85-012.746

STATE	PROJECT NO	PCN	SECTION NO	SHEET NO
ND	SIM-SNH-5-999(005)	16371	1	1

JOB# 25

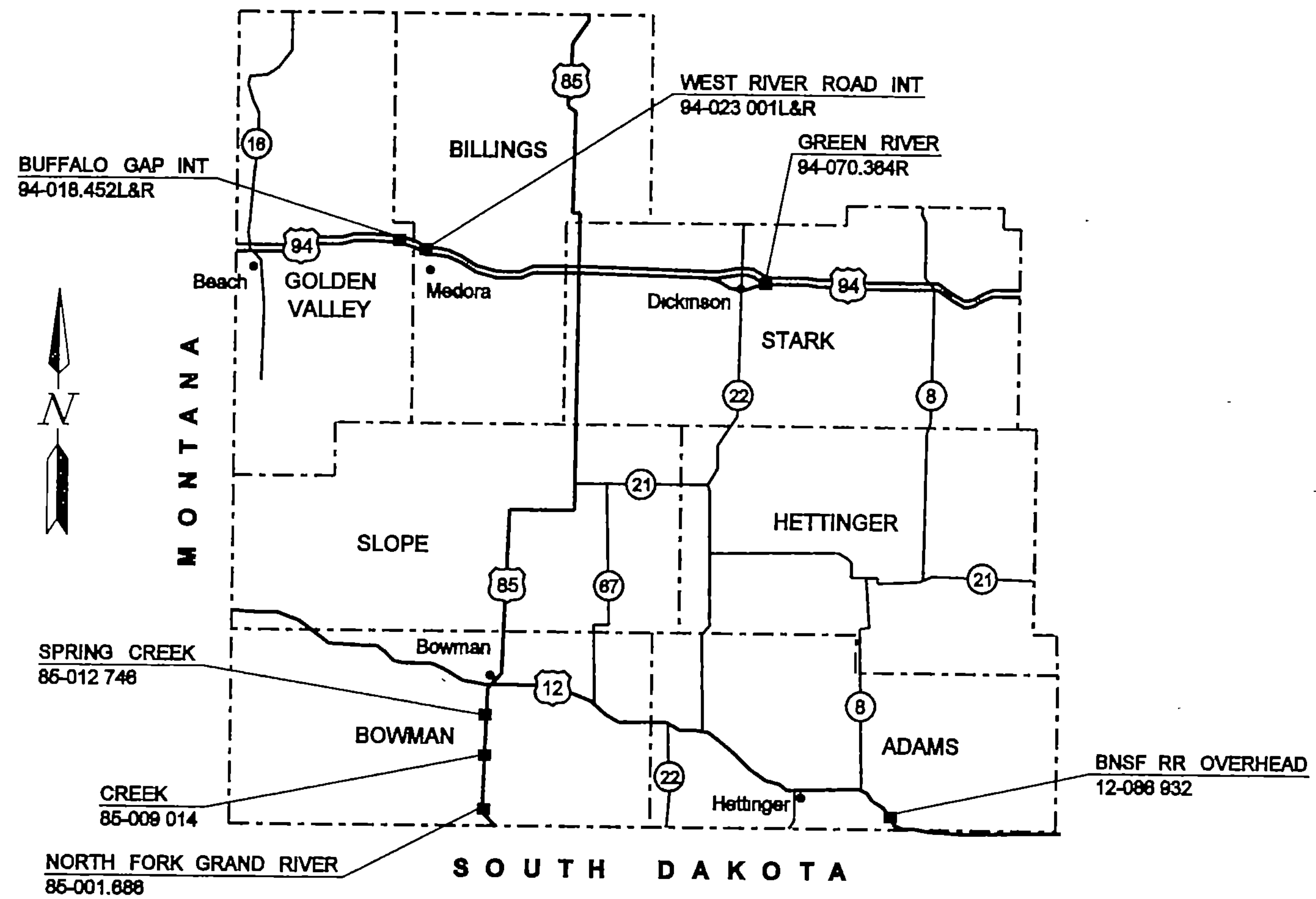
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

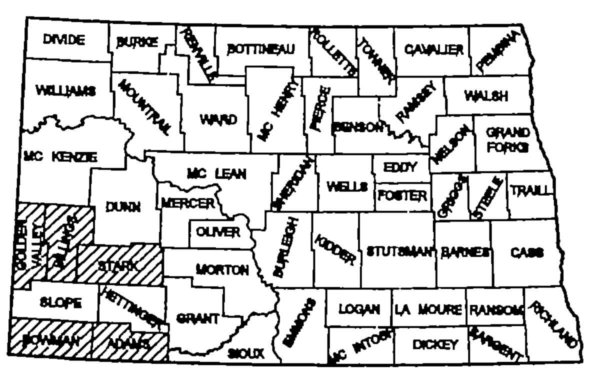
SIM-SNH-5-999(005)

ADAMS, BOWMAN, GOLDEN VALLEY, BILLINGS AND STARK COUNTIES

BRIDGE MAINTENANCE INCLUDING DECK SPALL REPAIR,
RESEALING DECK JOINTS AND MUD JACKING

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota Department of Transportation October 2002, Standard Drawings currently in effect, and other Contract Provisions submitted herein.





STATE COUNTY MAP

DESIGNERS

Brian Raschke

APPROVED DATE ____________

OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

APPROVED DATE ____________

FEDERAL HIGHWAY ADMINISTRATION
U S. 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.

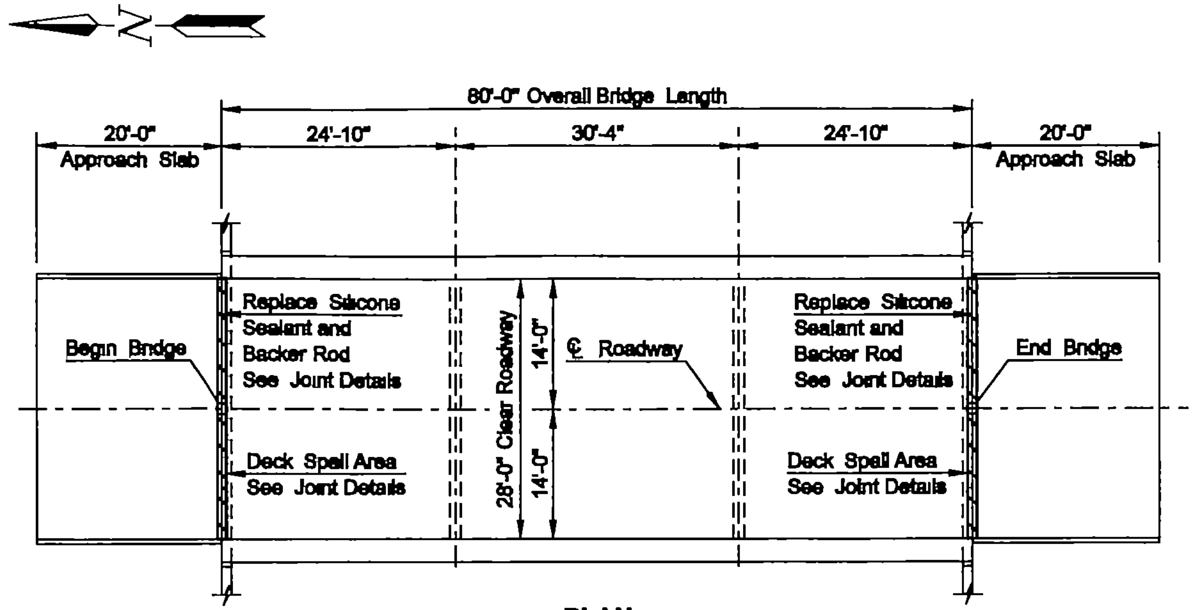
APPROVED DATE 02/13/08

Terrence R. Udland
BRIDGE ENGINEER

This document was originally issued and sealed by Terrence R. Udland, Registration Number PE- 2674, on 02/13/08 and the original document is stored at the North Dakota Department of Transportation

2/13/2008 3 58 16 PM R:\project\50999000 005\bridge\001TS_001_TITLE.dgn

STATE	PROJECT NUMBER	SECTION NO	SHEET NO
ND	SNH-5-999(005)	170	5



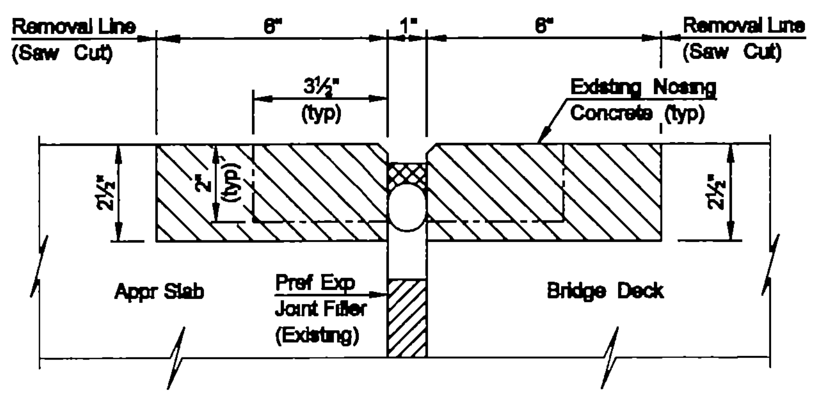
PLAN

NOTES:

100 SCOPE OF WORK. Work at this site (Hwy 85, RP 12.746) consists of repairing concrete spall areas on the bridge deck and approach slab surfaces and resealing the joints between the bridge and approach slabs.

930 SILICONE SEALANT: The silicone sealant and backer rod shall be replaced in the joints between the approach slabs and deck at both ends of the bridge. After placing the new concrete, the joint shall be cleaned of all foreign material and sandblasted before the new backer rod and silicone sealant are installed. A low modulus (Type 5) silicone sealant shall be used. The backer rod diameter may need to be larger if the existing joint is greater than the 1" as shown. The new silicone sealant and backer rod shall extend 6" up the face of the curb. All materials, labor and equipment required to remove and replace the backer rod and silicone sealant shall be included in the bid item "Silicone Sealant."

930 DECK SPALL REPAIR. The bridge deck and approach slabs have spall areas as shown at both ends of the bridge. The deck spall repair shall be constructed as a Bridge Deck Overlay meeting Section 650 of the NDDOT Standard Specifications with the exception that a mobile mixer will not be required. The depth of removal shall be 2½". The perimeter of the repair area shall be saw cut to a depth of 1". The saw cutting and all material, labor and equipment required to remove the concrete and repair the deck spall areas shall be included in the bid item "Deck Spall Repair."

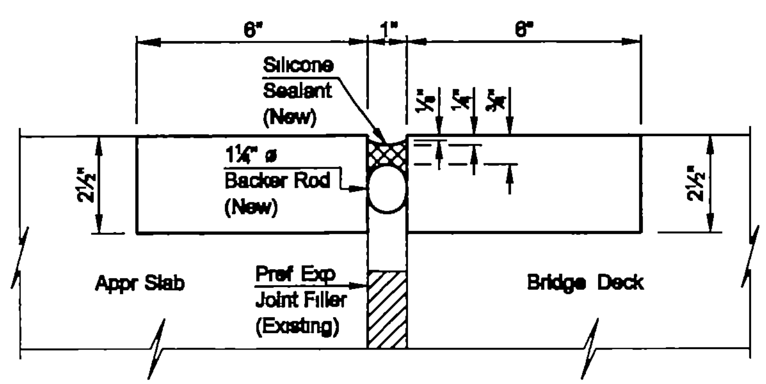


(SHOWING CONCRETE REMOVAL)

EXISTING JOINT DETAIL

Indicates Concrete to be Removed

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
930	8644	SILICONE SEALANT	LF	58
930	9610	DECK SPALL REPAIR	SF	56



(SHOWING OVERLAY CONCRETE)

NEW JOINT DETAIL

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 02/13/08 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPRING CREEK

BRIDGE LAYOUT

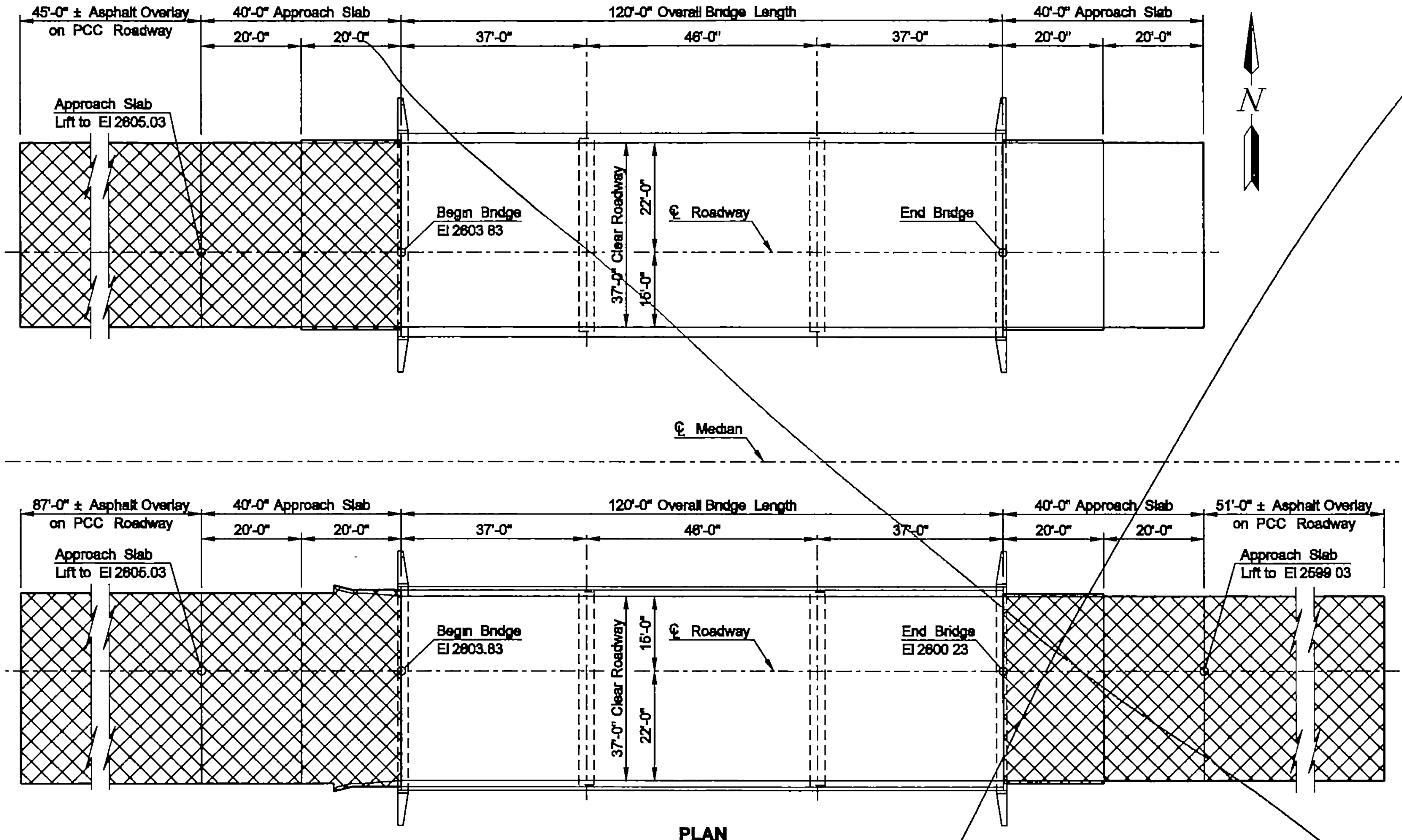
PROJECT SNH-5-999(005)

