

08680 #65 1-1604 FAP 885 UNION 104(A-BY)-1

JAR

#65

65

95%
10-7-2004

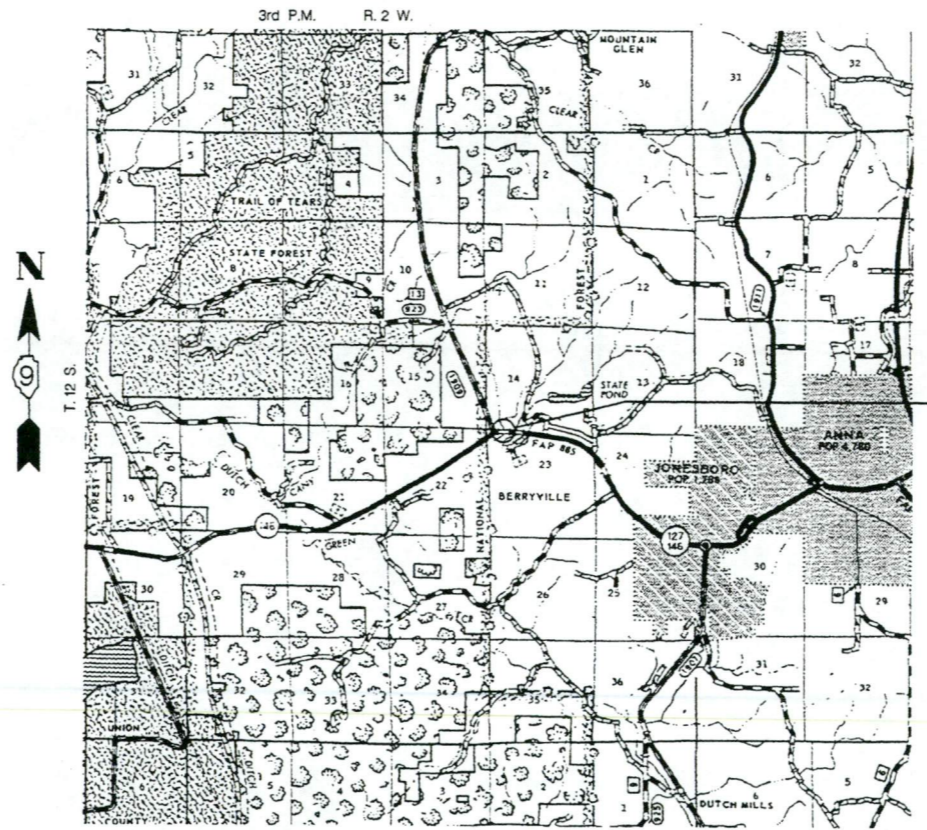
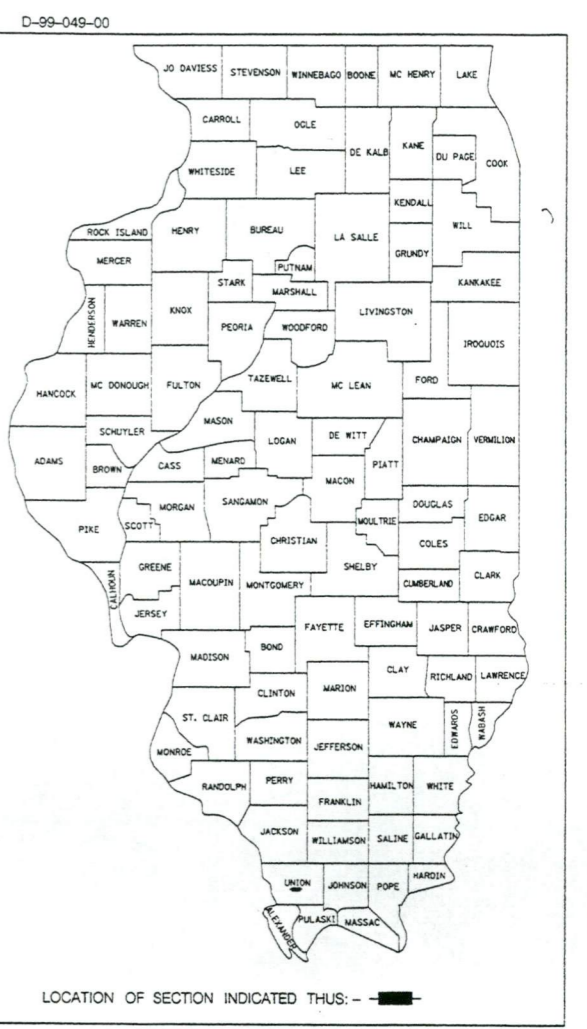
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
885	104(A-BY)-1	UNION	23	1
STA. 171+89 TO STA. 172+73				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				
*ACF-0885 (031)				

FOR INDEX OF SHEETS, SEE SHEET NO. 2
FOR SUMMARY OF QUANTITIES, SEE SHEET NO. 3

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROPOSED
HIGHWAY PLANS

F.A.P. ROUTE 885 (ILLINOIS 127/146)
SECTION 104(A-BY)-1
PROJECT **ACF-0885 (031)**
UNION COUNTY
C-99-021-03

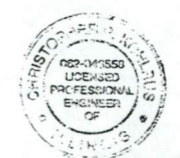


PROPOSED PROJECT ENDS
- STA. 172 + 73

PROPOSED CAST-IN-PLACE TRIPLE
BARREL BOX CULVERT. 12'-0" (W)
X 10'-0" (H). 79'-3 1/4' LENGTH.
22° SKEW LT. FORWARD
STA. 172 + 31.00
S.N. 091-2026

PROPOSED PROJECT BEGINS
- STA. 171 + 89

STRUCTURE REPLACEMENT OVER
GREEN CREEK TRIBUTARY



Christopher P. Kohlman 6/13/03
EXPIRATION DATE: 11/30/03

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED September 10 2003

Thomas A. Z...
DISTRICT ENGINEER

December 5 2003

Michael J. Rhin...
ENGINEER OF DESIGN AND ENVIRONMENT

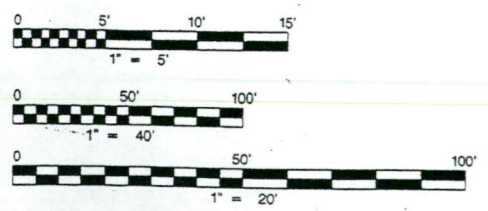
December 5 2003

Walter A. Mad...
DIRECTOR, DIVISION OF HIGHWAYS

PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS

091-2026

PROJECT ENGINEER: DAVID PICHE 618-351-5227
FILE NAME: 202615.DWG, 6/11/03



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD
ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT
CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS
ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
JOINT UTILITY-LOCATION- INFORMATION FOR EXCAVATION
1-800-892-0123
WEBSITE: WWW.JULIEICALL.COM

CONTRACT NO. 98680
COUNTY: UNION SECTION: 104(A-BY)-1 ROUTE: F.A.P. 885

REPLACED 091-2003

TOWNSHIP : JONESBORO
FUNCTIONAL CLASSIFICATION : OTHER PRINCIPAL ARTERIAL ROADWAY
2003 A.D.T. : 5800
PV : 4750
SU : 748
MU : 302

091-2026

ALLEN HENDERSON & ASSOCIATES, INC.

CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD, IL. PHONE: (217) 544-8033

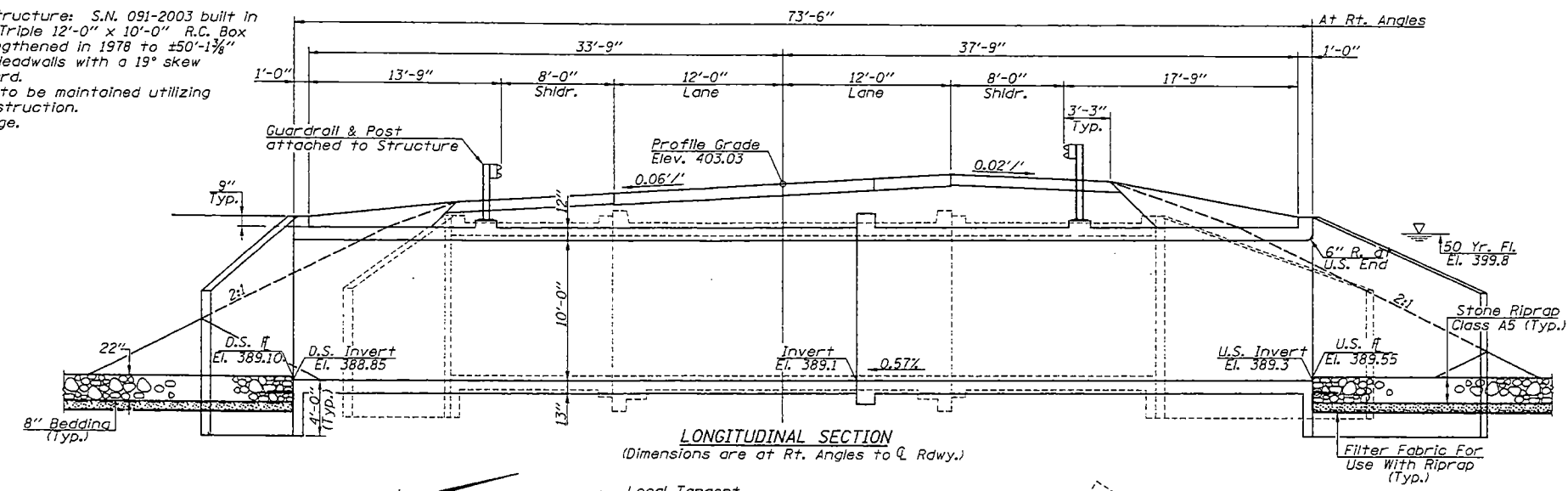
FILL HEIGHT = 403.03 - 389.06 - 11.0' = 2.97'

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 1 OF 8 SHEETS
F.A.P. 885	104(A-BY)-1	UNION	23	16	
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT-					

Benchmark #101: Chiseled Square on top of N.E. Wingwall, S.N. 091-2003 Sta. 171+99, 27' Rt. El. 401.02

Existing Structure: S.N. 091-2003 built in 1932 as a Triple 12'-0" x 10'-0" R.C. Box Culvert lengthened in 1978 to ±50'-1 1/2" Out-Out. Headwalls with a 19° skew left forward.
Traffic to be maintained utilizing Stage Construction.
No Salvage.



