

DESIGN DATA			
Traffic	Average Daily (Pass, Trucks, Total)		
Reference Point	198.717	208.72	221.712
Current 2015	1275, 895, 2170	1730, 815, 2545	2170, 850, 3020
Forecast 2035	1825, 1335, 3160	2475, 1215, 3690	3105, 1270, 4375
Clear Zone Distance: 32 Feet		Design Speed: 65 mph	
Minimum Sight Dist. for Stopping: 645 Feet		Bridges: 0052-216.127 HS 45	
Sight Dist. for No Passing Zone: 1100 Feet		0052-222.340 HS 42	
Pavement Design Life (years) 20			
Design Accumulated One-way		ESALs: 3,902,158	

JOB # 19
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

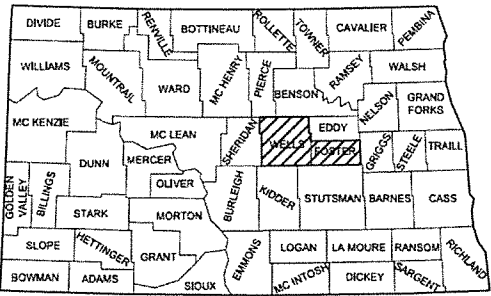
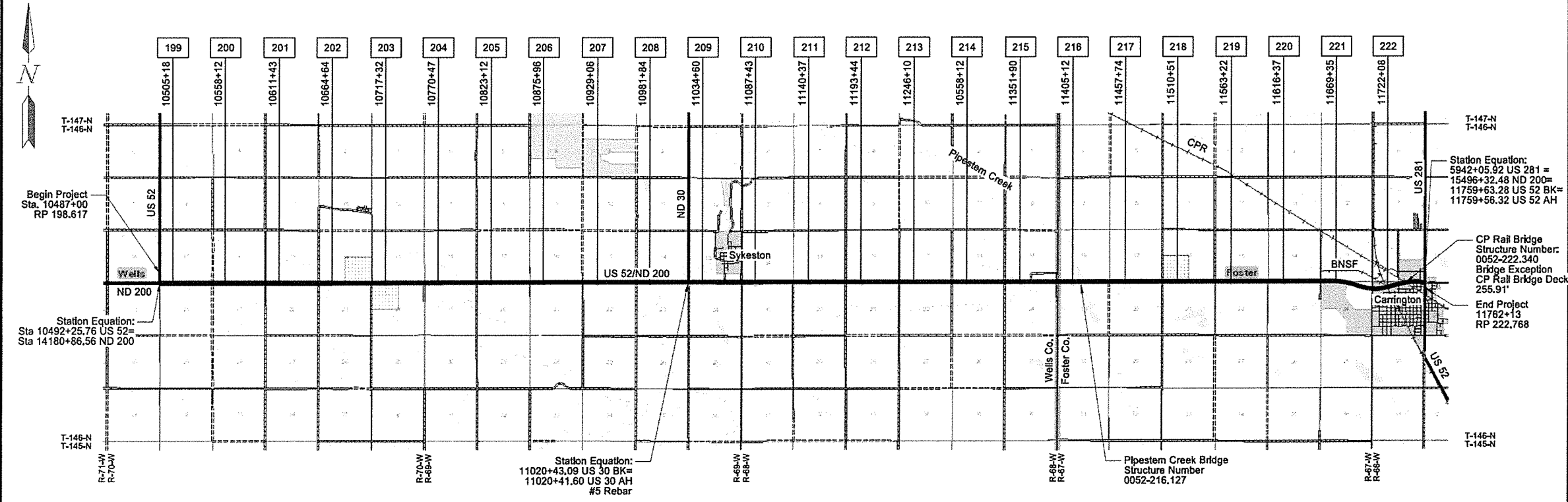
CPU-SNH-3-052(042)198
Wells and Foster County
US 52-W Jct ND 200 to E Jct ND 200
RP 198.717 to RP 222.719

Grading, HMA, Aggregate Base, Concrete, Signing, Lighting, Guardrail, Structure Improvements, and Incidentals

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	CPU-SNH-3-052(042)198	18878	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
CPU-SNH-3-052(042)198 \ US Hwy 52	24.151	24.103

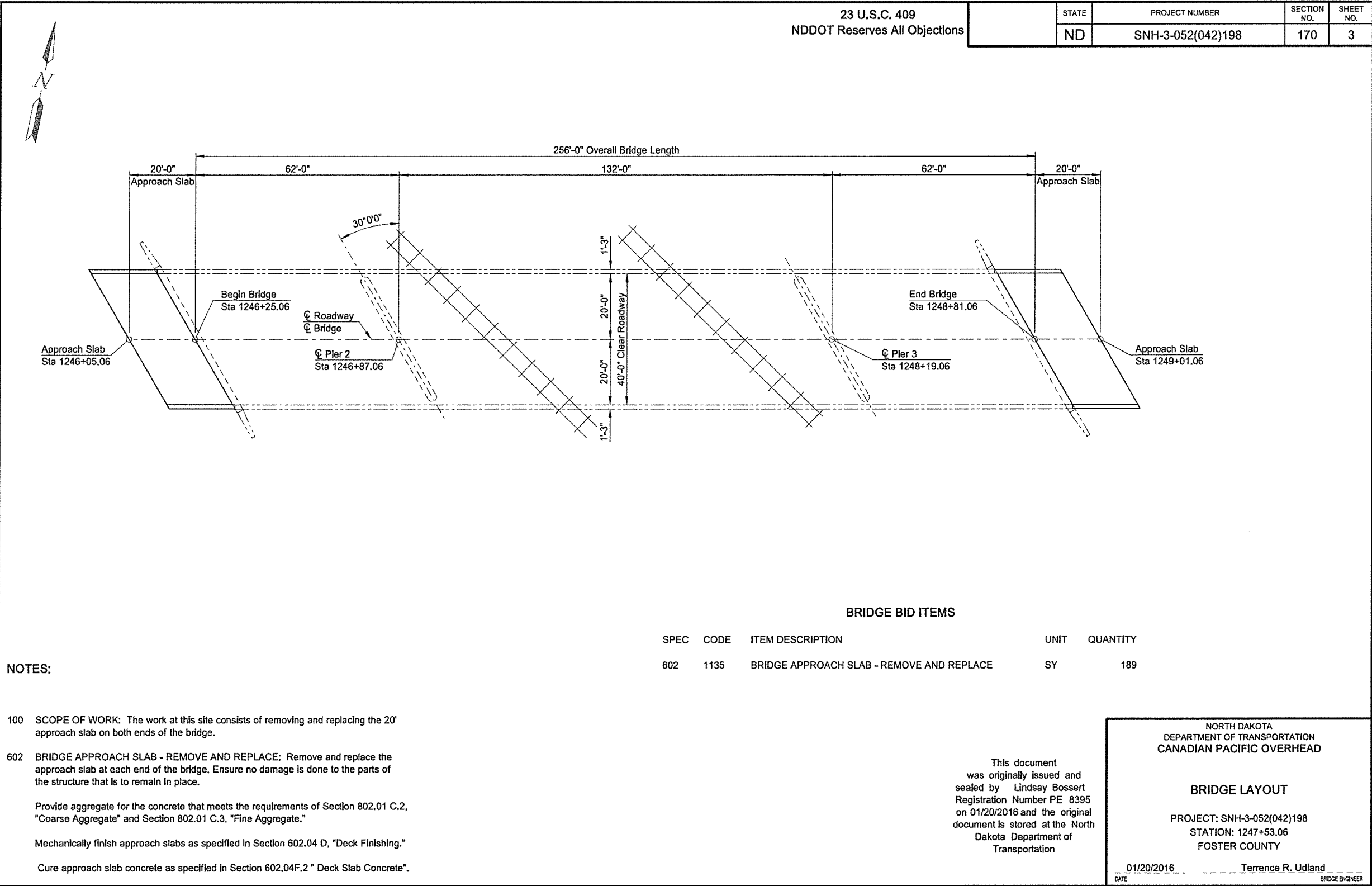


DESIGNERS
Jeff Wilcox
Brad Schaff
Miles Mehlhoff

APPROVED DATE 2-16-2016
Roger Weigel
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 2/15/16
Eric Molbert
NDDOT DIV-DIST OR CONSULTANT FIRM

This document was originally issued and sealed by Eric R. Molbert, Registration Number PE-4222, on 02/15/16 and the original document is stored at the North Dakota Department of Transportation



NOTES:

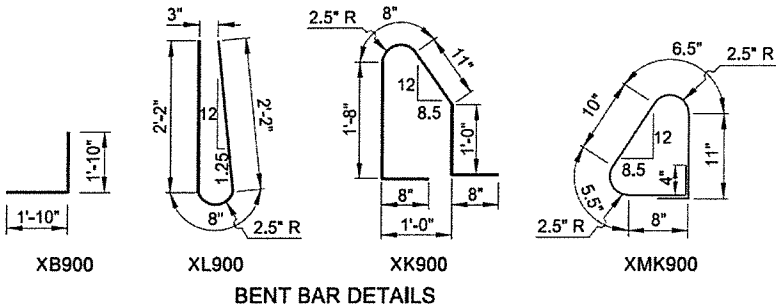
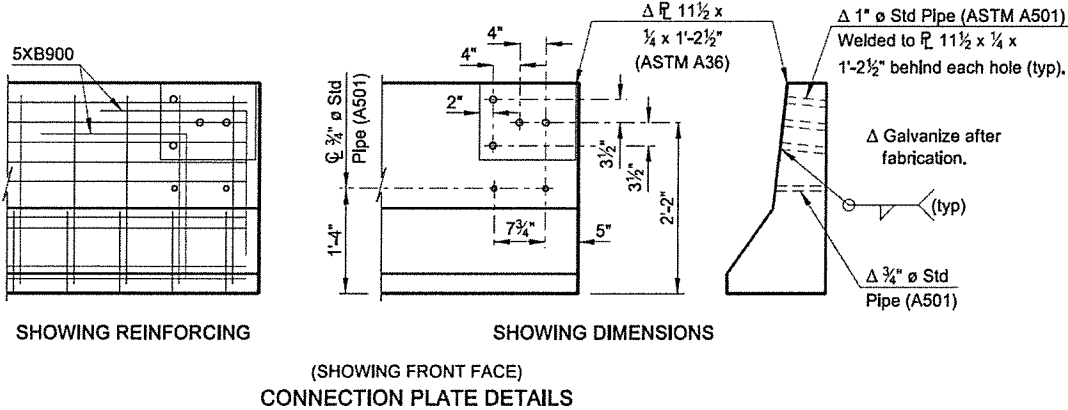
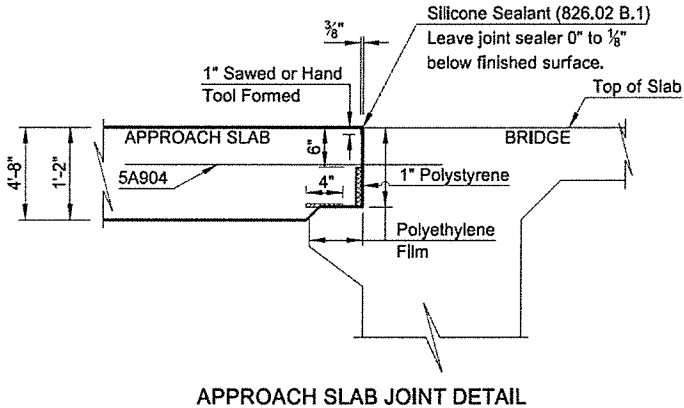
The estimated material quantities shown are for information purposes only. Include the concrete, reinforcing bars, polyethylene film, preformed joint filler, polystyrene, silicone sealant, foundation fill, and labor required to build the approach slabs and barriers in the pay item "Bridge Approach Slab-Remove & Replace." Use Class AE-3 concrete and Grade 60 reinforcing steel. Provide reinforcing steel that meets the requirements of Section 612 and foundation fill that meets the requirements of Section 210. Use polyethylene film that meets the requirements of ASTM C171.

Apply surface Finish "D" to the inside and top surfaces of the approach slab barriers.

The bar marks beginning with an "X" indicate an epoxy coated bar. The dimensions shown in the "Bent Bar Details" are out to out.

Install 5A904 according to manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Sec. 806.02 of the NDDOT Standard Specification. Embed the bars 1'-0" minimum into the abutment.

SKEW ANGLE = 0°			
BAR LIST - ONE SLAB			
SIZE	MARK	NO.	LENGTH
7	A900	168	19'-8"
5	A901	84	24'-1"
6	A902	20	1'-3"
4	XA903	18	19'-8"
5	A904	42	4'-0"
4	A905	4	3'-0"
5	XB900	4	3'-8"
5	XK900	58	5'-7"
5	XL900	60	5'-0"
5	XMK900	2	4'-1"
ESTIMATED MATERIAL QUANTITIES			
REINFORCING STEEL (LBS)		CONCRETE (CY)	
9,995		39.9	



This document was originally issued and sealed by Lindsay Bossert, Registration Number PE 8395, on 01/20/2016 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE SLAB)
APPROACH SLAB	94.5 SY
CANADIAN PACIFIC OVERHEAD	
APPROACH SLAB DETAILS	

DESIGN DATA

Traffic

Current Traffic (1978) 1440 Pass. 160 Trucks 1600 Total 175
 Traffic Forecast (1998) 2250 Pass. 250 Trucks 2500 Total 275
 Design Speed 30 MPH

Average Daily

Est. 30th
Max. Hr.

