

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED  
**PROJECT 183-391**  
**US HIGHWAY 183**  
**LYMAN COUNTY**

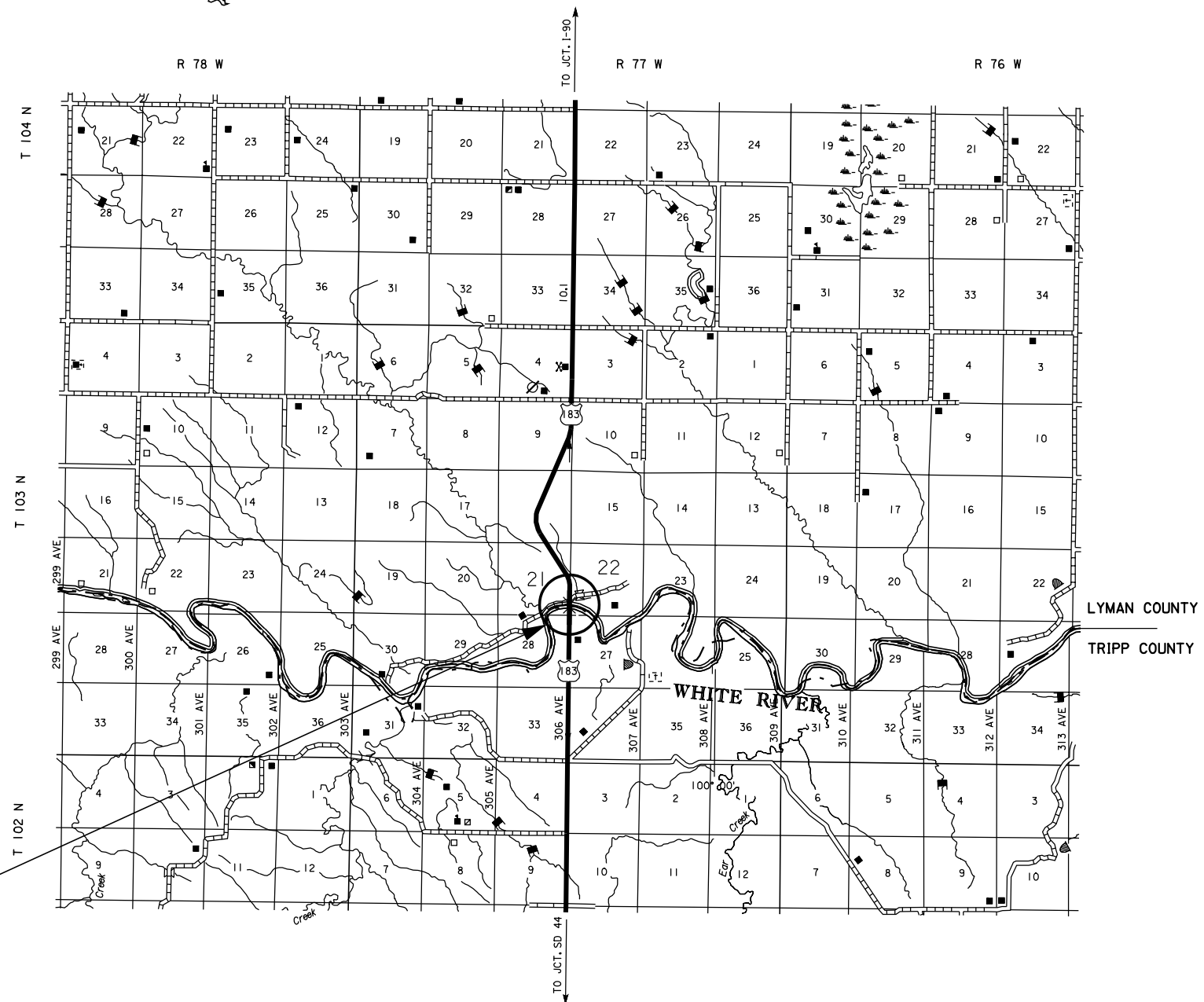
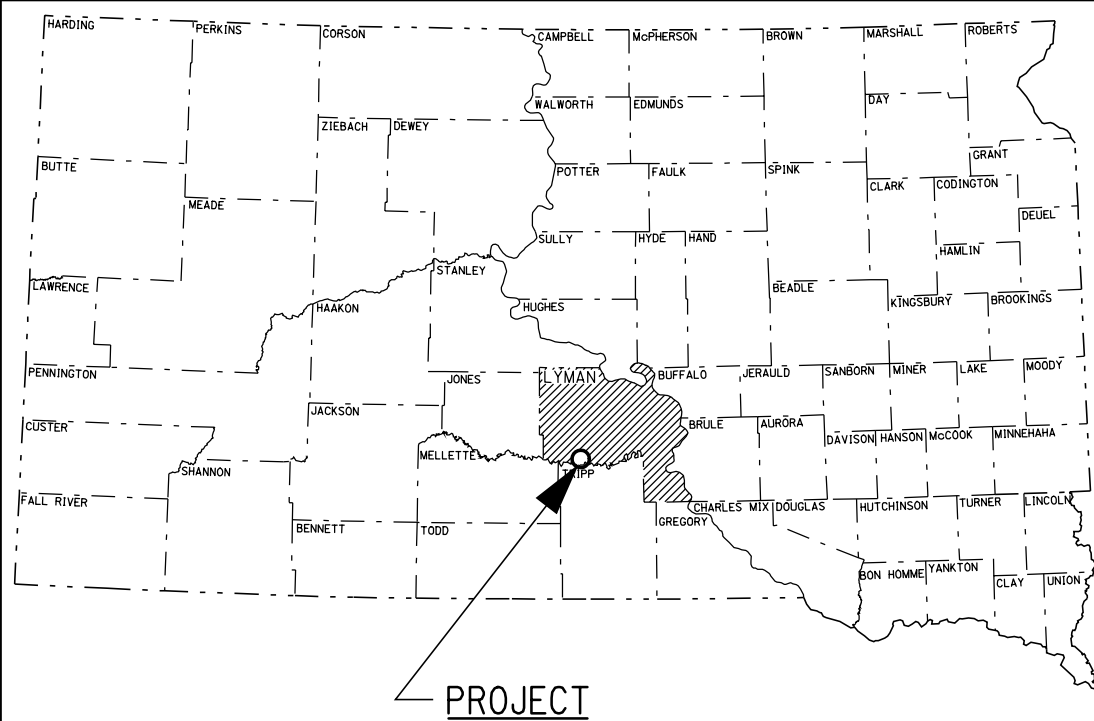
BRIDGE RAIL AND CURB REPAIR  
PCN IIBI

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
s.d.	183-391	1	12



INDEX OF SHEETS

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	ESTIMATE OF QUANTITIES
SHEET NOS. 3 & 4	NOTES AND TRAFFIC CONTROL
SHEET NOS. 5 - 12	LAYOUT FOR BRIDGE REPAIR FOR STRUCTURE NO. 43-160-339



DESIGN DESIGNATION

STR. NO. 43-160-339 (MRM 61.53):	
ADT (2007)	460
ADT (2027)	755
DHV	115
D	50%
T DHV	12.1%
T ADT	26.5%
V	65

STR. NO. 43-160-339  
MRM 61.53  
0.082 MILE = 433.2 FEET

# ESTIMATE OF QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	183-391	2	12

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0020	Remove Bridge Railing	25	Ft
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
412E0200	Rail Repainting	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.3	CuYd
460E0300	Breakout Structural Concrete	0.3	CuYd
630E0210	Straight Class B Thrie Beam Rail	25.0	Ft
634E0010	Flagging	20	Hour
634E0100	Traffic Control	406	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0610	4" Temporary Pavement Marking Tape Type 2	2,544	Ft

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	183-391	3	12

**SPECIFICATIONS**

South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

**SEQUENCE OF OPERATIONS**

The Contractor shall submit his proposed sequence of operations for the Engineers approval at least one week prior to the preconstruction meeting.

