SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	TOTAL QUANTITY
20200100	EARTH EXCAVATION	CU YD	185
20300100	CHANNEL EXCAVATION	CU YD	279
20400800	FURNISHED EXCAVATION	CU YD	45
25000200	SEEDING, CLASS 2	ACRE	0.15
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	20
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	20
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	20
25100115	MULCH, METHOD 2	ACRE	0.15
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	15
28000400	PERIMETER EROSION BARRIER	FOOT	602
28100107	STONE RIPRAP, CLASS A4	SQ YD	481
28200200	FILTER FABRIC	SQ YD	481
35101600	AGGREGATE BASE COURSE, TYPE B 4"	SQ YD	52
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	195
40600275	BITUMINOUS MATERIALS (PRIME COAT)	POUND	94
40600982	HOT-MIX ASPHALT SURFACE REMOVAL - BUTT JOINT	SQ YD	40
40603080	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	76
40604050	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "C", N50	TON	42
42000070	PAVEMENT CONNECTOR (HMA) FOR BRIDGE APPROACH SLAB	SQ YD	50.3
44000100	PAVEMENT REMOVAL	SQ YD	480
48101500	AGGREGATE SHOULDERS, TYPE B 6"	SQ YD	165
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	185
50300225	CONCRETE STRUCTURES	CU YD	44.0
50300280	CONCRETE ENCASEMENT	CU YD	3.5
50301350	CONCRETE SUPERSTRUCTURE (APPROACH SLAB)	CU YD	71.6
50400705	PRECAST PRESTRESSED CONCRETE DECK BEAMS (42" DEPTH)	SQ FT	2272
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	32780
50901050	STEEL RAILING, TYPE SM	FOOT	250 1
51201800	FURNISHING STEEL PILES HP14X73	FOOT	184
51202305	DRIVING PILES	FOOT	184
51203800	TEST PILE STEEL HP14X73	EACH	2
51500100	NAME PLATES	EACH	1
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	49.0
63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	2
63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	4
63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	2
63200310	GUARDRAIL REMOVAL	FOOT	163
67100100	MOBILIZATION	L SUM	1
72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
X7011800	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1
Z0013798	CONSTRUCTION LAYOUT	L SUM	1

EARTHWORK SCHEDULE

STATION	CUT SQ FT	CUT CU YD	FILL SQ FT	FILL CU YD	TOTAL CU YD
6+25	18.3		0.0		
		35.4		0.1	35.5
6+59	37.2		0.2		
		17.0		0.1	17.2
6+75	21.9		0.2		
		21.3		0.3	21.6
7+00	24.1		0.4		
		18.1		3.9	21.9
7+25	14.9		8.0		
		9.8		14.5	24.3
7+45	11.4		31.3		
		2.6		15.9	18.5
7+52	9.5		97.1		
BRIDGE OMISSION					
8+48	7.3		67.2		
		2.0		14.0	16.0
8+55	8.8		46.2		
		8.0		33.9	41.9
8+75	12.9		45.4		
		15.0		29.6	44.6
9+00	19.5		18.5		
		17.1		18.7	35.8
9+25	17.4		21.9		
		16.5		26.4	43.0
9+50	18.3		35.2		
		20.7		16.4	37.2
9+75	26.5		0.3		

TOTAL CUT EARTH EXCAVATION	TOTAL FILL EMBANKMENT	TOTAL EARTHWORK
20200100		
185 CU YD	175 CU YD	360 CU YD

FURNISHED EXCAVATION = **20400800**	45 CU YD	

** FURNISHED EXCAVATION INCLUDES 25% SHRINKAGE AND 5% WASTE OF EARTH EXCAVATION.

CONCRETE SUPERSTRUCTURE (APPROACH SLAB)

50301350			APPROACH SLAB
Station	To	Station	CU YD
7+21.68		7+51.68	35.8
BRIDGE OMISSION			
8+48.33		8+78.33	35.8
TOTAL			71.6