BOWMAN COUNTY

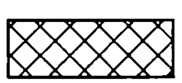
02/13/08 — DATE

Terrence R Udland — BRIDGE ENGINEER

STATE	PROJECT NUMBER	SECTION NO	SHEET NO
ND	SIM-5-999(005)	170	6



PLAN



Indicates Area to be Lifted

NOTES:

100 SCOPE OF WORK Work at this site (I94, RP 18.452) consists of mud jacking the approach slabs to their original positions

550 PCC PAVEMENT GRINDING. The Contractor shall diamond grind the driving surface after mud jacking the approach slabs and roadway The limits of the diamond grinding shall start from the end of the bridge and extend 100' beyond the areas that were lifted. The Engineer will only pay for the area that was diamond ground regardless of the number of passes required by the Contractor's operation

930 MUD JACKING: The approach slabs and concrete roadway pavement at the ends of the bridges have settled causing misalignment and poor ride quality The amount of approach slab settlement varies from approximately 2" to 3½" The Contractor shall mud jack the approach slabs to the elevations shown to improve the alignment and ride All labor, materials and equipment necessary to mud jack and restore the approach slabs and roadway pavement shall be included in the square yard bid item "Mud Jacking." Other methods of lifting/jacking the approach slabs and roadway pavement may be used if written approval is granted from the Engineer Concrete slabs that become damaged during lifting shall be replaced at the Contractor's expense

The grout mix used for mud jacking the approach slabs shall consist of one part Type I or II Portland Cement by weight and three parts Fly Ash by weight. Water shall be added to achieve the desired fluidity Chemical admixtures shall be allowed in order to achieve the desired properties if necessary No other additives will be allowed. The materials shall meet the following parameters.

Cement	Section 804 01 of the Standard Specifications
Fly Ash	Section 820.01 of the Standard Specifications
Chemical Admixtures	Section 808 of the Standard Specifications
Water	Section 812.01 of the Standard Specifications

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
550	0210	PCC PAVEMENT GRINDING	SY	2479
930	9635	MUD JACKING	SY	1258

This document was originally issued and sealed by Brian W Raschke, Registration Number PE 4361, on 02/13/08 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

BUFFALO GAP INTERCHANGE

BRIDGE LAYOUT

PROJECT. SIM-5-999(005)

GOLDEN VALLEY COUNTY

02/13/08 — DATE

Terrence R Udland — BRIDGE ENGINEER

DESIGN DATA				
Traffic	Average Daily			Est.Max.Hr.
Current 1998	Pass: 920	Trucks 190	Total 1110	120
Forecast 2018	Pass: 1110	Trucks 230	Total 1340	140
Minimum Sight Dist. for:		Design Speed 65		
Stopping 550		Bridges		
Safe Passing 2300'				
Passing for Marking 1100'				

JOB# 11

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	NH-5-085(036)000	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

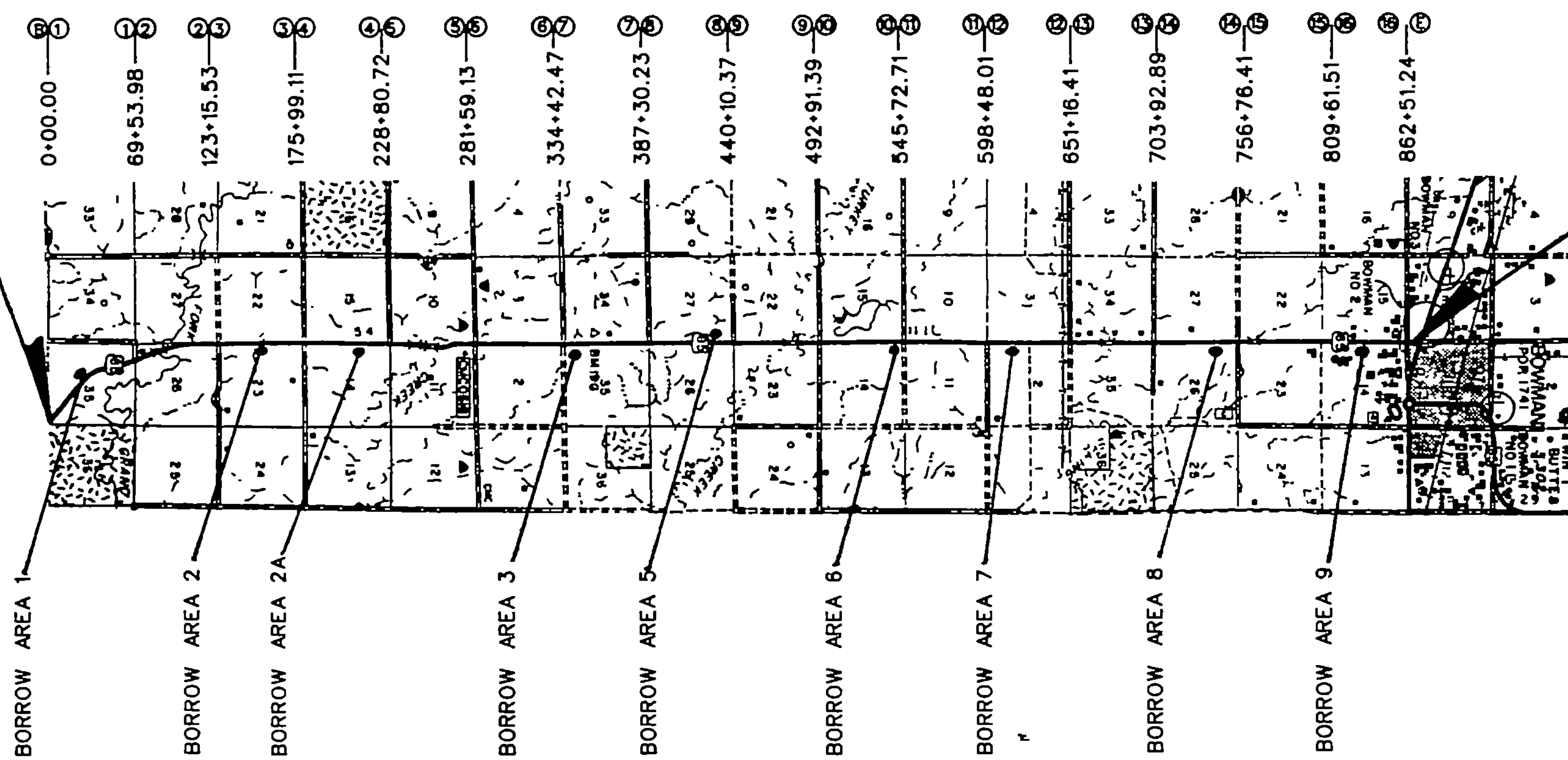
PROJECT NO. NH-5-085(036)000
IN BOWMAN COUNTY
WIDENING, BLENDED BASE COURSE,
HOT BITUMINOUS PAVEMENT AND INCIDENTALS

GOVERNING SPECIFICATIONS:

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

LENGTH OF PROJECT
16.340 MILES

Begin Proj. NH-5-085(036)000
So Dak State Line. Sta. 0+00.
Sec. 35. T 129 N. R 102 W.



End Project NH-5-085(036)000
640' South of the intersection
of US 85 and US 12. Sta. 862+75
Sec. 11. T131 N. R 102 W.

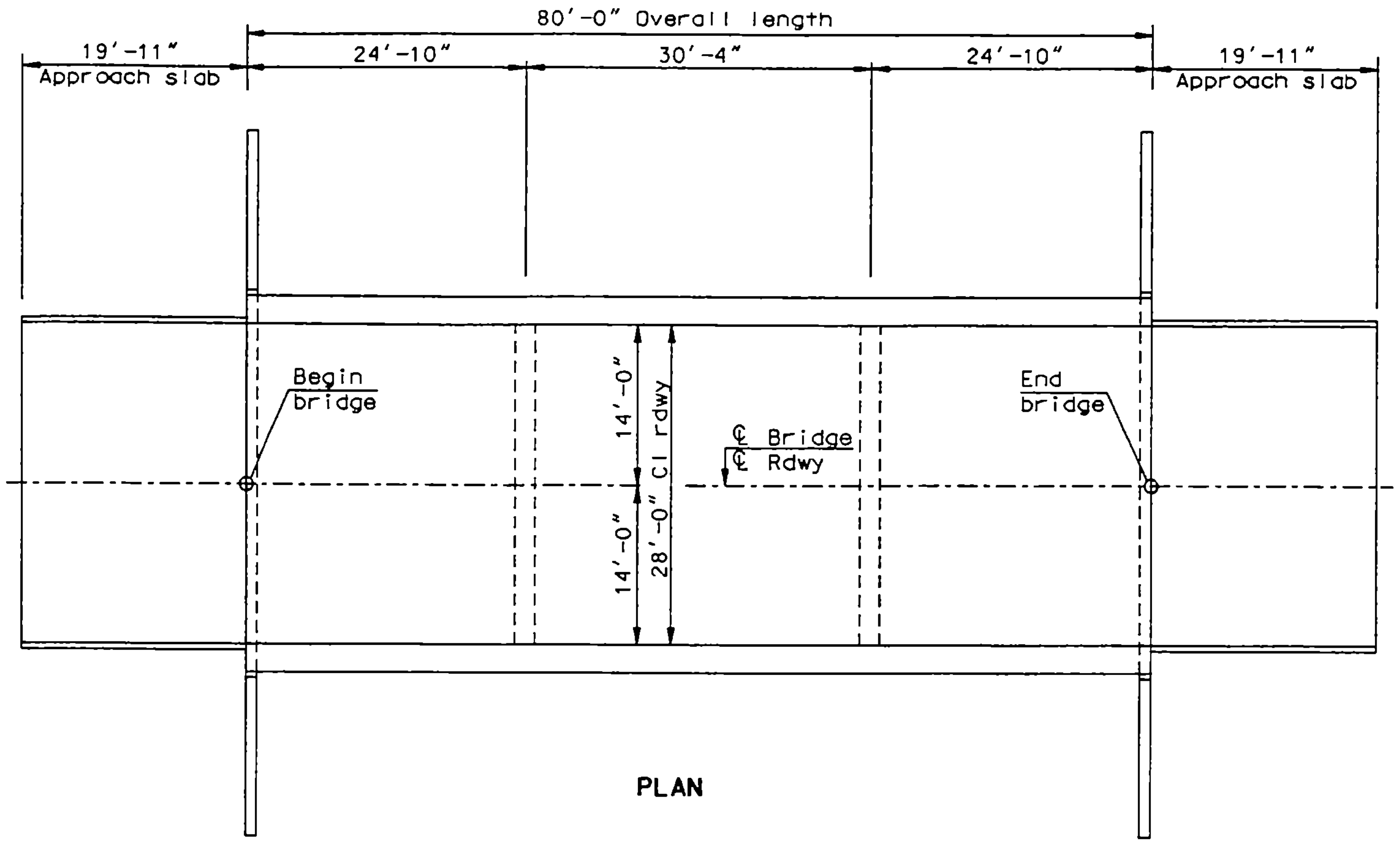
DESIGNER [signature]
DESIGNER Douglas A. Schumaker
DESIGNER
RECOMMEND APPROVAL 8-26, 1999
DESIGN ENGINEER [signature]

APPROVED DATE 8-26-99
[signature]
DIRECTOR OF HIGHWAYS AND ENGINEERING
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

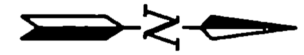
DAVID K. O. LEER REGISTERED PROFESSIONAL P.E. 1199 ENGINEER NORTH DAKOTA

...\50085000.036\d_rural\title.dgn Aug. 06, 1999 11:48:48

BRIDGE CODE	FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
X-020	8	ND	NH-5-085(036)000	142



PLAN



SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
550	0215	CONCRETE BRIDGE APPROACH SLAB	SY	128
602	1130	CLASS AE-3 CONCRETE	CY	2
612	0115	REINFORCING STEEL GRADE 60 EPOXY	LBS	594
930	8642	NOSING CONCRETE	CF	6
930	8644	SILICONE SEALANT	LF	59

NOTES:

100 SCOPE OF WORK: Work at this site consists of installing an approach lip and bridge approach slab at each abutment.

550 BRIDGE APPROACH SLAB: Included in the approach slab bid item is the asphalt removal, select backfill, coarse aggregate, class 1 excavation, geotextile fabric, polystyrene insulation board, drainage pipes, concrete headwall and the materials to build the approach slab.

930 NOSING CONCRETE: The nosing concrete material shall be an elastomeric concrete or a polymeric concrete that will provide a durable edge that can withstand live-load traffic without chipping or spalling. The nosing concrete material shall be Silspec 900 PNS, manufactured by Silicone Specialties Inc.; Waborcrete II, manufactured by Watson Bowman Acme; Elastomeric Concrete, manufactured by D. S. Brown Company, or an approved equal. The nosing concrete shall be mixed and installed according to the manufacturer's recommendation. All labor and materials required to install nosing concrete shall be included in the bid item "Nosing Concrete".

930 SILICONE SEALANT: The silicone sealand shall be a rapid cure, self leveling, cold applied two component silicone sealant that will bond to and be compatible to the nosing concrete used. The sealant shall be installed according to the manufacturer's recommendation. The silicone sealant and the nosing concrete must be supplied by the same manufacturer as a complete system. The backer rod and necessary bonding material shall be included in the bid item "Silicone Sealant".

930 TECHNICAL ASSISTANCE: The contractor shall acquire technical assistance from the manufacturer of the nosing concrete and silicone sealant for the surface preparation and installation of the nosing concrete and the silicone sealant. A technical representative must be present for the start of surface preparation and installation for at least one day. The contractor shall contact the manufacturer at least two weeks prior to the installation. The technical assistance shall be provided at no additional cost to the Department.

