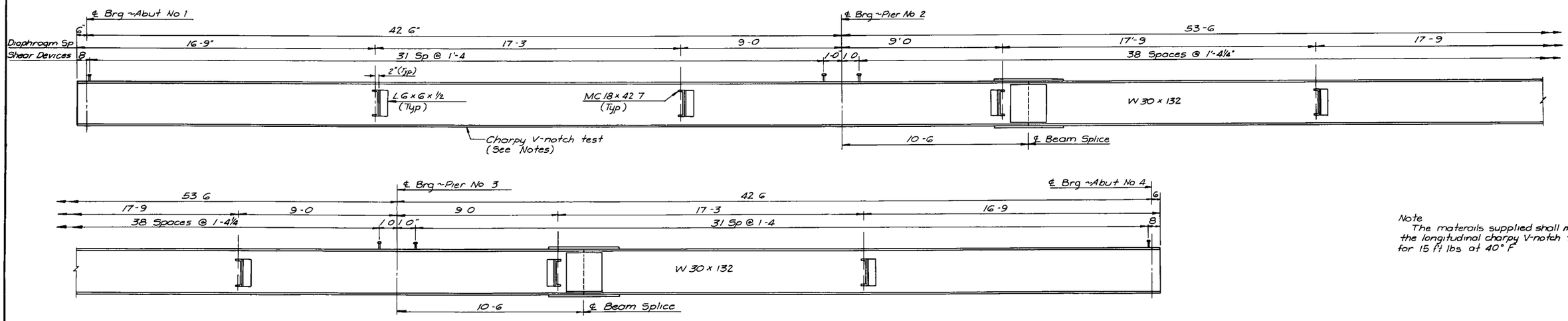
MATHISON CO 100 5-79 704284

2-149 111

FED ROAD DIST NO	STATE	PROJ NO	SHEET NO	TOTAL SHEETS
8	N D	F-FG 4-002(10)	77	



PLAN



GIRDER NO. 1 ELEVATION

Note
The materails supplied shall meet the longitudinal charpy V-notch test for 15 ft lbs at 40° F

MADE BY / CHECKED BY
TRACING — MADE BY / CHECKED BY
QUANTITIES — MADE BY / CHECKED BY

QUANTITIES

See Dwg 2-149 111-10 R

SOO LINE SEPARATION

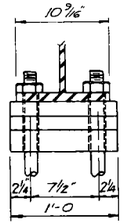
GIRDER DETAILS

RIGHT BRIDGE

2-149 111-9R

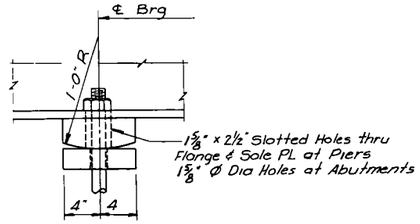
FED ROAD DIST NO.	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F FG-4-002(10)	78	

2-149.111



BEARINGS @ ABUT

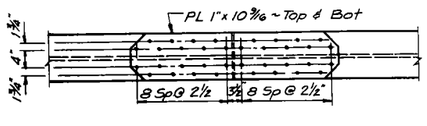
Sole PL ~ 8 x 2 1/4 x 1'-0
Masonry PL ~ 8" x 1 1/2" x 1-0
Swedge Bolts ~ 1 1/2" Ø x 1'-9"

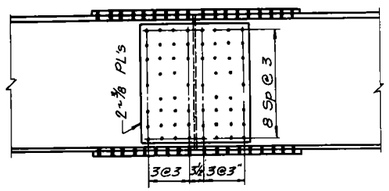


BEARING @ PIER

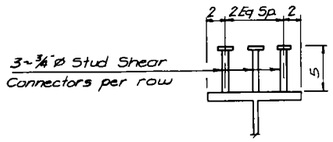
Sole PL ~ 8" x 3 1/4" x 1'-0
Masonry PL ~ 8 x 2 1/4 x 1'-0'
Swedge Bolts ~ 1 1/2" Ø 1'-9

BEARINGS AT ABUTMENT & PIER

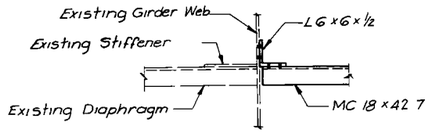




BEAM SPLICE DETAIL
Spans 2 & 3

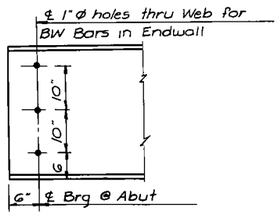


SHEAR DEVICE DETAILS

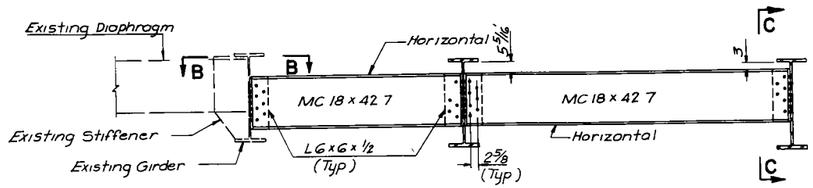


B-B

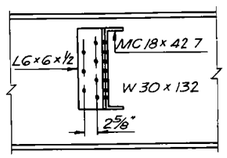
Note
Holes in existing girder wed will require drilling in the field



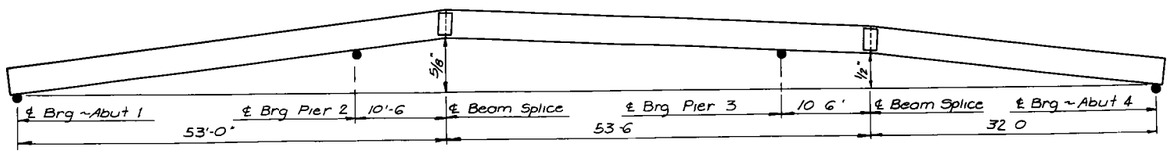
GIRDER END DETAIL



A-A



C-C



SHOP CAMBER DIAGRAM

QUANTITIES

Structural Steel-A36 45241 Lbs

SOO LINE SEPARATION

GIRDER DETAILS

RIGHT BRIDGE

2-149111-10R

MATHISON CO 100 8-79 70456

2-149.111

FED ROAD DIST NO.	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F FS 4-002(10)	79	

DESIGN | DETAILS | TRACING | QUANTITIES

MADE BY | CHECKED BY

REVISIONS | DATE

Barrier Spacing: 21'-7½" | 21'-7½" | 26'-9"

C2 Bars ~ To match Existing curb steel projecting from slab

3@6 3@12 3@6 6 Sp @1'-1⅜" 3@6 6 Sp @1'-1⅜" 3@6 6 Sp @1'-1⅜" 3@6 6 Sp @1-2 3@6 6 Sp @1-2 3@6 6 Sp @1-2" 3@6 6 Sp @1-2" 3@6 2@1-2" 12

C3 C3 C4

Begin Bridge

℄ Roadway

Existing Transverse Bars from the end wall

Existing Transverse Bars from the slab

T3 Top | 8 9 T1 Top | 16'-0 T2 Top | T4 Top

BW1

S1 Bars ~ Top
S2 Bars ~ Bot

T3 (Typ.) Bot

1'-10 Typ. Top & Bot

C3 C4

3" | 21 Eq Sp ~ C1 & C2 Bars (Typ End Spans) | 3" | 3" | 26 Eq Sp ~ C1 & C2 Bars (Typ center span) | 3

2 Spaces @ 21'-7½" ~ Barrier Spacing 26'-9

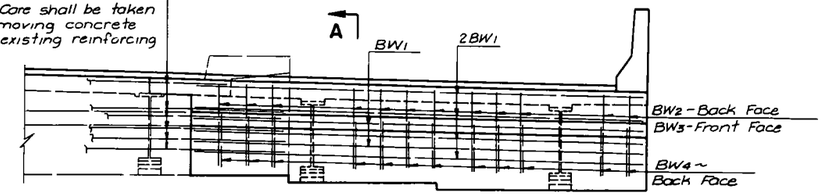
1'-3 | 276 Spaces @ about 6 ~ S1 & S2 Bars ~ to match transverse Bars from existing slab ~ Top & Bot

43'-3 26'-9"

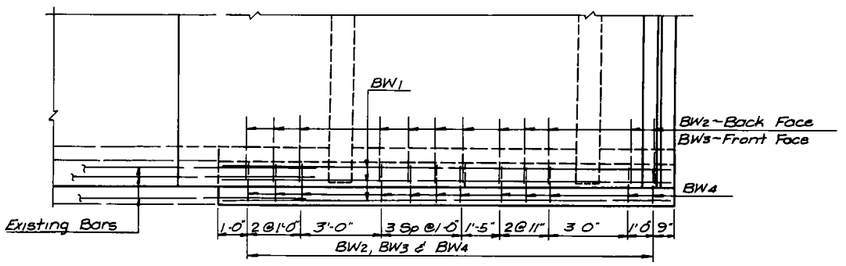
℄ Pier No 2 Sym about ℄

HALF PLAN

Existing Bars
Note Care shall be taken in removing concrete from existing reinforcing



ENDWALL ELEVATION



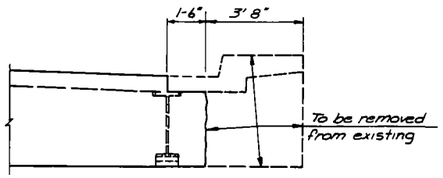
ENDWALL PLAN

Begin or End Bridge
⅞" ø Formed Holes
1'-0"

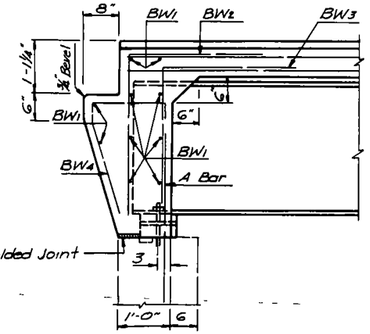
C-C

10" 10"

CURB SLEEVE DETAIL
For the new Section



ENDWALL REMOVAL DETAIL



A-A

QUANTITIES
See Dwg No 2-149.111-12 R.

SOO LINE SEPARATION

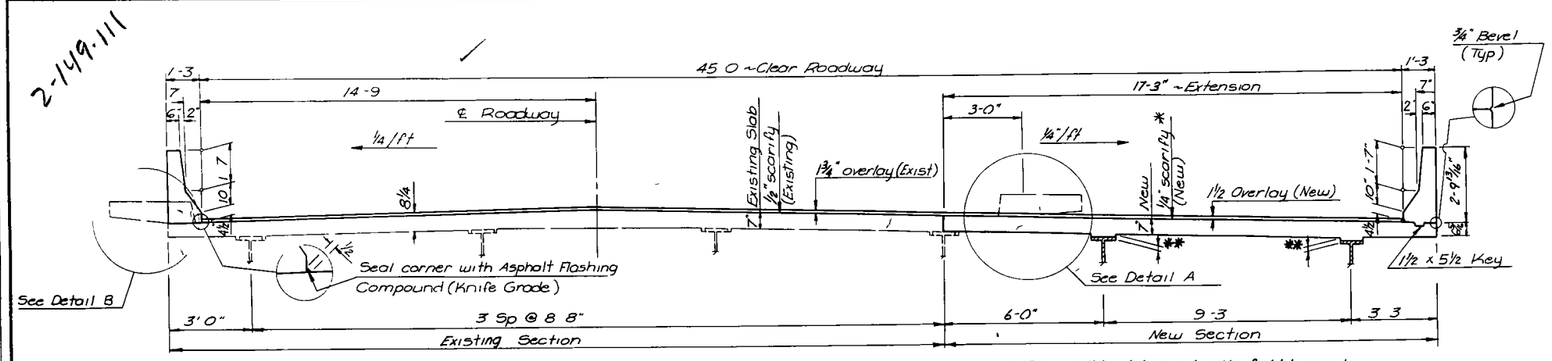
SUPERSTRUCTURE DETAILS

RIGHT BRIDGE

2-149.111-11 R

FED ROAD DIST NO	STATE	PROJ NO	SHEET NO.	TOTAL SHEETS
8	N D	F-FG-4-002(10)	80	

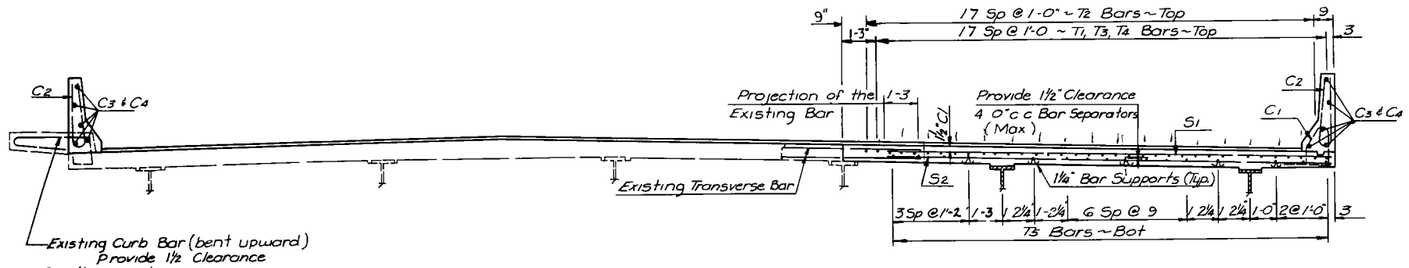
2-149-111



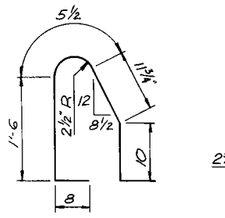
SECTION OF SLAB
Showing Dimensions

** Riser will be determined in the field to provide the 7" slab thickness below the screed

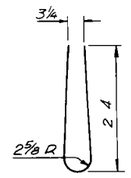
* See special provision for overlay



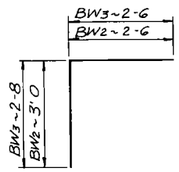
SECTION OF SLAB
Showing Reinforcing steel for New Slab Extension and New Barriers



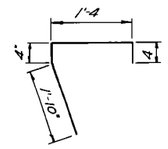
C1



C2



BW2 & BW3

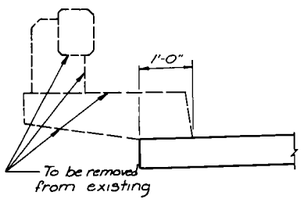


BW4

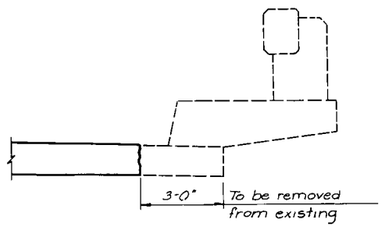
BENT BAR DETAILS
Dimensions shown are out to out

BAR LIST				
MARK	NO	SIZE	LENGTH	SHAPE
BW1	20	5	16-9	Str
BW2	24	4	5-6	Bent
BW3	24	4	5-2	"
BW4	24	4	3'-10"	"
* C1	142	5	5-1	Bent
C2	291	5	5-5	"
C3	40	4	21'-3	Str
C4	20	4	26-5	"
* S1	277	5	16-9	Str
S2	277	5	16'-9	"
* T1	36	5	24-9"	Str
* T2	36	6	24-9	"
* T3	36	4	36-2"	"
* T4	18	4	25-2	"
T5	48	4	47'-9	"

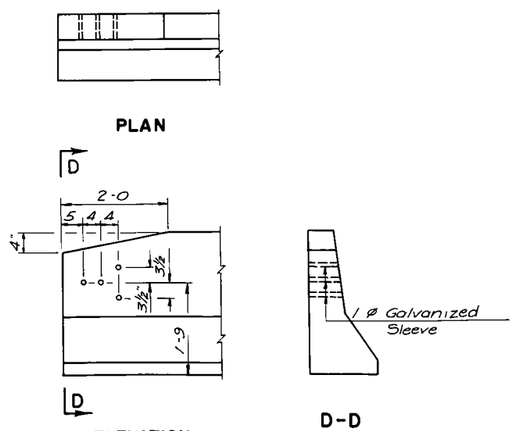
*Reinforcing Bar shall be Epoxy coated (See Special Provisions)



DETAIL "B"



DETAIL "A"



BARRIER END DETAILS

QUANTITIES	
Class AAE-3 Concrete	783 C.Y.
Reinforcing Steel	95516 Lbs.
Reinforcing Steel (Epoxy C)	30312 Lbs.

