

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

T.A.	SECTION NUMBER	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	SHELBY	16	1
		ILLINOIS	CONTRACT NO. 95895	

INDEX OF SHEETS

- 1 COVER SHEET
- 2 SUMMARY OF QUANTITIES AND SCHEDULES
- 3 TYPICAL SECTIONS AND GENERAL NOTES
- 4 PLAN & PROFILE
- 5 EROSION CONTROL PLAN
- 6-14 BRIDGE PLANS
- 15-16 CROSS SECTIONS

HIGHWAY STANDARDS

- 000001-08 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 280001-07 TEMPORARY EROSION CONTROL SYSTEMS
- 515001-04 NAME PLATE FOR BRIDGES
- 542401-04 METAL FLARED END SECTION FOR PIPE CULVERTS
- 701901-08 TRAFFIC CONTROL DEVICES
- 725001-01 OBJECT AND TERMINAL MARKERS
- B.L.R. 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

UTILITIES

POWER: SHELBY ELECTRIC COOP  
1355 STATE HWY 128  
SHELBYVILLE, IL 62565  
(217)-774-3986

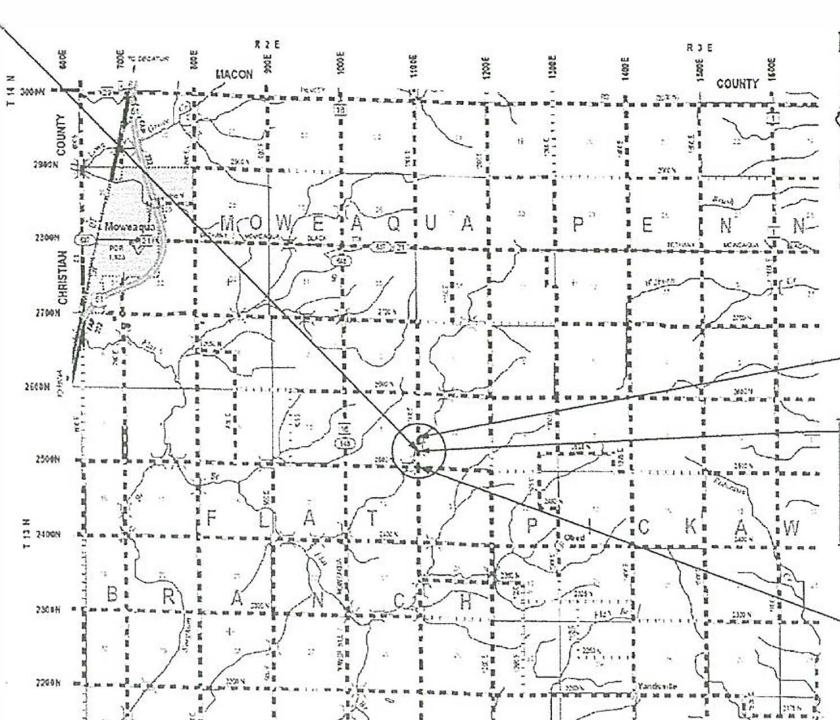
PHONE: FRONTIER COMMUNICATIONS  
112 W ELM ST  
SYCAMORE, IL 60178  
(815) 895-1515

PLANS FOR PROPOSED  
STP FUNDING

PROJECT 6G85(256)  
TOWNSHIP ROAD 112  
SECTION 18-06117-00-BR  
SHELBY COUNTY  
PROPOSED STRUCTURE NO. 087-3544  
C-97-064-19



EXISTING STRUCTURE NO. 087-3101  
SINGLE SPAN DECK GIRDER BRIDGE, 2 OUTSIDE GIRDERS,  
6 CROSS BEAMS, 13 STRINGERS WITH STEEL BRIDGE PLANK  
ASPHALT SURFACE DECK, STEEL RAILING BOTH SIDES,  
TIMBER ABUTMENT, WINGWALLS AND PILES ON THE NORTH,  
AND CONCRETE ABUTMENT ON THE SOUTH,  
LENGTH = 36'-6" WIDTH = 19'-7"



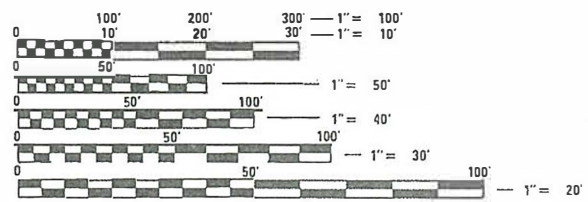
PROJECT ENDS  
STA. 18+50.00

STA. 15+00.00 SPECIAL BRIDGE DESIGN  
SINGLE SPAN 27' PPC DECK BEAM BRIDGE  
60'-0" BK. TO BK. ABUTMENTS,  
57'-6" SPAN, 24'-0" CLEAR WIDTH  
PILE BENT ABUTMENTS, 15° SKEW RT. FWD  
STRUCTURE No. 087-3544

PROJECT BEGINS  
STA. 12+00.00

LOCATION MAP  
NET LENGTH OF SECTION = 650.00 FEET = 0.123 MILES

FUNCTIONAL CLASSIFICATION: LOCAL ROAD (NON-URBAN)  
DESIGN SPEED = 30 MPH  
DESIGN TRAFFIC = 50 ADT (2014)



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  
OR 811

PROJECT ENGINEER  
PROJECT MANAGER

CONTRACT NO. 95895



SIGNED: 2-18-2021  
SHEETS 1-5, 15-16  
ROBERT HANFLAND, PE  
STATE OF ILLINOIS NO. 062-064104  
EXPIRES 11-30-2021

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

APPROVED: [Signature] 2-18-21  
SHELBY COUNTY ENGINEER

PASSED: [Signature] 2-25-21  
DISTRIC SEVEN ENGINEER OF LOCAL ROADS AND STREETS

Released for Bid Based on Limited Review: [Signature] 2-25-21  
REGION FOUR ENGINEER

PRINTED BY THE AUTHORITY  
OF THE STATE OF ILLINOIS

**SUMMARY OF QUANTITIES**

CODE NO.	ITEM	UNIT	TOTAL QUANTITY
20100500	TREE REMOVAL, ACRES	ACRE	0.5
20200100	EARTH EXCAVATION	CU YD	721
20300100	CHANNEL EXCAVATION	CU YD	975
25000200	SEEDING, CLASS 2	ACRE	0.9
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	81
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	81
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	81
25100115	MULCH, METHOD 2	ACRE	0.8
25100635	HEAVY DUTY EROSION CONTROL BLANKET	SQ YD	410
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	180
28000305	TEMPORARY DITCH CHECKS	FOOT	56
28100207	STONE RIPRAP, CLASS A4	TON	312
28200200	FILTER FABRIC	SQ YD	400
35101400	AGGREGATE BASE COURSE, TYPE B	TON	598
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	85
50300225	CONCRETE STRUCTURES	CU YD	21.8
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	1,407
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3,490
50900205	STEEL RAILING, TYPE S1	FOOT	120
51200957	FURNISHING METAL SHELL PILES 12" X 0.250"	FOOT	252
51202305	DRIVING PILES	FOOT	252
51203200	TEST PILE METAL SHELLS	EACH	1
51500100	NAME PLATES	EACH	1
54262724	METAL FLARED END SECTIONS 24"	EACH	2
542C0229	PIPE CULVERTS, CLASS C, TYPE 1 24"	FOOT	32
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	44
67100100	MOBILIZATION	L SUM	1
72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4

SEE SPECIAL PROVISIONS  
SPECIALTY ITEMS

**EARTHWORK SCHEDULE**

1	2	3	4	5	6	7	8	9
LOCATION	EARTH EXCAVATION	STRUCTURE EXCAVATION	CHANNEL EXCAVATION	ESTIMATED UNSUITABLE MATERIAL	ESTIMATED SUITABLE MATERIAL	ESTIMATE SUITABLE MATERIAL ADJUSTED FOR SHRINKAGE	EMBANKMENT	EARTHWORK BALANCE WASTE (+) OR SHORTAGE (-)
	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD
STA 12+00 TO 14+70	307	0	0	0	307	230	444	-214
STA 14+70 TO 15+30	0	85	120	62	143	107	0	107
STA 15+30 TO 18+50	414	0	855	257	1,012	759	567	192
TOTAL	721	85	975	319	1,462	1,097	1,011	85

COLUMN 1, 2, & 8 - LOCATION AND QUANTITIES FROM CROSS SECTIONS,  
CUT = EARTH EXCAVATION      FILL = EMBANKMENT  
COLUMN 3 - QUANTITIES FOR STRUCTURAL EXCAVATION (CUT) FROM BRIDGE PLANS  
COLUMN 4 - QUANTITY OF CHANNEL EXCAVATION (CUT) FROM BRIDGE PLANS  
COLUMN 5 - ESTIMATED UNSUITABLE MATERIAL (ESTIMATED AT 30% OF STRUCTURE AND CHANNEL EXCAVATION)  
COLUMN 6 - ESTIMATED SUITABLE EARTH EXCAVATION (ESTIMATED AT 70% OF STRUCTURE AND CHANNEL EXCAVATION)  
COLUMN 7 - QUANTITY OF SUITABLE EARTH EXCAVATION (CUT) ADJUSTED FOR A SHRINKAGE FACTOR OF 25%  
COLUMN 9 - EARTHWORK BALANCE  
(-) = QUANTITY OF FURNISHED EXCAVATION NEEDED EARTHWORK BALANCE  
(+) = QUANTITY OF EARTH EXCAVATION ADJUSTED FOR SHRINKAGE TO BE WASTED

**SEEDING SCHEDULE**

LOCATION	SEEDING CLASS 2	NITROGEN FERTILIZER NUTRIENT (90 LBS/ACRE)	PHOSPHORUS FERTILIZER NUTRIENT (90 LBS/ACRE)	SUITABLE POTASSIUM FERTILIZER NUTRIENT (90 LBS/ACRE)	MULCH METHOD 2	TEMPORARY EROSION CONTROL SEEDING (2 @ 100) LBS/ACRE
	ACRE	POUND	POUND	POUND	ACRE	POUND
STA 12+00 TO 14+70	0.3	27	27	27	0.3	60
STA 15+30 TO 18+50	0.6	54	54	54	0.5	120
TOTAL	0.9	81	81	81	0.8	180

**AGGREGATE BASE COURSE, TYPE B**

LOCATION	THICKNESS	WIDTH	LENGTH	TONS
STA 12+00 TO 12+50	8"	VARIES	50'	45
STA 12+50 TO 14+70	8"	20'	220'	223
STA 15+30 TO 18+00	8"	20'	270'	273
STA 18+00 TO 18+50	8"	VARIES	50'	44
STA 12+80 RT	6"	VARIES	15'	13
TOTAL				598

**TEMPORARY DITCH CHECKS**

LOCATION	FEET
STA 13+20 LT	8
STA 13+20 RT	8
STA 14+66 LT	8
STA 14+66 RT	8
STA 15+30 LT	8
STA 16+80 LT	8
STA 17+50 RT	8
TOTAL	56

**TREE REMOVAL**

LOCATION	ACRE
STA 14+50 RT TO STA 17+50 RT	0.5

**HEAVY DUTY EROSION CONTROL BLANKET**

LOCATION	SQ YD
STA 14+64 RT TO STA 17+34 RT	410

MODEL: Detail  
FILE: W1102 - P:\In\phum13449 - Shelby County Bridge\DCN\Sheet\Sheet A3349 Quantities.dgn



USER NAME = rhanland	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 40,0000' / in.	CHECKED -	REVISED -
PLOT DATE = 2/19/2021	DATE -	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**SUMMARY OF QUANTITIES AND SCHEDULES**

