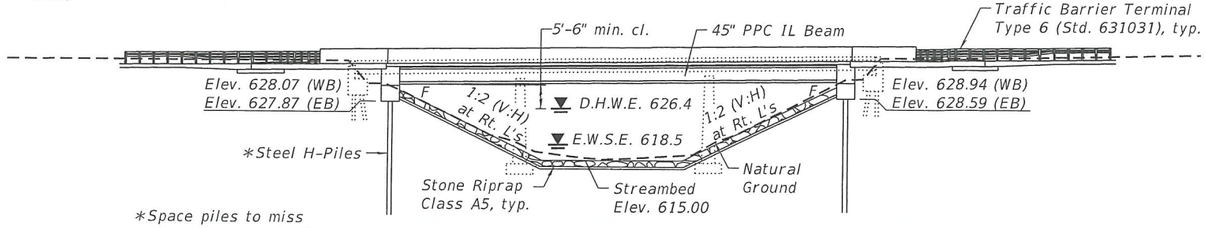
Benchmark: B.M. 9003: Chiseled "X" on east end of east concrete pad for crash barrels at the centerline of the bridge pier for Knox County Road overpass over I-74. Elevation 670.51

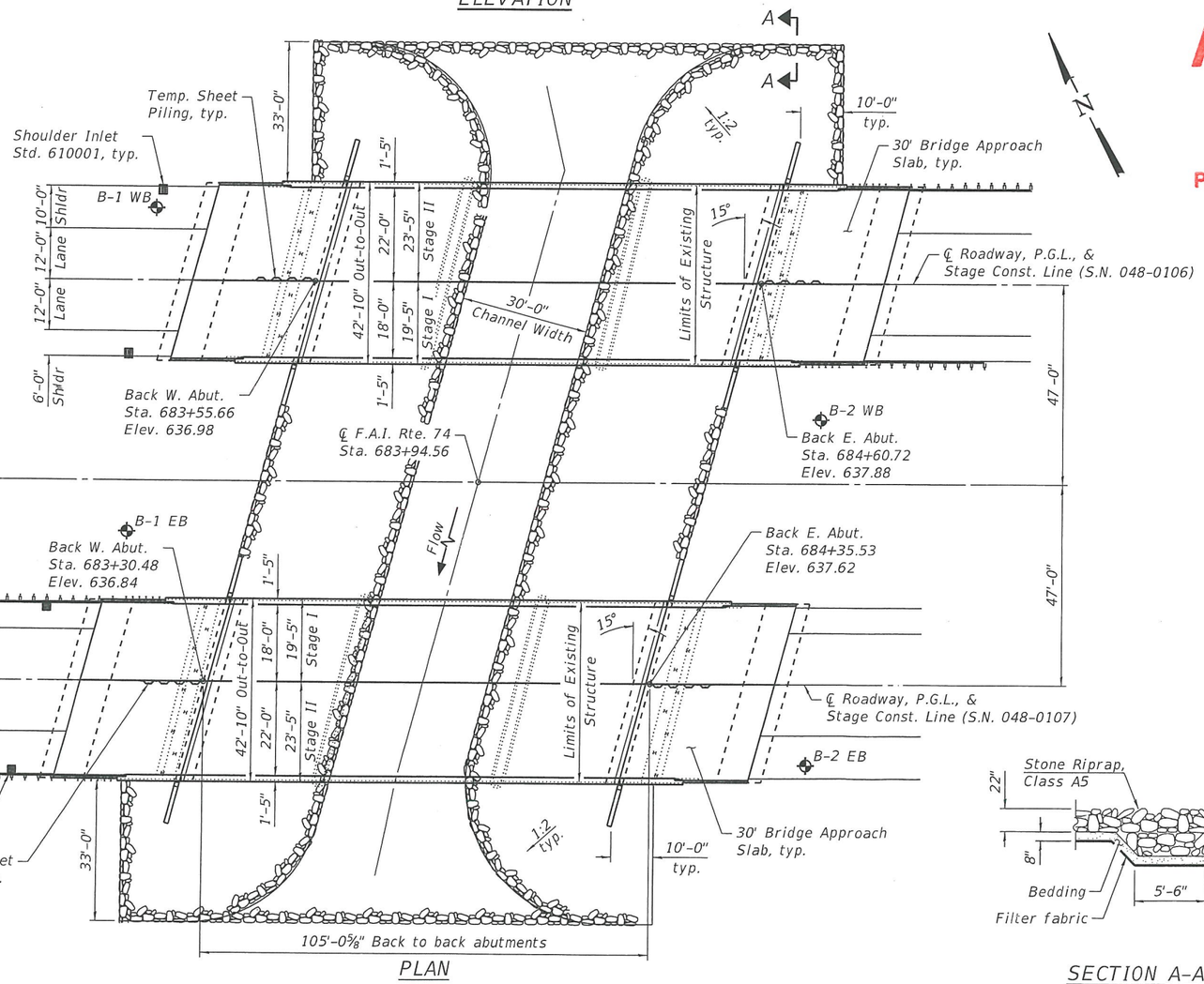
Existing Structure: S.N. 048-0054 & 0055 originally built in 1968 as Section 48-30B. The structures are 3-span continuous wide flange steel beam bridges on stub abutments founded on steel piles and solid wall piers founded on spread footings. The spans are 36'-0" - 41'-11" - 36'-0" with a 13°45' skew. The back-to-back of abutments is approximately 118'-9" and out-to-out width is 42'-0". Traffic to be maintained using staged construction.