Traffic Classification "M"

Minimum Sight Distance (Stopping) 200'

Minimum Sight Distance (Safe Passing) 1100'

Minimum Passing Sight Distance for Marking 500'

Bridge Design Loading HS-20

Clear Roadway Width 40'

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

PLANS

IN FOSTER COUNTY

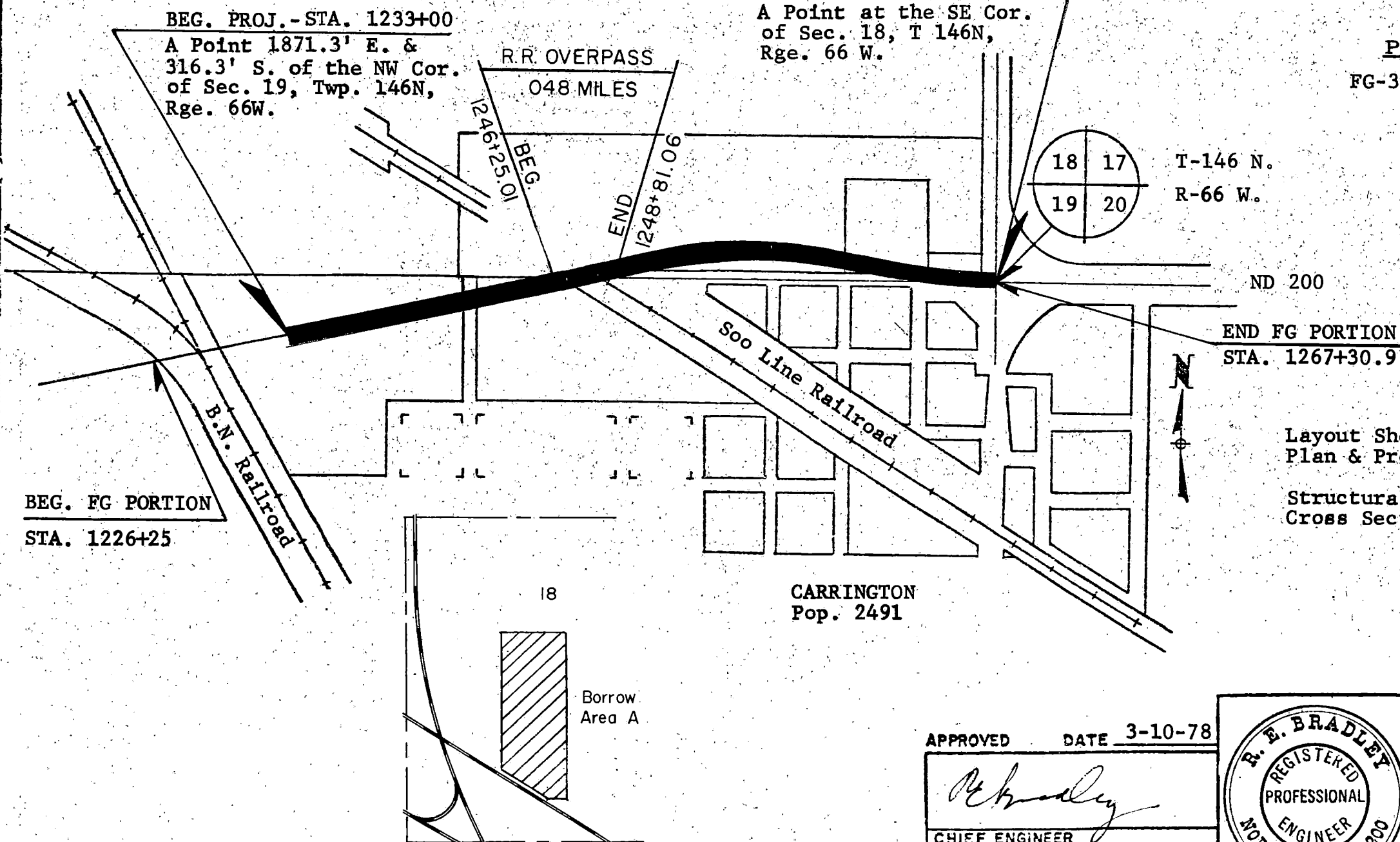
FEDERAL AID PROJECT NO. FG-3-052(11)198
 GRADE & STRUCTURAL ITEMS

GOVERNING SPECIFICATIONS:

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

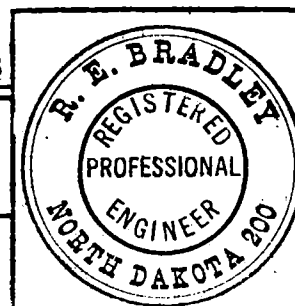
LENGTH OF PROJECT

Project	Miles-Gross	Miles-Net
FG-3-052(11)	.649	.649



APPROVED DATE 3-10-78

CHIEF ENGINEER
 NORTH DAKOTA
 STATE HIGHWAY DEPARTMENT



U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER

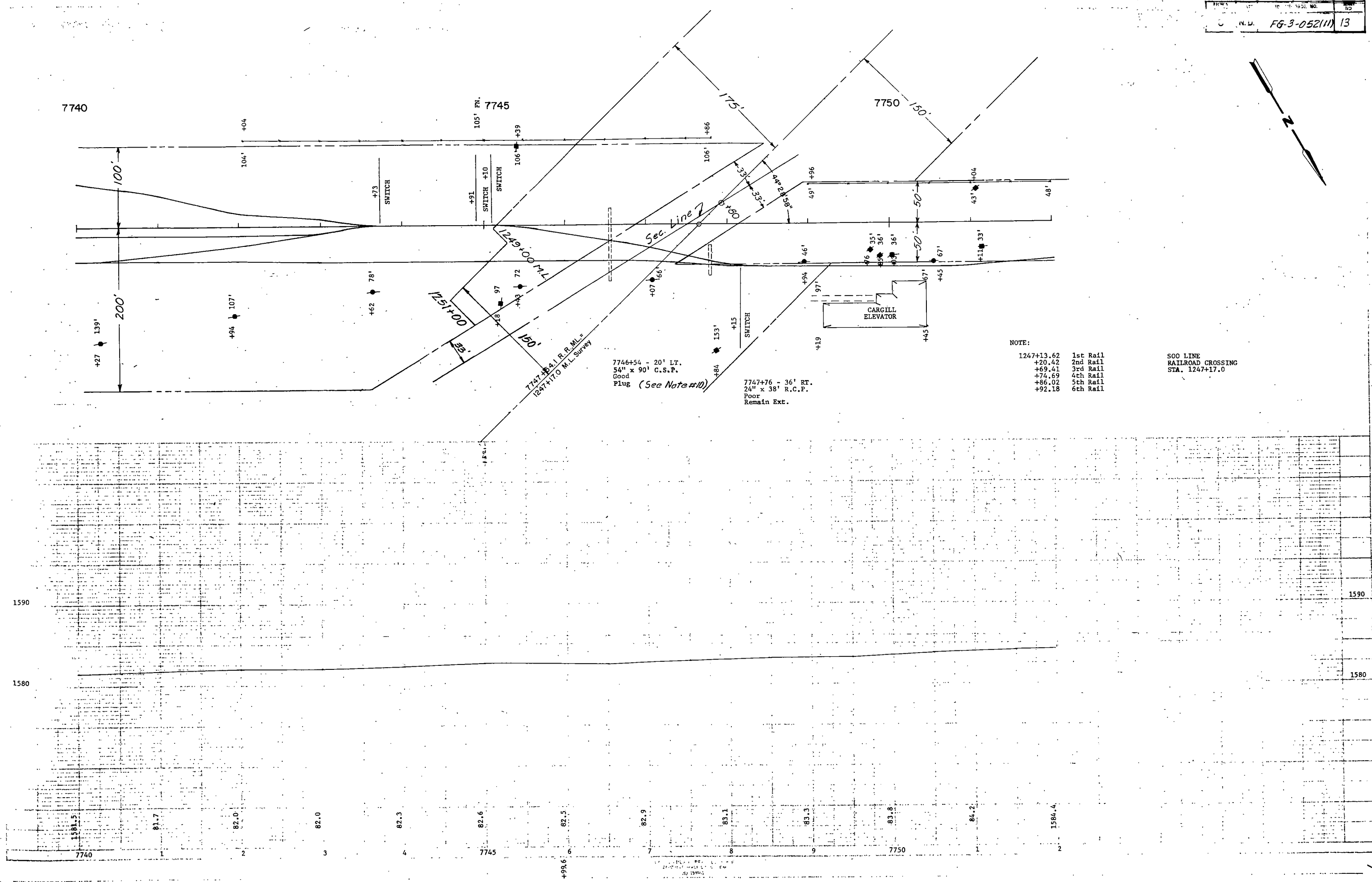
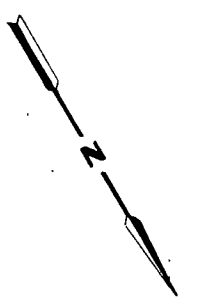
DATE

SYMBOLS

STATE & NATIONAL LINES		BUILDINGS	
COUNTY LINE		TELEGRAPH LINES	
TOWNSHIP & RANGE LINES		TELEPHONE LINES	
SECTION LINE		POWER LINES	
QUARTER SECTION LINE		CULVERTS (In Place)	
SECTION CORNER		CULVERTS (Install)	
QUARTER SECTION CORNER		CONCRETE BOX CULVERTS (Install)	
OLD RIGHT OF WAY LINE		BRIDGES (Install)	
NEW RIGHT OF WAY LINE		CONCRETE CURB	
GRADE LINE		CONCRETE CURB AND GUTTER	
CENTERLINE OF CONSTRUCTION		CONCRETE WALK	
RAILROAD RIGHT OF WAY LINE		CATCH BASIN (Existing)	
CITY OR VILLAGE CORPORATE LIMITS		CATCH BASIN (New)	
PROPERTY LINE		MANHOLE (Existing)	
EASEMENT LINE		MANHOLE (New)	
FENCES		CURB INLET (Existing)	
SNOW FENCE		CURB INLET (New)	
DRAINAGE		GROUND MOUNTED SIGNS	
WATERS EDGE		OVERHEAD SIGNS	
MARSH OR SWAMP		HYDRANT	
RIPRAP		LIGHT STANDARDS	
DRAINAGE DITCH		TRAFFIC SIGNALS (Plan & Profile Sheets)	
APPROACH		HIGH MAST LIGHTING ASSEMBLY	
TRAVELED WAY		GROUND ELEVATION	
RAILROADS		GRADE	
GUARD RAIL		CENTERLINE	
GUIDE POSTS		SECTION LINE	
DELINEATORS		DEFLECTION ANGLE (Delta)	
HEDGES AND TREES		SOD OR JUTE MESH	
INTERCHANGE		POLES TO BE MOVED	
HIGHWAY GRADE SEPARATION-NO CONNECTION		POLES TO BE LOWERED	
OTHER BRIDGE		CONCRETE FOUNDATION	
SERVICE ROAD		CONDUIT	
TERMINATED CROSS-ROAD		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	
		PEDESTRIAN PUSHBUTTON POST	
		TRAFFIC SIGNAL CONTROLLER	
		FEED POINT - PAD MOUNTED	

ABBREVIATIONS

Aggr.	Aggregate	M.L.	Main Line
Ahd.	Ahead	N.R.	North Roadway
Alt.	Alternate	Off. Loc.	Office Location
Approx.	Approximate or Approximately	O. to O.	Out to Out
Appr.	Approach	P. & P.	Plan and Profile
Asph. Cem. or A.C.	Asphalt Cement	P.C.	Point of Curvature
Asph. Conc.	Asphaltic Concrete	P.C.C.	Point of Compound Curve
Bit.	Bituminous or Bitumen	P.C.C. Pvm't	Portland Cement Concrete Pavement
Bk.	Back	P.D.	Private Drive
B.M.	Bench Mark	Pen.	Penetration
Bldg.	Building	Perf.	Perforated
Br.	Bridge	P.I.	Point of Intersection
C.A.E.S.	Corrugated Aluminum End Section	P.O.C.	Point on Curve
C.A.P.	Corrugated Aluminum Pipe	P.O.T.	Point on Tangent
C.B.	Catch Basin	P.P.	Power Pole
C.B.G.	Curb and Gutter	P.R.C.	Point of Reverse Curvature
Ch. Blk.	Channel Block	Pre.	Preformed
Ch. Ch.	Channel Change	P.S.D.	Passing Sight Distance
C.I.	Curb Inlet	P.T.	Point of Tangency
C.I.P.	Cast Iron Pipe	P.V.C.	Polyvinyl Chloride Sewer Pipe
Cl.	Class	Quant.	Quantity or Quantities
C.S.E.S.	Corrugated Steel End Section	R	Radius
C.S.P.	Corrugated Steel Pipe	R or Rge.	Range
CMS	Cationic Medium Setting	RC	Rapid Curing
Comp.	Compression	R.C.E.S.	Reinforced Concrete End Section
Const.	Construction	R.C.P.	Reinforced Concrete Pipe
Conc.	Concrete	R.C.P.S.	Reinforced Concrete Pipe Sewer
Cont. Reinf. Conc. Pvm't	Continuously Reinforced Concrete Pavement	Rd.	Road
Contn.	Contraction	Rdbd.	Roadbed
Crn.	Crown	Rdwy.	Roadway
CRS	Cationic Rapid Setting	Ref.	Reflectorized
Crse.	Course	R.R.	Railroad
C.S.	Curve to Spiral	Rt.	Right
C.to C.	Center to Center	R/W	Right of Way
C.Y.	Cubic Yard	Salv.	Salvage
D	Degree of Curvature	San.	Sanitary
D-Load	Dead Load	S.C.	Spiral to Curve
D.B.	Ditch Block	SC	Slow Curing
Def.	Deformed	Sc	Spiral Deflection Angle
Del.	Deliver	S.D.	Sight Distance
D.G.	Ditch Grade	S.E.	Superelevation
El. or Elev.	Elevation	Sec.	Section
Ellipt.	Elliptical	Sec. Line Appr.	Section Line Approach
Emb.	Embankment	Sep.	Separation
Emul.	Emulsified	Serv.	Service
Engr.	Engineer	Sgr. Prep.	Subgrade Preparation
Eq.	Equation	Shldr.	Shoulder
E.R.	East Roadway	SP	Special Provision
E.S.	End Section	S.P.P.	Structural Plate Pipe
Esmt.	Easement	S.P.P.A.	Structural Plate Pipe Arch
Exc.	Excavation	S.R.	South Roadway
Exp.	Expansion	SS	Slow Setting or Supplement Specification
F.D.	Field Drive	S.S.D.	Stopping Sight Distance
Found.	Foundation	S.T.	Spiral to Tangent
F.P.	Fence Post	Sta.	Station
Furn.	Furnish	Std.	Standard
Ga.	Gage or Gauge	Std. Specs.	Standard Specifications
Gr.	Gravel	Struct.	Structure
Grd.	Graded	Surf.	Surface or Surfacing
G.V.	Gate Valve	Surv.	Survey
Hel.	Helical	S.W.	Sidewalk
Hyd.	Hydrant	S.Y.	Square Yard
Ident.	Identification	T	Tangent Length (circular curve)
Inchg.	Interchange	T or Twp.	Township
I.M.	Iron Monument	Tel.	Telephone
Inst.	Install	Temp.	Temporary
Inter.	Intersection	T.P.	Telephone Pole
Inv.	Invert	Tr.	Traffic
Jt.	Joint	Trans.	Transverse or Transition
L	Length of Curve	Trtd.	Treated
Lc	Length of Spiral	Ts	Tangent Length (curve with spirals)
Levg.	Leveling	T.S.	Tangent to Spiral
L.F.	Linear or Lineal Foot	U.S.C. & G.S.	United States Coast and Geodetic Survey
Liq.	Liquid	V.C.	Vertical Curve
Long	Longitudinal	V.C.P.	Vitrified Clay Pipe
L.P.	Light Pole	W.M.	Water Main
Lt.	Left	W.M.V.	Water Main Valve
"M"	One Thousand	W.R.	West Roadway
Matl.	Material	Wrg.	Wearing
Max.	Maximum	W.S.V.	Water Service Valve
MC	Medium Curing	X-Sec.	Cross Section
M.H.	Manhole	Xc	Spiral Coordinate
Min.	Minimum	Yc	Spiral Coordinate



