

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED HIGHWAY BRIDGE PROGRAM

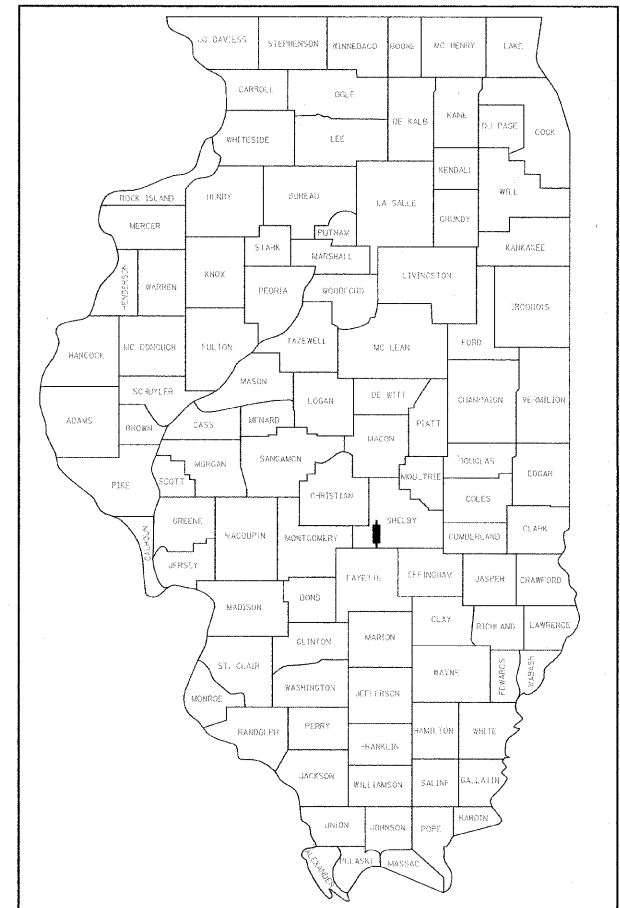
T.R. 140 OVER MITCHELL CREEK

SECTION 09-05118-00-BR

PROJECT BROS-173(169)

SHELBY COUNTY

C-97-122-10



LOCATION OF SECTION INDICATED THUS: - **█** -

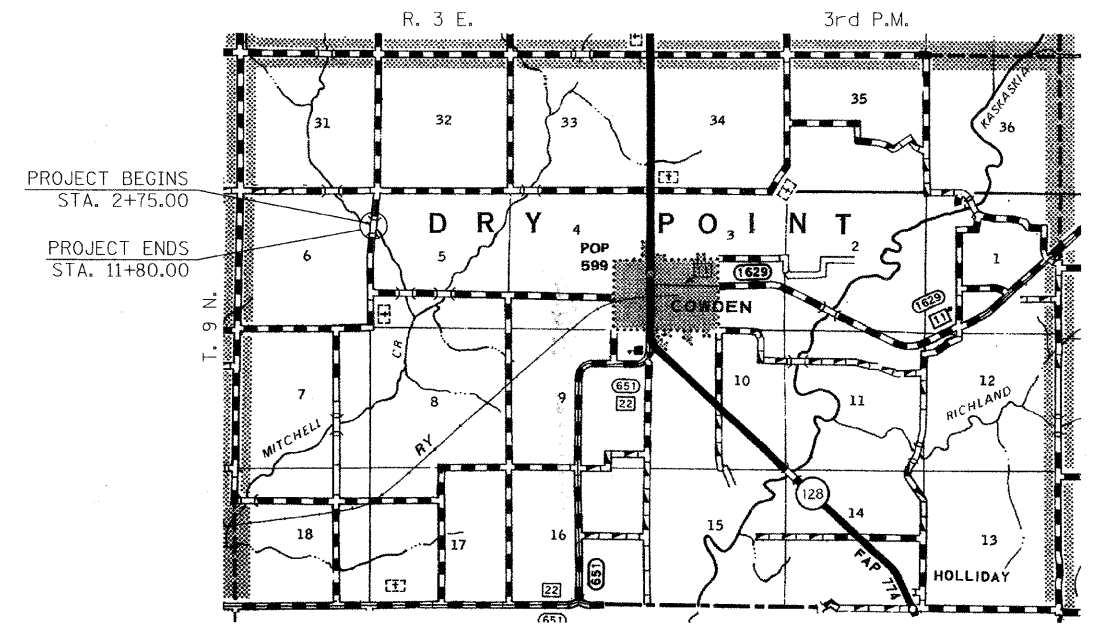
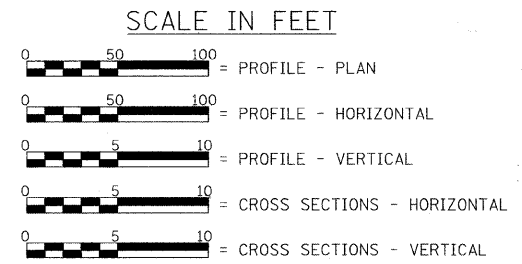
- INDEX OF SHEETS**
- 1 - TITLE SHEET
 - 2 - SUMMARY OF QUANTITIES, DETAILS, & TYPICAL SECTIONS
 - 3 - PLAN & PROFILE
 - 4 & 5 - GENERAL PLAN & ELEVATION
 - 6 - 9 - SUPERSTRUCTURE
 - 10 - RAILING
 - 11 - ABUTMENTS
 - 12 - PIERS
 - 13 - STEEL H PILE DETAILS
 - 14 - 21 - CROSS SECTIONS

- STANDARDS**
- STANDARD 000001-05
 - STANDARD 280001-05
 - STANDARD 515001-03
 - STANDARD 635006-03
 - STANDARD 701901-01
 - STANDARD BLR 21-8

UTILITIES

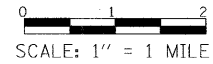
SHELBY ELECTRIC COOPERATIVE
NORTH ROUTE 128
SHELBYVILLE, ILLINOIS 62562

CONSOLIDATED COMMUNICATIONS INC.
121 SOUTH 17TH STREET
MATTOON, ILLINOIS 61938-3915
217-234-9971



LOCATION PLAN

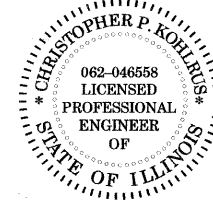
LENGTH OF SECTION - 905.00 FEET = 0.171 MILES



EXISTING STRUCTURE: SINGLE SPAN TIMBER DECK ON STEEL STRINGERS SUPPORTED BY CLOSED TIMBER ABUTMENTS WITH TIMBER WINGWALLS. ±45'-0" BK.-BK. ABUTMENTS, ±18'-11" OUT.-OUT. DECK. STEEL RAILING. ±0° SKEW.
EXISTING STRUCTURE NO: 087-3331

PROPOSED STRUCTURE: THREE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM (17") BRIDGE ON OPEN CONCRETE ABUTMENTS AND SOLID CONCRETE PIERS. 24'-0" OUT. TO OUT. DECK, 90'-0" BK. TO BK. ABUTMENTS. STEEL RAILING TYPE S-1. 20° SKEW LT. FWD.
PROPOSED STRUCTURE NO. 087-3571

LAND SECTION - 6
LAND QUARTER SECTION - N.E.
FUNCTIONAL CLASSIFICATION: LOCAL ROAD (NON-URBAN)
A.D.T. - 100 (2009)
30 M.P.H. DESIGN SPEED



Christopher P. Kohlberg 3/30/10
EXPIRATION: 11/30/2017

APPROVED APR 15, 2010
Brent Reynolds
TOWNSHIP HIGHWAY COMMISSIONER

APPROVED 04-05, 2010
A. An...
COUNTY ENGINEER

PASSED 4/8, 2010
Maureen Kastl
DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS

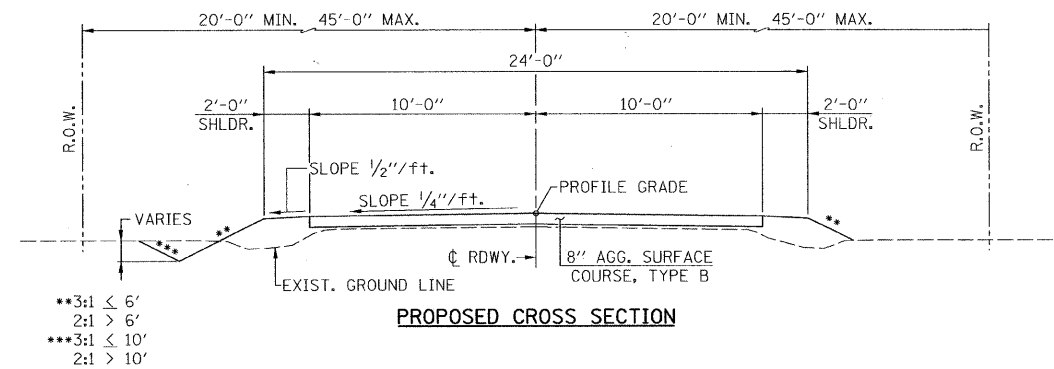
Releasing For Bid Based on Limited Review 4/8, 2010
Roger R. Drischell
DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOLL FREE
"JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS"
(J.U.L.I.E.) TELEPHONE NUMBER
1-800-892-0123

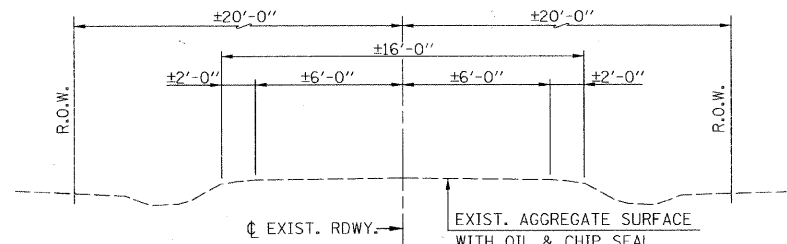
CONTRACT NO. 95628

FILE NAME	USER NAME	DESIGNED	REVISED		TITLE SHEET	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
#FILE#	#USER#	DRAWN	REVISED	Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL 62703 Phone: (217)544-8033 IL Design Firm No. 184-001907	SCALE: 1" = 1 MILE SHEET NO. 1 OF 21 SHEETS	140	09-05118-00-BR	SHELBY	21	1
		CHECKED	REVISED		STA. 2+75.00 TO STA. 11+80.00	STR. NO. 087-3571		CONTRACT NO.		
		DATE	REVISED			FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		



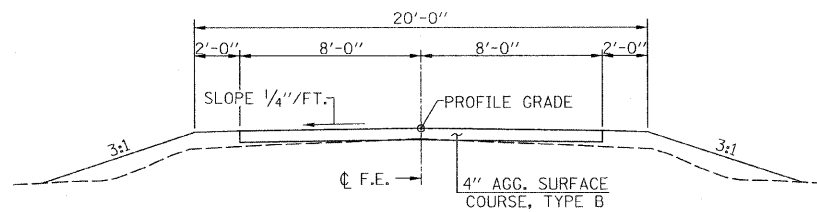
PROPOSED CROSS SECTION

•••3:1 < 6'
2:1 > 6'
•••3:1 < 10'
2:1 > 10'



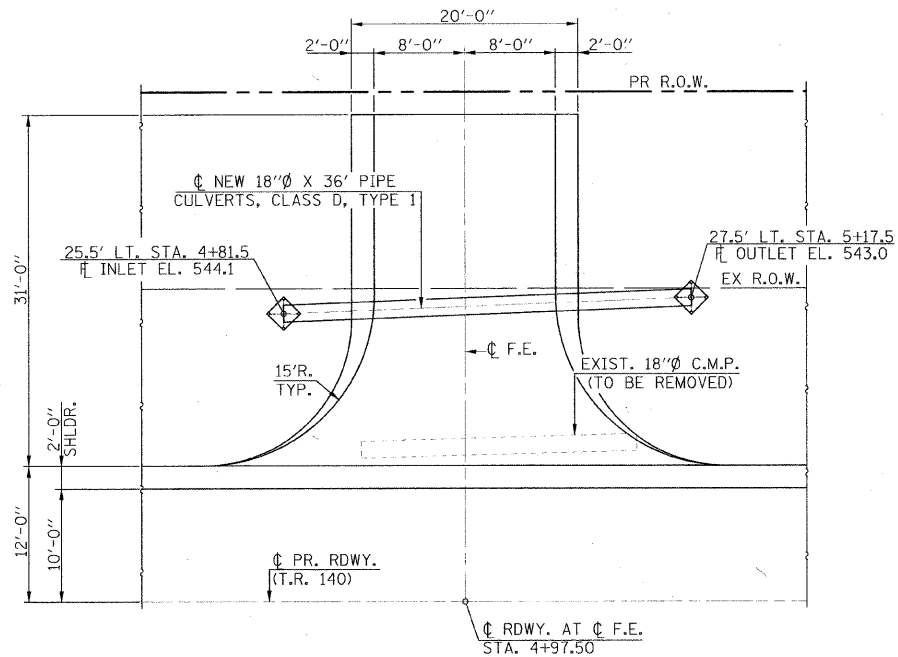
EXISTING CROSS SECTION

GENERAL NOTES
 WHERE SECTION OR SUBSECTION STONES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH STONES ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND PRESERVE ALL PROPERTY MARKERS AND MONUMENTS UNTIL THE OWNER, AUTHORIZED SURVEYOR, OR AGENT HAS WITNESSED OR REFERENCED THEIR LOCATION.
 SEEDING: FERTILIZER NUTRIENTS SHALL BE APPLIED AT A RATIO OF 1:1:1 AND AT A RATE OF 90 POUNDS PER ACRE FOR EACH NUTRIENT.
 MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE.
 AREAS TO BE SEEDDED SHALL CONSIST OF ALL DISTURBED EARTH SURFACES WITHIN THE RIGHT OF WAY AND EASEMENT AS DIRECTED BY THE ENGINEER.
 BEFORE ORDERING PIPE CULVERTS CONTRACTOR SHALL CONSULT WITH ENGINEER TO VERIFY LENGTHS.



TYPICAL FIELD ENTRANCE

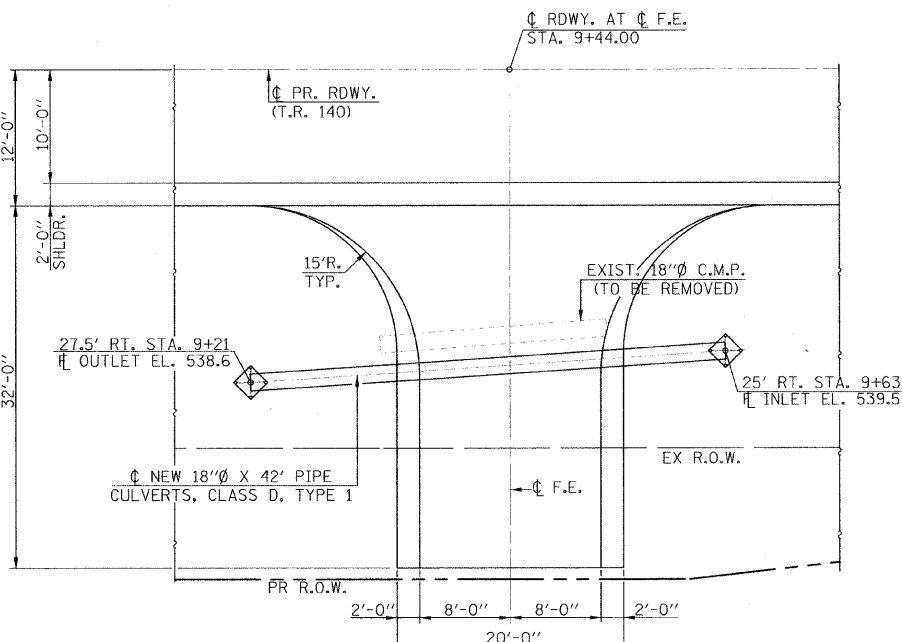
(F.E. STA. 4+97.50 LT.)
(F.E. STA. 9+44.00 RT.)



PLAN

SCHEDULE STONE RIPRAP DITCH

LOCATION	STONE RIPRAP DITCH QUANTITY	
	LT. (TON)	RT. (TON)
STA. 2+75 TO STA. 3+00	10.5	10.5
STA. 3+00 TO STA. 3+50	22.5	22.5
STA. 3+50 TO STA. 4+00	22.5	22.5
STA. 4+00 TO STA. 4+50	22.5	22.5
STA. 4+50 TO STA. 5+00	22.5	22.5
STA. 5+00 TO STA. 5+25	6	17
BRIDGE OMISSION (STA. 7+35 TO STA. 8+25)		
STA. 11+00 TO STA. 11+80	36	37.5
SUB-TOTAL	142.5	150
TOTAL	293	



PLAN

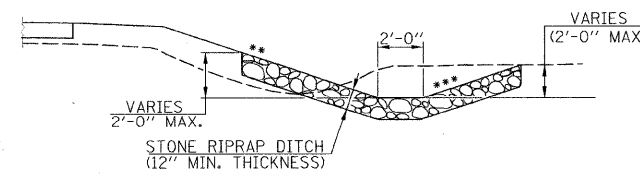
SCHEDULE INLET & PIPE PROTECTION

LOCATION	QUANTITY	
	EACH	
STA. 4+81.50 25.5' LT.	1	
STA. 5+17.5 27.5' LT.	1	
STA. 9+21 27.5' RT.	1	
STA. 9+63 25' RT.	1	
TOTAL	4	

SUMMARY OF QUANTITIES			
ITEM	UNIT	QUANTITY	
20100500 TREE REMOVAL, ACRES	ACRE	0.3	
20200100 EARTH EXCAVATION	CU. YD.	710	
20300100 CHANNEL EXCAVATION	CU. YD.	605	
20400800 FURNISHED EXCAVATION	CU. YD.	2100	
25000200 SEEDING, CLASS 2	ACRE	1.0	
25000400 NITROGEN FERTILIZER NUTRIENT	POUND	90	
25000500 PHOSPHORUS FERTILIZER NUTRIENT	POUND	90	
25000600 POTASSIUM FERTILIZER NUTRIENT	POUND	90	
25100115 MULCH, METHOD 2	ACRE	1.0	
28000250 TEMPORARY EROSION CONTROL SEEDING	POUND	100	
28000305 TEMPORARY DITCH CHECKS	FOOT	64	
28000400 PERIMETER EROSION BARRIER	FOOT	1641	
28000500 INLET AND PIPE PROTECTION	EACH	4	
28100207 STONE RIPRAP, CLASS A4	TON	499	
28102600 STONE RIPRAP DITCH	TON	293	
28200200 FILTER FABRIC	SQ. YD.	671	
40200800 AGGREGATE SURFACE COURSE, TYPE B	TON	870	
50100100 REMOVAL OF EXISTING STRUCTURES	EACH	1	
50200100 STRUCTURE EXCAVATION	CU. YD.	67	
50300225 CONCRETE STRUCTURES	CU. YD.	88.3	
50300280 CONCRETE ENCASEMENT	CU. YD.	2.8	
50400305 PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ. FT.	2122	
50800105 REINFORCEMENT BARS	POUND	8260	
50900205 STEEL RAILING, TYPE S1	FOOT	180	
51201400 FURNISHING STEEL PILES HP 10X42	FOOT	699	
51202305 DRIVING PILES	FOOT	699	
51203400 TEST PILE STEEL HP 10X42	EACH	4	
51500100 NAME PLATES	EACH	1	
54200223 PIPE CULVERTS, CLASS D, TYPE 1 18"	FOOT	78	
67100100 MOBILIZATION	L. SUM	1	
78201000 TERMINAL MARKER - DIRECT APPLIED	EACH	4	
X5020501 UNDERWATER STRUCTURE EXCAVATION PROTECTION - LOCATION 1	EACH	1	
X5020502 UNDERWATER STRUCTURE EXCAVATION PROTECTION - LOCATION 2	EACH	1	

