

80/20 FED / STATE

SUMMARY OF QUANTITIES				CONSTRUCTION CODE		
				6-64510-0100	6-64520-0100	6-73910-0000
CODE NO.	ITEM	UNIT	TOTAL QUANTITY	BOX CULVERT	BOX CULVERT	BOX CULVERT
				0011 SN 075-2503	0040 SN 075-2504	0040 SN 075-2505
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	342	334	8	
20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	412	412		
20100500	TREE REMOVAL, ACRES	ACRE	0.7		0.7	
20200100	EARTH EXCAVATION	CU YD	3885	2065	1180	640
<del>20201200</del>	<del>REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL</del>	<del>CU YD</del>	<del>1460</del>	<del>1025</del>	<del>435</del>	
20300100	CHANNEL EXCAVATION	CU YD	1030	1030		
20400800	FURNISHED EXCAVATION	CU YD	180	180		
25000200	SEEDING, CLASS 2	ACRE	3.25	1.25	1.25	0.75
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	249	100	92	57
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	249	100	92	57
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	249	100	92	57
25000700	AGRICULTURAL GROUND LIMESTONE	TON	5.6	2.2	2.1	1.3
25100115	MULCH, METHOD 2	ACRE	2.8	1.1	1.0	0.7
25100630	EROSION CONTROL BLANKET	SQ YD	3,000	1,340	1,010	650

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14

△ REV. 2-23-15

80/20 FED / STATE

SUMMARY OF QUANTITIES				CONSTRUCTION CODE		
				6-64510-0100	6-64520-0100	6-73910-0000
CODE NO.	ITEM	UNIT	TOTAL QUANTITY	BOX CULVERT	BOX CULVERT	BOX CULVERT
				0011	0040	0040
				SN 075-2503	SN 075-2504	SN 075-2505
40600982	HOT-MIX ASPHALT SURFACE REMOVAL - BUTT JOINT	SQ YD	508	174	174	160
40600990	TEMPORARY RAMP	SQ YD	85	29	29	27
40603310	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	227	84	73	70
40800050	INCIDENTAL HOT-MIX ASPHALT SURFACING	TON	22	22		
44000100	PAVEMENT REMOVAL	SQ YD	903	294	303	306
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	26	26		
48101200	AGGREGATE SHOULDERS, TYPE B	TON	95	32	40	23
50100300	REMOVAL OF EXISTING STRUCTURES NO. 1	EACH	1	1		
50100400	REMOVAL OF EXISTING STRUCTURES NO. 2	EACH	1		1	
50100500	REMOVAL OF EXISTING STRUCTURES NO. 3	EACH	1			1
50200400	ROCK EXCAVATION FOR STRUCTURES	CU YD	30		30	
50200450	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES	CU YD	939	507	432	
50800105	REINFORCEMENT BARS	POUND	14880	7,260	7620	
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3930	590	150	3,190
51500100	NAME PLATES	EACH	3	1	1	1

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14

△ REV. 2-23-15

EARTH EXCAVATION				
STATION TO STATION	EARTH EXCAVATION	EXCAVATION ADJUSTED FOR SHRINKAGE (EXCAV. X 0.75)	EMBANKMENT	BALANCE WASTE (+) FURNISHED (-)
	CU YD	CU YD	CU YD	CU YD
SEC 118 (B-1)				
STA 53+50.00 TO STA 58+25.00	2,065	1,550	2,920	(1,370)
CHANNEL EXCAVATION		515		515
SEC 118 (B-2)				
STA 84+00.00 TO STA 91+00.00	1,180	885	210	675
SEC 118 (B-1, B-2) - SUBTOTAL	3,245			(180)
SEC 118 (B-3)				
STA 430+50.00 TO STA 436+50.00	640	480	115	365
SEC 118 (B-3) - SUBTOTAL	640			365
SEC 118 (B-1, B-2, B-3) - TOTAL	3,885			

NOTE: A 25% SHRINKAGE FACTOR WAS USED.

CHANNEL EXCAVATION			
STATION TO STATION	CHANNEL EXCAVATION	EXCAVATION ADJUSTED FOR SHRINKAGE (EXCAV. X 0.50)	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES
	CU YD	CU YD	CU YD
SEC 118 (B-1)			
STA 55+75.00 TO STA 58+00.00	1014	507	507

IT IS ASSUMED THAT 50% OF EXCAVATED MATERIALS WILL BE SUITABLE FOR EARTH EMBANKMENT. THE REMAINDER SHALL BE WASTED AS REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES.

INLET AND PIPE PROTECTION		
LOCATION	SIDE	EACH
SEC 118 (B-1)		
STA 53+12.0	LT	1
SEC 118 (B-1) - TOTAL		1

SEEDING SCHEDULE								
STATION TO STATION	SIDE	SEEDING CLASS 2	NITROGEN FERT NUTR	PHOS FERT NUTR	POTAS FERT NUTR	AGR GROUND LIMESTONE	MULCH METH 2	TEMP EROSION SEEDING
		ACRE	LB	LB	LB	TON	ACRE	LB
SEC 118 (B-1)								
STA 53+40.00 TO STA 58+50.00	LT	0.62	56	56	56	1.2	0.6	62
STA 51+25.00 TO STA 60+55.00	RT	0.49	44	44	44	1.0	0.5	49
SEC 118 (B-1) - SUBTOTAL		1.11	100	100	100	2.2	1.1	111
USE		1.25	100	100	100	2.2	1.1	111
SEC 118 (B-2)								
STA 83+50.00 TO STA 90+50.00	LT	0.59	53	53	53	1.2	0.6	59
STA 86+94.00 TO STA 91+00.00	RT	0.43	39	39	39	0.9	0.4	43
SEC 118 (B-2) - SUBTOTAL		1.02	92	92	92	2.1	1.0	102
USE		1.25	92	92	92	2.1	1.0	102
SEC 118 (B-3)								
STA 433+25.00 TO STA 436+33.00	LT	0.26	23	23	23	0.5	0.3	26
STA 430+50.00 TO STA 436+33.00	RT	0.38	34	34	34	0.8	0.4	38
SEC 118 (B-3) - SUBTOTAL		0.64	57	57	57	1.3	0.7	64
USE		0.75	57	57	57	1.3	0.7	64
SEC 118 (B-1, B-2, B-3) - TOTAL		3.25	249	249	249	5.6	2.8	277
USE		3.25	249	249	249	5.6	2.8	*554

\* USE (2 X) TEMPORARY EROSION CONTROL SEEDING FOR RESEEDING TWICE DURING GROWING SEASON (MARCH 1 - NOVEMBER 30)

EROSION CONTROL BLANKET			
LOCATION	SIDE	EROSION CONTROL BLANKET	DESCRIPTION
		SQ YD	
SEC 118 (B-1)			
STA 53+40 TO STA 53+55	LT	40	1:3 SLOPES
STA 53+75 TO STA 54+45	RT	30	1:3 SLOPES
STA 54+70 TO STA 55+60	LT	110	1:3 SLOPES
STA 54+80 TO STA 55+70	RT	190	1:3 SLOPES
STA 55+80 TO STA 57+50	RT	380	1:3 SLOPES
STA 55+95 TO STA 58+50	LT	590	1:3 SLOPES
SEC 118 (B-2) - SUBTOTAL		1,340	
SEC 118 (B-2)			
STA 84+00 TO STA 88+10	LT	450	1:3 SLOPES
STA 88+30 TO STA 90+50	LT	120	1:3 SLOPES
STA 86+40 TO STA 88+50	RT	210	1:3 SLOPES
STA 88+80 TO STA 91+00	RT	230	1:3 SLOPES
SEC 118 (B-2) - SUBTOTAL		1,010	
SEC 118 (B-3)			
STA 430+25 TO STA 433+50	RT	200	1:3 SLOPES
STA 434+08 TO STA 435+02	RT	250	1:3 SLOPES
STA 434+55 TO STA 435+40	LT	200	1:3 SLOPES
SEC 118 (B-3) - SUBTOTAL		650	
SEC 118 (B-1, B-2, B-3) - TOTAL		3,000	

REV. 2-23-15

Benchmark No. 103: Chiseled (C) in top of S.W. wingwall of bridge SN 075-0014, Sta. 55+91, 22' RT Elev. 591.36 NGVD 29

Existing Structure: 075-0014 Built 1927 under SBI 100, Section 118 B. Existing structure is a single span concrete T beam bridge on timber pile supported closed abutments with concrete bridgerail. Back to back abutment length 42'-6". Structure to be removed and replaced with a triple barrel 10'x8' precast concrete box culvert. Traffic to be detoured during construction.

No Salvage.