NOTE:

1247+13.62	1st Rail
+20.42	2nd Rail
+69.41	3rd Rail
+74.69	4th Rail
+86.02	5th Rail
+92.18	6th Rail

S00 LINE
RAILROAD CROSSING
STA. 1247+17.0

7746+54 - 20' LT.
54" x 90' C.S.P.
Good
Plug (See Note #10)

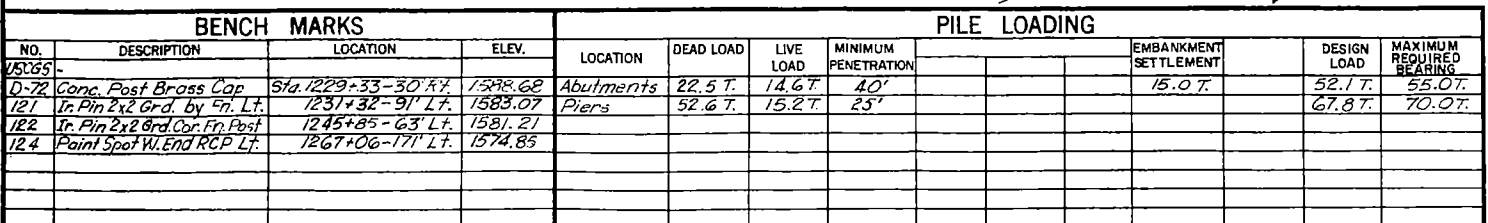
7747+76 - 36' RT.
24" x 38' R.C.P.
Poor
Remain Ext.

[illegible]

See Drawing 52-222.34-1 for General Notes.

STRUCTURAL DRAWINGS	
GENERAL DRAWING 52-222.34 (THIS SHEET), 52-222.34-1 & 2, D-704-2	
SUBSTRUCTURE 52-222.34-3 & 4, H-0401	
SUPERSTRUCTURE 52-222.34-5 THRU 10, D-800-1	
DESIGN LOADING HS20 (1944)	SCALE 1 INCH = 15 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
SOO LINE OVERHEAD
BRIDGE LAYOUT
PROJECT F-FG-3-052()198 STA.1247+53.1
FOSTER COUNTY
APPROVED
9-28-77 DATE *Shirley Huns* BRIDGE ENGINEER

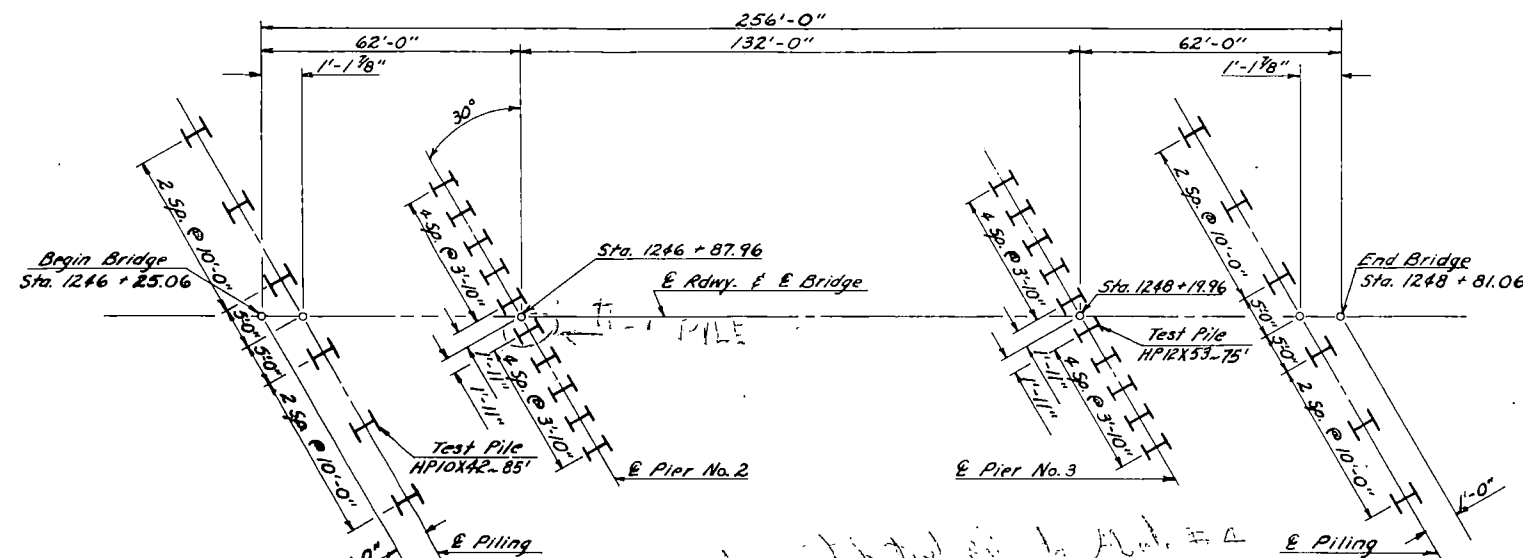


DESIGN STRENGTHS:

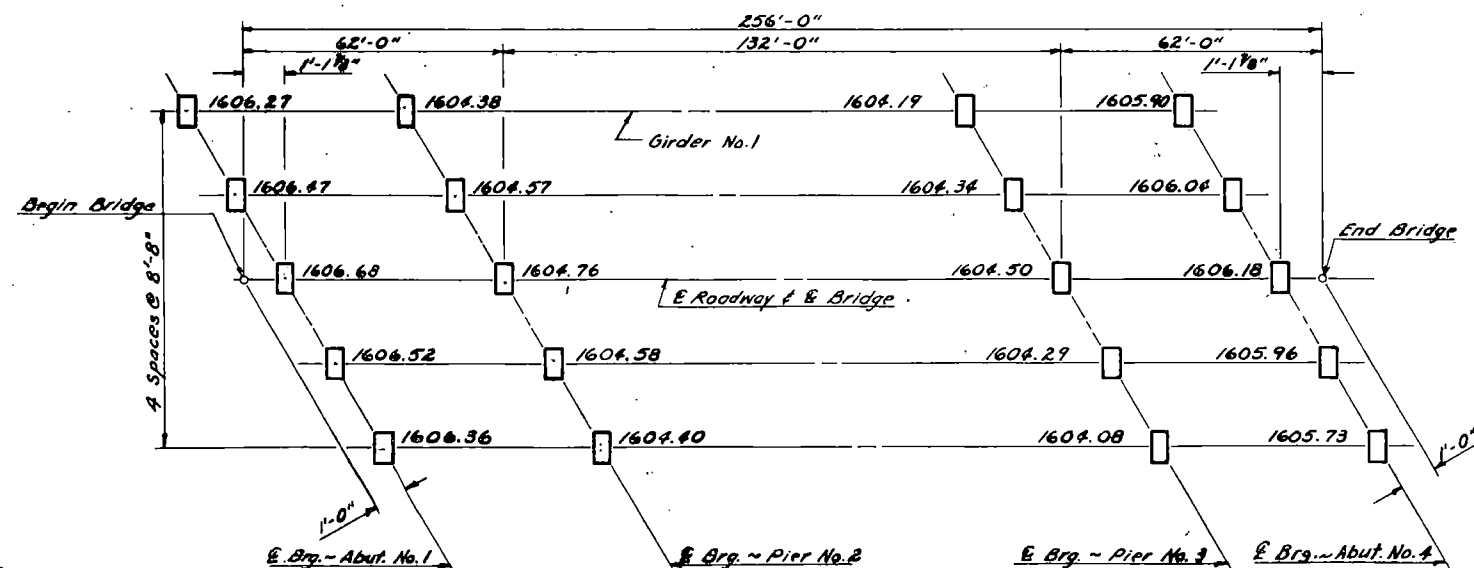
- $f_y = 60,000 \text{ psi} \sim \text{Reinforcing Steel}$
- $f'_c = 3,000 \text{ psi} \sim \text{Class AE-1 Concrete}$
- $f'_c = 4,000 \text{ psi} \sim \text{Class AE-3 Concrete}$
- $f_y = 36,000 \text{ psi} \sim \text{Structural Steel A-36}$
- $f_y = 50,000 \text{ psi} \sim \text{Structural Steel A-572}$

Design by Load Factor

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	FG-3-092(11)	15	



PILING LAYOUT
(Not to Scale)



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

NOTES:

GENERAL:

WORK SHALL CONFORM TO ALL APPLICABLE PARAGRAPHS OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.

THE COST OF FURNISHING AND PLACING JOINT FILLER, ASPHALT CURB SEAL AND OTHER MISCELLANEOUS ITEMS SHALL BE INCIDENTAL TO THE COST OF AAE-3 CONCRETE. BEARING AREAS SHALL BE FINISHED TRUE TO PLAN AND ELEVATION BY GRINDING, IF NECESSARY, BEFORE BEARING PLATES ARE SET. ALL HIGH STRENGTH BOLTS ARE TO BE 7/8 INCH DIAMETER. FIELD CONNECTIONS SHALL BE MADE WITH HIGH TENSILE STRENGTH BOLTS.

EXCAVATION: EXCAVATION FOR ABUTMENTS AND PIERS SHALL BE CLASS I AND SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE LIMITS SHOWN ON THE BRIDGE LAYOUT DRAWING.

EMBANKMENT: THE EMBANKMENT AT THE ABUTMENTS SHALL BE IN PLACE BEFORE PILING ARE DRIVEN. EMBANKMENT SHALL BE ACCORDING TO SECTION 203-2.3 OF THE STANDARD SPECIFICATION WITH COMPACTION OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-99. THE CONTRACTOR WILL BE REQUIRED TO PREDRILL THROUGH THE FILL AT THE ABUTMENTS BEFORE DRIVING PILING. ALL PILOT HOLES, NOT COMPLETELY FILLED BY THE PILES, SHALL BE BACKFILLED WITH SAND OR FINE GRAVEL BEFORE THE SUB-STRUCTURE IS PLACED.

PILING: THE TEST PILES SHALL BE DRIVEN TO A BEARING OF NOT LESS THAN 125 PERCENT OF THE DESIGN LOAD AS DETERMINED BY THE DYNAMIC FORMULA. A STEAM, AIR OR DIESEL HAMMER FOR DRIVING PILING FOR THIS STRUCTURE SHALL HAVE A RATED ENERGY AND RAM WEIGHT NOT LESS THAN 23,366 FOOT-POUND-TONS AS COMPUTED BY THE FORMULA $WE = 0.58W$ WHERE W IS THE WEIGHT OF THE RAM IN TONS AND E IS THE RATED HAMMER ENERGY AS ALLOWED IN THE STANDARD SPECIFICATION. IN NO CASE SHALL THE RAM WEIGHT BE LESS THAN 4,000 POUNDS.

REINFORCING STEEL: BENT BARS SHALL BE BENT AROUND A.C.I. STANDARD SIZE PINS FOR GRADE 60 REINFORCING. THE TOP LAYER OF REINFORCING BARS IN SLAB SHALL BE EPOXY COATED.

