94-259.847 L

DESIGN DATA			
Traffic	Average Daily		
Current 2014	Pass: 3771	Trucks:1192	Total: 4963
Preventative Maintenance			

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SIM-2-094(103)247	17739	1	1

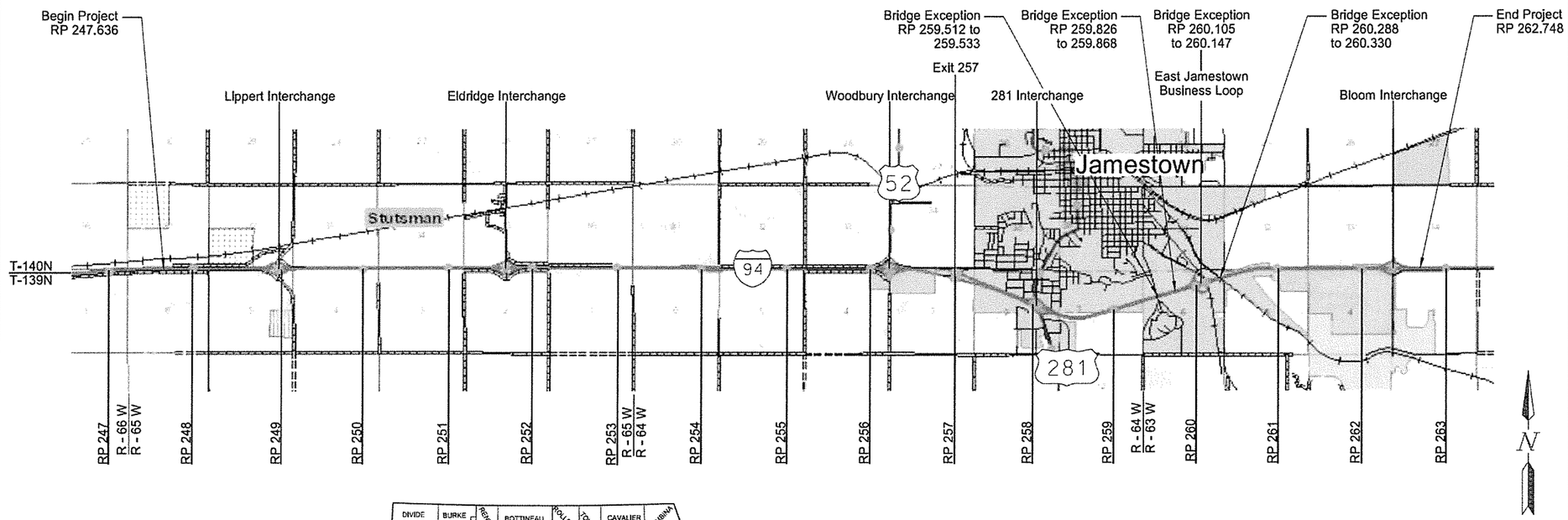
JOB # 19
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

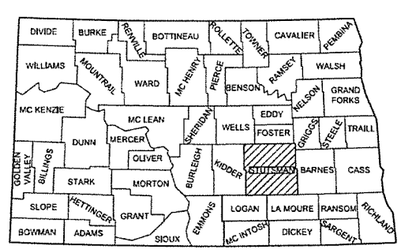
SIM-2-094(103)247
FHWA - PODI
Stutsman County
W Lippert E to Bloom Interchange - WB
CPR, Grinding, Approach Slab Repair

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
SIM-2-094(103)247	14.965	15.112

Bridge Exception Areas: RP 259.512 to RP 259.533 = 0.021 Miles
RP 259.826 to RP 259.868 = 0.042 Miles
RP 260.105 to RP 260.147 = 0.042 Miles
RP 260.288 to RP 260.330 = 0.042 Miles





STATE COUNTY MAP

Jesse Feldmeyer /s/

Dennis Rowell /s/

APPROVED DATE 1/5/2016

Jay F. Praska /s/
Valley City District Engineer
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 1/5/2016

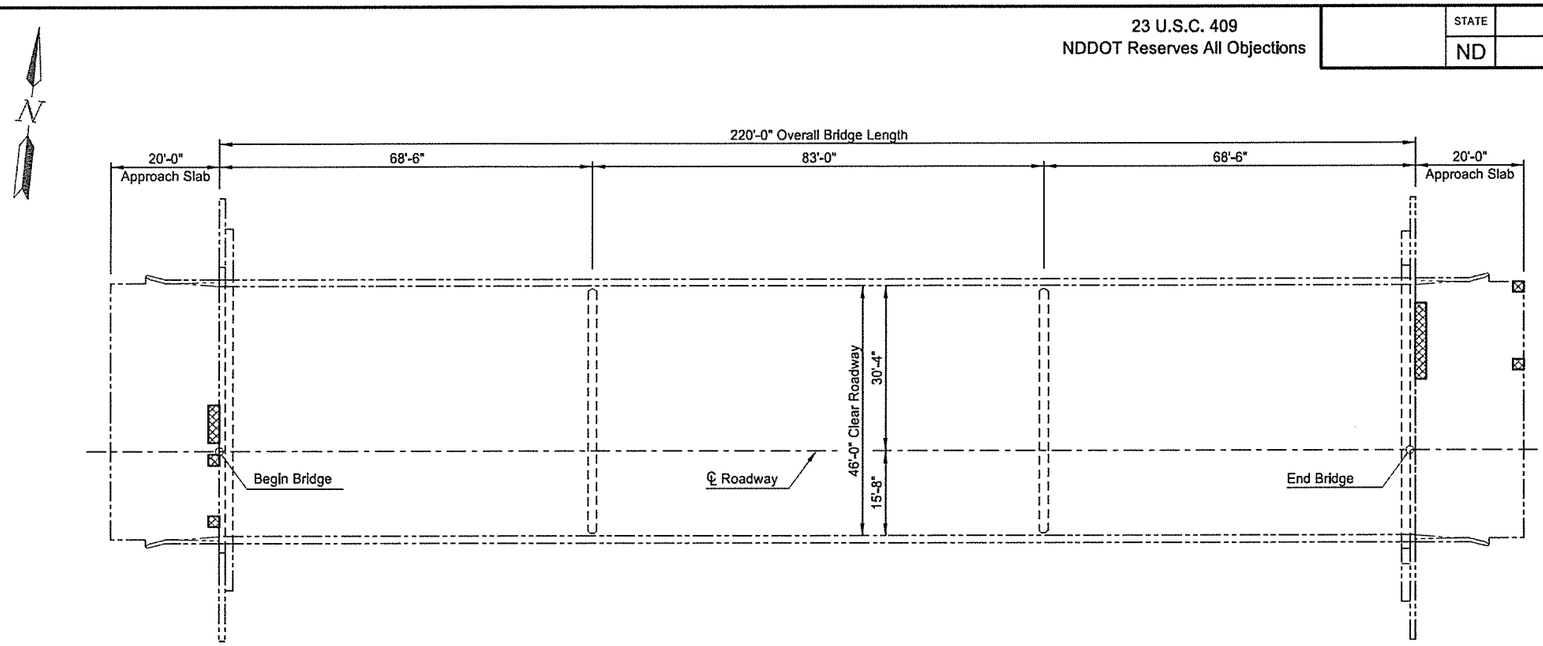
Daniel R Vlau /s/
NDDOT - Valley City District

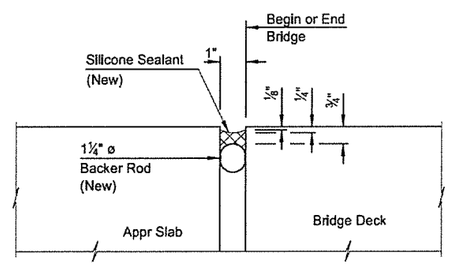
This document was originally issued and sealed by Daniel R Vlau Registration Number PE- 6329, on 1/5/2016 and the original document is stored at the North Dakota Department of Transportation

1/5/2016 3:06:11 PM jfeldmeyer F:\VC\DESIGNS\CPR\SIM-2-094(103)247\001TS_001_TITLE.dgn

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-2-094(103)247	170	4





JOINT DETAIL

Indicates spall repair area.

This document was originally issued and sealed by Dustin Wing, Registration Number PE 7128, on 01/04/16 and the original document is stored at the North Dakota Department of Transportation

NOTES:

100 SCOPE OF WORK: Work at this site consists of approach slab spall repairs, and resealing the joints between the bridge & approach slabs.

930 SILICONE SEALANT: After the spall repair work, remove and replace the backer rod and silicone sealant between the approach slab and deck at both ends of the bridge. Clean the joint of all foreign material and sandblast before the new backer rod and silicone sealant is installed. Provide a silicone sealant in accordance with Section 826.02 B.1. Provide a larger backer rod diameter if the existing joint is greater than the 1" as shown. Extend the new silicone sealant and backer rod 6" up the face of the curb. Include all materials, labor and equipment required to remove and replace the backer rod and silicone sealant in the bid item "Silicone Sealant."

930 SPALL REPAIR: Both approach slabs have spalling as shown. The Engineer in the field will determine the actual limits of the areas to be repaired. Construct the spall repair as a Bridge Deck Overlay meeting Section 650 of the NDDOT Standard Specifications with the exception that a mobile mixer will not be required and Class AAE-3 concrete can be substituted for low slump concrete. Sawcut the perimeter of the spall areas to a depth of 2½". Remove a minimum depth of 3" of concrete within the repair perimeter. Include the saw cutting and all material, labor and equipment required to remove the concrete and repair the approach slab spall in the bid item "Spall Repair."

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
930	8644	SILICONE SEALANT	LF	94
930	9612	SPALL REPAIR	SF	58

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
JAMES RIVER
JUST WEST OF JCT US 52 & I-94

BRIDGE LAYOUT

PROJECT: SIM-2-094(103)247

STUTSMAN COUNTY

01/04/16 — Terrence R. Udland
DATE — BRIDGE ENGINEER

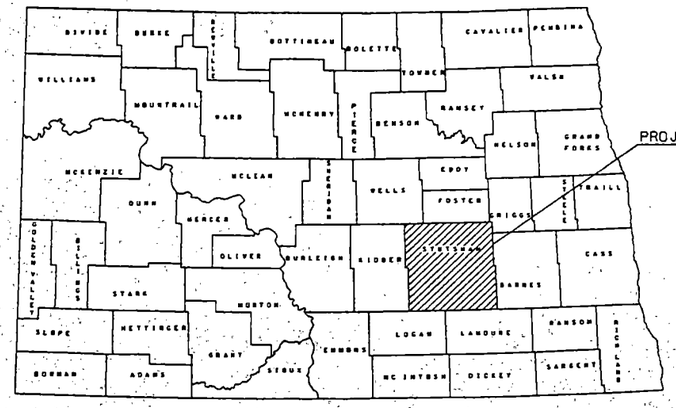
FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	N.D.	SIM-2-999(001)	1

JOB # 12

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

STUTSMAN COUNTY

SIM-2-999(001)



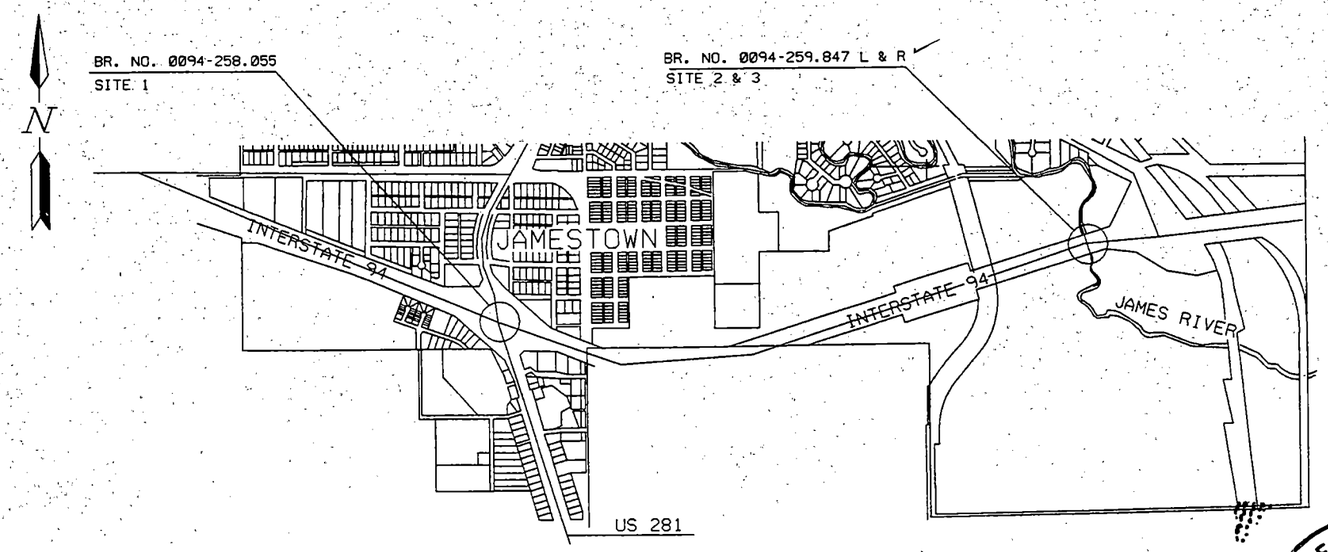
PROJECT SIM-2-999(001) CONSISTS OF REPAIRING EXPANSION JOINT STRIP SEALS AND MODIFIED JOINT SEALS

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.

INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE OF QUANTITIES
3	NOTES AND SCOPE OF WORK
4	MODIFIED JOINT SEAL MODIFICATION
5	EXPANSION JOINT MODIFICATION DETAILS



STANDARD DRAWINGS

D-704-8	BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS
D-704-9	CONSTRUCTION SIGN DETAIL
D-704-10	CONSTRUCTION SIGN DETAIL
D-704-11	CONSTRUCTION SIGN DETAIL
D-704-12	CONSTRUCTION SIGN DETAIL
D-704-13	CONSTRUCTION SIGN DETAIL
D-704-14	CONSTRUCTION SIGN AND BARRICADE ASSEMBLY DETAIL
D-704-23	CONSTRUCTION SIGN AND BARRICADE LOCATION DETAILS
D-704-35	SIGN LAYOUT FOR ONE LANE CLOSURE INTERSTATE SYSTEM

APPROVED

TERRENCE R. UDLAND REGISTERED PROFESSIONAL PE 2674 ENGINEER NORTH DAKOTA

5-26-99 DATE

BRIDGE ENGINEER

APPROVED DATE 5-26-99

P.E. 1199

DIRECTOR OF HIGHWAYS & ENGINEERING
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

ESTIMATE OF QUANTITIES

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	SIM-2-999(001)	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
103	0100	CONTRACT BOND	L SUM	1	1
702	0100	MOBILIZATION	L SUM	1	1
704	1100	TRAFFIC CONTROL	L SUM	1	1
930	8642	NOSING CONCRETE	CF	26.5	26.5
930	8644	SILICONE SEALANT	LF	95	95
930	8673	EXPANSION JOINT MODIFICATION-STRIP SEAL	LF	111	111

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SIM-2-999(001)	3

100 SCOPE OF WORK: This project includes structural repair work on three bridges in the Valley City District. The type of repair required, type of traffic control and estimated quantities are listed in the table shown below. The work shall be done on one-half of the roadway at a time.

704 TRAFFIC CONTROL: The type of traffic control shall be that shown in the table below. Traffic control for all sites shall be set up only while work is going on at that site during daylight hours. The traffic control shall be removed and normal traffic operations restored at the end of each work day. Bridge No. 94-258.055 will require additional "Road Work Ahead", W21-4-48, signs on the exit ramps. All materials, labor and equipment necessary to set up and take down the traffic control at three sites shall be included in the lump sum bid item "Traffic Control".

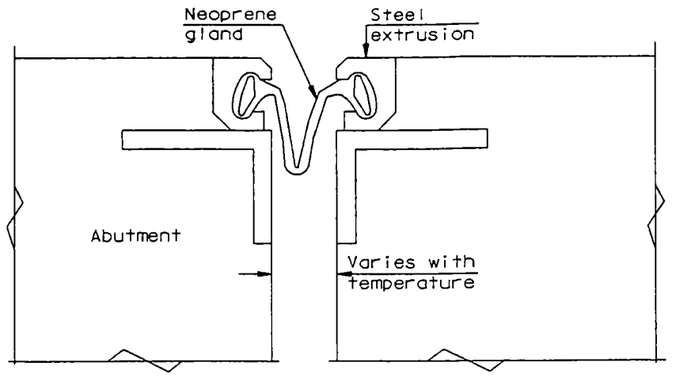
930 MODIFIED JOINT SEAL MODIFICATION: See Modified Joint Seal Modification details sheet for expansion joint modification.

930 EXPANSION JOINT MODIFICATION-STRIP SEAL: See Expansion Joint Modification-Strip Seal details sheet for expansion joint modification.

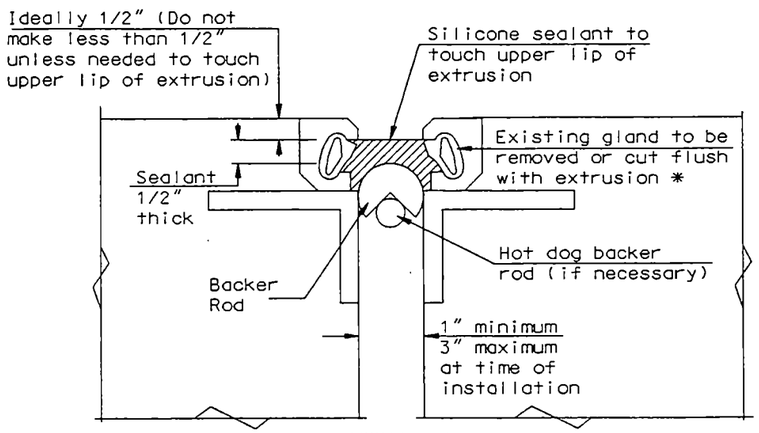
* The Modified Joint Seal Modification is located on the roadway between the curbs and the Expansion Joint Modification-Strip Seal is located on the sidewalk.

SITE	BRIDGE NO.	LOCATION OR BRIDGE NAME	TYPE OF REPAIR	TYPE OF TRAFFIC CONTROL	QUANTITIES			REMARKS
					EXPANSION JOINT MODIFICATION STRIP SEAL (LF)	MODIFIED JOINT SEAL NOSING CONCRETE CU.FT.	MODIFIED JOINT SEAL SILICONE SEALANT (LF)	
1	94-258.055	281 Interchange	Modified Joint Seal	Type P D-704-23	13	26.5	95	*North Abutment
2	94-259.847 L	James River	Strip Seal	D-704-35	49			All Strip Seals
3	94-259.847 R	James River	Strip Seal	D-704-35	49			All Strip Seals
				TOTAL	111	26.5	95	

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SIM-2-999(001)	4



EXISTING

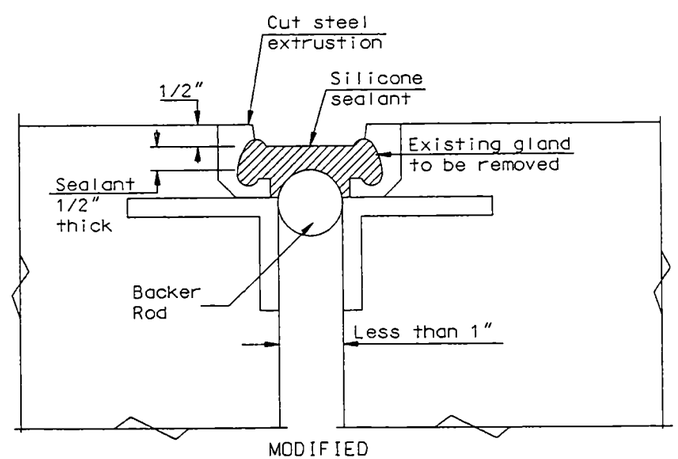


MODIFIED

STRIP SEAL JOINT MODIFICATION
(If opening is 1" to 3")

* If gland is removed the channel shall be filled with sealant

930 EXPANSION JOINT MODIFICATION: The neoprene gland shall be removed or cut flush with the extrusion. If, at the time of installation, the gap is less than 1", the lips of the steel extrusion shall be cut off and the entire gland shall be removed. The surfaces that will come in contact with the silicone sealant will be cleaned by sand blasting. The surfaces will then have a zinc-based primer applied. The Contractor shall use primer for galvanized steel that is recommended by the silicone sealant manufacturer. The backer rod and silicone sealant will be installed according to the manufacturer's recommendation. The silicone sealant shall be a rapid cure, self leveling, cold applied, two component silicone sealant that will bond to and be compatible with the properly prepared steel. All materials, labor and equipment necessary to remove or cut the gland, prepare the surfaces and install the silcione sealant and backer rod shall be included in the bid item "Expansion Joint Modification-Strip Seal".

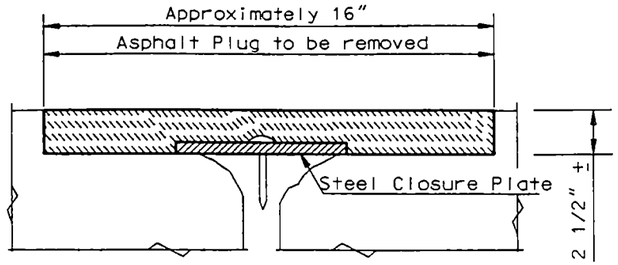


MODIFIED

STRIP SEAL JOINT MODIFICATION
(If opening is less than 1")

EXPANSION JOINT MODIFICATION STRIP SEAL

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SIM-2-999(001)	5



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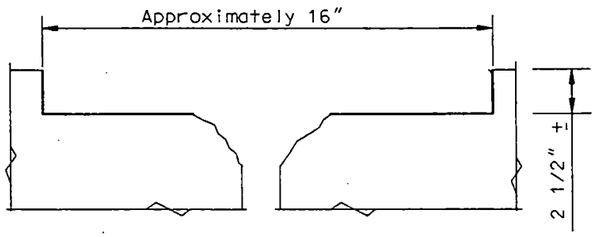
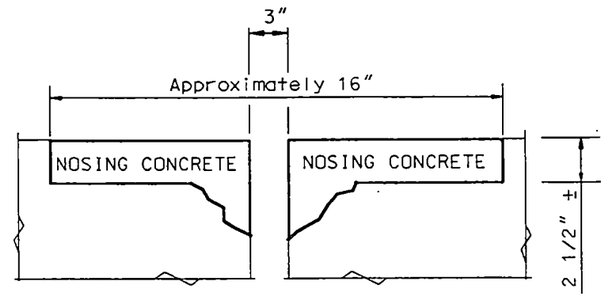


STAGE 1

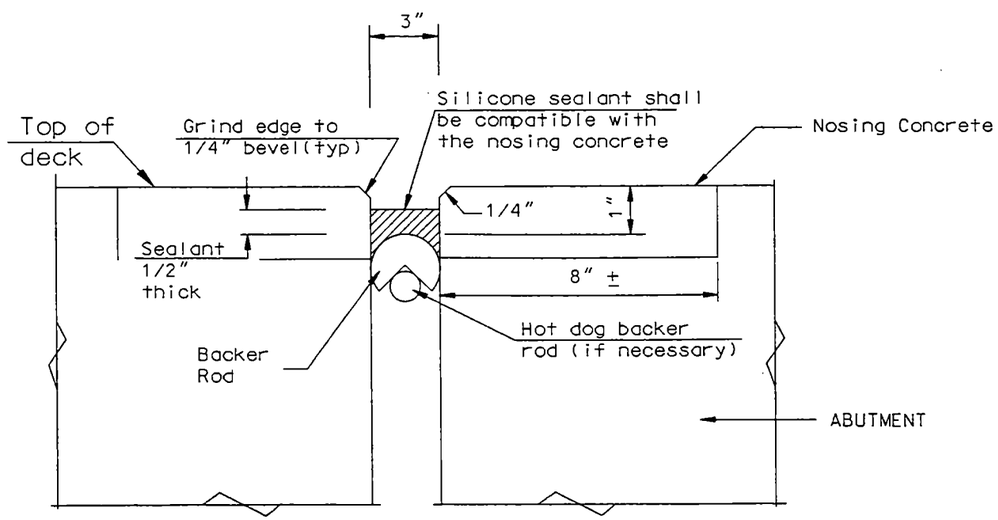


STAGE 2

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.; WABOCRETE 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 the nosing concrete shall be included in the bid item "Nosing Concrete".

930 SILICONE: The silicone sealant 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 recommendations. The silicone sealant and the nosing concrete must be supplied by the same manufacturer as a complete system. The backer rod and any necessary bonding materials 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 the silicone sealant for the surface preparation and installation of the nosing concrete and 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.



MODIFIED JOINT SEAL MODIFICATION

STAGE 3

ABUTMENT - BRIDGE DECK JOINT

STAGE 1:

1. Remove asphalt plug and closure plate at the end of deck and abutment to allow for nosing concrete.

STAGE 2:

2. Place nosing concrete in the blockout areas, allowing for a 3" gap over the joint.

STAGE 3:

3. After the nosing concrete has cured, grind the 1/2" bevel edge. Clean and prepare the joint. Apply any necessary bonding material. Install the backer rod and the silicone sealant.

MODIFIED JOINT SEAL MODIFICATION

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-2-094(007)256	1

JOB# 18

DESIGN DATA				
Traffic	Average Daily			Est. Max. Hr.
Current 1995	Pass: 2690	Trucks 850	Total 3540	350
Forecast 2015	Pass: 4035	Trucks 1275	Total 5310	530
Minimum Sight Dist. for:		Design Speed 70 MPH		
Stopping 600'		Bridges		
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT NO IM-2-094(007)256

IN STUTSMAN COUNTY

Recycled PCC Pavement & Incidentals

(N Roadway)

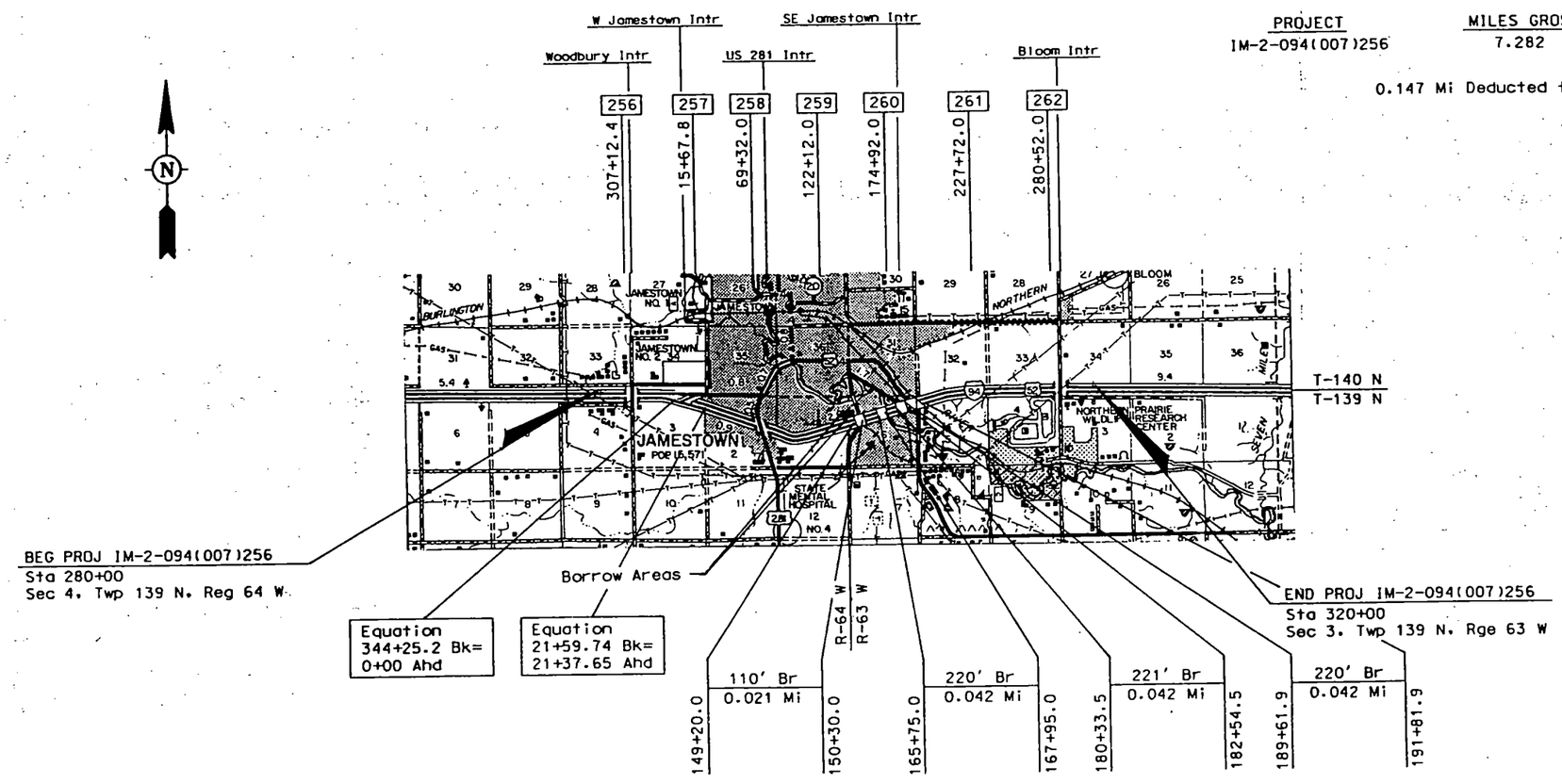
GOVERNING SPECIFICATIONS:

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

LENGTH OF PROJECT

PROJECT	MILES GROSS	MILES NET
IM-2-094(007)256	7.282	7.135

0.147 Mi Deducted for Structures



256-19

PAVING SECTION Brian Horn

URBAN SECTION

TRAFFIC SECTION Dave Ellefson

RURAL SECTION

RECOMMEND APPROVAL 1-10, 1997

DESIGN ENGINEER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE 1-10-97

Ray Zink

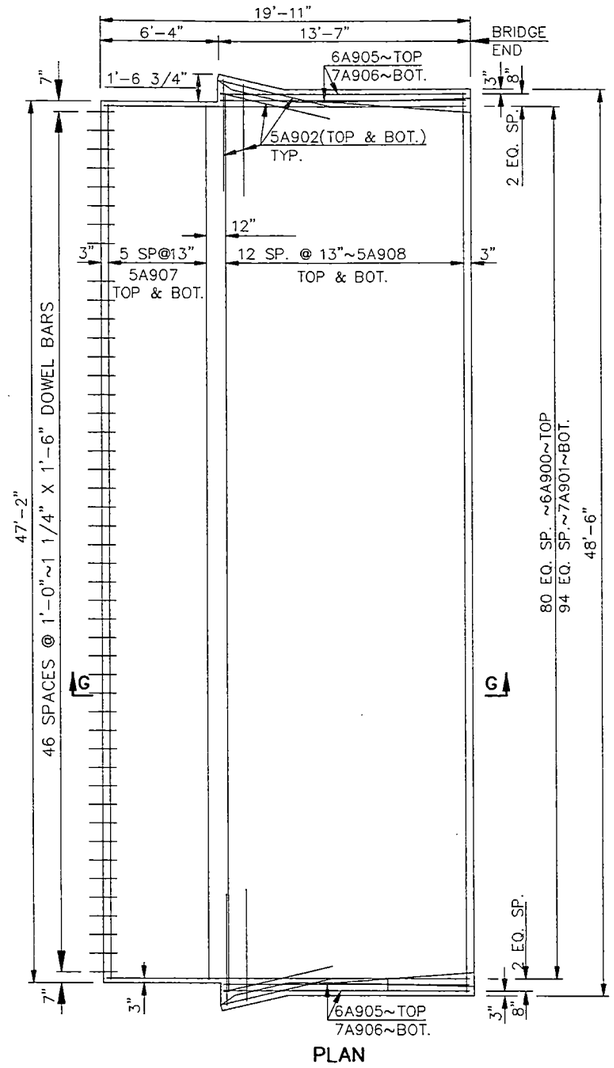
DIRECTOR OF HIGHWAYS AND ENGINEERING

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

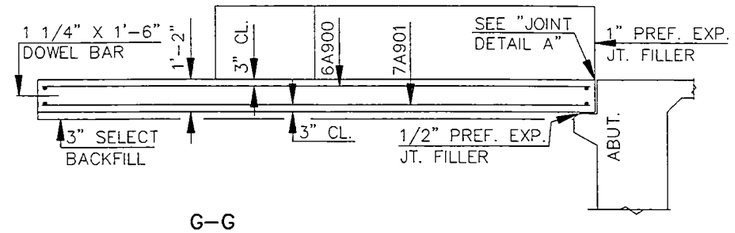
RAY ZINK REGISTERED PROFESSIONAL P.E. 972 ENGINEER NORTH DAKOTA

r:\project\20094256.007\d_paving\2 Dec. 27, 1996 10:56:44

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-2-094(007)256	239

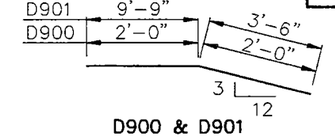


PLAN

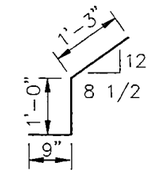


G–G

SEE DWG. NO. 94-259.847L-2
FOR "JOINT DETAIL A"

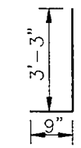


D900 & D901



XT900

FIELD BEND
TO FIT

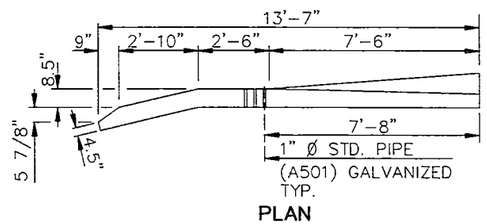


B900

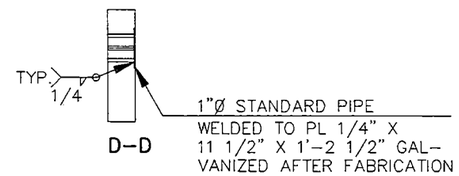
WIDTH = 46'-0" CLR RDWY			
SKEW ANGLE = 0°			
BAR LIST – ONE SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	81	19'-7"
7	A901	95	19'-7"
5	A902	16	6'-0"
4	XA903	2	7'-6"
6	A905	4	13'-3"
7	A906	4	13'-3"
5	A907	12	46'-10"
5	A908	26	48'-2"
4	B900	112	4'-0"
4	XT900	18	3'-0"
4	D900	4	4'-0"
4	D901	12	13'-3"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL LB	CONCRETE CY
8,828	43.4

X = EPOXY COATED BAR
SEE DWG. 94-259.847L-2
FOR NOTES.

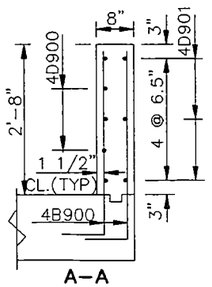


PLAN

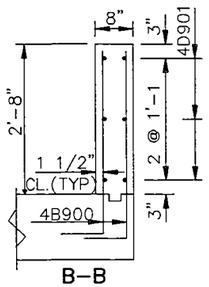


D–D

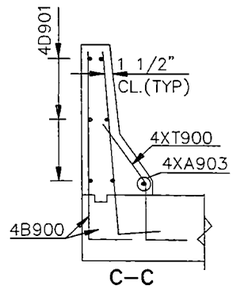
CONNECTION PLATE
ASSEMBLY



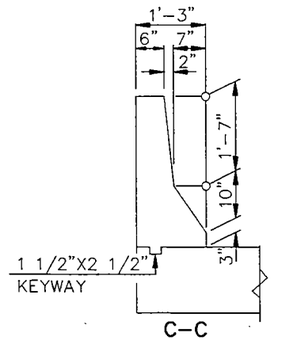
A–A



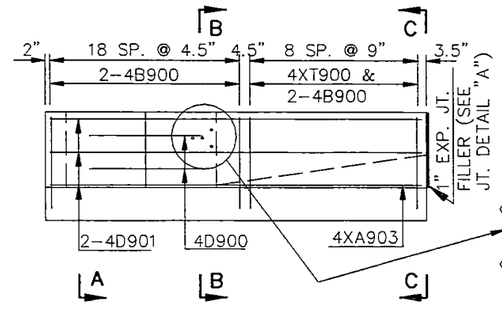
B–B



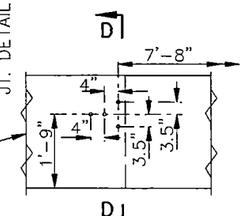
C–C
SHOWING REINFORCING



C–C
SHOWING DIMENSIONS



ELEVATION



QUANTITIES	(ONE SLAB)	
APPROACH SLAB	106.8	SY
SELECT BACKFILL	16.7	TON

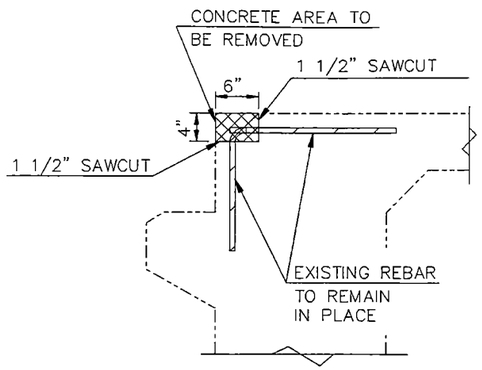
JAMES RIVER

EAST APPROACH SLAB
ENTRANCE END

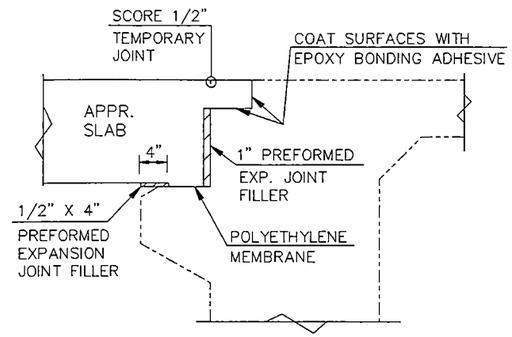
96LCS037 LLS

94-259.847L-1

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-2-094(007)256	240



STAGE 1



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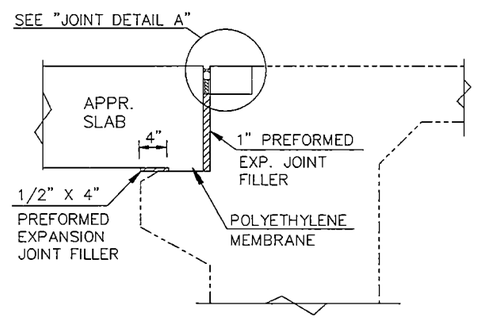

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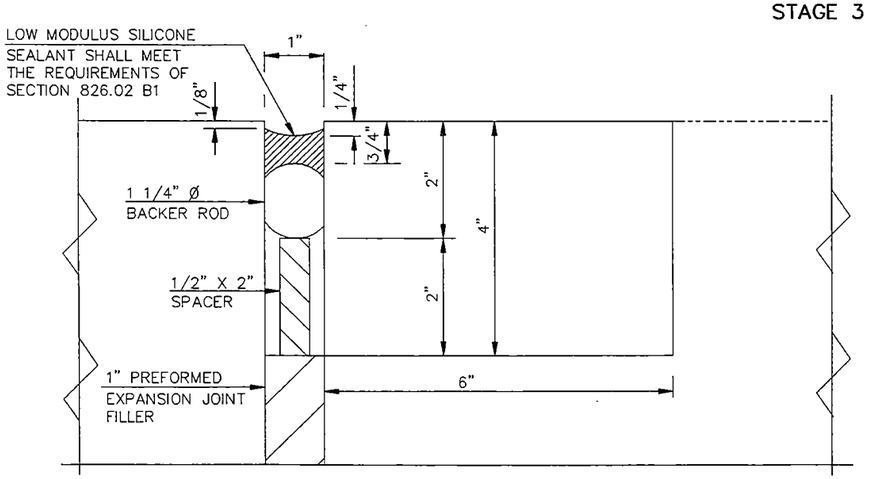


JOINT DETAIL A

EAST APPROACH SLAB – BRIDGE DECK JOINT

STAGE 1:

1. SAW 1 1/2" DEEP CUTS ALONG THE TOTAL WIDTH OF THE DECK OR AS CLOSE TO THE CURB AS POSSIBLE.

2 REMOVE THE CONCRETE FROM THE DECK APPROXIMATELY 4" DEEP AND 6" ACROSS FROM CURB LINE TO CURB LINE WITHOUT DAMAGING THE REINFORCING STEEL.

STAGE 2:

3. AFTER PLACING 1" THICK PREFORMED EXPANSION JOINT FILLER AGAINST THE EDGE OF THE DECK. PLACE THE NEW APPROACH SLAB CONCRETE INCLUDING THE 4" X 6" AREA OF THE DECK. IMMEDIATELY BEFORE PLACING CONCRETE IN THE 4" X 6" AREA, COAT THE SURFACES OF THE DECK WITH A EPOXY BONDING ADHESIVE. THIS ADHESIVE SHALL MEET THE REQUIREMENTS OF AASHTO M-235 TYPE 2, GRADE 2 AND THE APPROPRIATE CLASS DEPENDING ON THE TEMPERATURE OF THE DECK CONCRETE AT THE TIME OF APPLICATION.

STAGE 3:

4. AFTER THE CONCRETE HAS SET SAW CUT A 1" WIDE BY 4" DEEP JOINT OUT OF CONCRETE BETWEEN THE APPROACH SLAB AND THE NEW BRIDGE DECK END. THE THE JOINT SHOULD BE CENTERED OVER THE PREFORMED EXPANSION JOINT FILLER.

5. CLEAN THE JOINT AND INSTALL THE 2" SPACER, THE BACKER ROD AND THE SILICONE SEALANT ACCORDING TO SECTION 550.04 M.3 OF THE STANDARD SPECS.

GENERAL:

WHEN SAW CUTTING CANNOT EXTEND ALONG THE TOTAL WIDTH OF THE DECK, THE AREA FROM WHERE THE SAW CUT ENDS AND THE SIDE EDGES OF THE DECK SHALL BE FORMED WITH 1" THICK PREFORMED JOINT FILLER AND FINISHED WITH BACKER ROD AND SILICONE SEALANT.

NOTES:

THE ESTIMATED MATERIAL QUANTITIES SHOWN ON DRAWING NO. 94-259.847L-1 ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING BARS, DOWEL BARS, BACKER ROD, SILICONE SEALANT, POLYETHYLENE MEMBRANE, SAW CUTTING, CONNECTION PLATE ASSEMBLY, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB (REMOVE & REPLACE)".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

THE POLYETHYLENE MEMBRANE SHALL MEET THE REQUIREMENTS OF AASHTO M171.

SURFACE FINISH "D" SHALL BE REQUIRED FOR ALL SURFACES OF THE CURB TRANSITIONS.

ALL DOWEL BARS SHALL BE EPOXY COATED AND CONFORM TO AASHTO M-254 TYPE B. FREE ENDS OF THE DOWEL BARS SHALL BE GIVEN A THIN UNIFORM COATING OF GREASE. THIS COATING SHALL BE APPLIED WITHIN TWO HOURS BEFORE COVERING WITH CONCRETE.

