

Benchmark (B.M. 103): Railroad spike in power pole on the south side of Old U.S. Route 50. Sta. 409+55; 27.5' Lt., Elev. 533.87

Existing Structure: S.N. 013-0022 built 1924 as S.B.I. Route 12, Section 12-12B at Sta. 407+98 as a simple span reinforced concrete slab bridge, 26'-0" back to back abutments, supported on untreated timber piles. Existing bridge is to be removed and replaced with a precast double box culvert with cast-in-place end sections and sheet pile wingwalls. Traffic to be detoured during construction.

No Salvage

Permanent steel sheet piling wall with cap, typ. Minimum tip Elev. 509.00

DESIGN SCOUR ELEVATION TABLE

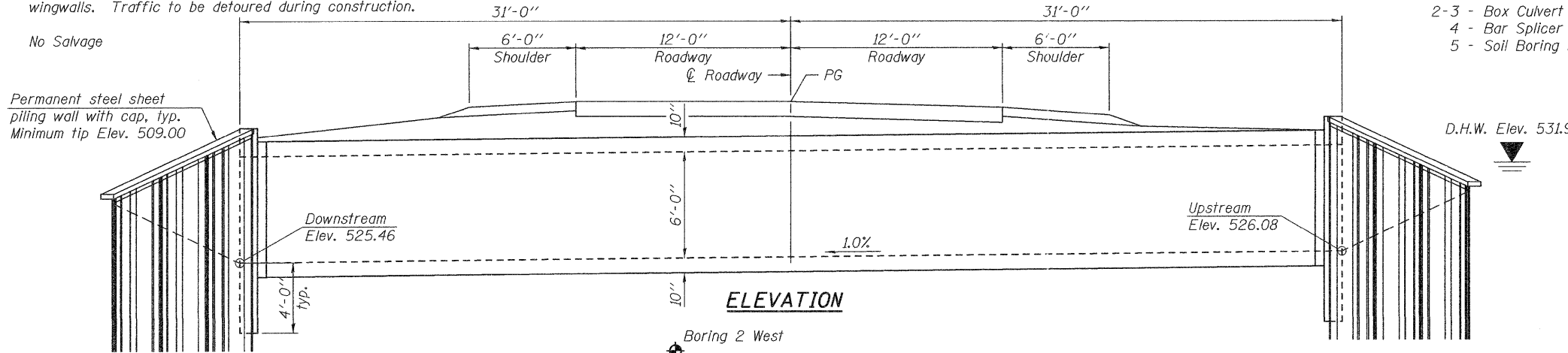
Design Scour Elevation (ft.)	Downstream	Upstream
	521.46	522.08

INDEX OF SHEETS

- 1 - General Plan & Elevation
- 2-3 - Box Culvert End Section Details
- 4 - Bar Splicer Assembly Details
- 5 - Soil Boring Logs

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Removal of Existing Structures	Each	1
Name Plates	Each	1
Box Culvert End Sections, Culvert No. 1	Each	2
Precast Concrete Box Culvert 10' x 6'	Foot	118.0
Stone Riprap, Class A4	Sq. yd.	124
Filter Fabric	Sq. yd.	124



DESIGN STRESSES

FIELD UNITS
 $f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 38,000$ psi (permanent sheet piling)
 $f_y = 50,000$ psi (AASHTO M270, Grade 50W)

PRECAST UNITS
 $f'_c = 5,000$ psi
 $f_y = 65,000$ psi (welded wire fabric)
 $f_y = 60,000$ psi (Reinforcement)