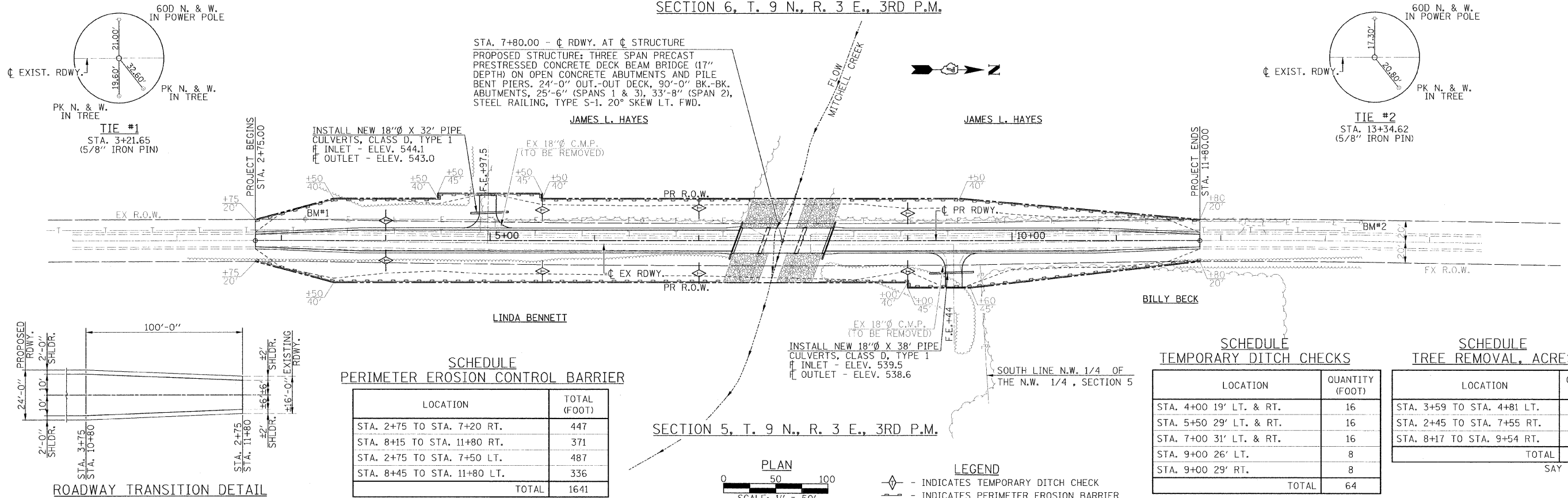
LOCATION	EARTHWORK SCHEDULE			
	EARTH EXCAVATION	EARTH EXCAVATION ADJUSTED FOR SHRINKAGE	EMBANKMENT	EARTHWORK BALANCE WASTE (+) OR SHORTAGE (-)
	CU. YD.	CU. YD.	CU. YD.	CU. YD.
STA. 2+75 TO STA. 3+00	39	29	0	29
STA. 3+00 TO STA. 3+50	178	133	5	128
STA. 3+50 TO STA. 4+00	180	135	31	104
STA. 4+00 TO STA. 4+50	111	83	86	-3
STA. 4+50 TO STA. 5+00	36	27	183	-123
STA. 5+00 TO STA. 5+50	13	10	225	-215
STA. 5+50 TO STA. 6+00	13	10	310	-300
STA. 6+00 TO STA. 6+50	9	7	363	-356
STA. 6+50 TO STA. 7+00	9	7	371	-364
STA. 7+00 TO STA. 7+35	6	4	257	-253
BRIDGE OMISSION - STA. 7+35 TO STA. 8+25	-	-	-	-
STA. 8+25 TO STA. 8+50	23	17	158	-141
STA. 8+50 TO STA. 9+00	32	24	312	-288
STA. 9+00 TO STA. 9+50	12	9	333	-324
STA. 9+50 TO STA. 10+00	7	5	195	-190
STA. 10+00 TO STA. 10+50	10	8	93	-85
STA. 10+50 TO STA. 11+00	9	7	33	-26
STA. 11+00 TO STA. 11+50	16	12	10	2
STA. 11+50 TO STA. 11+80	7	5	2	3
TOTAL	710	532	2967	-2100****

**** QUANTITY HAS BEEN REDUCED BY 335 CU. YD. (50% OF CHANNEL EXCAVATION AND STRUCTURE EXCAVATION)



STONE RIPRAP DITCH DETAIL (SEE SPECIAL PROVISIONS)

SECTION 6, T. 9 N., R. 3 E., 3RD P.M.



SCHEDULE PERIMETER EROSION CONTROL BARRIER

LOCATION	TOTAL (FOOT)
STA. 2+75 TO STA. 7+20 RT.	447
STA. 8+15 TO STA. 11+80 RT.	371
STA. 2+75 TO STA. 7+50 LT.	487
STA. 8+45 TO STA. 11+80 LT.	336
TOTAL	1641

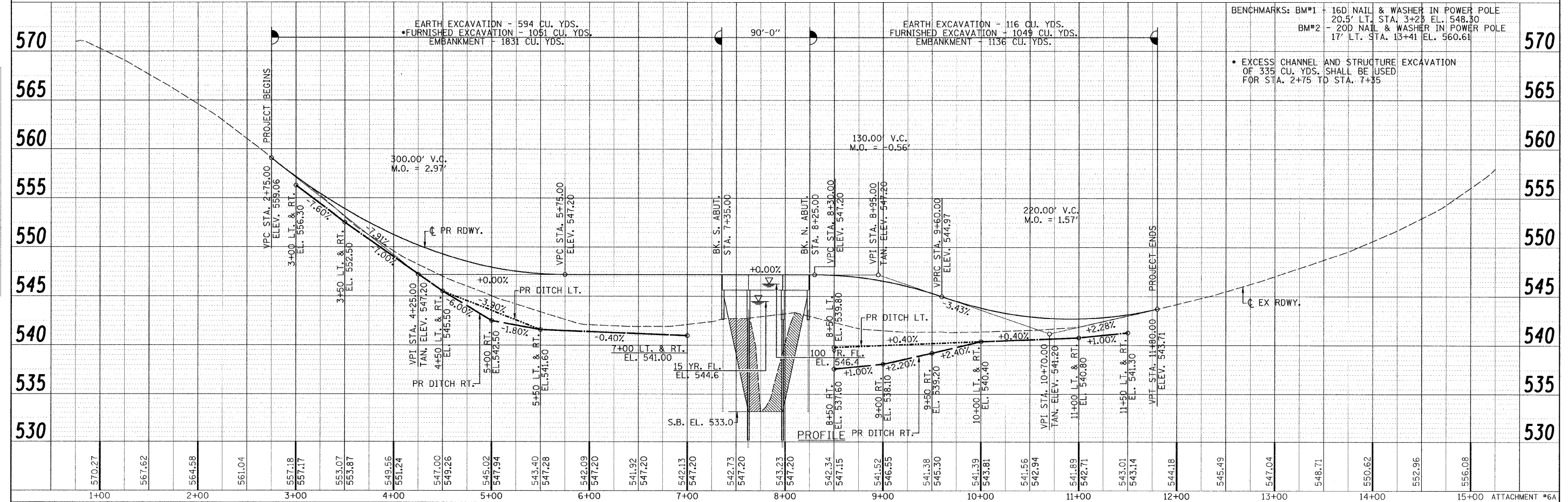
SCHEDULE TREE REMOVAL, ACRES

LOCATION	QUANTITY (ACRE)
STA. 3+59 TO STA. 4+81 LT.	0.02
STA. 2+45 TO STA. 7+55 RT.	0.23
STA. 8+17 TO STA. 9+54 RT.	0.04
TOTAL	0.29

SAY 0.30 ACRE

PLAN
 SURVEYED BY: _____
 NOTED BY: _____
 CHECKED BY: _____
 DATE: _____

PROFILE
 SURVEYED BY: _____
 NOTED BY: _____
 CHECKED BY: _____
 DATE: _____



Allen Henderson & Associates, Inc.
 Civil and Structural Engineers Springfield, IL
 62703 Phone: (217)544-8033 IL Design Firm
 No. 184-001907

PLAN & PROFILE

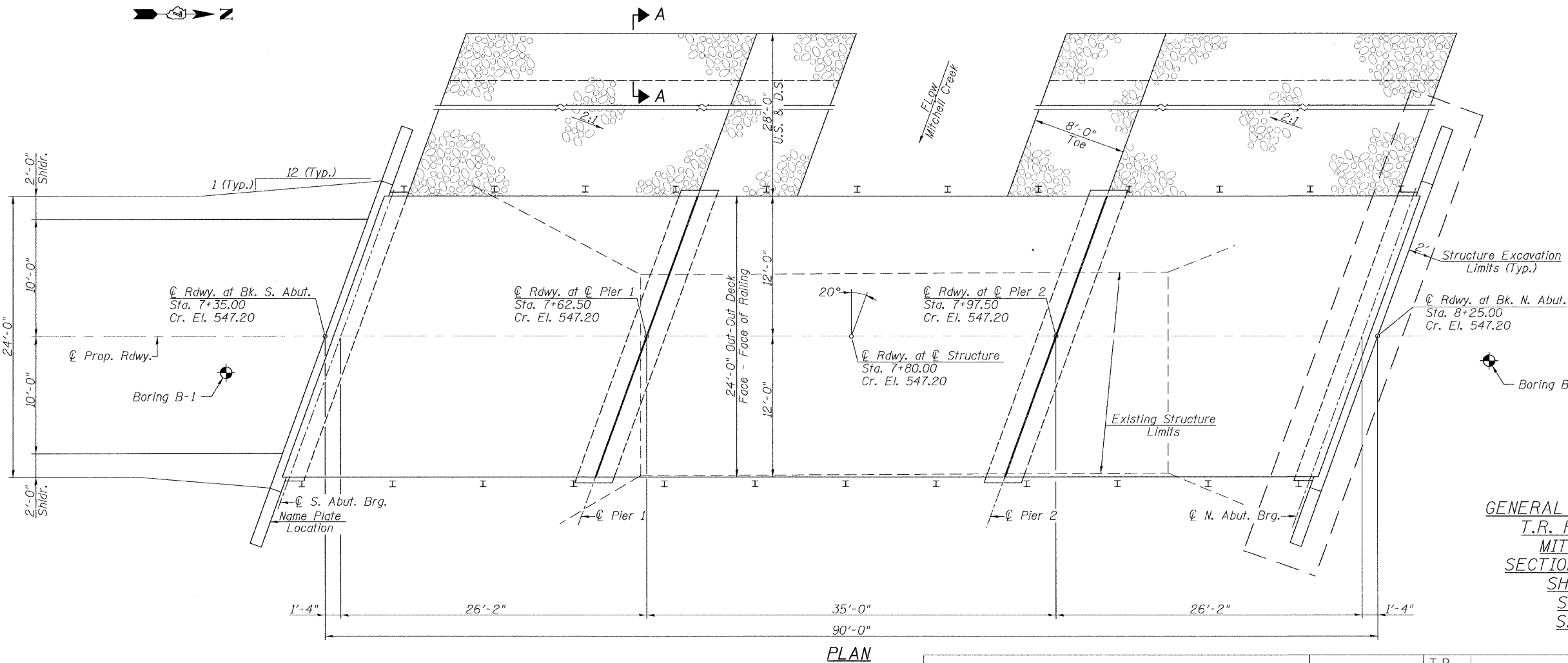
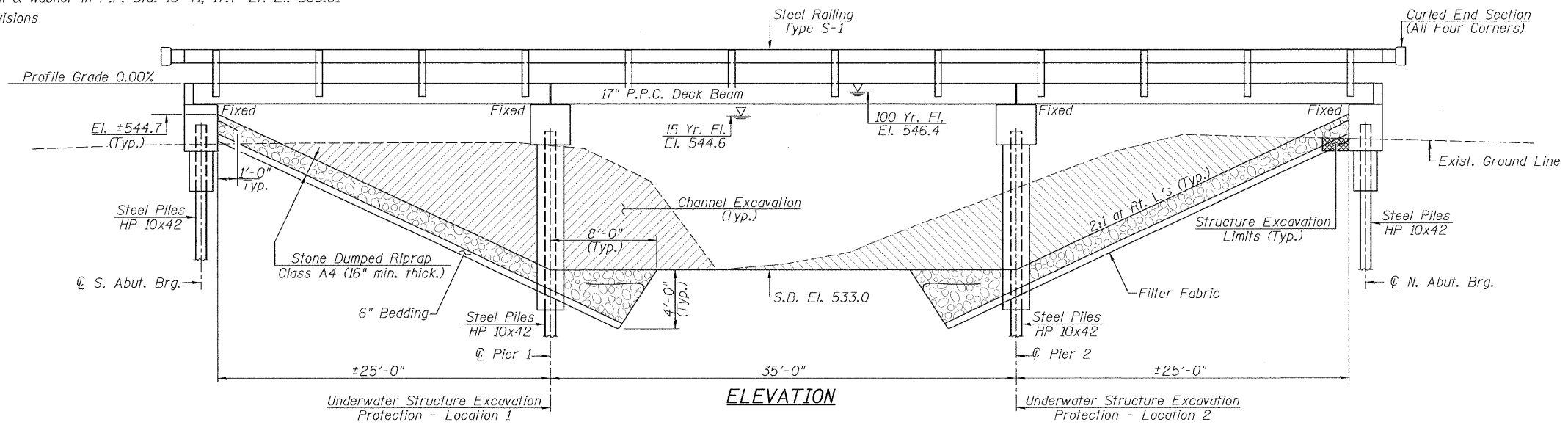
SCALE: 1" = 50'	SHEET NO. 3 OF 21 SHEETS	STA. 2+75.00 TO STA. 11+80.00
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T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	3
STR. NO. 087-3571	CONTRACT NO. 95628			
FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT			

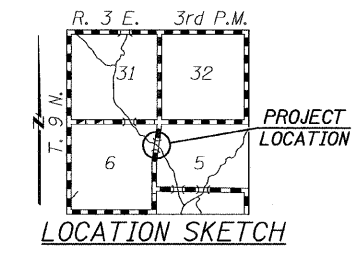
Existing Structure: Single span timber deck on steel stringers supported by closed timber abutments with timber wingwalls. $\pm 45'-0"$ Bk.-Bk. Abutments, $\pm 18'-11"$ Out.-Out. Deck. Steel Railing. $\pm 0^\circ$ Skew. Existing Structure No. 087-3331

Benchmark: BM #1: 16D Nail & Washer in P.P. Sta. 3+23, 20.5' Lt. El. 548.30
 BM #2: 20D Nail & Washer in P.P. Sta. 13+41, 17.7' Lt. El. 560.61


Salvage: See Special Provisions



MITCHELL CREEK
 STA. 7+80.00
 BUILT 20 BY
 SHELBY COUNTY
 SECTION 09-05118-00-BR
 STR. NO. 087-3571 LOADING HL-93
NAME PLATE
 (Standard 515001)

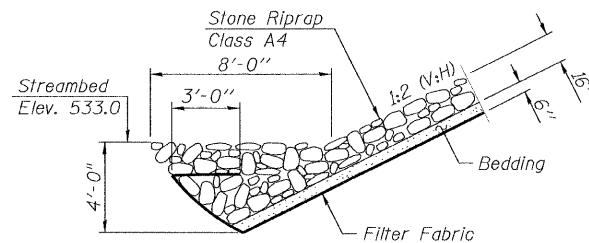


GENERAL PLAN & ELEVATION
 T.R. ROUTE 140 OVER
 MITCHELL CREEK
 SECTION 09-05118-00-BR
 SHELBY COUNTY
 STA. 7+80.00
 S.N. 087-3571

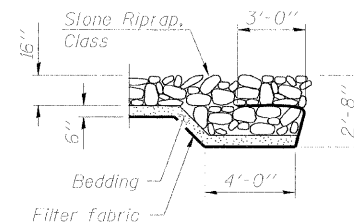
 Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL 62703 Phone: (217)544-8033 IL Design Firm No. 184-001907	SHEET NO. 1	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	10 SHEETS	140	09-05118-00-BR	SHELBY	21	4
		STR. NO. 087-3571	CONTRACT NO. 95628			
		FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT			

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Channel Excavation	Cu. Yd.		605	605
Stone Riprap, Class A4	Ton		499	499
Filter Fabric	Sq. Yd.		671	671
Removal of Existing Structures	Each		1	1
Structure Excavation	Cu. Yd.		67	67
Concrete Structures	Cu. Yd.		88.3	88.3
Concrete Encasement	Cu. Yd.		2.8	2.8
Precast Prestressed Concrete Deck Beams (17" Depth)	Sq. Ft.	2122		2122
Reinforcement Bars	Lb.		8260	8260
Steel Railing, Type S-1	Foot	180		180
Furnishing Steel Piles HP 10x42	Foot		699	699
Driving Piles	Foot		699	699
Test Piles Steel HP 10x42	Each		4	4
Name Plates	Each		1	1
Underwater Structure Excavation - Location 1	Each		1	1
Underwater Structure Excavation - Location 2	Each		1	1



TOE STONE RIPRAP TREATMENT



SECTION A-A

WATERWAY INFORMATION

Flood		Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Natural H.W.E.	Head - ft.		Headwater El.	
				Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design		15	3662	376	693	544.6	0.0	0.5	544.6	545.1
Base		100	6140	451	767	546.4	0.0	0.4	546.4	546.8
Exist. Overtop.		5	2690							
Prop. Overtop.		8	3015							
Max. Calc.		500	8265	451	767	547.7	0.0	0.4	547.7	548.1

LOADING HL-93

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

DESIGN SPECIFICATIONS

2007 AASHTO LRFD Bridge Design Specifications, 4th Edition with 2009 Interims

DESIGN STRESSES

FIELD UNITS

$f'_c = 3500$ psi
 $f_y = 60000$ psi (Reinforcement)

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$ psi
 $f'_{ci} = 5,000$ psi
 $f_{pu} = 270,000$ psi ($\frac{1}{2}$ " ϕ low lax strands)
 $f_{pb} = 201,960$ psi ($\frac{1}{2}$ " ϕ low lax strands)

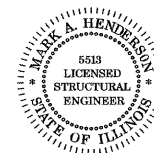
GENERAL NOTES

- See Proposal for Boring Data.
- Reinforcement bars shall conform to the requirements of ASTM A706, Grade 60. See Special Provisions.
- Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.
- Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.
- The Contractor shall drive one test pile in a permanent location at each pier and abutment as directed by the Engineer in the field prior to ordering the remainder of the piles.

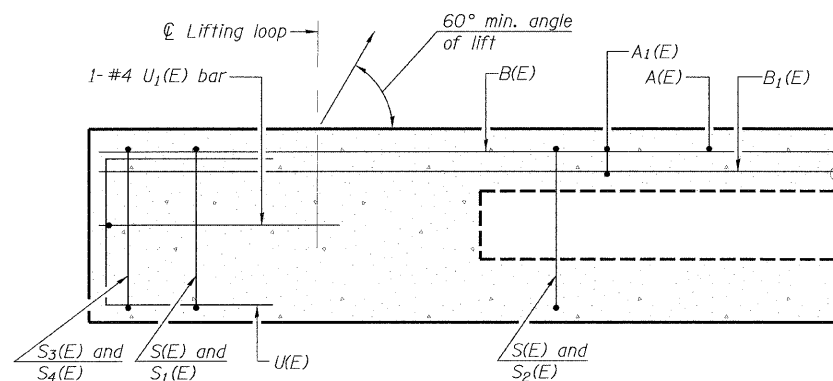
GENERAL DATA
 S.N. 087-3571

I certify that to the best of my knowledge, information and belief, this bridge 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 requirements of the current "A.A.S.H.T.O. LRFD Bridge Design Specifications.

