FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	BRF-1-006( )066	

GENERAL NOTES

400 070 DIMENSIONS: Thicknesses shown on the typical sections for surfacing are approximate. It is intended that the plan tonnages provided for by the basis of estimate will be used uniformly throughout the project unless otherwise authorized by the engineer.

400 120 COMPACTION OF HOT BITUMINOUS PAVEMENT: The compaction equipment for mainline paving shall include not less than one approved steel roller or approved vibratory roller and one approved pneumatic tired roller. The initial compaction shall be completed before the mat drops below 170°F, and the specified density shall be obtained before the mat temperature drops below 140°F. The maximum speed of vibratory roller in the vibratory mode shall be 3 mph. The speed of nonvibratory rollers and vibratory rollers in the static mode shall not exceed 4 mph during initial and intermediate rolling prior to obtaining the required density.

400 155 Quantity totals have been rounded off to the nearest whole unit for bidding purposes.

400 201 GRADE OF BITUMEN: The grade of bitumen for seal coat to be specified by the engineer in the field.

700 010 SEEDING: The following seed mixture will be used on this project:

Percent Pure Live Seed by Weight	Species	Minimum Percent Pure Live Seed (PLS)
32	Western Wheatgrass (Rosanna)	75
26	Thickspike Wheatgrass (Critana)	80
18	Green Needlegrass (Lodorm)	70
14	Little Bluestem (Blaze)	60
10	Switchgrass (NDG-98)	75

The amount of pure live seed to be applied per acre shall be 18 pounds. The fertilizer requirement is as follows:

50 pounds of Nitrogen N/acre
50 pounds of Phosphorous P_2O_5/acre

The fertilizer shall be applied at a rate assuring that fifty (50) pounds of Nitrogen (N) and fifty (50) pounds of Phosphorous (P_2O_5) are applied per acre of seeded area. In order to meet this requirement with a fertilizer formula of 25-25-0, it will be necessary to apply 200 pounds (bulk weight) per acre. The area to be seeded shall receive one application of fertilizer.

708 040 Dowel bars installed at expansion joints in the curb and gutter will not be paid for separately, but shall be included in the price bid for "Curb and Gutter - Type I."

CURB & GUTTER AT BRIDGE ENDS: The reinforced curb and gutter at the bridge ends (See Sheet #) shall not be a separate pay item, but shall be included in the price bid for Curb & Gutter, Type 1.

WORK SCHEDULE: The North Dakota State Game & Fish Department (G&F) will monitor the stream to determine water quality conditions both prior to and during construction. The purpose of the monitoring is to determine the effect that construction activities will have on fish spawning. The Contractor must give the Department a minimum of 21 days notice prior to commencing construction. The Department will inform the G&F Department so they can commence monitoring activities. The Contractor will not perform any construction activities that will affect the stream during this 21 day period.

TOPSOIL FOR SEEDING: The Contractor shall furnish topsoil borrow pit for this project. The cost of obtaining this site shall be included in price bid for "Topsoil for Type C Seeding".

If Contractor desires to haul across bridge, he will be limited to 60 Ton Gross vehicle with maximum of 30 ton on single axle. Single vehicle on the structure at one time. Approaches maintained to avoid bouncing of vehicle going onto the bridge. Concrete at 4000 psi strength.

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GENERAL NOTES

100 011 GENERAL: The engineer will attend to the removal of existing fences to the highway right of way line and to the relocation or adjustment of utility facilities as shown on the plans. Equipment shall work around utility poles, within the area, that are not to be disturbed.

100 030 UNDERGROUND UTILITIES: The contractor shall notify the local utility companies prior to the beginning of construction, so they may stake location and depth of all utilities in the project area. Subcutting or scarifying over utility lines may be eliminated if, in the opinion of the engineer, a hazardous situation exists. Separate plans, if any, showing relocation or adjustment work to be performed by utility companies to accommodate highway construction will be made available to the contractor, upon request to the engineer.

100 050 PROJECT ENGINEER RESPONSIBILITY:

(a) USC & G Bench Mark
As soon as it has been determined that a bench mark must be moved, consult your Construction Survey Manual (Sec. 150-4.9), for the proper steps needed to preserve the bench mark.

(b) All section corners must be monumented and a corner recordation form must be filed with the County Register of Deeds. See Appendix G of the Preliminary Survey Manual for instructions on how to fill out the form.

100 060 DETOURS: The contractor shall maintain the streets used as detours (streets to be designated by the engineer) and repair areas damaged by the detoured traffic. Upon completion of the project, the contractor shall restore the streets to a condition at least equal to that which existed at the time traffic was routed over them. Work shall be as deemed necessary by the engineer. The repair and maintenance of the detours will be paid for in accordance with SP-273 "Haul Road Maintenance." Necessary route markers will be furnished by the State Highway Department and erected and maintained by the contractor as an incidental item.

100 120 Excavate, if necessary, where the new surfacing meets existing pavement, bridge ends, or railroad crossings to allow placement of the full depth of the surfacing course. The excavation is not a pay item but shall be considered incidental to other items.

100 130 TREES, SHRUBS, AND NATIVE GRASSES: The contractor shall exercise care in his construction operations to ensure that trees, shrubs, and native grasses within the right of way and outside the construction area are disturbed as little as possible.

100 140 HISTORICAL INFORMATION: If any scientific or historical information is encountered after construction is in progress, the Highway Department will immediately notify the Historical Society, and efforts will be made to protect the material until it has been examined by an archaeologist from the Historical Society. If future activities should result in the discovery of any cultural resources that are eligible for inclusion in the National Register of Historical Places, this will require compliance with Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation "Procedures for the Protection of Historic and Cultural Properties" (36, CRF, Part 800).

100 170 POLE LINES: Designation of poles to be moved.
Designation of poles to be lowered.

200 010 SHRINKAGE: 25 percent additional volume in yardage computed by the end area method is allowed for shrinkage in earth embankment.

200 021 COMPACTION AND DENSITY CONTROL: Compaction and density controls shall be in accordance with Section 203-2.3.3 of the Standard Specifications, except that, if the subgrade is unstable (as evidenced by sponginess or rutting) when compacted to the required density, it will be necessary to dry the soils to obtain adequate stability. This may require drying below optimum moisture. The cost of such drying will be incidental to the price bid for "Roadway Excavation" (and/or "Borrow," if used).

200 335 BENCHING: When embankment is to be placed and compacted against the existing inslopes, the slopes shall be continuously benched, unless otherwise directed by the engineer. Benching shall be of sufficient width to permit the operations of placing and compacting equipment. The material cut out shall be recompacted along with the new embankment material. The cost of benching shall be incidental in the unit price bid for "Common Excavation."

400 010 PRIME, FOG, OR TACK COAT: When directed by the engineer, emulsified asphalt for prime, fog, or tack coat shall be diluted with water prior to application in a 50-50 ratio or other approved proportions. Cost of water shall be included in the price bid for "Emulsified Asphalt for Prime, Fog, or Tack Coat."

400 040 HOT BITUMINOUS PAVEMENT: The temperature of the mix at laydown shall not be less than 210°F, if the air temperature is above 60°F, and shall not be less than 225°F if the air temperature is below 60°F. The actual mixing temperature shall be adjusted as directed by the engineer within the allowable limitations to best suit construction conditions.

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NOTE SHEET

1. GENERAL NOTE: The Engineer will attend to the removal of existing fences to the new highway right-of-way line and to the relocation or adjustment of utility facilities as shown on the Plans.

2. SHRINKAGE: 25% additional volume in yardage computed by the end area method is allowed for shrinkage in earth embankment.

3. Separate plans, if any, showing relocation or adjustment work to be performed by utility companies to accommodate highway construction will be made available to the Contractor upon request to the Engineer.

4. PRIVATE PROPERTY WITHIN RIGHT OF WAY: All privately owned light poles, guard posts, signs, etc., within the right-of-way limits shall be removed by the owner.

5. Trees and shrubs that are within the right-of-way and outside of construction limits are not to be disturbed.

6. Total quantities have been rounded off to the nearest whole unit for bidding purposes.

7. COMPACTION AND DENSITY CONTROLS: The embankment shall be compacted in accordance with Sec. 203-2.3.2 of the Standard Specifications.

8. UNDERGROUND CABLES: The Contractor shall notify the Engineer sufficiently in advance of beginning excavation in areas of underground utilities so that arrangements may be made to have the utility owners determine locations and depths.

9. All inslopes on areas that are to be widened regardless of the rate of slope shall be benched unless otherwise directed by the Engineer. Benches shall be deep enough to provide sufficient width to permit placing, spreading and compacting equipment to operate. Each bench shall be thoroughly compacted before additional embankment is placed. Cost of benching shall be included in the price bid for Common Excavation.

10. TOPSOIL FOR SEEDING: The Contractor shall furnish topsoil borrow pit for this project. The cost of obtaining this site shall be included in price bid for "Topsoil For Type C Seeding".

11. CLASS OF CONCRETE: The class of concrete used in the curb and gutter and sidewalks shall be Class AE. The Contractor shall have the option of using Aggregate Size No. 1, 3, 4 or 5 as defined in Section 806-2 of the Standard Specifications.

12. CURB & GUTTER AT BRIDGE ENDS: The reinforced curb and gutter at the bridge ends (See Sheet #) shall not be a separate pay item, but shall be included in the price bid for Curb & Gutter, Type 1.

13. DIMENSIONS: Dimensions shown on the typical section for surfacing courses are approximate only. Plan quantities will be placed uniformly except where otherwise authorized by the Engineer.

14. TACK COAT: When directed by the Engineer, the emulsified asphalt for tack coat shall be diluted with water prior to application in a 50:50 ratio or other approved proportions. Cost of water shall be included in the price bid for Emulsified Asphalt for Tack Coat.

15. LOOSE AND EXCESS CHIPS: All loose and excess chips shall be removed from the roadway by sweeping as soon as practicable after sealing and no later than five days after the seal has been applied. The sweeping of loose chips from the shoulder onto the new sealed surface will not be permitted.

16. SEAL COAT: Grade to be specified by the Engineer.

17. If Contractor desires to haul across bridge, he will be limited to 60 Ton Gross vehicle with maximum of 30 ton on single axle. Single vehicle on the structure at one time. Approaches maintained to avoid bouncing of vehicle going onto the bridge. Concrete at 4000 psi strength.

18. WORK SCHEDULE: The North Dakota State Game & Fish Department (G&F) will monitor the stream to determine water quality conditions both prior to and during construction. The purpose of the monitoring is to determine the effect that construction activities will have on fish spawning. The Contractor must give the Department a minimum of 21 days notice prior to commencing construction. The Department will inform the G&F Department so they can commence monitoring activities. The Contractor will not perform any construction activities that will affect the stream during this 21 day period.

BASIS OF ESTIMATE

Water For Compaction -
10 Gal. per C. Y. of Embankment

Seeding -
Entire right-of-way south of structure except roadbed, sidewalk, sodded and hydro-seeding areas.

Hydro Mulch Seeding -
Lt. Backslope, Sta. 39+25 to 43+68.

Topsoil For Seeding -
4" deep on all areas to be seeded plus all areas to be sodded.
South of Structure = 1695 C. Y.
North of Structure = 216 C. Y.

Aggregate Base Course Class 8

1.5 Ton/c.y. + 25%

FHWA REGION	STATE	FED. AID PROJ.
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SUMMARY OF QUANTITIES

STRUCTURAL

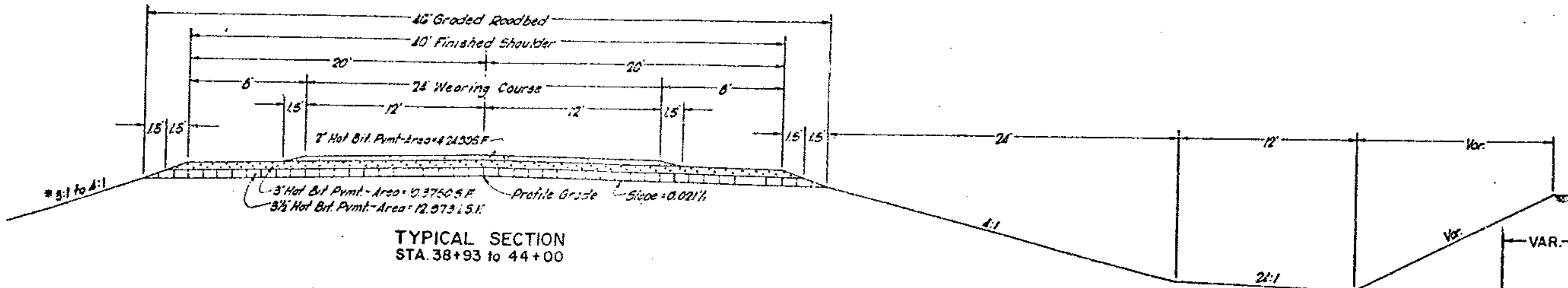
SPEC. NO.	202	208		228	208	602		612		616		622				624	750	702			
CODE NO.	0105	0100	0110	0100	0200	0110	0130	0115	0116	5890		0020	0393			0124	0100	3000	0130		
	REMOVAL OF STRUCTURE	CLASS I EXCAVATION	CLASS 2 EXCAVATION	SELECT BACKFILL	FOUNDATION PREPARATION	CLASS AE-I CONCRETE	CLASS AAE-3 CONCRETE	REINFORCING STEEL GRADE 60	REINF. STEEL GRADE 60 (EPOXY COATED)	STRUCTURAL STEEL		STEEL PILING HP 10x42	STEEL TEST PILES HP 10x42			PEDESTRIAN FENCE	LINSEED OIL TREATMENT	BRIDGE BENCH MARKS	LOOSE ROCK RIPRAP		
	L.Sum	Cu.Yd.	Cu.Yd.	Cu.Yd.	L.Sum	Cu.Yd.	Cu.Yd.	Lbs.	Lbs.	L.Sum		L.Ft.	L.Ft.			L.Ft.	Gal.	Set	C.Y.		
	1	170	275	300	1	277	439	82080	46676	1		3120	140			249	17	1	670		
TOTAL	1	170	275	300	1	277	439	82080	46676	1		3120	140			249	17	1	670		

SUMMARY OF QUANTITIES

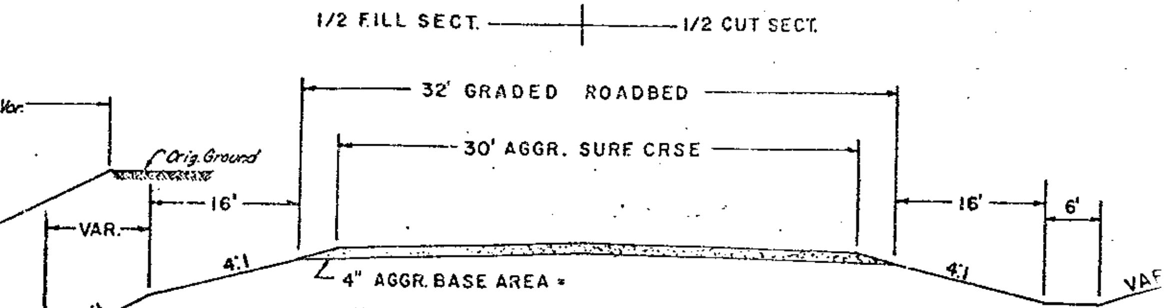
GRADING & SURFACING

SPEC. NO.		203	204		216	401	406		420		630															705	708	712	726	728	746	756	420	762	726	726	726	302
CODE NO.		0101			0100	0152	0185	0320	0100	0145	0055	0085	0455	0485	2460	2380	2465	2900	3275	3285	3325					0100	0300	0100	0210	0100	0100	0100	0160	3299	0095	0335	0320	0135
		COMMON EXCAVATION TYPE A	AVERAGE HAUL		WATER	SS-1H or CSS-1H EMULS. ASPH. FOR TACK COAT	HOT BIT. PVMT. CL. 24	120-150 ASPH. CEMENT	RC-250,800 LIQUID ASPH. or CRS-2 EMULS. ASPH. FOR SEAL COAT	COVER COAT MATERIAL CLASS-43	CORR. STEEL PIPE.		CORR. STEEL END SECT.		REINFORCED CONCRETE PIPE				REINFORCED CONCRETE END SECT.							MOBILIZATION	CURB & GUTTER TYPE I	CONCRETE SIDEWALK	SEEDING TYPE C CLASS I or IV	SODDING	FLAGGING	FIELD LABORATORY TYPE A	BLOTTER MATERIAL CLASS 44	MAINTENANCE & PROTECTION of TRAFFIC	SEEDING TYPE A	TOPSOIL FOR TYPE C SEEDING	HYDRO-MULCH SEEDING	AGGR. BASE COURSE CL.8
											.064 18"	.064 24"	.064 18"	.064 24"	CL.II 30"	CL.III 24"	CL.III 30"	CL.III 84"	24"	30"	84"																	
		C.Y.	C.Y.	Sta.	"M" Gal.	Gal.	Ton	Ton	Gal.	Ton	L.F.	L.F.	EA.	EA.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	EA.					L.Sum	L.F.	S.Y.	Acre	S.Y.	M.Hr.	Ea.	Ton	L.Sum	Acre	C.Y.	Acre	Ton
HWY 6		3631	8250	2.94	92	874	1904	137	1576	36		16		2											1	260	116	2.2	1941		1		1		2111	1	
By Pass		54088	49316	4.52							54		2		60	92	48	112	4	4	2													12				4519
TOTAL		63379	57566	4.29	92	874	1904	137	1576	36	54	16	2	2	60	92	48	112	4	4	2					1	260	116	2	1941		1		1	12	2111	1	4519

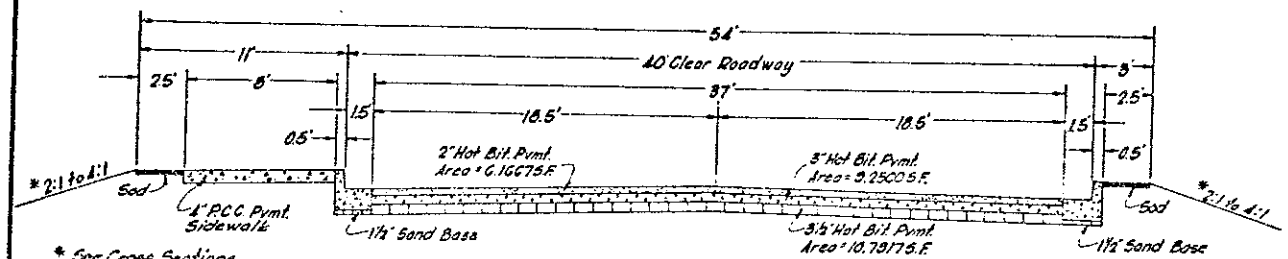
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
8	N.D.	[illegible]-0051 ( )	



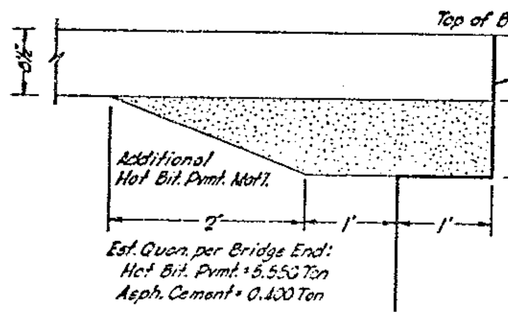
TYPICAL SECTION
STA. 38+93 to 44+00



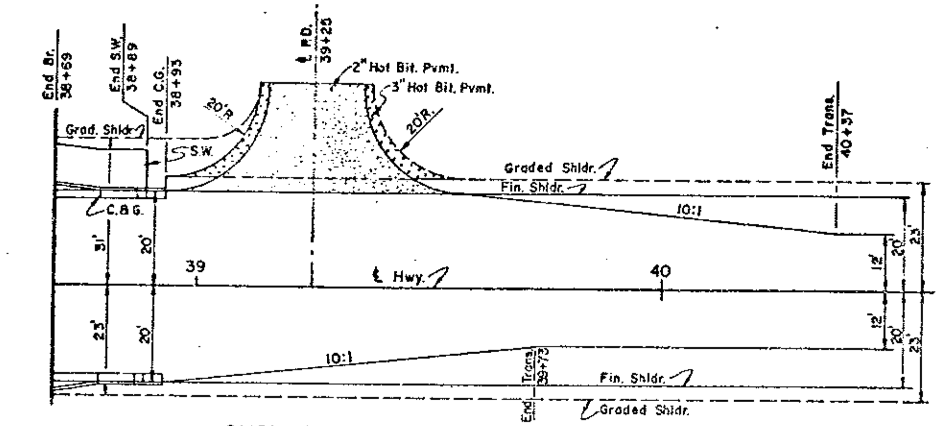
TYPICAL SECTION TEMPORARY BYPASS



TYPICAL SECTION
Sta. 35+04 to 36+19 Lt.
Sta. 35+22 to 36+19 Rt.
Sta. 38+69 to 38+93 Lt. & Rt.