THE TOP LAYER OR TRANSVERSE DECK SLAB REINFORCEMENT SHALL BE TIED DOWN WITH WIRE TIES TO THE SHEAR CONNECTORS OF THE BEAMS. IF CHANNELS ARE USED FOR SHEAR CONNECTORS, SMALL HOLES MAY BE BURNED THROUGH THE TOP PORTION OF THE SHEAR CONNECTOR WEB TO FACILITATE MAKING THE TIE. THE TIES SHALL BE AT INTERVALS OF 5 TO 6 FEET ALONG THE FULL LENGTH OF ALL BEAMS TO PREVENT THE SLAB REINFORCEMENT FROM RISING WHEN THE CONCRETE IS PLACED. TWO WRAPS WITH 14 GAGE PLASTIC EPOXY COATED TIES SHALL BE USED FOR THIS PURPOSE.

CONCRETE: THE DECK SLAB CONCRETE SHALL BE STRUCK OFF AND COMPACTED BY AN APPROVED DECK FINISHING MACHINE. SUBSTRUCTURE CONCRETE SHALL BE AE-1 AND SUPERSTRUCTURE CONCRETE AAE-3. CONTRACTOR HAS THE OPTION TO SUBSTITUTE AAE-3 CONCRETE FOR AE-1, BUT NOT AE-1 FOR AAE-3 CONCRETE. PAYMENT WOULD BE FOR CLASS SHOWN ON THE PLAN. IN THE AREAS WHERE CLASS 3 AGGREGATE IS IMPOSSIBLE TO OBTAIN, CONTRACTOR MAY SUBSTITUTE CLASS 4 AGGREGATE FOR CLASS 3. SPECIAL SURFACE FINISH SHALL BE REQUIRED FOR ALL EXPOSED SURFACES OF BARRIERS, AND EXPOSED EDGES OF SLAB. ALL OTHER SURFACES SHALL BE GIVEN THE "ORDINARY SURFACE FINISH".

CURING CONCRETE: THE WATER SOLUBLE LIQUID MEMBRANE CURE (SECTION 550-4.13.2.1 AND 880-5 OF THE STANDARD SPECIFICATIONS) SHALL BE USED FOR CURING THE DECK SLAB CONCRETE. A PROTECTIVE COVERING SHALL BE USED SO THAT MEMBRANE IS NOT APPLIED TO THE AREA WITHIN 3 INCHES OF ANY BARRIER UNTIL AFTER THE ASPHALT CURB SEAL IS IN PLACE. THE COST OF LIQUID MEMBRANE CURING COMPOUND SHALL BE INCLUDED IN THE BID PRICE FOR CONCRETE CLASS AAE-3.

LINSEED OIL TREATMENT: LINSEED OIL TREATMENT SHALL NOT BE STARTED UNTIL ALL CONCRETE WORK IS COMPLETED AND THE ASPHALT CURB SEAL HAS BEEN INSTALLED. ONLY ONE UNIFORM APPLICATION OF .015 GALLONS PER SQUARE YARD SHALL BE APPLIED TO THE DECK.

STRUCTURAL STEEL: THE GIRDER SHALL BE CAMBERED IN THE SHOP AS DETAILED ON DRAWING NO. 52-222.34-7. THE SHOP CAMBER DIAGRAM REPRESENTS THE TOTAL RISE, IN INCHES, TO BE CUT INTO THE WEB PLATES OF THE GIRDERS.

A MINIMUM OF TWO (2) CONTIGUOUS BEAM SECTIONS SHALL BE PLACED IN THEIR CORRECT RELATIVE POSITIONS BEFORE DRILLING THE HOLES FOR THE BEAM FIELD SPLICE BETWEEN THOSE SECTIONS. THE PROPER ALIGNMENT SHALL BE MAINTAINED BETWEEN SECTIONS WHILE REAMING THE HOLES. TEMPLATES SHALL NOT BE USED IN LIEU OF THE ABOVE SHOP ASSEMBLY. WIRE ROPE SLINGS SHALL NOT BE USED TO HANDLE THE BEAMS. THEY SHALL BE HANDLED WITH BEAM CLAMPS DESIGNED FOR THAT PURPOSE OR OTHER DEVICES, APPROVED BY THE ENGINEER.

GIRDER FLANGES ARE TO BE A-572 GRADE 50. REQUIREMENT FOR CHARPY V-NOTCH TEST IS DESIGNATED ON DRAWING 52-222.34-6 FOR TENSION FLANGE PLATES. ALL OTHER STRUCTURAL STEEL SHALL BE A36. SHEAR CONNECTORS ON SPLICE PLATES SHALL BE MOVED TO CLEAR BOLT HOLES. SHOP WELDED CONNECTIONS OF DIAPHRAGM ANGLES TO GUSSET PLATES MAY BE USED IN PLACE OF THE BOLTED CONNECTIONS SHOWN. DETAIL SHOULD BE SHOWN ON SHOP DRAWINGS.

STRUCTURAL STEEL PAY QUANTITIES ARE BASED ON THE USE OF THE OPTIONAL SHOP WEB SPLICES.

STEEL ERECTION:

FALSEWORK WITH PROVISIONS FOR JACKING MUST BE PROVIDED AT ALL SPLICE POINTS DURING ERECTION. ALL SPLICE POINTS IN EACH GIRDER LINE SHALL BE BROUGHT TO THEIR PROPER ELEVATION AND SUPPORTED IN POSITION BEFORE THE BOLTS IN ANY OF THE SPLICES ARE TIGHTENED TO THE REQUIRED TENSION.

PAINT: PAINT AND PAINTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS, SECTION 710, 870-1.1 AND 870-1.10. COMMERCIAL BLAST CLEANING SHALL BE USED ACCORDING TO SECTION 710.3.4.11 OF STANDARD SPECIFICATION.

ALL EXPOSED STEEL SURFACES SHALL BE GIVEN ONE SHOP COAT OF RED LEAD PAINT (INCLUDING TOP OF UPPER FLANGES BUT NOT SHEAR CONNECTORS), ONE SPOT COAT OF RED LEAD PAINT AFTER ERECTION AND CONCRETE WORK IS COMPLETED AND TWO FINISH COATS OF ENAMEL. THE FIRST FINISH COAT SHALL CONFORM TO PREDOMINANTLY ORANGE COLOR NO. 22203. THE SECOND COAT SHALL CONFORM TO BROWN COLOR NO. 22144. BOTH FINISH COATS SHALL MEET THE FEDERAL STANDARD NO. 595 FOR COLOR. COLOR CHIPS ARE ON FILE IN THE BRIDGE DIVISION OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT, BISMARCK.

RAILWAY-HIGHWAY PROVISIONS: THE CONTRACTOR SHALL SUBMIT HIS PLAN OF ACTION TOGETHER WITH FALSEWORK EXCAVATION AND SHORING PLANS TO THE BRIDGE ENGINEER AND TO THE RAILWAY FOR APPROVAL BEFORE ANY WORK IS DONE IN THESE AREAS.

THE CONTRACTOR SHALL STOP ALL WORK ADJACENT TO AND ABOVE OCCUPIED TRACKS DURING TRAIN MOVEMENT TO PREVENT ACCIDENTAL DROPPING AND DISLODGING OF MATERIALS AND TOOLS THAT MAY STRIKE THE TRAINS.

THE STATE WILL ASSUME NO RESPONSIBILITY FOR THE DELAYS CAUSED TO THE CONTRACTOR BECAUSE OF WORK SCHEDULING WITH THE RAILWAY. THE STATE WILL PAY NO DAMAGE CAUSED TO THE CONTRACTOR IF HE IS DELAYED BY TRAIN SERVICE OR ANY EMERGENCY HAVING TO DO WITH THE RAILWAY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS WORK SCHEDULE WITH THE RAILWAY'S SCHEDULE. DURING CONSTRUCTION OF THE OVERPASS BRIDGE, CLEARANCE MAY BE RESTRICTED TO NOT LESS THAN EIGHT AND ONE-HALF (8 1/2) FEET HORIZONTALLY MEASURED FROM THE CENTERLINE OF TRACK AND AT TWENTY-TWO (22) FEET VERTICALLY MEASURED FROM TOP OF RAIL, PROVIDED, HOWEVER THAT THE CONTRACTOR SHALL FIRST OBTAIN RAILWAY'S PERMISSION FOR SAID RESTRICTED CLEARANCES.

THE CONTRACTOR, WHILE WORKING ON SOO LINE PROPERTY AT MAINLINE STATION 1247+50 WILL BE REQUIRED TO FURNISH RAILROAD PROTECTION INSURANCE FOR THE AMOUNT SPECIFIED IN THE SPECIAL PROVISION.

SHEET PILING:

SHEET PILING SHALL BE REQUIRED TO PROTECT FOOTING EXCAVATION AT PIERS NO. 2 & 3. SHEET PILING SHALL BE IN SUFFICIENT LENGTH TO ACCOMMODATE A MINIMUM OF 10'-0" PENETRATION FROM GROUND ELEVATION. TEMPORARY WALKWAY AND RAILINGS SHALL BE INSTALLED BETWEEN THE EXCAVATED SECTION AND RAIL. THE COST OF SHEET PILING SHALL BE INCIDENTAL TO CLASS I EXCAVATION. CONTRACTOR SHALL SUBMIT DETAILS OF SHEETING, WALKERS, AND WALKWAY FOR APPROVAL.

QUANTITIES

SOO LINE OVERHEAD
CARRINGTON

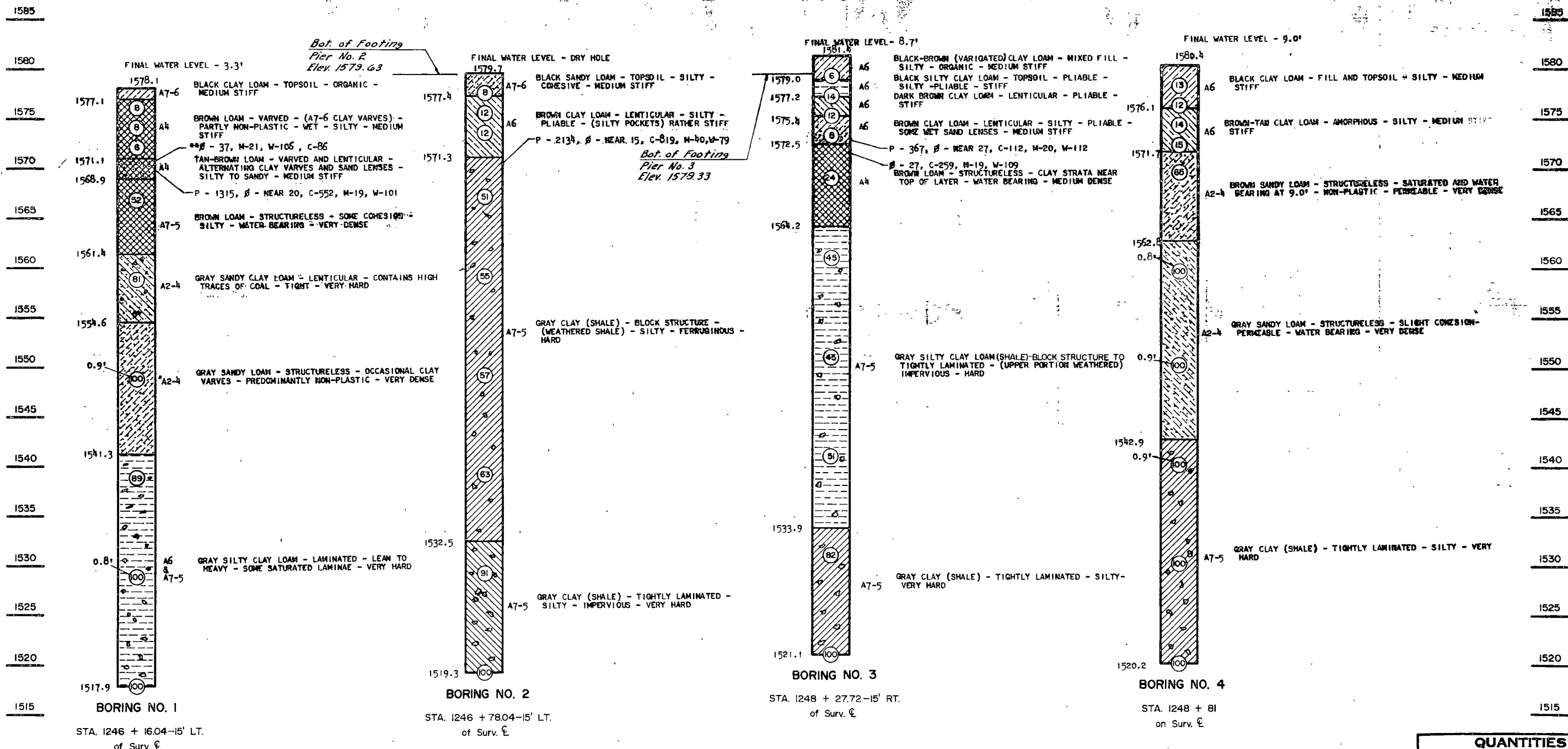
PILING LAYOUT
BEARING PLATE LAYOUT
GENERAL NOTES

52-222.34-1

Bot. of Footing
Abutment No. 1
Elev. 1601.40

Bot. of Footing
Abutment No. 4
Elev. 1600.30

NO.	DATE	BY	CHKD.	APP'D.
16				



NOTES:

ENCIRCLED NUMBERS INDICATE THE NUMBERS OF BLOWS DELIVERED BY A 140 LB. HAMMER FROM A HEIGHT OF 30" TO DRIVE CORE TUBE 1.0'. THE BORING LOG DATA SHOWN IS FOR DESIGN PURPOSES ONLY. THE STATE ASSUMES NO RESPONSIBILITY IF SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN.

SYMBOLS:

P - MAXIMUM LOAD (LBS./SQ. FT.)

δ - ANGLE OF INTERNAL FRICTION (DEGREES)

C - COHESION (LBS./SQ. FT.)