Traffic shall be maintained through the project at ALL times.

**GENERAL MAINTENANCE OF TRAFFIC**

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

All breakaway sign supports shall comply with FHWA NCHRP 350 crash-worthy requirements. The Contractor shall provide post installation details at the preconstruction meeting for all steel post breakaway sign support assemblies.

**TEMPORARY PAVEMENT MARKING**

Pavement marking tape, Type 2, shall be used for all stop bars and lane lines. Approximately 2,400 feet of 4 inch yellow and 144 feet of 4 inch white (24" stop bar reduced to 4" equivalent). The Contractor will be paid only once for tape placement. The Contractor is responsible for maintaining and cleaning the tape throughout the duration of the project. The Contractor is responsible for the removal of all temporary pavement marking tape when it is no longer required.

**TEMPORARY PAVEMENT MARKING, Continued**

Temporary pavement markings shall be as per the Standard Specifications.

**WASTE DISPOSAL SITE**

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

**WASTE DISPOSAL SITE, Continued**

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13 and ARSD 74:27:10:06.

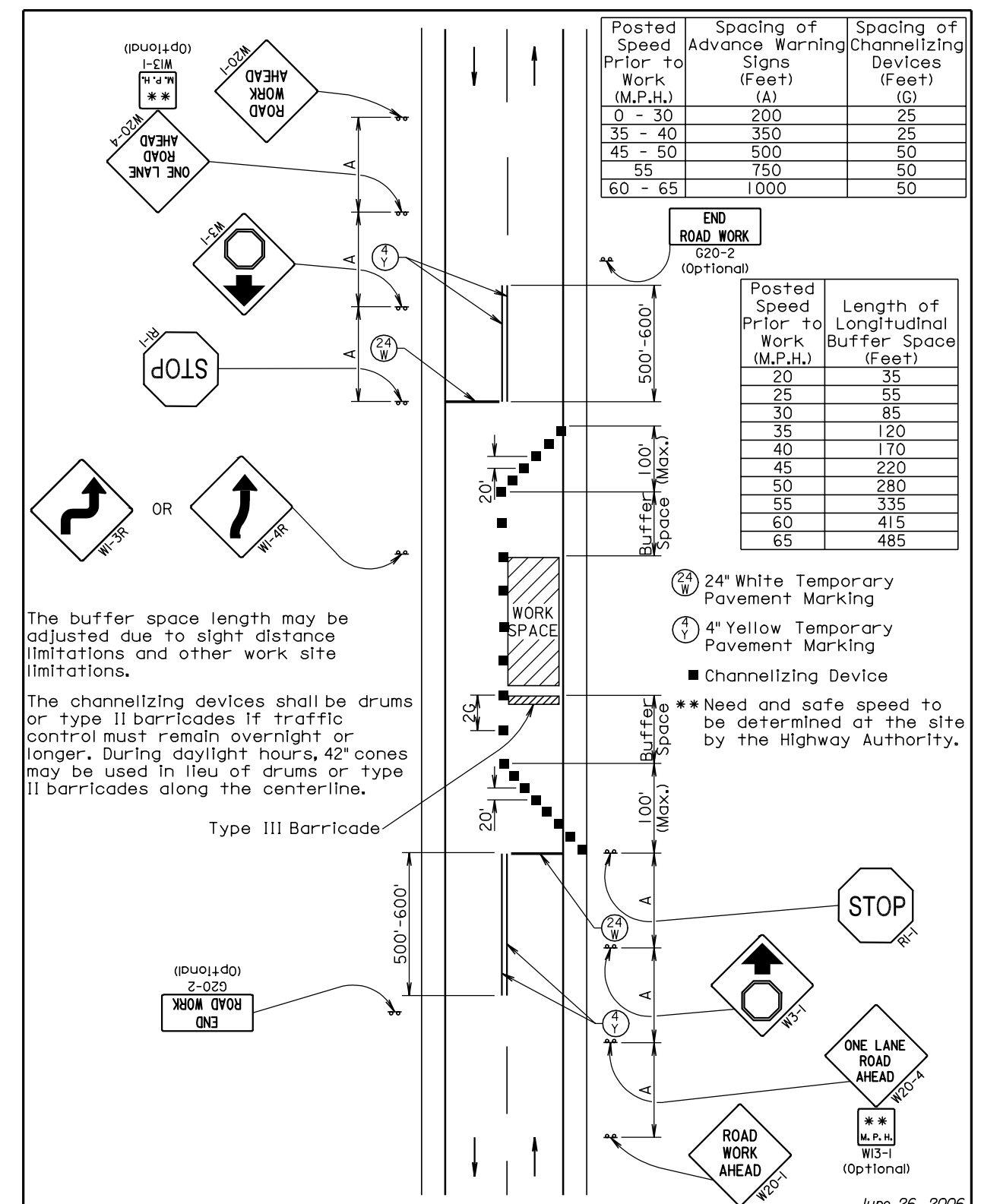
Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

**ITEMIZED LIST FOR TRAFFIC CONTROL**

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2A	36" x 18"	END ROAD WORK	2	17	34
R1-1	48" x 48"	STOP	2	34	68
W1-4a	48" x 48"	REVERSE CURVE SIGN (LEFT OR RIGHT)	1	34	34
W3-1A	48" x 48"	STOP AHEAD (SYMBOL)	2	34	68
W13-1	24" x 24"	ADVISORY SPEED PLATE	2	16	32
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD #### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	1	34	34
<b>TOTAL UNITS</b>					<b>406</b>

Plotting Date: 22-SEP-2008



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

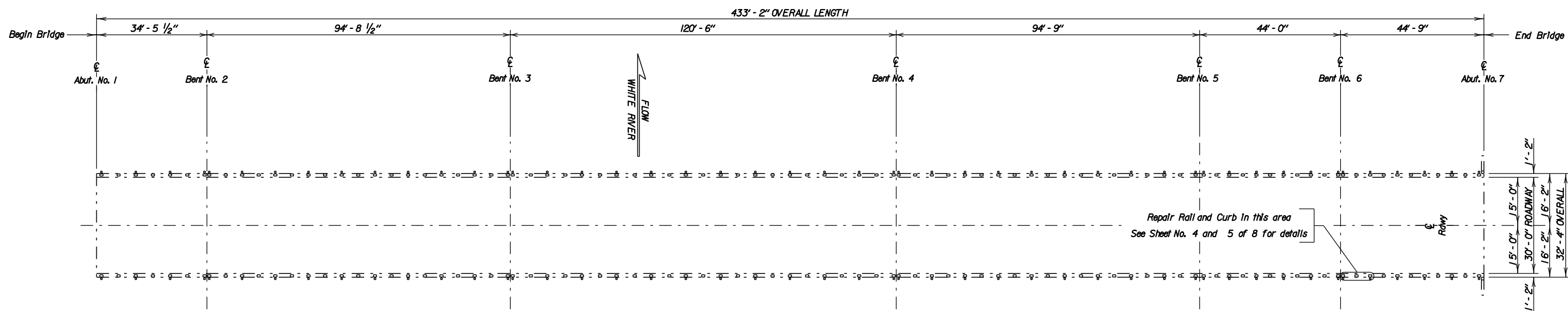
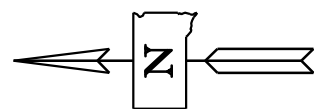
Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485

The buffer space length may be adjusted due to sight distance limitations and other work site limitations.

The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. During daylight hours, 42" cones may be used in lieu of drums or type II barricades along the centerline.

- 24W 24" White Temporary Pavement Marking
- 4Y 4" Yellow Temporary Pavement Marking
- Channelizing Device
- \*\* Need and safe speed to be determined at the site by the Highway Authority.