JAMES RIVER

EAST APPROACH SLAB JOINT DETAIL

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-2-094(007)256	241

WIDTH = 46'-0" CLR RDWY

SKEW ANGLE = 0°

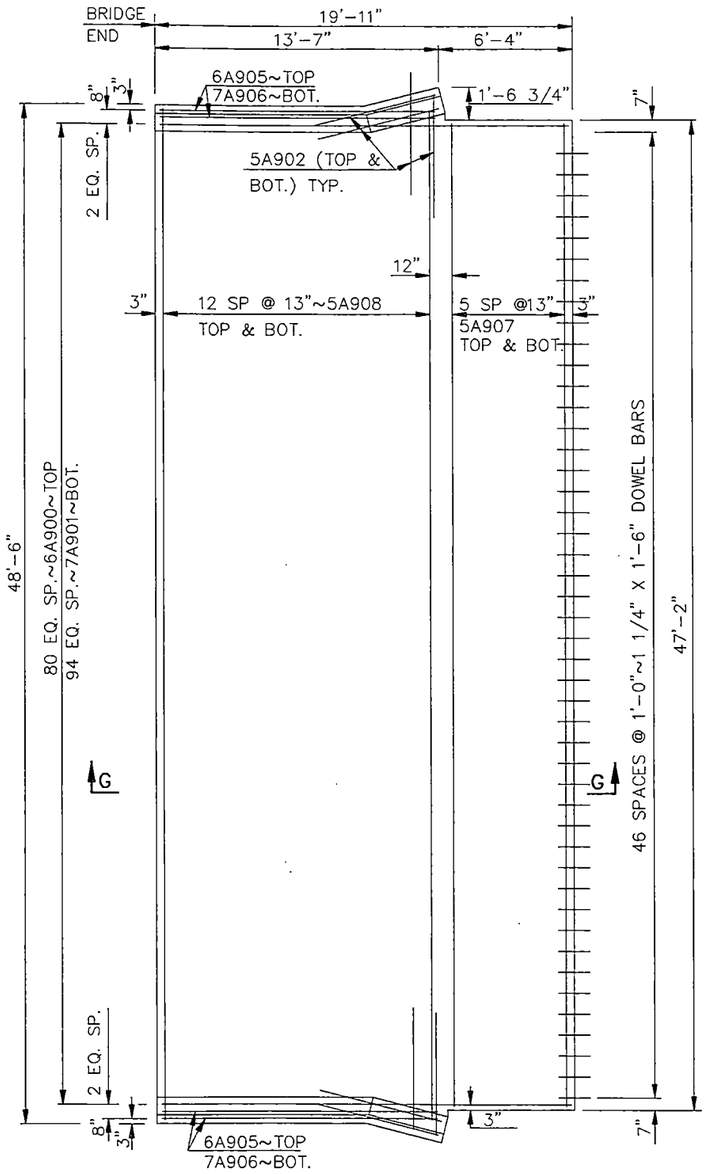
BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
6	A900	81	19'-7"
7	A901	95	19'-7"
5	A902	16	6'-0"
4	XA903	4	13'-2"
6	A905	4	13'-3"
7	A906	4	13'-3"
5	A907	12	46'-10"
5	A908	26	48'-2"
4	XB902	56	2'-9"

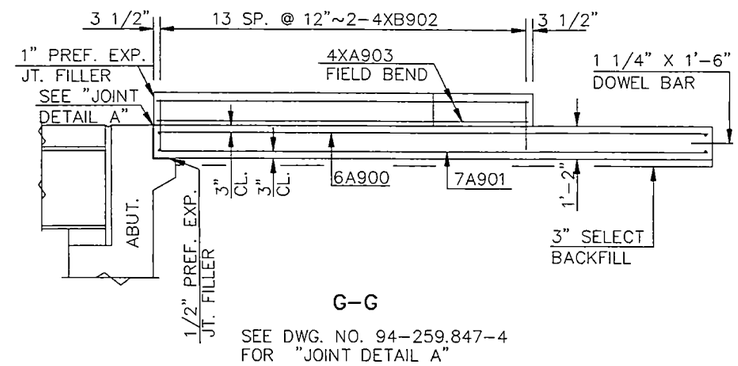
ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL LB	CONCRETE CY
8,504	42.7

SEE DWG. 94-259.847L-4 FOR NOTES.

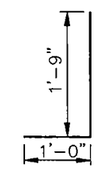


PLAN



G-G

SEE DWG. NO. 94-259.847-4 FOR "JOINT DETAIL A"



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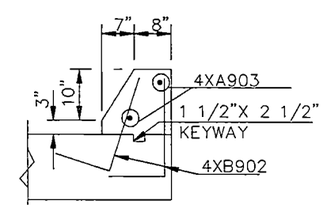

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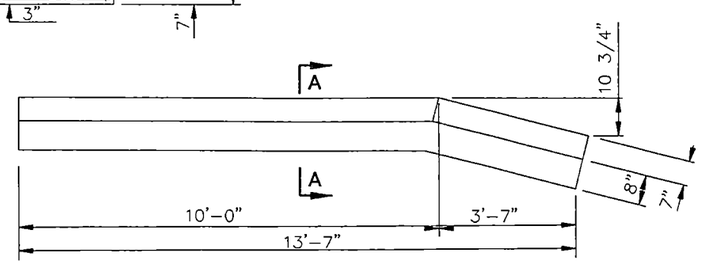


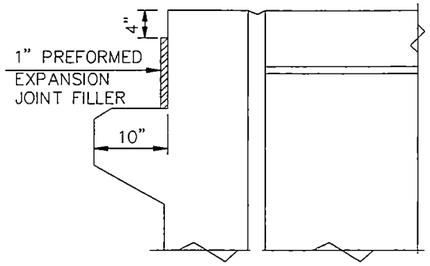
PLAN OF BARRIER

QUANTITIES	(ONE SLAB)	
APPROACH SLAB	106.8	SY
SELECT BACKFILL	16.7	TON

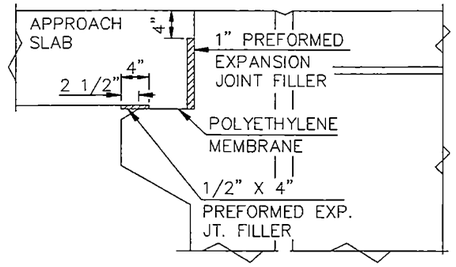
JAMES RIVER

WEST APPROACH SLAB
EXIT END

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-2-094(007)256	242



STAGE 1



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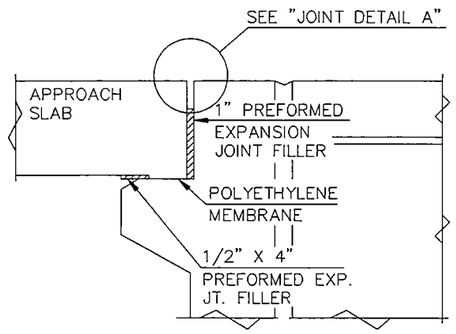

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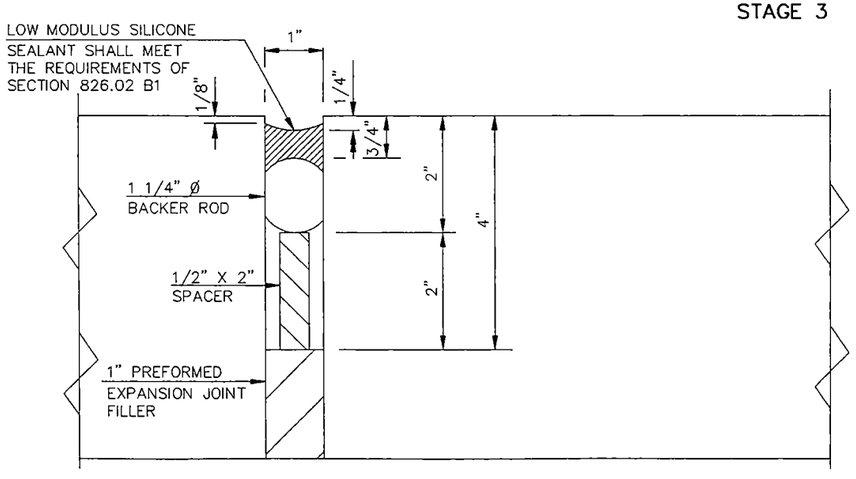


JOINT DETAIL A

WEST APPROACH SLAB – BRIDGE DECK JOINT

STAGE 1:

1. 1" THICK PREFORMED EXPANSION JOINT FILLER TO BE INSTALLED PRIOR TO APPROACH SLAB PLACEMENT.

STAGE 2.

3. AFTER PLACING THE 1/2" X 4" PREFORMED EXPANSION JOINT FILLER AND THE POLYETHYLENE MEMBRANE PLACE THE NEW APPROACH SLAB CONCRETE.

STAGE 3:

4. AFTER THE CONCRETE HAS SET SAW CUT A 1" WIDE BY 4" DEEP JOINT OUT OF THE CONCRETE BETWEEN THE APPROACH SLAB AND THE ABUTMENT WALL. THE JOINT SHOULD BE CENTERED OVER THE PREFORMED EXPANSION JOINT FILLER.

5. CLEAN THE JOINT AND INSTALL THE 1/2" X 2" SPACER, THE BACKER ROD AND THE SILICONE SEALANT ACCORDING TO SECTION 550.04 M.3 OF THE STANDARD SPECS.

GENERAL:

WHEN SAW CUTTING CANNOT EXTEND ALONG THE TOTAL WIDTH OF THE DECK, THE AREA FROM WHERE THE SAW CUT ENDS AND THE SIDE EDGES OF THE DECK SHALL BE FORMED WITH 1" THICK PREFORMED JOINT FILLER AND FINISHED WITH BACKER ROD AND SILICONE SEALANT.

NOTES:

THE ESTIMATED MATERIAL QUANTITIES SHOWN ON DRAWING NO. 94-295.847L-3 ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING BARS, DOWEL BARS, BACKER ROD, SILICONE SEALANT, POLYETHYLENE MEMBRANE, SAW CUTTING, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB (REMOVE & REPLACE)".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

THE POLYETHYLENE MEMBRANE SHALL MEET THE REQUIREMENTS OF AASHTO M171.

SURFACE FINISH "D" SHALL BE REQUIRED FOR ALL SURFACES OF THE CURB TRANSITIONS.

ALL DOWEL BARS SHALL BE EPOXY COATED AND CONFORM TO AASHTO M-254 TYPE B. FREE ENDS OF THE DOWEL BARS SHALL BE GIVEN A THIN UNIFORM COATING OF GREASE. THIS COATING SHALL BE APPLIED WITHIN TWO HOURS BEFORE COVERING WITH CONCRETE.

JAMES RIVER

WEST APPROACH SLAB
JOINT DETAIL

JOB# 3

FHWA REGION	STATE	PROJECT	SHEET NO.
8	N.D.	IR-094-7(038)259	1

DESIGN DATA

Traffic			Average Daily				Est. 30th Max. Hr.
Current (1990)	2250	Pass.	500	Trucks	2750	Total	350
Forecast (2010)	2850	Pass.	850	Trucks	3700	Total	425

Design Speed 70 MPH
Traffic Classification "M"
Minimum Sight Distance (Stopping) 600'

Bridges James River HS20
Burlington Northern HS25

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

IN STUTSMAN COUNTY

FEDERAL AID PROJECT IR-94-7(038)259 CONTRACT 2

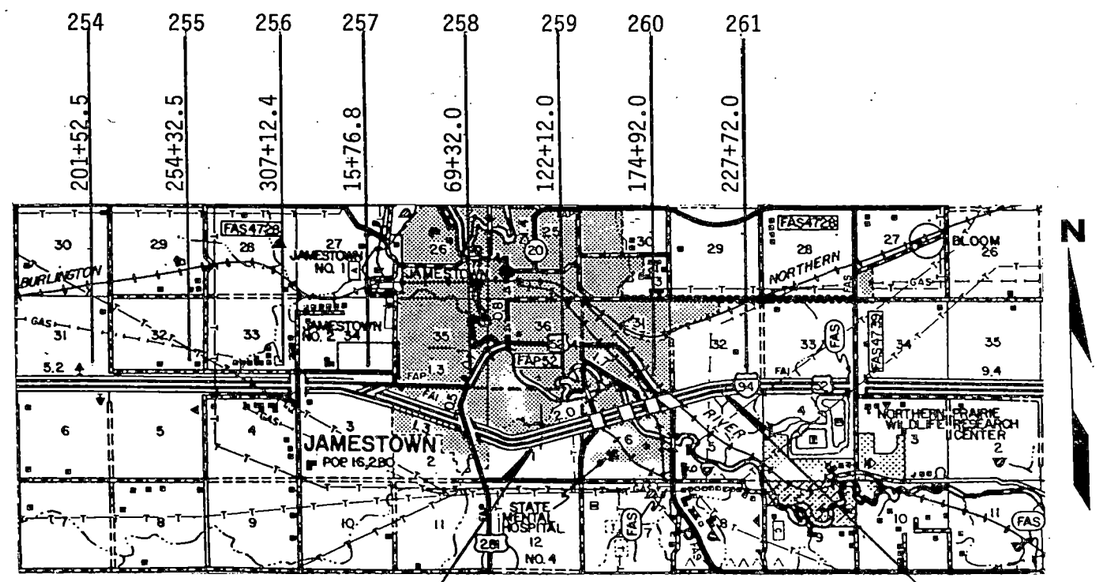
STRUCTURAL, GRADING, & SURFACING

GOVERNING SPECIFICATIONS:

Standard Specifications for Road and Bridge Construction, adopted by the North Dakota State Highway Department, November 1986, shall apply to all North Dakota Department of Transportation contracts, standard drawings currently in effect, and other contract provisions submitted herein.

LENGTH OF PROJECT

Project	Miles-Gross	Miles-Net
IR-94-7(038)259	1.685	1.685



BEG. PROJECT IR-94-7(038)259
STA. 116+00

END PROJECT IR-94-7(038)259
STA. 205+00

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE 8/31/90

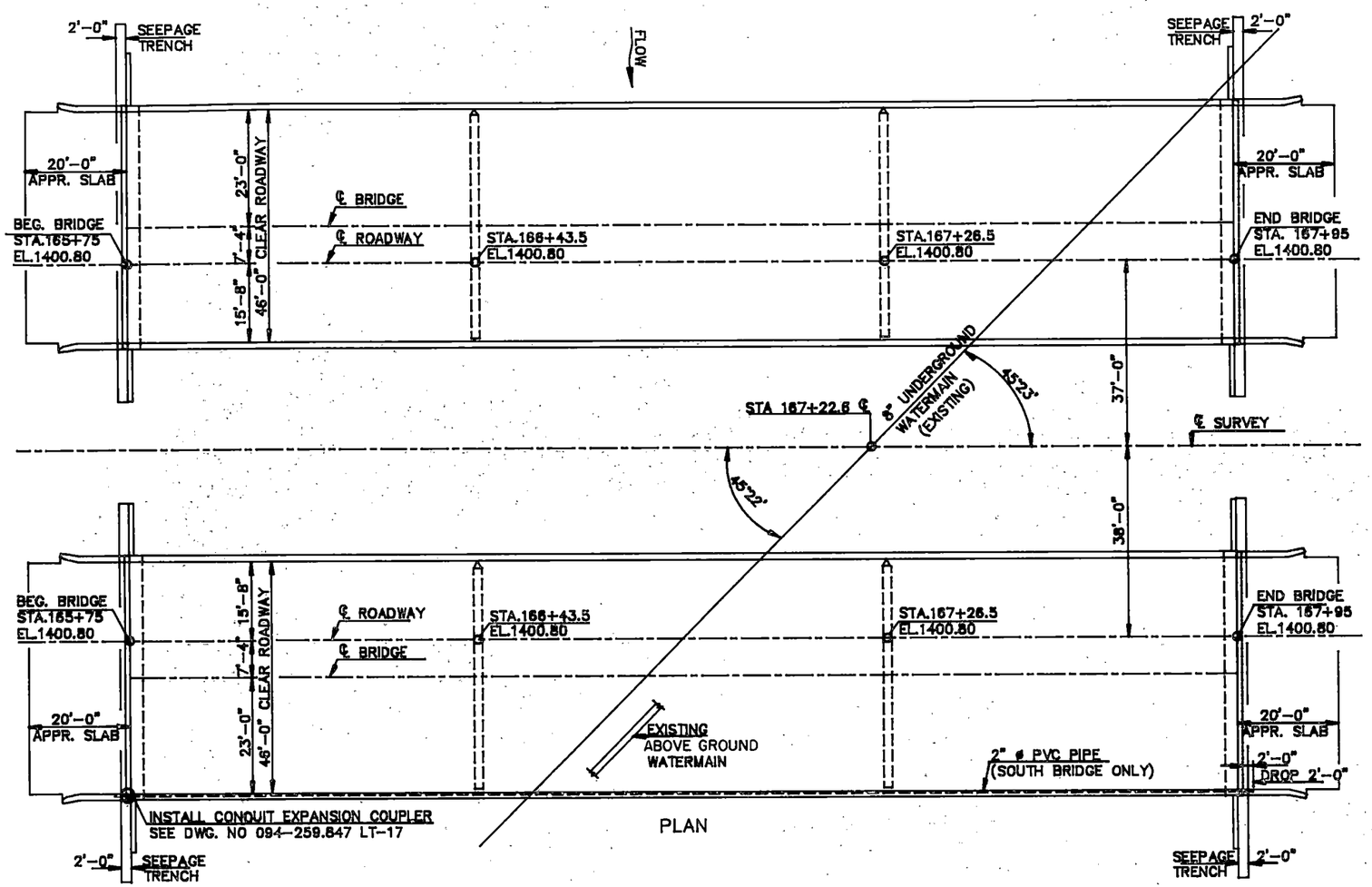
Ray Zink

DIRECTOR OF HIGHWAYS
AND ENGINEERING

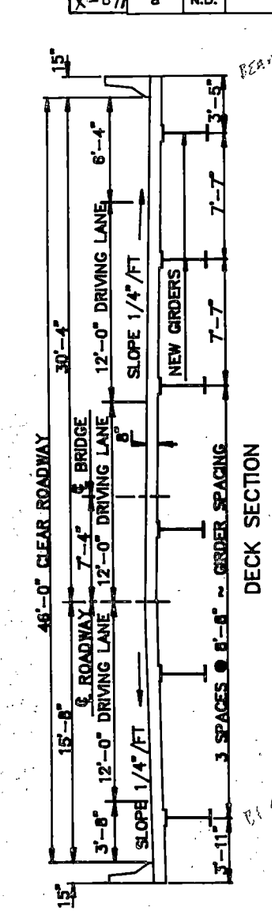
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

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

BRIDGE CODE	FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
X-071	8	N.D.	IR-094-7(038)259	80



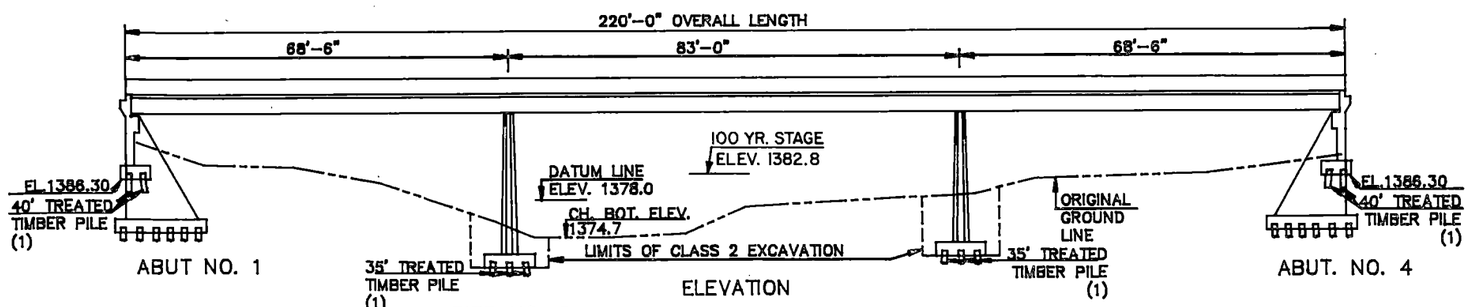
PLAN



DECK SECTION

SITE #1

NOTE:
THIS PROJECT CONSISTS OF THE STRUCTURES ON BOTH ROADWAYS. BOTH STRUCTURES ARE SHOWN ON THIS LAYOUT DRAWING. ONLY THE WESTBOUND STRUCTURE IS SHOWN IN THE REMAINING PLAN DRAWINGS. THE EASTBOUND STRUCTURE IS SIMILAR TO THE WEST-BOUND STRUCTURE ROTATED BY 180°. THE ESTIMATE OF QUANTITIES SHOWN ON DRWG. NO. 094-259.847 LT-4 IS FOR BOTH STRUCTURES.



ELEVATION

(1) ON WIDENING PORTION ONLY

FOREST D. DUROW REGISTERED PROFESSIONAL ENGINEER 948 NORTH DAKOTA

8-30-90 DATE

BRIDGE ENGINEER

DESIGN LOADING	F.W.S.
HS20	15 P.S.F.

JAMES RIVER
AT JAMESTOWN

BRIDGE LAYOUT

46'-0" CLEAR ROADWAY

90LCS45

094-259.847 LT. & RT.

STRUCTURAL NOTES

100 SCOPE OF WORK: This bridge widening project consists of widening the structures on both the west and eastbound roadways of I-94 over the James River. Structural plans for existing structure are available at the Bridge Division of the central office in Bismarck. The existing slab shall be removed and replaced. The existing abutments and piers shall be widened. The existing structural steel shall be sandblasted and painted. Two new girder lines shall be added to the outside of the structures. The final structures shall have a 46 foot clear roadway with 20 foot approach slabs.

100 GENERAL: The cost of furnishing and placing preformed expansion joint filler, concrete inserts, tie wire, bar spacers, bar supports, deck drains, conduit, and other miscellaneous items shall be included in the price bid for Class AE-3 and AAE-3 concrete.

202 REMOVAL OF CONCRETE: In removing the deck concrete, care shall be taken to minimum damage to the girders. Damage caused by the removal shall be repaired as directed by the engineer at the contractor's expense. Concrete shall be removed from the river to the satisfaction of the engineer. All work to remove and properly dispose of the concrete shall be included in the bid item "Removal of Concrete." "Removal of Concrete" shall be bid lump sum.

210 EXCAVATION: The excavation at the abutments as shown on the layout sheet shall be included in the lump sum bid item, "Class 1 Excavation." The excavation at the piers shall be included in the lump sum bid item, "Class 2 Excavation."

210 SELECT BACKFILL: Select backfill shall meet the requirements of Section 816.03, Class 5, except maximum size shall be 3".

550 BRIDGE APPROACH SLABS: Mechanical finishing of the approach slabs shall be required. A mechanical or hand-held transverse metal tine finish shall be applied. A surface tolerance of 3/16" in 10 feet is also required.

602 SURFACE FINISH "D": Surface Finish "D" shall be required for all exposed surfaces of the barrier and the edge of the slab. Select backfill shall be compacted in accordance with Section 203.02F.

602 DECK CONCRETE: Beams and girders have slight variations in the anticipated camber. To build the deck to the designated thickness will require slight adjustments in deck elevation and/or riser dimensions. These adjustments result in minor concrete quantity discrepancies. The contractor shall consider this quantity discrepancy when he bids the unit price for Class AAE-3 Concrete. The Department will only pay for the plan quantity of Class AAE-3 Concrete.

602 Deflection of the deck shoring shall be computed using the total dead load plus the weight of the finishing machine. The forming shall be adjusted properly to accommodate the deflection and thereby maintain the total slab thickness specified in the plans.

602 PENETRATING WATER REPELLENT TREATMENT: Penetrating water repellent shall be applied to the driving surface of the concrete deck.

602 DIAPHRAGMS: If the diaphragm concrete is placed before the deck concrete, the concrete shall cure for at least 72 hours before deck placement.

602 BARRIERS: Barriers shall be constructed according to the provisions of Section 602.03 B.4 except that there shall be no expansion or deflection joints. Make 3/4" V-grooves in all faces of the barriers at each pier and at equal spaces between substructures at approximately 10-foot spacing.

612 REINFORCING STEEL: Dimensions for bent bars are given out to out and to tangent intersections unless otherwise noted.

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

612 All reinforcing steel shall be Grade 60.

612 ANCHORAGE REINFORCING STEEL: The contractor is required to drill into existing concrete to install concrete anchorage units. The contractor shall have drilling equipment available that is capable of drilling thru any existing reinforcing steel that may be encountered while drilling holes into the existing concrete.

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

616 Field connections shall be made with 7/8 inch diameter, AASHTO M 164 high-strength bolts unless otherwise shown.

616 Temporary or permanent attachments or devices that are not shown on the plans as part of the structure shall not be welded to the structural steel members during the fabrication and construction process.

616 The cost of swedge bolts shall be included in the total cost of structural steel.

616 STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 36T2, except the requirement for Charpy V-Notch test is waived for the bearings, ice nose, and expansion joint material.

616 STUD SHEAR CONNECTORS: The cost of furnishing and installing studs to the existing girders shall be paid for as "Stud Shear Connector." The flange surface shall be clean and dry before the studs are connected. The air temperature shall be a minimum of 50°F during installation of the studs.

630 PAINT AND PAINTING: The structural steel shall be painted according to the supplemental specifications. The finish coat shall be blue color number 25177 of Federal Standard 595B.

STRUCTURAL NOTES

630 Cleaning and painting of the old steel shall be included in the lump sum price bid for "sandblasting and painting." Cleaning and painting of new steel shall be included in lump sum price bid for "Structural Steel."

ELEVATION CHECK POINTS: 16 bolts need to be placed on top of the barrier to serve as elevation check points. The cost for this item shall be included in the unit price bid for Class AAE-3 concrete.

SHOP DRAWINGS: The contractor shall submit the following shop drawings to the Construction office for approval;

1. Structural Steel Items.
2. Elastomeric Bearing Assemblies.

DESIGN STRENGTH: F'C 3,000 PSI Cl. AE-3 Concrete
F'C 4,000 PSI Cl. AAE-3 Concrete
FY 60,000 PSI GR. 60 Reinforced Steel
FY 36,000 PSI Structural Steel M270 Grade 36
Load Factor Design (HS 20)

ELASTOMERIC BEARING PAD: Elastomeric bearing pad material and fabrication shall be in accordance with AASHTO M251 specifications with additional suffix requirements F17, Z22, and Z31. Bearing acceptance will be by certification in accordance with Section 106 of the Standard Specifications. The elastomeric material shall have a hardness of 60 durometers.

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
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BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEVATION
BM 3	PAINT SPOT ON CURB	150+30-60' RT	1441.07

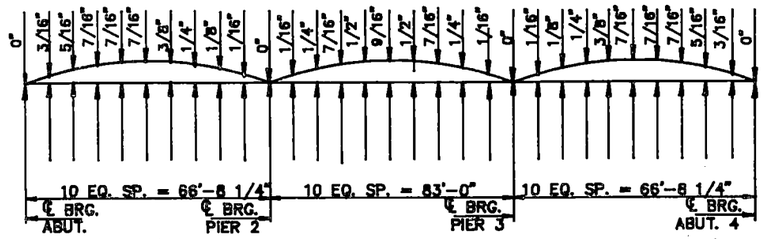
* MEASURED BELOW BOTTOM OF FOOTING

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH LOAD	DESIGN LOAD	MINIMUM * PENETRATION
ABUT. 1 & 4	8.2 T	4.2 T	7.6 T	20.0 T	25'
PIER 2 & 3	15.5 T	6.0 T	1.8 T	23.3 T	25'

INDEX OF STRUCTURAL DRAWINGS

DESCRIPTION	DRAWING NUMBER
LAYOUT	094-259.847 LT & RT
NOTES	094-259.847 LT-1 & 2
MISCELLANEOUS DETAILS	094-259.847 LT-3
PILE LAYOUT & BEARING ELEV	094-259.847 LT-4
ABUTMENT DETAILS	094-259.847 LT-5-8
PIER DETAILS	094-259.847 LT-9-11
GIRDER DETAILS	094-259.847 LT-12-14
SUPERSTRUCTURE DETAILS	094-259.847 LT-15-17
BAR REINFORCEMENT DETAILS	094-259.847 LT-18 & 19
APPROACH SLAB (NORTH ROADWAY)	094-259.847 LT-20 & 21
APPROACH SLAB (SOUTH ROADWAY)	094-259.847 LT-22 & 23



FIELD RISER DIAGRAM
"A" DIMENSION

STANDARDS

D-900-1	BRIDGE BENCH MARKS

(1) DEAD LOAD DEFLECTIONS INCLUDED

GIRDER NO. 1 IS THE SOUTH GIRDER

SCREED ELEVATIONS ● GIRDER NO. 6 (1)	SCREED ELEVATIONS ● GIRDER NO. 5 (1)	SCREED ELEVATIONS ● GIRDER NO. 2 & 3 (1)	SCREED ELEVATIONS ● GIRDER NO. 1 & 4 (1)
1400.213	1400.371	1400.710	1400.529
1400.213	1400.371	1400.710	1400.529
.228	.386	.730	.549
.240	.398	.747	.566
.249	.407	.757	.576
.252	.410	.761	.580
.251	.409	.758	.577
.245	.403	.750	.569
.235	.393	.738	.557
.225	.383	.725	.544
.216	.374	.715	.534
1400.213	1400.371	1400.710	1400.529
.220	.378	.713	.532
.233	.391	.725	.544
.247	.405	.739	.558
.256	.414	.750	.569
.260	.418	.754	.573
.256	.414	.750	.569
.247	.405	.739	.558
.233	.391	.725	.544
.220	.378	.713	.532
1400.213	1400.371	1400.710	1400.529
.216	.374	.715	.534
.225	.383	.725	.544
.235	.393	.738	.557
.245	.403	.750	.569
.251	.409	.758	.577
.252	.410	.761	.580
.249	.407	.757	.576
.240	.398	.747	.568
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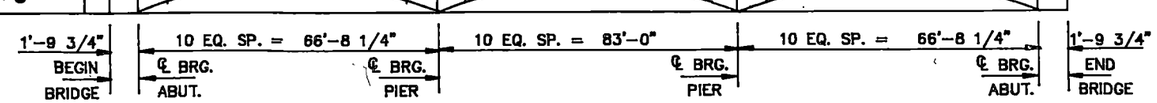
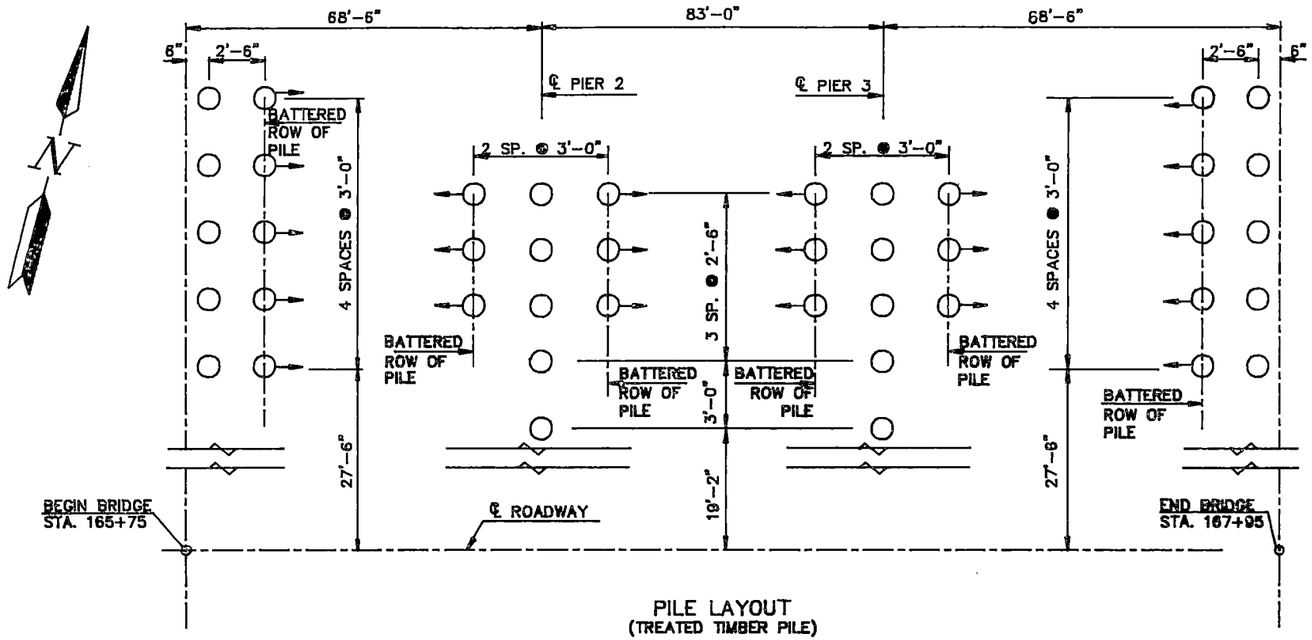


SCREED ELEVATIONS
ELEVATIONS ARE TO TOP OF FINISHED ROADWAY

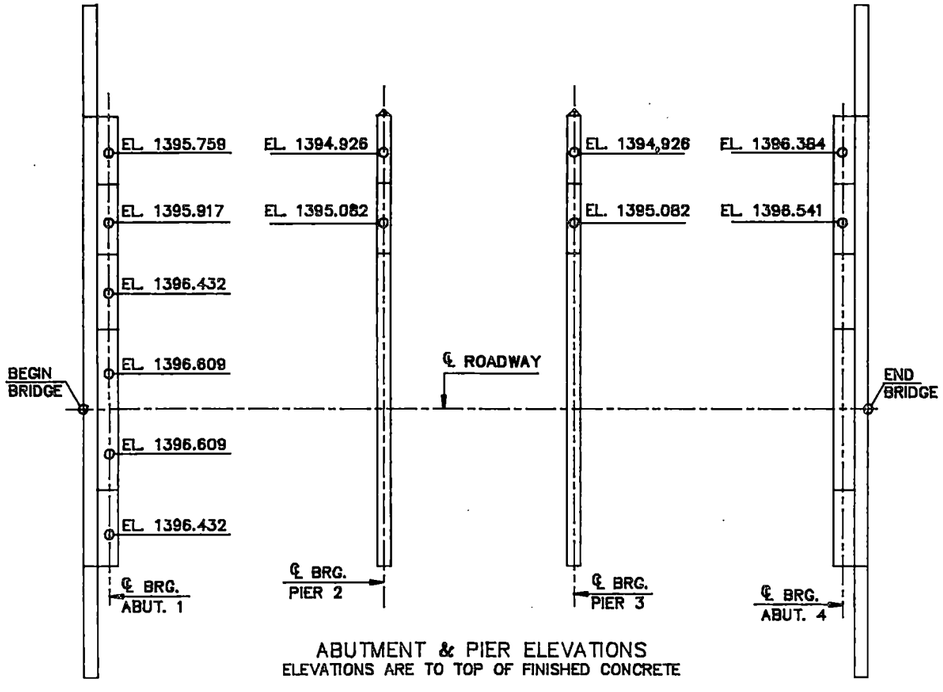
JAMES RIVER AT JAMESTOWN

MISCELLANEOUS DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	84



PILE LAYOUT
(TREATED TIMBER PILE)



ABUTMENT & PIER ELEVATIONS
ELEVATIONS ARE TO TOP OF FINISHED CONCRETE

ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0115	REMOVAL OF CONCRETE-SITE 1	L.SUM	1.0
210	0102	CLASS 1 EXCAVATION-SITE 1	L.SUM	1.0
210	0111	CLASS 2 EXCAVATION	L.SUM	1.0
210	0200	SELECT BACKFILL	CU.YD.	1550.0
210	0202	FOUNDATION PREPARATION-SITE 1	L.SUM	1.0
550	0215	CONCRETE BRIDGE APPROACH SLAB	SQ.YD.	426.8
602	0130	CLASS AAE-3 CONCRETE	CU.YD.	650.2
602	1130	CLASS AE-3 CONCRETE	CU.YD.	286.6
602	1250	PENETRATING WATER REPELLANT TR.	SQ.YD.	2249.0
612	0115	REINFORCING STEEL GRADE 60	LBS.	41400.0
612	0116	REINFORCING STEEL GRADE 60 EPOXY	LBS.	155070.0
* 616	5868	STRUCTURAL STEEL-SITE 1	L.SUM	1.0
616	8030	STUD SHEAR CONNECTOR	EA.	480.0
622	4630	TREATED TIMBER PILING	L.FT.	3140.0
630	0101	SANDBLASTING & PAINTING-SITE 1	L.SUM	1.0
930	8800	ELASTOMERIC BEARING PAD	SQ.FT.	22.6
930	8850	EXPANSION JOINT STRIP SEAL	L.FT.	97.0

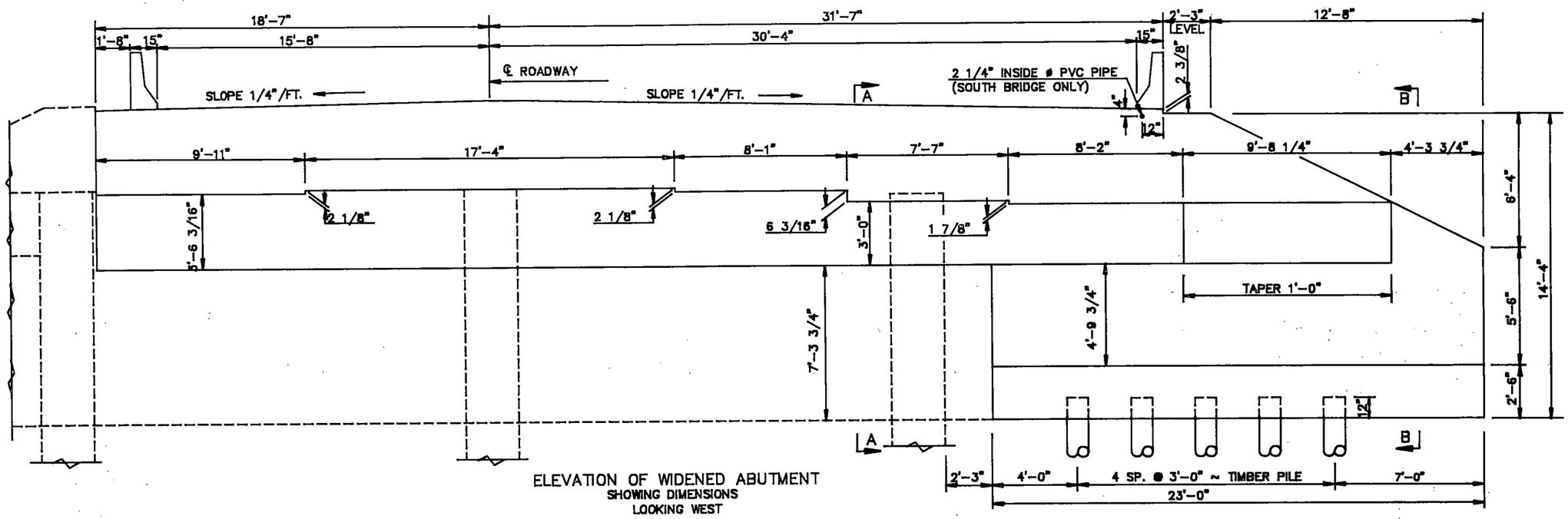
* THE ESTIMATED QUANTITY OF STRUCTURAL STEEL IS 162,570 LBS.

NOTE:
THE ESTIMATE OF QUANTITIES SHOWN ABOVE ARE FOR BOTH ROADWAY STRUCTURES.
THE SITE 1 ITEM DESCRIPTIONS SHOWN ABOVE ARE BID AS ONE (1) LUMP SUM AND INCLUDE ALL WORK REQUIRED ON BOTH ROADWAY STRUCTURES AT SITE 1.

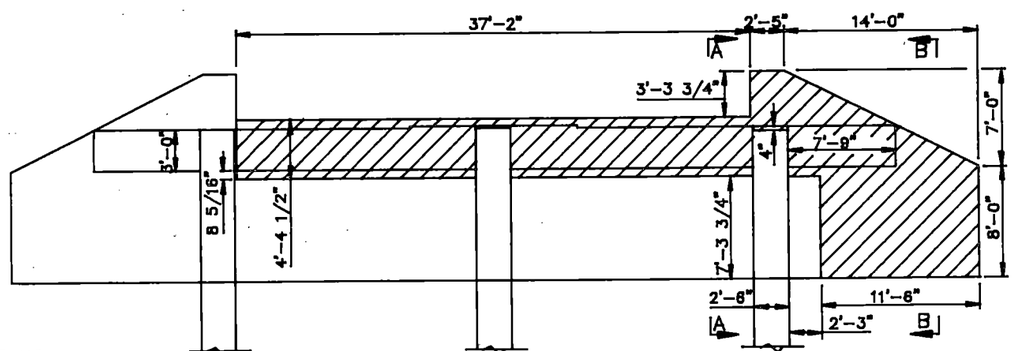
JAMES RIVER AT JAMESTOWN

PILE LAYOUT-ABUTMENT & PIER CAP ELEVATIONS & QUANTITIES

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	85

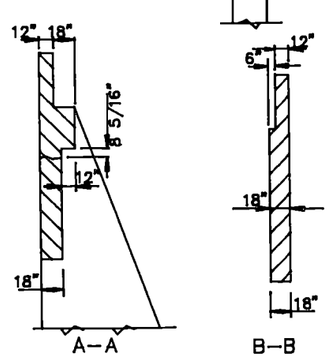


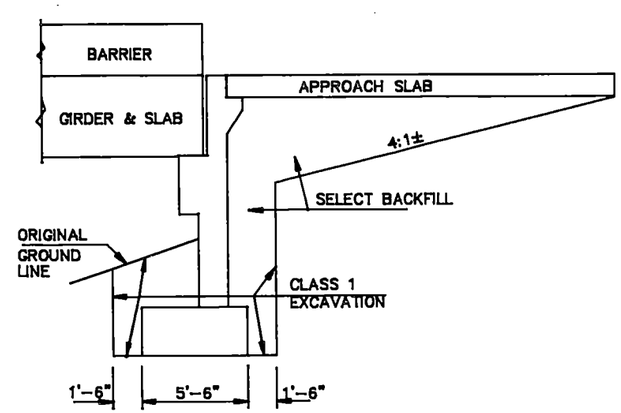
ELEVATION OF WIDENED ABUTMENT
SHOWING DIMENSIONS
LOOKING WEST



ELEVATION OF EXISTING
SHOWING DIMENSIONS FOR REMOVAL
LOOKING WEST

NOTE:
ALL CONCRETE REMOVAL JOINTS SHALL BE SAW CUT TO PROVIDE A NEAT LINE.