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

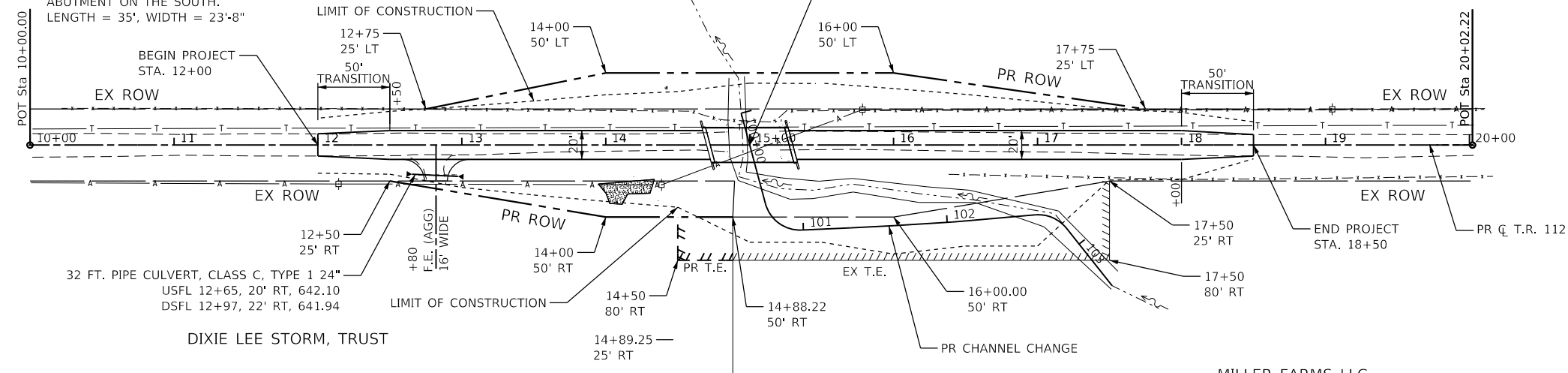
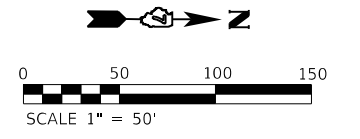
T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	SHELBY	16	2
			CONTRACT NO. 95895	
			ILLINOIS FED. AID PROJECT	



EXISTING STRUCTURE 087-3101  
 SINGLE SPAN DECK GIRDER BRIDGE,  
 2 OUTSIDE GIRDERS, 6 CROSS BEAMS,  
 13 STRINGERS WITH STEEL BRIDGE  
 PLANK ASPHALT SURFACE DECK. STEEL  
 PIPE HANDRAILS 1' ABOVE DECK BOTH  
 SIDES. TIMBER ABUTMENT, WINGWALLS  
 AND PILES ON THE NORTH, AND CONCRETE  
 ABUTMENT ON THE SOUTH.  
 LENGTH = 35', WIDTH = 23'-8"

SLOAN, TIFFANY &  
 RENFRO, CAMILLE

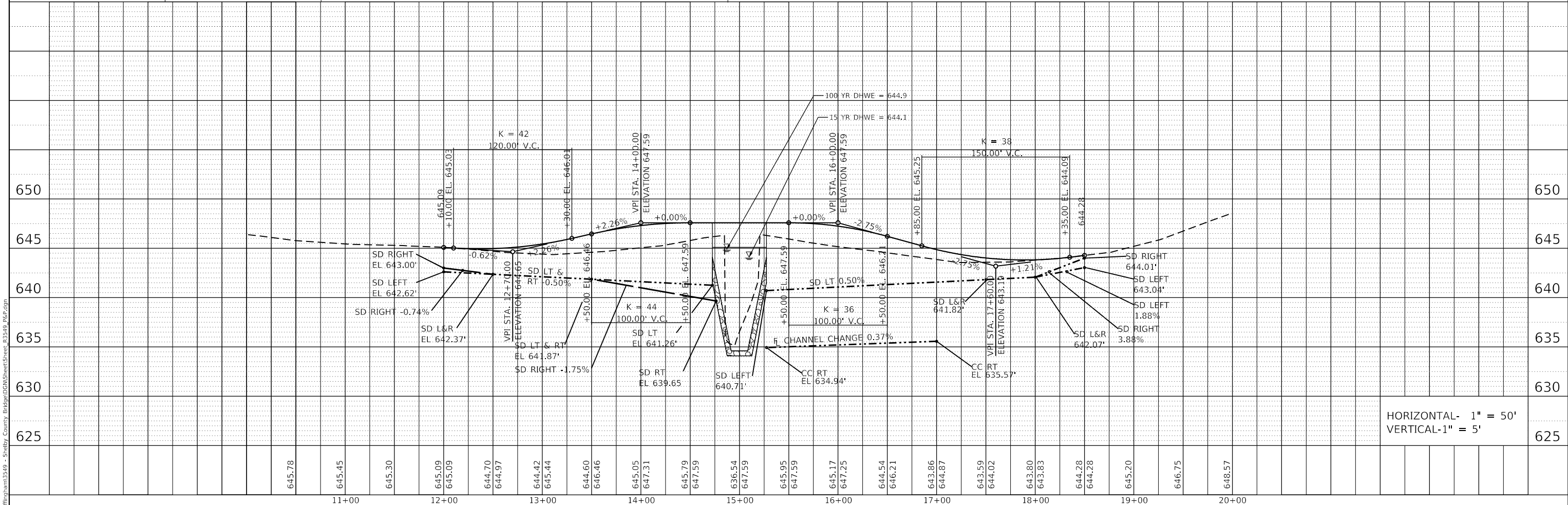
STA. 15+00.00 - PROPOSED BRIDGE (087-3544)  
 SINGLE SPAN PPC DECK BEAMS (27" DEPTH)  
 60'-0" BK TO BK ABUTMENT  
 57'-6" SPAN, 24' CLEAR WIDTH ON  
 PILE BENT ABUTMENTS, SKEW = 15° RT FWD



DATE	
BY	
PLAN	
NO.	
NO.	
NO.	
NO.	
NO.	

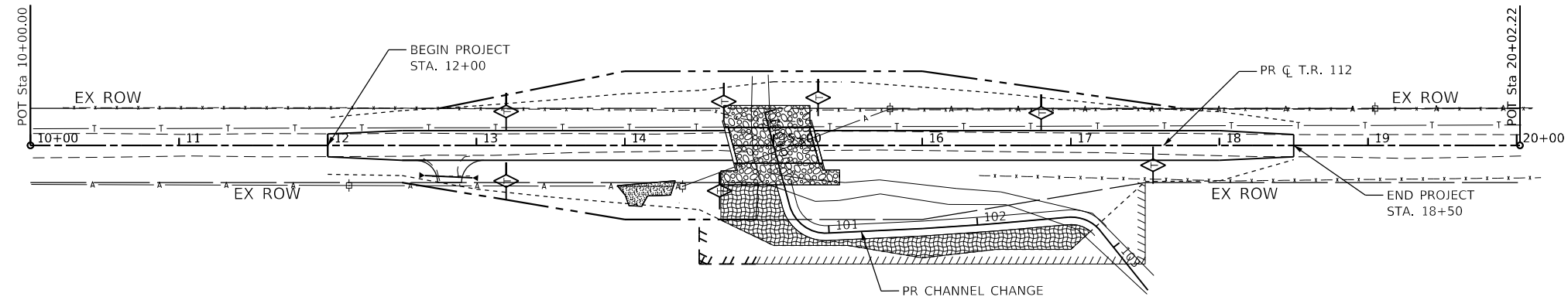
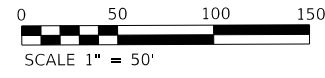
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DATE	
BY	
PROFILE	
NO.	
NO.	
NO.	
NO.	
NO.	



HORIZONTAL- 1" = 50'  
 VERTICAL- 1" = 5'

 CIVIL DESIGN, INC. WBE / DBE EFFINGHAM, IL LICENSE #184.003222	USER NAME = rhanfland	DESIGNED -	REVISD -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>PLAN AND PROFILE</b>			T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	PLOT SCALE = 100,0000' / in.	CHECKED -	REVISD -		112	18-06117-00-BR	SHELBY	16	4				
	PLOT DATE = 2/19/2021	DATE -	REVISD -		SCALE:	SHEET 1	OF 1	SHEETS	STA. 10+00	TO STA. 20+00	CONTRACT NO. 95895		
											ILLINOIS FED. AID PROJECT		



**PERMANENT EROSION CONTROL**

- STONE RIPRAP, A4
- HEAVY DUTY EROSION CONTROL BLANKET

**TEMPORARY EROSION CONTROL**

- TEMPORARY DITCH CHECK

MODEL: Default; FILE NAME: P:\Effingham\3549 - Shelby County Bridge\DCR\Sheet\Sheet\_83549\_Riprap\_Profile\_Erosion\_Control.dgn



USER NAME = rhanfland	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100.0000' / in.	CHECKED -	REVISED -
PLOT DATE = 2/19/2021	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EROSION CONTROL PLAN**

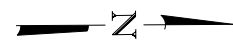
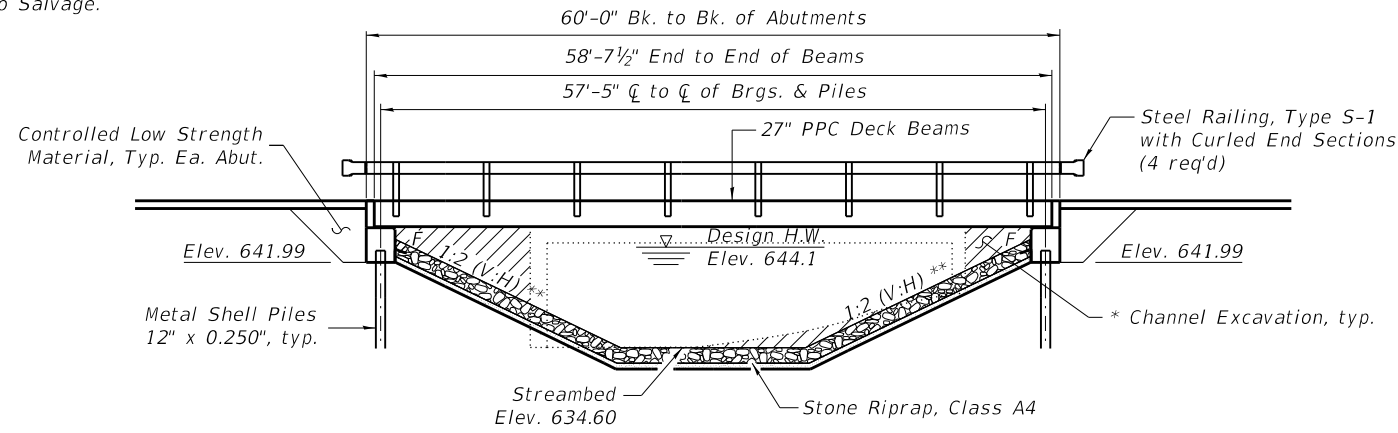
SCALE: SHEET 1 OF 1 SHEETS STA. 10+00 TO STA. 20+00

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	SHELBY	16	5
CONTRACT NO. 95895				
		ILLINOIS	FED. AID PROJECT	

Bench Mark: Chiseled "□" on top of S.E. wingwall. Elev. 645.34.

Existing Structure: S.N. 087-3101 was built in 1974. Existing structure is a single-span steel stringer bridge on concrete abutments. 36'-6" back to back abutments, 19'-7" out to out of deck. Bridge is currently closed.

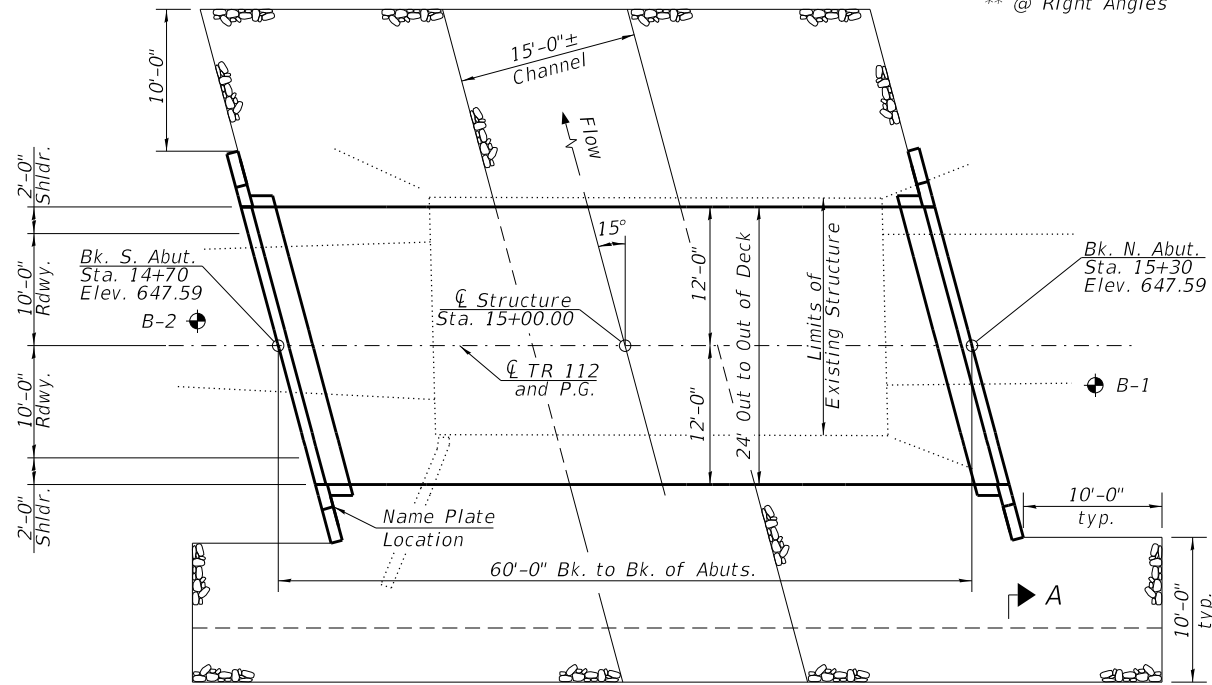
No Salvage.