AGGREGATE SURFACE

40200800 STATION			SURFACE AREA (SQ FT)	AGG SURF CSE, TY B TON
6+59.40		FE	651	195
TOTAL :				195

AGGREGATE SHOULDER

48101500 STATION	TO	STATION	SIDE	SURFACE AREA (SQ FT)	AGG SHLD TY B, 6" (SQ YD)
6+25.00	-	7+51.70	RT	454	50.4
6+25.00	-	6+35.08	LT	22	2.4
6+71.20	-	7+51.70	LT	203	22.5
8+48.30		9+75.00	RT	350	38.9
8+48.30	-	9+75.00	LT	452	50.2
TOTAL :					165

SEEDING

25000200 STATION	TO	STATION	SIDE	AREA (SQ FT)	SEEDING CL 2A (ACRE)
6+25	-	6+40	LT	143	0.01
6+71	-	7+53	LT	444	0.01
6+25	-	7+53	RT	986	0.02
BRIDGE OMISSION					
8+47		9+75	LT	2679	0.06
8+47	-	9+75	RT	2368	0.05
TOTAL :					0.15

AGGREGATE BASE CSE

35101600			AGG BASE CSE TYPE B 4"
Station	To	Station	SQ YD
6+25.00		7+21.70	26
BRIDGE OMISSION			
8+78.30		9+75.00	26
TOTAL			52

GUARDRAIL REMOVAL

63200310 STATION	TO	STATION	SIDE	GUARDRAIL REMOVAL (FOOT)
7+16.48	-	7+57.07	LT	41
7+17.23	-	7+56.92	RT	40
8+43.18	-	8+83.82	LT	41
8+43.14		8+83.42	RT	41
TOTAL :				163

HMA PAVING

40600275			HOT MIX ASPHALT	HOT MIX ASPHALT	PRIME ON HOT MIX
40622978			SURFACE	BINDER	ASPHALT
40603310			TON	TON	TON
Station	To	Station			
6+25.00		7+21.70	21	38	47
BRIDGE OMISSION					
8+78.30		9+75.00	21	38	47
TOTAL			42	76	94

PERIMETER EROSION BARRIER

28000400 STATION	TO	STATION	SIDE	PERIMETER ERO BAR (FOOT)
6+25.00	-	7+51.70	RT	151.0
6+71.20	-	7+51.70	LT	152.0
BRIDGE OMISSION				
8+48.30		9+75.00	RT	155.0
8+48.30	-	9+75.00	LT	144.0
TOTAL :				602

HOT-MIX ASPHALT

LOCATION:	SBI 11A	SBI 11A
MIXTURE USE	BINDER	SURFACE
AC/PG	PG 64-22	PG 64-22
DESIGN AIR VOIDS	4.0% @ Ndes= 50	4.0% @ Ndes= 50
MIX COMP(GRADATION)	IL-19.0	IL-9.5
FRICTION AGGREGATE	MIX C	MIX C
MIXTURE WEIGHT	112	112
QUALITY MGMT PROGRAM	QC/QA	QC/QA
SUBLOT SIZE	N/A	N/A

PRINTED DATE: 4/16/2024
FILE NAME: $FILE$

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	DRAWN - JEH	REVISED -
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PLOT DATE = 4/16/2024	DATE - 04-08-2016	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES / SCHEDULE OF QUANTITIES