DETAIL AT ABUTMENT

QUANTITIES
SEE DRWG. NO. 94-259.847 LT.-6

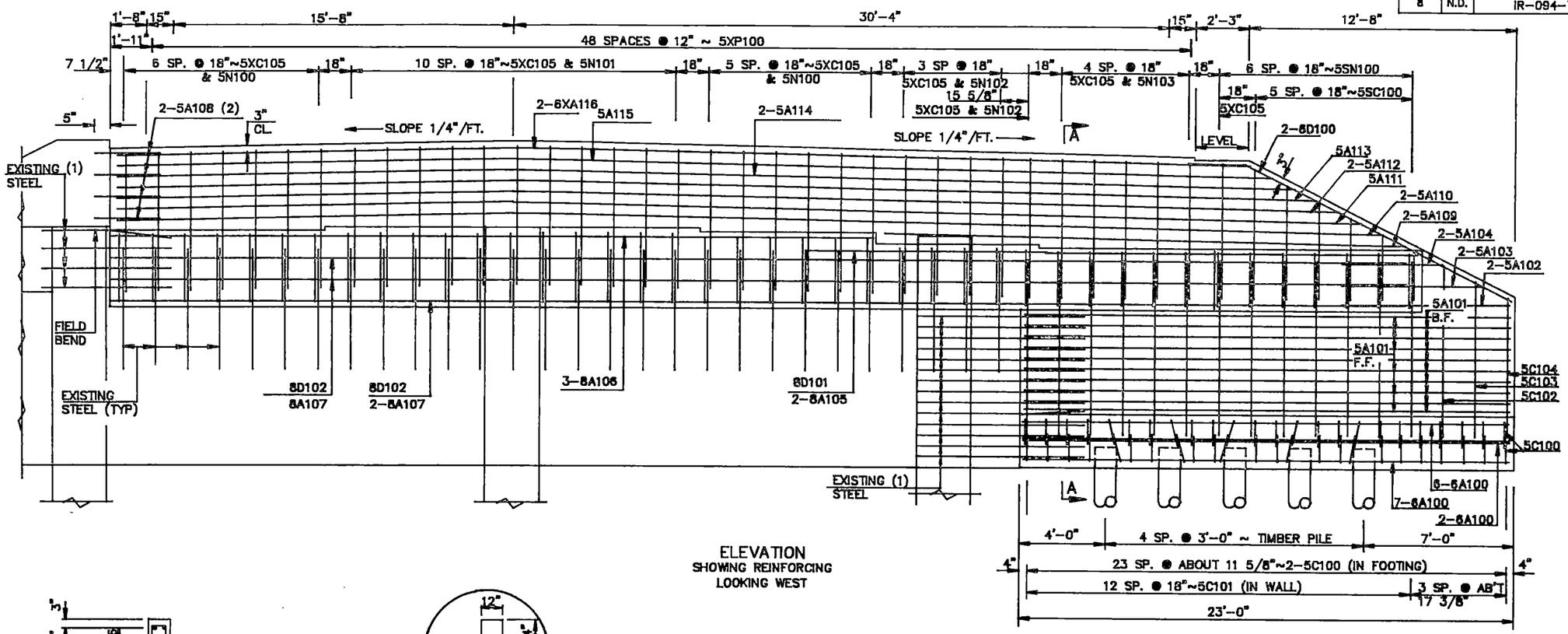
JAMES RIVER AT JAMESTOWN

WEST ABUTMENT WIDENING DETAILS

90LCS46

094-259.847 LT-5

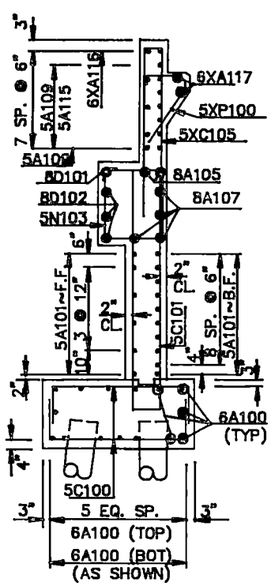
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	86



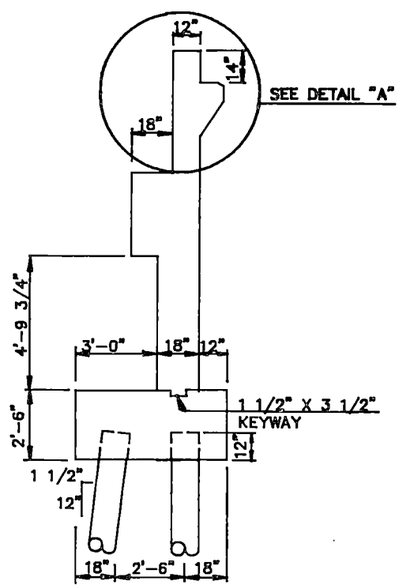
ELEVATION
SHOWING REINFORCING
LOOKING WEST

(1) EXISTING LONGITUDINAL STEEL SHALL BE CUT TO A MINIMUM LENGTH OF 3'-0".

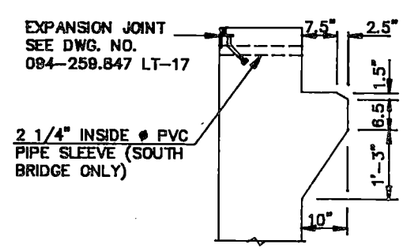
(2) ALL 5A108 BARS SHALL BE ANCHOR UNITS WITH A HIGH STRENGTH ADHESIVE SPECIFICALLY INTENDED FOR CONCRETE ANCHORAGE. (HILTI HBR OR AN APPROVED EQUAL).



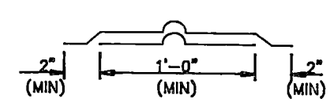
A-A
SHOWING REINFORCING



A-A
SHOWING DIMENSIONS



DETAIL "A"



ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM "CLASS AE-3 CONCRETE".

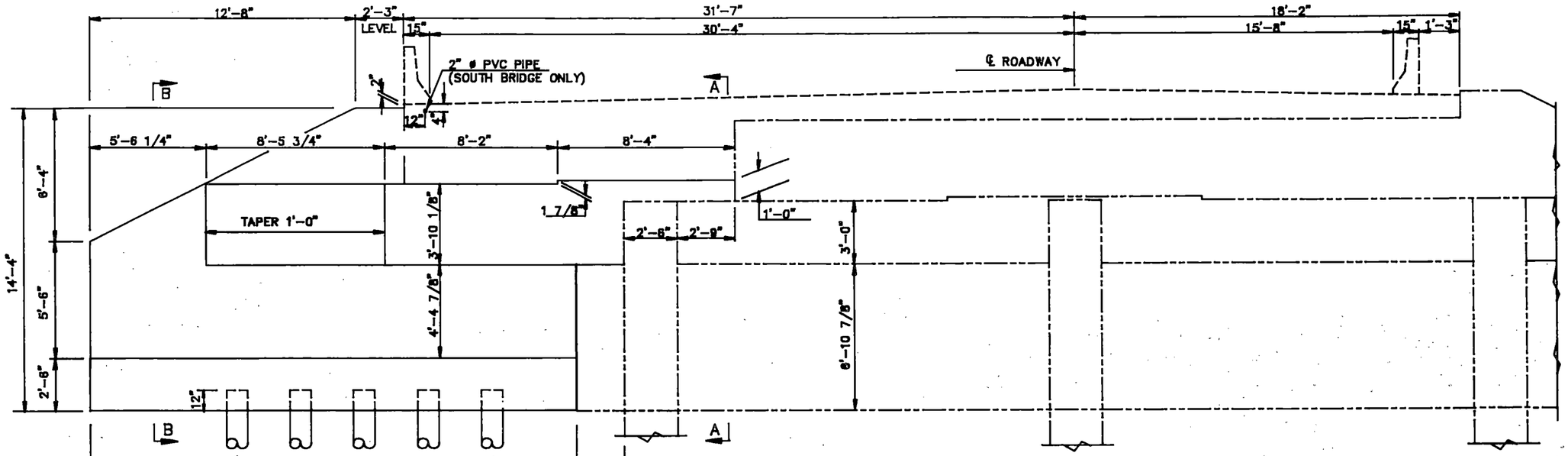
TWO-PLY FABRIC WATERPROOFING
TO BE PLACED AT ALL CONSTRUCTION JOINTS

QUANTITIES	(ONE ABUT.)	
CONCRETE REMOVAL	23.9	C.YD.
CL. AE-3 CONCRETE	45.3	C.YD.
REINFORCING STEEL	4,418	LBS.
REINFORCING STEEL--EPOXY	1,036	LBS.

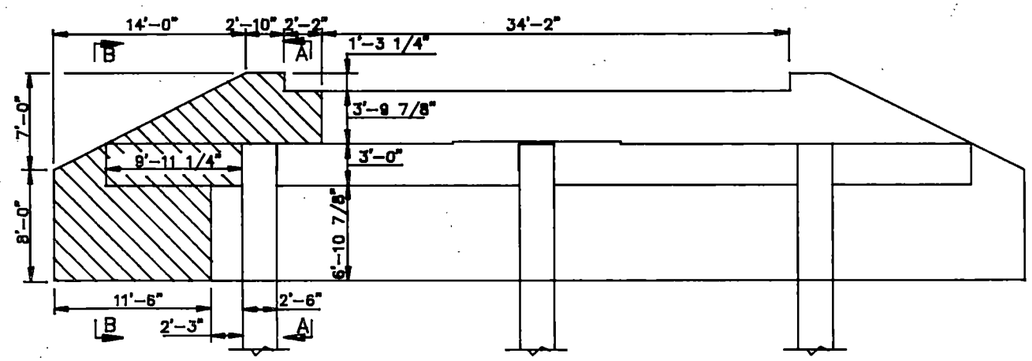
JAMES RIVER AT JAMESTOWN

WEST ABUTMENT WIDENING DETAILS

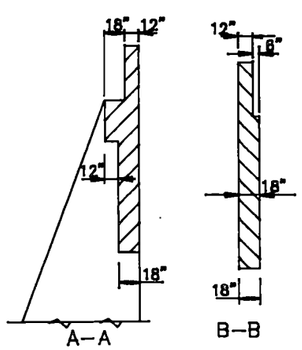
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	87

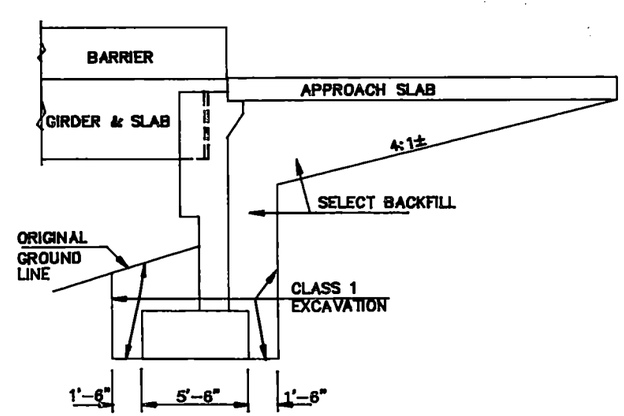


ELEVATION OF WIDENED ABUTMENT
SHOWING DIMENSIONS
LOOKING EAST



ELEVATION OF EXISTING
SHOWING DIMENSIONS FOR REMOVAL
LOOKING EAST





DETAIL AT ABUTMENT

NOTE:
ALL CONCRETE REMOVAL JOINTS SHALL BE SAW CUT TO PROVIDE A NEAT LINE.

QUANTITIES
SEE DRWG. NO. 94-259.847 LT-6

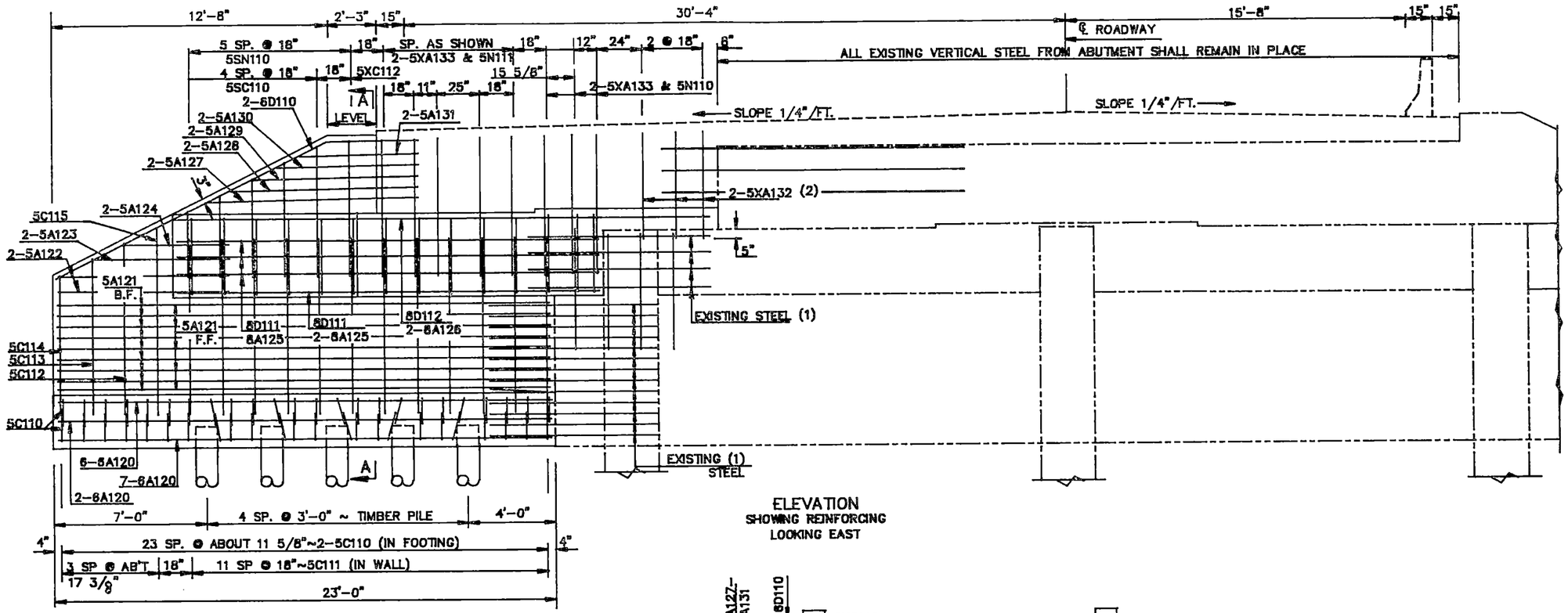
JAMES RIVER AT JAMESTOWN

EAST ABUTMENT WIDENING DETAILS

90LCS48

094-259.847 LT-7

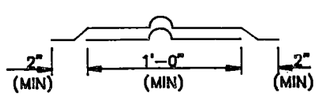
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	88



ELEVATION
SHOWING REINFORCING
LOOKING EAST

(1) EXISTING LONGITUDINAL STEEL SHALL BE CUT TO A MINIMUM LENGTH OF 3'-0".

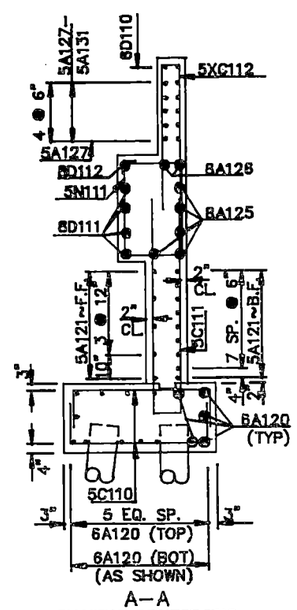
(2) ALL 5XA132 BARS SHALL BE ANCHOR UNITS WITH A HIGH STRENGTH ADHESIVE SPECIFICALLY INTENDED FOR CONCRETE ANCHORAGE. (HILTI HBR OR AN APPROVED EQUAL).



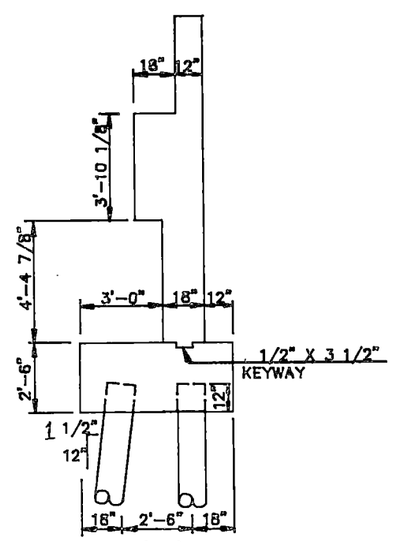
ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM "CLASS AE-3 CONCRETE".

TWO-PLY FABRIC
WATERPROOFING

TO BE PLACED AT ALL CONSTRUCTION JOINTS



A-A
SHOWING REINFORCING



A-A
SHOWING DIMENSIONS

QUANTITIES	(ONE ABUT.)
CONCRETE REMOVAL	8.7 C.YD.
CL AE-3 CONCRETE	25.8 C.YD.
REINFORCING STEEL	2,611 LBS.
REINFORCING STEEL-EPOXY	150 LBS.

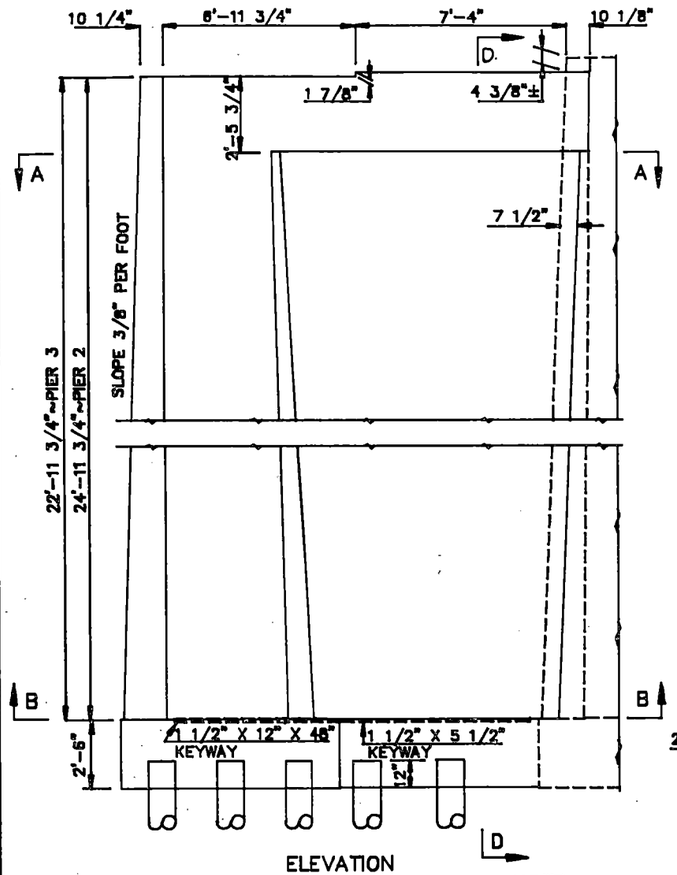
JAMES RIVER AT JAMESTOWN

EAST ABUTMENT WIDENING DETAILS

90LCS49

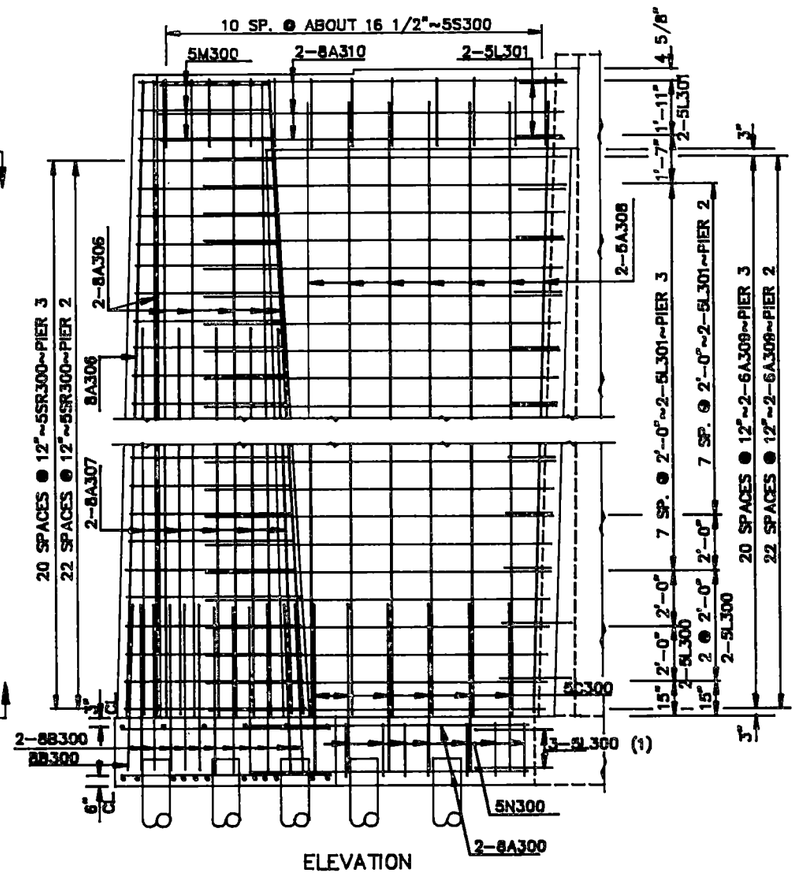
94-259.847 LT-8

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7 (038) 259	89

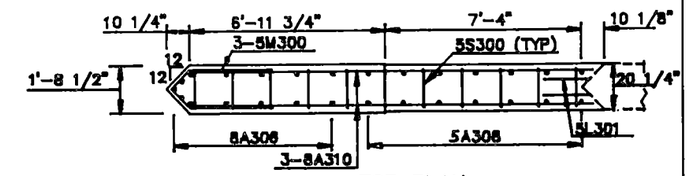


ELEVATION
SHOWING DIMENSIONS
LOOKING EAST

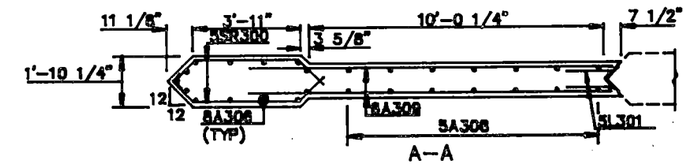
NOTE:
SEE DRAWING NO.
094-259.847 LT-11
FOR D-D



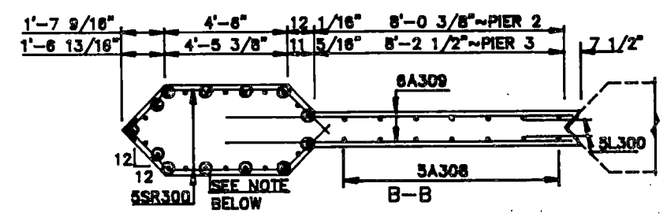
ELEVATION
SHOWING REINFORCING
LOOKING EAST



TOP PLAN

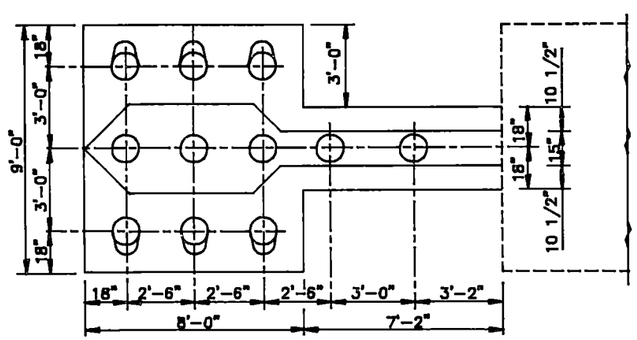


A-A

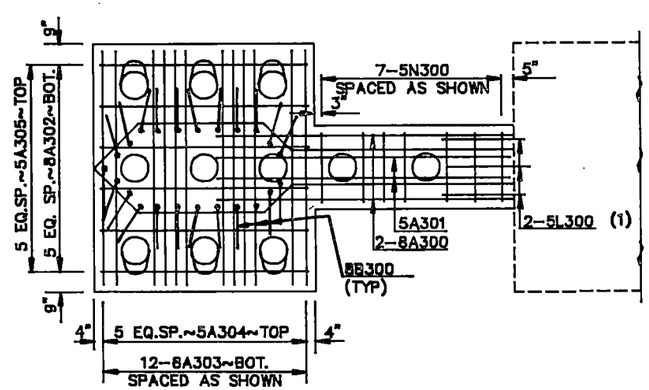


B-B

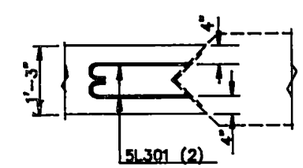
NOTE:
THE ENCIRCLED REINFORCING STEEL IN THE ABOVE SECTION ARE DESIGNATED AS 8A306'S. ALL OTHER REINFORCING STEEL ARE DESIGNATED AS 8A307'S UNLESS OTHERWISE NOTED.



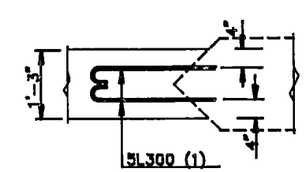
FOOTING PLAN
SHOWING DIMENSIONS



FOOTING PLAN
SHOWING REINFORCING



(2) 5L301'S SHALL BE WELDED ALL AROUND TO THE ICE NOSE ANGLE AT THE SPACING SHOWN.



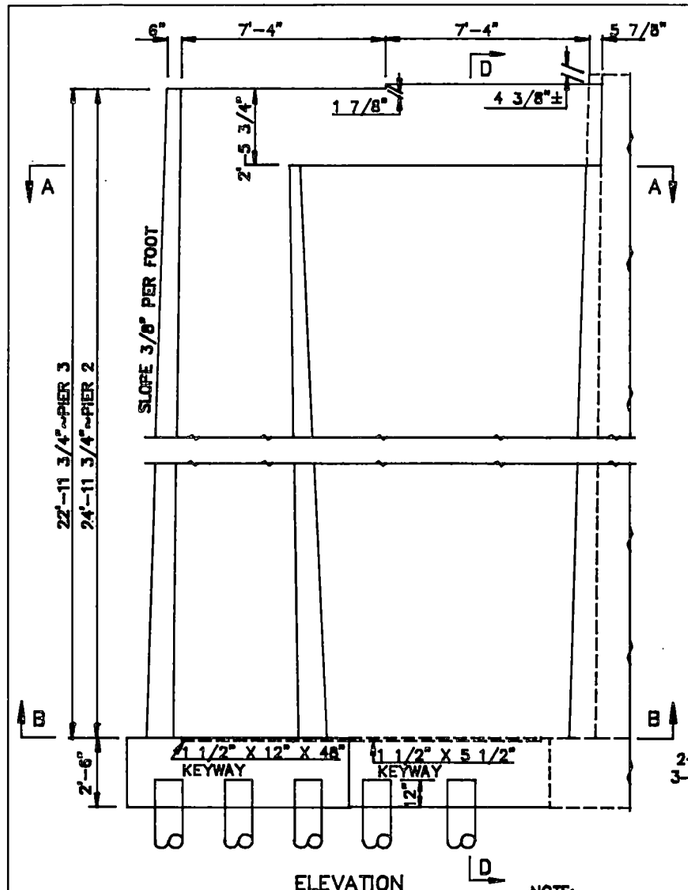
(1) INSTALL 5L300'S WITH A HIGH STRENGTH ADHESIVE SPECIFICALLY INTENDED FOR CONCRETE ANCHORAGE. (HILTI HBP OR AN APPROVED EQUAL).

QUANTITIES	(ONE BRIDGE)		
PIER 2	CLASS AE-3 CONCRETE	32.1	C.YD.
	REINFORCING STEEL	4,525	LBS.
PIER 3	CLASS AE-3 CONCRETE	30.0	C.YD.
	REINFORCING STEEL	4,392	LBS.

JAMES RIVER AT JAMESTOWN

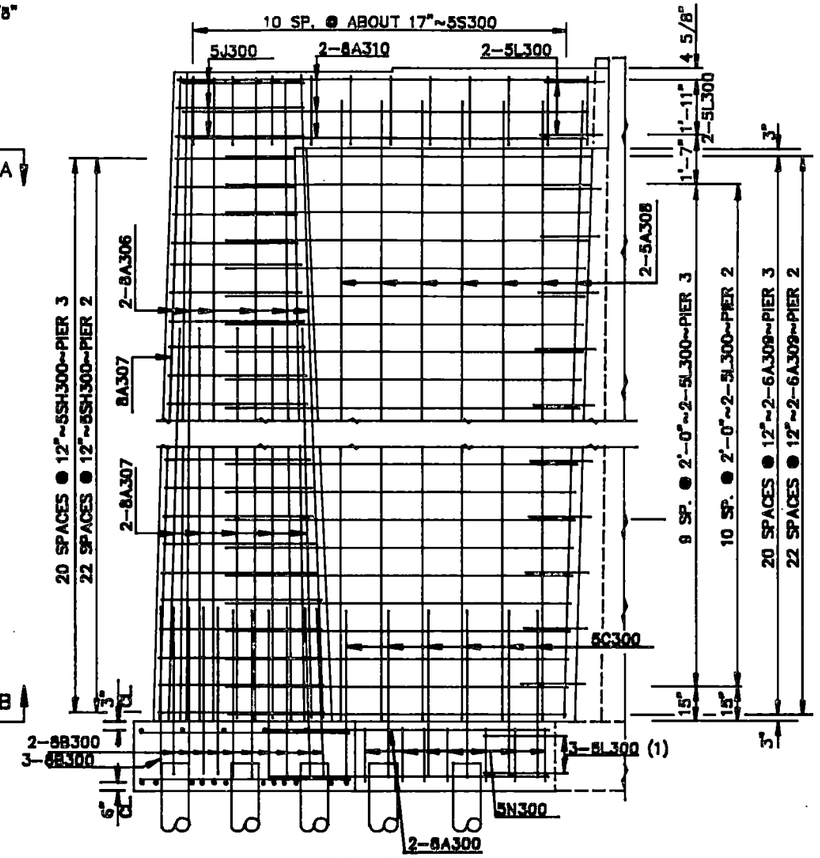
PIER WIDENING DETAILS
FOR NORTH BRIDGE

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7 (038) 259	90



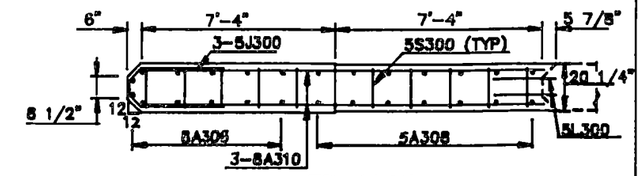
ELEVATION
SHOWING DIMENSIONS
LOOKING WEST

NOTE:
SEE DRAWING NO.
094-259.847 LT-11
FOR D-D

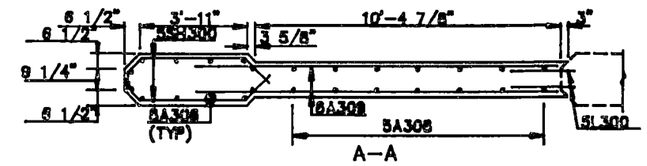


ELEVATION
SHOWING REINFORCING
LOOKING WEST

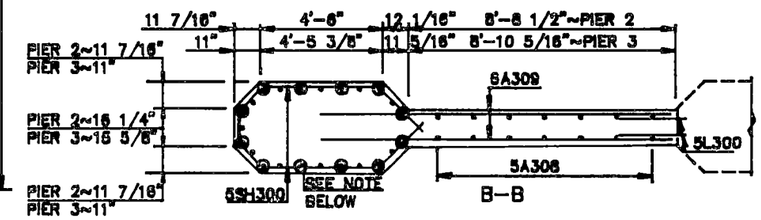
NOTE:
THE ENCIRCLED REINFORCING STEEL IN THE ABOVE SECTION ARE DESIGNATED AS 8A306'S. ALL OTHER REINFORCING STEEL ARE DESIGNATED AS 8A307'S UNLESS OTHERWISE NOTED.



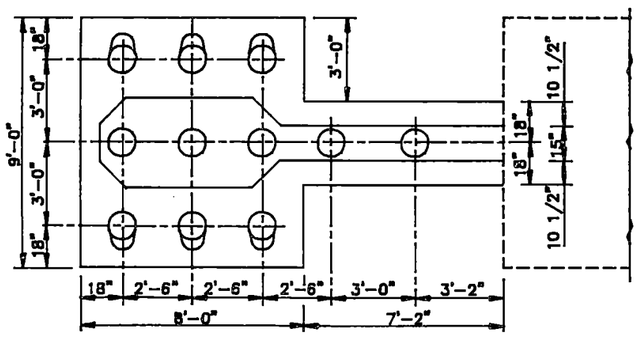
TOP PLAN



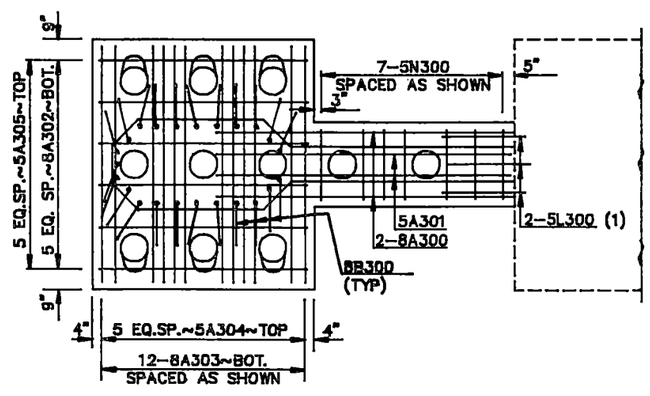
A-A



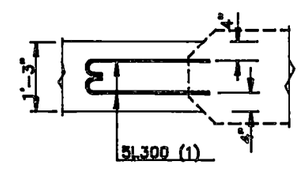
B-B



FOOTING PLAN
SHOWING DIMENSIONS



FOOTING PLAN
SHOWING REINFORCING



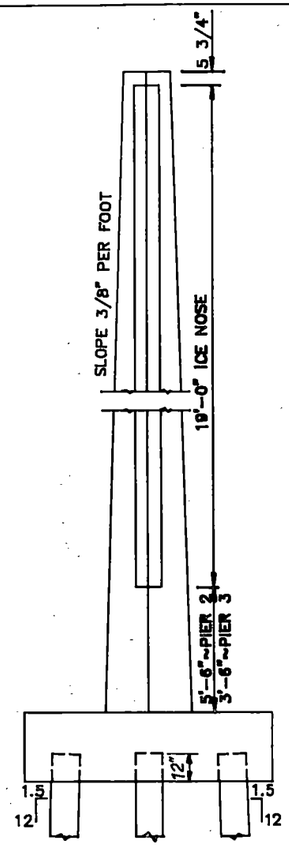
(1) INSTALL 5L300'S WITH A HIGH STRENGTH ADHESIVE SPECIFICALLY INTENDED FOR CONCRETE ANCHORAGE. (HILTI HBP OR AN APPROVED EQUAL).

	QUANTITIES	(ONE BRIDGE)	
PIER 2	CLASS AE-3 CONCRETE	32.3	C.YD.
	REINFORCING STEEL	4,493	LBS.
PIER 3	CLASS AE-3 CONCRETE	30.2	C.YD.
	REINFORCING STEEL	4,366	LBS.

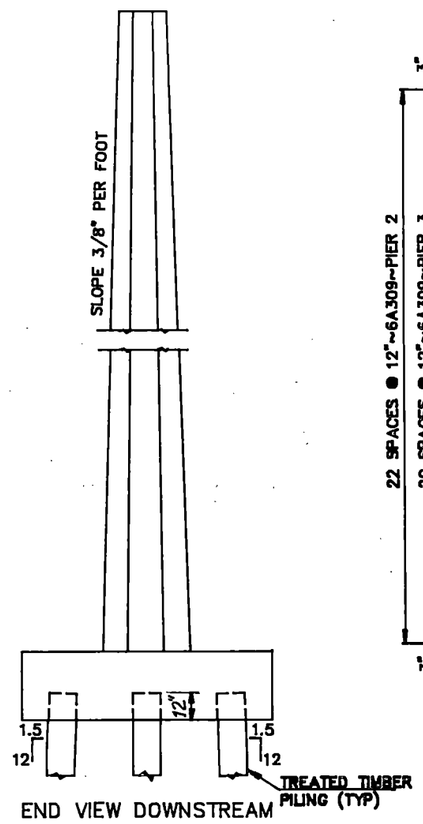
JAMES RIVER AT JAMESTOWN

PIER WIDENING DETAILS
FOR SOUTH BRIDGE

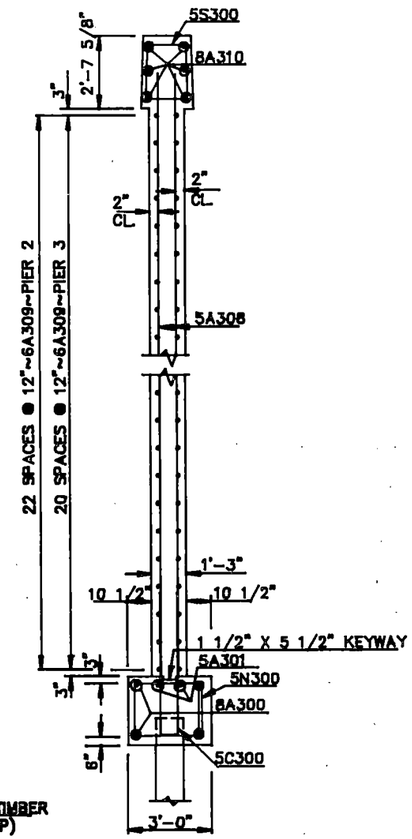
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	91



END VIEW UPSTREAM

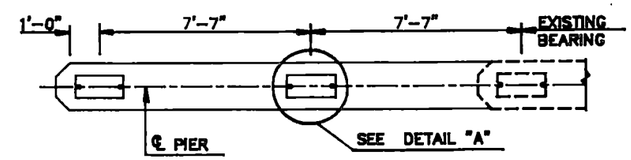


END VIEW DOWNSTREAM

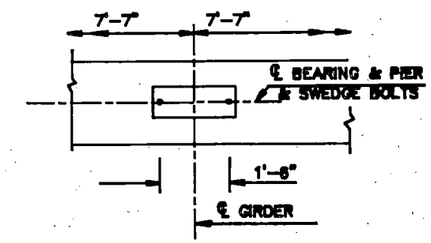


D-D

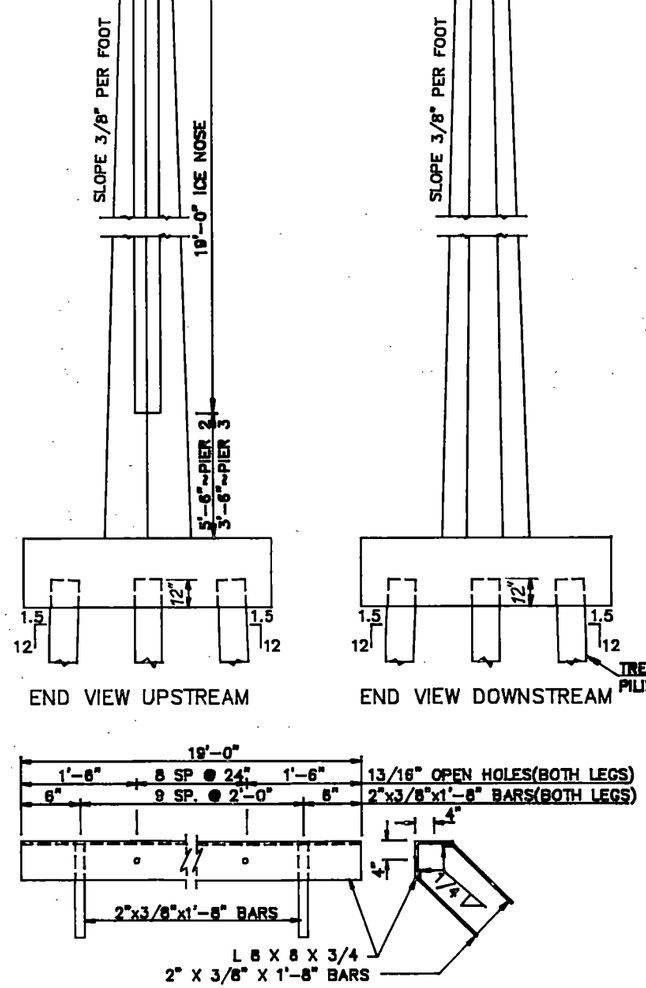
NOTE:
SEE DRAWINGS NO.
094-259.847 LT-9 & 10



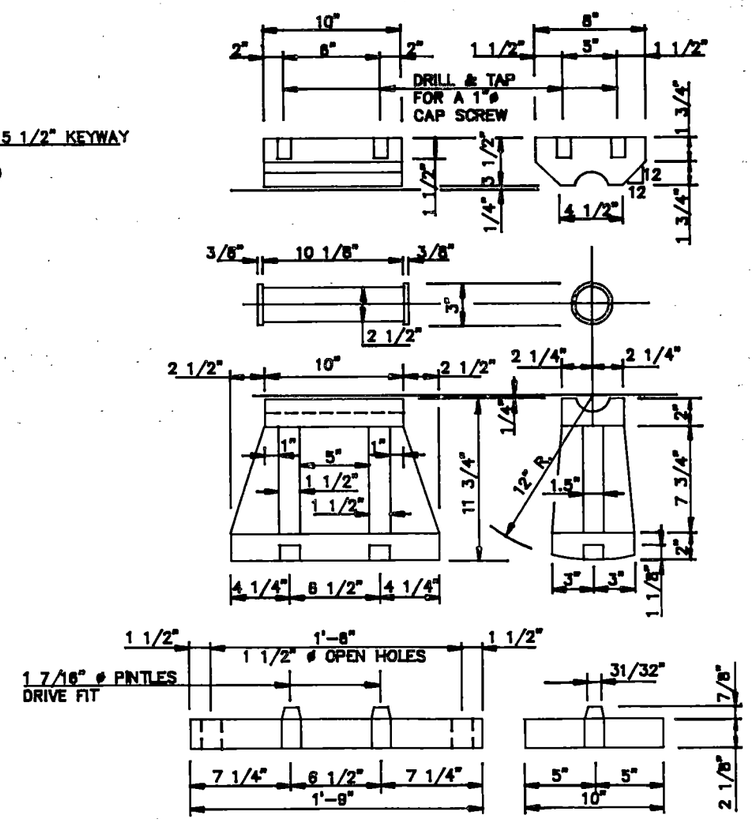
PLAN OF PIER WIDENING
SHOWING BEARING LOCATIONS



DETAIL "A"



ICE NOSE DETAILS
2 REQUIRED



EXPANSION BEARING DETAILS
8 REQUIRED

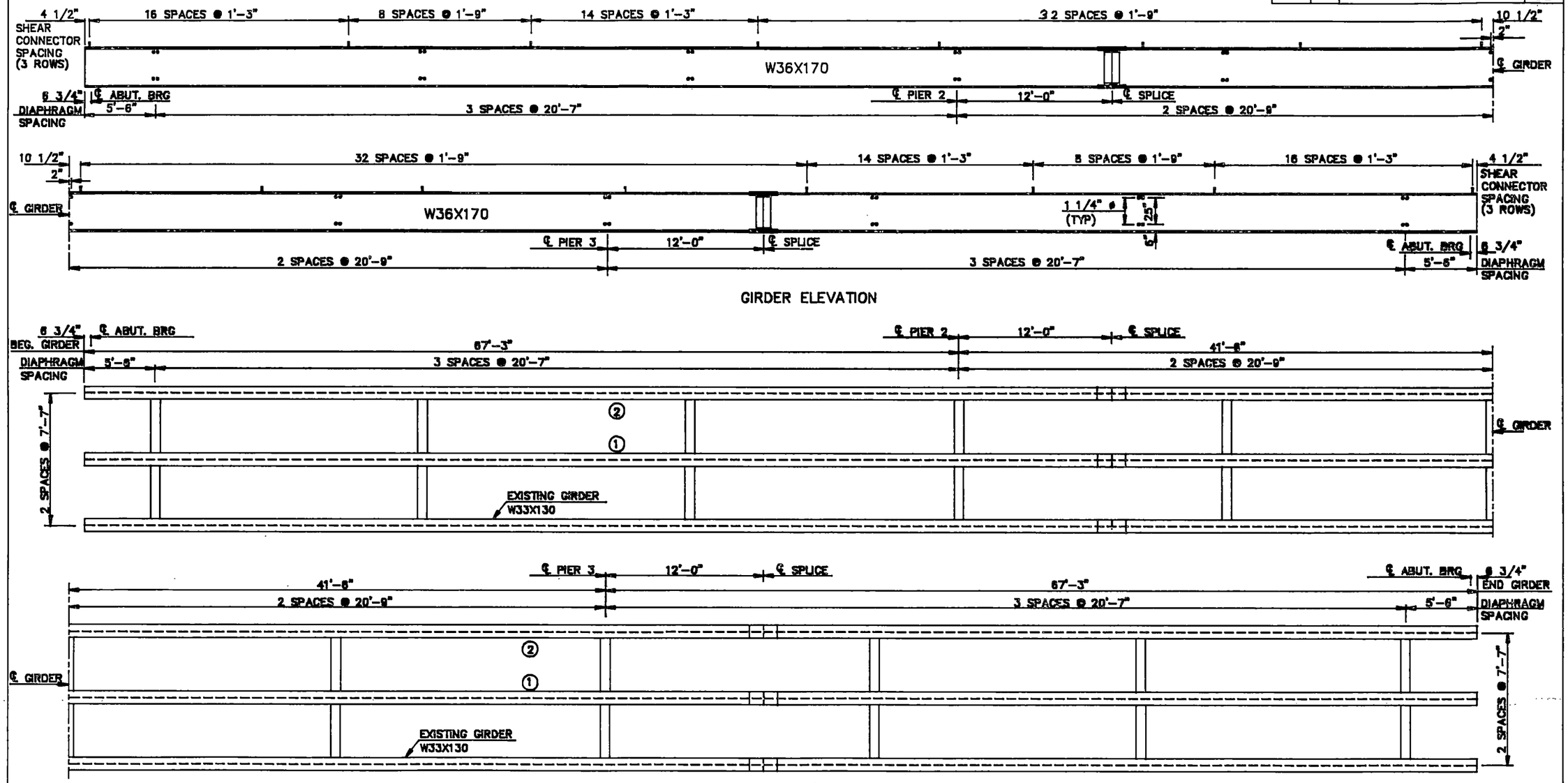
* FOR INFORMATIONAL PURPOSES ONLY

QUANTITIES	(BOTH BRIDGES)	
* STRUCTURAL STEEL	4,739	LBS.