**WATERWAY INFORMATION**

Drainage Area = 1.4 sq. mi.		Existing Low Grade Elev. 591.7 ft @ Sta. 54+97.5 Proposed Low Grade Elev. 591.87 @ Sta 54+74							
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater E.I.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	10	710	110	170	580.1	0.3	0.3	580.4	580.4
Base	100	1190	155	215	581.6	0.7	0.6	582.2	582.1
OVT (E)	> 500	-	-	-	-	-	-	-	-
OVT (P)	> 500	-	-	-	-	-	-	-	-
Max. Calc.	500	1990	195	240	582.9	2.5	2.2	585.4	585.1

10-Year Outlet Velocity From Existing Structure = 4.0 fps  
10-Year Outlet Velocity From Proposed Structure = 4.1 fps

**PROFILE GRADE**  
Along  $\phi$  IL Rte. 100

STATION 55+75  
BUILT BY  
STATE OF ILLINOIS  
F.A.P. RT. 558 SEC. 118 (B-1)  
LOADING HL-93  
STRUCTURE NO. 075-2503

**DESIGN SCOUR ELEVATION TABLE**

Design Scour Elevation (ft.)	Upstream	Downstream
	571.4	571.0

**HIGHWAY CLASSIFICATION**

FAP Rte. 558 - IL Rte. 100  
Functional Class: Minor Arterial  
ADT: 1100 (2011); 1363 (2034)  
ADTT: 10%  
Design Speed: 60 m.p.h.  
Posted Speed: 55 m.p.h.  
Directional Distribution: 50:50

**LOADING HL-93**

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

**DESIGN SPECIFICATIONS**

2012 AASHTO LRFD Bridge Design Specifications  
6th Edition, with 2013 Interims

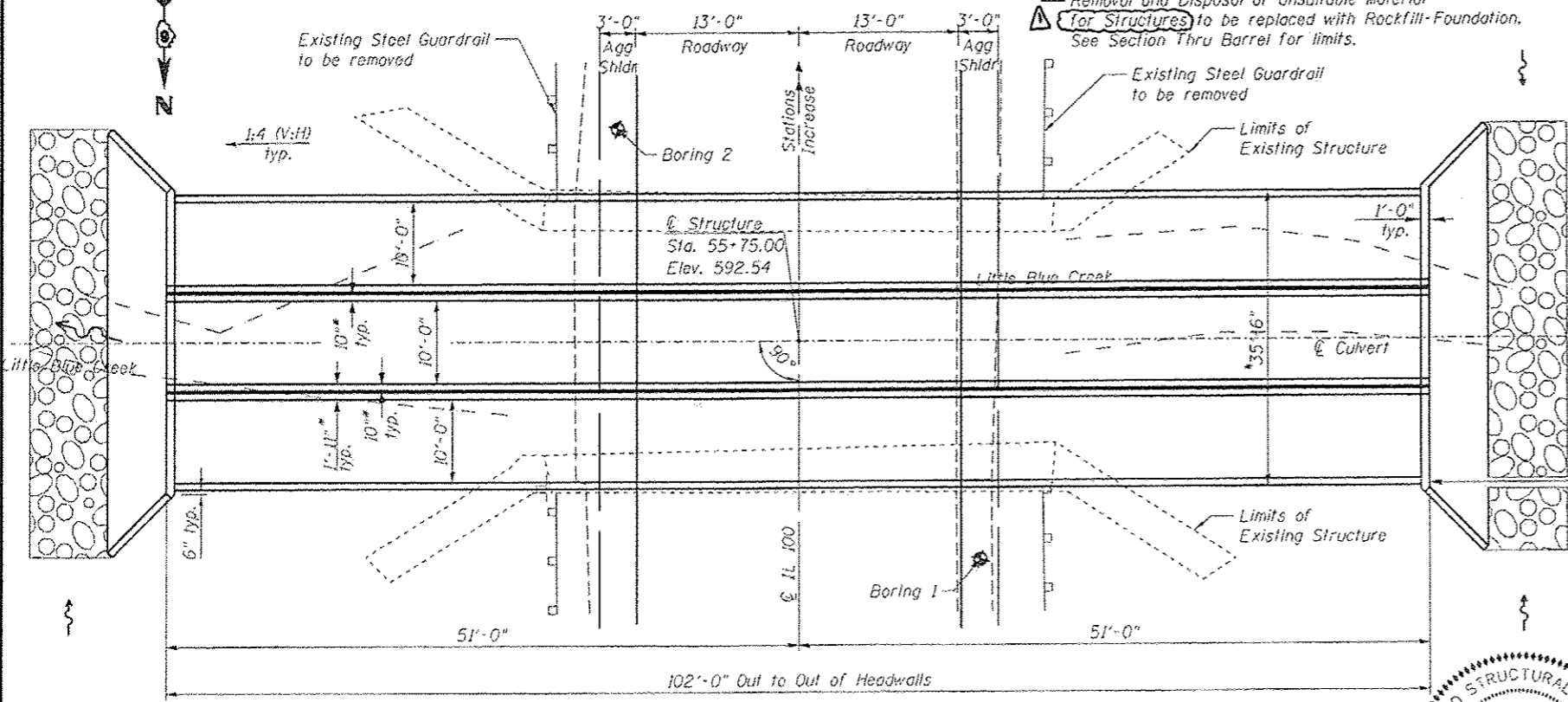
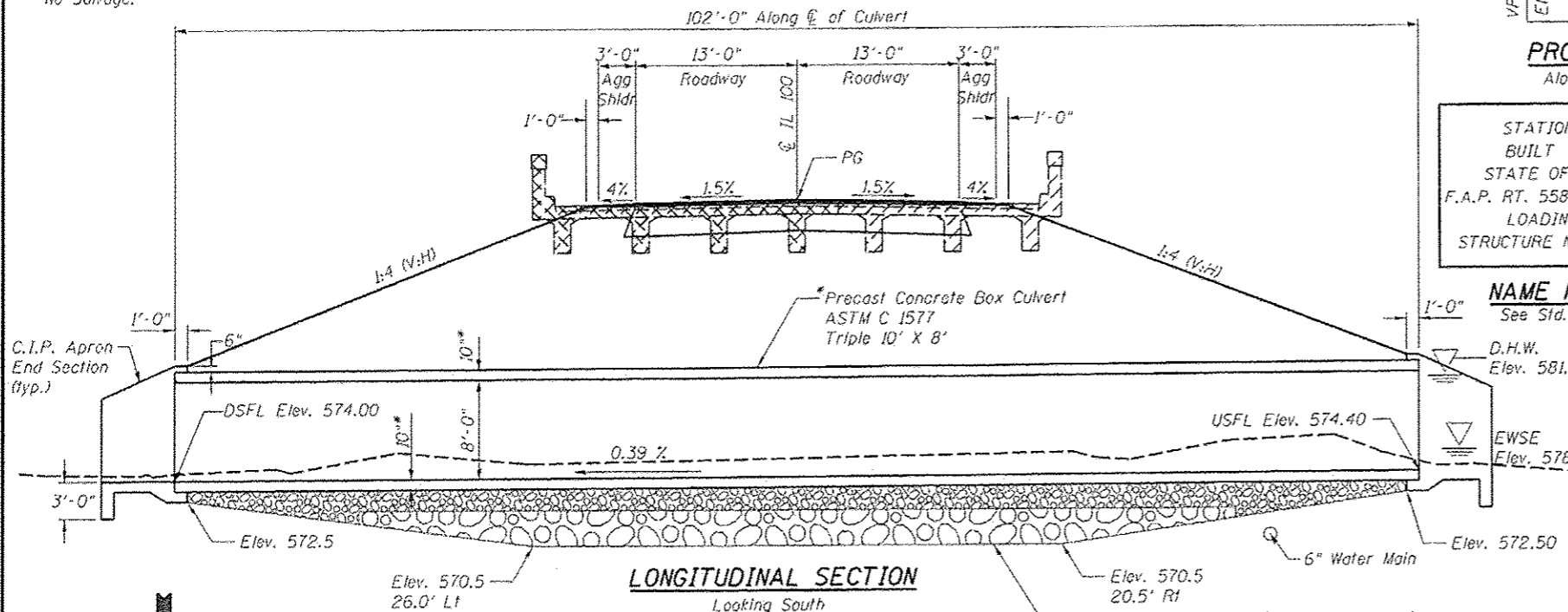
**DESIGN STRESSES**

**FIELD UNITS**

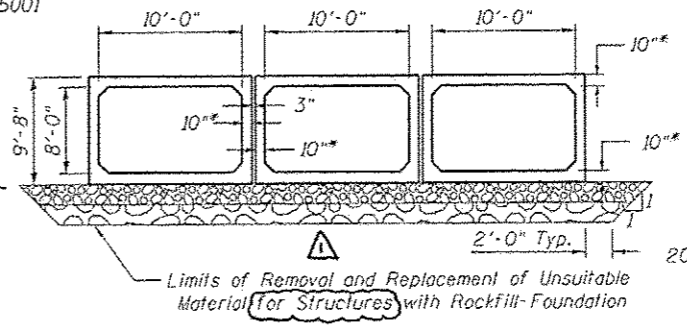
$f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (Reinforcement)

**PRECAST UNITS**

$f'_c = 5,000$  psi  
 $f_y = 65,000$  psi (Welded Wire Fabric)  
 $f_y = 60,000$  psi (Reinforcement)

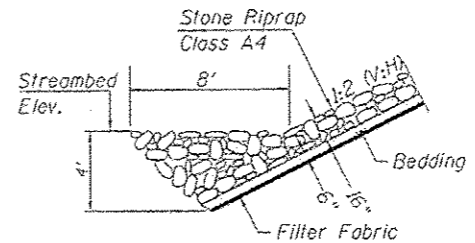


Note:  
Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.  
Existing foundations shall be completely removed and replaced with rockfill foundation

