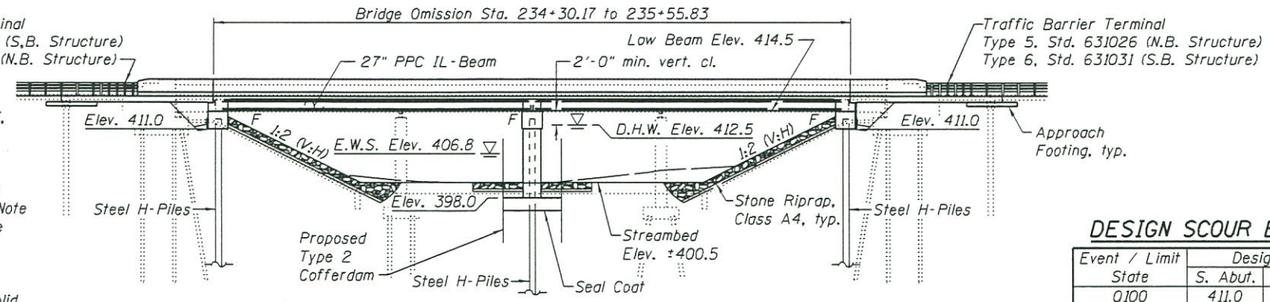
Bench Mark: BM 1 - Cut square on northeast headwall of S.N. 041-0001 (N.B.), Sta. 235+70.57, 68.4' RT. Elev. 419.28.

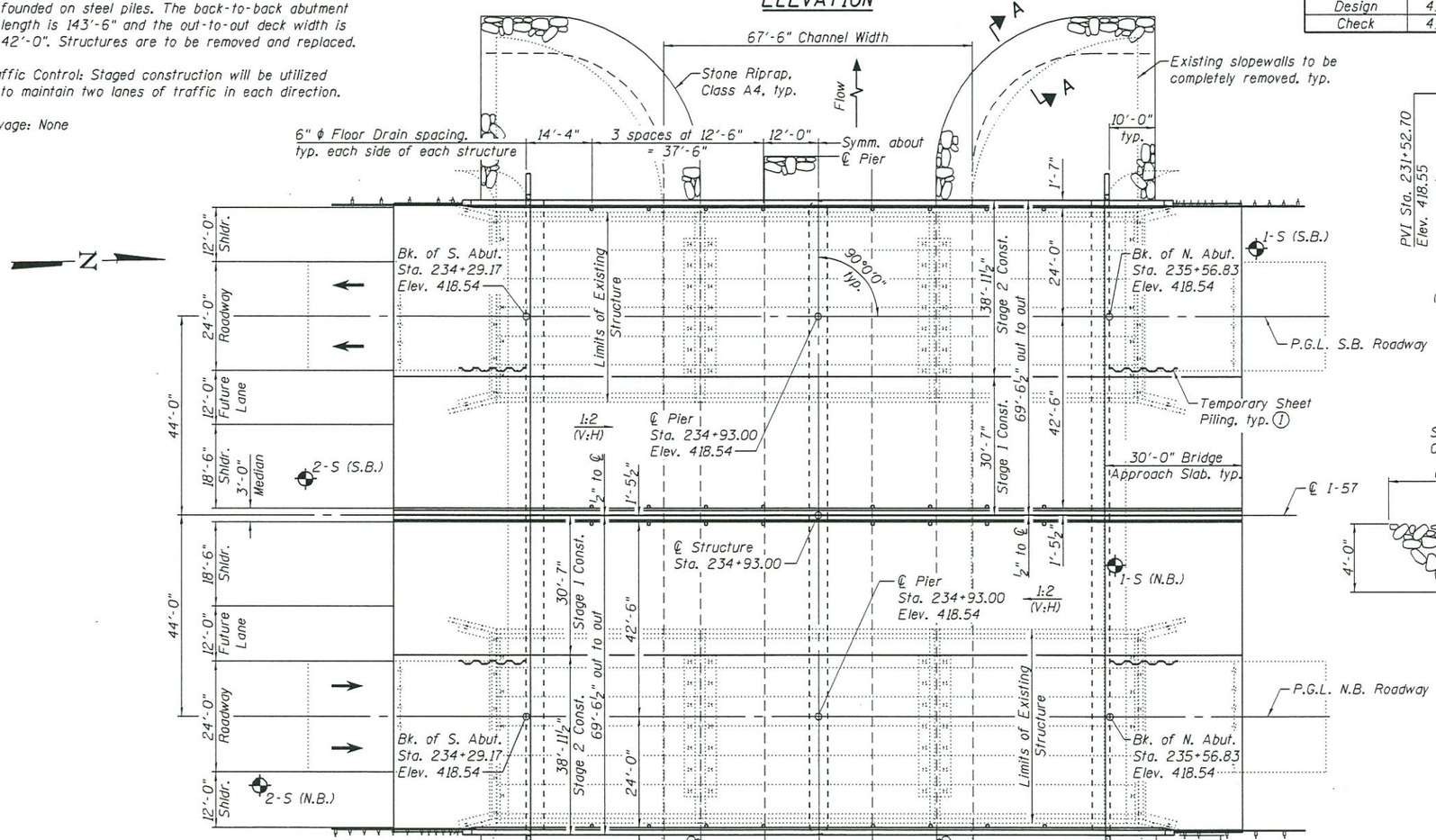
Existing Structure: S.N. 041-0001 (N.B.) and S.N. 041-0002 (S.B.) were originally built in 1964 as F.A.I. 57, Section 41-1B-1, Sta. 234+69.00. Note that I-57 stationing was revised in 2016, and the structures are now at Sta. 234+92.75. Each structure consists of a three span steel WF30 superstructure supported by concrete open stub abutments founded on steel piles and concrete solid wall hammerhead-type piers with spread footings founded on steel piles. The back-to-back abutment length is 143'-6" and the out-to-out deck width is 42'-0". Structures are to be removed and replaced.