M - MOISTURE (PERCENT)

W - DRY WEIGHT (LBS./CU. FT.)

** - TRIAXIAL

QUANTITIES

SOO LINE OVERHEAD
CARRINGTON

BORING LOG

52-222.34-2

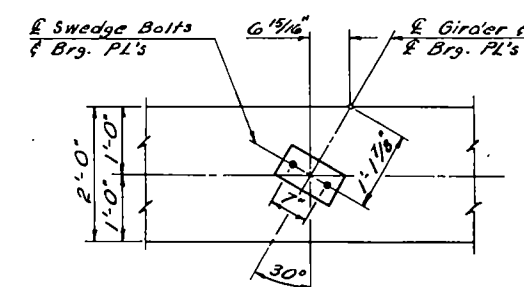
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	FG-3-052(111)	17	

BAR LIST (ONE ABUT.)				
MARK	NUMBER	SIZE	LENGTH	SHAPE
A1	10	5	35'-0"	STR.
A2	8	6	35'-5"	"
A3	4	5	4'-2"	"
A4	4	5	7'-6"	"
A5	4	5	10'-9"	"
A6	8	5	11'-6"	"
A7	4	6	10'-9"	Bent
A8	47	5	18'-6"	"
A9	2	5	19'-7"	"
A10	2	5	20'-8"	"
A11	2	4	20'-1"	"
A12	2	4	19'-3"	"
A13	2	4	18'-6"	"
A14	2	4	18'-1"	"
A15	2	4	17'-3"	"
A16	2	4	16'-6"	"
A17	2	4	15'-11"	"
A18	2	4	14'-11"	"
A19	2	4	14'-4"	"
A20	56	4	2'-8"	"
A21	2	5	29'-6"	STR.

FABRIC WATERPROOFING DETAIL

Two Ply Fabric Waterproofing shall consist of furnishing materials and placing damp-proofing and fabric waterproofing at areas designated on this sheet in accordance with Sec. 736 of the "Standard Specifications" for Two Ply Fabric Waterproofing. All materials and work shall be considered incidental to the pay item for Class AE-1 Concrete.

DETAIL "A"

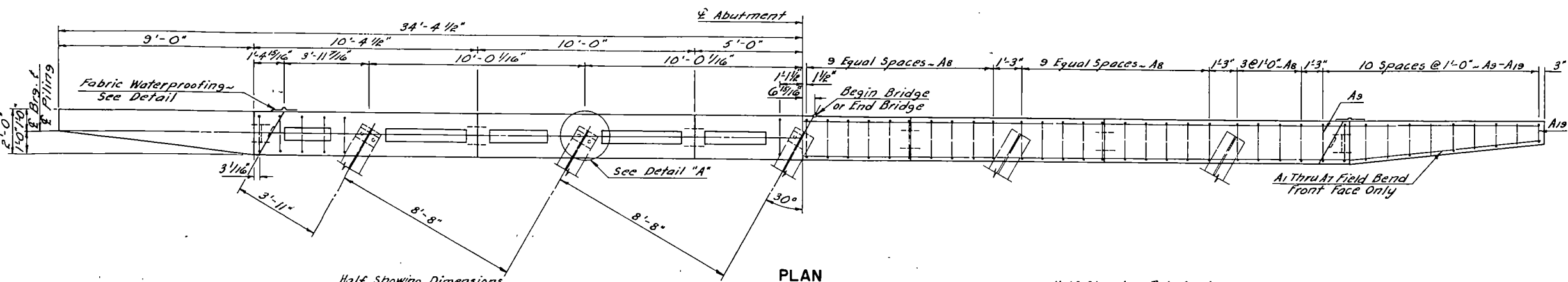


QUANTITIES (ONE ABUT.)

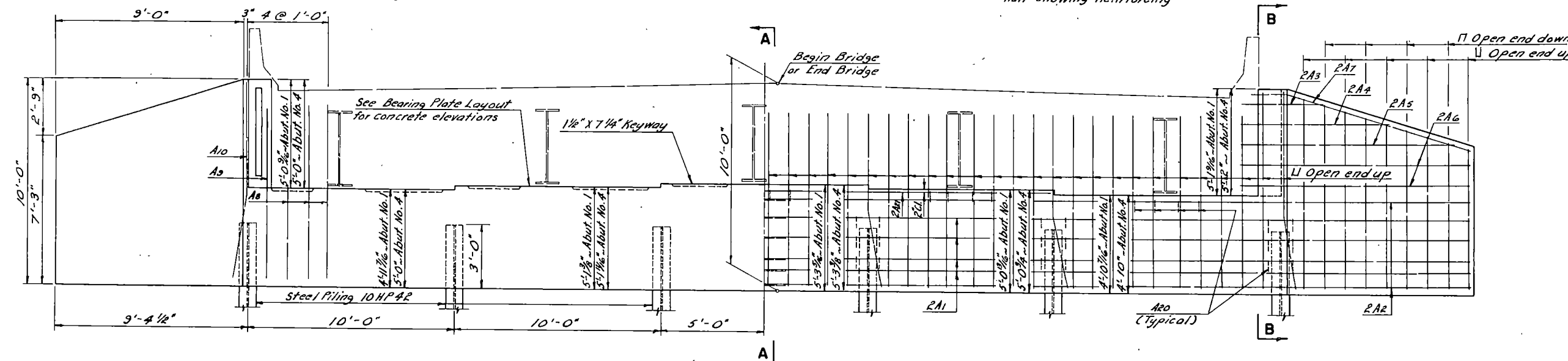
Class AE-1 Concrete	2623
Reinforcing Steel	2623
Excavation (See Layout)	
Piling (See Layout)	

SOO LINE OVERHEAD
CARRINGTON

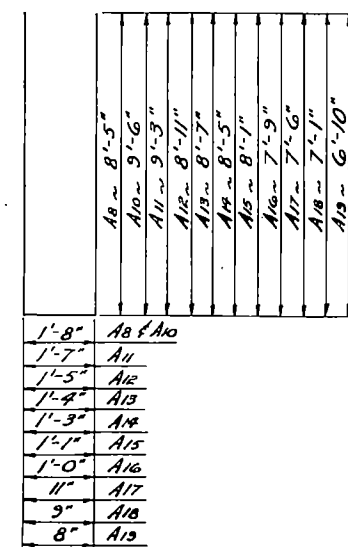
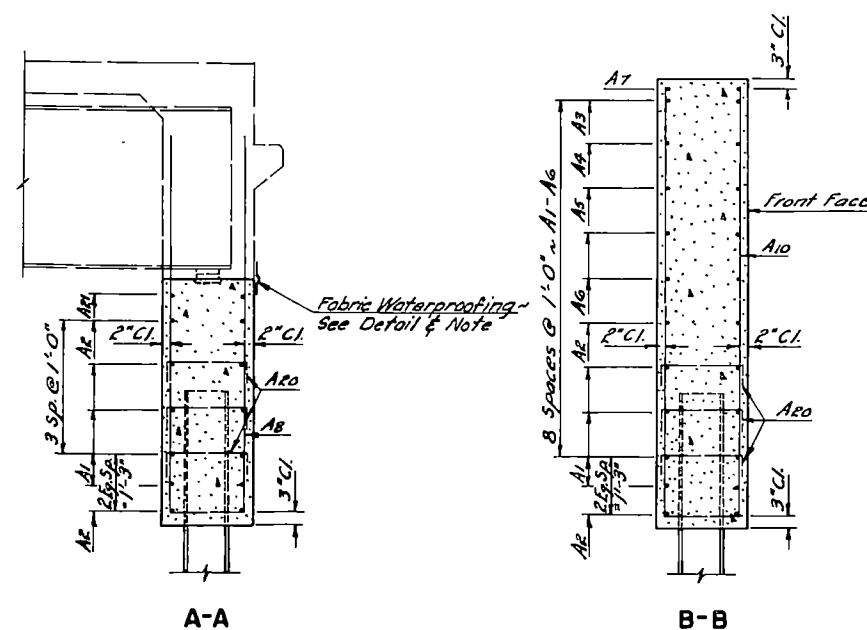
ABUTMENT DETAILS