LARRY L. SCHWARTZ
REGISTERED PROFESSIONAL ENGINEER
2099
NORTH DAKOTA

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPRING CREEK

BRIDGE LAYOUT

PROJECT: NH-5-085(036)000

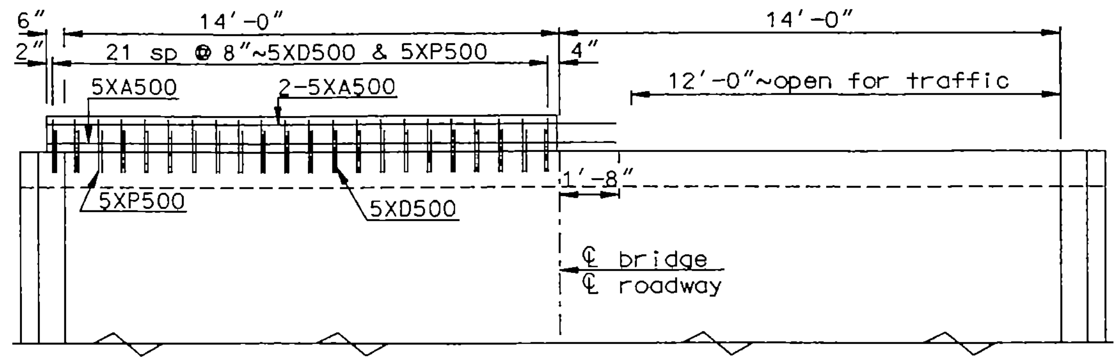
STATION 673 + 11

BOWMAN COUNTY

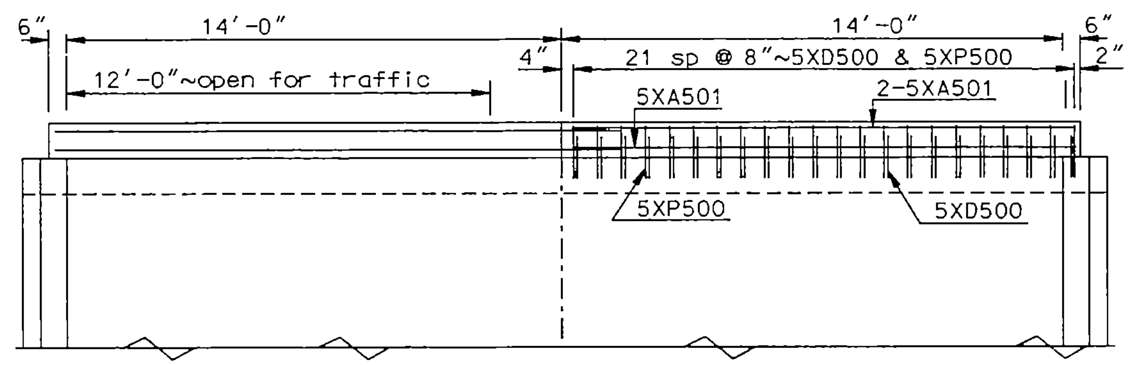
APPROVED
7 JUL 99
DATE
Larry Schwartz
ENGINEER

BRLO 98LCS085 LLS

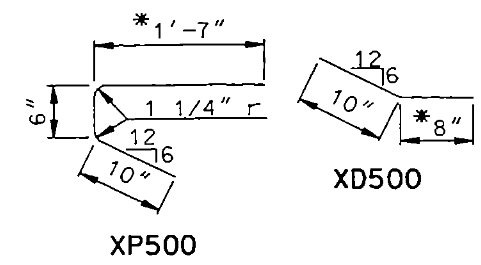
85-012.746



PLAN VIEW
STAGE 1 CONSTRUCTION



PLAN VIEW
STAGE 2 CONSTRUCTION



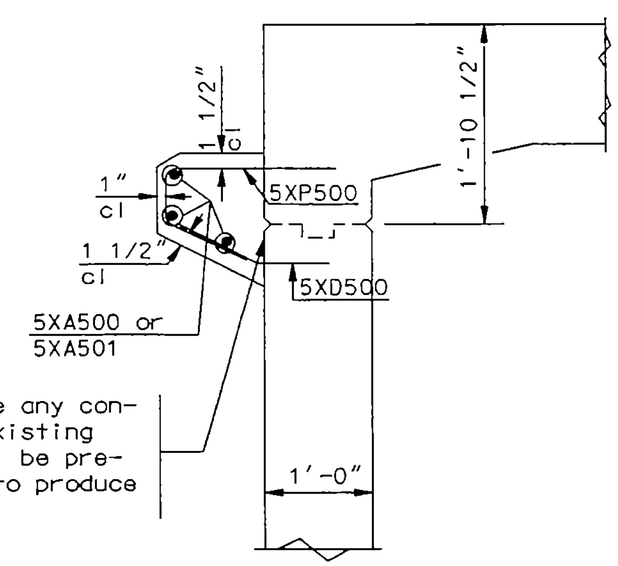
BAR LIST
Dimensions shown are out to out

BAR LIST			
SIZE	MARK	NO	LENGTH
5	XA500	6	16'-0"
5	XA501	6	14'-2"
5	XD500	88	* 1'-6"
5	XP500	88	* 2'-11"

NOTES:

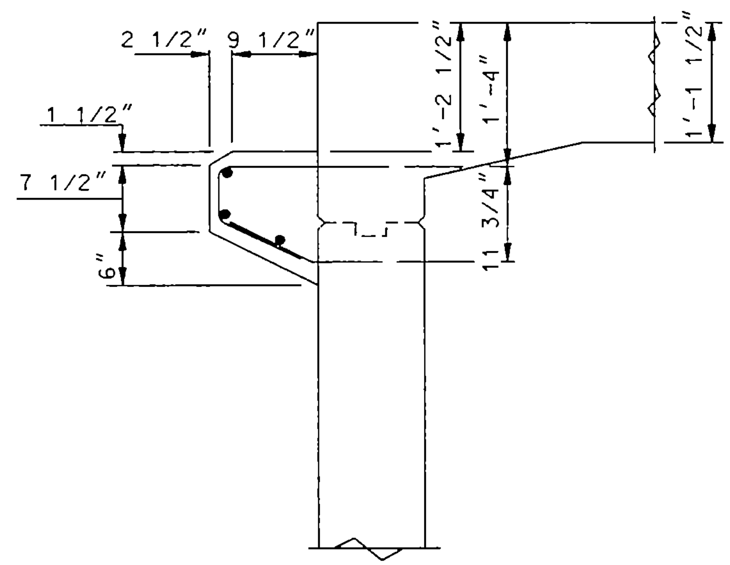
* Length may vary depending on manufacturer's recommendations for anchorage.

5XD500 & 5XP500 shall be installed according to the manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Sec. 806.02 of the NDDOT Standard Specifications.



Bush hammer finish: Before any concrete is placed against existing concrete the surface shall be prepared with a bush hammer to produce a clean rough finish.

APPROACH LIP @ ℄
Showing reinforcing



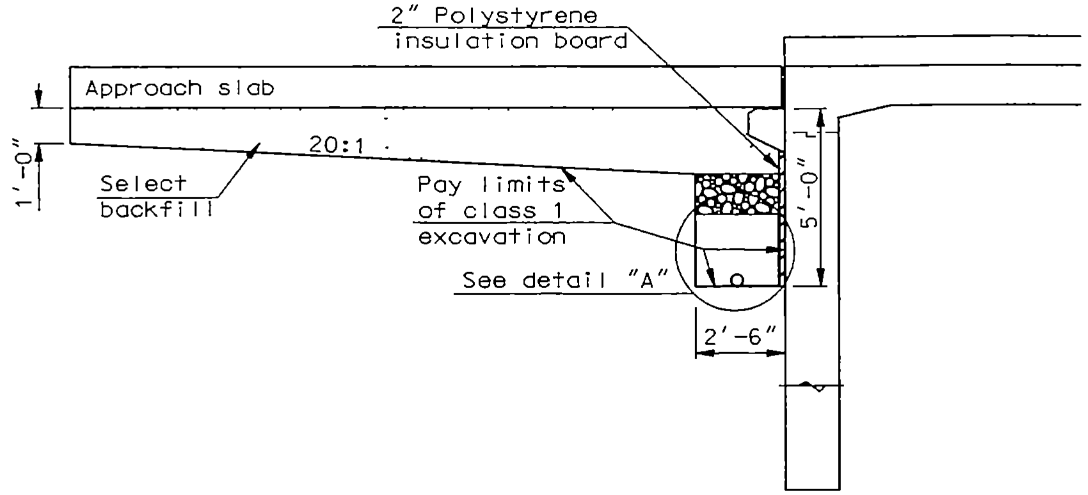
APPROACH LIP @ ℄
Showing dimensions

QUANTITIES	
Class AE-3 Concrete	2.1 CY
Reinf. Steel Grade 60 Epoxy	594 LBS

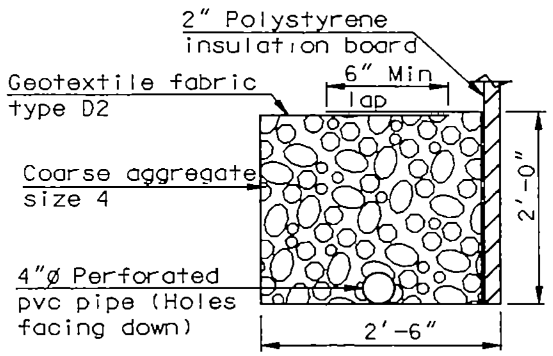
SPRING CREEK

APPROACH LIP DETAILS

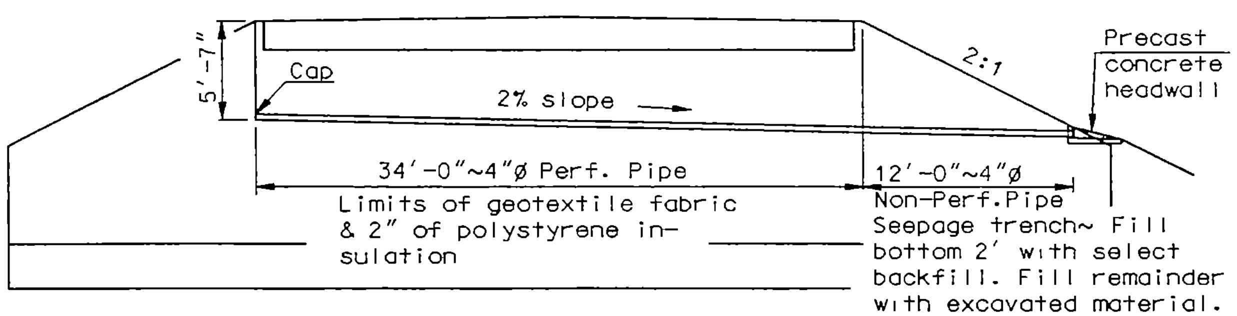
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	NH-5-085(036)000	144



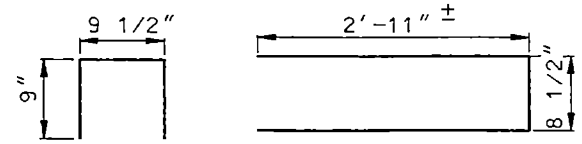
DETAIL AT ℄ ABUTMENT



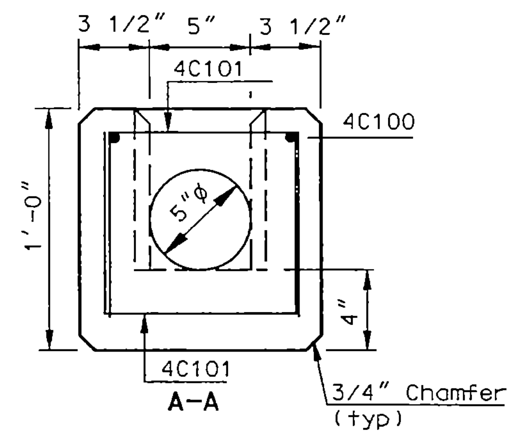
DETAIL "A"

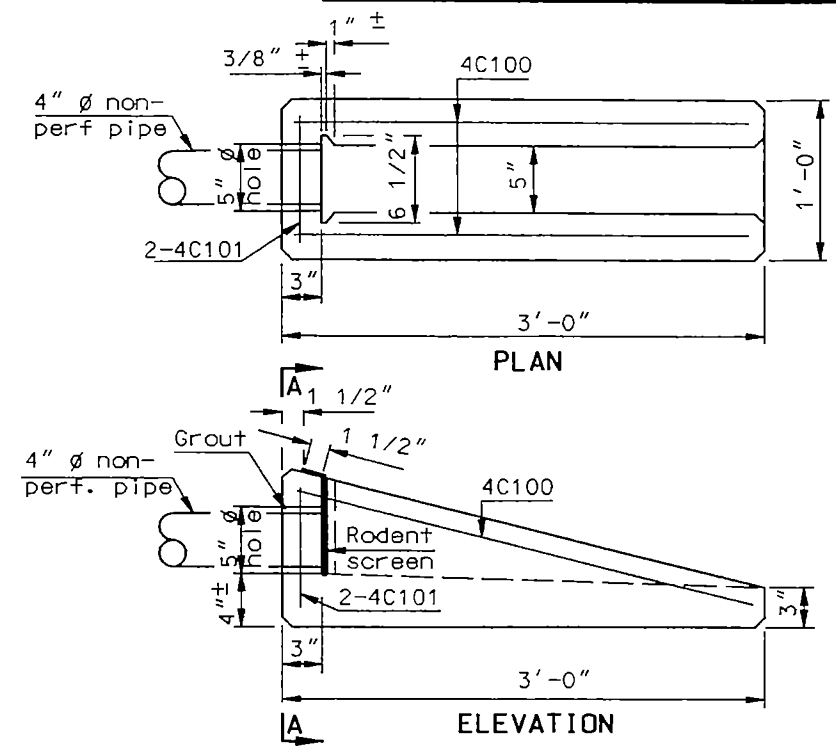


BACK FACE OF ABUTMENT

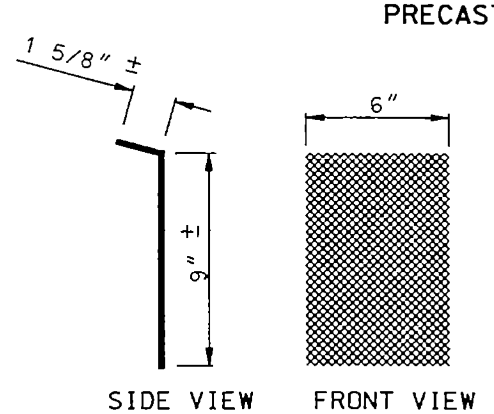


BENT BAR DETAILS





PRECAST CONCRETE HEADWALL DETAILS



RODENT SCREEN DETAILS

NOTE:

The dimensions for the rodent screen are approximate to allow for bending and a snug fit into the slot in the backwall.