TOTAL BILL OF MATERIAL

Item	Unit	Quantity
Stone Riprap, Class A5	Ton	174
Filter Fabric For Use With Riprap	Sq. Yd.	191
Removal of Existing Structures	Each	1
Reinforcement Bars	Pound	71380
Temporary Soil Retention System	Sq. Ft.	360
Name Plates	Each	1
Concrete Box Culverts	Cu. Yd.	382.8
Bar Spacers	Each	204
Steel Plate Beam Guardrail Attached to Structures	Foot	84.84
Geotextile Retaining Wall	Sq. Ft.	123

WATERWAY INFORMATION

Drainage Area = 2.75 Sq. Mi. Low Grade Elev. = 402.50 @ Sta. 177+00

Frea. Yr.	Location	Q (c.f.s.)		Opening Sq. Ft.		Nat. H.W.E.	Head - ft.		Headwater El.	
		Exist.	Prop.	Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	Main Channel	2480	2510	360.0	360.0					
50	Overflow	230	200	50.0	50.0	399.8	0.4	0.1	400.2	399.9
	Overflow	2710	2710	410.0	410.0					
Base	Main Channel	2850	2880	360.0	360.0					
100	Overflow	270	240	50.0	50.0	400.2	0.7	0.6	400.9	400.8
	Overflow	3120	3120	410.0	410.0					
Ex. 0-Top	Main Channel	3430	-	360.0	-					
250	Overflow	350	-	50.0	-	400.7	1.4	-	402.1	-
	Overflow	3780	-	410.0	-					
Pr. 0-Top	Main Channel	-	3520	-	360.0					
275	Overflow	-	330	-	50.0	400.7	-	1.3	-	402.0
	Overflow	-	3850	-	410.0					

** Upstream face of culvert

DESIGN SPECIFICATIONS
2002 A.A.S.H.T.O. Specifications.

LOADING HS 20-44

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

DESIGN STRESSES

FIELD UNITS
f'c = 3500 psi
fy = 60000 psi (Reinf.)

NOTES

- A Precast Box Culvert alternate will not be allowed at this site.
- Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.
- Excavate behind the existing culvert before Stage I Removal. Install temporary soil retention system as detailed. Saw out the existing structure at the stage removal line.
- The layout of the stone riprap may be varied in the field to suit ground conditions as directed by the engineer.
- Exposed edges shall be beveled 3/4".
- For backfill and embankment, see the Standard Specifications.
- All dimensions are at right angles unless otherwise noted.
- All construction joints shall be bonded.

STA. 172+31.00
BUILT 200 BY
STATE OF ILLINOIS
F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
LOADING HS 20-44
STR. NO. 091-2026

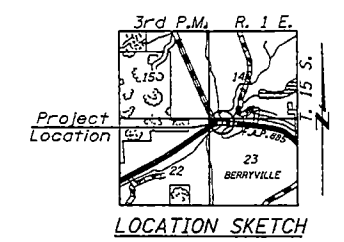
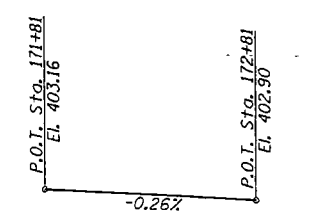
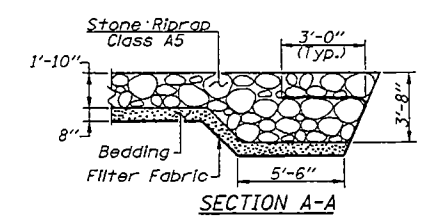
NAME PLATE
(See Standard 515001)

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

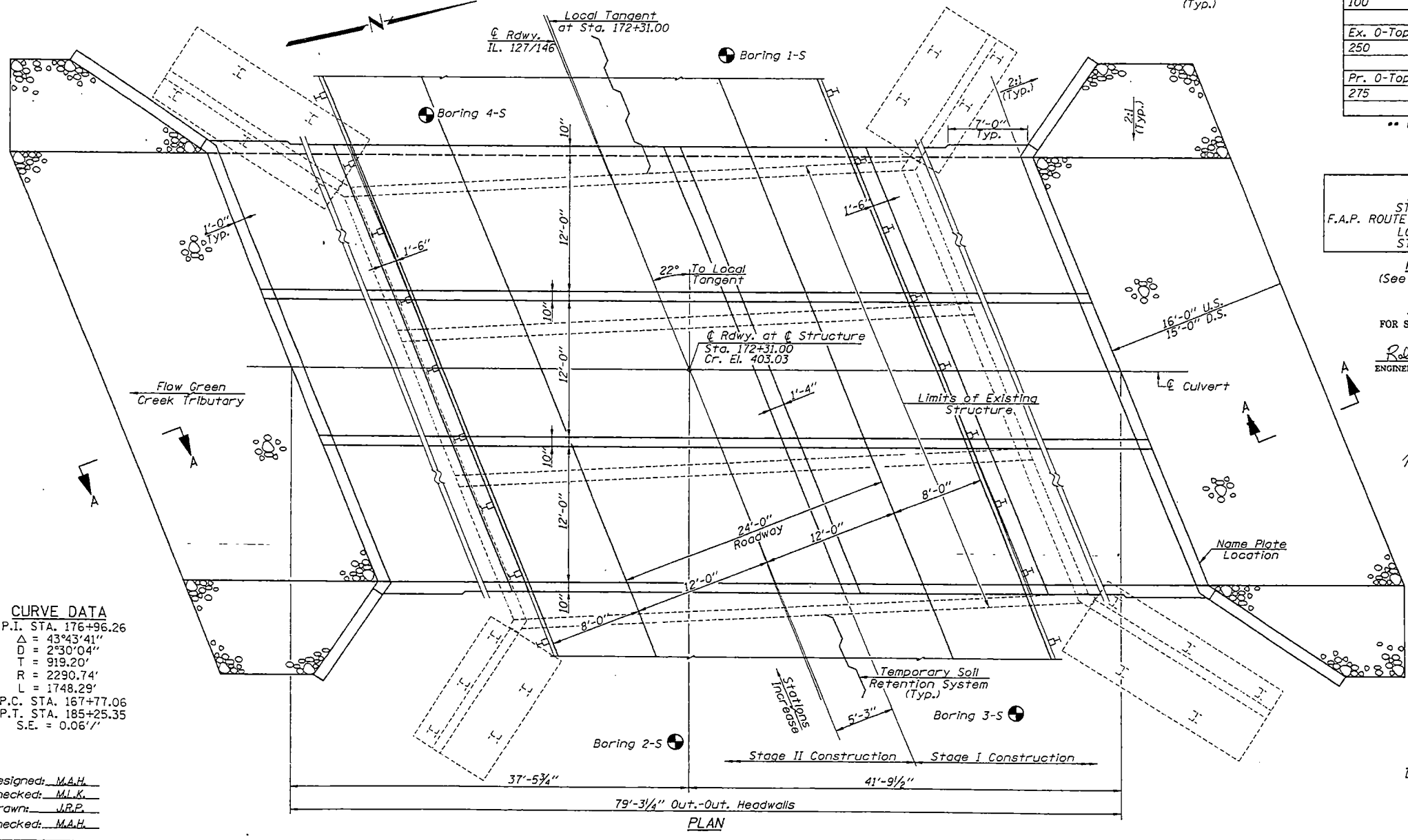
Ralph E. Anderson
ENGINEER OF BRIDGES AND STRUCTURES



EXPIRATION DATE: 11/30/04



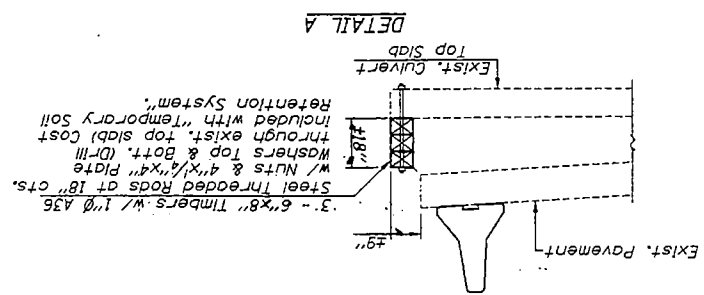
GENERAL PLAN & ELEVATION
IL. ROUTE 127/146 OVER
GREEN CREEK TRIBUTARY
F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
UNION COUNTY
STA. 172+31.00
S.N. 091-2026



CURVE DATA
P.I. STA. 176+96.26
Δ = 43°43'41"
D = 2°30'04"
T = 919.20'
R = 2290.74'
L = 1748.29'
P.C. STA. 167+77.06
P.T. STA. 185+25.35
S.E. = 0.0611'