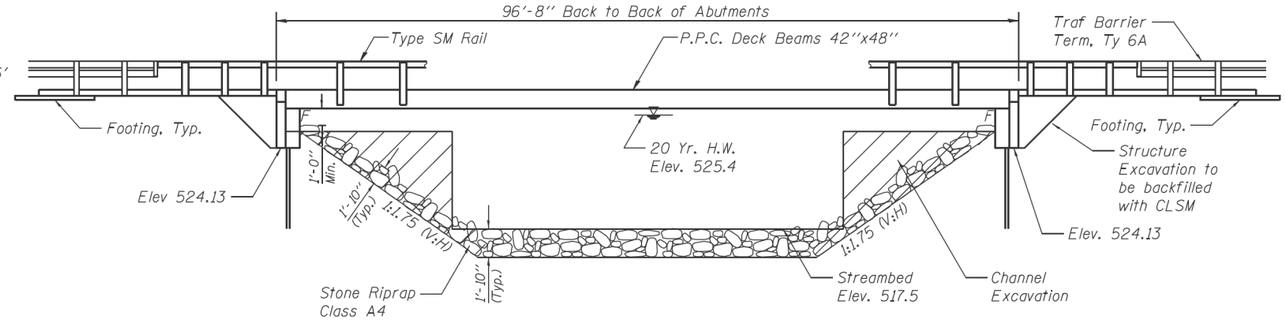
SHEET NO 1 OF 1 SHEETS

F.A.S. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
657	10-00075-00-BR	CUMBERLAND	18	3
		CONTRACT NO 95934		
		ILLINOIS FEDERAL AID PROJECT		

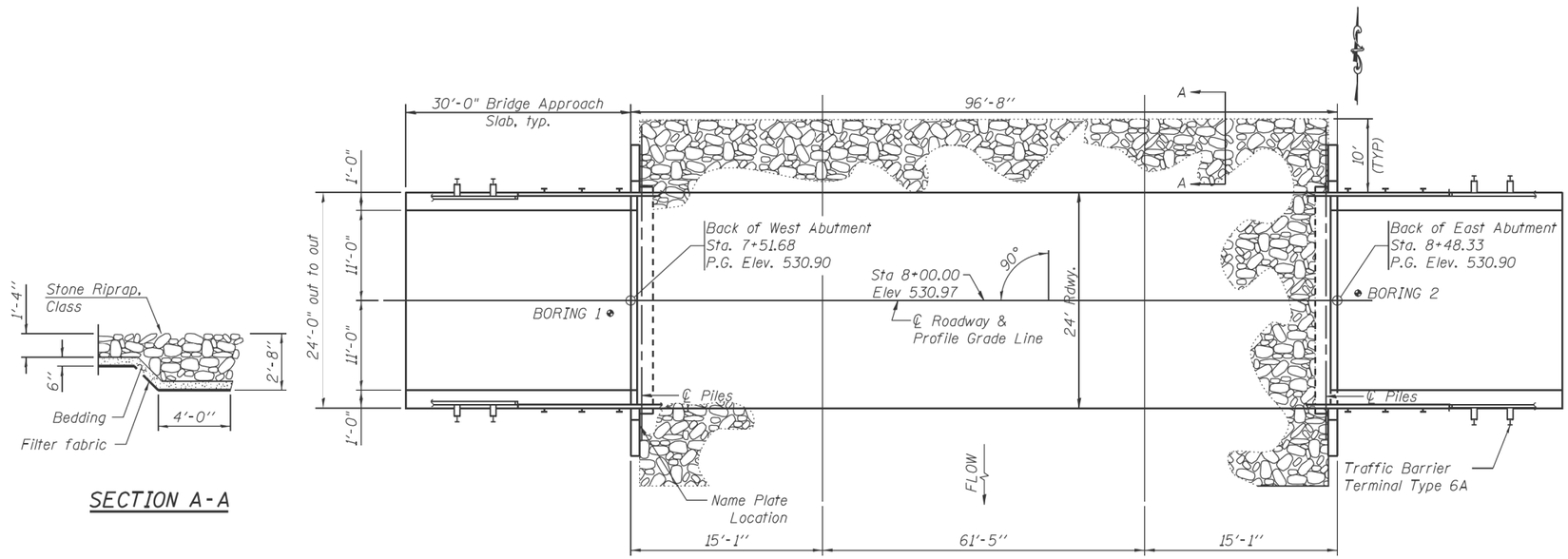
B.M. #1 : Sta. 0+42, ℄, IP with Cap, Elev. 530.28
B.M. #2 : Sta. 6+42, ℄, IP with Cap, Elev. 530.85
B.M. #3 : Sta. 8+43, 13.4' Rt., Chiseled [] on Wing Wall, Elev. 530.48
B.M. #4 : Sta. 13+42, ℄, IP with Cap, Elev. 530.46

Existing Structure: Structure 018-0021 consists of a two span concrete deck beam bridge on closed wood abutments. The bk. to bk. of abutments length is 86' and the out-to-out width is 24'. The existing structure shall be completely replaced. Road closure shall be used during construction.