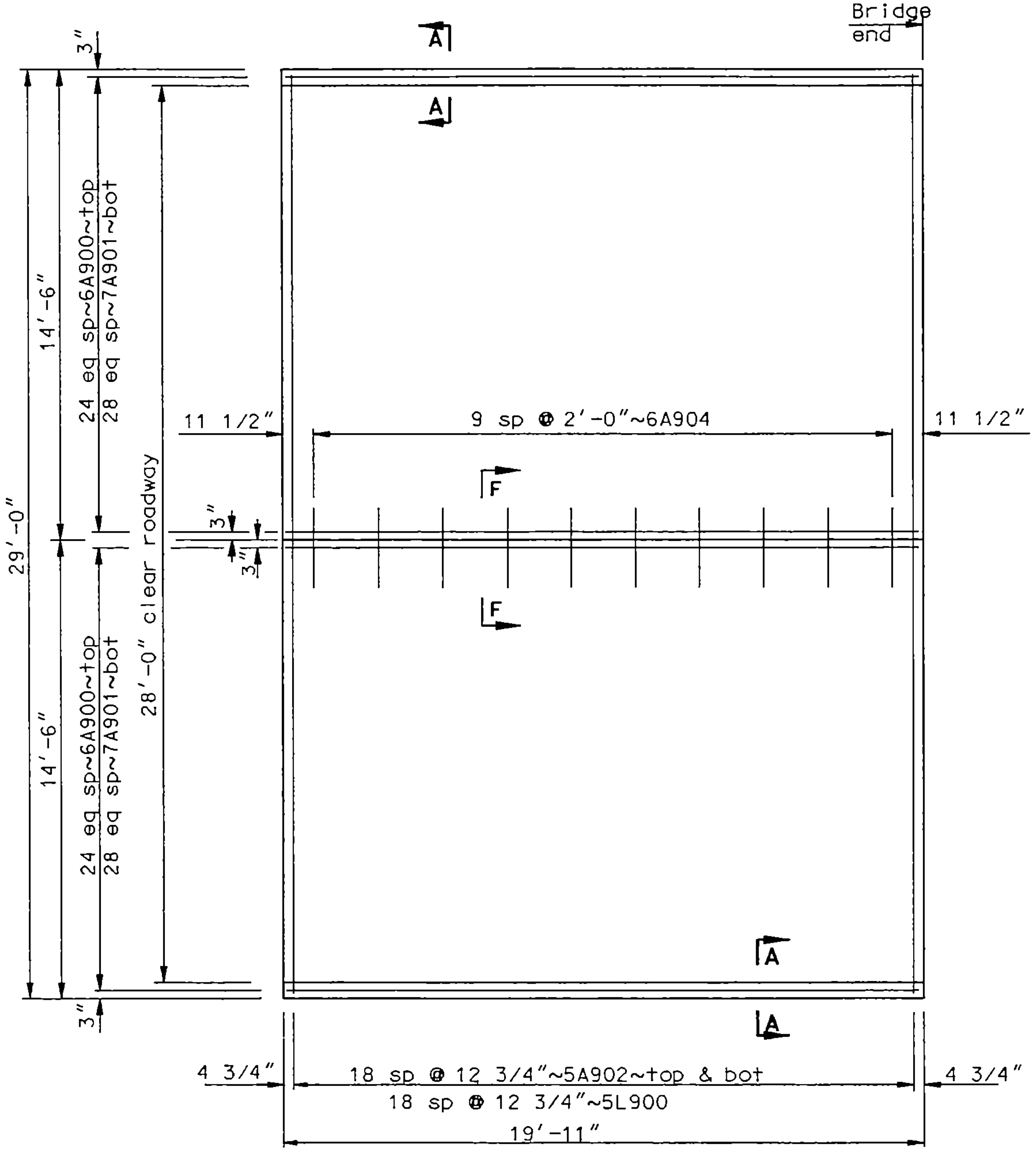
The rodent screen shall be fabricated from flattened, expanded metal with screen opening of approximately 0.25 square inches. The screen shall be 16 ga. metal and be hot dip galvanized after fabrication.

The cost of the filter fabric (underdrains), the coarse aggregate size 4, precast concrete head-walls, rodent screen, cap, 2" polystyrene insul-ation board, 4"ø perforated pipe, 4"ø non-perforated pipe, select backfill and class 1 excavation shall be included in the price bid for "Concrete Bridge Approach Slab".

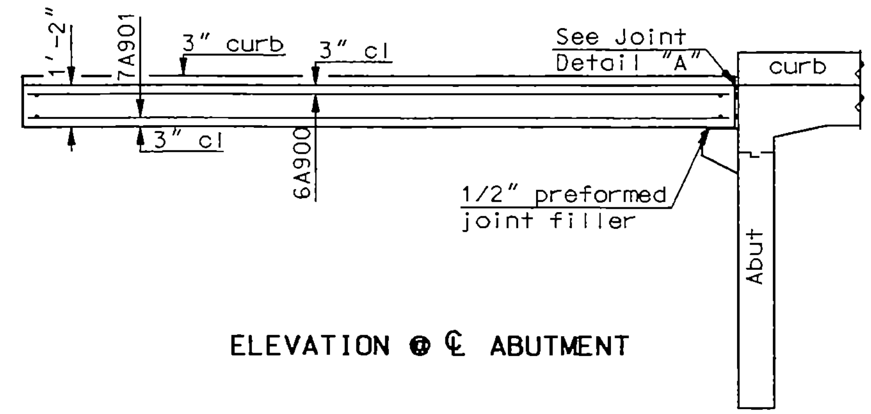
SPRING CREEK

EXCAVATION & BACKFILL AT ABUTMENT

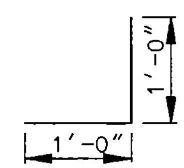
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	NH-5-085(036)000	145



PLAN



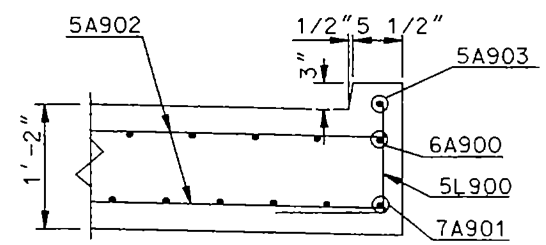
ELEVATION @ ℄ ABUTMENT



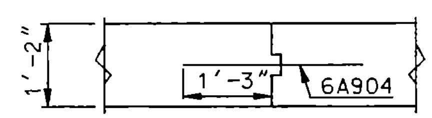
L900

BENT BAR DETAIL

Dimensions shown are out to out



A-A



F-F

WIDTH = 28'-0" CL RDWY			
SKEW ANGLE = 0°			
BAR LIST - ONE SLAB			
SIZE	MARK	NO	LENGTH
6	A900	50	19'-7"
7	A901	58	19'-7"
5	A902	38	14'-2"
5	A903	2	19'-7"
6	A904	10	2'-6"
5	L900	38	2'-0"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS)	CONCRETE CY
4.511	25.1

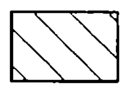
See dwg no. 85-012.746-4 for notes.

QUANTITIES (ONE APPROACH)	
Approach slab	64.2 SY

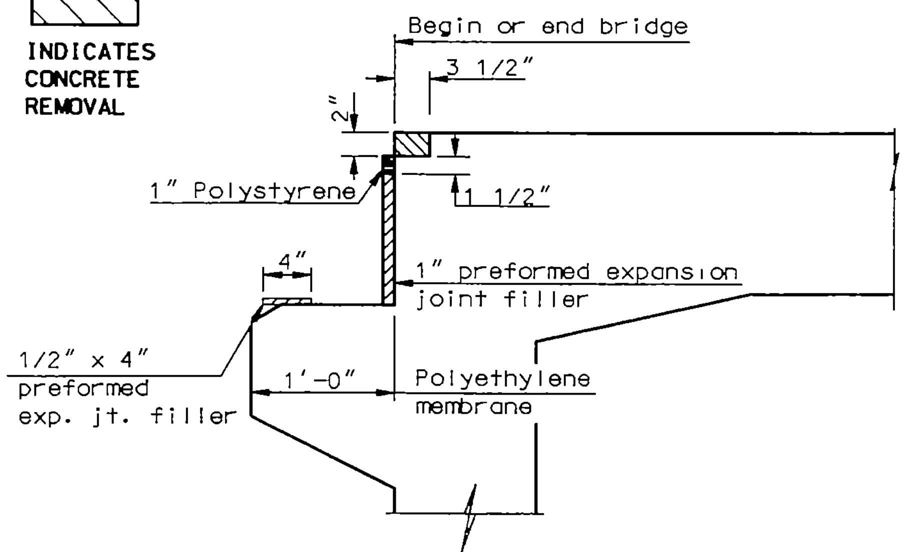
SPRING CREEK

APPROACH SLAB

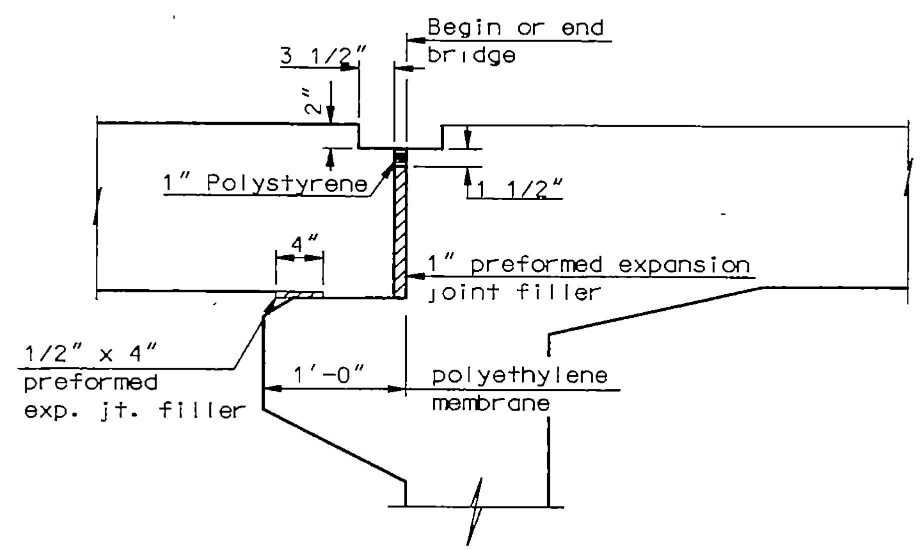
FHWA REGION	STATE	FED AID PROJ. NO	SHEET NO
8	N.D	NH-5-085(036)000	146



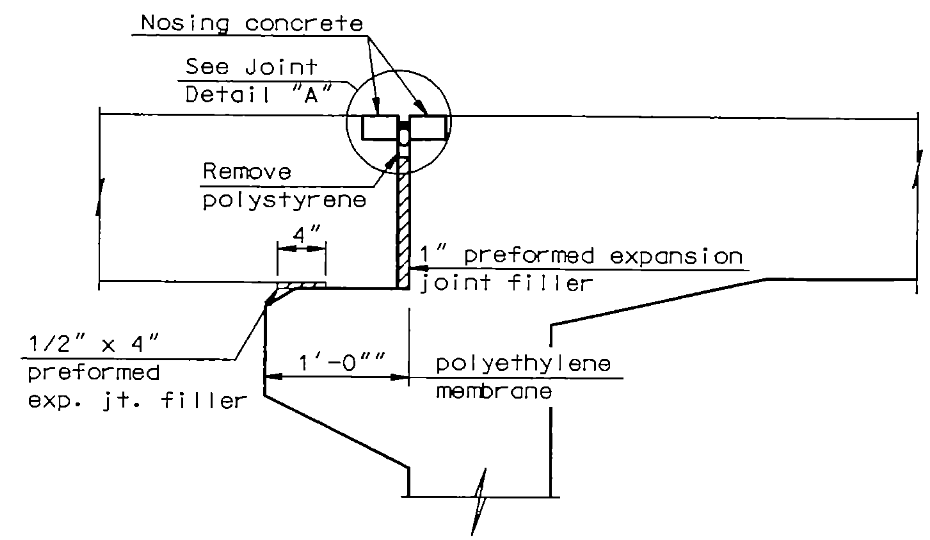
INDICATES CONCRETE REMOVAL



STAGE 1



STAGE 2



STAGE 2

APPROACH SLAB - BRIDGE DECK JOINT

STAGE 1:

1. Remove concrete at ends of deck to allow for nosing concrete.

2. Place the 1" thick preformed expansion joint filler, the 1/2" x 4" preformed expansion joint filler, the 1" thick polystyrene and the polyethylene membrane.

STAGE 2:

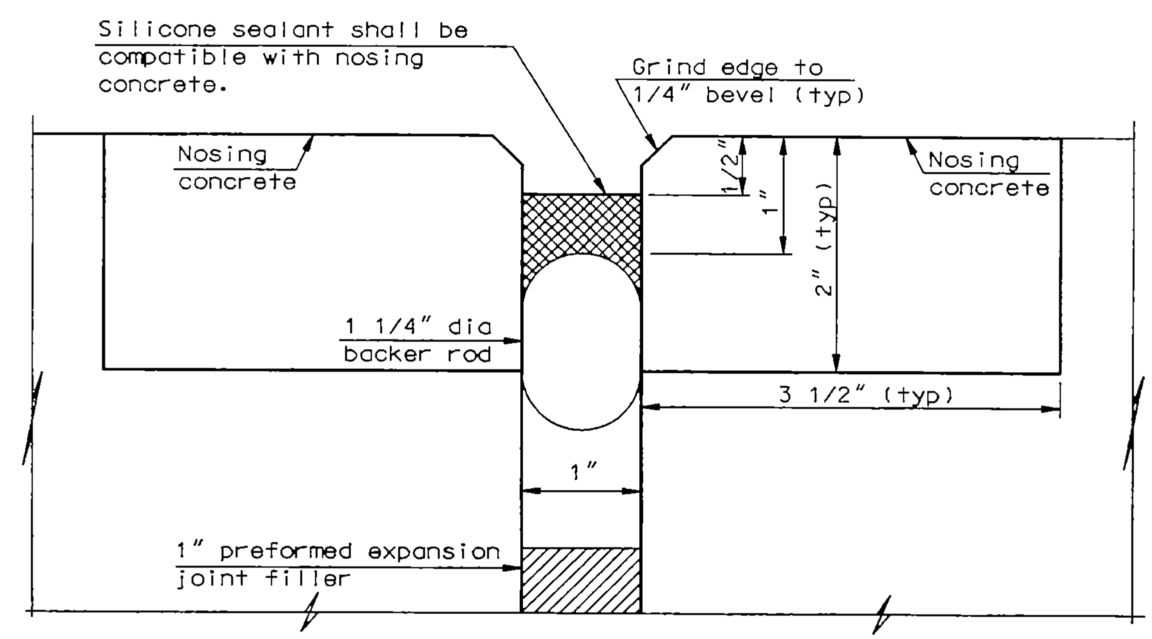
3. Place the new approach slab concrete. A 2" x 3 1/2" blockout shall be formed between the curbs in the approach slab as shown.

