17-042.967

RP 11.000 to RP 38.476				
Traffic	Average Daily			
Current 2013	Pass: N/A	Trucks: N/A	Total: 415	
Forecast 2033	Pass: N/A	Trucks: N/A	Total: 510	
Clear Zone Distance: N/A		Design Speed: 65 MPH		
Minimum Sight Dist. for Stopping: 645 FT		Bridges: N/A		
Sight Dist. for No Passing Zone: 1,100 FT				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 274,305				

RP 38.476 to RP 39.478				
Traffic	Average Daily			
Current 2013	Pass: N/A	Trucks: N/A	Total: 1,500	
Forecast 2033	Pass: N/A	Trucks: N/A	Total: 1,835	
Clear Zone Distance: N/A		Design Speed: 25, 45 MPH		
Minimum Sight Dist. for Stopping: 155, 360 FT		Bridges: N/A		
Sight Dist. for No Passing Zone: 450, 700 FT				
Pavement Design Life N/A (years)				
Design Accumulated One-way Flexible ESALs: N/A				

RP 39.478 to RP 53.440				
Traffic	Average Daily			
Current 2013	Pass: N/A	Trucks: N/A	Total: 455	
Forecast 2033	Pass: N/A	Trucks: N/A	Total: 560	
Clear Zone Distance: N/A		Design Speed: 65 MPH		
Minimum Sight Dist. for Stopping: 645 FT		Bridges: N/A		
Sight Dist. for No Passing Zone: 1,100 FT				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 379,806				

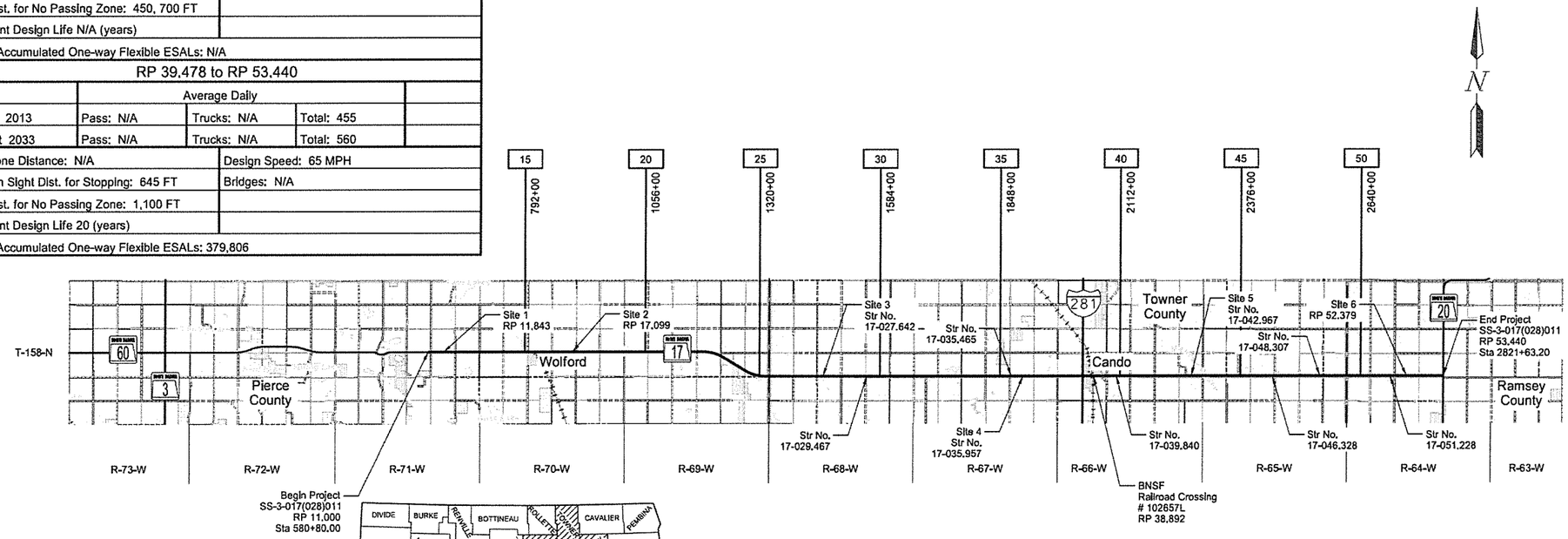
JOB # 16
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

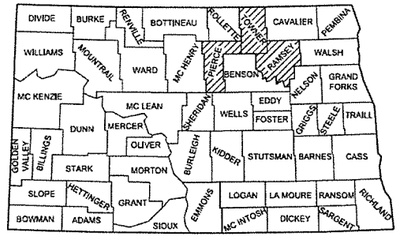
SS-3-017(028)011
Pierce, Towner, and Ramsey Counties
ND 17 - 11 Mi E of Jct ND 3 E to Jct ND 20
HMA, Subcut, Guardrail, Signing, and Rail Retrofit

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SS-3-017(028)011	20285	1	1

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
SS-3-017(028)011	0.632	42.440





STATE COUNTY MAP

DESIGNERS

Adam M. Ruud, PE

Steven L. Strack

APPROVED DATE 2/10/16

Roger Weigel /s/
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

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 February 4, 2016

Adam R. Walker /s/
Houston Engineering, Inc.

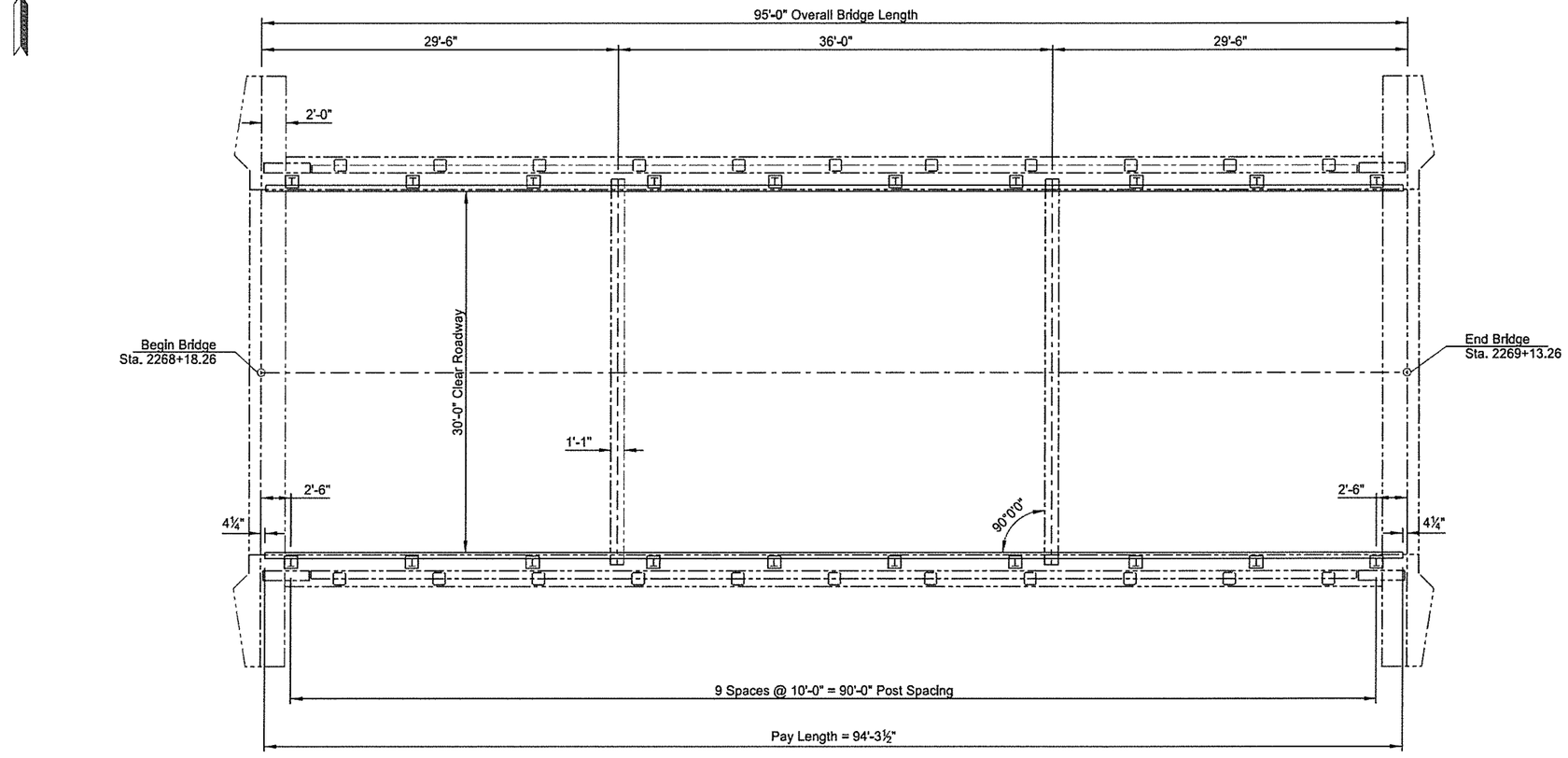
This document was originally issued and sealed by Adam R. Walker, Registration Number PE- 5845, on 2/4/16 and the original document is stored at the North Dakota Department of Transportation

2/4/2016 1:04:58 PM aruud H:\Fargo\JBN\3900\3950\14_3950_160 Hwy 17 Minor Rehab\CAD\Design\Sheets\001TS_001.dgn

Houston Engineering, Inc.

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-3-017(028)011	170	1



NOTES:

100 SCOPE OF WORK: Work at this site consists of installing free standing double box beam rail retrofit.

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	3001	DOUBLE BOX BEAM RAIL RETROFIT - FREE STANDING	LF	188.6

This document was originally issued and sealed by Adam R. Walker, Registration Number PE 5845, on 1/29/16 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

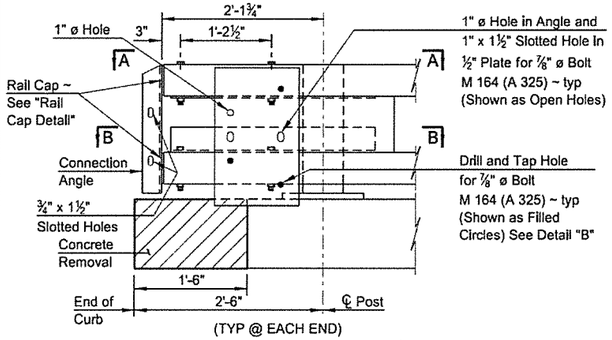
MAUVAIS COULEE

DOUBLE BOX BEAM RAIL RETROFIT
LAYOUT (FREE STANDING)
PROJECT: SS-3-017(028)011
STATION: 2268+65.76
TOWNER COUNTY

2/2/16 (DATE)
Terrence R. Udland (BRIDGE ENGINEER)

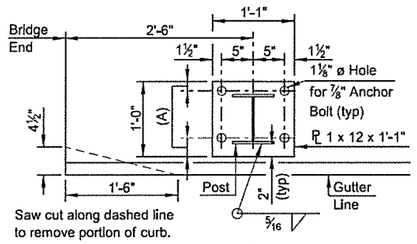
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-3-017(028)011	170	2



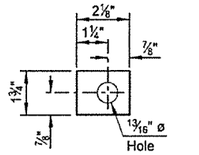
(TYP @ EACH END)

END POST CONNECTION DETAIL



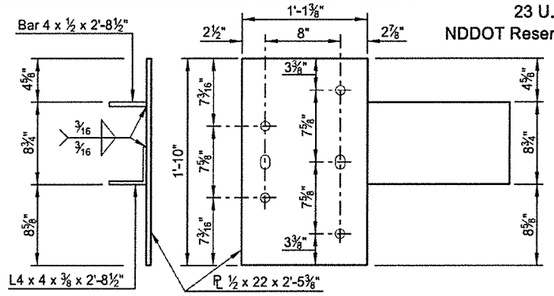
(A) Variable 1½" to 3"

BASE PLATE DETAIL



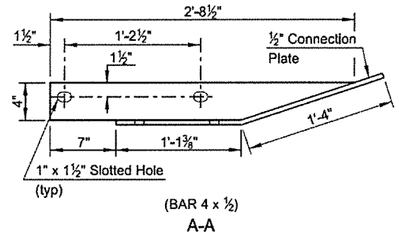
Position washers to completely cover slotted holes.