Traffic Control: Staged construction will be utilized to maintain two lanes of traffic in each direction.

Salvage: None



ELEVATION



PLAN

Notes:
1. The stage removal line of the existing abutments will be located 2'-0" from the stage construction line.
2. For Riprap Protection at Piers, see sheet 2 of 2.
3. The Profile Grade shows the final elevations after grinding.
4. Up to ¼" may be ground off the bridge deck and the bridge approach slabs.

WATERWAY INFORMATION

Drainage Area = 23.45 sq. mi. Existing Low Grade Elev. 417.97 at Sta. 234+00; Proposed Low Grade Elev. 418.54 at Sta. 234+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	3,480	1,046	1,046	412.2	0.3	0.3	412.5	412.5
Design	50	5,520	1,081	1,081	412.5	0.7	0.7	413.2	413.2
Base	100	6,420	1,093	1,093	412.6	0.9	0.9	413.5	413.5
Max. Calc.	500	8,750	1,157	1,157	413.1	1.9	1.9	415.0	415.0

DESIGN SCOUR ELEVATION TABLE

Event / Limit State	Design Scour Elevations (ft.) S. Abut.	Pier	N. Abut.	Item 113
0100	411.0	393.5	411.0	5
0500	411.0	392.5	411.0	
Design	411.0	393.5	411.0	
Check	411.0	392.5	411.0	

DESIGN SPECIFICATIONS

2014 AASHTO LRFD Bridge Design Specifications, 7th Edition with 2015 & 2016 Interims

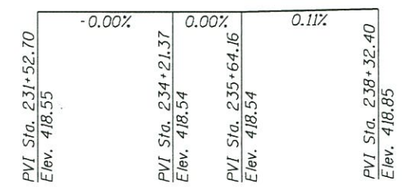
DESIGN STRESSES

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 = 7,000 psi
fpu = 270,000 psi (0.6" ϕ low-relax strands)
fpbt = 202,300 psi (0.6" ϕ low-relax strands)

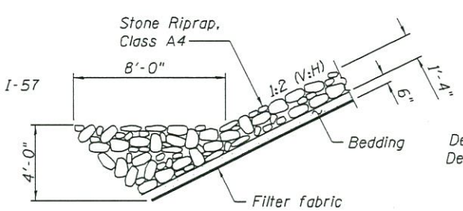


PROFILE GRADE 3

(Along P.G.L. of N.B. and S.B. roadway)

HIGHWAY CLASSIFICATION

F.A.I. Rte. 57 - I-57
Functional Class: Interstate
ADT (one-way): 16,850 (2015); 15,400 (2035)
ADTT (one-way): 5,650 (2015); 4,000 (2035)
DHV (one-way): 1,540 (2035)
Design Speed: 70 m.p.h.
Posted Speed: 70 m.p.h.



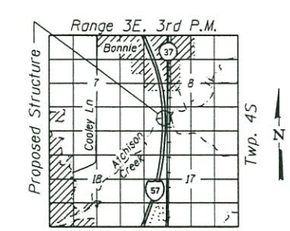
SECTION A-A

LOADING HL-93

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

SEISMIC DATA

Seismic Performance Zone (SPZ) = 2
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.226g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.627g
Soil Site Class = C



LOCATION SKETCH

APPROVED
FEB 27 2017
AS A BASIS FOR PREPARATION OF DETAILED PLANS

GENERAL PLAN & ELEVATION
I-57 OVER ATCHISON CREEK
F.A.I. RTE. 57 - SEC. (41-1)B-2
JEFFERSON COUNTY
STATION 234+93.00
STRUCTURE NO. 041-0111 (N.B.)
STRUCTURE NO. 041-0112 (S.B.)