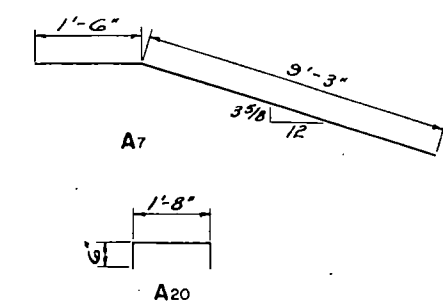
PLAN



FRONT ELEVATION



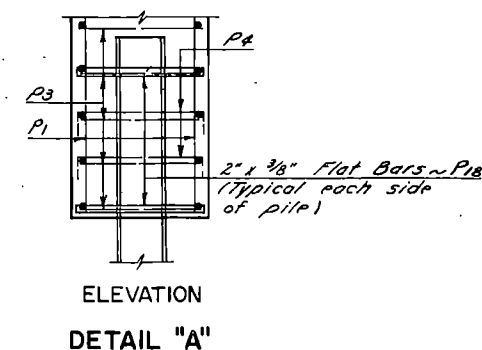
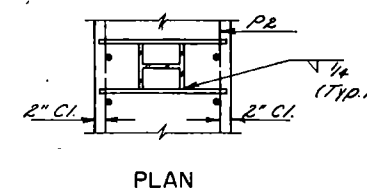
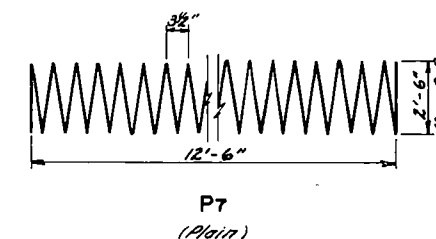
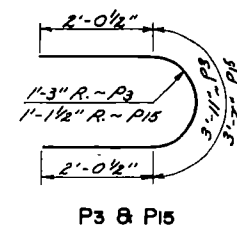
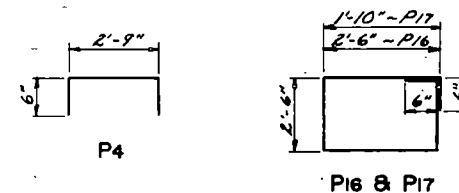
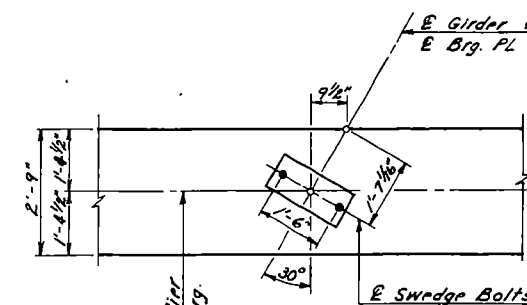
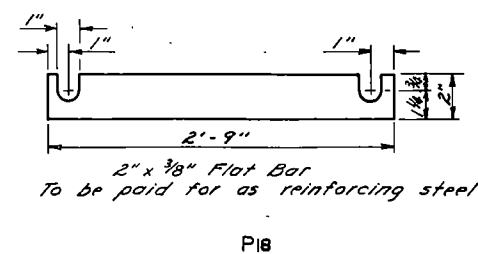
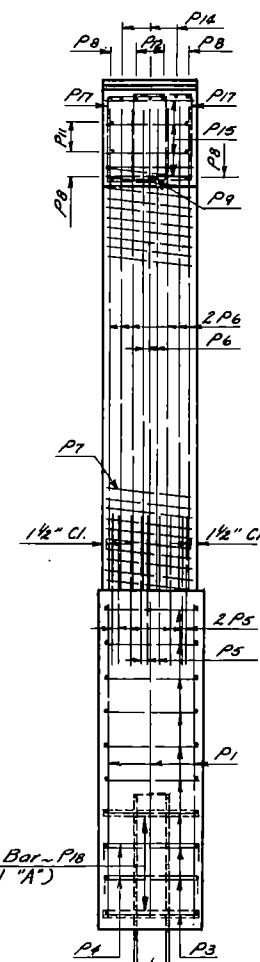
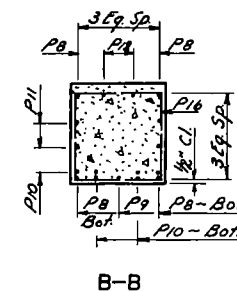
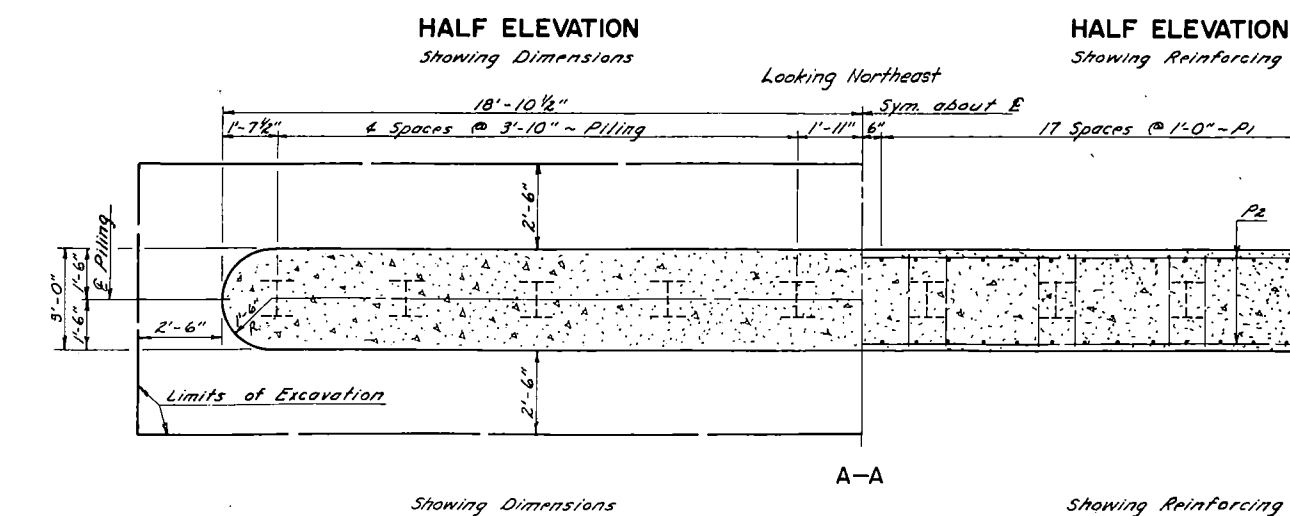
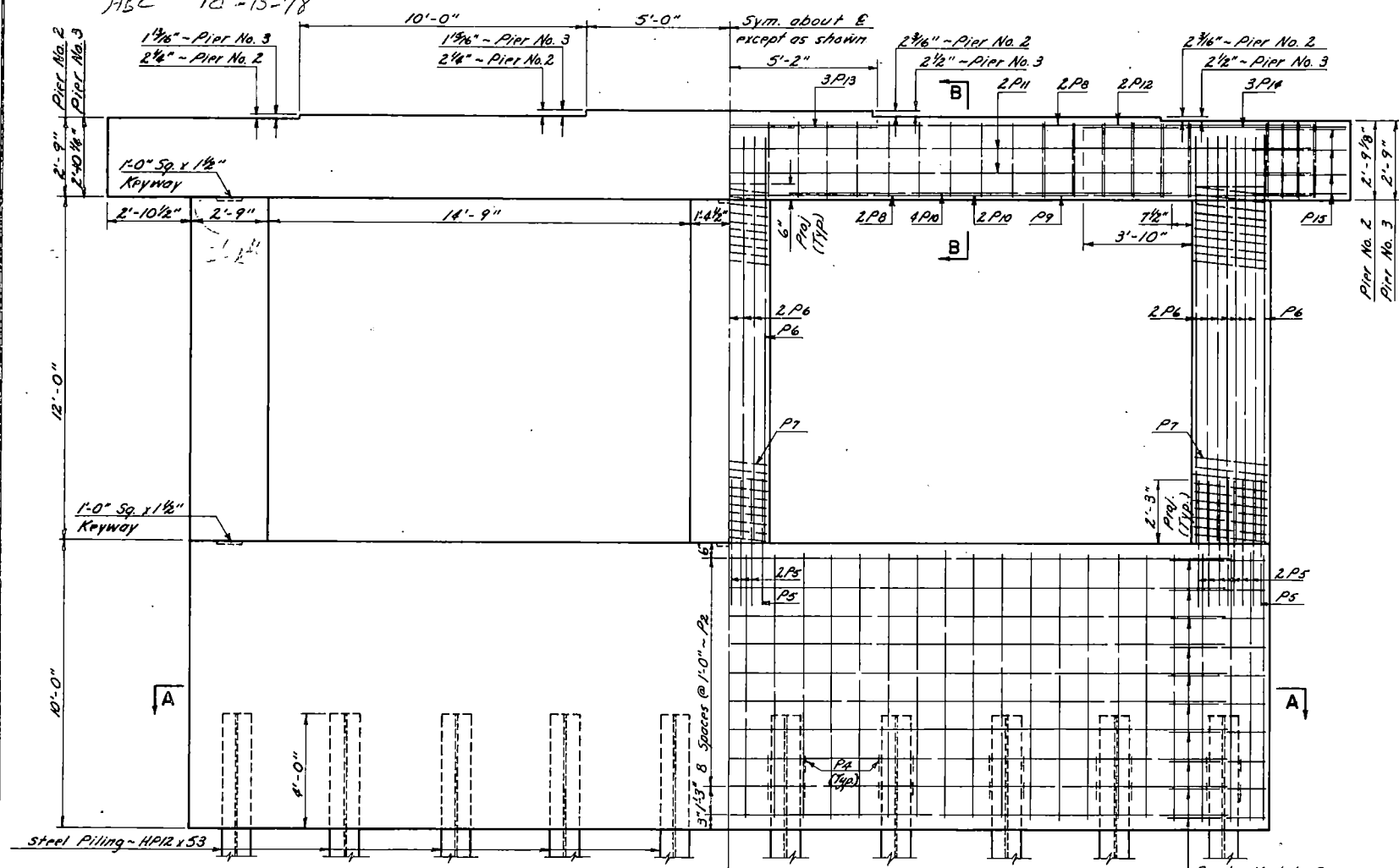
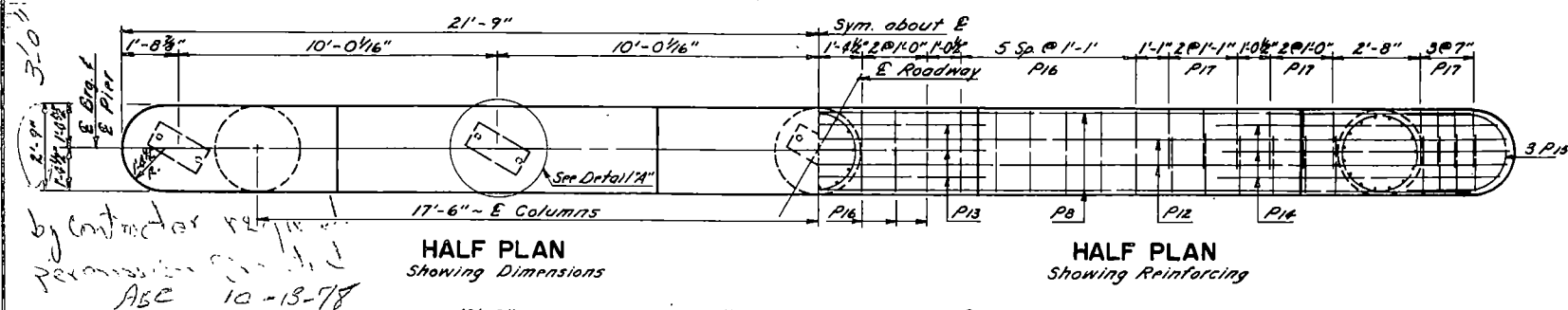
AB, A10-A19 BARS



BENT BAR DETAILS

Dimensions shown are out to out.

CHECKED BY DLK
MADE BY DLK
QUANTITIES CHECKED BY LFG



BAR LIST			(ONE PIECE)	
MARK	NUMBER	SIZE	LENGTH	SHAPE
P1	78	5	9'-7"	Str
P2	20	5	35'-0"	"
P3	20	5	8'-0"	Bent
P4	40	4	3'-9"	"
P5	42	7	4'-6"	Str
P6	42	7	14'-3"	"
P7	3	4	355'-0"	Spiral
P8	4	8	40'-9"	Str
P9	1	8	43'-2"	"
P10	12	8	13'-6"	"
P11	4	4	40'-9"	"
P12	2	8	42'-10"	"
P13	3	8	10'-4"	"
P14	6	8	8'-10"	"
P15	8	5	7'-8"	Bent
P16	18	5	11'-0"	"
P17	40	5	9'-8"	"
P18	40	2 1/2 x 3/8	2'-9"	Flat & Bent
*S46	1	4	3'-8"	Str
*S45	1	5	4'-0"	"
*S46	1	6	4'-6"	"
*S47	1	7	5'-0"	"
*S48	1	8	5'-4"	"

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

NOTE:

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

All exposed edges to be beveled with $\frac{3}{4}$ " triangular molding.

QUANTITIES (One Pier)	
Class AE-1 Concrete	61.9 c.y.
Reinforcing Steel	6597 lbs.
Steel Piling (See Layout)	
Excavation (See Layout)	

SOO LINE OVERHEAD
CARRINGTON

PIER NOS. 2 & 3

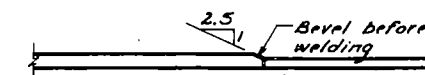
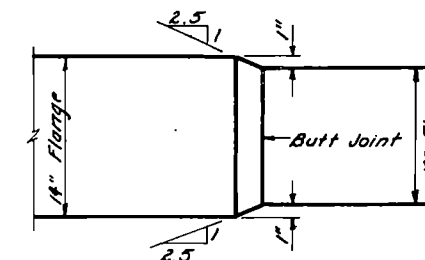
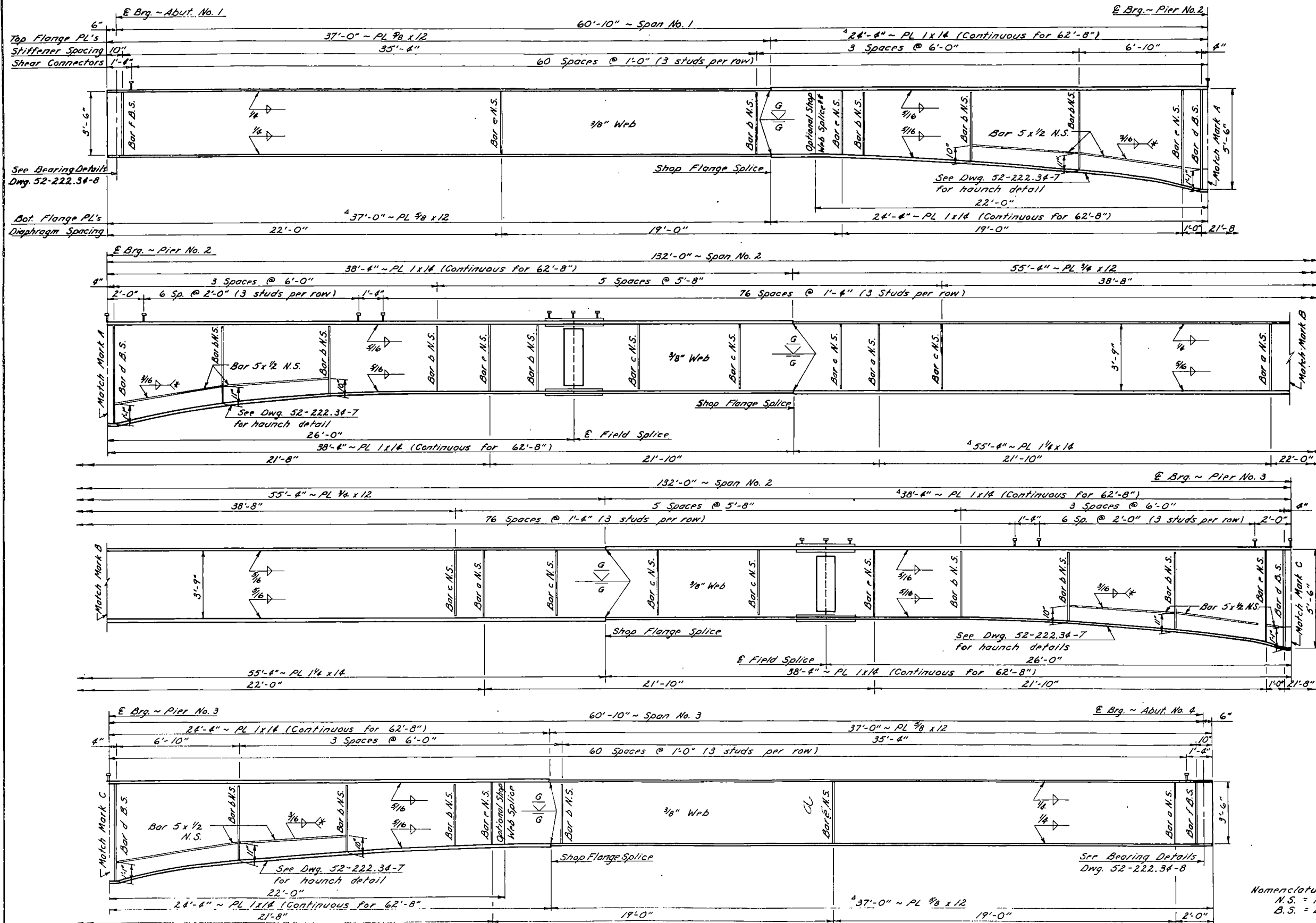


See Dwg. 52-222.34-7 for
Sections A-A, B-B & Pier
Diaphragms.

QUANTITIES
See Dwg. 52-222.36-B
SOO LINE OVERHEAD CARRINGTON
SUPERSTRUCTURE DETAILS

QUANTITIES	CHECKED BY	<i>DLP</i>
	MADE BY	<i>LEG</i>
	CHECKED BY	<i>DLS</i>

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	N. D.	FG-3-052(11)	20	



TYPICAL SHOP FLANGE SPLICE
Top Flange Shown

NOTE:

The details shown on this drawing represent Girder No. 1 in a five girder bridge. Girders No. 2, No. 3, No. 4 and No. 5 are similar to Girder No. 1 and shall be fabricated in accordance with drawings 52-222.34-5 thru 52-222.34-8.