¼" BAR WASHER "C"



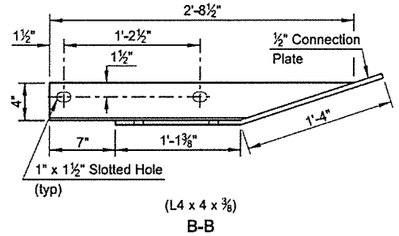
(4 REQUIRED)

GUARDRAIL CONNECTION PLATE DETAILS



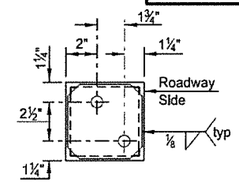
(BAR 4 x ½)

A-A



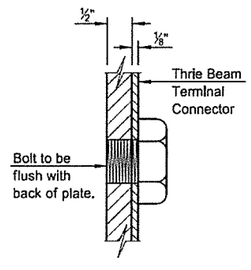
(L4 x 4 x ⅜)

B-B



Bar 4¾ x ½ x 4¾"
Cope corners to ¾" to provide zinc drains.

RAIL CAP END VIEW



DETAIL "B"

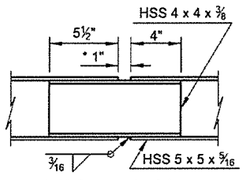
NOTES:

Include all cost for furnishing and installing the guardrail connection plates and for sawing and removing portions of the curb in the price bid for "Double Box Beam Rail Retrofit - Free Standing."

Galvanize after fabrication.

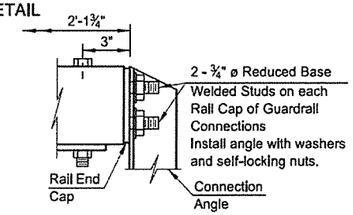
Work Drawings:
Submit work drawings for the rail retrofit to the Engineer for review. Use the following text sizes on all work drawing sheets:

Dimensions and Notes	0.08"
Detail Subtitles	0.09"
Detail Titles	0.10"

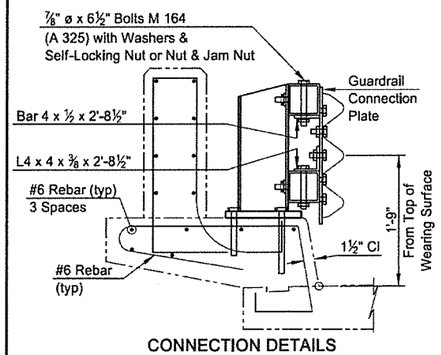


* 2" @ expansion joint.

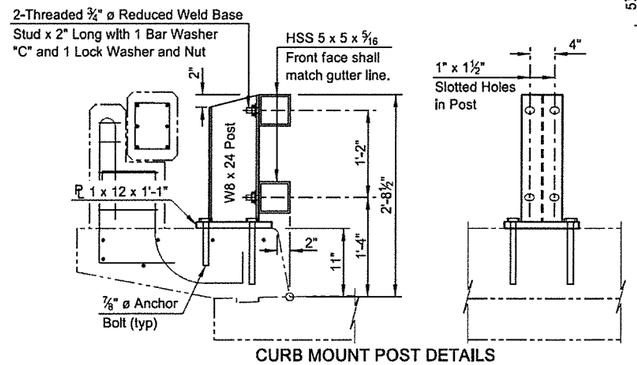
RAIL SPLICE DETAIL



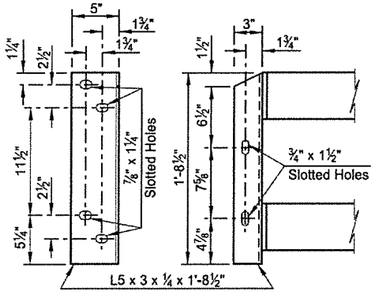
RAIL CAP DETAIL



CONNECTION DETAILS



CURB MOUNT POST DETAILS



(4 REQUIRED)

CONNECTION ANGLE DETAILS

This document was originally issued and sealed by Adam R. Walker Registration Number PE 5845, on 1/29/16 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	
RAIL RETROFIT - FREE STANDING	188.6 LF

MAUVAIS COULEE BRIDGE

DOUBLE BOX BEAM RAIL RETROFIT DETAILS (FREE STANDING)

JOB# 20

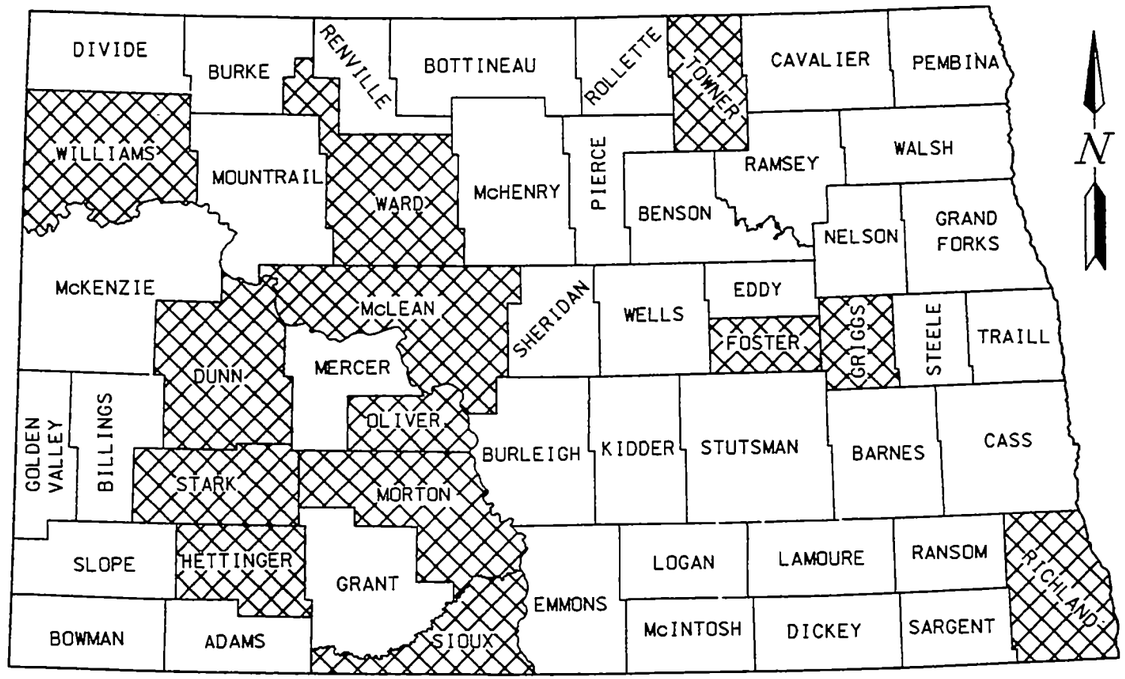
STATE	PROJECT NO.	PCN	SHEET NO.
ND	SS-9-999(142)	14280	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

STATEWIDE

SS-9-999(142)

MAINTENANCE REPAIR WORK ON THIRTEEN STRUCTURES THROUGHOUT THE STATE



STATE COUNTY MAP

INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION	SITE NUMBER
1	TITLE SHEET	ALL
2	SITE LOCATIONS	ALL
3	ESTIMATE OF QUANTITIES	ALL
4	SPALL REPAIR	1
5	SPALL REPAIR	2
6	EXPANSION JOINT REPAIR	3
7	EXPANSION & APPROACH SLAB JOINT REPAIR	4
8	DECK SPALL REPAIR	5
9	SPALL REPAIR	6
10-11	JOINT REPAIR & APPROACH SLAB DETAILS	7
12	DETOUR SIGN LAYOUT	7
13	FLOWABLE FILL PLACEMENT & JOINT REPAIR	8
14-15	HEADWALL DETAILS	9-10
16	BOX CULVERT JOINT REPAIR	11
17	ABUTMENT PEDESTAL REPAIR	12
18-19	SLOPE PROTECTION DETAILS & SPALL REPAIR	13

LIST OF STANDARD DRAWINGS

D-704-8	BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS
D-704-9, 10, 11, 12	CONSTRUCTION SIGN DETAILS
D-704-13	BARRICADE DETAILS
D-704-14	CONSTRUCTION SIGN AND BARRICADE ASSEMBLY DETAILS
D-704-19	CONSTRUCTION SIGN AND BARRICADE LOCATION DETAILS
D-704-24	CONSTRUCTION SIGN AND BARRICADE DETAILS

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation October 1997; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

SPECIAL PROVISIONS

SP 318(97) TERO SPECIAL PROVISION

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 March 23, 2001

Terrence R. Udland

BRIDGE ENGINEER
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

TERRENCE R. UDLAND REGISTERED PROFESSIONAL 2674 ENGINEER NORTH DAKOTA

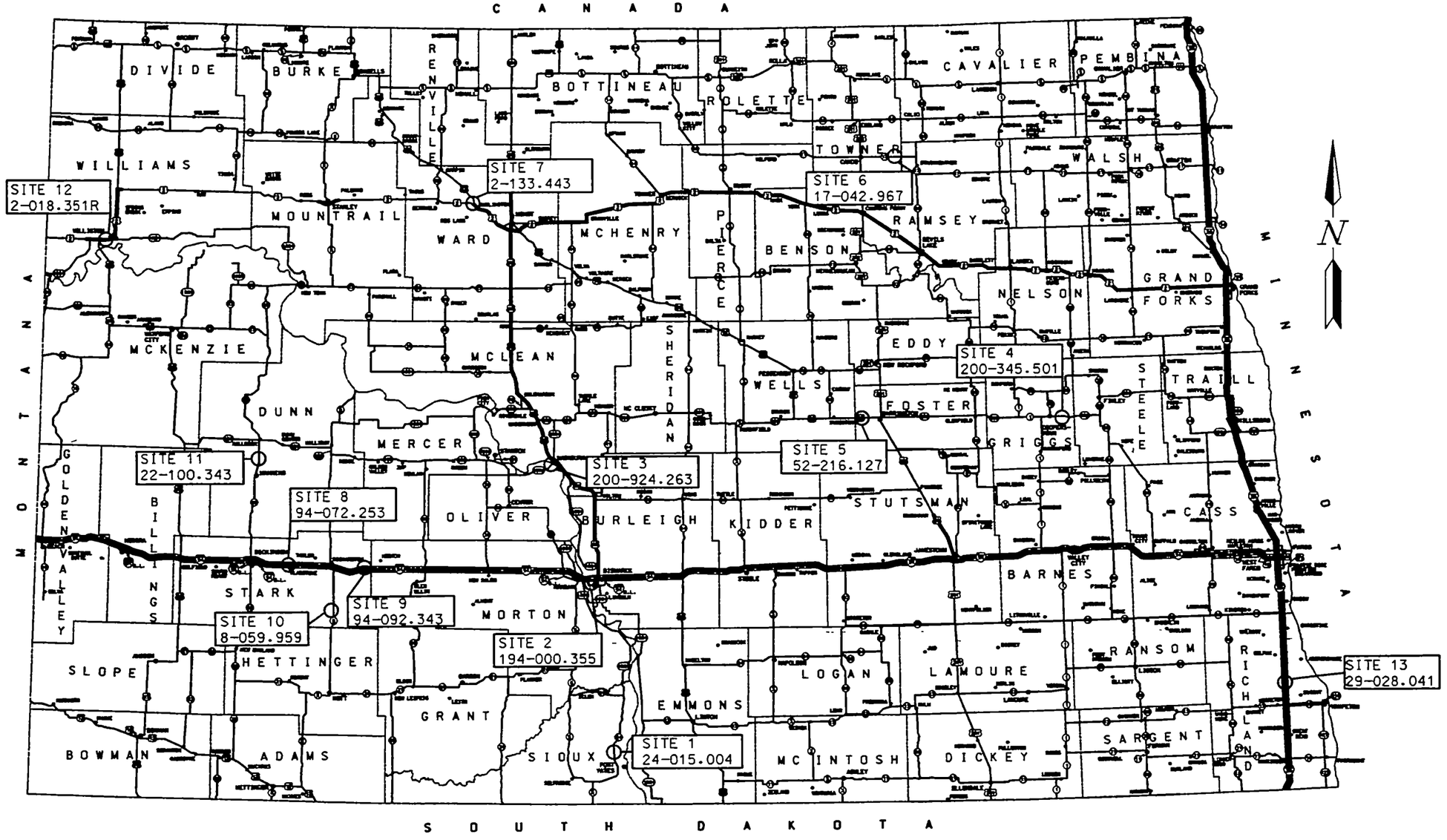
I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 3/23/2001