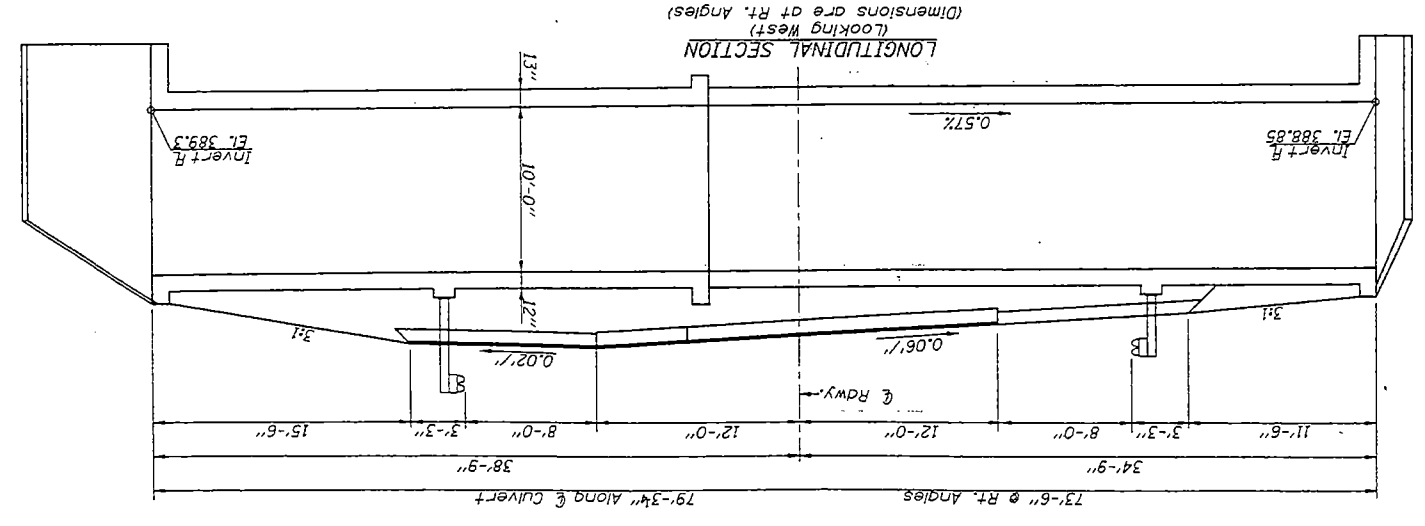
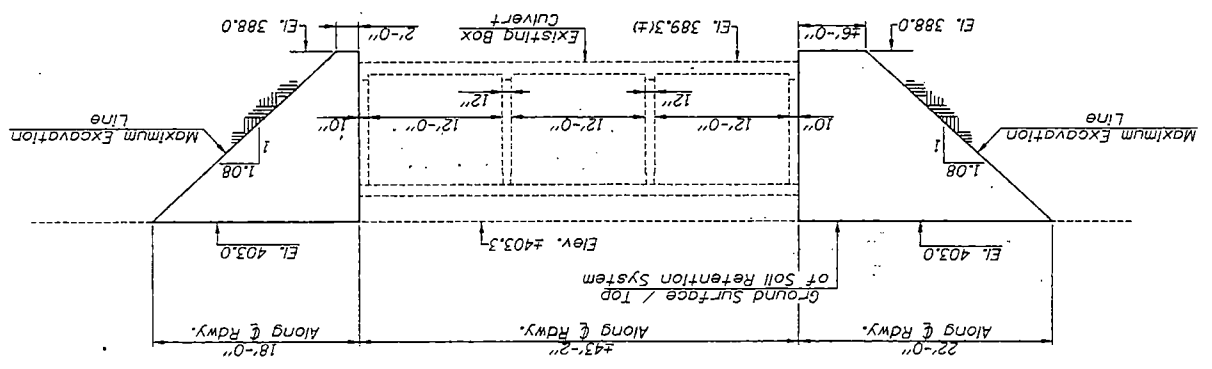
Designed: M.A.H.
Checked: M.L.K.
Drawn: J.R.P.
Checked: M.A.H.

STAGING & DETAILS
 II. ROUTE 127/146 OVER
 GREEN CREEK TRIBUTARY
 F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
 UNION COUNTY
 STA. 172+31.00
 S.N. 091-2026



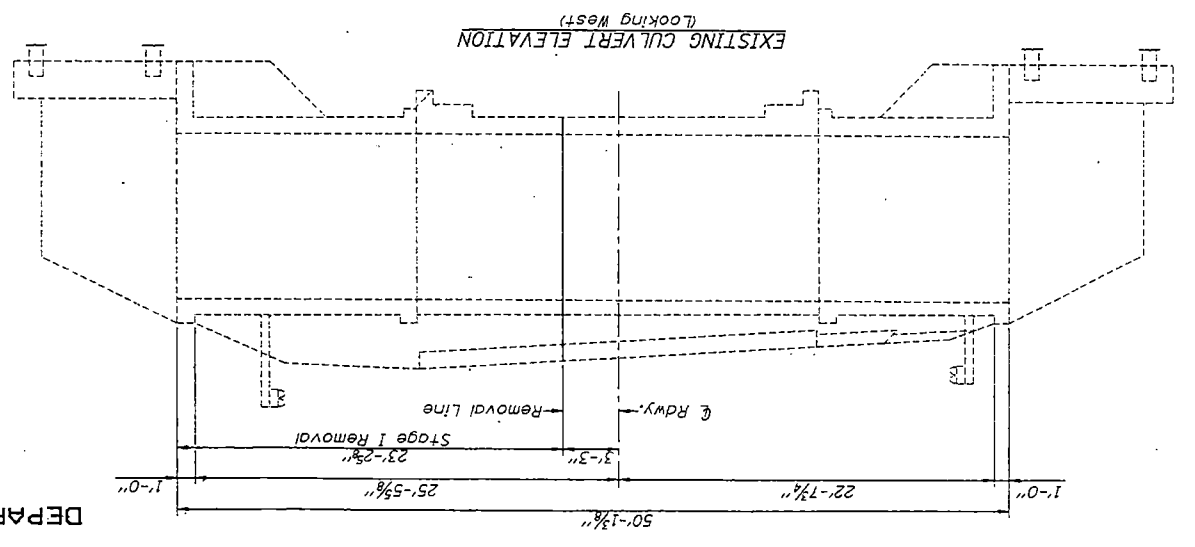
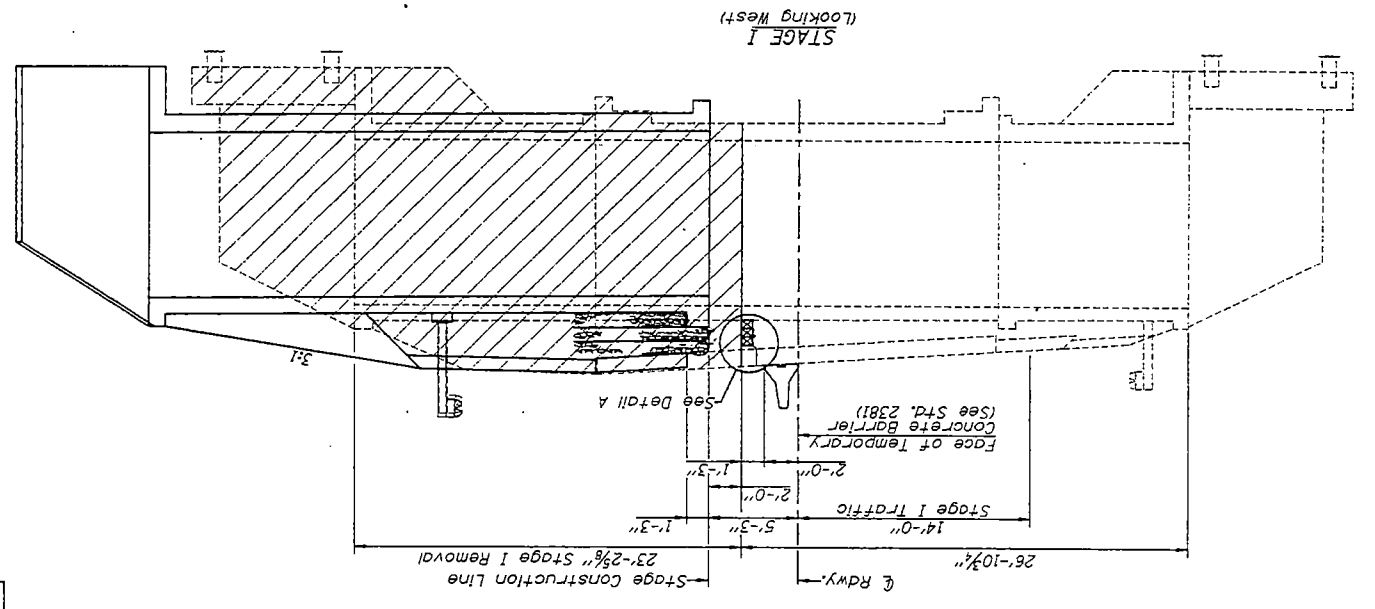
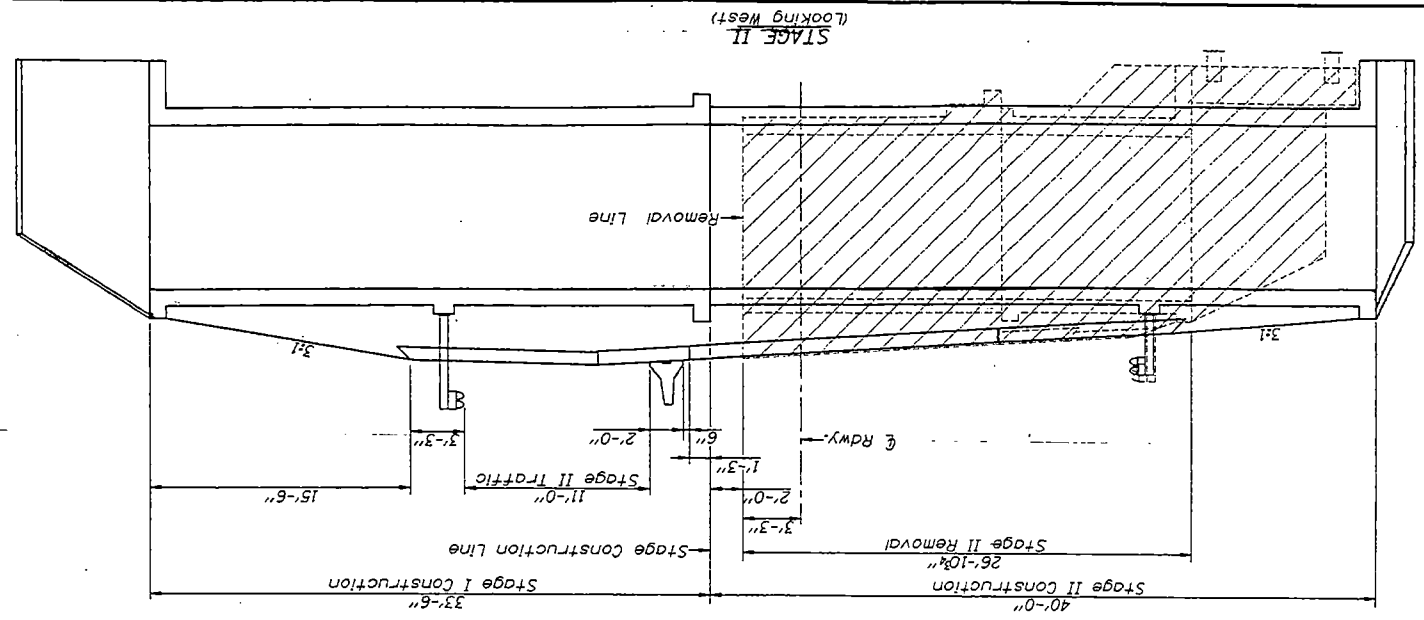
Note: A contoured sheet piling system does not appear feasible and additional members or other retention systems may be necessary. The contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer.