SOO LINE SEPARATION

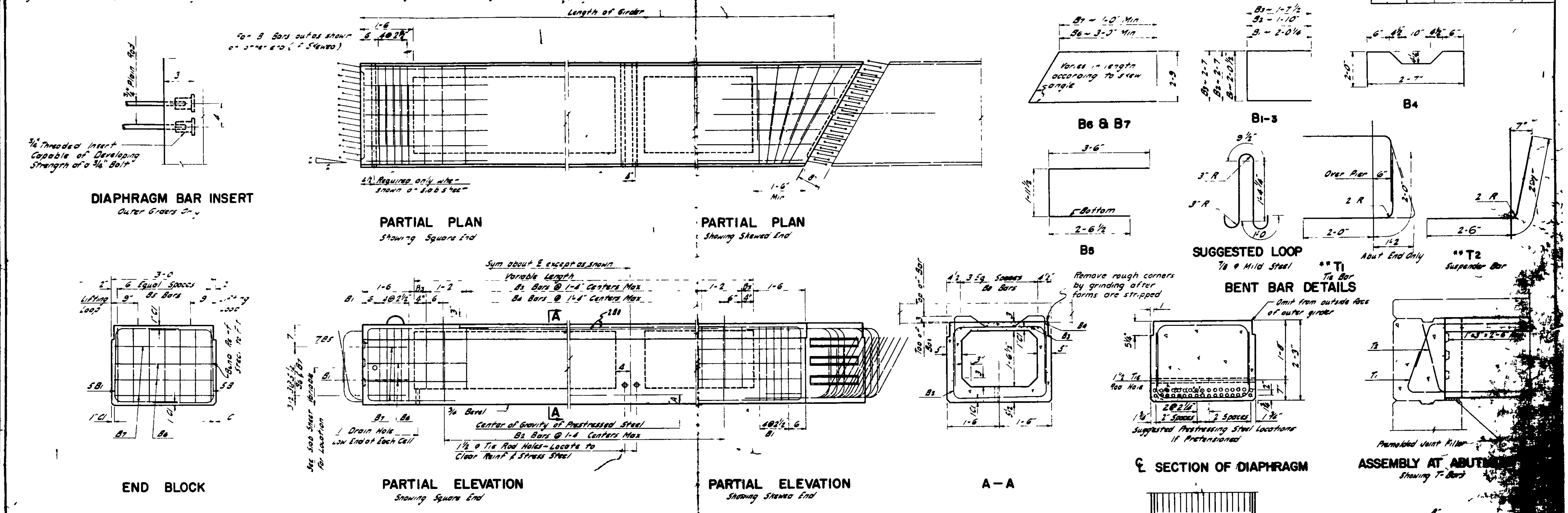
SUPERSTRUCTURE DETAILS
RIGHT BRIDGE

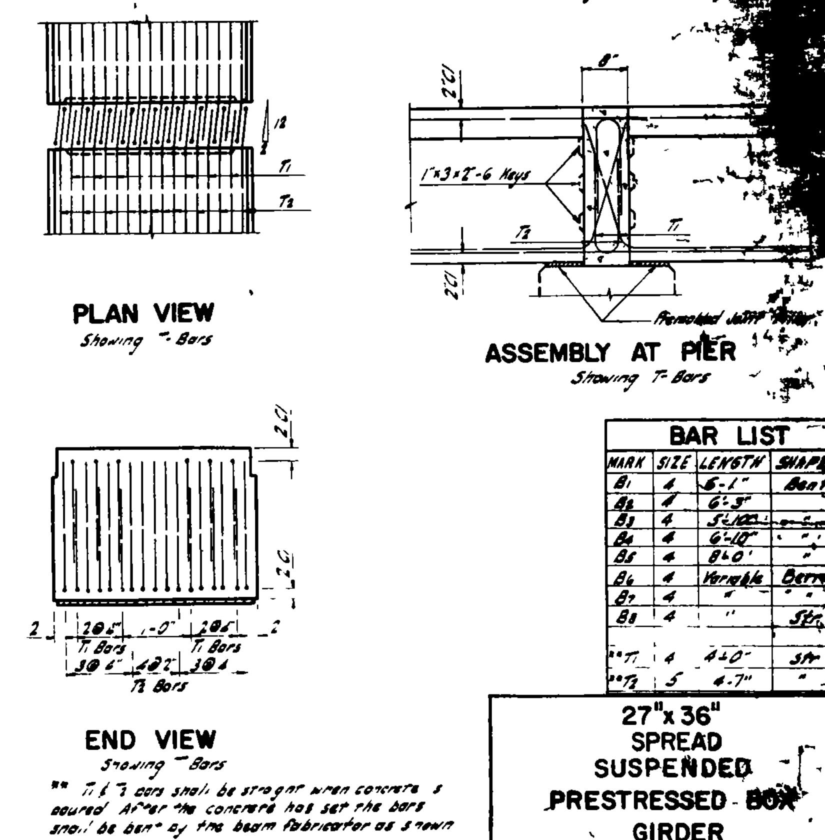
2-149 111-12R

2-149-111

FED ROAD DIST NO	STATE	PROJ NO	SHEET NO	TOTAL SHEETS
5	ND		10	81

Weight of Girder in Tons = (0.2596)(Length of Girder in Feet) + (0.2010)(No of Diaphragms) + (0.2412)(Length of End Blocks)





①5140 PSI CONCRETE @ DETENSIONING
②4500 PSI CONCRETE @ DETENSIONING
③4600 PSI CONCRETE @ DETENSIONING

GIRDER DATA

LENGTH "L"	SPACE BETWEEN BEAMS	THICKNESS OF SLAB BETW BMS	THICKNESS OF SLAB ON TOP BEAMS	BRIDGE NO	LIVE LOAD	FINAL STRESSING FORCE AT MIDSPAN A	KIPS	A	KIPS	A	KIPS	WEIGHT "TONS"
35'-2"	4'-8"	7"	6		H20	2 25	231 2	2 75	238 3	3 25	245 7	10 1
38-10	4-6"	8	7 1/2	83-921	HS20	2 25	289 9	2 75	298 6	3 25	307 9	11 0
41'-6"	4'-0"	8	7 1/2"	8-4503	HS20	2 25	320 7	2 75	330 4	3.25	340 7	13 3
36'-7"	4'-0"	8"	7 1/2	94-2831 5R	HS20	2 25	252 8	2 75	260 4	3 25	268 5	10 1
48-10	4-0	8	7 1/2	94-2831 5R	HS20	2 25	424 5	2 75	437 3	3 25	450 9	13 2
42'-10"	4-6	8	7 1/2	83-921	HS20	2 25	345 8	2 75	356 3	3 25	376 3	12 0
49-0	4-0'	7	6 1/2	29-2351	HS20	2 75	45 7	3.25	465 7	3 75	480 7	13.7
49'-4"	4'-8	7	6		H20	2 25	408 4	3 25	4_0 7	3 75	433 8	13.7
4[illegible]'-1"	5'-3"	8"	7 1/2"	2-149	HS20	2 25	353 9	2 75	364 5	3 25	375 9	11 7
50'-11 1/2"	2 6	7	6 1/2	81-7	HS20	2 50	415 9	3 00	428 6	3 50	442 1	14 8
①51'-4	6-0	7	6 1/2	49-13	HS20	2 25	559 6	2 75	576 5	3 25	594 4	14 3
51-11	5-0	7	6 1/2	11-4	HS20	3 00	5[illegible]2 4	3 50	590 5	4.00	609 8	14 4
52-2	5-0	7	6 1/2	11-4	HS20	3 00	567 6	3.50	585 5	4.00	604 6	14 5
52-8	5-0	7	6 1/2	29 66	HS20	2 50	569 8	3.00	587 2	3 50	605 8	14.6
52-10	5-0	7	6 1/2	29-66	HS20	2 50	572 8	3 00	590 2	3.50	608 8	14.6
[illegible]	5-3	8	7 1/2"	2 149	HS20	3.25	594 4	3 75	613 5	4 25	633.8	14 5
63-4"	6-6"	8"	7 1/2	37-2 18	HS20	1 75	653 6	2 25	6[illegible]2 8	2 75	693 0	17 4
55-3 1/2"	4 8	7	6 1/2	116-03	H 15	2 25	489 7	2 75	504 5	3 25	520 2	15 0
②55-0"	7'-0"	7"	6 1/2"	200A-181	HS20	2 25	547 9	2 75	564 4	3 25	581 9	15 0
③58 8	4'0"	7"	6 1/2"	23-1091	HS20	2 25	631 8	2 75	671 4	3.25	692.3	18 1
59'-0"	7'-0"	7"	6 1/2	BR3823(5)	H20	2 25	540 7	2 75	557.0	3.25	574 3	16 2

DESIGN SPECIFICATIONS A A.S H.O.
DESIGN AND SHOP DRAWING AT LEAST 14 DAYS PRIOR TO THE FORMING AND POURING OF ANY GIRDERS, THE CONTRACTOR SHALL SUBMIT CHECKED DESIGN FIGURES AND SHOP DRAWINGS FOR THE APPROVAL OF THE BRIDGE ENGINEER OF THE STATE HIGHWAY DEPARTMENT. THE DESIGN FIGURES SHALL SHOW THE TOTAL INITAL PRESTRESS FORCE REQUIRED AS THE SUM OF THE FINAL PRESTRESS FORCE TAKEN FROM THE CONTRACT DRAWINGS AND THE LOSSES IN PRESTRESS DUE TO FRICTION, ELASTIC SHORTENING OF CONCRETE, SHRINKAGE OF CONCRETE, CREEP OF CONCRETE AND RELAXATION OF STEEL STESS AS DETERMINED BY THE CONTRACTOR FOR HIS METHOD OF STRESSING. IF THE CONTRACTOR WISHES, THE LOSS OF STEEL STRESS NOT INCLUDING FRICTION LOSSES MAY BE ASSUMED AS 35,000 P.S.I. FOR PRETENSIONING AND 25,000 P S.I. FOR POST-TENSIONING.

SHOP DRAWINGS SHALL SHOW WIRE, STRAND OR BAR LAYOUT, END ANCHOR PLATE DETAILS PULL DOWN LOCATIONS, TENSIONING FORCES, ELONGATION AND ORDER OF TENSIONING AND ANY PROPOSED CHANGES IN REINFORCING STEEL

* THE FINAL PRESTRESS FORCE (REMAINING AFTER ALL LOSSES [illegible] COUNTED FOR) AND ITS CORRESPONDING DIMENSION [illegible] SHALL BE SELECTED FROM THOSE ON A CURVE DETERMINED BY THE THREE VALUES SHOWN ON THIS DRAWING.

THE GIRDERS SHALL BE POURED IN ALL-STEEL FORMS
ALL REINFORCING STEEL SHALL BE INTERMEDIATE GRADE

MINOR CHANGES TO THE SHAPE OF THE GIRDER AND TO THE REINFORCING STEEL MAY BE MADE TO ACCOMMODATE THE FORMS OF VARIOUS CONTRACTORS AND THEIR CONSTRUCTION METHODS WITH THE APPROVAL OF THE BRIDGE ENGINEER

ALL TENSION IN THE TOP OF THE BEAM SHALL BE TAKEN CARE OF BY DRAPING PRESTRESS STEEL, BY ADDING MILD STEEL IN THE TOP OR BY A COMBINATION OF THE TWO,

THE DEAD LOAD PROVISIONS IN THE DESIGN INCLUDE COMPOSITE CONCRETE SLAB, 25 P.S.F. FUTURE WEARING SURFACE AND CURB WEIGHT UNIFORMLY DISTRIBUTED OVER ALL UNITS.

* IF NOT SHOWN ON THIS DRAWING, SEE PLANS ON SPECIFIC PROJECT

C G = 12 11 from bottom
Area = 493 5 Sq In
Moment of Inertia = 43,621 In⁴

THE CENTER OF GRAVITY OF THE TENSIONING UNITS AT ALL POINTS ALONG THE GIRDER SHALL LIE ON OR BELOW THE CURVE OF A DRAPED CHALK LINE THAT SAGS FREELY WITH DIMENSION "A" AS SHOWN AND WITH THE END 7" ABOVE THE BOTTOM OF THE GIRDER.

CONCRETE TEST CYLINDER STRENGTH AT TIME OF STRESS TRANSFER SHALL BE AT LEAST 4000 P.S I.

STRESSING FORCES FOR LENGTHS NOT SHOWN SHALL BE INTERPOLATED FROM VALUES IN TABLE

BAR LIST

MARK	SIZE	LENGTH	SHAPE
B1	4	5-1"	Bent
B2	4	6'-3"	
B3	4	5'-10"	"
B4	4	6'-10"	"
B5	4	8'-0'	"
B6	4	Variable	Bent
B7	4	"	"
B8	4	"	Str.
**T1	4	4'-0"	Str
**T2	5	4-7"	"

27"x36" SPREAD SUSPENDED PRESTRESSED BOX GIRDER

COMPOSITE SLAB

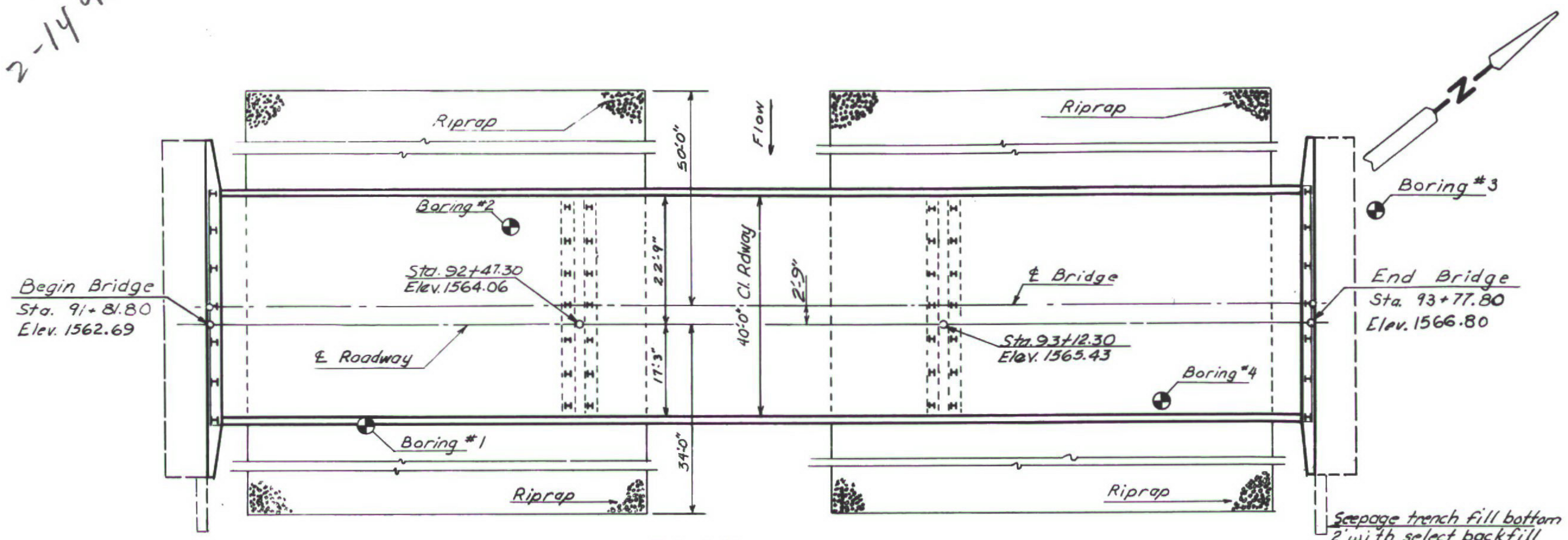
H-7010

QUANTITIES | MADE BY | CHECKED BY

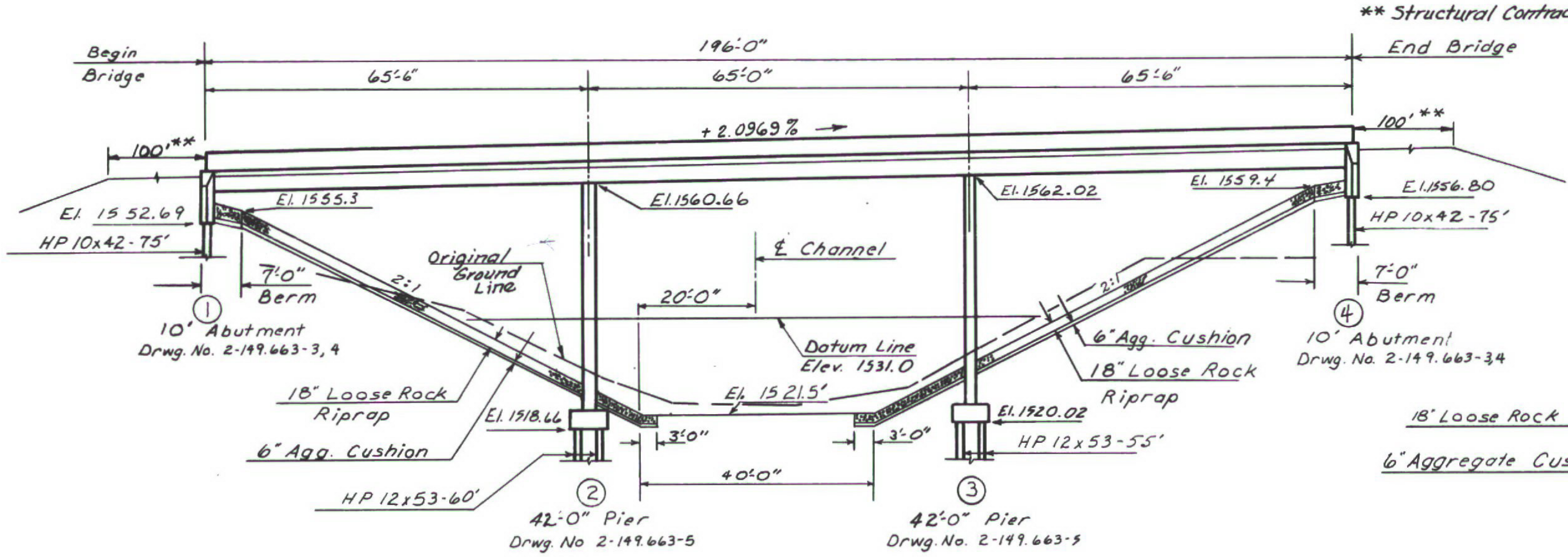
H-7010

2-149.663

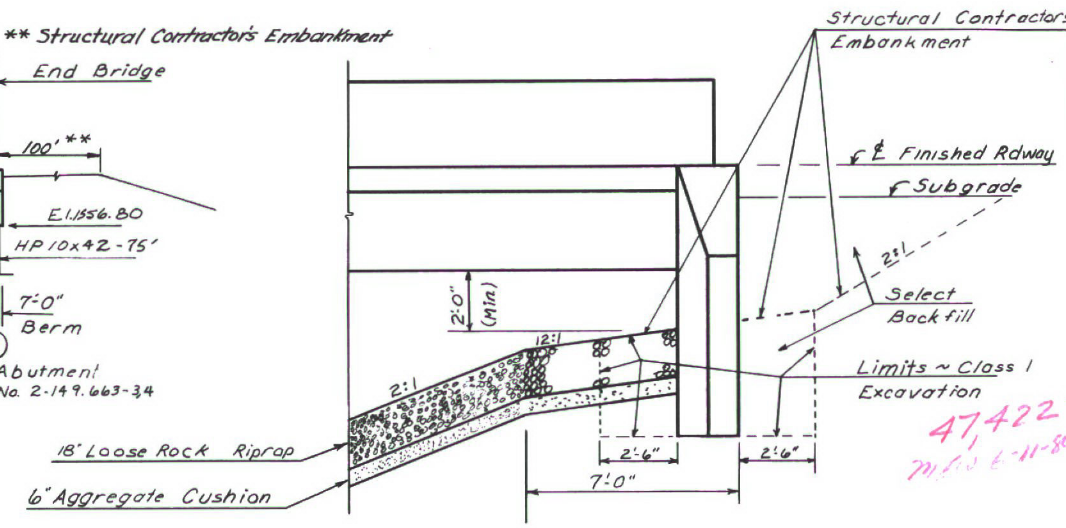
BRIDGE CODE	FED ROAD DIST NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
X-081	5	N. D.	F-FG-4-002()147	82	



