DESIGN DATA				
Traffic	Average Daily			Est.Max.Hr.
Current (1993)	Pass. 290	Trucks 50	Total 340	34
Forecast (2013)	Pass. 290	Trucks 50	Total 340	34

Minimum Sight Dist. for:	Design Speed 60 MPH
Stopping	
Safe Passing	
Passing for Marking	

JOB# 3

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

BOTTINEAU COUNTY

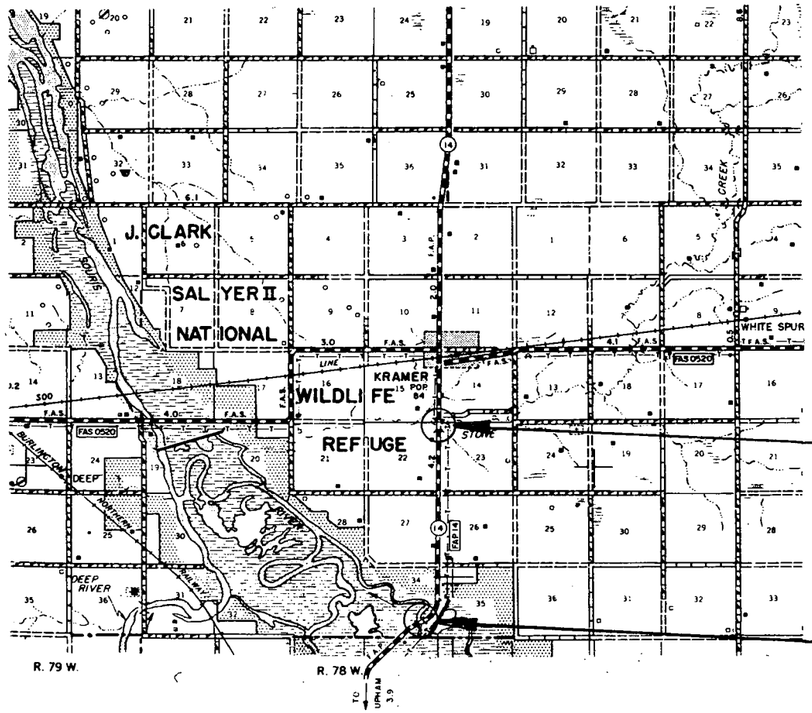
HES-4-014(007)141, HES-4-014(008)144

Bridge Rail Retrofit, Guardrail, and Incidentals

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	HES-4-014(007)141 HES-4-014(008)144	1

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation September 1992, Standard Drawings currently in effect, and other Contract Provisions submitted herein.



PAVING SECTION _____

URBAN SECTION _____

TRAFFIC SECTION Brad Pfeifer

RURAL SECTION _____

RECOMMEND APPROVAL 8-3, 1993

DESIGN ENGINEER David K.O. Lee

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

_____ _____
DIVISION ADMINISTRATOR DATE

APPROVED DATE 9-1-93

Ray Zink

DIRECTOR OF HIGHWAYS
AND ENGINEERING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

RAY ZINK REGISTERED PROFESSIONAL P.E. 972 ENGINEER NORTH DAKOTA

SYMBOLS

STATE & NATIONAL LINES
COUNTY LINE
TOWNSHIP & RANGE LINES
SECTION LINE
QUARTER SECTION LINE
SECTION CORNER
QUARTER SECTION CORNER
OLD RIGHT OF WAY LINE
NEW RIGHT OF WAY LINE
GRADE LINE
CENTERLINE OF CONSTRUCTION — 500
RAILROAD RIGHT OF WAY LINE
CITY OR VILLAGE CORPORATE LIMITS
PROPERTY LINE
EASEMENT LINE
FENCES
SNOW FENCE
DRAINAGE
WATERS EDGE
MARSH OR SWAMP
RIPRAP
DRAINAGE DITCH
APPROACH — 302 + 00
TRAVELED WAY
RAILROADS — NAME
GUARD RAIL
GUIDE POSTS
DELINEATORS
HEDGES AND TREES
INTERCHANGE
HIGHWAY GRADE SEPARATION - NO CONNECTION
OTHER BRIDGE
SERVICE ROAD
TERMINATED CROSS-ROAD

BUILDINGS
TELEGRAPH LINES
TELEPHONE LINES
POWER LINES
CULVERTS (In Place)
CULVERTS (Install)
CONCRETE BOX CULVERTS (Install)
BRIDGES (Install)
CONCRETE CURB
CONCRETE CURB AND GUTTER
CONCRETE WALK
CATCH BASIN (Existing)
CATCH BASIN (New)
MANHOLE (Existing)
MANHOLE (New)
CURB INLET (Existing)
CURB INLET (New)
GROUND MOUNTED SIGNS
OVERHEAD SIGNS
HYDRANT
LIGHT STANDARDS
TRAFFIC SIGNALS (Plan & Profile Sheets)
HIGH MAST LIGHTING ASSEMBLY
GROUND ELEVATION — 1430
GRADE ELEVATION — 1410
245
CENTERLINE
SECTION LINE
DEFLECTION ANGLE (Delta)
SOD OR JUTE MESH
POLES TO BE MOVED
POLES TO BE LOWERED
CONCRETE FOUNDATION
CONDUIT
CONDUCTOR
CONCRETE PULL BOX
FEED POINT
250 WATT LIGHT STANDARDS
400 WATT LIGHT STANDARDS
700 WATT LIGHT STANDARDS
1000 WATT LIGHT STANDARDS
FLASHING BEACON
TRAFFIC SIGNAL - MAST ARM MOUNTED
TRAFFIC SIGNAL - POST MOUNTED
SIGNAL HEAD — 3
PEDESTRIAN PUSHBUTTON POST
TRAFFIC SIGNAL CONTROLLER
FEED POINT - PAD MOUNTED

ABBREVIATIONS

Aggr	Aggregate
Ahd	Ahead
Alt	Alternate
Approx	Approximate or Approximately
Appr	Approach
Asph Cem or A C	Asphalt Cement
Asph Conc.	Asphaltic Concrete
Bit	Bituminous or Bitumen
Bk	Back
B M	Bench Mark
Bldg.	Building
Br	Bridge
C A E.S.	Corrugated Aluminum End Section
C A P	Corrugated Aluminum Pipe
C B	Catch Basin
C & G	Curb and Gutter
Ch Blk	Channel Block
Ch Ch	Channel Change
C.I	Curb Inlet
C I P	Cast Iron Pipe
Cl	Class
C.S.E S	Corrugated Steel End Section
C.S.P.	Corrugated Steel Pipe
CMS	Cationic Medium Setting
Comp	Compression
Const	Construction
Conc	Concrete
Cont. Reinf Conc Pvmt	Continuously Reinforced Concrete Pavement
Contr	Contraction
Cr	Crown
CRS	Cationic Rapid Setting
Crse	Course
C S.	Curve to Spiral
C. to C.	Center to Center
C.Y	Cubic Yard
D	Degree of Curvature
D-Load	Dead Load
D.B.	Ditch Block
Def	Deformed
Del	Deliver
D G.	Ditch Grade
El. or Elev	Elevation
Elliptl.	Elliptical
Emb	Embankment
Emul.	Emulsified
Engr.	Engineer
Eq	Equation
E R	East Roadway
E S	End Section
Esmt	Easement
Exc	Excavation
Exp.	Expansion
F D	Field Drive
Found	Foundation
F P	Fence Post
Furn	Furnish
Ga	Gage or Gauge
Gr	Gravel
Grd	Graded
G V.	Gate Valve
Hel	Helical
Hyd	Hydrant
Ident	Identification
Inchg	Interchange
I M	Iron Monument
Inst	Install
Inter	Intersection
Inv	Invert
Jt	Joint
L	Length of Curve
Lc	Length of Spiral
Levg	Leveling
L F.	Linear or Lineal Foot
Liq	Liquid
Long	Longitudinal
L P	Light Pole
Lt	Left
"M"	One Thousand
Matl	Material
Max	Maximum
MC	Medium Curing
M H	Manhole
Min	Minimum
M L	Main Line
N R	North Roadway
Off Loc	Office Location
O to O	Out to Out
P & P	Plan and Profile
P C	Point of Curvature
P C C	Point of Compound Curve
P C C Pvmt	Portland Cement Concrete Pavement
P D	Private Drive
Pen	Penetration
Perf	Perforated
P I	Point of Intersection
P O C	Point on Curve
P O T	Point on Tangent
P P	Power Pole
P R C	Point of Reverse Curvature
Pref	Preformed
P S D	Passing Sight Distance
P T	Point of Tangency
P V C	Polyvinyl Chloride Sewer Pipe
Quant	Quantity or Quantities
R	Radius
R or Rge	Range
RC	Rapid Curing
R C E S	Reinforced Concrete End Section
R C P	Reinforced Concrete Pipe
R C P S	Reinforced Concrete Pipe Sewer
Rd	Road
Rdbd	Roadbed
Rdwy	Roadway
Refl	Reflectorized
R R	Railroad
Rt	Right
R/W	Right of Way
Salv	Salvage
San	Sanitary
S C	Spiral to Curve
SC	Slow Curing
Sc	Spiral Deflection Angle
S D	Sight Distance
S E	Superelevation
Sec	Section
Sec Line Appr	Section Line Approach
Sep	Separation
Serv	Service
Sgr Prep	Subgrade Preparation
Shldr	Shoulder
SP	Special Provision
S P P	Structural Plate Pipe
S P P A	Structural Plate Pipe Arch
S R	South Roadway
SS	Slow Setting or Supplement Specification
S S D	Stopping Sight Distance
S T.	Spiral to Tangent
Sta.	Station
Std.	Standard
Std. Specs.	Standard Specifications
Struct.	Structure
Surf	Surface or Surfacing
Surv	Survey
S W	Sidewalk
S Y	Square Yard
T	Tangent Length (circular curve)
T or Twp	Township
Tel	Telephone
Temp	Temporary
T P	Telephone Pole
Tr	Traffic
Trans	Transverse or Transition
Trtd	Treated
Ts	Tangent Length (curve with spirals)
T S	Tangent to Spiral
U S C & G S	United States Coast and Geodetic Survey
V C	Vertical Curve
V C P	Vitrified Clay Pipe
W M	Water Main
W M V	Water Main Valve
W R	West Roadway
Wrng	Wearing
W S V	Water Service Valve
X-Sec	Cross Section
Xc	Spiral Coordinate
Yc	Spiral Coordinate

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	HES-4-014(007)141	3

HES-4-014(008)144

NOTES

100 030 UNDERGROUND UTILITIES: The contractor shall notify the local utility companies prior to the beginning of construction, so they may determine the location 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 utilities engineer - Bismarck.

704 P01 CONSTRUCTION TRAFFIC CONTROL: When construction activities will encroach on the driving lane, a one-lane closure shall be used in accordance with Standard D-704-19, Type F. During non-working hours, the devices for the Type F one lane closure shall be removed. For work which does not encroach on the driving lane, traffic control shall be in accordance with Standard D-704-24, Type U.

748 P01 CURB & GUTTER TYPE 1: Curb and gutter shall be installed at the locations shown in the plans in accordance with Standard D-748-1, except that the curb shall be 3 inches in height, measured from the gutter line to the top of curb. Any asphalt pavement which is removed in order to form and place the new curb and gutter shall be replaced with hot bituminous pavement. The hot bituminous pavement shall be class 29 using 120-150 asphalt cement @ 6 percent of hot bituminous pavement.

All materials, equipment, and labor required to install the curb and gutter, including furnishing and placing the hot bituminous pavement, shall be included in the price bid for the item "Curb & Gutter Type 1."

754 P01 SIGN SUPPORTS: The sign support "Steel Galvanized Posts - Square Tube Perforated" were designed using a minimum yield strength of 42,000 psi and the design requirements of the "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals." The wind speed of 75 mph was used. The contractor may choose other types of square telescoping steel post in lieu of the ones specified but the contractor must provide equivalent strength posts and meet the FHWA yielding support requirements. The square telescoping steel post shall have all holes punched completely. All metal shall be removed from the punched holes.

764 150 GUARDRAIL POSTS: Wood posts shall be used for the W-beam guardrail, and flared end treatment and transition. The wood posts on the flared end treatment shall be of the shape shown in the plans. Round posts cannot be substituted in the flared end treatment and transition section.