ELEVATION

\* Channel shall be excavated as shown with 2:1 slopes within the ROW. Suitable excavated materials may be used in embankments.

\*\* @ Right Angles



PLAN

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Channel Excavation	Cu. Yd.			120
Stone Riprap, Class A4	Ton		312	312
Filter Fabric	Sq. Yd.		400	400
Removal of Existing Structures	Each			1
Structure Excavation	Cu. Yd.		85	85
Concrete Structures	Cu. Yd.		21.8	21.8
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1,407		1,407
Reinforcement Bars, Epoxy Coated	Pound		3,490	3,490
Steel Railing, Type S1	Foot	120		120
Furnishing Metal Shell Piles 12" x 0.250"	Foot		252	252
Driving Piles	Foot		252	252
Test Pile Metal Shells	Each		1	1
Name Plates	Each		1	1
Controlled Low-Strength Material	Cu. Yd.		44	44
Terminal Marker - Direct Applied	Each	4		4

INDEX OF SHEETS

- 1 General Plan and Elevation
- 2-3 PPC Deck Beam Details
- 4 Superstructure Details
- 5 Steel Railing, Type S-1
- 6 Abutment Details
- 7 Metal Shell Pile Details
- 8-9 Soil Boring Logs

DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design Specifications, 8th Edition

LOADING HL-93

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

DESIGN STRESSES

FIELD UNITS

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

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$  psi  
 $f'_{ci} = 5,000$  psi  
 $f_{pu} = 270,000$  psi (1/2" dia. low lax. strands)  
 $f_{pbt} = 201,960$  psi (1/2" dia. low lax. strands)

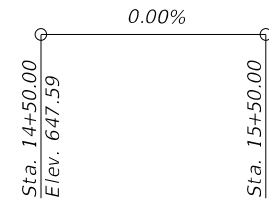
SEISMIC DATA

Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. ( $S_{D1}$ ) = 0.120g  
 Design Spectral Acceleration at 0.2 sec. ( $S_{D5}$ ) = 0.252g  
 Soil Site Class = C

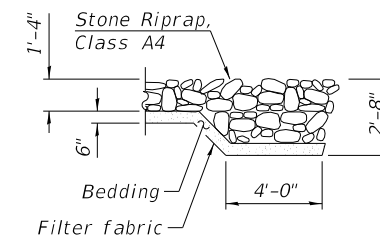
GENERAL NOTES

Reinforcement bars designated (E) shall be epoxy coated.

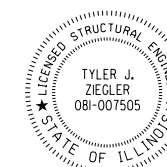
Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.



PROFILE GRADE  
(along C roadway)



SECTION A-A



*[Signature]*  
 2-18-2021  
 TYLER ZIEGLER Date  
 Licensed Structural Engineer  
 State of Illinois No. 081-007505  
 Expires 11-30-2022

I certify that to the best of my knowledge, information and belief, that this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of the structure and complies with the requirements of the current AASHTO LRFD Bridge Design Specifications.

WATERWAY INFORMATION

Flood		Freq. Yr.	Q C.F.S.	Opening Sq. Ft.	Nat. H.W.E.	Head - Ft.	Headwater El.
				Exist. Prop.	Exist. Prop.	Exist. Prop.	Exist. Prop.
Ex. Overtop.		9	1100	210	643.9	0.6	644.5
Design		15	1320	210	644.1	0.8	644.3
Pr. Overtop.		50	1946	-	644.6	-	645.0
Base		100	2296	210	644.9	0.8	645.7
Max Calc.		500	3159	210	645.4	0.6	645.9

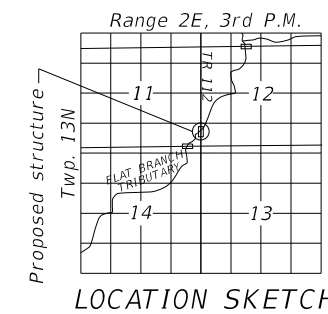
Exist. Low Grade Elev. 643.59 @ Sta. 17+50  
 Prop. Low Grade Elev. 643.83 @ Sta. 18+00

DESIGN SCOUR ELEVATION TABLE

Event/Limit State	Design Scour Elev. (ft.)		Item 113
	S. Abut.	N. Abut.	
Q100	642.0	642.0	8
Q200	642.0	642.0	
Design	642.0	642.0	
Check	642.0	642.0	

FLAT BRANCH TRIBUTARY  
 BUILT 20 BY  
 SHELBY COUNTY  
 SEC. 18-06117-00-BR  
 TR 112 STA. 15+00  
 STR. NO. 087-3544 LOADING HL-93

NAME PLATE  
 See Std. 515001



LOCATION SKETCH

GENERAL PLAN AND ELEVATION  
 T.R. 112 OVER FLAT BRANCH TRIBUTARY  
 SEC. 18-06117-00-BR  
 SHELBY COUNTY  
 STATION 15+00.00  
 STRUCTURE NO. 087-3544

MODEL 01.dwg  
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CIVIL DESIGN, INC.  
 WBE / DBE  
 EFFINGHAM, IL  
 LICENSE # 184.003222

USER NAME = rhanfland  
 DESIGNED - TJZ  
 DRAWN - TJZ  
 PLOT SCALE = 0.1660' / in.  
 CHECKED - ADB  
 PLOT DATE = 2/19/2021  
 DATE - 2/19/2021

REVIS -  
 REVIS -  
 REVIS -  
 REVIS -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

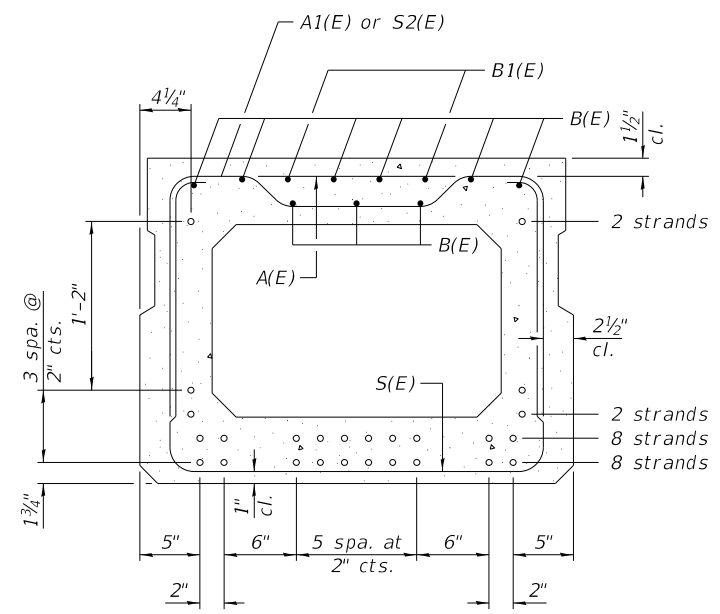
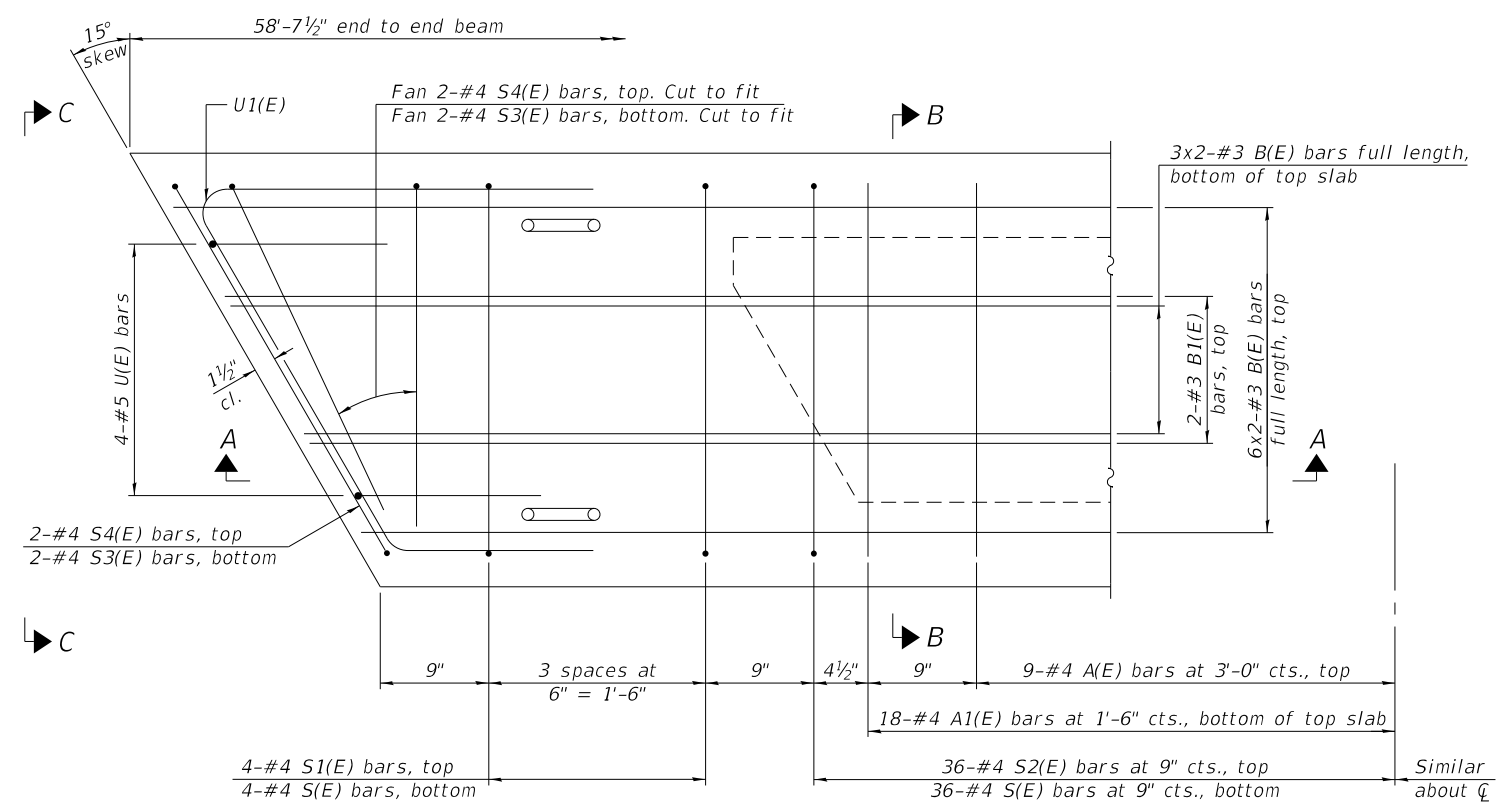
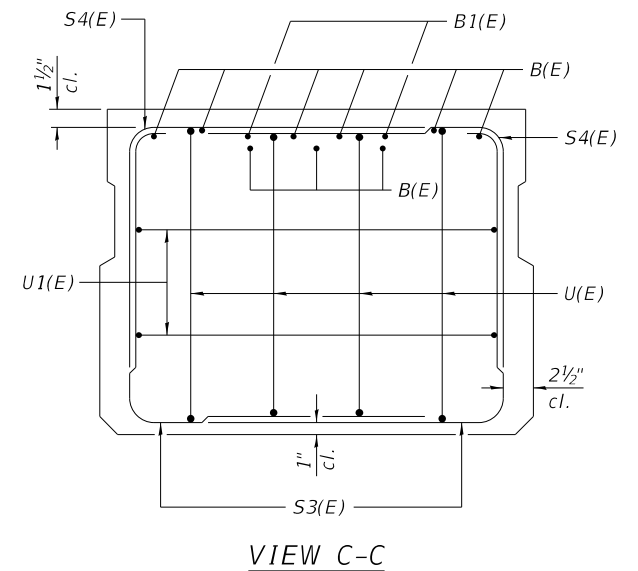
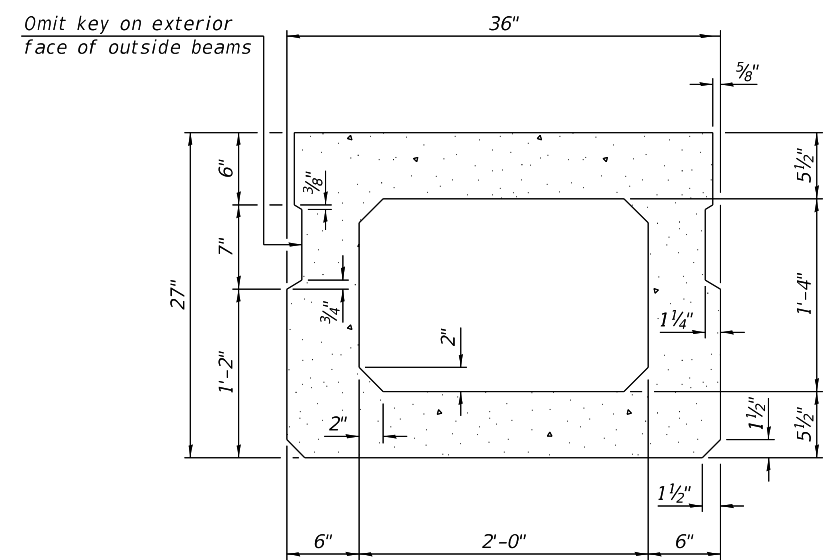
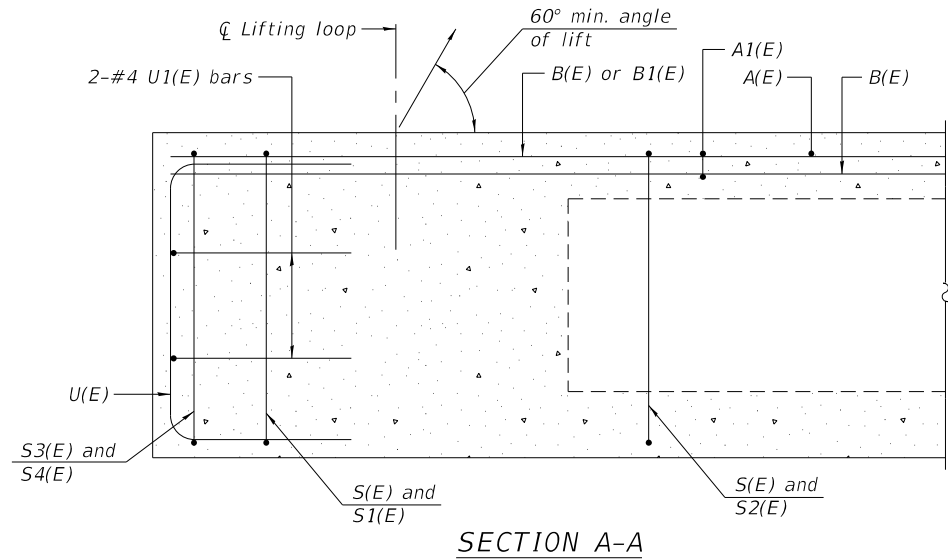
GENERAL PLAN & ELEVATION  
 STRUCTURE NO. 087-3544