JAMES RIVER AT JAMESTOWN

PIER WIDENING DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	92



GIRDER ELEVATION

STEEL LAYOUT

NOTE:
ALL DETAILS SHOWN ON THIS DRAWING ARE FOR THE NEW GIRDERS. THE GIRDER MATERIAL SUPPLIED SHALL MEET LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENT FOR ZONE 2.

QUANTITIES

SEE DWG. NO. 094-259.847 LT-14

JAMES RIVER AT JAMESTOWN

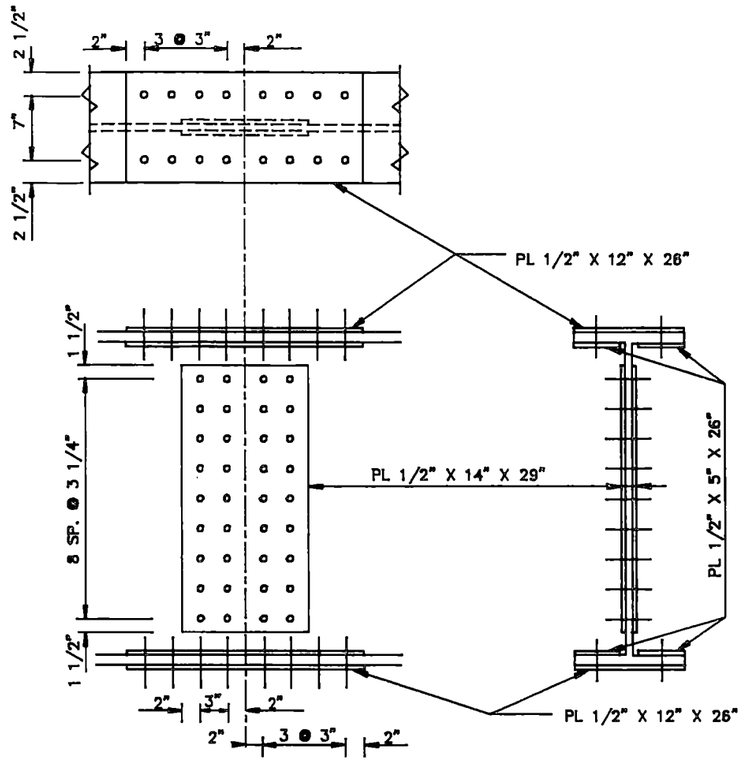
GIRDER DETAILS

(NEW W36X170 GIRDER)

90LCS55

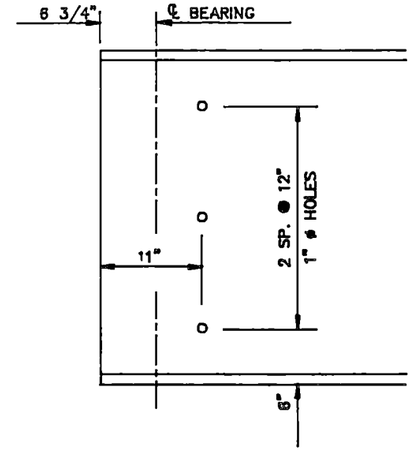
094-259.847 LT-12

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	93

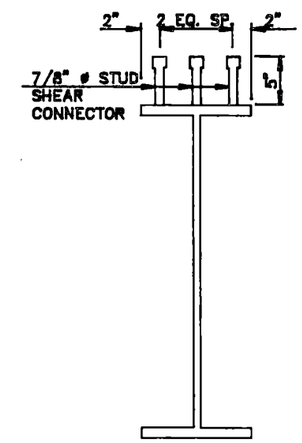


SPLICE DETAIL

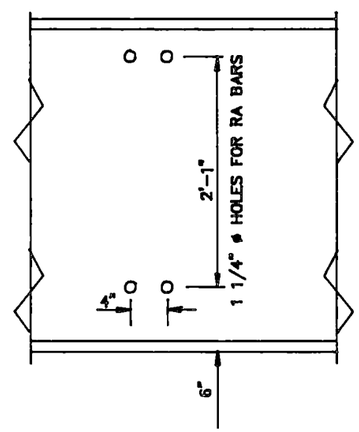
USE M270 GRADE 36 STEEL
USE 7/8" ø M164 BOLTS



DETAIL OF GIRDER AT ABUT. NO. 4

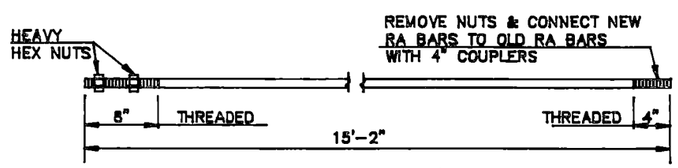


SHEAR DEVICE DETAIL



DETAIL OF GIRDER
AT DIAPHRAGM

NOTE:
ALL DETAILS SHOWN ON THIS DRAWING ARE FOR THE NEW GIRDERS.



RA BAR DETAIL
(44 REQUIRED)
1" DIAMETER

QUANTITIES

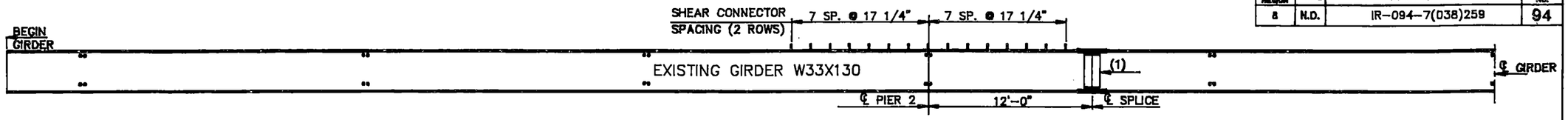
SEE DWG. NO. 094-259.847 LT - 14

JAMES RIVER AT JAMESTOWN

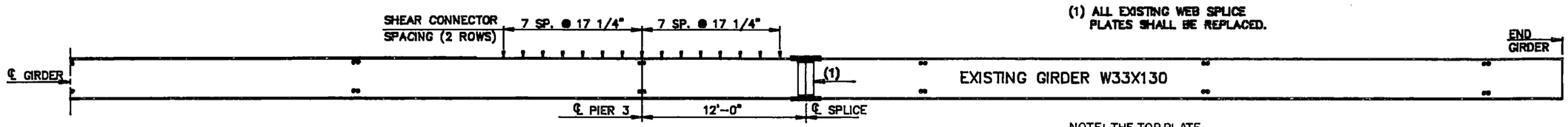
GIRDER DETAILS
(NEW W36X170 GIRDER)

90LCS56

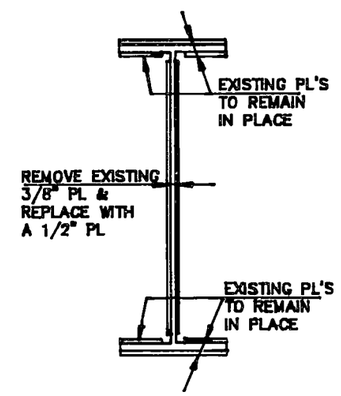
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	94

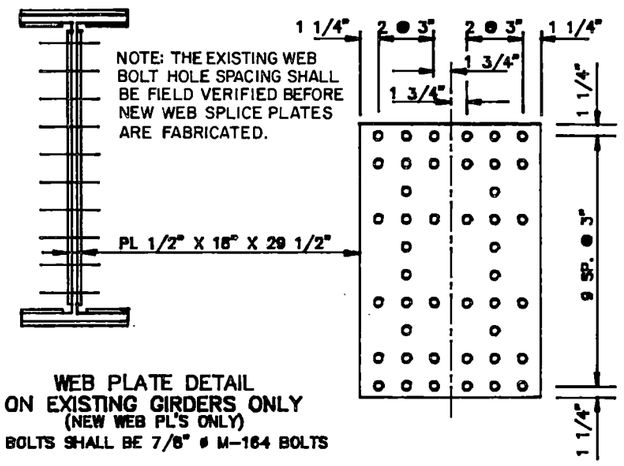


(1) ALL EXISTING WEB SPLICE PLATES SHALL BE REPLACED.



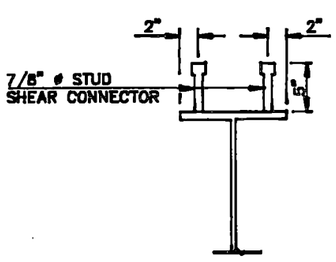
GIRDER ELEVATION
ONE GIRDER SHOWN
(4 GIRDERS EXISTING)





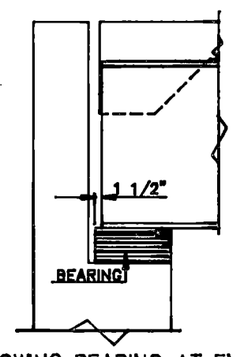
NOTE: THE EXISTING WEB BOLT HOLE SPACING SHALL BE FIELD VERIFIED BEFORE NEW WEB SPLICE PLATES ARE FABRICATED.

WEB PLATE DETAIL
ON EXISTING GIRDERS ONLY
(NEW WEB PL'S ONLY)
ALL BOLTS SHALL BE 7/8" ø M-164 BOLTS

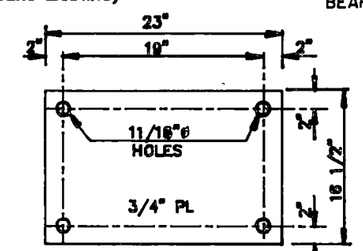


SHEAR DEVICE DETAIL

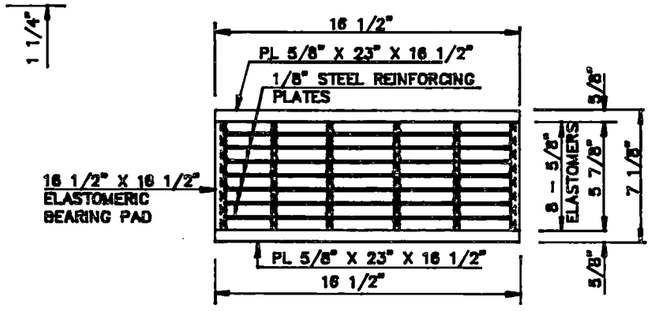
NOTE:
THE STUD SHEAR CONNECTORS SHALL BE FIELD INSTALLED FOR THE EXISTING GIRDERS. THE COST OF FURNISHING AND PLACING THE SHEAR STUDS SHALL BE INCLUDED IN THE PRICE BID FOR "STUD SHEAR CONNECTOR".



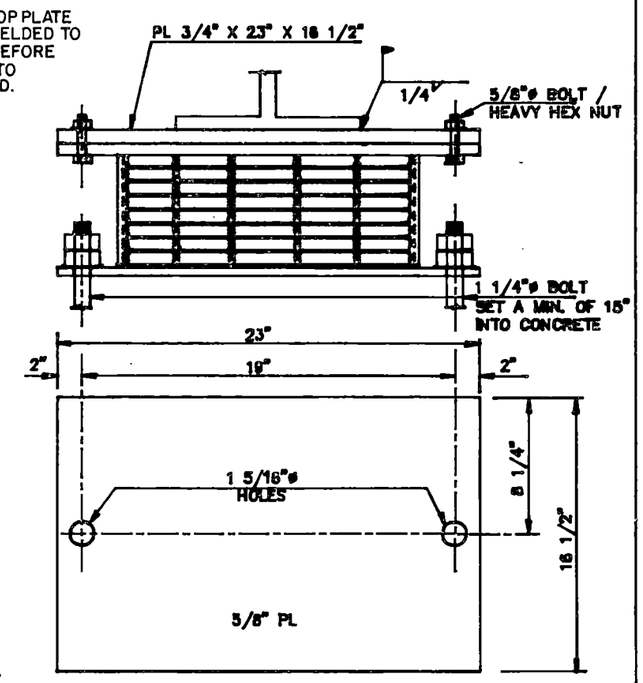
SHOWING BEARING AT END OF BEAM AT ABUT. NO. 1



HOLE SPACING IN THE TOP 5/8" PL OF THE BEARING ARE THE SAME AS THOSE SHOWN IN THE 3/4" PL.



NOTE: THE TOP PLATE SHALL BE WELDED TO THE BEAM BEFORE ATTACHING TO BEARING PAD.



ABUTMENT 1 BEARING DETAILS
(8 REQUIRED PER BRIDGE)
TOP & BOTTOM PLATES SHALL BE FACTORY VULCANIZED TO ELASTOMERIC BEARINGS.

TEMPERATURE ADJUSTMENTS	
TEMP ° F	INCHES
-40	- 1 3/8"
0	- 11/16"
40	0"
80	11/16"
120	1 3/8"

NOTE:
THE POSITION OF THE TOP PLATE IN RELATIONSHIP TO THE BOTTOM PLATE SHALL BE ADJUSTED AS SHOWN IN THE "TEMPERATURE ADJUSTMENT" TABLE. A POSITIVE DIMENSION MEANS TOWARD THE ABUTMENT.

NOTE:
ALL DETAILS SHOWN ON THIS DRAWING ARE FOR THE EXISTING GIRDERS EXCEPT FOR THE BEARING DETAILS WHICH ARE FOR ALL THE GIRDERS AT ABUTMENT NO. 1.

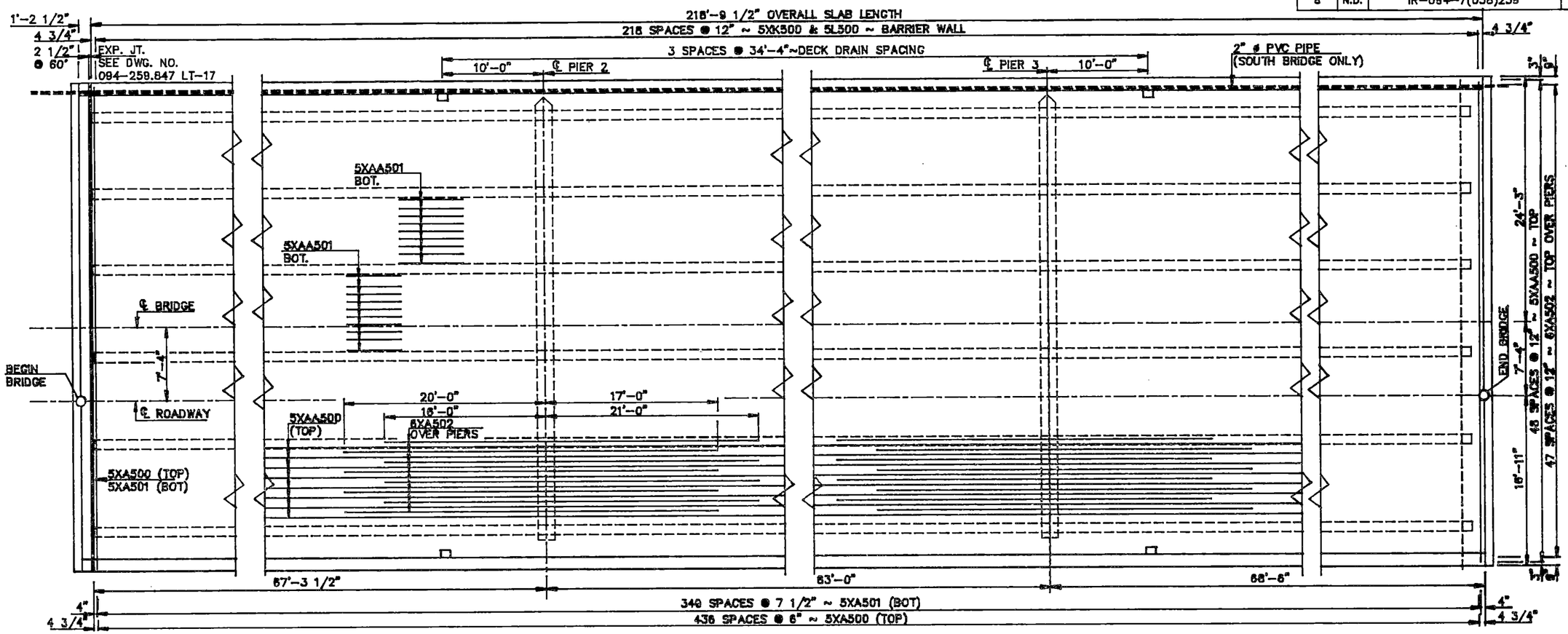
* FOR INFORMATIONAL PURPOSES ONLY.

QUANTITIES	(ONE BRIDGE)	
* STRUCTURAL STEEL	78,915	LBS.
ELASTOMERIC BEARING PAD	11.3	SQ.FT.

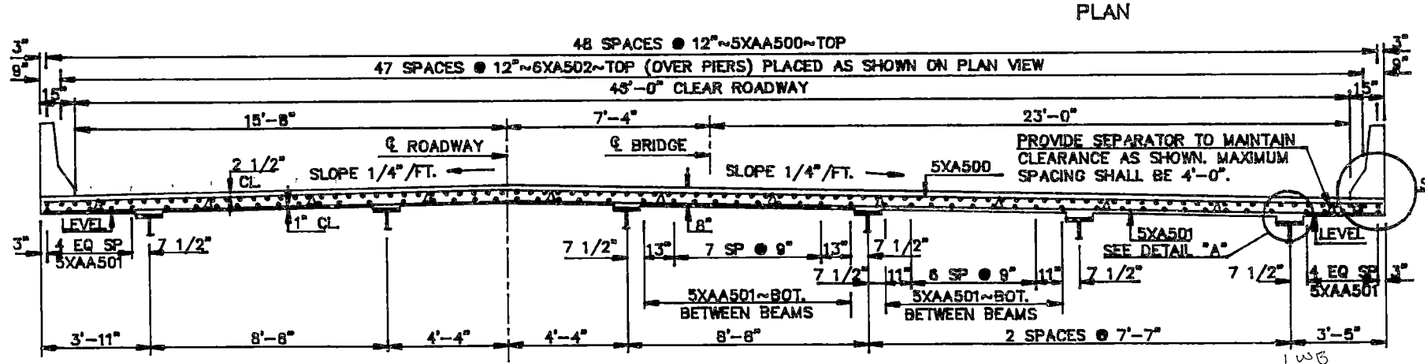
JAMES RIVER AT JAMESTOWN

GIRDER DETAILS

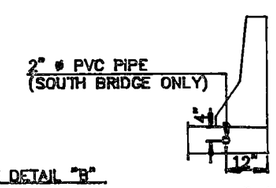
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	95



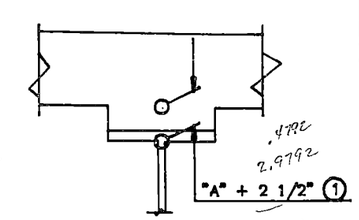
PLAN



TYPICAL SECTION
SHOWING DIMENSIONS & REINFORCING



DETAIL "B"



DETAIL "A"

① "A" DIMENSION FOR THE NEW GIRDERS IS SHOWN IN THE FIELD RISER DIAGRAM. SLIGHT ADJUSTMENT MAY BE REQUIRED TO ACCOMODATE GIRDER CAMBER. THE "A" DIMENSION FOR THE EXISTING GIRDERS SHALL BE DETERMINED IN THE FIELD USING GIRDER ELEVATIONS AND SCREED ELEVATIONS.

QUANTITIES

SEE DWG. NO. 094-259.847 LT-17

JAMES RIVER AT JAMESTOWN

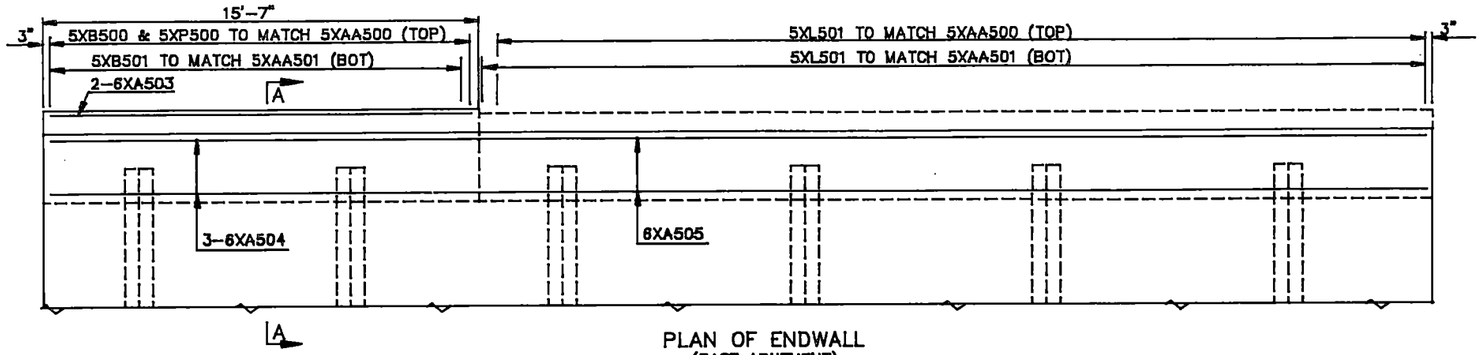
SUPERSTRUCTURE DETAILS

46'-0" CLEAR ROADWAY

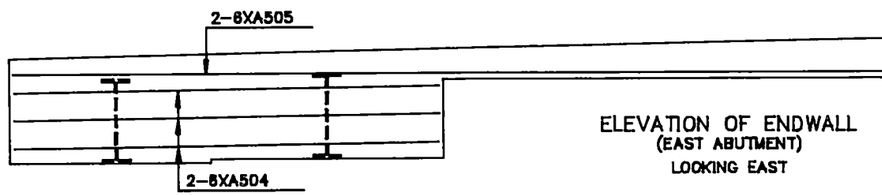
90LCS58

094-259.847 LT-15

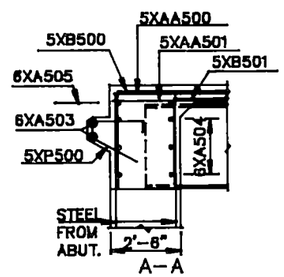
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	96



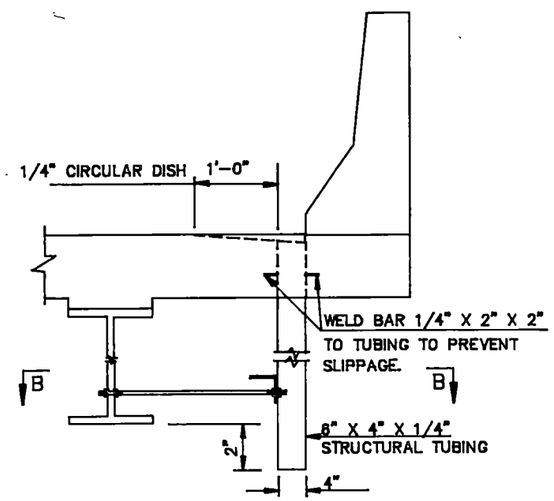
PLAN OF ENDWALL
(EAST ABUTMENT)
LOOKING EAST



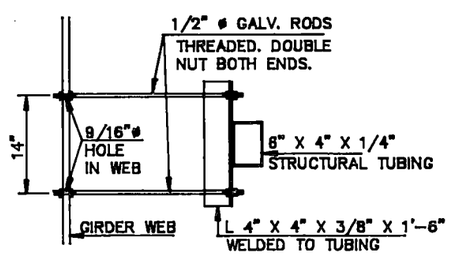
ELEVATION OF ENDWALL
(EAST ABUTMENT)
LOOKING EAST



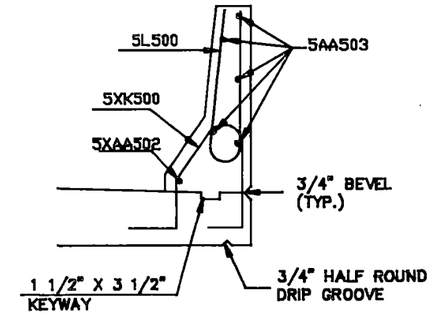
A-A
AT ABUT. NO. 4



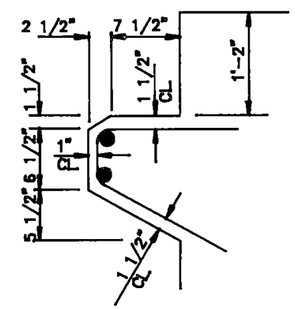
DECK DRAIN DETAIL
(8 REQUIRED)



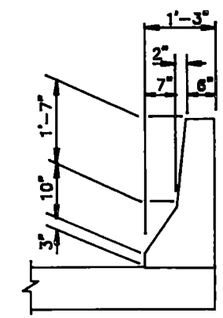
B-B



SECTION OF BARRIER



APPROACH
SLAB LIP



BARRIER WALL DIMENSIONS

NOTE:
ALL MATERIALS TO BE GALVANIZED AFTER WELDING.

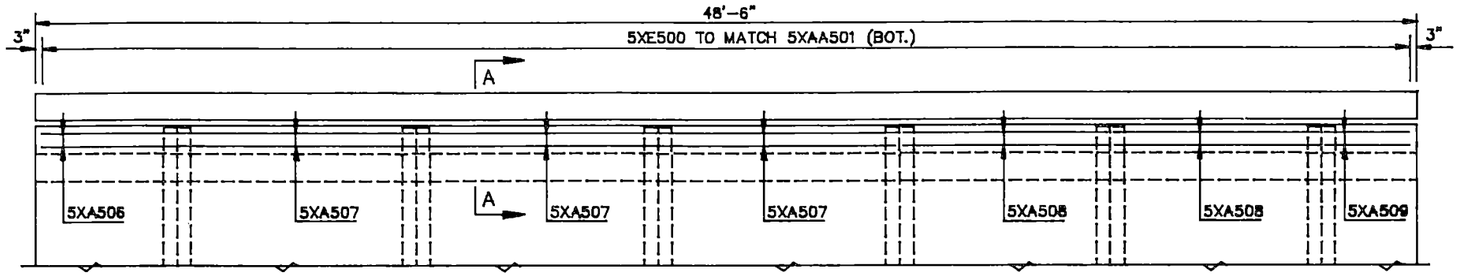
DRAINS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE PRICE BID FOR CLASS AAE-3 CONCRETE.

QUANTITIES
SEE DWG. NO. 094-259.847 LT-17

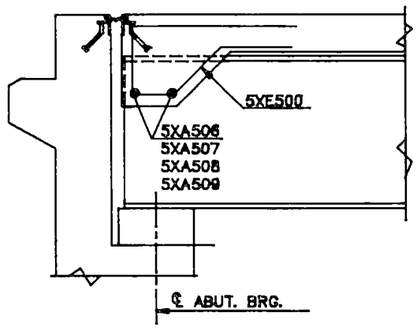
JAMES RIVER AT JAMESTOWN

SUPERSTRUCTURE DETAILS

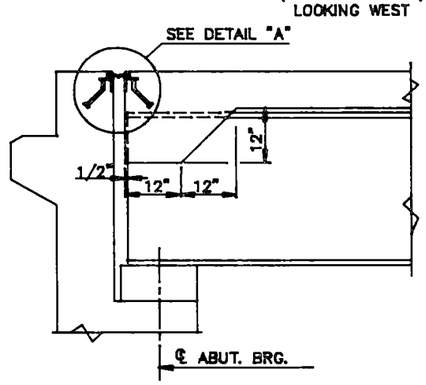
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	97



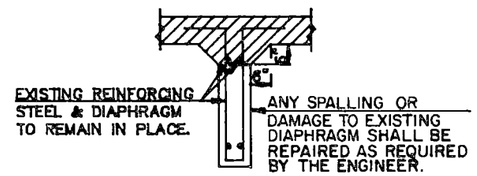
PLAN OF ENDWALL
(WEST ABUTMENT)
LOOKING WEST



A–A
SHOWING REINFORCING
AT ABUT. NO. 1

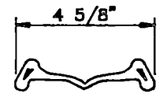


A–A
SHOWING DIMENSIONS
AT ABUT. NO. 1

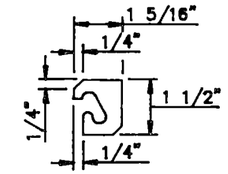


EXISTING DIAPHRAGMS

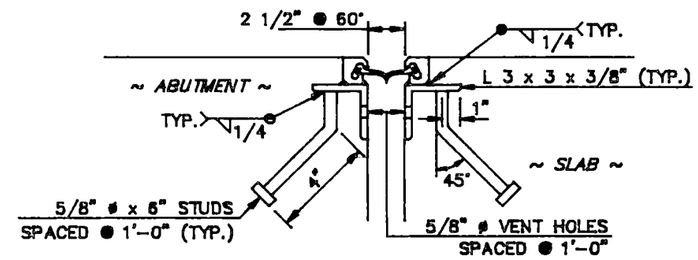
HATCHED AREA SHOWS LIMITS OF SLAB CONCRETE REMOVAL



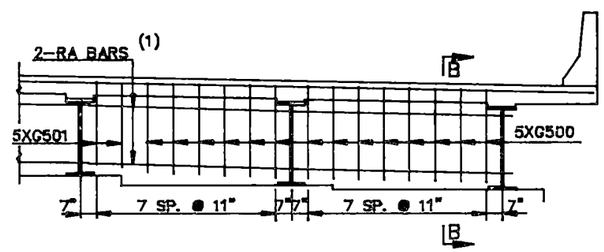
NEOPRENE STRIP SEAL



STEEL EXTRUSION

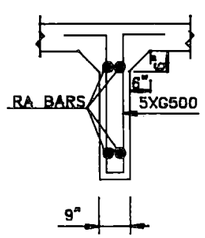


DETAIL "A"
(GALVANIZE AFTER FABRICATION)
EXPANSION JOINT DETAILS

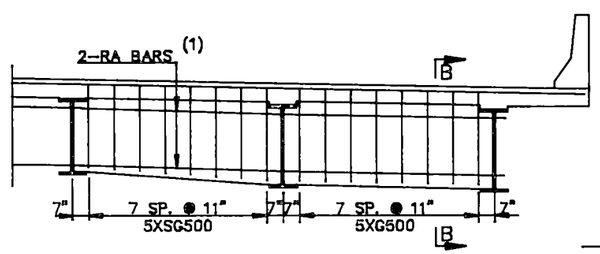


PIER DIAPHRAGM

(1) SEE DRAWING NO. 094–259.847 LT–13 FOR RA BAR DETAIL.

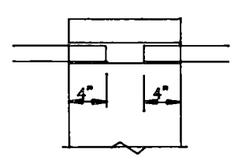


B–B



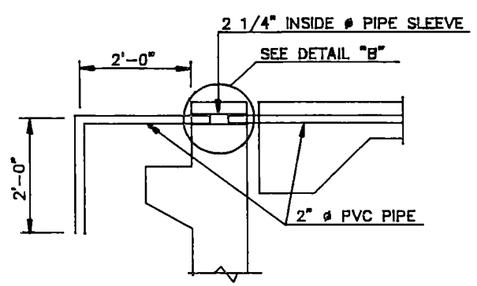
INTERMEDIATE DIAPHRAGM

(1) SEE DRAWING NO. 094–259.847 LT–13 FOR RA BAR DETAIL.



DETAIL "B"

NOTE:
THE 2" DIAMETER CONDUIT AND THE EXPANSION COUPLER FOR THE LIGHTING SYSTEM AND THE INSTALLATION SHALL NOT BE BID SEPARATELY BUT SHALL BE INCLUDED IN THE PRICE BID FOR THE ITEM "CLASS AAE–3 CONCRETE".



EXPANSION COUPLER AT WEST ABUTMENT (SOUTH BRIDGE ONLY)

* FOR INFORMATION PURPOSES ONLY

QUANTITIES (ONE BRIDGE)		
* CONCRETE REMOVAL	219.8	C.Y.
CLASS AAE–3 CONCRETE	325.1	C.Y.
REINFORCING STEEL	4,783	LBS.
REINFORCING STEEL (EPOXY)	76,349	LBS.
EXPANSION JOINT STRIP SEAL	48.5	L.F.

JAMES RIVER AT JAMESTOWN

SUPERSTRUCTURE DETAILS

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

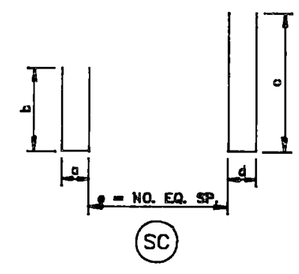
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	98

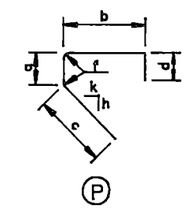
LOCATION		SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
ABUTMENT 1 (ONE BRIDGE)	REGULAR	6	A100	15	22'-8"		22'-8"							
		5	A101	16	22'-8"		22'-8"							
		5	A102	2	8'-0"		8'-0"							
		5	A103	2	7'-0"		7'-0"							
		5	A104	2	5'-0"		5'-0"							
		8	A105	2	29'-0"		29'-0"							
		8	A106	3	35'-0"		35'-0"							
		8	A107	4	60'-0"		60'-0"							
		5	A108	8	2'-6"		2'-6"							
		5	A109	2	24'-6"		24'-6"							
		5	A110	2	58'-8"		58'-8"							
		5	A111	1	57'-8"		57'-8"							
		5	A112	2	58'-7"		58'-7"							
		5	A113	1	55'-7"		55'-7"							
		5	A114	2	54'-6"		54'-6"							
		5	A115	1	53'-5"		53'-5"							
		5	C100	48	8'-2"		1'-6"	5'-2"	1'-6"					
		5	C101	13	17'-2"		8'-0"	1'-2"	8'-0"					
		5	C102	1	17'-8"		8'-3"	1'-2"	8'-3"					
		5	C103	1	16'-2"		7'-6"	1'-2"	7'-6"					
		5	C104	1	15'-2"		7'-0"	1'-2"	7'-0"					
		6	D100	2	17'-0"		3'-0"	14'-0"					12	6
		8	D101	1	28'-9"		19'-0"	9'-9"					12	1 1/4
		8	D102	3	60'-0"		51'-0"	9'-0"					12	1 1/4
		5	N100	13	11'-0"	2'-2"	3'-0"	4"						
		5	N101	11	11'-4"	2'-2"	3'-2"	4"						
		5	N102	5	10'-4"	2'-2"	2'-8"	4"						
		5	N103	5	10'-0"	2'-2"	2'-6"	4"						
		5	SC100	1	56'-6"	8"	2'-6"	6'-3"	8"	5				
		5	SN100	1	63'-0"	2'-2"	2'-6"	4"	1'-2"	6		2'-6"		
	EPOXY	6	XA116	2	52'-6"		52'-6"							
		6	XA117	2	48'-2"		48'-2"							
		5	XC105	35	13'-8"		6'-6"	8"	6'-6"					
		5	XP100	49	4'-7"	5"	1'-2"	2'-3"	5"		1.5"		12	8

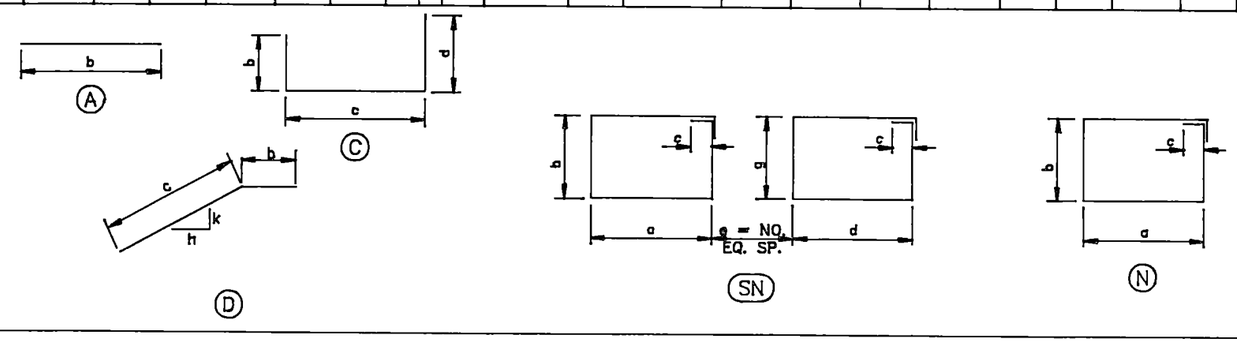
LOCATION		SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
ABUTMENT 4 (ONE BRIDGE)	REGULAR	6	A120	15	22'-8"		22'-8"							
		5	A121	14	22'-8"		22'-8"							
		5	A122	4	7'-10"		7'-10"							
		5	A123	2	6'-3"		6'-3"							
		5	A124	2	4'-11"		4'-11"							
		8	A125	5	19'-4"		19'-4"							
		8	A126	2	24'-8"		24'-8"							
		5	A127	2	9'-7"		9'-7"							
		5	A128	2	8'-7"		8'-7"							
		5	A129	2	7'-6"		7'-6"							
		5	A130	2	6'-5"		6'-5"							
		5	A131	2	5'-5"		5'-5"							
		5	C110	48	8'-2"		1'-6"	5'-2"	1'-6"					
		5	C111	12	17'-2"		8'-0"	1'-2"	8'-0"					
		5	C112	1	17'-8"		8'-3"	1'-2"	8'-3"					
		5	C113	1	16'-2"		7'-6"	1'-2"	7'-6"					
		5	C114	1	15'-2"		7'-0"	1'-2"	7'-0"					
		5	C115	1	18'-8"		8'-9"	1'-2"	8'-9"					
		6	D110	2	18'-1"		4'-2"	13'-11"					12	6
		8	D111	4	19'-5"		10'-11"	8'-6"					12	1 1/2
		8	D112	1	24'-8"		16'-2"	8'-6"					12	1 1/2
		5	N110	3	12'-2"	2'-2"	3'-7"	4"						
		5	N111	5	11'-10"	2'-2"	3'-5"	4"						
		5	SC110	1	54'-2"	8"	3'-7"	6'-7"	8"	4				
		5	SN110	1	84'-0"	2'-2"	3'-4"	4"	1'-2"	5		3'-4"		
	EPOXY	5	XA132	6	4'-11"		4'-11"							
		5	XA133	16	6'-4"		6'-4"							
		5	XC112	1	13'-4"		6'-4"	8"	6'-4"					

NOTES:

1. FABRICATION AND TOLERANCES SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.
2. ALL DIMENSIONS ARE OUT TO OUT OF BARS.
3. NOMINAL LENGTH OF EACH BENT BAR OR CUT BAR IS THE SUM TOTAL OF THE DETAILING DIMENSIONS FOR THAT BAR, UNLESS OTHERWISE NOTED.
4. THE "r" DIMENSION INDICATES THE RADIUS.
5. AN "X" PRECEDING A BAR DESIGNATION INDICATES AN EPOXY COATED BAR.