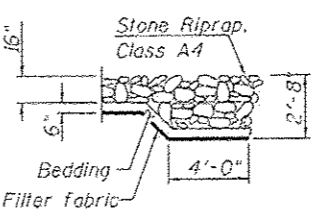


**SECTION THRU BARREL**

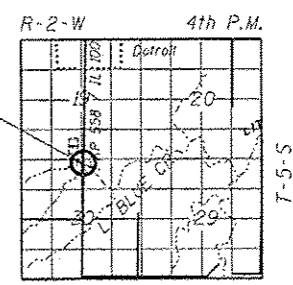
\* Culvert Slab, Wall Thickness, and Shape May Vary as Per Manufacturer



**TOE STONE RIPRAP TREATMENT**

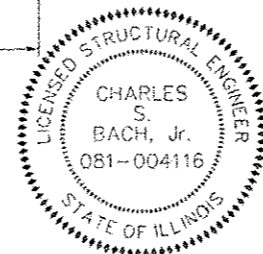


**FLANK STONE RIPRAP TREATMENT**



**LOCATION SKETCH**

**GENERAL PLAN & ELEVATION**  
**IL RTE 100 OVER LITTLE BLUE CREEK**  
**FAP RTE 558 SECTION 118 (B-1)**  
**PIKE COUNTY**  
**STATION 55+75.00**  
**EXISTING STRUCTURE NO. 075-0014**  
**PROPOSED STRUCTURE NO. 075-2503**



TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THIS CULVERT DESIGN IS STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOWN ON THE PLANS. THE DESIGN IS AN ECONOMICAL ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH THE REQUIREMENTS OF THE CURRENT "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."  
Charles S. Bach, Jr. 2/9/2015  
STRUCTURAL ENGINEER PSBA EXPIRES: 11/30/2016

REV. 2-23-15

Plans prepared by:  
**PSBA**  
**POEPPING, STONE, BACH & ASSOCIATES**  
100 SOUTH 54TH ST - P.O. BOX 209  
QUINCY, IL 62306 - 217/223-4605

DESIGNED - TCO	REVISION - 02/09/2015
CHECKED - CSB	REVISION -
DRAWN - PSBA	REVISION -
CHECKED - 11/21/14	REVISION -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SN 075-2503 CULVERT DETAILS  
CAST-IN-PLACE END SECTIONS STA 55+75  
SCALE: NTS SHEET 1 OF 4 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
558	118 (B-1, B-2, B-3)	PIKE	102	49
CONTRACT NO. 72840				
ILLINOIS FED. AID PROJECT				



Benchmark No. 105: Chiseled  $\square$  in S.W. abutment of bridge SN 075-0055, Sta. 88+65.3, 22' RT Elev. 611.44 NGVD 29

Existing Structure: 075-0055 Built 1928 under SBI 100, Section 118 B. Existing structure is a single span concrete slab structure on timber pile supported closed abutments with concrete bridgerail. Back to back abutment length 42'-2". Structure to be removed and replaced with a double 10'x5' precast concrete box culvert. Traffic shall be detoured during construction.

No Salvage.

Notes:  
 Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.  
 Existing foundations shall be completely removed and replaced with rockfill foundation.  
 Boring 2 indicates rock excavation may be required for installation of proposed culvert and wingwalls. Limits of rock excavation shall extend 2'-0" beyond footprint of culvert and wingwalls to a minimum depth of 6" and backfilled with porous granular material.  
 Contact the District Geotechnical Engineer to verify foundation conditions meet plan requirements.

**WATERWAY INFORMATION**

Drainage Area = 0.5 sq. mi.		Existing Low Grade Elev. 611.0 ft @ Sta. 87+27.9 Proposed Low Grade Elev. 611.0 ft @ Sta. 87+20.0							
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Head - Ft.		Headwater El.		
			Exist.	Prop.	H.W.E. Exist.	H.W.E. Prop.	Exist.	Prop.	
Design	10	310	50	70	605.0	0.4	0.2	605.4	605.2
Base	50	520	60	80	605.5	1.0	0.7	606.5	606.1
OVT (E)	100	620	60	80	605.6	1.4	0.9	607.0	606.5
OVT (P)	> 500	-	-	-	-	-	-	-	-
Max. Calc.	> 500	-	-	-	-	-	-	-	-
	500	860	70	80	605.9	2.7	1.6	608.5	607.5

10-Year Outlet Velocity From Existing Structure = 5.5 fps  
 10-Year Outlet Velocity From Proposed Structure = 5.2 fps

**HIGHWAY CLASSIFICATION**

FAP Rte. 558 - IL Rte. 100  
 Functional Class: Minor Arterial  
 ADT: 1100 (2011); 1383 (2034)  
 ADTT: 11K  
 Design Speed: 60 m.p.h.  
 Posted Speed: 55 m.p.h.  
 Directional Distribution: 50:50

**LOADING HL-93**

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

**DESIGN SPECIFICATIONS**

2012 AASHTO LRFD Bridge Design Specifications  
 6th Edition, with 2013 Interims

**DESIGN STRESSES**

**FIELD UNITS**

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

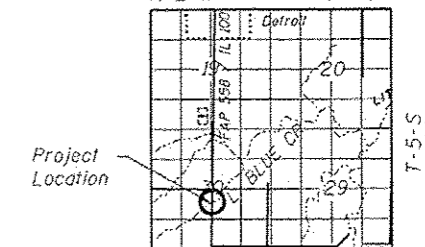
**PRECAST UNITS**

$f'_c = 5,000$  psi  
 $f_y = 65,000$  psi (Welded Wire Fabric)  
 $f_y = 60,000$  psi (Reinforcement)

**DESIGN SCOUR ELEVATION TABLE**

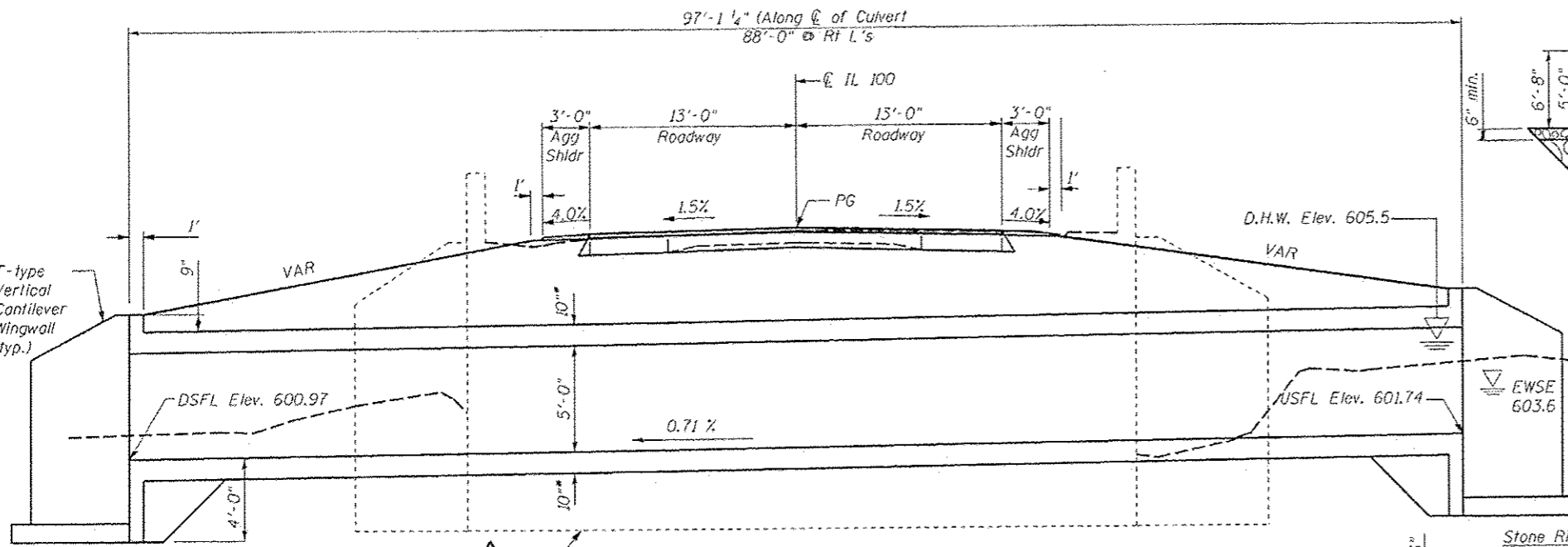
Design Scour Elevation (ft.)	Upstream	Downstream
	597.7	597.0

**LOCATION SKETCH**



**GENERAL PLAN & ELEVATION**

**IL RTE 100 OVER LITTLE BLUE CREEK**  
**FAP RTE 558 SECTION 118 (B-2)**  
**PIKE COUNTY**  
**STATION 88+44.00**  
**EXISTING STRUCTURE NO. 075-0055**  
**PROPOSED STRUCTURE NO. 075-2504**

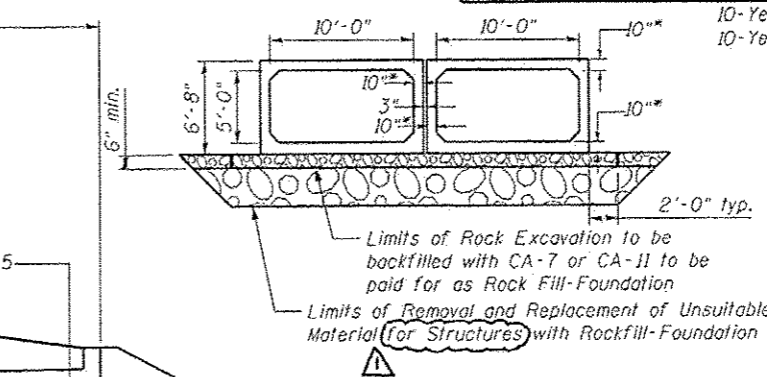


**LONGITUDINAL SECTION**  
 Looking South at right angles

Removal and Disposal of Unsuitable Material for Structures to be replaced with Rockfill-Foundation. See Section Thru Barrel for limits.