Francis G. Bigle

OFFICE OF INFRASTRUCTURE SUPPORT
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NUMBER	SHEET NO.
ND	SS-9-999(142)	2



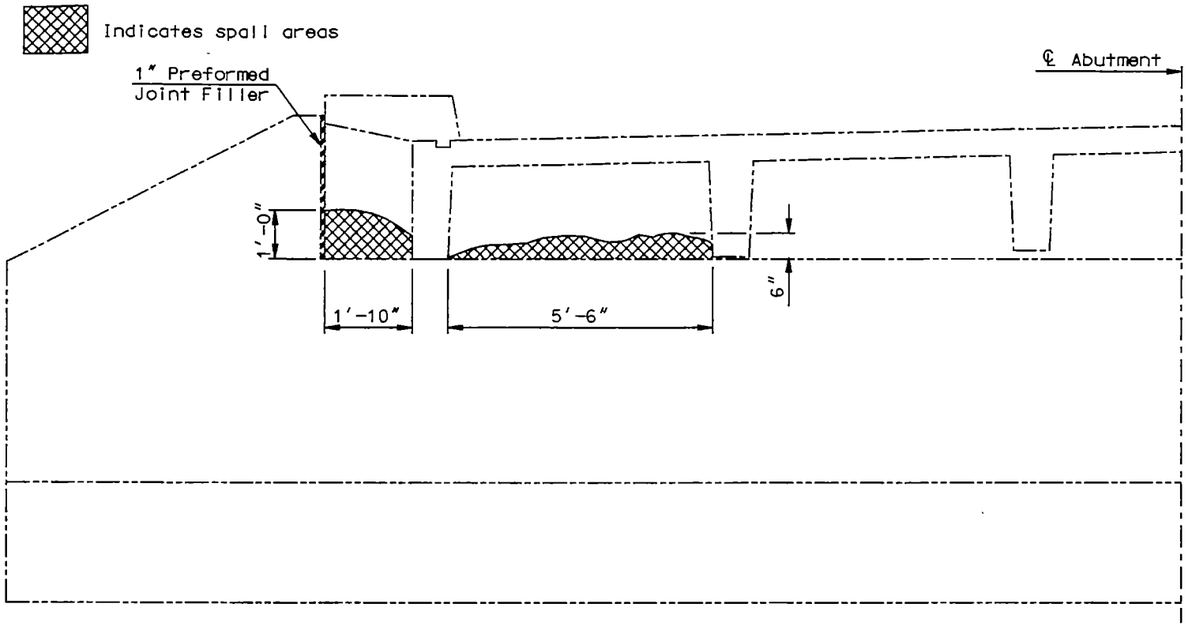
STATE MAP

SITE LOCATIONS

MAP 01LCS035 BWR

...\bridge\lcs\map.dgn Mar. 22, 2001 16:10:05

STATE	PROJECT NUMBER	SHEET NO.
ND	SS-9-999(142)	9



(Looking East)

PARTIAL EAST ABUTMENT ELEVATION

NOTES:

100 SCOPE OF WORK: Work at this site consists of repairing concrete spall areas on the endwall of the east abutment.

704 TRAFFIC CONTROL: The traffic control at this site shall be according to Standard Drawing D-704-24, Type S. The traffic control shall be set up only while work is going on at the site during daylight hours. The traffic control shall be removed and normal traffic operations restored at the end of each work day. All traffic control devices, labor and equipment required for traffic control at this site shall not be bid separately but shall be included in the lump sum bid item "Traffic Control."

930 SPALL REPAIR: The endwall of the east abutment has spall areas as shown in the elevation view. The contractor shall remove all unsound concrete and replace it with new concrete.

A 30 pound maximum size hammer shall be used on any unsound concrete removal. A 15 pound maximum size chipping hammer shall be used on any unsound concrete inside the existing reinforcing steel. The edges of the repair area shall be sharp, neat lines at least 1 inch deep. These sharp, neat lines shall be produced by saw cutting or other means approved by the field engineer.

After all unsound concrete is removed, the existing surface shall be cleaned by light sandblasting or high pressure water blasting. After the surface has dried and just before the patching material is placed, the surface shall be coated with an epoxy bonding agent.

The patching material shall be Class AE-5 concrete or other concrete material that is specifically intended for patching concrete. This material may be SIKATOP 122 Repair Mortar, Tammsteck Duralop Gel, Structurite 200, or an approved equal.

It is important to minimize the shrinkage in the patching material. Therefore, the contractor shall take steps including proper curing to minimize shrinkage.

The spall repair quantity is based on the assumption that the area to be repaired is to the dimensions shown on the elevation view. The actual limits of the repair shall be determined by the engineer in the field. It is also assumed that the spall repair areas are two to six inches deep.

All labor, equipment and materials needed to repair the spall areas shall be included in the bid item "Spall Repair."

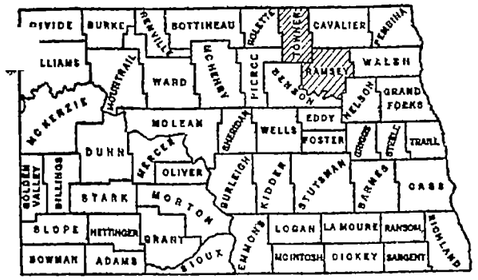
SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
930	9612	SPALL REPAIR	SF	5

MAUVAIS COULEE
TOWNER COUNTY

SPALL REPAIR

17-046.19, 17-051.090, 17-042.967 / 17-039.84 17-048.307 all

FED. ROAD DIV. NO	STATE	FED. AID PROJ. NO.	SHEET NO	TOTAL SHEETS
8	N. D	F-356 (5)	1	145



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY STRUCTURE

IN TOWNER & RAMSEY COUNTIES

FEDERAL AID PROJECT NO. F-356(5)

GRADE, BASE, BIT. SURF. TREAT., & STRUCTURES

SCALES
- LAYOUT SHEET. 1 IN. = 5000'
- PLAN AND PROFILE DRAWINGS (HOR 1 IN. = 100 FT, VERT 1 IN. = 10 FT)
- STRUCTURAL DRAWINGS.- AS SHOWN
- CROSS SECTION SHEETS.- 1 IN. = 20 FT

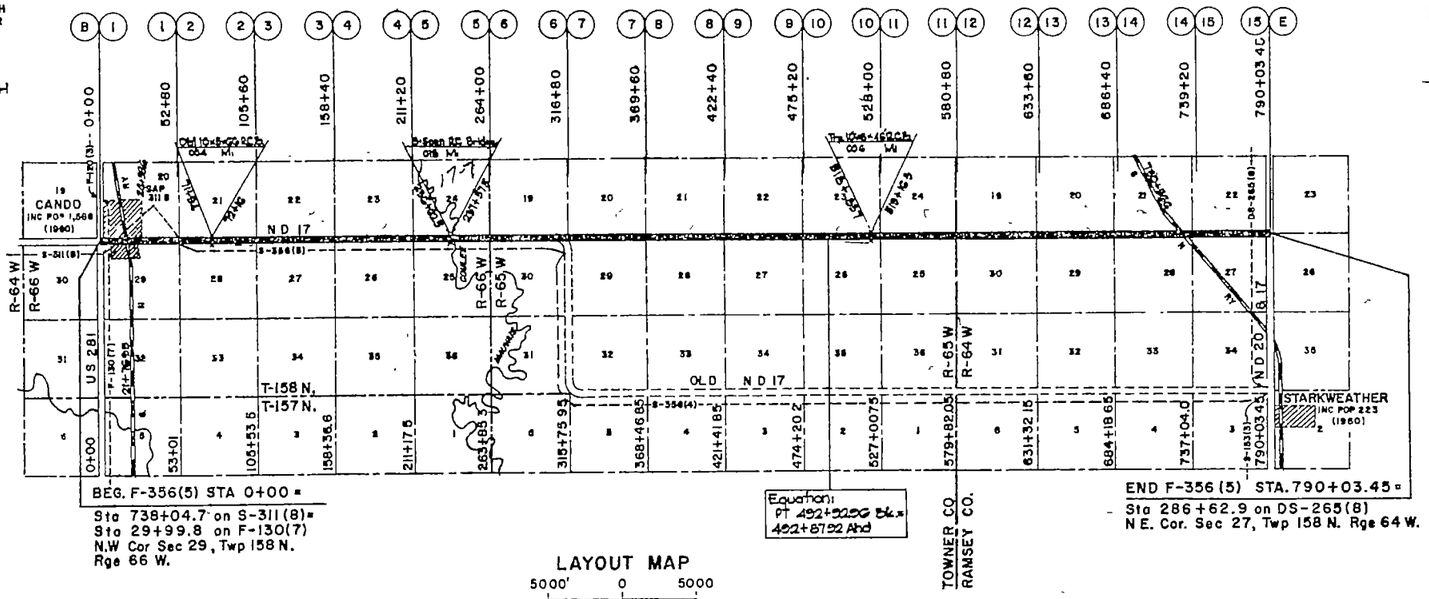
INDEX OF DRAWINGS

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
F-356(5)	14.963	14.963
TOTALS	14.963	14.963

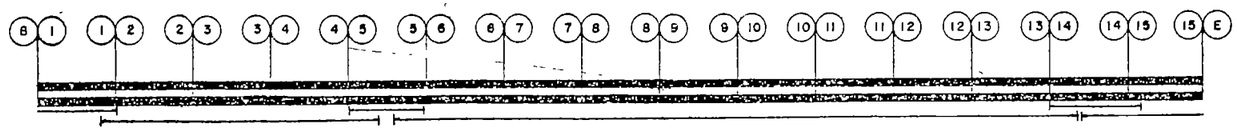
DESIGN DATA

TRAFFIC — AVERAGE DAILY		EST 30TH MAX HR
CURRENT TRAFFIC (1962)	380 PASS 50 TRUCKS 400 TOTAL	45
TRAFFIC FORECAST (1982)	560 PASS 80 TRUCKS 640 TOTAL	75
DESIGN SPEED	70 MPH Except 0+00 to 22+22	55 MPH
TRAFFIC CLASSIFICATION	"M"	
MINIMUM SIGHT DISTANCE (NON PASSING)	600'	
MINIMUM SIGHT DISTANCE (SAFE PASSING)	3200'	
MINIMUM PASSING SIGHT DISTANCE FOR MARKING	1200'	