BITUMINOUS SURFACING DETAIL
AT BRIDGE ENDS



SHOULDER TRANSITION S. OF STRUCTURE

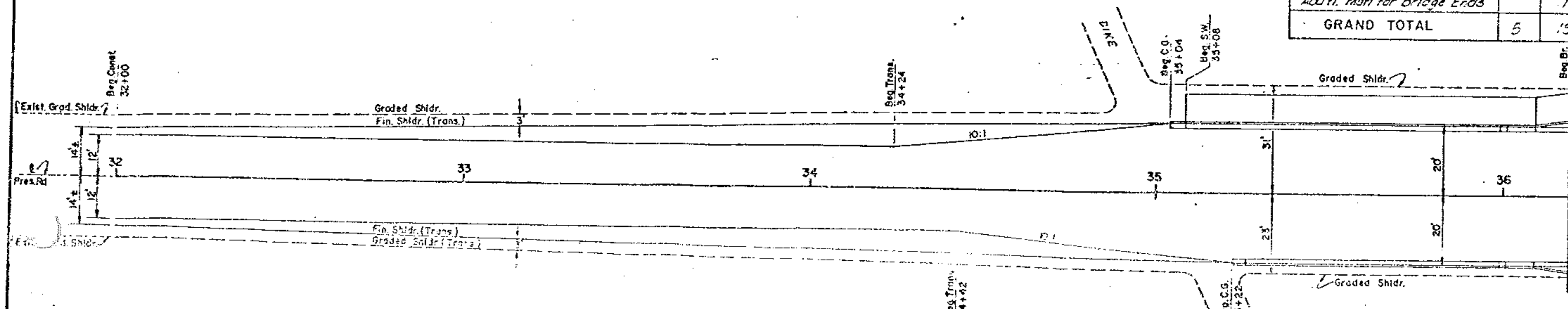
CURB & GUTTER SECTION		46' GRADED SECTION		BASIS OF ESTIMATE			
QUANTITY PER STA.	WIDTH	QUANTITY PER STA.	WIDTH	QUANTITY PER S.Y.	DEPTH	UNIT	DESCRIPTION
0.473		0.473				"M" Gal.	Water for Dust Palliative - 25 "M" Gal./Mi.
79.94	37'	96.14	43'	0.19444	3½"	Ton	Hot Bituminous Pavement (Base Course) @ 2.0 Ton/C.Y. Cl. 24
5.76		6.92		0.01400		Ton	120-150 Asphalt Cement for Hot Bit. Pvmt. @ 7.2% of Hot Bit. Pavement
20.56	37'	23.89	43'	0.05		Gal.	SS-1H or CSS-1H Emuls. Asph. for Tack Coat @ 0.05 Gal./S.Y. *
68.52	37'	76.85	40'	0.16667	3"	Ton	Hot Bituminous Base Course @ 2.0 Ton/C.Y. Cl. 24
4.93		5.53		0.01200		Ton	120-150 Asphalt Cement for Hot Bit. Pvmt. @ 7.2% of Hot Bit. Pavement
20.56	37'	15.00	27'	0.05		Gal.	SS-1H Emuls. Asph. for Tack Coat @ 0.05 Gal./S.Y.
45.68	37'	31.48	24'	0.11111	2"	Ton	Hot Bit. Pavement (Surf. Crse.) @ 2.0 Ton/C.Y. Cl. 24
3.29		2.27		0.00800		Ton	120-150 Asphalt Cement for Hot Bit. Pvmt. @ 7.2% of Hot Bit. Pavement
143.89	37'	178.89	46'	0.35		Gal.	RC-250, 800 Liquid Asph. or CRS-2 Emuls. Asph. for Seal Coat @ 0.35 Gal./S.Y. *
5.14	37'	3.33	24'	0.0125		Ton	Cover Coat Material Class 43 @ 25 Lbs./S.Y.
1.23	37'	0.80	24'	0.003		Ton	Blotter Material Class 44 @ 6 Lbs./S.Y. (Seal Coat Maintenance)

* See Note 16

ESTIMATE OF QUANTITIES							
SPEC. NO.	216	406		401	420		
CODE. NO.	0120	0185	0320	0152	0100	0145	0160
DESCRIPTION	WATER	HOT BIT. PVMT. CL. 24	120-150 ASPH. CEMENT	SS-1H or CSS-1H EMULS. ASPH. FOR TACK COAT	RC 250, 800 LIQUID ASPH. or CRS-2 EMULS. ASPH. FOR SEAL COAT	COVER COAT MATERIAL CLASS 43	BLOTTER MATERIAL CLASS 44
	"M" Gal	Ton	Ton	Gal.	Gal.	Ton	Ton
32+00 to 35+22 (Transition)	1.6	570.4	41.0	[illegible]	459.4	11.6	2.8
35+22 to 36+19	0.5	186.3	13.5	[illegible]	[illegible]	5.0	1.2
36+69 to 38+93	0.1	46.6	3.4	5.9	34.5	1.2	0.3
38+93 to 40+37 (Transition)	0.7	308.7	22.2	[illegible]	257.9	6.4	1.5
40+37 to 44+00	1.7	742.2	53.4	[illegible]	543.4	12.1	2.9
R.D. Appr.		36.4	2.6	3.7	25.9		
Add'l. Mat'l for Bridge Ends		11.1	0.8				
GRAND TOTAL	5	1904	137	374	1576	36	9

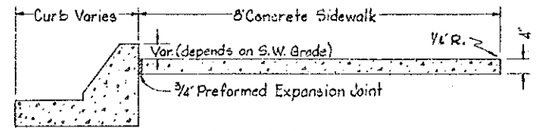
MAXIMUM SIZE OF AGGREGATE		
DESCRIPTION	TYPE OF AGGREGATE	MAXIMUM SIZE
Hot Bituminous Pvmt. Cl. 24	Crushed	3/4"
Blotter Material Class 44	Screened	5/8"
Cover Coat Material Class 43		1/2"

SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS	
NAME	NO.
Hot Bituminous Pavement (Temp. Recording)	SS-1
Field Laboratory	SS-3
Metal Pipe	SS-8
Control of Materials	SS-13
Measurement & Payment	SS-15
Control of Materials	SS-16
Erosion & Water Pollution Control	SP-106A
Hot Bituminous Pavement	SP-109E
Aggregate Base or Surface Course	SP-110
Legal Relations & Responsibility to Public Underground Utilities	SP-113
Structural Steel	SP-116C
Seal Coat	SP-118
Sodding	SP-122A
Legal Relations & Responsibility to the Public	SP-123
Maintenance & Protection of Traffic	SP-124
Control of Materials	SP-125
Portland Cement Concrete	SP-126
Hot Bituminous Pavement	SP-128
Measurement & Payment	SP-133
Quick Setting Anchor Grout	SP-135
Bidding Requirements & Conditions	SP-148
Measurement & Payment	SP-145
Legal Relations & Responsibility to Public Utilities (Century Code)	SP
Measurement & Payment (Bit. Materials)	SP
Bituminous Materials (Acceptance & Sampling)	SP
Bituminous Materials (Viscosity Grades)	SP
Measurement & Payment (Contract Adjustment)	SP
Chemical Admixture for Concrete	SP
Underground Utilities (Century Code)	SP
Prestressed Concrete Piles	SP

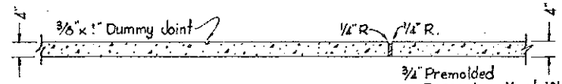


SHOULDER TRANSITION N. OF STRUCTURE

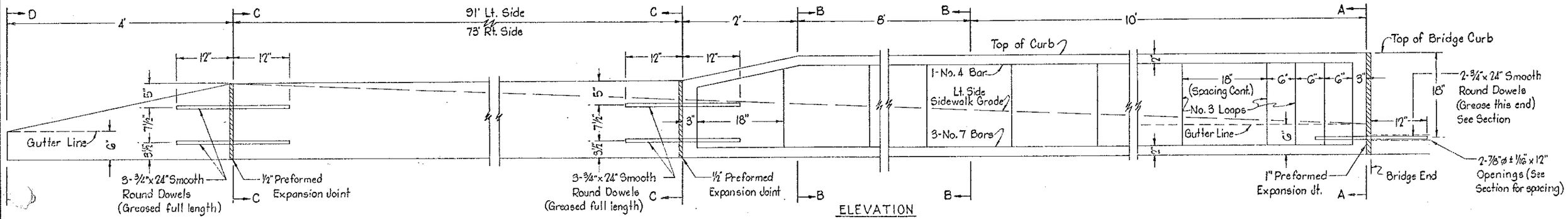
FED. ROAD DIST. NO.	STATE	PROJ. NO.		SHEET NO.	
8	N.D.	BRF-[illegible]			



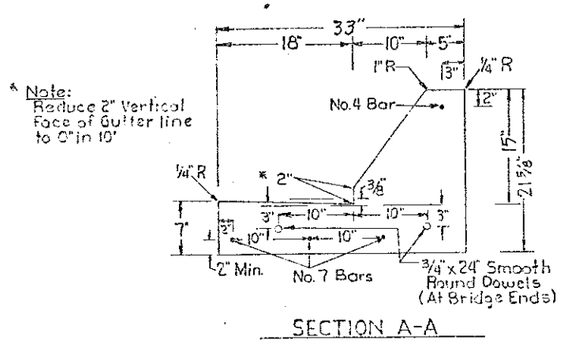
CONCRETE SIDEWALK DETAIL



LONGITUDINAL SIDEWALK DETAIL

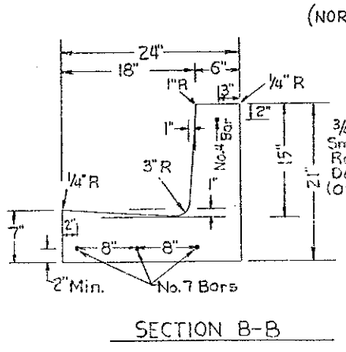


ELEVATION
(NORTH END STRUCTURE)

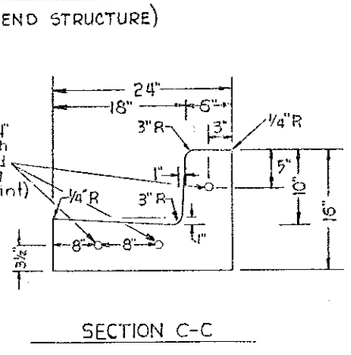


* Note: Reduce 2" Vertical Face of Gutter line to 0" in 10'

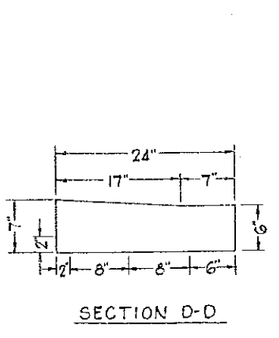
SECTION A-A



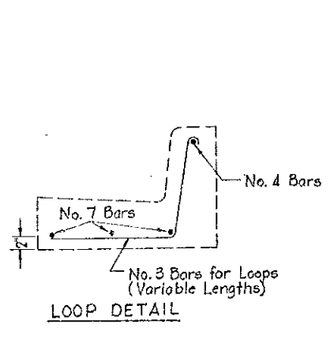
SECTION B-B



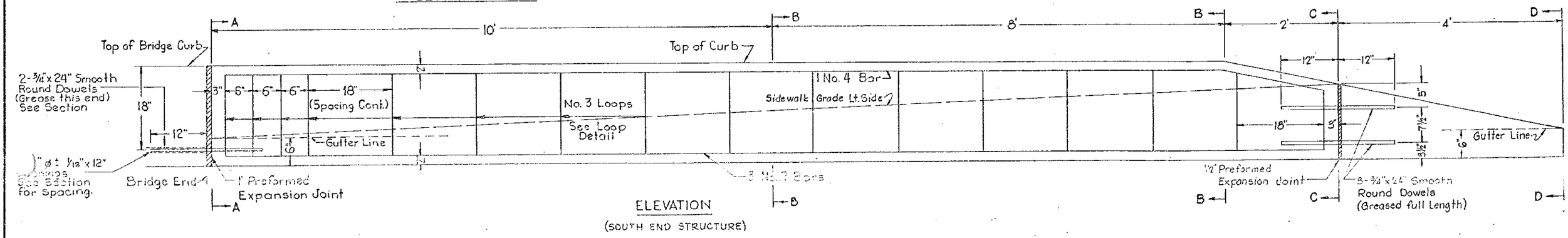
SECTION C-C



SECTION D-D



LOOP DETAIL



ELEVATION
(SOUTH END STRUCTURE)

MANDAN
INC. POP. 11,093 (1970)

3	N.D.	BRF-006( )	

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
1	E. Edge of Light Sta. Base	33+80 Rt.	1648.17
2	Curb N.W. Cor. of Bridge	36+04	1660.49
3	Curb S.W. Cor. of Bridge	38+69	1662.38
4	Top of Pipe N. End	44+36 48 Lt.	1676.61

BEG. PROJ. BRB-1-006( ) Sta. 32+00±
Sta. 32+00 on F-251(15)

INSTALL CURB & GUTTER-TYPE I*
35+04 to 36+19 – 38+69 to 38+93 Lt. 139 L.F.
35+22 to 36+19 – 38+69 to 38+93 Rt. 121 L.F.

INSTALL CONCRETE SIDEWALK*
35+08 to 36+19 – 38+69 to 38+89 Lt. 110 S.Y.

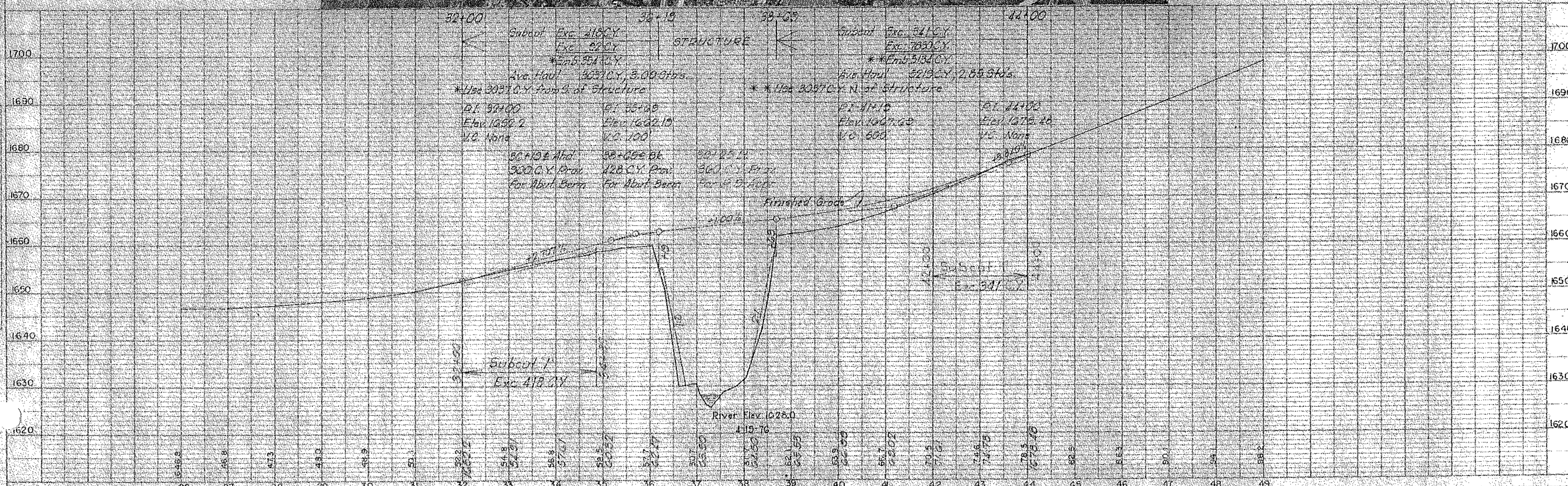
*See Sheet No.

END PROJ. BRB-1-006( ) Sta. 44+00±
Sta. 44+00 on F-251(15)

INSTALL PIPE CULVERT
35+25 Lt. 24"x 46' C.S.P. (.064") 2-C.S.E.S. (.064")

Speed Limit
& Corpor Limit Lines

Sta. 36+04.06 To Sta. 38+69.06
3-Span Bridge CL. Rdwy. 22.0'
N. End Span-Conc. Slab Supported by Rolled Beams
S. End Span-Conc. Slab
Center Span-Steel Truss with Conc. Slab



w ~~Wel~~ ping

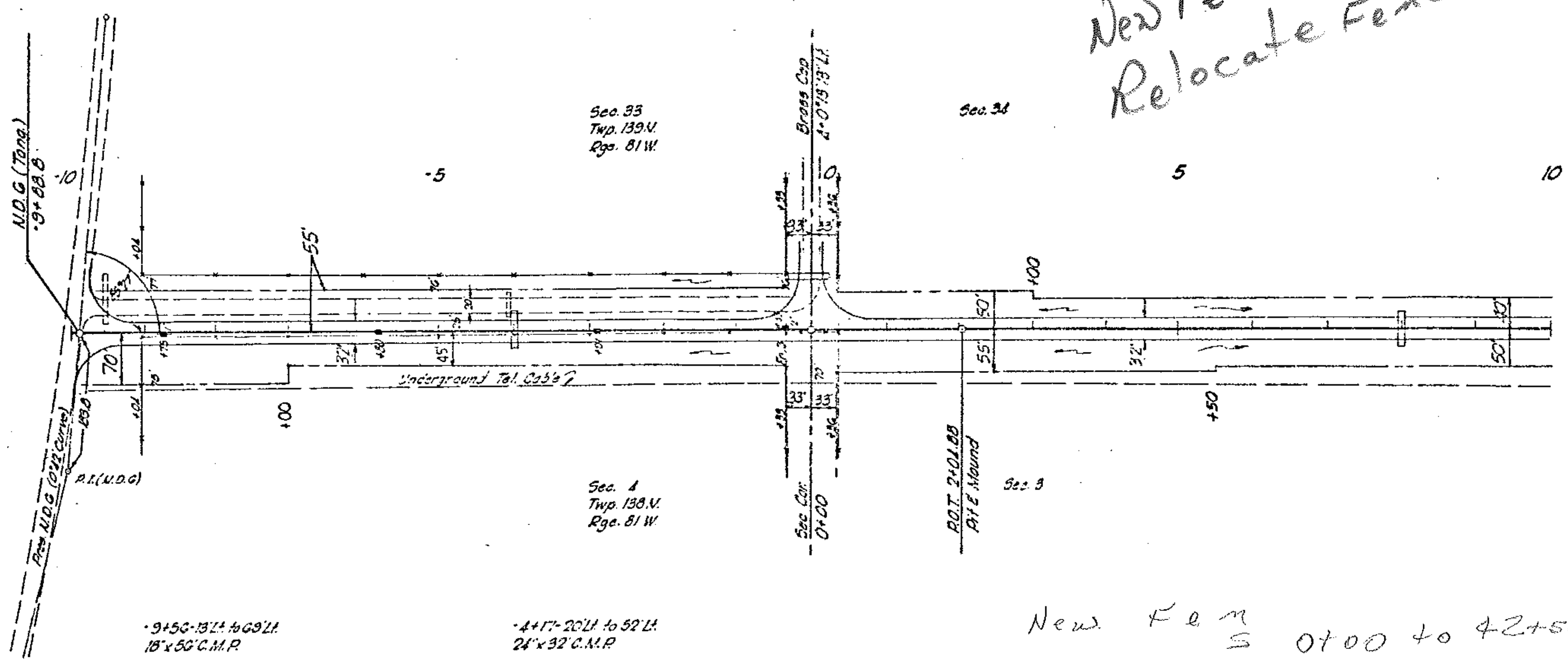
New Fence where Nec.
Relocate Fence were Nec.