FILE NAME = H:\P\13042.002\Structural\TSL\Microstation\841011.0112-78461-001-General Plan & Elevation.dgn

OATES ASSOCIATES Engineering - Architecture
ILLINOIS DESIGN FIRM LICENSE NO: 184.001115

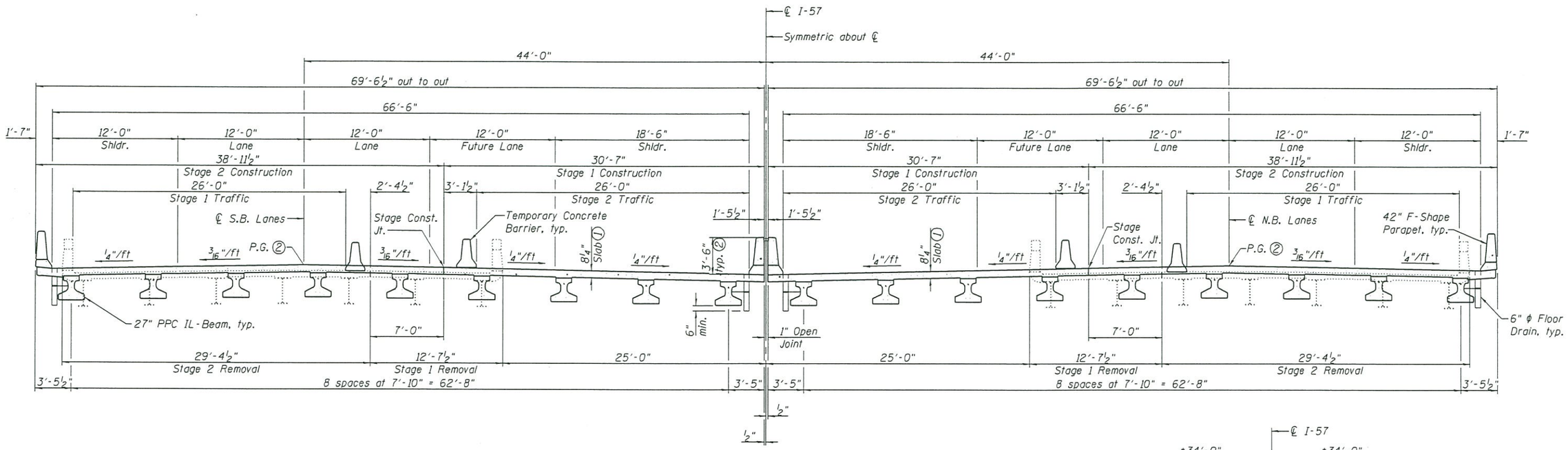
USER NAME =	DESIGNED - SJN	REVISED -	
	CHECKED - DGL	REVISED -	
PLOT SCALE =	DRAWN - SJN	REVISED -	
PLOT DATE = 2/24/2017	CHECKED - DGL	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. 1 OF 2 SHEETS

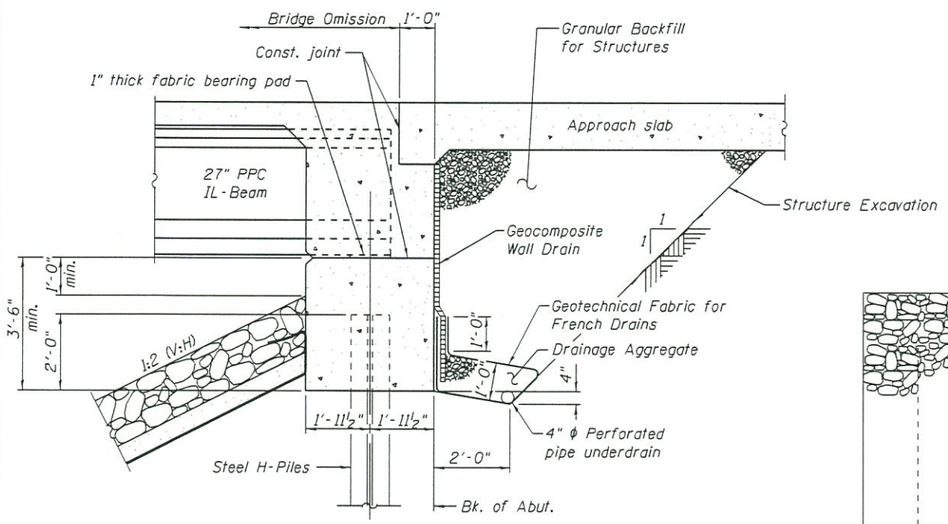
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	(41-1)B-2	JEFFERSON		