PLAN

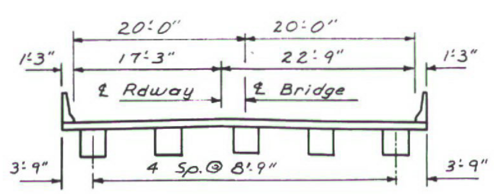


ELEVATION



DETAIL AT ABUTMENT

NOT TO SCALE



DECK SECTION

HYDRAULIC DESIGN DATA

DRAINAGE AREA	4025 SQ. MI.
DESIGN FREQUENCY	50 YRS.
DESIGN DISCHARGE	9260 CFS.
DESIGN STAGE	1546.9
STREAM GRADIENT	0.0001
WATERWAY PROVIDED BELOW DESIGN STAGE	2230 SQ. FT.
WATERWAY PROVIDED BELOW CLEARANCE	4550 SQ. FT.
AVERAGE VELOCITY OF FLOW IN NATURAL CHANNEL	3.3±
DEPTH OF FLOW	25.4 FT.
VELOCITY OF FLOW UNDER BRIDGE	4.2 FT/SEC.
FREEBOARD PROVIDED	11.9 FT.±
100-YEAR FREQUENCY DISCHARGE	4460 CFS
100-YEAR FREQUENCY STAGE	1549.7
MAXIMUM RECORDED STAGE (1969)	1548.0
MAXIMUM RECORDED DISCHARGE (1904)	12000 CFS

SPECIAL PROVISIONS

NO.	NAME
254	EPOXY COATED REINFORCING STEEL
208-1	EXCAVATION FOR BOX CULVERTS & BRIDGES
610-3	PORTLAND CEMENT CONCRETE
622-3	PILING
806-1	AGGREGATES FOR PORTLAND CEMENT CONCRETE
806-3	AGGREGATE FOR PORTLAND CEMENT CONCRETE, STRUCTURAL & PAVING MOTAR SAND & UNDER-DRAIN GRANULAR FILL

ESTIMATE OF QUANTITIES

SPEC NO.	CODE NO.	BID ITEM		
103	0100	CONTRACT BOND	1	L.S.
203	0140	BORROW	10,765	C.Y.
208	0100	CLASS I EXCAVATION	107	C.Y.
208	0110	CLASS II EXCAVATION	167	C.Y.
208	0201	FOUNDATION PREPARATION	1	EA.
216	0100	WATER	309	M GAL.
228	0100	SELECT BACKFILL	213	C.Y.
604	9620	PRESTRESSED BOX BEAM-33"(15@64'4")	965.0	L.FT.
602	0130	CLASS AAE-3 CONCRETE	256.6	C.Y.
602	1110	CLASS AE-1 CONCRETE	300	C.Y.
612	0115	REINFORCING STEEL- GRADE 60	57,177	LBS.
612	0116	REINFORCING STEEL-(GR,60) EPOXY COATED	31,878	LBS.
622	0020	STEEL PILING- HP 10 X42	900	L.F.
622	0040	STEEL PILING-HP12 X53	1,495	L.F.
622	0393	STEEL TEST PILING-HP10X 42	170	L.F.
622	1200	STEEL TEST PILING-HP12X53	135	L.F.
702	0130	LOOSE ROCK RIPRAP	850.2	C.Y.
703	0100	AGGREGATE CUSHION	283.4	C.Y.
616	5890	STRUCTURAL STEEL A36(APPROX. 2156 LBS.)	1	L.S.
750	0100	LINSEED OIL TREATMENT	35	GAL.
900	3000	BRIDGE BENCH MARKS	1	SET

47,422
M.L.S. 6-11-80

STRUCTURAL DRAWINGS

GENERAL DRAWING 2-149.663-1,2

SUBSTRUCTURE 2-149.663-3,4,5

SUPERSTRUCTURE 2-149.663-6&7 H-0401 D-900-1 H-7008

DESIGN LOADING	SCALE
HS 20	1 INCH = 15 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

SOURIS RIVER
BRIDGE LAYOUT

PROJECT F-FG-4-002()147 STA. 92+79.80

WARD COUNTY

APPROVED

3-14-80 (signature) BRIDGE ENGINEER
DATE

SCREED ELEVATIONS

Screed Elev. Girder No. 5 D.L. Defl. Incl.	Screed Elev. ℄ Roadway D.L. Defl. Incl.	Screed Elev. Girder No. 1 D.L. Defl. Incl.
62.266	62.688	62.381
.283	.705	.398
.446	.868	.561
.606	63.028	.721
.761	.183	.876
.908	.330	63.023
63.048	.470	.163
.178	.600	.293
.301	.723	.416
.417	.839	.532
.527	.949	.642
.634	64.056	.749
.648	.070	.763
.811	.233	.926
.971	.393	64.086
64.125	.548	.241
.273	.695	.388
.413	.835	.528
.543	.965	.658
.666	65.088	.781
.782	.204	.897
.892	.314	65.007
.999	.421	.114
65.013	.435	.128
.176	.598	.291
.336	.758	.451
.491	.913	.606
.638	66.060	.753
.778	.200	.893
.908	.330	66.023
66.031	.453	.146
.147	.569	.262
.257	.679	.372
.364	.786	.479
.382	.804	.497

10" Begin Bridge — 10 Eq. Sp.=64'4" — ℄ Pier #2 — 8" — 10 Eq. Sp.=64'4" — 8" — ℄ Pier #3 — 10 Eq. Sp.=64'4" — 10" End Bridge

SCREED ELEVATIONS

BENCH MARKS

NO.	DESCRIPTION	LOCATION		ELEV.
11	Point Spot on N. end of CSP	80+18	102' RT	1538.71
12	Point Spot on SW Corner of wing wall for Bridge	92+06	24' RT	1562.61
13	Point Spot on SW Corner of water plant	101+87	274' Rt	1588.24

PILE LOADING

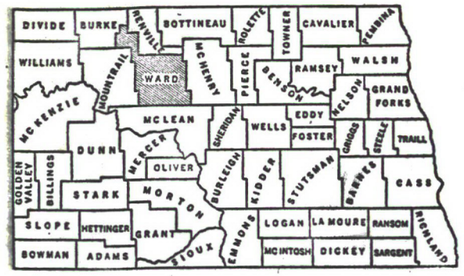
LOCATION	DEAD LOAD + EARTH	LIVE LOAD	EARTH O. T. M.	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	DESIGN LOAD	MAX. REQD. BEARING	* MINIMUM PENETRATION
Abut. 1 & 4	34.1 T	11.4 T					45.5 T.	55 T.	40'
Pier 2 & 3	39.3 T	11.6 T					50.9 T.	70 T.	20'

*in ft. below footing

2-149.663 L

2-149.111

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	FG-701(2)		1	8



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

SCALES
- LAYOUT SHEET: 1 IN. = 3000'
- PLAN AND PROFILE DRAWINGS: HOR. 1 IN. = 100 FT. / VERT. 1 IN. = 10 FT.
- STRUCTURAL DRAWINGS:- AS SHOWN
- CROSS SECTION SHEETS:- 1 IN. = 10 FT.

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN WARD COUNTY

FEDERAL AID PROJECT NO. FG-701(2)

INDEX OF DRAWINGS

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
FG-701(2)	0.026	0.026
TOTALS	0.026	0.026

STRUCTURAL DRAWINGS	STANDARD DRAWINGS
2-12.5-1	7.5
2-12.5-2	7.6
H-1173-1	14.9
H-1173-2	H-0112
H-1278	H-0401
H-1397	H-0501

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota State Highway department Jan. 1956 and approved as standard by the Bureau of Public Roads May 7, 1956 Required Special Provisions dated June 15, 1959 and approved by the Bureau of Public Roads July 6, 1959 and others submitted herewith.

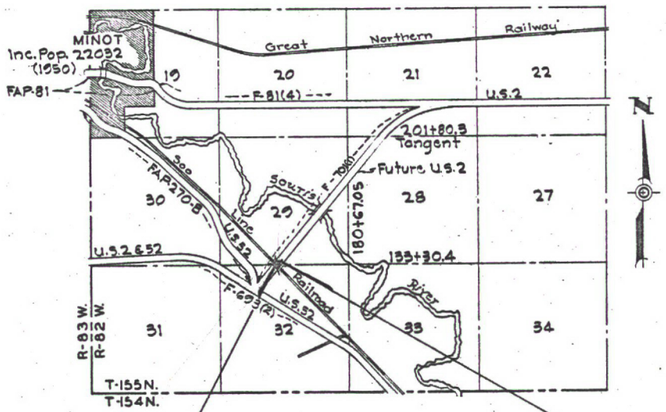
KEY TO CONVENTIONAL SIGNS

STATE & NATIONAL LINES
COUNTY LINE
TOWNSHIP & RANGE LINES
GRADE LINE (500)
CENTERLINE OF CONSTRUCTION
OLD RIGHT OF WAY LINE
NEW RIGHT OF WAY LINE
ABANDONED RIGHT OF WAY LINE
PROPERTY LINE
STONE WALL
OTHER FENCES (KIND)
POLE LINES (KIND)
POWER LINES (KIND)
BRIDGE
GROUND / GRADE ELEVATION (652.0 / 644.0 / 640)
TRAVELED WAY
RAILROADS (KIND & NAME)
HEDGES AND TREES (KIND)
TRAILS
CITY OR VILLAGE CORPORATE LIMITS
SECTION CORNER
QUARTER SECTION CORNER
BUILDINGS
OLD CULVERTS
NEW CULVERTS
DRAINAGE
BENCH MARKS (BM)
WATERS EDGE
MARSH
WIRE ROPE GUARD RAIL
SNOW FENCE
RIPRAP
GUARD POSTS
COBBLE GUTTERS
CONCRETE GUTTERS (TYPE CONCRETE GUTTER)

DESIGN DATA

TRAFFIC	AVERAGE DAILY	EST. 30TH MAX. HR.
CURRENT TRAFFIC (1958)	788 PASS. 262 TRUCKS 1050 TOTAL	137
TRAFFIC FORECAST (1979)	2400 PASS. 800 TRUCKS 3200 TOTAL	416

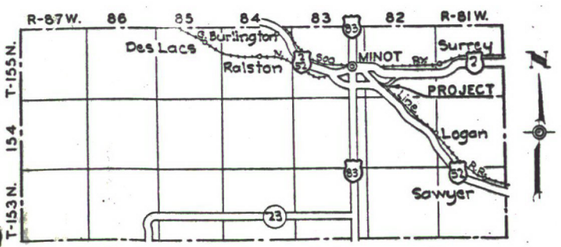
DESIGN SPEED 70 MPH
TRAFFIC CLASSIFICATION 'M'
MINIMUM SIGHT DISTANCE (NON PASSING) 600'
MINIMUM SIGHT DISTANCE (SAFE PASSING) 3200'
MINIMUM PASSING SIGHT DISTANCE FOR MARKING 1200'
BRIDGES H20 S16 (1957) DESIGN LOADING
MINIMUM WIDTH 30'



LAYOUT MAP
3000' 0 3000'

BEG. FG-701(2) STA. 132+40.52=
Sta. 132+40.52 on F-701(1)
A point 2234.08' East & 68.47' South of the N.W. Cor. of Sec. 32, Twp. 155, Rge. 82 W.

END FG-701(2) STA. 133+80.52=
Sta. 133+80.52 on F-701(1)
A point 2322.86' East & 38.79' North of the N.W. Cor. of Sec. 32, Twp. 155, Rge. 82 W.



SKETCH MAP OF PART OF WARD COUNTY

QUANTITIES ① See Special Provisions

LOCATION	13B EXCAVATION CLASS 2	60A CONCRETE CLASS A-1	60A CONCRETE CLASS A(1)½	62A REINFORCING STEEL	63A STRUCTURAL STEEL	65G STEEL ENCASED PILING	SLOPE PROTECTION	22B SELECT BACKFILL	BRIDGE BENCH MARKS
	CU.YD.	CU.YD.	CU.YD.	LB.	LB.	Lin.Ft.	SQ.FT.	CU.YD.	SET
Sta. 133+14.77	261	6.9	255.9	49,204	93,585	1980	5373	75	1
Grand Totals	261	6.9	255.9	49,204	93,585	1980	5373	75	1

① ID I

Add 1240.15 to datum of proj. plans to get C & G. datum.

See Par. Survey Aug. 26, 1958

APPROVED DATE 9-24-62

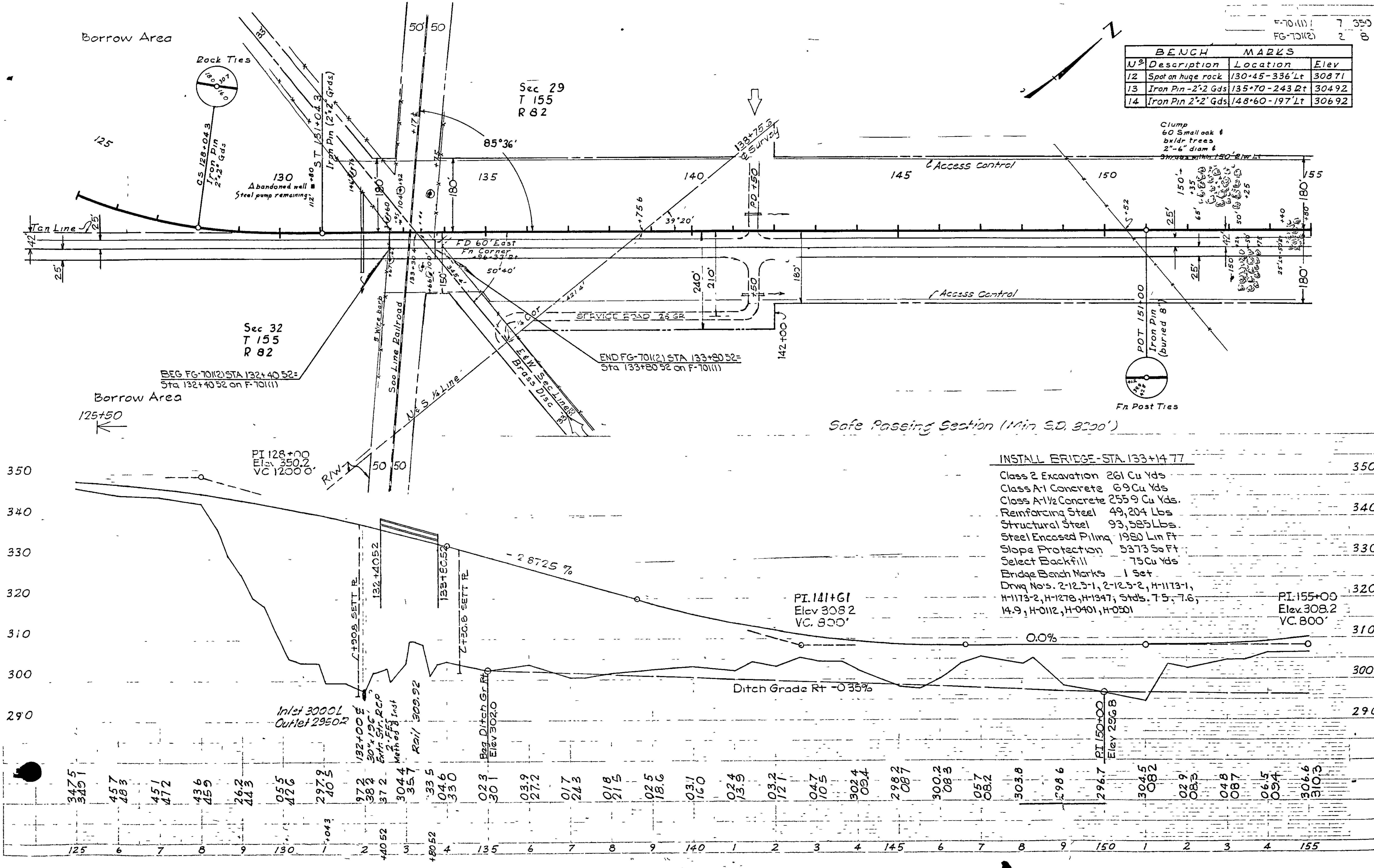
CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

N. E. BRADLEY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE



BENCH MARKS

Nº	Description	Location	Elev
12	Spot on huge rock	130+45 - 336' Lt	308.71
13	Iron Pin - 2"x2 Gds	135+70 - 243' Rt	304.92
14	Iron Pin 2"x2' Gds	148+60 - 197' Lt	306.92

INSTALL BRIDGE - STA. 133+14.77

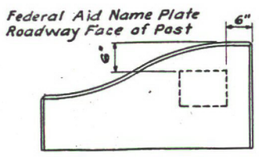
- Class 2 Excavation 261 Cu Yds
- Class A-1 Concrete 69 Cu Yds
- Class A-1½ Concrete 255.9 Cu Yds.
- Reinforcing Steel 49,204 Lbs
- Structural Steel 93,585 Lbs.
- Steel Encased Piling 1980 Lin Ft
- Slope Protection 5373 Sq Ft
- Select Backfill 75 Cu Yds
- Bridge Bench Marks 1 Set
- Drwg No's. 2-12.5-1, 2-12.5-2, H-1173-1, H-1173-2, H-1278, H-1347, Std's. 7.5, 7.6, 14.9, H-0112, H-0401, H-0501

DETAILS	CHECKED BY	JJC
	MADE BY	OCA
TRACING	CHECKED BY	THR
	MADE BY	THR
QUANTITIES	CHECKED BY	MEW

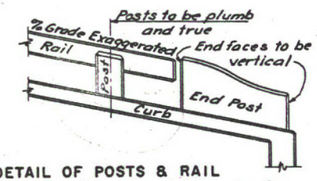
1960
FEDERAL AID
PROJECT
F-701(2)
NORTH DAKOTA
2-12.5