STAGE 3:

4. Place nosing concrete in the blockout areas, both in the deck and the approach slab.

5. Remove the 1" polystyrene.

6. After the nosing concrete has cured, grind the 1/4" edge bevel, clean and prepare the joint, apply any necessary bonding material, install the backer rod and the silicone sealant.



JOINT DETAIL A

NOTES:

All estimated material quantities shown on drawing no. 85-012.746-3 are for informational puproses only. All materials including concrete, reinforcing bars, polyethylene membrane, polystyrene, preformed joint filler and labor required to build the approach slabs and curbs shall be included in the pay item "Concrete Bridge Approach Slab".

QUANTITIES (TWO APPROACHES)		
Nosing Concrete	5.4	CF
Silicone Sealant	58	LF

SPRING CREEK

APPROACH SLAB JOINT DETAILS

APPRSLJT 98LCS088 LLS

85-012.746-4

DESIGN DATA				
Traffic	Average Daily			Est.Max.Hr.
Current (1997)	Pass: 990	Trucks 190	Total 1180	120
Forecast (2017)	Pass: 1190	Trucks 230	Total 1420	140

Minimum Sight Dist. for:	Design Speed 65 MPH
Stopping	Bridges
Safe Passing	
Passing for Marking	

JOB# 31

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	SHE-5-085(034)012	1

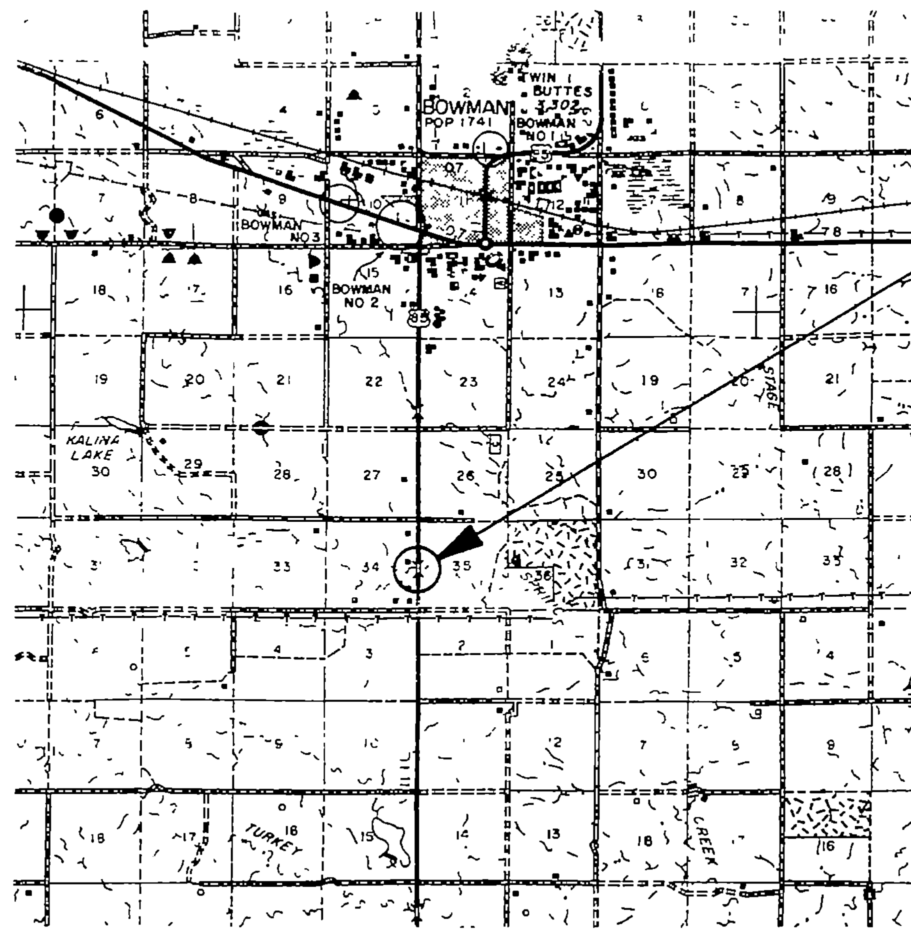
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

BOWMAN COUNTY
SHE-5-085(034)012
Guardrail, Bridge Rail Retrofit and Incidentals

GOVERNING SPECIFICATIONS:

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

N



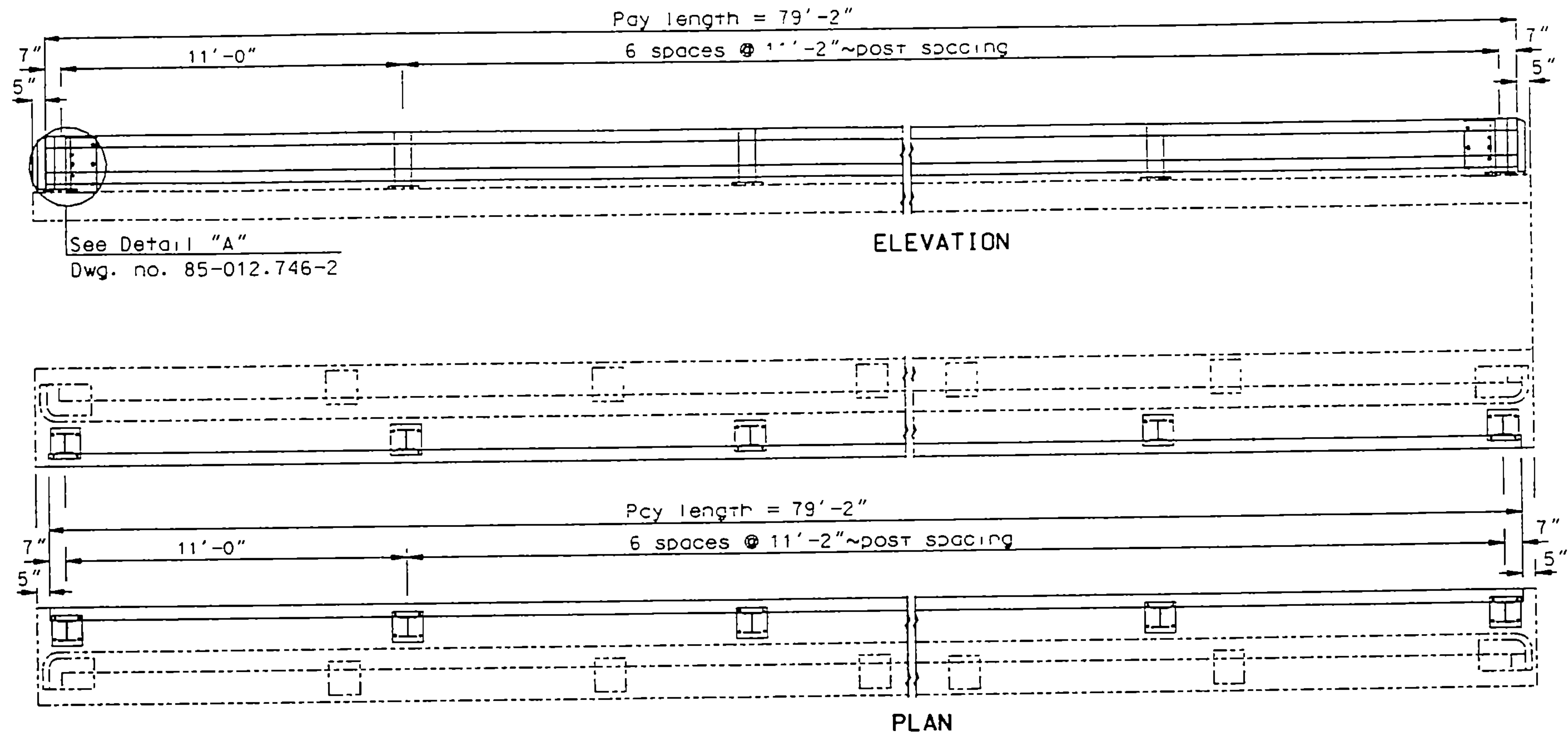
Spring Creek Bridge
RP 12.746 US 85

DESIGNER Brad Pfeifer
DESIGNER
DESIGNER
RECOMMEND APPROVAL 2-5, 1998
DESIGN ENGINEER [signature]

APPROVED DATE 2-5-98
David K.O. Leer
P.E. 1199
DIRECTOR OF HIGHWAYS AND ENGINEERING
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

...\d_traffi\title.dgn Dec. 15, 1997 13:05:41

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SHE-5-085(034)012	10



SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	3001	DBL BOX BM RAIL RETROFIT (F.STDG)	LF	158.3

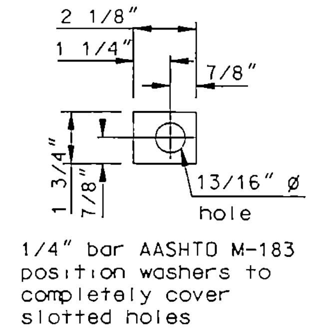
SPRING CREEK

RAIL RETROFIT LAYOUT

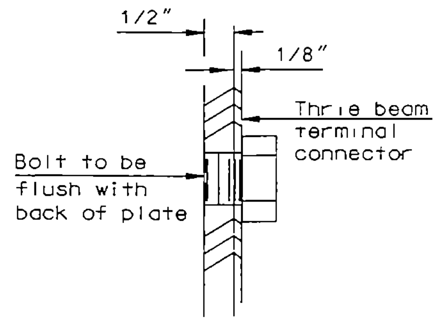
85-012.746-1

RRETRO1 97LCS098 LLS

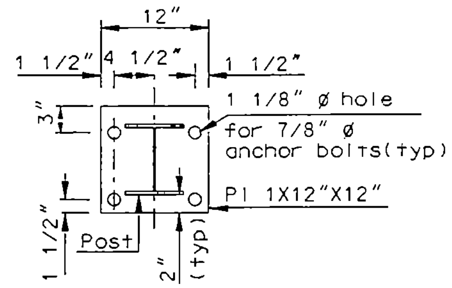
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO
8	ND	SHE-5-085(034)012	11



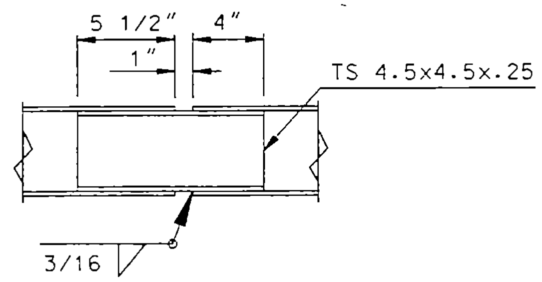
BAR WASHER "C"



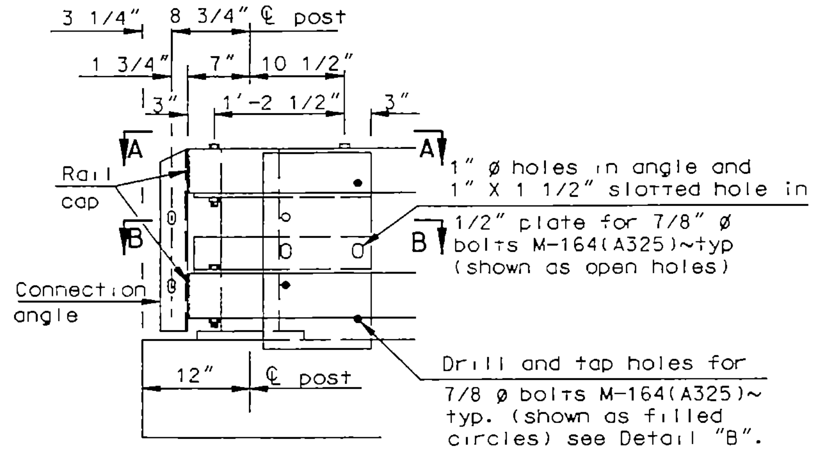
DETAIL "B"



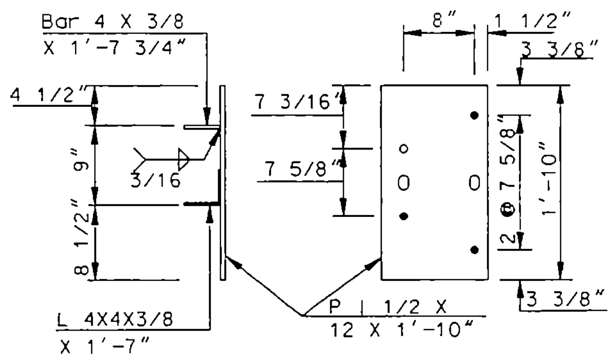
BASE PLATE DETAIL



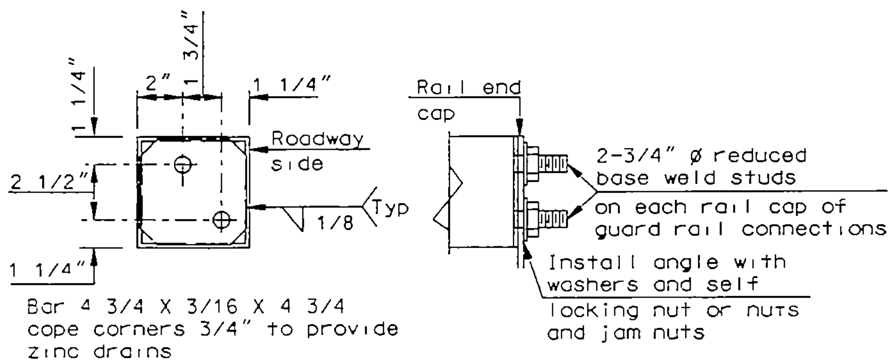
RAIL SPLICE DETAIL



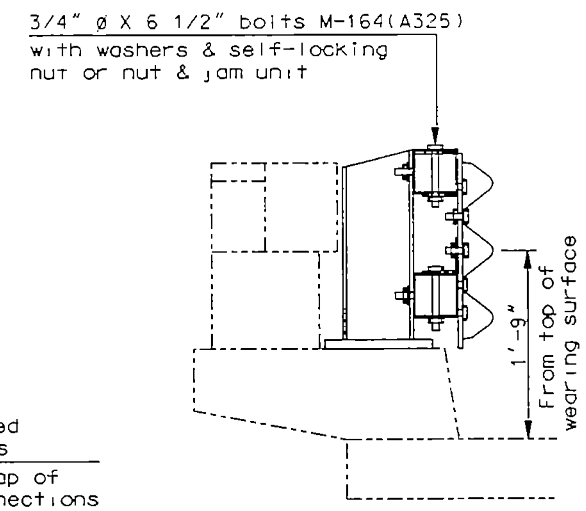
DETAIL "A"
(Typ @ each end)