764 301 EMBANKMENT FOR GUARDRAIL INSTALLATION: The embankment material required for guardrail installation may be obtained from within the right of way with the approval of the Engineer. The existing topsoil shall be removed from the area to be disturbed, stockpiled, and replaced when embankment is completed. The disturbed areas shall be seeded with a seed mixture of 50 percent brome grass, 50 percent crested wheat grass at a rate of 25 pounds pure live seed per acre. Fertilizers shall be applied at a rate of 20 pounds phosphorous and 20 pounds nitrogen per acre. Compaction of the embankment shall be in accordance with Section 203.02 I of the Standard Specifications. The inslopes in areas that are to be widened shall be benched in accordance with Section 203.02 F of the Standard Specifications unless otherwise directed by the Engineer. All existing drainage patterns shall be maintained. This may involve some excavation and ditch widening. The embankment will be measured by the number of sites complete and in place. A site is defined as the area of embankment needed to place a completed guardrail on as shown in the plans. The cost for any excavation to maintain the drainage patterns and for benching, seeding, salvaging, stockpiling, and spreading of the topsoil shall be included in the price bid for "Guardrail Embankment, Type C."

764 820 REMOVE 4-CABLE GUARDRAIL & POSTS: The removed 4-cable guardrail and posts shall become property of the contractor and disposed of outside the highway right of way.

The item "Remove 4-Cable Guardrail and Posts" shall be measured by the linear foot of guardrail removed.

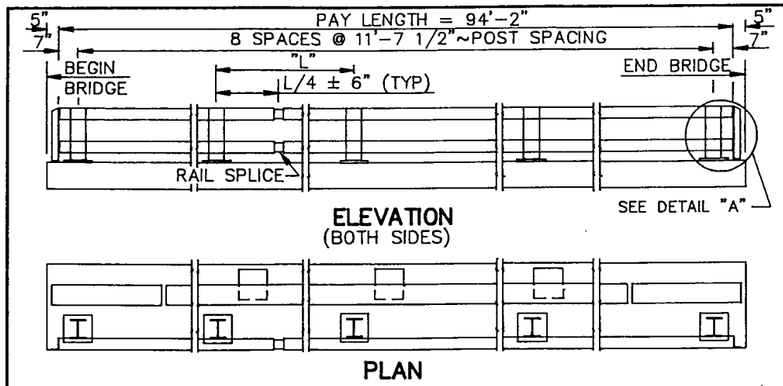
The cost of removing the 4-cable guardrail and posts and disposing of these materials shall be included in the price bid for the item "Remove 4-Cable Guardrail and Posts."

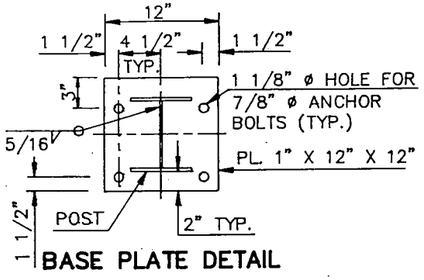
ESTIMATED QUANTITIES

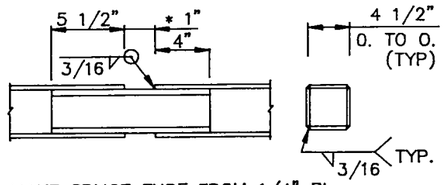
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	HES-4-014(007)141 HES-4-014(008)144	4

SPEC	CODE	ITEM DESCRIPTION	UNIT	HES-4-014(007)141	HES-4-014(008)144	TOTAL
103	0100	CONTRACT BOND	L SUM	1		1
202	0130	REMOVAL OF CURB AND GUTTER	LF	160	160	320
203	0208	GUARDRAIL EMBANKMENT - TYPE C	EA	5	4	9
624	3001	DOUBLE BOX BEAM RAIL RETROFIT (FREE STANDING)	LF	398	188	586
702	0100	MOBILIZATION	L SUM	1		1
704	0100	FLAGGING	M HR	160	100	260
704	1000	TRAFFIC CONTROL SIGNS	UNIT	334	334	668
704	1052	TYPE III BARRICADE	EA	1	1	2
704	1060	DELINEATOR DRUMS	EA	28	14	42
704	1065	TRAFFIC CONES	EA	23	21	44
704	1081	VERTICAL PANELS (BACK TO BACK)	EA	24	24	48
748	0140	CURB & GUTTER - TYPE I	LF	160	160	320
754	0116	FLAT SHEET FOR SIGNS - TYPE 2 (REFL SHEETING)	SF	27		27
754	0209	STEEL GALV POSTS - SQUARE TUBE PERFORATED	LB	200		200
754	0319	HAZARD MARKERS - TYPE III	EA	4	4	8
764	0131	W BEAM GUARDRAIL	LF	345	458	803
764	0139	W BEAM GUARD RAIL - FLARED END TREATMENT & TRAN	EA	6	4	10
764	2040	REMOVE 4 CABLE GUARD RAIL & POSTS	LF	280	280	560

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	HES-4-014(008)144	



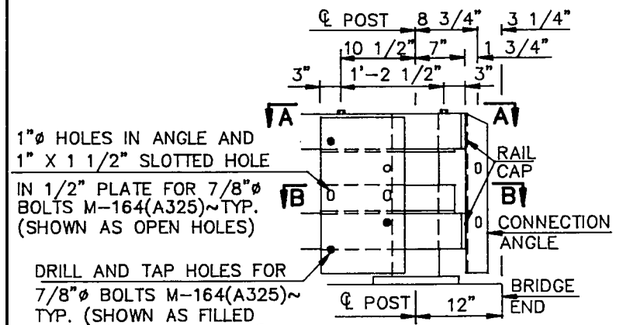


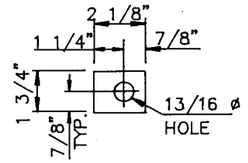


MAKE SPLICE TUBE FROM 1/4" PL. GRIND ALL EDGES PRIOR TO GAVANIZING TO ASSURE PROPER FIT.

* 1" EXPANSION JT. UNLESS NOTED OTHERWISE ON PLANS. EXP. JT. WILL BE NEEDED IN PANEL THAT HAS A DECK EXP. JT.

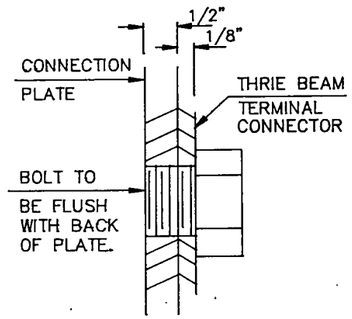
RAIL SPLICE DETAIL



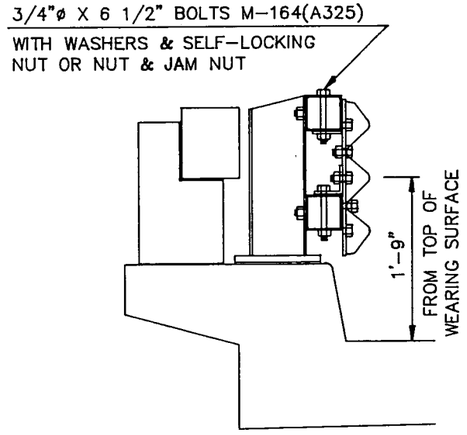


1/4" BAR AASHTO M-183 POSITION WASHERS TO COMPLETELY COVER SLOTTED HOLES

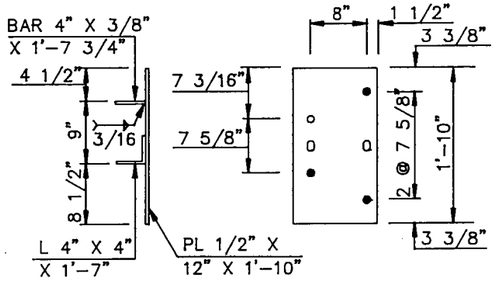
BAR WASHER "C"



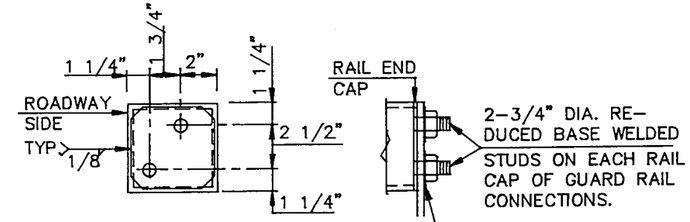
DETAIL "B"



GUARDRAIL CONNECTION DETAILS

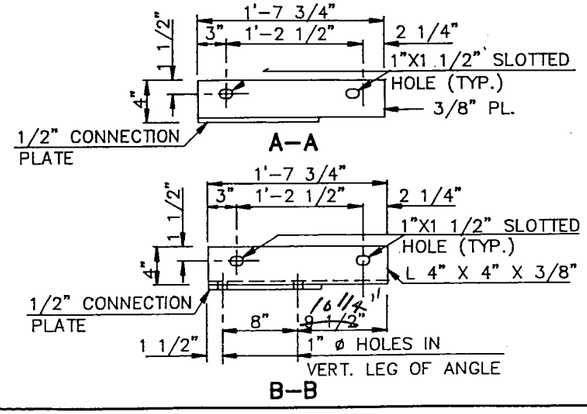


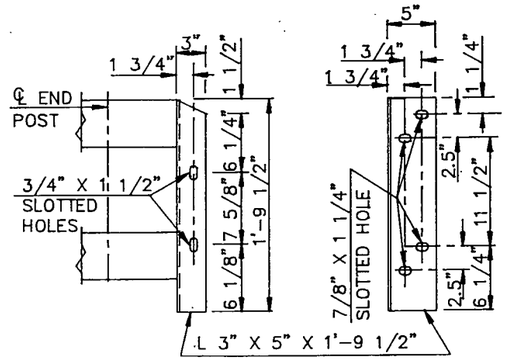
GUARDRAIL CONNECTION PLATES



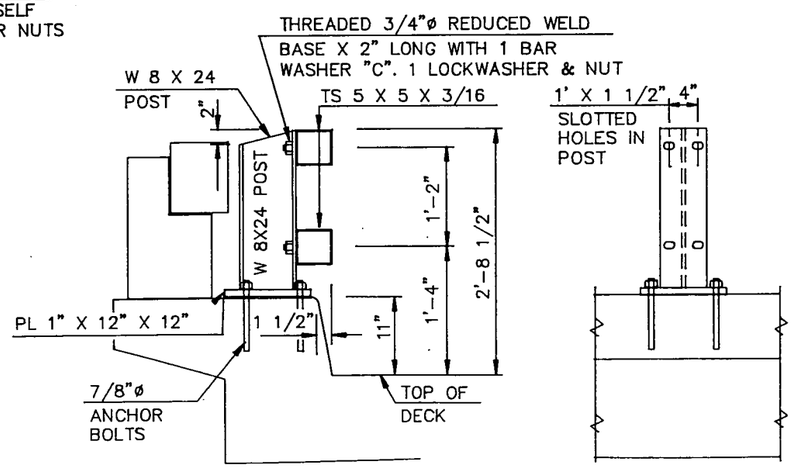
BAR 4 3/4" X 3/16" X 4 3/4" COPE CORNERS 3/4" TO PROVIDE ZINC DRAINS.

RAIL CAP DETAIL





CONNECTION ANGLE



CURB MOUNT POST DETAILS

NOTES:

THE BID ITEM SHALL BE "DOUBLE BOX BEAM RAIL RETROFIT". THE PAY LENGTH SHALL BE END TO END AND IN LINEAR FEET.

RAIL ELEMENTS SHALL BE SQUARE STRUCTURAL TUBING IN ACCORDANCE WITH ASTM SPECIFICATION A 500 GRADE B.

STEEL POSTS, PLATES, BARS & ANGLES SHALL CONFORM TO AASHTO SPECIFICATION M-183, UNLESS OTHERWISE NOTED.

RAILING SHALL BE FABRICATED TO THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE STRUCTURE. POSTS TO BE NORMAL TO GRADE.

PAYMENT FOR THE RAILING SHALL INCLUDE COMPENSATION FOR FURNISHING AND INSTALLING THE GUARDRAIL CONNECTION PLATES.

ALL STRUCTURAL STEEL INCLUDING FASTENERS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION ACCORDING TO AASHTO M111.