FG

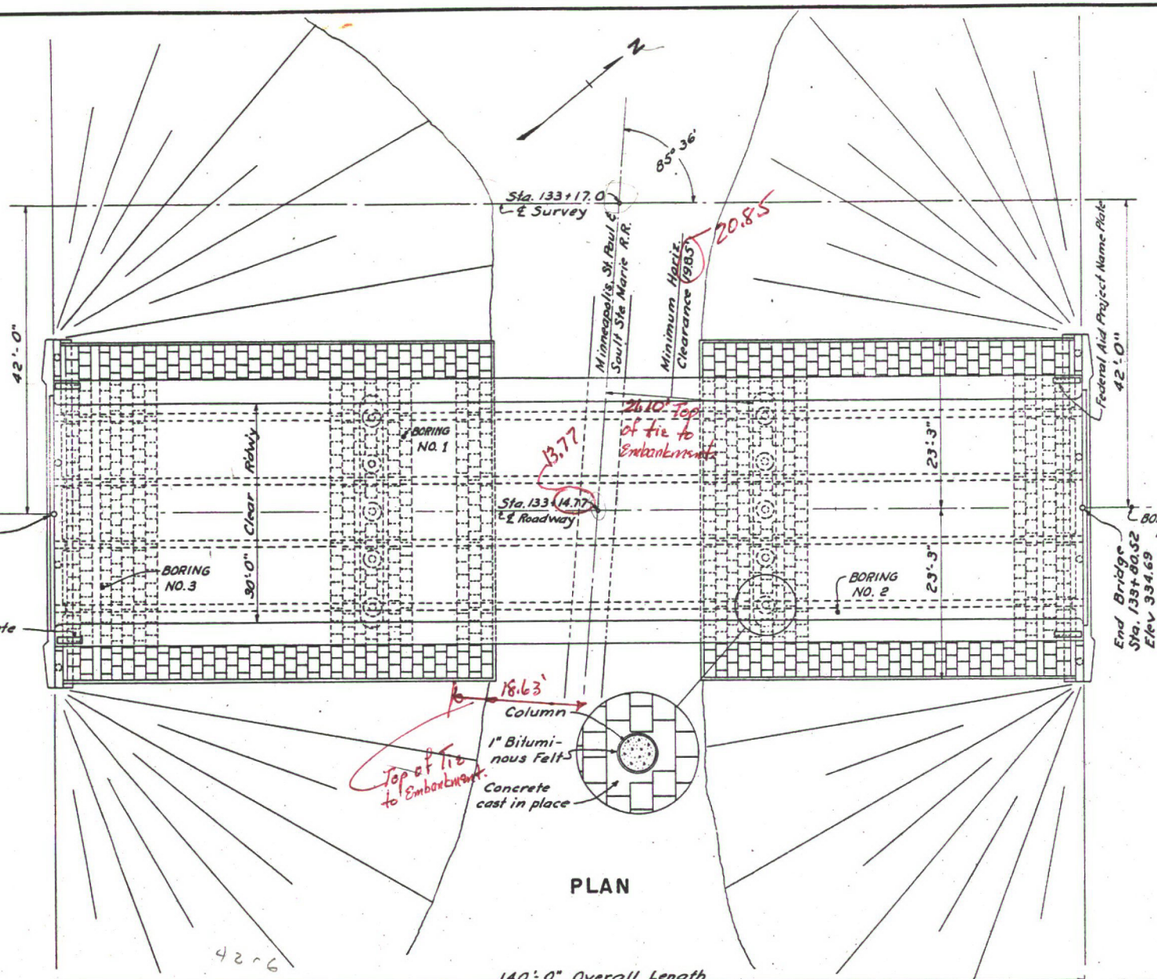
FEDERAL AID NAME PLATE
2 Required



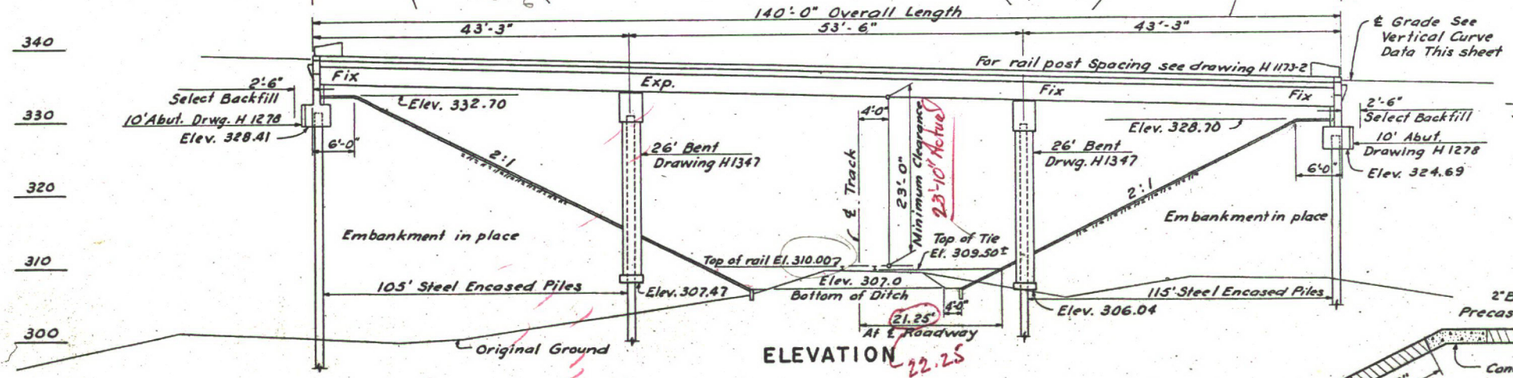
NAME PLATE LOCATION ON END POST
Also see plan (This drawing)
Railing Details Drawing H-0112,
H-1173 & Standard Drawing 14.9.



DETAIL OF POSTS & RAIL
Showing Supplemental Drawing for Railing Details, Sheet H-0112 (Outside View)



PLAN



ELEVATION

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
11	2"x2" Hub by P.P.	Sta. 121+35~225'Rt.	348.27
12	Spot on huge rock	Sta. 130+45~336'Lt.	308.71
13	Iron Pin ~2"x2" Gds.	Sta. 135+70~243'Rt.	304.92
14	Iron Pin ~2"x2" Gds	Sta. 148+60~197'Lt.	306.92

PILE LOADING

LOCATION	DEAD LOAD + EARTH	LIVE LOAD	EARTH O. T. M.	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	LONG. FORCE	DESIGN LOAD	MINIMUM REQUIRED BEARING	⊕ MINIMUM PENETRATION
Abutment	31.4 T.	13.3 T.						44.7 T.	65 T.	60
Pier	47.6 T.	23.7 T.						71.3 T	73 T.	50
								⊕ Below bottom of footing		

NOTES

GENERAL:
A vibrating strike-off template shall be used when finishing the deck slab concrete. Care shall be taken that the vibrator is shut off when the forward movement of the template is stopped. The final strike-off shall be made on a fairly long surface without continual starting and stopping.
The cost of furnishing and placing joint filler, asphalt curb seal, name plates, end post pipe sleeves, and other miscellaneous items shall be included in the price bid for Class A-1½ Concrete.
For painting, welding, and deflection notes see drawing H-1173-1.
For rail post spacing and slab pouring sequence notes see drawing H-1173-2.

EXCAVATION:
All structural excavation shall be Excavation Class 2

EMBANKMENT:
The roadway embankment has been previously placed under separate contract, but additional shaping and placement will be required in order to conform to the exact limits as defined on this sheet and as directed by the Engineer; any cost accruing due to these operations shall be included in the unit price bid for precast block.
Earth consolidation shall be in accordance with Section 17.3(a)4 of the Standard Specifications using "Extra Compaction".
Embankment material, if required shall be obtained from Highway Right-of-Way as staked by the Engineer.

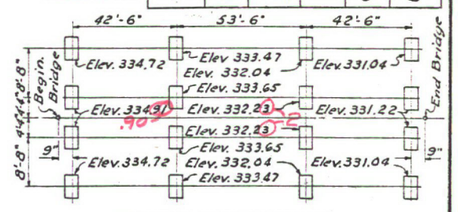
PRECAST BLOCK:
The precast block panels shall be placed in accordance with the standard drawing 7.5, the details as shown on this sheet, and as specifically directed by the Engineer.

REINFORCING STEEL: (Intermediate Grade)
Bent bar details are given center to center unless noted.
The Bar fabricator shall add a prefix to all bar designations to differentiate between the several parts of the structure or structures.

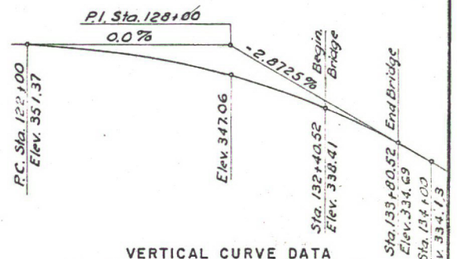
CONCRETE:
All exposed edges of concrete shall be beveled with ¾" triangular molding except as shown on the plans.
The "Rubbed Surface Finish" shall be given to the railing end posts, to the outside and roadway vertical faces of curbs, and to the exposed faces of the abutment wing walls. All other surfaces shall be given the "Ordinary Surface Finish".
All concrete shall be Class A-1½ except railings which are Class A-1 and shall be compacted by vibration.
Air-entrained portland cement shall be used in the bridge slab and curb concrete. Concrete made from both regular and air-entrained cement shall be considered Class A-1½ as a pay item
The Deck Slab may be placed in one continuous pour provided the Contractor can supply concrete at a rate not less than 25 Cu. Yd. per hour.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	FG-701(2)		3	8

CODE: X-131



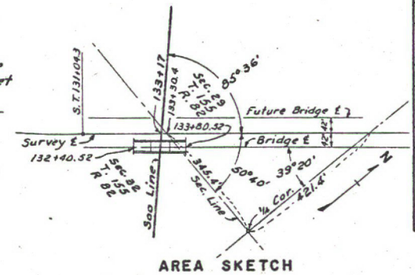
BEARING PLATE LAYOUT
Elevations are to top of finished Concrete



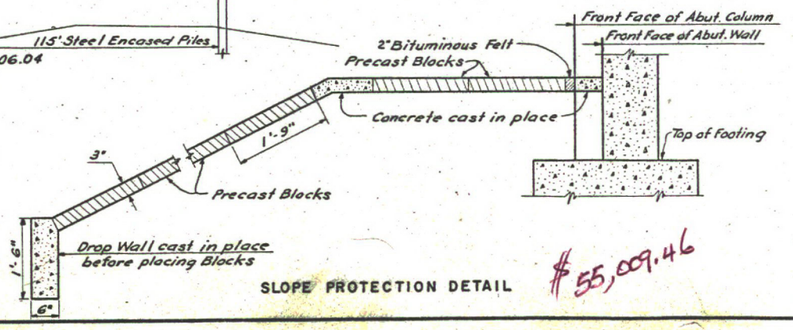
VERTICAL CURVE DATA
Elevations are to top of finished Roadway

ESTIMATE OF QUANTITIES

SPCL. PROV.	SPEC. NO.	BID ITEM			
	12	REMOVING EXISTING STRUCTURE AT STA.			
	15 B	EXCAVATION CLASS			CU. YD.
		" CLASS 2		261	CU. YD.
		" CLASS 3			CU. YD.
	60 A	CONCRETE CLASS A—1		6.9	CU. YD.
		" CLASS A—1½		255.9	CU. YD.
	62 A	REINFORCING STEEL		49,204	LB.
	63 A	STRUCTURAL STEEL		93,585	LB.
	64 A	UNTREATED TIMBER			M.B.M.
	64 B	TREATED TIMBER			M.B.M.
	65 A	UNTREATED TIMBER PILING	@ FT.		LIN. FT.
151	65 G	STEEL ENCASED PILING	9 @ 105 FT. / 9 @ 115 FT.	1980	LIN. FT.
	65 E	UNTREATED TIMBER TEST PILES			EACH
152	65 S	STEEL ENCASED TEST PILES			EACH
		SLOPE PROTECTION		5373	SQ. FT.
	81	TEMPORARY CROSSING AND DETOUR			
	228	SELECT BACKFILL		75	CU. YD.
		BRIDGE BENCH MARKS		1	SET



AREA SKETCH



SLOPE PROTECTION DETAIL

$55,009.46

STRUCTURAL DRAWINGS

GENERAL DRAWING	2-12.5-1(THIS SHEET), 2-12.5-2, 7.6, H-0501
SUBSTRUCTURE	H-1278, H-1347, H-0401, 7.5
SUPERSTRUCTURE	H-1173-1, H-1173-2, H-0112, 14.9
DESIGN LOADING	H20 S16 (1957)
SCALE	1 INCH = 10 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
OVERHEAD
MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE R.R.
BRIDGE LAYOUT

PROJECT FG-701(2) STA. 132+40.52

WARD COUNTY

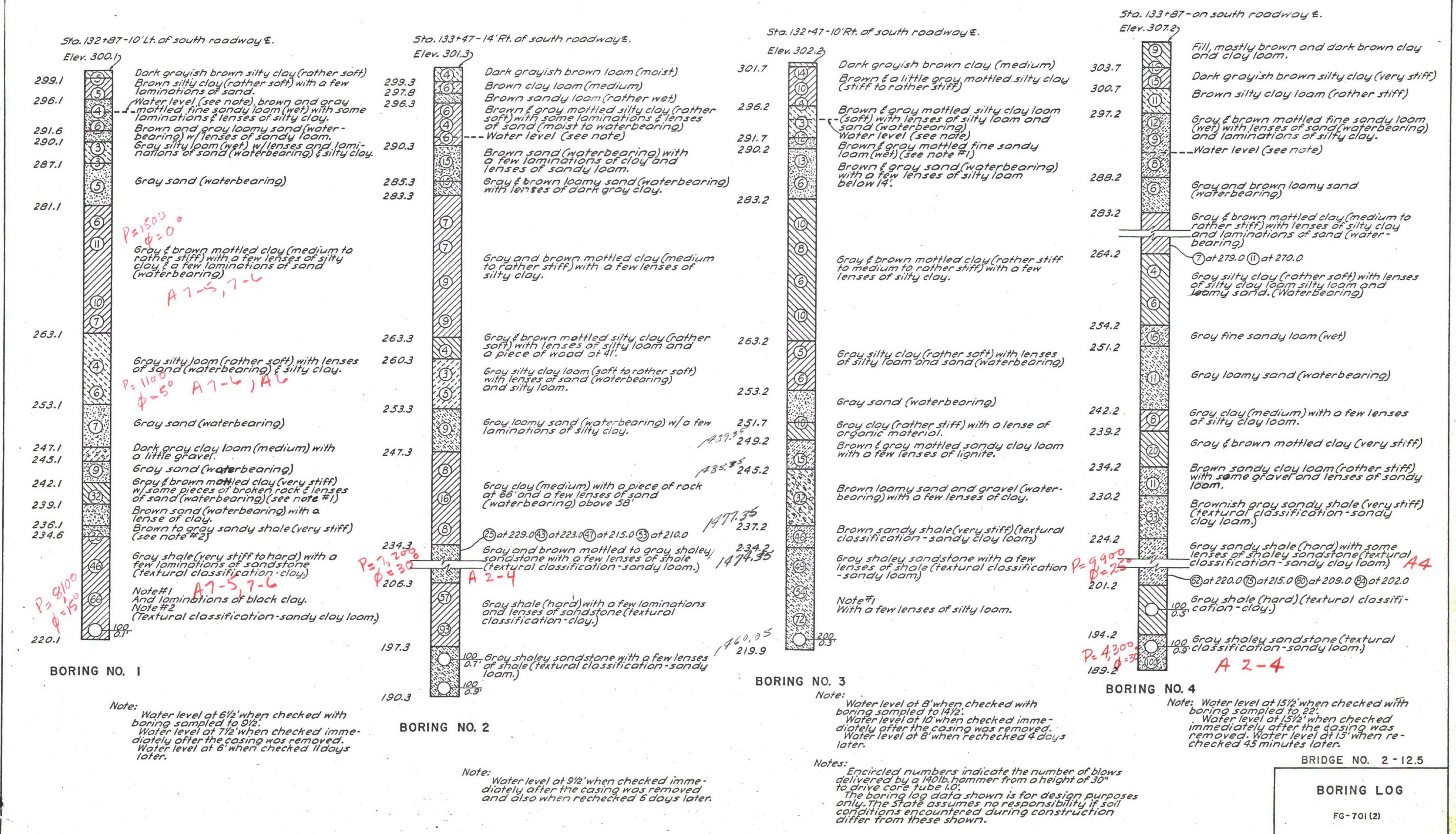
APPROVED
9-18-59
DATE

Joseph O. Kirby
BRIDGE ENGINEER

JOSEPH O. KIRBY REGISTERED PROFESSIONAL ENGINEER

2-12.5-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	FG-701(2)		4	8



BRIDGE NO. 2-12.5

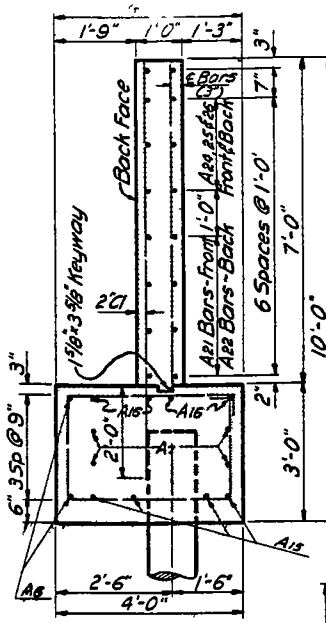
BORING LOG

FG-701 (2)

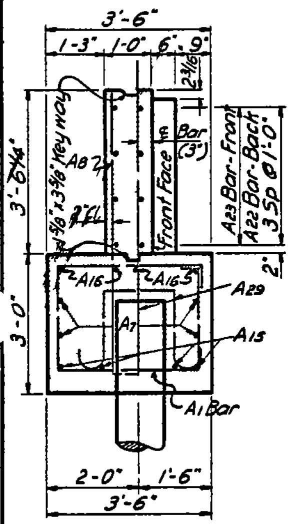
WARD COUNTY

2-12.5-2

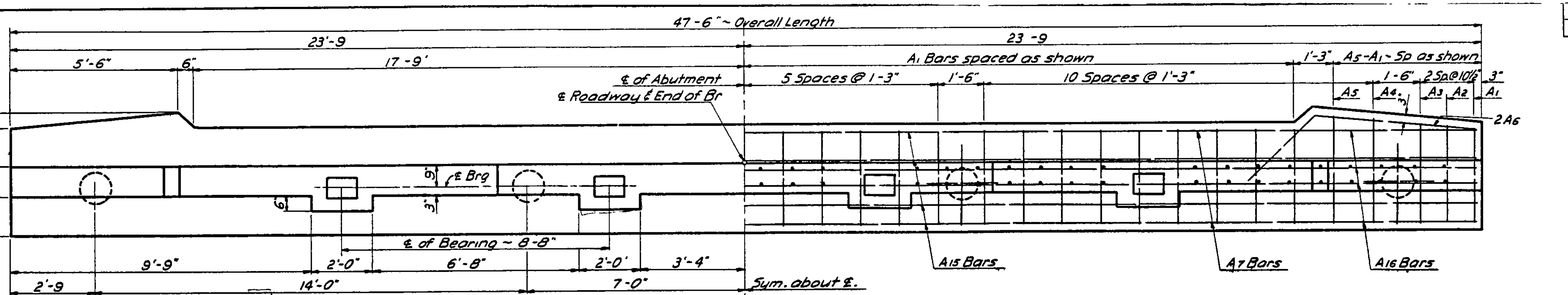
FED ROAD DIST NO	STATE	PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N D	FG-TOI(2)		7	8