BRIDGES DESIGN LOADING H 20 S-16 1961
30' CLEAR ROADWAY WIDTH
R C BOX CULVERT DESIGN LOADING
H 20 S-16 - 1940, 1953

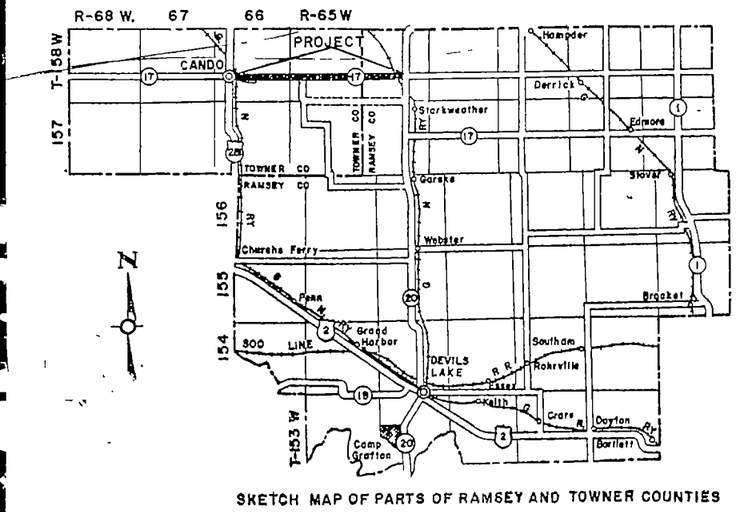


LAYOUT MAP
5000' 0 5000
SCALE IN FEET



SIGHT DISTANCE DIAGRAM

LEGEND
- Passing Zones (1200' Min. S.D.)
- Non Passing Zones
- Safe Passing Sections (3200' Min. S.D.)



SKETCH MAP OF PARTS OF RAMSEY AND TOWNER COUNTIES

KEY TO CONVENTIONAL SIGNS

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

COVERNING SPECIFICATIONS

Standard Specifications adopted by the North Dakota State Highway department July, 1961 and approved as standard by the Bureau of Public Roads Dec 29, 1961.

Required special provisions dated June 15, 1959 and approved by the Bureau of Public Roads July 8, 1959, and others submitted herewith

APPROVED DATE 3-12-62

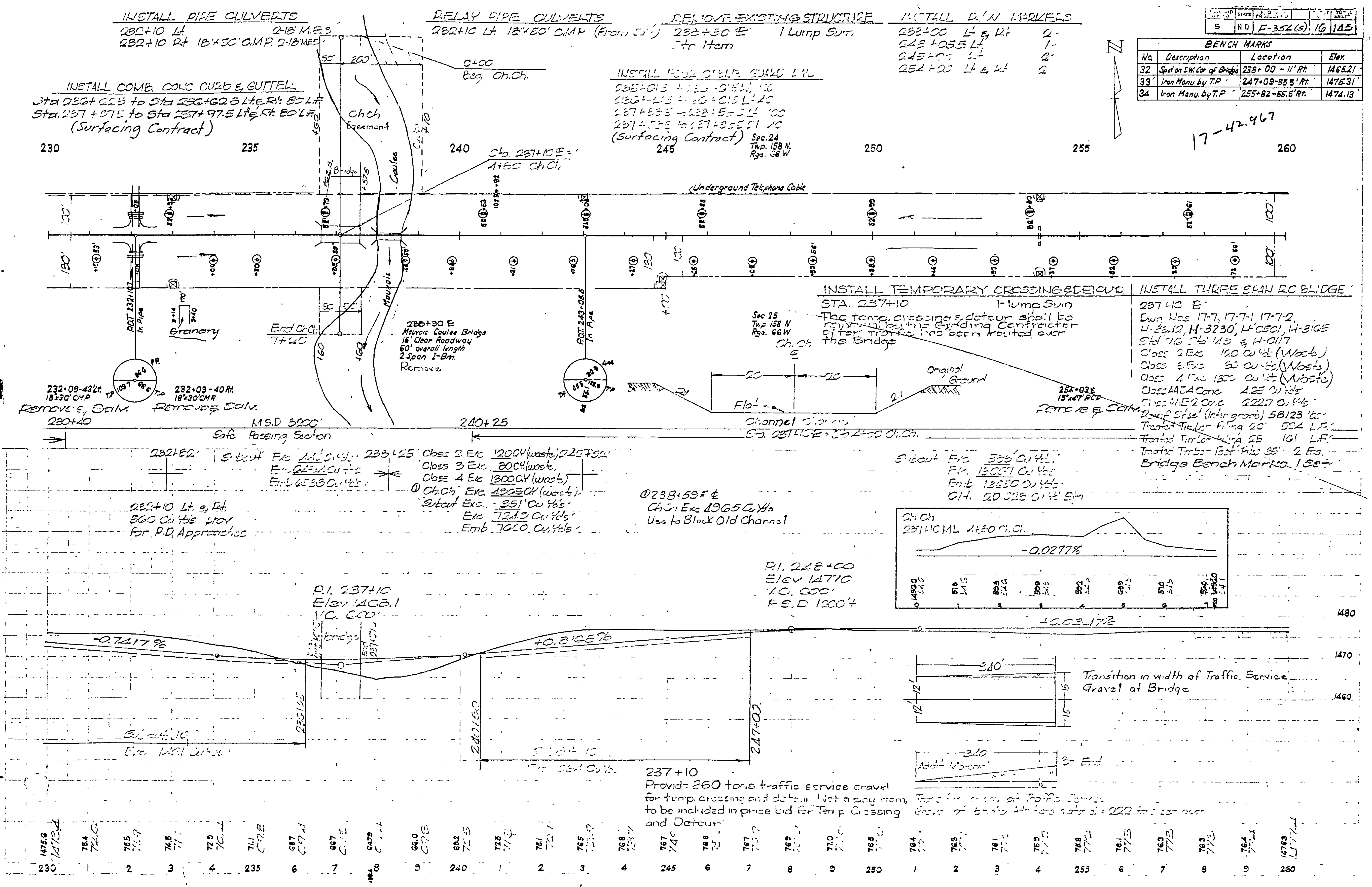
CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE

F-356(5)

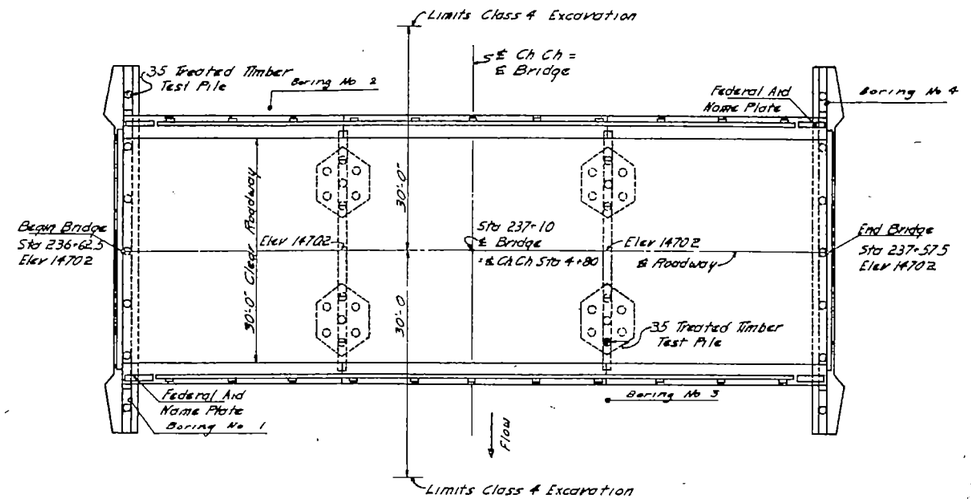


BENCH MARKS

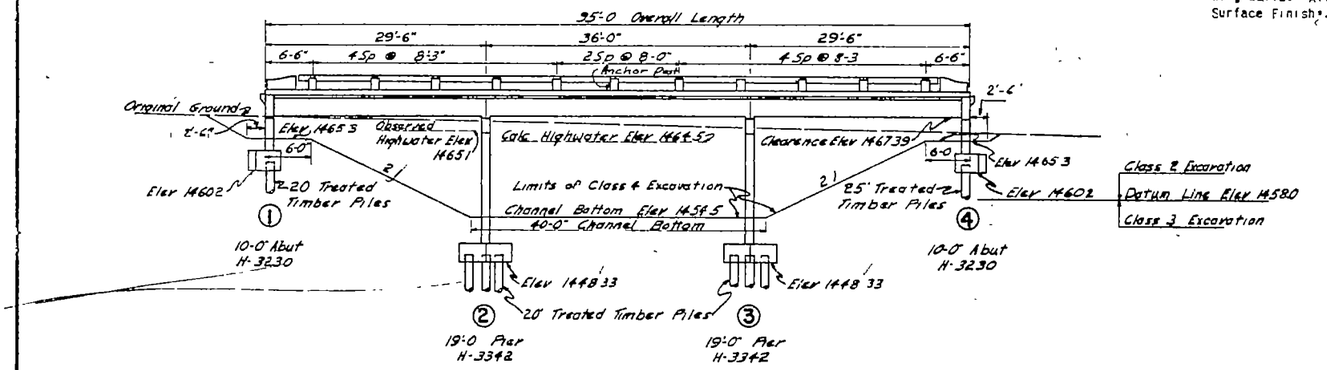
No.	Description	Location	Elev.
32	Spot on S.W. Cor of Bridge	238+00 - 11' Rt.	1465.21
33	Iron Monu. by T.P.	247+09-55.5' Rt.	1475.31
34	Iron Monu. by T.P.	255+82-55.5' Rt.	1474.13

17-42-967 17-7

BRIDGE CODE	FED ROAD DIST NO.	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
X021	5	N D	F-356(5)		53	145



PLAN



ELEVATION

NOTES:

GENERAL:

The cost of incidental items shown on the plans but not listed in the estimate of quantities shall be included in the unit price for the various pay items.

For railing notes see drawing H-0117.

For Boring Log see drawing 17-7-2

For Hydraulic Design Data see drawing 17-7-1.

Air-entrained portland cement shall be used in the entire bridge

The deck slab concrete shall be struck off and compacted by approved deck finishing machines

The Temporary Detour shall be removed by the grading contractor when no longer needed as a detour

The abutment backfill shall not be placed above the original ground elevation until the superstructure deck has been placed

The existing bridge to be removed by the structural contractor at Sta 236+29.5 is a 60'-0" two span Steel I-Beam and concrete deck with concrete piers and abutments, and 16 foot clear roadway.

All structural steel in the existing bridge shall be removed in accordance with section 12 of the Standard Specifications Structural steel salvaged from the bridge shall remain the property of the State, and shall be neatly piled on highway Right-of-day within 1000 feet of the existing structure location as designated by the Engineer

REINFORCING STEEL.

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 3/4" triangular molding except as shown on the plans

The "Rubbed Surface Finish" shall be given to the railing end posts, railing, 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".

Notes Cont.

End posts are to be Class AE-2 and railing Class AAE-4 Concrete. In each instance the concrete shall be compacted by vibration.

