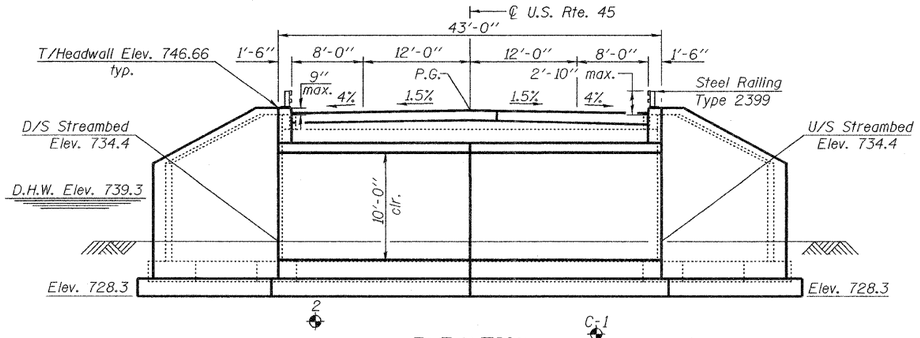
Bench Mark: BM#2: Cut Square top NW corner of wingwall U.S. 45 bridge over Jackson Creek
±Sta. 149+22.6, Offset ±22.3' Lt., Elev. = 746.16

Existing Structure: S.N. 099-2005 was built in 1978 as F.A. Route 124, Section 104B-3R, at station 149+06.00. The single span superstructure consists of precast prestressed concrete deck beams. The substructure consists of footing supported closed abutments. The structure is ±33'-0" back to back of abutments and 42'-0" out to out of deck. The existing structure will be replaced. Stage construction will be utilized to maintain one lane of traffic at all times.

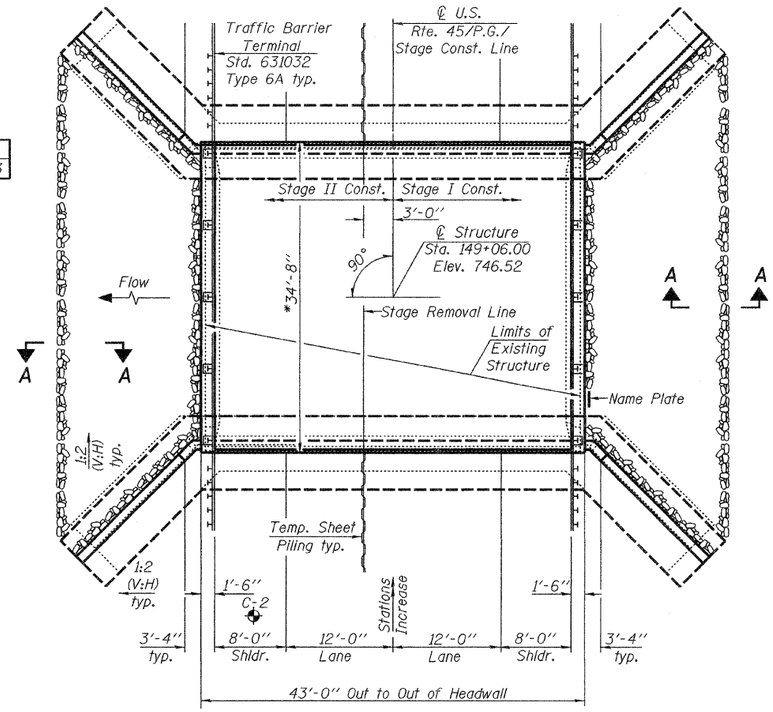
No Salvage



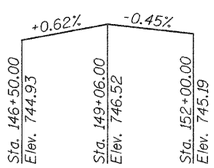
ELEVATION

DESIGN SCOUR ELEVATION TABLE

Design Scour Elev. (ft.)	D.S.	U.S.
	728.3	728.3



PLAN



PROFILE GRADE

DESIGNED	Bruno P. Naviekonda
CHECKED	Stephen M. Ryan
DRAWN	h.t. duong
CHECKED	D.P.N. / SMR

November 20, 2007
EXAMINED — ENGINEER OF BRIDGE DESIGN
PASSED — ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS RALPH E. ANDERSON 081-004625 SPRINGFIELD LICENSED STRUCTURAL ENGINEER

EXPIRES 11-30-2008

WATERWAY INFORMATION

Exist. Low Grade Elev. 743.7 ft. @ Sta. 156+00
Propo. Low Grade Elev. 743.7 ft. @ Sta. 156+00
Drainage Area = 2.0 mi.²

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	329	124	128	738.5	0.0	0.0	738.5	738.5
Design	50	568	150	154	739.3	0.0	0.0	739.3	739.3
Base	100	703	159	163	739.6	0.0	0.0	739.6	739.6
Max. Calc.	500	1151	179	182	740.2	0.4	0.4	740.6	740.6