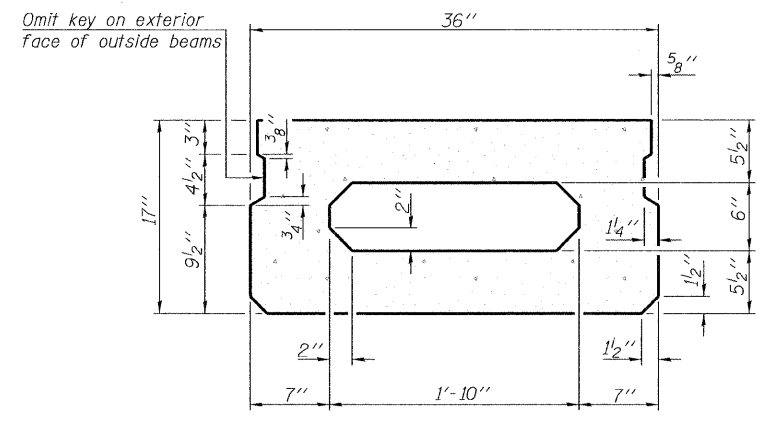
Mark A. Henderson 4/1/2010
 Expiration Date 11/30/2010



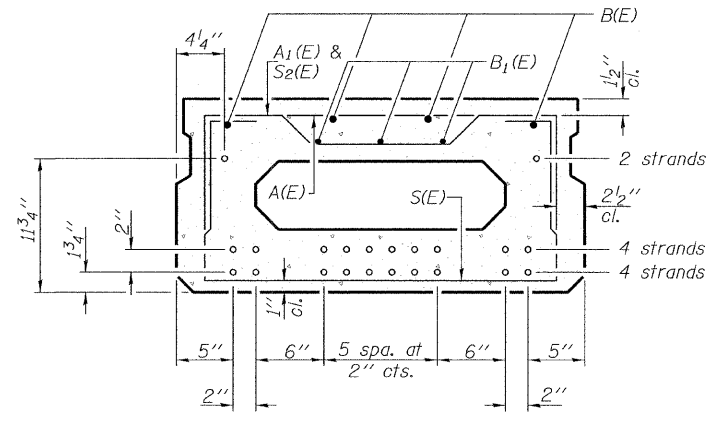
Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL. 62703 Phone: (217)544-8033 IL Design Firm No. 184-001907	SHEET NO. 2 10 SHEETS	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		140	09-05118-00-BR	SHLEBY	21	5
		STR. NO. 087-3571		CONTRACT NO. 95628		
		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



SECTION C-C



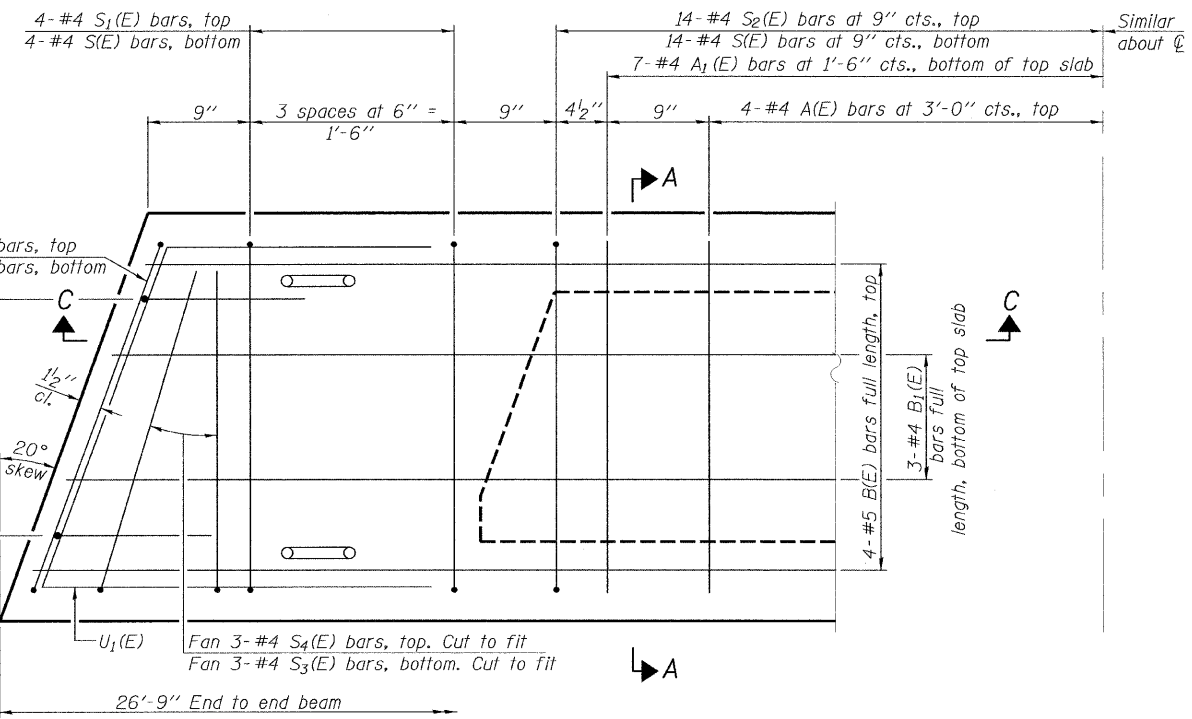
SECTION A-A
(Showing dimensions)



SECTION A-A
(Showing reinforcement and permissible strand locations)

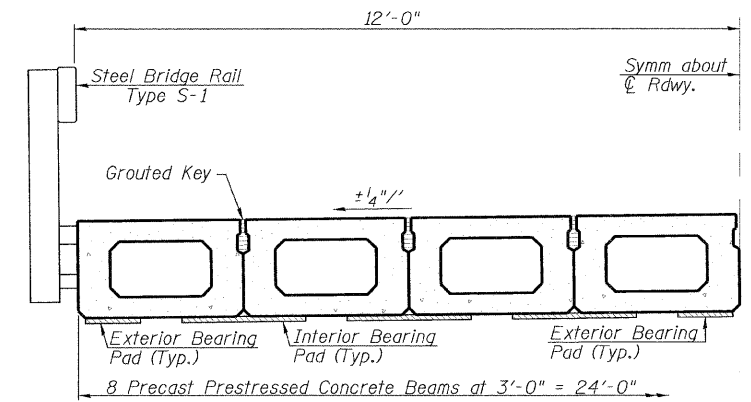
Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

MINIMUM BAR LAP
 #4 bar = 2'-0"
 #5 bar = 2'-6"

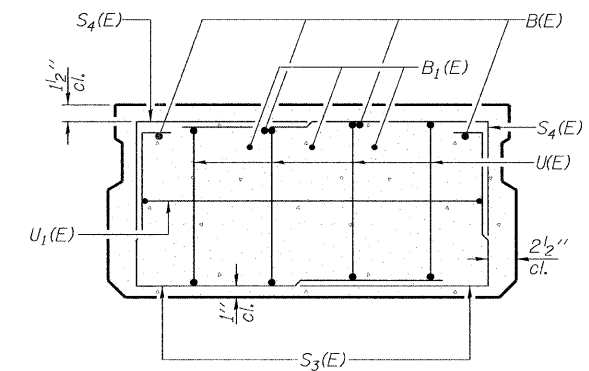


PLAN VIEW

Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4 inches in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



HALF CROSS SECTION



VIEW B-B

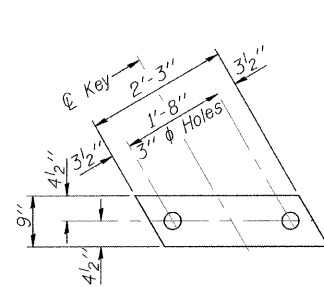
BAR LIST
 ONE BEAM ONLY
 (For information only)

Bar	No.	Size	Length	Shape
A(E)	8	#4	2'-7"	—
A1(E)	14	#4	2'-10"	—
B(E)	4	#5	26'-5"	—
B1(E)	3	#4	26'-5"	—
S(E)	36	#4	5'-9"	⌈
S1(E)	8	#4	4'-3"	⌈
S2(E)	28	#4	4'-6"	⌈
S3(E)	10	#4	4'-2"	⌈
S4(E)	10	#4	3'-5"	⌈
U(E)	8	#5	3'-8"	⌈
U1(E)	2	#4	6'-1"	⌈

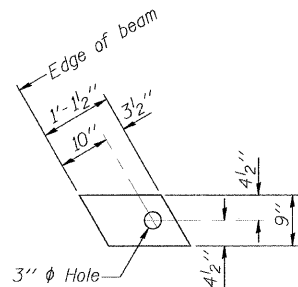
Note: See sheet 7 of 21 for additional details and Bill of Material.

17" X 36" PPC DECK BEAM
 (SPANS 1 & 3)
 S.N. 087-3571

<p>Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL. 62703 Phone: (217)544-8033 IL Design Firm No. 184-001907</p>	SHEET NO. 3	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	10 SHEETS	140	09-05118-00-BR	SHELBY	21	6
		STR. NO. 087-3571	CONTRACT NO. 95628			
		FED. ROAD DIST. NO. _		ILLINOIS FED. AID PROJECT		



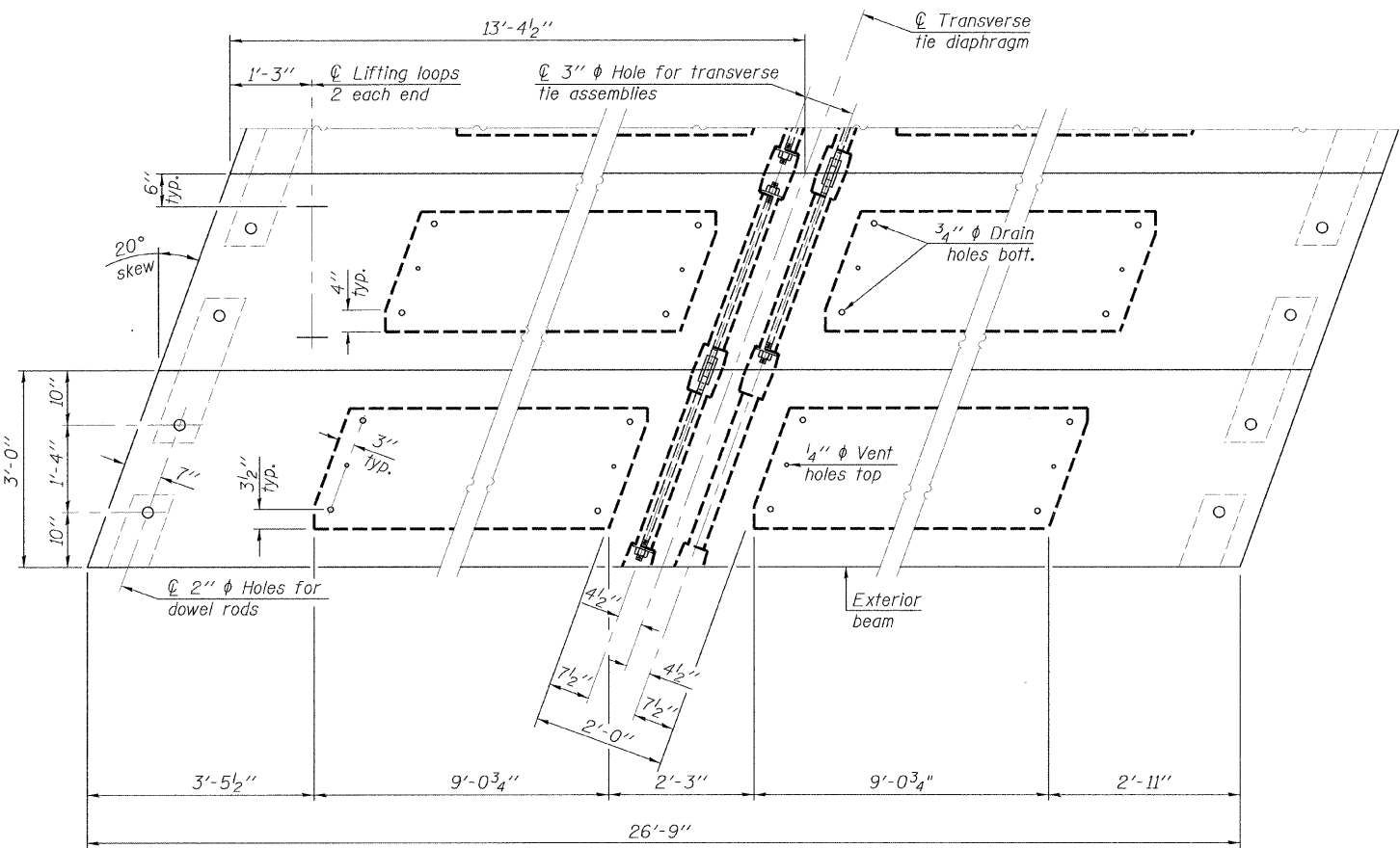
FABRIC BEARING PAD
(Interior)
(24 Required)



FABRIC BEARING PAD
(Exterior)
(16 Required)

FIXED

Notes:
All bearing pads shall be 1" thick.

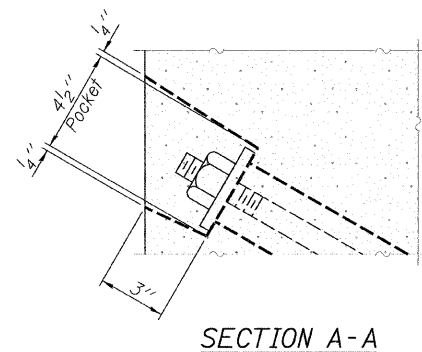


PLAN VIEW

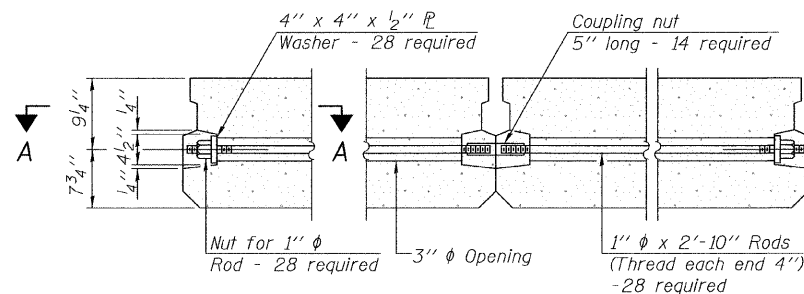
Note: Connect beams in pairs with the transverse tie configuration shown.

NOTES

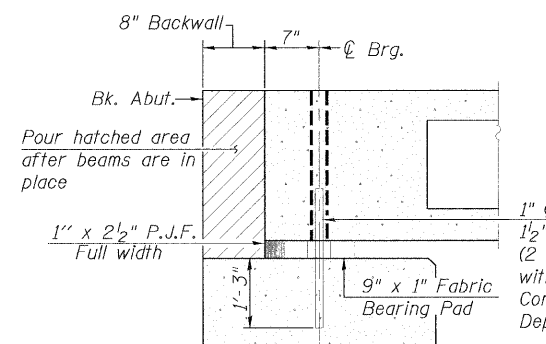
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" ϕ rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
A minimum 2 1/2" ϕ lifting pin shall be used to engage the lifting loops during handling.
Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.
Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



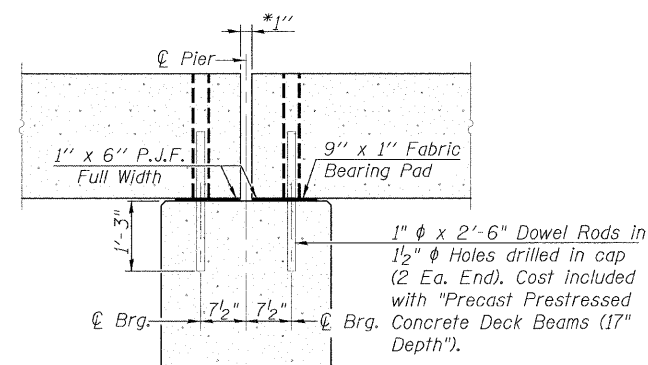
SECTION A-A



TYPICAL TRANSVERSE TIE ASSEMBLY

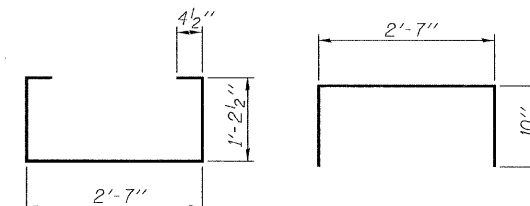


SECTION THRU ABUTMENT
(At Right Angles)

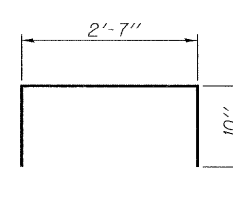


SECTION THRU PIER

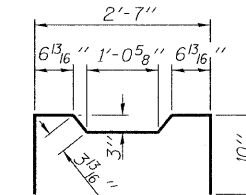
Notes : After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
All horizontal dimensions are at right angles to beam ends.
* 1" joint shall be filled with non-shrink grout.
* 1" dimension may vary to accommodate tolerance in beam lengths.