ELEVATION - TEMPORARY SOIL RETENTION SYSTEM (Looking North)



STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

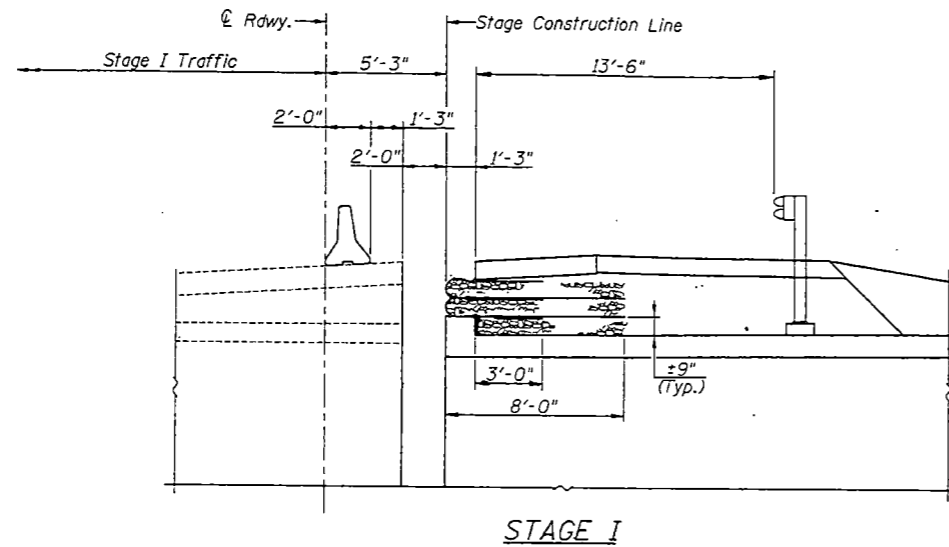
ROUTE NO.	SECTION	COUNTY	TOTAL SHEET NO.
F.A.P. 885 104(A-BY)-1	UNION	17	23
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT-			OF 8 SHEETS



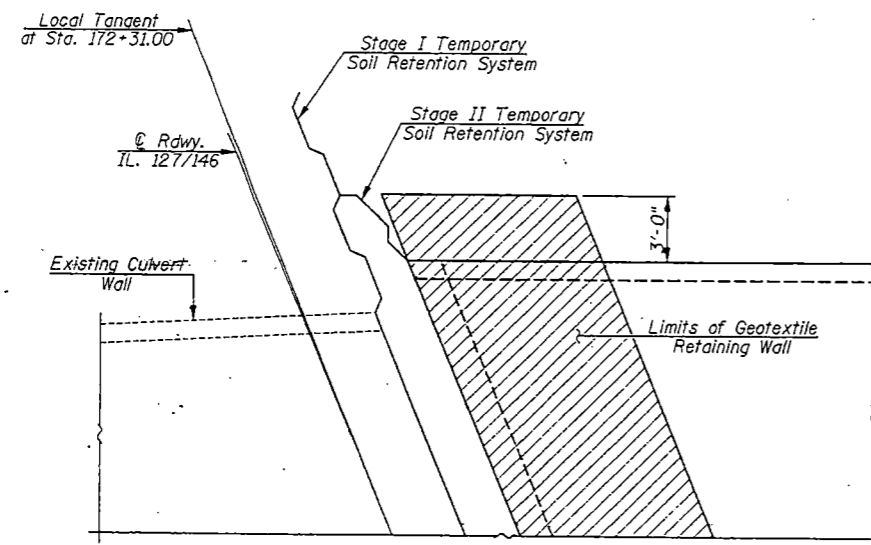
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 885	104(A)-BY-1	UNION	23	18
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT-				

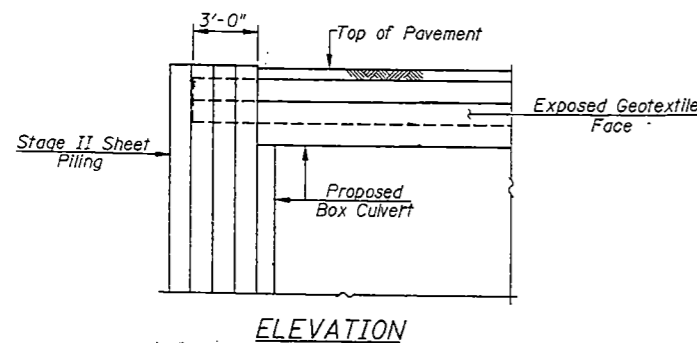
SHEET NO. 3
OF 8 SHEETS



STAGE I



PLAN

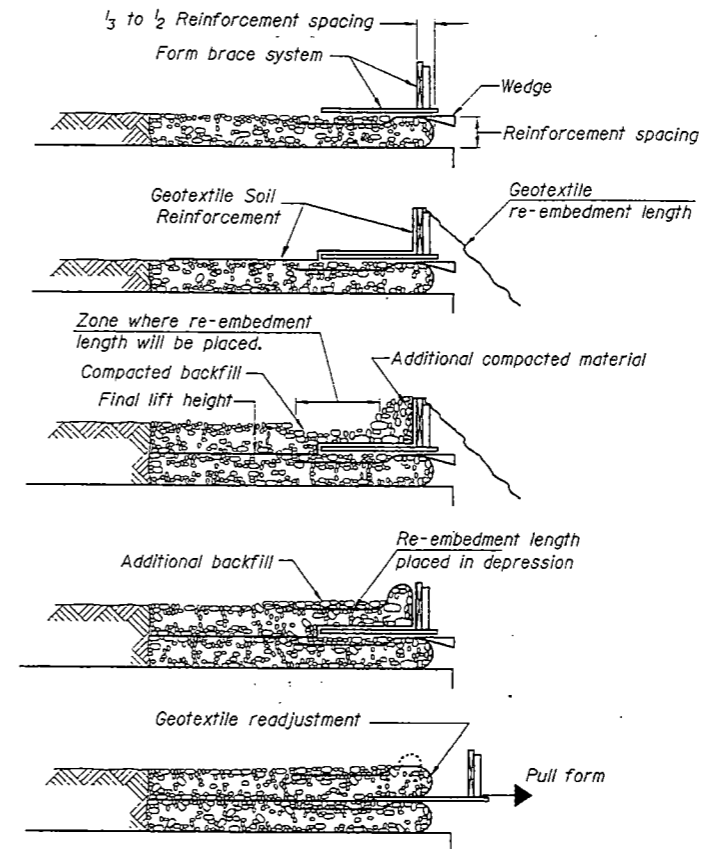


ELEVATION

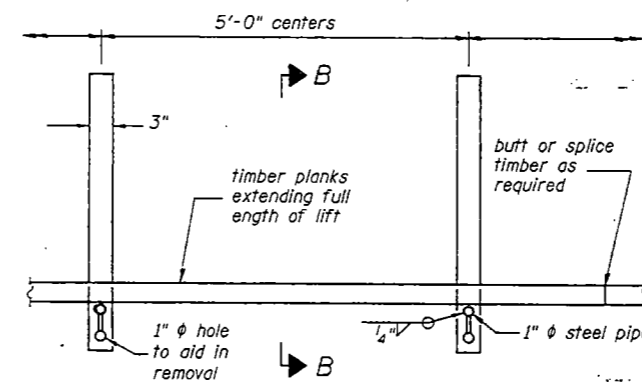
BILL OF MATERIAL

Item	Unit	Quantity
Geotextile Retaining Wall	Sq. Ft.	123

Note:
The geotextile soil reinforcement shall have a minimum allowable tensile strength (T min.) of 17 lb./in. as determined by the procedure described in the Special Provision. The computations supporting the determination of T min. shall be submitted to the engineer for approval.