** Structural steel pay quantities are based on the use of the optional shop web splice.

* Weld to web only

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

QUANTITIES

See Dwg. 52-222.34-8

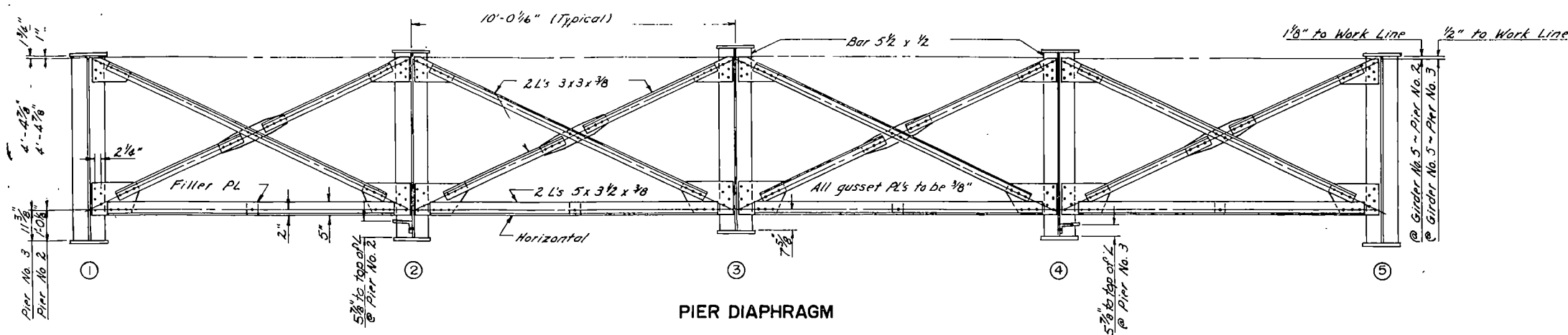
500 LINE OVERHEAD
CARRINGTON

SUPERSTRUCTURE DETAILS

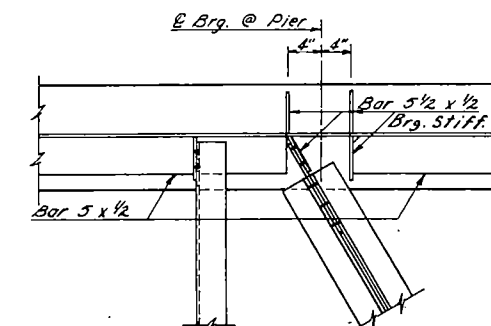
Nomenclature:
N.S. = Near Side
B.S. = Both Sides

GIRDER ELEVATION

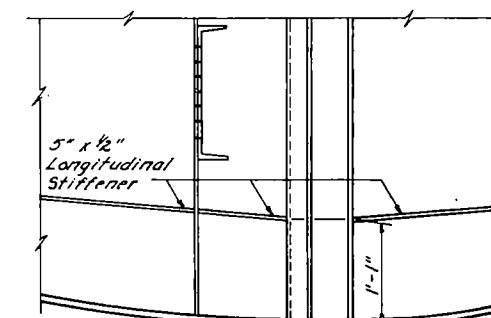
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	FG-3-052(4)	21	



PIER DIAPHRAGM

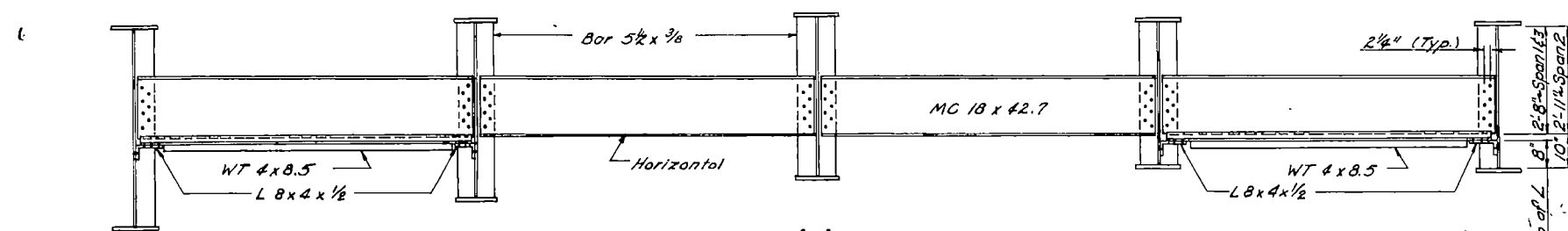


PLAN

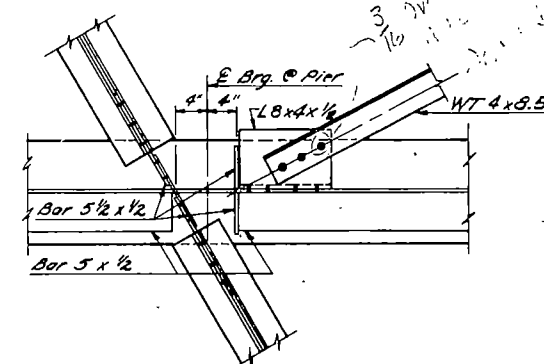


*Pier diaphragm omitted
in this view*

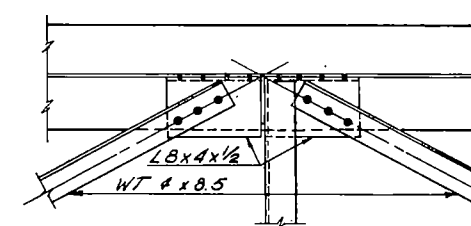
ELEVATION
DETAIL "A"



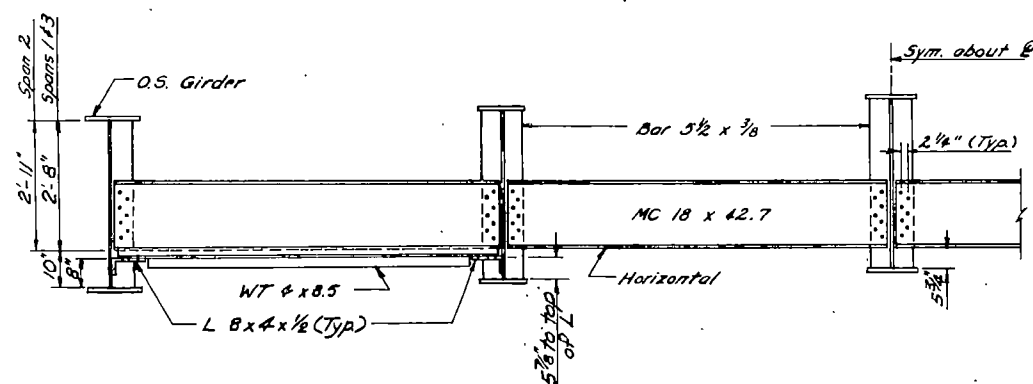
A-A



PLAN

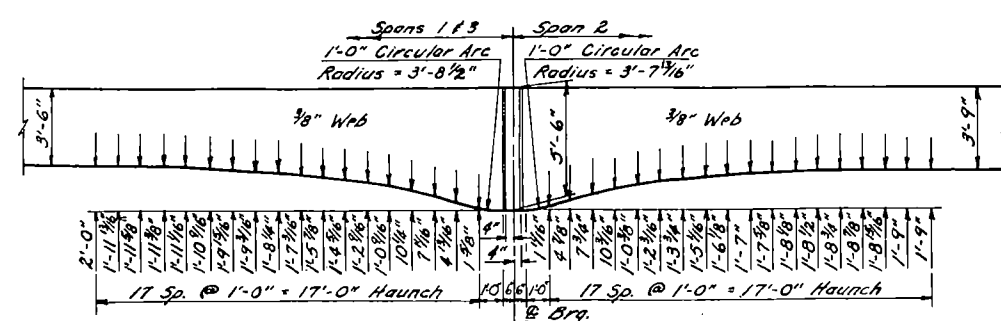


PLAN



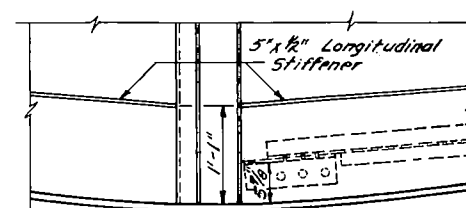
B-B

Typical for diaphragms
in Spans 1, 2, & 3



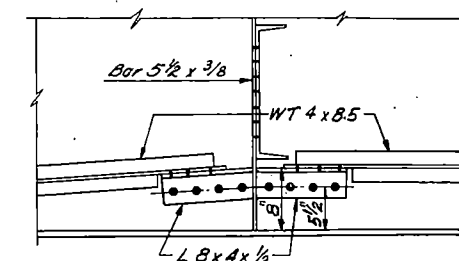
GIRDER HAUNCH DETAILS

(Showing Web Only)



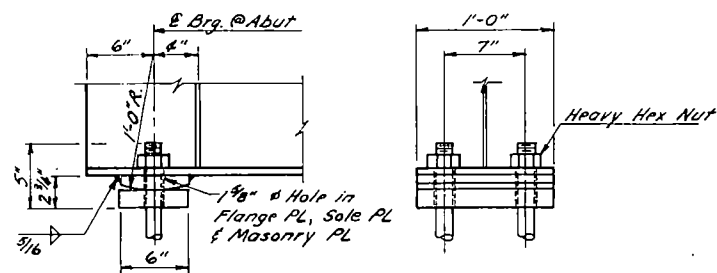
*Pier diaphragm omitted
in this view*

ELEVATION
DETAIL "B"



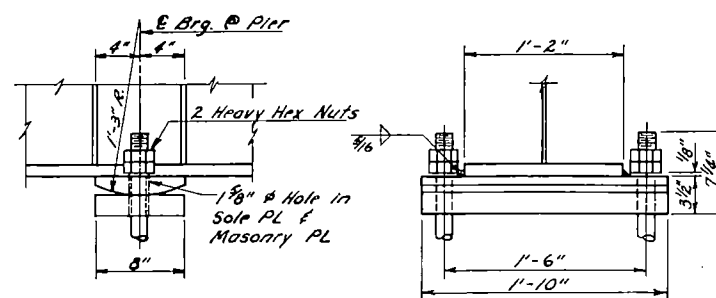
ELEVATION
DETAIL "C"

[illegible]



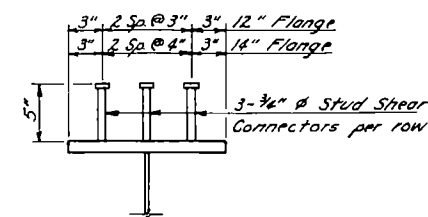
Sole Plate ~ Bar $6 \times 1\frac{1}{2} \times 1'-0"$
Masonry Plate ~ Bar $6 \times 1\frac{1}{2} \times 1'-0"$
Swedge Bolts ~ $1\frac{1}{2} \text{ } \phi \times 2'-0"$

ABUTMENT BEARING DETAILS



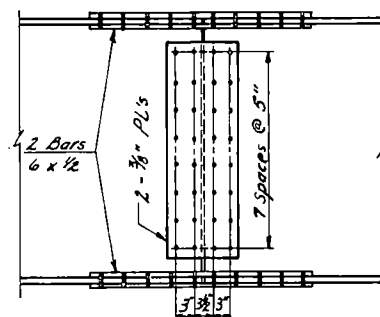
Sole Plate ~ Bar 8 x 1 1/2 x 1'-10"
Masonry Plate ~ Bar 8 x 2 x 1'-10"
Swedge Bolts ~ 1 1/2" ø x 2'-0"

PIER BEARING DETAILS

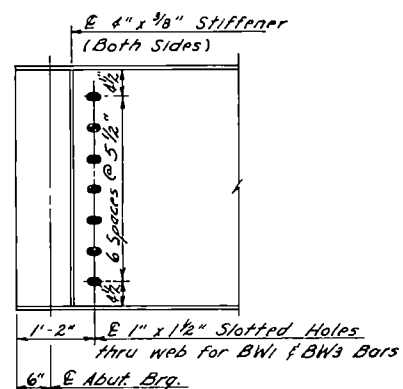


For each row of studs, one C5 x 6.7 may be substituted if contractor submits plans showing details.

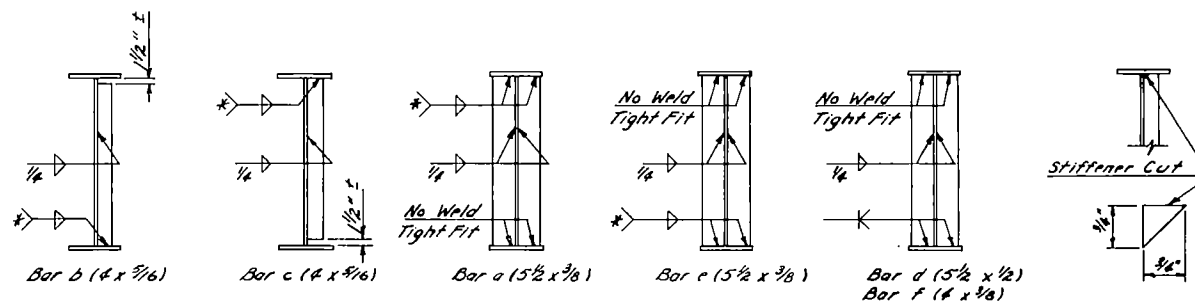
SHEAR CONNECTOR DETAILS



FIELD SPLICE DETAILS

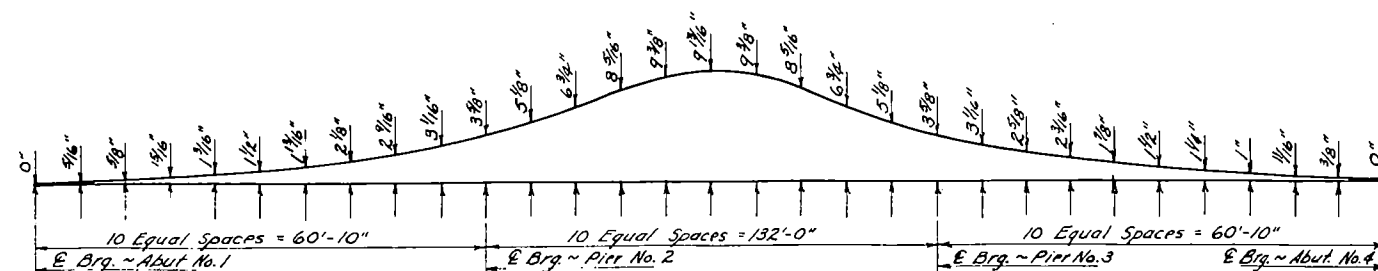


GIRDER DETAIL



WEB STIFFENER DETAILS

* Weld size to be $\frac{1}{4}$ " for flange thickness over $\frac{1}{2}$ " to $\frac{3}{4}$ " and $\frac{5}{16}$ " for flange thickness over $\frac{3}{4}$ " to $\frac{1}{2}$ ".