The curb shall be poured in sections with a construction joint over each bent. The end faces of curb first poured shall be painted with hot asphalt before adjacent sections are poured. Reinforcing steel shall not pass through the joint. Edges shall be beveled or rounded

EXCAVATION.

All structural excavation below elevation 1458.0 except excavation Class 4, the limits of which are shown on this sheet, shall be excavation Class 3.

All structural excavation above elevation 1458.0 except excavation Class 4 shall be excavation Class 2

Channel Excavation, Class 4, shall extend a distance of 30 feet North and South of the centerline and shall conform the elevation section on this sheet.

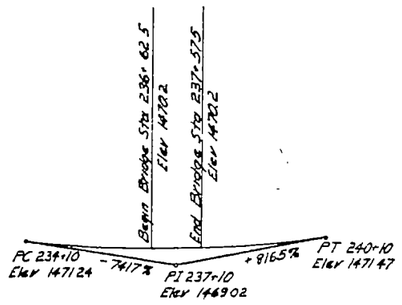
DESIGN STRESSES

fc = 1,200 psi
fs = 20,000 psi (Rein Steel)
fs = 18,000 psi (Struct Steel)

1962
FEDERAL AID
PROJECT
F-356(5)
NORTH DAKOTA
17-7

FEDERAL AID NAME PLATE

2 Required
See Drawing H-0117
For Location on End Posts



VERTICAL CURVE DATA

Elevations to Top of Finished Roadway

ESTIMATE OF QUANTITIES

SPEC NO	BID ITEM		
12	REMOVING EXISTING STRUCTURE AT STA 236+29.5	LUMP	SUM
18A	EXCAVATION CLASS 1		CU YD
18B	CLASS 2	110	CU YD
18C	CLASS 3	80	CU YD
18D	CLASS 4	1300	CU YD
60AA	CONCRETE CLASS AAE-4	4.65	CU YD
60A	CLASS AE-2	222.7	CU YD
62A	REINFORCING STEEL (INTERMEDIATE GRADE)	38123	LB
63A	STRUCTURAL STEEL		LB
64A	UNTREATED TIMBER		M B M
64B	TREATED TIMBER		M B M
65A	UNTREATED TIMBER PILING		LIN FT
65B	TREATED TIMBER PILING 33 @ 20 FT	394	LIN FT
65B	" " " 7 @ 25 FT	161	LIN FT
65I	UNTREATED TIMBER TEST PILES		EACH
65J	TREATED TIMBER TEST PILES @ 35 FT	2	EACH
84*	TEMPORARY CROSSING AND DETOUR	LUMP	SUM
	BRIDGE BENCH MARKS	1	SET
*	SEE SPECIAL PROVISION		

STRUCTURAL DRAWINGS

GENERAL DRAWING THIS SHEET 17-7-1 & 17-7-2
SUBSTRUCTURE H-3230, H-3342
SUPERSTRUCTURE H-0501, H-3413, STD 76 & STD 149, H-087

DESIGN LOADING	SCALE
H_{20}-S_{16} (1961)	1 INCH = 10 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

MAUVAIS COULEE
BRIDGE LAYOUT

PROJECT F-356(5) STA. 237+10

COUNTY TOWNER

APPROVED

8-19-62 Joseph R. Kirby
DATE BRIDGE ENGINEER

JOSEPH R. KIRBY — REGISTERED PROFESSIONAL ENGINEER — NORTH DAKOTA

BENCH MARKS

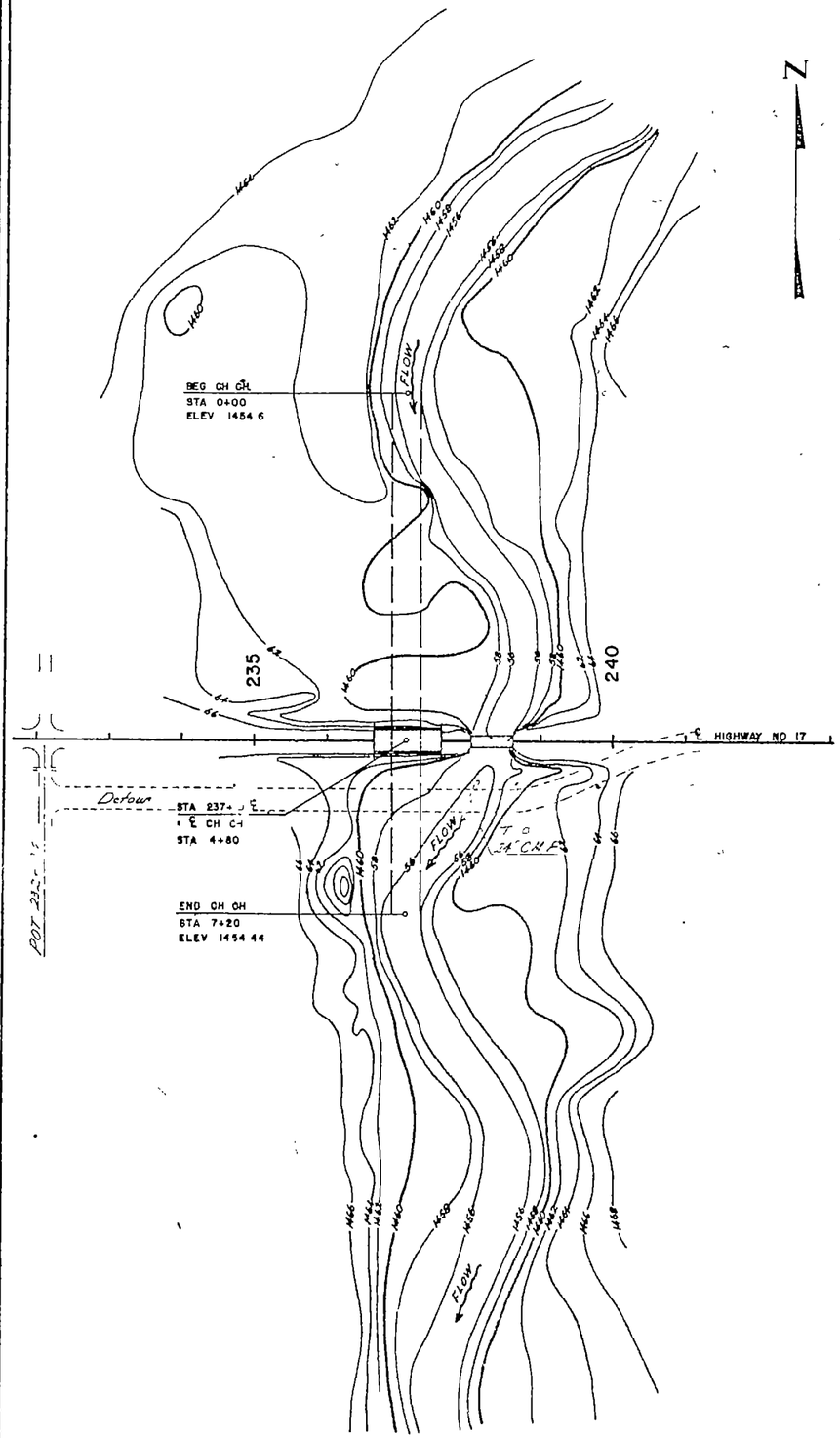
NO	DESCRIPTION	LOCATION	ELEV
31	Ir Mon by TP	229+72-52 Rt	1474.11
32	Spot on S W Corner of Bridge	238+00 -11 Rt	1465.21
33	Ir Mon by TP	247+09-55 Rt	1475.31

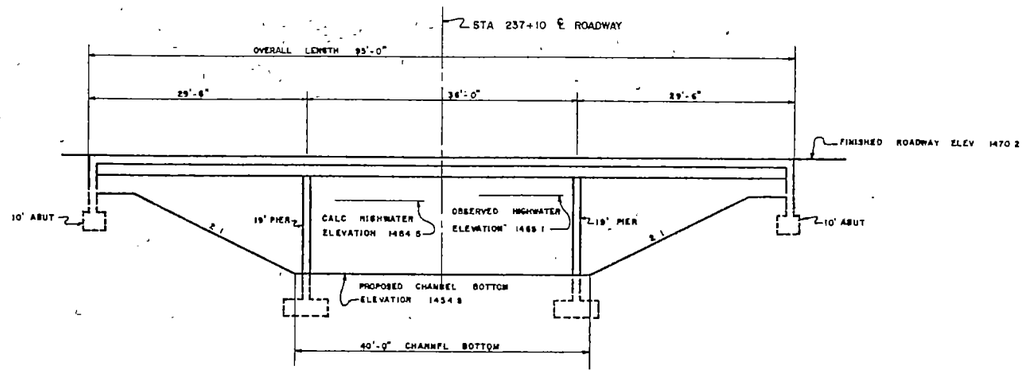
PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH	WIND 50 LB	WIND 15 LB	WIND 100 LB L.L.	LONG FORCE	DESIGN LOAD	MAX. REQ'D BEARING	MINIMUM PENETRATION
Abutment	11.1 T	6.5 T	4.2 T					21.8 T	28 0T	
Pier	10.7 T	3.6 T	1.4 T					21.7 T	28 0T	

17-42.967

FED ROAD DIV NO.	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	N D	F 356(5)		54	145





ELEVATION VIEW

DESIGN CRITERIA

TYPE	THREE-SPAN R C CONTINUOUS T-BEAM
DESIGN LOADING	H20 S16 (1961)
ROADWAY WIDTH	30'-0" CLEAR, 2'-10" CURBS
RAILINGS	STANDARD R C
ABUTMENTS	10' ROCKING WALL
PIERS	19' WALL WITH TWO FOOTINGS

HYDRAULIC DESIGN DATA

DRAINAGE AREA (CONTRIBUTING)	370 SQ MI
DESIGN FREQUENCY	50 YR
DESIGN DISCHARGE	2880 C F S
STREAM GRADIENT	0 00024 FT/FT
STREAM VELOCITY	2 1 F P S
VELOCITY UNDER BRIDGE	5 0 F P S
DEPTH OF FLOW	10 0 FT
WATERWAY PROVIDED BELOW HIGH WATER	580 SQ FT
WATERWAY PROVIDED BELOW CLEARANCE	847 SQ FT
FREEBOARD PROVIDED	3 FT
MINIMUM WATER ELEVATION	INTERMITTENT

BRIDGE NO 17-7

MAUVAIS COULEE BRIDGE

TOPOGRAPHIC LAYOUT

PROJ F-356(5) STA 237+10

TOWNER COUNTY

17-7-1

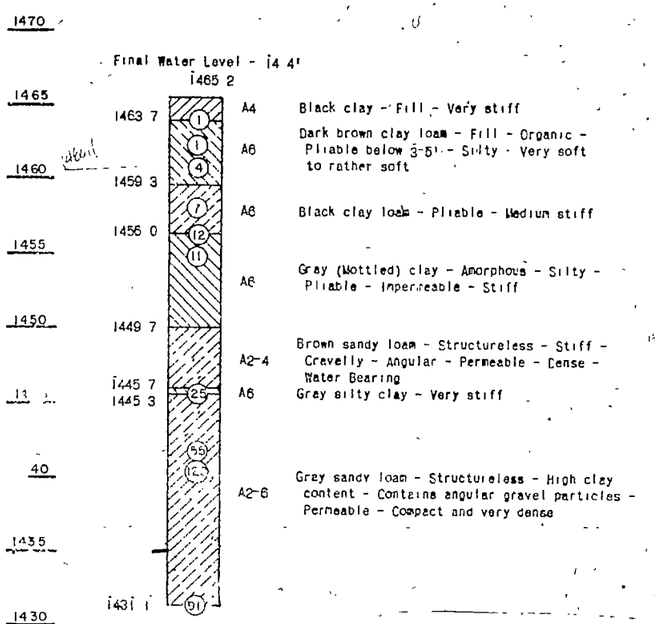
17-42.967

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	F-356(5)		55	145

NOTE:

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 shown is for design purposes only. The State assumes no responsibility if soil conditions encountered during construction differ from these shown

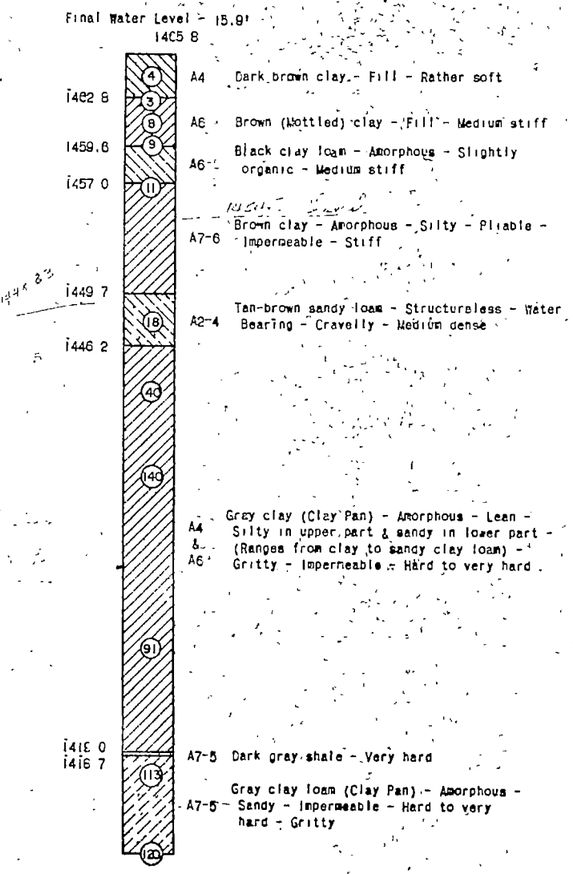


BORING NO 1

STA 236+62.5-20' RT # 17 ℄

BORING NO. 1

DEPTH.	4.8-5.8
MAX.LOAD:	2002
SHEAR ∠.	Near 15°
COHESION:	1403
MOISTURE.	20%
DRY WT.:	99

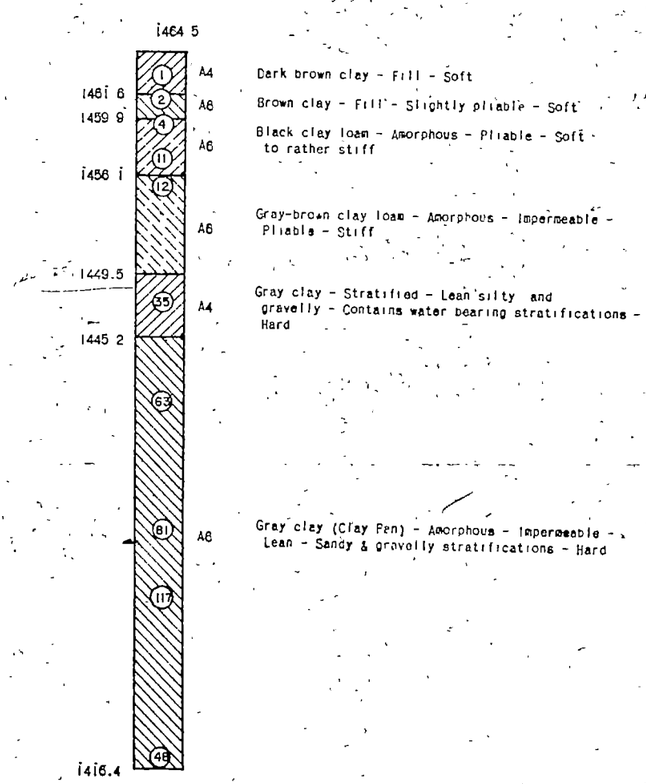


BORING NO 2

STA 236+91.75-16' LT # 17 ℄

BORING NO 2

DEPTH:	6.4-7.4	9.0-10.0
MAX.LOAD:	3911	4101
SHEAR ∠:	Near 15°	Near 15°
COHESION:	1890	2024
MOISTURE:	25%	25%
DRY WT:	93	96

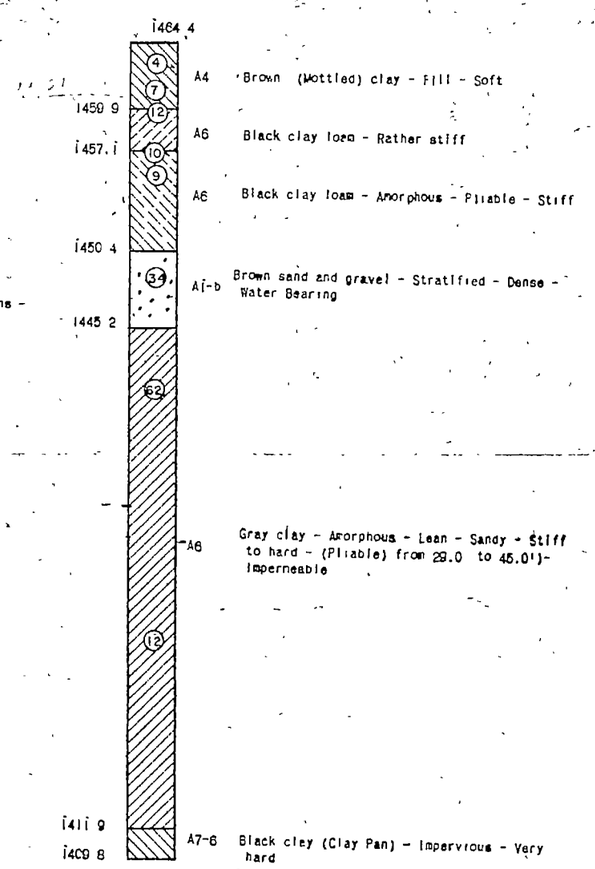


BORING NO. 3

STA 237+28.5-20' RT # 17 ℄

BORING NO. 3

DEPTH:	4.8-5.8	9.0-10.0	21.0-22.0
MAX LOAD:	1169	1691	12.659
SHEAR ∠:	Near 15°	Near 15°	Near 15°
COHESION:	574	817	6114
MOISTURE:	26%	26%	21%
DRY WT.:	87	90	105



BORING NO. 4

STA 237+57.5-16' LT # 17 ℄

BORING NO. 4

DEPTH:	9.0-10.0
MAX LOAD.	3144
SHEAR ∠.	Near 15°
COHESION:	1520
MOISTURE:	22%
DRY WT..	99

BRIDGE NO. 17-7

BORING LOG

F-356(5)

TOWNER COUNTY

17-7-2

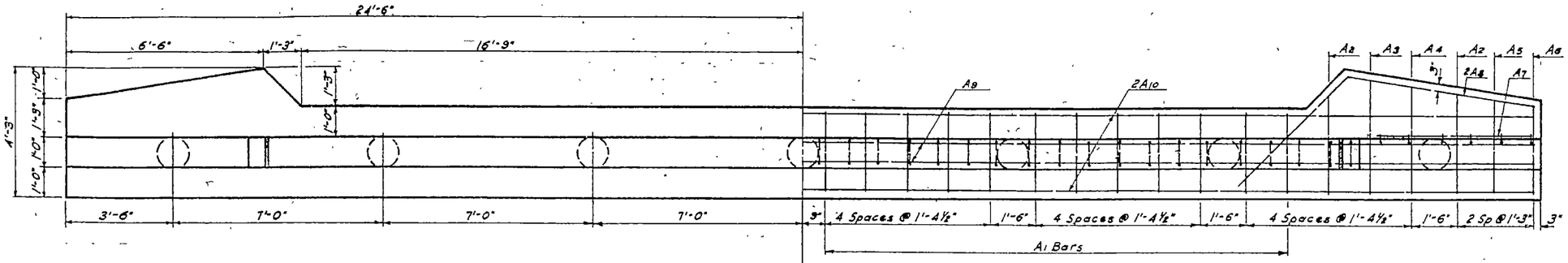
17-7-2

17-42.967

FED ROAD DIST NO	STATE	FED-AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	F 354(5)		56	145

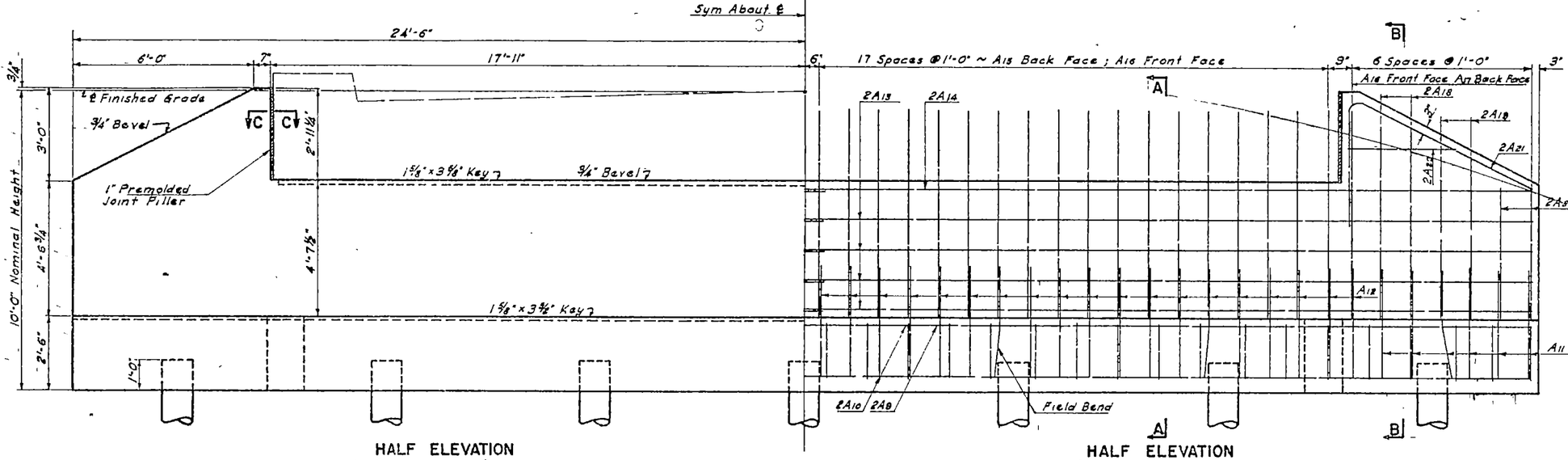
BAR LIST (ONE ABUT.)