CONTRACT NO. 78461
ILLINOIS FED. AID PROJECT



CROSS SECTION

(Looking North)

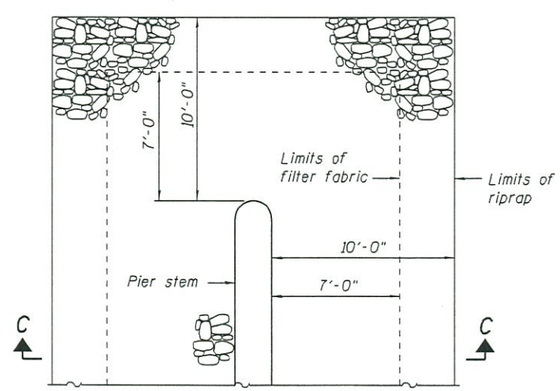


SECTION THRU INTEGRAL ABUTMENT

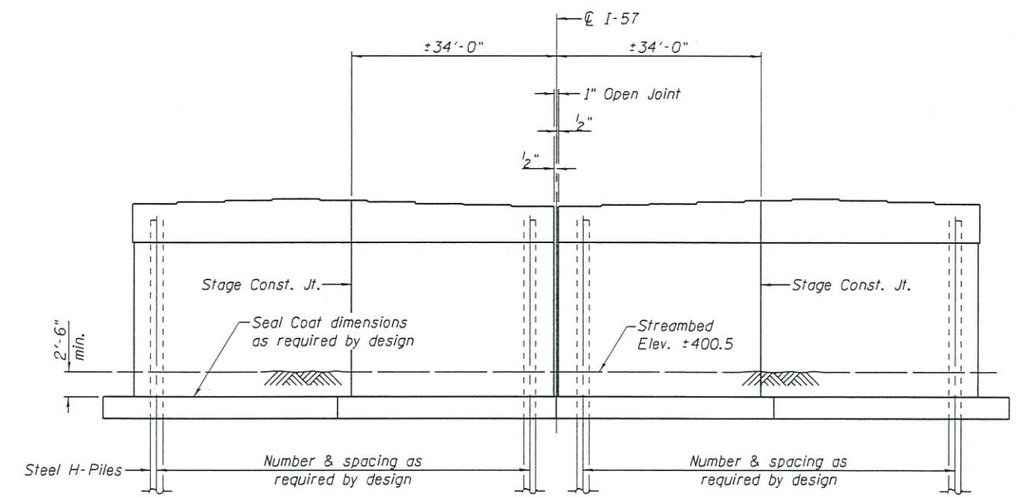
APPROVED

FEB 27 2017

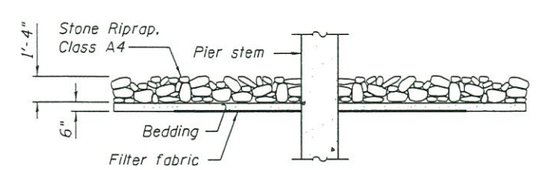
AS A BASIS FOR PREPARATION OF DETAILED PLANS



RIPRAP PROTECTION AT PIERS



PIER SKETCH



SECTION C-C

Notes:
① Prior to grinding.
② After grinding.

DETAILS
I-57 OVER ATCHISON CREEK
F.A.I. RTE. 57 - SEC. (41-1)B-2
JEFFERSON COUNTY
STATION 234+93.00
STRUCTURE NO. 041-0111 (N.B.)
STRUCTURE NO. 041-0112 (S.B.)

FILE NAME = H:\P\13042.002\Structural\TSL\Microstation\041011.0112-78461-002-Details.dgn

OATES ASSOCIATES Engineering - Architecture	USER NAME =	DESIGNED - SJN	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
		CHECKED - DGL	REVISED -		
	PLOT SCALE =	DRAWN - SJN	REVISED -		
ILLINOIS DESIGN FIRM LICENSE NO: 184.001115	PLOT DATE = 2/24/2017	CHECKED - DGL	REVISED -		SHEET NO. 2 OF 2 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	(41-1)B-2	JEFFERSON		
		CONTRACT NO. 78461		
		ILLINOIS FED. AID PROJECT		