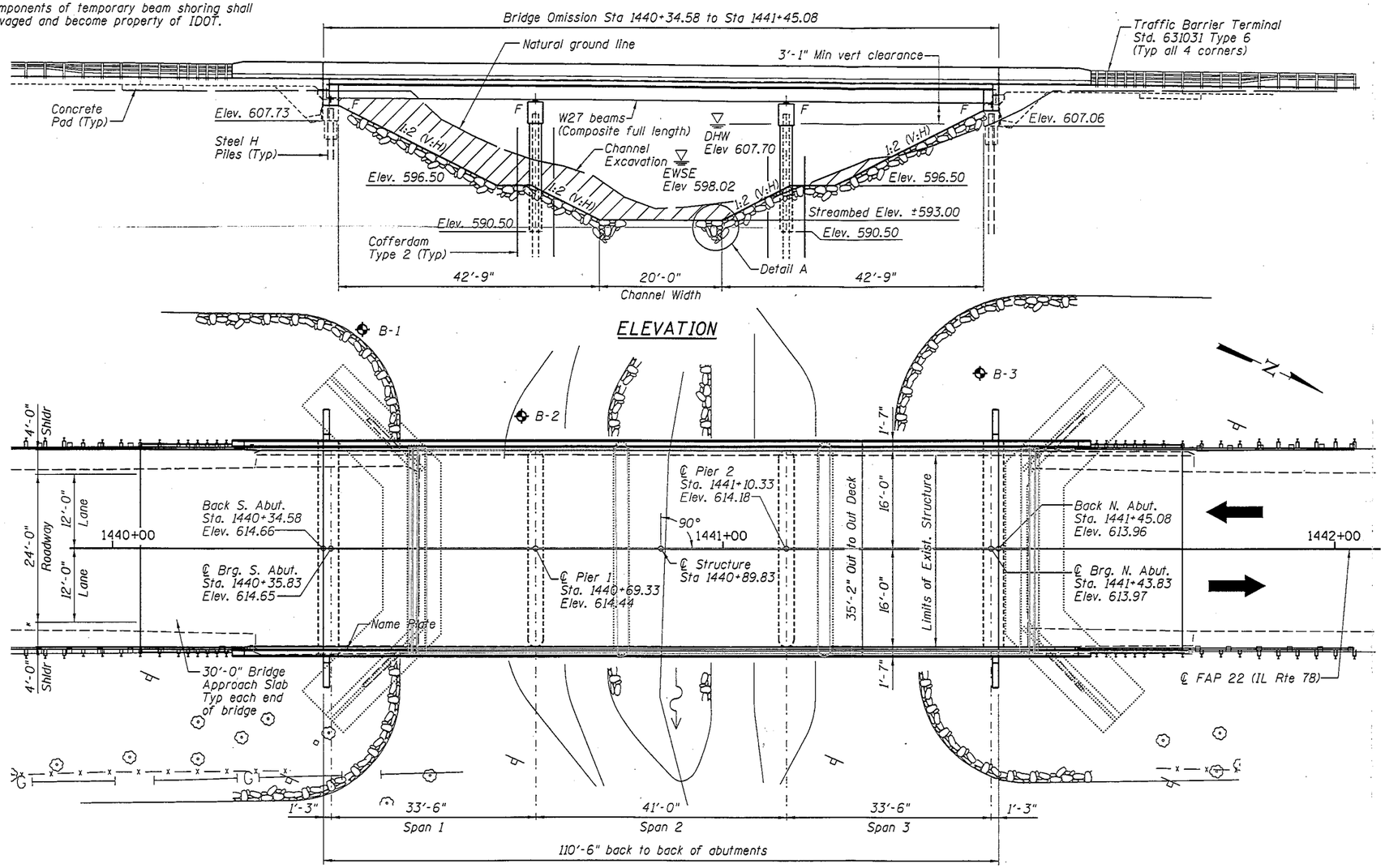
Existing Structure Number 048-0018:
The existing structure is a three span consisting of a PPC deck beam superstructure on closed abutments and solid wall piers. The total structure length is 99.5' back-to-back abutments and the width is 33.0' out to out. The superstructure consists of 17" PPC deck beams with approximately 3" of bituminous overlay. The closed abutments are founded on spread footings that are supported by untreated timber piling. Abutment caps were added to the original closed abutments in 1977 to provide ample bearing surface for the new deck beams. The caps are longer than the existing abutment wall due to the wider deck. The closed abutments are approximately 16' tall with 2.25' thick footings. The solid wall piers are supported by HP8x36 piles and were added in 1977 when the truss bridge was removed. Road will be closed and traffic detoured during construction.