SECTION Y-Y

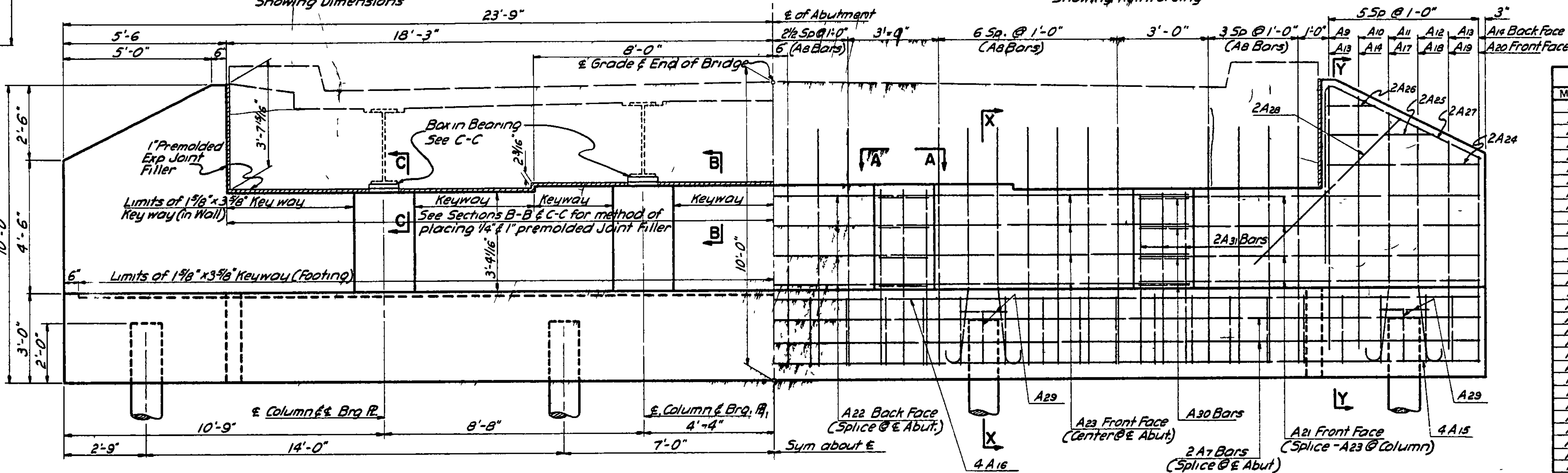


SECTION X-X



HALF PLAN
Showing Dimensions

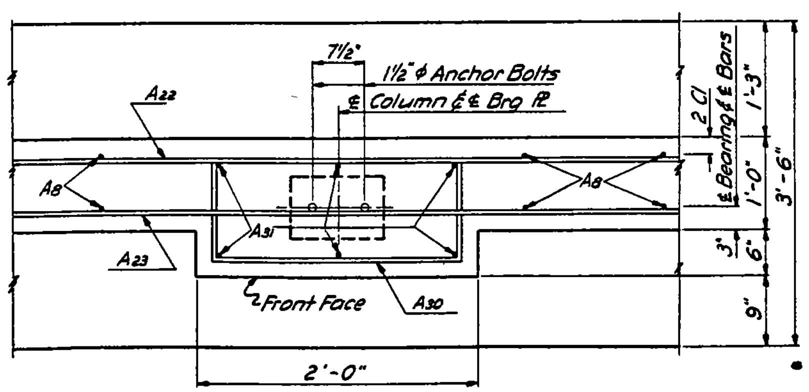
HALF PLAN
Showing Reinforcing



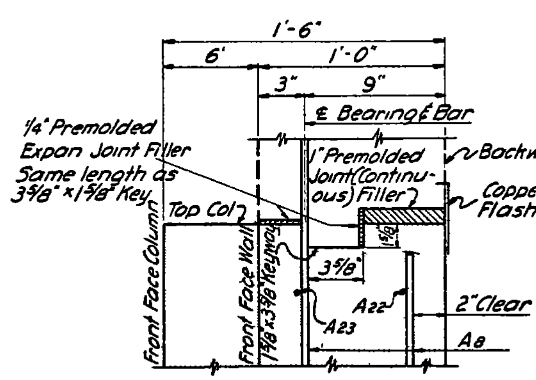
HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcing

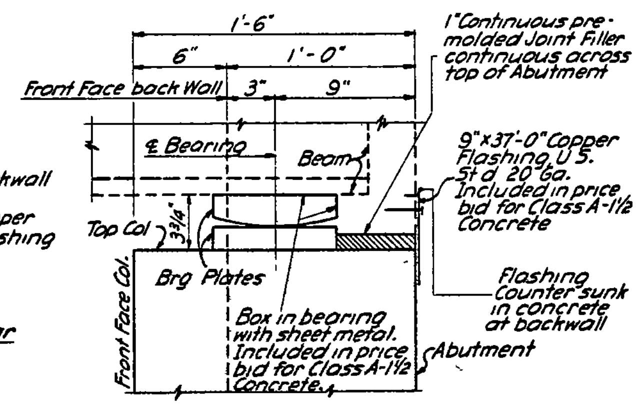
BAR LIST (ONE ABUT)				
MARK	NO	SIZE	LENGTH	SHAPE
A1	31	4	11'-4	Bent
A2	2	4	11'-10	"
A3	2	4	12'-0"	"
A4	2	4	12'-4"	"
A5	2	4	12'-6"	"
A6	4	6	8'-3"	"
A7	8	6	24'-9"	Str.
A8	28	4	14'-3"	Bent
A9	2	4	8'-9"	Str
A10	2	4	8'-3'	"
A11	2	4	7'-9"	"
A12	2	4	7'-3"	"
A13	4	4	6'-9'	"
A14	4	4	6'-3	"
A15	8	10	25'-8"	"
A16	8	11	26'-0"	"
A17	2	4	5'-9"	"
A18	2	4	5'-3"	"
A19	2	4	4'-9"	"
A20	2	4	4'-3"	"
A21	8	4	11'-6"	"
A22	8	4	24'-4"	"
A23	4	4	27'-8"	"
A24	4	4	5'-0"	"
A25	4	4	3'-6"	"
A26	4	4	1'-6"	"
A27	4	6	12'-0"	Bent
A28	4	6	7'-0"	Str.
A29	8	6	6'-11"	Bent
A30	16	5	6'-4"	"
A31	24	6	5'-8"	Str



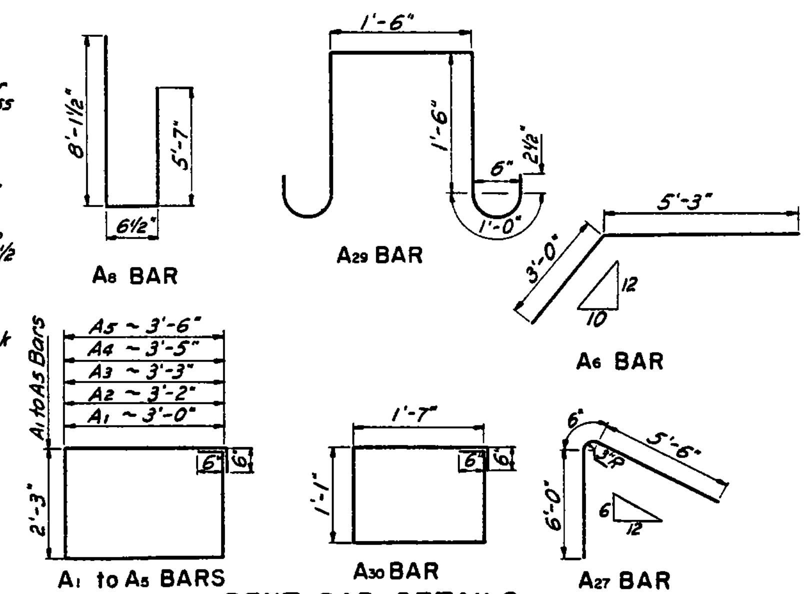
SECTION A-A



SECTION B-B



SECTION C-C
Through Column



BENT BAR DETAILS

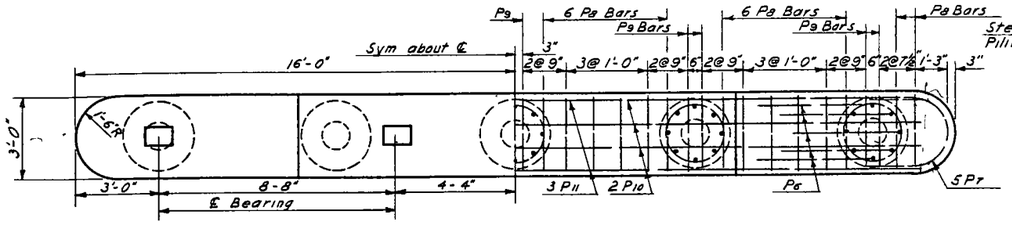
QUANTITIES (ONE ABUT)	
Concrete Class A-1½	26.1 Cu Yd
Reinforcing Steel	3805 lb
Piling (See Layout)	
Excavation (See Layout)	

10 FT. ABUTMENT
FOR I BEAM SPANS
FIXED END
30 FT ROADWAY

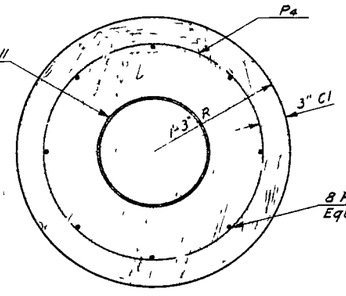
H-1278

FED ROAD DIST NO	STATE	PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N D	FG-7011(2)		8	8

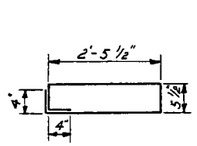
DETAILS	MADE BY	THK
	CHECKED BY	BLS
TRACING	MADE BY	MEW
	CHECKED BY	THR
QUANTITIES	MADE BY	THR
	CHECKED BY	MEW



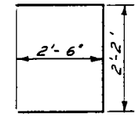
TOP PLAN



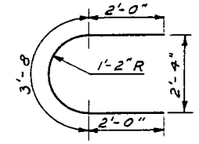
C-C



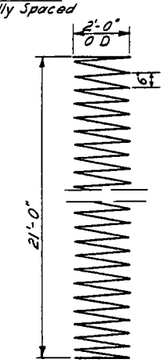
P1 BAR



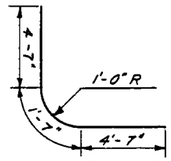
P3 BAR



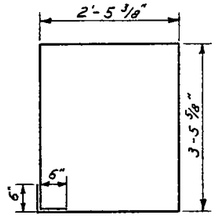
P7 BAR



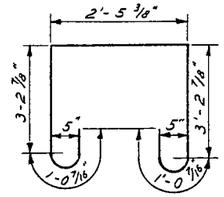
P4 BAR



P6 BAR

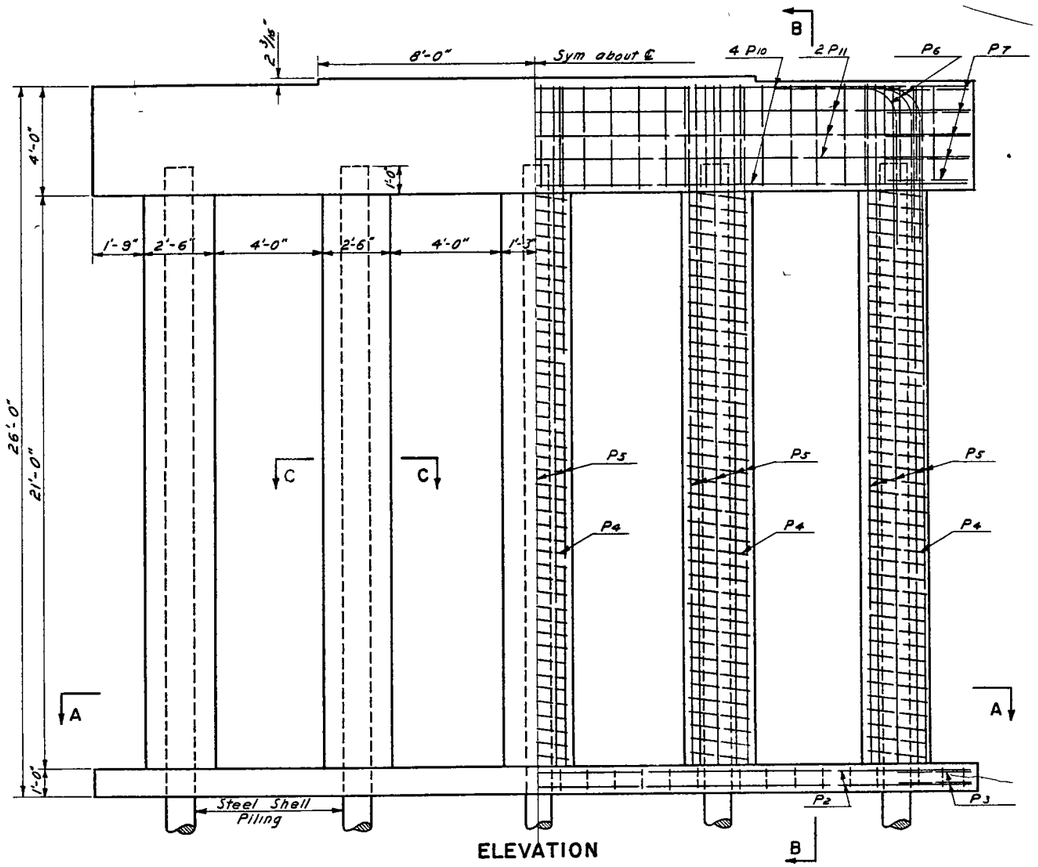


P8 BAR

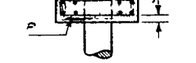


P9 BAR

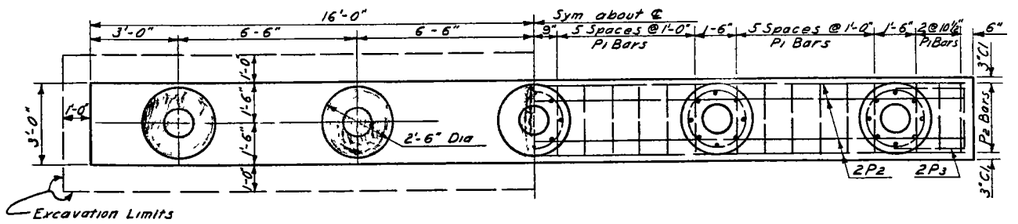
BENT BAR DETAILS



ELEVATION



B-B



A-A

NOTE
Column concrete shall be allowed to set a minimum of two hours before pier cap reinforcing is placed or concrete poured

BAR LIST (One Bent)

MARK	NO	SIZE	LENGTH	SHAPE
P1	30	4	6'-6'	Bent
P2	8	8	31'-0'	Str
P3	4	6	7'-2"	Bent
P4	5	3	278'-6"	"
P5	40	5	24'-9"	Str
P6	10	7	10'-9"	Bent
P7	10	5	7'-8"	"
P8	28	5	12'-10'	"
P9	10	5	11'-0"	"
P10	8	9	29'-0'	Str
P11	6	6	29'-0"	"

QUANTITIES (One Bent)

Concrete Class A-1½	331 CY
Reinforcing Steel	4231 Lb
Piling (See Layout)	
Excavation (See Layout)	

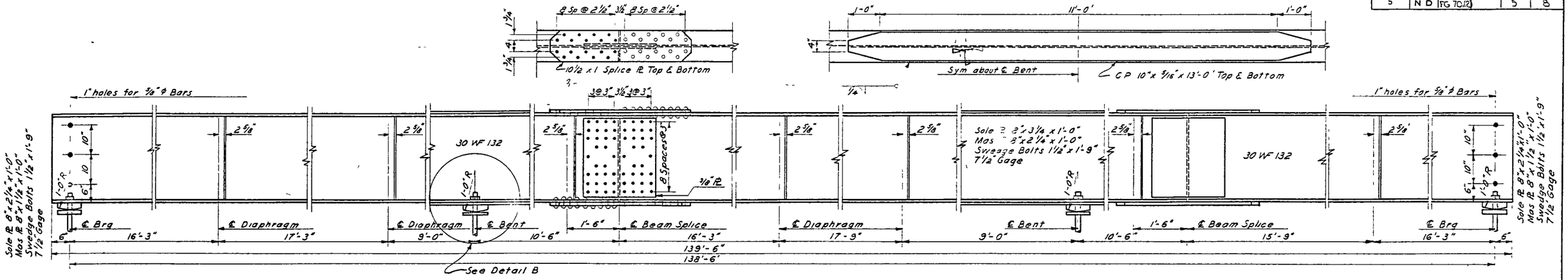
26' BENT DETAIL FOR I- BEAM SPANS 30' ROADWAY

H-1347

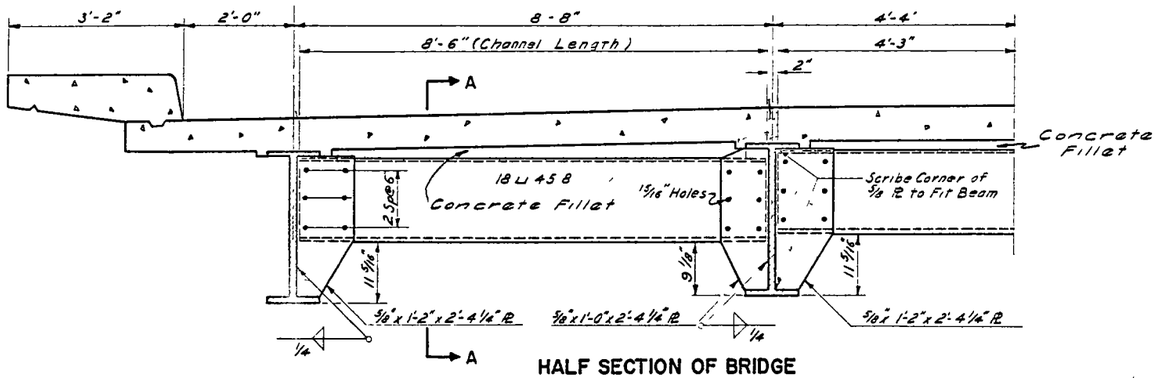
H-1347

DIST NO				SHEETS
5	N D	FG 70.1(2)	5	8

DETAILS	MADE BY A.H.S.
TRACING	CHECKED BY M.E.H.P.
QUANTITIES	CHECKED BY T.H.R.