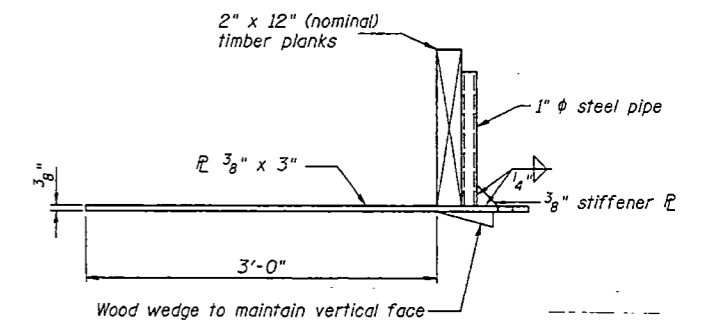


GEOTEXTILE WALL
CONSTRUCTION PROCEDURE



PLAN

GEOTEXTILE TEMPORARY
FORM BRACE DETAIL



SECTION B-B

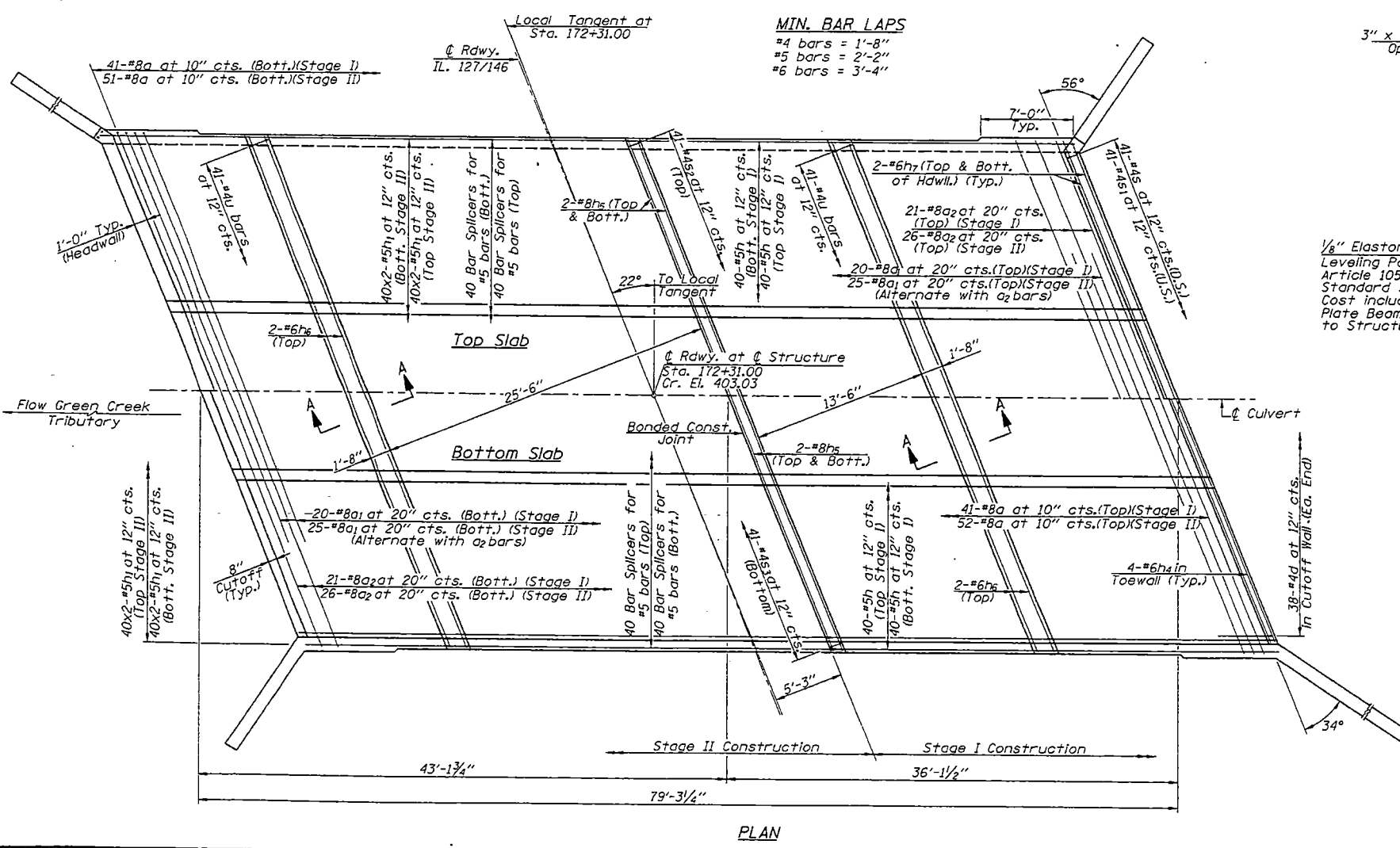
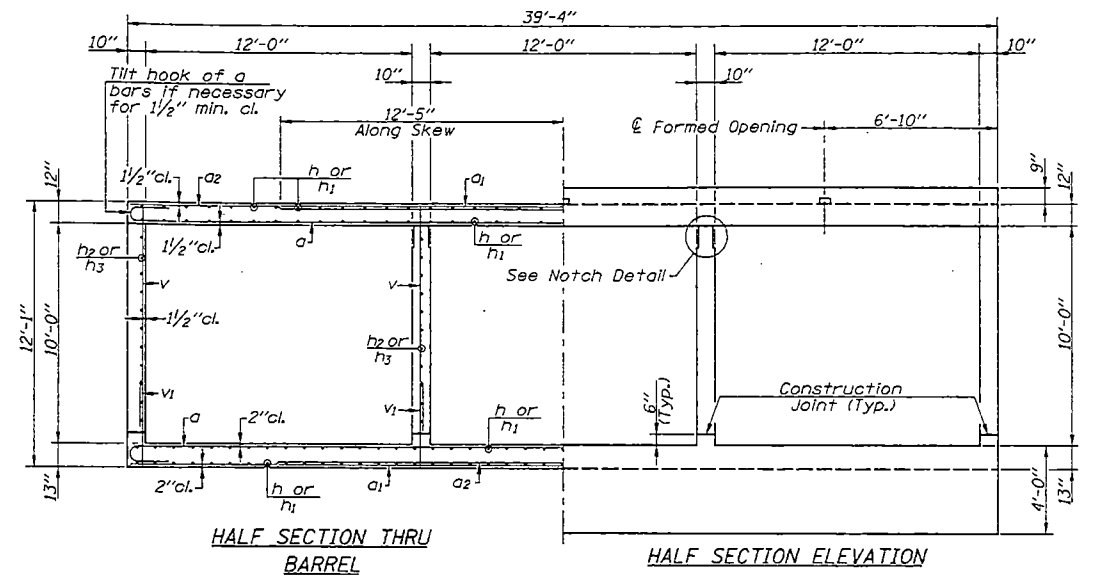
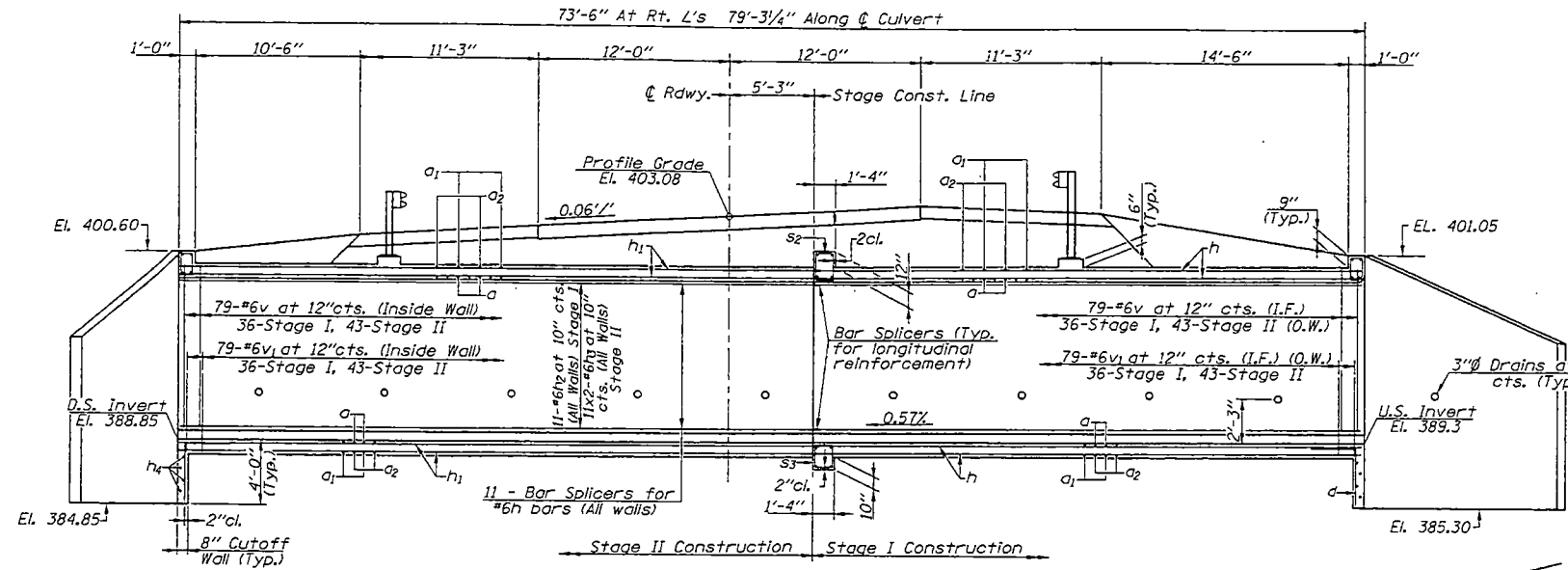
Note:
The temporary form brace detail is provided as a guide. The contractor is responsible for the design and performance of the form system used.