BRF-1-006( )

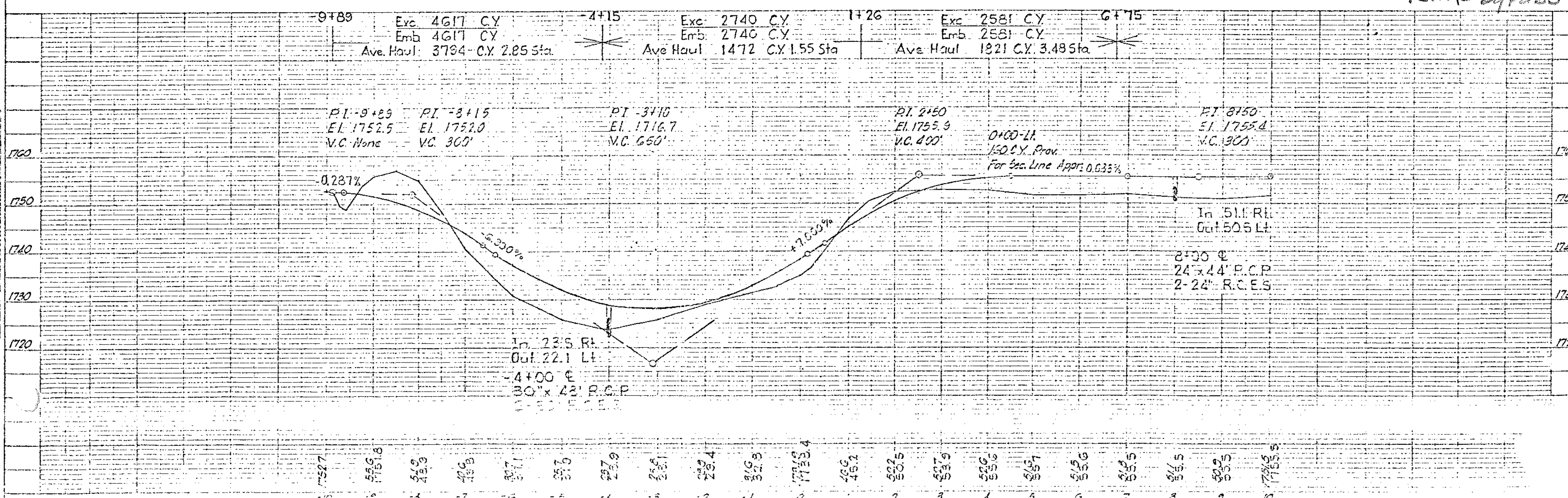
BENCH MARKS			
NO.	DESCRIPTION	LOCATION	ELEV.
1	Point Seat on Culvert	-9+53 -73'Rt	1718.45
2	Top Cadastral Cor	0+00 -E	1735.05

INSTALL PIPE CULVERTS

- -4+00 ℄ 30"x 48' R.C.P. Cl. III 2-30" R.C.E.
- 0+00 ℄ Lt. 18"x 53' C.S.P.(.064) 2-18" C.S.E.S.(.0
- 8+00 ℄ 24"x 44' R.C.P. Cl. III 2-24" R.C.E.S.



Temp Bypass



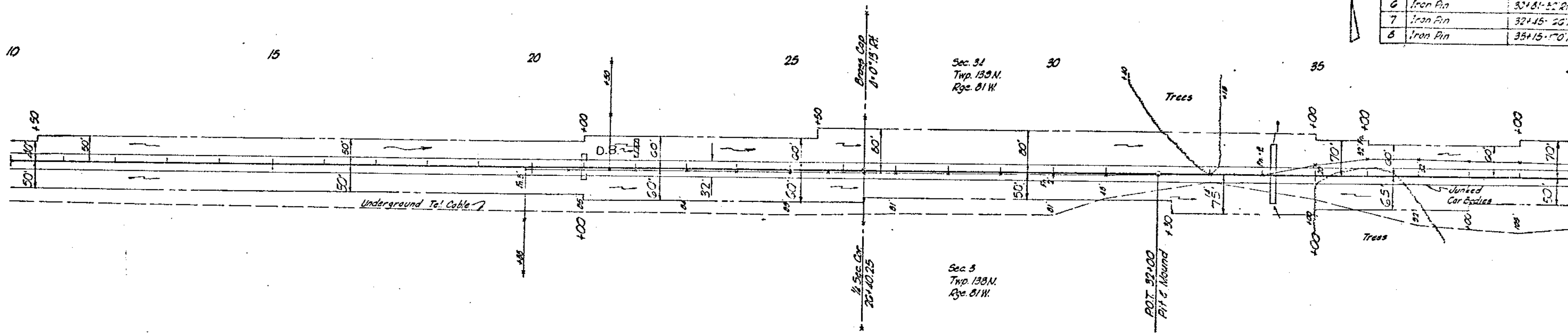
8 | N.D. | BRF-1-006( )

INSTALL PIPE CULVERT

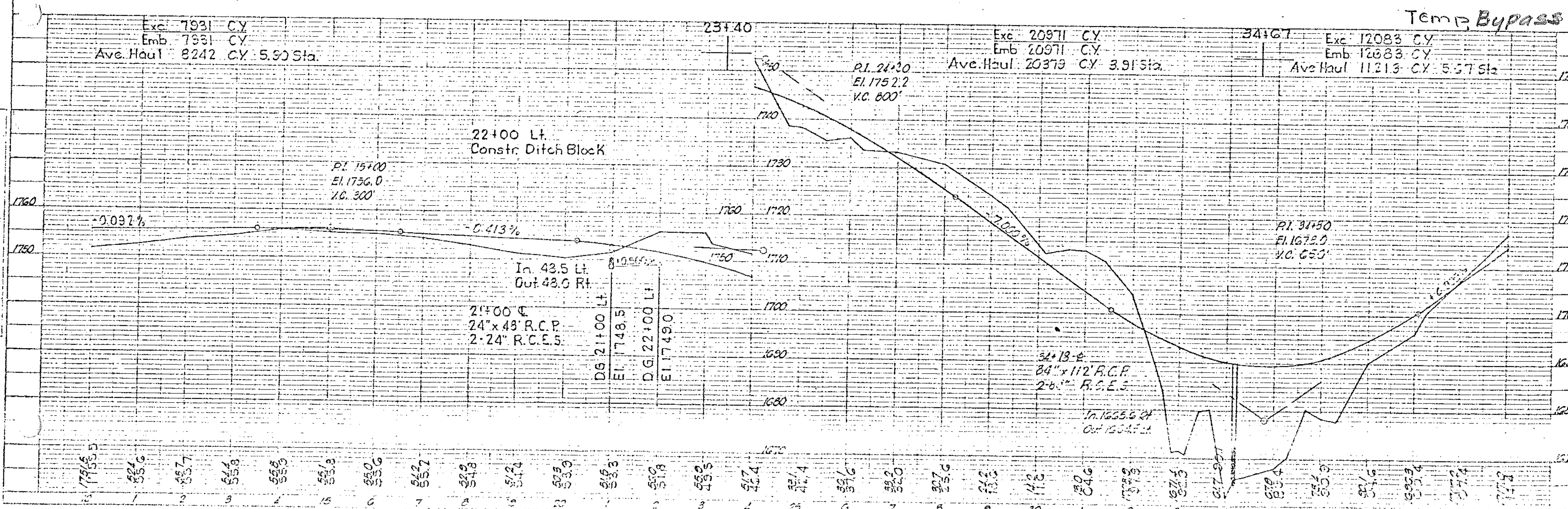
21+00 ℄ 24" x 48' R.C.P. Cl. III 2-24" R.C.E.S.
34+18 ℄ 84" x 112' R.C.P. Cl. III 2-84" R.C.E.S.

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
3	Iron Pin on Fn. Line	19+35 - 50' Rt.	1752.0
4	1x2 @ Grds. on Fn. Line	21+50 - 50' Lt.	1758.0
5	Iron Pin on Fn. Line	23+42 - 30' Lt.	1750.0
6	Iron Pin	30+81 - 52' Rt.	1702.2
7	Iron Pin	32+45 - 50' Rt.	1687.3
8	Iron Pin	35+15 - 170' Rt.	1687.0



Temp Bypass

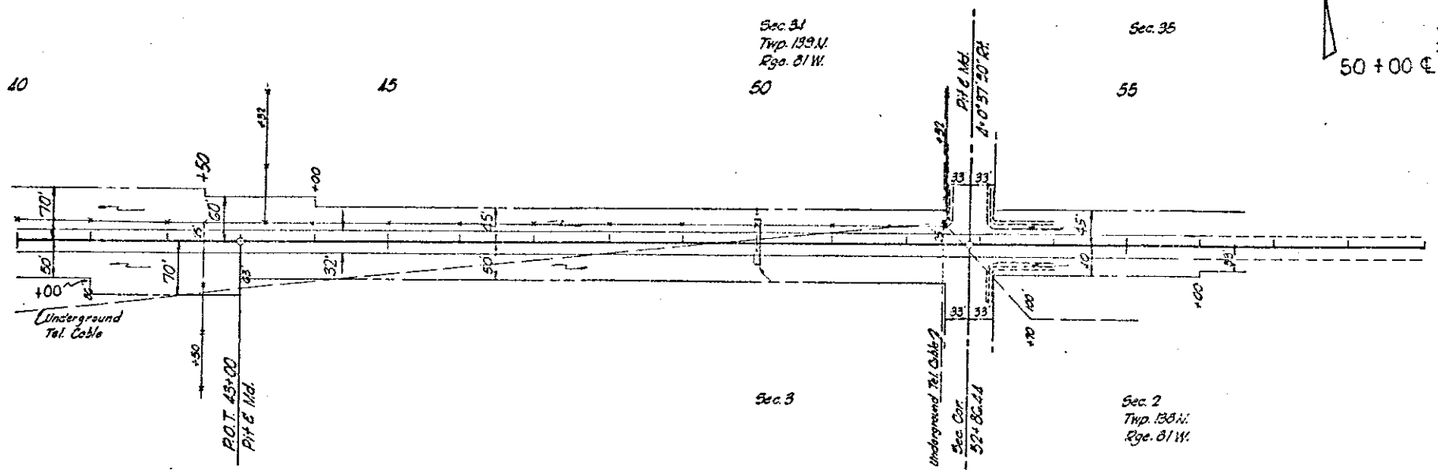


8	NHS BRF-1-006( )

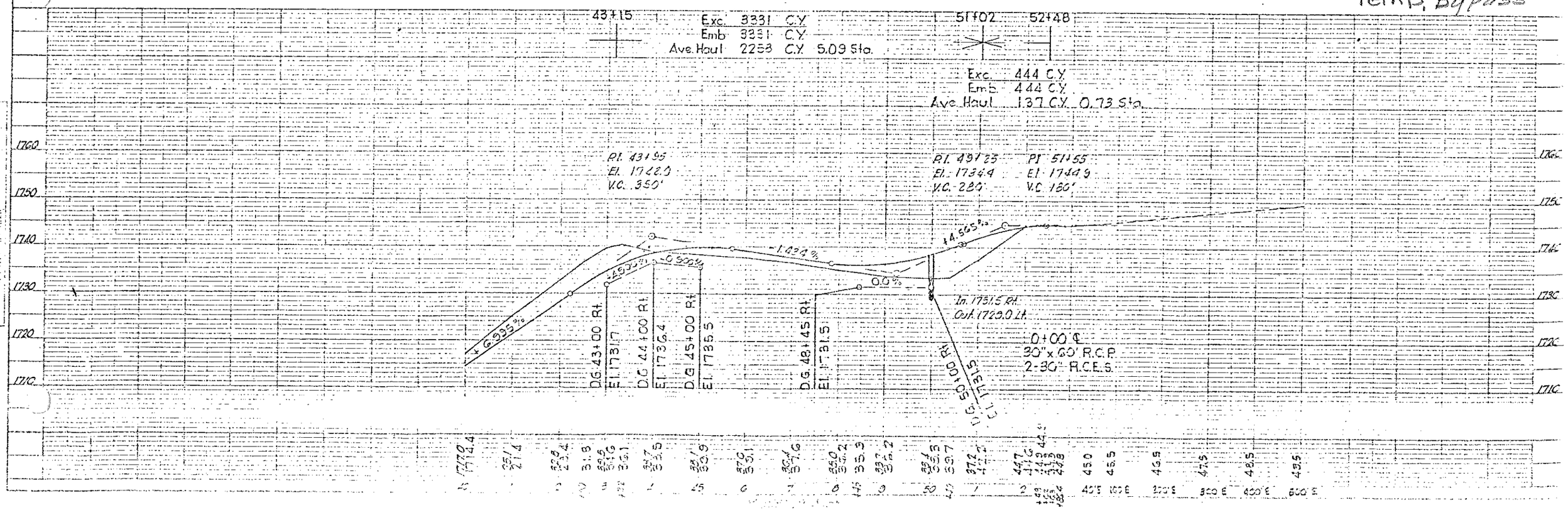
BENCH MARKS			
NO.	DESCRIPTION	LOCATION	ELEV.
9	Iron Pin	434.77' 105 Lt.	1738.22
10	Iron Pin	521.62' 102 Lt.	1738.28

N

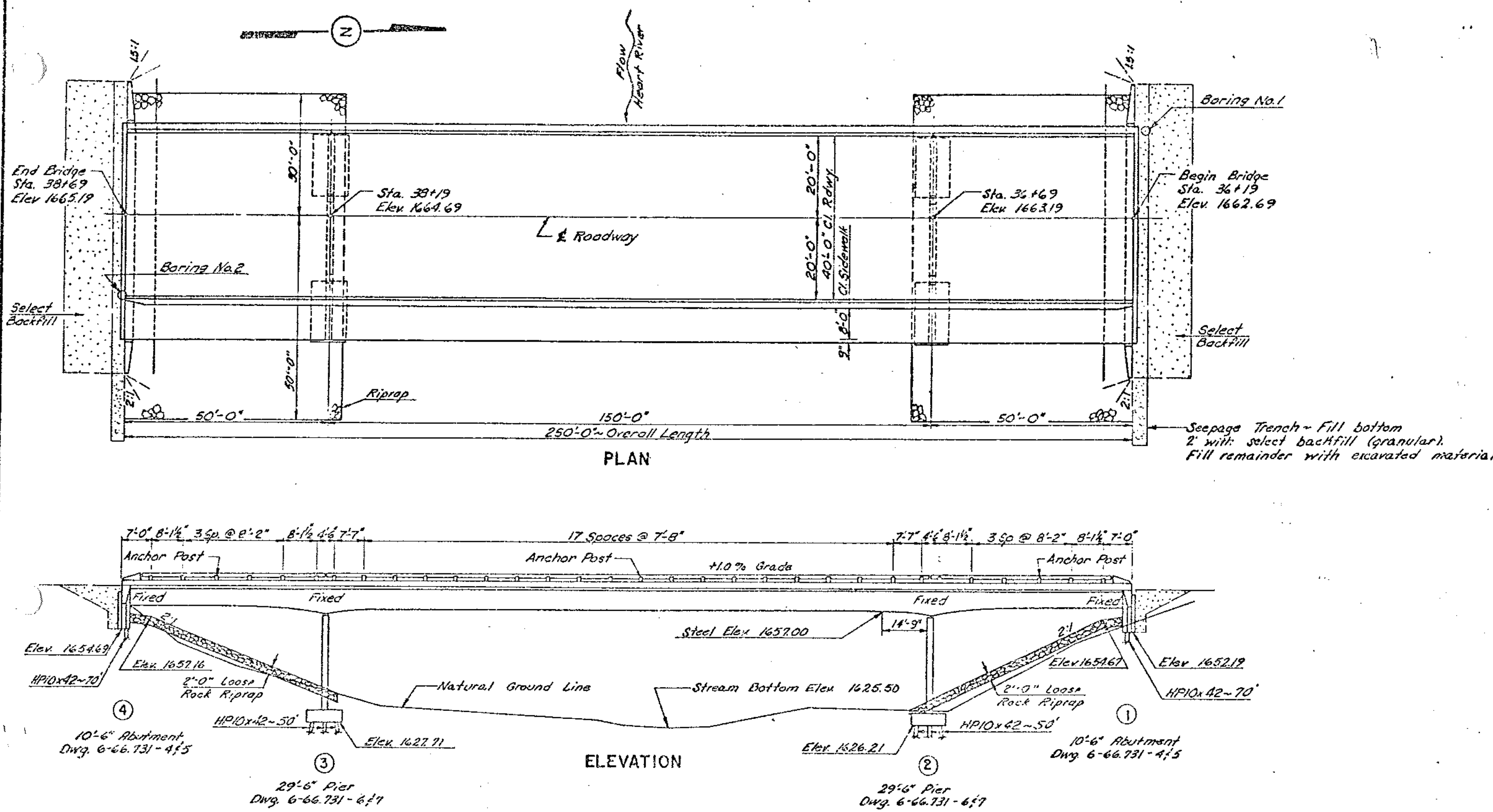
INSTALL PIPE CULVERT
50+00 ℄ 30"x 60' R.C.P Cl. II 2-30" R.C.E.S.

