



04-24-2020 LETTING ITEM 192

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

SURFACE TRANSPORTATION PROGRAM
OFF SYSTEM BRIDGE

TOWNSHIP ROUTE 276 (HAGEN ROAD)

EAST ELDORADO TOWNSHIP

SECTION 14-04121-00-BR

PROJECT NO. 7F6B(840)

JOB NO. C-99-518-15

INDIAN CREEK

SALINE COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	7
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	

SUMMARY OF QUANTITIES

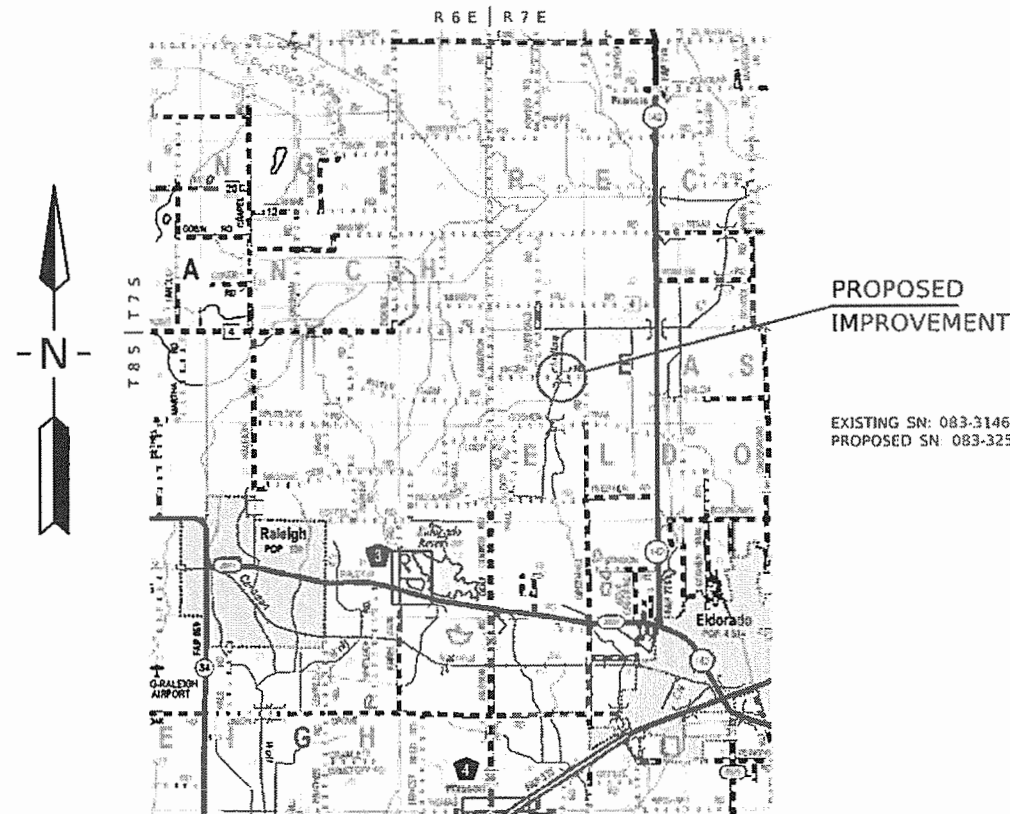
CODE NO.	PAY ITEM	UNIT	TOTAL
* X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.5
* X7010216	TRAFFIC CONTROL AND PROTECTION (SPECIAL)	L SUM	1
* 20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	59
* 20100210	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	100
20200100	EARTH EXCAVATION	CU YD	907
* 20300100	CHANNEL EXCAVATION	CU YD	181
* 28100807	STONE DUMPED RIPRAP, CLASS A4	TON	313
* 40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	372
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	45
50300225	CONCRETE STRUCTURES	CU YD	16.8
50300280	CONCRETE ENCASEMENT	CU YD	2.7
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1,152
50800105	REINFORCEMENT BARS	POUND	2,250
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	98
51201400	FURNISHING STEEL PILES HP10X42	FOOT	480
51202305	DRIVING PILES	FOOT	480
51500100	NAME PLATES	EACH	1
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	13.8
67100100	MOBILIZATION	L SUM	1
Δ 72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4

