

Bench Mark: #4829-1 Disk in top of north headwall of SN 092-2034; Sta. 213+23.86; 67.00' Rt.; Elev. 664.35

Existing Structure: SN 092-0171 was built in 1975 as part of SBI Route 49, Sec. 120BR and the HMA WS and a beam were replaced in 2000 as part of FAP 840, Section (119BR, 120BR) I. The existing superstructure consists of two simple spans of PPC deck beams with a 5" concrete wearing surface. The substructure consists of pile bent abutments and a pier supported by a spread footing. The existing structure is 94'-0" back to back of abutments and 33'-0" out to out of deck. The existing superstructure is to be removed and replaced maintaining one lane of traffic by using staged construction.

No Salvage.

LOADING HL 93 (NEW CONST.)
LOADING HS20-44 (EXIST. CONST.)
 Allow 50 #/sq. ft. for future wearing surface

DESIGN SPECIFICATIONS

NEW CONSTRUCTION
 2010 AASHTO LRFD Bridge Design Specifications

EXISTING CONSTRUCTION
 2002 AASHTO Bridge Design Specifications
 1995 FHWA Seismic Retrofitting Manual for Highway Bridges

DESIGN STRESSES

NEW CONSTRUCTION

FIELD UNITS
 $f'_c = 3,500$ psi
 $f'_c = 5,000$ psi (CWS only)
 $f_y = 60,000$ psi (Reinforcement)

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$ psi
 $f'_ci = 5,000$ psi
 $f_{pu} = 270,000$ psi (1/2" low lax strands)
 $f_{pbt} = 201,960$ psi (1/2" low lax strands)

EXISTING CONSTRUCTION

FIELD UNITS
 $f'_c = 3,500$ psi
 $f_y = 40,000$ psi (Reinforcement)

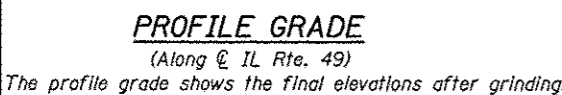
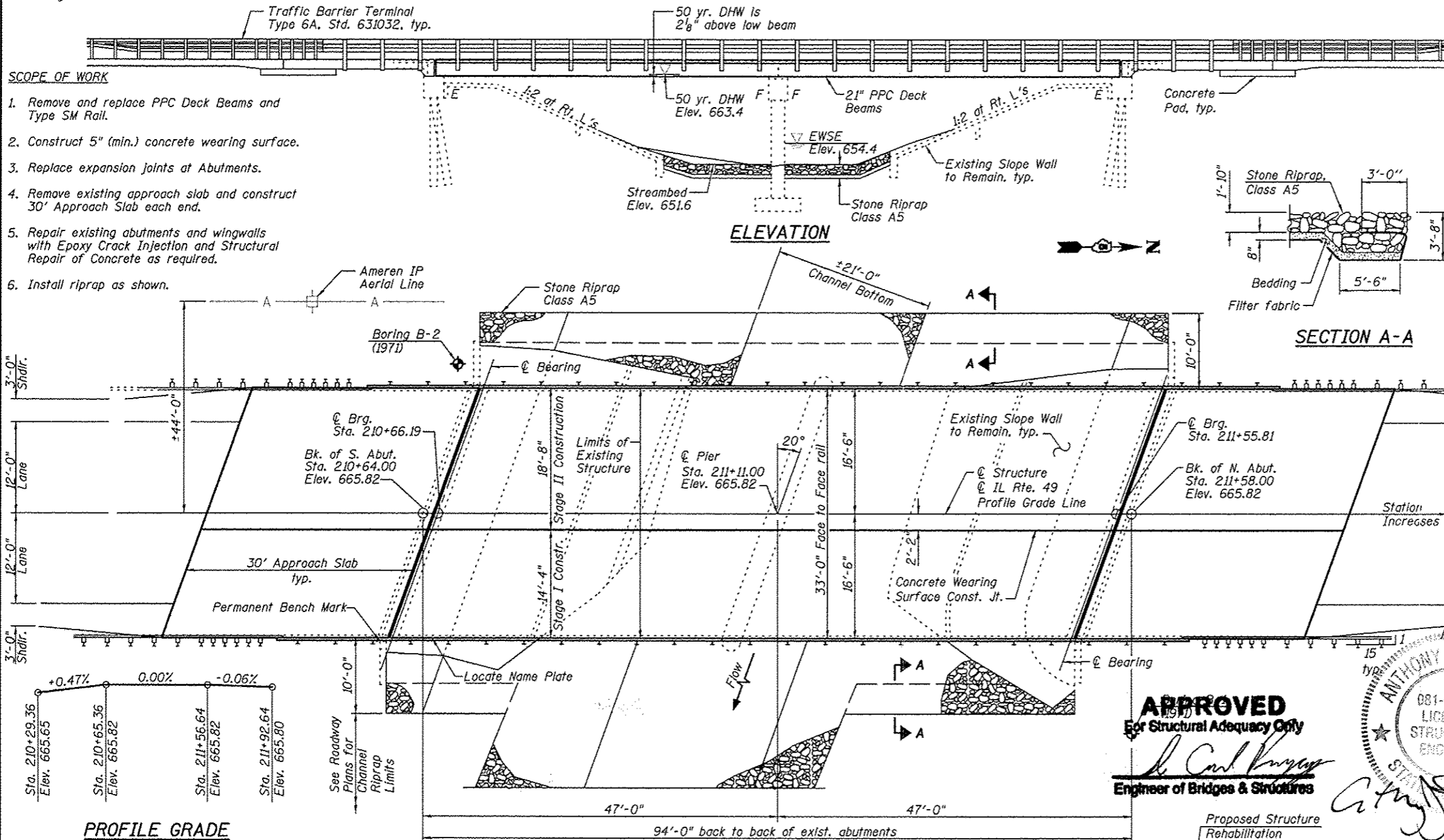
SEISMIC DATA