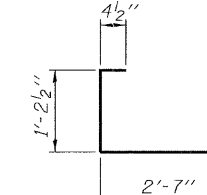
BAR S(E)



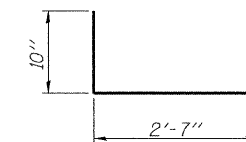
BAR S1(E)



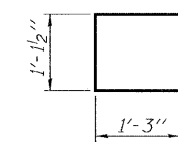
BAR S2(E)



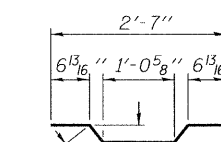
BAR S3(E)



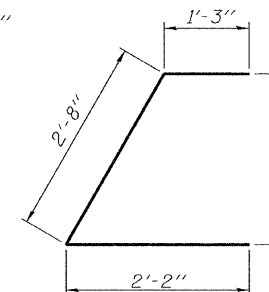
BAR S4(E)



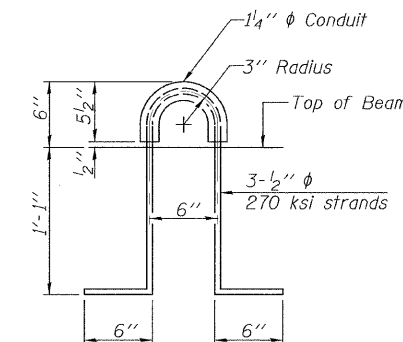
BAR U(E)



BAR A1(E)



BAR U1(E)



LIFTING LOOP DETAIL

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (17" depth)	Sq. Ft.	1284
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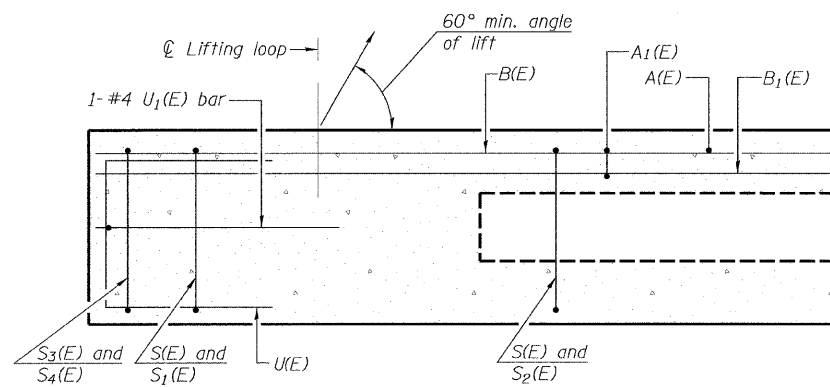
17" X 36" PPC DECK BEAM DETAILS
(SPANS 1 & 3)
S.N. 087-3571



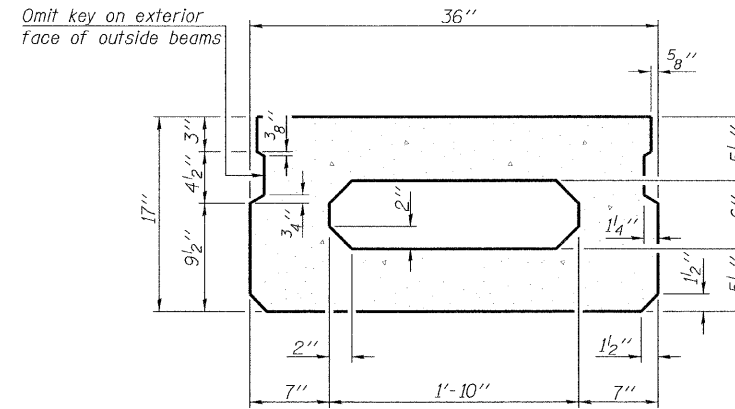
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62703 Phone: (217)544-8033 IL Design Firm
No. 184-001907

SHEET NO. 4
10 SHEETS

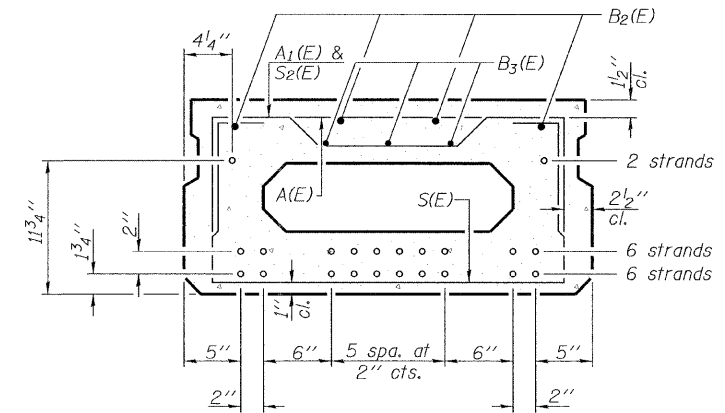
T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	7
STR. NO. 087-3571		CONTRACT NO. 95 428		
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



SECTION C-C



SECTION A-A
(Showing dimensions)

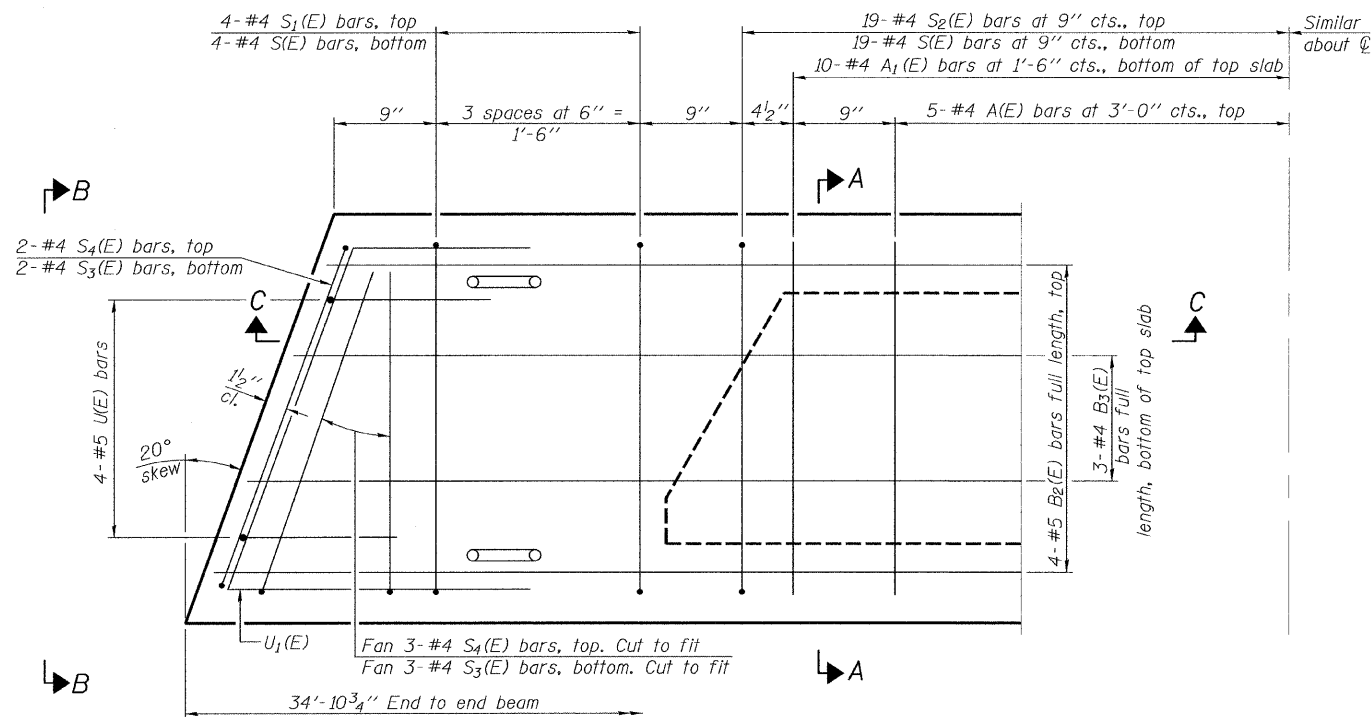


SECTION A-A
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

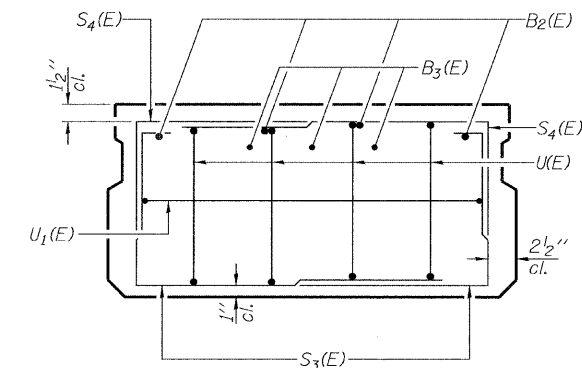
MINIMUM BAR LAP

#4 bar = 2'-0"
#5 bar = 2'-6"



PLAN VIEW

Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

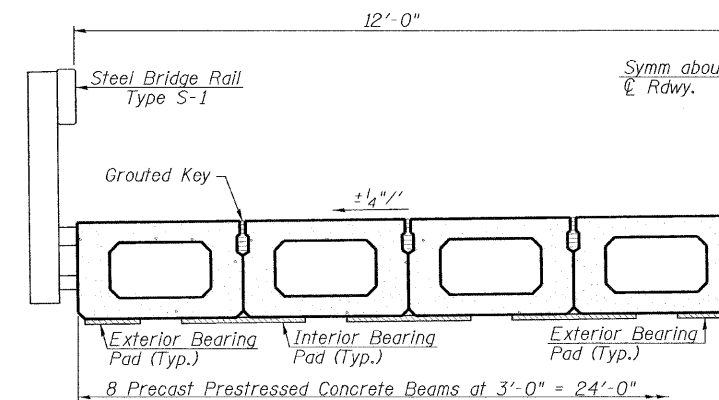


VIEW B-B

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	10	#4	2'-7"	—
A1(E)	20	#4	2'-10"	—
B2(E)	4	#5	34'-7"	—
B3(E)	3	#4	34'-7"	—
S(E)	46	#4	5'-9"	⌋
S1(E)	8	#4	4'-3"	⌋
S2(E)	38	#4	4'-6"	⌋
S3(E)	10	#4	4'-2"	⌋
S4(E)	10	#4	3'-5"	⌋
U(E)	8	#5	3'-8"	⌋
U1(E)	2	#4	6'-1"	⌋

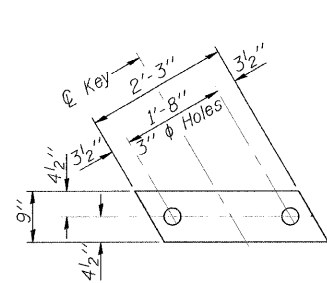
Note: See sheet 9 of 21 for additional details and Bill of Material.



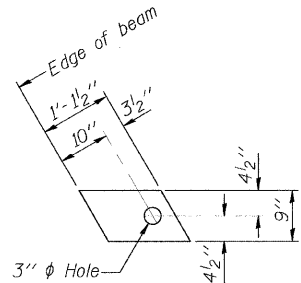
HALF CROSS SECTION

17" X 36" PPC DECK BEAM
(SPAN 2)
S.N. 087-3571





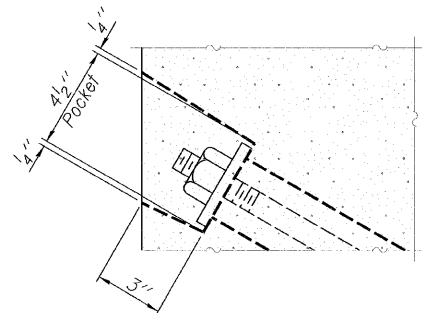
FABRIC BEARING PAD
(Interior)
(12 Required)



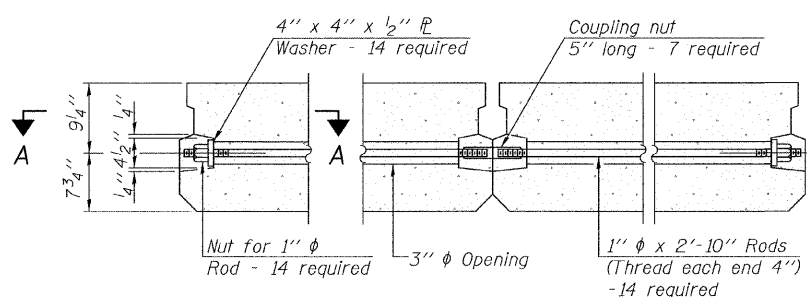
FABRIC BEARING PAD
(Exterior)
(8 Required)

FIXED

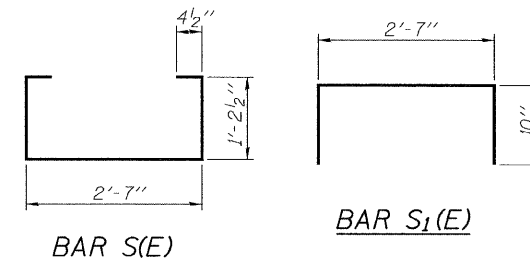
Notes:
All bearing pads shall be 1" thick.



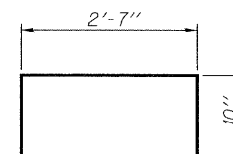
SECTION A-A



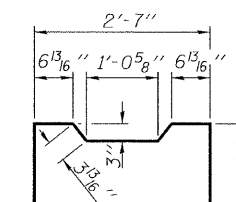
TYPICAL TRANSVERSE TIE ASSEMBLY



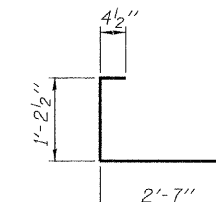
BAR S(E)



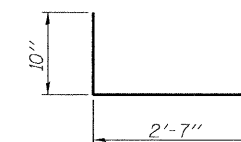
BAR S1(E)



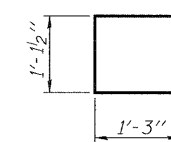
BAR S2(E)



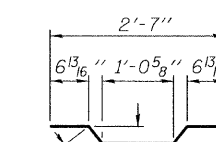
BAR S3(E)



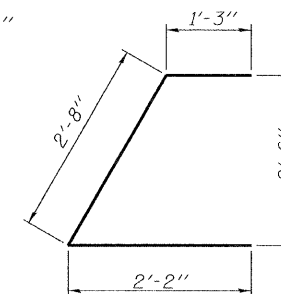
BAR S4(E)



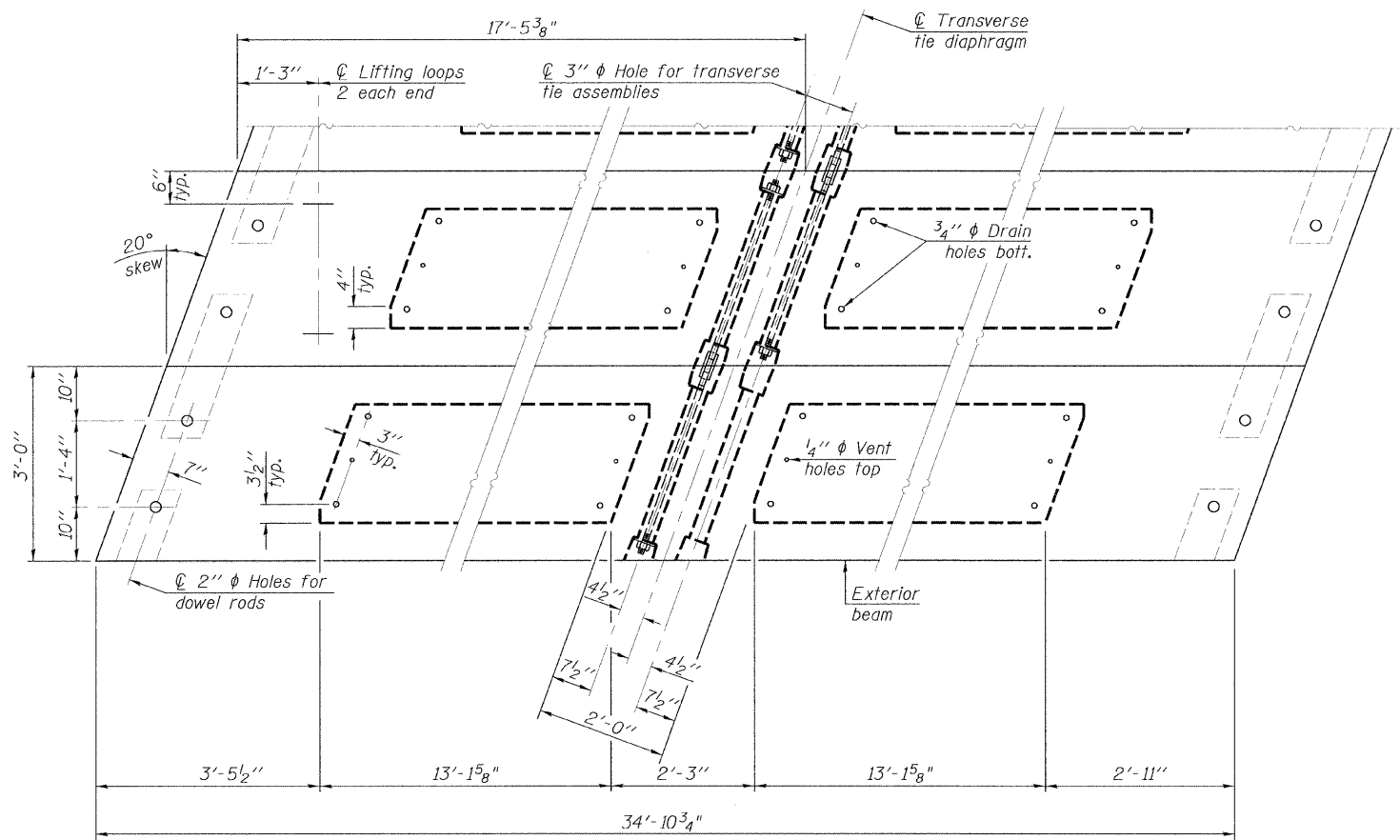
BAR U(E)



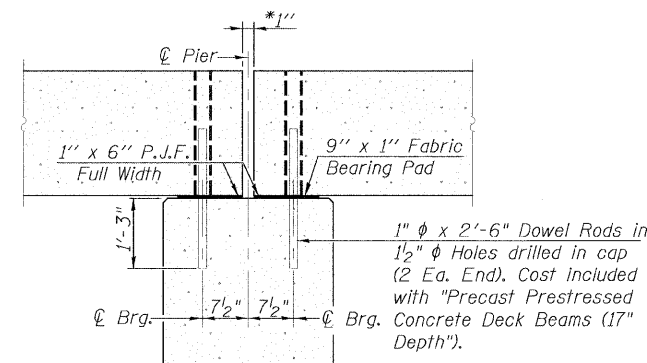
BAR A1(E)



BAR U1(E)

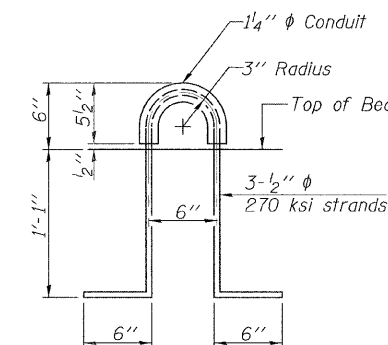


PLAN VIEW



SECTION THRU PIER

Notes : After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
All horizontal dimensions are at right angles to beam ends.
* 1" joint shall be filled with non-shrink grout.
* 1" dimension may vary to accommodate tolerance in beam lengths.



LIFTING LOOP DETAIL

Note: Connect beams in pairs with the transverse tie configuration shown.

NOTES

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
Two 8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.
Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.
Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

BILL OF MATERIAL

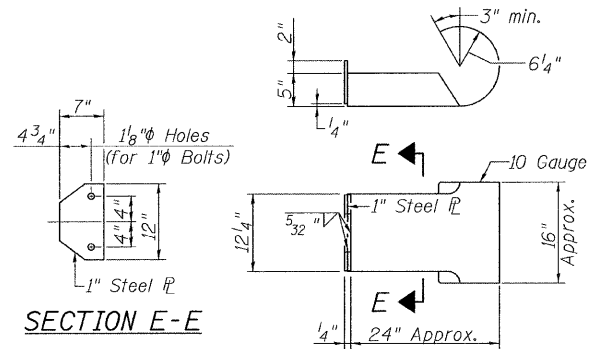
Precast Prestressed Conc. Deck Bms. (17" depth)	Sq. Ft.	838
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17" X 36" PPC DECK BEAM DETAILS (SPAN 2)
S.N. 087-3571

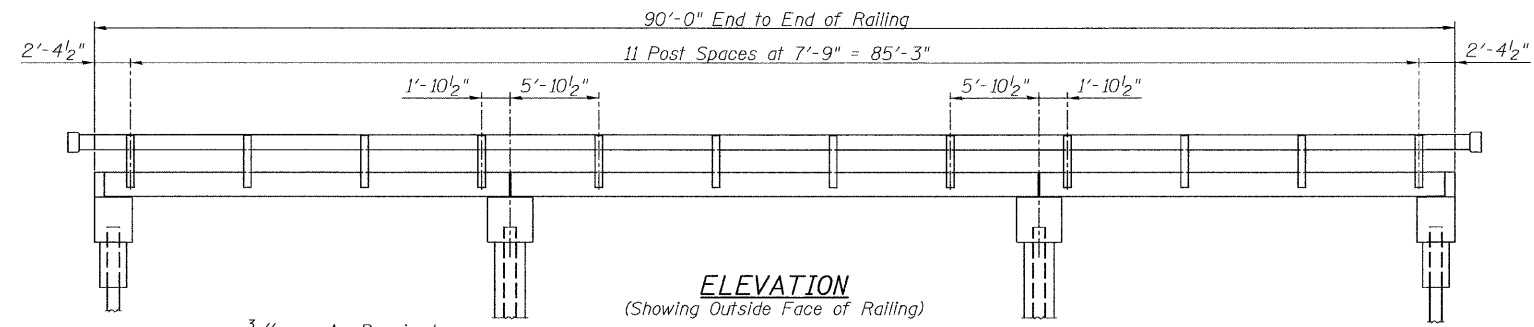


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No. 184-001907

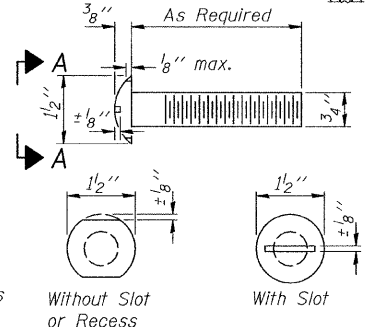
SHEET NO. 6	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
10 SHEETS	140	09-05118-00-BR	SHELBY	21	9
STR. NO. 087-3571			CONTRACT NO. 95628		
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					



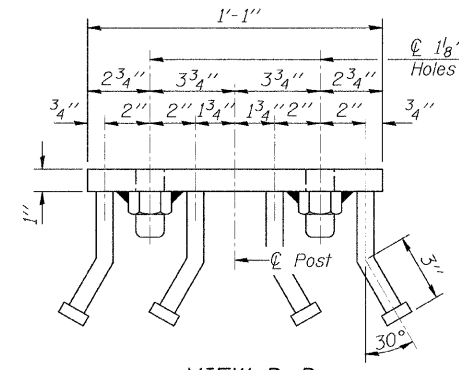
SECTION E-E
CURLED END SECTION DETAILS (4 Required)
 (Cost of Curled End Sections to be included in the cost of Steel Railing, Type S-1.)