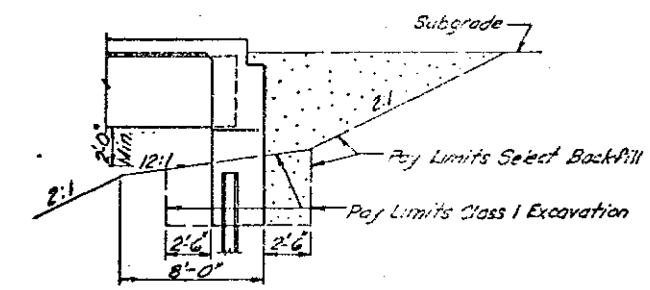


Temp. Bypass



BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
X-071	8	N. D.	BRF-1-006( )		





DETAIL AT ABUTMENTS

SPECIAL PROVISIONS	
NO.	NAME
SP-806-3	AGGREGATE FOR PORTLAND CEMENT CONCRETE
SP-106-2	CONTROL OF MATERIAL
SP-208-1	EXCAVATION FOR BOX CULVERTS AND BRIDGES
SP-254	EPOXY COATED REINFORCING STEEL
SP-602-1	CONCRETE STRUCTURES
SP-610-3	PORTLAND CEMENT CONCRETE
616-28 844-1	STRUCTURAL STEEL
SP-622-3	PILING

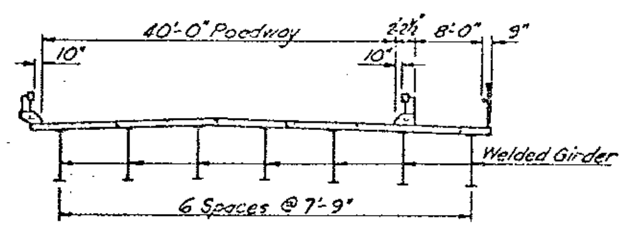
ESTIMATE OF QUANTITES

SPEC. NO.	CODE NO.	BID ITEM		
202	0125	REMOVAL OF STRUCTURE		LUMP S
208	0100	CLASS 1 EXCAVATION		170 CU. Y
208	011C	CLASS 2 EXCAVATION		275 CU. Y
220	0100	SELECT BACKFILL		300 CU. Y
208	0200	FOUNDATION PREPARATION		LUMP S
602	1110	CLASS AE-1 CONCRETE		277.0 CU. Y
602	0130	CLASS AAE-3 CONCRETE		439.46 CU. Y
612	0115	REINFORCING STEEL-GRADE 60		82,080
612	0116	REINFORCING STEEL-GRADE 60 (EPOXY COATED)		45,676
616	3890	STRUCTURAL STEEL		LUMP S
		(ESTIMATED TOTAL A572 & A36 = 370,073 LBS.)		
622	0020	STEEL PILING HP10x42	11 AT 70' 47 AT 50'	3120 LIN.
622	0393	STEEL TEST PILE HP10x42	1 AT 80' 1 AT 60'	140 LIN.
624	0124	PEDESTRIAN FENCE		249.25 LIN.
702	0130	LOOSE ROCK RIPRAP		670 C
705	0100	MOBILIZATION		LUMP S
750	0100	LINSEED OIL TREATMENT		17 G
900	3000	BRIDGE BENCH MARKS		1 S

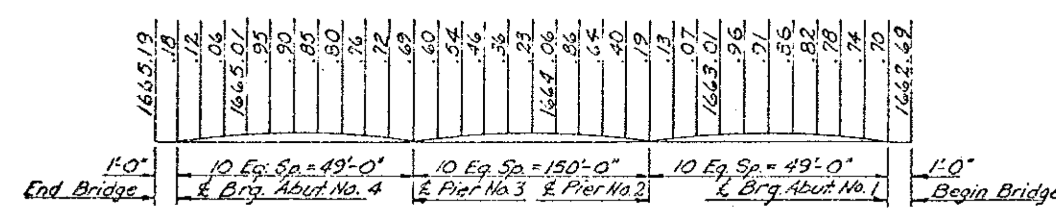
DESIGN STRENGTHS:

f'c=3000 psi ~ Class AE-1 Concrete
f'c=4000 psi ~ Class AAE-3 Concrete
fy=50,000 psi ~ Structural Steel A572
fy=36,000 psi ~ Structural Steel A36
fy=60,000 psi ~ Reinforcing Steel

Design by Load Factor



DECK SECTION
(Looking North)



SCREED ELEVATION
Elevations shown are to top of finished concrete.

BENCH MARKS			
NO.	DESCRIPTION	LOCATION	ELEV.
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	38+89	[illegible]
4	Top of Pipe N. End	44+36 48' Lt.	1676.61

PILE LOADING						
LOCATION	DEAD LOAD	LIVE LOAD	EARTH LOAD	[illegible]	DESIGN	MAXIMUM [illegible]
[illegible]	[illegible]	[illegible]				
Piers	[illegible]	8.0 T	3.0 T			[illegible]

STRUCTURAL DRAWING
GENERAL DRAWING (THIS SHEET) 6-66.731-1, 2, 3, 3A, 3B & 3C
SUBSTRUCTURE 6-66.731-4, 5, 6 & 7 H-0401
SUPERSTRUCTURE 6-66.731-8, 9, 10, 11, 12, 13 & 14, D-900-1

DESIGN LOADING	SCALE
HS20 (1944)	1 INCH = 15 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

HEART RIVER BRIDGE

BRIDGE LAYOUT

PROJECT BRF-1-006( ) 1056 STA. 37+440

MORTON COUNTY

APPROVED
6/12/73

6-66.731

REGION DIST. NO.	STATE	PROJECT NO.	SHEET NO.
8	ND	BRF-1-006( )	

HYDRAULIC DESIGN DATA

DRAINAGE AREA	3330 SQ. MI.
DESIGN FREQUENCY	25 YEARS
DESIGN DISCHARGE	33,250 C.F.S.
DESIGN STAGE	1655.1 M.S.L.
AVERAGE VELOCITY OF FLOW IN NATURAL CHANNEL	7.23 F.P.S.
DEPTH OF FLOW	29.6 Ft.
VELOCITY OF FLOW UNDER BRIDGE	7.2 F.P.S.
FREEBOARD PROVIDED	1.9 Ft.
100 YEAR FREQUENCY DISCHARGE	32,575 C.F.S.
100 YEAR FREQUENCY STAGE	1653.1 M.S.L.
MAX. RECORDED STAGE	1656.5 M.S.L.
MAX. RECORDED DISCHARGE	30,500 C.F.S.
MIN. WATER ELEV.	1622.5± M.S.L.

HEART RIVER BRIDGE

TOPOGRAPHIC MAP

S-66,731-1

FOR COMMENT ONLY
August Letting - Due June 24

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

SPECIAL PROVISION

Section 108 - Prosecution and Progress

Project BRF-1-006( )066

June 20, 1983

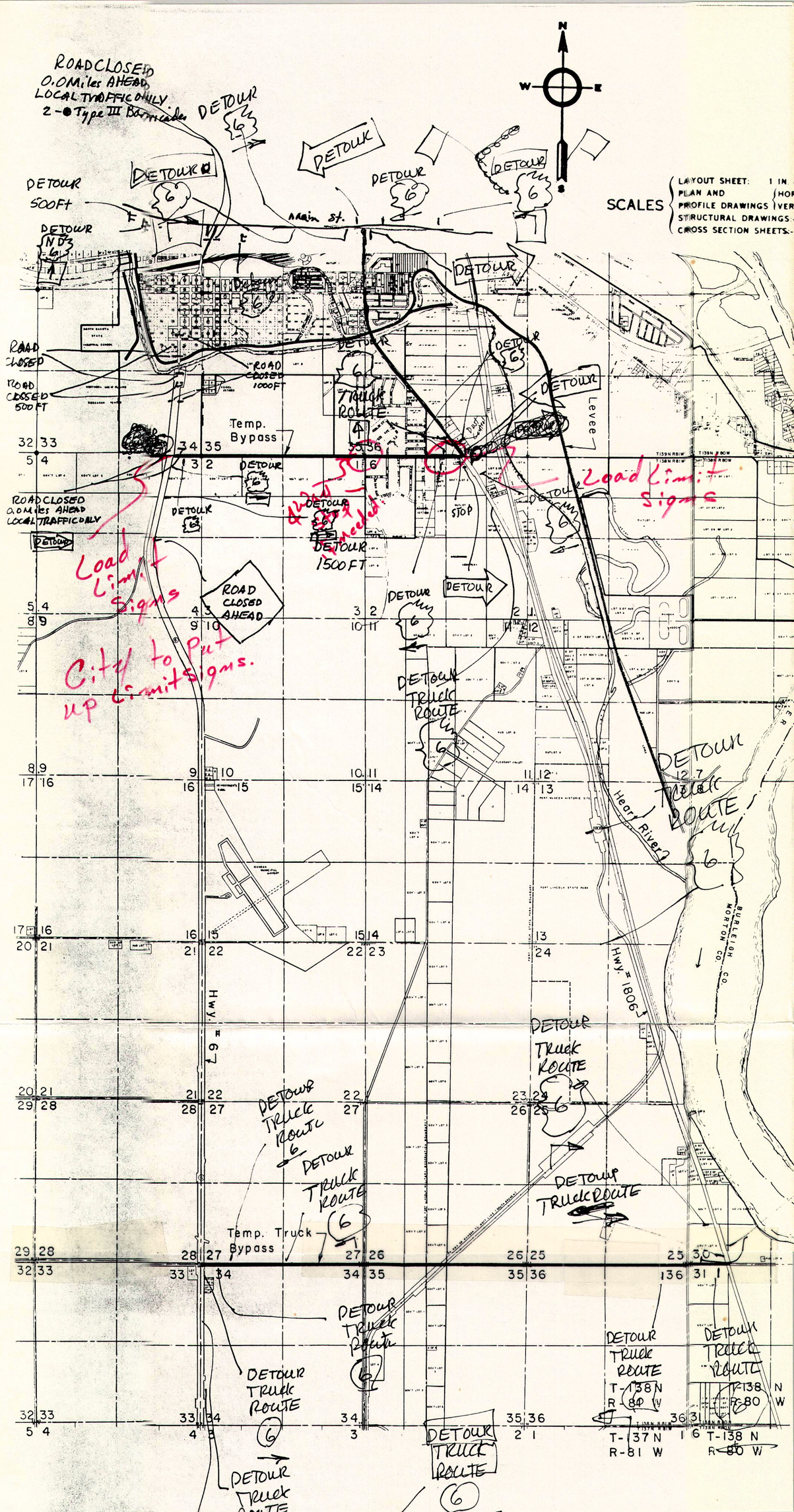
This Special Provision governs over the Standard Specifications, the Supplemental Specifications and the Plans.

Section 108 shall govern when revised as follows:

Add the following:

108-3.1 The Contractor shall complete all work on the Detour on or before November 1, 1983. The Detour will be considered completed when the Engineer accepts it as ready to receive traffic with all items of work on the Detour completed and accepted. If the Detour is not completed on or before November 1, 1983 a sum of $500.00 per calendar day in liquidated damages will be deducted from any monies due the Contractor, until the Detour is completed and accepted.

Work on State Highway 6 that would interfere with, or endanger traffic, will not be permitted prior to the Spring construction season of 1984.


ROAD CLOSED
0.0 Miles AHEAD
LOCAL TRAFFIC ONLY
2 - Type III Barricades
DETOUR
DETOUR 500 FT
DETOUR ND
Main St.
ROAD CLOSED
ROAD CLOSED 500 FT
ROAD CLOSED 1000 FT
Temp. Bypass
TRUCK ROUTE
Levee
ROAD CLOSED 0.0 Miles AHEAD LOCAL TRAFFIC ONLY
DETOUR 1500 FT
STOP
ROAD CLOSED AHEAD
Load Limit Signs
City to put up Limit signs.
DETOUR TRUCK ROUTE
Heart River
Hwy # 1806
BURLEIGH CO.
MORTON CO.
Hwy # 6
Temp. Truck Bypass
T-138 N R-80 W
T-137 N R-81 W
SCALES
LAYOUT SHEET: 1 IN.
PLAN AND PROFILE DRAWINGS (HOR VER
STRUCTURAL DRAWINGS
CROSS SECTION SHEETS

F.A.P. or S.P.R. SEC. NO.	STATE	PROJ. NO.	SHT. NO.
8	I.D.	BRF-I-006( )	

PART ELEVATION

PART PLAN

TYPICAL POST DETAILS

PART PLAN

See Dwg 6-66.731-12 for end of curb on sidewalk side of bridge.

A-A

ANCHOR POST DETAILS

Seal corner with asphalt flashing compound (Knife Grade)

CURB SECTION

Showing post flush with face of curb on sidewalk side.

P1 - P3

RAIL BOLT

(Galvanized)
To be included in the unit price bid for class AAE-3 concrete

PART ELEVATION

BENT BAR DETAILS

Dimensions shown are out to out

P9

P7 & P8

P6

NOTES:

All concrete above top of curb shall be class AAE-3.
"Rubbed Surface Finish" will be required for the roadway face of curbs, the outside vertical faces of curb and sidewalk, and all faces of rails, intermediate posts and end posts.
★ Number of bars shown on superstructure sheet.
★★ Number, Length & Splicing information of "R" Bars shown on superstructure sheet.
† Railing and end post quantities are included in slab quantities on superstructure sheet.

BAR LIST

(Bars for four end posts)

MARK	NUMBER	SIZE	LENGTH
P1	4	5	7'-10"
P2	4	5	6'-6"
P3	4	5	4'-3"
P4	8	5	2'-1"
P5	8	5	4'-0"
P6	8	5	5'-10"

BAR LIST

(Bars for railing & posts)

P7	★	6	4'-4"
P8	★	6	5'-1"
P9	★	5	6'-9"
P10	★	3	4'-2"
P11	★	3	3'-2"
P12	★	3	4'-8"
RC	★	3	3'-3"
R	★★	6	★★

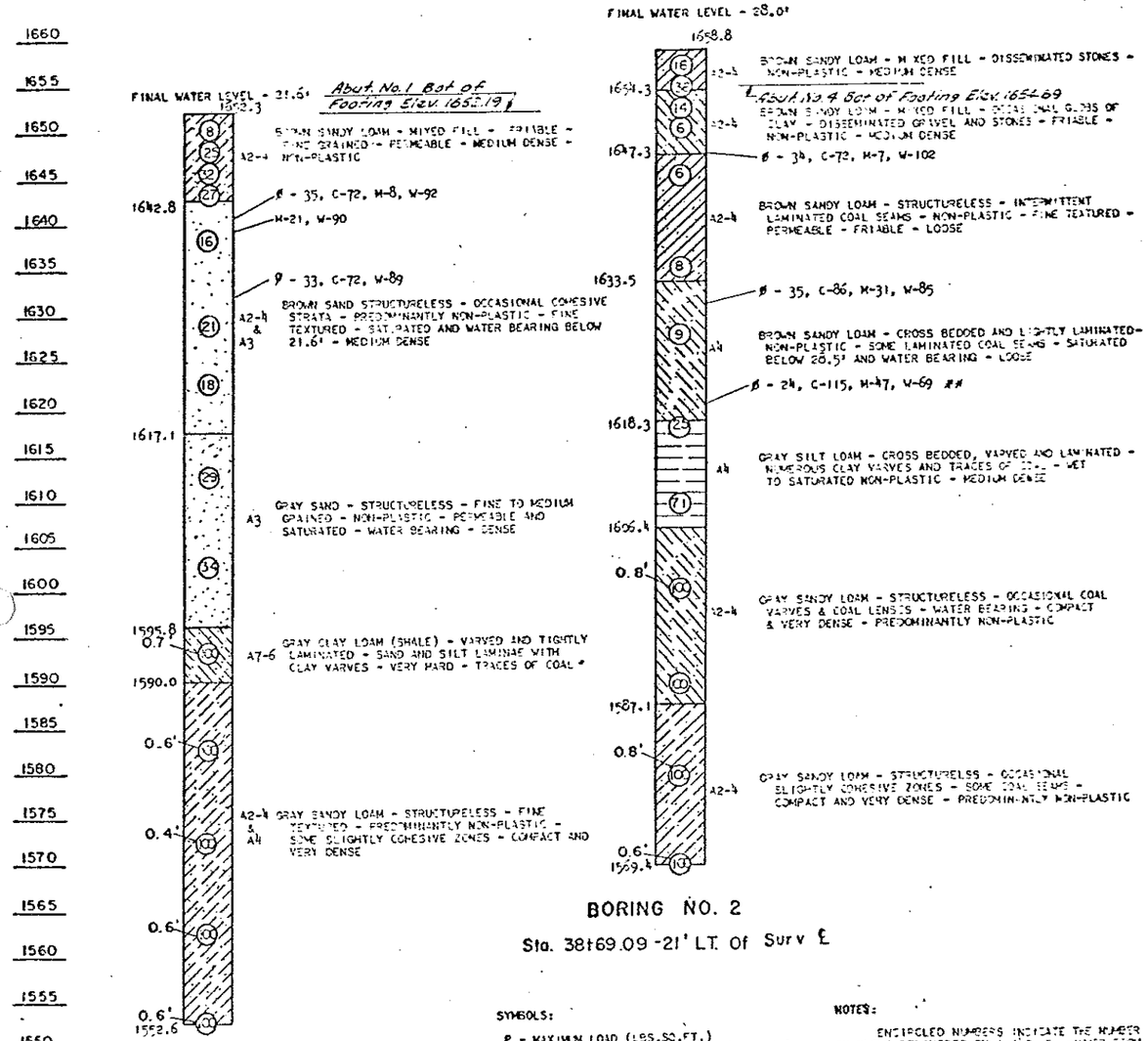
QUANTITIES 4 END POSTS

Class AAE-3 Concrete ..... 3.7 Cu. Yds.
Reinforcing Steel (Grade 60) 177 Lbs.

RAILING DETAILS

6-65.731-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N D	BRF-1-006( )		



BORING NO. 1

Sta. 36+17 -21' Rt of Surv. ℄

BORING NO. 2

Sta. 38+69.09 -21' LT. Of Surv ℄

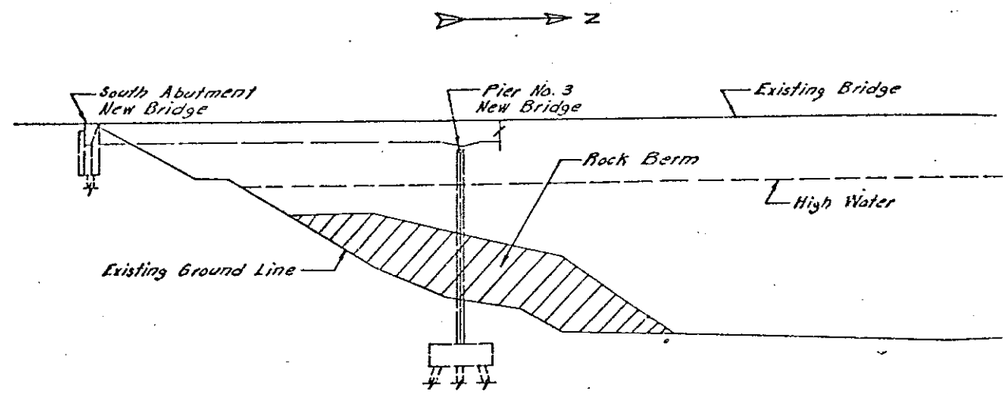
SYMBOLS:

P = MAXIMUM LOAD (LBS./SQ.FT.)
ϕ = ANGLE OF INTERNAL FRICTION (DEGREES)
C = COHESION (LBS./SQ.FT.)
M = MOISTURE (PER CENT)
W = DRY WEIGHT (LBS./CU.FT.)
= TRIAXIAL

NOTES:

ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 LB. HAMMER FROM A HEIGHT OF 30" TO DRIVE CORE TUBE 1.0'.

THE BORING LOG DATA SHOWN IS FOR DESIGN PURPOSES ONLY. THE STATE ASSUMES NO RESPONSIBILITY IF SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THESE SHOWN.