Username - TRPR25289



PLAN

**INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Layout for Bridge Repairs
- Sheet No. 2 - Estimates of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Details of Concrete Breakout
- Sheet No. 5 - Details of Concrete Repair
- Sheet No. 6 through 8 - Original Construction Plans

LAYOUT FOR BRIDGE REPAIRS  
FOR  
**433' - 2" I-BEAM BRIDGE**  
30' - 0" ROADWAY 0° SKEW  
STR. NO. 43-160-339 SEC. 21/22-T103N-R77W  
OVER WHITE RIVER 183-391  
PCN 11B1

LYMAN COUNTY  
S. D. DEPARTMENT OF TRANSPORTATION  
JUNE 2008

PLANS BY :  
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY NP LYMNI/BI	DRAWN BY JWL LIBILA/OI	CHECKED BY CJD/BB	<i>Kevin M. Coeden</i> BRIDGE ENGINEER
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## ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0020	Remove Bridge Railing	25.0	Ft
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
412E0200	Rail Repainting	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.3	CuYd
460E0300	Breakout Structural Concrete	0.3	CuYd
630E0210	Straight Class B Thrie Beam Rail	25.0	Ft

### SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 Edition with 2003 Interim Specifications using Working Stress (Load Factor) Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.
- All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Bridge Welding Code D1.5M/D1.5:2002 unless otherwise noted in this plan set.

### DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

### NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing structure is a paint containing lead. The Contractor should plan his/her operations accordingly, and inform his/her employees of the hazards of lead exposure.

### SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

Work on the structure shall be accomplished under the traffic control shown in the plans

Str. No. 43-160-339

- Breakout the existing concrete curb as shown on the plans.
- Remove and replace damaged anchor bolts and 4" x 3/4" x 1' - 0" plates as shown on the plans.
- Repair portions of concrete curb as shown on the plans.
- Remove and replace damaged section of thrie beam rail.

### GENERAL CONSTRUCTION - BRIDGE

- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise. Match existing chamfer if the existing chamfer differs.
- Use 2" clear cover on all reinforcing steel except as shown.
- The testing requirements for slump, air and producing concrete cylinders for the Class A45 Concrete, Bridge Repair shall be waived for this project.

### CONCRETE BREAKOUT

- The existing curb shall be broken out to the limits shown on the plans. Breakout limits shall be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned and straightened to the satisfaction of the Engineer. Care shall be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout shall be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department. The existing reinforcing steel that is to be reused in the new construction and that is exposed during concrete breakout shall be epoxy coated in accordance with the "Epoxy Coating Existing Reinforcing Steel" notes.
- All broken out concrete shall be disposed of by the Contractor. Any disposal of discarded material shall be in accordance with the Construction Specifications.
- During concrete removal operations, no broken out concrete shall be allowed to fall into the White River.
- The contract unit price per cubic yard for "Breakout Structural Concrete" shall include saw cutting, breaking out concrete, cleaning, straightening existing reinforcing steel, and disposal of all broken out material.

### EPOXY COATING EXISTING REINFORCING STEEL

- The existing resteel in the curb that is exposed during concrete breakout, and is to be reused, shall be epoxy coated in the field.
- The reinforcing steel shall be abrasive blasted clean and then epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel. This coating shall be the epoxy touch up coating material supplied by an epoxy coating manufacturer who supplies coating material for new epoxy coated reinforcing steel. The abrasive blasted reinforcing steel shall be coated promptly and before detrimental oxidation occurs. The coating shall be allowed to cure for 24 hours or as per the manufacturer's recommendations, whichever is more stringent, before concrete can be placed. These bars shall be clean and free from all surface contaminants before coating.
- The cost of cleaning and epoxy coating the existing reinforcing steel shall be incidental to the various bid items.

### REMOVAL OF EXISTING BRIDGE RAIL

- The section of existing thrie beam rail, anchor bolts, and 4" x 3/4" x 1'-0" plates indicated on the plans shall be completely removed and either salvaged by the Contractor or disposed of in accordance with the waste disposal site note in this set of plans. If the Contractor elects to salvage the thrie beam, it must be removed from view of the ROW to the satisfaction of the Engineer prior to project completion.
- The 4" x 3/4" x 1'-0" plates shall be removed from the existing rail posts using the air carbon arc process.
- The cost of all labor, tools, materials, and incidentals necessary to remove the thrie beam rail, anchor bolts, and 4" x 3/4" x 1'-0" plates shall be incidental to the contract unit price per foot for "Remove Bridge Railing".

### ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR

### 433' - 2" STEEL GIRDER BRIDGE

30'-0" ROADWAY OVER WHITE RIVER STR. NO. 43-160-339  
SEC. 21/22-T103N-R77W 0° SKEW 183-391

LYMAN COUNTY  
S.D. DEPARTMENT OF TRANSPORTATION

JUNE 2008

2 OF 8

DESIGNED BY: NP LYMNI1B1	DRAWN BY: NP I1B1NOTA	CHECKED BY: BB	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	183-391	6	12

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	183-391	7	12

**AIR CARBON ARC PROCESS**

1. The removal of the existing 4" x 3/4" x 1'-0" plates called for by these plans shall be accomplished using the air carbon arc process.
2. Lay out all cut lines on the steel surfaces, using a marker visible during the cutting process, before any air carbon arc cutting begins.
3. When grinding to a specified shape is required after air carbon arc cutting, lay out the shape to grind to on the steel surface with a visible marker and grind to the lay out line. Radius all edges to accept paint.
4. Extreme care shall be exercised during the cutting process so that absolutely no damage (such as nicks, gouges, splattering) to the surrounding metal shall occur.
5. Grind all surfaces cut with the air carbon arc process to remove high carbon deposits, provide a smooth finish, and radius edges for painting.

**BRIDGE RAIL MODIFICATIONS**

Bridge rail modification shall include the removal of a 25 foot length of Thrie Beam railing, anchor bolts within the concrete removal limits, and the 4" x 3/4" x 1'-0" plates as shown on the plans. Wood blocks and other components of the bridge rail shall remain in place and/or be salvaged for reinstallation of the replacement Thrie Beam railing. All cost associated with removal of the Thrie Beam railing, anchor bolts, and 4" x 3/4" x 1'-0" plates shall be incidental to the contract unit price per foot for "Remove Bridge Railing".

New anchor bolts and threaded rods shall be installed to replace the removed anchor bolts. The anchor bolts and threaded rods shall conform to ASTM A307. The vertical bolts, nuts and washers shall be galvanized in accordance with ASTM Specification A153. The horizontal threaded rods, nuts, and washers shall be painted in accordance with the "Rail Repainting" notes.

New 4" x 3/4" x 1'-0" plates shall be installed to replace the removed plates. The plates shall conform to ASTM A36. The plates shall be painted in accordance with the "Rail Repainting" notes.

A new 25' section of Class B Thrie Beam shall be installed to replace the removed sections of Thrie Beam railing.

Thrie Beam railing shall be Class B, Type 1

New bolts, nuts and washers shall be used to attach the Thrie Beam to the channel rail. The 5/8" diameter x 0'-11" bolts shall conform to ASTM A307. The bolts and washers shall be galvanized in accordance with ASTM Specifications A153.

All costs associated with furnishing and installing the new railing shall be incidental to the contract unit price per foot for "Straight Class B Thrie Beam Rail".

All costs associated with furnishing and installing the new anchor bolts and the 4" x 3/4" x 1'-0" plates shall be incidental to the contract lump sum price for "Structural Steel Miscellaneous".

**RAIL REPAINTING**

1. The work affected areas shall be painted in accordance with Section 412 of the Standard Specifications and prepared for painting in accordance with SSPC Standard SP-3.