MARK	NO	SIZE	LENGTH	SHAPE
A1	24	4	9'-6"	Bent
A2	4	4	11'-0"	"
A3	2	4	12'-0"	"
A4	2	4	11'-6"	"
A5	2	4	10'-8"	"
A6	2	4	10'-2"	"
A7	2	4	5'-3"	Str
A8	4	6	11'-6"	Bent
A9	4	5	25'-6"	Str.
A10	8	8	26'-0"	Str.
A11	12	5	4'-9"	Bent
A12	38	4	8'-0"	Bent
A13	16	4	25'-3"	Str.
A14	4	6	25'-9"	"
A15	36	4	4'-3"	"
A16	38	4	7'-0"	"
A17	2	5	7'-0"	"
A18	8	4	6'-6"	"
A19	8	4	5'-6"	"
A20	8	4	4'-6"	"
A21	4	6	10'-9"	Bent
A22	4	4	3'-6"	Str



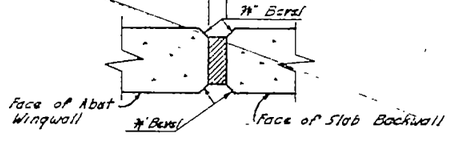
HALF PLAN
Showing Dimensions

HALF PLAN
Showing Footing Reinforcement

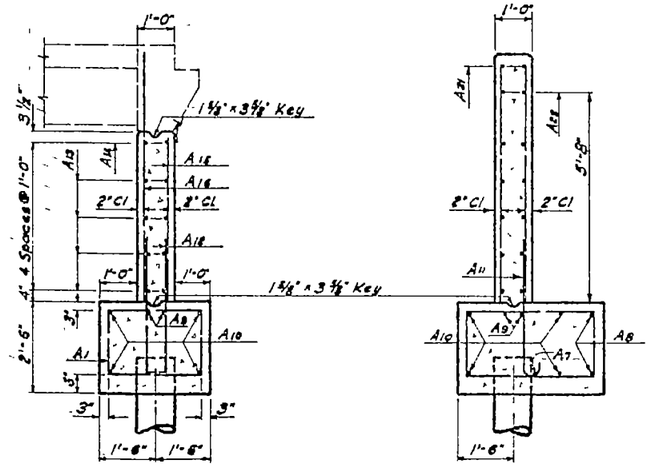


HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcement

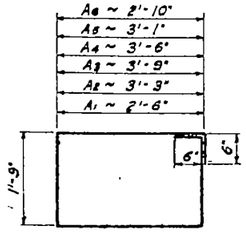


SECTION C–C

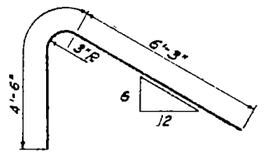


A-A

B-B



A1 THRU A6



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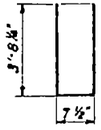
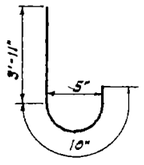
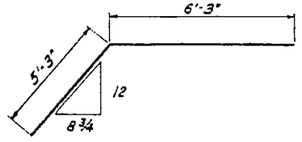


A12



A11



A8

BENT BAR DETAILS

QUANTITIES (ONE ABUT)

Concrete Class AE-2	29.6 C.Y.
Reinforcing Steel	2,122 Lbs.
Piling (See Layout)	
Excavation (See Layout)	

10' ABUTMENT FOR T-BEAM SPANS

30' ROADWAY

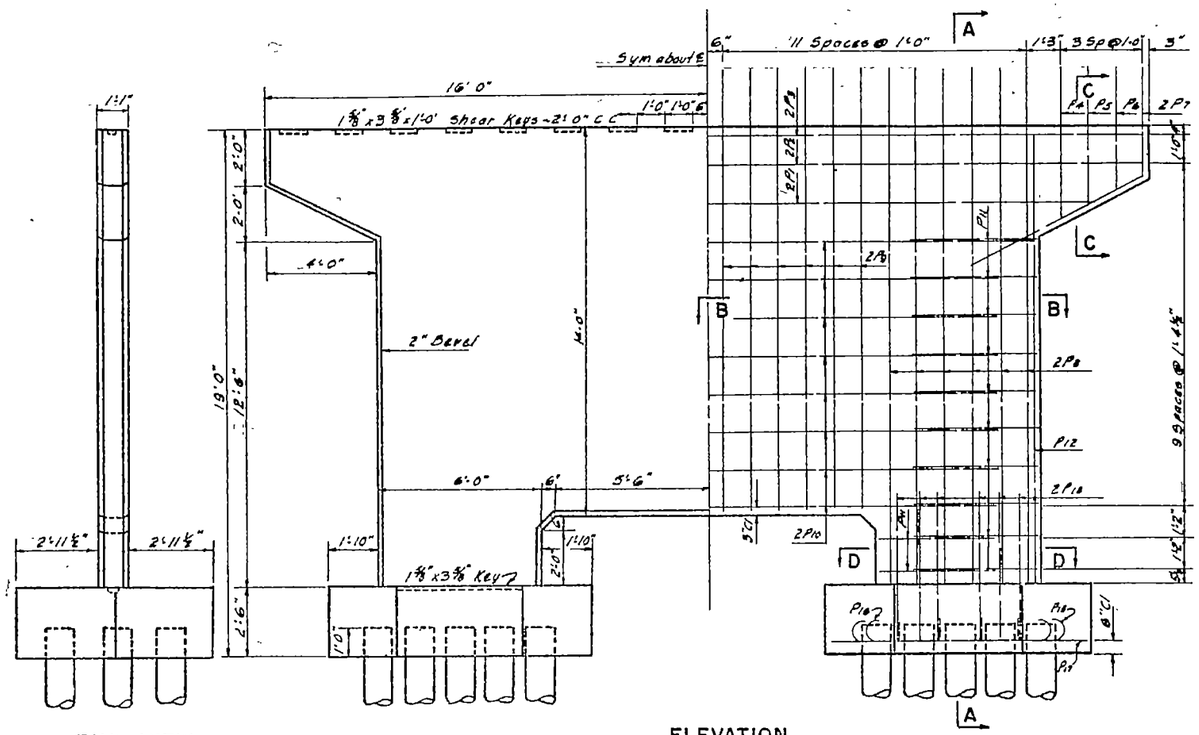
H-3230

H-3230

17-42.967

FED. ROAD DIST NO	STATE	FED. AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	F-356(6)		57	145

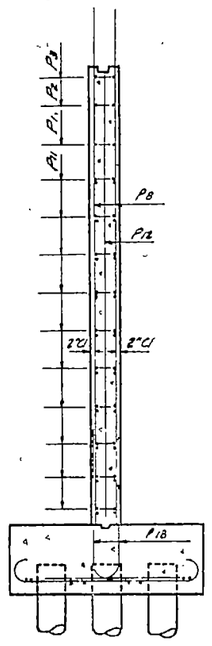
QUANTITIES CHECKED BY 21V



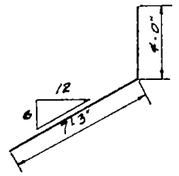
END VIEW

ELEVATION

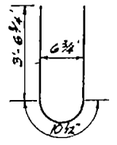
Half Showing Dimensions Half Showing Reinforcing



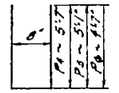
A-A



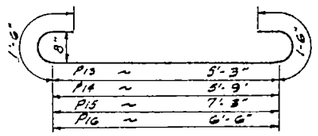
P 7 BAR



P11 BAR

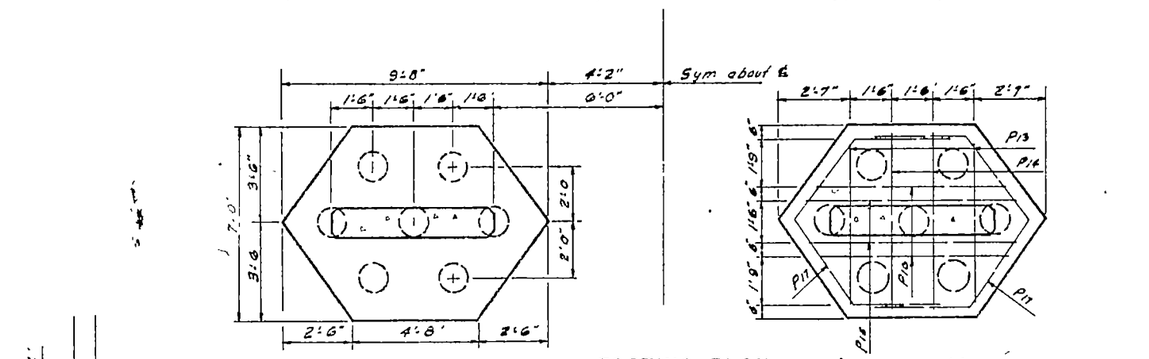


P4,5,8,6 BARS



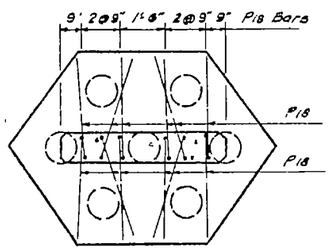
P13,14,15,16 BARS

BAR LIST (ONE PIER)				
Mark	No	Size	Length	Shape
P1	2	5	26'-3"	Str
P2	2	3	37'-6"	"
P3	2	8	37'-6"	"
P4	2	5	11'-10"	Bent
P5	2	3	10'-10"	"
P6	2	3	9'-10"	"
P7	4	6	11'-3"	"
P8	24	7	18'-6"	Str
P9	24	6	14'-9"	"
P10	16	5	21'-0"	"
P11	24	4	8'-0"	Bent
P12	2	8	16'-3"	Str
P13	4	8	8'-3"	Bent
P14	4	8	8'-9"	"
P15	4	8	10'-3"	"
P16	4	8	9'-6"	"
P17	4	8	13'-0"	"
P18	24	8	8'-9"	"



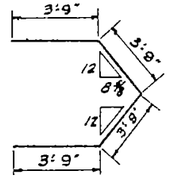
FOOTING PLAN

Half Showing Dimensions Half Showing Reinforcing

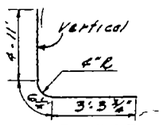


HALF FOOTING PLAN

Showing Reinforcing Extending into Wall

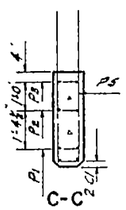


P17 BAR

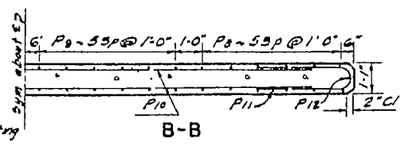


P18 BAR

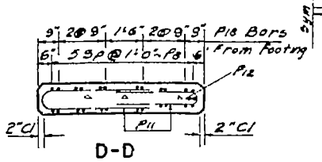
BENT BAR DETAILS



C-C



B-B



D-D

QUANTITIES ONE PIER	
Concrete Class AE-2	243 C Y
Reinforcing Steel	33231 lbs
Piling (See Layout)	