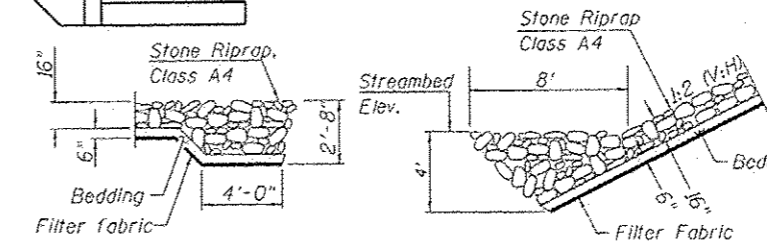
STATION 88+44  
 BUILT BY  
 STATE OF ILLINOIS  
 F.A.P. RT 558 SEC. 118 (B-2)  
 LOADING HL-93  
 STRUCTURE NO. 075-2504

**NAME PLATE**  
 See Sid. 515001



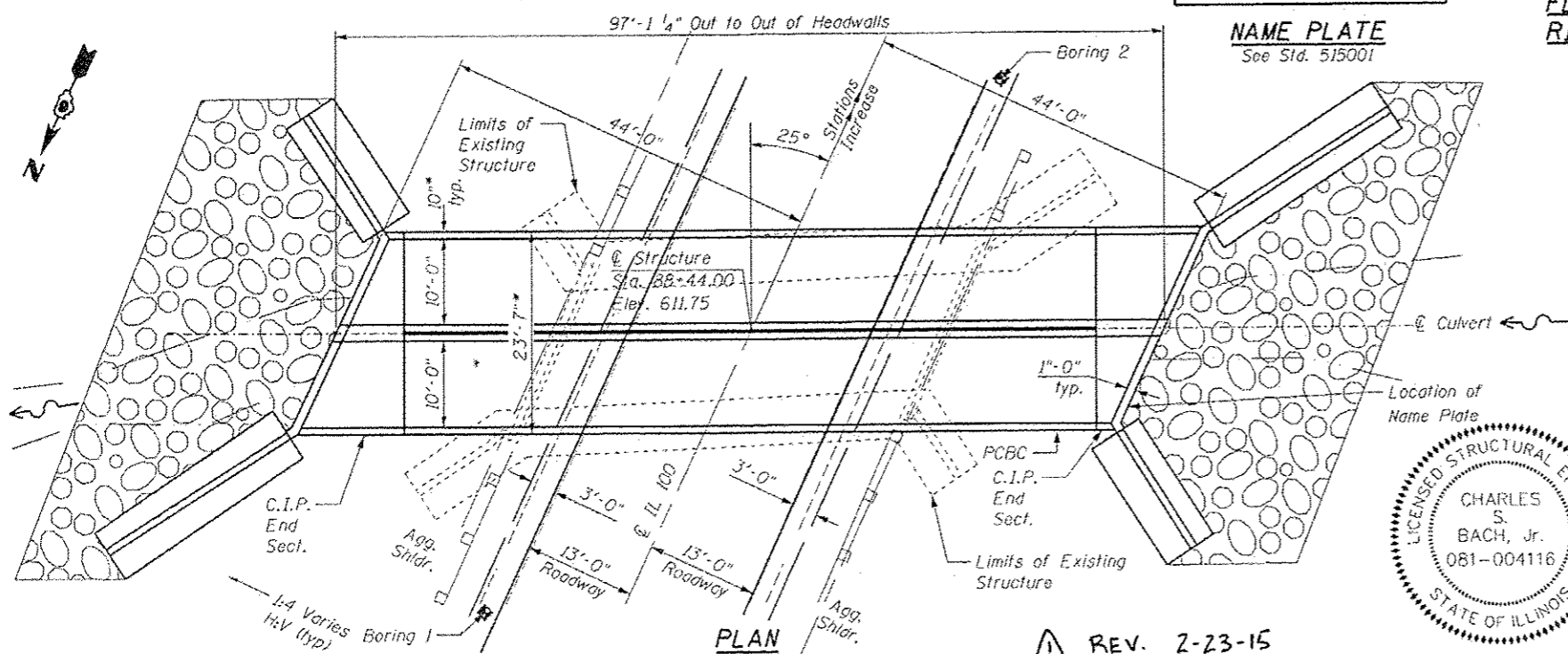
**SECTION THRU BARREL**

\*Culvert slab, wall thickness, and shape may vary as per manufacturer.



**FLANK STONE RIPRAP TREATMENT**

**TOE STONE RIPRAP TREATMENT**



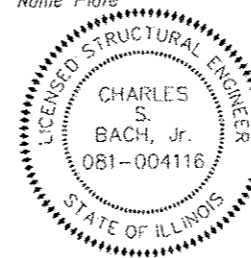
**PLAN**

REV. 2-23-15

**PROFILE GRADE**

Along  $\bar{C}$  IL Rte. 100

TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THIS CULVERT DESIGN IS STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOWN ON THE PLANS. THE DESIGN IS AN ECONOMICAL ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH THE REQUIREMENTS OF THE CURRENT "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."



Charles S. Bach, Jr.  
 STRUCTURAL ENGINEER  
 PSBA  
 EXPIRES: 11/30/2015

Plans prepared by:

**PSBA**  
**POPPING STONE BACH & ASSOCIATES**  
 100 SOUTH 54TH ST. P.O. BOX 709  
 QUINCY, IL 62306 - 217-223-4665

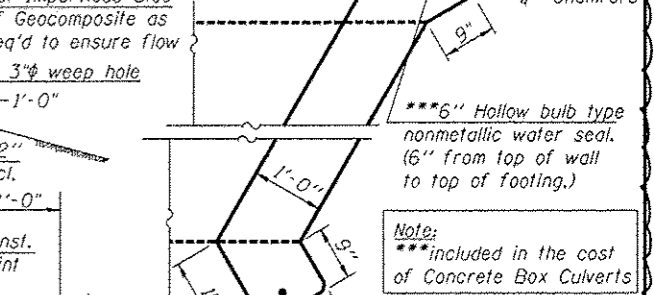
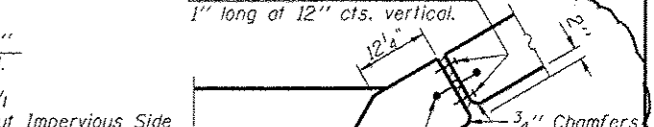
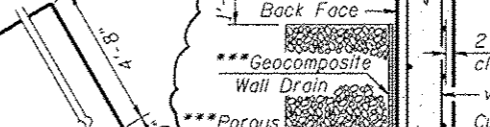
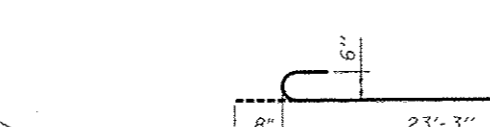
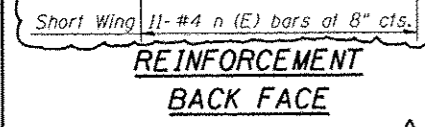
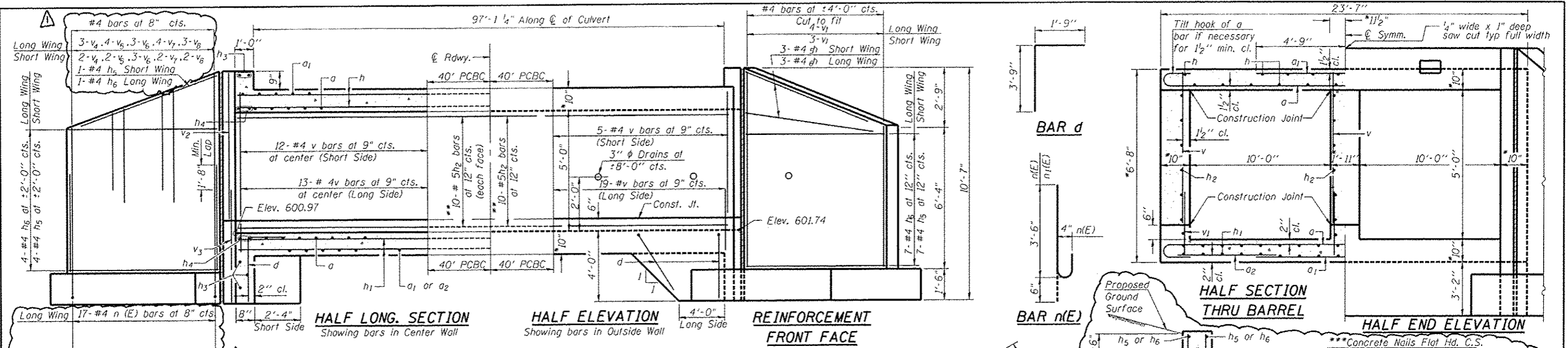
USER NAME: tennys	DESIGNED: TCD	REVISED: 02/09/2015
PLOT SCALE: 6:3000 = 1" = 100'	CHECKED: CSR	REVISED: -
PLOT DATE: 2/9/2015	DRAWN: PSBA	REVISED: -
	CHECKED: 11/2014	REVISED: -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SN 075-2504 CULVERT DETAILS  
 CAST-IN-PLACE END SECTIONS STA 88+44