2. For informational purposes, 4.0 square feet of structural steel will require painting. The quantity shown includes the following work affected areas.

The new 4" x 3/4" x 1'-0" plates, areas of the existing rail post within four inches of all welds and the horizontal threaded rods, nuts and washers.

3. Paint color

Top Coat - The paint color shall be an approved orange color. Prior to ordering the paint, a paint chip of the orange color shall be submitted to the Department for color approval.

Primer Coat - Color shall sharply contrast with the top coat.

4. Bridge Rail Painting will be paid for at the contract lump sum price for "Rail Repainting". Payment will be full compensation for surface preparation, furnishing and applying the coating system, cleanup, providing inspection access, and all incidentals to satisfactorily complete the work.

**NOTES (CONTINUED)  
FOR**

**433' - 2" STEEL GIRDER BRIDGE**

**30'-0" ROADWAY  
OVER WHITE RIVER  
STR. NO. 43-160-339**

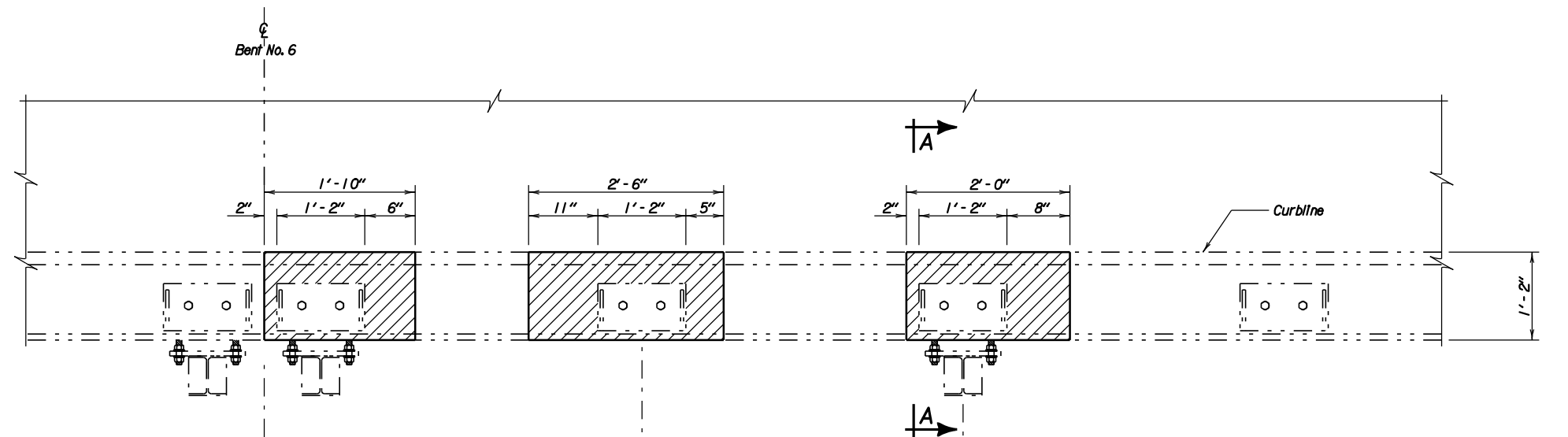
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0° SKEW  
183-391**

**LYMAN COUNTY  
S.D. DEPARTMENT OF TRANSPORTATION**

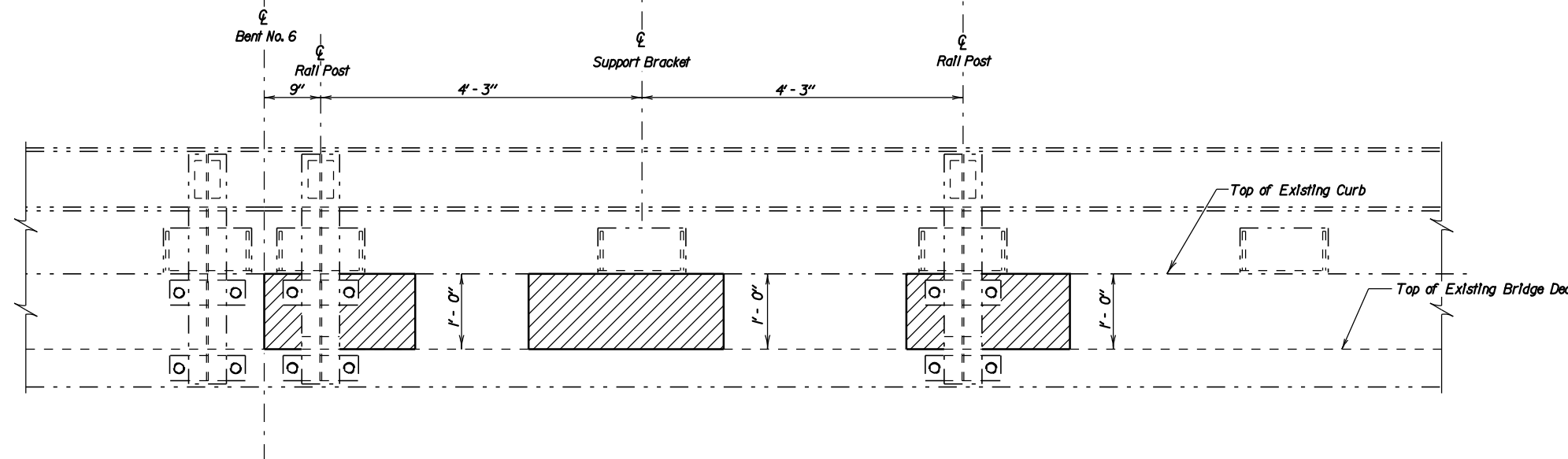
**JUNE 2008**

**3 OF 8**

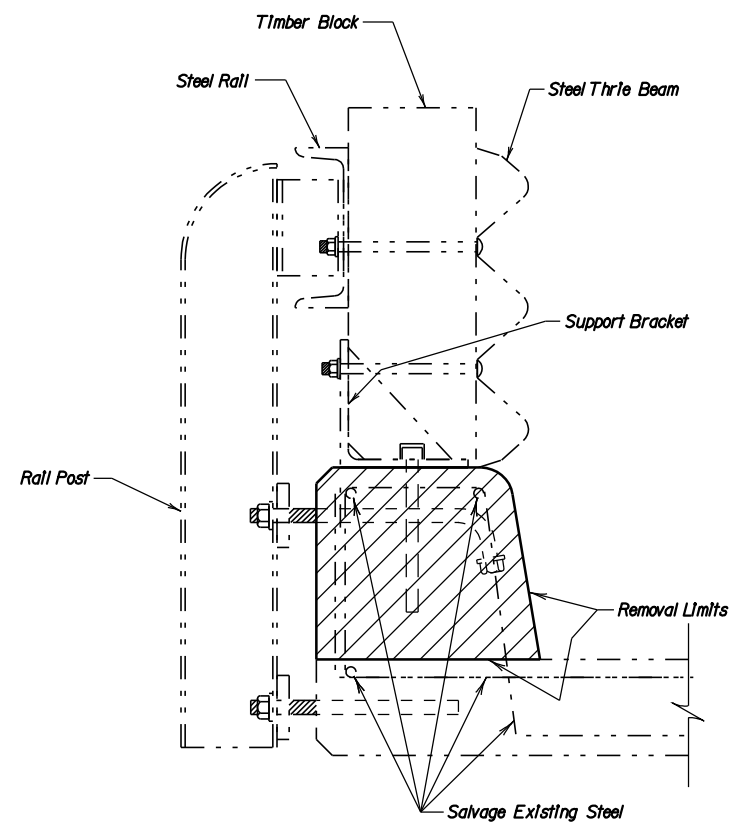
DESIGNED BY: NP LYMNI1B1	DRAWN BY: NP I1B1NOTA	CHECKED BY: BB	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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**PLAN**  
 (Rail, Thrie Beam, & Timber Blocks Not Shown for Clarity)  
 (Concrete Breakout Shown)  
 (Salvage all Existing Steel)