SHEET 1 OF 9 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	Shelby	16	6

CONTRACT NO. 95895  
 ILLINOIS FED. AID PROJECT





**BAR LIST**  
**ONE BEAM ONLY**  
(For information only)

Bar	No.	Size	Length	Shape
A(E)	18	#4	2'-7"	—
A1(E)	36	#4	2'-10"	—
B(E)	18	#3	30'-0"	—
B1(E)	4	#3	10'-0"	—
S(E)	80	#4	7'-5"	⌈
S1(E)	8	#4	5'-11"	⌈
S2(E)	72	#4	6'-2"	⌈
S3(E)	8	#4	5'-0"	⌈
S4(E)	8	#4	4'-3"	⌈
U(E)	8	#5	4'-6"	⌈
U1(E)	4	#4	5'-9"	⌈

**SECTION B-B**  
(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**  
#3 bar = 1'-6"

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.

Note:  
See sheet 3 of 9 for additional details and Bill of Material.

MODEL: 03 Deck Beam  
FILE NAME: P:\Effingham\0873544.dgn  
SHELBY COUNTY BRIDGE DEPARTMENT

PD-2736-R 1-1-2020



CIVIL DESIGN, INC.  
WBE / DBE  
EFFINGHAM, IL  
LICENSE # 184.003222

USER NAME = rhanfland	DESIGNED - TJZ	REVISED -
PLOT SCALE = 0.1660' / in.	DRAWN - TJZ	REVISED -
PLOT DATE = 2/19/2021	CHECKED - ADB	REVISED -
	DATE - 2/19/2021	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

27" x 36" PPC DECK BEAM  
STRUCTURE NO. 087-3544

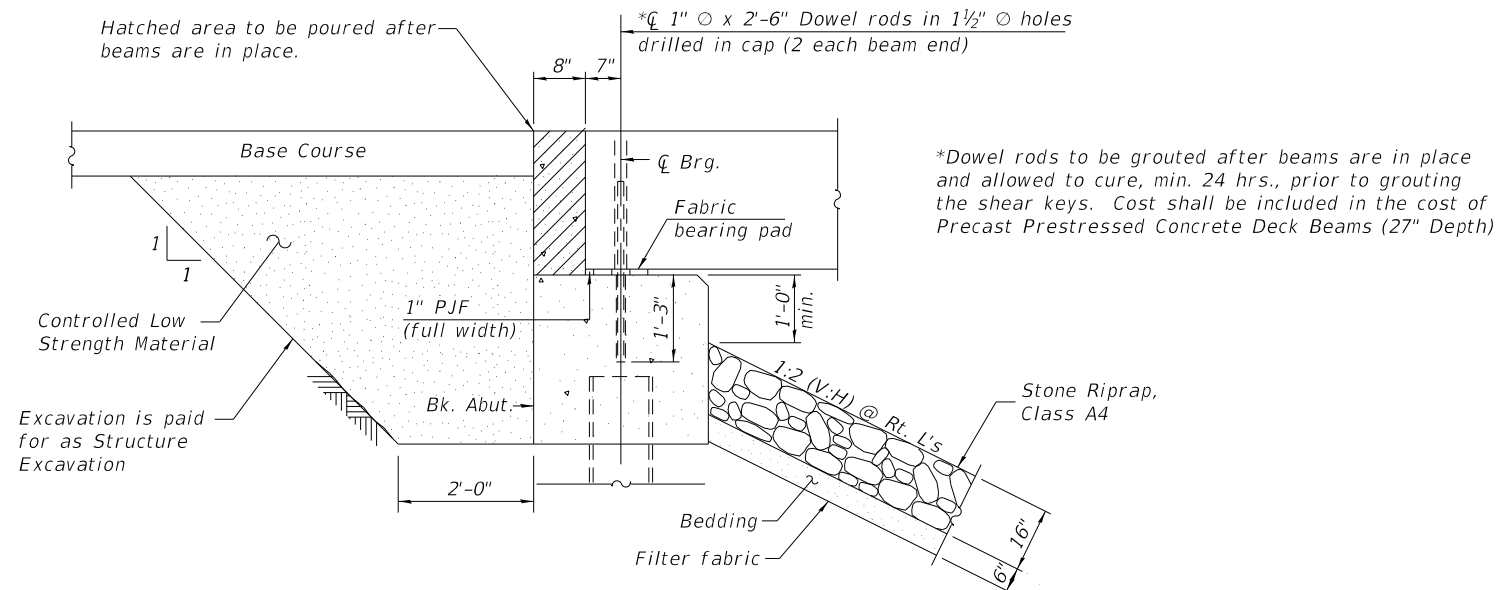
SHEET 2 OF 9 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	Shelby	16	7
CONTRACT NO. 95895				

ILLINOIS FED. AID PROJECT



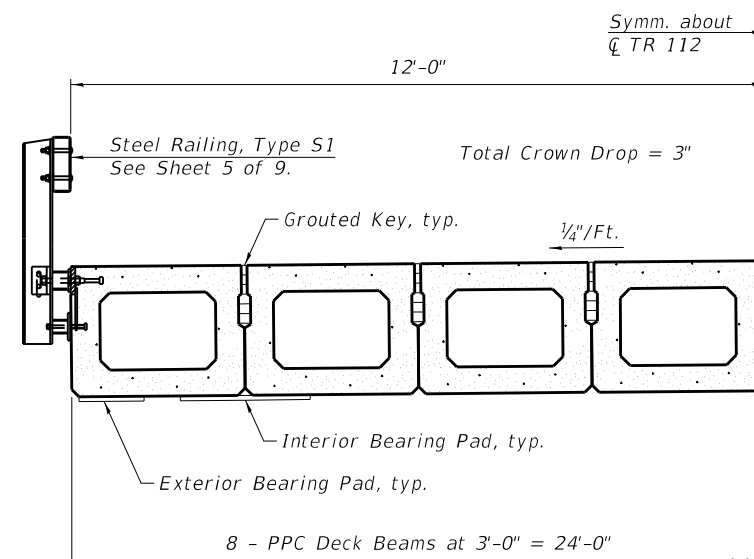




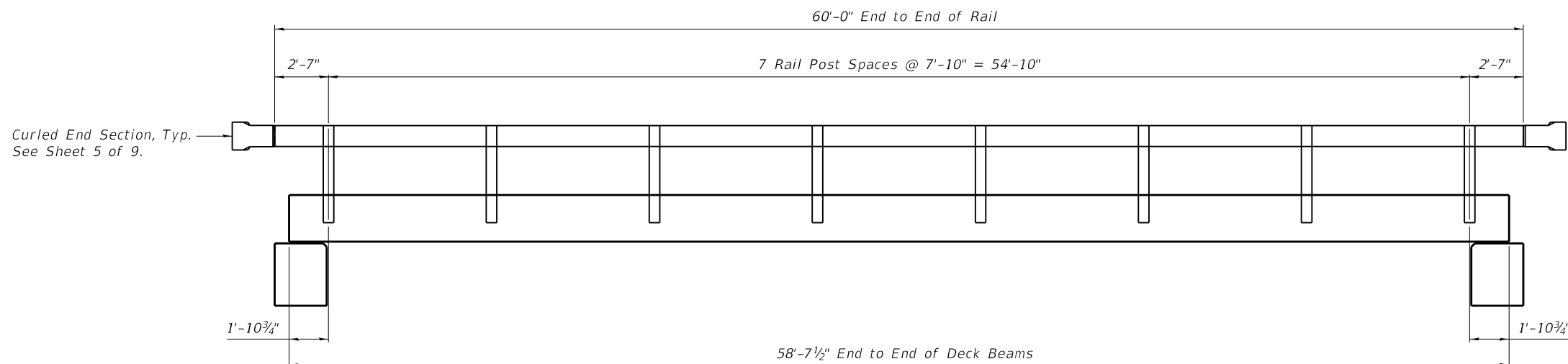
**SECTION THRU ABUTMENT**

Pay limits of Controlled Low Strength Material shall extend from end to end of abutment. Place up to the bottom of Aggregate Base Course, Type B.