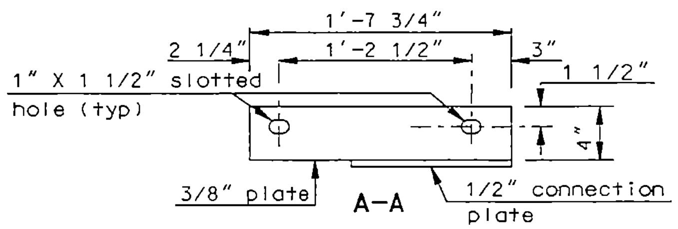
GUARDRAIL CONNECTION PLATES
(4 required)



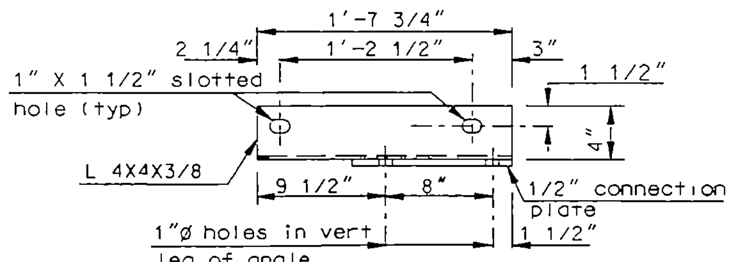
RAIL CAP DETAIL



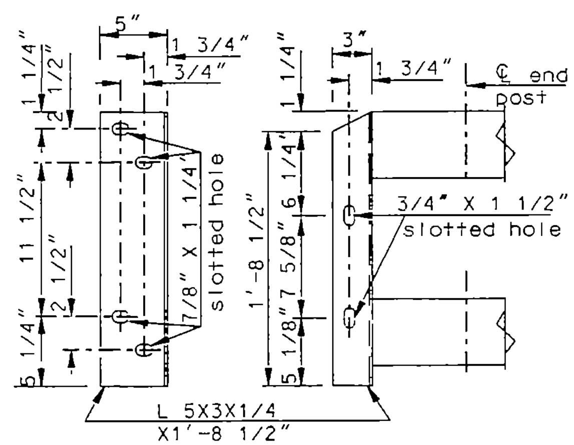
GUARDRAIL CONNECTION DETAILS



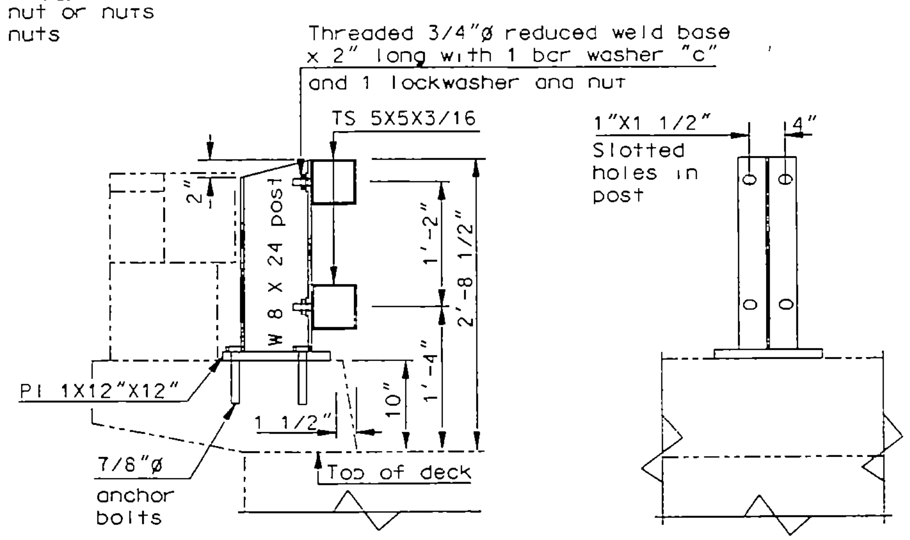
A-A



B-B



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 and 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 shall 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 shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 18,250 pounds

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.

Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

QUANTITIES	
DOUBLE BOX BEAM RAIL RETROFIT (FREE STANDING)	158.3 LF

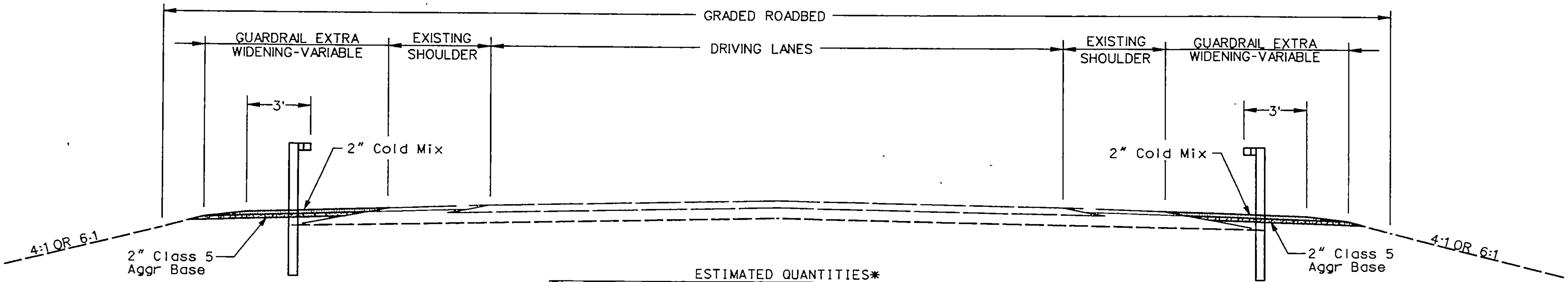
SPRING CREEK

RAIL RETROFIT DETAILS

RRETRO2 97LCS099 LLS

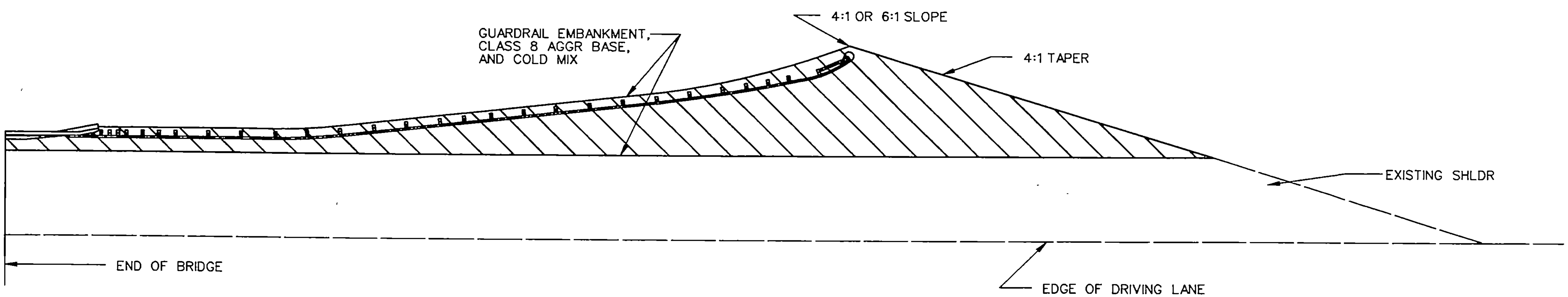
85-012.746-2

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	SHE-5-085(034)012	12



ESTIMATED QUANTITIES*

Spring Creek Bridge - 12.746 SOUTH END OF BRIDGE	UNIT	RT	LT	Spring Creek Bridge - 12.746 NORTH END OF BRIDGE	UNIT	LT	RT
Class 8 Aggr Base	TON	14	6	Class 8 Aggr Base	TON	14	6
Cold Mix	TON	16	6	Cold Mix	TON	16	6



*QUANTITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE BID SEPARATELY. COST SHALL BE INCLUDED IN THE PRICE BID FOR "GUARDRAIL EMBANKMENT-TYPE C."

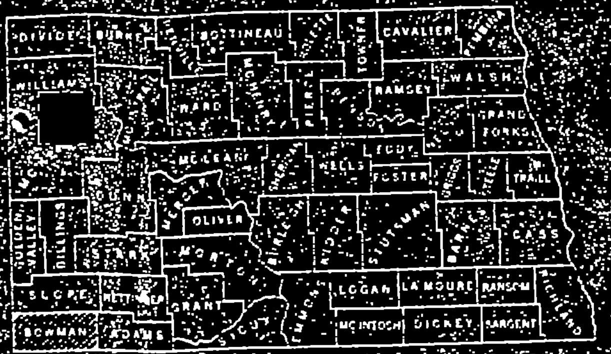
TYPICAL SURFACING AT BRIDGE ENDS WITH GUARDRAIL

SPRING CREEK BRIDGE

RP 12.746
US 85

BREND

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6N	N. D.	F21(9)		1	9



SKETCH MAP OF NORTH DAKOTA
SHOWING COUNTIES

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN BOWMAN COUNTY

FEDERAL AID PROJECT NO. F 21 (9)

SCALES
- LAYOUT SHEET: 1 IN. = 2000 FT.
- PLAN AND PROFILE DRAWINGS: HOR. 1 IN. = 100 FT. VERT. 1 IN. = 10 FT.
- STRUCTURAL DRAWINGS: AS SHOWN
- CROSS SECTION SHEETS: 1 IN. = 10 FT.

INDEX OF DRAWINGS

GOVERNING SPECIFICATIONS

Standard Specifications adopted by the North Dakota State Highway Department Nov 1949 and approved as standard by the Bureau of Public Roads July 3, 1950. Required Special Provisions, approved as standard by the Bureau of Public Roads Aug. 5, 1948 and those submitted herewith.

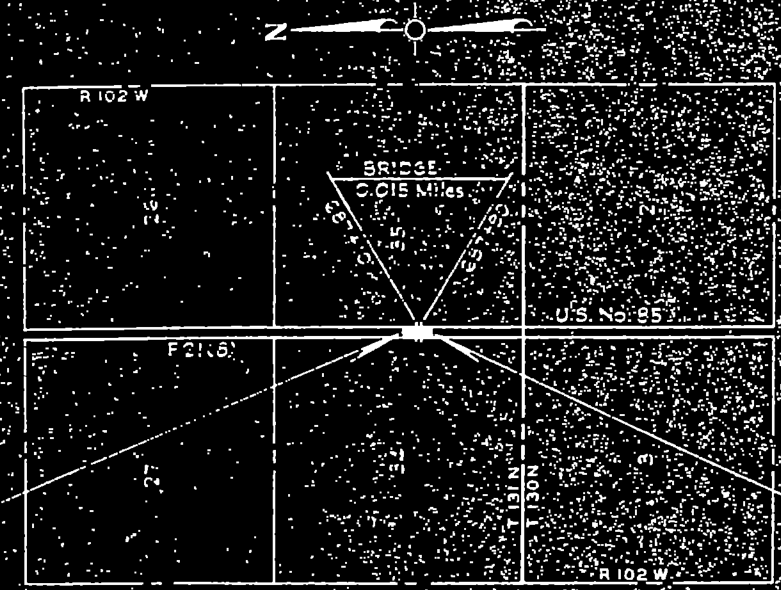
LENGTH OF PROJECT		
PROJECT	MILES GROSS	MILES NET
F21(9)	0.115	0.115
TOTALS		

F-5-85 (1)
MILE 12

DESIGN DATA

TRAFFIC		AVERAGE DAILY	EST. 30TH MAX. HR.
PRESENT TRAFFIC	1952	290 PASS., 85 TRUCKS, 375 TOTAL	38
TRAFFIC FORECAST	1972	400 PASS., 115 TRUCKS, 515 TOTAL	52

DESIGN SPEED 60 MPH
TRAFFIC CLASSIFICATION M
BRIDGE 28' Clear Rdwy.
Design Load H 15 S 12 (1949)



BEG. F 21 (9)
STA. 684+00 =
STA. 684+00 F 21 (8)
2545.9' N. of SE Cor.
Sec. 34, T. 131 N.
R. 102 W.

END F 21 (9)
STA. 690+00 =
STA. 690+00 F 21 (8)
1945.9' N. of SE Cor.
Sec. 34, T. 131 N.
R. 102 W.

LAYOUT MAP
SCALE – FEET
2000 0 2000

GENERAL NOTE – The Engineer will attend to the removal of ...ng fences to the new highway right-of-way line and to ...moval of existing pole lines to within 1½ feet of the new highway right-of-way line so as not to interfere with construction.

SHRINKAGE NOTE – 15% additional volume in yardage computed by the end area method is allowed for shrinkage in earth embankment.

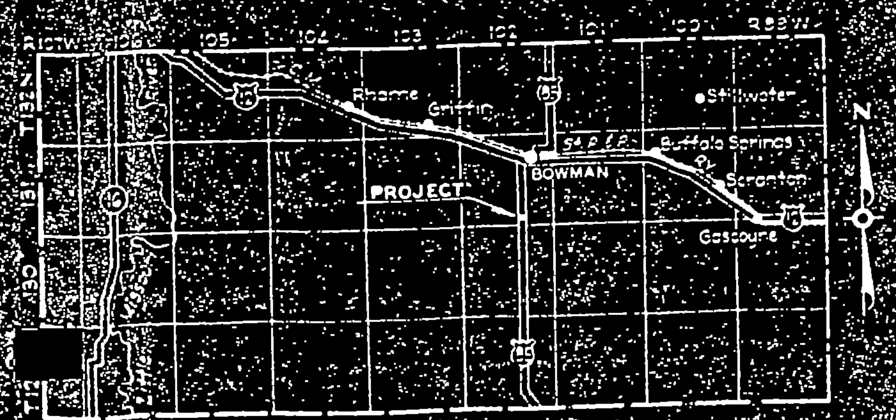
POLE LINES – ⊕ Designation of poles to be moved.

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 — B.M.
WATERS EDGE
MARSH
WIRE ROPE GUARD RAIL
SNOW FENCE
RIPRAP
GUARD POSTS
COBBLE GUTTERS
CONCRETE GUTTERS

① See Special Provision.