**ELEVATION**  
 (Thrie Beam & Timber Blocks Not Shown for Clarity)  
 (Concrete Breakout Shown)  
 (Salvage all Existing Steel)



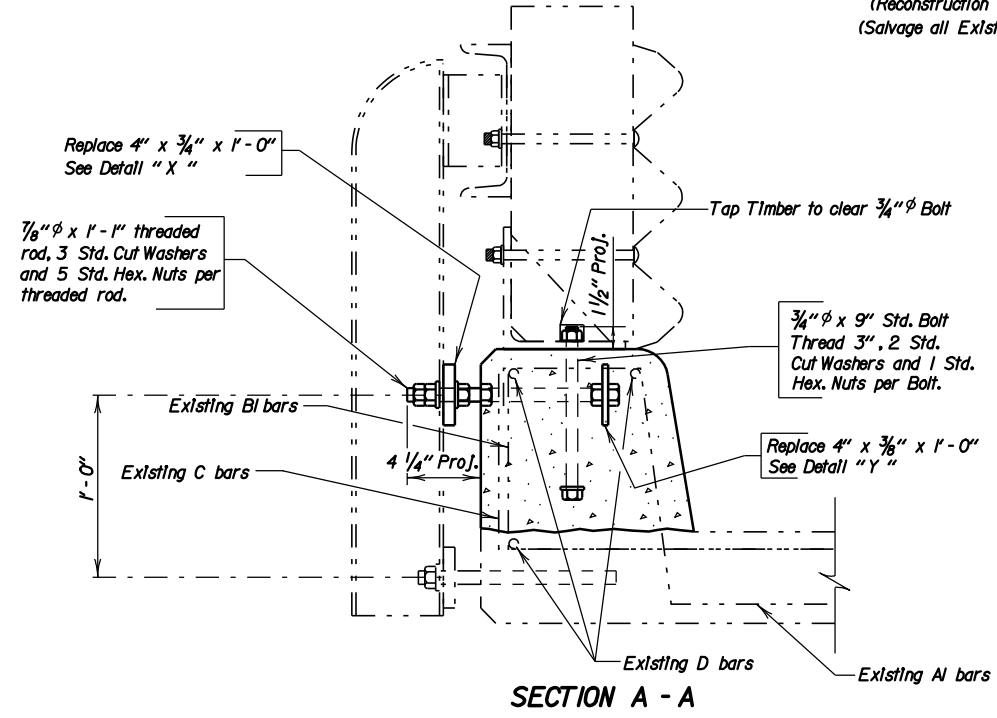
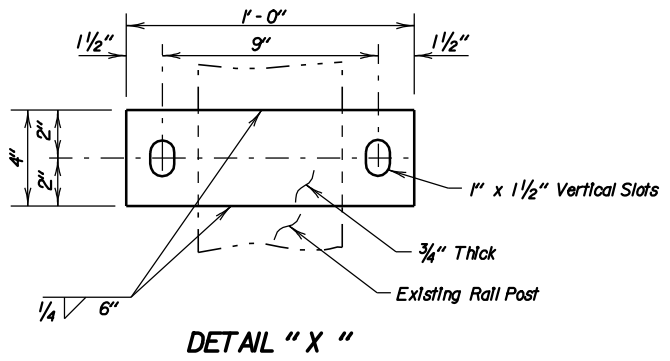
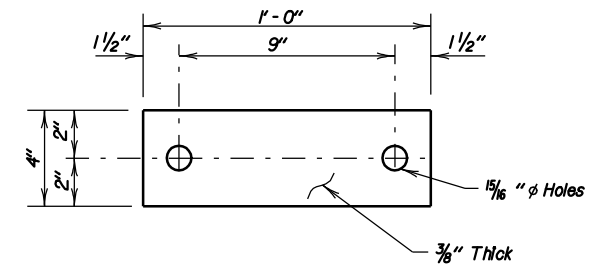
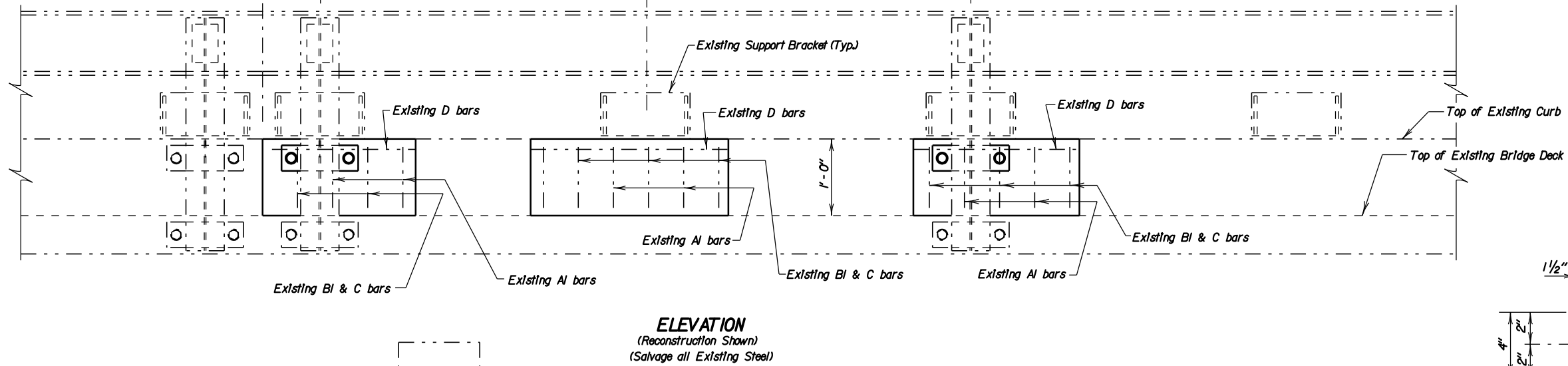
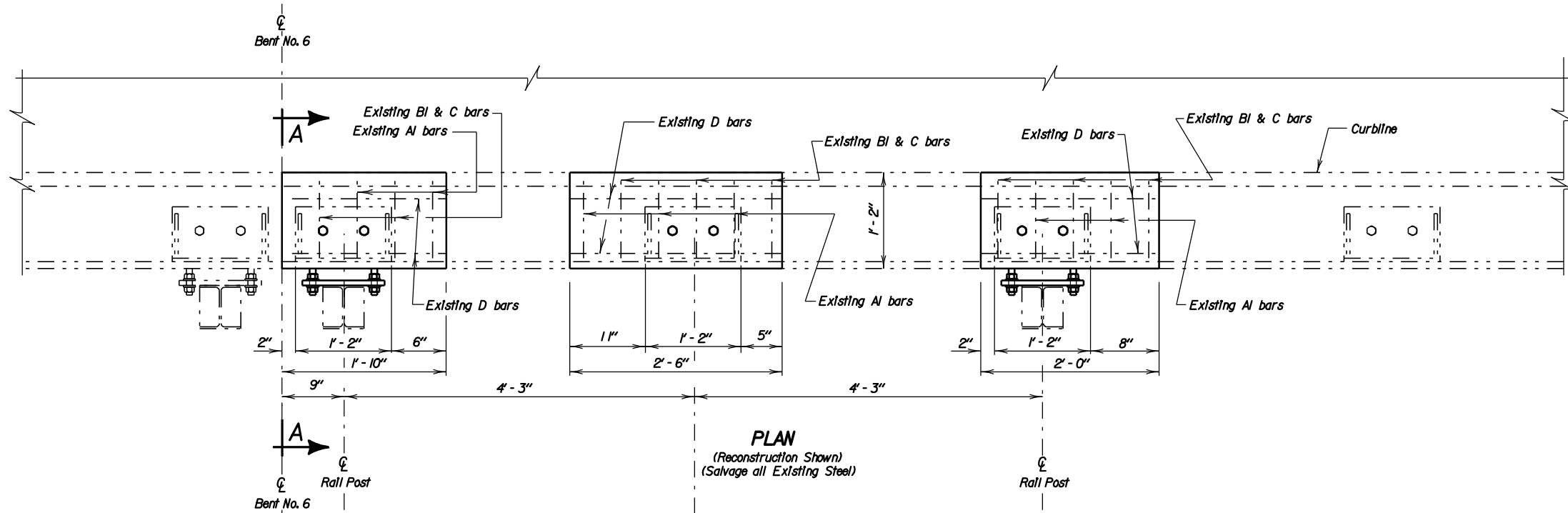
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ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu.Yd.	0.3