All components of temporary beam shoring shall be salvaged and become property of IDOT.

Bench Mark BM4:
Chiseled "□" on NE wing at IL78 bridge.
Elev 610.54

Bench Mark BM6:
RR spike in power pole 0.3 mi south of IL78 bridge of east side of road.
Elev 647.24



PLAN

LOADING HL-93

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

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge Design Specifications
6th Edition

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (Structural Steel M270 Grade 50W)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 Sec. (S_{D1}) = 0.077 g
Design Spectral Acceleration at 0.2 Sec. (S_{DS}) = 0.124 g
Soil Site Class = C

HIGHWAY CLASSIFICATION

Route: FAP 22 (Il Rte 78)
Functional Class: Minor Arterial
DHV: 185 (2014) 225 (2034)
ADT: 1,823 (2014) 2,225 (2034)
ADTT: 7%
Design/Posted Speed: 55 mph
Directional Distribution: 50-50 2 way traffic

APPROVED

NOV 07 2012

AS A BASIS FOR PREPARATION OF DETAILED PLANS

WATERWAY INFORMATION

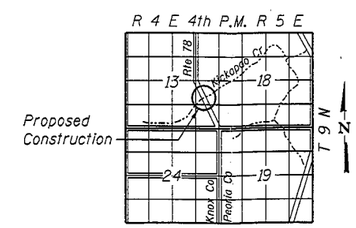
Drainage Area = 17.4 sq mi Low Grade Elev. 613.00 @ Sta. 1443+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
	10	2,780	401	761	606.40	1.30	0.70	607.70	607.10
Design	50	4,420	506	827	607.70	2.40	1.20	610.10	608.90
Base	100	5,180	549	924	608.20	3.50	1.40	611.70	609.60
Max. Calc.	500	7,020	639	1020	609.20	3.50	1.90	612.70	611.10

10 year velocity through existing bridge = 6.9 fps
10 year velocity through proposed bridge = 3.7 fps

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	Event	S. Abut.	Pier 1	Pier 2	N. Abut.
	Q_{100}	607.73	583.34	583.34	607.06
	Q_{500}	607.73	579.39	579.39	607.06



LOCATION SKETCH

IL ROUTE 78 OVER
KICKAPOO CREEK
F.A.P. ROUTE 22
SECTION (48B-1)BR
KNOX COUNTY
STATION 1440+89.93
STRUCTURE NUMBER 048-0095

FILE NAME = I:\1001\5497.01.IL.79\C000.Structural\TSBL\TSBL.dgn

HOMER L. CHASTAIN & ASSOCIATES, LLP
CONSULTING ENGINEERS
184-001997

USER NAME = jbuening	DESIGNED - ACB	REVISED -	
PLOT TIME = 1:35:33 PM	CHECKED - JMB	REVISED -	
PLOT SCALE = 20.0000 ' / in.	DRAWN - RLK	REVISED -	
PLOT DATE = 10/31/2012	CHECKED - JMB	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