JAMES RIVER AT JAMESTOWN

ABUTMENT 1 & 4

REINFORCING BAR LIST & DETAILS

90LCS53

094-259.847 LT-18

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

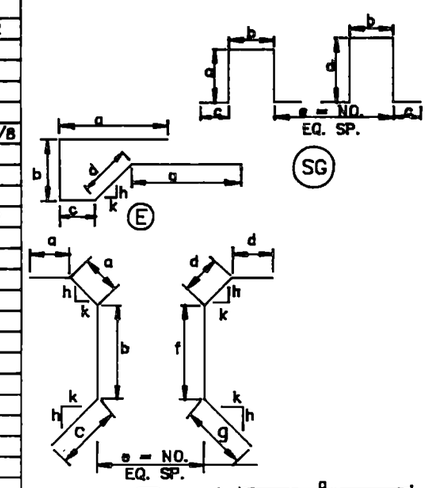
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	99

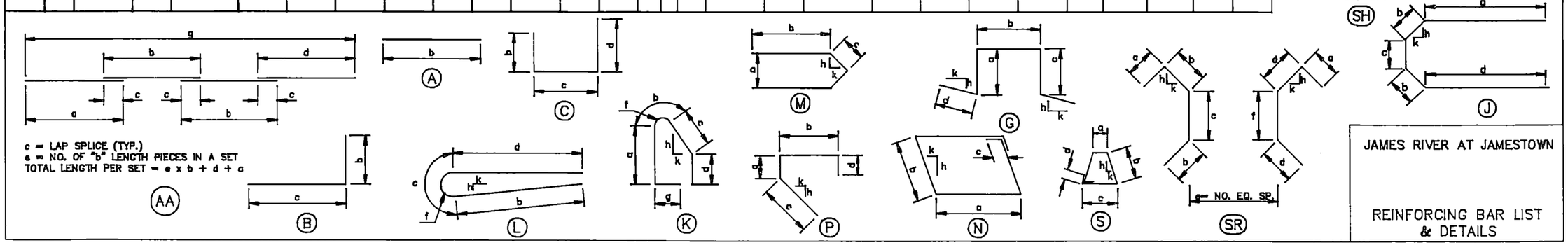
LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
PIERS 2 & 3 (NORTH BRIDGE)	8	A300	8	14'-9"		14'-9"							
	5	A301	4	11'-0"		11'-0"							
	8	A302	12	7'-6"		7'-6"							
	8	A303	24	8'-6"		8'-6"							
	5	A304	12	8'-6"		8'-6"							
	5	A305	12	7'-6"		7'-6"							
	8	A306-2	13	24'-10"		24'-10"							
	8	A306-3	13	22'-10"		22'-10"							
	8	A307	20	14'-0"		14'-0"							
	5	A308-2	14	24'-6"		24'-6"							
	5	A308-3	14	22'-6"		22'-6"							
	6	A309	88	13'-0"		13'-0"							
	8	A310	12	14'-6"		14'-6"							
	8	B300	46	7'-6"		2'-3"	5'-3"						
	5	C300	12	8'-10		4'-0"	10"	4'-0"					
	5	L300	22	4'-0"		3'-0"	6 1/4"	5 3/4"		2"		0	0
	5	L301	40	3'-6"		2'-6"	6 1/4"	5 3/4"		2"		0	0
	5	M300	6	8'-2"	16 1/2"	3'-0"	1'-1"					12	12
	5	N300	14	9'-8"	2'-6"	2'-0"	4"					0	0
	5	S300	22	7'-8"	1'-4"	2'-1"	1'-6"	4"				12	1/2
	5	SR300-2	2	166'-9"	4"	2'-1"	4'-0"	1'-1"	22	3'-6"		12	12
	5	SR300-3	2	150'-6"	4"	2'-0"	4'-0"	1'-1"	20	3'-6"		12	12
PIERS 2 & 3 (SOUTH BRIDGE)	8	A300	8	14'-9"		14'-9"							
	5	A301	4	11'-0"		11'-0"							
	8	A302	12	7'-6"		7'-6"							
	8	A303	24	8'-6"		8'-6"							
	5	A304	12	8'-6"		8'-6"							
	5	A305	12	7'-6"		7'-6"							
	8	A306-2	12	24'-10"		24'-10"							
	8	A306-3	12	22'-10"		22'-10"							
	8	A307	22	14'-0"		14'-0"							
	5	A308-2	14	24'-6"		24'-6"							
	5	A308-3	14	22'-6"		22'-6"							
	6	A309	88	13'-0"		13'-0"							
	8	A310	12	14'-6"		14'-6"							
	8	B300	46	7'-6"		2'-3"	5'-3"						
	5	C300	12	8'-10		4'-0"	10"	4'-0"					
	5	J300	6	7'-8"	3'-0"	7"	6"	3'-0"				12	12
	5	L300	62	4'-0"		3'-0"	6 1/4"	5 3/4"		2"		0	0
	5	N300	14	9'-8"	2'-6"	2'-0"	4"					0	0
	5	S300	22	7'-8"	1'-4"	2'-1"	1'-6"	4"				12	1/2
	5	SH300-2	2	161'-0"	1'-1"	4'-0"	2'-0"	7 1/2"	22	3'-6"	1'-1"	12	12
	5	SH300-3	2	146'-1"	1'-1"	3'-11"	2'-0"	7 1/2"	20	3'-6"	1'-1"	12	12

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
SUPERSTRUCTURE (ONE BRIDGE) REGULAR	5	AA503	10	225'-0"		60'-0"	2'-2"	45'-0"	3	218'-6"			
	5	L500	438	5'-4"		2'-3"	10"	2'-3"		3"		12	1 1/4
SUPERSTRUCTURE (ONE BRIDGE) EPOXY COATED	5	XA500	437	48'-2"		48'-2"							
	5	XA501	350	48'-2"		48'-2"							
	6	XA502	98	37'-0"		37'-0"							
	6	XA503	2	15'-3"		15'-3"							
	6	XA504	6	15-3"		15'-3"							
	6	XA505	2	48'-2"		48'-2"							
	5	XA506	2	3'-7"		3'-7"							
	5	XA507	6	8'-4"		8'-4"							
	5	XA508	4	7'-3"		7'-3"							
	5	XA509	2	3'-1"		3'-1"							
	5	XAA500	49	227'-1"	20'-0"	60'-0"	2'-2"	27'-1"	3	218'-5"			
	5	XAA501	58	224'-11"		60'-0"	2'-2"	44'-11"	3	218'-5"			
	5	XAA502	2	224'-11"		60'-0"	2'-2"	44'-11"	3	218'-5"			
	5	XB500	16	6'-5"		3'-5"	3'-0"						
	5	XB501	19	6'-0"		3'-0"	3'-0"						
	5	XE500	58	9'-5"	3'-0"	1'-3"	9"	1'-5"				12	12
	5	XG500	100	9'-1"	3'-4"	5"	12"					0	0
	5	XG501	4	8'-5"	3'-0"	5"	12"					0	0
	5	XK500	438	5'-6"	1'-5"	7 1/4"	11 3/4"	9"		10 1/2"	2 7/8"	12	8 3/8
	5	XL501	72	4'-6"		3'-0"	6"	1'-0"		2"		0	0
	5	XP500	16	4'-5"	5"	2'-0"	1'-7"	5"				6 1/2	12
	5	XSG500	9	71'-4"	3'-2"	5"	12"	3'-4"	7				

NOTES:

1. FABRICATION AND TOLERANCES SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.
2. ALL DIMENSIONS ARE OUT TO OUT OF BARS.
3. NOMINAL LENGTH OF EACH BENT BAR OR CUT BAR IS THE SUM TOTAL OF THE DETAILING DIMENSIONS FOR THAT BAR, UNLESS OTHERWISE NOTED.
4. ADJACENT AA BARS SHALL BE TURNED END FOR END SO THAT THE SPICE LOCATIONS ARE STAGGERED.
5. THE "f" DIMENSION INDICATES THE RADIUS.
6. AN "x" PRECEDING A BAR DESIGNATION INDICATES AN EPOXY COATED BAR.
7. THE NUMBER FOLLOWING THE "DASH" IN THE MARK INDICATES THE PIER FOR THAT BAR. EXAMPLE: "A308-2" INDICATES PIER 2.

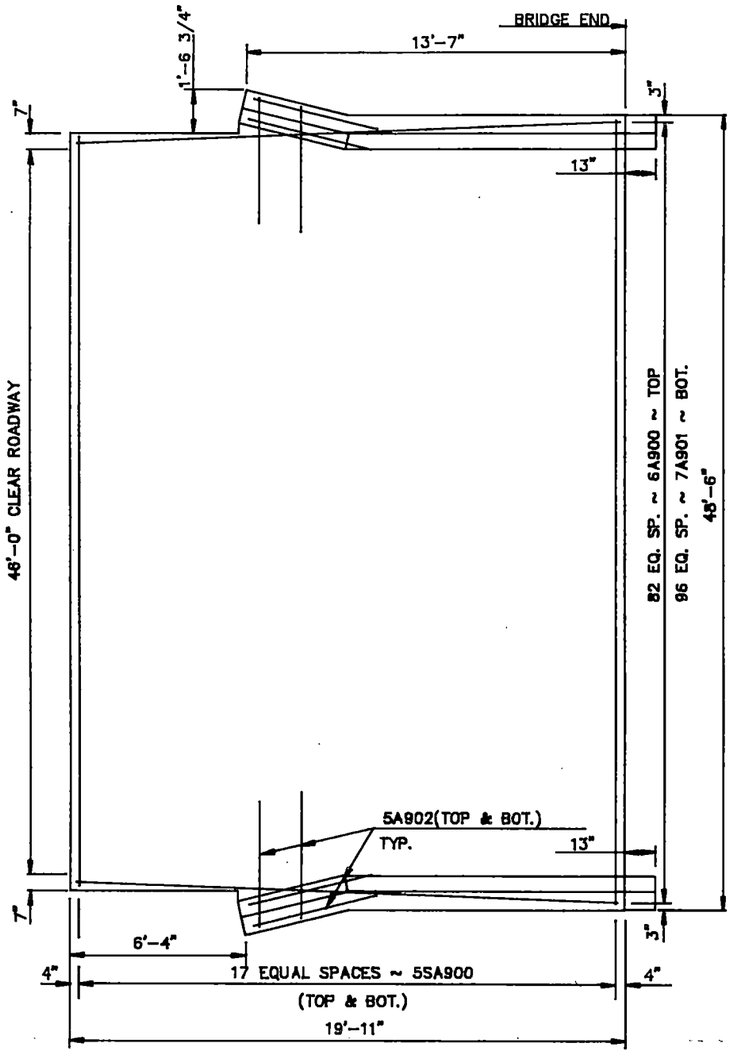




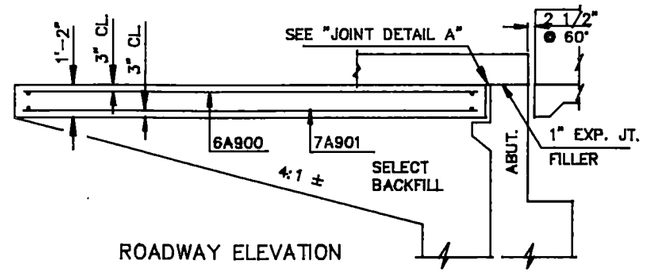
JAMES RIVER AT JAMESTOWN

REINFORCING BAR LIST & DETAILS

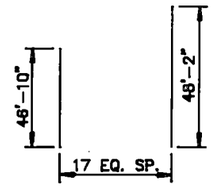
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	100



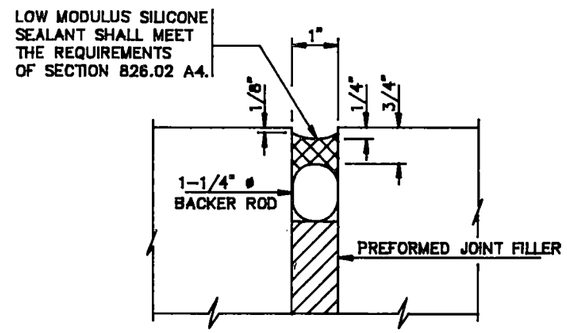
PLAN



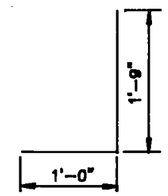
ROADWAY ELEVATION



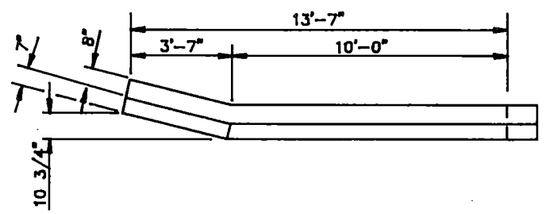
SA900



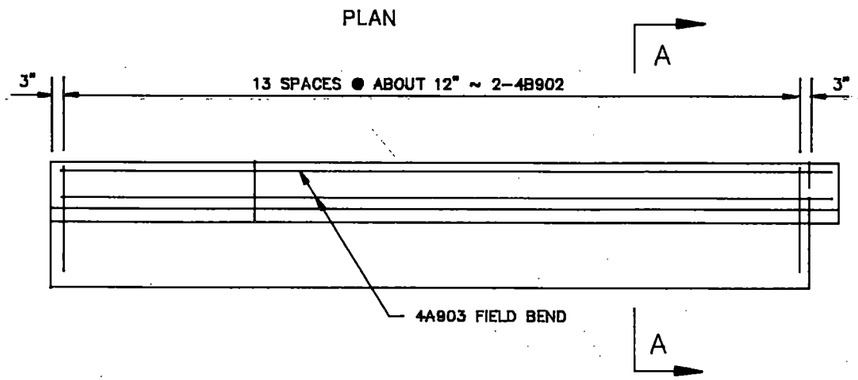
JOINT DETAIL A



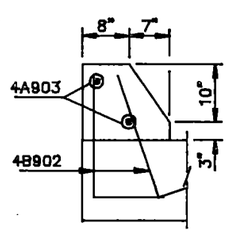
B902



PLAN



ELEVATION



A-A

WIDTH = 46'-0" CL. RDWY.			
SKEW ANGLE = 0°			
BAR LIST - WEST SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	83	19'-7"
7	A901	97	19'-7"
5	A902	16	4'-6"
4	A903	4	14'-3"
5	SA900	2	855'-0"
4	B902	56	2'-9"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
8,324	42.7

NOTES:

THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

SURFACE FINISH "D" SHALL BE REQUIRED FOR THE INSIDE AND TOP SURFACES OF THE CURB TRANSITION.

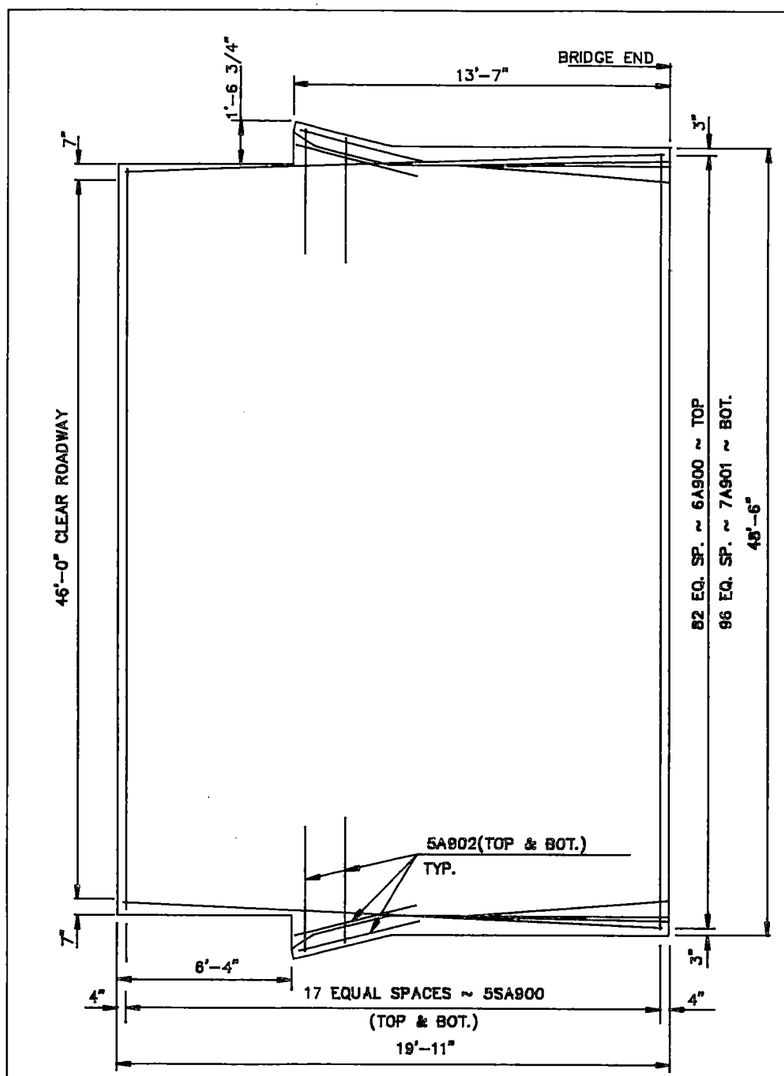
QUANTITIES	WEST SLAB
APPROACH SLAB	106.7 S.Y.

JAMES RIVER AT JAMESTOWN

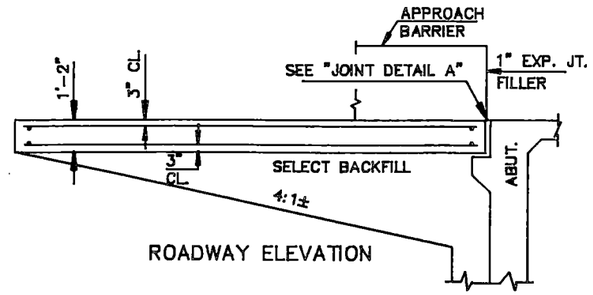
APPROACH SLAB

WEST END-NORTH ROADWAY

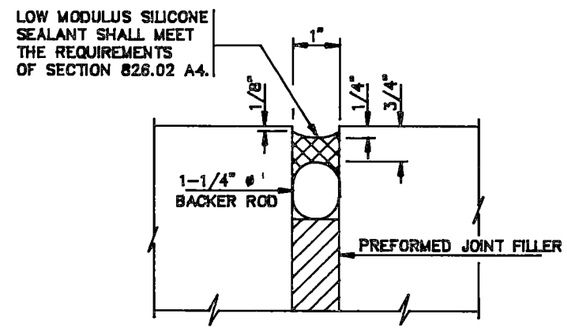
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	101



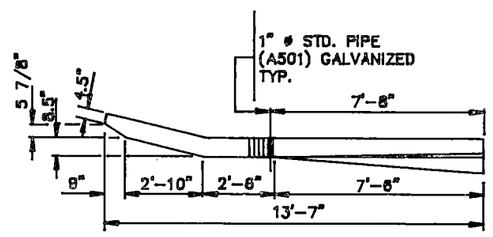
PLAN



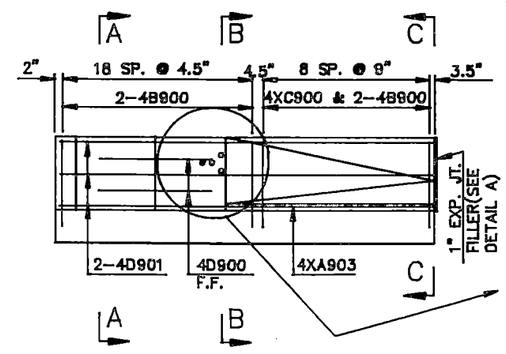
ROADWAY ELEVATION



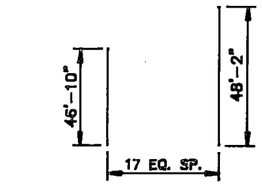
JOINT DETAIL A



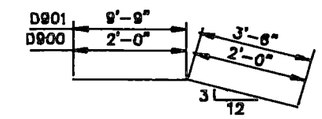
PLAN



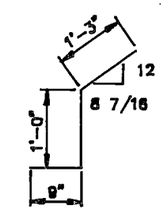
ELEVATION



SA900

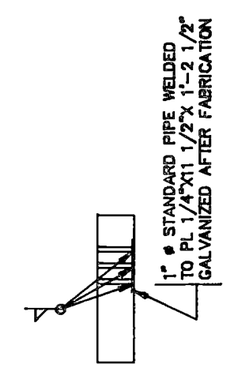


D900 & D901

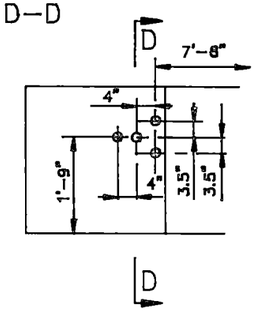


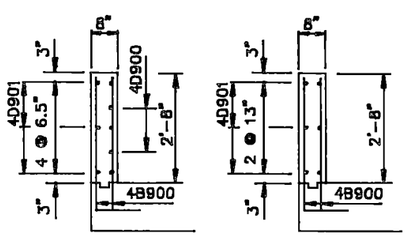
XC900

B900

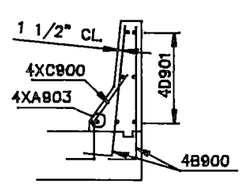


D-D

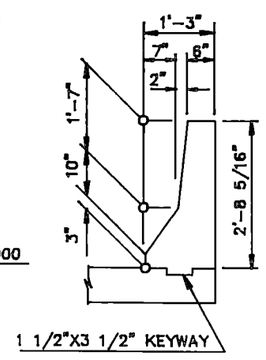




A-A B-B



C-C



C-C

WIDTH = 46'-0" CL. RDWY.
SKEW ANGLE = 0°

BAR LIST - EAST SLAB

SIZE	MARK	NO.	LENGTH
6	A900	83	19'-7"
7	A901	97	19'-7"
5	A902	16	4'-6"
4	XA903	2	7'-8"
4	B900	112	4'-0"
4	XC900	16	3'-0"
4	D900	4	4'-0"
4	D901	12	13'-3"
5	SA900	2	655'-0"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
8,645	43.3

NOTES:

THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND THE APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

THE BAR MARKS BEGINNING WITH AN "X" INDICATES AN EPOXY COATED BAR.

SURFACE FINISH "D" SHALL BE REQUIRED FOR THE INSIDE AND TOP SURFACES OF THE CURB TRANSITIONS.

QUANTITIES	EAST SLAB
APPROACH SLAB	106.7 S.Y.

JAMES RIVER AT JAMESTOWN

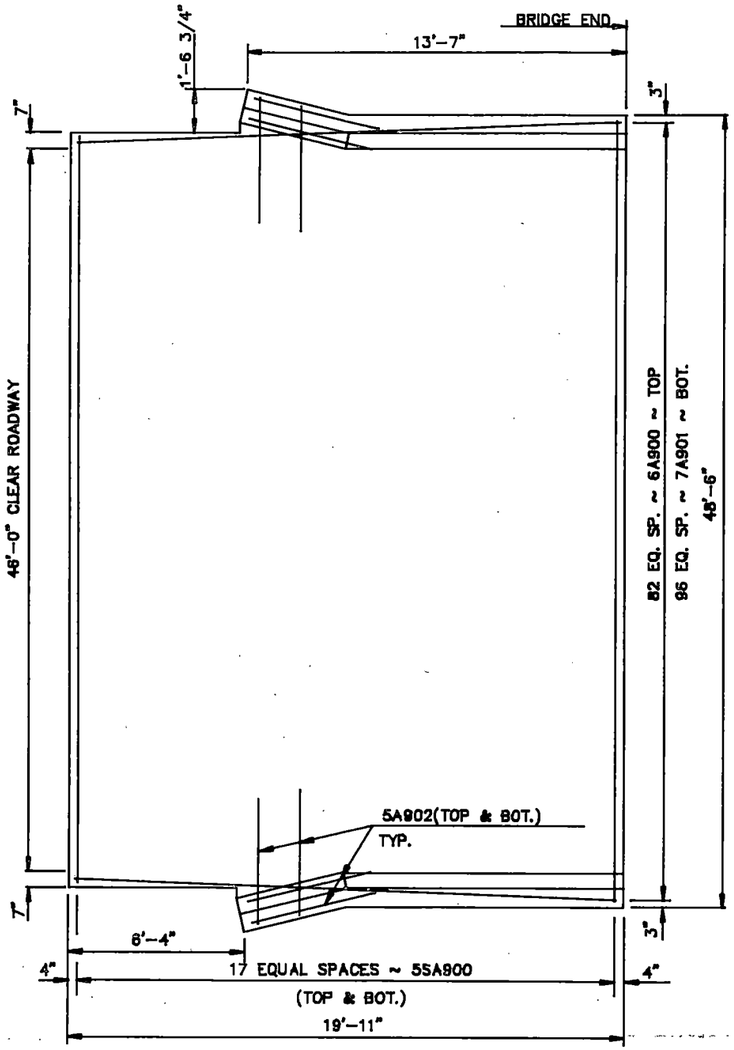
APPROACH SLAB

EAST END-NORTH ROADWAY

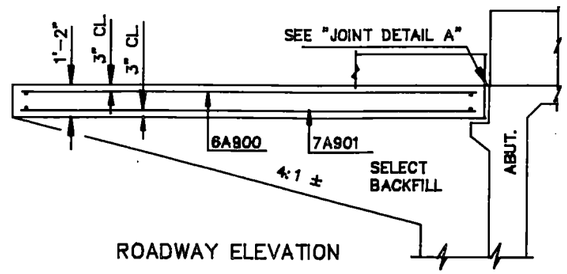
90LCS64

094-259.847 LT-21

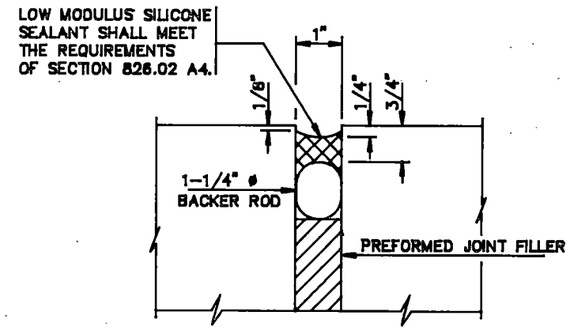
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	102



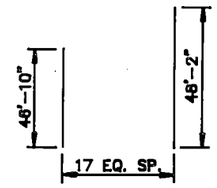
PLAN



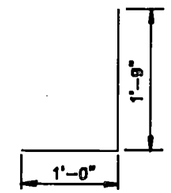
ROADWAY ELEVATION



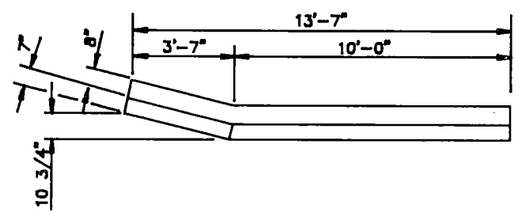
JOINT DETAIL A



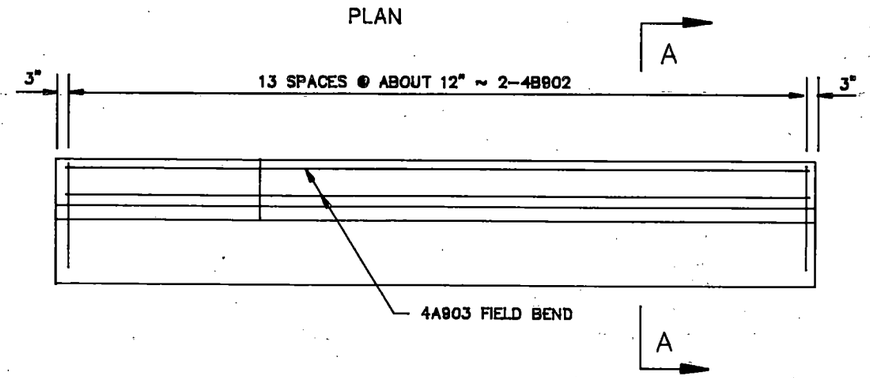
SA900



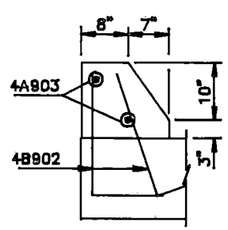
B902



PLAN



ELEVATION



A-A

WIDTH = 46'-0" CL. RDWY.			
SKEW ANGLE = 0°			
BAR LIST - EAST SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	83	19'-7"
7	A901	97	19'-7"
5	A902	16	4'-6"
4	A903	4	13'-3"
5	SA900	2	855'-0"
4	B902	56	2'-9"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
8,321	42.6

NOTES:

THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY.

ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

SURFACE FINISH "D" SHALL BE REQUIRED FOR THE INSIDE AND TOP SURFACES OF THE CURB TRANSITION.

QUANTITIES	EAST SLAB
APPROACH SLAB	106.7 S.Y.

JAMES RIVER AT JAMESTOWN

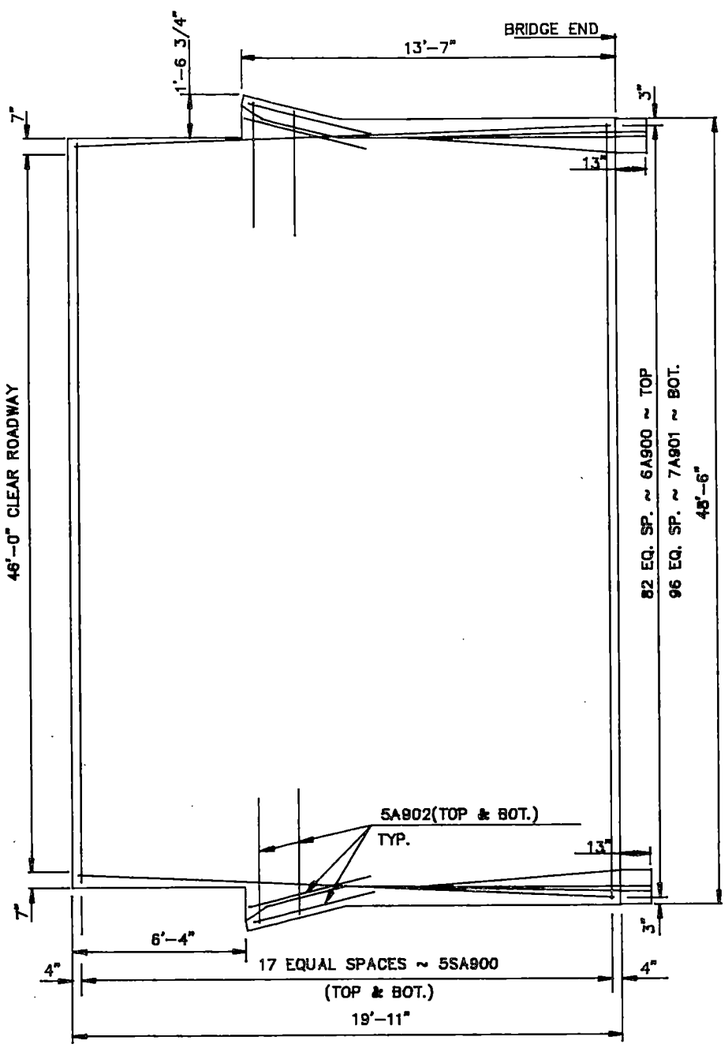
APPROACH SLAB

EAST END-SOUTH ROADWAY

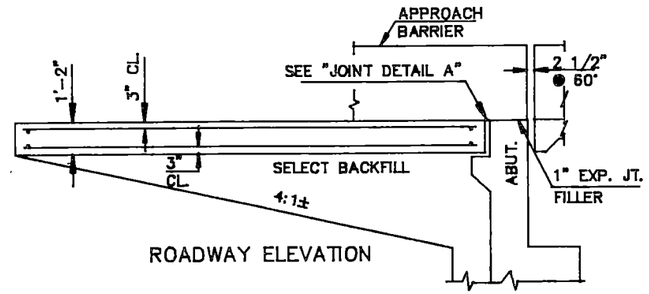
90LCS65

094-259.847 LT-22

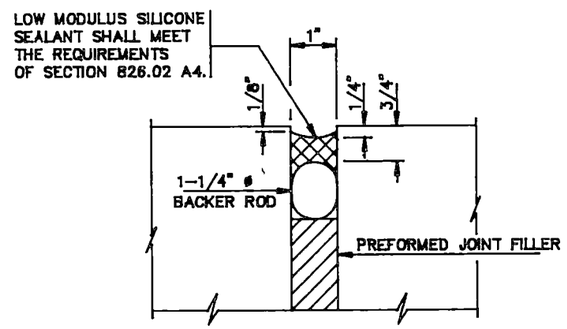
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-094-7(038)259	103



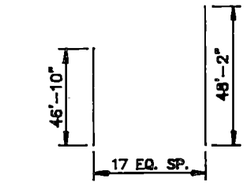
PLAN



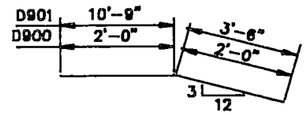
ROADWAY ELEVATION



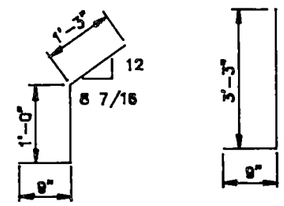
JOINT DETAIL A



SA900



D900 & D901



XC900 B900

WIDTH = 46'-0" CL. RDWY.
SKEW ANGLE = 0°

BAR LIST - WEST SLAB

SIZE	MARK	NO.	LENGTH
6	A900	83	19'-7"
7	A901	97	19'-7"
5	A902	16	4'-6"
4	XA903	2	8'-8"
4	B900	112	4'-0"
4	XC900	18	3'-0"
4	D900	4	4'-0"
4	D901	12	14'-3"
5	SA900	2	855'-0"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
8,654	43.5

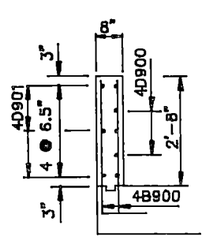
NOTES:

THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICON SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND THE APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB".

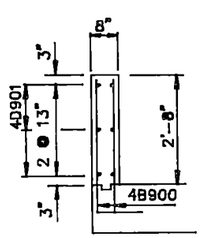
THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

THE BAR MARKS BEGINNING WITH AN "X" INDICATES AN EPOXY COATED BAR

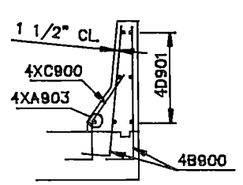
SURFACE FINISH "D" SHALL BE REQUIRED FOR THE INSIDE AND TOP SURFACES OF THE CURB TRANSITIONS.



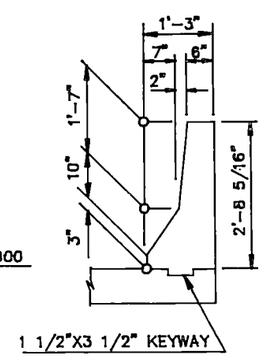
A-A



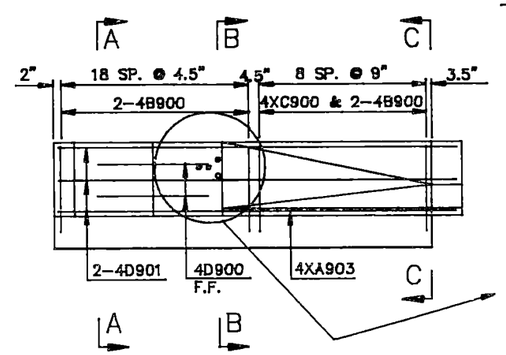
B-B



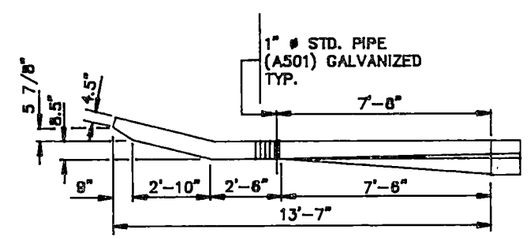
C-C



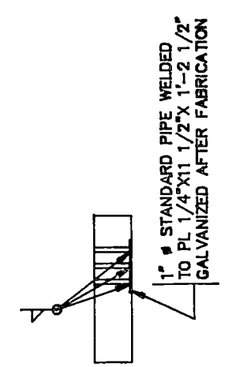
C-C



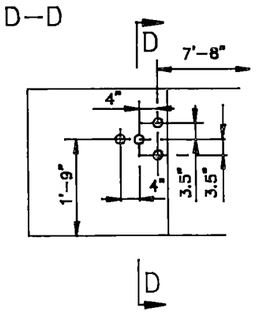
ELEVATION



PLAN



D-D



QUANTITIES	WEST SLAB
APPROACH SLAB	106.7 S.Y.

JAMES RIVER AT JAMESTOWN

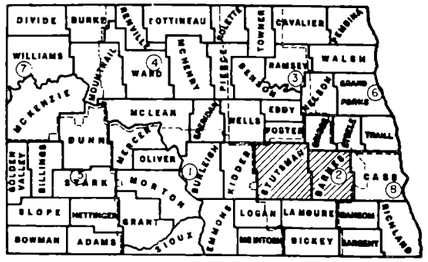
APPROACH SLAB

WEST END-SOUTH ROADWAY

90LCS66

094-259.847 LT-23

FED. ROAD DIV. NO	STATE	FED. AID PROJ. NO	SHEET NO
8	N.D.	TQFI-I-094-7(22)258 TQFI-I-094-8(72)289	1



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

SCALES
- LAYOUT SHEET: 1 IN. =
- 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.

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN STUTSMAN & BARNES COUNTIES

FEDERAL AID PROJ. NO. TQFI-I-094-7(22)258 & TQFI-I-094-8(72)289

REPAIR & OVERLAY OF PORTLAND CEMENT CONCRETE

BRIDGE DECKS

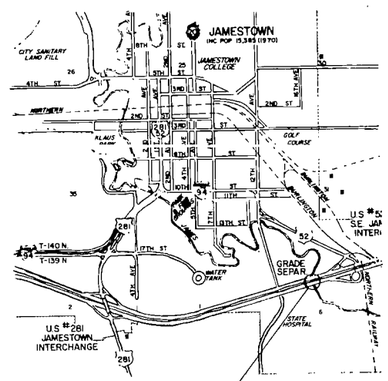
LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
TOTALS		

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway department July 1971 and approved as standard by the Federal Highway Administration Sept. 29, 1971 Required Contract Provisions (Form PR-1273) dated Sept. 1975 and others submitted herewith.

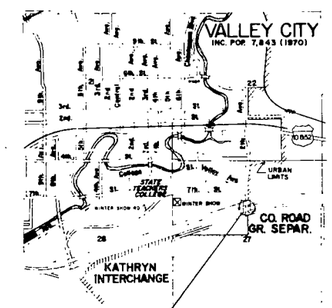
DESIGN DATA

TRAFFIC	AVERAGE DAILY			EST. 30TH MAX. HR.
CURRENT TRAFFIC (19)	PASS.	TRUCKS	TOTAL	
TRAFFIC FORECAST (19)	PASS.	TRUCKS	TOTAL	
DESIGN SPEED		MPH		
TRAFFIC CLASSIFICATION				
MINIMUM SIGHT DISTANCE (STOPPING)				
MINIMUM SIGHT DISTANCE (SAFE PASSING)				
MINIMUM PASSING SIGHT DISTANCE FOR MARKING				
BRIDGES				



BRIDGE NO. 94-259.86
PROJ. NO. TQFI-I-094-7(22) 258

N



BRIDGE NO. 94-293.25
PROJ. NO. TQFI-I-094-8 (72) 289

SUMMARY OF QUANTITIES

	SPEC NO.	CODE NO.		
I	705	0100	MOBILIZATION	1 L.S.
	762	3299	MAINTENANCE & PROTECTION OF TRAFFIC	1 L.S.
	900	9700	CLASS I OVERLAY	2845 S.Y.
	900	8673	EXPANSION JOINT MODIFICATION	64 L.F.
	750	0100	LINSEED OIL TREATMENT (LOW SLUMP ONLY)	775 Gal.
TQFI	900	9501	APPROACH SLAB (REMOVE & REPLACE)	624 S.Y.
	900	9701	CLASS II OVERLAY	989 S.Y.
	900	8674	JOINTS AT ENDS OF BRIDGE	280 L.F.
	302	0120	AGGREGATE (CLASS 5)	186 TON
	550	0184	10" NON-REINF. CONC. PAVEMENT CLASS AE-3	1512 S.Y.
	216	0100	WATER	42 M GAL

APPROVED DATE 4-15-76
R. E. Bradley
by [illegible]
CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

R. E. BRADLEY
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA 2690

APPROVED DATE 4-13-76
BRIDGE ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
Stanley [illegible]

U S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

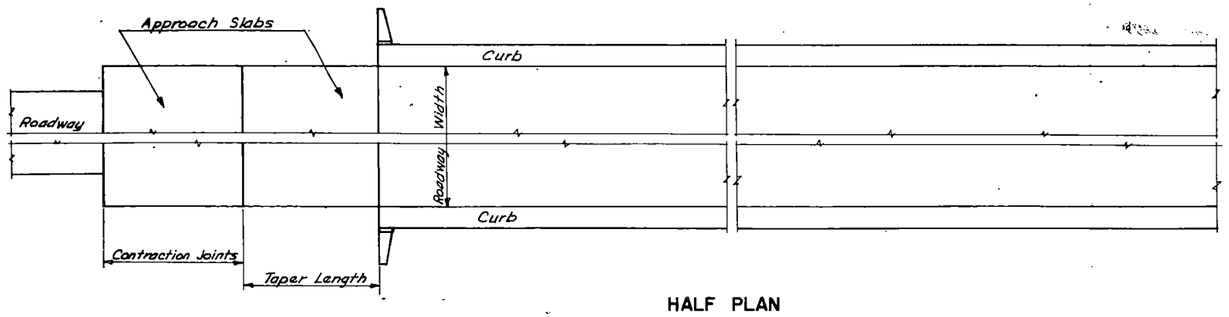
DIVISION ADMINISTRATOR DATE

MATHISON CO. 208 3-75 500139

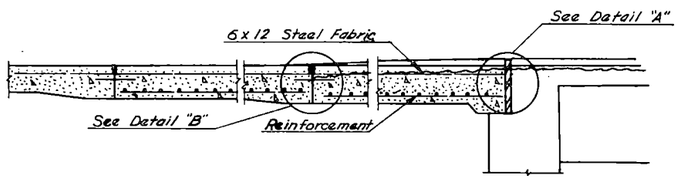
TQFI-I-094-7(22)258 & TQFI-I-094-8(72)289

Orig.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	IQFI-094-(1 125)	2	5

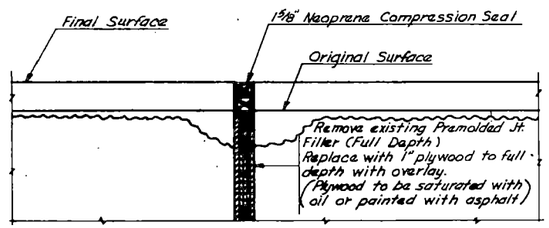


HALF PLAN



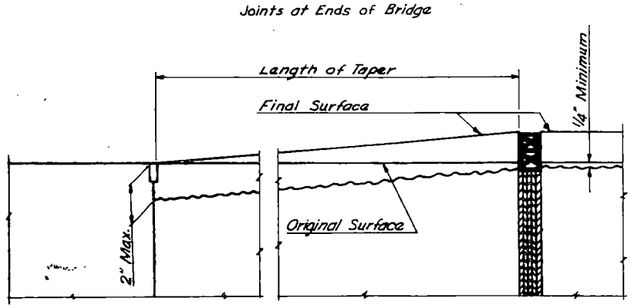
APPROACH SLAB

NOTE: After overlay has been placed & cured the top 2½" of plywood shall be routed & the Neoprene Seal installed.

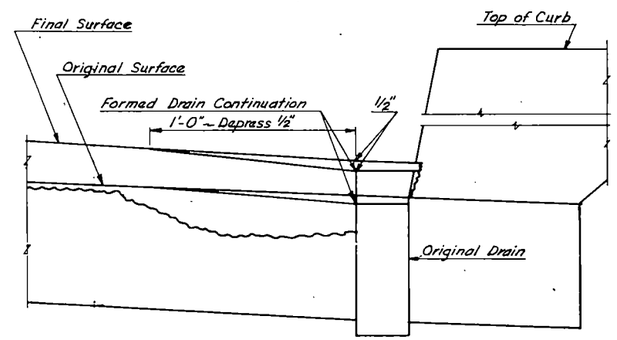


DETAIL "A"

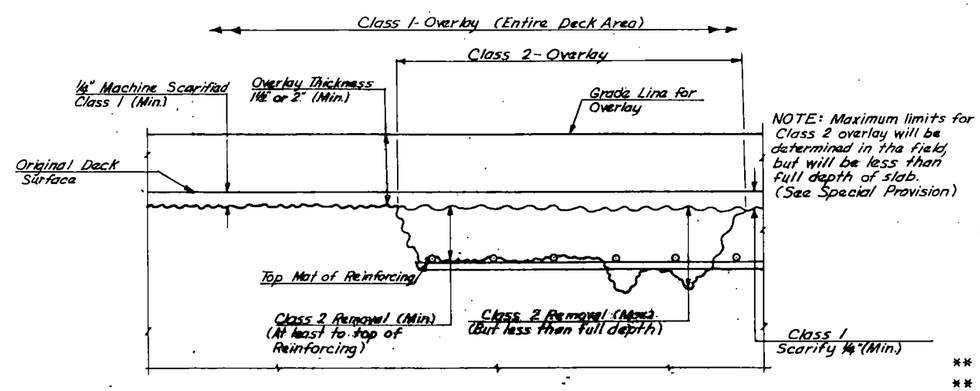
Joints at Ends of Bridge



DETAIL "B"



DETAILS AT FLOOR DRAINS



BRIDGE DECK

TRAFFIC CONTROL ON BRIDGE DECK OVERLAYS

STANDARD D-754-71-11, TYPE P, WILL BE USED FOR DIVIDED HIGHWAY AREAS. THE FOLLOWING STANDARDS WILL BE NEEDED WITHE THE ABOVE STANDARD: D-754--71-1, 2, 2.8, 3, 4 & 5.