**DETAILS OF CONCRETE BREAKOUT  
 FOR  
 433' - 2" I-BEAM BRIDGE**  
 30' - 0" ROADWAY STR. NO. 43-160-339  
 0° SKEW SEC. 21/22-TI03N-R77W  
 OVER WHITE RIVER 183-391

LYMAN COUNTY  
 S. D. DEPARTMENT OF TRANSPORTATION  
 JUNE 2008





**DETAILS OF CONCRETE REPAIR FOR**  
**433' - 2" I-BEAM BRIDGE**  
 30' - 0" ROADWAY STR. NO. 43-160-339 OVER WHITE RIVER  
 0° SKEW SEC. 21/22-T103N-R77W 183-391

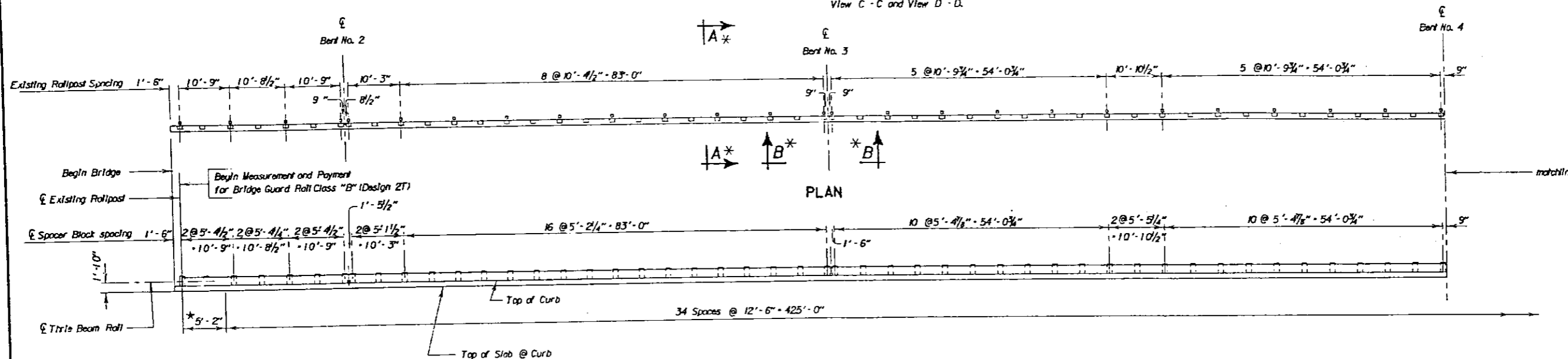
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Repair	Cu.Yd.	0.3

LYMAN COUNTY  
 S. D. DEPARTMENT OF TRANSPORTATION  
 JUNE 2008

DESIGNED BY: NP LYMNIBI  
 DRAWN BY: JWL TIBLA05  
 CHECKED BY: CJD  
 Kevin N. Coeden  
 BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	183-391	10	12

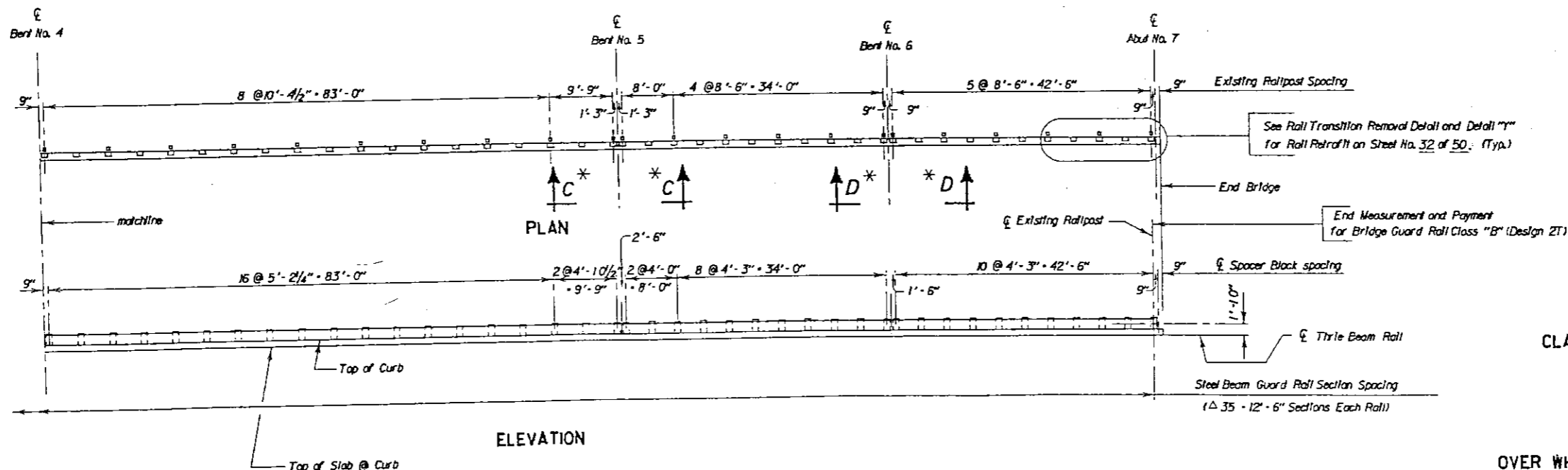
\*For Section A - A see Sheet No. 31 of 50,  
and Sheet No. 33 of 50 for View B - B,  
View C - C and View D - D.



\*Cut Thrie beam to fill in this area

ELEVATION

**ORIGINAL CONSTRUCTION PLANS**



ELEVATION

LAYOUT OF  
CLASS "B" (DESIGN 2T) BRIDGE GUARD RAIL  
FOR  
433'-2" I-BEAM BRIDGE

30'-0" ROADWAY  
OVER WHITE RIVER SEC. 21/22-T103N-R77W  
STA. 144+35.58 TO 148+68.75 FO183(3)61  
STR. NO. 43-160-339

△ See Bridge Guard Rail Class "B" (Design 2T)  
Note No. 11 on Sheet No. 5 of 50.