GEOTEXTILE RETAINING WALL
IL. ROUTE 127/146 OVER
GREEN CREEK TRIBUTARY
F.A.P. ROUTE 885 - SECTION 104(A)-BY-1
UNION COUNTY
STA. 172+31.00
S.N. 091-2026

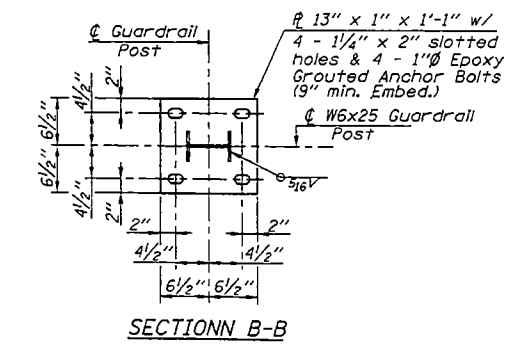
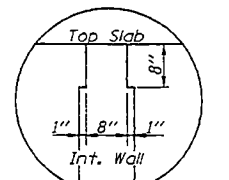
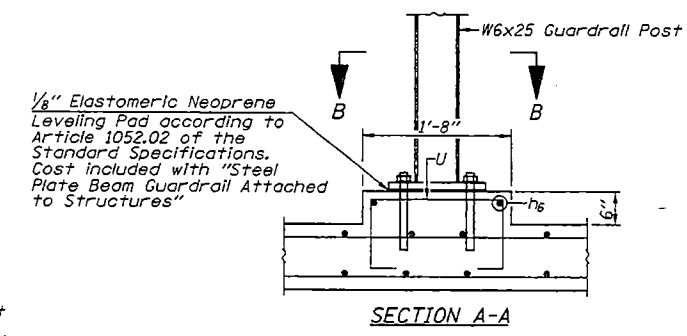
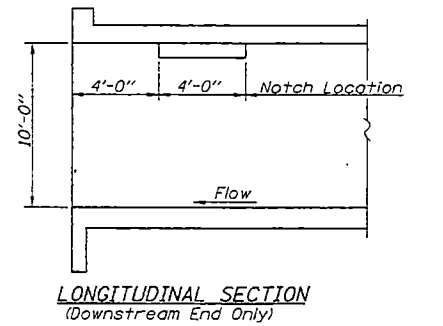
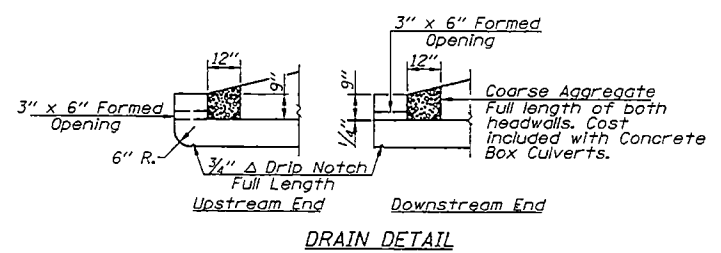
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 885	104(A-BY)-1	UNION	23	19
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT-				

SHEET NO. 4
OF 8 SHEETS



MIN. BAR LAPS
#4 bars = 1'-8"
#5 bars = 2'-2"
#6 bars = 3'-4"



The contractor shall use the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures. The capsule or adhesive cartridge shall be sealed with pre-measured amounts of adhesive chemical.

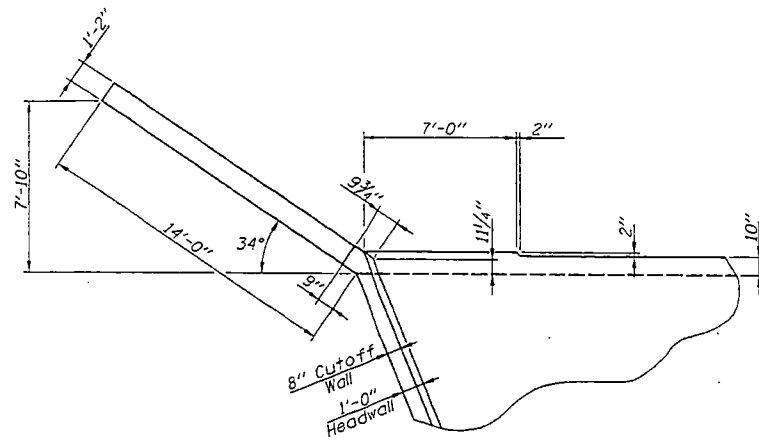
A distance of half the length of the wingwall but not less than 6 feet of the barrel shall be poured monolithically with the wingwalls.
Work this sheet with Sheet 5 of 8.

CULVERT DETAILS
IL. ROUTE 127/146 OVER
GREEN CREEK TRIBUTARY
F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
UNION COUNTY
STA. 172+31.00
S.N. 091 -2026

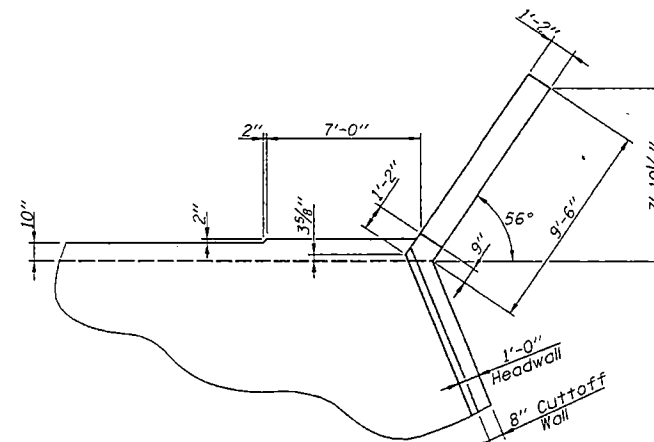
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 885	104(A-BY)-1	UNION	23	20
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT-				

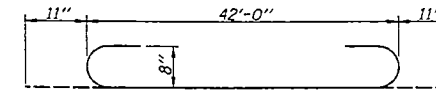
SHEET NO. 5
OF 8 SHEETS



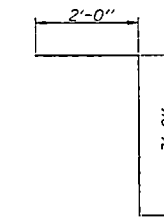
CORNER DETAIL



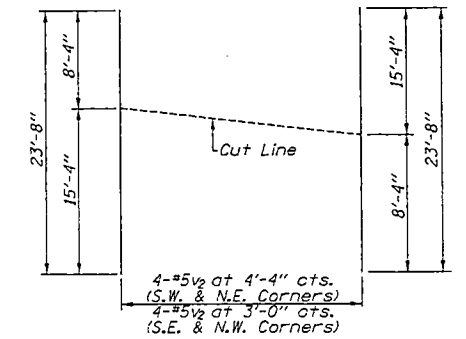
CORNER DETAIL



BAR a



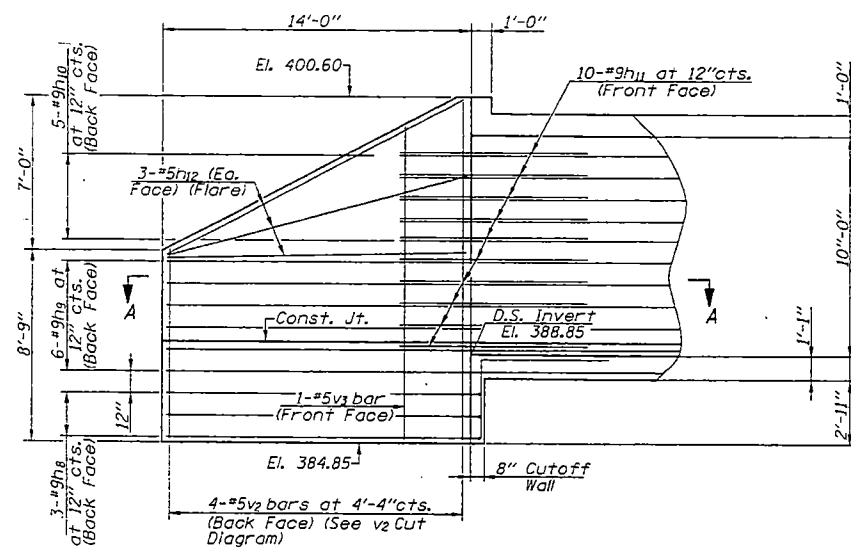
BAR d



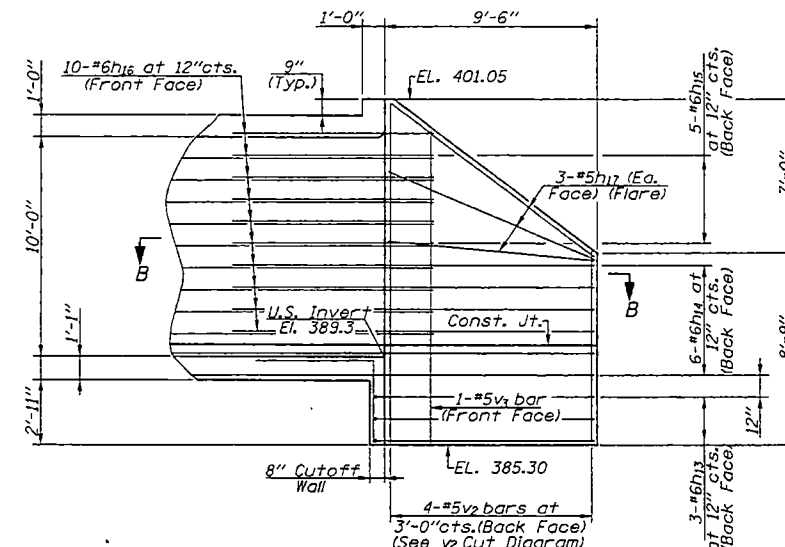
BARS v2

Note: Order v2 bars full length. Lay out in field as shown. Cut along cut line. Use remainder of bar in opposite wingwall.