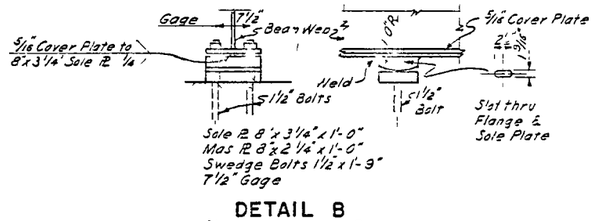


BEAM ELEVATION



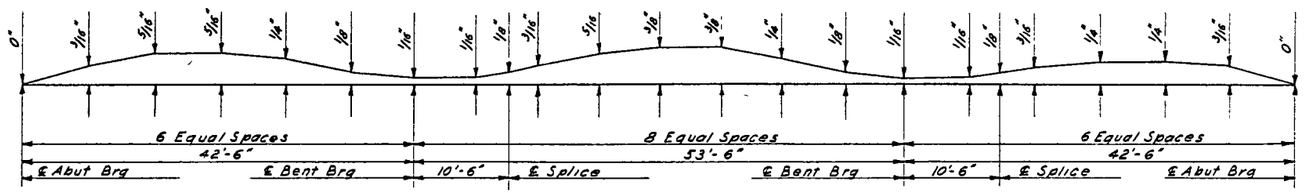
HALF SECTION OF BRIDGE

Showing Steel Diaphragm & Connectors
See Sheet H 1173-(Sheet 2) for A-A



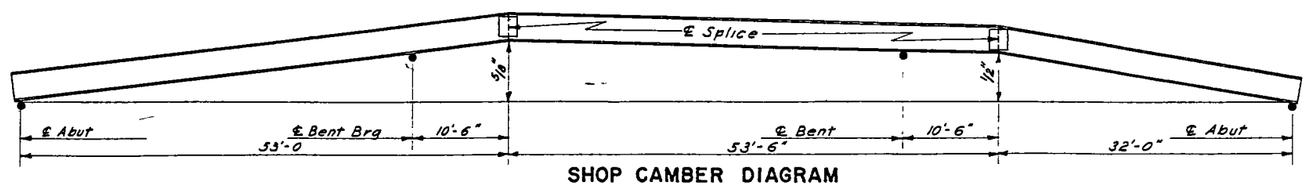
DETAIL B

Showing Expansion Bearing



FIELD RISER DIAGRAM

Showing Dimension "a"



SHOP CAMBER DIAGRAM

STRUCTURAL STEEL

All Structural Carbon Steel shall conform to the latest ASTM A-7 Specifications

GENERAL

All rivets are to be ⅞"

Open holes are to be 15/16" except as noted

Field connections shall be made with high tensile strength bolts or shall be riveted

The placement of pier swedge bolts shall be in accordance with the approved shop drawings

Bearing areas are to be finished true to plan & elevation by grinding if necessary before bearing plates are set

The Field Riser Diagram shows dimensions from an assumed chord drawn between supports. Additions or subtractions must be made to the riser dimensions to compensate for the tolerances in the beam and deflection due to weight of the beam

PAINT

Paint and painting shall conform to the North Dakota Standard Specifications for Road and Bridge Construction, Sections 80 & 132.17. All exposed steel surfaces shall be given one shop coat of red lead paint, one spot coat of red lead paint after erection and concrete work is completed and two field coats of aluminum paint (first field coat tinted with Prussian Blue) No paint, shop or field, on top of beams

WELDING

The metal arc process shall be used for all shop and field fabrication. All welding shall conform to the current Standard Specifications for Welding Highway & Railway Bridges, Design, Construction and Repair," of the American Welding Society

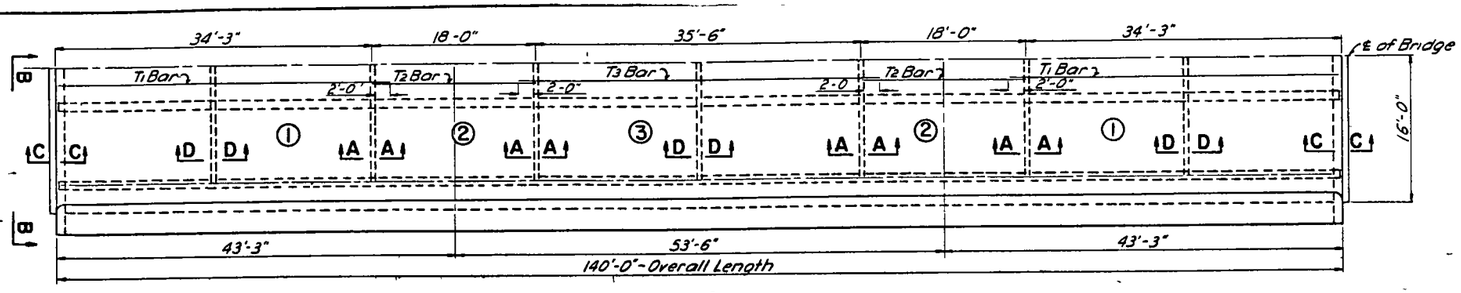
Welding will not be paid for directly, but shall be included in the unit price bid for structural steel

QUANTITIES	
Structural Steel	93,585 lb

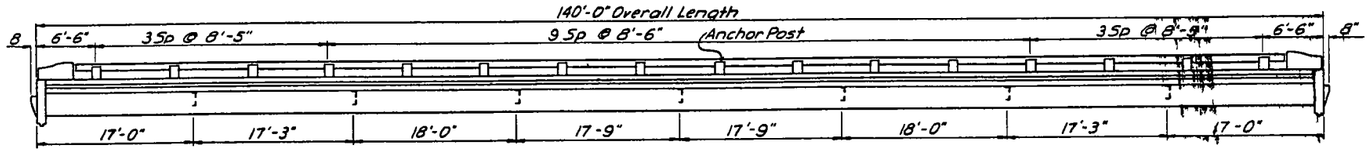
SUPERSTRUCTURE
THREE SPAN CONTINUOUS
I-BEAM
140'-0" OVERALL LENGTH
30' ROADWAY
SHEET 1 OF 2

H 1173

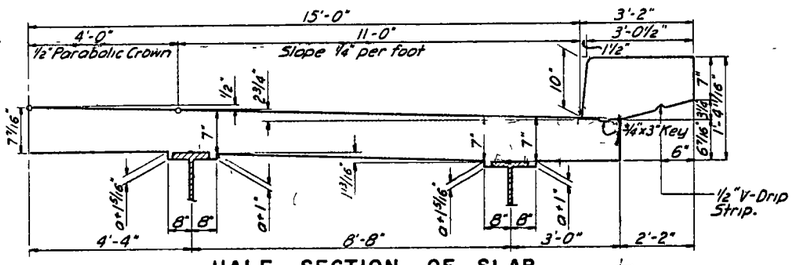
DIST NO	STATE	PROJ NO	YEAR	NO.	SHEETS
5	N D	FG 70(12)		6	8



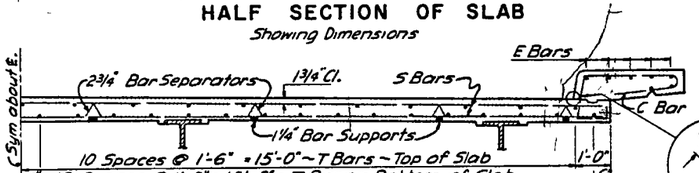
HALF PLAN



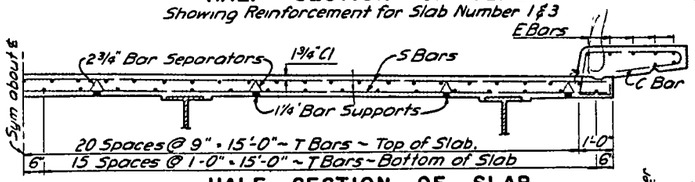
ELEVATION



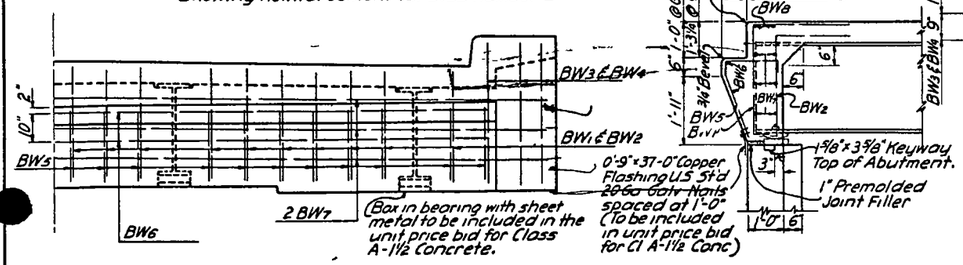
HALF SECTION OF SLAB
Showing Dimensions



HALF SECTION OF SLAB
Showing Reinforcement for Slab Number 1 & 3

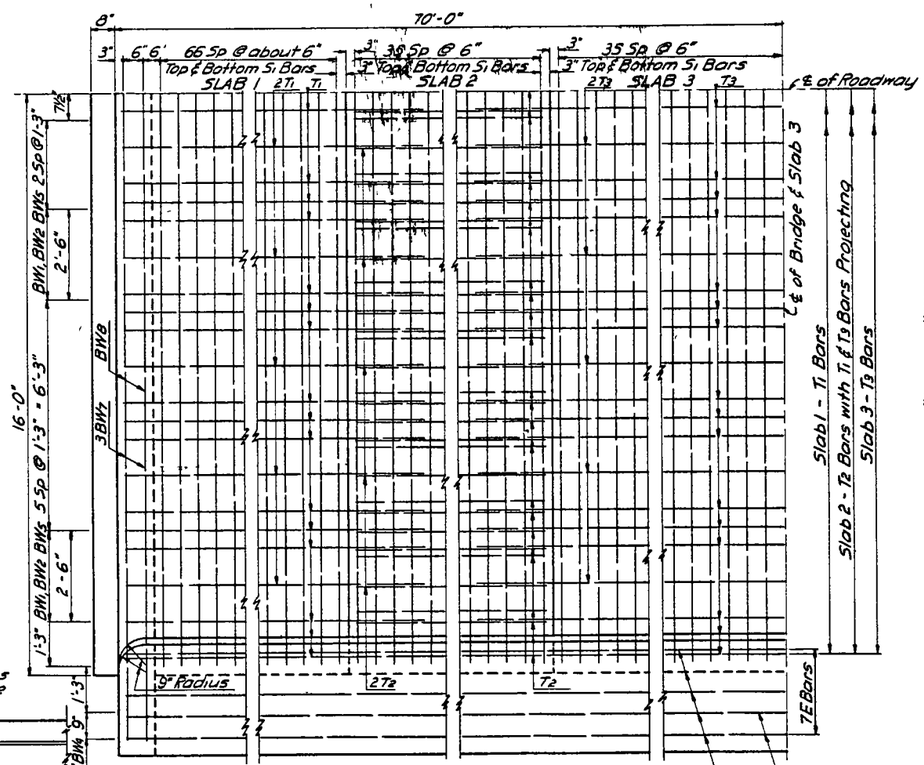


HALF SECTION OF SLAB
Showing Reinforcement for Slab Number 2



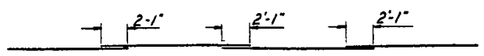
SECTION B-B

SECTION C-C

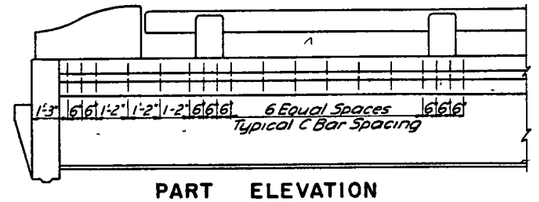


SLAB REINFORCEMENT DETAILS

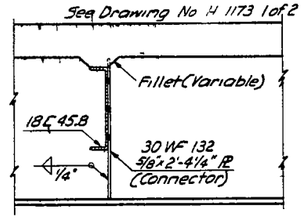
T1 & T3 Bar Projections shown in half plan above



E Bars ~ Field splicing details in curb
R Bars ~ Field splicing details in rail

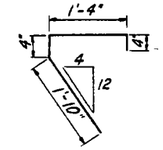


PART ELEVATION
Showing C Bar Spacing

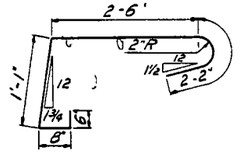


SECTION D-D

SECTION A-A

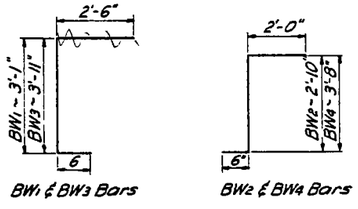


BW5 BAR



BENT BAR DETAILS

C BAR



BW1 & BW3 Bars

BW2 & BW4 Bars

BAR LIST

MARK	NO	SIZE	LENGTH	SHAPE
BW1	40	4	6'-1"	Bent
BW2	40	4	5'-4"	"
BW3	12	4	6'-11"	"
BW4	12	4	6'-2"	"
BW5	44	4	3'-10"	"
BW6	4	5	31'-6"	Str
BW7	12	5	36'-0"	"
BW8	4	5	36'-0"	"
C	298	5	6'-11"	Bent
E	36	5	36'-6"	Str
S1	554	5	31'-6"	Str
T1	106	4	36'-0"	Str
T2	146	5	17'-6"	"
T3	53	4	39'-6"	"
△P10	60	5	3'-4"	Bent
△P11	4	5	4'-0"	"
△P12	64	5	3'-6"	"
△P13	68	3	3'-8"	"
△P14	60	3	2'-8"	"
△RC	222	3	2'-8"	Bent
△R	48	5	34'-6"	Str.

NOTES

The slab shall be poured in the following sequence:
1 Slab sections 1
2 Slab section 3
3 Slab sections 2 over piers
Each curb shall be placed in one continuous operation.
Bevel all exposed edges with ¾" triangular molding except as shown
Quantities shown below include handrail end posts.
△ See Drawing H-0112

For railing details see Drawing H-0112

Designed for 25 #/s' future wearing surface

QUANTITIES

*Concrete Class A-1	69 Cu Yd
*Concrete Class A-1½	137.5 Cu Yd
*Reinforcing Steel	33,132 lb

*Includes End Post & Railing Quant

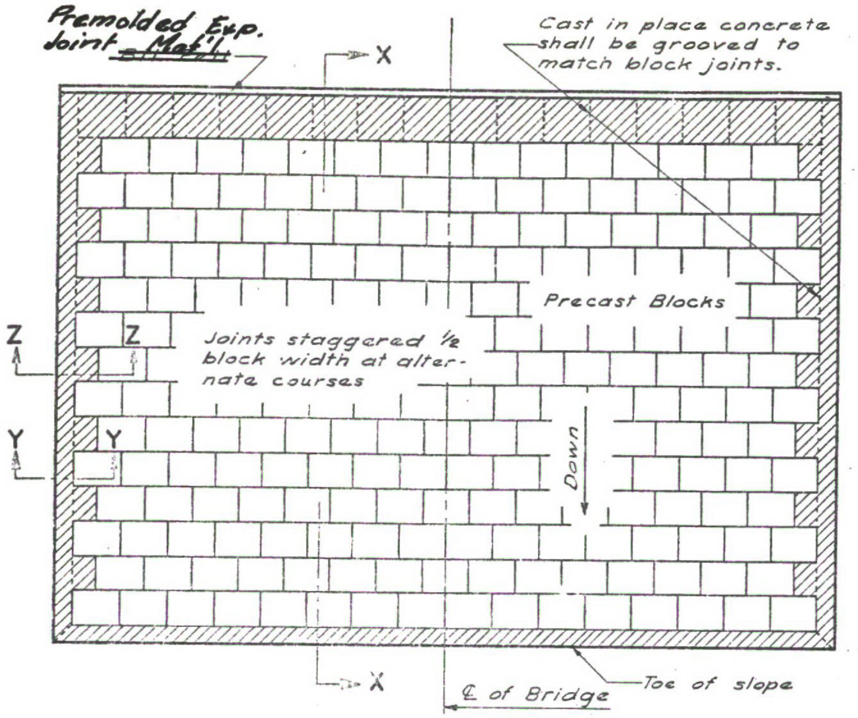
SUPERSTRUCTURE
THREE SPAN
I - BEAM
OVERALL LENGTH 140 FT
H20 S16 LOADING
SHEET 2 OF 2

TRACING MADE BY P.M.S. CHECKED BY J.C.
QUANTITIES MADE BY M.W.L. CHECKED BY P.M.S.