SCALE: NTS SHEET 1 OF 3 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
558	118 (B-1, B-2, B-3)	PIKE	102	53
CONTRACT NO. 72840				
ILLINOISIFIED, AIO PROJECT				

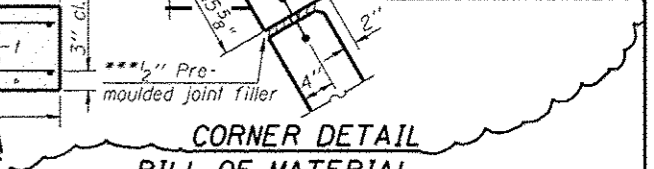
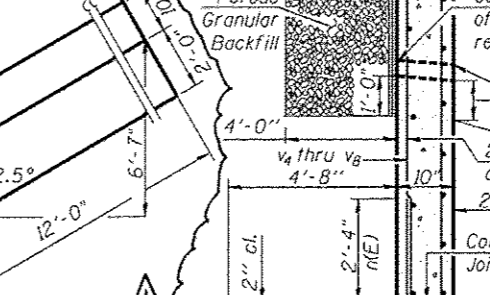
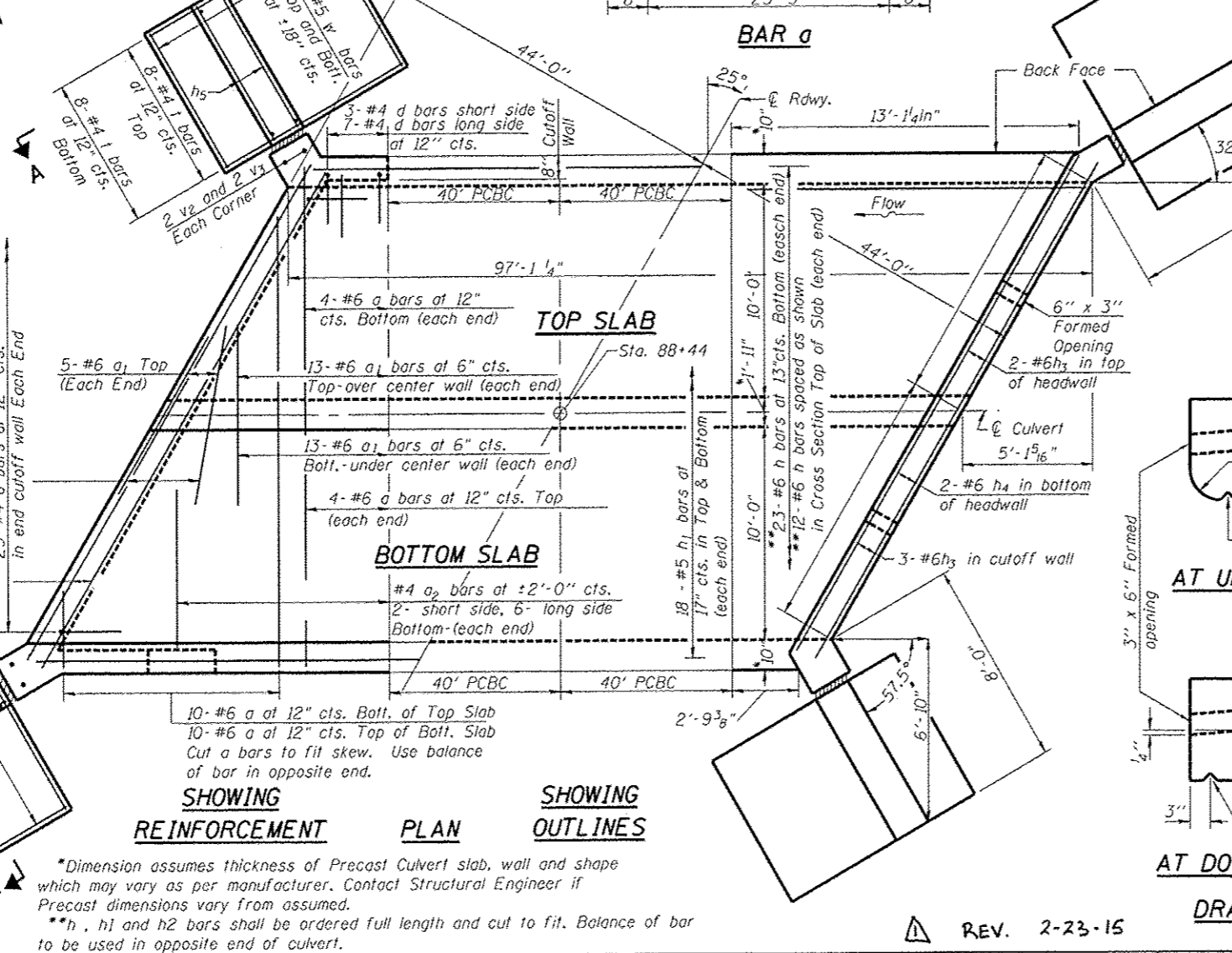


Notes:  
Exposed edges shall be beveled 3/4\"/>

Extend longitudinal & horizontal reinforcement 2'-9\"/>

Areas of precast box culvert in contact with cast-in-place concrete shall be sand blasted, cleaned and wetted prior to placing concrete in field according to Article 503.09(b)

See special detail sheet for Granular Culvert Backfill limits.  
Saw cuts shall be included in the cost of Concrete Box Culverts  
Contact the District Geotechnical Engineer to verify foundation conditions meet plan requirements.



DB-T-R 7-1-10

PSBA  
POPPING STONE BACH & ASSOCIATES  
100 SOUTH 54TH ST. P.O. BOX 709  
QUINCY, IL 62306 217/223-6995

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SN 075-2504 CULVERT DETAILS  
CAST-IN-PLACE END SECTION: STA 88+44

**BILL OF MATERIAL**

Bar No.	Size	Length	Shape	Bar No.	Size	Length	Shape
a	36 #6	24'-7"	U	1	80 #4	7'-3"	
a1	72 #6	9'-6"		v	98 #4	6'-4"	
a2	16 #4	8'-1"		v1	14 #4	8'-9"	
d	66 #4	5'-6"	L	v2	8 #5	6'-11"	
h	35 #6	16'-5"		v3	8 #5	6'-0"	
h1	36 #5	16'-5"		v4	10 #4	6'-0"	
h2	40 #5	16'-5"		v5	12 #4	6'-7"	
h3	10 #6	24'-10"		v6	12 #4	7'-2"	
h4	8 #6	25'-7"		v7	12 #4	7'-9"	
h5	30 #4	7'-0"		v8	10 #4	8'-4"	
h6	30 #4	11'-0"		w	24 #5	11'-0"	
n(E)	56 #4	4'-0"		w1	24 #5	7'-0"	

Removal and Disposal of Unsuitable Material for Struct. Cu. Yd. 432  
Rock Excavation for Structures Cu. Yd. 30  
Reinforcement Bars Pound 7620  
Reinforcement Bars, Epoxy Coated Pound 150  
Name Plates Each 1  
Concrete Box Culverts Cu. Yd. 68.7  
Granular Culvert Backfill Cu. Yd. 216  
Rock Fill Foundation Ton 834

Table for 2 End Sections  
See Roadway Plans for Stone Dumped Riprap quantities

Benchmark No. 430: Chiseled "□" on top center West Headwall, Sta. 430+87.27, 24.91' LT Elev. 439.20 NAVD 88  
 Benchmark No. 435: Chiseled "□" on top center East Headwall, Sta. 434+71.98, 20.44' RT Elev. 442.13 NAVD 88

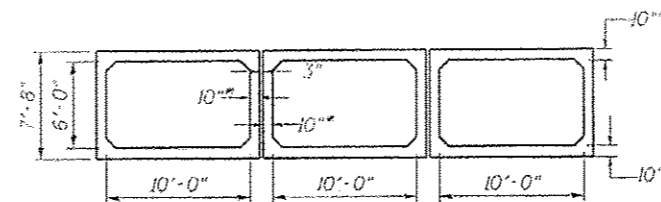
Existing Structure: 075-2014 Built 1934 under SBI 100, Section 123 A&B. Existing structure is a double barrel 10' x 6' 24° skew concrete box culvert structure with concrete headwall. Back to back of headwall length of 43'-9 1/2". Structure to be removed and replaced with a triple 10'x6' precast concrete box culvert. Traffic shall be detoured during construction.

No Salvage.