LYMAN COUNTY

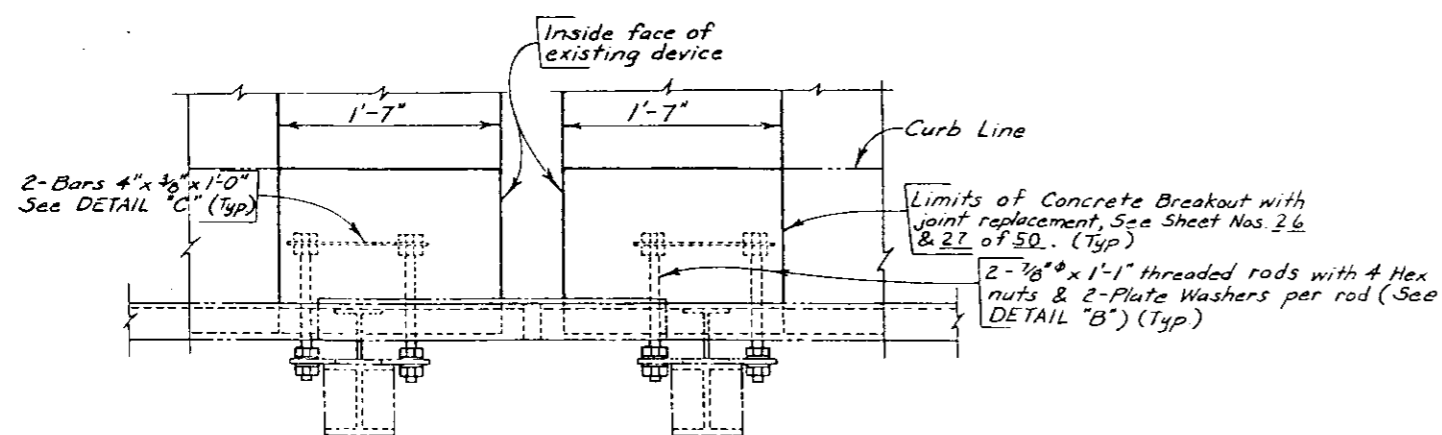
S. D. DEPT. OF TRANSPORTATION

AUG. 1990

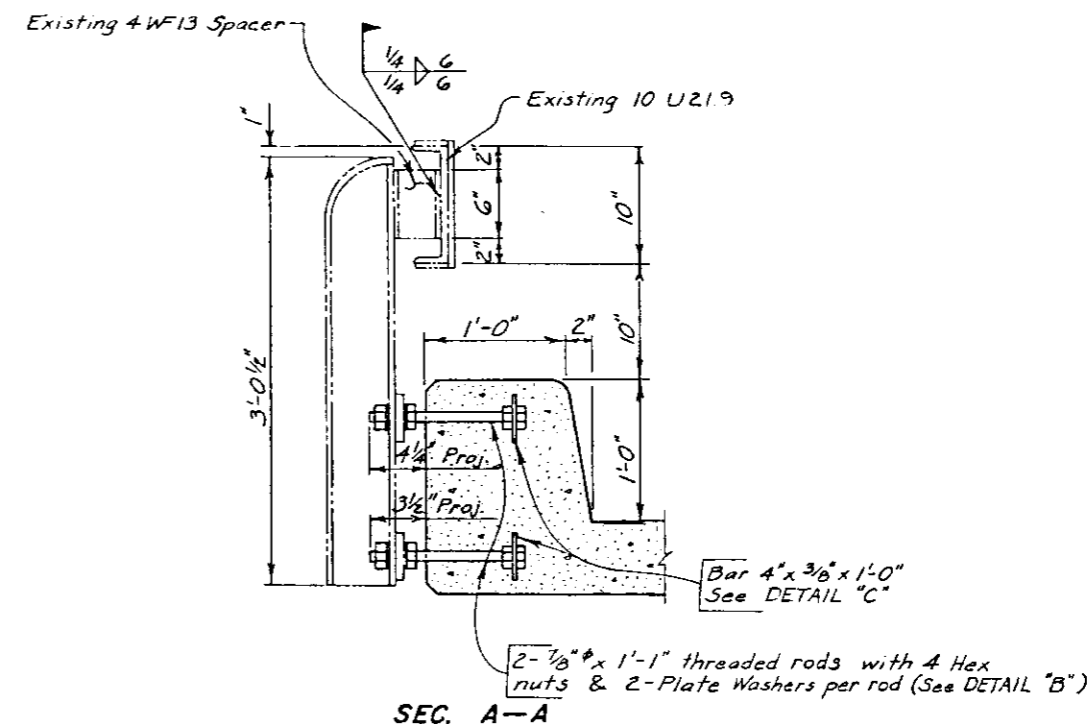
6 OF 8

DESIGNED BY TDW	DRAWN BY DAH/TFC	CHECKED BY EJA	APPROVED <i>[Signature]</i> BRIDGE ENGINEER
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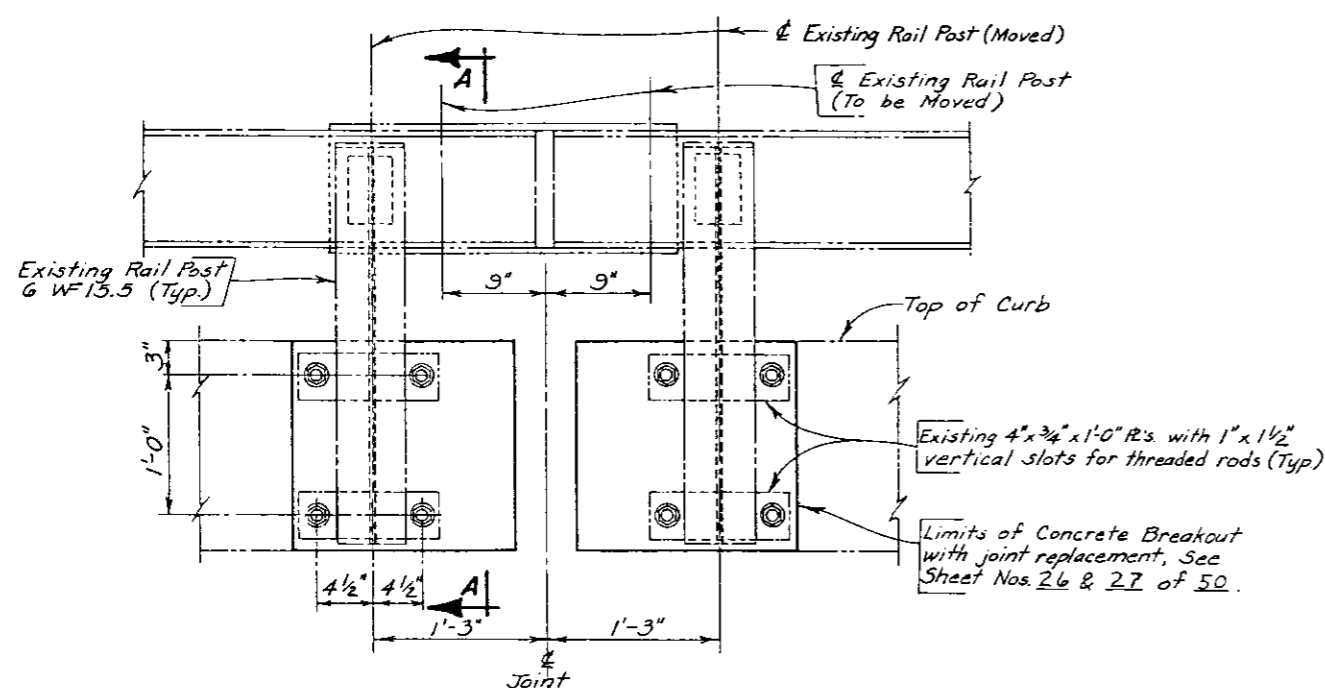
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	183-391	11	12



PLAN

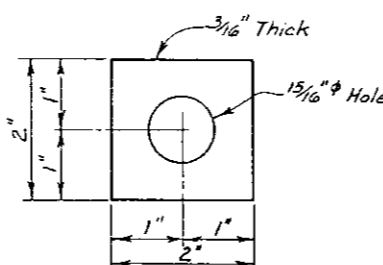


SEC. A-A

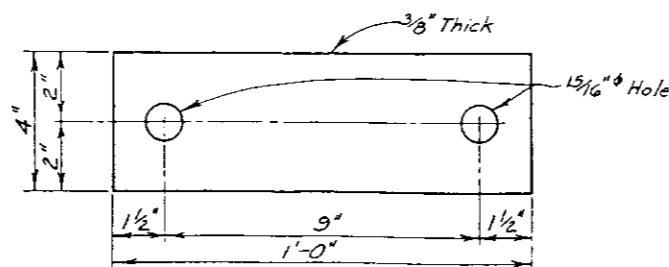


ELEVATION

RELOCATION OF RAIL POSTS AT BENT NO. 5  
(Due to joint replacement, See Sheet Nos. 26 & 27 of 50.)