No Salvage.

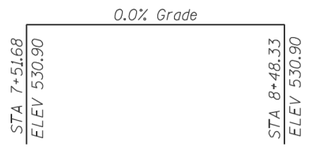


ELEVATION



PLAN

SECTION A-A



PROFILE GRADE

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
Fy = 60,000 psi (reinforcement)

PRECAST PRESTRESSED UNITS

f'c = 6,000 psi
f'ci = 5,000 psi
f_{pu} = 270,000 psi (½" low relax. strands)
f_{pbt} = 201,960 psi (½" low relax. strands)

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevations (ft.)	W. Abut.	E. Abut.
Q100	524.13	524.13
Q500	-	-

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge Design Specifications - 6th ed., with 2012 & 2013 Interims

LOADING HL-93

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

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.138
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.324
Site Soil Class = C

BUILT 2023 BY
CUMBERLAND COUNTY
SEC. 10-00075-00-BR
PROJECT NO. XXRX(514)
FAS 657 STA. 8+00
STR. NO. 018-3203 LOADING HL-93

LETTERING FOR NAME PLATE

Locate Name Plate on the outside face of the Southeast Wingwall.

WATERWAY INFORMATION

Drainage Area = 1020.2 SQ MI Low Grade Elev. = 530.31 @ Sta. 22+50

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Design	20	2473	612.9	644.8	525.4	0.3	0.1	660.7	660.5
Base	100	3650	660.2	743.7	527.1	0.8	0.8	527.2	527.2
Overtopping									
Max. Calc.									

GENERAL NOTES

1. The Contractor shall drive 1 test pile at each abutment, as specified, in a permanent location as directed by the Engineer before ordering the remaining piles.
2. Concrete sealer shall be applied to exterior face of each fascia beam.
3. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60.
4. Reinforcement bars designated (E) shall be epoxy coated.
5. Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub. Abuts.	Total
Removal of Existing Structures	Each	-	-	1
Concrete Structures	Cu. Yd.	-	44	44
Precast Prestressed Concrete Deck Beams (42" Depth)	Sq. Ft.	2272	-	2272
Steel Bridge Railing, Type SM	Foot	250	-	250
Reinforcement Bars, Epoxy Coated	Pound	27650	5130	32780
Furnishing Steel Piles HP 14x73	Foot	-	184	184
Driving Piles	Foot	-	184	184
Test Pile Steel HP 14x73	Each	-	2	2
Name Plates	Each	1	-	1
Structure Excavation	Cu. Yd.	-	185	185
Stone Riprap Class A4	Sq. Yd.	-	485	485
Channel Excavation	Cu. Yd.	-	279	279
Controlled Low-Strength Material	Cu. Yd.	-	49	49
Concrete Encasement	Cu. Yd.	-	3.5	3.5
Filter Fabric	Sq. Yd.	-	485	485
Concrete Superstructure (Appr. Slab)	Cu. Yd.	71.6	-	71.6

1

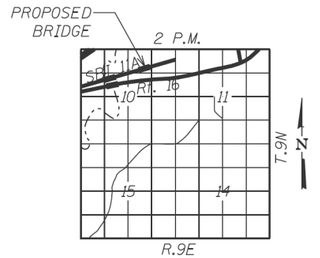
INDEX OF SHEETS

1. General Plan & Elevation
2. Approach Slab Elevations
3. Superstructure
4. Superstructure Details
5.-6. Approach Slab Details
7. Steel Railing
8. Abutment Details
9. Pile Details
10. Boring Logs

STATE OF ILLINOIS
GARY P. MRAZ
NUMBER 81-005893
LICENSED STRUCTURAL ENGINEER

2.3.23
Gary Mraz Date
License Expires 11-30-2024

I certify that to the best of 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 AASHTO Standard Specifications for Highway Bridges.