SUMMARY OF QUANTITIES					
SPEC. NO.	DESCRIPTION	QUANTITY BRIDGE	QUANTITY BALANCE	QUANTITY TOTAL	UNIT
① 18	Roadway Excavation	920	1437	2357	Cu. Yd.
① 29 Z	Gravel Surfacing Grade 3 G		182	182	Cu. Yd.
15	Class 2 Excavation	140		140	Cu. Yd.
15	Class 3 Excavation	147		147	Cu. Yd.
① 60 A	Class A-1 Concrete	4.3		4.3	Cu. Yd.
① 60 A	Class A-1½ Concrete	245.2		245.2	Cu. Yd.
62	Reinforcing Steel	35919		35919	Lbs.
65 A	Untreated Timber Piling	1650		1650	L. F.
65 E	Untreated Timber Test Piles	2		2	Each
12	Remove Existing Structure Sta. 687+70	1 Lump Sum		1 Lump Sum	Sta.



SKETCH MAP OF BOWMAN COUNTY

APPROVED DATE 7-18-52
CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

RECOMMENDED FOR APPROVAL DATE
DISTRICT ENGINEER
BUREAU OF PUBLIC ROADS
DEPARTMENT OF COMMERCE

APPROVED DATE
DIVISION ENGINEER
BUREAU OF PUBLIC ROADS
DEPARTMENT OF COMMERCE

F 21 (9)

85-012.746

5N	N.D.	F21(9)		2	[illegible]

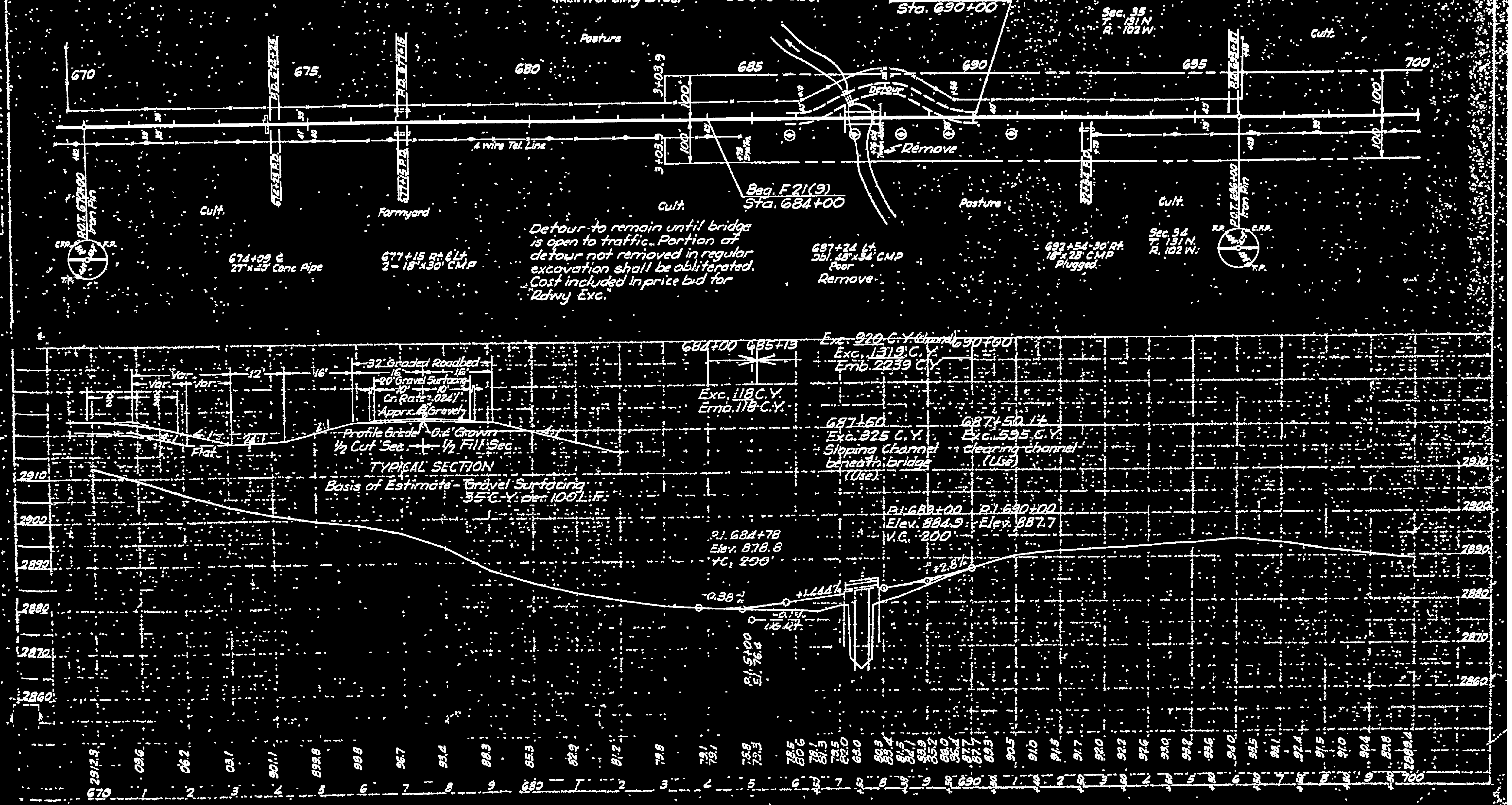
INSTALL 80' BRIDGE

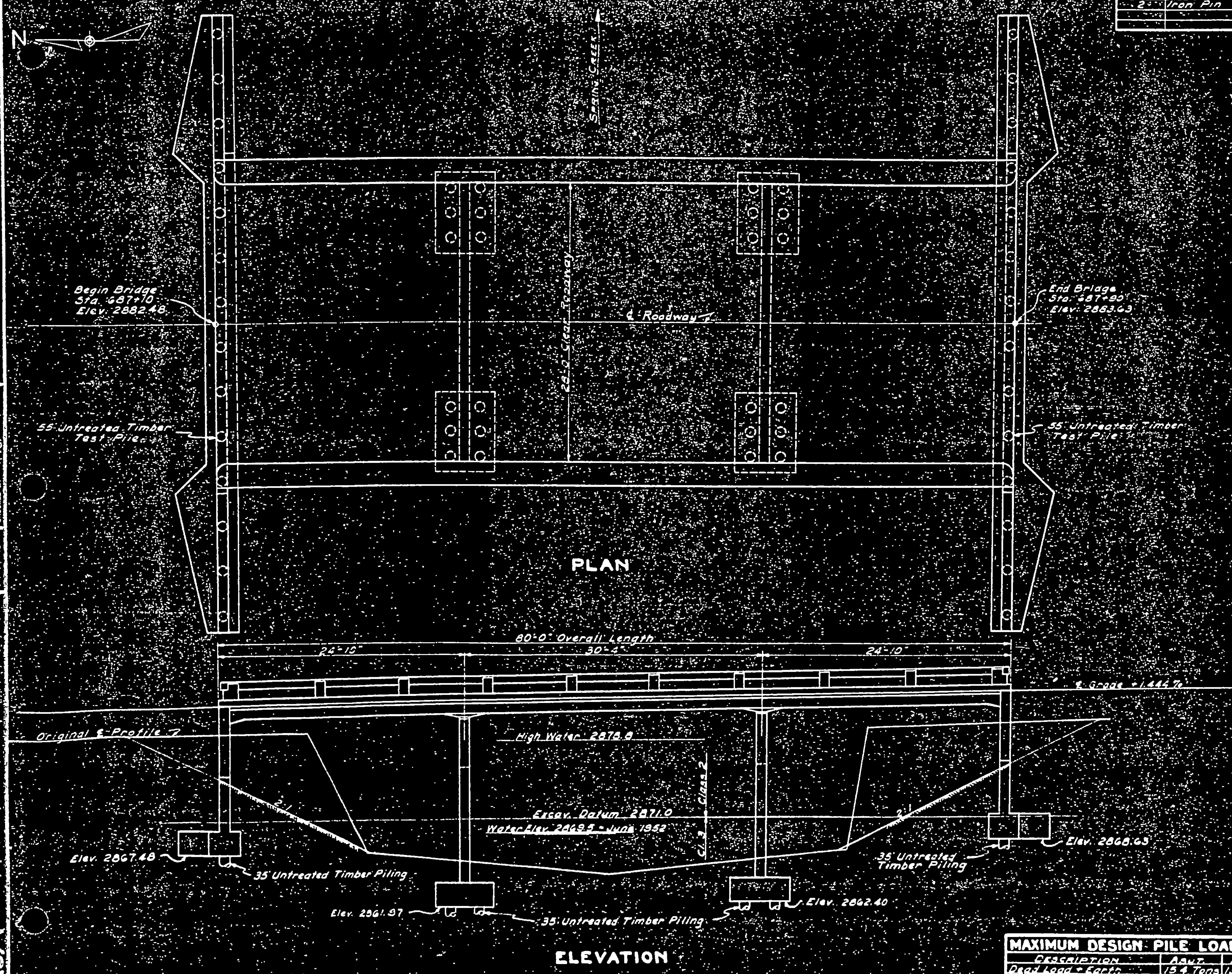
Sta. 687+50 ℄ Drwg. No. 21(9)-1, 131931, 121532 & 118032

Remove Old Structure	Lump Sum
Class 2 Exc.	140 C.Y. (waste)
Class 3 Exc.	147 C.Y. (waste)
Untr. Timber Piling	1650 L.F.
Untr. Timber Test Piles	2 Each.
Class "A-1" Concrete	4.30 C.Y.
Class "A-1½" Concrete	245.2 C.Y.
Reinforcing Steel	35919 Lbs.

BENCH MARKS

No.	Description	Location	Elev.
1	USGS. BM #19	671+29-40' Rt.	2907.77
2	Iron Pin	687+35-113' Lt.	2879.95
3	Iron Pin	696+06-75' Lt.	2892.15





BENCH MARKS

No.	Description	Location	Elev.
1	U.S.G.S. B.M. #19	Sta. 671+29 - 40' Rt.	2907.77
2	Iron Pin	Sta. 687+35 - 113' Lt.	2879.95

Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.	Total Sheets
5N	N.D.	F 21(9)			

NOTES:

The old structure was a two-span, 40 foot, timber bridge. All but the south abutment and the stubs of piling in the north abutment and bent have been removed. The existing south abutment shall be removed and all piles removed down to the present ground line. All salvagable material shall be piled along the right-of-way and shall become the property of the state.

All excavation above the 2:1 slopes shown on the plans shall be removed and paid for as Roadway Excavation.

A cut-off of two feet (2') has been assumed in estimating the pay length (below cutoff) of piling as compared with the ordered length.

All concrete above the top of the curbs shall be Class A-1. All concrete shall be compacted by vibration.

All exposed edges of concrete shall be beveled with ¾" triangular molding, except as shown on these plans.

The surface of handrails, hand rail posts, face of curb and outer edge of hand rail post base shall be given the "Rubbed Surface Finish". All other surfaces shall be given the "Ordinary Surface Finish".

The entire floor shall be poured in one continuous run.

The cost of premolded joint filler, drain pipes, guard rail pipe sleeves, rail bolts, sisal kraft paper and other incidentals shall be included in the unit price bid for Class A-1½ Concrete.

This bridge has been designed for a 30#/sq. ft. future wearing surface.

Spec. No.	ESTIMATE OF QUANTITIES
81	TEMPORARY CROSSING AND DETOUR
12	REMOVING OLD STRUCTURE — LUMP SUM
15	STRUCTURAL EXCAVATION
	CLASS 2 — 140 CU. YD.
	CLASS 3 — 147 CU. YD.
	CU. YD.
65A	UNTREATED TIMBER PILING 50 @ 35 FT. = 1650 LIN. FT.
	" " TEST PILES 2 @ 55 FT. — 2 EACH
65B	TREATED TIMBER PILING — @ — FT. — LIN. FT.
	UNTREATED TIMBER — M. B. M.
	TREATED TIMBER — M. B. M.
60*	CONCRETE CLASS "A-1" — 4.30 CU. YD.
60*	" " "A-1½" — 245.2 CU. YD.
92	REINFORCING STEEL — 35,919 LB.
	STRUCTURAL STEEL — LB.
	* See Special Provisions.

STRUCTURAL DRAWINGS
GENERAL DRAWING 21(9)-1 (THIS SHEET)
SUBSTRUCTURE 131931 & 131932
SUPERSTRUCTURE 118032

MAXIMUM DESIGN PILE LOADINGS

Description	Abut.	Piers
Dead Load + Earth	15.4 Tons	13.6 Tons
Live Load	2.4 Tons	3.6 Tons
Ice		1.6 Tons
Design Pile Load	17.8 Tons	17.2 Tons

Design Loading H15 S12 (1949)

SCALE 1 IN. = 8 FT.