THE ANCHOR BOLTS MUST BE ABLE TO DEVELOP IN TENSION THE EQUIVALENT OF A AASHTO M-164 (A325) 7/8"ø BOLT (18,250 LBS). THE ANCHOR BOLTS MAY BE MECHANICAL TYPE, GROUT-IN TYPE OR OTHER TYPE THAT CAN DEVELOP THE REQUIRED TENSION IN THE CONCRETE.

ALL ANCHOR AND SPLICE BOLTS SHALL BE GALVANIZED AND WILL BE AASHTO M-164 (A325).

THE CONTRACTOR SHALL SUBMIT THE SHOP DRAWINGS FOR DOUBLE BOX BEAM RAIL FOR APPROVAL BY THE BRIDGE ENGINEER BEFORE FABRICATION.

QUANTITIES		
DOUBLE BOX BEAM RAIL RETROFIT (FREE STANDING)	188.3	L.FT.

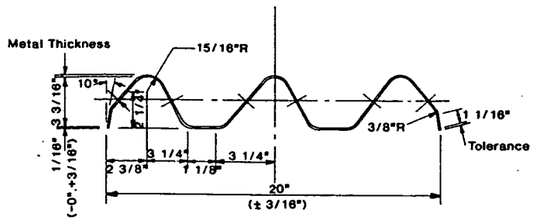
STONE CREEK

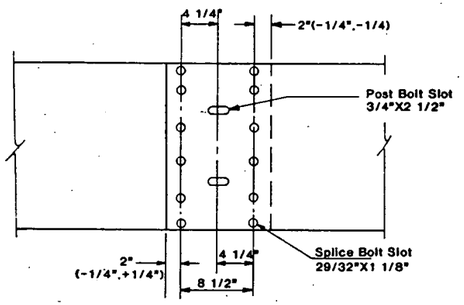
RAIL RETROFIT DETAILS

93LCS35 LPH

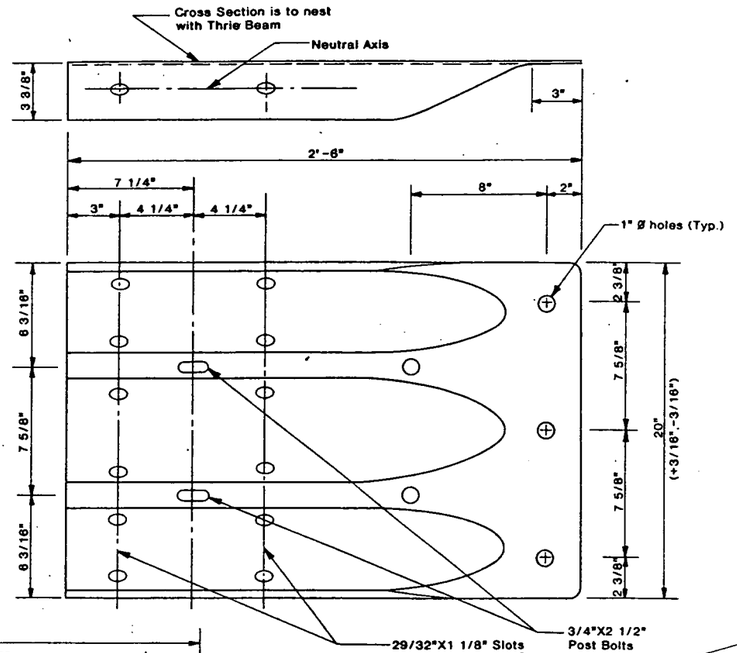
14-144.188-1

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	HES-4-014(007)141	16
		HES-4-014(008)144	

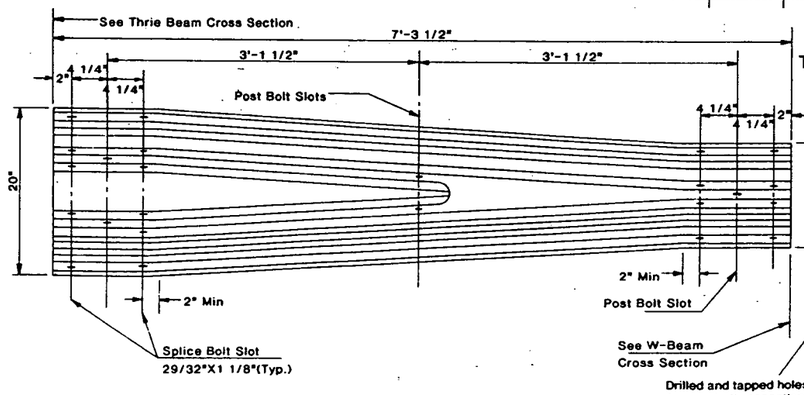




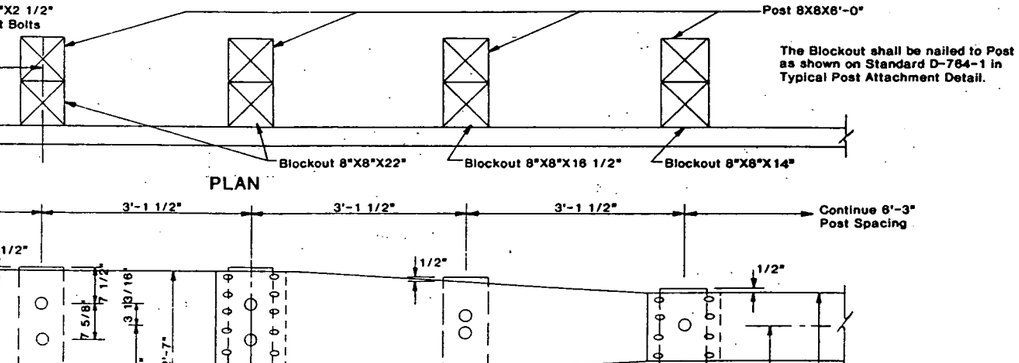
THRIE BEAM



THRIE BEAM TERMINAL CONNECTOR



THRIE TO W-BEAM TRANSITION SECTION

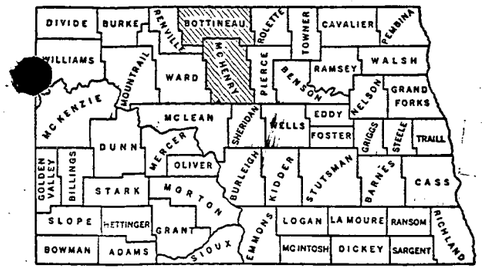


ELEVATION

THRIE BEAM TO W-BEAM TRANSITION AND CONNECTION TO DOUBLE BOX BEAM RAIL RETROFIT

14-144.259 14-141.4/4

FED. ROAD DIV. NO.	STATE	F.A.S. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	S-390(14)		1 -	117



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN BOTTINEAU & MC HENRY COUNTIES

FEDERAL AID SECONDARY PROJECT NO. S-390(14)

GRADE, BITUMINOUS TREATED BASE, AND STRUCTURES

SCALES { LAYOUT SHEET: 1 IN. = 3000 FT.
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
S-390(14)	16.299	16.299
TOTALS	16.299	16.299

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway department Jan. 1956 and approved as standard by the Bureau of Public Roads May 7, 1956 Required Special Provisions dated June 15, 1959 and approved by the Bureau of Public Roads July 8, 1959 and others submitted herewith

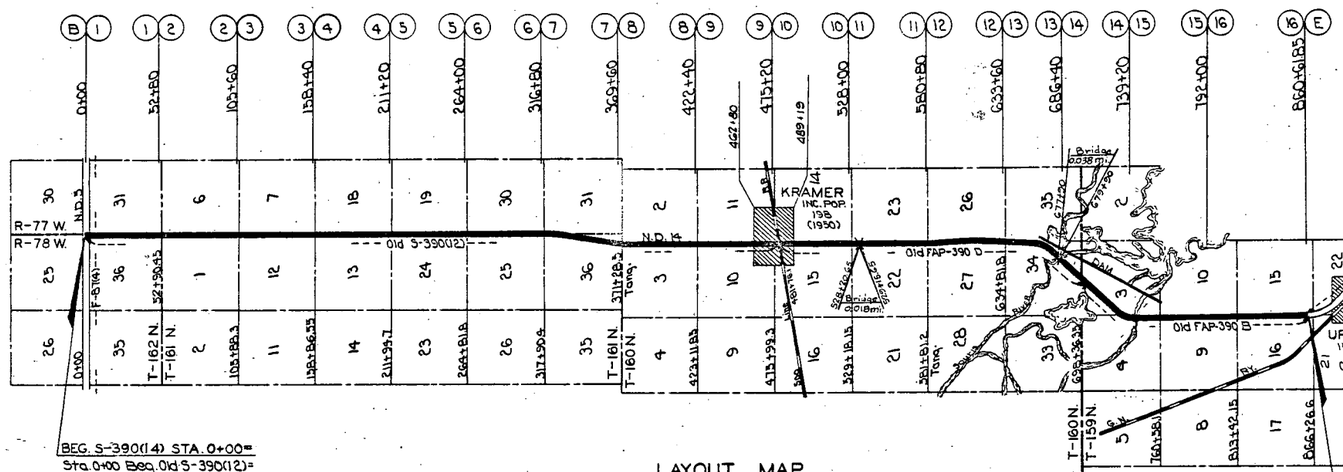
KEY TO CONVENTIONAL SIGNS

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

DESIGN DATA

TRAFFIC	AVERAGE DAILY	EST. 30TH MAX. HR.
N. D. 5 TO KRAMER		
CURRENT TRAFFIC (1960)	218 PASS. 72 TRUCKS 290 TOTAL	38
TRAFFIC FORECAST (1980)	436 PASS. 144 TRUCKS 580 TOTAL	76
KRAMER TO UPHAM		
CURRENT TRAFFIC (1960)	173 PASS. 57 TRUCKS 230 TOTAL	30
TRAFFIC FORECAST (1980)	346 PASS. 114 TRUCKS 460 TOTAL	60

DESIGN SPEED 70 MPH
TRAFFIC CLASSIFICATION "M"
MINIMUM SIGHT DISTANCE (NON PASSING) 600'
MINIMUM SIGHT DISTANCE (SAFE PASSING) 3200'
MINIMUM PASSING SIGHT DISTANCE FOR MARKING 1200'
BRIDGES
MIN. WIDTH 30'
DESIGN LOADING H_{20} S_{16} (1957)

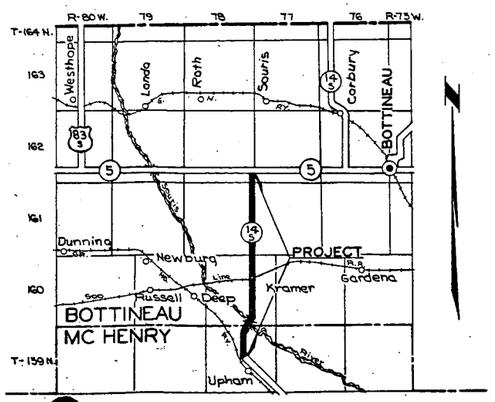


BEG. S-390(14) STA. 0+00=
Sta. 0+00 Beg. Old S-390(12)=
Sta. 199+05.7 on F-87(4)
A point at the N.E. Cor. of Sec. 36, Twp. 162 N. Rge. 78 W.

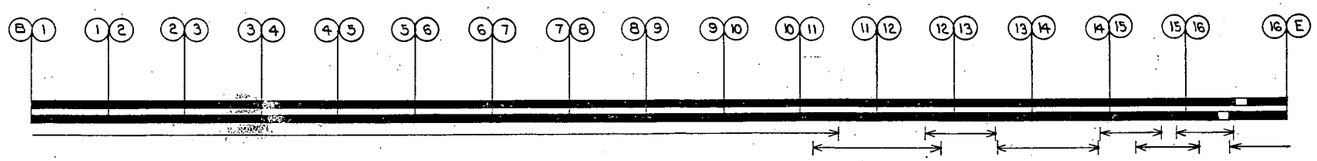
END S-390(14) STA. 860+61.85=
Sta. 153+13.1 on Old FAP-390 B =
Sta. 0+00 Beg. S-390(3)
A point 564.7' N. of the N.W. Cor. of Sec. 22, Twp. 159 N. Rge. 78 W.

LAYOUT MAP

5000' 0 5000'
SCALE-FEET



SKETCH MAP OF PARTS OF BOTTINEAU & MC HENRY COUNTIES



SIGHT DISTANCE DIAGRAM
LEGEND

PASSING ZONES (1200' Min. S.D.)
NON PASSING ZONES
SAFE PASSING SECTIONS (3200' Min. S.D.)