LOCATION SKETCH

GENERAL PLAN & ELEVATION
FAS 657 OVER EMBARRAS RIVER OVERFLOW
SEC. 10-00075-00-BR
CUMBERLAND COUNTY
STATION 8+00.00
STRUCTURE NO. 018-3203

PRINTED DATE= 4/16/2024
FILE NAME= J:\DN-Engineering\Projects\Cumberland Co Highway Dept\22-884 Cumberland Co.Embarras River Overflow Bridge Replacement\CADD\Drawings\Sheets\Bridge GPE.dgn

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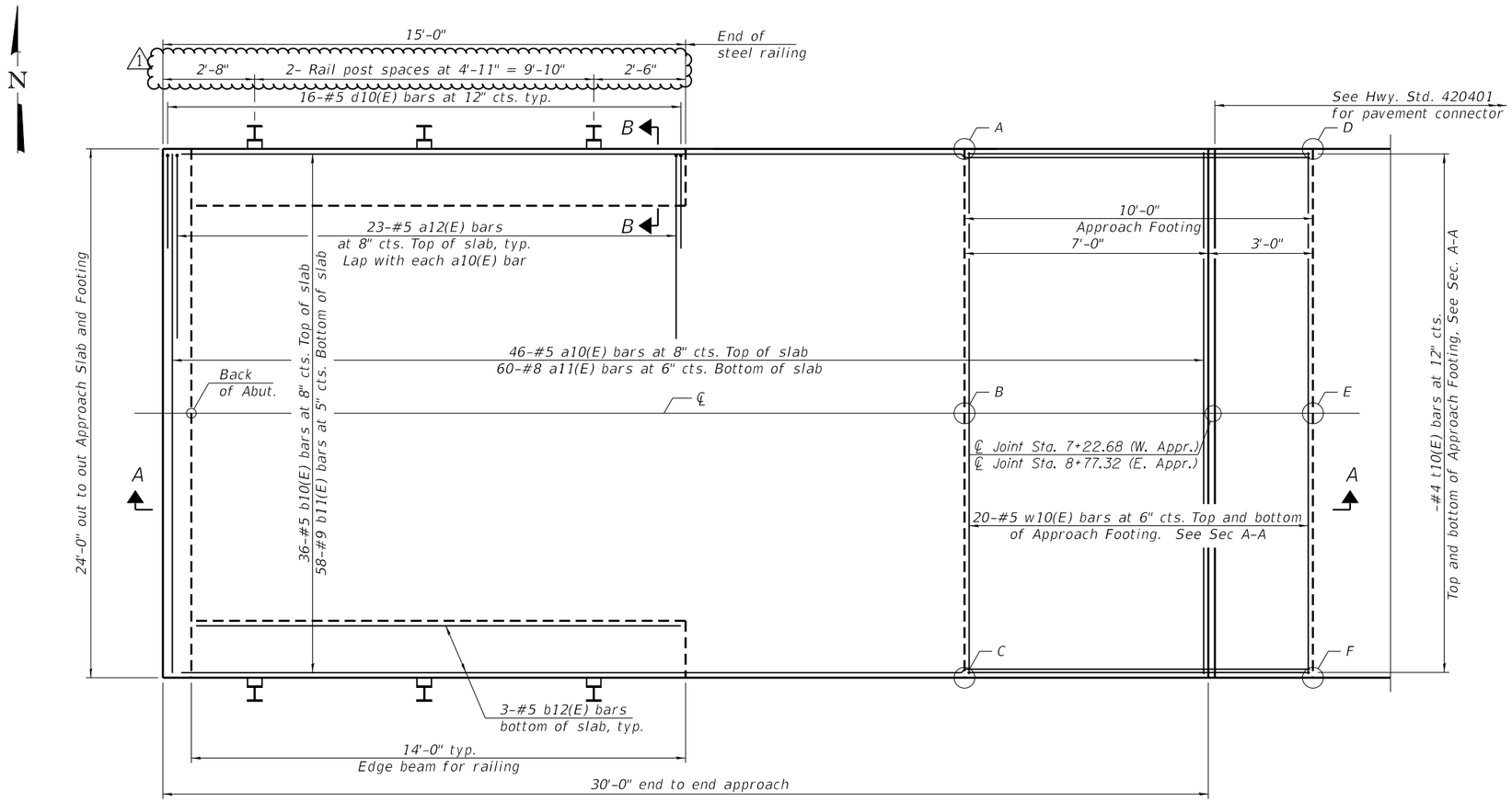
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION
SHEET NO 1 OF 10 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
657	10-00075-00-BR	CUMBERLAND	18	5
		CONTRACT NO. 95934		
		ILLINOIS FED. AID PROJECT		