ROCK BERM DETAIL

QUANTITIES

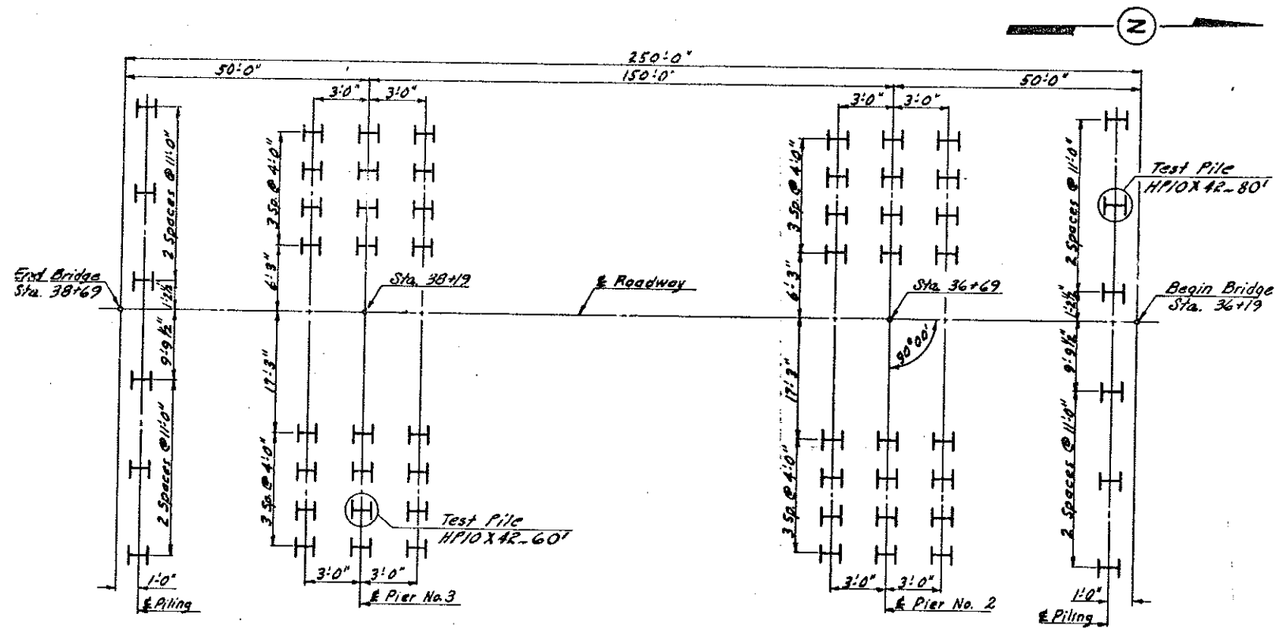
BORING LOG

HEART RIVER

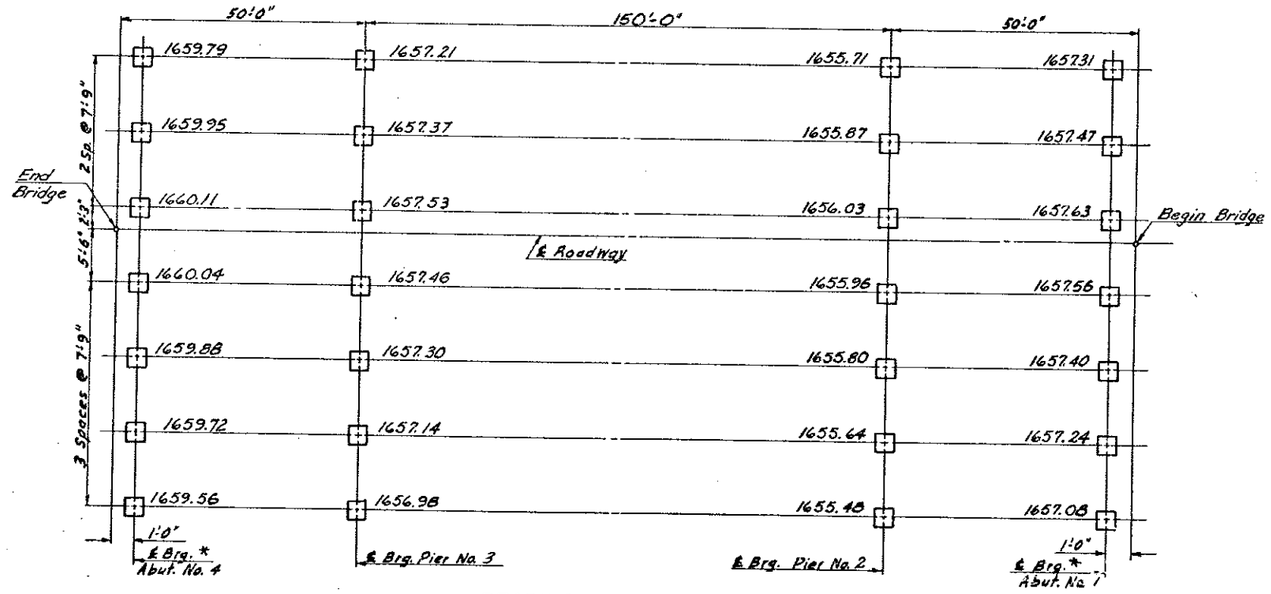
RF-1-006( )066

FED. ROAD DIST. NO.	STATE	PROJ. NO	SHEET NO.	TOTAL SHEETS
8	N. D	BRF-1-006( )	-	

QUANTITIES CHECKED BY



PILING LAYOUT
(Not to Scale)



BEARING PLATE LAYOUT
Elevations shown are to top of finished concrete
(Not to Scale)

* Abut. brg. surface shall be on 1 % grade.

QUANTITIES

HEART RIVER BRIDGE

PILING LAYOUT
BEARING PLATE LAYOUT

6-66.731-3

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	BRF-1-006( )	

100 010 GENERAL: The cost of furnishing and placing 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.

100 015 Cement, steel piling, structural steel, reinforcing steel, and paint used in the construction of this bridge shall be of domestic origin.

100 017 Bearing areas shall be finished true to plan and elevation by grinding if necessary, before bearing plates are set.

100 020 Dead load deflections have been accounted for in the screed elevations.

203 010 EMBANKMENT: The embankment at the abutments shall be in place for a minimum of 30 days before piling is driven. Embankment shall be according to Section 203-2.3.2 of the Specifications.

203 020 The contractor will be required to drill pilot holes through the embankment prior to driving piling. All pilot holes not completely filled by the piles shall be backfilled with sand or fine gravel before the substructure is placed.

208 020 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.

228 010 BACKFILL: All backfilling shall be done according to Section 203-2.3.2 and 228 of the Standard Specifications. Select backfill shall not be placed above the elevation of the berm until the superstructure has cured.

602 010 DECK-FINISHING MACHINE: In addition to the requirements of Section 602-3.6.2.2 of the Standard Specifications, the deck-finishing machine shall be self propelled, mounted on wheels which ride on a track, and have one or more power-driven, oscillating, rotating, or vibrating screeds.

602 110 CONCRETE BARRIER RAILING: The concrete barrier shall be formed for a minimum of three contiguous sections. Concrete shall be placed in alternate sections and shall have a curing period of three days between placement of adjacent sections.

602 120 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 nonshrink epoxy mortar approved by the engineer.

602 210 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. The covered concrete shall be kept continuously moist by a fog spray for five days, and no waterproof material such as polyethylene shall be used to cover the canvas or burlap.

602 220 The concrete shall be protected during the interval between final finishing and placement of the covering with a linseed oil-based emulsion containing at least 50 percent linseed oil and meeting the requirements of AASHTO M-148. The minimum rate of application shall be 200 square feet per gallon. This emulsion shall not be applied to surfaces which are to receive the special surface finish.

602 310 SPECIAL SURFACE FINISH: Special surface finish shall be required for all exposed surfaces of barrier, and exposed edges of slab. The intent of the finish is to provide a uniform color and to provide an aesthetic appearance. All surfaces which are to receive the special surface finish should be cleaned to remove laitance, for oil, fins, etc., and roughened by brushing and sandblasting so that special surface finish material will develop adequate bond to the prepared concrete surface.

602 320 The special surface finish shall be applied in two applications as one of the last items of work and only after the ordinary surface finish and cure period are complete. A spray application of special surface finish is required, and the rate of application for the commercially-packaged mortar shall be as recommended by the manufacturer.

602 330 The method of cure shall be as stated in the Specifications except that liquid membrane curing compounds will not be allowed on surfaces that are to receive the special surface finish.

610 010 CONCRETE: All superstructure concrete shall be Class AAE-3 or AAE-4. Concrete for the substructure shall be Class AE-1, AE-3, or AE-4. The class of concrete paid for will be that class shown on the plans.

610 020 Type I or Type II cement may be used.

610 030 A retarding admixture shall be used in the cast-in-place deck concrete when the ambient temperature is above 60°F. At least 20 working days before use, a sample of the admixure shall be submitted to the Materials Division for testing and approval.

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	BRF-1-006( )	

610 040 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.

610 050 The contractor will be expected to place the slab concrete for one bridge in one continuous operation. Minimum rate of placement shall be 50 cubic yards per hour.

612 010 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.

612 020 The bar fabricator shall add a prefix to all bar designations to differentiate between the several parts of the structure.

612 030 The top layer of transverse deck slab reinforcement shall be tied down with wire ties to the shear connectors of the beams. The ties shall be at intervals of five to six feet along the full length of all beams. Two wraps with 14-gauge plastic or epoxy-coated ties shall be used for this purpose.

612 040 All reinforcing steel shall be Grade 60.

616 011 Girder flanges are to be A-572, Grade 50. All other structural steel shall be A-36.

616 015 The girders shall be cambered in the shop as detailed on Drawing 6-66.731-10. The shop camber diagram represents the total rise, in inches, to be cut into the web plates of the girders.

616 020 A minimum of two (2) contiguous beam sections shall be placed in their correct relative positions before drilling the holes for the field splice between those sections. The proper alignment shall be maintained between sections while reaming the holes. Templates shall not be used in lieu of the above shop assembly. Wire rope slings shall not be used to handle the beams; they shall be handled with beam clamps designed for that purpose or other devices approved by the engineer.

616 025 Shear connector on splice plates shall be moved to clear bolt holes.

616 030 Shop-welded connections of diaphragm angles to gusset plates may be used in place of the bolted connections shown. Details shall be shown on shop drawings.

616 035 All field connections shall be made with 7/8 inch diameter, ASTM A325 high-strength bolts.

616 040 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.

616 050 Swedge bolts shall be provided by the steel fabricator, and the cost shall be incidental to the total cost of structural steel.

616 110 STEEL ERECTION: Falsework with provision for jacking must be provided at all splice points during erection. All splice points in each girder line shall be brought to their proper elevation and supported in this position before the bolts in any of the splices are tightened to the required tension.

622 110 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 23,215 foot-pound-tons, as computed by the formula W (E-8, 662.5) + .54E, where W is the weight of the ram in tons and E is the rated hammer energy as allowed in Section 622 of the Specifications. In no case shall the ram weight be less than 4,800 pounds.

622 115 Test piles shall be driven to a bearing not less than 125% of the design load as determined by the dynamic formula in Section 622-3.3.

718 010 PAINT AND PAINTING: Paint shall conform to the Standard Specifications, Section 870-1.1 and 870-1.18. The finish coats shall be red color no. 31302 and shall meet Federal Standard No. 595 colors. The second coat shall be tinted to differentiate it from the other coats. The dry thickness of each finish and spot coat shall not be less than 1.5 mil for any reading. The dry thickness of the shop coat shall not be less than 1.5 mil for any reading.

750 010 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.

FHWA REGION	STATE	FED. AID PROJ. NO	SHEET NO
8	N.D.	BRF-1-006( )	

900 The contractor shall submit the following shop drawings for
010 approval by the bridge engineer before fabrication;

1. Structural steel.

900 The rock berm around pier 3 shall remain. Only that portion
500 interfering with construction of the new pier shall be removed. The rock berm shall be restored to its original shape according to Drawing 6-66.731-2.

900 The existing structure is a three-span bridge with a clear
510 roadway of 22 feet. The north span is 72' by 11" in length and consists of a concrete slab supported by rolled beams. The center span is a 175-foot steel truss with a concrete slab. The south span is a 12-foot concrete slab.

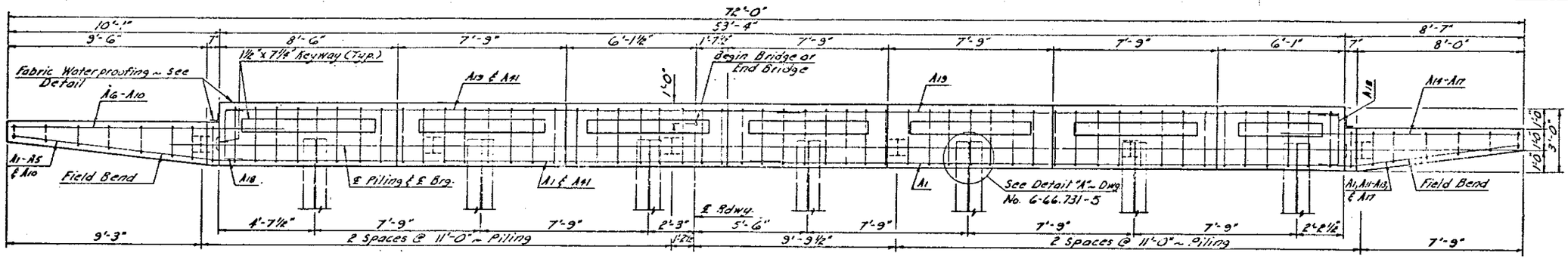
The structural steel is to become the property of the contractor and shall be removed from the site. The concrete shall be broken up and disposed of within one mile of the site as directed by the engineer.

900 The contractor shall remove the existing bridge in a manner which
515 will minimize the entry of debris into the water course.

900 The telephone conduit and gas line on the existing bridge will be
520 removed by the owners. The method of attaching the gas line to the new bridge shall be approved by the bridge engineer. Materials and installation shall be the responsibility of the owners.

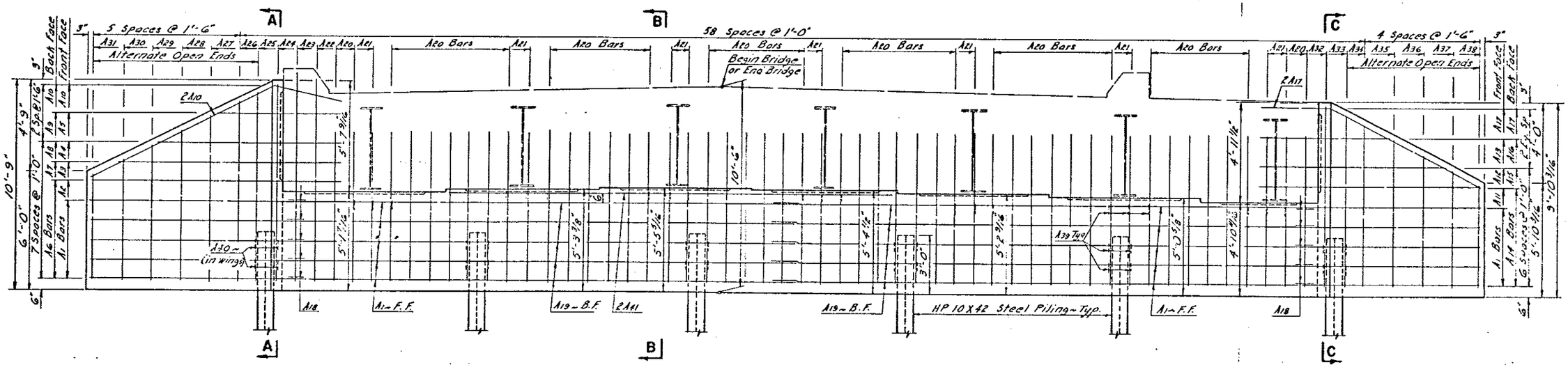
900 CONDUIT MATERIALS: The contractor shall notify Giles Jantzer
521 (222-7384) a minimum of 72 hours before the conduit is to be delivered to the project by Northwestern Bell Telephone Company.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	BRF-1-006( )		



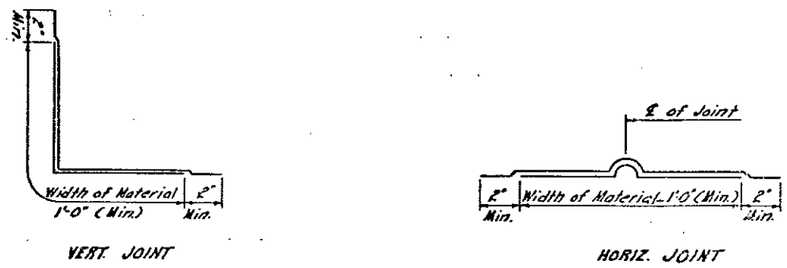
PLAN

Abut. No. 1 Shown - Abut No. 4 Reversed



ELEVATION

Abut. No. 1 Shown - Abut No. 4 Reversed



FABRIC WATERPROOFING DETAIL

NOTE:

Two Ply Fabric Waterproofing shall consist of furnishing materials and placing damp-proofing 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.
See Dwg. 6-66.731-5 for sections A-A, B-B & C-C.