(Dimensions shown at Rt. L's)



**HALF CROSS SECTION**



**RAIL ELEVATION**

MODEL: 04\_Superstructure\_Details; FILE: 18-06117-00-09 - Shelby County Bridge/CDI/Sheet/Sheet\_087-3544.dgn



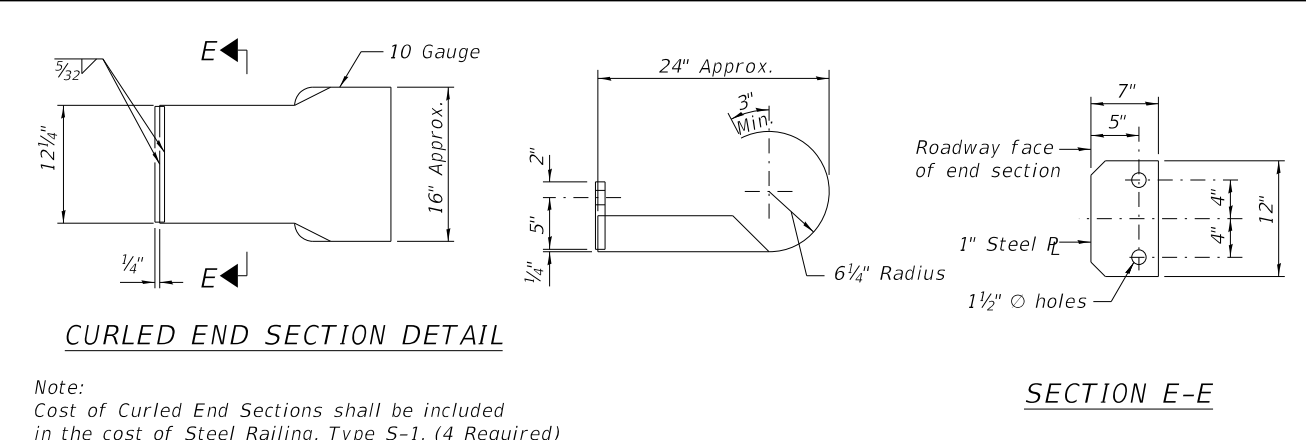
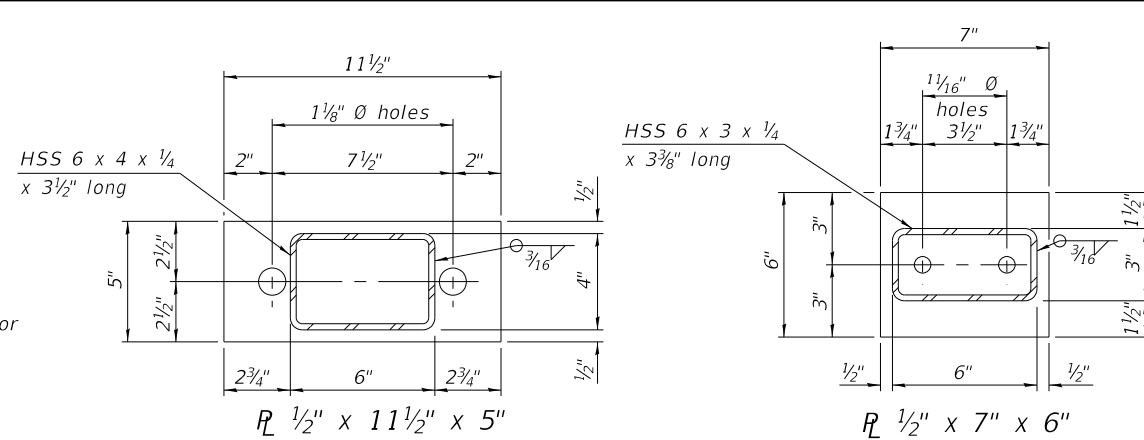
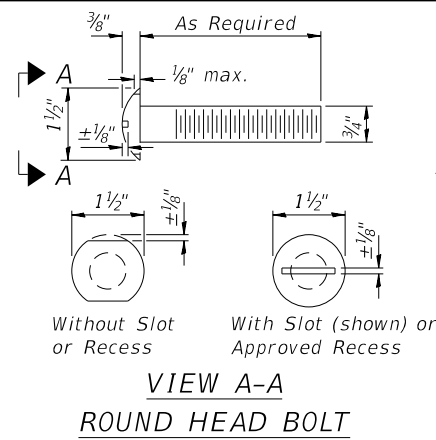
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PLOT SCALE = 0.1660' / 1"	DRAWN - TJZ	REVISED -
PLOT DATE = 2/19/2021	CHECKED - ADB	REVISED -
	DATE - 2/19/2021	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

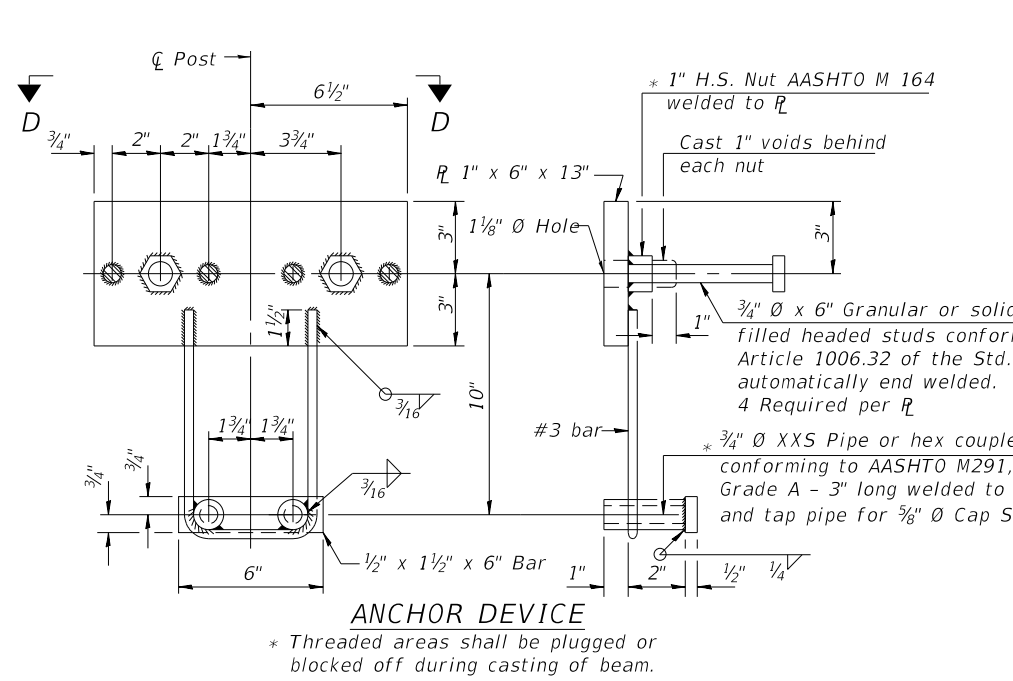
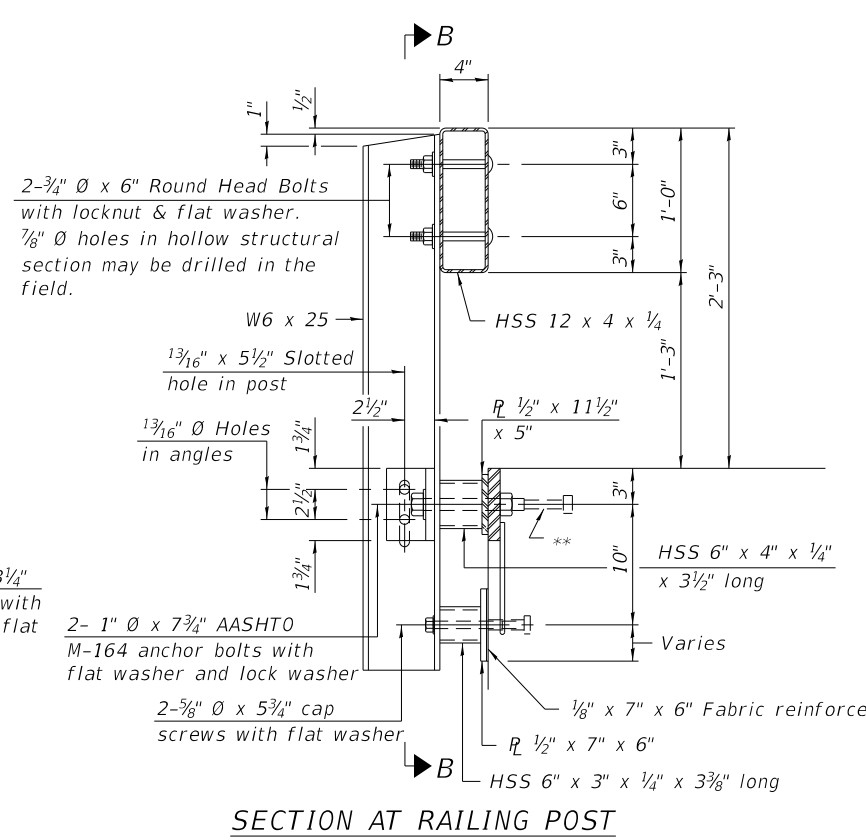
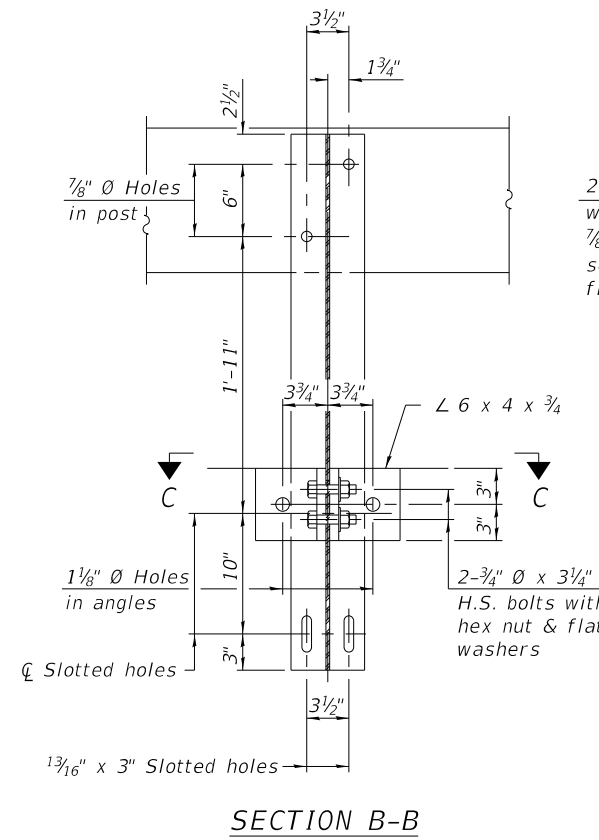
**SUPERSTRUCTURE DETAILS  
STRUCTURE NO. 087-3544**

SHEET 4 OF 9 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	Shelby	16	9
			CONTRACT NO. 95895	
ILLINOIS FED. AID PROJECT				



Note:  
Cost of Curled End Sections shall be included in the cost of Steel Railing, Type S-1. (4 Required)