**WATERWAY INFORMATION**

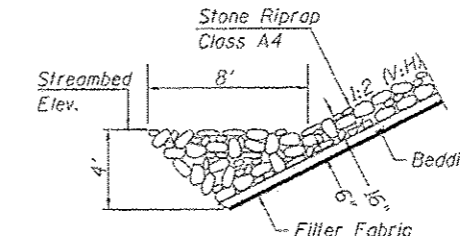
Drainage Area = 2.2 sq. mi.		Existing Low Grade Elev. 437.1 ft @ Sta. 442+00		Proposed Low Grade Elev. 437.1 ft @ Sta. 442+00					
Flood	Freq. Yr.	C.F.S.	Opening Sq. Ft.		Head - Ft.		Headwater E.		
			Exist.	Prop.	H.W.E.	Exist.	Prop.	Exist.	Prop.
Design	10	1080	100	160	439.6	0.0	0.0	439.6	439.6
Base	50	1800	120/510	180/510	440.8	0.5	0.5	441.3	441.3
OVT (E)	100	2150	120/870	180/870	441.3	0.5	0.5	441.8	441.8
OVT (P)	<10 yr	-	-	-	-	-	-	-	-
Max. Calc.	<10 yr	3000	120/370	180/370	440.5	2.2	2.2	442.7	442.7

10-Year Outlet Velocity From Existing Structure = 10.7 fps  
 10-Year Outlet Velocity From Proposed Structure = 6.2 fps

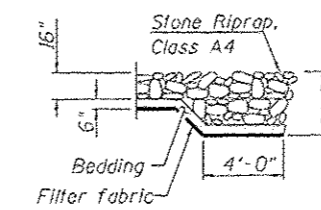


**SECTION THRU BARREL**

\*Culvert slab & wall thickness and shape may vary as per manufacturer



**TOE STONE RIPRAP TREATMENT**



**FLANK STONE RIPRAP TREATMENT**

**HIGHWAY CLASSIFICATION**

FAP Rte. 558 - IL Rte. 100  
 Functional Class: Minor Arterial  
 ADT: 425 (2011); 534 (2034)  
 ADTT: 19%  
 Design Speed: 60 m.p.h.  
 Posted Speed: 55 m.p.h.  
 Directional Distribution: 50:50

**LOADING HL-93**

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

**DESIGN SPECIFICATIONS**

2012 AASHTO LRFD Bridge Design Specifications  
 6th Edition with 2013 Interims

**DESIGN STRESSES**

**FIELD UNITS**

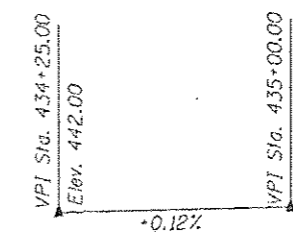
f'c = 3,500 psi  
 fy = 60,000 psi (Reinforcement)  
 fy = 50,000 psi (M270 Grade 50W)

**PRECAST UNITS**

f'c = 5,000 psi  
 fy = 65,000 psi Welded Wire Fabric  
 fy = 60,000 psi Reinforcement