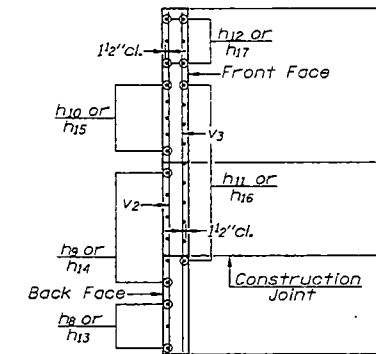
Work this sheet with Sheet No. 4 of 8.



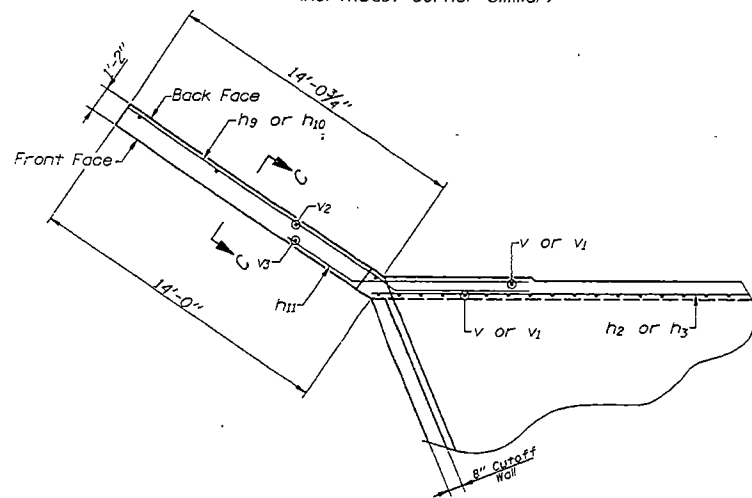
PARTIAL ELEVATION AT
S.W. CULVERT CORNER
(Northeast corner similar)



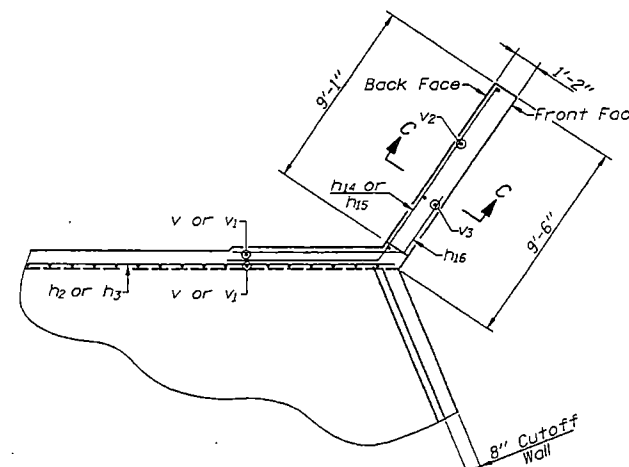
PARTIAL ELEVATION AT
N.W. CULVERT CORNER
(Southeast corner similar)



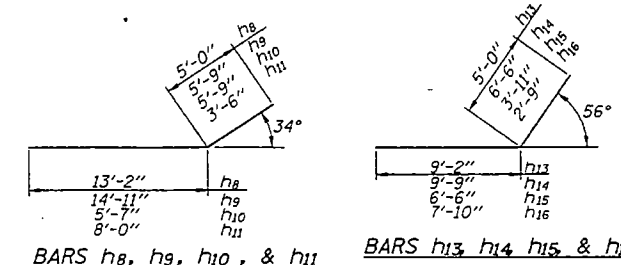
SECTION C-C



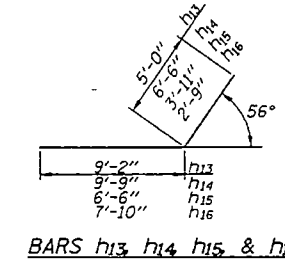
SECTION A-A



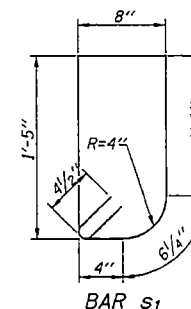
SECTION B-B



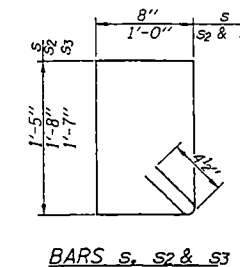
BARS h8, h9, h10, & h11



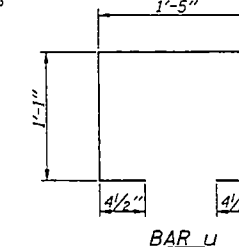
BARS h13, h14, h15, & h16



BAR s1



BARS s, s2 & s3



BAR u

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a	185	#8	43'-10"	—
a1	90	#8	24'-10"	—
a2	94	#8	42'-0"	—
d	76	#4	5'-8"	—
h	160	#5	35'-9"	—
h1	320	#5	22'-8"	—
h2	44	#6	35'-9"	—
h3	88	#6	23'-1"	—
h4	8	#6	42'-0"	—
h5	8	#6	42'-0"	—
h6	4	#6	42'-0"	—
h7	8	#6	41'-2"	—
h8	6	#9	18'-2"	—
h9	12	#9	20'-8"	—
h10	10	#9	11'-4"	—
h11	20	#9	11'-6"	—
h12	12	#5	14'-0"	—
h13	6	#6	14'-2"	—
h14	12	#6	16'-3"	—
h15	10	#6	10'-5"	—
h16	20	#6	10'-7"	—
h17	12	#5	9'-3"	—
s	41	#4	4'-11"	—
s1	41	#4	4'-9"	—
s2	41	#4	6'-1"	—
s3	41	#4	5'-11"	—
u	82	#4	4'-4"	—
v	320	#6	10'-3"	—
v1	320	#6	4'-8"	—
v2	8	#5	23'-8"	—
v3	4	#5	13'-6"	—
Concrete Box Culverts		Cu. Yd.	382.8	
Reinforcement Bars		Pound	71370	
Bar Splicers		Each	204	

CULVERT DETAILS
IL. ROUTE 127/146 OVER
GREEN CREEK TRIBUTARY
F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
UNION COUNTY
STA. 172+31.00
S.N. 091 -2026

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 885	104(A-BY)-1	UNION	23	21
FED. ROAD DIST. NO. 7		ILLINOIS FED. AID PROJECT-		

SHEET NO. 6
OF 8 SHEETS

The diameter of this part is the same as the diameter of the bar spliced.

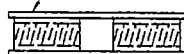


ROLLED THREAD DOWEL BAR



** ONE PIECE

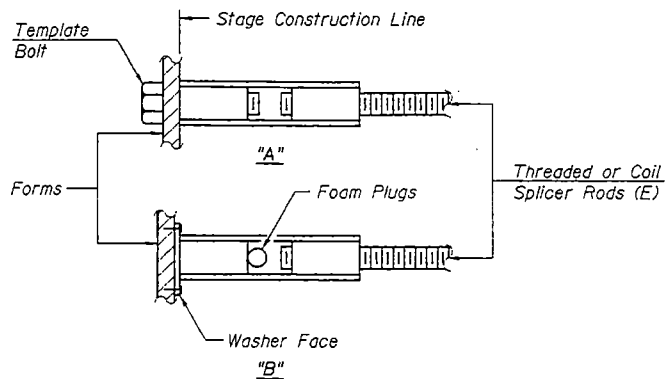
Wire Connector



WELDED SECTIONS

BAR SPLICER ASSEMBLY ALTERNATIVES

** Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating.

NOTES

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.

All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.

Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

- Minimum Capacity = $1.25 \times f_y \times A_t$
(Tension in kips)
- Minimum *Pull-out Strength = $1.25 \times f_{s_{allow}} \times A_t$
(Tension in kips)

Where f_y = Yield strength of lapped reinforcement bars in ksi.

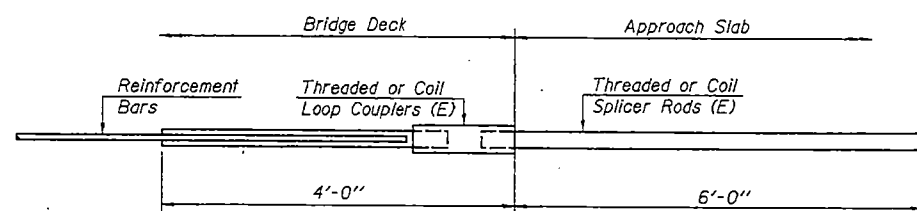
$f_{s_{allow}}$ = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)

A_t = Tensile stress area of lapped reinforcement bars.