THE FOLLOWING IS A LIST OF SIGNS THAT ARE REQUIRED:

SIGN NO.	NAME	QUANTITY
CW-276-48	ROAD CONSTRUCTION 1 MILE	3 EACH
CW-296-48	RIGHT LANE CLOSED ½ MILE	3 EACH
CW-296-48	LEFT LANE CLOSED ½ MILE	3 EACH
CW-25-48	RIGHT LANE ENDS	3 EACH
CW-25-48	LEFT LANE ENDS	3 EACH
CM-104-60	END CONSTRUCTION	3 EACH
CM-102	ABC CONSTRUCTION CO.	3 EACH
TYPE II	BARRICADES	20 EACH
	DELINEATOR DRUMS	20 EACH
TYPE B	FLASHERS	10 EACH
TYPE C	FLASHERS	20 EACH
	ORANGE FLAGS	16 EACH
R-4-48	SPEED ZONE AHEAD	3 EACH
R-8-48	SPEED LIMIT	3 EACH
	20" NUMERALS 0 TO 9	6 EACH

NOTES:

THE CONTRACTOR SHALL NOTIFY THE DISTRICT OFFICE OF THE STATE HIGHWAY DEPARTMENT WELL IN ADVANCE OF ANY WORK REQUIRED TO BE DONE BY THE STATE MAINTENANCE SO AS NOT TO INTERFERE WITH THE CONTRACTORS OPERATIONS.

ALL MUDJACKING, PREPARATION AND PLACEMENT OF TAPER ON ASPHALTIC SURFACES SHALL BE DONE BY STATE MAINTENANCE.

ALL PREMOLDED JOINT FILLER, CLEANING AND FILLING MUD-JACK HOLES AND THE CLEANING AND FILLING OF APPROACH SLABE CRACKS UNDER OVERLAY ONLY SHALL BE INCIDENTAL TO CLASS 1 OVERLAY.

STRUCTURAL DETAILS OF SPECIFIC STRUCTURES ARE AVAILABLE AT THE DISTRICT OFFICE OR AT THE BRIDGE DIVISION, CENTRAL OFFICE IN BISMARCK.

LIMITS OF CLASS 2 OVERLAY SHALL BE DETERMINED BY THE ENGINEER AND OUTLINED WITH SOME SUITABLE MARKING. THESES AREAS SHALL NOT BE EXPANDED UNLESS APPROVED BY THE ENGINEER.

ANY DECK REINFORCING REQUIRED SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 109-5 OF THE NORTH DAKOTA STANDARD SPECIFICATION FOR ROADS & BRIDGES.

THE OVERLAY SHALL BE PLACED OVER ONE HALF OF THE BRIDGE FROM THE LONGITUDINAL ℄ TO THE CURB IN ONE CONTINUOUS POUR UNLESS THE AREA IS TO LARGE TO PLACE IN ONE DAY.

IF THIS OCCURS THE ENGINEER SHALL DETERMINE WHERE THE CONSTRUCTION JOINTS SHALL BE LOCATED.

.. TRAFFIC SHALL BE MAINTAINED ON THE OTHER HALF OF BRIDGE.

CANOPY

SHOULD THE DEPTH OF CONCRETE REMOVAL AMKE IT POSSIBLE FOR THE CHIPPIND HAMMER TO PENETRATE THE FULL DEPTH OF THE SLAB, A MEANS OF PROTECTING THE ROADWAY BENEATH THE STRUCTURE FROM FALLING DEBRIS SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.

PAYMENT FOR SUCH PROTECTION WILL BE MADE IN ACCORDANCE WITH SECTION 109-5 OF THE NORTH DAKOTA STANDARD SPECIFICATIONS FOR ROADS & BRIDGES.

SPECIAL PROVISIONS

NO.	NAME
	REPAIR & OVERLAY OF PORTLAND CEMENT CONCRETE BRIDGE DECKS
123	LEGAL RELATIONS & RESPONSIBILITY TO PUBLIC
124	MAINTENANCE & PROTECTION OF TRAFFIC
SP	MEASUREMENT & PAYMENT (FREIGHT RATES)

STRUCTURE NUMBER	LENGTH	WIDTH	APPROACH SLABS	APPROACH SLAB LENGTH	TAPER LENGTH
94-259.86R	220'	30'	* 2	40'	20'
94-259.86L	220'	30'	* 2	40'	20'

* See Special Details

** Two Alternates, Low Slump Concrete & Latex Concrete

ESTIMATE OF QUANTITIES

	SPEC NO.	CODE NO.			
	705	0100	MOBILIZATION	1	L.S.
	762	3299	MAINTENANCE & PROTECTION OF TRAFFIC	1	L.S.
**	900	9700	CLASS I OVERLAY	1467	S.Y.
**	900	9701	CLASS II OVERLAY	989	S.Y.
	750	0100	LINSEED OIL TREATMENT (LOW SLUMP ONLY)	54	GAL.
*	900	9501	APPROACH SLAB (REMOVE & REPLACE)	624	S.Y.
*	900	8673	EXPANSION JOINT MODIFICATION	64	L.F.
	900	8674	JOINTS AT ENDS OF BRIDGE	120	L.F.
*	302	0120	AGGREGATE (CLASS 5)	186	TON
	550	0184	10" NON-REINF. CONC. PAVEMENT CLASS AE-3	1512	S.Y.
	216	0100	WATER	1,2 "M"	GAL.

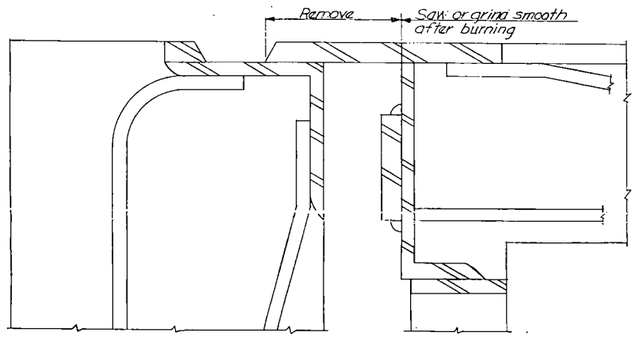
QUANTITIES MADE BY CHECKED BY

94-259.86

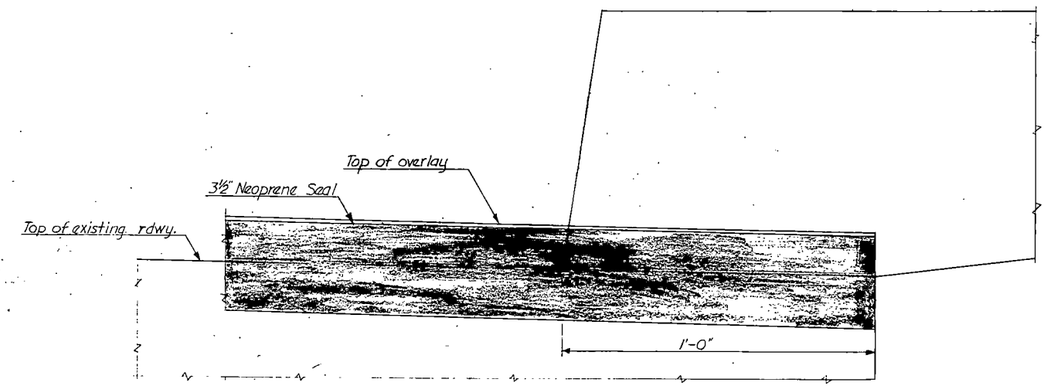
94-259.830

94-~~259.86~~

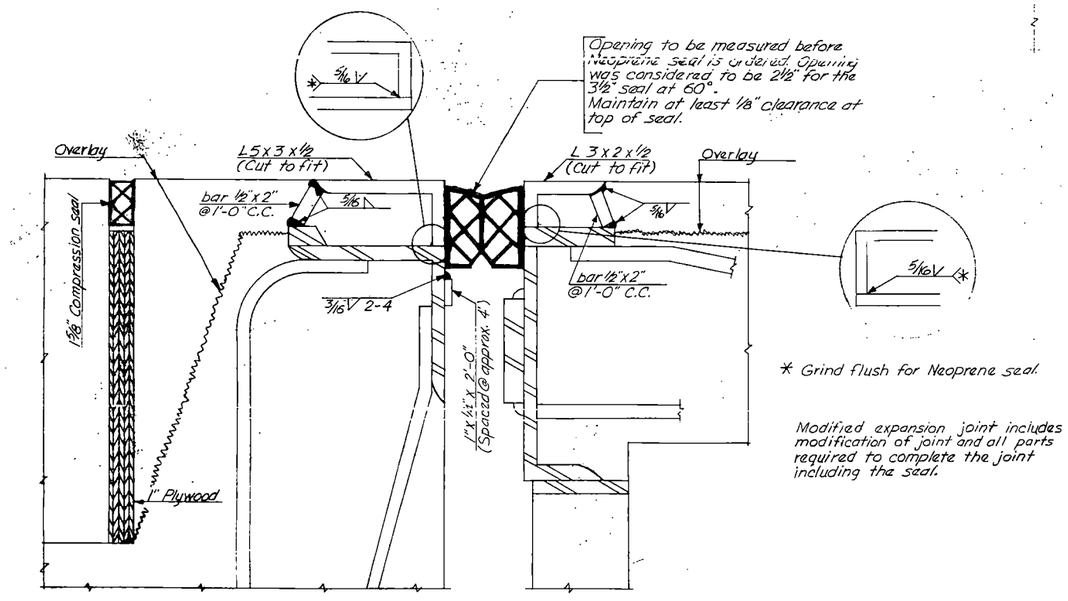
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	TQF 1-1-094-7(22)	3



EXISTING EXPANSION JOINT



DETAIL OF EXPANSION JOINT UNDER CURB



MODIFIED EXPANSION JOINT

BRIDGE OVERLAY
JAMES RIVER
EXPANSION JOINT
MODIFICATION

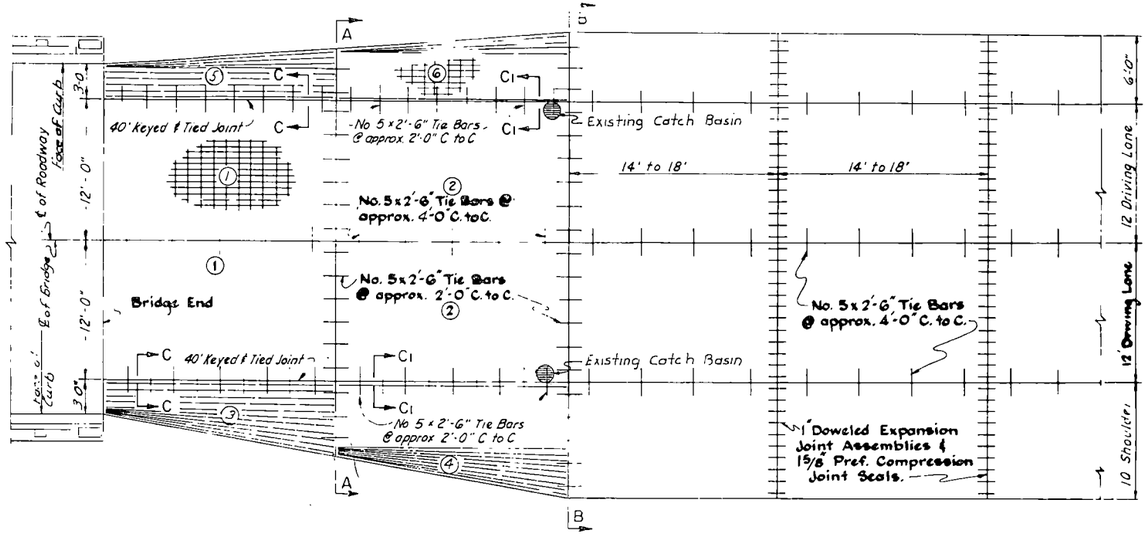
94-259.88-1

94-259.8447

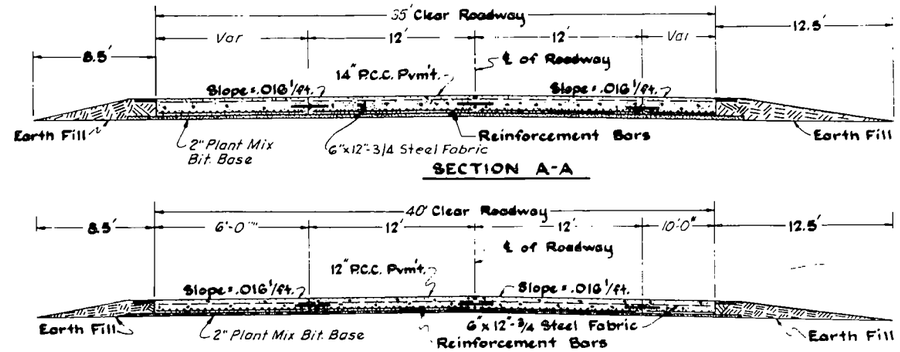
94-259.86-1

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

30' BRIDGE APPROACH SLAB
AND 40' P.C.C. PAVING

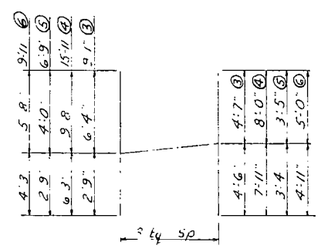


PLAN VIEW

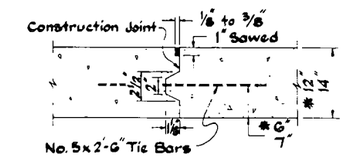


SECTION A-A

SECTION B-B



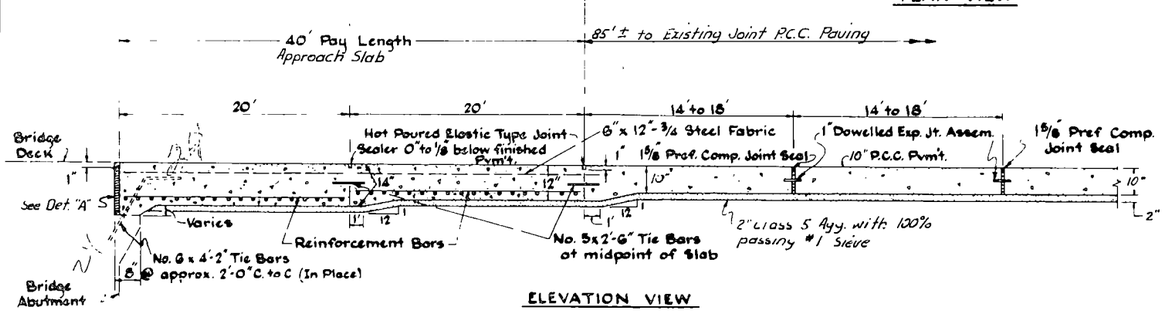
Total length ③: 81'-9"
④: 143'-3"
⑤: 60'-9"
⑥: 89'-3



NOTE:
12" P.C.C. Pvm't

SECTION-C-C (14")
SECTION-C1-C1 (12")

PLAN VIEW



ELEVATION VIEW

REINFORCING BARS									
LONGITUDINAL					TRANSVERSE				
PANEL	EACH	BAR SIZE	LENGTH	LBS.	PANEL	EACH	BAR SIZE	LENGTH	LBS.
①	24/24	#8	19'-6"	2499	①	18/18	#6	11'-6"	622
②	24/24	#7	19'-6"	1914	②	18/18	#5	11'-6"	432
③	11	#8	19'-6"	573	③	1 Set	#6	81'-9"	123
④	18	#7	19'-6"	718	④	1 Set	#5	143'-3"	150
⑤	9	#8	19'-6"	469	⑤	1 Set	#6	60'-9"	91
⑥	12	#7	19'-6"	478	⑥	1 Set	#5	89'-3"	93

NOTE:
Longitudinal Bars spaced @ approx. 6" C. to C.
Transverse Bars spaced @ approx. 1'-1½" C. to C.

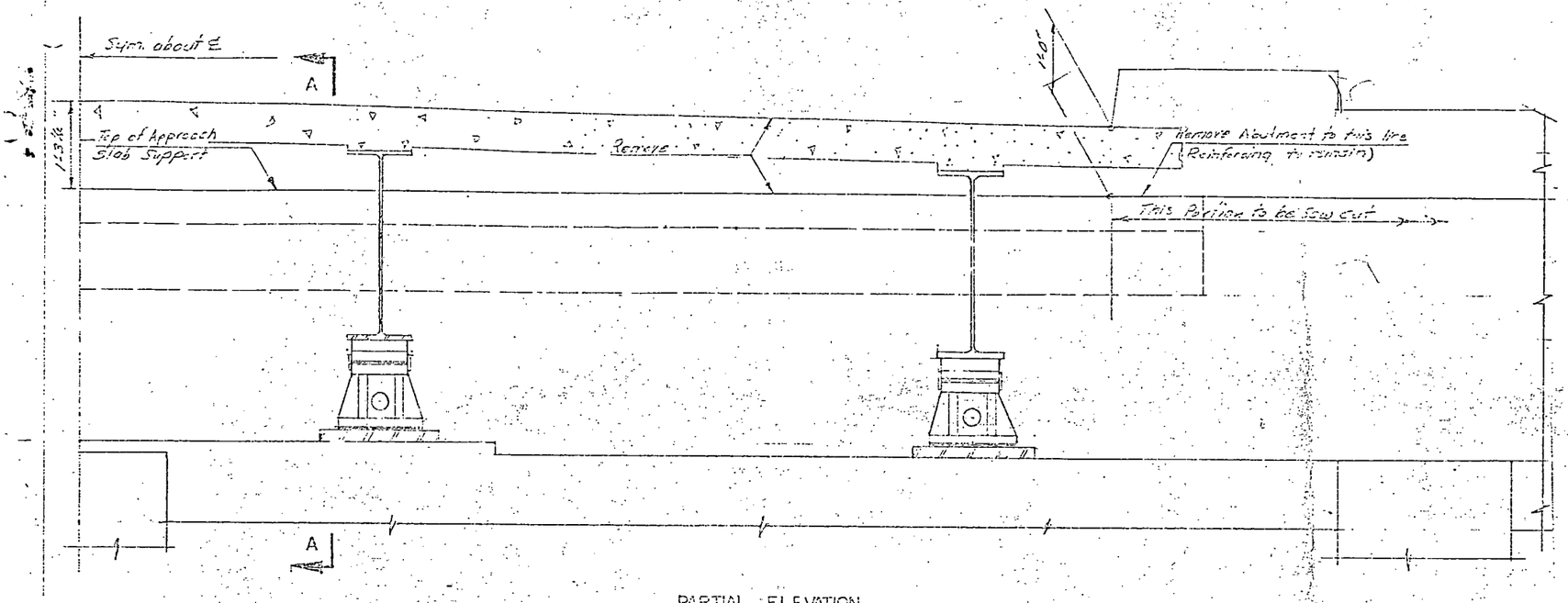
Bars shall be placed at a 2" clearance from bottom of slab.

Panels ① thru ⑥ have 6" x 12"-3/4 Steel Fabric placed at a 2½" clearance from top of slab.

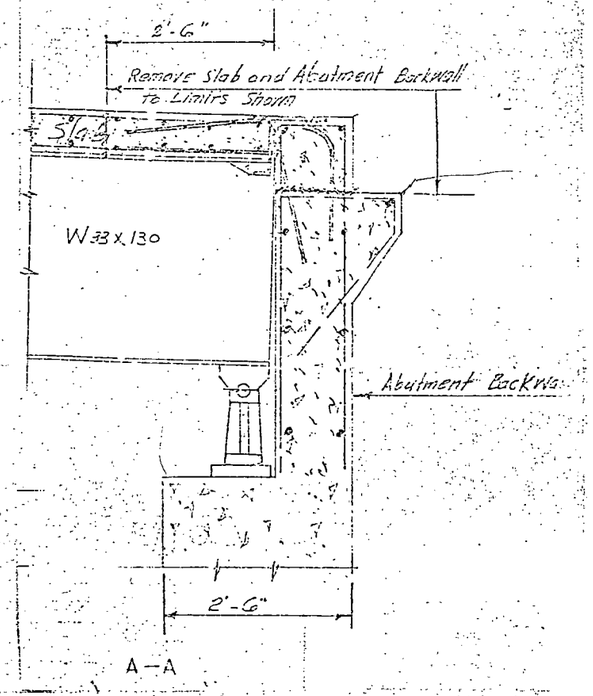
QUANTITIES FOR ONE BRIDGE APPROACH SLAB ~ See Note ◯

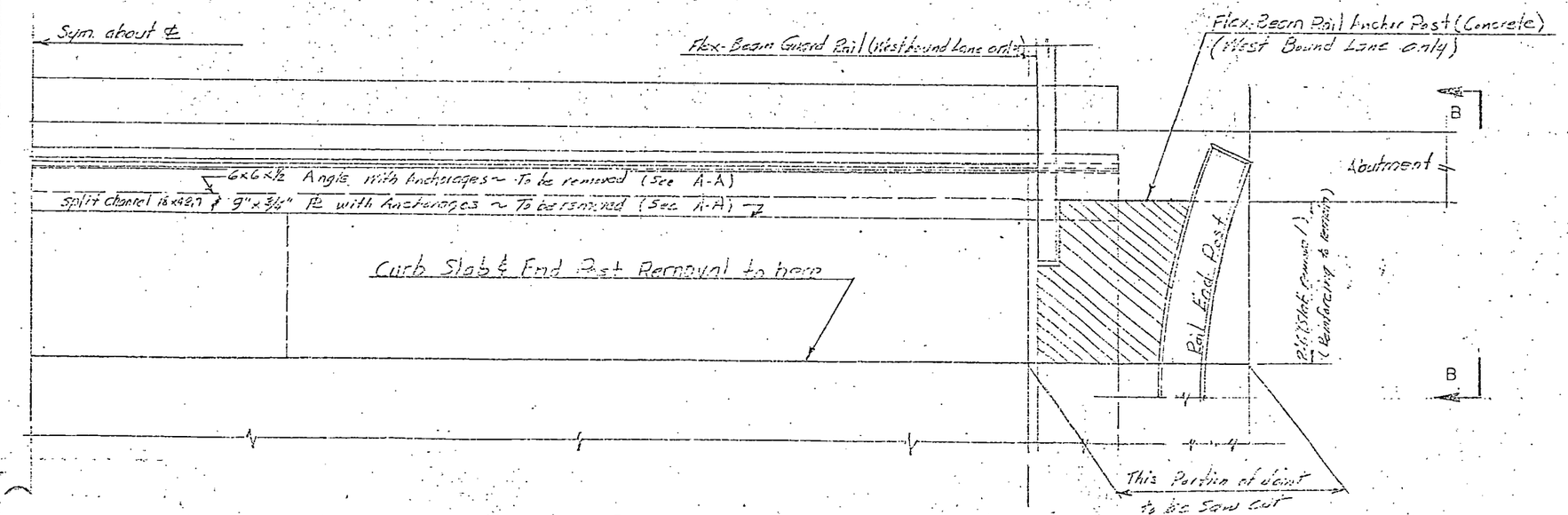
Item	Unit	Quantity
P.C.C. Pavement	S.Y.	156
Cement	Bbls.	75
Reinforcement Bars	Lbs.	8162
Steel Fabric	S.Y.	156
Sodding	S.Y.	
Seeding	Acre	

NOTE:
Class 5 Aggregate shall have 100% of aggregate pass the 1" screen.

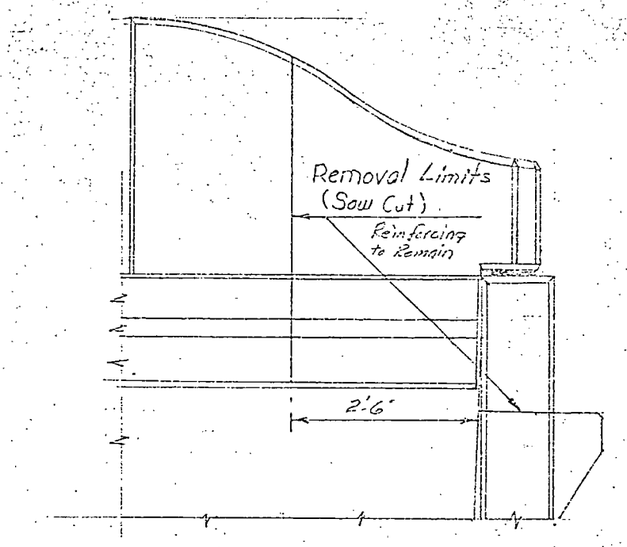


PARTIAL ELEVATION





PARTIAL PLAN

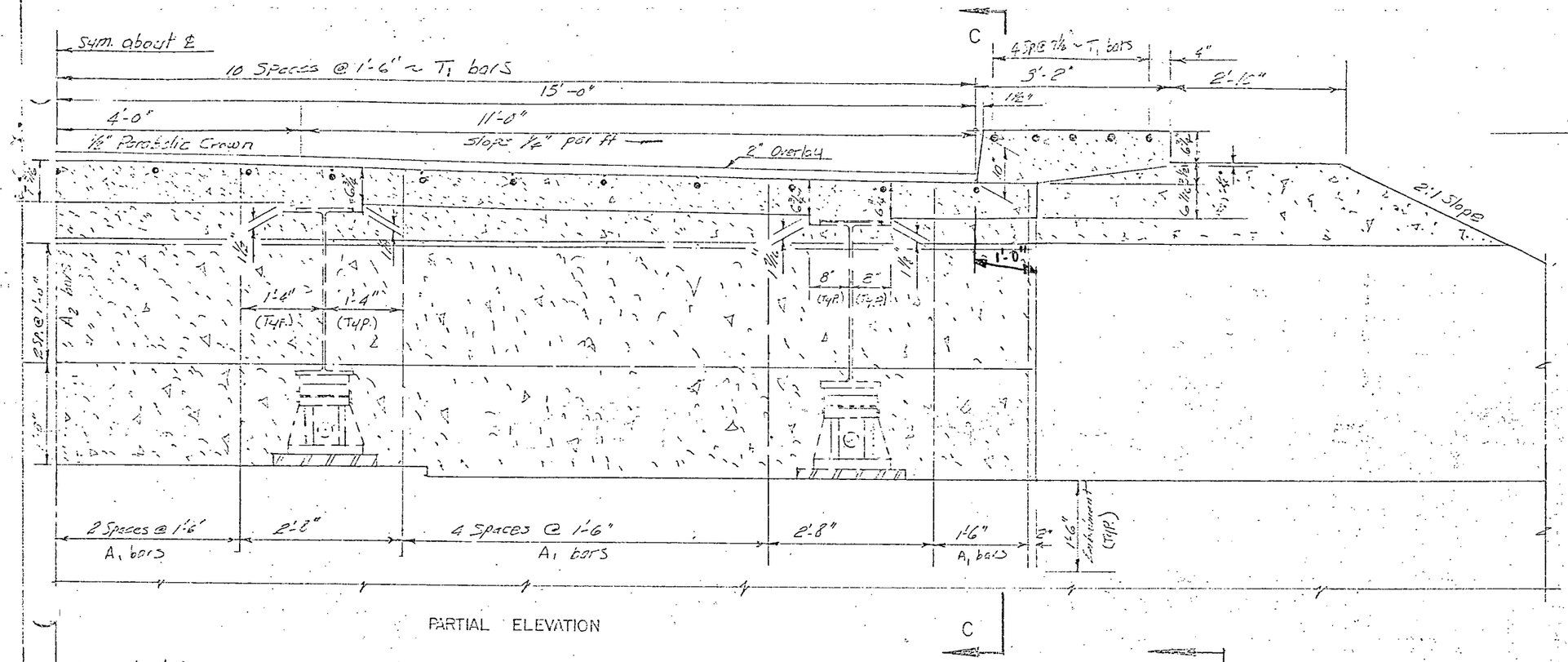


B—B

PORTIONS OF EXISTING STRUCTURE TO BE REMOVED

Abut. (East)

AUG 1976
RECEIVED
N.D. State Hwy. Dept.
Valley City, N.D.



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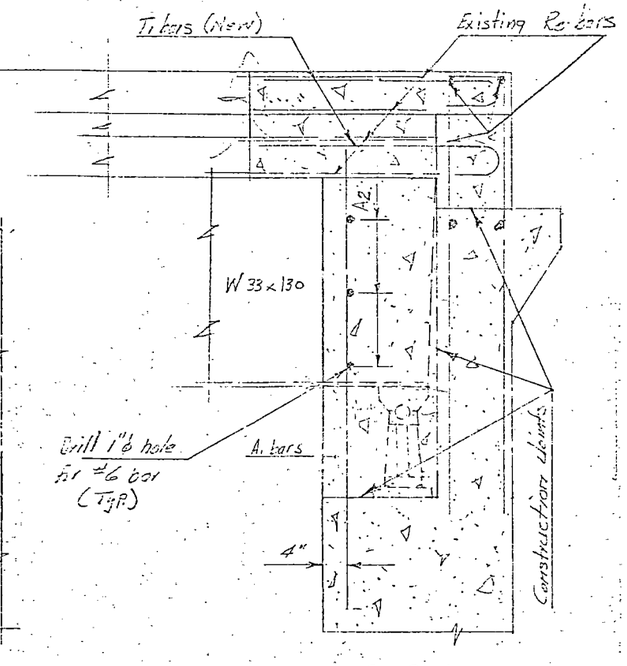
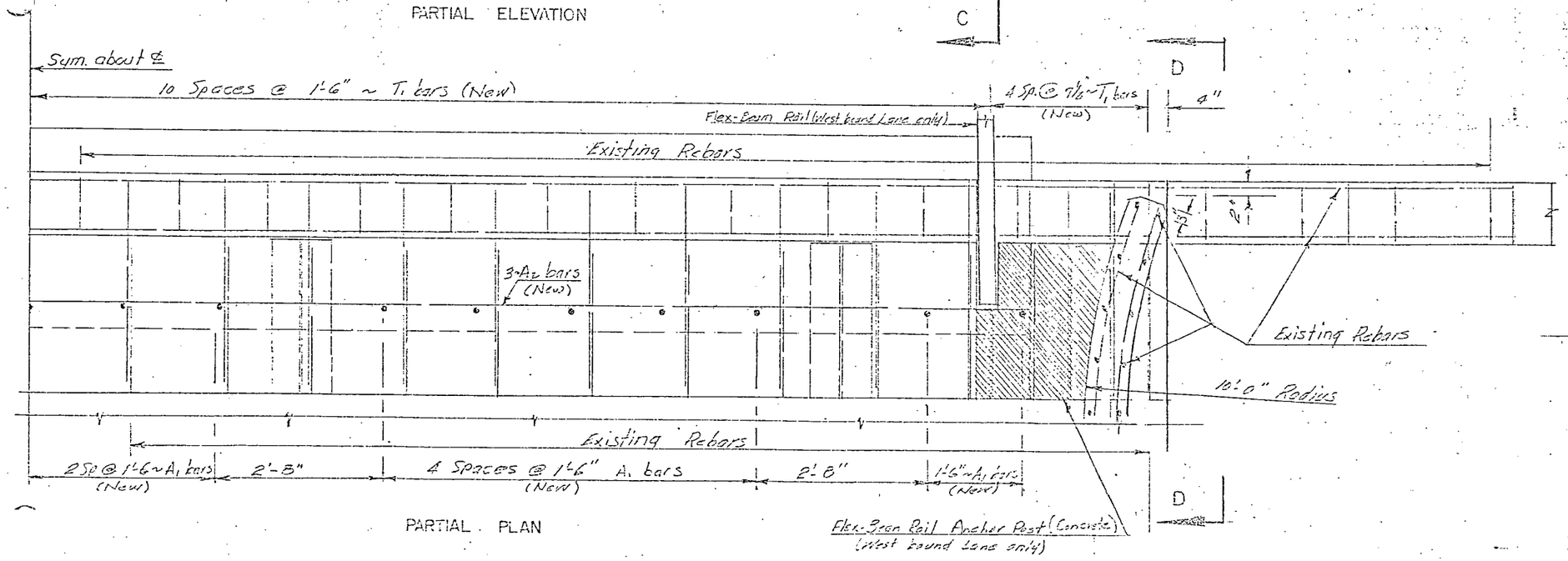
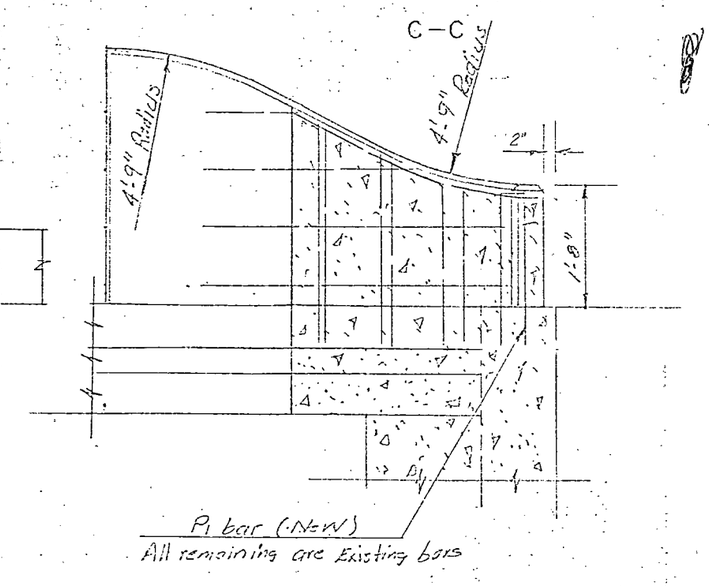


C – C



PARTIAL PLAN



D – D

REMODELED BRIDGE END
EAST

C. O. 94-259.86

NOTES:

THE CONTRACTOR SHALL REMOVE PORTIONS OF THE EXISTING STRUCTURES, TAKING CARE NOT TO DAMAGE REINFORCING BARS. ANY REMOVAL THAT WILL BE EXPOSED AFTER REPLACEMENT SHALL BE SAW CUT TO MAKE A NEAT STRAIGHT JOINT BETWEEN OLD AND NEW CONCRETE.

THE SAWED JOINT SHALL BE 1" DEEP AND SHALL BE NORMAL TO THE FACES OF THE UNITS TO BE CUT. IF THE JOINTS ARE NOT SATISFACTORY TO THE ENGINEER THEY SHALL BE RESAWED TO THE ENGINEER'S SATISFACTION.

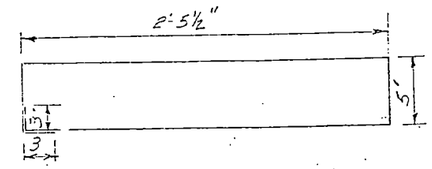
THE REPLACEMENT OF THE CONCRETE DECK BETWEEN CURBS SHALL BE TO THE BOTTOM OF THE 1" SCARIFICATION ONLY AND THE SURFACE SHALL BE CLEANED OF ALL LAITANCE BEFORE THE PLACEMENT OF THE OVERLAY.

REINFORCING SHALL BE GRADE 40. ALL REPLACEMENT CONCRETE SHALL BE AE-3.

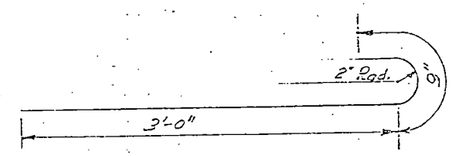
THE FACES OF THE REPLACED CURB AND THE PORTION OF THE END POSTS THAT ARE TO BE REPLACED AND THE EXPOSED FACES OF THE ABUTMENT TO BE REPLACED SHALL BE GIVEN THE RUBBED SURFACE FINISH. ALL OTHER SURFACES SHALL BE GIVEN THE ORDINARY SURFACE FINISH.

THE REMOVAL AND REPLACEMENT OF CONCRETE SHALL BE DONE FOR ONE HALF OF BRIDGE AT A TIME.

TRAFFIC SHALL BE MAINTAINED AT ALL TIMES.



P1



T1

BENT BAR DETAILS

BAR LIST (ONE BRIDGE)

MARK	NUMBER	SIZE	LENGTH	SHAPE
A_1	19	6	6'-3"	Str
A_2	5	6	31'-6"	"
P_1	2	5	6'-9"	Bent
T_1	31	5	3'-9"	"

QUANTITIES (ONE Bridge)

Remove Reinforced Concrete	5.0	c.y.
Replace Reinforced Concrete	13.0	c.y.
Reinforcing Steel (Grade 40)	455	lbs

JAMES RIVER BRIDGE REPAIR

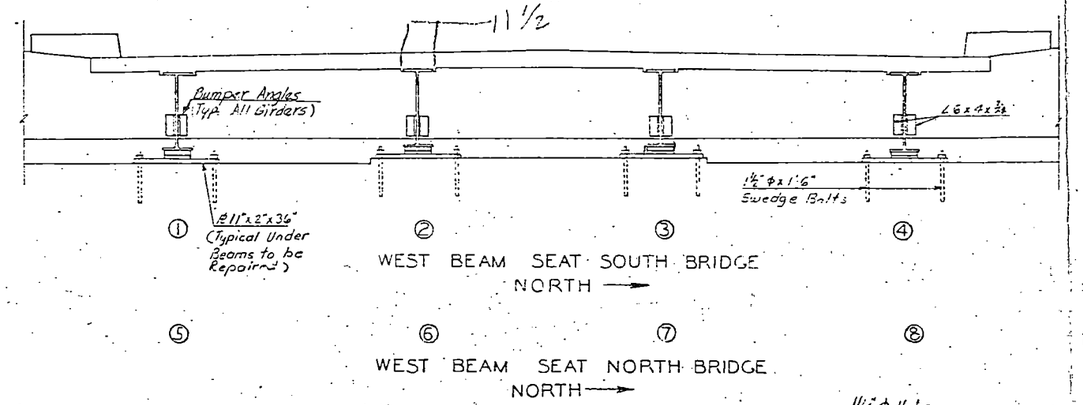
EAST ABUTMENT (TWO BRIDGES)

C.O. 94-259.86

East End

C.O. 94-259.86

Revised 11-29-76



GENERAL NOTES:

THE INITIAL ACTION OF BRIDGE REPAIR SHALL BE THE ATTACHMENT OF THE BUMPER ANGLES TO ALL GIRDERS. THE ANGLES SHALL BE FITTED AND THE GIRDER WEB HOLES MARKED FOR DRILLING IN THE FIELD. THE HOLES IN THE ANGLES MAY BE PREFABRICATED OR DRILLED IN THE FIELD AS SHOWN ON THE ANGLE DETAIL. THE BUMPER ANGLES SHALL BE INSTALLED AND THE BOLTS TIGHTENED TO THEIR FINAL POSITION BEFORE THE REPAIR IS BEGUN. ALL FASTENERS SHALL BE HIGH STRENGTH 5/8" BOLTS.

THE FOLLOWING STEPS FOR THE BEARING REPAIR SHALL BE AS OUTLINED:

1. THE ANCHOR HOLES IN THE CONCRETE FOR THE NEW MASONRY PLATE FOR ALL GIRDERS SHALL BE DRILLED. THE HOLES FOR THE 1½" SWEDGE BOLTS SHALL BE 2" IN DIAMETER.

2. ~~WELD EXISTING BOLT PLATE TO GIRDER FLANGE AS EXPLAINED IN THE DETAIL.~~

3. REMOVE THE SPALLED CONCRETE AND CUT THE 1½" SWEDGED ANCHOR BOLT BELOW THE EXISTING MASONRY PLATE.

4. RAISE THE GIRDER APPROXIMATELY ¼" AND REMOVE THE EXISTING MASONRY PLATE. (JACKING AGAINST THE SLAB WILL NOT BE TOLERATED.)

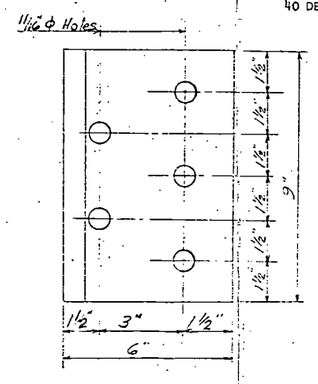
5. PLACE NEW MASONRY PLATE, FILL THE HOLES IN THE CONCRETE WITH GROUT AND SET NEW SWEDGE BOLTS.

6. REPAIR THE CONCRETE SPALLS WITH SPEED-CRETE RED LINE SPECIFICATIONS.
THE GIRDERS SHALL NOT BE LOWERED ONTO MASONRY PLATE UNTIL 3 DAYS OF CURING HAS ELAPSED.
3 or 4 hours
IF ANY OTHER TYPE OF CONCRETE PATCHING MATERIAL IS CONSIDERED, THE CONTRACTOR WILL BE REQUIRED TO SUBMIT THE TYPE TO THE BRIDGE DIVISION AT BISMARCK FOR APPROVAL.

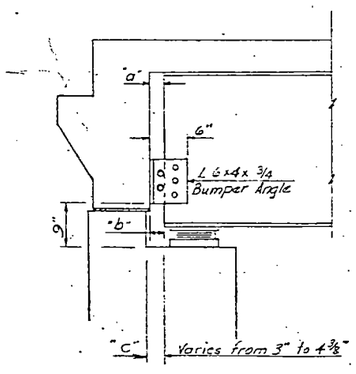
THE APPLICATION OF AN EPOXY SHALL BE APPLIED TO THE BROKEN SURFACE OF THE CONCRETE AS RECOMMENDED BY THE MANUFACTURER BEFORE THE PATCHING CONCRETE IS APPLIED. THE PATCHING CONCRETE SHALL ALSO BE APPLIED AS RECOMMENDED BY THE MANUFACTURERERS SPECIFICATIONS.

7. THE TEMPERATURE SHALL BE 40 DEGREES F. OR ABOVE AT PLACEMENT OF AND FOR 24 HOURS AFTER PLACEMENT OF THE SPEED CRETE.

IF NECESSARY THE AREAS SHALL BE HOUSED AND HEATED TO MAINTAIN THE 40 DEGREE F. TEMPERATURE.