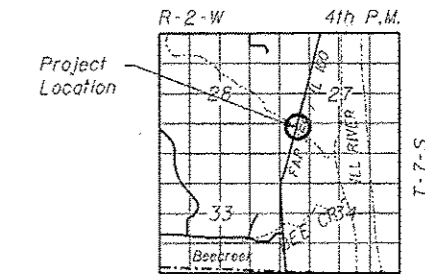
**DESIGN SCOUR ELEVATION TABLE**

Design Scour Elevation (ft.)	Upstream	Downstream
	430.6	430.4

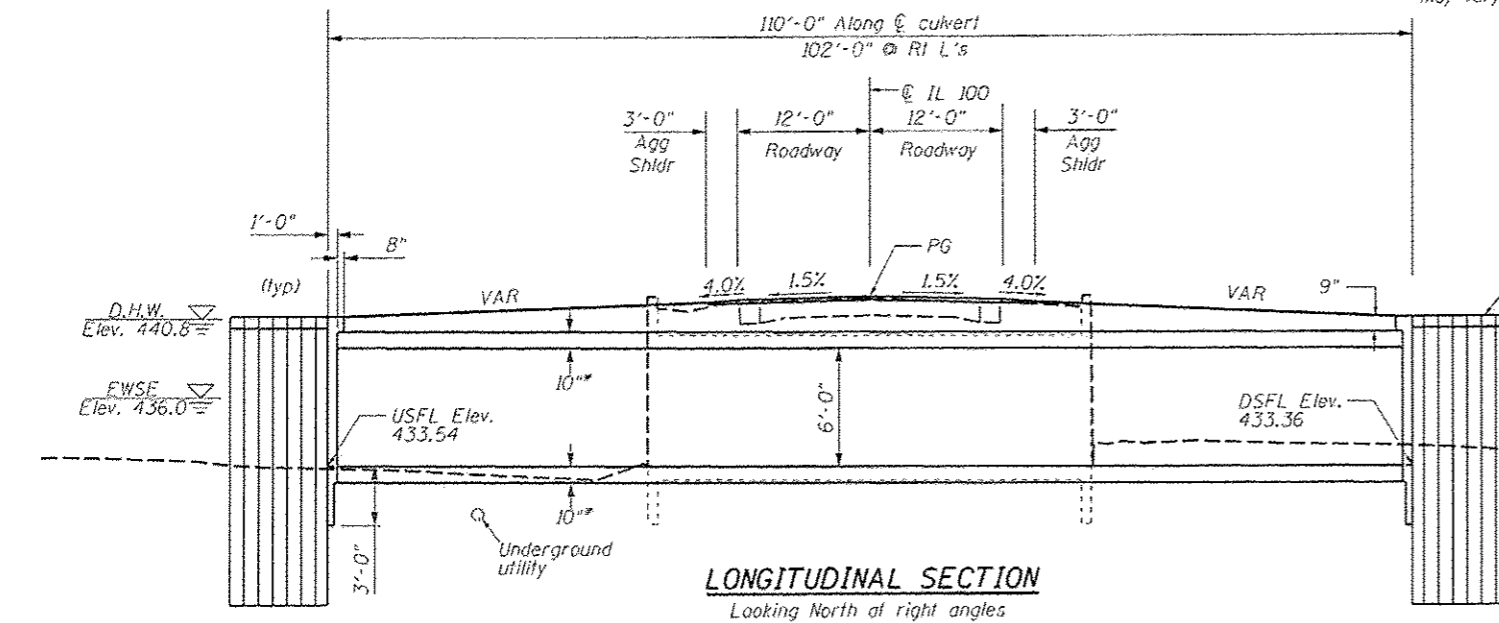


**PROFILE GRADE**

Along @ IL Rte. 100



**LOCATION SKETCH**



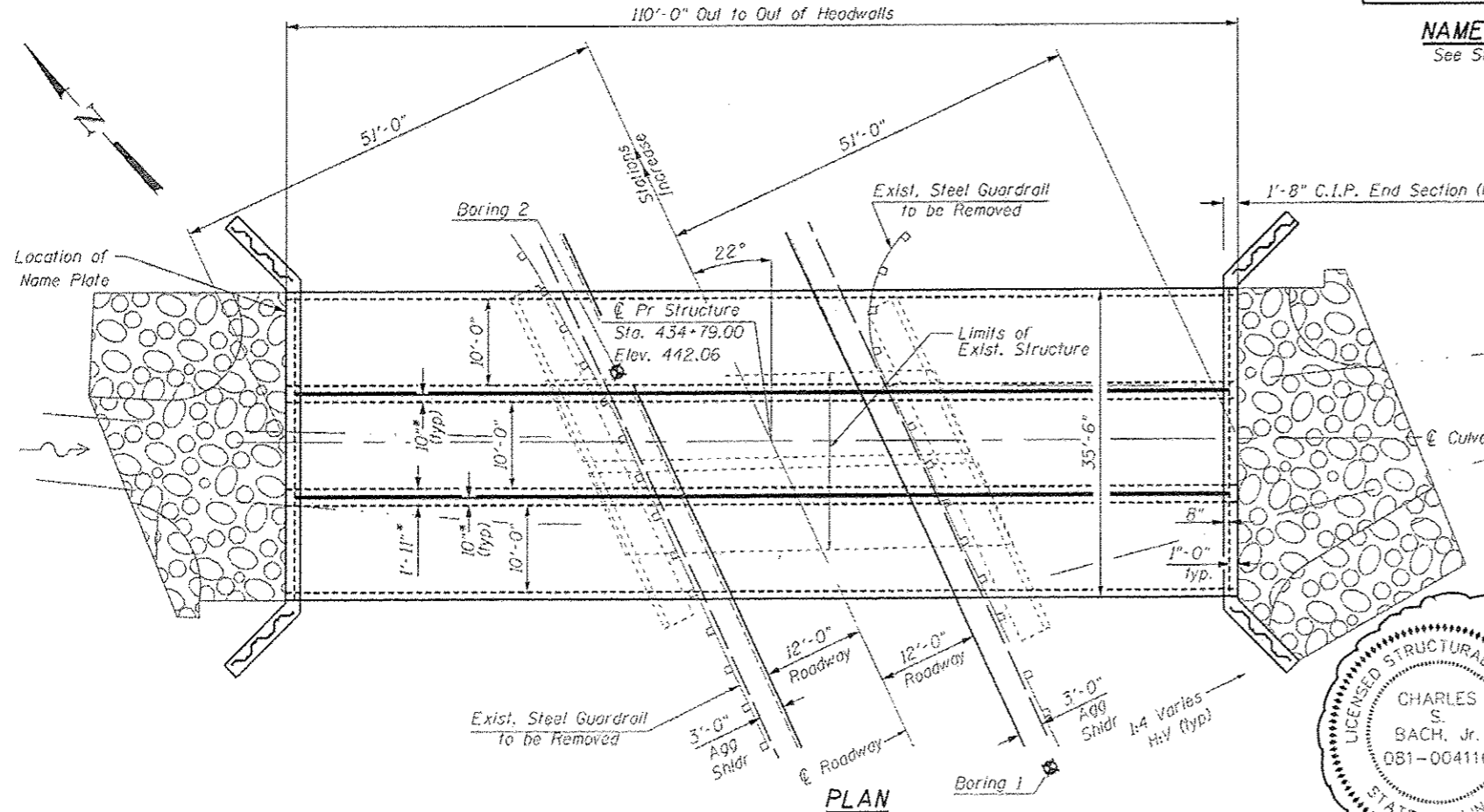
**LONGITUDINAL SECTION**

Looking North at right angles

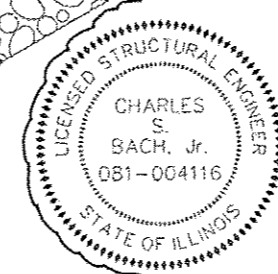
STATION 434+79  
 BUILT BY  
 STATE OF ILLINOIS  
 F.A.P. RTE 558 SEC. 118 (B-3)  
 LOADING HL-93  
 STRUCTURE NO. 075-2505

**NAME PLATE**

See Std. 515001



**PLAN**



TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THIS CULVERT DESIGN IS STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOWN ON THE PLANS. THE DESIGN IS AN ECONOMICAL ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH THE REQUIREMENTS OF THE CURRENT "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."

*Charles S. Bach, Jr.* 2/9/2015  
 STRUCTURAL ENGINEER PSBA EXPIRES: 11/30/2016

REV. 2-23-15

**GENERAL PLAN & ELEVATION**

IL RTE 100 OVER STREAM  
 FAP RTE 558 SECTION 118 (B-3)

PIKE COUNTY  
 STATION 434+79.00

EXISTING STRUCTURE NO. 075-2014  
 PROPOSED STRUCTURE NO. 075-2505

FILE NO. 15-01-006-54762903.027 end sheet.dgn

**PSBA**  
 POEPPING STONE BACH & ASSOCIATES  
 100 SOUTH 54TH ST - P.O. BOX 709  
 QUINCY, IL 62306 - 217/223-4665

USER NAME = tammyd	DESIGNED - YCD	REVISIONS - 02/09/2015
PLAT SCALE = 5/8"=1'-0"	CHECKED - CSB	REVISIONS -
PLAT DATE = 2/9/2015	DRAWN - PSBA	REVISIONS -
	CHECKED - OBS	REVISIONS -

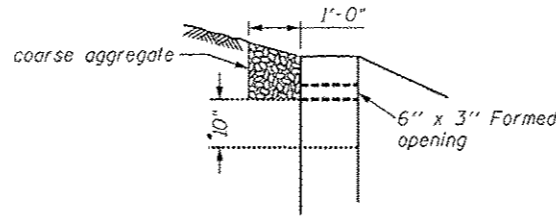
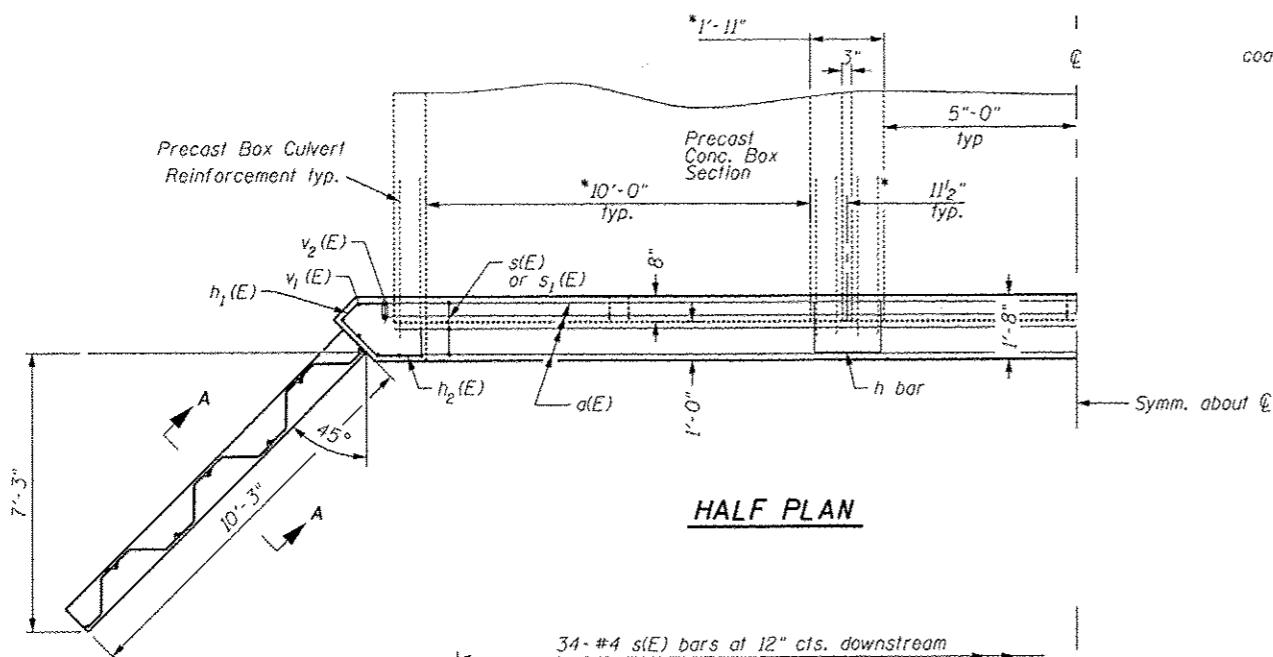
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SN 075-2505 CULVERT DETAILS  
 CAST-IN-PLACE END SECTIONS STA 434+79

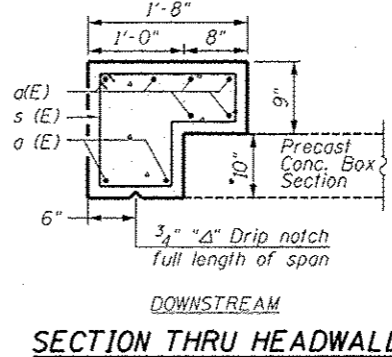
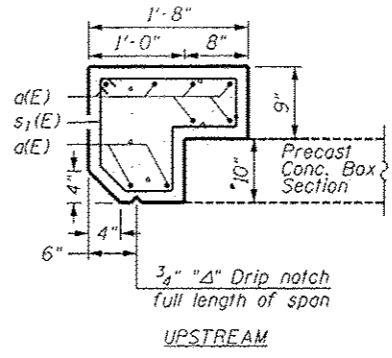
SCALE: NTS SHEET 1 OF 3 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
558	118 (B-1, B-2, B-3)	PIKE	102	56
CONTRACT NO. 72840			ILLINOIS HIGHWAY PROJECT	

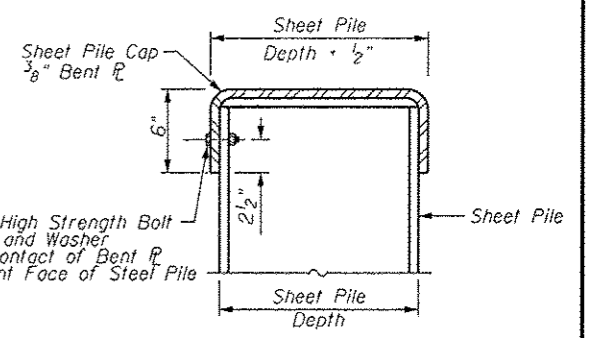




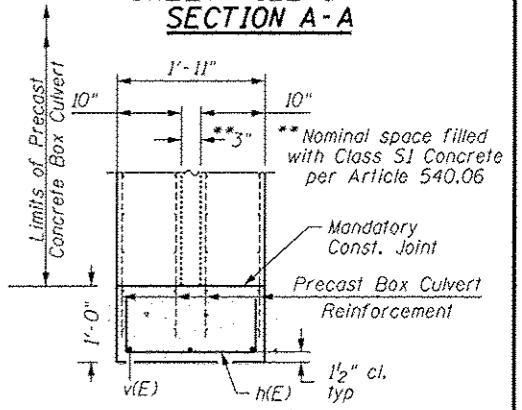
**DRAIN DETAIL**  
 Coarse aggregate for 6" x 3" formed openings full length of both headwalls. To be placed by Grading Contractor. Cost included with Concrete Box Culverts.