APPROVED DATE 7-14-60

CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

R. E. BRADLEY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

DIVISION ENGINEER DATE

S-390(14)

14-148.259

DIV. NO.	DIST.	PROJECT NO.	YEAR	SHEET NO.	SHEETS
5	N.D.	S-390(14)	21	117	

INSTALL PIPE CULVERTS

Sta. 512+08 Rt. 2-36" FES
Sta. 513+00 ℄ - 36"x132' RCP (Skew 24° Lt. ℄ Bk.)

Sta. 521+30 Lt. - 18"x42' CMP - 2-18" MES
Sta. 531+83 Rt. 2-18" MES
Sta. 532+98 Lt. 2-18" MES
Sta. 535+85 Lt. 2-18" MES
Sta. 539+94 Rt. 2-18" MES

RELAY PIPE CULVERTS

Sta. 512+08 Rt. 36"x26' RCP From Salv.
Sta. 531+23 Rt. 18"x42' CMP From Salv.
Sta. 532+98 Lt. 18"x42' CMP From Salv.
Sta. 535+35 Lt. 18"x42' CMP From Salv.
Sta. 539+94 Rt. 18"x42' CMP From Salv.

INSTALL SODDING

512+08 Rt 20 Sq Yd
513+00 Rt 20 Sq Yd

INSTALL BRIDGE

Sta. 528+68.15 ℄ Dwgs.

REMOVE EXISTING BRIDGE

Sta. 530+36.4 ℄ - 1-Lump Sum

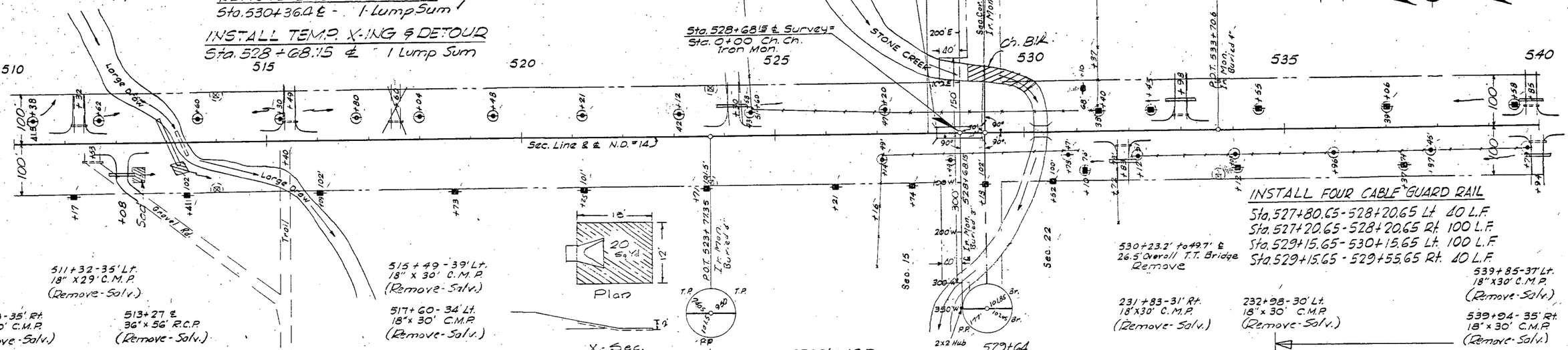
INSTALL TEMP. X-ING & DETOUR

Sta. 528+68.15 ℄ - 1 Lump Sum

INSTALL SIG. SIGN MARKERS

Sta. 514+00 Rt. & Lt. - 2
Sta. 523+77.3 Rt. & Lt. - 2
Sta. 533+70.6 Rt. & Lt. - 2

Bench Marks			
No.	Description	Location	Elev.
56	In. Mon. by P.P.	513+41-101' Rt.	1436.58
57	In. Mon. by P.P.	521+25-101' Rt.	1440.09
58	Large Rock	530+60-293' Lt.	1435.98
59	In. Mon. by P.P.	537+37-74" Rt.	441.25



INSTALL FOUR CABLE GUARD RAIL

Sta. 527+80.65 - 528+20.65 Lt. 40 L.F.
Sta. 527+20.65 - 528+20.65 Rt. 100 L.F.
Sta. 529+15.65 - 530+15.65 Lt. 100 L.F.
Sta. 529+15.65 - 529+55.65 Rt. 40 L.F.

INSTALL COMB. CONC. CURB & GUTTER

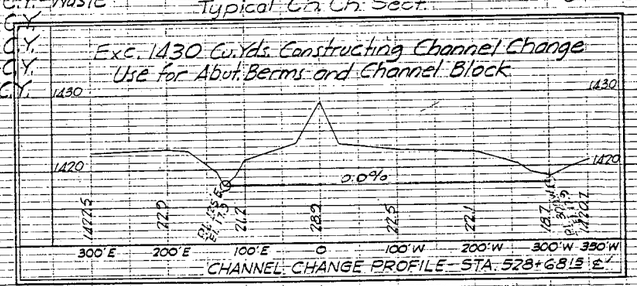
Sta. 527+80.65 to 528+20.65 Lt. - 40 L.F.
Sta. 527+80.65 to 528+20.65 Rt. - 40 L.F.
Sta. 529+15.65 to 529+55.65 Lt. - 40 L.F.
Sta. 529+15.65 to 529+55.65 Rt. - 40 L.F.

Subcut Exc. 875 C.Y.
Exc. 4,799 C.Y.
Emb. 5,674 C.Y.

521+55 Class 2 Exc. 105 C.Y. - Waste
Class 3 Exc. 150 C.Y. - Waste
Class 4 Exc. 834 C.Y. - Waste
Ch. Ch. Exc. 1430 C.Y.
Subcut Exc. 1484 C.Y.
Exc. 11,221 C.Y.
Emb. 12,705 C.Y.

Sta. 515+49 Lt. 200 Cu. Yds. Prov. for P.D.
Sta. 524+30 Lt. 200 Cu. Yds. Prov. for P.D.
Sta. 512+08 Rt. 200 Cu. Yds. Prov. for P.D.
Sta. 531+83 Rt. O.D. Prov.
Sta. 532+98 Lt. 200 Cu. Yds. Prov. for P.D.
Sta. 511+32 Lt. 200 C.Y. Prov. for P.D.

3200' MSD
Safe Passing Section
Typical Ch. Ch. Sect.



Subcut Exc. 1223 C.Y.
Exc. 7,727 C.Y.
Emb. 8,955 C.Y.

INSTALL BRIDGE

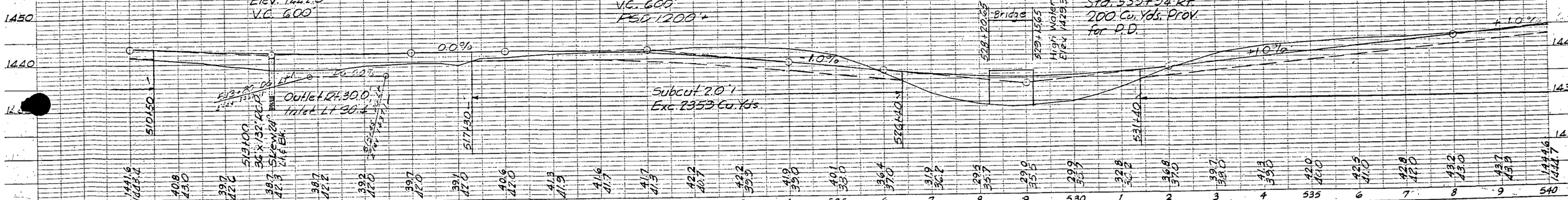
Sta. 528+68.15 ℄
Install 3 Span T-Beam Bridge
Dwg. Nos. 14-1, 14-1-1, H-3238, H-3338, 14-1-2, H-3151, H-0117, H-0501, Std. 7.6 & 14.9

Class 2 Exc.	105	C.Ys. - Waste
Class 3 Exc.	150	C.Ys. - Waste
Class 4 Exc.	834	C.Ys. - Waste
Class AAE-1 Conc.	4.65	C.Ys.
Class AE-1½ Conc.	280.9	C.Ys.
Reinf. Steel	62,036	Lbs.
Treat. Tbr. Piling 30'	1092	L.F.
Treat. Tbr. Piling 35'	231	L.F.
Treat. Tbr. Test Pile 60'	2	Ea.
Br. Bench Marks	1	Set

P.I. 523+00
El. 1434.0
V.C. 600'
Sta. 539+85 Lt.
200 Cu. Yds. Prov. for P.D.
Sta. 539+94 Rt.
200 Cu. Yds. Prov. for P.D.

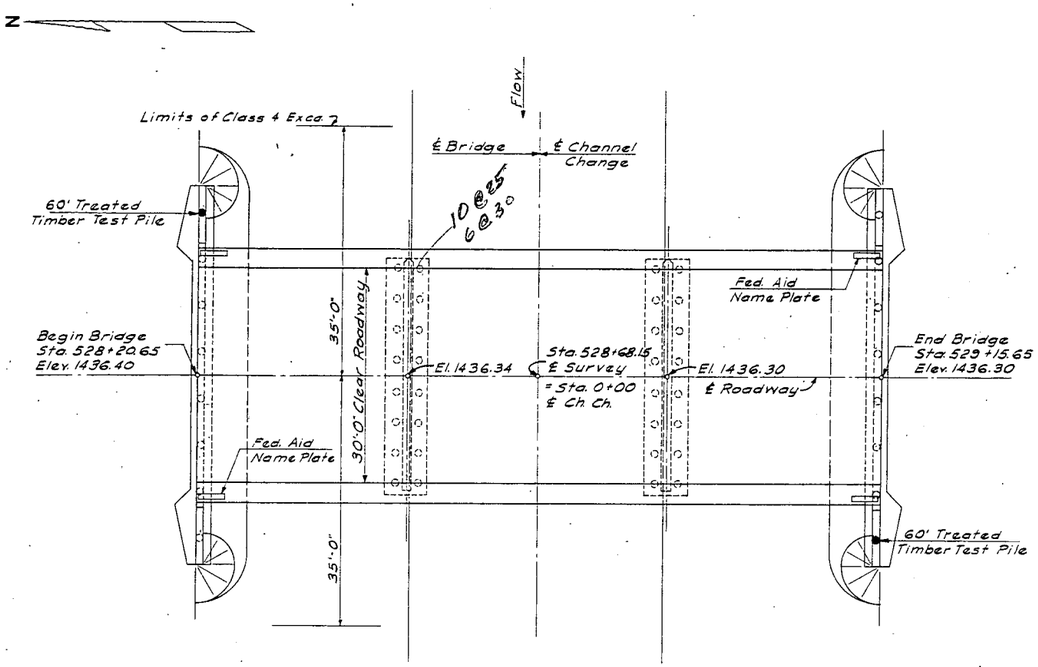
P.I. 513+00
Elev. 1442.0
V.C. 600'

P.I. 521+00
Elev. 1442.0
V.C. 600'
PSD 1200'+

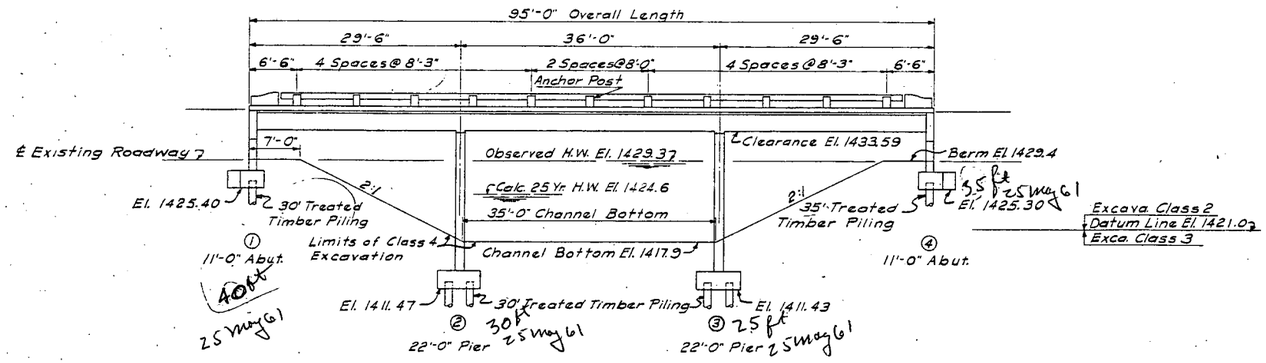


14 - 144.188 14 1/4

BRIDGE CODE NO.	FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
X021	5	N.D.	S-390(14)		34	117



PLAN



ELEVATION

NOTES:

GENERAL:

A vibrating strike-off template shall be used when finishing the deck slab concrete. Care shall be taken that the vibrator is shut off when the forward movement of the template is stopped. The final strike-off shall be made on a fairly long surface without continual starting and stopping.