Nomenclature:
F.F. = Front Face
B.F. = Back Face

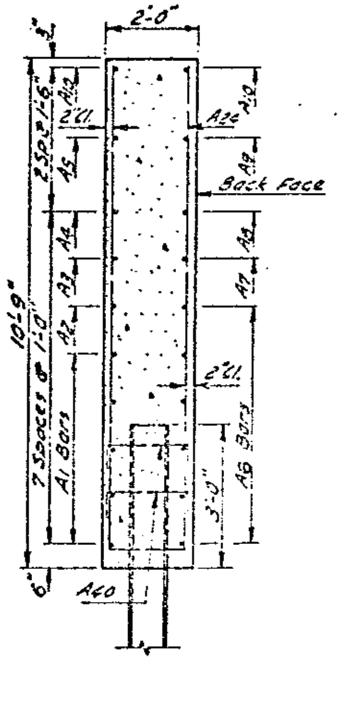
QUANTITIES
See Dwg 6-66.731-5

HEART RIVER BRIDGE

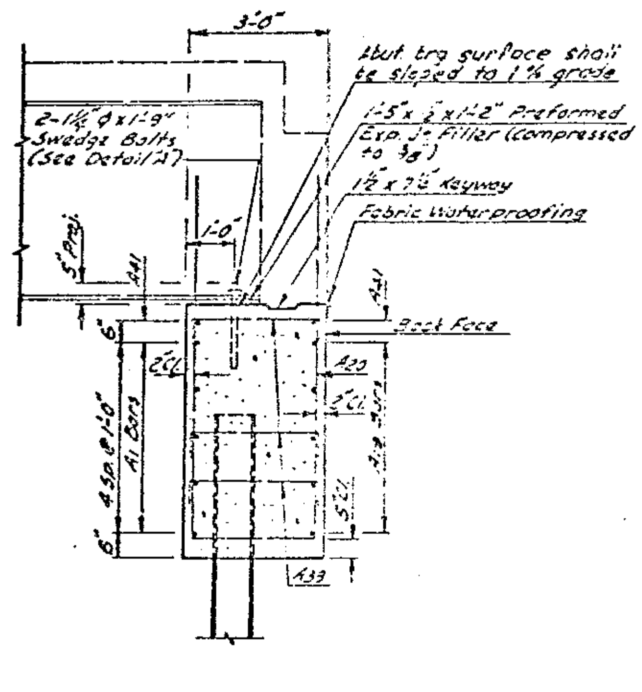
ABUTMENT DETAILS

6-66.731-4

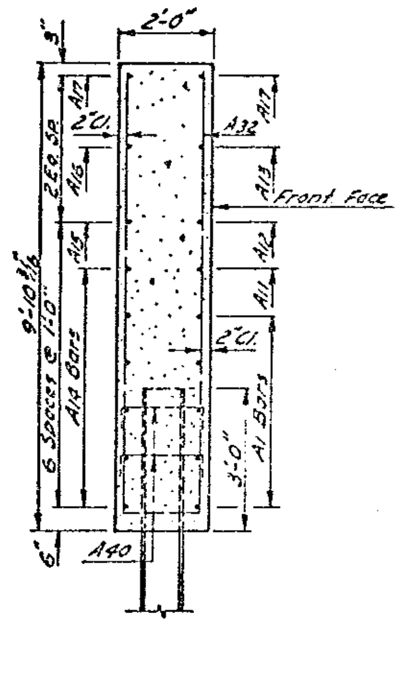
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
6	N. D.	[illegible]	



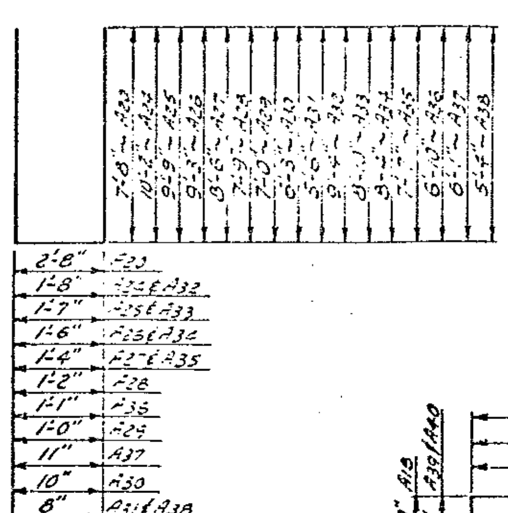
A-A



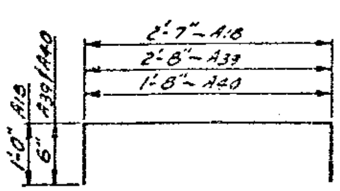
B-B



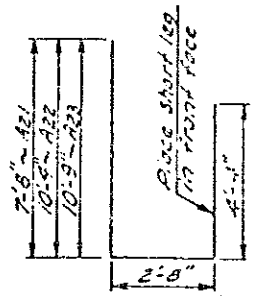
C-C



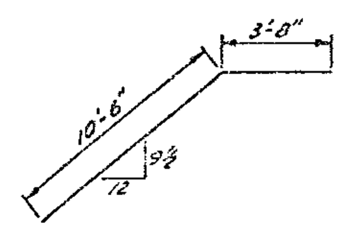
A20, A24-A38



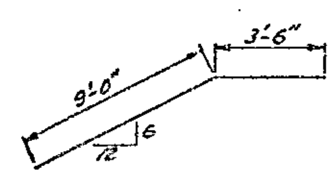
A18, A39 & A40



A21-A23



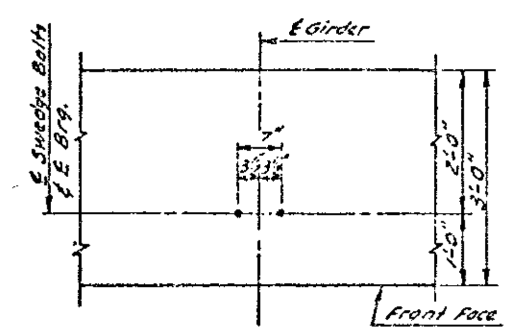
A10



A17

BENT BAR DETAILS

Dimensions Shown Are Out to Out



PLAN

DETAIL "A"

BAR LIST (ONE ABUT)					
MARK	NUMBER	SIZE	LENGTH	SHAPE	UNIT
A1	13	4	35'-6"	Str.	
A2	1	4	[illegible]	"	
A3	1	4	[illegible]-6"	"	
A4	1	4	9'-6"	"	
A5	1	4	6'-6"	"	
A6	6	7	2'-11"	"	
A7	1	7	[illegible]-6"	"	
A8	1	7	9'-6"	"	
A9	1	7	6'-6"	"	
A10	2	6	2'-2"	Bent	
A11	1	4	[illegible]-5"	Str.	
A12	1	4	9'-8"	"	
A13	1	4	6'-8"	"	
A14	6	6	[illegible]-5"	"	
A15	1	6	9'-8"	"	
A16	1	6	6'-8"	"	
A17	2	6	2'-6"	Bent	
A18	13	4	2'-7"	"	
A19	13	4	[illegible]	Str.	
A20	42	5	3'-0"	Bent	
A21	3	5	[illegible]	"	
A22	1	5	[illegible]	"	
A23	1	5	[illegible]	"	
A24	1	5	[illegible]	"	
A25	1	4	[illegible]	"	
A26	1	4	[illegible]	"	
A27	1	4	[illegible]	"	
A28	1	4	5'-8"	"	
A29	1	4	5'-3"	"	
A30	1	4	3'-4"	"	
A31	1	4	[illegible]	"	
A32	1	5	[illegible]	"	
A33	1	4	3'-3"	"	
A34	1	4	5'-2"	"	
A35	1	4	5'-6"	"	
A36	1	4	[illegible]	"	
A37	1	4	[illegible]	"	
A38	1	4	[illegible]	"	
A39	37	4	[illegible]	"	
A40	8	4	[illegible]	"	
A41	2	4	[illegible]	Str.	

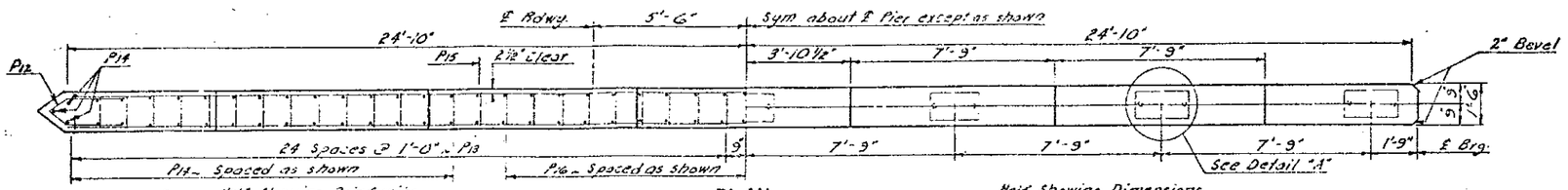
QUANTITIES (ONE ABUT.)	
Class [illegible] Concrete	[illegible]
Reinforcing Steel	2206
Excavation (See Layout)	
Piling (See Layout)	

HEART RIVER BRIDGE

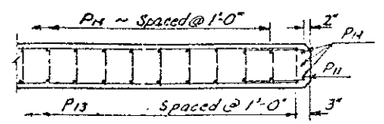
ABUTMENT DETAILS

6-66731-5

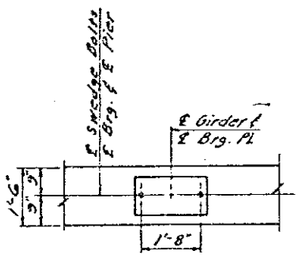
FED. RYD. & DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOT. SHTS.
8	N. D.	BPF 1-006( )		



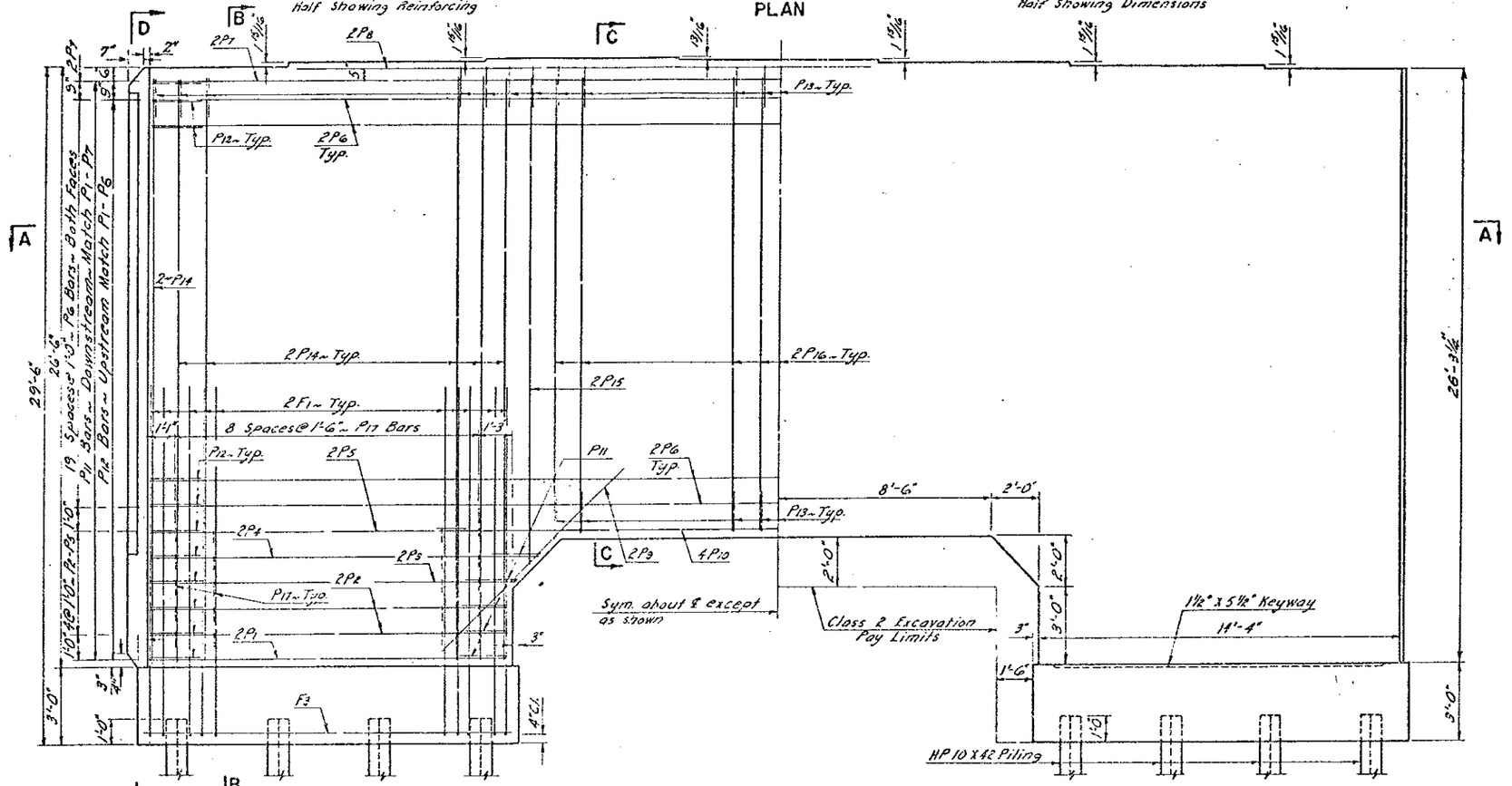
PLAN



PART PLAN DOWNSTREAM END

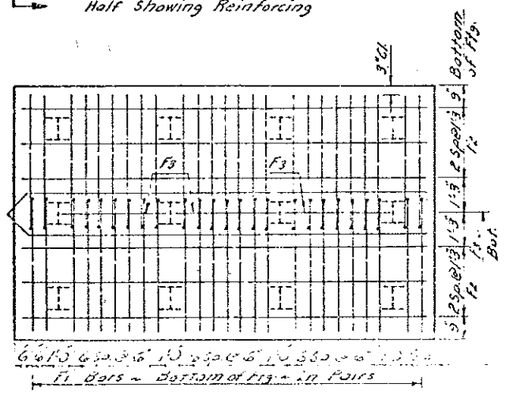


DETAIL "A"

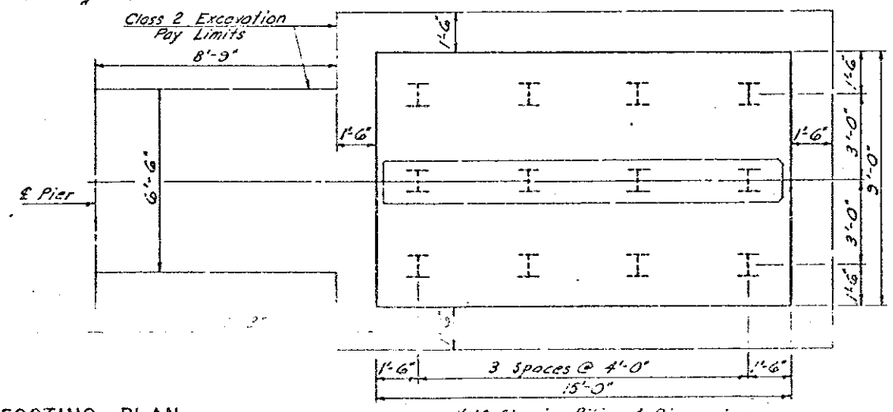


ELEVATION

Looking North

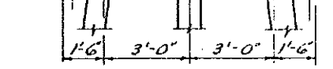


Half Showing Reinforcing



FOOTING PLAN

Half Showing Piling & Dimensions



D-D

Note: Pile spacing dimensions are at the bottom of footing.

See Dwg. 6-66.731.7 for Sections A-A, B-B, & C-C.

QUANTITIES

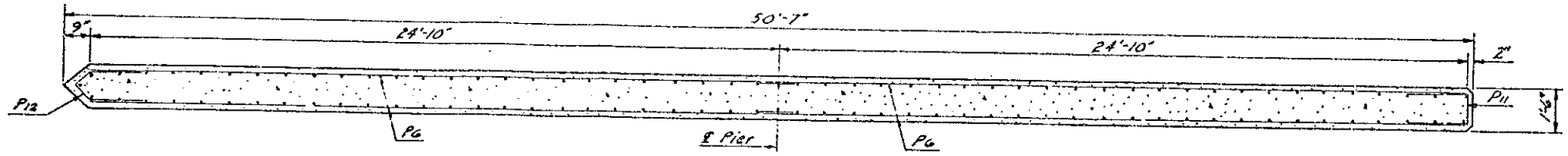
See Dwg. 6-66.731-7

HEART RIVER BRIDGE

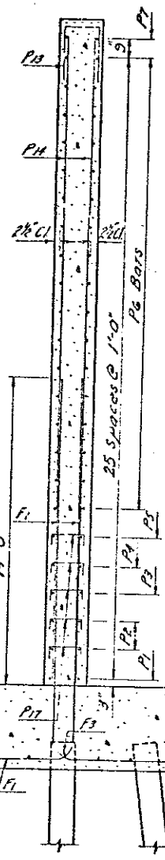
PIER DETAILS

6-66.731-6

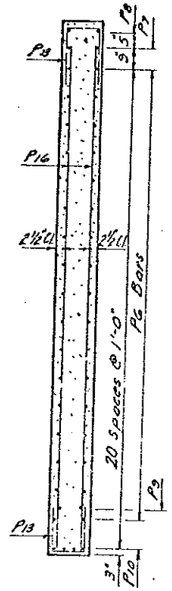
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHTS.
8	N. D.	BRF-1-006( )		



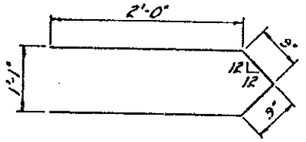
A-A



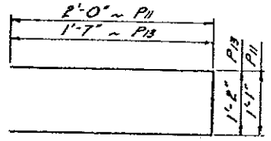
B-B



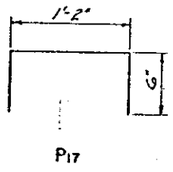
C-C



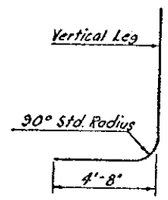
P12



P11 & P13



P17



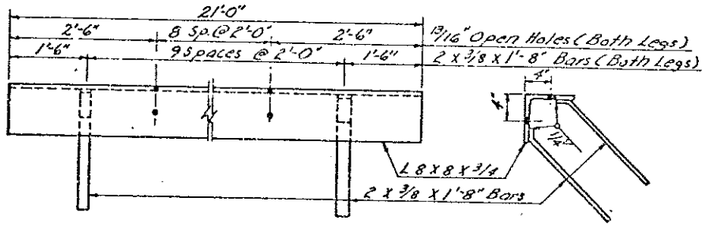
F1

BENT BAR DETAILS

Dimensions shown are out to out

BAR LIST (ONE PIER)

MARK	NUMBER Footing	NUMBER Wall	SIZE	LENGTH	SHAPE	UNIT
F1	100		9	21'-2"	Bent	
F2	12		6	14'-6"	Str.	
F3	6		6	3'-8"	"	
P1		4	6	14'-2"	Str.	
P2		8	4	14'-2"	"	
P3		4	4	14'-6"	"	
P4		4	4	15'-6"	"	
P5		4	4	12'-6"	"	
P6		80	4	25'-6"	"	
P7		4	6	25'-9"	"	
P8		2	6	22'-9"	"	
P9		4	11	10'-0"	"	
P10		4	9	26'-8"	"	
P11		37	5	3'-1"	Bent	
P12		26	5	5'-6"	"	
P13		70	5	4'-4"	"	
P14		62	6	26'-0"	Str.	
P15		4	5	23'-3"	"	
P16		38	5	21'-0"	"	
P17		90	4	2'-2"	Bent	



ICE NOSE ANGLE

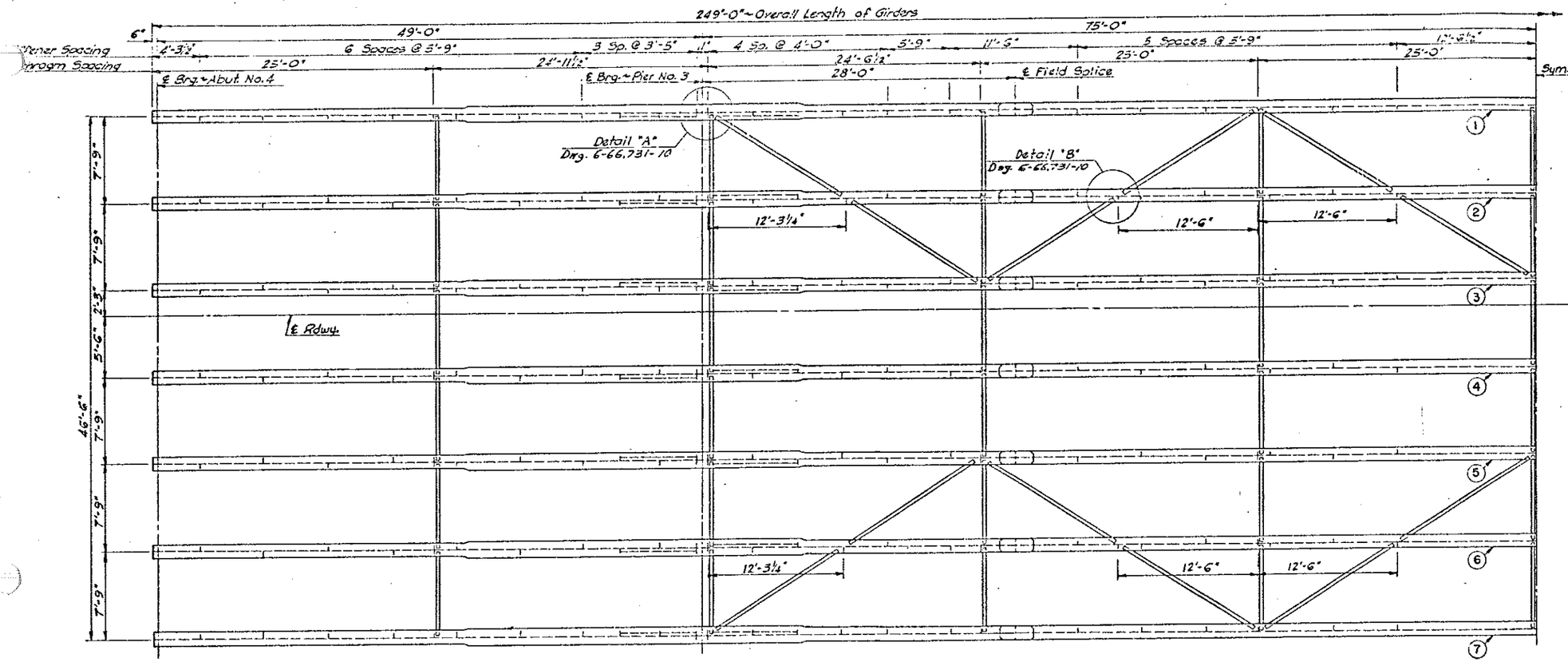
QUANTITIES (ONE PIER)