Salvage: None

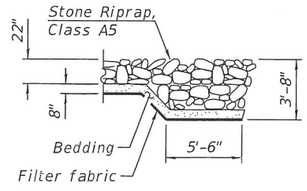


*Space piles to miss existing battered piles.

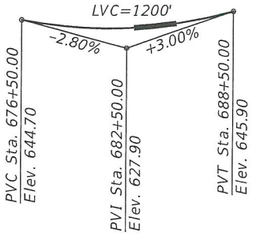
ELEVATION



PLAN



SECTION A-A



PROFILE GRADE
Along ℄ Roadway

APPROVED
OCT 11 2019
AS A BASIS FOR PREPARATION OF DETAILED PLANS

LOADING HL-93
Allow 50#/sq. ft. for future wearing surface.

DESIGN SPECIFICATIONS
2017 AASHTO LRFD Bridge Design Specifications, 8th Edition

DESIGN STRESSES
FIELD UNITS
f'c = 3,500 psi
f'c = 4,000 psi (Superstructure Concrete)
fy = 60,000 psi (Reinforcement)
PRECAST PRESTRESSED UNITS
f'c = 8,500 psi
f'ci = 6,500 psi
fpu = 270,000 psi (0.6" ϕ Low Relaxation Strands)
fpbt = 202,300 psi (0.6" ϕ Low Relaxation Strands)

SEISMIC DATA
Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.075
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.120
Soil Site Class = C

HIGHWAY CLASSIFICATION
F.A.I. Rte. 74 (I-74)
Functional Class: Interstate
ADT: 7,050 (2015); 6,663 (2032)
ADTT: 2,050 (2015); 1,950 (2032)
DHV: 666 (a.m., 2032)
Design Speed: 70 m.p.h.
Posted Speed: 70 m.p.h.
1-Way Traffic
Directional Distribution: 100

DESIGN SCOUR ELEVATION TABLE - WESTBOUND

Event / Limit State	Design Scour Elevations (ft.) W. Abut.	E. Abut.	Item 113
Q100	628.07	628.94	8
Q200	628.07	628.94	
Design	628.07	628.94	
Check	628.07	629.14	

DESIGN SCOUR ELEVATION TABLE - EASTBOUND

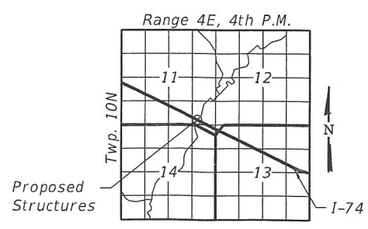
Event / Limit State	Design Scour Elevations (ft.) W. Abut.	E. Abut.	Item 113
Q100	627.87	628.59	8
Q200	627.87	628.59	
Design	627.87	628.59	
Check	627.87	628.79	