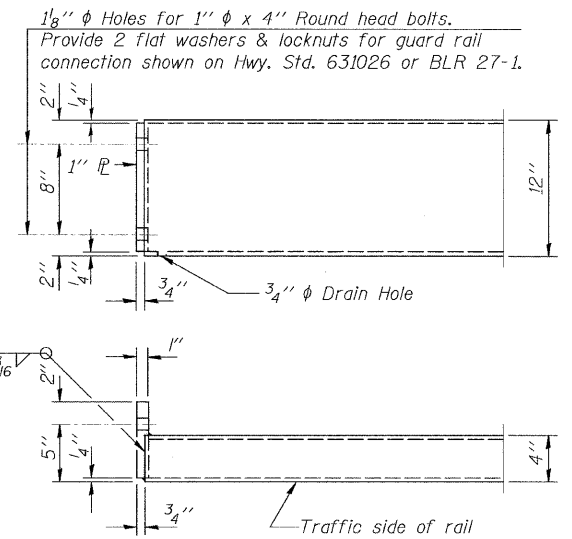
ELEVATION
 (Showing Outside Face of Railing)



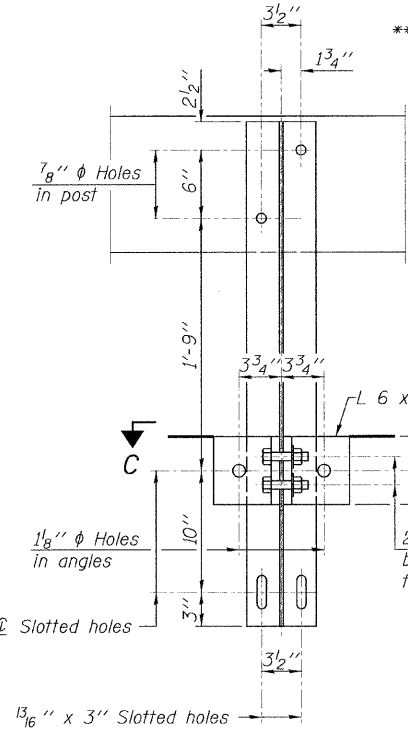
VIEW A-A
ROUND HEAD BOLT



VIEW D-D



END OF RAIL DETAILS



SECTION B-B

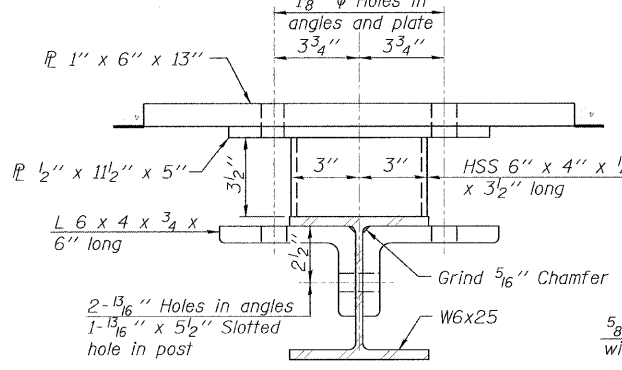
** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2 inch.

2- 3/4 inch diameter x 6 inch Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8 inch diameter holes in hollow structural section may be drilled in the field.

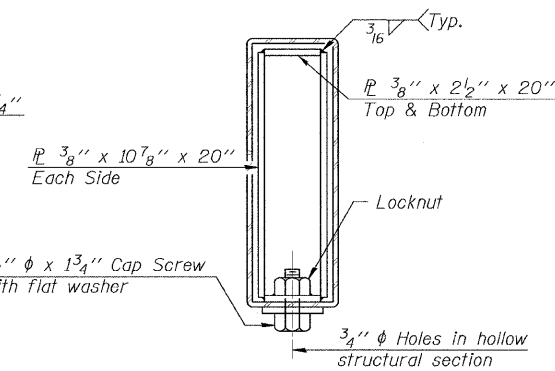
W6 x 25
 1 3/16 inch x 5 1/2 inch Slotted hole in post
 L 6 x 4 x 3/4
 2- 3/4 inch diameter x 3 1/4 inch H.S. bolts with hex nut & flat washers
 1 3/16 inch diameter holes in angles
 2- 1 inch diameter x 7 3/4 inch AASHTO M-164 anchor bolts with flat washer and lock washer
 2- 5/8 inch diameter x 5 3/4 inch cap screws with flat washer

2- 1 inch diameter x 7 3/4 inch AASHTO M-164 anchor bolts with flat washer and lock washer
 1 3/16 inch diameter holes in angles
 1 3/16 inch x 3 inch Slotted holes

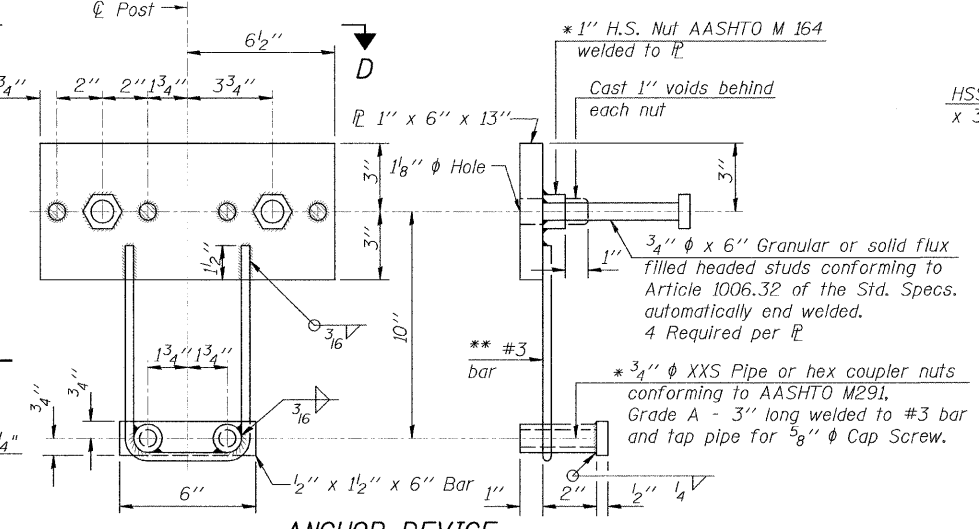
SECTION AT RAILING POST



SECTION C-C

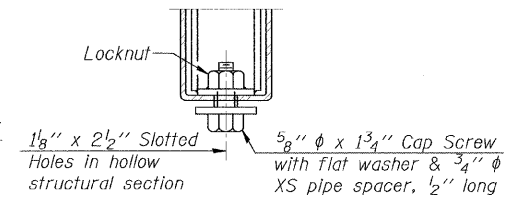


SECTIONS AT RAIL SPLICE

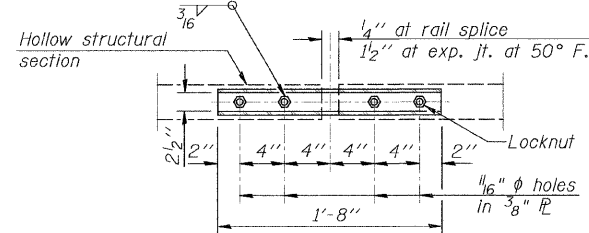


ANCHOR DEVICE

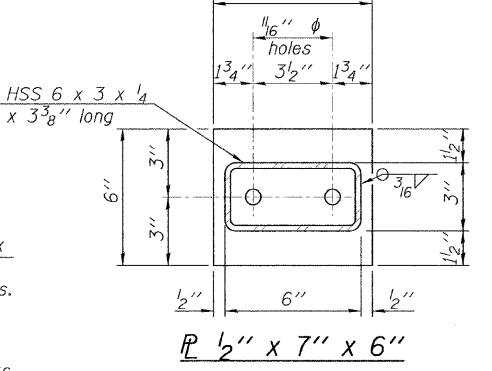
* Threaded areas shall be plugged or blocked off during casting of beam.



RAIL SPLICE CONNECTION AT EXPANSION JT.



PLAN-BOTT. SPLICE PIPE TYPICAL



SECTION AT RAIL SPLICE (continued)

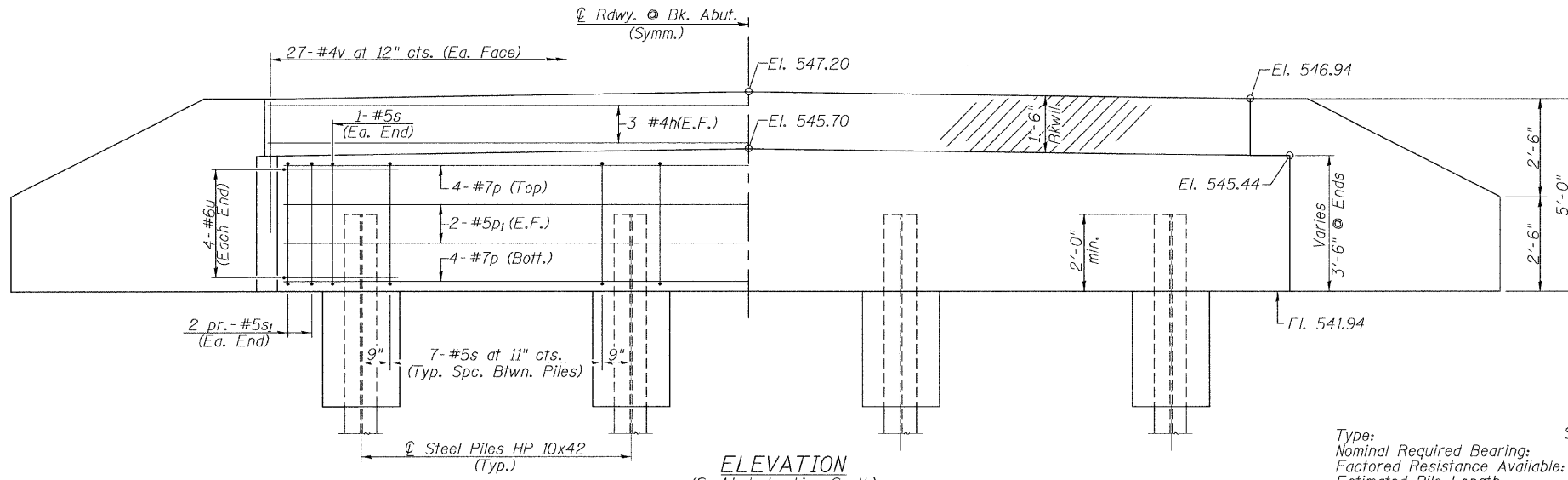
Notes:
 All field drilled holes shall be coated with an approved zinc rich paint before erection.
 For multi-span bridges, sufficient 1/4 inch x 6 inch x 1'-2 inch galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.
 All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
 *** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	180

STEEL RAILING TYPE S-1
 S.N. 087-3571

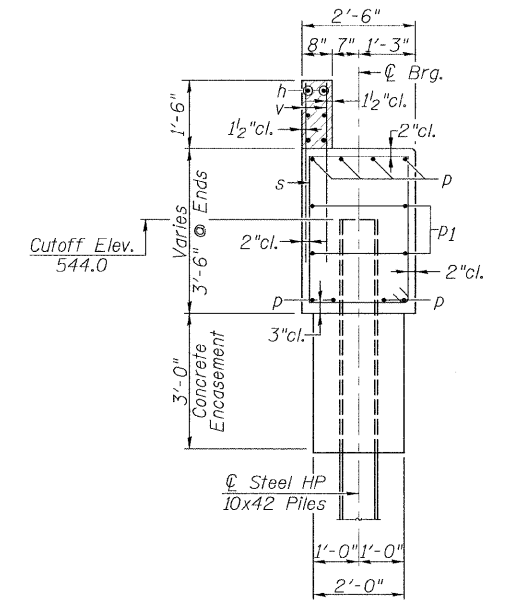
SHEET NO. 7	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
10 SHEETS	140	09-05118-00-BR	SHELBY	21	10
STR. NO. 087-3571			CONTRACT NO. 95628		
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					



ELEVATION
(S. Abut. Looking South)
(N. Abut. Looking North)

PILE DATA

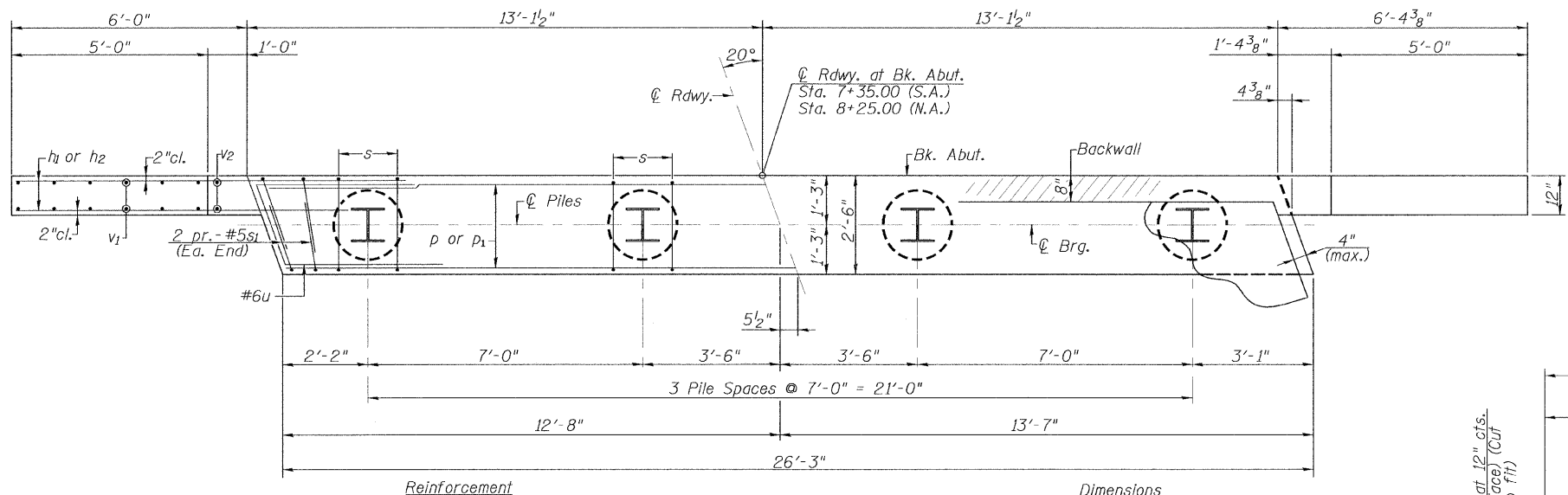
Type:	(S. Abut.)	(N. Abut.)
Nominal Required Bearing:	Steel HP 10x42	Steel HP 10x42
Factored Resistance Available:	206 Kips	206 Kips
Estimated Pile Length:	44'	45'
Number of Production:	3	3
Number of Test Piles:	1	1



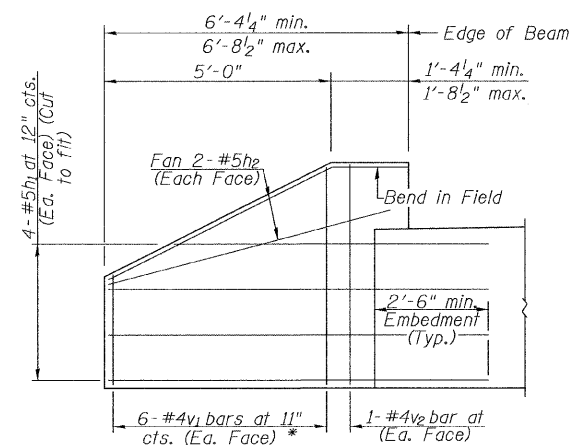
SECTION THRU ABUTMENT

NOTES

All exposed edges shall have standard $\frac{3}{4}$ " chamfer.
Space reinforcement in cap to miss beam anchor dowels.
Wingwalls and Backwalls may, at the contractor's option, be cast monolithically.
Hatched area and wingwalls shall be poured after deck beams are anchored in place.
The Steel H-Piles shall be according to AASHTO M270, Grade 50.
If a portion of the pier wall or concrete encasement is under water, reinforcement may be placed underwater into forms. Concrete shall be tremied according to Article 503.08 of the Standard Specifications to an elevation of 1'-0" above the water line at the time of construction.
The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.