10 Year Velocity through Existing Bridge = 2.7 fps
10 Year Velocity through Proposed Bridge = 2.6 fps

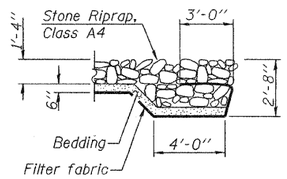
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

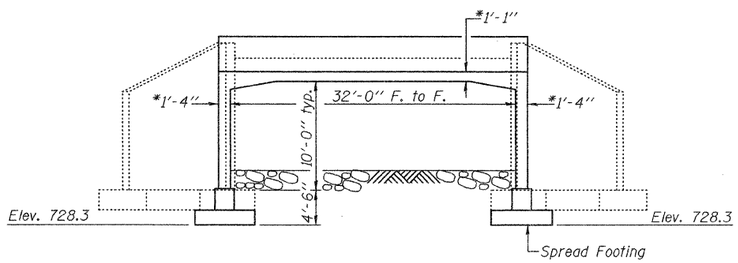
STATION 149+06.00
BUILT 20 BY
STATE OF ILLINOIS
F.A.P. RTE. 330 SEC. 104B-3-BR
LOADING HS20
STRUCTURE NO. 099-4649

NAME PLATE

See Std. 515001



SECTION A-A



SECTION THRU STRUCTURE

*Slab and wall thickness may vary as per manufacturer's design.

SEISMIC DATA

Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) = 0.04g
Site Coefficient (S) = 1.0

LOADING HS20-44

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

DESIGN SPECIFICATIONS

2002 AASHTO

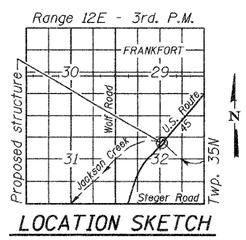
DESIGN STRESSES

FIELD UNITS

f'_c = 3,500 psi
f_y = 60,000 psi (reinforcement)

PRECAST UNITS

f'_c = 5,000 psi
f_y = 65,000 psi (welded wire fabric)



LOCATION SKETCH

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 330	104B-3-BR	WILL	42	20
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

SHEET NO. 1
11 SHEETS

Contract No. 60B80

GENERAL NOTES

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.

Reinforcement bars designated (E) shall be epoxy coated.

The option of using a precast footing is not allowed.

The option of using precast wingwalls is not allowed.

Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.

After the keyways have been grouted and cured, the joints on all three sides of the structure shall be externally sealed using 13" wide external sealing bands conforming to Article 1057.01. Cost included with Three-Sided Precast Concrete Structure 32'x10'.

All details shown are developed assuming the use of cast-in-place headwalls and wingwalls placed as shown. The Contractor has the option of using precast headwalls. If the precast option is used, the details for the headwalls shall be submitted to the Engineer for approval.

The footing design is based on the following maximum reactions applied at the top of the footing pedestal:

Vertical: 13.2 k/ft DL + 2.3 k/ft LL
Horizontal: 2.25 k/ft DL + 1.0 k/ft LL

The Contractor shall verify that the selected structure meets these design parameters. If the design parameters are exceeded, a complete footing design with calculations, details, and the required structural seals shall be submitted for review and approval.

Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure. The Contractor shall sawcut the upper portion of the existing abutment at the Stage Removal Line before Stage I Removal to ensure the remaining portion will not be prematurely damaged.

Cost of excavation is included in the pay item Three Sided Precast Concrete Structure 32' x 10'.

Structural Seal does not include the design of precast elements.

Dimensions for the Three-Sided Precast are for a Hy-Span section. Con-Span, Redi-Span Bridge System and Bebo-Arch System are also acceptable, but dimensions may vary.

TOTAL BILL OF MATERIAL

	ITEM	UNIT	TOTAL
	Removal of Existing Structures	Each	1
	Name Plates	Each	1
	Concrete Structures	Cu. Yd.	181.0
**	Protective Coat	Sq. Yd.	17.3
	Reinforcement Bars	Pound	15970
	Reinforcement Bars, Epoxy Coated	Pound	1780
	Three Sided Precast Concrete Structure 32' x 10'	Foot	43
	Bar Splicers	Each	60
	Steel Railing, Type 2399	Foot	70
	Temporary Sheet Piling	Sq. Ft.	1510
	Stone Riprap, Class A4	Sq. Yd.	326
	Filter Fabric	Sq. Yd.	326

**Protective coat shall be applied to top surface of headwalls and upper 9" of inside face of headwalls.

GENERAL PLAN & ELEVATION
U.S. RT. 45 OVER JACKSON CREEK
F.A.P. RT. 330 SEC. 104B-3-BR
WILL COUNTY
STATION 149+06.00
STRUCTURE NO. 099-4649