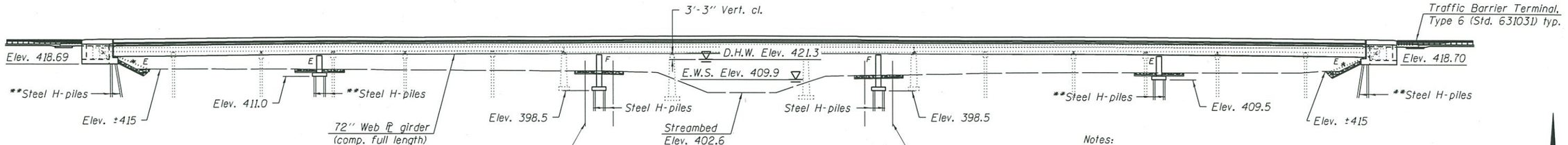
Benchmark: NGS plaque in abutment at Sta. 1320+68. 18.0' Rt.. Elev. 424.448
NGS plaque in abutment at Sta. 1327+91. 18.5' Rt.. Elev. 424.455

Existing Structure: SN 080-0001 built in 1951 as F.A. Route 13. Section 7 at Sta. 324+30. The existing structure consists of a 15 span steel wide flange beam and concrete deck superstructure supported on pile bent abutments and pile bent and pile supported piers. Back-to-back of abutment length is 726'-6" and out-to-out width of deck is 35'-8". The existing structure is to be removed and replaced. Traffic is to be maintained using stage construction.

No Salvage.



ELEVATION

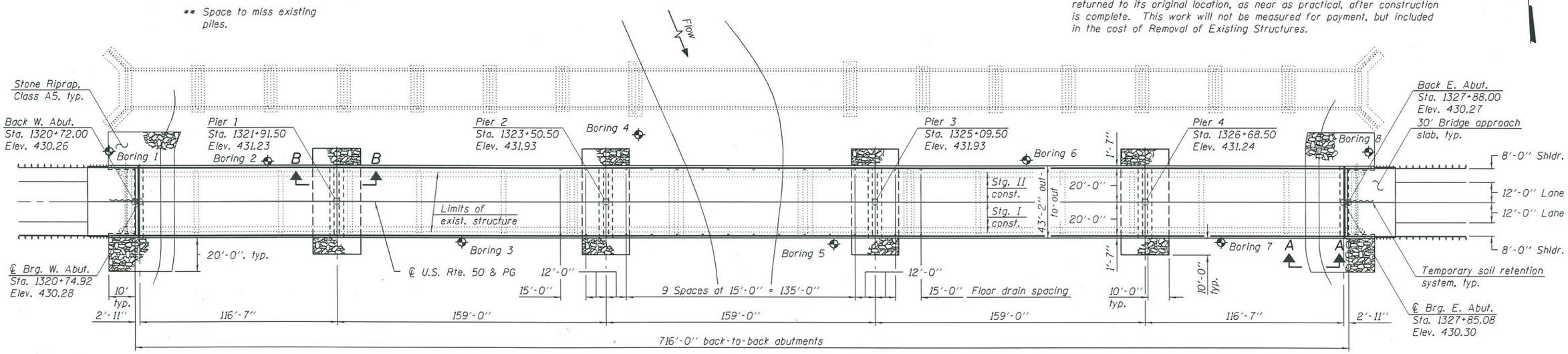
* 1:2 (V:H)

** Space to miss existing piles.

Notes:

* The ability of steel H-piles to resist scour and seismic forces shall be verified in the design phase. Drilled shafts may be required.

Any stone from the existing A4 riprap that is disturbed shall be returned to its original location, as near as practical, after construction is complete. This work will not be measured for payment, but included in the cost of Removal of Existing Structures.