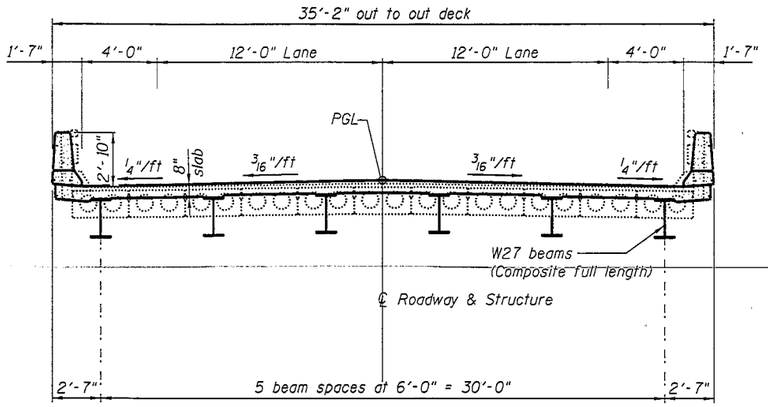
GENERAL PLAN & ELEVATION

SHEET NO. 1 OF 2 SHEETS

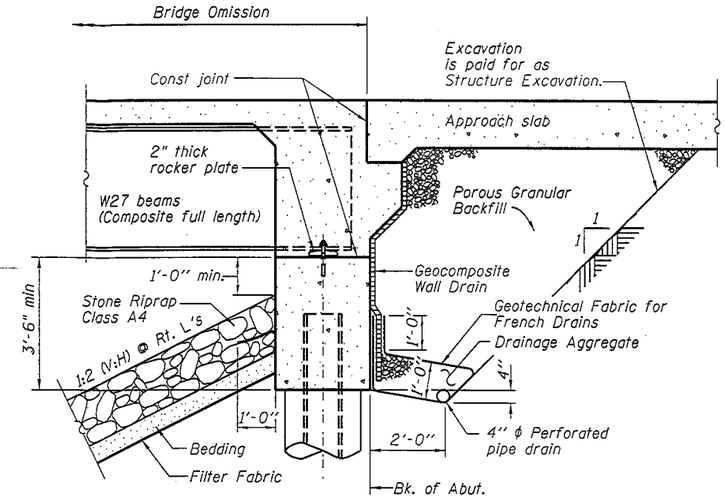
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
22	(48B-1)BR	KNOX	2	1

CONTRACT NO. 68758

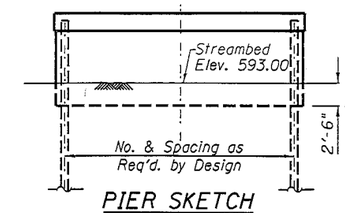
ILLINOIS FED. AID PROJECT



SECTION THRU DECK
(Looking North)



SECTION THRU INTEGRAL ABUTMENT
(Horiz. dim. @ Rt. L's)

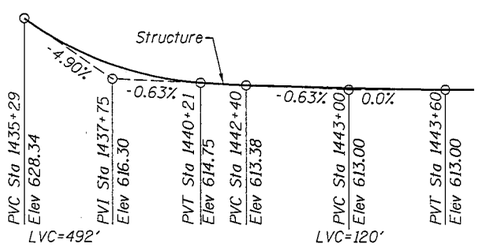


PIER SKETCH

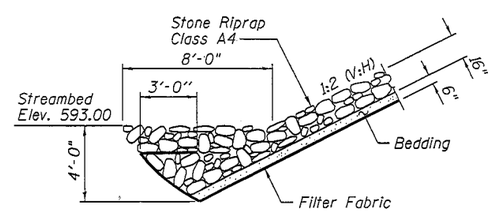
APPROVED

NOV 07 2012

AS A BASIS FOR
PREPARATION OF DETAILED PLANS



PROFILE GRADE
(Along ℄ Rdwy)



DETAIL A-A

IL ROUTE 78 OVER
KICKAPOO CREEK
F.A.P. ROUTE 22
SECTION (48B-1)BR
KNOX COUNTY
STATION 1440+89.93
STRUCTURE NUMBER 048-0095

FILE NAME = I:\IDOT\5497.01_IL_78\CADD_Structural\TS&L\TS&L.dgn

HOMER L. CHASTAIN & ASSOCIATES, LLP CONSULTING ENGINEERS 184-001397	USER NAME = jbuening	DESIGNED - ACB	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DETAILS	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT TIME = 1:36:15 PM	CHECKED - JMB	REVISED -			22	(48B-1)BR	KNOX	2	2
	PLOT SCALE = 20.0000 ' / in.	DRAWN - RLK	REVISED -					CONTRACT NO. 68758		
	PLOT DATE = 10/31/2012	CHECKED - JMB	REVISED -		SHEET NO. 2 OF 2 SHEETS		ILLINOIS FED. AID PROJECT			