PLAN

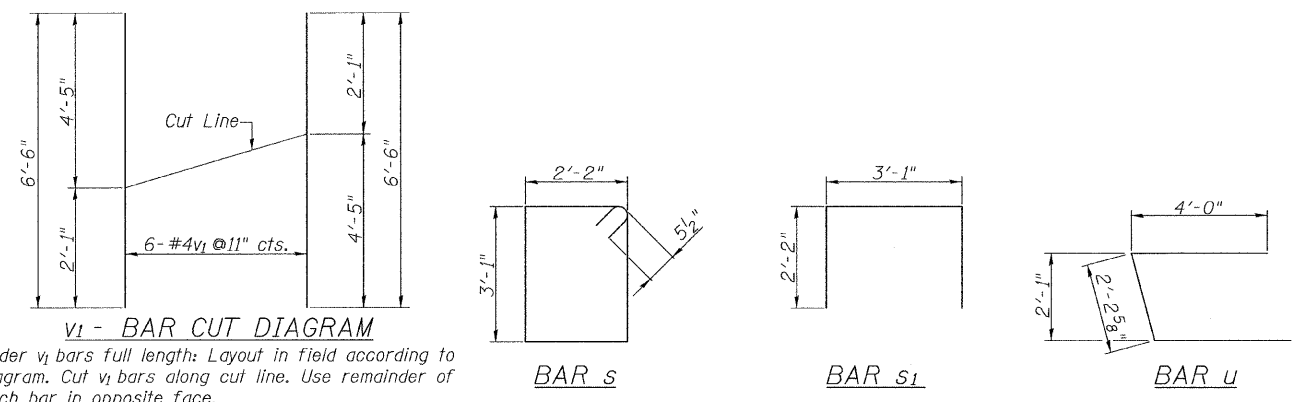


WINGWALL ELEVATION
(Showing Reinforcement)
* See v1-bar cut diagram

BILL OF MATERIAL
TWO ABUTMENTS

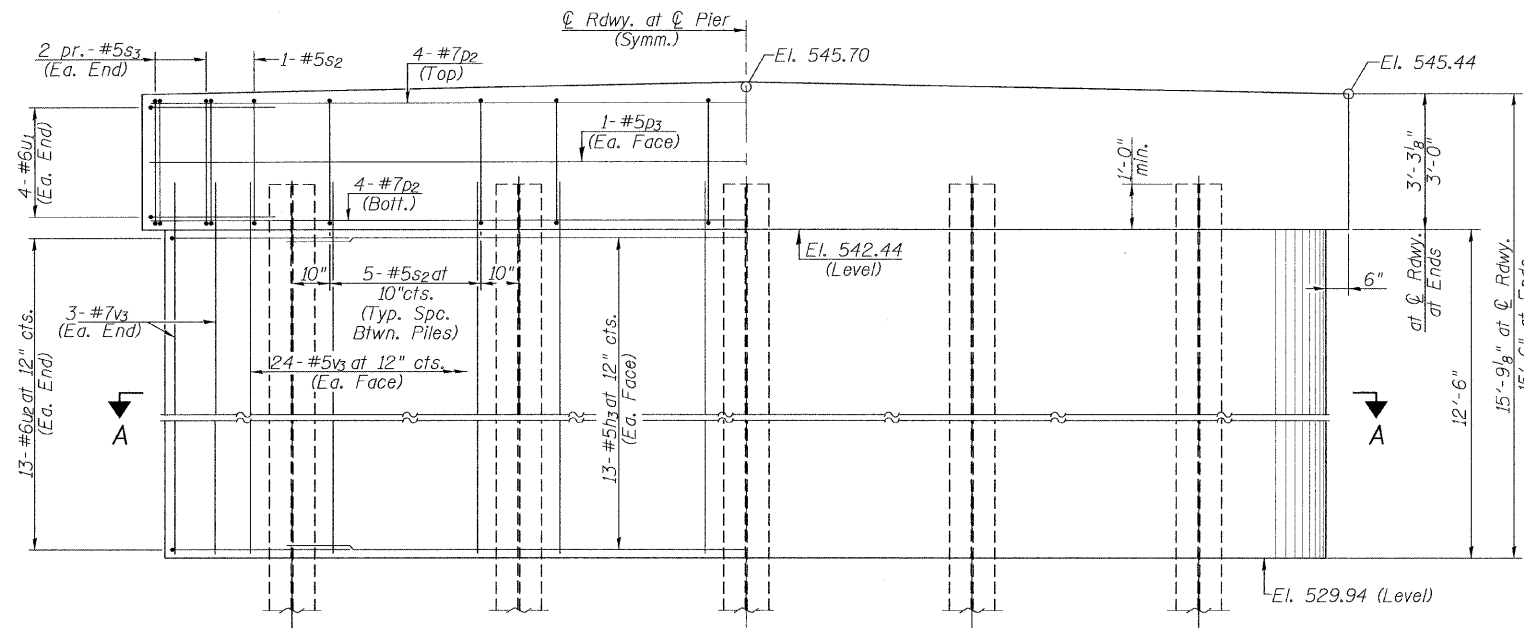
BAR	NO.	SIZE	LENGTH	SHAPE
h	12	#4	27'-3"	—
h1	32	#5	8'-11"	—
h2	16	#5	7'-0"	—
p	16	#7	25'-10"	—
p1	8	#5	25'-10"	—
s	46	#5	11'-5"	□
s1	16	#5	7'-5"	□
u	16	#6	10'-3"	—
v	108	#4	3'-0"	—
v1	24	#4	6'-6"	—
v2	8	#4	4'-6"	—
Concrete Structures			Cu. Yd.	23.1
Reinforcement Bars			Pound	2960
Furnishing Steel Piles HP 10x42			Foot	267
Driving Piles			Foot	267
Test Pile Steel HP 10x42			Each	2
Concrete Encasement			Cu. Yd.	2.8
Structure Excavation			Cu. Yd.	21

ABUTMENTS
S.N. 087-3571

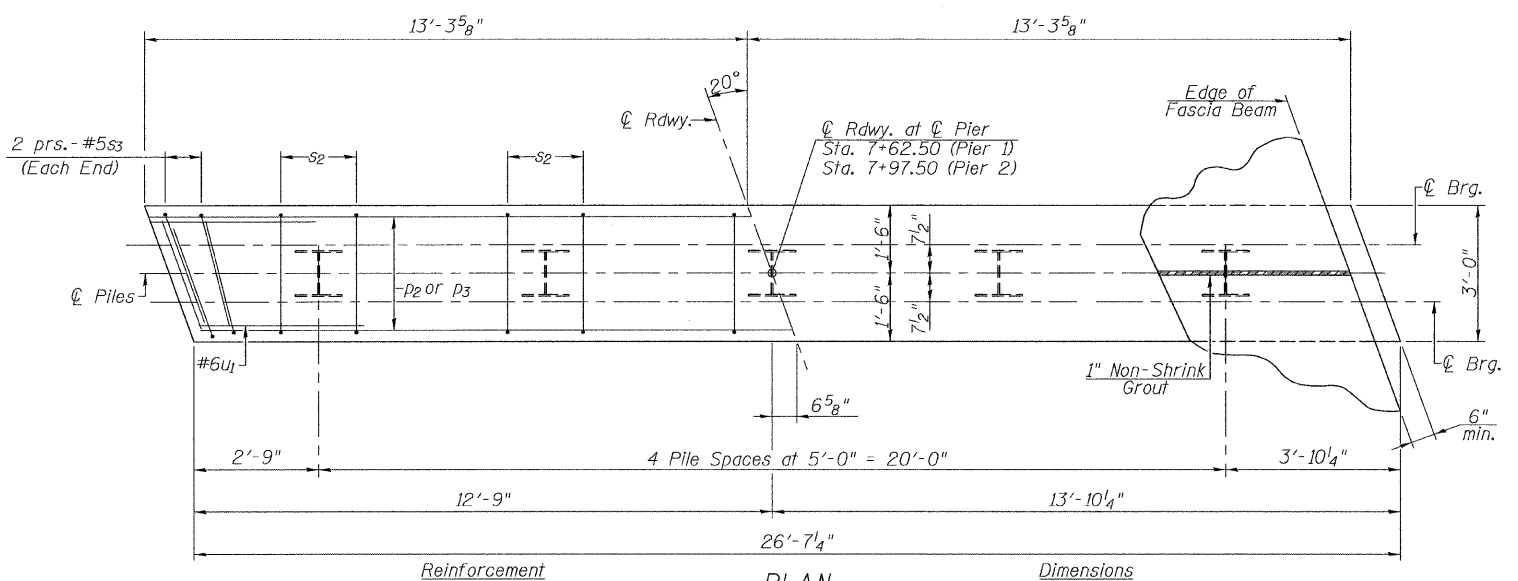


Order v1 bars full length: Layout in field according to diagram. Cut v1 bars along cut line. Use remainder of each bar in opposite face.

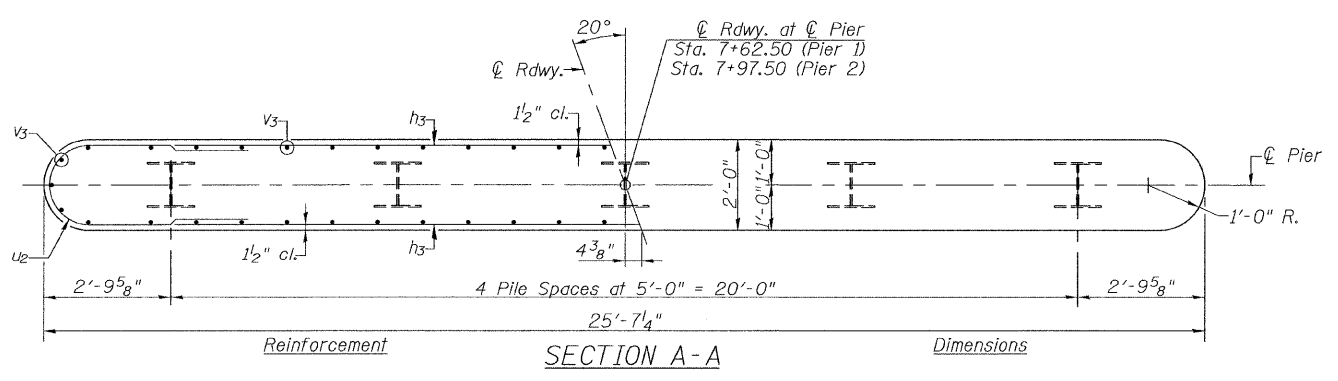
<p>Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL 62703 Phone: (217)544-8033 IL Design Firm No. 184-001907</p>	SHEET NO. 8	T.R. RTE. 140	SECTION 09-05118-00-BR	COUNTY SHELBY	TOTAL SHEETS 21	SHEET NO. 11
	10 SHEETS	STR. NO. 087-3571	CONTRACT NO. 95628		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT	



Reinforcement ELEVATION Dimensions



Reinforcement PLAN Dimensions



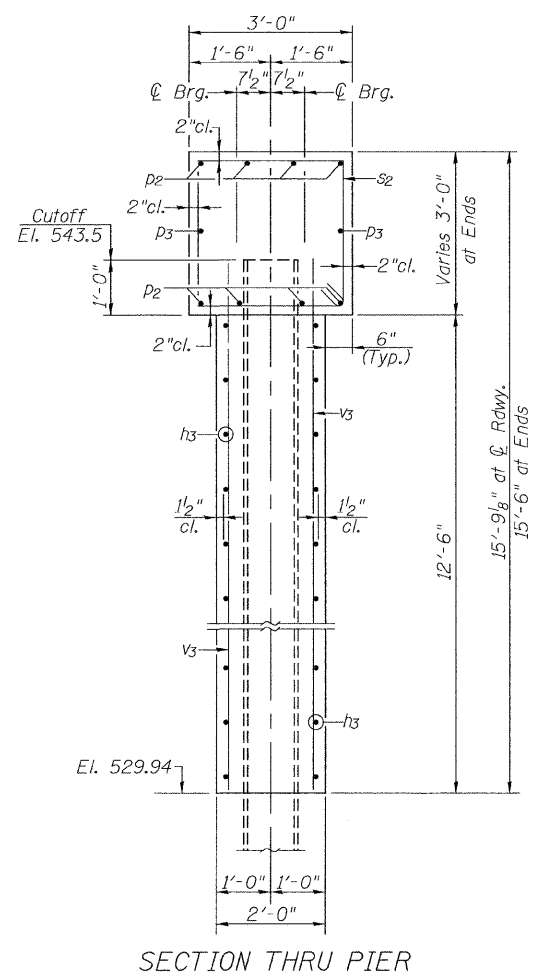
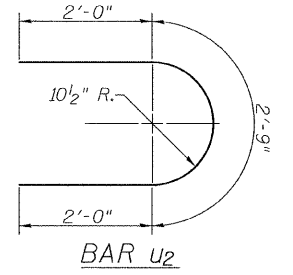
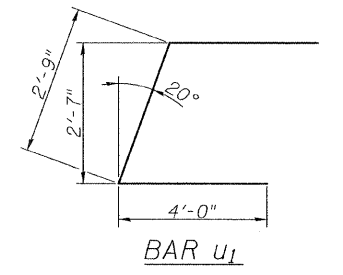
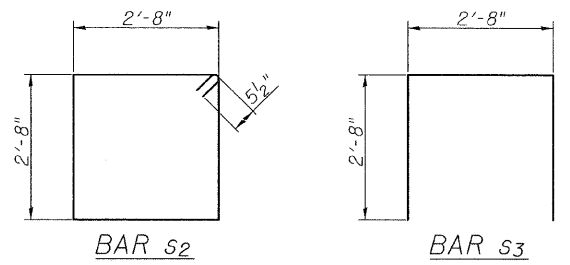
Reinforcement SECTION A-A Dimensions

PILE DATA

	Pier 1	Pier 2
Type:	Steel HP 10x42	Steel HP 10x42
Nominal Required Bearing:	284 Kips	284 Kips
Factored Resistance Available:	142 Kips	142 Kips
Estimated Pile Length:	54'	54'
Number of Production:	4	4
Number of Test Piles:	1	1

NOTES

The Steel H-Piles shall be according to AASHTO M270, Grade 50.
 All exposed edges shall have standard 3/4" chamfer except as noted.
 Space reinforcement in pier caps to miss beam anchor dowels.
 The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.
 If a portion of the pier wall or concrete encasement is under water, reinforcement may be placed underwater into forms. Concrete shall be tremied according to Article 503.08 of the Standard Specifications to an elevation of 1'-0" above the water line at the time of construction.



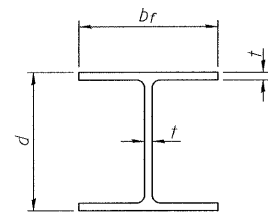
SECTION THRU PIER

BILL OF MATERIAL TWO PIERS

BAR	NO.	SIZE	LENGTH	SHAPE
h3	52	#5	23'-7"	—
p2	16	#7	26'-2"	—
p3	4	#5	26'-2"	—
s2	44	#5	11'-7"	□
s3	16	#5	8'-0"	□
u1	16	#6	10'-9"	U
u2	52	#6	6'-9"	U
v3	108	#5	14'-3"	—
Concrete Structures		Cu. Yd.	65.2	
Reinforcement Bars		Pound	5300	
Furnishing Steel Piles, HP 10x42		Foot	432	
Driving Piles		Foot	432	
Test Pile, Steel HP 10x42		Each	2	
Underwater Structure Excavation		Each	1	
Protection - Location 1		Each	1	
Underwater Structure Excavation		Each	1	
Protection - Location 2		Each	1	
Structure Excavation		Cu. Yd.	46	

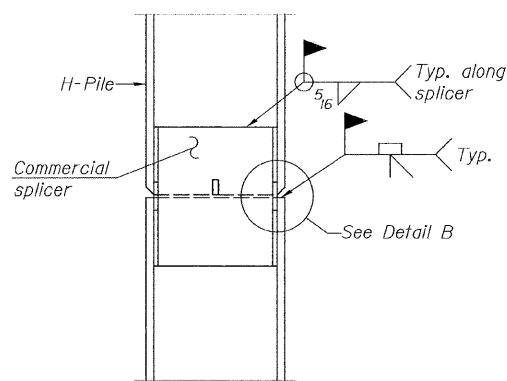
PIERS S.N. 087-3571

<p>Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL. 62703 Phone: (217)544-8033 IL Design Firm No. 184-001907</p>	SHEET NO. 9 10 SHEETS	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
		140	09-05118-00-BR	SHELBY	21	12	
		STR. NO. 087-3571			CONTRACT NO. 95428		
		FED. ROAD DIST. NO. ILLINOIS			FED. AID PROJECT		

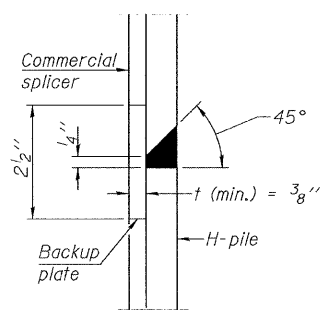


STEEL PILE TABLE

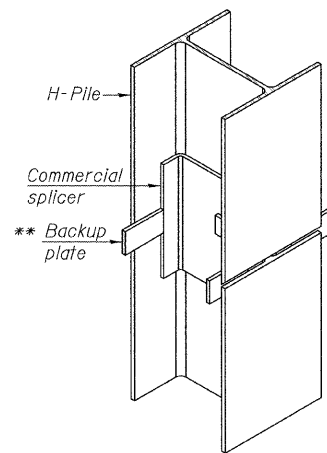
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	13/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



ELEVATION

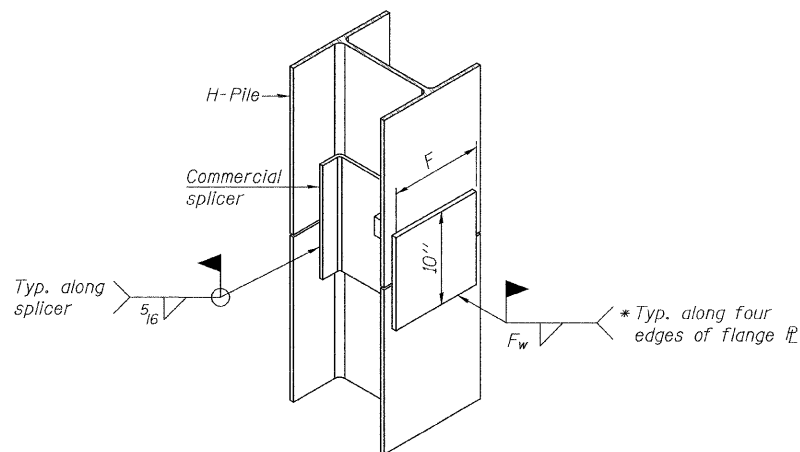


DETAIL "B"



ISOMETRIC VIEW

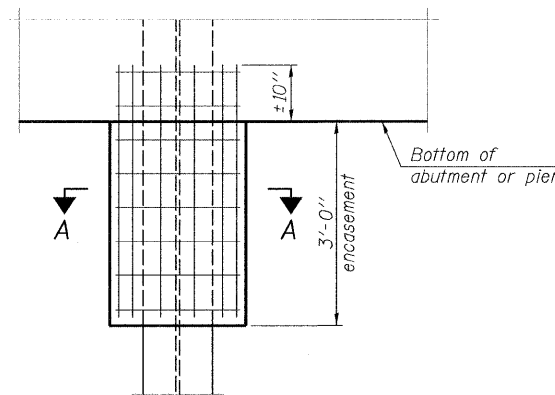
WELDED COMMERCIAL SPLICE



ISOMETRIC VIEW

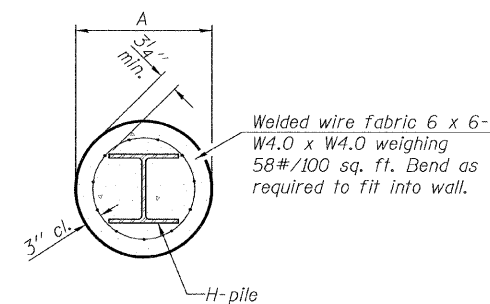
WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).



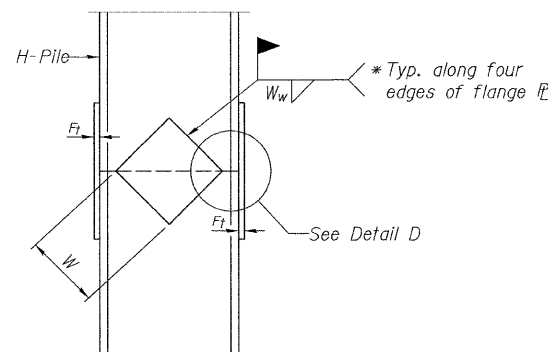
ELEVATION

PILE ENCASEMENT

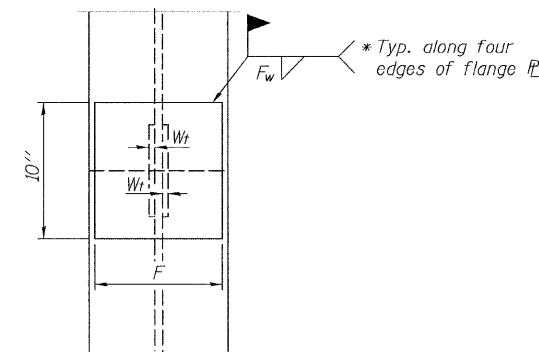


SECTION A-A

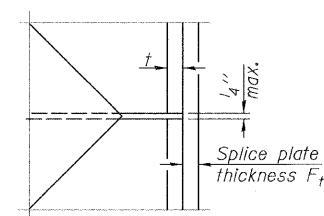
Note:
Forms for encasement may be omitted when soil conditions permit.