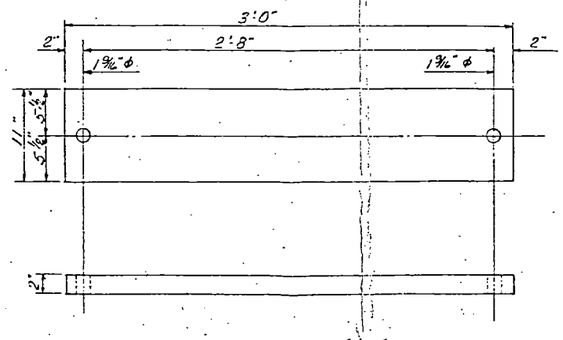


BUMPER ANGLE DETAIL

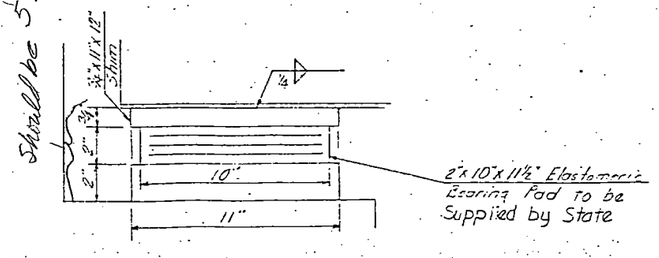


TYPICAL SECTION

Beam No.	Dim. "a"	Dim. "b"	Dim. "c"
1	3 1/8"	2 7/8"	4 3/8"
2	2 7/8"	2 3/4"	3 1/2"
3	2 7/8"	2 3/8"	3 1/2"
4	3 1/8"	2 5/8"	3 3/4"
5	2 1/2"	1 5/8"	3"
6	2 3/4"	2 1/8"	3 1/2"
7	2 3/4"	2 1/4"	3 5/8"
8	2 1/4"	2"	3 1/2"



MASONRY PLATE 11" x 2" x 36"



BEARING PAD DETAILS

ADDED CONTRACT ITEMS

Abutment Repair	L. Sum	1 Ea.
Add. Mobiliz. & De-Mobiliz.	L. Sum	1 Ea.
Flagging	M. Hrs.	889
"J" Bolts	Each	49
Drill Dowel Holes & Re-set Dowels	Each	64
West Beam Seat Repair	L. Sum	1 Ea.
Add. Shim Plates For Beam Seat Repair	L. Sum	1 Ea.
Conduit Repair	L. Sum	1 Ea.
Add. Signs for Flagging	L. Sum	1 Ea.

TQFI-I-94-7(22)258

QUANTITIES	
Structural Steel	2464 Lbs.
Speed Crete	16 C.F.
Epoxy	46 S.F.

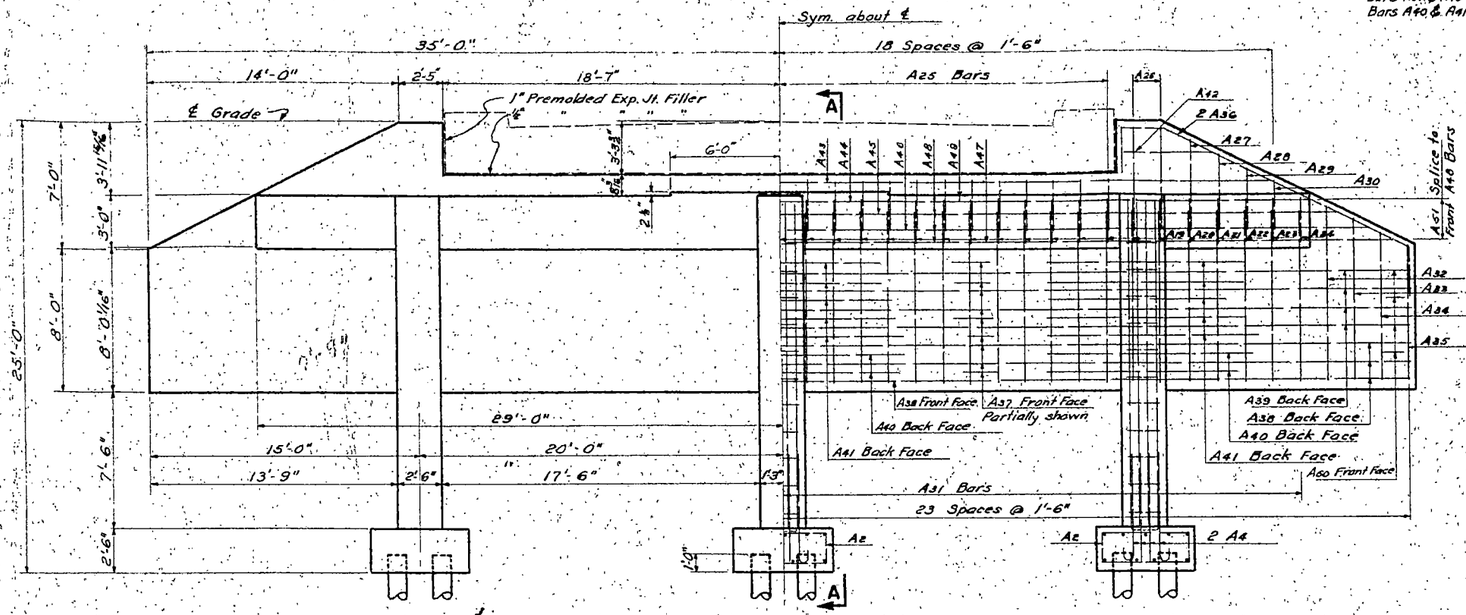
JAMES RIVER
BRIDGE REPAIR
HWY. I-94

West Beam Seat Repair

Nov. 26, 1976

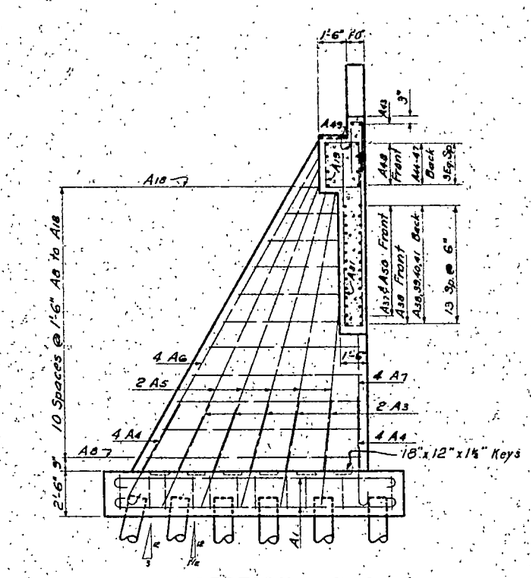
FED. ROAD DIST. NO.	STATE	PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	N.D.				

NOTE:
Bars A38, A39, A44, A45, A46 & A47 to be spliced between columns.
Bars A43, A48 & A50 to be spliced at centerline of abutment.
Bars A37 & A48 to be centered on centerline of abutment.
Bars A40 & A41 to be centered on columns.

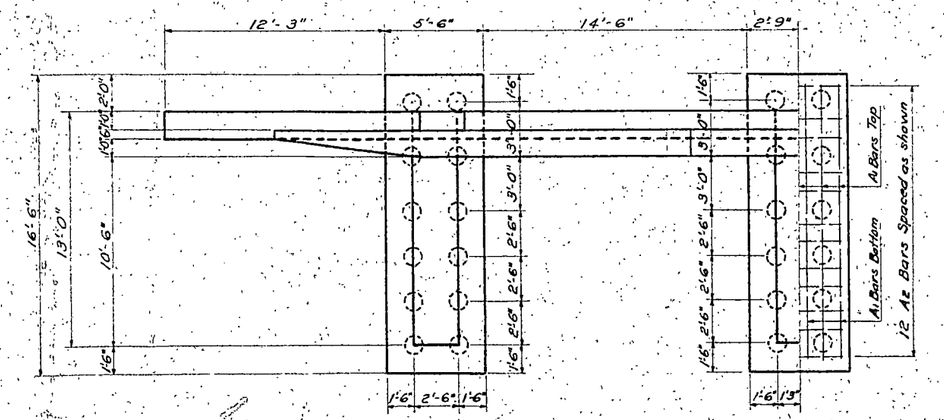


HALF ELEVATION
Showing Dimensions

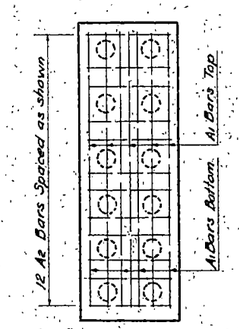
HALF ELEVATION
Showing Reinforcing



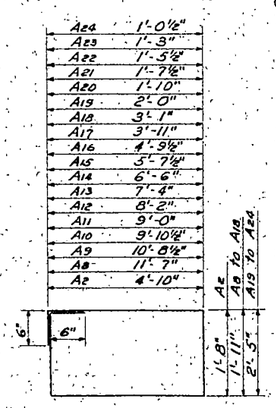
SECTION A-A



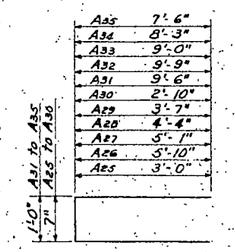
HALF PLAN



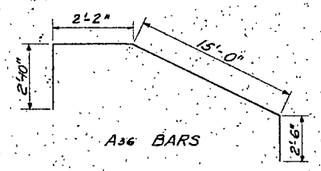
HALF FOOTING PLAN



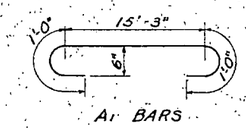
A2 & A8 to A24 BARS



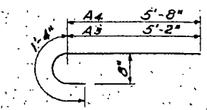
A25 to A35 BARS



A36 BARS



A1 BARS



A3 & A4 BARS

BENT BAR DETAILS

*BAR LIST — ONE ABUT.

MARK	NO.	SIZE	LENGTH	SHAPE
A1	27	3/4"ϕ	17'-3"	Bent
A2	36	3/4"ϕ	14'-0"	"
A3	30	1"□	6'-6"	"
A4	24	1"□	7'-0"	"
A5	30	3/4"ϕ	18'-0"	Str.
A6	12	1"ϕ	20'-6"	"
A7	12	1"□	17'-0"	"
A8	3	5/8"ϕ	28'-0"	Bent
A9	3	5/8"ϕ	26'-3"	"
A10	3	5/8"ϕ	24'-7"	"
A11	3	5/8"ϕ	22'-10"	"
A12	3	5/8"ϕ	21'-2"	"
A13	3	5/8"ϕ	19'-6"	"
A14	3	5/8"ϕ	17'-10"	"
A15	3	5/8"ϕ	16'-1"	"
A16	3	5/8"ϕ	14'-5"	"
A17	3	5/8"ϕ	12'-8"	"
A18	3	5/8"ϕ	11'-0"	"
A19	29	1/2"ϕ	9'-10"	"
A20	2	1/2"ϕ	9'-6"	"
A21	2	1/2"ϕ	9'-1"	"
A22	2	1/2"ϕ	8'-9"	"
A23	2	1/2"ϕ	8'-4"	"
A24	2	1/2"ϕ	7'-11"	"
A25	25	1/2"ϕ	6'-7"	"
A26	4	1/2"ϕ	12'-3"	"
A27	2	1/2"ϕ	10'-9"	"
A28	2	1/2"ϕ	9'-3"	"
A29	2	1/2"ϕ	7'-9"	"
A30	2	1/2"ϕ	6'-3"	"
A31	39	5/8"ϕ	20'-0"	"
A32	2	5/8"ϕ	20'-6"	"
A33	2	5/8"ϕ	19'-0"	"
A34	2	5/8"ϕ	17'-6"	"
A35	2	5/8"ϕ	16'-0"	"
A36	4	3/4"ϕ	22'-6"	"
A37	9	5/8"ϕ	40'-0"	Str.
A38	12	1"ϕ	25'-3"	"
A39	12	3/4"ϕ	25'-3"	"
A40	6	1"ϕ	11'-0"	"
A41	15	3/4"ϕ	11'-0"	"
A42	4	1/2"ϕ	5'-6"	"
A43	4	3/4"ϕ	28'-0"	"
A44	3	1"ϕ	21'-6"	"
A45	3	1"ϕ	22'-6"	"
A46	3	1"ϕ	23'-9"	"
A47	3	1"ϕ	24'-9"	"
A48	4	1"ϕ	40'-0"	"
A49	2	1/2"ϕ	30'-0"	"
A50	8	5/8"ϕ	36'-0"	"
A51	8	5/8"ϕ	12'-0"	"

*NOTE:
The fabricator shall add a prefix to each bar designation to differentiate between structures and/or units of a structure on the project.

QUANTITIES

Concrete Class A-1½	109.3 Cu. Yd.
Reinforcing Steel	11,028 Lb.
Piling (See Layout)	
Excavation (See Layout)	

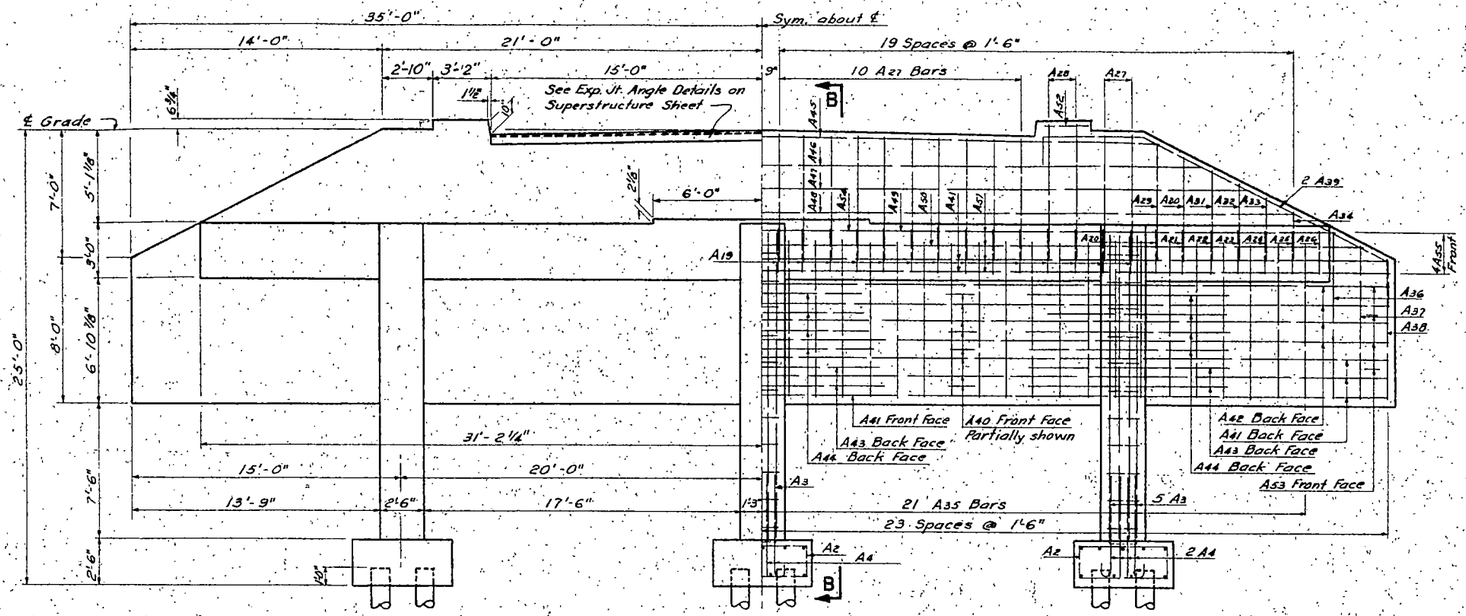
25' ABUTMENT DETAILS FOR I-BEAM SPANS FIXED END 30' ROADWAY

DETAILED BY	EGP
TRACED BY	JC
DESIGNED BY	OCA
TRACING CHECKED BY	ICF
UTILITIES MADE BY	ICF
PREPARED BY	ES

H-1

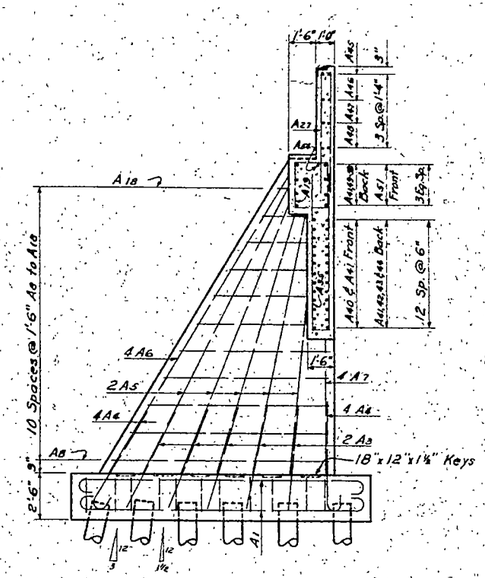
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	N.D.				

NOTE:
Bars A41, A42, A43, & A50 to be spliced between columns.
Bars A45, A46, A47, A48, A51, A53 & A54 to be spliced at centerline of abutment.
Bar A40 to be centered on centerline of abutment.
Bars A49 & A44 to be centered on columns



HALF ELEVATION
Showing Dimensions

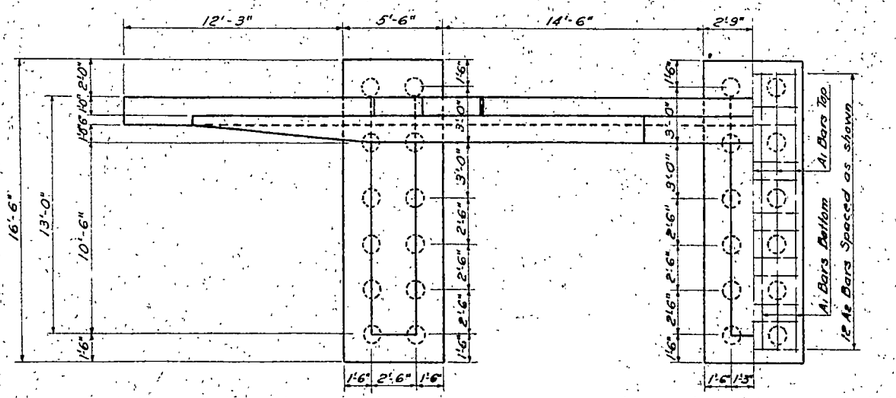
HALF ELEVATION
Showing Reinforcing



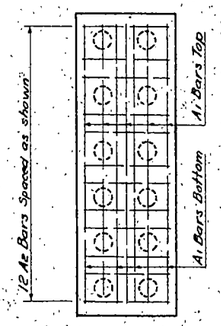
SECTION B-B

*BAR LIST ONE ABUT.				
MARK	NO.	SIZE	LENGTH	SHAPE
A1	27	¾"ϕ	17'-3"	Bent
A2	36	¾"ϕ	14'-0"	"
A3	30	1"ϕ	6'-6"	"
A4	24	1"□	7'-0"	"
A5	30	¾"ϕ	17'-0"	Str.
A6	12	1"ϕ	19'-6"	"
A7	12	1"□	16'-0"	"
A8	3	⅝"ϕ	27'-11"	Bent
A9	3	⅝"ϕ	26'-1"	"
A10	3	⅝"ϕ	24'-4"	"
A11	3	⅝"ϕ	22'-6"	"
A12	3	⅝"ϕ	20'-8"	"
A13	3	⅝"ϕ	18'-10"	"
A14	3	⅝"ϕ	17'-1"	"
A15	3	⅝"ϕ	15'-3"	"
A16	3	⅝"ϕ	13'-5"	"
A17	3	⅝"ϕ	11'-7"	"
A18	3	⅝"ϕ	9'-10"	"
A19	28	½"ϕ	9'-10"	"
A20	2	½"ϕ	9'-8"	"
A21	2	½"ϕ	9'-5"	"
A22	2	½"ϕ	9'-1"	"
A23	2	½"ϕ	8'-10"	"
A24	2	½"ϕ	8'-6"	"
A25	2	½"ϕ	8'-3"	"
A26	2	½"ϕ	7'-11"	"
A27	24	½"ϕ	13'-7"	"
A28	4	½"ϕ	15'-1"	"
A29	2	½"ϕ	12'-11"	"
A30	2	½"ϕ	11'-5"	"
A31	2	½"ϕ	9'-11"	"
A32	2	½"ϕ	8'-5"	"
A33	2	½"ϕ	6'-11"	"
A34	2	½"ϕ	5'-5"	"
A35	41	⅝"ϕ	18'-4"	"
A36	2	⅝"ϕ	19'-0"	"
A37	2	⅝"ϕ	17'-6"	"
A38	2	⅝"ϕ	16'-0"	"
A39	4	¾"ϕ	24'-0"	"
A40	8	⅝"ϕ	40'-0"	Str.
A41	18	1"ϕ	25'-3"	"
A42	12	⅞"ϕ	25'-3"	"
A43	6	1"ϕ	11'-0"	"
A44	12	⅞"ϕ	11'-0"	"
A45	4	¾"ϕ	23'0"	"
A46	4	½"ϕ	25'-3"	"
A47	4	½"ϕ	27'-11"	"
A48	4	½"ϕ	30'-7"	"
A49	3	1"ϕ	23'-3"	"
A50	3	1"ϕ	24'-3"	"
A51	8	1"ϕ	21'-9"	"
A52	4	⅝"ϕ	2'-10"	"
A53	8	⅝"ϕ	36'-6"	"
A54	2	⅝"ϕ	32'-0"	"
A55	8	⅝"ϕ	13'-3"	"

*NOTE:
The fabricator shall add a prefix to each bar designation to differentiate between structures and/or units of a structure on the project.

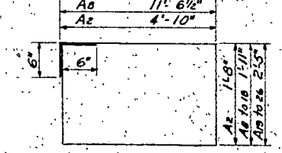


HALF PLAN

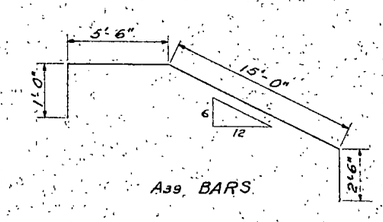


HALF FOOTING PLAN

A26	1'-0½"
A25	1'-2½"
A24	1'-4"
A23	1'-6"
A22	1'-7½"
A21	1'-9½"
A20	1'-11"
A19	2'-0"
A18	2'-6"
A17	3'-4½"
A16	4'-3½"
A15	5'-2½"
A14	6'-1½"
A13	7'-0"
A12	7'-11"
A11	8'-10"
A10	9'-9"
A9	10'-7½"
A8	11'-6½"
A2	4'-10"

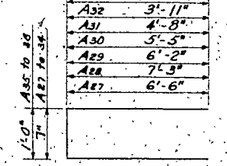


A2 & A8 to A26 BARS

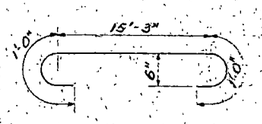


A39 BARS

A38	7'-6"
A37	8'-3"
A36	9'-0"
A35	8'-8"
A34	2'-5"
A33	3'-2"
A32	3'-11"
A31	4'-8"
A30	5'-5"
A29	6'-2"
A28	7'-3"
A27	6'-6"



A27 to A38 BARS



A1 BARS

A3 & A4 BARS

BENT BAR DETAILS

QUANTITIES		
Concrete Class A-1%	118.9	Cu. Yd.
Reinforcing Steel	11458	Lb.
Piling (See Layout)		
Excavation (See Layout)		

25' ABUTMENT DETAILS
FOR I-BEAM SPANS
EXPANSION END
30' ROADWAY

H-124

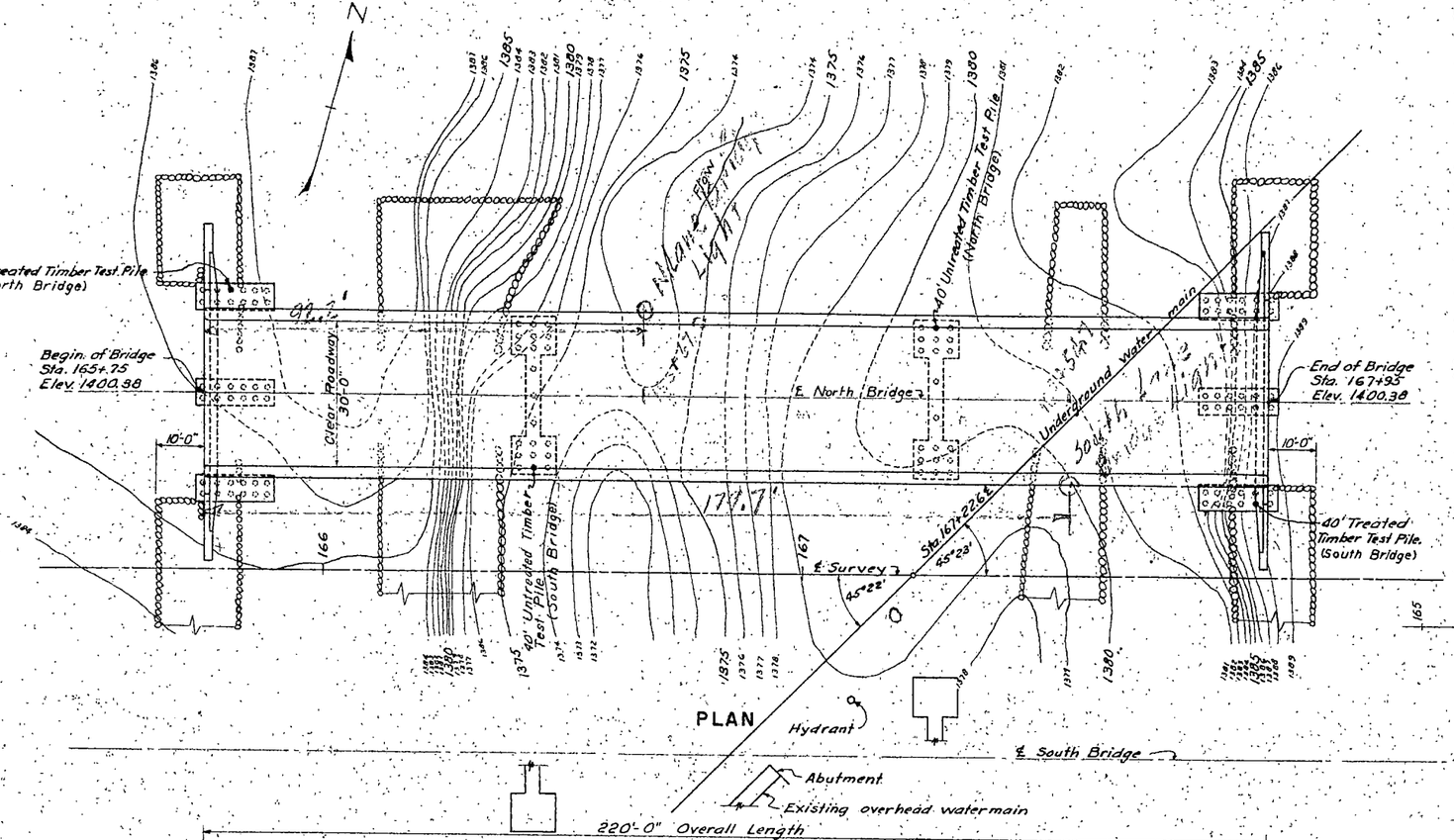
DETAILS: MADE BY EGP, CHECKED BY JC
BRACING: MADE BY OCA, CHECKED BY ICF
MADE BY ICF, CHECKED BY RWH

H-12

94-99 LTR

CODE: X031

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5.	N. D.	I-01-7(2)		7	29



PLAN

ELEVATION

NOTES

All concrete shall be class A-1½ and shall be compacted by vibration.

Exposed edges of concrete shall be beveled with a ¾" triangular molding unless otherwise noted.

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

The cost of furnishing and placing the premolded expansion joint filler, drain pipes, and other incidentals shall be included in the unit price bid for Class A-1½ concrete.

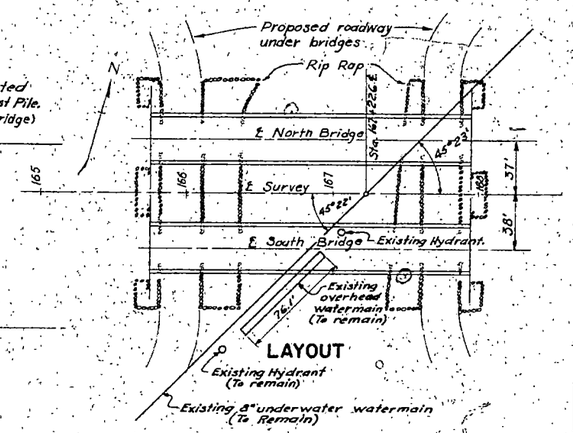
The surface of railing end posts, curb face, and all exposed vertical faces of the superstructure and substructure above the low water line shall be given the "Rubbed Surface Finish". All other surfaces shall be given the "Ordinary Surface Finish".

Loose Rock Rip Rap shall be placed by the grading contractor and shall be measured and paid for as "Loose Rock Rip Rap". Any excavation required for placing "Loose Rock Rip Rap" shall be incidental to the item "Loose Rock Rip Rap".

The bar fabricator shall add a prefix to each bar designation to differentiate between structures and/or units of a structure on the project.

EXISTING WATERMAIN
(UNDERGROUND & OVERHEAD)

The existing underground and overhead river crossing of the 8" watermain to the State Hospital is to remain in place. Howeve the contractor shall determine the location of the existing 8" underground water main within the area of the proposed bridge locations before starting any substructure operations. He will make certain that his coffer-dam and timber piling operations will not damage the existing underground water main. Any damage to the underground and overhead water main resulting from his (Contractor) operations shall be repaired by him at his own expense and to the satisfaction of the North Dakota State Health Department.



LAYOUT

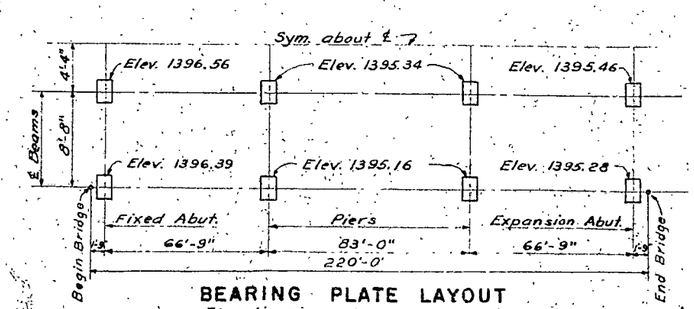
ESTIMATE OF QUANTITIES (TWO BRIDGES)

SPEC. NO.	BID ITEM			
12	REMOVING EXISTING STRUCTURE AT STA.			
15	EXCAVATION CLASS 1			
	" CLASS 2		550	CU. YD.
	" CLASS 3		660	CU. YD.
60A	CONCRETE CLASS A-1			CU. YD.
	" CLASS A-1½		1167.4	CU. YD.
62A	REINFORCING STEEL		184,716	LB.
63	STRUCTURAL STEEL		309,794	LB.
64A	UNTREATED TIMBER			M.F.B.M.
64B	TREATED TIMBER			M.F.B.M.
65A	UNTREATED TIMBER PILING	80 @ 30 FT.	2240	LIN. FT.
65B	TREATED TIMBER PILING	142 @ 30 FT.	3976	LIN. FT.
65K	UNTREATED TIMBER TEST PILES	40' Long	2	EACH
65L	TREATED TIMBER TEST PILES	40' Long	2	EACH
81	TEMPORARY CROSSING AND DETOUR		LS	
	Ornamental Metal Railing		416	LIN. FT.
	Loose Rock Rip Rap (Grading Item)		935	CU. YD.

STRUCTURAL DRAWINGS

GENERAL DRAWING	(This sheet)
SUBSTRUCTURE	H-1240; H-1241; H-1319; H-1320
SUPERSTRUCTURE	H-1131, H-1132 & H-0101

DESIGN LOADING	SCALE
H20 S16	1 INCH = 15 FEET



BEARING PLATE LAYOUT

Elevations are to top of Concrete (Both Bridges the Same)

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
24	Iron Mon.& Hub by Ir. F.P.	Sta. 163+88-39' Rt.	1386.79
25	Spot on Bridge Abut.	Sta. 166+51-89.2 Rt.	1387.09
26	Spot on Conc. Step	Sta. 169+29-213 Lt.	1388.90

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	LONG. FORCE	ICE	FRICTION	DESIGN LOAD
Abutments										
* Toe	+16.49	+ 4.09	+18.42	—	—	—	—	—	—	18.39 Ton
** Heel	+17.06	+ 4.28	- 2.99	—	—	—	—	—	—	18.35 Ton
Pier No.2	8.75	4.22	2.62	3.98	1.20	0.84	3.33	2.15	1.91	18.36 Ton
Pier No.3	8.75	4.44	3.10	3.74	1.12	0.80	3.08	1.69	1.77	18.47 Ton
	*	Horizontal Earth Pressure 40#/sq. ft.								
	**	" " " 20#/sq. ft.								

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
JAMES RIVER
BRIDGE LAYOUT

PROJECT I-01-7(2) STA. 166+85

STUTSMAN COUNTY

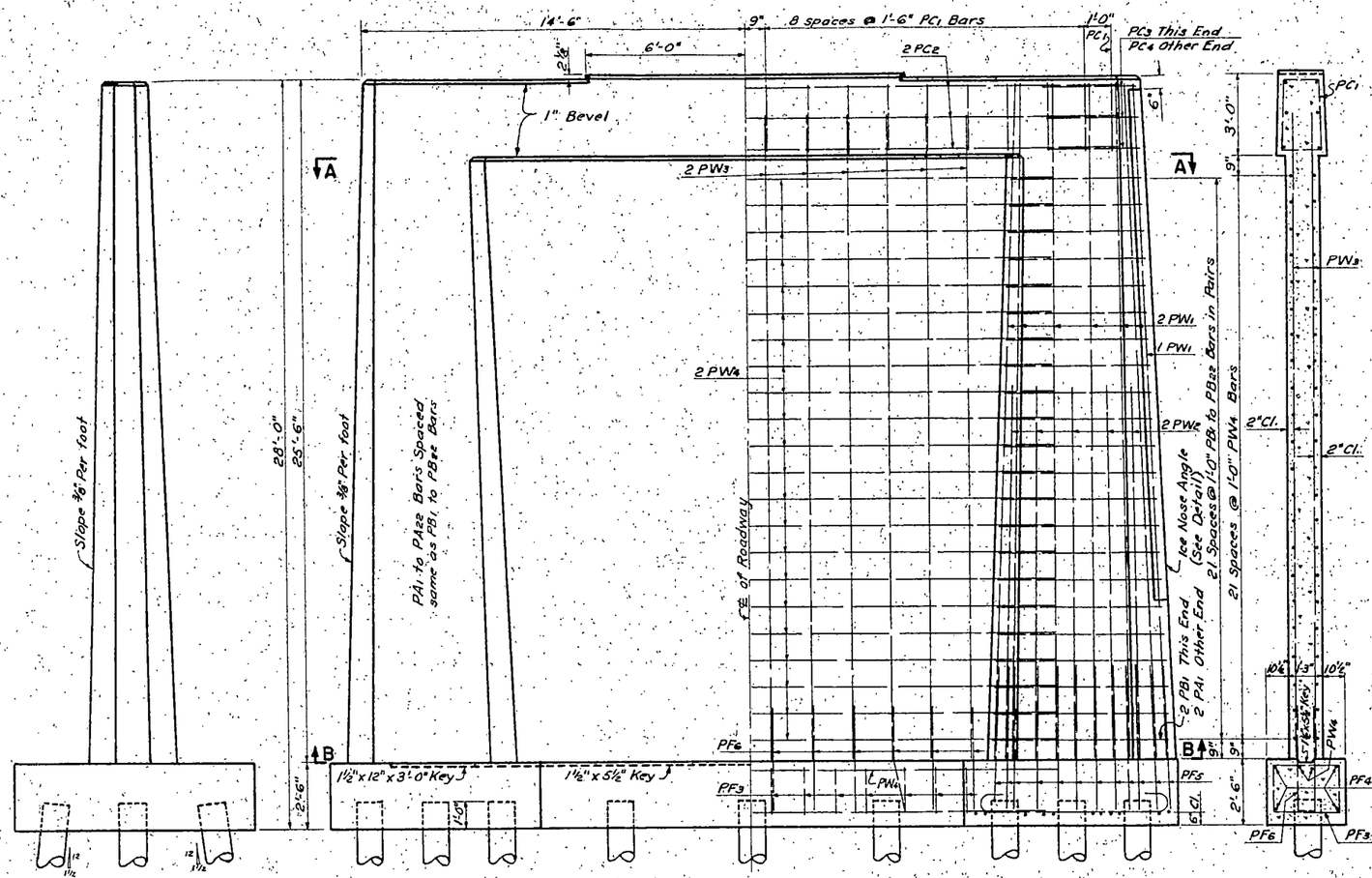
APPROVED

Oct. 24, 1956 Joseph R. Kirby
DATE BRIDGE ENGINEER

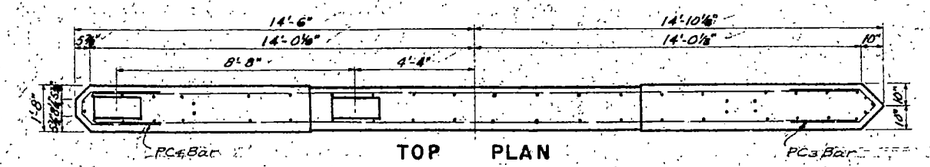
X004

DETAILS | ADDING | ALTERATIONS
MADE BY | CHECKED BY | MADE BY | CHECKED BY | MADE BY | CHECKED BY

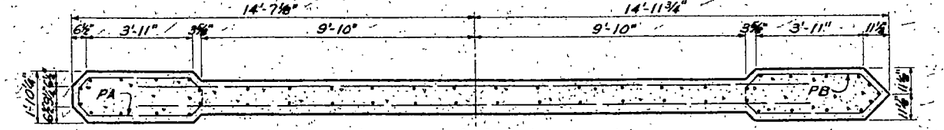
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				



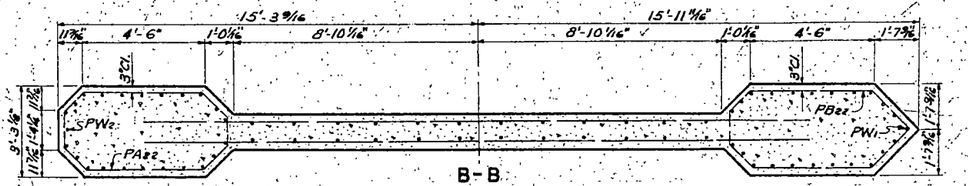
END VIEW — ELEVATION — SECTION ON ℄



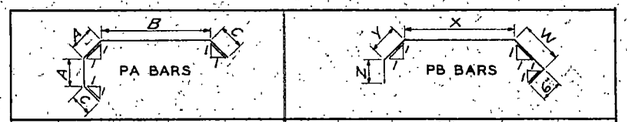
TOP PLAN



A-A



B-B

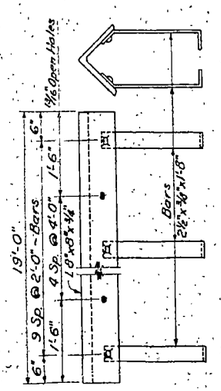


MARK	A	B	C	LENGTH
PA1	1'-1½"	3'-11½"	1'-0¼"	8'-3"
PA2	1'-1⅛"	3'-11⅛"	1'-0⅝"	8'-3"
PA3	1'-0⅞"	3'-10⅞"	0'-11½"	8'-0"
PA4	1'-0⅝"	3'-10⅝"	1'-0⅛"	8'-0"
PA5	1'-0½"	3'-10½"	0'-9⅝"	7'-6"
PA6	1'-0"	3'-10"	0'-10"	7'-6"
PA7	0'-11⅝"	3'-9⅝"	0'-10⅝"	7'-6"
PA8	0'-11⅜"	3'-9⅜"	0'-9⅞"	7'-3"
PA9	0'-11"	3'-9"	0'-8½"	7'-0"
PA10	0'-10⅞"	3'-8⅞"	0'-8⅞"	7'-0"
PA11	0'-10⅝"	3'-8⅝"	0'-7½"	6'-9"
PA12	0'-10⅛"	3'-8⅛"	0'-8⅛"	6'-9"
PA13	0'-9¾"	3'-7¾"	0'-8⅛"	6'-9"
PA14	0'-9½"	3'-7½"	0'-7¾"	6'-6"
PA15	0'-9⅛"	3'-7⅛"	0'-7⅜"	6'-4"
PA16	0'-8⅞"	3'-6⅞"	0'-7⅜"	6'-3"
PA17	0'-8½"	3'-6½"	0'-7¼"	6'-3"
PA18	0'-8⅛"	3'-6⅛"	0'-6⅞"	6'-0"
PA19	0'-7⅞"	3'-5⅞"	0'-7⅜"	6'-0"
PA20	0'-7⅝"	3'-5⅝"	0'-6⅞"	5'-9"
PA21	0'-7¼"	3'-5¼"	0'-6⅞"	5'-8"
PA22	0'-7"	3'-5"	0'-6"	5'-7"
Total length one set				150'-10"

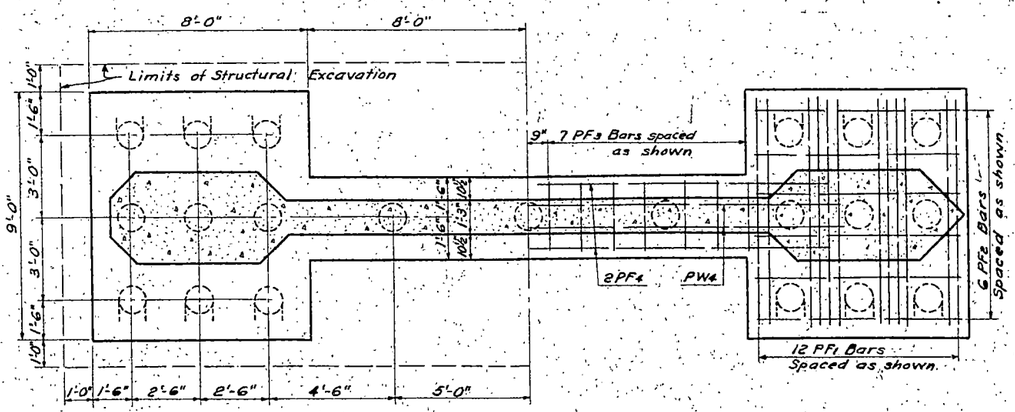
MARK	W	X	Y	Z	LENGTH
PB1	1'-1⅛"	3'-11½"	1'-1½"	0'-11⅞"	8'-6"
PB2	1'-10½"	3'-11½"	1'-1½"	0'-11"	8'-4"
PB3	1'-10"	3'-10⅞"	1'-0⅞"	0'-11½"	8'-3"
PB4	1'-9½"	3'-10⅝"	1'-0⅝"	0'-9¼"	8'-0"
PB5	1'-9"	3'-10¼"	1'-0¼"	0'-10½"	8'-0"
PB6	1'-8⅛"	3'-10"	1'-0"	0'-8⅝"	7'-9"
PB7	1'-7⅞"	3'-9⅝"	0'-11⅝"	0'-9⅜"	7'-9"
PB8	1'-7¾"	3'-9⅜"	0'-11⅛"	0'-9⅞"	7'-8"
PB9	1'-6¾"	3'-9"	0'-11"	0'-7¼"	7'-4"
PB10	1'-6½"	3'-8¾"	0'-10¾"	0'-7¼"	7'-3"
PB11	1'-5¾"	3'-8⅜"	0'-10⅛"	0'-8½"	7'-3"
PB12	1'-5¼"	3'-8⅛"	0'-10⅛"	0'-6½"	7'-0"
PB13	1'-4⅝"	3'-7¾"	0'-9¾"	0'-7⅜"	7'-0"
PB14	1'-4⅛"	3'-7½"	0'-9½"	0'-8⅜"	7'-0"
PB15	1'-3⅝"	3'-7⅛"	0'-9⅛"	0'-6⅛"	6'-8"
PB16	1'-3⅛"	3'-6⅝"	0'-8⅝"	0'-8⅛"	6'-9"
PB17	1'-2½"	3'-6½"	0'-8½"	0'-6½"	6'-6"
PB18	1'-2"	3'-6¼"	0'-8¼"	0'-7½"	6'-6"
PB19	1'-1½"	3'-5⅞"	0'-7⅞"	0'-5¾"	6'-3"
PB20	1'-0⅞"	3'-5⅝"	0'-7⅝"	0'-6⅛"	6'-3"
PB21	1'-0⅛"	3'-5¼"	0'-7¼"	0'-5¼"	6'-0"
PB22	0'-11⅛"	3'-5"	0'-7"	0'-6⅛"	5'-11"
Total length one set					157'-11"

BAR LIST

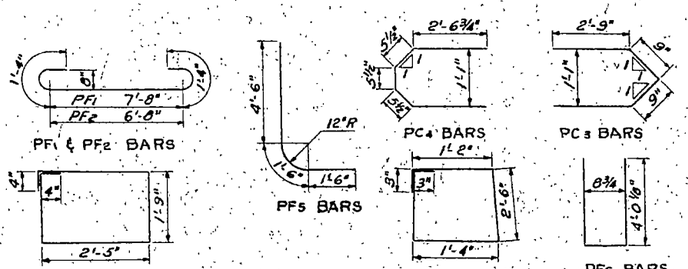
MARK	NO.	SIZE	LENGTH	SHAPE
PA1 to PA22	2 Sets	5/8"ϕ	150'-10"	Bent
PB1 to PB22	2 Sets	5/8"ϕ	157'-11"	Bent
PC1	20	5/8"ϕ	8'-0"	Bent
PC2	6	1"ϕ	27'-6"	Str.
PC3	3	3/4"ϕ	7'-0"	Bent
PC4	3	3/4"ϕ	6'-6"	Bent
PF1	24	1"ϕ	10'-4"	Bent
PF2	12	1"ϕ	9'-4"	Bent
PF3	14	5/8"ϕ	9'-0"	Bent
PF4	4	1"ϕ	22'-0"	Str.
PF5	46	1"ϕ	7'-6"	Bent
PF6	12	5/8"ϕ	8'-9"	Bent
PW1	25	1"ϕ	25'-0"	Str.
PW2	21	1"ϕ	14'-0"	Str.
PW3	24	5/8"ϕ	24'-6"	Str.
PW4	46	5/8"	23'-0"	Str.