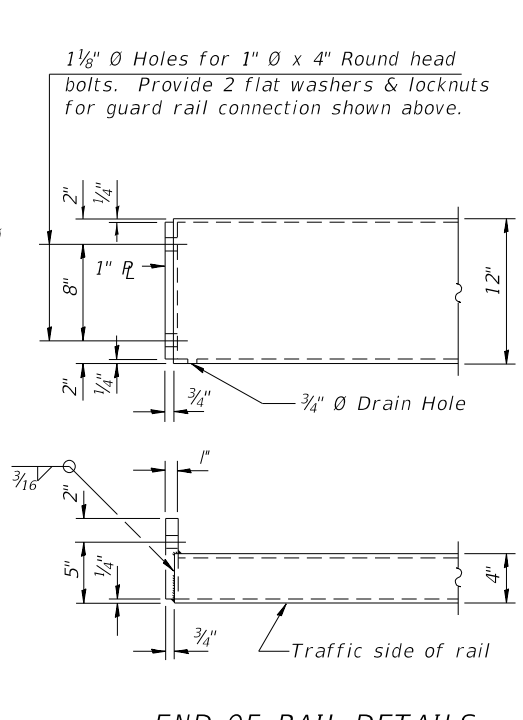
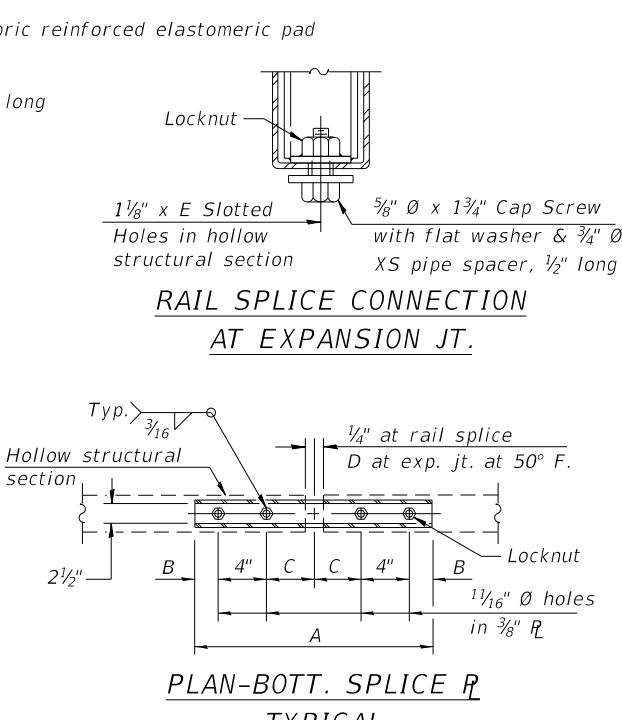
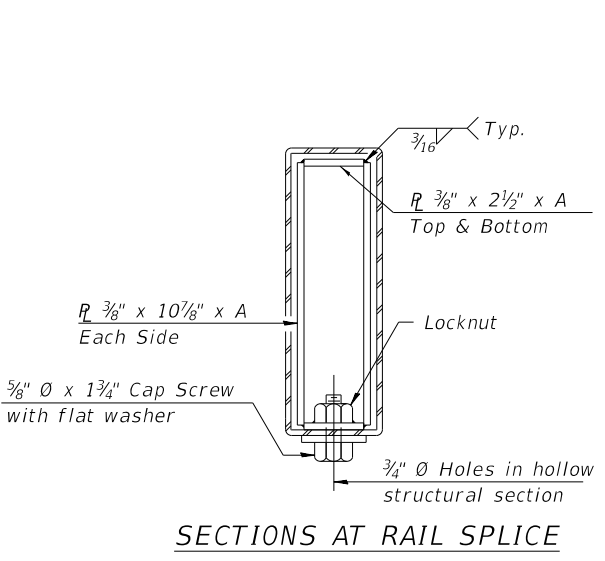
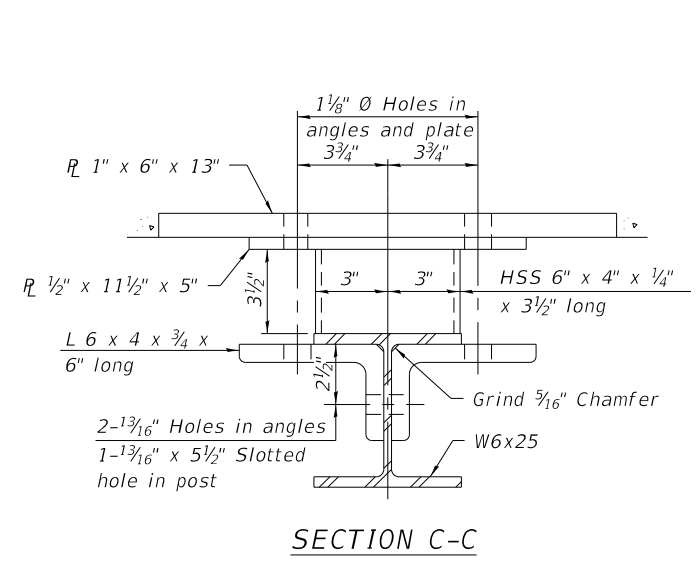


**SPLICE DIMENSIONS**

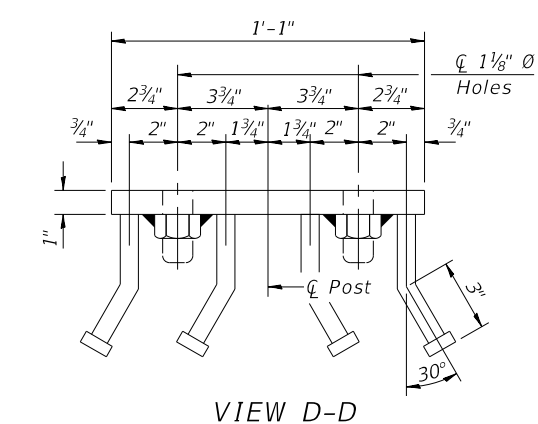
T	D	A	B	C	E
≤ 4"	2 1/2"	1'-8"	2"	4"	2 1/2"
> 4" ≤ 6 1/2"	3 3/4"	2'-0"	2 1/2"	5 1/2"	3 1/2"
> 6 1/2" ≤ 9"	5"	2'-4"	3 1/2"	6 1/2"	9"
> 9" ≤ 13"	7"	2'-10"	4 1/2"	8 1/2"	11"
Rail Splice	1/4"	1'-8"	2"	4"	

T = Total movement at expansion joint as shown on the design plans.

Notes:  
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. The anchorage studs may be bent down 1/2 inch to accommodate the top reinforcement bar placement.



**BILL OF MATERIAL**

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	120

MODEL OF Steel Railing  
FILE NAME: R-23A.dwg  
SHELBY COUNTY Bridge/CDR/Sheet/Sheet\_087-3544.dwg

R-23A 2-17-2017 (10'-9" Maximum Post Spacing)

<b>CDI</b> CIVIL DESIGN, INC. WBE / DBE EFFINGHAM, IL LICENSE # 184.003222	USER NAME = rhanfland	DESIGNED - TJZ	REVISED -
	PLOT SCALE = 0.1660' / in.	DRAWN - TJZ	REVISED -
	PLOT DATE = 2/19/2021	CHECKED - ADB	REVISED -
		DATE - 2/19/2021	REVISED -

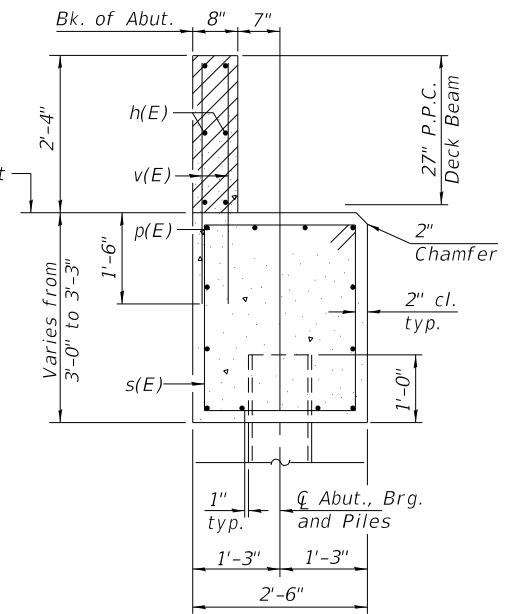
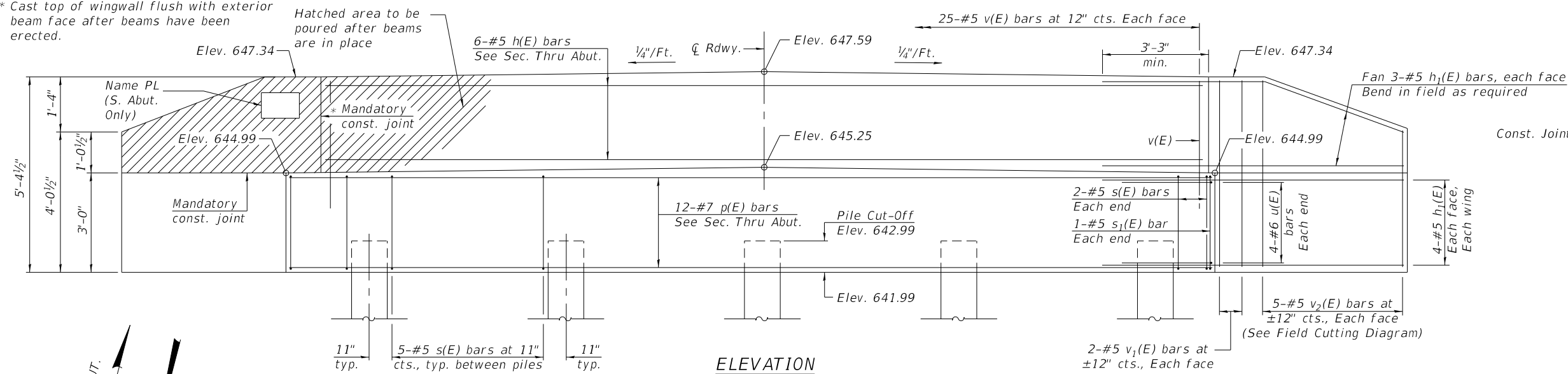
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**STEEL RAILING, TYPE S-1**  
**STRUCTURE NO. 087-3544**  
SHEET 5 OF 9 SHEETS

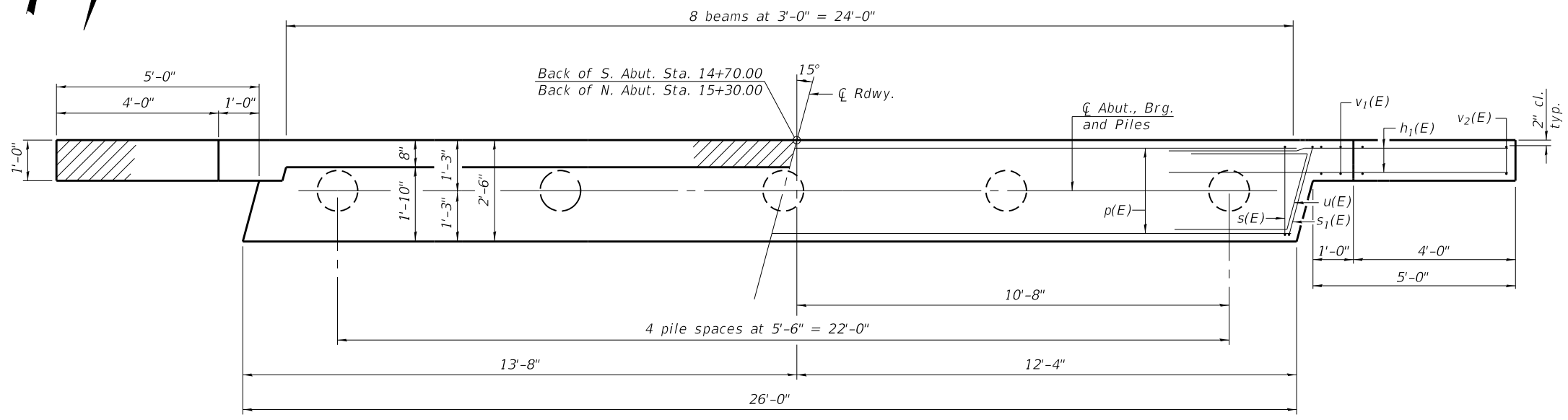
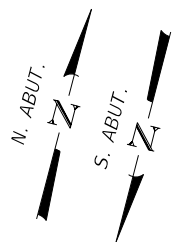
T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	Shelby	16	10

CONTRACT NO. 95895  
ILLINOIS FED. AID PROJECT

\* Cast top of wingwall flush with exterior beam face after beams have been erected.



**SECTION THRU ABUTMENT**  
(Dimensions shown at Rt. L's)



**PLAN**

**BILL OF MATERIAL - 2 ABUT.**

Bar	No.	Size	Length	Shape
h(E)	12	#5	24'-7"	—
h <sub>1</sub> (E)	56	#5	8'-9"	—
p(E)	24	#7	25'-9"	—
s(E)	48	#5	10'-7"	□
s <sub>1</sub> (E)	4	#5	10'-9"	□
u(E)	16	#6	7'-3"	—
v(E)	100	#5	3'-8"	—
v <sub>1</sub> (E)	16	#5	5'-1"	—
v <sub>2</sub> (E)	20	#5	8'-10"	—
Structure Excavation			Cu. Yd.	85
Concrete Structures			Cu. Yd.	21.8
Reinforcement Bars, Epoxy Coated			Pound	3,490
Furnishing Metal Shell Piles 12" x 0.250"			Foot	252
Driving Piles			Foot	252
Test Pile Metal Shells			Each	1

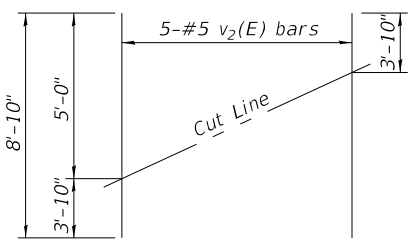
Notes:  
For details of piles, see sheet 7 of 9.  
Cast backwall after beams have been erected.