The cost of furnishing and placing asphalt curb seal, name plates, drain pipes, end post pipe sleeves and other miscellaneous items shall be included in the price bid for Class AE-1½ Concrete.

For rail post spacing and deflection notes see drawing H-315.

For Hydraulic Design Data see drawing 14-1-1.

For Boring Log see drawing 14-1-2.

The existing bridge shall be removed by the Grading Contractor.

The temporary detour shall be constructed, maintained and removed by the Structural Contractor. See Special Provision.

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 the 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'.

The entire curb shall be placed in one continuous operation.

Curb concrete must not be poured until after the shoring beneath the deck slab has been removed.

All concrete below the tops of curbs shall be Class AE-1½ Concrete.

End posts are to be Class AE-1½ and railing Class AE-1 Concrete. In each instance the concrete shall be compacted by vibration.

PILING:

The use of treated Western Larch piling will be permitted providing it conforms to the following additional items not specified in Section 130 of the Standard Specifications:

(a) Retension of preservative - not less than ten pounds per cubic foot.

(b) Penetration of preservative - one half (½) inch and 85% of Sapwood.

Notes continued::

The Structural Contractor will be required to drill pilot holes for Abutment #4 piling to elevation 1420.3 or lower if the hard stratum has not been penetrated.

EXCAVATION:

All structural excavation below elevation 1421.0 except excavation Class 4, the limits of which are shown on this sheet, shall be excavation Class 3.

All structural excavation above elevation 1421.0 except excavation Class 4 shall be excavation Class 2.

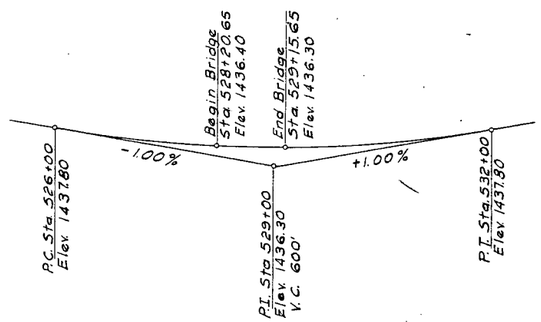
Channel Change Excavation (Class 4 shall extend a distance of 35 feet each side of the centerline and shall conform to the section shown on this sheet in the elevation view.

EMBANKMENT:

The Grading Contractor shall place all embankment at both ends of the bridge above elevation 1429.4.

26.5' T.T. Br. Remove

continue column 2



VERTICAL CURVE DATA

Elevations are to top of Finished Roadway ℄

ESTIMATE OF QUANTITIES (ONE BRIDGE)

SP'L. PRO.	SPEC. NO.	BID ITEM		
	12	REMOVING EXISTING STRUCTURE AT STA. 530+23.2	GRADING ITEM	
	15A	EXCAVATION CLASS 1		CU. YD.
	15B	" CLASS 2	105	CU. YD.
	15C	" CLASS 3	150	CU. YD.
	15D	" CLASS 4	834	CU. YD.
	60AA	CONCRETE CLASS AAE-1	4.65	CU. YD.
50	60A	" CLASS AE-1 1/2	280.9	CU. YD.
	52A	REINFORCING STEEL (INTERMEDIATE GRADE)	62,036	LB.
	63A	STRUCTURAL STEEL		LB.
	64A	UNTREATED TIMBER		M.B.M.
	64B	TREATED TIMBER		M.B.M.
	65A	UNTREATED TIMBER PILING	@ FT.	LIN. FT.
151	65B	TREATED TIMBER PILING	39 @ 30 FT. 1092	LIN. FT.
151	65B	TREATED TIMBER PILING	7 @ 35 FT. 231	LIN. FT.
	66K	UNTREATED TIMBER TEST PILES		EACH
151	65L	TREATED TIMBER TEST PILES	@ 60 FT. 2	EACH
151	65L	TREATED TIMBER TEST PILES		EACH
SP'L. PROV.	84	TEMPORARY CROSSING AND DETOUR (STA. 528+68.15)	LUMP SUM	
		BRIDGE BENCH MARKS	ONE	SET.

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
	Ir. Mon. by P.P.	Sta. 513+41~101.5' Rt.	1436.58
	Ir. Mon. by P.P.	Sta. 521+25~101' Rt.	1440.09
58	Large Rock	Sta. 530+60~293' Lt.	1433.98
59	Ir. Mon. by P.P.	Sta. 537+37~74.5' Rt.	1441.25

PILE LOADING

LOCATION	DEAD LOAD + EARTH	LIVE LOAD	EARTH O. T. M.	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	LONG. FORCE	DESIGN LOAD	MIN. REQ'D. BEARING	MINIMUM * PENETRATION
Abutment	16.33 T.	5.64 T.						21.97 T.	30.0 T.	15'
Pier	14.48 T.	8.76 T.						23.24 T.	30.0 T.	15'

* Below Bottom of Footing in ft.

1961 FEDERAL AID PROJECT S-390(14) NORTH DAKOTA 14-1

FEDERAL AID NAME PLATE
2 REQUIRED
(See drawing no. H-0117 for location on end post.)

DESIGN STRESSES:
fc = 1200 psi
fs = 20000 psi (Reinforcing Steel)
fs = 18,000 psi (Structural Steel)

STRUCTURAL DRAWINGS

GENERAL DRAWING THIS SHEET & 14-1-1
SUBSTRUCTURE H-3238, H-3338, 14-1-2
SUPERSTRUCTURE H-3151, H-0117, H-0501, ST'D. 7.6, ST'D. 14.9

DESIGN LOADING H20-S16(1957)

SCALE 1 INCH = 10 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

STONE CREEK
BRIDGE LAYOUT

PROJECT S-390(14) STA. 528+68.15

BOTTINEAU COUNTY

APPROVED

1/25/60 DATE

Joseph R. Kirby BRIDGE ENGINEER

JOSEPH R. KIRBY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

CHECKED BY C.E.G. MADE BY C.E.G. CHECKED BY G.F.E. QUANTITIES

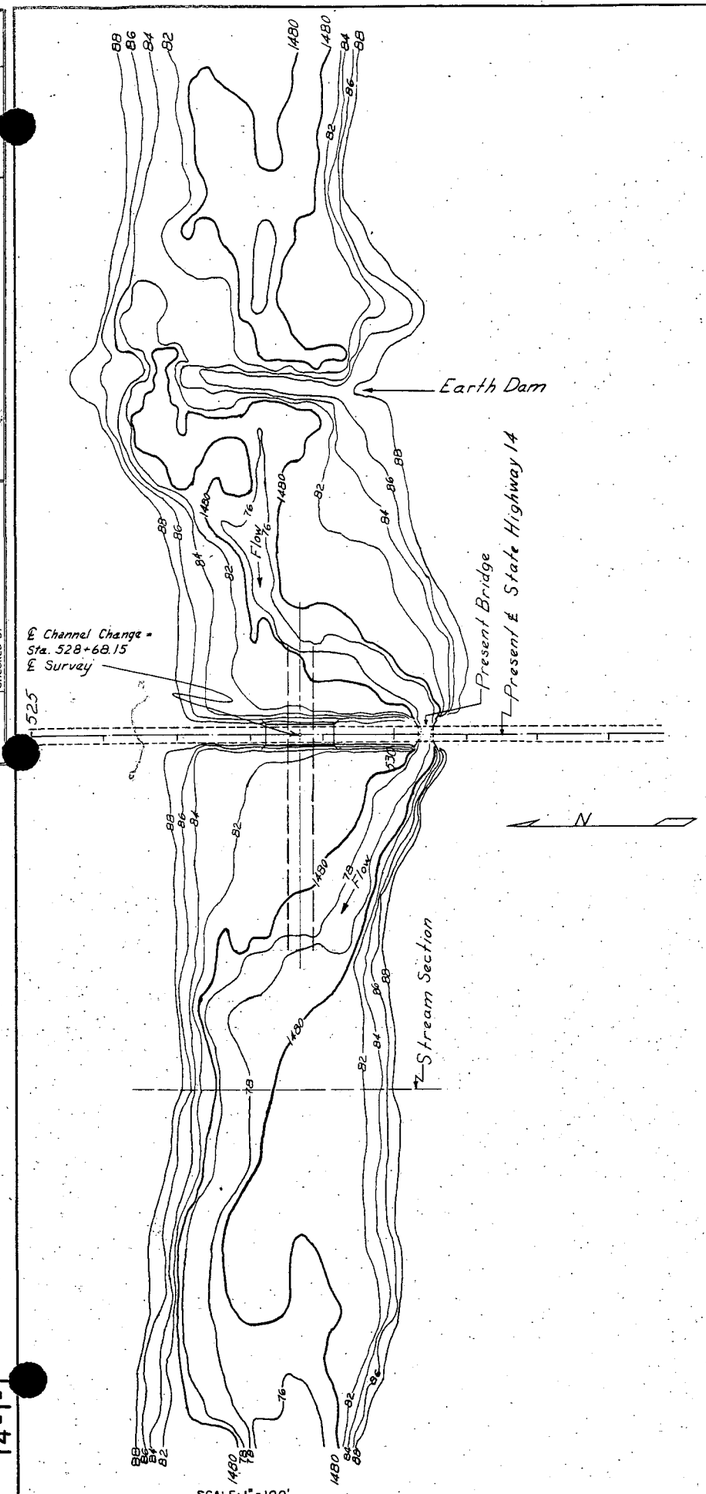
14-1

14-1

14-144.188

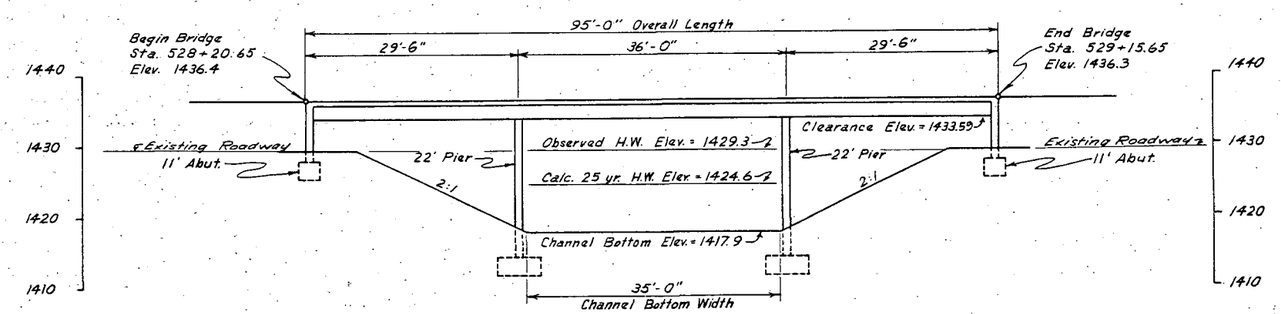
FED. ROAD DIV. NO.	STATE	F.A.S. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	S-390(14)		35	117

QUANTITIES | MADE BY | CHECKED BY



HYDRAULIC DESIGN DATA

DRAINAGE AREA	122.5 SQ. MI.
DESIGN FREQUENCY	25 YR.
DESIGN DISCHARGE	1490 CFS
STREAM GRADIENT	0.000747 FT./FT.
STREAM VELOCITY	3.04 FPS
VELOCITY UNDER BRIDGE	4.98 FPS
DEPTH OF FLOW	6.5 FT.
WATERWAY PROVIDED BELOW HIGH WATER	299 SQ.FT.
WATERWAY PROVIDED BELOW CLEARANCE	1035 SQ. FT.
FREEBOARD PROVIDED	9.4 FT.
MINIMUM WATER ELEVATION	STREAM INTERMITTENT



ELEVATION

SCALE·1"=10'

BRIDGE NO. 14-1

STONE CREEK BRIDGE

TOPOGRAPHIC LAYOUT

PROJ. S-390(14) STA. 528+68.15

BOTTINEAU COUNTY

14-1-1

14-1-1

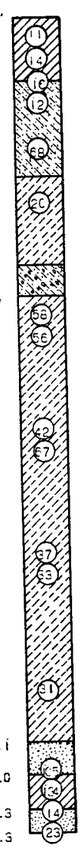
14-144.188

FED. ROAD DIV. NO.	STATE	F.A.S. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	S-390(14)		36	117

QUANTITIES MADE BY CHECKED BY

1430 1425 1420 1415 1410 1405 1400 1395 1390 1385 1380 1375 1370 1365 1360 1355 1350 1345 1340 1335

Final Water Level - Elowing Well

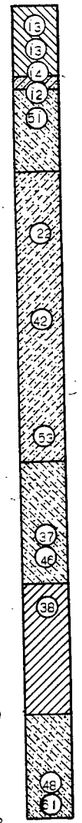


A6	Dark gray brown clay - Pliable - Stiff
A2-4	Brown sandy loam - Few lenses and stratifications of clay - Fine to course grained - Permeable - Medium dense to very dense - Encountered water at 7.8'
A6	Dark gray clay loam - Even mixture of soil seperates - Pliable - Stiff
A6	Gray brown sandy gravelly clay loam -
A4	Dark gray clay loam - Even mixture of soil seperates - Occasional rock fragments & sandy loam stratifications - Tenacious - Impervious - Hard
A1-b	Gray loamy sand - Course gradation - Permeable - Very dense - Water Bearing - Water under pressure from this layer
A6	Gray clay - Lean - Impervious - Very hard
A1-b	Medium to course gradation - Permeable - Medium dense

BORING NO.1

STA. 528+21.15 ℄ 27' RT.