PLAN

DESIGN SPECIFICATIONS

2014 AASHTO LRFD Bridge Design Specifications, 7th Edition with 2015 Interims

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
f'c = 4,000 psi (Superstructure concrete)
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (Structural steel M270 Grade 50W)

LOADING HL-93

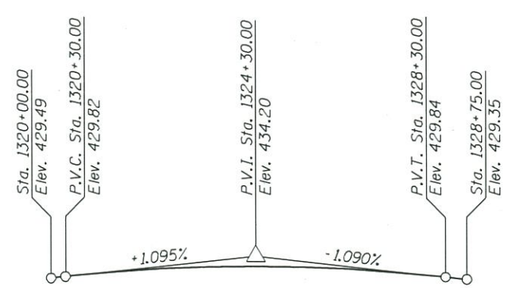
Allow 50#/sq. ft. for future wearing surface.

HIGHWAY CLASSIFICATION

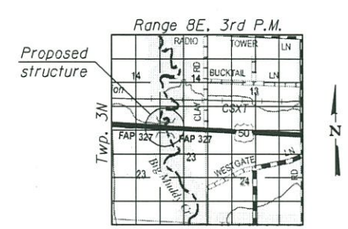
F.A.P. Rte. 327 - U.S. Rte. 50
Functional Class: Other Principal Arterial (non-urban)
ADT: 4150 (2013); 5800 (2037)
ADTT: 847 (2013); 1184 (2037)
DHV: 511
Design Speed: 70 m.p.h.
Posted Speed: 55 m.p.h.
Two-Way Traffic
Directional Distribution: 51:49

SEISMIC DATA

Seismic Performance Zone (SPZ) = 2
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.253 g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.601 g
Soil Site Class = D



PROFILE GRADE
(Along ℄ U.S. Rte. 50)



LOCATION SKETCH

APPROVED
NOV 30 2015
AS A BASIS FOR PREPARATION OF DETAILED PLANS

GENERAL PLAN & ELEVATION
U.S. RTE. 50 OVER BIG MUDDY CREEK
F.A.P. RTE. 327 - SEC. (7-2)BR
RICHLAND COUNTY
STATION 1324+30.00
STRUCTURE NO. 080-0025

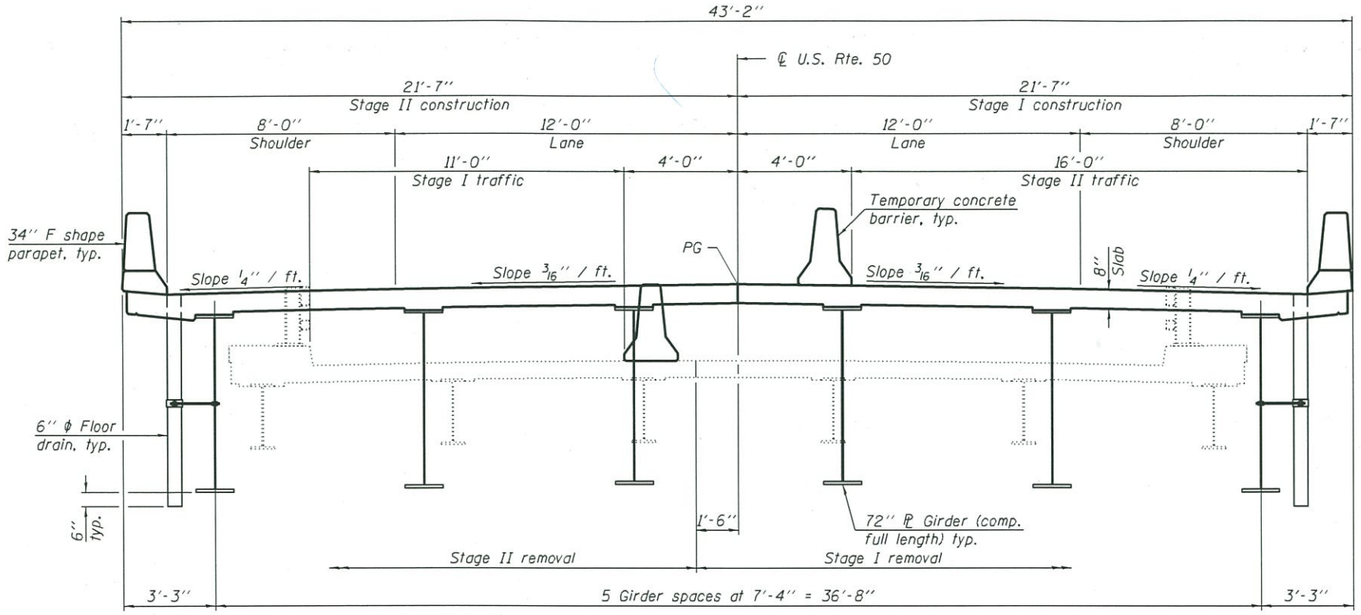
DESIGNED -	DEREK G. VERHULST
CHECKED -	JEFFREY S. BURKE
DRAWN -	MICHAEL B. MOSSMAN
CHECKED -	D.G.V. / J.S.B.