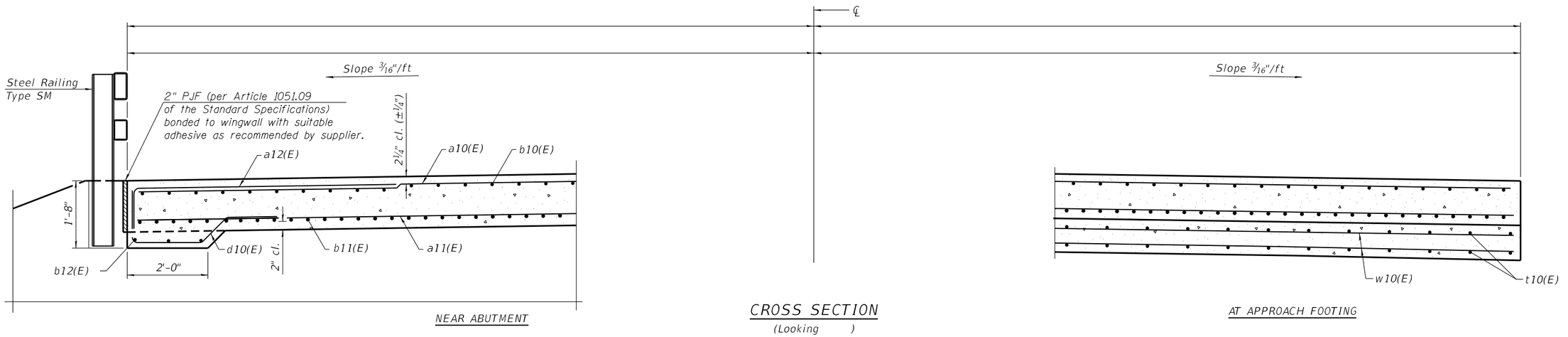


PLAN

(East approach slab shown; West approach slab similar by 180° rotation)

TOP AND BOTTOM ELEVATIONS FOR APPROACH FOOTING

East Approach			West Approach		
Point/ Location	Top	Bottom	Point/ Location	Top	Bottom
A -	529.41	528.58	A -	529.45	528.62
B -	529.59	528.76	B -	529.63	528.80
C -	529.41	528.58	C -	529.45	528.62
D -	529.38	528.55	D -	529.44	528.61
E -	529.57	528.74	E -	529.63	528.80
F -	529.38	528.55	F -	529.44	528.61



CROSS SECTION

(Looking)