* = 28 day concrete

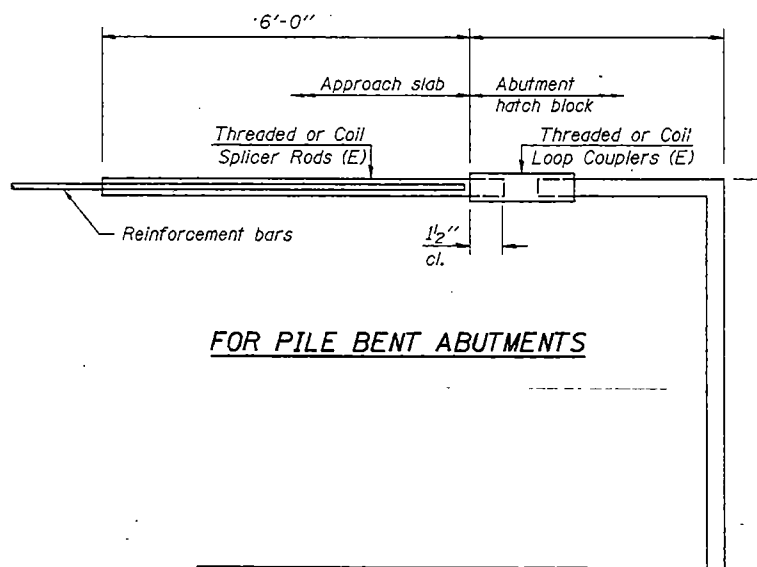
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	5.9
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6
#9	5'-9"	75.0	30.0
#10	7'-3"	95.0	38.0
#11	9'-0"	117.4	46.8

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."



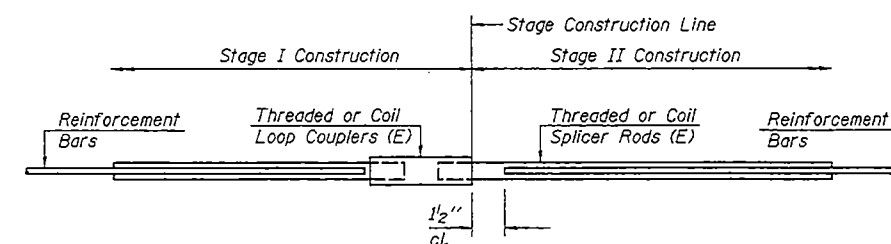
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



FOR PILE BENT ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



STANDARD

Bar Size	No. Assemblies Required	Location
#6	44	WALLS
#5	80	TOP SLAB
#5	80	BOTTOM SLAB
Total	204	

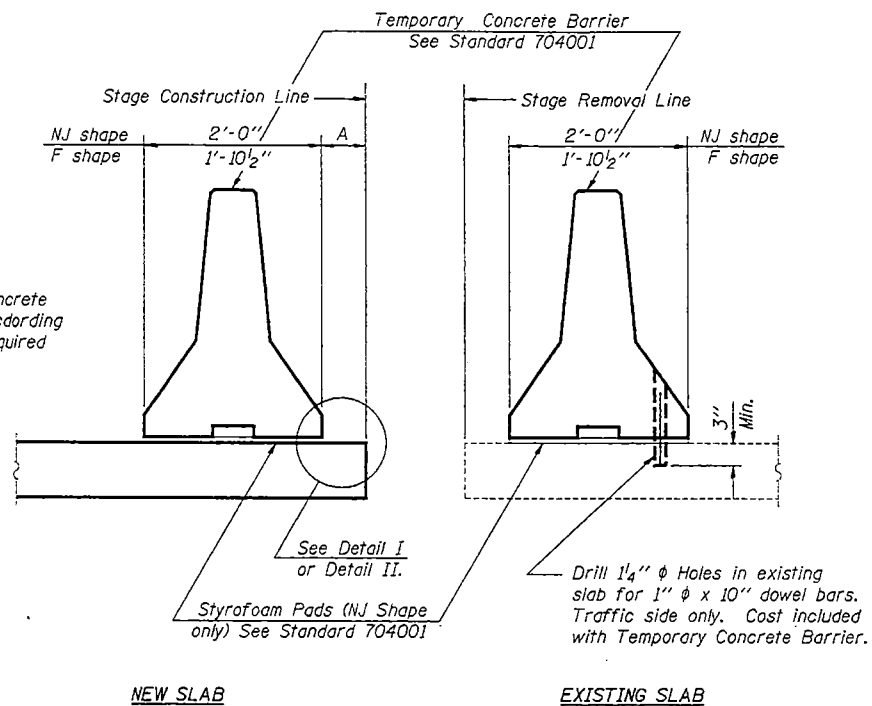
BAR SPLICER ASSEMBLY DETAILS
IL. ROUTE 127/146 OVER
GREEN CREEK TRIBUTARY
F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
UNION COUNTY
STA. 172+31.00
S.N. 091-2026

BSD-1 10-31-02

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 885	104(A-BY)-1	UNION	23	22
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT-				

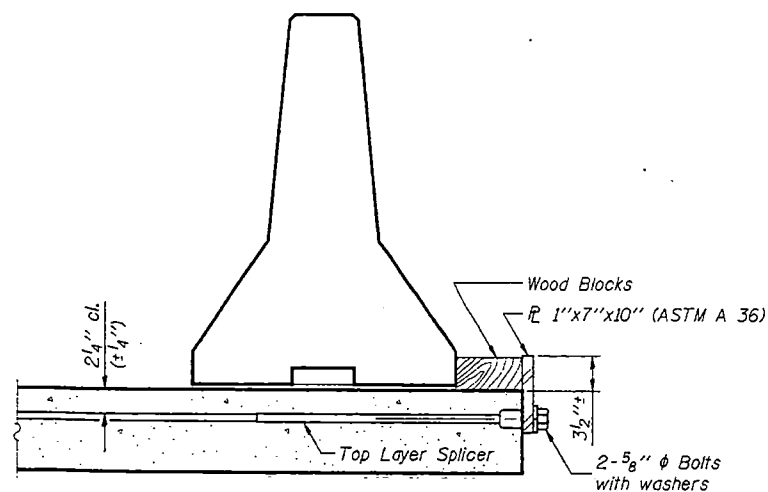
When "A" is 3'-6" or less, the temporary concrete barrier shall be Anchored to the new slab according to Detail I or Detail II. No anchorage is required when "A" is greater than 3'-6".



SECTIONS THRU SLAB

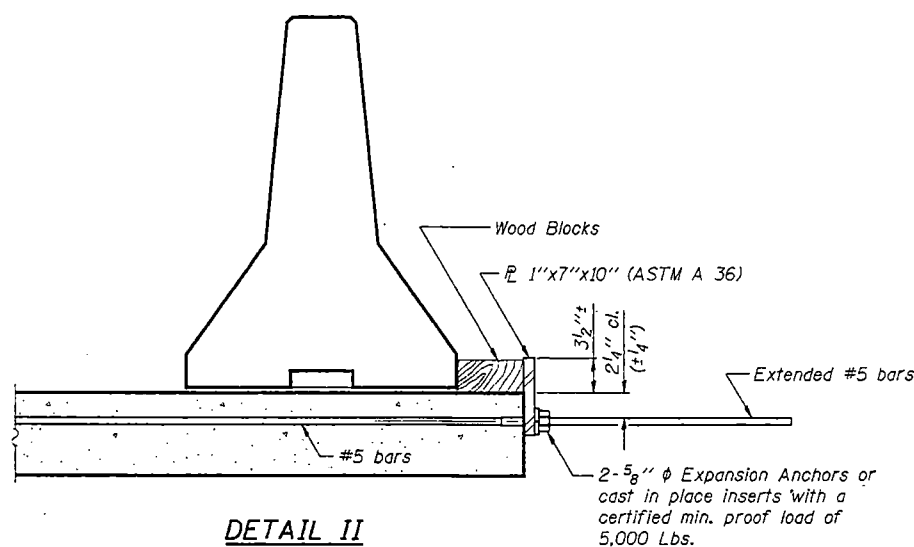
NOTES

- Detail I - With Bar Splicer or Couplers:
Connect one (1) 1"x7"x10" steel \bar{P} to the top layer of couplers with 2-5/8" ϕ bolts screwed to coupler at approximate \bar{C} of each barrier panel.
- Detail II - With Extended Reinforcement Bars:
Connect one (1) 1"x7"x10" steel \bar{P} to the concrete slab with 2-5/8" ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate \bar{C} of each barrier panel.
- Cost of anchorage is included with Temporary Concrete Barrier.



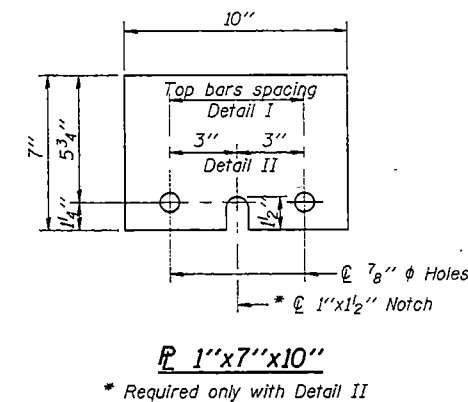
DETAIL I

The 1"x7"x10" Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place.



DETAIL II

The 1"x7"x10" Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed.



TEMPORARY CONCRETE BARRIER
FOR STAGE CONSTRUCTION
IL. ROUTE 127/146 OVER
GREEN CREEK TRIBUTARY
F.A.P. ROUTE 885 - SECTION 104(A-BY)-1
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