ELEVATION



END VIEW



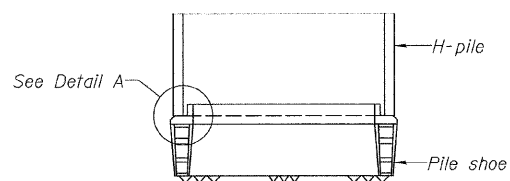
DETAIL D

WELDED PLATE FIELD SPLICE

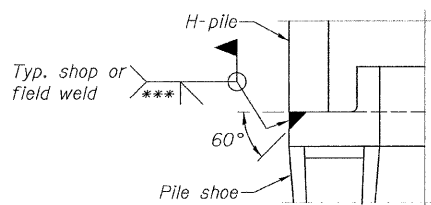
Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.

Designation	F	F _t	F _w	W	W _t	W _w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5 1/2"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5 1/2"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5 1/2"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5 1/2"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5 1/2"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5 1/2"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

HP PILE DETAILS
S.N. 087-3571



ELEVATION



DETAIL A

H-PILE SHOE ATTACHMENT



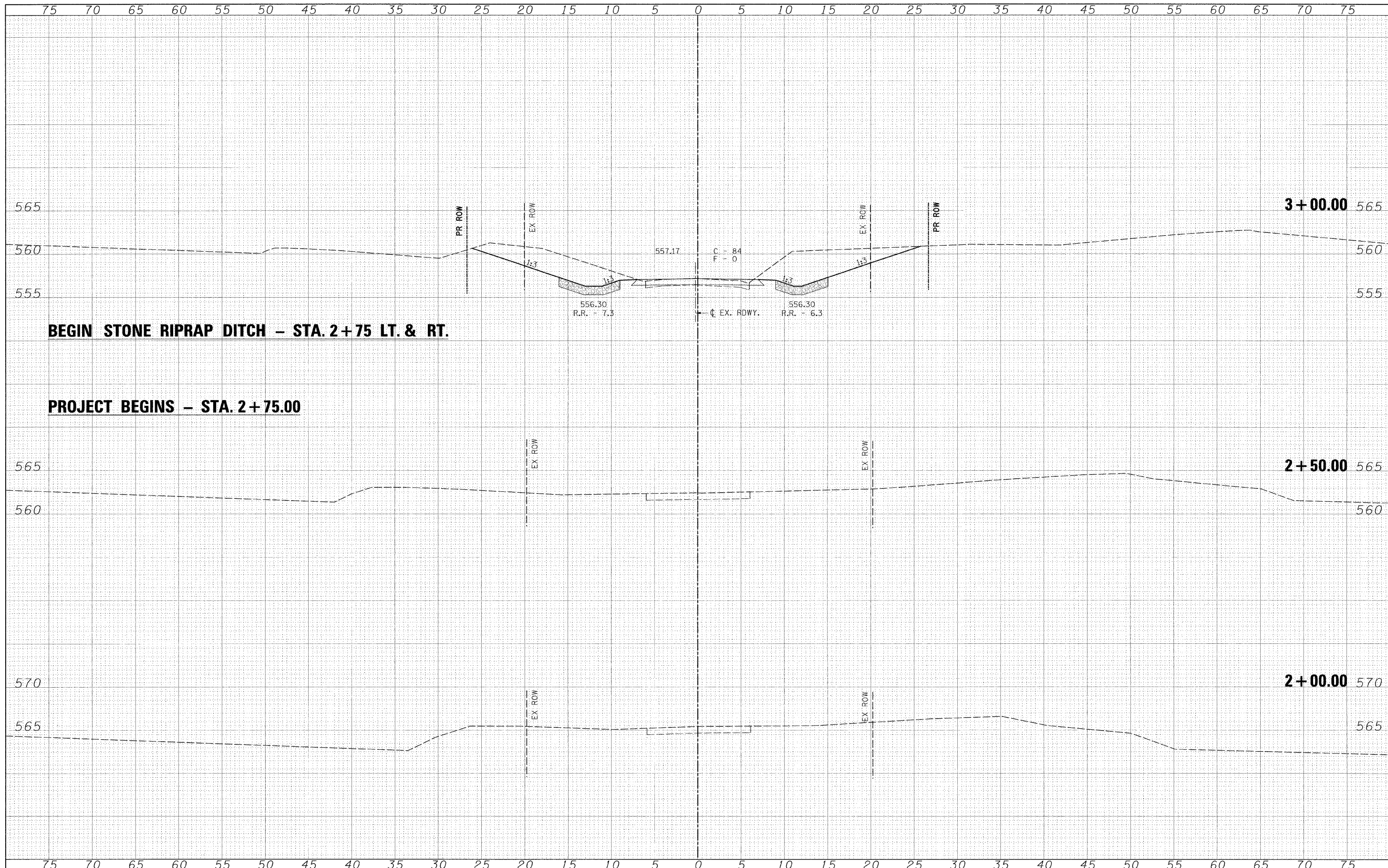
Allen Henderson & Associates, Inc.
Civil and Structural Engineers Springfield, IL
62703 Phone: (217)544-8033 IL Design Firm
No. 184-001907

SHEET NO. 10
10 SHEETS

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHLEBY	21	13
STR. NO. 087-3571		CONTRACT NO. 95628		
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

DATE _____ BY _____
 SURVEYED _____
 PLOTTED _____
 NOTE BOOK _____
 AREAS CHECKED _____
 NO. _____

DATE _____ BY _____
 SURVEYED _____
 PLOTTED _____
 NOTE BOOK _____
 AREAS CHECKED _____
 NO. _____



BEGIN STONE RIPRAP DITCH - STA. 2+75 LT. & RT.

PROJECT BEGINS - STA. 2+75.00

FILE NAME - \$FILEL\$

USER NAME = \$USER\$
 PLOT SCALE = \$SCALE\$
 PLOT DATE = \$DATE\$

DESIGNED -
 DRAWN -
 CHECKED -
 DATE -

REVISED -
 REVISED -
 REVISED -
 REVISED -



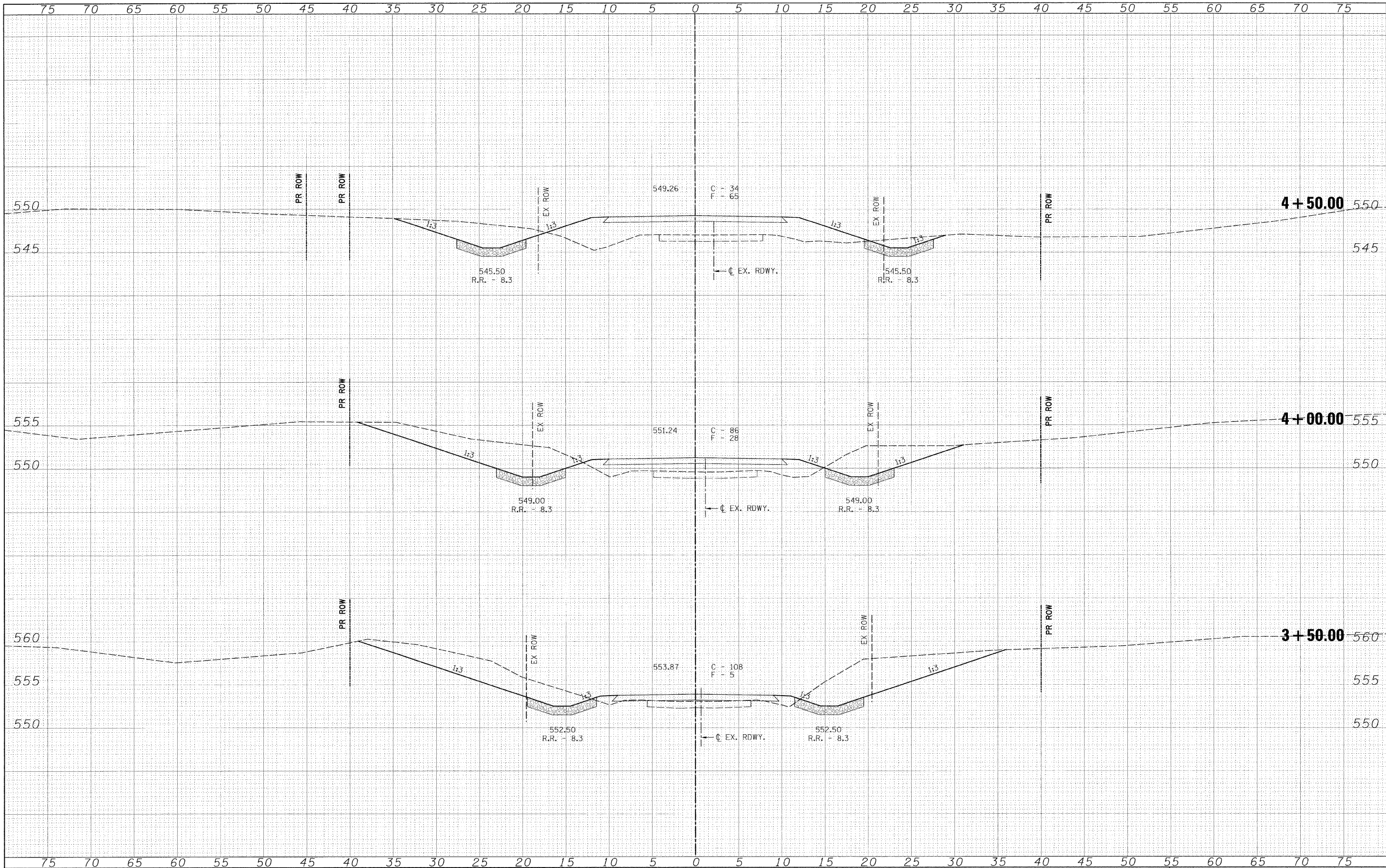
Allen Henderson & Associates, Inc.
 Civil and Structural Engineers Springfield, IL.
 62703 Phone: (217)544-8033 IL. Design Firm
 No. 184-001907

CROSS SECTIONS
 SCALE: 1" = 5'
 SHEET NO. 14 OF 21 SHEETS
 STA. 2+00.00 TO STA. 3+00.00

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	14
STR. NO. 087-3571		CONTRACT NO. 95628		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		

FINAL SURVEY
 SUPPLEMENTED
 NOTE BOOK
 TEMPLATE
 AREAS
 AREAS CHECKED

ORIGINAL SURVEY
 SUPPLEMENTED
 NOTE BOOK
 TEMPLATE
 AREAS
 AREAS CHECKED



FILE NAME -
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 PLOT SCALE = #SCALE#
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DESIGNED -
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 CHECKED -
 DATE -

REVISED -
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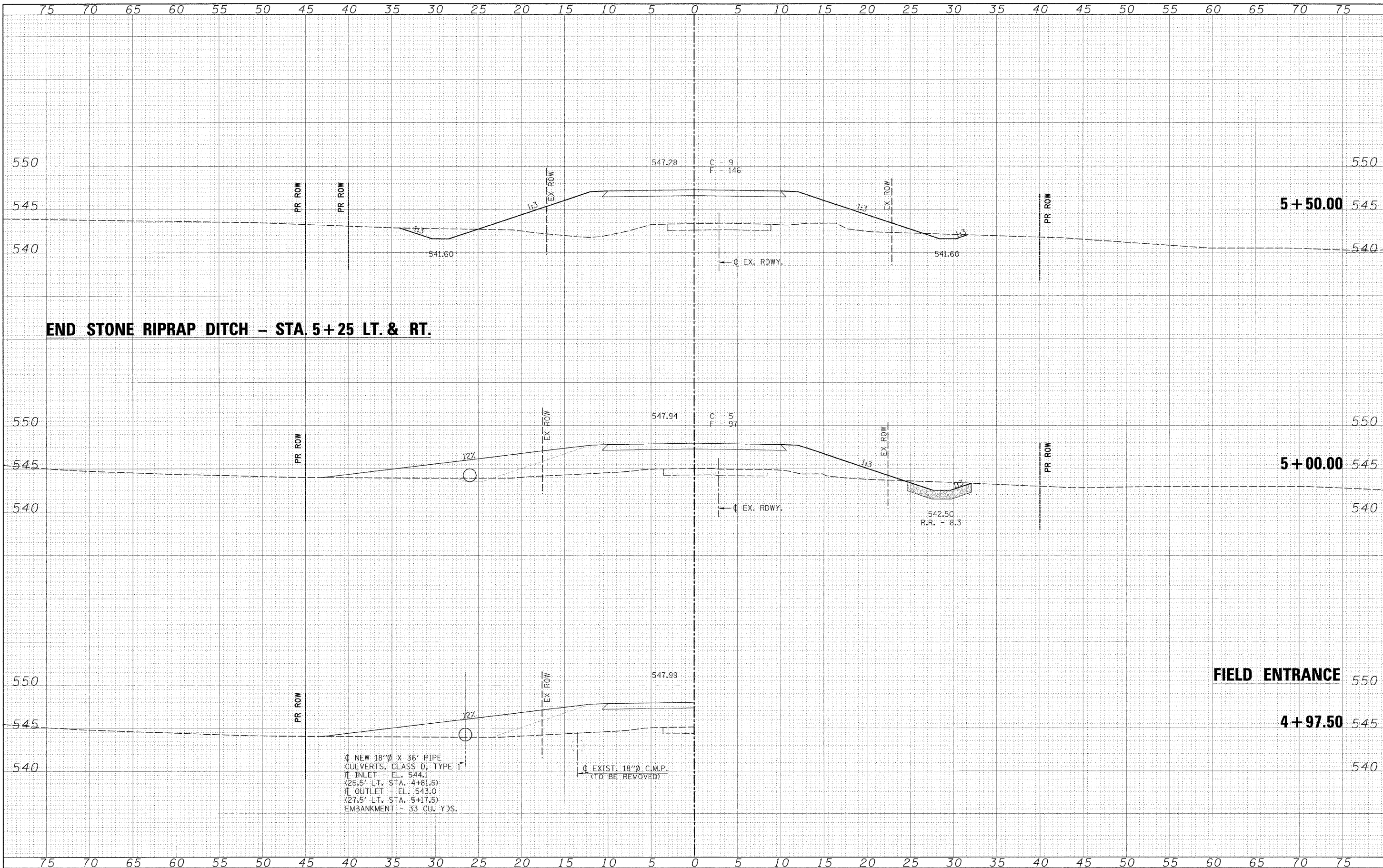
Allen Henderson & Associates, Inc.
 Civil and Structural Engineers Springfield, IL.
 62703 Phone: (217)544-8033 IL Design Firm
 No. 184-001907

CROSS SECTIONS
 SCALE: 1" = 5'
 SHEET NO. 15 OF 21 SHEETS
 STA. 3+50.00 TO STA. 4+50.00

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	15
STR. NO. 087-3571		CONTRACT NO. 95028		
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

DATE	
BY	
FINAL SURVEY	
PLOTTED	
NOTE BOOK	
AREAS	
AREAS CHECKED	

DATE	
BY	
ORIGINAL SURVEY	
PLOTTED	
NOTE BOOK	
AREAS	
AREAS CHECKED	

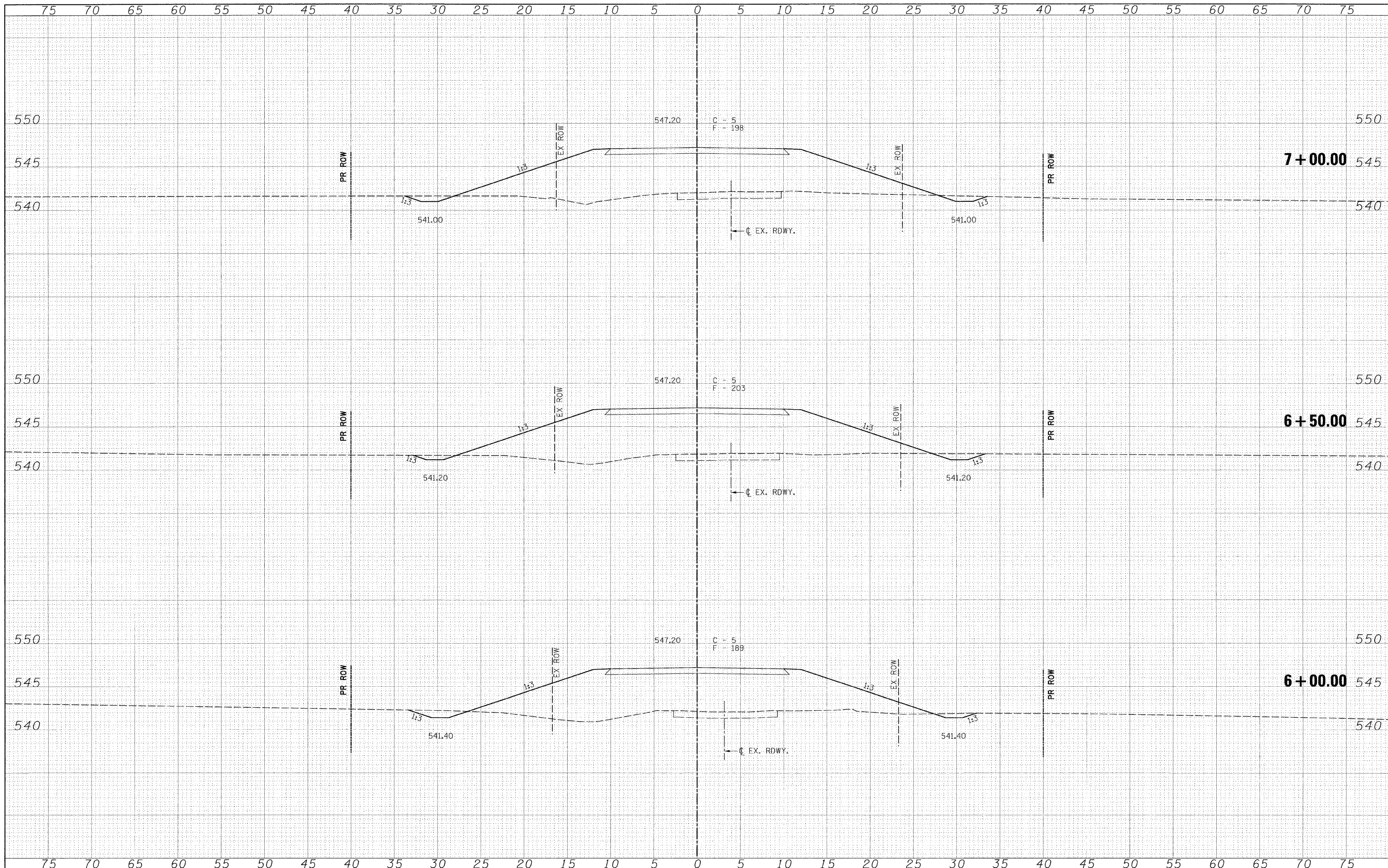


NEW 18" X 36" PIPE
 CULVERTS, CLASS D, TYPE 1
 INLET - EL. 544.1
 (25.5' LT. STA. 4+81.5)
 OUTLET - EL. 543.0
 (27.5' LT. STA. 5+17.5)
 EMBANKMENT - 33 CU. YDS.