WATERWAY INFORMATION

Drainage Area = 23.6 sq. mi.
Exist. Overtopping Elev. 636.80 @ Sta. 683+00
Prop. Overtopping Elev. 636.80 @ Sta. 683+00

Flood	Freq. Yr.	Q C.F.S.	Opening Ft² Exist.	Opening Ft² Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
	10	2,750	427	463	624.5	0.6	0.0	625.1	624.5
Design	50	4,280	559	605	626.4	1.1	0.4	627.5	626.8
Base	100	4,980	608	657	627.1	1.4	0.6	628.5	627.7
Scour Check	200	5,690	659	711	627.8	1.6	0.8	629.4	628.6
Max. Calc.	500	6,650	750	807	628.9	1.8	1.0	630.7	629.9

10 Year Velocity through Existing Bridge = 7.2 fps
10 Year Velocity through Proposed Bridge = 6.2 fps



LOCATION SKETCH

GENERAL PLAN & ELEVATION
I-74 OVER FRENCH CREEK
F.A.I. RTE. 74
SEC. 48(30B)BR
KNOX COUNTY
STATION 683+94.56
STRUCTURE NO. 048-0106 (WB)
STRUCTURE NO. 048-0107 (EB)

PRINT DATE: 9/19/2019 10:48:33 AM Z:\17035 Oates I-74 over French Creek\DGN\Bridge\prelim\Plotsheets\TS&Ldgn