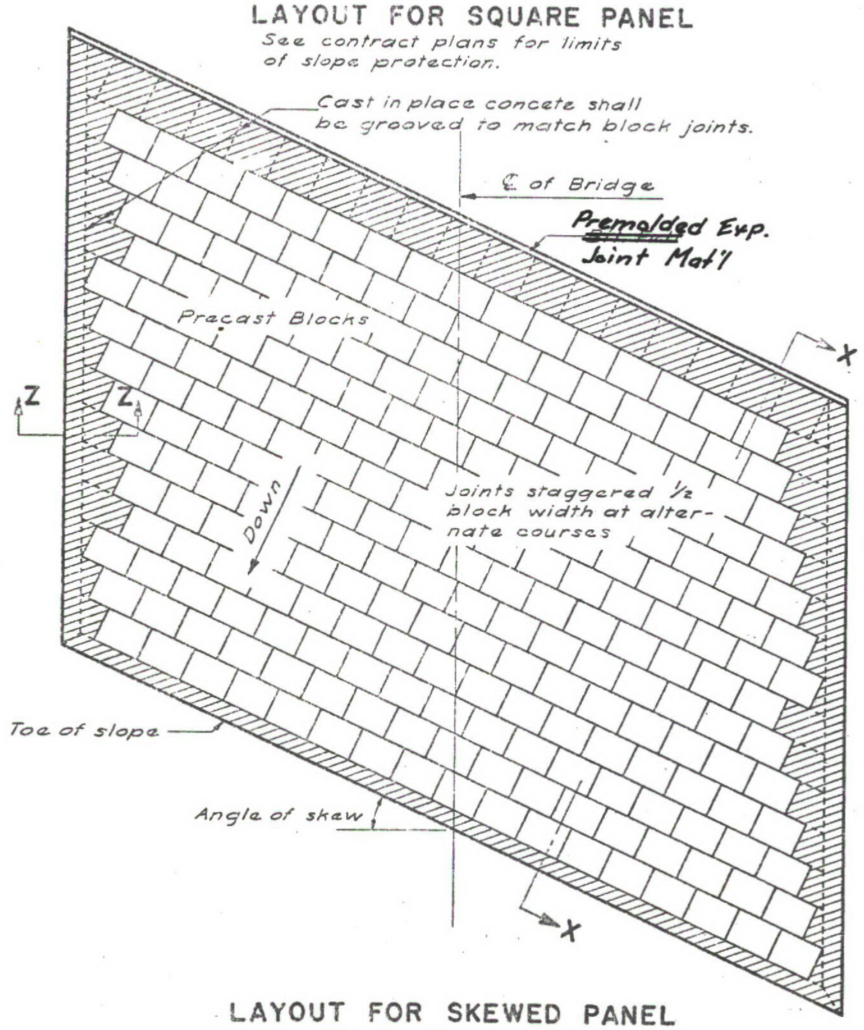
H-1173-2

H-1173-2

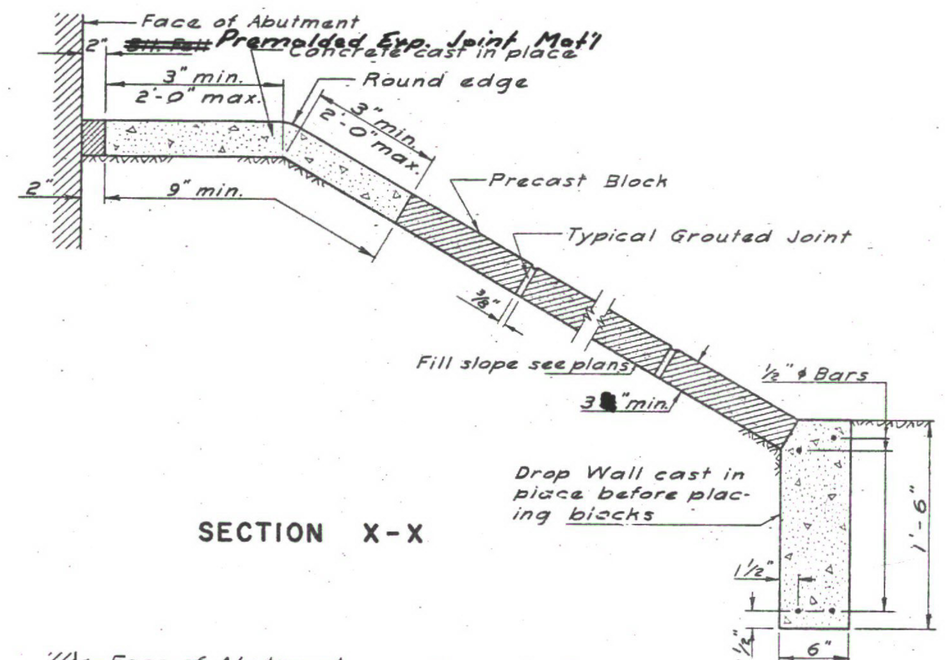
STANDARD SLOPE PROTECTION UNDER BRIDGES
GROUTED PRECAST CONCRETE BLOCKS



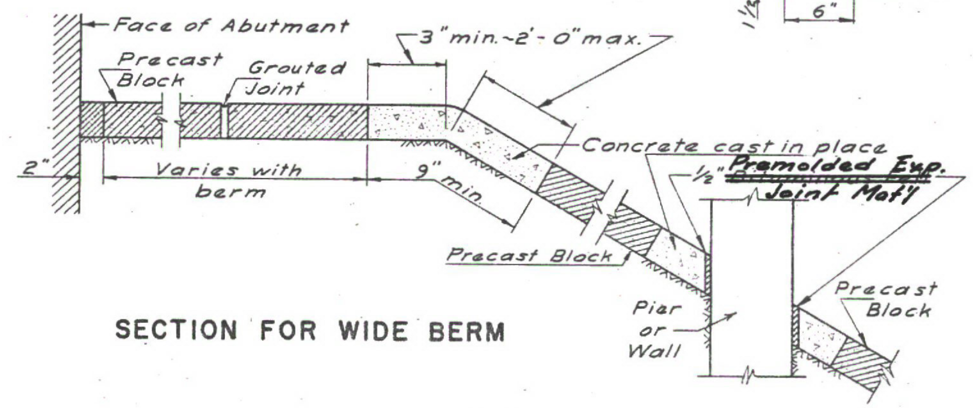
LAYOUT FOR SQUARE PANEL
See contract plans for limits of slope protection.



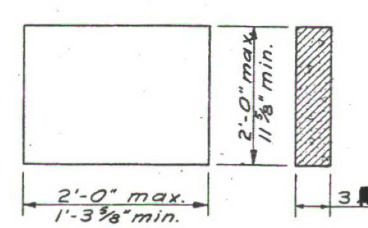
LAYOUT FOR SKEWED PANEL
See contract plans for limits of slope protection & angle of skew.



SECTION X-X



SECTION FOR WIDE BERM



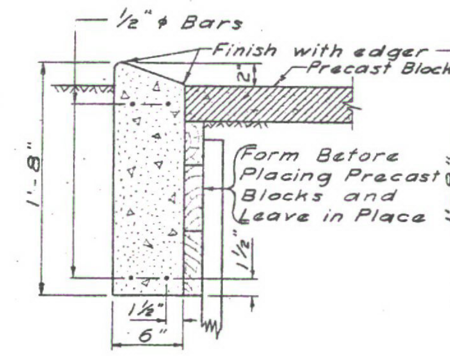
DETAILS OF PRECAST BLOCKS

½" depth grooves to be provided.

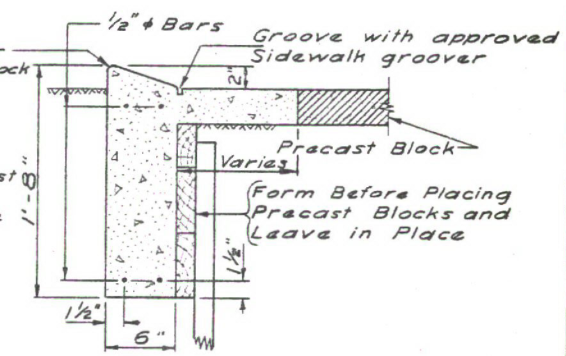
NOTE:

Wherever parts of bridge, such as pier columns or walls, are contacted by the Slope Protection material, ½" thick Bituminous Felt Joint Filler shall be provided between contact areas.

The areas around such piers or walls, where the regular block pattern is interrupted, shall be constructed with cast in place concrete and shall be marked into sections with an approved Sidewalk groover. ~~Bituminous Felt Joint Filler shall be in accordance with the Standard Specifications for Preformed Expansion Joint Filler For Concrete, AASHO Designation: M-33.~~



SECTION Y-Y



SECTION Z-Z

CONSTRUCTION NOTES

Where applicable, Construction methods shall conform to Section 60 of the N.D.H.D. Standard Specifications.

The contractor will be allowed to cast the slope protection in place, however, when he does this he will be required to groove the finished surface to give the same appearance which would be obtained with the precast blocks. Poured in place concrete slope protection will be required to develop a minimum compressive strength of 3000#/sq.in. in 28 days. The gradation of coarse aggregate shall be optional with the contractor.

Precast Concrete Blocks for slope protection shall develop a minimum compressive strength of 3000#/sq.in. in 28 days. The gradation of coarse aggregate shall be optional with the contractor. All joints between precast blocks shall be grouted and the joints grooved as shown on this sheet. All precast blocks shall be sound and free from cracks or other defects that would interfere with the proper placing of the unit, or impair the strength or permanence of the construction.

Only one size of precast block shall be used at a structure location.

The embankment slope to be protected shall conform to the plan cross-section, be free of rubbish, and have all loose material thoroughly compacted.

The cast-in-place concrete shown at all edges and around pier columns or walls of the slope protection as detailed on this sheet, shall be provided regardless of which type of slope protection is used.

Rectangular shaped blocks shall be placed with the long dimension horizontal.

The adjacent slope areas shall be left in a smooth, uniform condition.

METHOD OF MEASUREMENT

Slope protection shall be measured by the square foot and the area to be paid for shall include all that area within the outside limits of the concrete edges and ~~bituminous felt~~ without deducting for pier columns or pier walls.

BASIS OF PAYMENT

Slope protection shall be paid for at the contract unit price bid per square foot for Slope Protection. The payment of this price shall be full compensation for furnishing, delivering, and placing all material, for all reinforcing steel, excavation, backfill, preparation of slope surface, form lumber, ~~bituminous felt~~ Premolded Exp. Joint Mat'l, equipment, tools, labor, and all incidentals necessary to complete this item in accordance with the plan and these specifications.

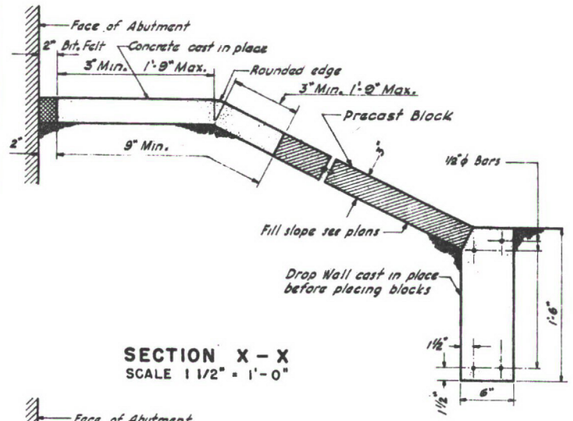
CONSTRUCTION NOTES (cont.)

Test cylinders for determining Compressive strength of the concrete shall be cured along with and under the same curing conditions as for the poured in place concrete or precast concrete blocks.

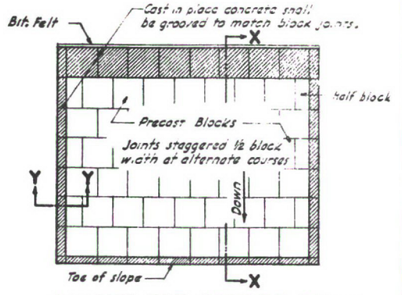
Precast Concrete block joints shall be grout filled, using grout consisting of one part of Portland Cement and two parts of clean sharp sand by volume corrected for moisture.

1-20-58 REVISIONS 12-11-59	NORTH DAKOTA STATE HIGHWAY DEPARTMENT Submitted: [signature] Bridge Engineer Recommended: [signature] Director Staff Division Approved: [signature] Chief Engineer

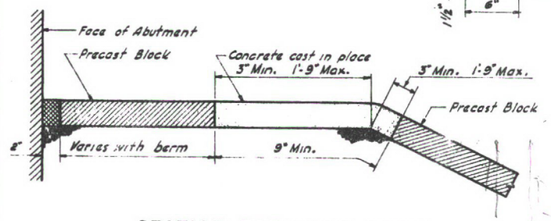
SLOPE PROTECTION DETAIL



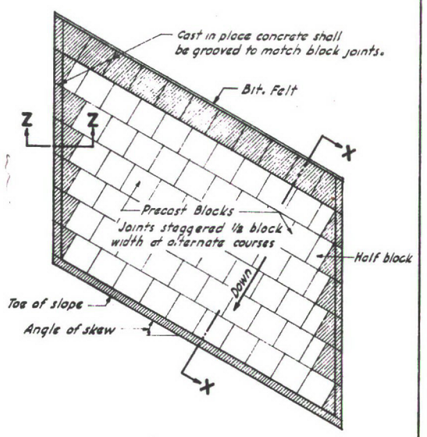
SECTION X – X
SCALE 1 1/2" = 1'-0"



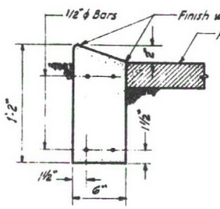
LAYOUT FOR SQUARE PANEL
See contract plans for limits of slope protection.



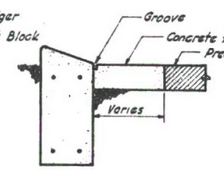
SECTION FOR WIDE BERM
SCALE 1 1/2" = 1'-0"



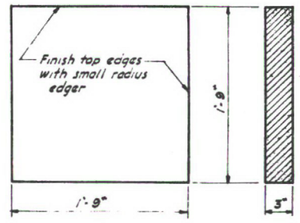
LAYOUT FOR SKEWED PANEL
See contract plans for limits of slope protection & angle of skew.



SECTION Y–Y
SCALE 1 1/2" = 1'-0"



SECTION Z–Z



DETAILS OF PRECAST BLOCK
SCALE 1 1/2" = 1'-0"

METHOD OF MEASUREMENT
Slope protection block shall be measured by the square foot and shall include all that area within the outside limits of the concrete edges and bituminous felt.

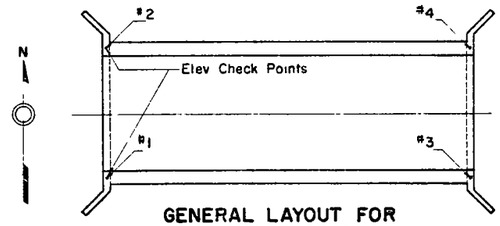
BASIS OF PAYMENT
Slope protection block shall be paid for at the contract price per square foot and shall include all precast block, concrete, reinforcing steel, excavation, bituminous felt and all other materials, equipment, tools, labor and work incidental to construction.

CONSTRUCTION NOTES
Construction methods & materials shall conform to N.D.H.D. specifications Sect. 60
Poured concrete shall be class A-1½"
Precast conc. block shall conform to A.S.T.M specification C 145-52 for grade A block.
Blocks shall be laid up with dry joints tight & true to line and level with a full bed resulting in a smooth even surface over the entire panel.
All joints shall be kept free of earth.
Blocks shall be sound & free of chips, cracks, and other blemishes.
The slope receiving the panel shall conform to the designated cross section, free of rubbish with all loose material thoroughly compacted.

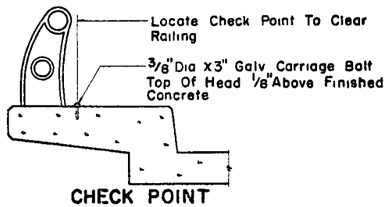
VOID

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
Submitted: Joseph P. Kirby
Bridge Engineer
Recommended: M. Engebretson
Director Staff Division
Approved: R. O. Bradley
1-20-58 Chief Engineer

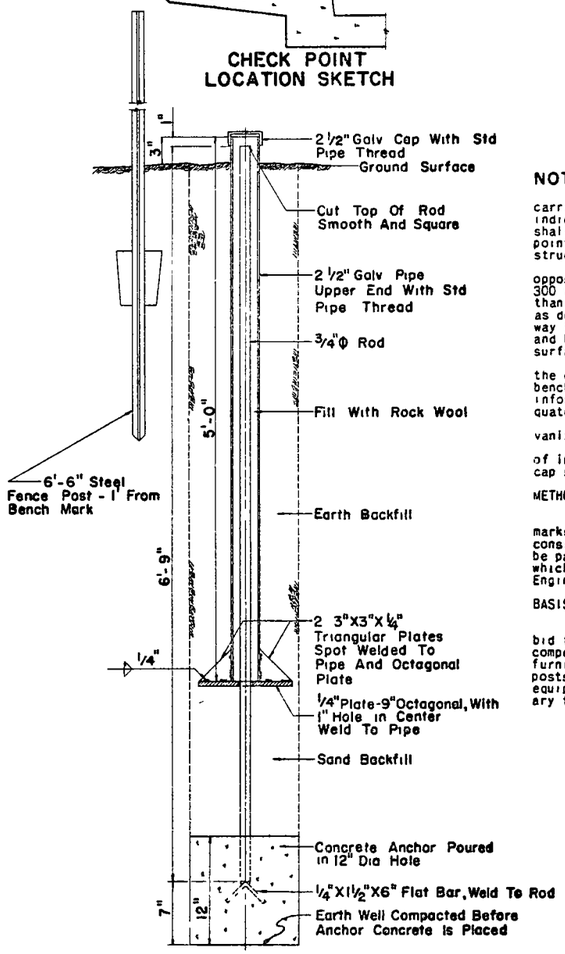
BRIDGE BENCH MARKS



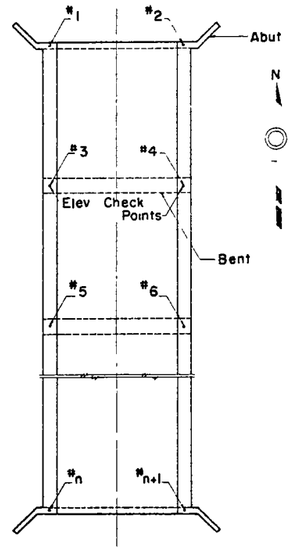
GENERAL LAYOUT FOR SINGLE SPAN



CHECK POINT LOCATION SKETCH



BENCH MARK DETAIL



GENERAL LAYOUT FOR MULTIPLE SPAN

NOTES

Elevation check points shall consist of 3/8"x 3" galvanized carriage bolts (or equal) set in the concrete curb at the points indicated on the General Layout Sketches. The top of bolt head shall project above the finished concrete 1/8". Elevation check points shall be placed on each curb over each unit of the substructure for each bridge at a structural location.

Two bench marks as detailed hereon shall be set at diagonal opposite positions away from the structure location and at least 300 feet from the nearest point on the bridge or bridges (if more than one at a location). These bench marks shall be constructed as detailed on this sheet and located near the Highway Right-of-way lines. The steel fence post shall extend 4'-0" above ground and be painted with two coats of white paint suitable for steel surfaces.

The Project Engineer shall run a set of levels determining the elevation of each check point on the structure and the two bench marks immediately after the completion of the bridge. This information shall be submitted to the Bridge Engineer with adequate information locating each check point and bench mark.