NEAR ABUTMENT

AT APPROACH FOOTING

BAIA-CIP-R34-0 10-12-2021

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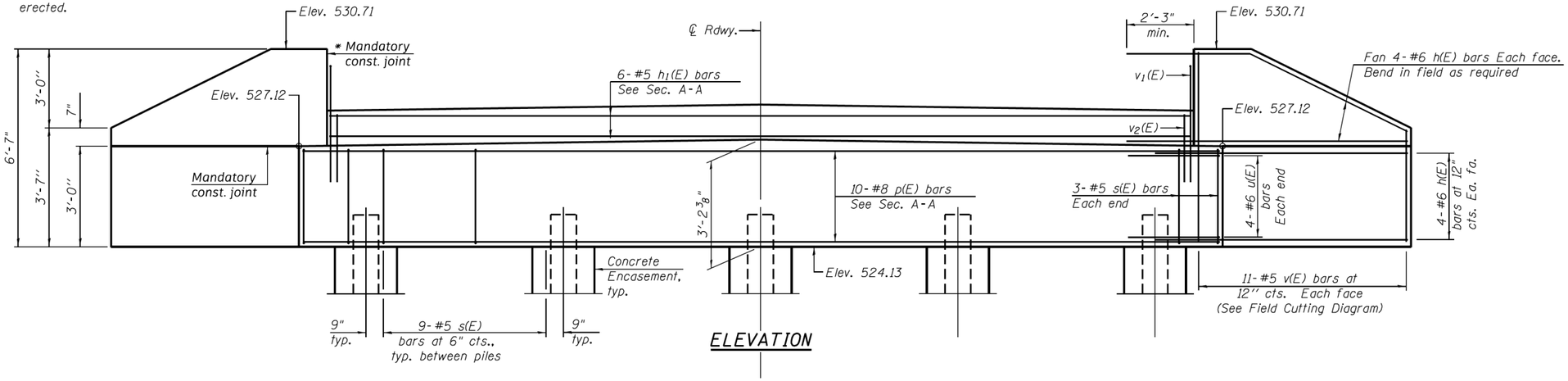
PLOT SCALE = $SCALE$	DRAWN - PS	REVISED -
PLOT DATE = 4/16/2024	CHECKED - MW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

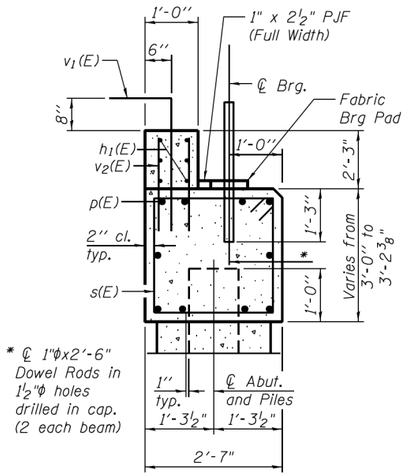
BRIDGE APPROACH SLAB DETAILS
STRUCTURE NO. 018-3203
SHEET NO 5 OF 10 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
657	10-00075-00-BR	CUMBERLAND	18	9
		CONTRACT NO. 95934		
	ILLINOIS FED. AID PROJECT			