Final Water Level - 1.6'

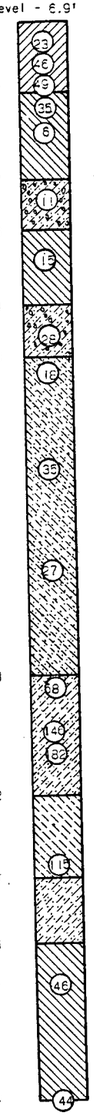


A6	Gray brown clay - Sandy at top of layer - Plastic - Medium stiff
A6	Tan sandy clay - Plastic - Medium stiff
A2-4	Brown sandy loam - Fine & course sand seperates - Fairly permeable - Some plasticity - Very dense
A6	Dark gray sandy clay loam - Some lenses and stratifications of sandy loam - Occasional rock fragments - Compact but fairly pliable - Very stiff to hard
A2-4	Gray sandy loam - Fine grained - Variable clay content - Dense
A6	Dark gray clay - Lean - High sand content - Slightly pliable - Impervious - Hard
A2-4	Gray sandy loam - Stratifications of sand predominantly - Fine gradation - Variable clay content - Very dense

BORING NO.2

STA.528+68.15 ℄ 27' LT

Final Water Level - 6.9'



A6	Brown tan clay - Embankment material - Compact - Lean
A6 & A2-4	Dark gray brown clay - High sand content and stratifications of sandy loam - Lean - Sandy layers permeable - Medium stiff - Encountered water at 8.5'
A2-4	Gray brown sandy gravelly loam - Permeable - Water bearing - Medium dense
A6	Gray brown clay - Lean - High sand content - Pliable - Very stiff
A2	Gray brown sandy gravelly loam - Pea gravel and fine to medium sand seperates - Permeable - Dense
A6 & A4	Dark gray brown sandy clay loam - High fine to course sand seperate - Occasional stratifications of sandy loam - Pliable - Tenacious - Very stiff - Silty near lower part of horizon
A2-4	Dark gray sandy loam - Fine gradation - Variable plasticity & clay content - Very dense - Contains some stratifications of loamy sand
A4	Gray silt loam (Fragipan) - Very compact - Impervious - Very hard
A2-4	Dark gray sandy loam - Predominantly fine grained sand fraction - Permeable - Dense - Water Bearing
A7-6	Dark gray clay (clay pan) - Lean - High content of shale particles - Impervious - Hard

BORING NO.3

STA. 529+15.15 ℄ 14' RT.

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.

BRIDGE NO. 14-1

BORING LOG

S-390(14)

BOTTINEAU COUNTY

14-1-2

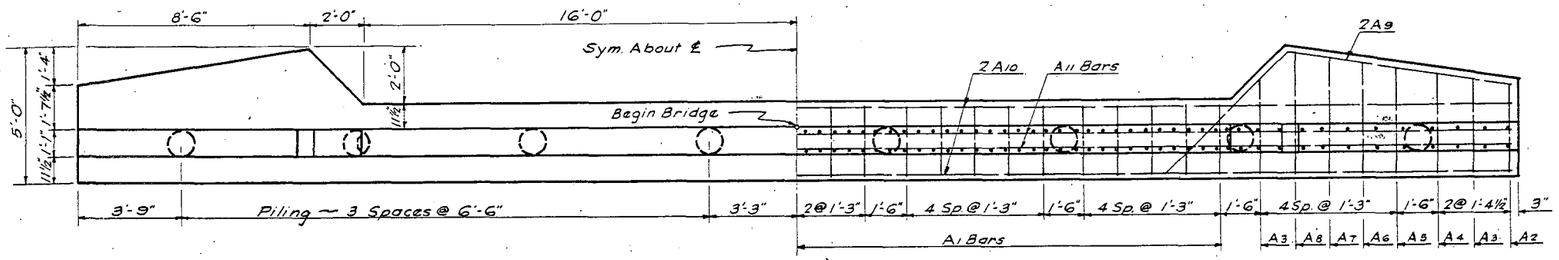
14-1-2

14-144.188

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	N.D.	S-390(14)		37	117

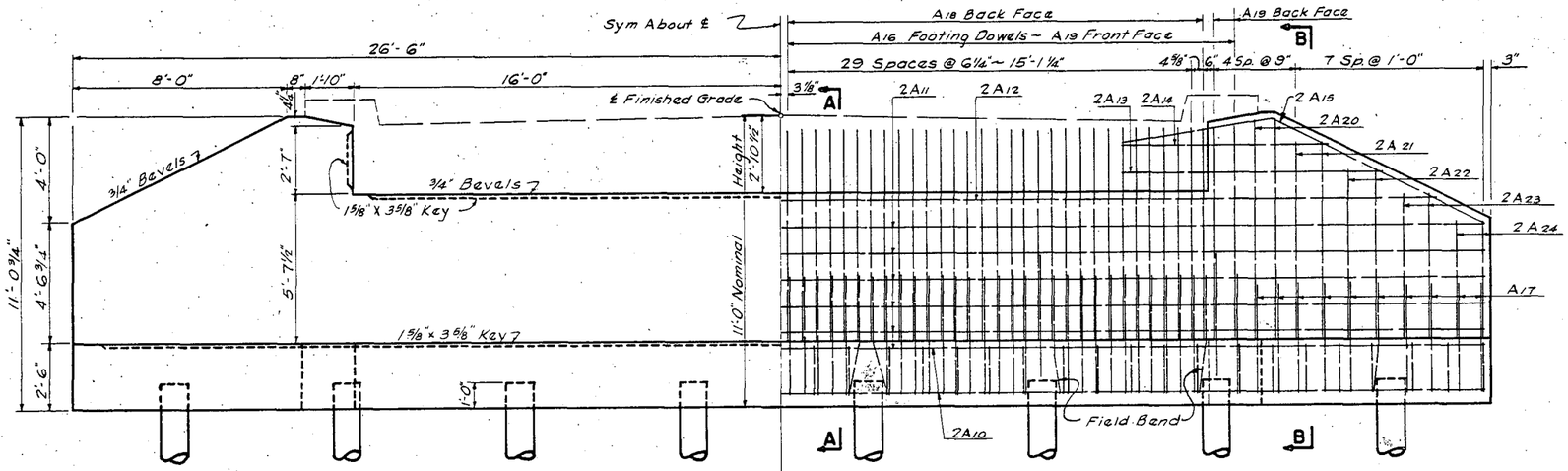
BAR LIST (One Abut.)

MARK	NO.	SIZE	LENGTH	SHAPE
A1	25	4	9'-6"	Bent
A2	2	4	10'-10"	"
A3	4	4	11'-4"	"
A4	2	4	11'-8"	"
A5	2	4	12'-2"	"
A6	2	4	12'-6"	"
A7	2	4	13'-0"	"
A8	2	4	13'-4"	"
A9	4	8	14'-6"	"
A10	8	8	28'-0"	Str.
A11	24	5	27'-6"	"
A12	4	6	25'-9"	"
A13	4	5	9'-9"	"
A14	4	5	7'-9"	"
A15	4	6	14'-6"	Bent
A16	66	6	9'-9"	"
A17	20	5	9'-0"	"
A18	62	8	8'-0"	Str.
A19	70	6	8'-0"	"
A20	8	6	8'-3"	"
A21	8	5	7'-6"	"
A22	8	5	6'-6"	"
A23	8	4	5'-6"	"
A24	8	4	4'-6"	"



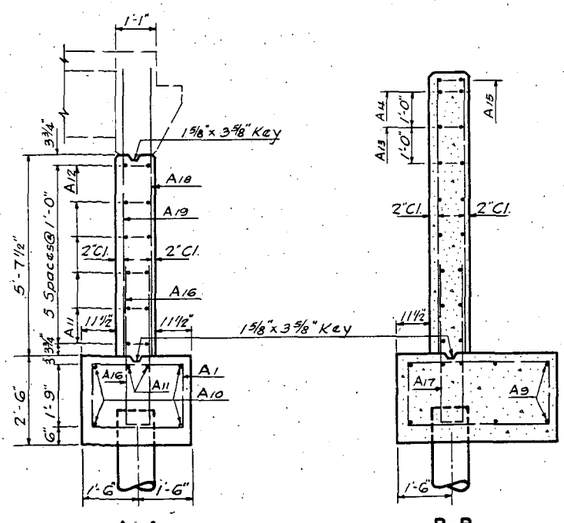
PLAN

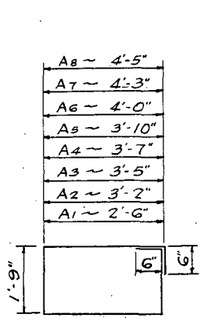
Half Showing Dimensions Half Showing Footing Reinforcing Steel

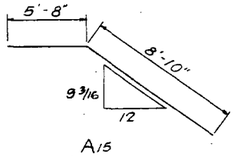


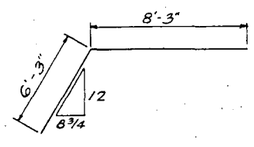
ELEVATION

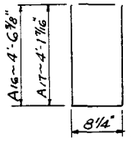
Half Showing Dimensions Half Showing Reinforcing Steel











BENT BAR DETAILS

QUANTITIES (One Abut.)