NOVEMBER 30, 2015

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

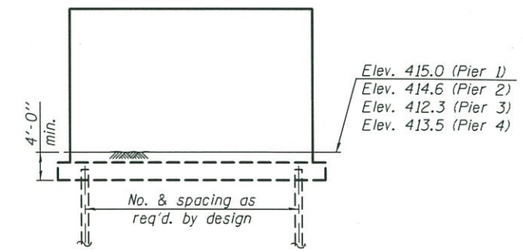
SHEET NO. 1 OF 2 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	(7-2)BR	RICHLAND		
		CONTRACT NO. 74439		
		ILLINOIS FED. AID PROJECT		

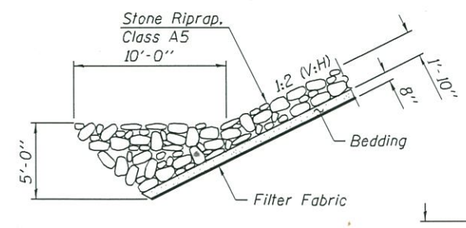


CROSS SECTION

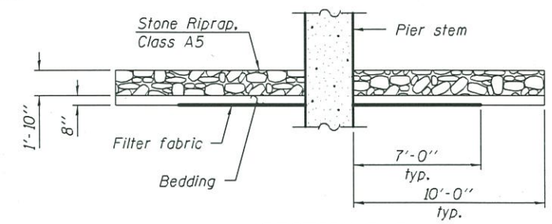
Note:
All structural steel girders, cross frames, and diaphragms within a distance of 10 ft. from the expansion joint shall be metalized or galvanized and then painted.