ICE NOSE ANGLE



FOOTING PLAN
Dowel Bars not shown



BENT BAR DETAILS

QUANTITIES

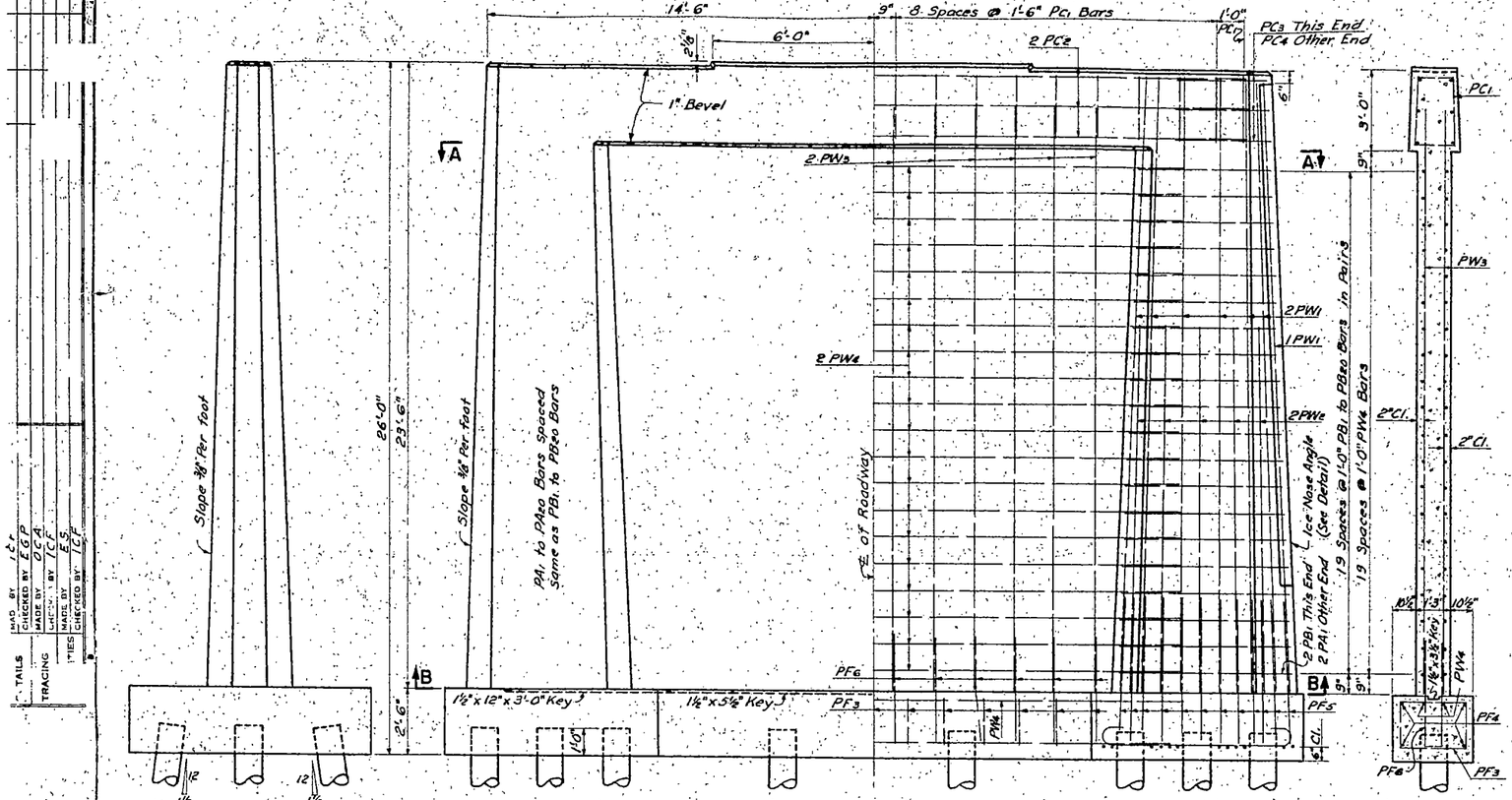
Concrete Class A-1½"	65.1 Cu. Yd.
Reinforcing Steel	7842 Lbs.
Structural Steel	865 Lbs.
Piling (See Layout)	
Excavation (See Layout)	

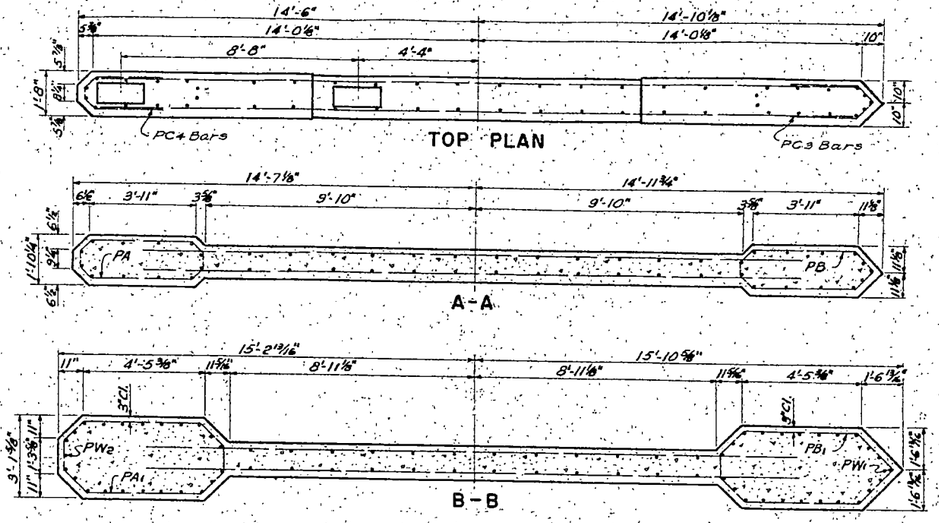
28' PIER DETAILS
FOR I BEAM SPANS
30' ROADWAY

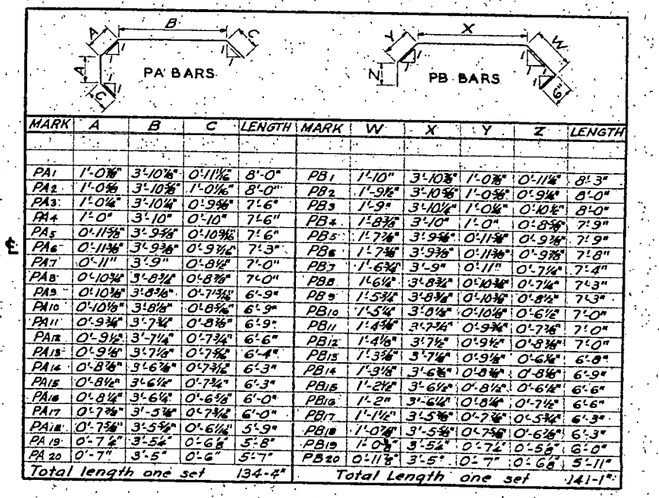
H-1319

H-13

FED. ROAD SECT. NO.	STATE	PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
3	N.D.				



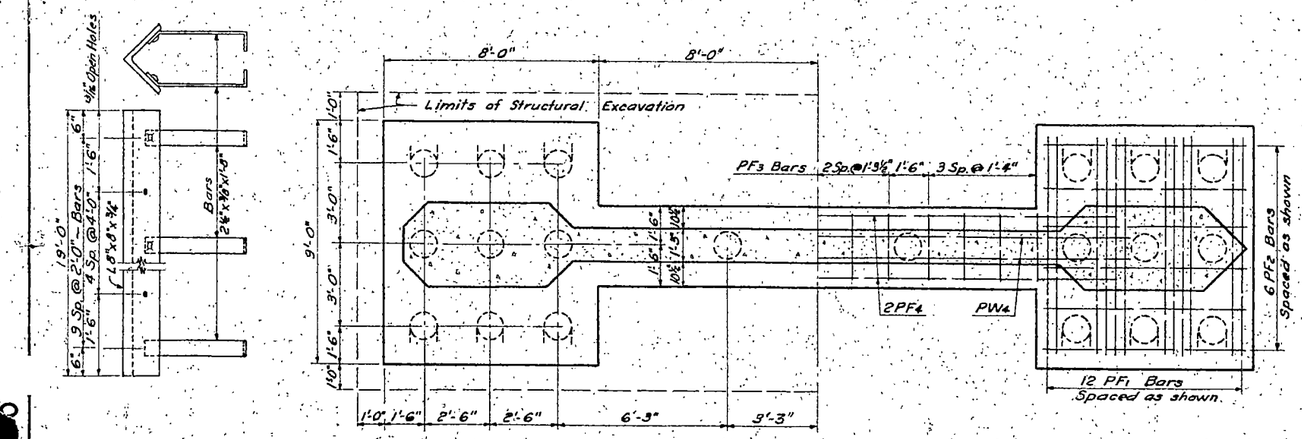




MARK	A	B	C	LENGTH	MARK	W	X	Y	Z	LENGTH
PA1	1'-0⅞"	3'-10⅞"	0'-11⅞"	8'-0"	PB1	1'-10"	3'-10⅜"	1'-0⅜"	0'-11⅛"	8'-3"
PA2	1'-0⅝"	3'-10⅜"	1'-0⅛"	8'-0"	PB2	1'-9⅞"	3'-10⅝"	1'-0⅝"	0'-9⅛"	8'-0"
PA3	1'-0¼"	3'-10¼"	0'-9⅝"	7'-6"	PB3	1'-9"	3'-10¼"	1'-0¼"	0'-10⅛"	8'-0"
PA4	1'-0"	3'-10"	0'-10"	7'-6"	PB4	1'-8⅜"	3'-10"	1'-0"	0'-8⅝"	7'-9"
PA5	0'-11⅝"	3'-9⅞"	0'-10⅜"	7'-6"	PB5	1'-7⅞"	3'-9⅝"	0'-11⅝"	0'-9⅜"	7'-9"
PA6	0'-11⅜"	3'-9⅜"	0'-9⅞"	7'-3"	PB6	1'-7⅜"	3'-9⅜"	0'-11⅜"	0'-9⅞"	7'-8"
PA7	0'-11"	3'-9"	0'-8½"	7'-0"	PB7	1'-6¾"	3'-9"	0'-11"	0'-7¾"	7'-4"
PA8	0'-10¾"	3'-8¾"	0'-8⅜"	7'-0"	PB8	1'-6½"	3'-8¾"	0'-10¾"	0'-7½"	7'-3"
PA9	0'-10⅜"	3'-8⅜"	0'-7¾"	6'-9"	PB9	1'-5¾"	3'-8⅜"	0'-10⅜"	0'-7¼"	7'-3"
PA10	0'-10⅛"	3'-8⅛"	0'-8⅛"	6'-9"	PB10	1'-5¼"	3'-8⅛"	0'-10⅛"	0'-6½"	7'-0"
PA11	0'-9¾"	3'-7¾"	0'-8⅛"	6'-9"	PB11	1'-4⅞"	3'-7¾"	0'-9⅞"	0'-7⅛"	7'-0"
PA12	0'-9½"	3'-7½"	0'-7¾"	6'-6"	PB12	1'-4½"	3'-7½"	0'-9½"	0'-6⅞"	7'-0"
PA13	0'-9⅛"	3'-7⅛"	0'-7⅜"	6'-4"	PB13	1'-3⅞"	3'-7⅛"	0'-9⅛"	0'-6½"	6'-8"
PA14	0'-8⅞"	3'-6⅞"	0'-7⅛"	6'-3"	PB14	1'-3⅛"	3'-6⅞"	0'-8⅞"	0'-6⅛"	6'-9"
PA15	0'-8½"	3'-6½"	0'-7¼"	6'-3"	PB15	1'-2½"	3'-6½"	0'-8½"	0'-5⅞"	6'-6"
PA16	0'-8¼"	3'-6¼"	0'-6⅞"	6'-0"	PB16	1'-2"	3'-6¼"	0'-8¼"	0'-7½"	6'-6"
PA17	0'-7⅞"	3'-5⅞"	0'-7⅜"	6'-0"	PB17	1'-1½"	3'-5⅞"	0'-7⅞"	0'-5¾"	6'-3"
PA18	0'-7⅜"	3'-5⅜"	0'-6⅞"	5'-9"	PB18	1'-0⅞"	3'-5⅜"	0'-7⅜"	0'-6⅛"	6'-3"
PA19	0'-7¼"	3'-5¼"	0'-6¾"	5'-8"	PB19	1'-0⅜"	3'-5¼"	0'-7¼"	0'-5⅞"	6'-0"
PA20	0'-7"	3'-5"	0'-6"	5'-7"	PB20	0'-11⅞"	3'-5"	0'-7"	0'-6⅛"	5'-11"
Total length one set				134'-4"	Total Length one set					141'-1"

BAR LIST

MARK	NO.	SIZE	LENGTH	SHAPE
PA1 to PA20	2 Sets	5/8"ϕ	134'-4"	Bent
PB1 to PB20	2 Sets	5/8"ϕ	141'-1"	Bent
PC1	20	5/8"ϕ	8'-0"	Bent
PC2	6	1"ϕ	27'-6"	Str.
PC3	3	3/4"ϕ	7'-0"	Bent
PC4	3	3/4"ϕ	6'-6"	Bent
PF1	24	1"ϕ	10'-4"	Bent
PF2	12	1"ϕ	9'-4"	Bent
PF3	13	5/8"ϕ	9'-0"	Bent
PF4	4	1"ϕ	22'-3"	Str.
PF5	46	1"ϕ	7'-6"	Bent
PF6	12	5/8"ϕ	8'-9"	Bent
PW1	25	1"ϕ	23'-0"	Str.
PW2	21	1"ϕ	13'-9"	Str.
PW3	24	5/8"ϕ	22'-6"	Str.
PW4	42	5/8"ϕ	23'-0"	Str.



QUANTITIES

Concrete Class A-1½	60.8 Cu.Yd.
Reinforcing Steel	7472 Lb.
Structural Steel	865 Lb.
Piling (See Layout)	
Excavation (See Layout)	

26' PIER DETAILS

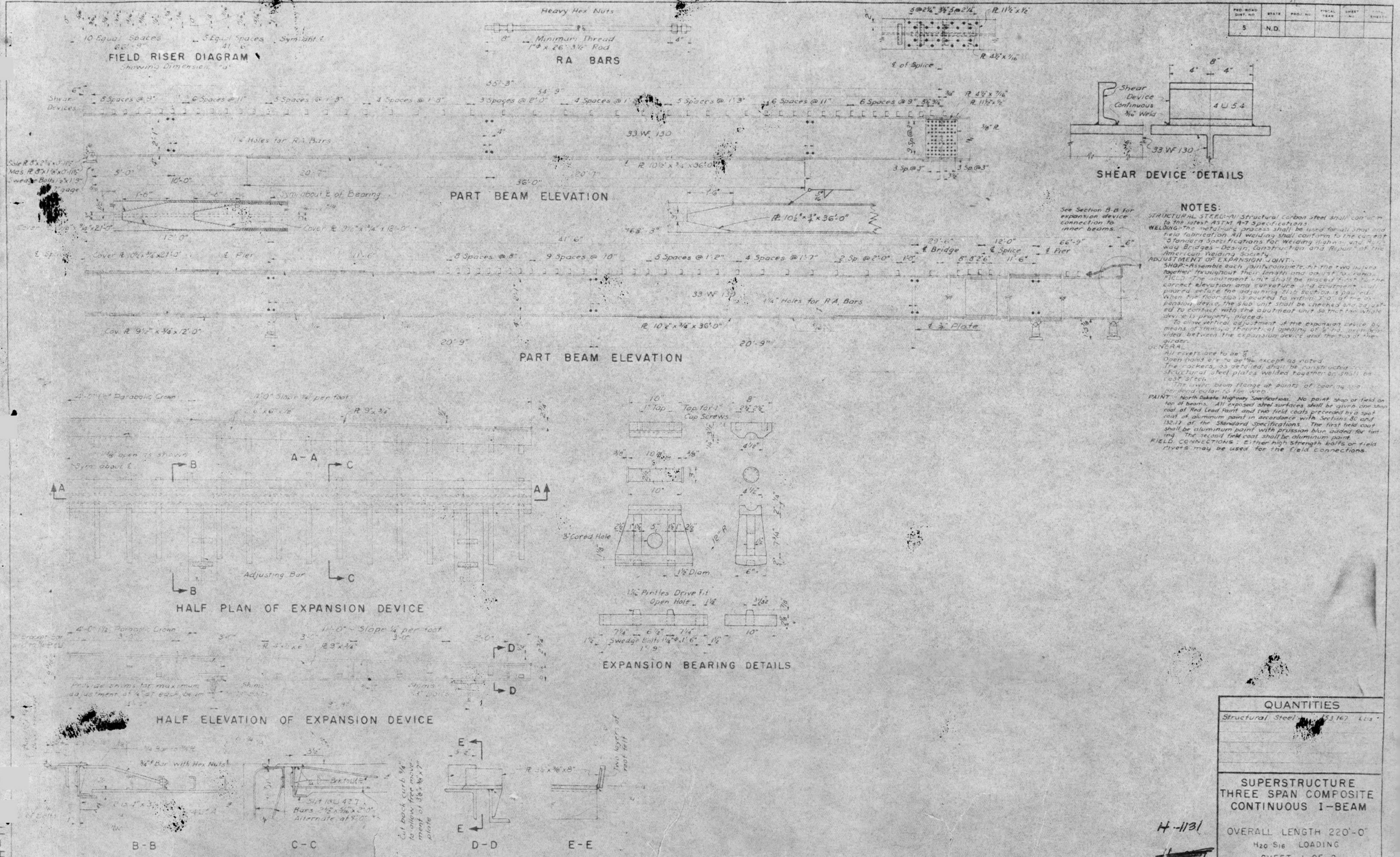
FOR I BEAM SPANS

30' ROADWAY

H-1320

H-1320

PRO. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				



NOTES:

STRUCTURAL STEEL:-All Structural carbon steel shall conform to the latest ASTM A-7 Specifications.

WELDING:-The metallic arc process shall be used for all shop and field fabrication. All welding shall conform to the current "Standard Specifications for Welding Highway and Railroad Bridges - Design, Construction and Repair" of the American Welding Society.

ADJUSTMENT OF EXPANSION JOINT:-

SHOP:-Assemble each joint complete, at the two halves together throughout their length and adjust to ranges.

FIELD:-The abutment unit shall be placed first to the correct elevation and correctness and alignment shall be poured before the adjoining slab section is poured. When the floor slab is poured to within 3' of the expansion device, the slab unit shall be checked and adjusted to contact with the abutment unit so that the whole device is properly placed.

To allow vertical adjustment of the expansion device by means of shims, a theoretical opening of ½" has been provided between the expansion device and the top of the girder.

GENERAL:

All rivets are to be ¾".

Open holes are to be 1⅛" except as noted.

The rockers, as detailed, shall be constructed of structural steel plates welded together or shall be cast steel.

The lower beam flange at points of bearing shall be ground clean to the web.

PAINT:-North Dakota Highway Specifications. No paint shop or field on top of beams. All exposed steel surfaces shall be given one shop coat of Red Lead Paint and two field coats preceded by a spot coat of aluminum paint in accordance with Sections 80 and 132.17 of the Standard Specifications. The first field coat shall be aluminum paint with prussian blue added for tinting. The second field coat shall be aluminum paint.

FIELD CONNECTIONS:- Either high strength bolts or field rivets may be used for the field connections.

QUANTITIES
Structural Steel [illegible] 53,167 Lbs.

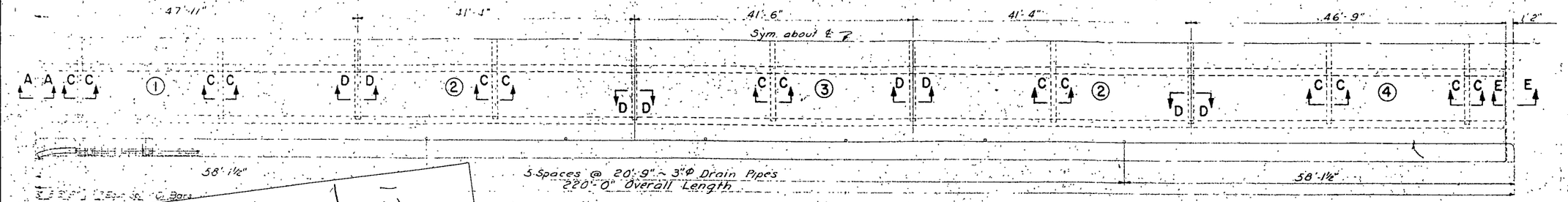
SUPERSTRUCTURE
THREE SPAN COMPOSITE
CONTINUOUS I-BEAM

OVERALL LENGTH 220'-0"
H_{20} S_{16} LOADING
SHEET 1 OF 2

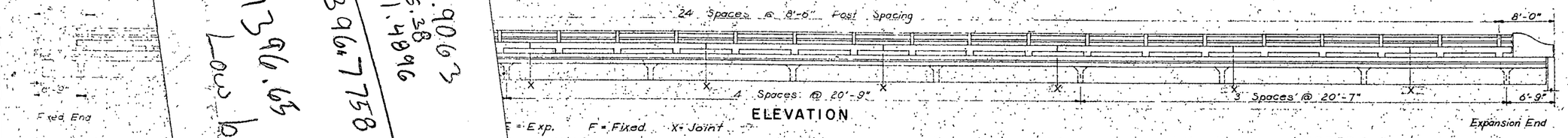
H-1131

H-11

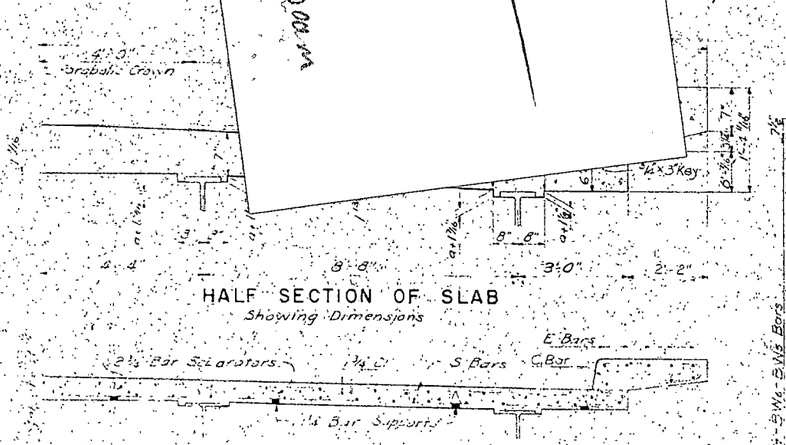
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				



HALF PLAN

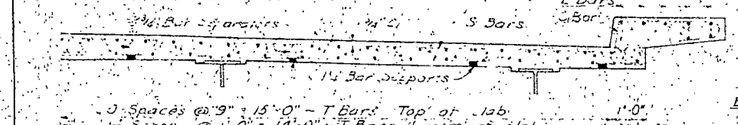


ELEVATION

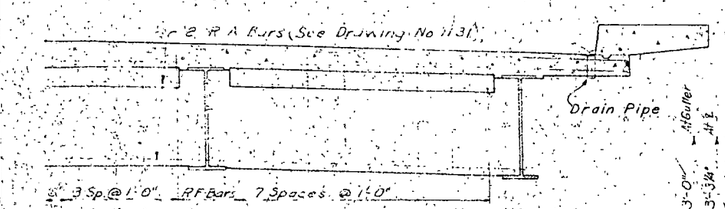


HALF SECTION OF SLAB
Showing Dimensions

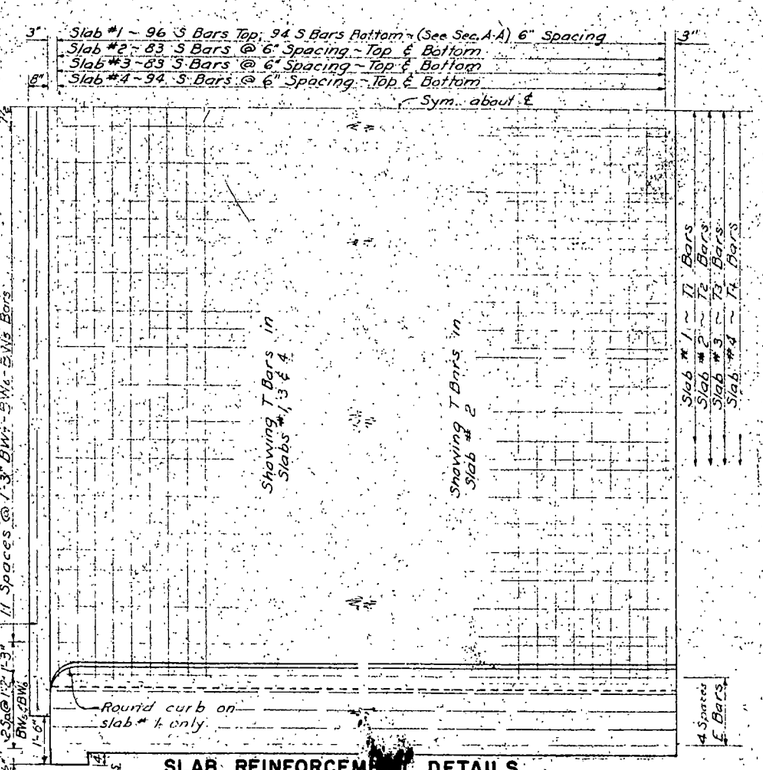
HALF SECTION OF SLAB



HALF SECTION OF SLAB
Showing Reinforcement for Slab Pier Bents



HALF SECTION OF SLAB
Showing Diaphragm



SLAB REINFORCEMENT DETAILS

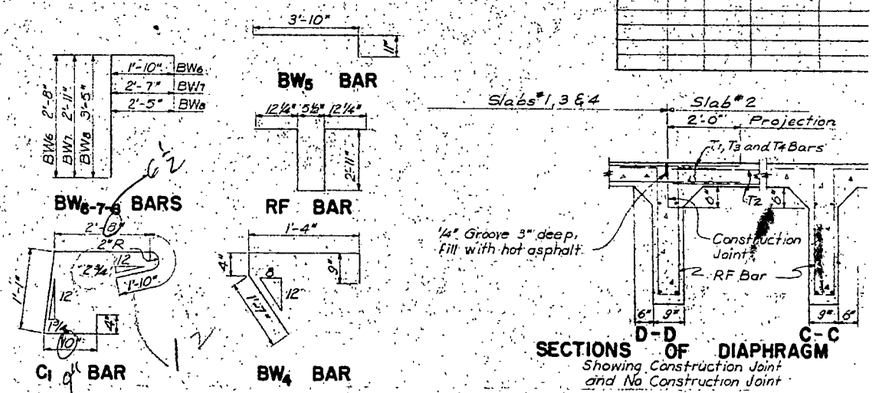
NOTES

The Slab shall be poured in the following sequence:
1. Slab Sections 1 & 4.
2. Slab Section 3.
3. Slab Sections 2 over the piers.

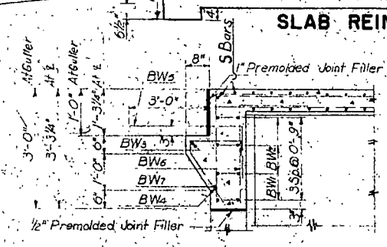
Each curb shall be placed in one continuous operation.
Each railing base shall be placed in one continuous operation.
Railing base and end posts shall be class A-1½ Concrete.
Bevel all exposed edges with ¾" Triangular molding except as shown.
For railing details and R Bars see Dra... Plan.

BAR LIST FOR ENTIRE FLOOR SLAB & RAILING

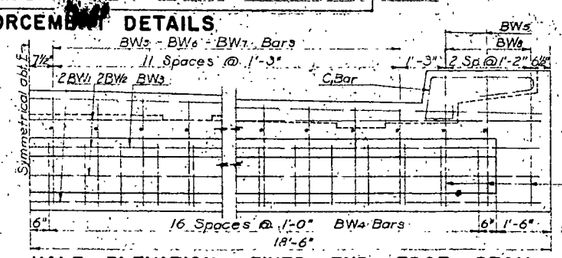
MARK	No.	SIZE	LENGTH	SHAPE
BW1	2	⅝"⌀	36'-6"	Str.
BW2	6	½"⌀	36'-6"	"
BW3	1	⅝"⌀	33'-6"	"
BW4	34	½"⌀	4'-0"	Bent
BW5	28	½"⌀	4'-9"	"
BW6	24	⅝"⌀	4'-6"	"
BW7	24	⅝"⌀	5'-6"	"
BW8	12	⅝"⌀	5'-10"	"
C1	320	⅝"⌀	6'-9"	Bent
E	84	¾"⌀	38'-0"	Str.
R1	150	½"⌀	6'-2"	Bent
R2	392	⅝"⌀	2'-8"	"
R3	16	⅝"⌀	14'-3"	Str.
R4	56	⅝"⌀	25'-0"	"
RF	264	½"⌀	8'-4"	Bent
S	876	⅝"⌀	31'-8"	Str.
T1	106	½"⌀	25'-9"	Str.
T2	292	⅝"⌀	27'-9"	"
T3	106	½"⌀	23'-6"	"
T4	106	½"⌀	25'-3"	"



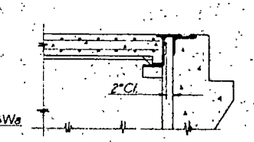
BENT BAR DETAILS



SECTION AT FIXED END (A-A)



HALF ELEVATION - FIXED END EDGE BEAM



SECTION AT EXP. END
E-E

QUANTITIES

Concrete Class A-1	
Concrete Class A-1½	237.6 C.Y.
Reinforcing Steel	54,858 L
Ornamental Metal Railing	416 L

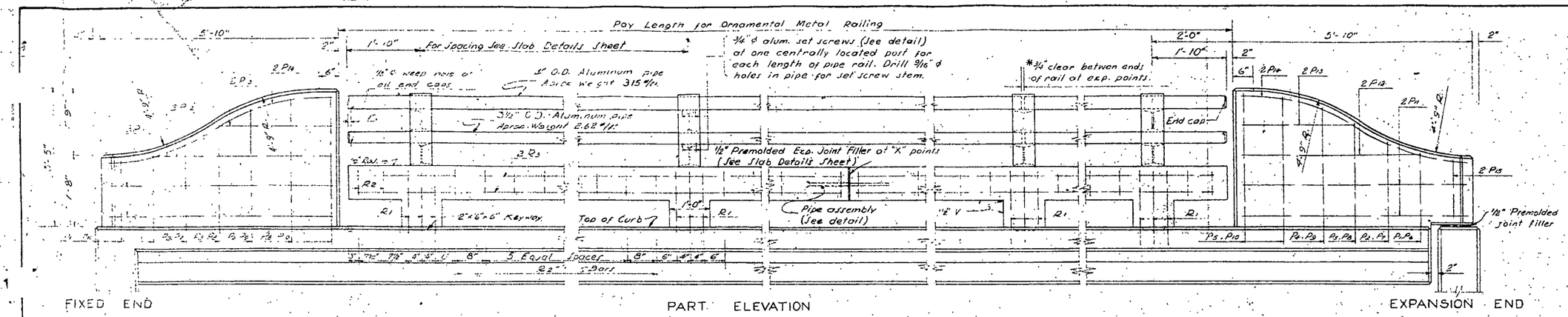
SUPERSTRUCTURE
THREE SPAN COMPOSITE
CONTINUOUS I-BEAM

OVERALL LENGTH 220'-0"
H_{20} S_{16} LOADING
SHEET 2 OF 2

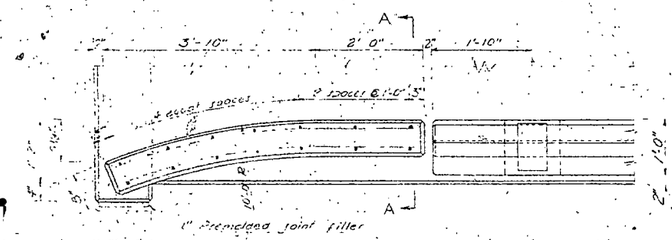
H-1132

19.9063
1375.38
1.4896
1396.7758
1396.63
Low bar

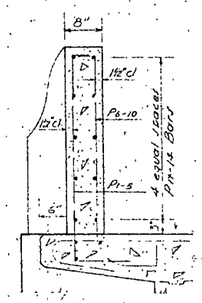
FED. AID DIV. NO	STATE	FED. AID PROJECT NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				



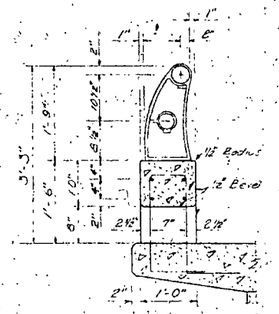
*Each section of pipe rail shall project through, or into, at least three and preferably four posts.



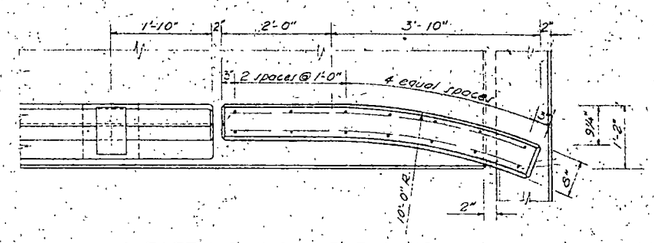
PART PLAN - FIXED END



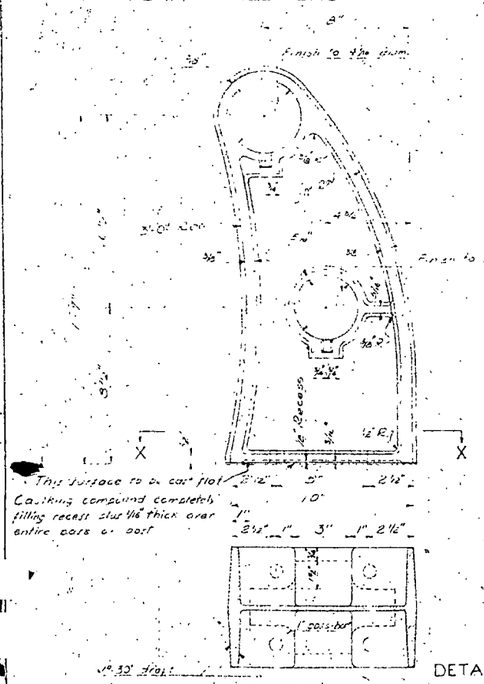
SECTION A-A



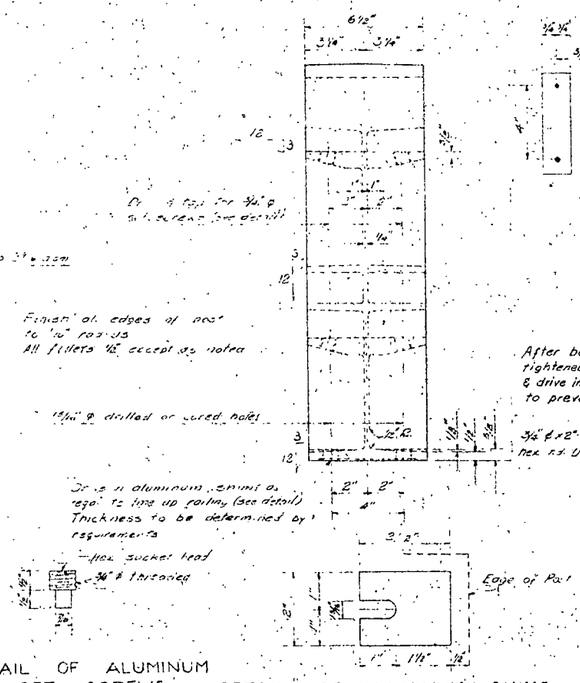
TYPICAL SECTION



PART PLAN - EXPANSION END



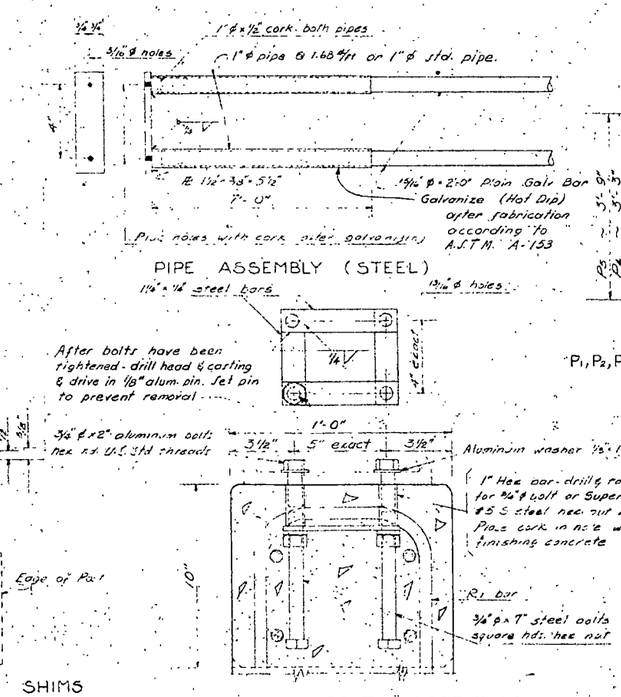
SECTION X-X



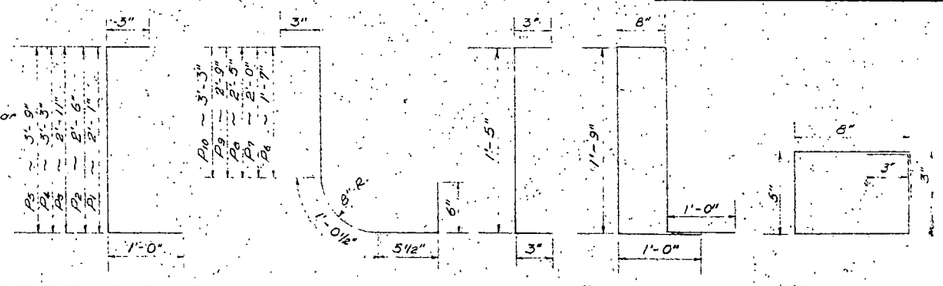
DETAIL OF ALUMINUM SET SCREWS

DETAIL OF ALUMINUM SHIMS

RAIL POST DETAILS

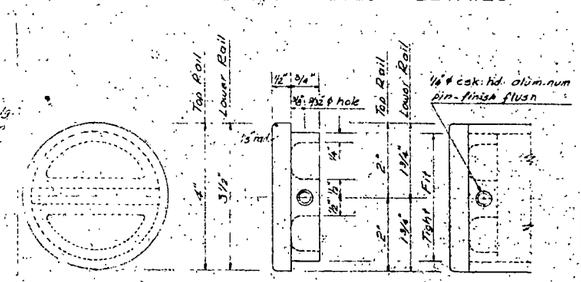


ANCHOR BOLT ASSEMBLY



P1, P2, P3, P4 & P5 BARS — P6, P7, P8, P9 & P10 BARS — P11 BARS — R1 BARS — R2 BARS

BENT BAR DETAILS



CAST ALUMINUM END CAP FOR RAIL

NOTES

Rail posts shall be aluminum alloy sand or permanent mold castings 356-T6, alloy SG70A condition T6. Sand castings shall conform to A.S.T.M. Spec. B 108.

Rail pipe to be aluminum alloy tube 6061-T6 conforming to A.S.T.M. Spec. B 210-55T, alloy GS11A condition T6. Mill finish.

Bolts and screws to be aluminum alloy 2024-T4 with No. 205 alumilite finish conforming to A.S.T.M. Spec. B 211-55T alloy QS42A condition T4.

Pins shall conform to A.S.T.M. Spec. B 211-55T, alloy GS11A condition T6.

All aluminum castings shall be finished by grinding off the gates and parting lines followed by sand blasting and one coat of clear lacquer.

The bottom of rail posts in contact with concrete shall be coated with "Alumalastic Compound" as manufactured by the Parr Paint and Color Company of Cleveland, Ohio, or approved equal (knife grade). Excess compound shall be neatly removed after the posts are bolted into final position.

All posts shall be set normal to grade.

All pipe, rail posts, anchor bolt assemblies, bolts, pipe assemblies with 15/16" ø x 2'-0" galvanized plain bars, screws, shims, pins, end caps and compound shall be included in the price bid for Ornamental Metal Railing.

All concrete in the railing base and end posts shall be Class "A".

BAR LIST
(4 END POSTS)

MARK	No.	SIZE	LENGTH	SHAPE
P1	6	5/8" ø	3'-4"	Bent
P2	4	"	3'-9"	"
P3	4	"	4'-2"	"
P4	4	"	4'-6"	"
P5	8	"	5'-0"	"
P6	6	"	3'-10"	"
P7	4	"	4'-3"	"
P8	4	"	4'-8"	"
P9	4	"	5'-0"	"
P10	8	"	5'-6"	"
P11	16	1/2" ø	5'-6"	Field Bent
P12	8	"	4'-3"	"
P13	8	"	2'-9"	"
P14	8	5/8" ø	6'-0"	"
P15	4	5/8" ø	1'-11"	Bent

QUANTITIES FOR 4 END POSTS
Concrete, Class A 1.5 C.Y.
Reinforcing Steel 307.0 lbs

NOTES:
End posts and concrete railing base shall be given the "Rubbed Surface Finish".
R bars will be called for on slab details sheet.
Railing end posts & concrete railing base quantities are included in slab quantities on slab sheet.

STANDARD RAILING DETAILS

H-0101

H-0101