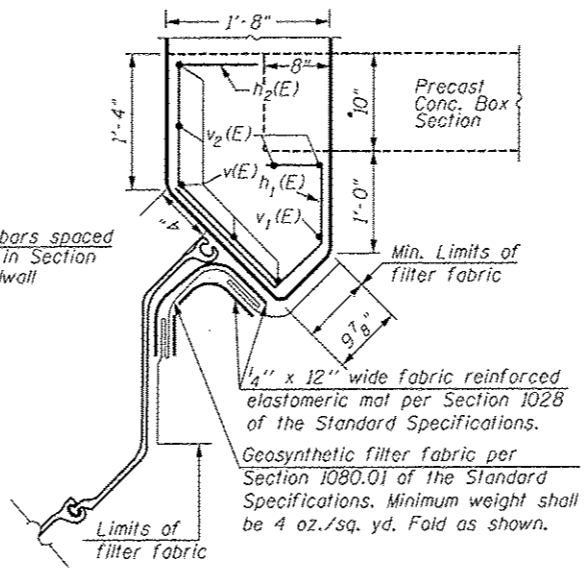
**SECTION THRU HEADWALL**



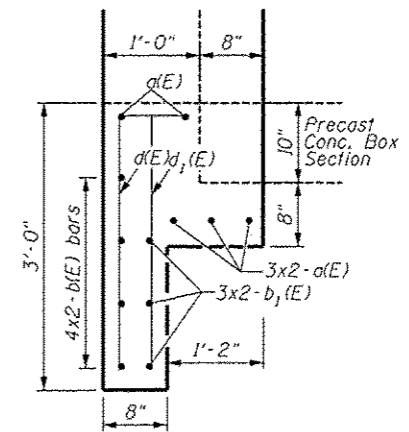
**SHEET PILE CAP SECTION A-A**



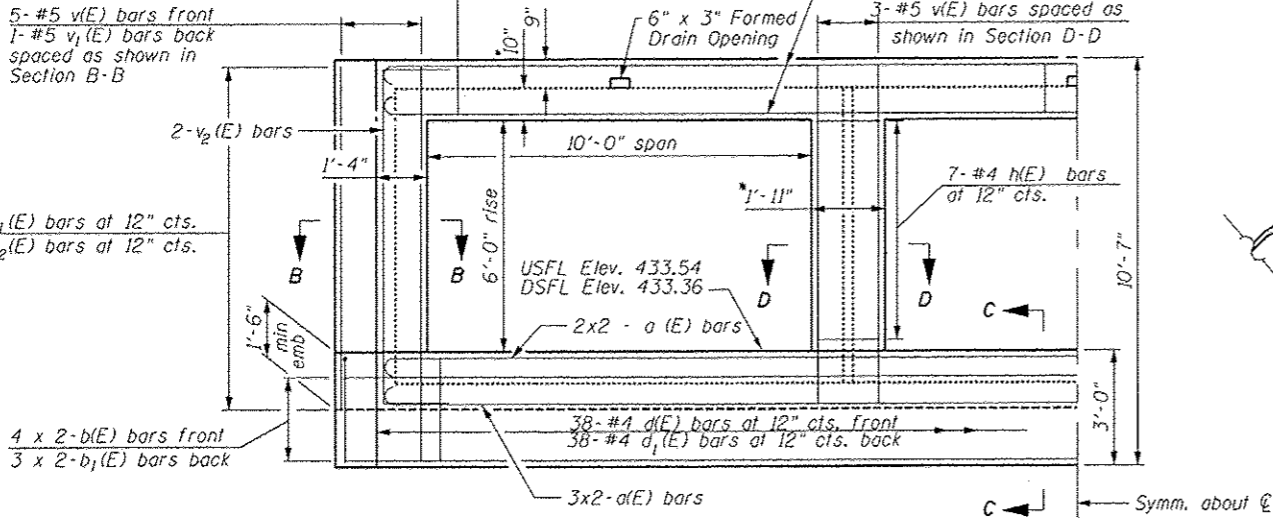
**SECTION D-D**



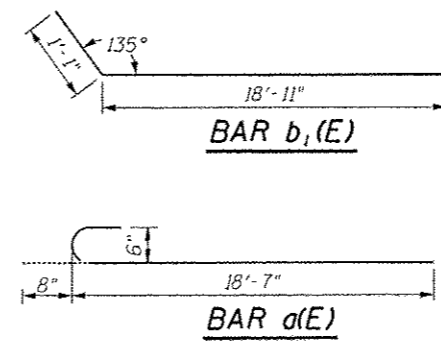
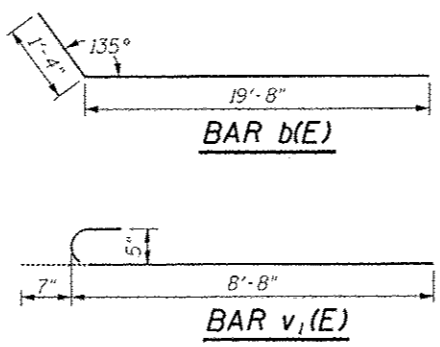
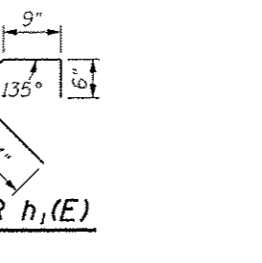
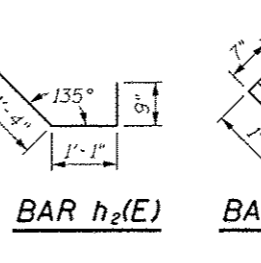
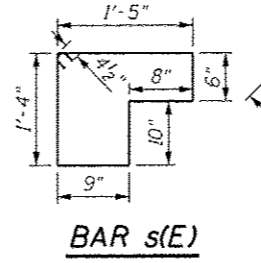
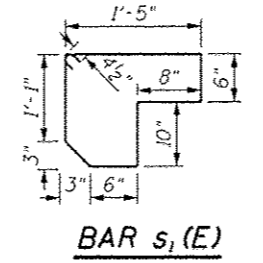
**SECTION B-B**



**SECTION C-C**



**END ELEVATION**



**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape	
a(E)	52	#6	19'-3"	U	
b(E)	16	#4	21'-0"	U	
b1(E)	12	#4	20'-0"	U	
d(E)	76	#4	3'-3"	U	
d1(E)	76	#4	2'-8"	U	
h(E)	28	#4	3'-2"	U	
h1(E)	36	#4	3'-2"	U	
h2(E)	36	#4	3'-2"	U	
s(E)	34	#4	6'-3"	U	
s1(E)	34	#4	6'-2"	U	
v(E)	32	#5	8'-11"	U	
v1(E)	4	#5	9'-3"	U	
v2(E)	8	#6	12'-8"	U	
Reinforcement Bars, Epoxy Coated				Pound	3190
Name Plate				Ea	1
Concrete Box Culverts				Cu. Yd.	17.9
Granular Culvert Backfill				Cu. Yds.	98
Permanent Steel Sheet Piling				Sq. Ft.	1394

See Roadway Plans for Stone Dumped Riprap quantities Table for two (2) headwalls.

**Notes:**  
 Exposed edges shall be beveled 3/4"  
 Reinforcement bars shall conform to requirements of ASTM A706, Grade 60.  
 Reinforcement bars designated as (E) shall be epoxy coated.  
 Bars indicated thus 12 x 4-#5 etc. indicates 12 lines of bars with 4 lengths per line.  
 Extend precast box culvert longitudinal and horizontal reinforcement into end section. Bend as necessary to provide 1/2" clear cover.  
 The minimum effective section modulus of the permanent steel sheet pile wall shall be 18.0 in. 3/11.  
 Sheet piling shall not be driven until the concrete strength has attained a minimum flexural strength of 650 psi or a minimum compressive strength of 3500 psi.  
 The cost of furnishing and installing the fabricated steel cap, elastomeric mat, and filter fabric shall be included in the cost of Permanent Steel Sheet Piling.  
 The sheet pile cap shall be AASHTO M270 Grade 50W. Fasteners shall be ASTM A325 Type 1 Bolts 3/4" φ, holes 7/8" φ.  
 Areas of the precast box culvert in contact with cast-in-place concrete shall be sand blasted, cleaned and wetted prior to placing concrete in field according to Article 503.09 (b).  
 See detail sheet for Granular Culvert Backfill Limits.

REV. 2-23-15

FILE NAME: D:\2244-SHT-08B-S10702505\_CIP\_end\_section.dgn

**PSBA**  
**POEPPING STONE BACH & ASSOCIATES**  
 100 SOUTH 54TH ST - P.O. BOX 709  
 QUINCY, IL 62308 - 217/223-4605

USER NAME: natal  
 DESIGNED: TCD  
 CHECKED: CSB  
 DRAWN: PSBA  
 CHECKED: DBS  
 PLOT SCALE: 5/8"=1'-0"  
 PLOT DATE: 12/15/2014

DESIGNED: TCD  
 CHECKED: CSB  
 DRAWN: PSBA  
 CHECKED: DBS  
 REVISED: -  
 REVISED: -  
 REVISED: -  
 REVISED: -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SN 075-2505 CULVERT DETAILS  
 CAST-IN-PLACE END SECTIONS STA 434+79  
 SCALE: NTS SHEET 2 OF 3 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
558	118 (B-1, B-2, B-3)	PIKE	102	57
			CONTRACT NO. 72840	
ILLINOIS FED. AID PROJECT				