**S. ABUT. PILE DATA**

Type: Metal Shell 12"  $\odot$  x 0.250"  
Nominal Required Bearing: 243 kips  
Factored Resistance Available: 133 kips  
Est. Length: 28 ft./pile  
No. Production Piles: 5  
No. Test Piles: 0

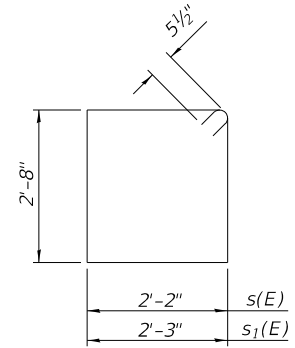
**N. ABUT. PILE DATA**

Type: Metal Shell 12"  $\odot$  x 0.250"  
Nominal Required Bearing: 243 kips  
Factored Resistance Available: 133 kips  
Est. Length: 28 ft./pile  
No. Production Piles: 4  
No. Test Piles: 1

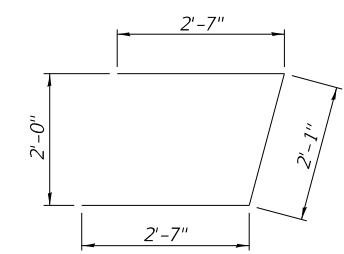


**FIELD CUTTING DIAGRAM**

Order v<sub>2</sub>(E) bars full length. Cut as shown and use remainder of bars in opposite face.



**BARS s(E) & s<sub>1</sub>(E)**



**BAR u(E)**

MODEL OF Abutment Details  
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PLOT SCALE = 0.1660' / in.	DRAWN - TJZ	REVISED -
PLOT DATE = 2/19/2021	CHECKED - ADB	REVISED -
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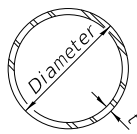
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**ABUTMENT DETAILS  
STRUCTURE NO. 087-3544**

SHEET 6 OF 9 SHEETS

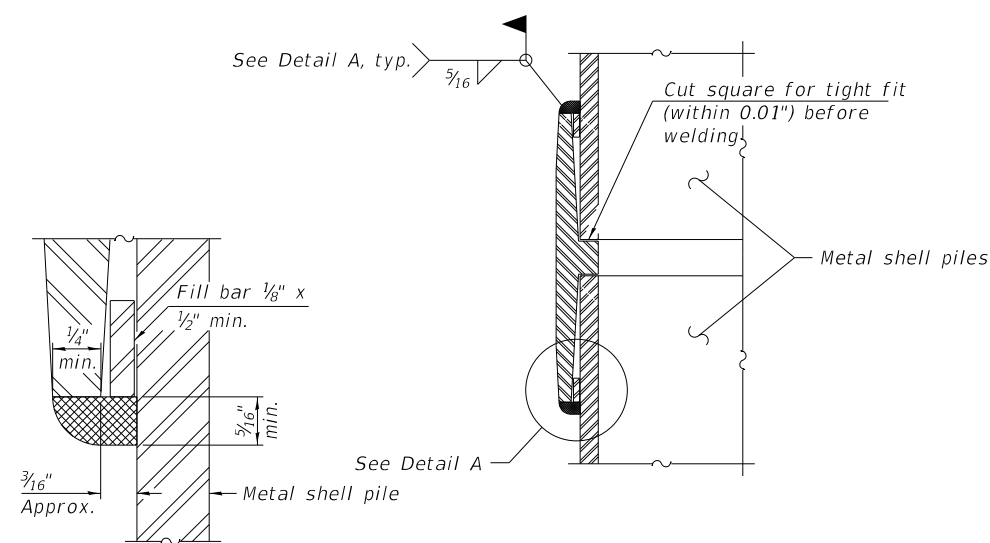
T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	Shelby	16	11
CONTRACT NO. 95895				

ILLINOIS FED. AID PROJECT

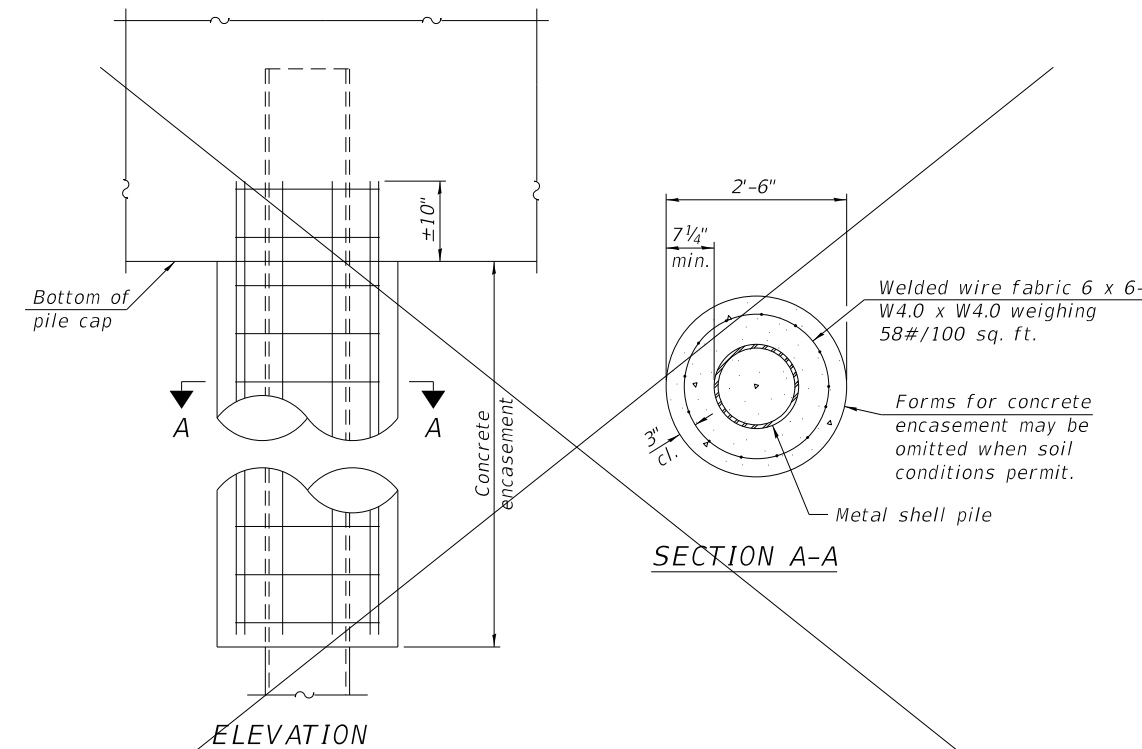


**METAL SHELL PILE TABLE**

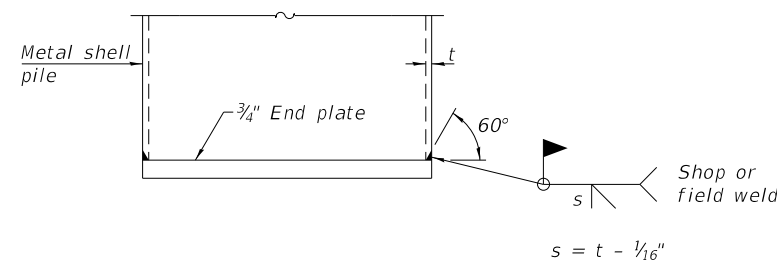
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. <sup>3</sup> /ft.)
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361
PP16	0.312"	52.32	0.0478
PP16	0.375"	62.64	0.0470



**DETAIL A**



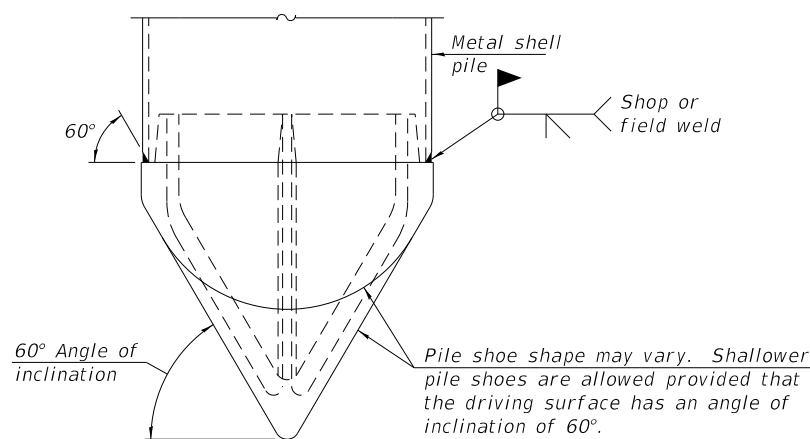
**INDIVIDUAL PILE CONCRETE ENCASUREMENT**  
(When specified)



**END PLATE ATTACHMENT**

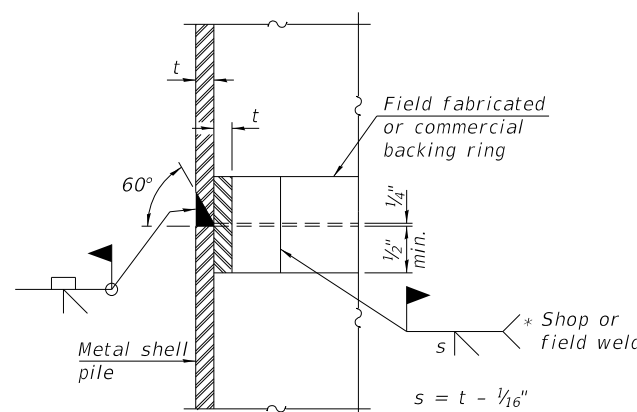
**WELDED COMMERCIAL SPLICE**

Notes:  
The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.  
Pile segments shall be driven to solid contact with splicer before welding.



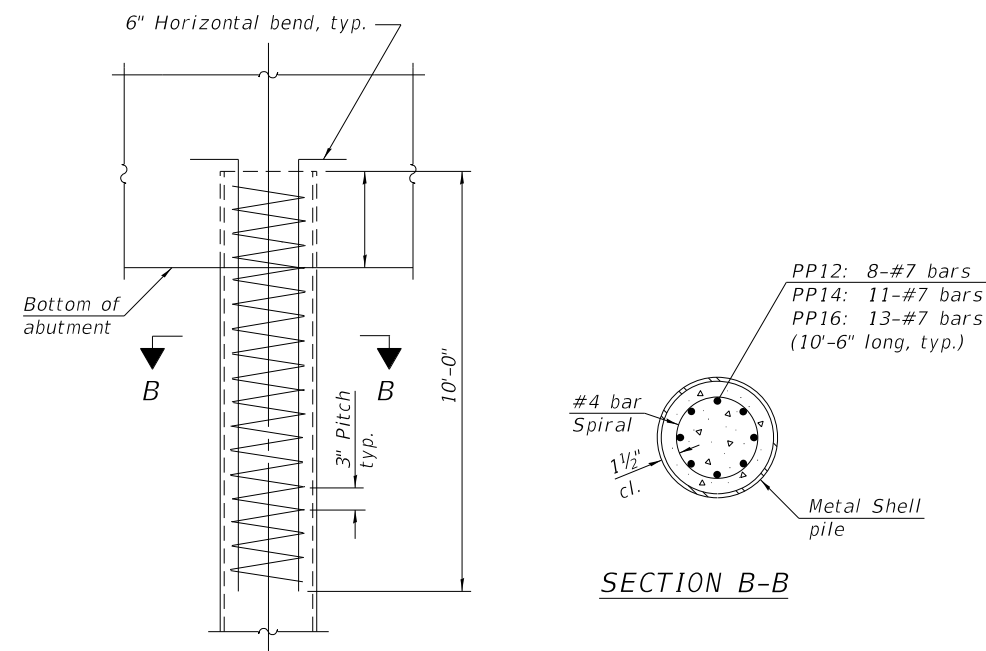
**PILE SHOE ATTACHMENT**

(When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 80-50 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld).



**COMPLETE PENETRATION WELD SPLICE**

\* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



**ELEVATION**

**REINFORCEMENT AT ABUTMENTS**  
(Omit when concrete encasement is specified)

Note:  
The metal shell piles shall be according to Article 1006.05 of the Standard Specifications.