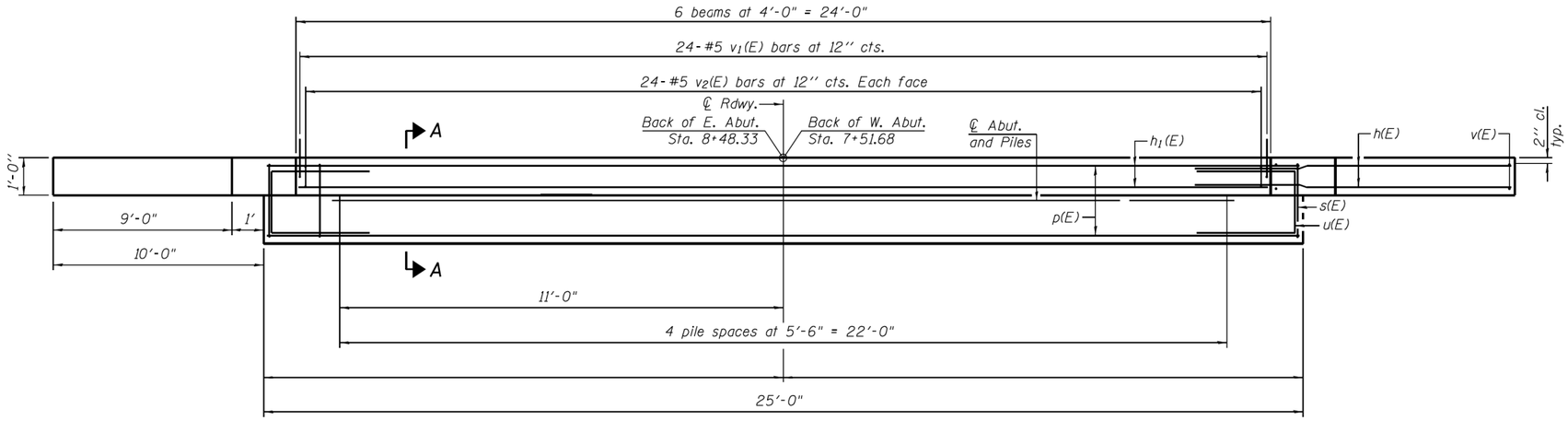
* Cast top of wingwall flush with exterior beam face after beams have been erected.



ELEVATION



SECTION A-A



PLAN

BILL OF MATERIAL

(Two Abutments)

Bar	No.	Size	Length	Shape
h(E)	64	#6	13'-4"	
h_1(E)	12	#5	23'-9"	
p(E)	20	#8	24'-9"	
s(E)	84	#5	10'-5"	
u(E)	16	#6	9'-11"	
v(E)	44	#5	9'-6"	
v_1(E)	48	#5	5'-5"	
v_2(E)	96	#5	3'-9"	
Structure Excavation		Cu. Yd.	185	
Concrete Structures		Cu. Yd.	29	
Reinforcement Bars, Epoxy Coated		Pound	5130	
Furnishing Steel Piles, HP14x73		Foot	184	
Driving Piles		Foot	184	
Test Pile,		Each	2	
Concrete Encasement		Cu. Yd.	3.5	

Notes:

For details of piles and Concrete Encasement, see sheet 9 of 10.

Cast backwall after beams and concrete wearing surface, if applicable, have been erected.

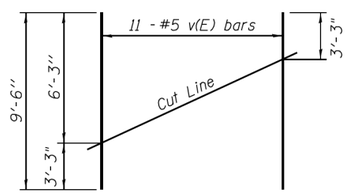
PILE DATA

Type:	Steel HP 14x73
Nominal Required Bearing:	300 kips
Factored Resistance Available:	317 kips
Est. Length:	34' East, 12' West
No. Production Piles:	8 (4 East, 4 West)
No. Test Piles:	2 (1 East, 1 West)

Note:

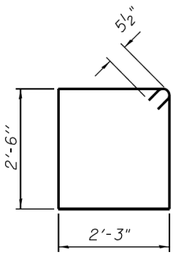
Due to the shallow depth of bedrock at the West Abutment, the piles shall be set in 24" diameter holes drilled at least 10' into bedrock, driven to maximum nominal bearing, and back-filled with PCC.

1 Cost to be included with Furnishing Steel Piles, HP14x73

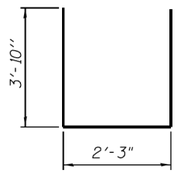


FIELD CUTTING DIAGRAM

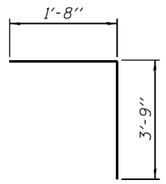
Order v(E) bars full length. Cut as shown and use remainder of bars in opposite face.



BAR s(E)



BAR u(E)



BAR v_1(E)

AD-2742-0 7-1-10

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ABUTMENTS
STRUCTURE NO. 018-3203
SHEET NO 8 OF 10 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
657	10-00075-00-BR	CUMBERLAND	18	12
		CONTRACT NO. 95934		
		ILLINOIS FED. AID PROJECT		

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