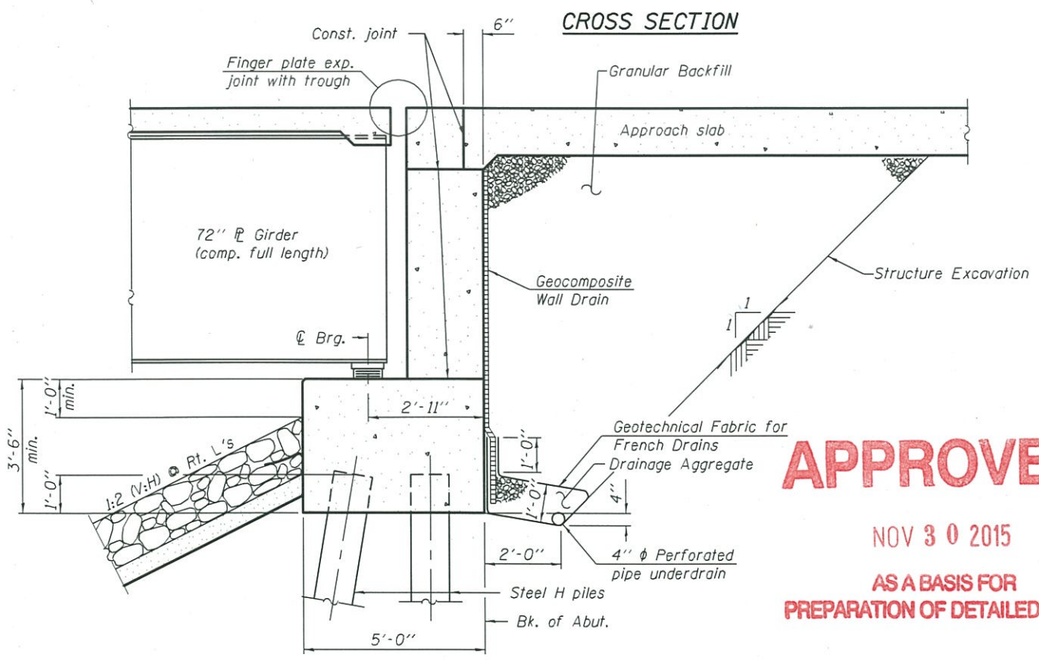
PIER SKETCH



SECTION A-A



SECTION B-B



SECTION THRU PILE SUPPORTED STUB ABUTMENT

APPROVED
NOV 30 2015
AS A BASIS FOR PREPARATION OF DETAILED PLANS

WATERWAY INFORMATION

Drainage Area = 1112.15 sq. mi.

Existing Overtopping Elev. 425.7 at Sta. 1310+00
Proposed Overtopping Elev. 425.7 at Sta. 1310+00

Flood		Discharge (cfs)		Waterway Opening (sq. ft.)		Nat. H.W.E.	Head		Headwater El.	
		Existing	Proposed	Existing	Proposed		Exist.	Prop.	Exist.	Prop.
10	Little Wabash	4718	4415	906	896	419.4	0.2	0.1	419.6	419.5
	Little Muddy	11058	11152	2284	4363					
	Big Muddy	15374	15583	4269	4331					
	Total	31150	31150	7459	9590					
50	Little Wabash	7176	6512	1237	1237	421.3	0.3	0.2	421.6	421.5
	Little Muddy	19216	20076	3115	5273					
	Big Muddy	23858	23662	5540	5615					
	Total	50250	50250	9892	12125					
100	Little Wabash	8834	7714	1368	1376	422.0	0.4	0.2	422.4	422.2
	Little Muddy	21044	23500	3425	5611					
	Big Muddy	29222	27886	6013	6091					
	Total	59100	59100	10806	13078					
Overtopping	Little Wabash									
	Little Muddy									
	Big Muddy									
	Total									
500	Little Wabash	12233	10859	1657	1680	423.5	0.8	0.2	424.3	423.7
	Little Muddy	29359	32340	4092	6339					
	Big Muddy	40208	38601	7028	7114					
	Total	81800	81800	12777	15133					

10 Year velocity through existing bridge = 5.3 ft./sec.
10 Year velocity through proposed bridge = 5.6 ft./sec.

DESIGN SCOUR ELEVATION TABLE

Event / Limit State	Design Scour Elevations (ft.)						
	W. Abut.	Pier 1	Pier 2	Pier 3	Pier 4	E. Abut.	Item 113
0100	418.7	405.3	385.3	385.3	402.1	418.7	5
0500	418.7	404.6	383.8	383.8	401.2	418.7	
Design	418.7	405.3	385.3	385.3	402.1	418.7	
Check	418.7	404.6	383.8	383.8	401.2	418.7	

DETAILS
U.S. RTE. 50 OVER BIG MUDDY CREEK
F.A.P. RTE. 327 - SEC. (7-2)BR
RICHLAND COUNTY
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NOVEMBER 30, 2015

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. 2 OF 2 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
327	(7-2)BR	RICHLAND		
		CONTRACT NO. 74439		
		ILLINOIS FED. AID PROJECT		