EXIST. 18" C.M.P.
 (TO BE REMOVED)

FINAL SURVEY BY DATE
 SURVEYED BY DATE
 PLOTTED BY DATE
 NOTE BOOK NO. AREAS CHECKED

ORIGINAL SURVEY BY DATE
 SURVEYED BY DATE
 PLOTTED BY DATE
 NOTE BOOK NO. AREAS CHECKED



FILE NAME: #FILEL#

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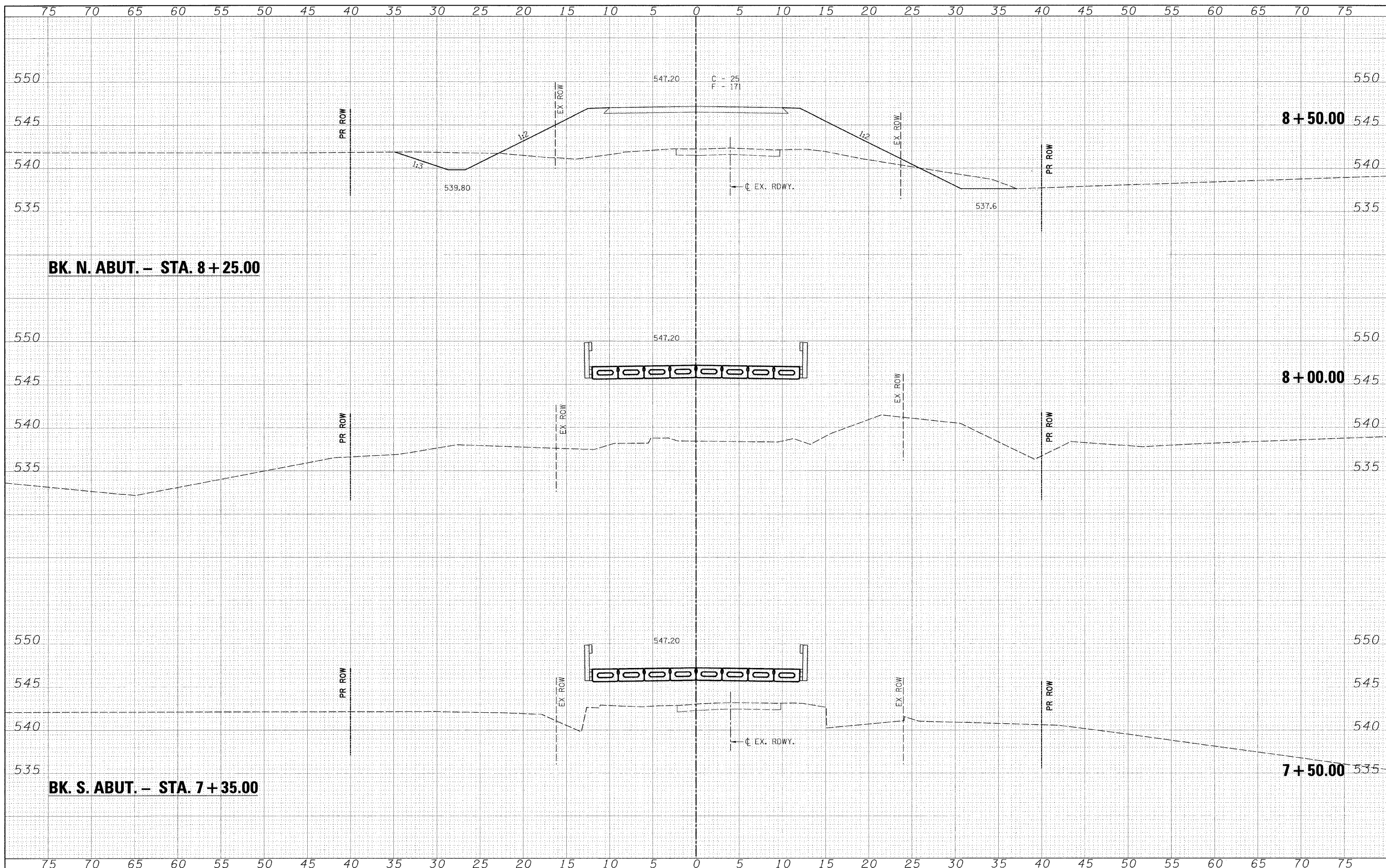
Allen Henderson & Associates, Inc.
 Civil and Structural Engineers Springfield, IL.
 62703 Phone: (217)544-8033 IL Design Firm
 No. 184-001907

CROSS SECTIONS
 SCALE: 1" = 5'
 SHEET NO. 17 OF 21 SHEETS STA. 6+00.00 TO STA. 7+00.00

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	17
STR. NO. 097-3571		CONTRACT NO. 95628		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		

FINAL SURVEY
 SURVEYED BY
 PLOTTED BY
 NOTE BOOK NO.
 AREAS CHECKED

ORIGINAL SURVEY
 SURVEYED BY
 PLOTTED BY
 NOTE BOOK NO.
 AREAS CHECKED



FILE NAME -
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USER NAME = #USER#
 PLOT SCALE = #SCALE#
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DESIGNED -
 DRAWN -
 CHECKED -
 DATE -

REVISED -
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 REVISED -
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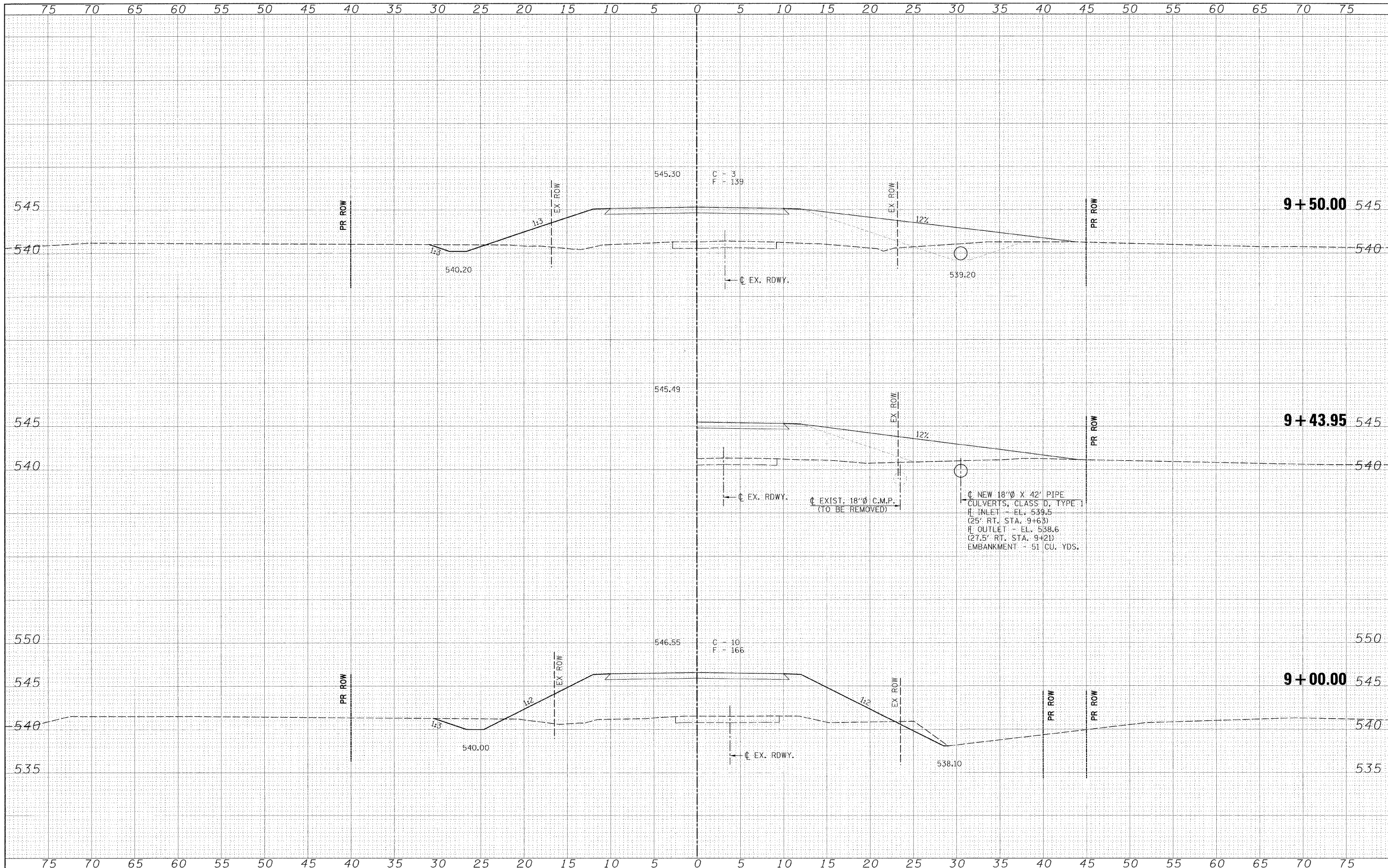
Allen Henderson & Associates, Inc.
 Civil and Structural Engineers Springfield, IL.
 62703 Phone: (217)544-8033 IL Design Firm
 No. 184-001907

CROSS SECTIONS
 SCALE: 1" = 5'
 SHEET NO. 18 OF 21 SHEETS STA. 7+50.00 TO STA. 8+50.00

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	18
STR. NO. 087-3571		CONTRACT NO. 95628		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		

DATE: _____
 BY: _____
 SURVEYED: _____
 DRAWN: _____
 CHECKED: _____
 DESIGNED: _____
 REVISIONS: _____

DATE: _____
 BY: _____
 SURVEYED: _____
 DRAWN: _____
 CHECKED: _____
 DESIGNED: _____
 REVISIONS: _____



FILE NAME: _____
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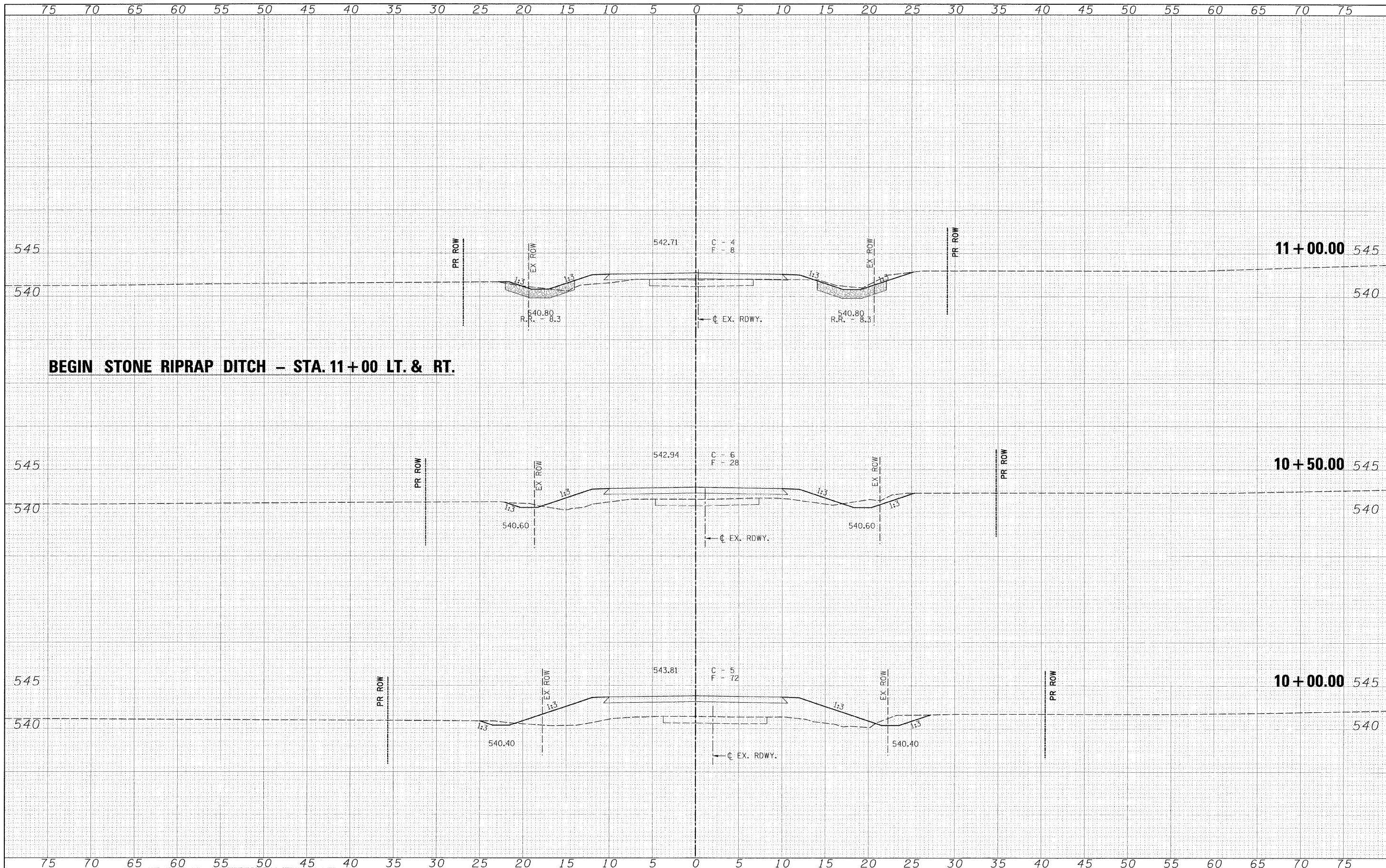
Allen Henderson & Associates, Inc.
 Civil and Structural Engineers Springfield, IL.
 62703 Phone: (217)544-8033 IL Design Firm
 No. 184-001907

CROSS SECTIONS
 SCALE: 1" = 5'
 SHEET NO. 19 OF 21 SHEETS
 STA. 9+00.00 TO STA. 9+50.00


T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	19
STR. NO. 087-3571		CONTRACT NO. 95628		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		

FINAL SURVEY	DATE
SURVEYED	BY
PLANNED	
NOTED	
NOTE BOOK	NO.
TEMPLATE	
AREAS	
CHECKED	

ORIGINAL SURVEY	DATE
SURVEYED	BY
PLANNED	
NOTED	
NOTE BOOK	NO.
TEMPLATE	
AREAS	
CHECKED	

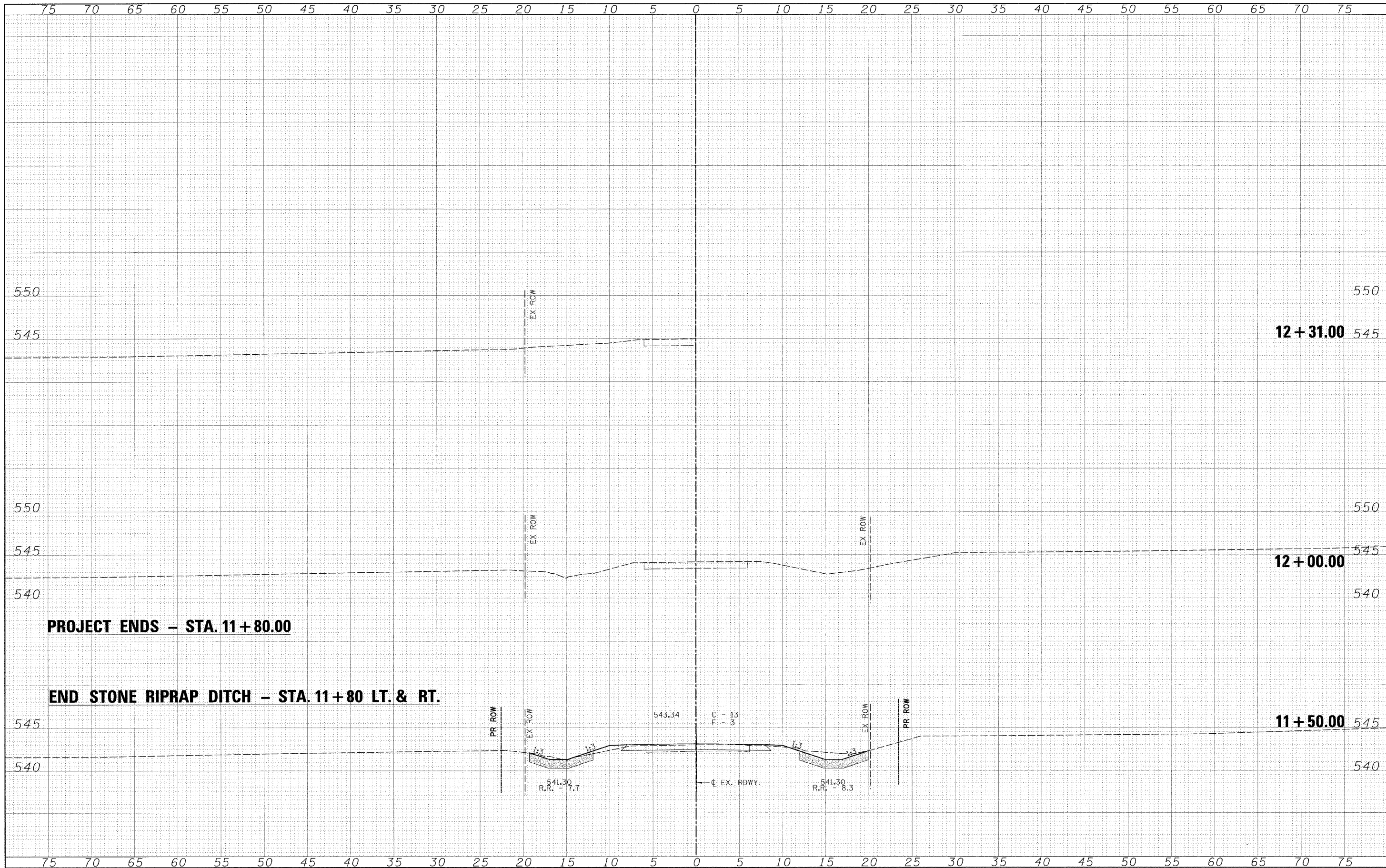


BEGIN STONE RIPRAP DITCH - STA. 11+00 LT. & RT.

FILE NAME =	USER NAME = #USER#	DESIGNED -	REVISED -	 Allen Henderson & Associates, Inc. Civil and Structural Engineers Springfield, IL. 62703 Phone: (217)544-8033 IL. Design Firm No. 184-001907	CROSS SECTIONS		I.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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				SCALE: 1" = 5'	SHEET NO. 20 OF 21 SHEETS	STA. 10+00.00	TO STA. 11+50.00				

FINAL SURVEY	BY	DATE
SURVEY		
NOTE BOOK		
NO.		
AREAS CHECKED		

ORIGINAL SURVEY	BY	DATE
SURVEY		
NOTE BOOK		
NO.		
AREAS CHECKED		



FILE NAME =
\$FILEL\$

USER NAME = \$USER\$
DESIGNED -
DRAWN -
CHECKED -
DATE

REVISIED -
REVISIED -
REVISIED -
REVISIED -

DESIGNED -
DRAWN -
CHECKED -
DATE



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Civil and Structural Engineers Springfield, IL.
62703 Phone: (217)544-8033 IL. Design Firm
No. 184-001907

CROSS SECTIONS
SCALE: 1" = 5'
SHEET NO. 21 OF 21 SHEETS
STA. 12+00.00 TO STA. 12+50.00

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
140	09-05118-00-BR	SHELBY	21	21
STR. NO. 087-3571		CONTRACT NO. 95428		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		