Concrete Class AE-1½	30.1 C.Y.
Reinforcing Steel	5633 lb.
Piling (See Layout)	
Excavation (See Layout)	

11'-0" ABUTMENT FOR T-BEAM SPANS 30' ROADWAY

H-3238

H-3238

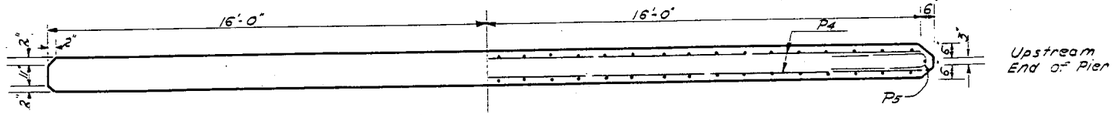
H20 S16 Loading
July 1960

CHECKED BY RFD
MADE BY CEG
QUANTITIES
CHECKED BY GFE

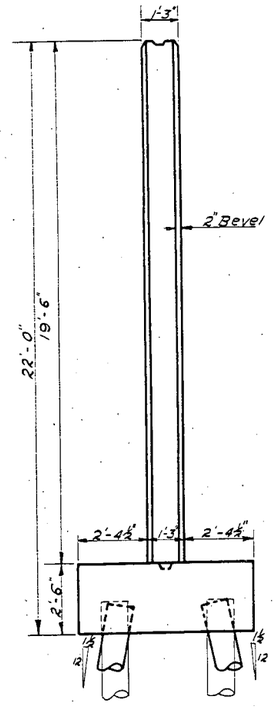
14-144.188

DIST. NO.	STATE	FED. AID PROJ. NO.	YEAR	NO.	SHEETS
5	N.D.	S-3803(4)		38	117

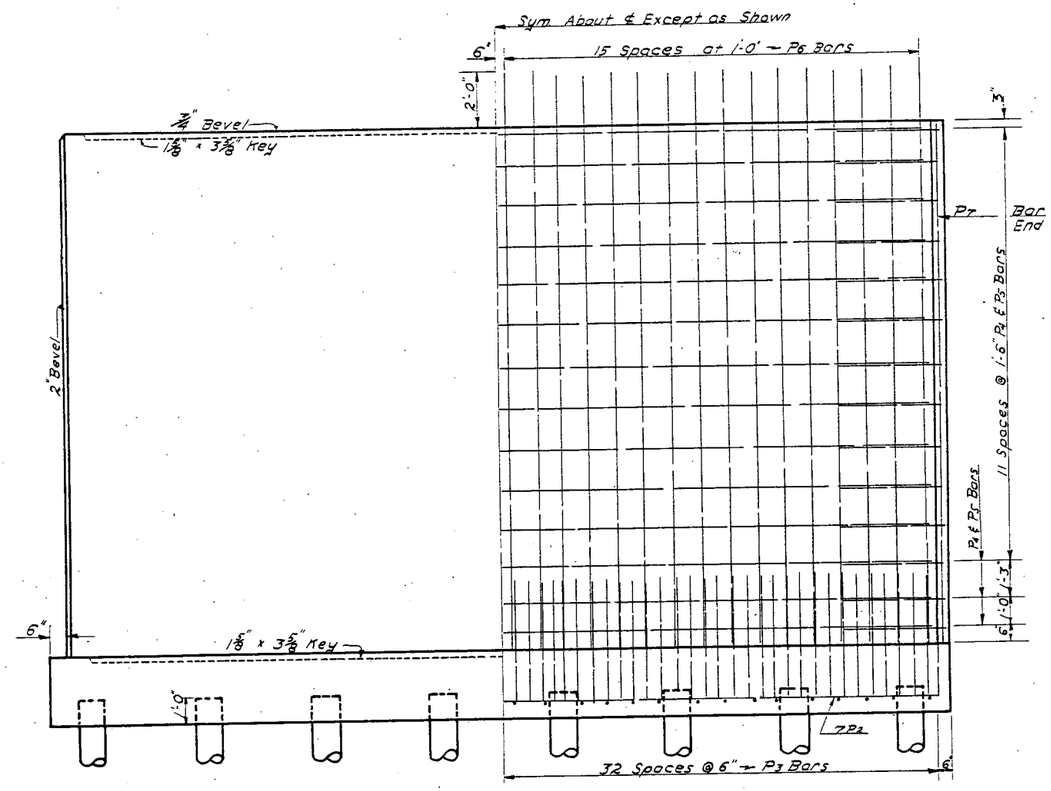
BAR LIST (ONE PIER)				
MARK	NO.	SIZE	LENGTH	SHAPE
P1	30	5	6-9	Bent
P2	7	6	32-6	Str.
P3	64	5	9-6	Bent
P4	28	4	31-6	Str.
P5	28	4	5-3	Bent
P6	64	6	21-6	Str.
P7	1	6	19-3	Str.



TOP VIEW

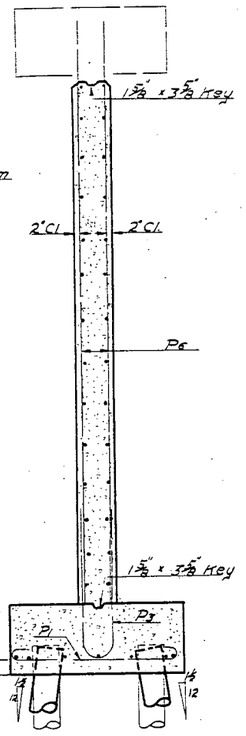


END VIEW

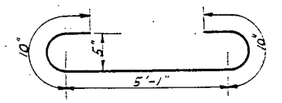


ELEVATION

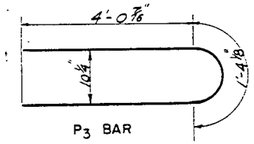
Half Showing Dimensions — Half Showing Reinforcement



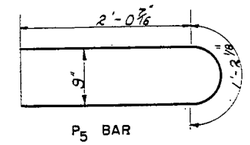
℄ SECTION



P1 BAR

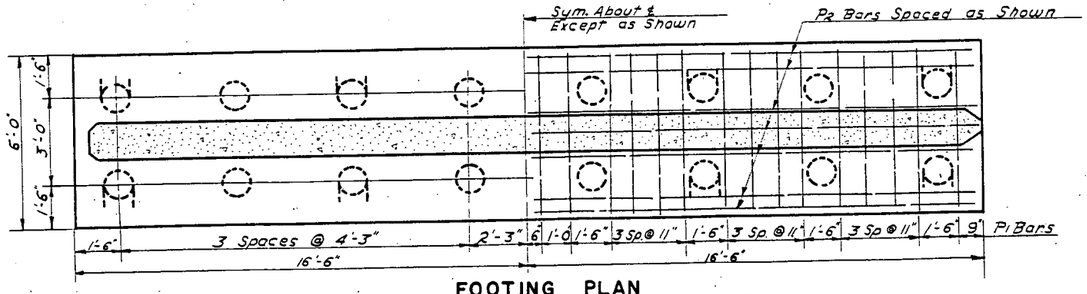


P3 BAR



P5 BAR

BENT BAR DETAILS



FOOTING PLAN

Half Showing Dimensions — Half Showing Reinforcing

QUANTITIES (One Pier)	
Concrete Class AE-1½	47.0 cu.
Reinforcing Steel	4263 lb.
Piling (See layout)	
Excavation (See layout)	

22' PIER DETAILS FOR T-BEAM SPANS

30' ROADWAY

H-3338

H20 S16 loading
July 1960

QUANTITIES MADE BY C.E.G. CHECKED BY R.E.P.

H-3338

14-144.188

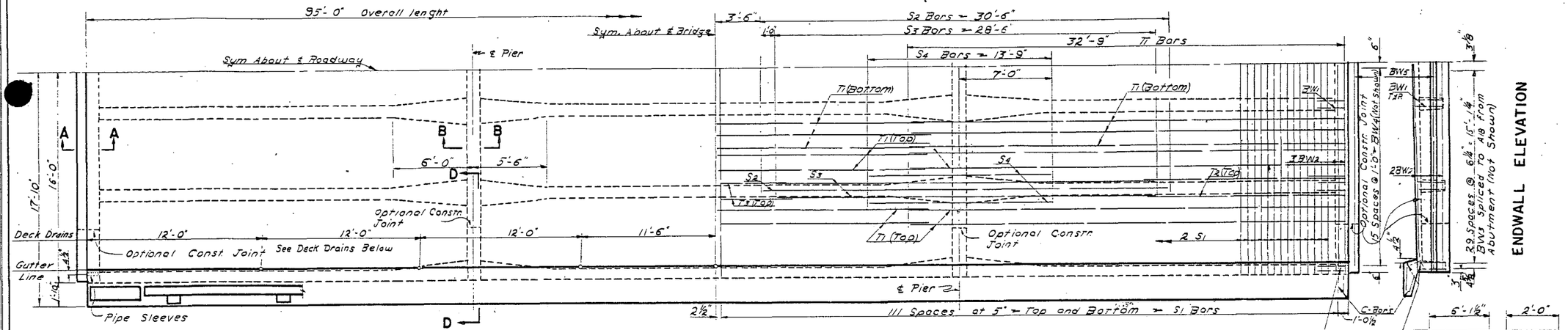
FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	3390(A)		33	117

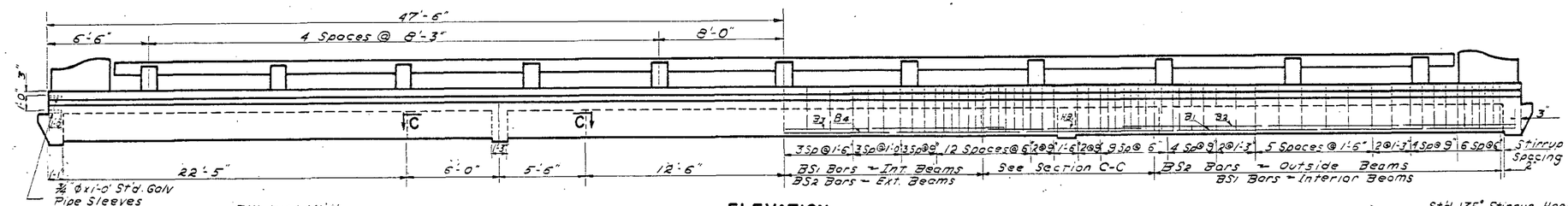
BAR LIST

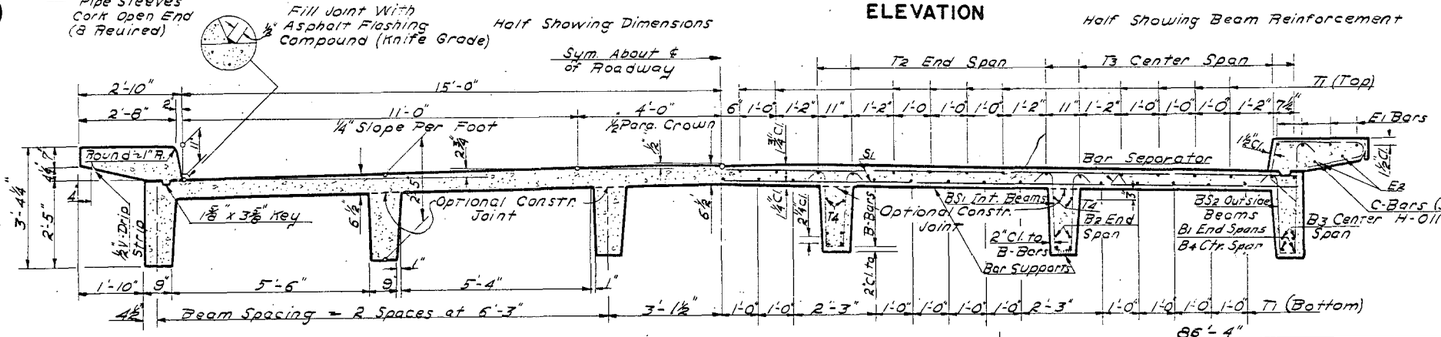
MARK	NO	SIZE	LENGTH	SHAPE
T1	135	4	32'-9"	Str.
T2	24	4	16'-0"	"
T3	12	4	12'-3"	"
T4	24	8	33'-9"	"
S1	448	4	31'-9"	"
S2	8	10	30'-6"	"
S3	24	11	28'-6"	"
S4	20	10	13'-9"	"
C	216	4	6'-6"	Bent
D1	4	6	31'-9"	Str.
E1	24	5	33'-0"	"
E2	12	4	32'-9"	"
E3	12	6	14'-0"	"
B1	24	11	29'-3"	"
B2	24	11	25'-6"	"
B3	12	11	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	96	4	3'-11"	"
HS2	128	4	3'-8"	"
HS3	116	4	3'-5"	"
HS4	68	4	4'-3"	"
BW1	24	6	7'-0"	Bent
BW2	12	4	31'-9"	Str.
BW3	124	6	8'-5"	Bent
BW4	64	5	4'-0"	"
BW5	2	6	31'-6"	Str.