MODEL 07.rvt Details  
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DATE: 2/19/2021 10:54:44 AM

F-MS 1-1-2020



CIVIL DESIGN, INC.  
WBE / DBE  
EFFINGHAM, IL  
LICENSE # 184.003222

USER NAME = rhanfland  
DRAWN - TJZ  
CHECKED - ADB  
DATE - 2/19/2021

DESIGNED - TJZ  
REVISIONS  
REVISIONS  
REVISIONS  
REVISIONS

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

METAL SHELL PILE DETAILS  
STRUCTURE NO. 087-3544

SHEET 7 OF 9 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	Shelby	16	12
CONTRACT NO. 95895				

ILLINOIS FED. AID PROJECT





# SOIL BORING LOG

Date 3/24/08

ROUTE County Road 1100 East DESCRIPTION Bridge Replacement Boring LOGGED BY CE Jolly

SECTION 18-06117-00-BR LOCATION Flat Branch Tshp, SEC. 11, TWP. 13N, RNG. 2E, 3<sup>rd</sup> PM

COUNTY Shelby DRILLING METHOD Hollow Stem Auger HAMMER TYPE Hydraulic

STRUCT. NO. Station	D E P T H S	B L O W S	U C S Qu	M O I S T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft	D E P T H S	B L O W S	U C S Qu	M O I S T
BORING NO. B-2 Station 0+94.8 Offset 0.00ft Ground Surface Elev. 98.60 ft					86.10				
Oil & chip roadway & subgrade. 98.10									
Brown, moist SILTY CLAY LOAM, trace fine gravel. (A-7-6)				15.9					
	9				77.10				
	4		10.2						
	4								
	4								
	4	2.9	22.7						
	6	B							
	1								
	3	0.4	25.1		71.10				
	3	B							
Brown, moist SANDY CLAY LOAM. (A-2) 89.60									
	2								
	1	0.2	22.2						
	2	B							
Brown, moist SANDY LOAM. (A-3) 87.10									
	1								
	1	0.2	19.4						
	2	B							
Gray, moist SILTY CLAY LOAM, trace sand. (A-6) 84.60									
	2								
	1	1.3	19.3						
	2	B							
	3								
	3	1.9	19.6						
	4	B							
Gray, moist SANDY LOAM. (A-3) 79.60									
	3								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)  
BBS, from 137 (Rev. 8-99)

Elev. 100.0 (Boring Logs) = Elev. 647.7 (Plans)



# SOIL BORING LOG

Date 3/24/08

ROUTE County Road 1100 East DESCRIPTION Bridge Replacement Boring LOGGED BY CE Jolly

SECTION 18-06117-00-BR LOCATION Flat Branch Tshp, SEC. 11, TWP. 13N, RNG. 2E, 3<sup>rd</sup> PM

COUNTY Shelby DRILLING METHOD Hollow Stem Auger HAMMER TYPE Hydraulic

STRUCT. NO. Station	D E P T H S	B L O W S	U C S Qu	M O I S T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft	D E P T H S	B L O W S	U C S Qu	M O I S T
BORING NO. B-2 Station 0+94.8 Offset 0.00ft Ground Surface Elev. 98.60 ft					86.10				
Gray, moist, very hard SANDY LOAM, occasional sand lenses. (A-1-a) (continued) 57.10									
Brown, moist, hard SANDY LOAM, trace medium to coarse gravel. (A-3)									
	25								
	31	6.8	10.6						
	29	B							
	25								
	42	8.0	8.6						
	18	B							
	33								
	60	11.2	9.5						
		B							
	27								
	48	10.7	9.9						
	12	B							
End of Boring 47.90									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)  
BBS, from 137 (Rev. 8-99)

MODEL 08 08.rtf  
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CIVIL DESIGN, INC.  
WBE / DBE  
EFFINGHAM, IL  
LICENSE # 184.003222

USER NAME = rhanfland	DESIGNED - TJZ	REVISED -
DRAWN - TJZ	REVISED -	
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PLOT DATE = 2/19/2021	DATE - 2/19/2021	REVISED -

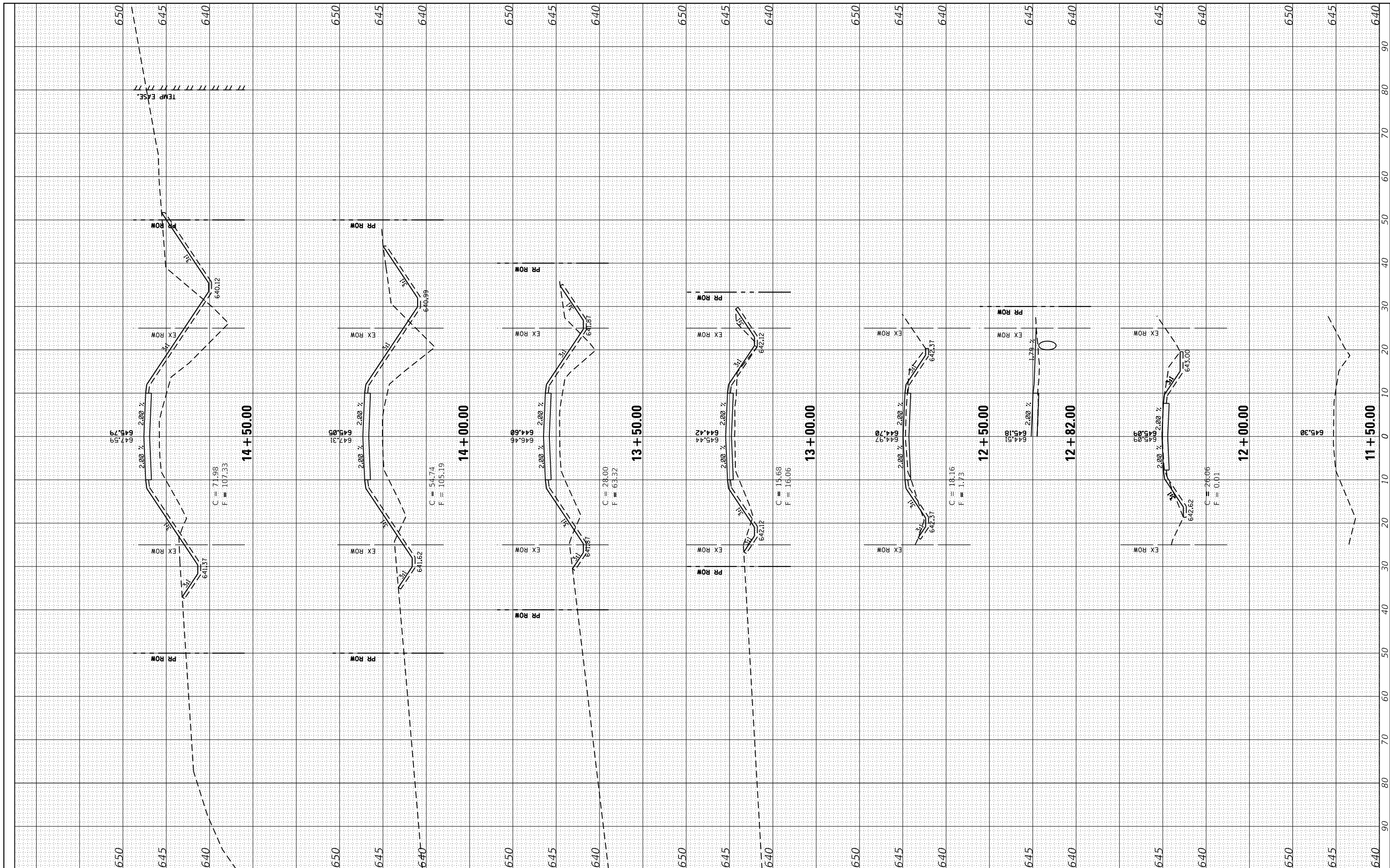
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

BORING LOGS  
STRUCTURE NO. 087-3544  
SHEET 9 OF 9 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	18-06117-00-BR	Shelby	16	14
			CONTRACT NO. 95895	
ILLINOIS FED. AID PROJECT				

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

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



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DESIGNED -	REVISED -
DRAWN -	REVISED -
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DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**CROSS SECTIONS**

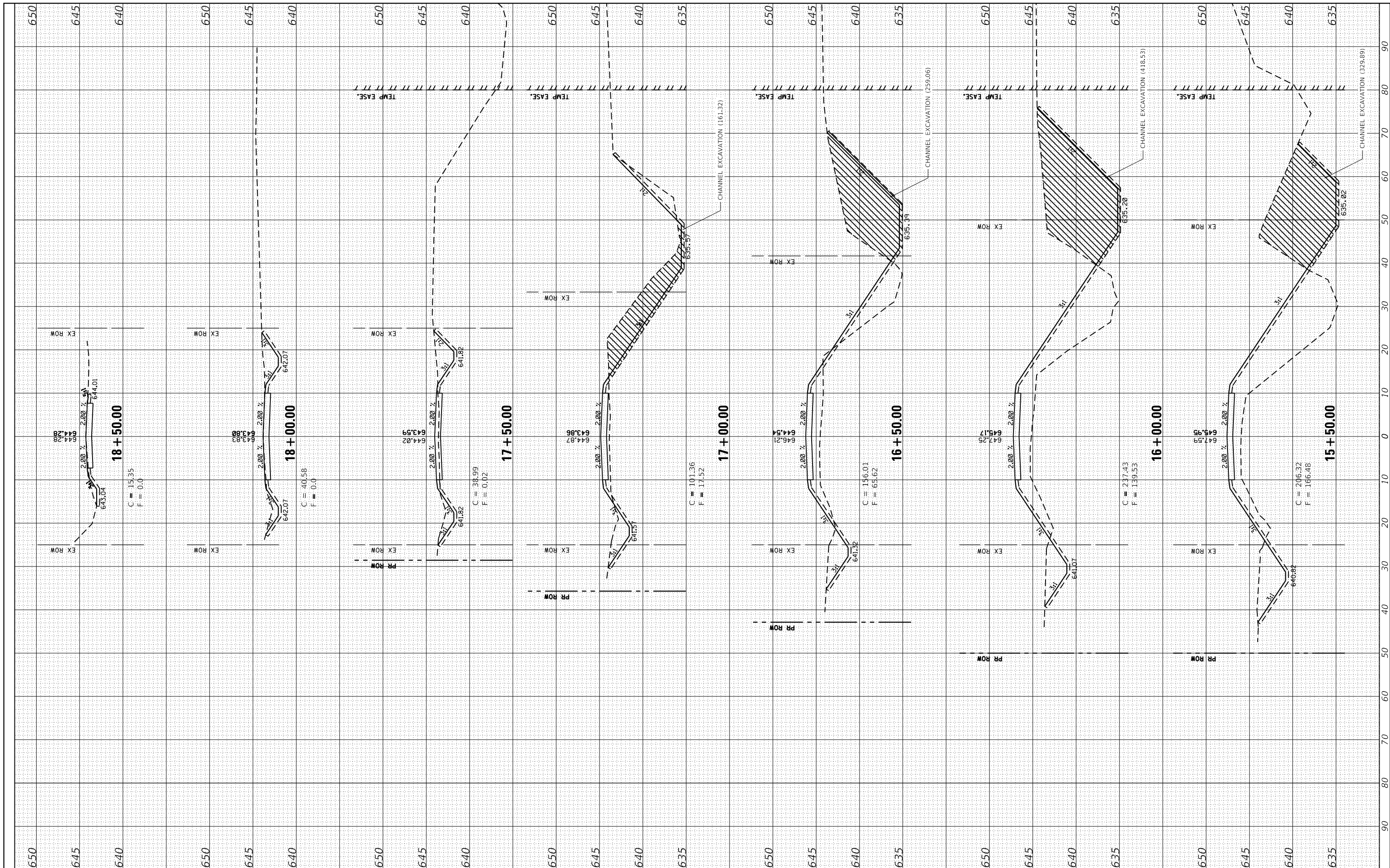
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T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	SHELBY	16	15
CONTRACT NO. 95895				
ILLINOIS FED. AID PROJECT				



FINAL SURVEY	SURVEYED	BY	DATE
EX. BOOK	PLOTTED		
NO.	TEMPLATE		
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DESIGNED -	REVISIONS
DRAWN -	REVISED -
CHECKED -	REVISED -
DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**CROSS SECTIONS**

SCALE: SHEET 2 OF 2 SHEETS STA. 15+50 TO STA. 18+50

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	18-06117-00-BR	SHELBY	16	16
CONTRACT NO. 95895				
ILLINOIS FED. AID PROJECT				