LFD SEISMIC DATA-EXISTING CONSTRUCTION
 Seismic Performance Category (SPC) = A
 Horizontal Bedrock Acceleration Coefficient (A) = 0.047 g
 Site Coefficient (S) = 1.0

LRFD SEISMIC DATA-NEW CONSTRUCTION
 Seismic Performance Zone (SPZ) = 1
 Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.091 g
 Design Spectral Acceleration at 0.2 sec. (S_{D5}) = 0.17 g
 Soil Site Class = C

INDEX OF SHEETS

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- GENERAL PLAN**
IL RTE. 49 OVER
TRIBUTARY TO STONY CREEK
F.A.P. RTE. 840 SECTION 120BR-1
VERMILION COUNTY
STATION 211+11.00
STRUCTURE NO. 092-0171



WATERWAY INFORMATION

Drainage Area = 12.9 sq. mi. Low Grade Elev. 664.7 ft. @ Sta. 207+00

Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater El.	
		Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
10	1590	512	512	662.8	0.9	0.9	663.7	663.7
Design	50	2594	522	663.4	0.8	0.8	664.2	664.2
Base	100	3045	522	663.6	1.2	1.2	664.8	664.8
Max. Calc.	500	4156	522	664.0	1.4	1.4	665.4	665.4

10 Yr. Vel. through Exist. Bridge = 3.1 FPS 10 Yr. Vel. through Prop. Bridge = 3.1 FPS

DESIGN SCOUR ELEVATION TABLE

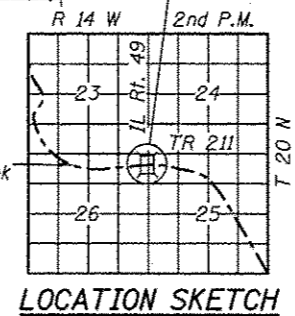
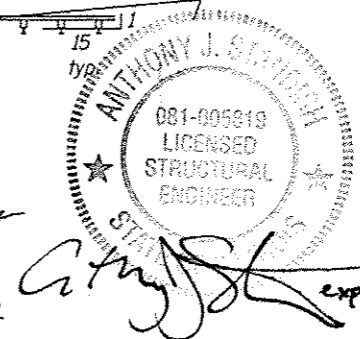
Design Scour Elevation (ft.)	S. Abut.	Pier	N. Abut.
	660.3	646.64	660.3

CURVE DATA

$\Delta = 1^{\circ}01'42''$ (Rt.)
 $D = 0^{\circ}04'22''$
 $T = 706.79'$
 $L = 1413.54'$
 $E = 3.17'$
 $R = 78,748.76'$
 $P.C. = \text{Sta. } 206+64.19$
 $P.T. = \text{Sta. } 220+77.73$
 $P.I. = \text{Sta. } 213+70.98$

APPROVED
 For Structural Adequacy Only

Anthony J. Statovich
 Engineer of Bridges & Structures



NAME PLATE
 Existing Name Plate shall be cleaned and relocated adjacent to new Name Plate. Cast Included with Name Plates.