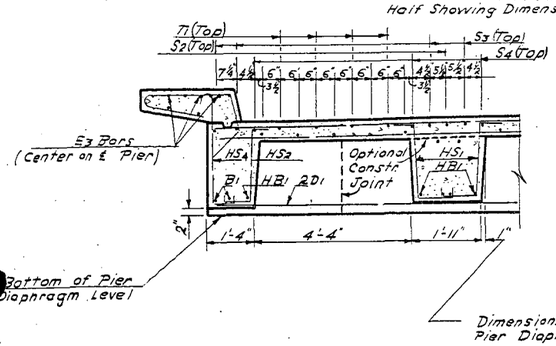
RAILING BAR LIST (See H-0117)

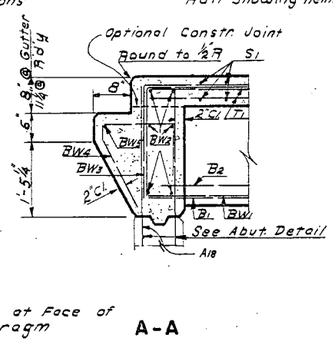
P10	50	5	4'-0"	Bent
P11	5	5	4'-6"	"
P12	44	5	4'-10"	"
P13	48	3	3'-8"	"
P14	40	3	2'-8"	"
RC	152	3	2'-8"	Bent
R1	12	5	39'-3"	Str.
R2	12	5	30'-3"	"
R3	12	5	21'-3"	"

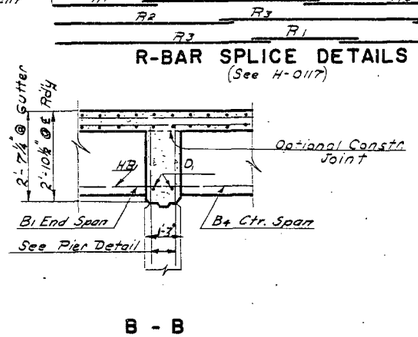


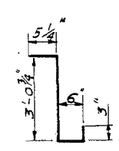


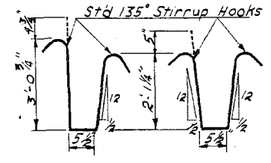


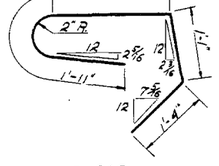


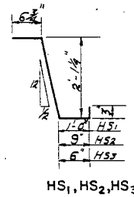


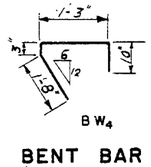


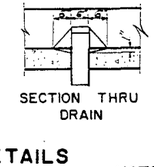


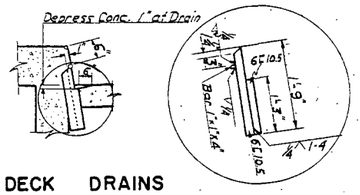




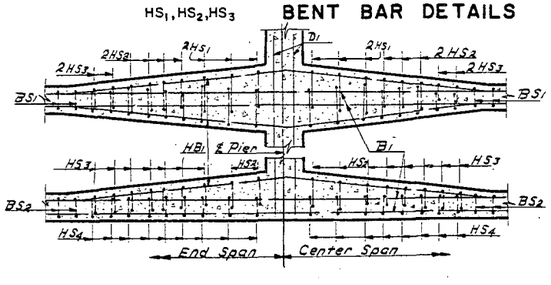








BENT BAR DETAILS



NOTE: This Deck Drain Detail supercedes 3" ϕ pipe drains called for on Drawing No. H-0117.

NOTES:

Provide 3/16 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-1½ *	1267 cu.yd.
Concrete Class AE-1	4.63 cu.yd.
Reinforcing Steel **	42,244 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
July , 1960

H-3151

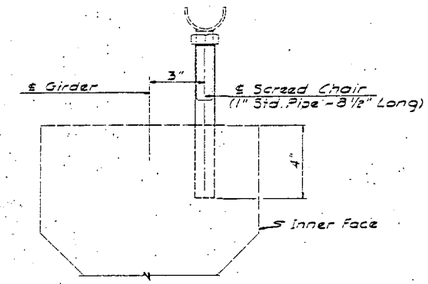
QUANTITIES MADE BY L.H.&C.E.G. CHECKED BY G.E.E.

H-3151

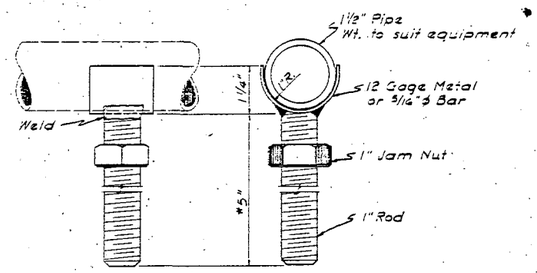
1-144 - 10-72

14-144.188

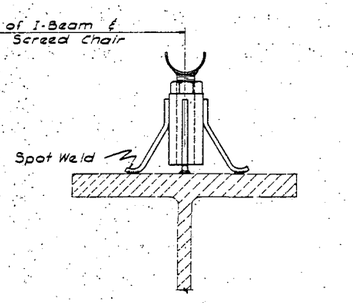
S 390(14) 40 117



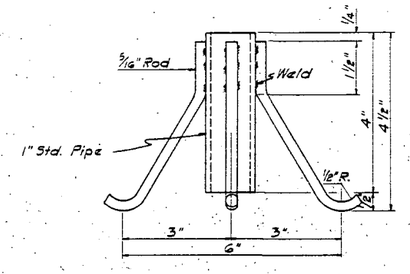
SCREED CHAIR IN PRESTRESSED GIRDER
(Outside Girders Only)



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 1 1/2" 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

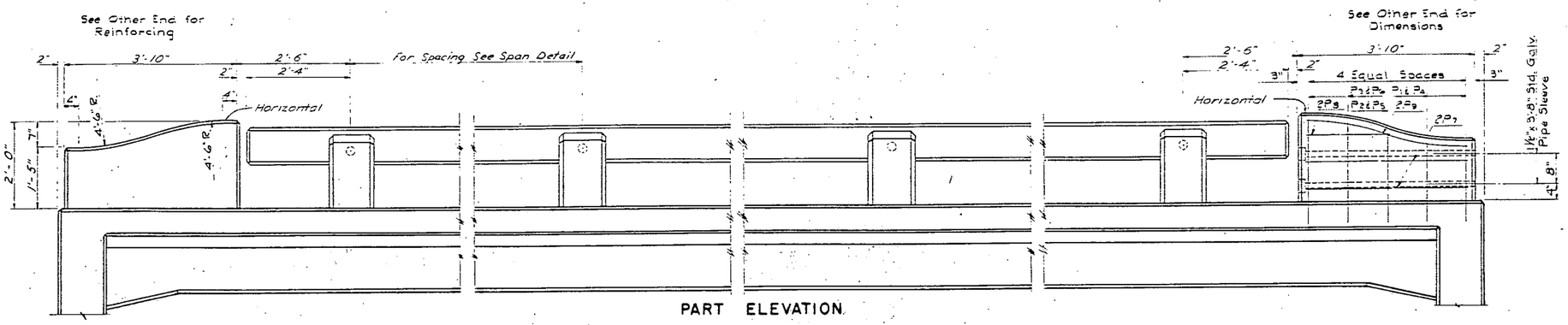
SCREED CHAIR AND ADJUSTABLE SCREED HOLDER

APPROVED: 1-6-59 (DATE)
Joseph R. Kirby (BRIDGE ENGINEER)

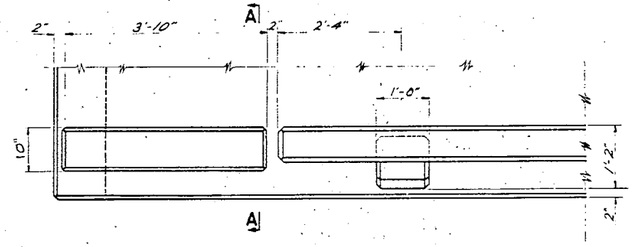
H-0501

14-144,188

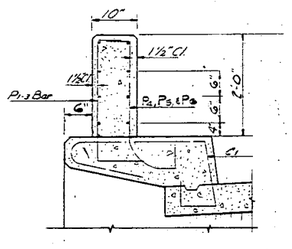
FED. ROAD DIV. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	5390(14)		41	117

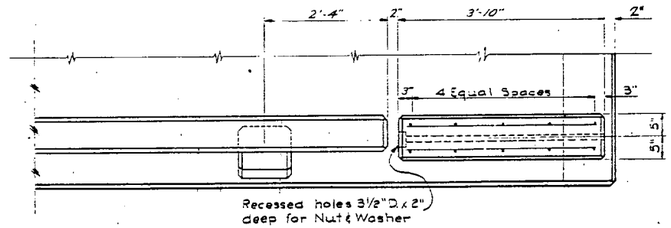


PART ELEVATION

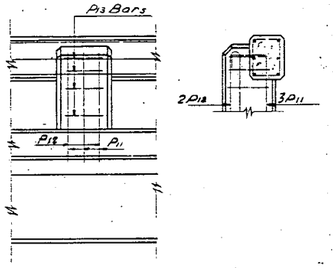


PART PLAN

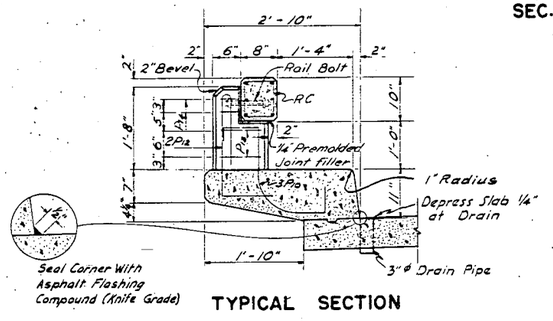




PART PLAN

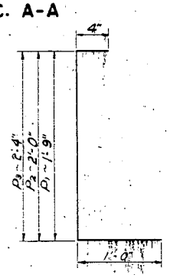


ANCHOR POST DETAIL
See Layout For Placement

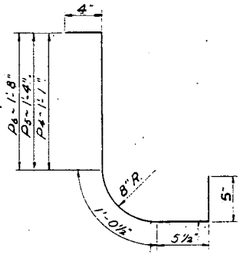


TYPICAL SECTION

SEC. A-A



P1, P2 & P3 BARS



P4, P5 & P6 BARS

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'-10"	Bent
P13	*	3	3'-8"	Bent
P14	*	3	2'-8"	Bent
RC	*	3	2'-8"	Bent
R**	**	5	* *	Str.

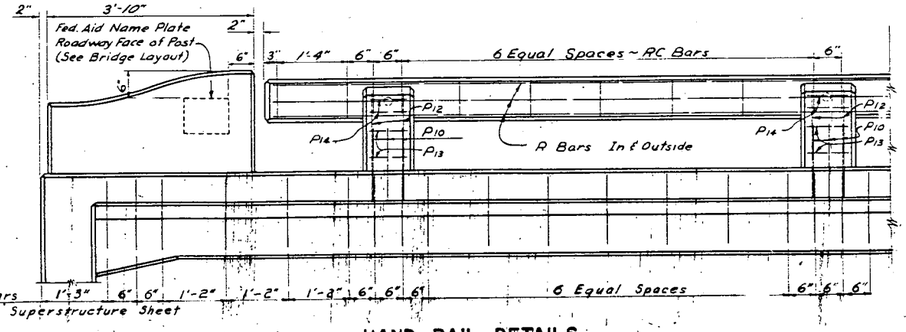
* Number of bars shown on superstructure sheet.
** Number, length & splicing information of R bars shown on superstructure sheet.

BAR LIST
(4 END POSTS)

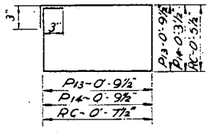
MARK	NO.	SIZE	LENGTH	SHAPE
P1	8	5	3'-1"	Bent
P2	4	5	3'-4"	"
P3	8	5	3'-8"	"
P4	8	5	3'-4"	"
P5	4	5	3'-7"	"
P6	8	5	3'-11"	"
P7	16	4	3'-6"	Str.
P8	8	4	3'-9"	Str.
P9	8	5	3'-9"	Field Bend

QUANTITIES ~ 4 END POSTS ✝	
Concrete Class A-1½	0.8 Cu.Yd.
Reinforcing Steel	224 Lbs.

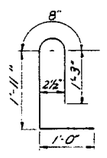
✝ Railing and end post quantities are included in slab quantities on superstructure sheet.



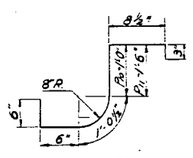
HAND RAIL DETAILS



P13, P14 & RC BARS

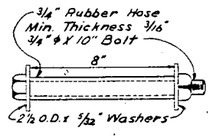


P12 BARS



P10 & P11 BARS

BENT BAR DETAILS



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

STANDARD RAILING DETAILS

NOTES:

All concrete above top of curb shall be Class A-1 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.

CHECKED BY: B.G.N. 8/16/61
MADE BY: C.E.G.
CHECKED BY: B.G.N.
QUANTITIES MADE BY: C.E.G.
CHECKED BY:
TRACING

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