Except for fence posts, all metal parts to be hot dip galvanized after punching, shearing, welding, and fabrication.

Threads of cap and pipe are not to be galvanized. At time of installation these threads are to be coated with grease and cap screwed to snug fit.

METHOD OF MEASUEMENT

Each set of Bridge Bench Marks consisting of two bench marks and the required number of elevation check points shall be considered as one unit for bidding purposes and the quantity to be paid for shall be the number of sets of bridge bench marks which have been installed complete in place and accepted by the Engineer.

BASIS OF PAYMENT

Bridge Bench Marks shall be paid for at the contract price bid for each set of Bridge Bench Marks, which price shall be full compensation for all excavation, backfill and clean-up, and for furnishing, hauling and placing all elevation check points, fence posts, galvanized pipe, caps, rods, sand backfill, concrete, rock equipment, tools and incidentals, including galvanizing, necessary to complete this item.

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

Submitted Joseph R. Kuhy
Bridge Engineer

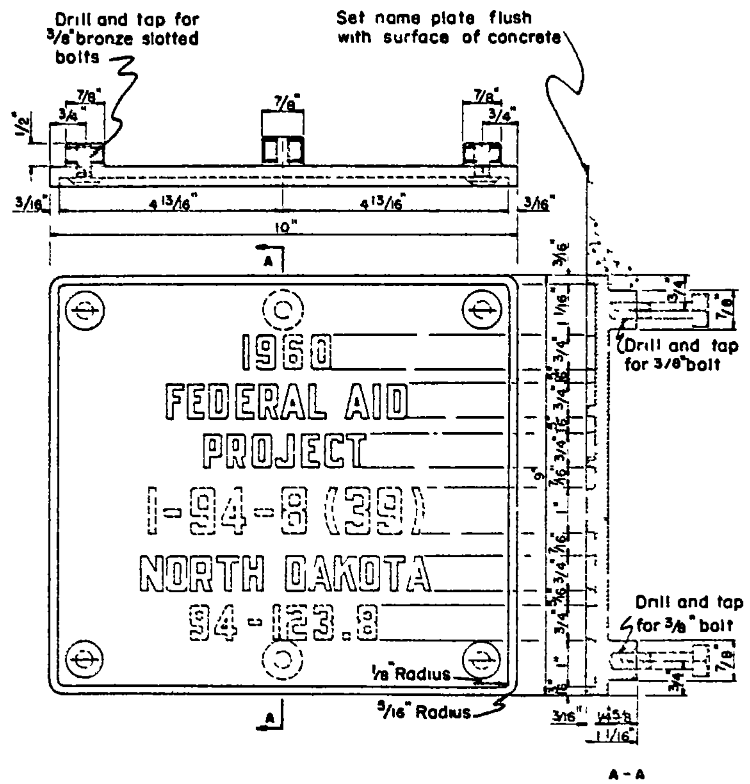
Recommended
Director Staff Division

Approved
Chief Engineer

Date 3-3-58 Revised 6-9-58

Note All dimensions for 3/4 inch letters and numbers shall be in direct proportion to those shown above for the 1 inch high letters and numbers

LETTERS FOR BRIDGE NAME PLATES



FEDERAL AID NAME PLATE

NOTES

Federal Aid Project name plates shall be installed in the locations designated on the Structure layout sheet

The Federal Aid Project number, Bridge number, and date to be shown on the name plate shall be as indicated on the structure layout sheet

Name plates shall be cast of bronze composed of the following materials

Copper	-	84-86%
Tin	-	4- 6%
Lead	-	4- 6%
Zinc	-	4- 6%

Lettering shall be approximately 3/16" above the surface of the plate and shall conform to the type and spacing shown "Name Plate Condensed" pattern letters as manufactured by Hellman Co or approved equal may be used if desired Vertical and horizontal spacing shall be kept in proportion to the spacing shown

The top surface of the letters and frame shall be burnished The background of the plate shall have a deep brown oxidized finish

The draft on the letters shall be not more than 3" in 12"

Letters and numbers shall conform to those shown

Furnish two steel bolts 3/8" x 3" long and four bronze bolts 3/8" x 3/4" long with each plate The bronze bolts shall have slotted heads The four corner bolt holes are to be used to fasten the plate to the forms during construction After the forms have been removed the four bronze bolts shall be used to fill the four bolt holes

A rubbed proof of the patterns shall be submitted to the North Dakota State Highway Department for approval before the name plates are cast

Unless otherwise noted on the structure layout sheet two (2) Federal Aid Name Plates will be required at each structure location

The cost of furnishing and installing name plates, steel and bronze bolts, as described on this sheet, shall be included in the unit price bid for the several pay items

Revised 7-10-59
Revised 4-30-59
Revised 4-7-58

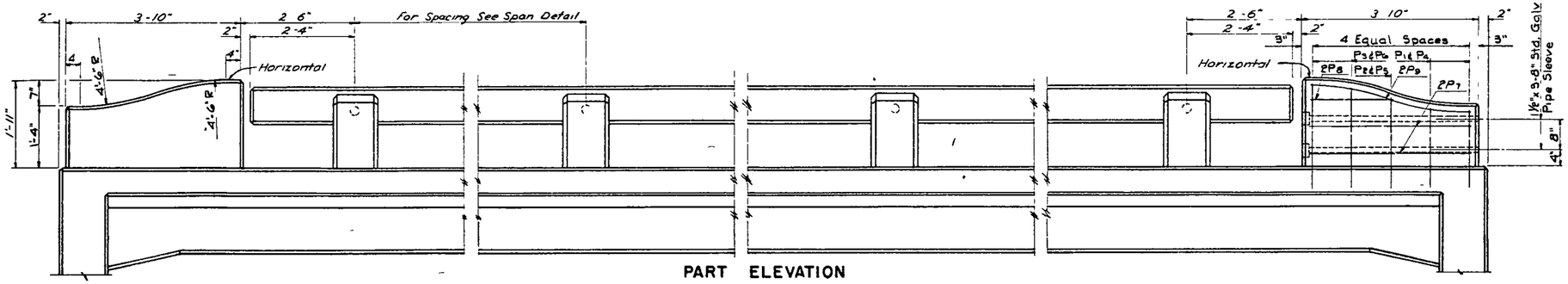
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

Submitted: [signature] Bridge Engineer
Recommended: [signature] Director, Staff Division
Approved: [signature] Acting Chief Engineer
Date 3-24-58

FED ROAD DIV NO.	STATE	PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	N D				

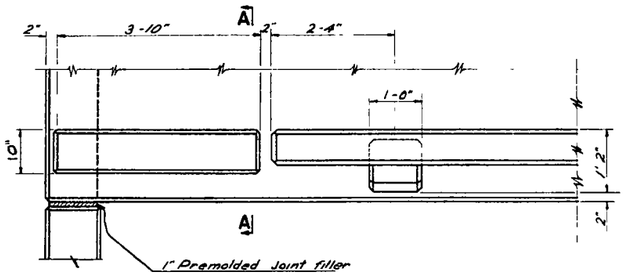
DETAILS MADE BY CEG
TRACING CHECKED BY CEG
QUANTITIES MADE BY CEH
CHECKED BY CEG

See Other End for Reinforcing

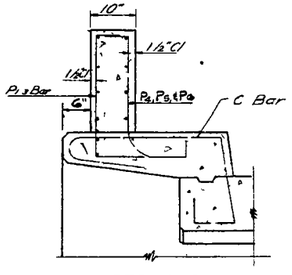


See Other End for Dimensions

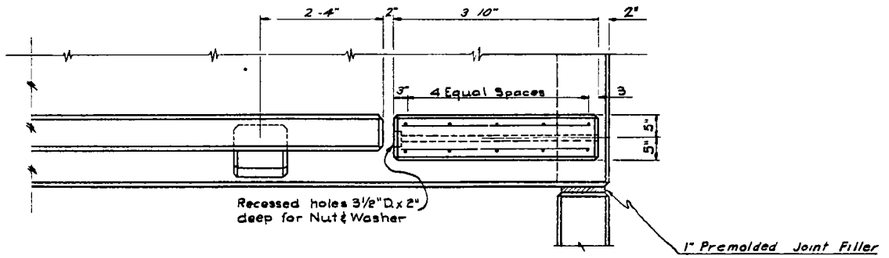
PART ELEVATION



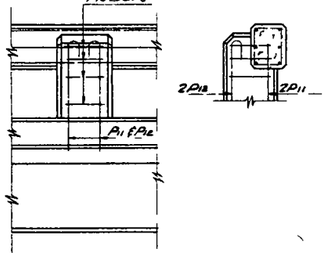
PART PLAN



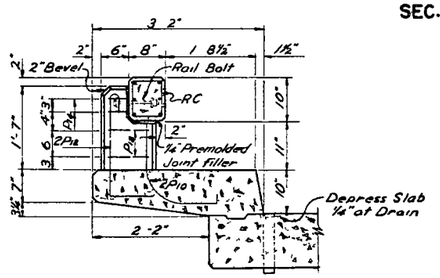
SEC. A-A



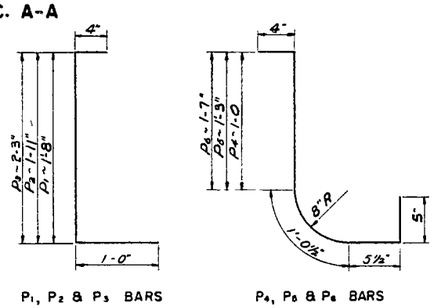
PART PLAN



ANCHOR POST DETAIL
See Layout For Placement



TYPICAL SECTION



P1, P2 & P3 BARS

P4, P5 & P6 BARS

BENT BAR DETAILS FOR END POSTS

BAR LIST
(BARS FOR RAILING AND POSTS)

MARK	NO	SIZE	LENGTH	SHAPE
P10	*	5	3 4"	Bent
P11	*	5	4'-0"	Bent
P12	*	5	3 6"	Bent
P13	*	3	3 8"	Bent
P14	*	3	2'-8"	Bent
RC	*	3	2'-8"	Bent
R**	**	5	* *	Str

* Number of bars shown on Superstructure Sheet
** Number Length & Splicing information of R bars shown on Superstructure Sheet

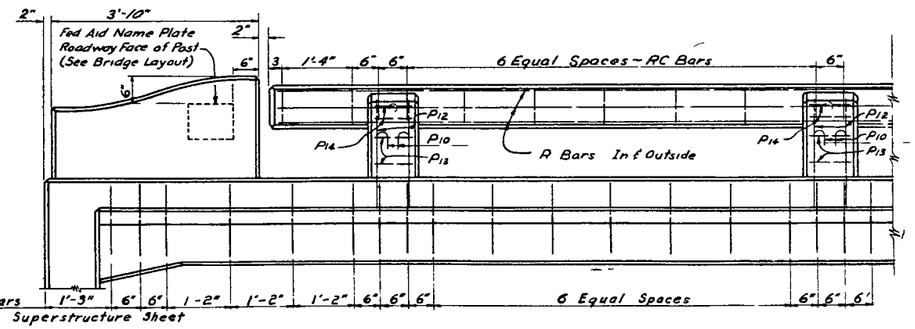
BAR LIST
(4 END POSTS)

MARK	NO	SIZE	LENGTH	SHAPE
P1	8	5	3-0"	Bent
P2	4	5	3 3"	"
P3	8	5	3'-7"	"
P4	8	5	3-3"	"
P5	4	5	3-6"	"
P6	8	5	3'-10"	"
P7	16	4	3'-6"	Str
P8	8	4	1'-9"	Str
P9	8	5	3-9"	Field Bend

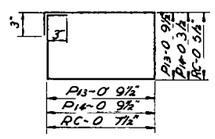
QUANTITIES ~ 4 END POSTS

Concrete Class A 1½	0.8 Cu Yd
Reinforcing Steel	221 Lbs

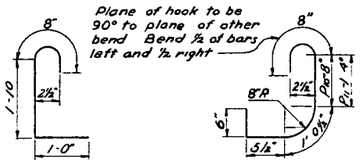
* Railing and end post quantities are included in slab quantities on Superstructure Sheet



HAND RAIL DETAILS



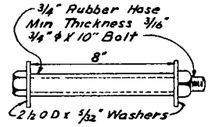
P13, P4 & RC BARS



P12 BARS

P10 & P11 BARS

BENT BAR DETAILS FOR RAILING POSTS & RAILING



RAIL BOLT
(Galvanized)
(To be included in the unit price bid for Class A 1½ Concrete)

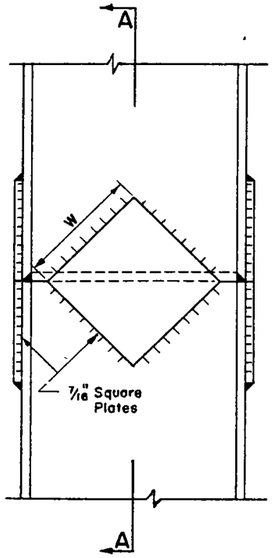
STANDARD RAILING DETAILS

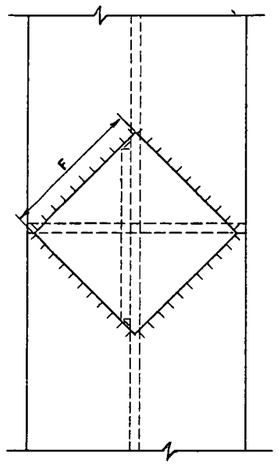
H-01

H-0112

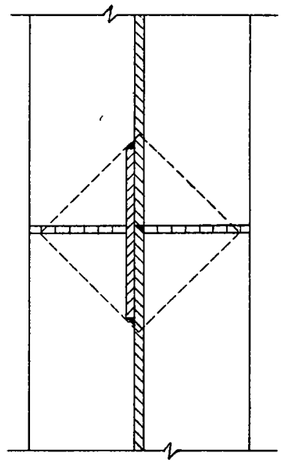
FED ROAD DIV NO	STATE	PROJ. NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	N D				

QUANTITIES MADE BY CHECKED BY

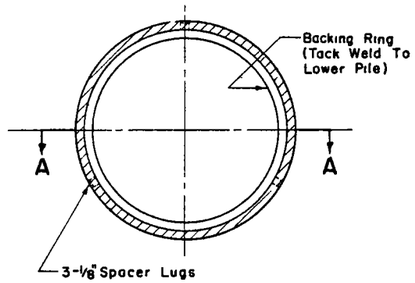




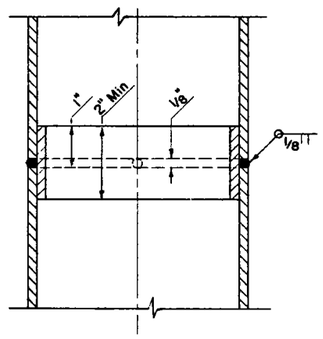
Flame Scarf Inside Of Both Flanges And One Side Of Web Of Upper Section



A-A

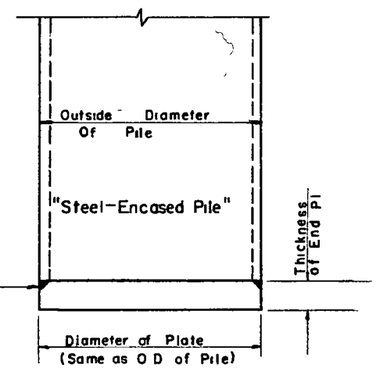


Backing Ring may be made from pile cut-offs or other material of a like quality.

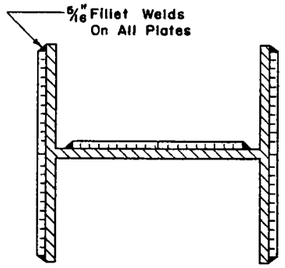


A-A

SHELL PILE SPLICE DETAIL



END PLATE DETAIL



PILE	8"	10"	12"	14"
F FLANGE	5"	6½"	8"	10"
W WEB	4"	5½"	6½"	8"

H-PILE SPLICE DETAIL

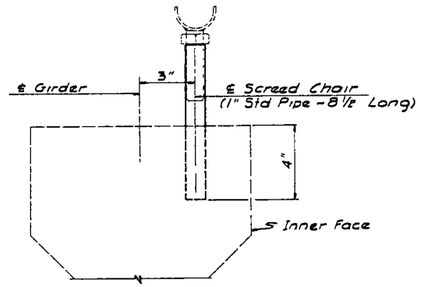
All welding shall conform to the current specification for "Welded Highway and Railway Bridges of the American Welding Society" Backing rings and welding will not be paid for directly, but shall be included in the unit price bid for steel piles.

PILE SPLICE DETAILS

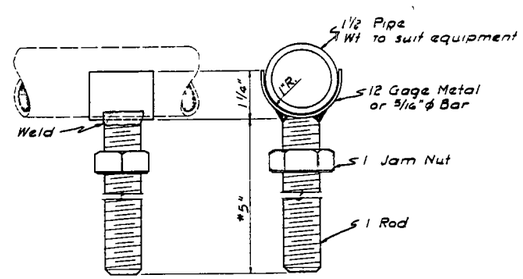
Revised 6-19-59

H-0401

H-0401

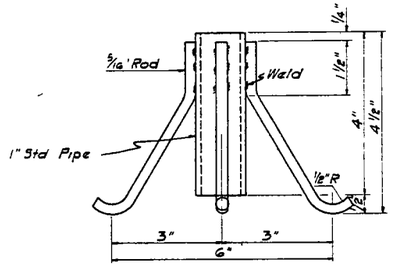


SCREED CHAIR IN PRESTRESSED GIRDER
(Outside Girders Only)



ADJUSTABLE SCREED HOLDER
**Useable with slab thickness of 7" or less for greater slab thickness adjust length accordingly.*

I-BEAM WITH SCREED CHAIR



SCREED CHAIR*

NOTES

The spacing of screed chairs shall be such that no noticeable deflection occurs in the screed when the vibrating strike-off is in operation Chairs shall be similarly placed for all screeds on the same bridge span with a maximum spacing of three feet when using 1½" extra strong pipe for a screed Screeds shall be set on outer beams and also on intermediate beams if necessary to maintain the required template

The cost of the screed chairs and holders shall be included in the unit price bid for the various pay items Upon completion of the project the screed and screed holders shall remain the property of the Contractor

The design shown for the screed chairs and seat may be varied slightly to suit manufacturers products if approved by the Engineer

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

SCREED CHAIR AND ADJUSTABLE SCREED HOLDER

APPROVED 1-6-59 DATE

BRIDGE ENGINEER