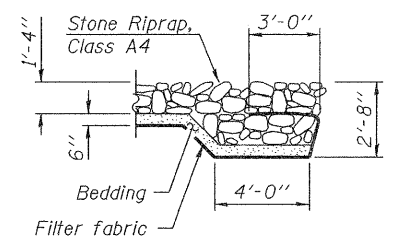
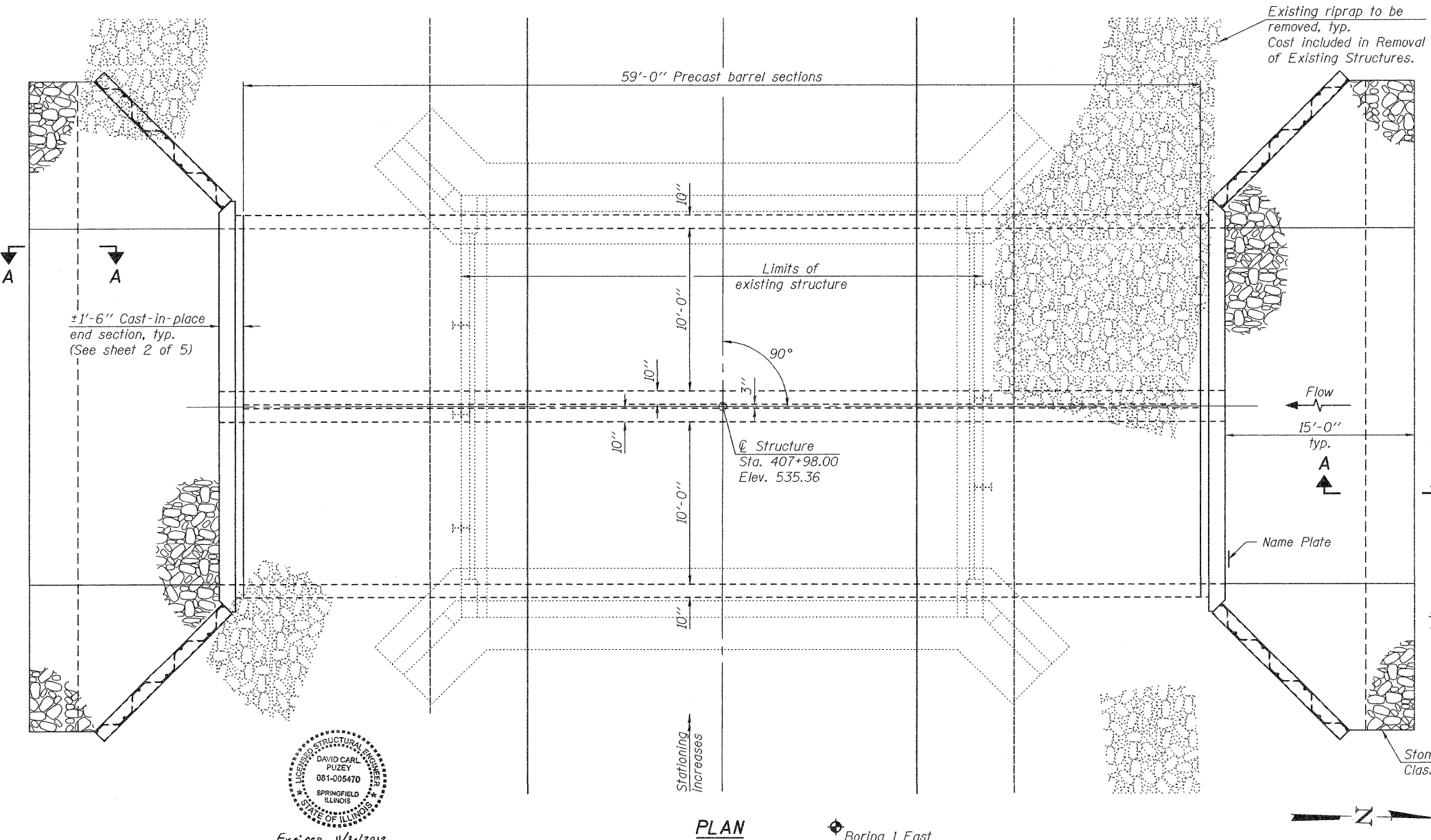
LOADING HS-20-44

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

DESIGN SPECIFICATIONS
2002 AASHTO

CULVERT CONSTRUCTION SEQUENCE

1. Remove existing structure
2. Build cutoff wall
3. Prepare bed
4. Place precast box culvert sections.
5. Form and place concrete in end section
6. Drive sheeting
7. Backfill culvert and wings
8. Install sheet pile cap

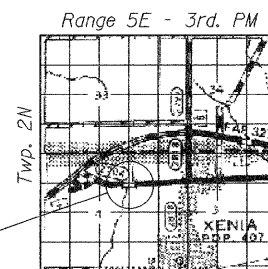


SECTION A-A

WATERWAY INFORMATION

Flood	Freq. Yr.	C.F.S.	Opening Sq. Ft.		Head - Ft.		Headwater El.		
			Exist.	Prop.	H.W.E. Exist.	Prop.	Exist.	Prop.	
Design	10	391	100	106	531.3	0.3	0.0	531.6	531.3
Base	50	650	114	118	531.9	0.9	0.5	532.8	532.4
Max. Calc.	100	768	117	120	532.0	1.7	0.8	533.7	532.8

Proposed Low Grade Elev. 535.36 @ Sta. 408+00
 Existing Low Grade Elev. 535.36 @ Sta. 408+00
 10 year velocity through existing bridge = 3.9 ft./sec.
 10 year velocity through proposed culvert = 3.7 ft./sec.



LOCATION SKETCH

STATION 407+98.00
 BUILT 201 BY
 STATE OF ILLINOIS
 F.A.S. RTE. 2704 SEC. 12B-1(I)
 LOADING HS-20
 STRUCTURE NO. 013-2012

NAME PLATE
See Std. 515001

GENERAL PLAN & ELEVATION
OLD U.S. ROUTE 50 OVER NICKOLSON CREEK
F.A.S. RTE. 2704 - SEC. 12B-1(I)

CLAY COUNTY
STATION 407+98.00
STRUCTURE NO. 013-2012



DESIGNED - <i>David Pucey</i>	EXAMINED - <i>Michael B. Mossman</i>	DATE - MARCH 9, 2011
CHECKED - <i>Michael B. Mossman</i>	PASSED - <i>Michael B. Mossman</i>	
DRAWN - MICHAEL B. MOSSMAN		
CHECKED -		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BOX CULVERT END SECTION DETAILS
STRUCTURE NO. 013-2012

SHEET NO. 1 OF 5 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2704	12B-1(I)	CLAY	39	18

CONTRACT NO. 74116
 ILLINOIS FED. AID PROJECT