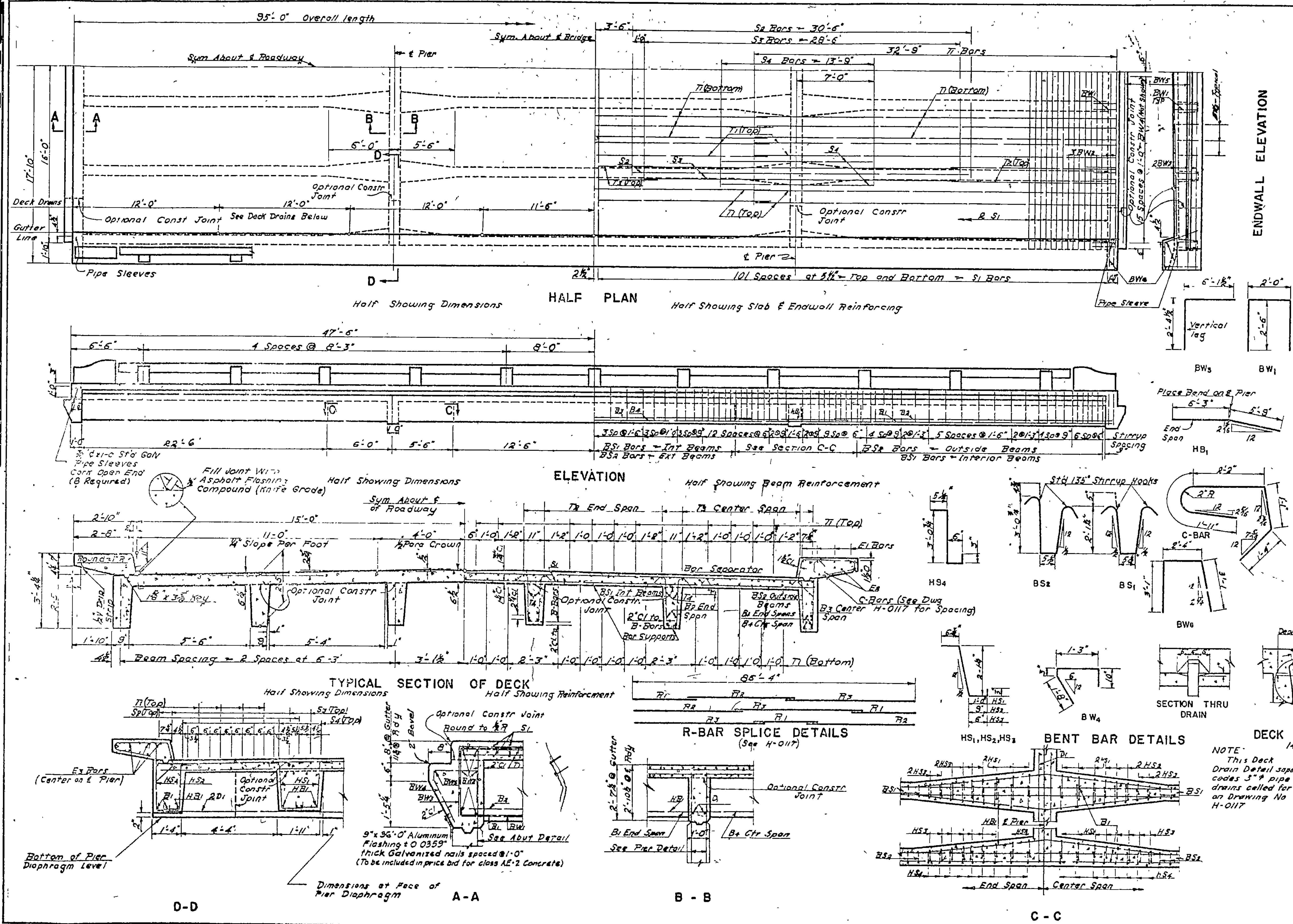
19'-0" PIER DETAILS
FOR
T-BEAM SPANS
30'-0" ROADWAY
H20 S16

H-3342

H-3342

17-42.967

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	N.D.	F 356(5)		58	145



BAR	LIST			
MARK	NO	SIZE	LENGTH	SHAPE
T1	135	5	33'-0"	Str
T2	24	4	16'-0"	"
T3	12	4	12'-3"	"
T4	24	8	33'-9"	"
S1	408	5	31'-9"	"
S2	8	10	30'-6"	"
S3	24	11	28'-6"	"
S4	20	10	13'-9"	"
C	208	4	6'-6"	Bent
D1	4	6	31'-9"	Str
E1	24	5	33'-0"	"
E2	12	4	32'-9"	"
E3	12	6	14'-0"	"
B1	24	11	29'-3"	"
B2	24	11	25'-6"	"
B3	12	11	28'-0"	"
B4	12	11	36'-0"	"
HB1	20	6	12'-0"	Str
BS1	332	4	5'-6"	Bent
BS2	166	4	6'-5"	"
HS1	86	4	3'-11"	"
HS2	128	4	3'-8"	"
HS3	116	4	3'-5"	"
HS4	68	4	4'-3"	"
BW1	24	6	7'-0"	"
BW2	12	4	35'-3"	Str
BW3	90	6	8'-6"	Bent
BW4	64	9	4'-0"	"
BW5	2	6	31'-6"	Str
BW6	8	4	8'-6"	Bent

RAILING BAR LIST (See H-0117)				
P10	50	5	4'-0"	Bent
P11	6	5	4'-6"	"
P12	44	5	4'-10"	"
P13	48	3	3'-8"	"
P14	40	3	2'-8"	"
RC	152	3	2'-8"	Bent
R1	12	5	39'-3"	Str
R2	12	5	30'-3"	"
R3	12	5	21'-3"	"

NOTES:

Provide 7/16" camber 15'-0" from ends of bridge and at bridge ℄ to compensate for dead load deflection

This superstructure designed for 25% future wearing surface

The optional construction Joints do not require keys, but the top of the pour shall have a rough surface and be clean before the next pour

QUANTITIES	
Concrete Class AE-2 *	126.5 cu yd
Concrete Class AE-4	4.65 cu yd
Reinforcing Steel **	36,793 lbs

* Includes End Posts
** Includes End Posts & Railing See Drawing H-0117

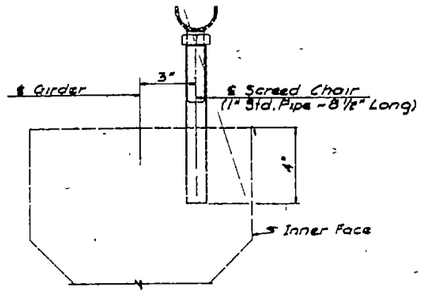
SUPERSTUCTURE

THREE SPAN CONTINUOUS
CONCRETE T-BEAM
95'-0" OVERALL LENGTH
30'-0" ROADWAY

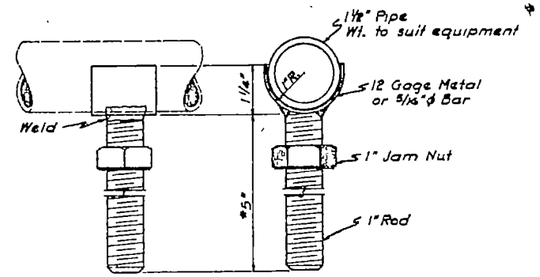
H20 S16 Loading

17-42967

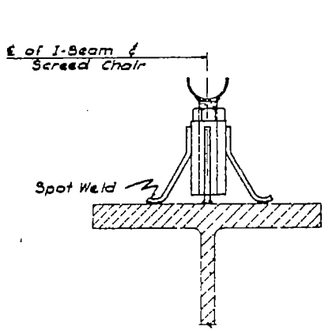
No.	Stage		Sheet No.
5	N D	F-033(5)	59



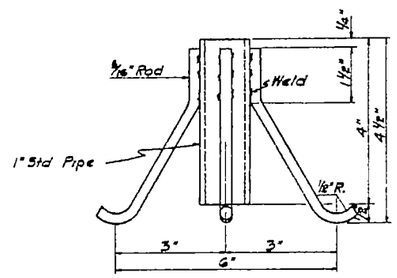
SCREED CHAIR IN PRESTRESSED GIRDER
(Outside Girders Only)



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

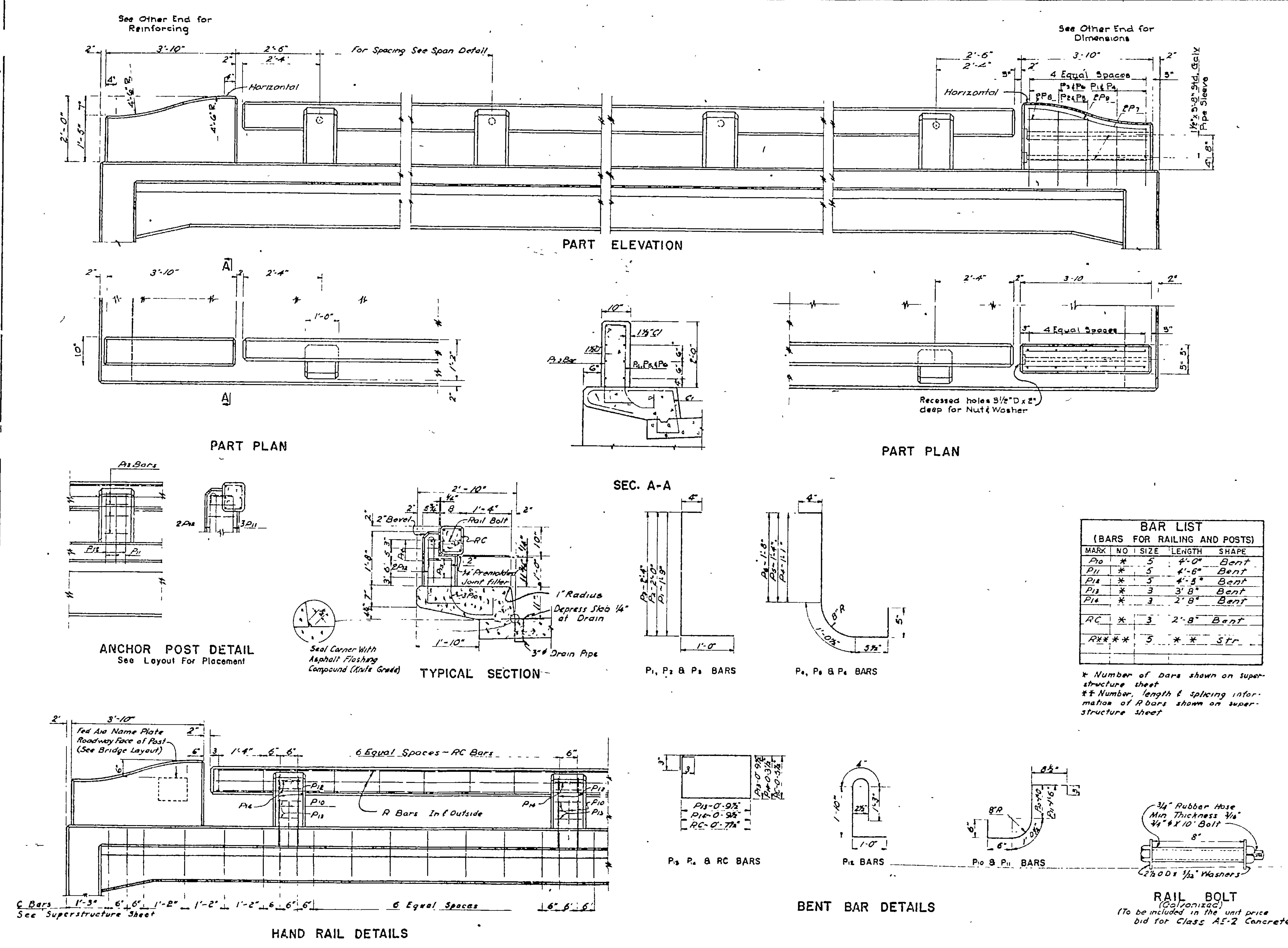
APPROVED 1-6-59 DATE

Jennie P. Kirby
BRIDGE ENGINEER

H-0501

17-42,967

FED ROAD DIV NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	N D	C-356(5)		60	145



NOTES:

All concrete above top of curb shall be Class AAE-4 except concrete end posts.

"Rubbed Surface Finish" will be required for the roadway faces of curbs, the outside vertical faces of curb and slab, and all faces of rails, intermediate and end posts.

BAR LIST (BARS FOR RAILING AND POSTS)				
MARK	NO	SIZE	LENGTH	SHAPE
P10	*	5	4'-0"	Bent
P11	*	5	4'-6"	Bent
P12	*	5	4'-5"	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'-1"	Bent
P2	4	5	3'-4"	"
P3	8	5	3'-8"	"
P4	8	5	3'-4"	"
P5	4	5	3'-7"	"
P6	8	5	3'-4"	"
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 AE-2	0.8 Cu yd
Reinforcing Steel	224 Lbs

✠ Railing and end post quantities are included in slab quantities on superstructure sheet

STANDARD RAILING DETAILS

H-0117