SHOP CAMBER DIAGRAM

Showing rise in inches above a cord between the centerline of abutment bearings for each girder line.

GIRDER NO. 5	℄ ROADWAY	GIRDER NO. 1
16/11.08	16/11.40	16/10.99
16/11.08	16/11.41	16/10.99
.10	.43	16/11.02
.11	.44	.03
.13	.46	.05
.14	.47	.07
.15	.48	.10
.16	.50	.13
.17	.52	.15
.19	.54	.15
.21	.56	.18
16/11.23	16/11.59	16/11.21
16/11.30	16/11.65	16/11.28
.37	.74	.37
.44	.81	.45
.48	.85	.50
.47	.85	.51
.41	.80	.46
.31	.71	.38
.18	.59	.26
16/11.04	.45	.13
16/10.91	16/11.33	16/11.02
16/10.86	16/11.28	16/10.97
.81	.23	.92
.76	.19	.88
.72	.15	.85
.67	.11	.81
.63	.07	.78
.59	16/11.03	.74
.55	16/10.99	.71
.51	.95	.67
16/10.46	16/10.91	16/10.63
16/10.45	16/10.90	16/10.62

1'-1 7/8"

Begin Bridge

10 Eq. Sp. = 60'-10 1/8"

± Brg. ± Abut. 1

10 Eq. Sp. = 132'-0"

± Pier 2 ± Pier 3

10 Eq. Sp. = 60'-10 7/8"

± Brg. ± Abut. 4

1'-1 7/8"

End Bridge

SCREED ELEVATIONS

Elevations are to top of finished concrete

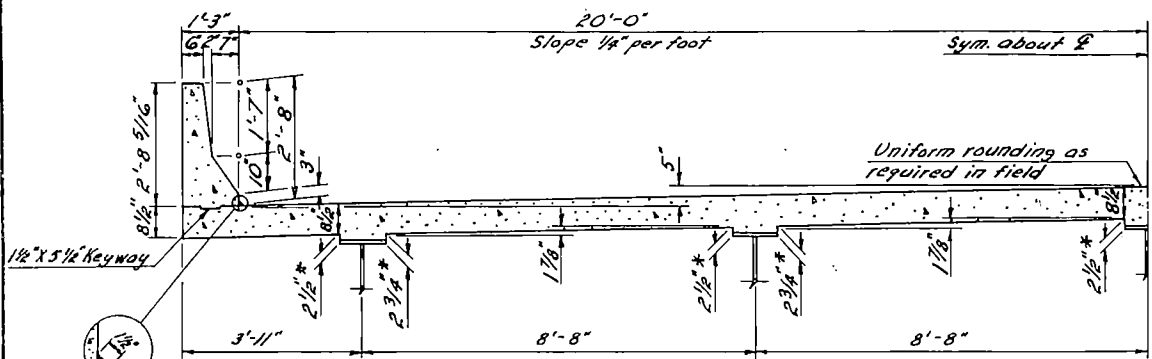
See Correction ~ # 52-222-34

QUANTITIES	
Structural Steel A572	106,479 Lbs.
Structural Steel A36	126,489 Lbs.

SOO LINE OVERHEAD
CARRINGTON

SUPERSTRUCTURE DETAILS

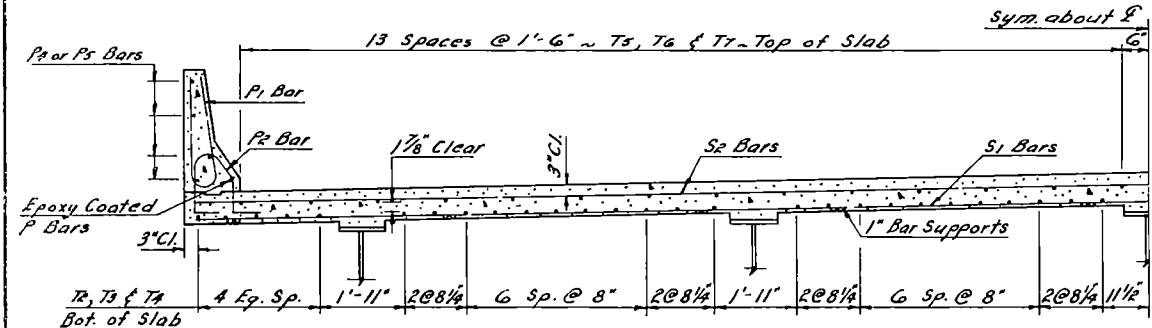
PROJ. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	PG-3-052(111)	24	



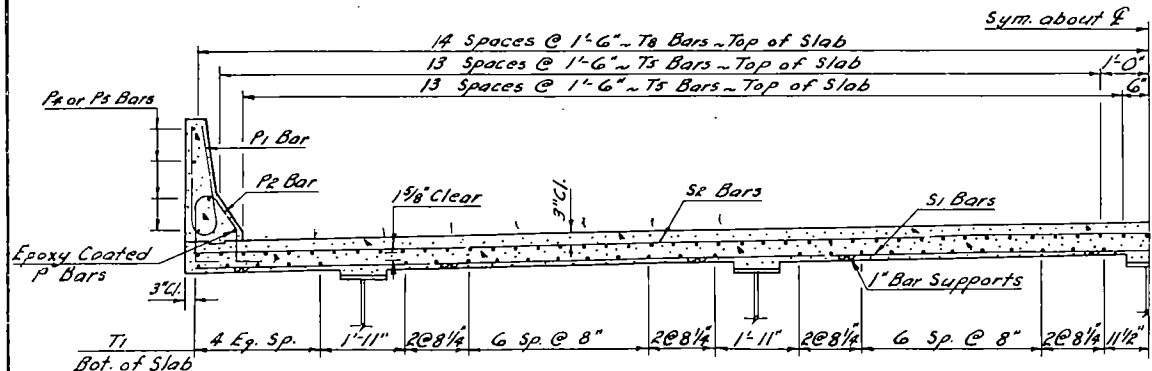
Seal corner with Asphalt Flashing Compound (Knife Grade)

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

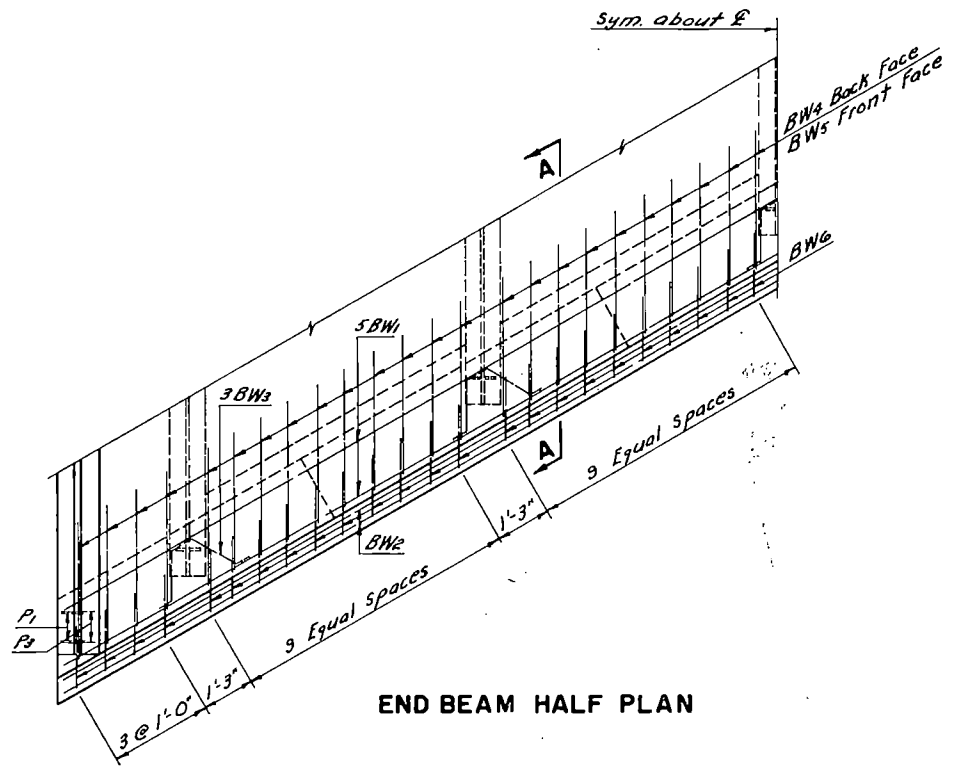
HALF SECTION OF SLAB
Showing Dimensions



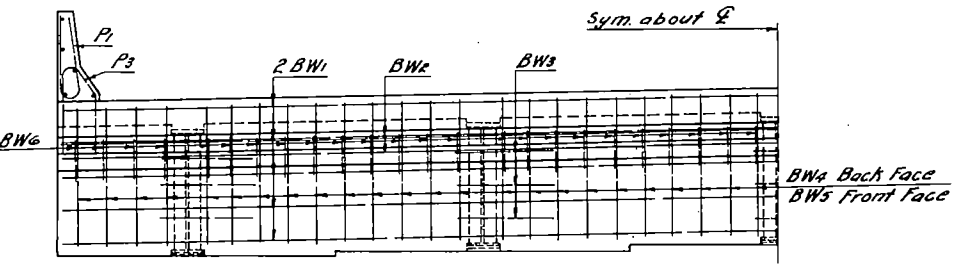
HALF SECTION OF SLAB
Showing Reinforcing Between Supports



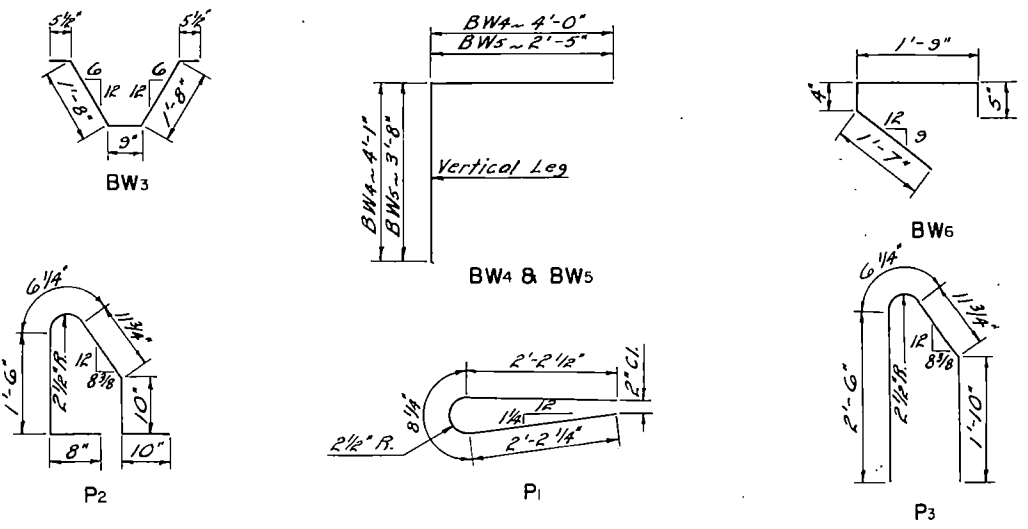
HALF SECTION OF SLAB
Showing Reinforcing Over Supports



END BEAM HALF PLAN

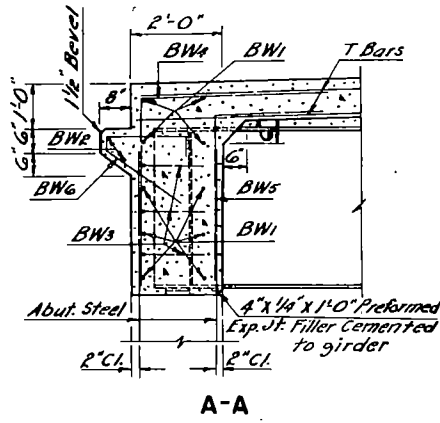


END BEAM HALF ELEVATION



BENT BAR DETAILS
Dimensions shown are out to out

BAR LIST (SUPERSTRUCTURE)				
MARK	NUMBER	SIZE	LENGTH	SHAPE
BW1	20	6	48'-8"	Str.
BW2	4	5	48'-8"	"
BW3	30	5	5'-0"	Bent
BW4	96	6	8'-1"	"
BW5	96	6	6'-1"	"
BW6	96	4	4'-1"	"
P1	502	5	5'-1"	Bent
P2	574	5	5'-4"	"
P3	8	5	5'-10"	"
T1	32	4	30'-5"	Str.
T2	40	4	26'-1"	"
T3	8	4	30'-5"	"
T4	10	4	26'-1"	"
S1	427	6	42'-2"	Str.
S2	427	6	42'-2"	"
S3-S4	2 Sets	6	92'-4"	"
S5-S6	2 Sets	6	92'-4"	"
T5	108	5	51'-1"	Str.
T6	54	5	54'-0"	"
T7	54	5	58'-6"	"
T8	54	5	47'-0"	"
T9	168	4	47'-0"	"
T10	28	4	38'-4"	"
T11	28	4	36'-10"	"
T12	58	6	47'-0"	"



QUANTITIES	
Class AA-3 Concrete	363.2 C.Y.
Reinforcing Steel	53,111 Lbs.
Epoxy Coated Reinf. Steel	44,163 Lbs.

500 LINE OVERHEAD
CARRINGTON

SUPERSTRUCTURE DETAILS