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

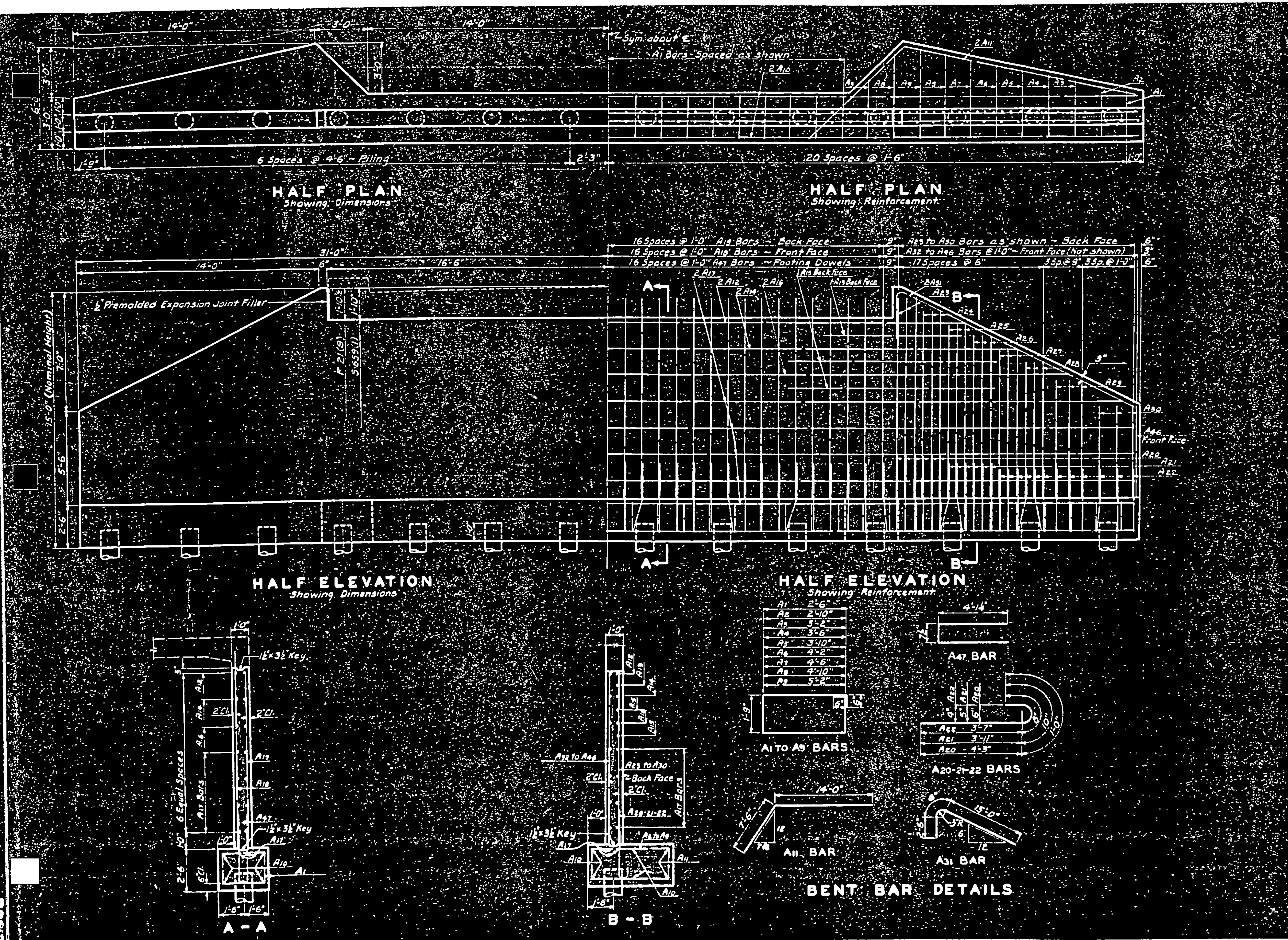
SPRING CREEK
BRIDGE LAYOUT

PROJECT No. F 21(9) STA. 687+50

BOWMAN COUNTY

APPROVED July 21 — Frank E. C[illegible]
Bridge Engineer

21(9)-1



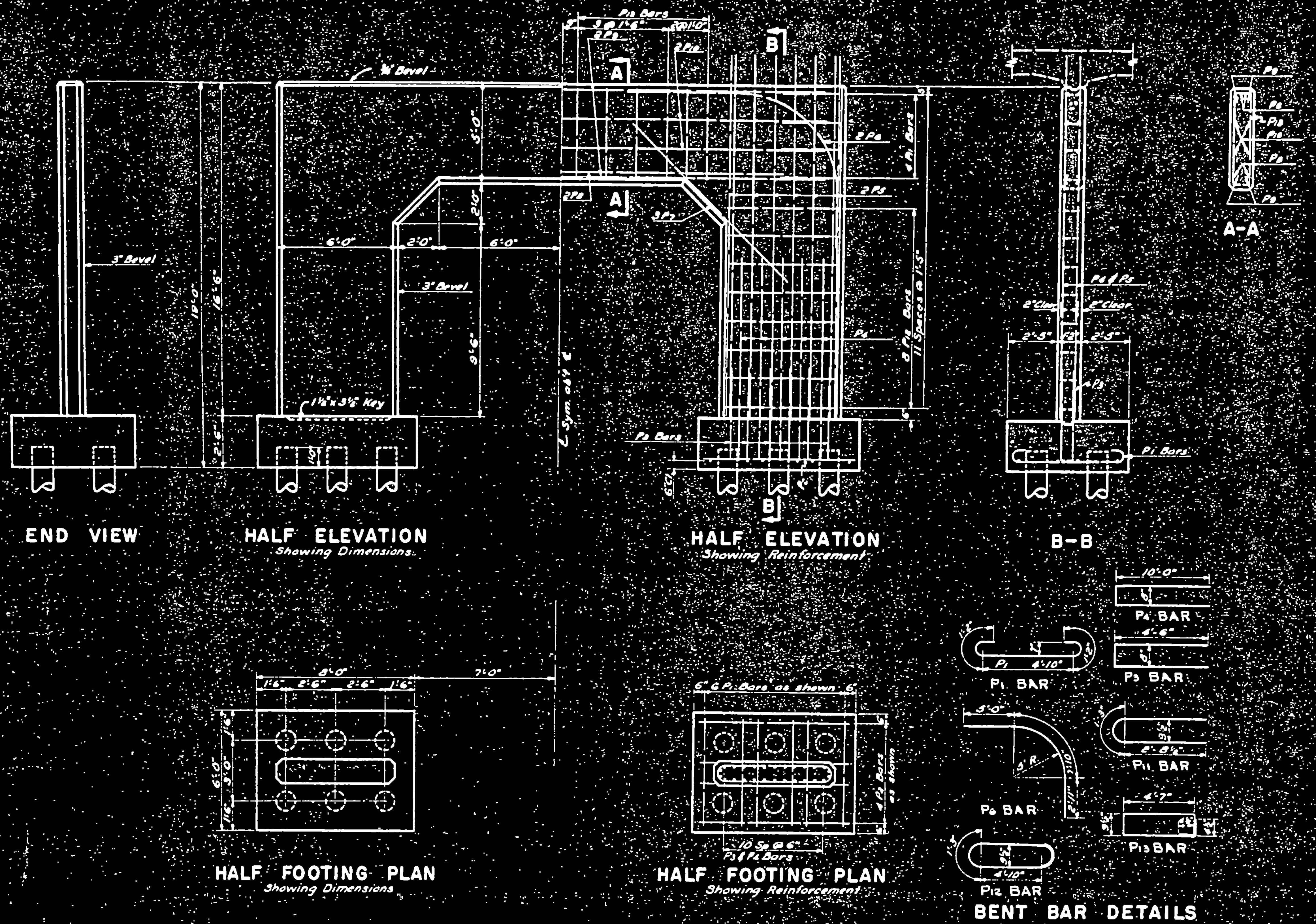
BAR LIST				
MARK	NO.	SIZE	LENGTH	SHAPE
A1	21	½"φ	9'-6"	Bent
A2	2	"	10'-2"	"
A3	4	"	10'-10"	"
A4	2	"	11'-6"	"
A5	2	"	12'-2"	"
A6	2	"	12'-10"	"
A7	2	"	13'-6"	"
A8	4	"	14'-2"	"
A9	2	"	14'-10"	"
A10	8	1"φ	32'-6"	Str.
A11	4	1¼"φ	21'-6"	Bent
A12	4	¾"φ	22'-0"	Str.
A13	2	"	8'-0"	"
A14	4	½"φ	24'-6"	"
A15	4	¾"φ	12'-0"	"
A16	4	½"φ	27'-6"	"
A17	20	"	31'-6"	"
A18	33	¾"φ	11'-9"	"
A19	33	½"φ	10'-3"	"
A20	12	¾"φ	5'-3"	Bent
A21	12	⅝"φ	4'-9"	"
A22	24	½"φ	4'-3"	"
A23	6	¾"φ	11'-11"	Str.
A24	6	"	11'-2"	"
A25	6	⅝"φ	10'-5"	"
A26	6	"	9'-8"	"
A27	6	½"φ	8'-11"	"
A28	6	"	8'-2"	"
A29	6	"	7'-1"	"
A30	6	"	5'-7"	"
A31	4	¾"φ	15'-0"	Bent
A32	2	½"φ	12'-4"	Str.
A33	2	"	11'-11"	"
A34	2	"	11'-5"	"
A35	2	"	10'-11"	"
A36	2	"	10'-5"	"
A37	2	"	9'-11"	"
A38	2	"	9'-5"	"
A39	2	"	8'-11"	"
A40	2	"	8'-5"	"
A41	2	"	7'-11"	"
A42	2	"	7'-5"	"
A43	2	"	6'-11"	"
A44	2	"	6'-5"	"
A45	2	"	5'-11"	"
A46	2	"	5'-5"	"
A47	33	⅝"φ	8'-10"	Bent

QUANTITIES-ONE ABUT.				
Project NO.	Concrete Class A-1½ Cu. Yd.	Reinforcing Steel Lbs.	Timber Piles	Timber Test Piles
S 659(1)	44.3	4086	13	1
F 21(9)	44.3	4086	13	1

ABUTMENT DETAILS
(15 FT. NOMINAL HEIGHT)
FOR SLAB SPANS
28 FT. ROADWAY

121532

5N	N.D.				



BAR LIST				
MARK	NO.	SIZE	LENGTH	SHAPE
P1	12	7/8"φ	7'-2"	Bent
P2	8	3/4"φ	7'-6"	Str.
P3	12	"	9'-8"	Bent
P4	10	5/8"φ	20'-8"	"
P5	32	3/4"φ	17'-9"	Str.
P6	4	7/8"φ	15'-9"	Bent
P7	6	"	11'-0"	Str.
P8	2	1"φ	22'-0"	"
P9	4	1"φ	26'-0"	"
P10	4	3/4"φ	26'-0"	"
P11	8	1/2"φ	6'-8"	Bent
P12	16	"	13'-5"	"
P13	12	"	11'-6"	"

QUANTITIES	
Concrete Class A 1/2	20.5 Cu. Yd.
Reinforcing Steel	2595 Lbs.
Timber Piles	12 Each
Excavation	See Layout

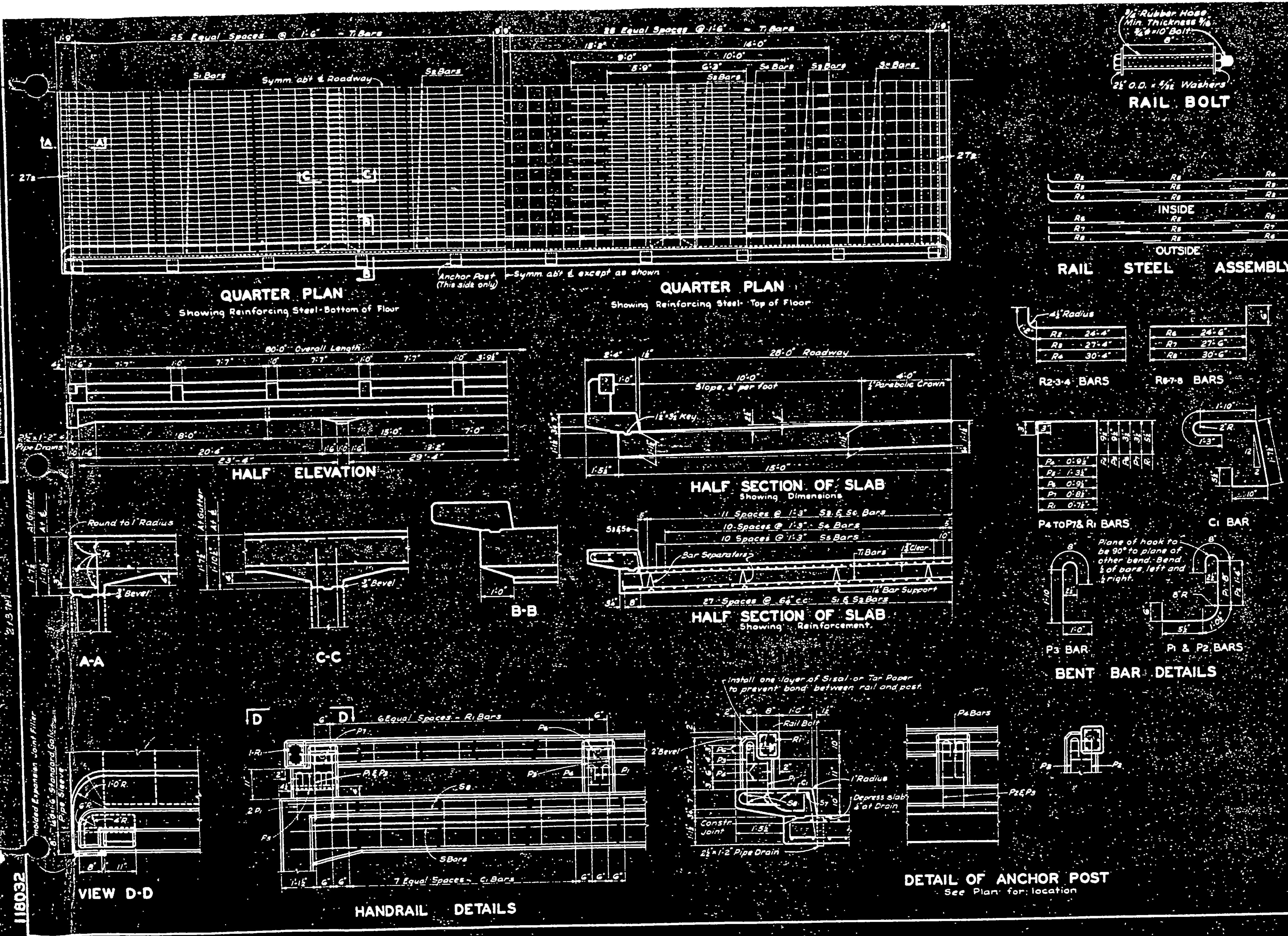
PIER DETAILS

FOR SLAB SPANS

28' ROADWAY

131931

131931



BAR LIST

MARK	NO.	SIZE	LENGTH	SHAPE
C_1	184	5/8 ⌀	6'-0"	Bent
P_1	44	5/8 ⌀	3'-4"	"
P_2	4	"	4'-0"	"
P_3	40	"	3'-6"	"
P_4	36	3/8 ⌀	3'-8"	"
P_5	8	"	4'-8"	"
P_6	28	"	2'-8"	"
P_7	8	"	2'-6"	"
R_1	134	"	2'-8"	"
R_2	4	5/8 ⌀	25'-6"	"
R_3	4	"	28'-6"	"
R_4	4	"	31'-6"	"
R_5	12	"	28'-0"	Straight
R_6	4	"	25'-0"	Bent
R_7	4	"	28'-0"	"
R_8	4	"	31'-0"	"
S_1	114	7/8 ⌀	25'-6"	Straight
S_2	57	"	32'-0"	"
S_3	50	3/4 ⌀	29'-9"	"
S_4	44	5/8 ⌀	19'-0"	"
S_5	44	"	12'-0"	"
S_6	50	5/8 ⌀	11'-6"	"
S_7	6	3/4 ⌀	28'-0"	"
S_8	30	5/8 ⌀	28'-0"	"
T_1	104	5/8 ⌀	29'-6"	"
T_2	8	3/4 ⌀	32'-6"	"

NOTES:

Slab has been designed for a 30#/□' future wearing surface.

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

QUANTITIES

Concrete Class A-1	4.30 C.Y.
Concrete Class A-1½	115.6 C.Y.
Reinforcing Steel	22557 Lbs.

SLAB BRIDGE DETAILS

THREE SPAN

OVERALL LENGTH 80'-0"

H15S12 LOADING

118032