DETAIL "B"



DETAIL "C"

## ORIGINAL CONSTRUCTION PLANS

RELOCATION OF RAIL POST AT BENT NO. 5  
FOR  
**433'-2" I-BEAM BRIDGE**  
30'-0" ROADWAY

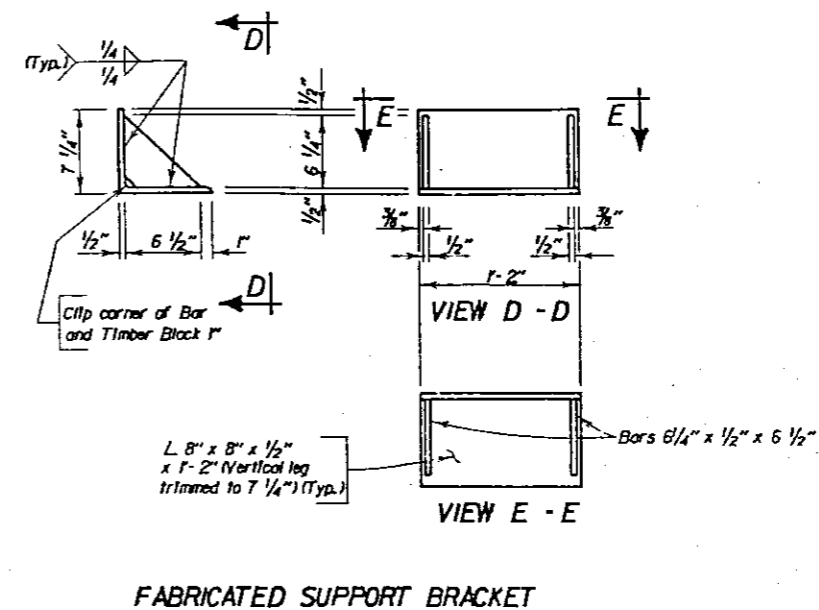
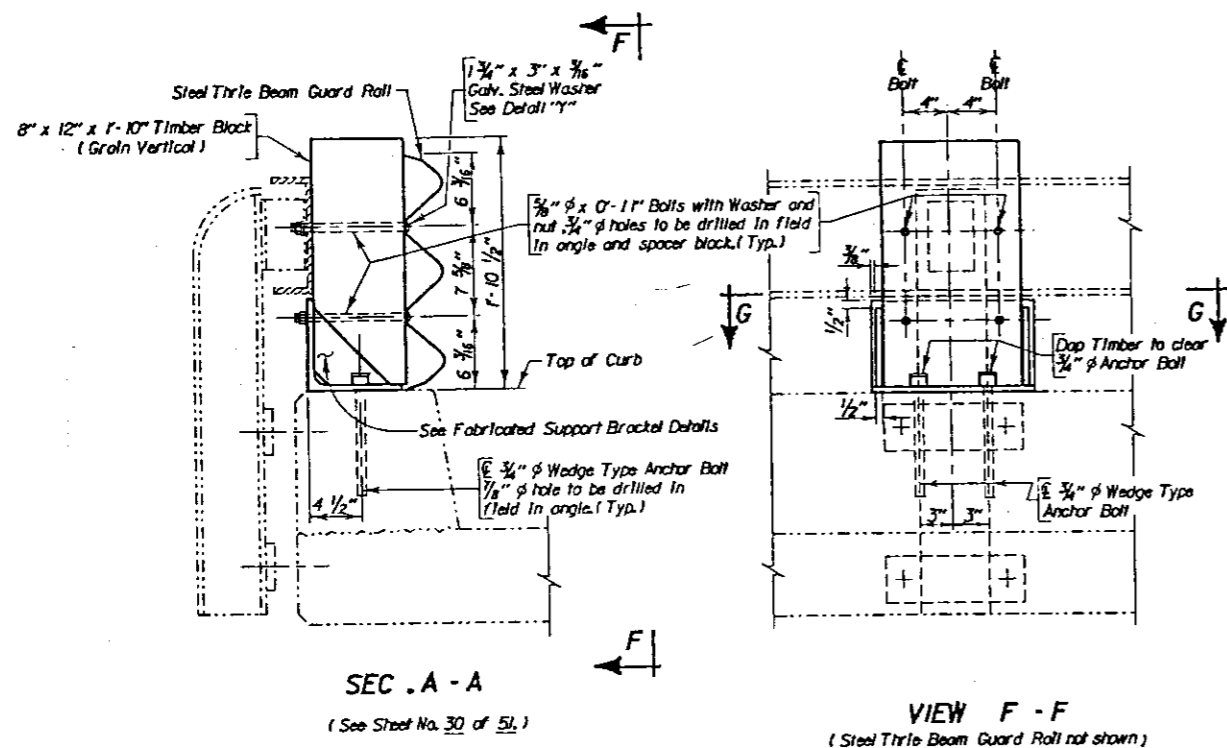
OVER WHITE RIVER SEC. 21/22-T103N-R77W  
STA. 144+35.58 TO 148+68.75  
STR. NO. 43-160-339 F 0183(3) 61

LYMAN COUNTY  
S. D. DEPT. OF TRANSPORTATION

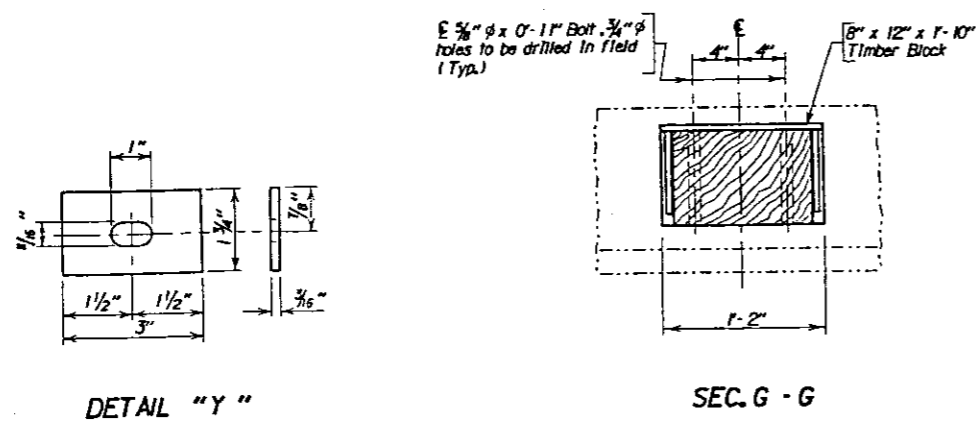
SEPT. 1989

7 OF 8

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
E.H.	C.D.	T.P.W.	



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Guard Rail Class "B" (Design 2T)	Lin. Ft.	860.3
Remove End Block	Each	4



## ORIGINAL CONSTRUCTION PLANS

DETAILS OF CLASS "B" (DESIGN 2T)  
BRIDGE GUARD RAIL FOR  
**433'-2" 1-BEAM BRIDGE**  
30'-0" ROADWAY  
OVER WHITE RIVER SEC. 21/22-T103N-R77W  
STA. 144+35.58 TO 148+68.75 F 0183(3)61  
STR. NO. 43-160-339

LYMAN COUNTY

S. D. DEPT. OF TRANSPORTATION  
AUG. 1990 8 OF 8

DESIGNED BY TDW	DRAWN BY EJA/TFC	CHECKED BY EJA	APPROVED <i>[Signature]</i> BRIDGE ENGINEER
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