Class A Concrete	98 C.Y.
Reinforcing Steel	14,664 Lbs.
Structural Steel (A36)	902 "
Piling (See Layout)	
Excavation (See Layout)	

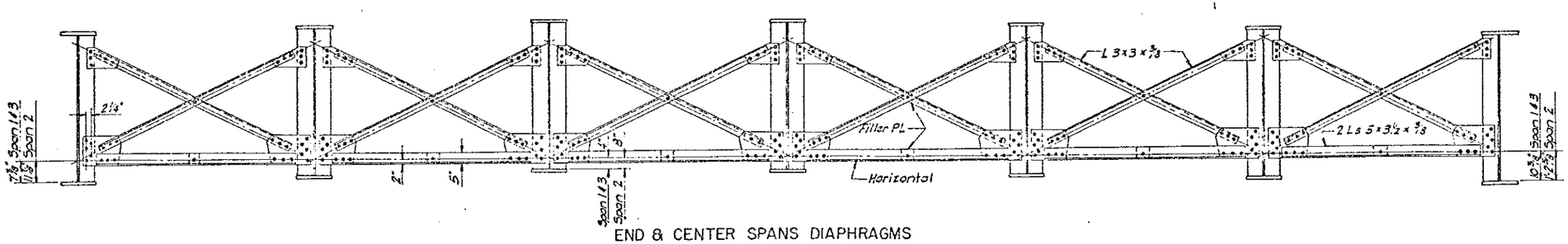
HEART RIVER BRIDGE

PIER DETAILS

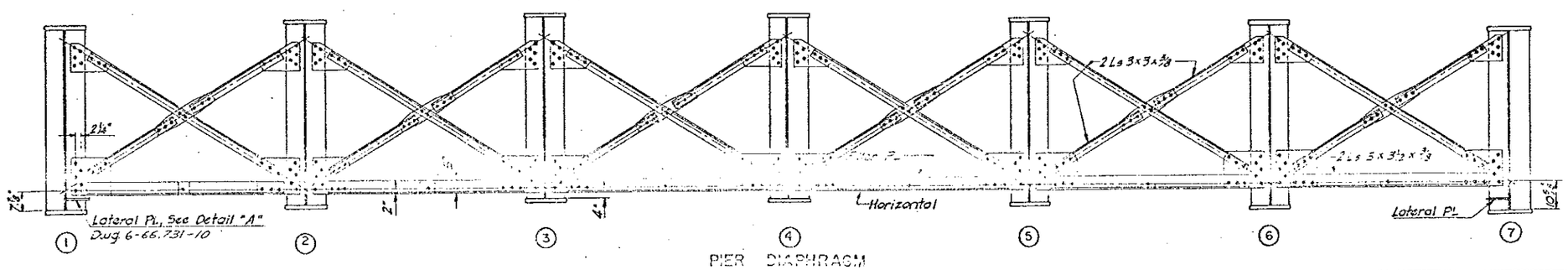
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	BRF-1-006( )		



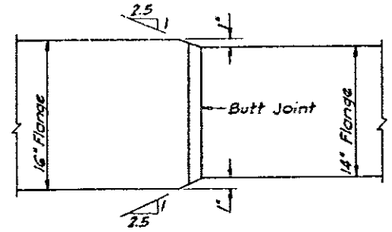
STEEL LAYOUT

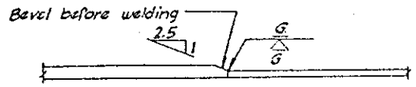


END & CENTER SPANS DIAPHRAGMS



PIER DIAPHRAGM





TYPICAL SHOP FLANGE SPLICE

Top Flange Shown

NOTE:

All gusset Pl's to be ⅜" thick.
For location of lateral Pl's, see steel layout and Details "A" & "B" on Dwg. 6-66,731-10

QUANTITIES
See Dwg. 6-66.731-10

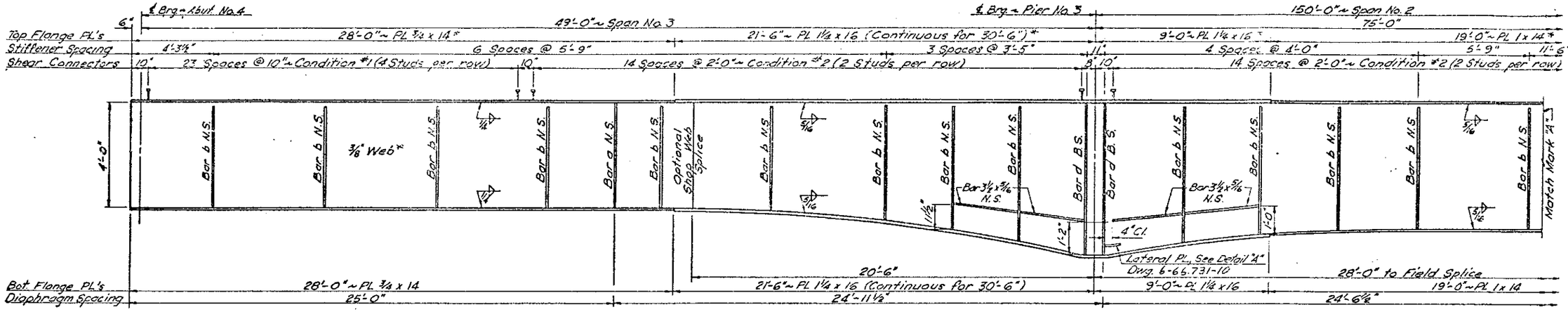
HEART RIVER BRIDGE

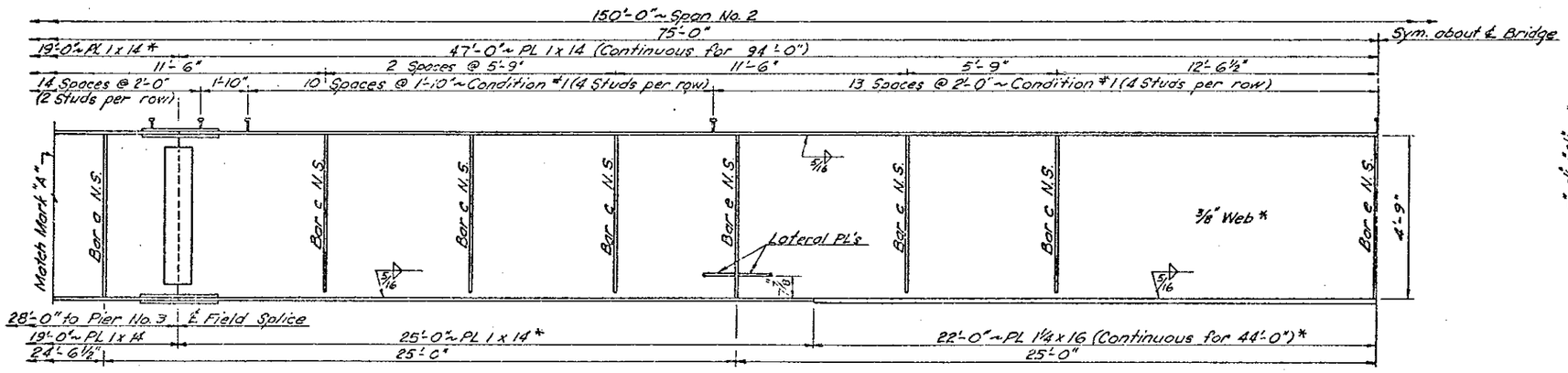
WELDED GIRDER

DETAILS

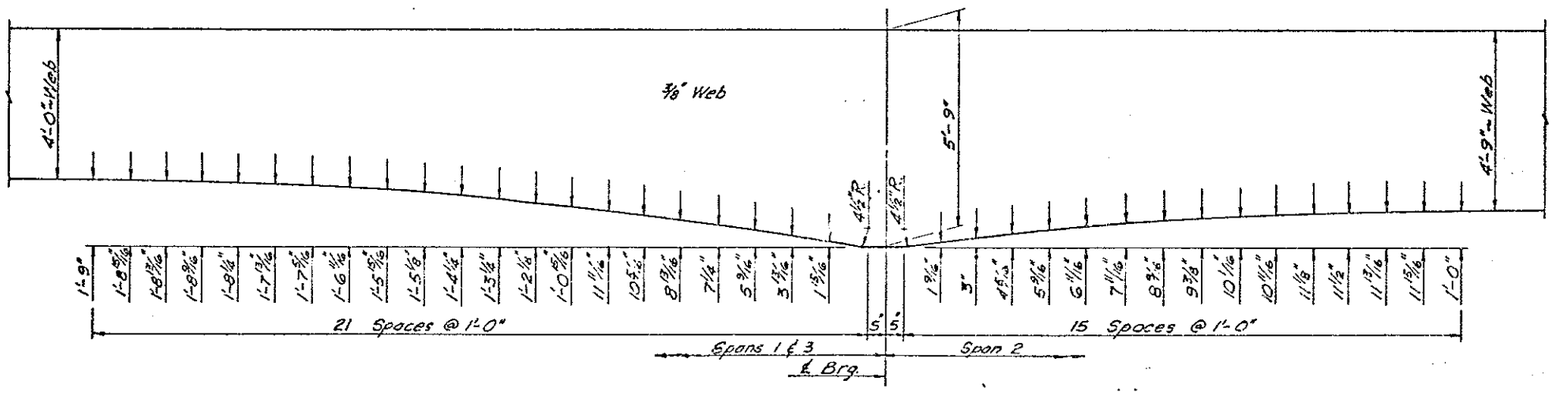
6-66.731-8

FED. ROAD DIST. NO.	STATE	PROJ. NO	SHEET NO.	TOTAL SHEETS
8	N. D.	BRF-1-006( )		

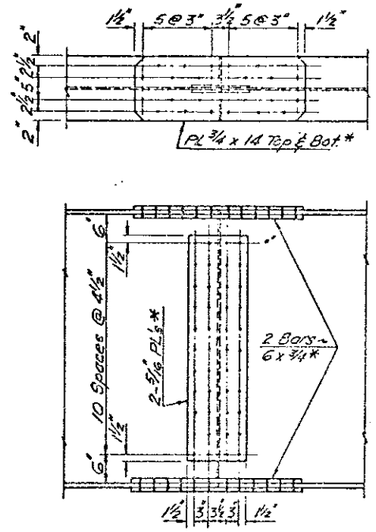




HALF GIRDER ELEVATION
(Inside Face of Girder No. 1 Shown)



GIRDER HAUNCH DETAILS
Drawings Not Only



FIELD SPLICE DETAILS

Nomenclature:
N.S. = Near Side
B.S. = Both Sides

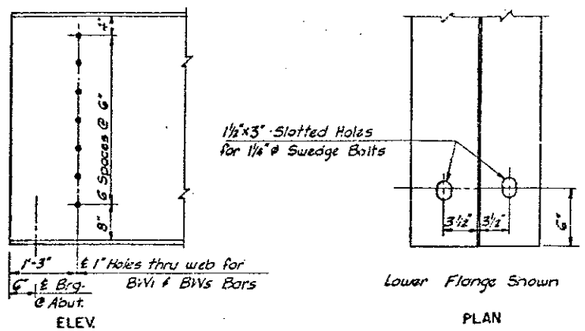
*All plates designated by * shall meet the longitudinal Charpy V-notch test for 15 ft.-lb. at 40°F Sampling and testing procedures shall be in accordance with ASTM A673-73. The (4) frequency of heat testing shall be used

QUANTITIES
See Dwg. 6-66.731-10

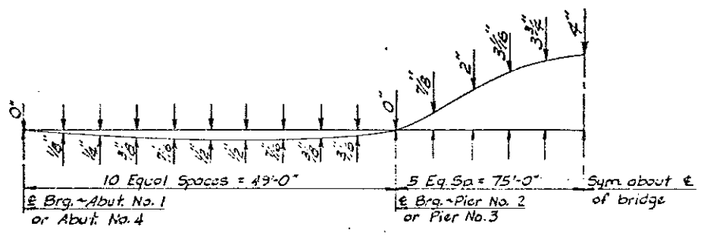
WELDED GIRDER DETAILS

6-66.731-9

FED. ROAD SHEET NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	N. D.	BRF-1-006( )		

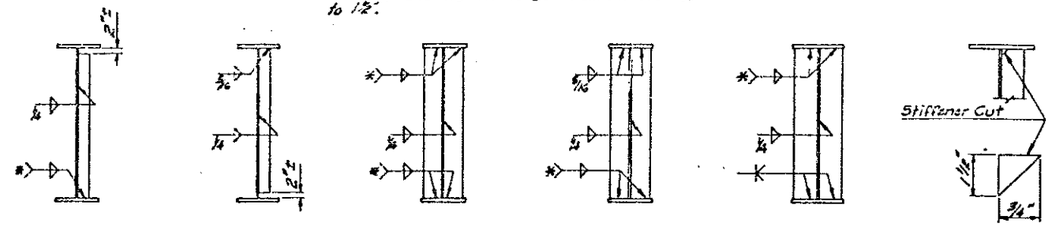


GIRDER DETAILS @ ABUTMENT

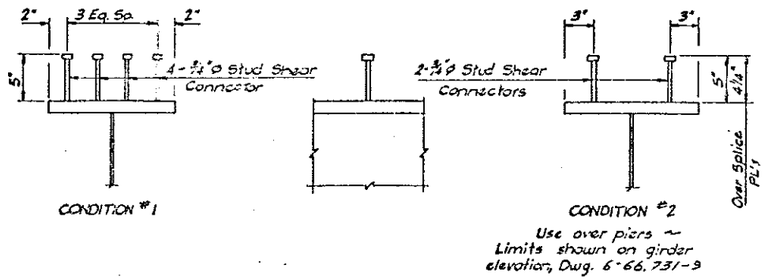


SHOP CAMBER DIAGRAM

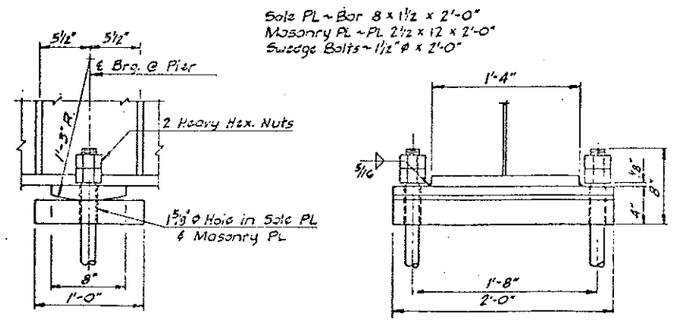
* Weld size to be ¼" for flange thickness over ½" to ¾" and 5/16" for flange thickness over ¾" to 1½".



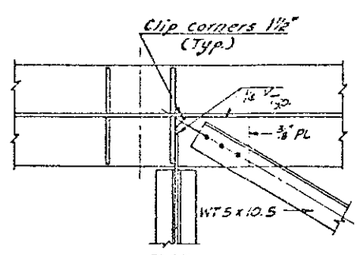
WEB STIFFENER DETAILS



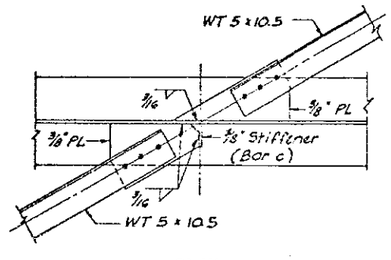
SHEAR CONNECTOR DETAILS



PIER BEARING DETAILS



DETAIL "A"



DETAIL "B"

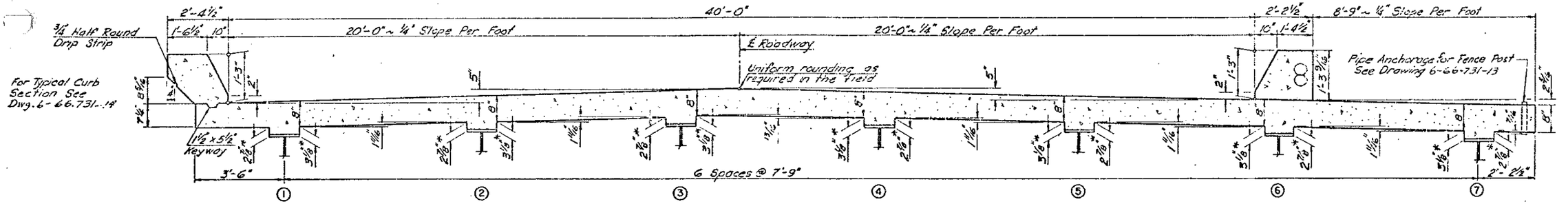
QUANTITIES	
Structural Steel (A572)	180,694 Lbs.
Structural Steel (A36)	18,613 Lbs.

HEART RIVER BRIDGE

WELDED GIRDER DETAILS

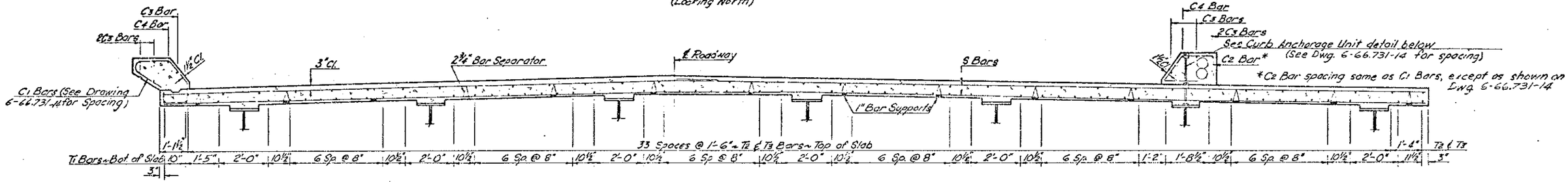
6-66.731-10

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	BAF-1-(006)[ ]		

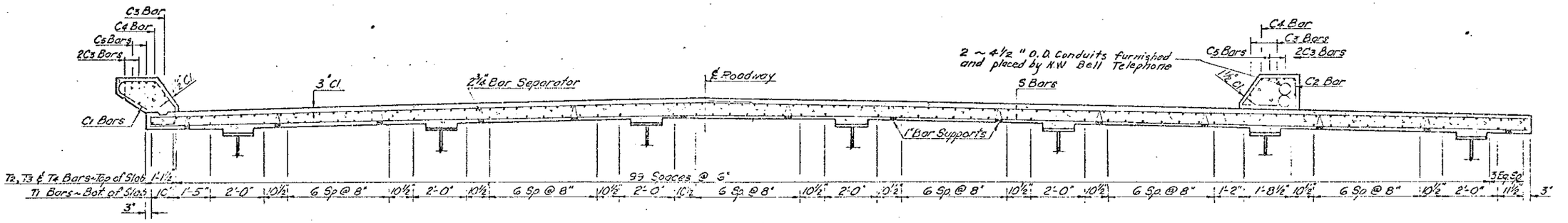


*Allow for variation in girder elevation by adjusting the riser dimension to maintain required slab thickness.