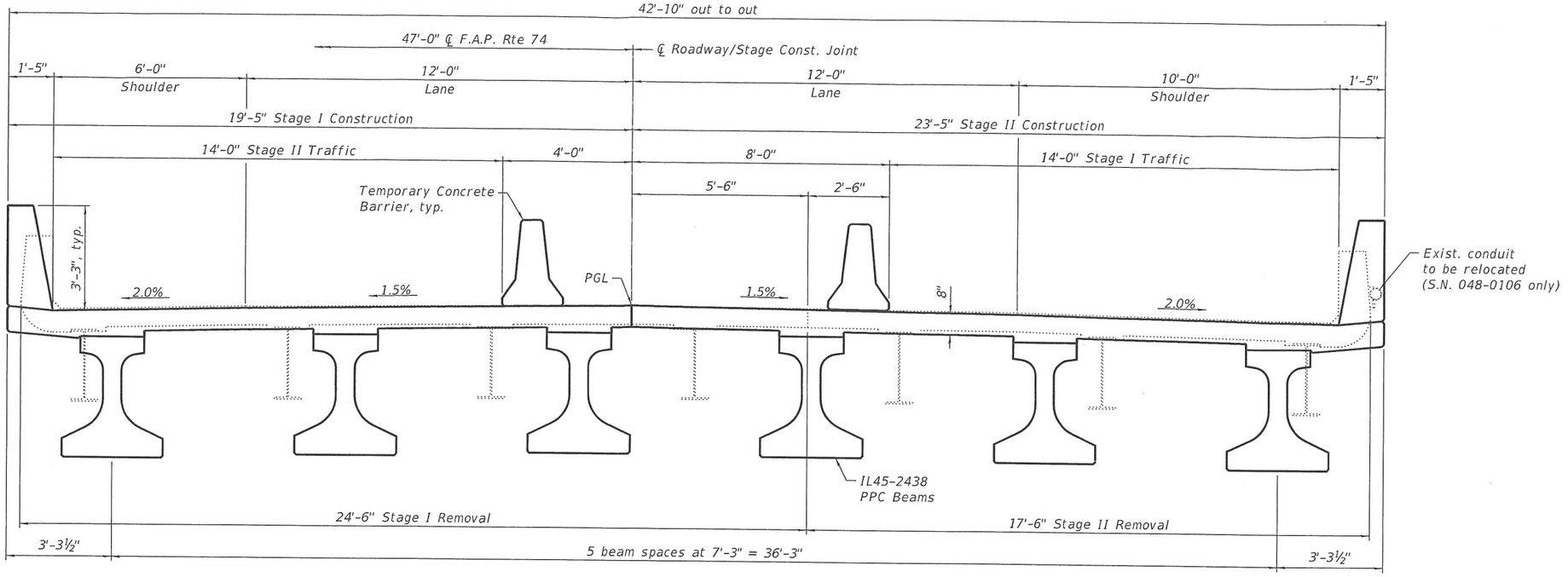
EFK•Moen Civil Engineering Design

USER NAME = acb	DESIGNED - ACB	REVISED -	
	CHECKED - CDL	REVISED -	
PLOT SCALE = 0.1667 '/ in.	DRAWN - ACB	REVISED -	
PLOT DATE = 9/19/2019	CHECKED - CDL	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

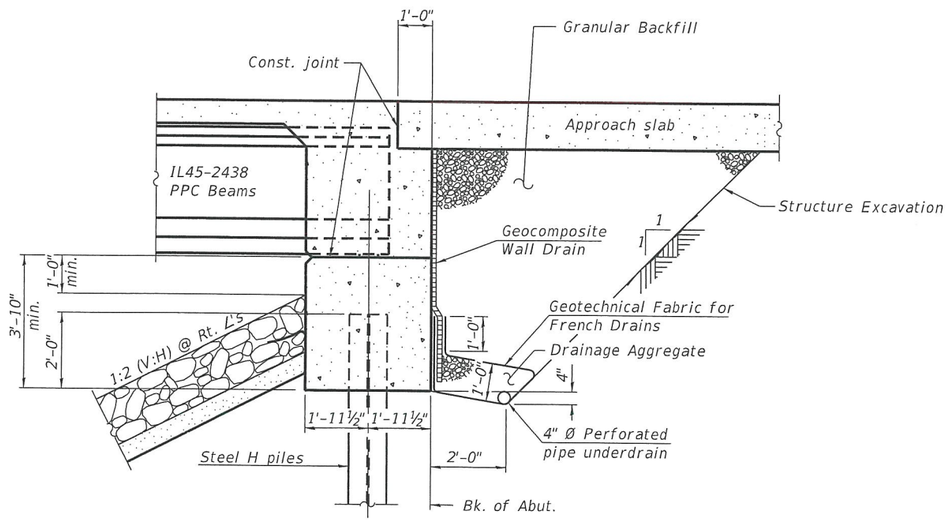
SHEET 1 OF 2 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
74	48(30B)BR	KNOX		
		CONTRACT NO.		
	ILLINOIS FED. AID PROJECT			



CROSS SECTION

(Looing west at S.N. 048-0106, Looking east at S.N. 048-0107 similar)



SECTION THRU INTEGRAL ABUTMENT

(Horiz. dim. @ Rt. L's)

APPROVED

OCT 11 2019

AS A BASIS FOR
PREPARATION OF DETAILED PLANS

DETAILS
I-74 OVER FRENCH CREEK
F.A.I. RTE. 74
SEC. 48(30B)BR
KNOX COUNTY
STATION 683+94.56
STRUCTURE NO. 048-0106 (WB)
STRUCTURE NO. 048-0107 (EB)

PRINT DATE: 9/19/2019 10:48:34 AM Z:\17035 Oates I-74 over French Creek\DGN\Bridge\prelim\Plotsheets\TS&L2.dgn

EFK•Moen
Civil Engineering Design

USER NAME = acb		DESIGNED - ACB	REVISED -	
		CHECKED - CDL	REVISED -	
PLOT SCALE = 0.1667 ' / in.		DRAWN - ACB	REVISED -	
PLOT DATE = 9/19/2019		CHECKED - CDL	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 2 OF 2 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
74	48(30B)BR	KNOX		
		CONTRACT NO.		
	ILLINOIS	FED. AID PROJECT		