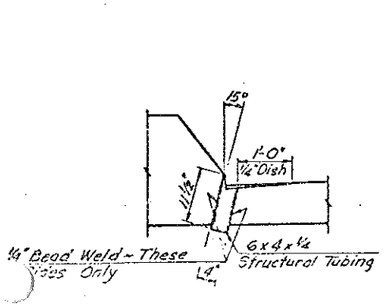
SECTION OF SLAB
Showing Dimensions
(Looking North)



SECTION OF SLAB
Showing Reinforcing Between Supports
(Looking North)



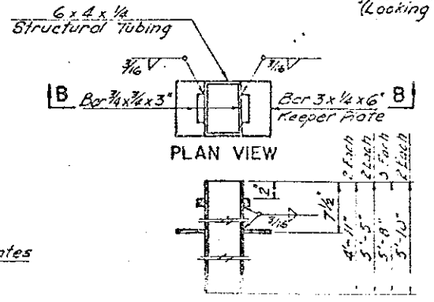
SECTION OF SLAB
Showing Reinforcing Over Piers
(Looking North)



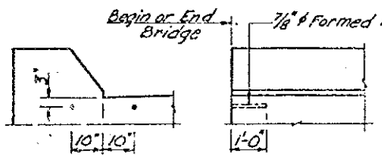
WEST DRAIN DETAIL
11 Required

EAST DRAIN DETAIL
11 Required

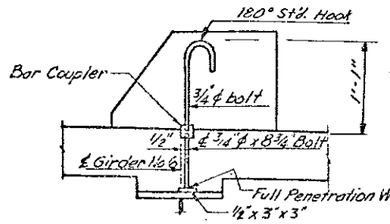
Shall be considered incidental to the pay item of Class AAE-3 Concrete



DRAIN PIPE DETAIL
(East Drains)



CURB SLEEVE DETAIL



CURB ANCHORAGE UNIT

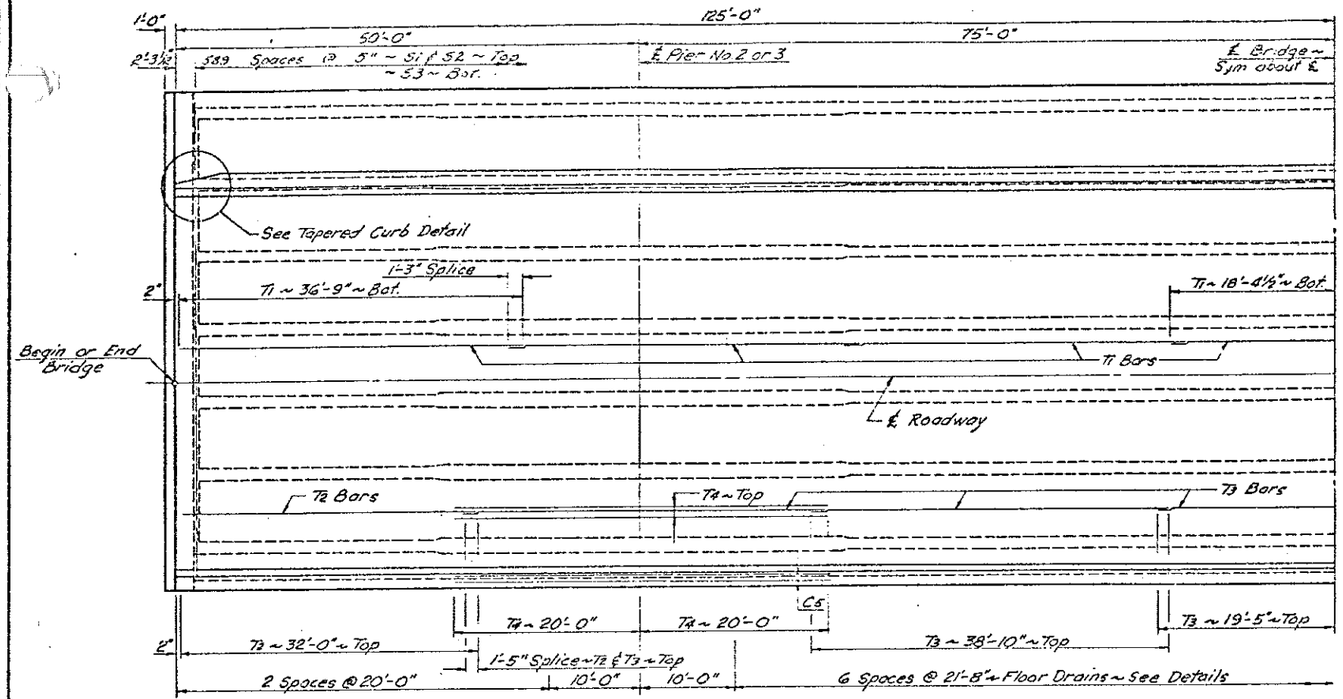
A ¾" ℄ x 8¾" bolt projecting to a ½" x 3" x 3" plate shall be set on the top of the steel girder under the curb adjacent to the sidewalk. The top portion shall be threaded and greased. This will allow the slab to be poured and finished as a full width. After the concrete has been finished, the threads shall be exposed to receive the coupler and J-bolt. The material shall meet A36 strength requirements. Payment will be made under "Structural Steel A36 Welded Girder" and includes the cost of material and placement.

QUANTITIES
See Drawing 6-66.731-12

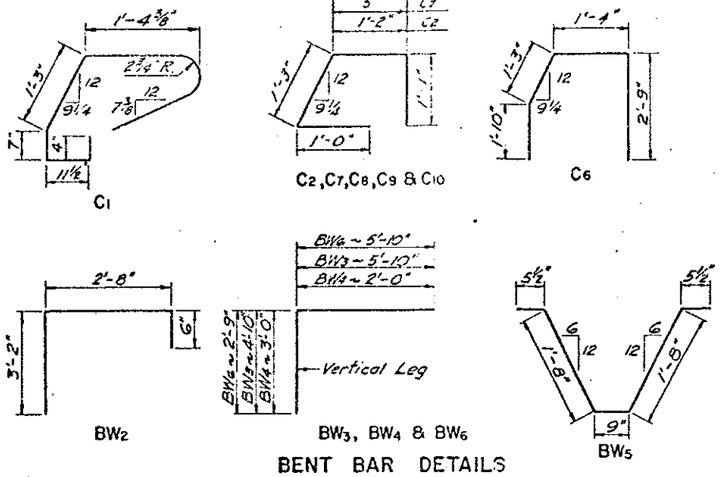
SLAB DETAILS

S-66.731-11

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOT. SHTS.
8	N. D.	BRF-1-006( )		

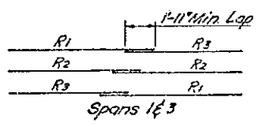


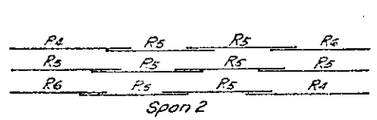
HALF PLAN



BENT BAR DETAILS

Dimensions shown are out to out



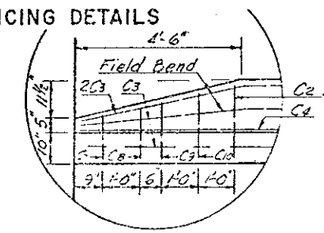


R BAR SPLICING DETAILS

SUPERSTRUCTURE

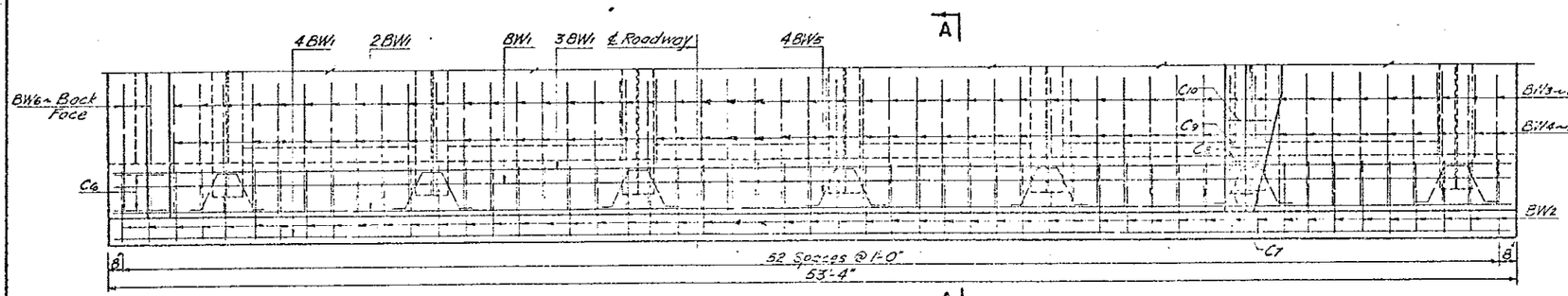
MARK	NUMBER 12-48	NUMBER CURB	NUMBER PARAPET & CURB	SIZE	LENGTH	SHAPE	UNIT
BW1	36			4	27'-2"	Str.	
BW2	106			5	6'-4"	Bent	
BW3	102			5	10'-8"	"	
BW4	91			5	5'-0"	"	
BW5	56			5	5'-0"	"	
BW6	4			5	8'-7"	"	
BW7	4			6	27'-6"	Str.	
C1	285			5	5'-9"	Bent	
C2	281			5	4'-6"	"	
C3		63		5	37'-1"	Str.	
C4		14		6	37'-4"	"	
C5		8		6	40'-0"	"	
C6	4			5	7'-2"	Bent	
C7	2			5	3'-9"	"	
P7		174		6	4'-4"	Bent	
P8		8		6	5'-7"	"	
P9		128		5	4'-9"	"	
P10			128	3	4'-2"	"	
P11			116	3	3'-2"	"	
P12			12	3	4'-8"	"	
RC			242	3	3'-3"	Bent	
R1			16	6	26'-4"	Str.	
R2			16	6	23'-4"	"	
R3			16	6	20'-4"	"	
R4			8	6	41'-10"	"	
R5			32	6	38'-10"	"	
R6			8	6	35'-10"	"	
S1	590			5	30'-10"	"	
S2	590			5	22'-8"	"	
S3	590			5	51'-10"	"	
T1	413			5	36'-9"	Str.	
T2	70			4	32'-0"	"	
T3	175			4	38'-10"	"	
T4	136			4	40'-0"	"	
C8	2			5	4'-0"	Bent	
C9	2			5	4'-1"	"	
C10	2			5	4'-3"	"	

* Epoxy Coated Reinforcing Steel

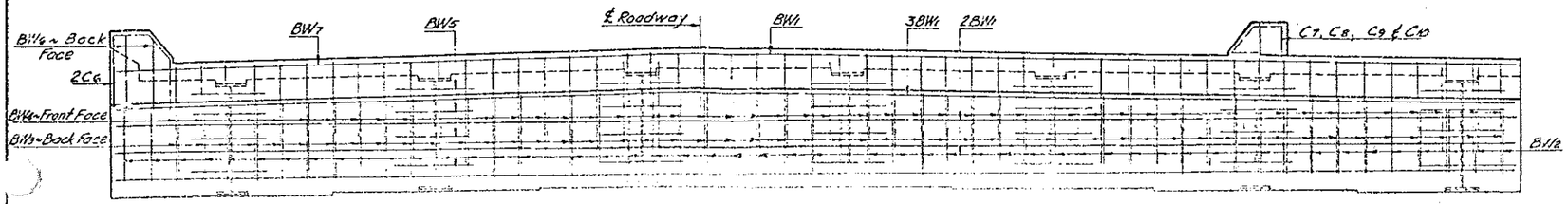


TAPERED CURB DETAIL

(Sidewalk Side Only)

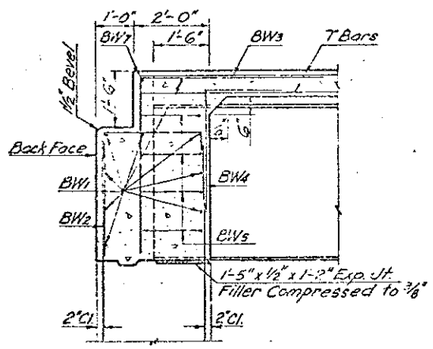


PLAN



ENDWALL ELEVATION

(Abutment No. 1 Shown)



A-A

QUANTITIES

Class A-3 Concrete, 5 sack	123.4 C.Y.
Class A-3 Concrete, 5 sack, Epoxy	3.08 C.Y.
Reinforcing Steel	50,134 Lbs.
Structural Steel A36	Incl.
Reinforcing Steel (Epoxy)	45,670 Lbs.

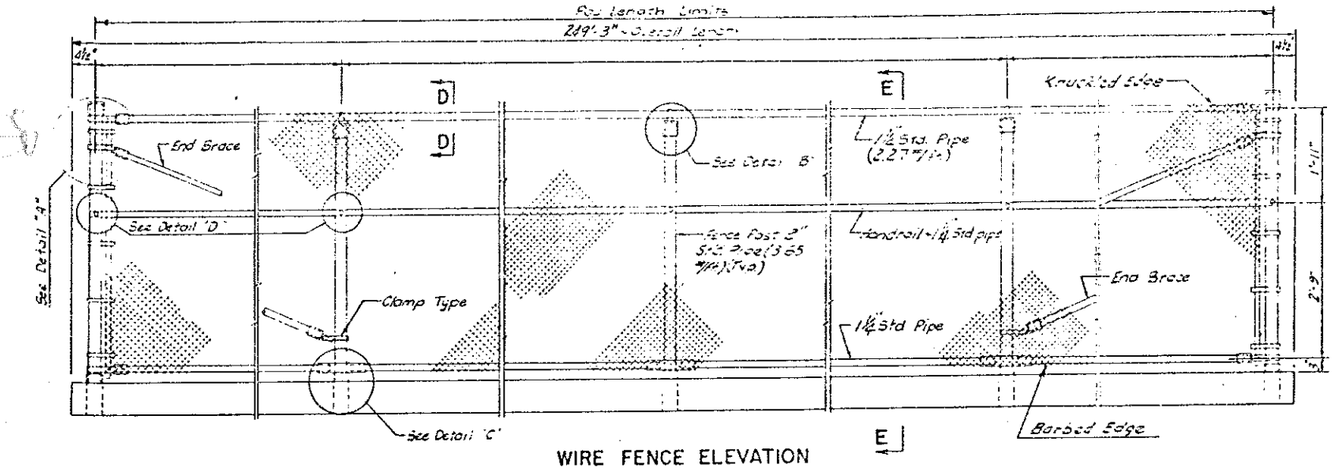
Railing and post quantities included

HEART RIVER DRIVE

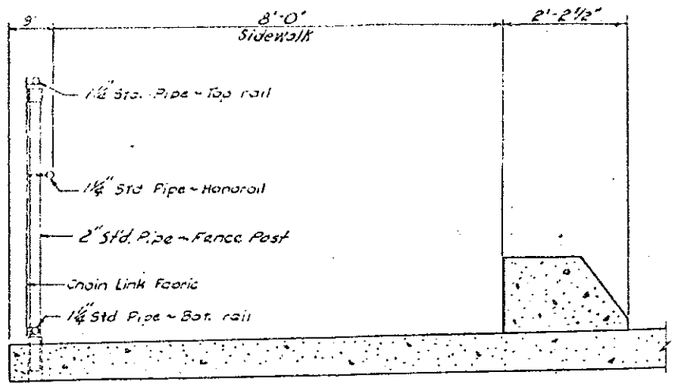
SLAB & ENDWALL DETAILS

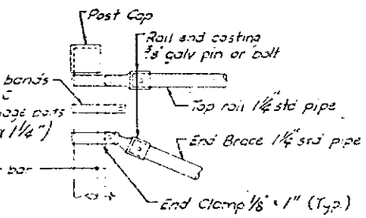
6-66.731-12

8	N.D.	BRF-1-006(1)		

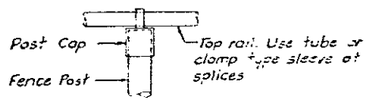


WIRE FENCE ELEVATION

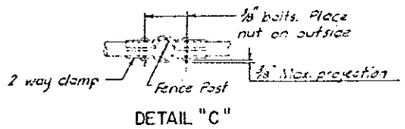




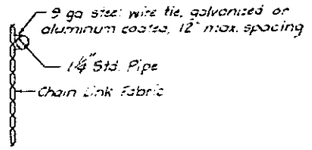
DETAIL "A"



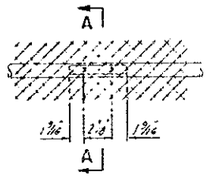
DETAIL "B"



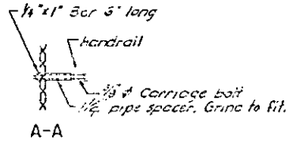
DETAIL "C"



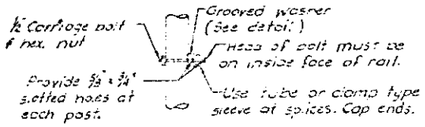
D-D



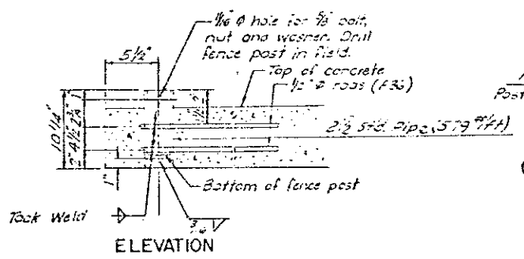
PART ELEVATION
@ ℄ BAY



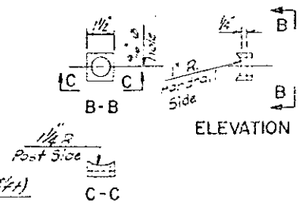
A-A



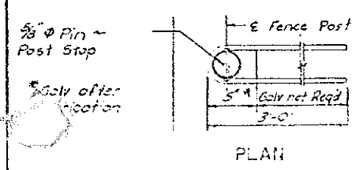
DETAIL "D"



ELEVATION



GROOVED WASHER DETAIL



PLAN

PIPE ANCHORAGE FOR FENCE POSTS

NOTE:
All posts, fittings and chain link fence shall conform to Section 836 of the Standard Specifications

Chain Link fabric shall be zinc coated steel, 9-gage wire, 2" mesh, 30" high, top edge knuckle and bottom edge barbed. All posts, fittings and hardware shall be galvanized steel in conformance with AASHTO M181

QUANTITIES	
Pedestrian Fence	L.F.

HEART RIVER BRIDGE

PEDESTRIAN FENCE

6-66.731-13