* SEE SPECIAL PROVISIONS
Δ SPECIALTY ITEMS

INDEX OF SHEETS

1. COVER SHEET
 2. PLAN & PROFILE
 3. GENERAL PLAN & ELEVATION
 4. 21" X 48" PPC DECK BEAMS
 5. 21" X 48" PPC DECK BEAM DETAILS
 6. ABUTMENT
 7. STEEL RAILING, TYPE S-1
 8. NAME PLATE
 9. PILING DETAILS
 - 10.-11. CROSS SECTIONS
- STANDARDS 000001-07 STD SYMBOLS, ABBREVIATIONS & PATTERNS
 280001-07 TEMPORARY EROSION CONTROL SYSTEMS
 701901-08 TRAFFIC CONTROL DEVICES
 725001-01 OBJECT AND TERMINAL MARKERS
 BLR 21-9 TYP APPLICATION OF TRAF CONTR DEVICES

CLASSIFICATION : LOCAL ROAD (RURAL)
ADT : 50
DESIGN SPEED : 30 MPH



LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 430.00 FT. = 0.0814 MILES

CONTRACT NO. 99635



Kevin Phillips

Kevin Phillips
PROFESSIONAL ENGINEER
#062-047293
EXPIRES NOV. 30, 2021

Round Table Design, Inc.

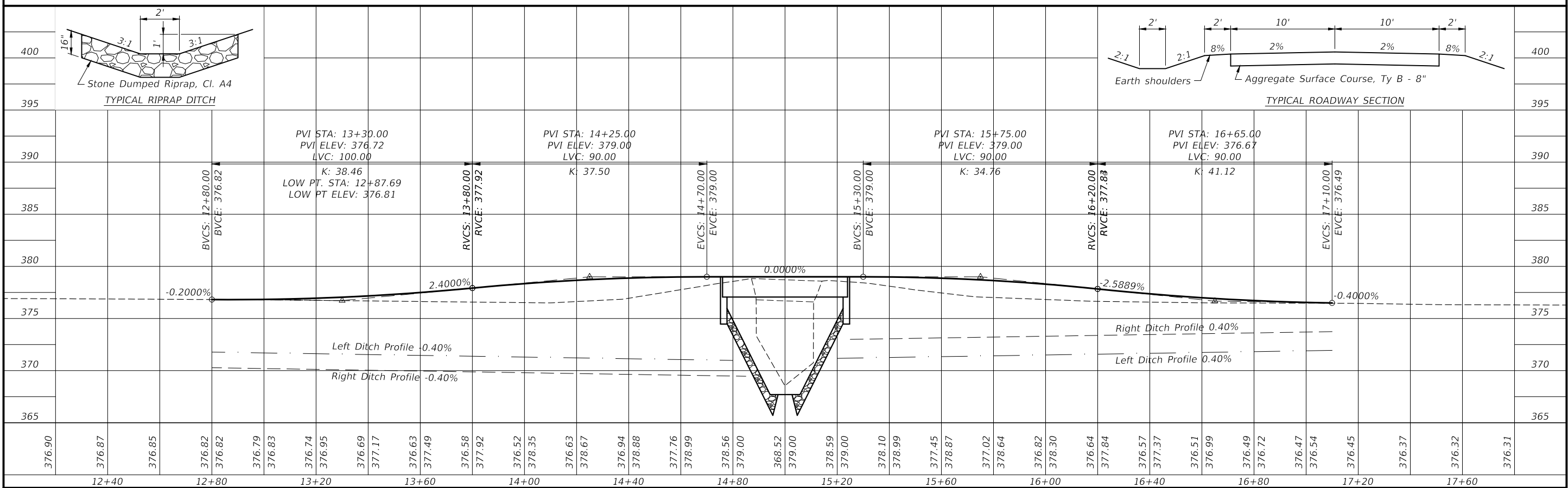
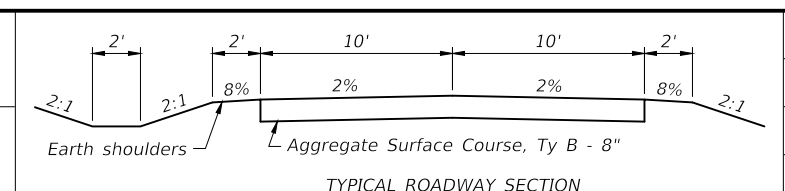
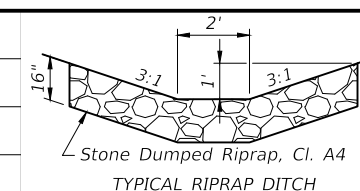
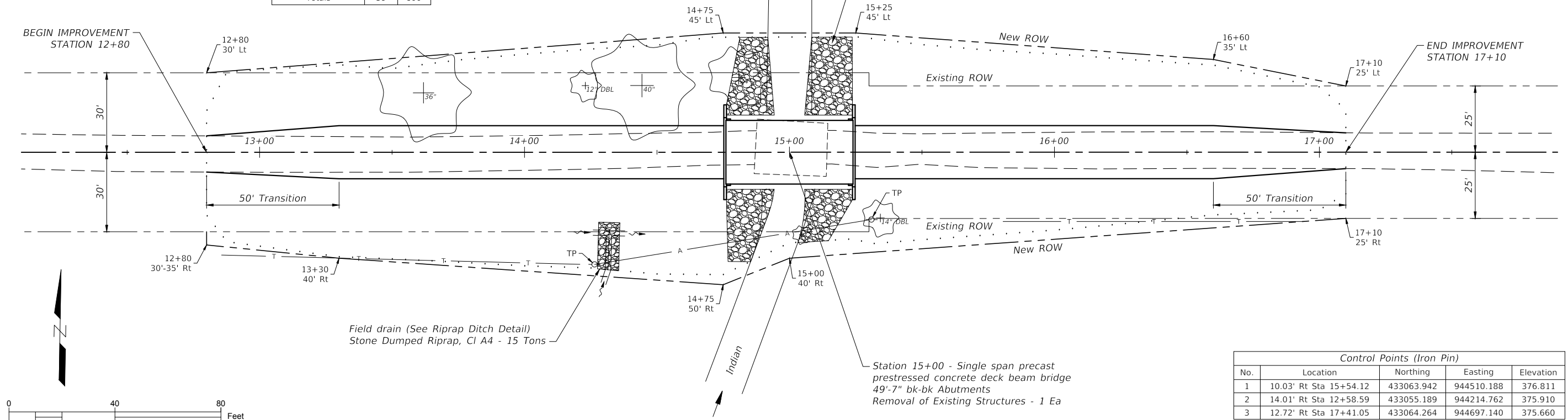
PROFESSIONAL ENGINEERING - LAND SURVEYING
1457 HIGHWAY 145 S HARRISBURG, IL (618) 253-6017

ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	2-13-20 <i>Steve McKinney</i> East Eldorado Township Road Commissioner
Approved	February 13, 2020 <i>Clay Phipps</i> Saline County Engineer
Passed	FEBRUARY 19, 2020 <i>[Signature]</i> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	FEBRUARY 19, 2020 <i>Keith Roberts</i> Keith Roberts P.E. Acting Region Five Engineer

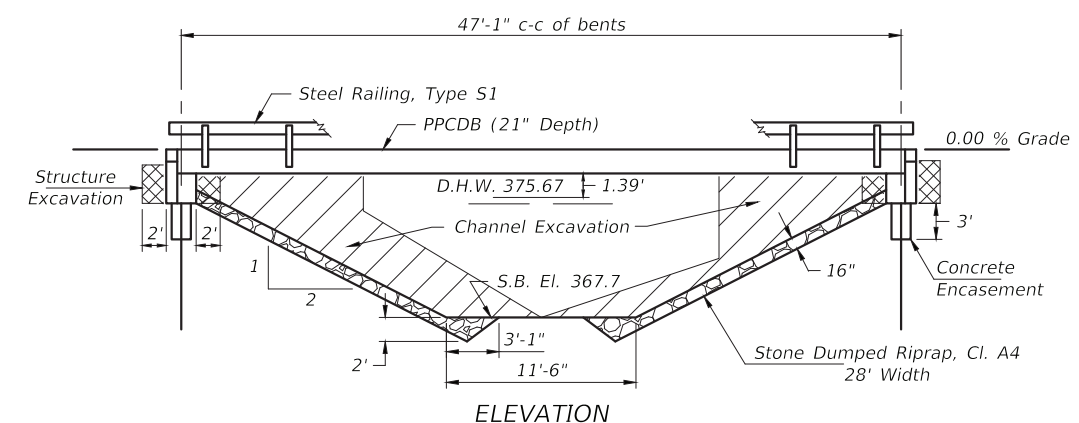
Existing Structure - Timber deck with steel stringers on closed concrete abutments. 15.6' W x 27.0' L

Tree Removal (Units Dia)		
Location	6-15	>15
22.4' Lt Sta 13+62		36
25.1' Lt Sta 14+23	2@12	
25.1' Lt Sta 14+44		40
28.2' Lt Sta 14+81		24
31.2' Rt Sta 15+05	7	
24.8' Rt Sta 15+34	2@14	
Totals	59	100

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	2
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	



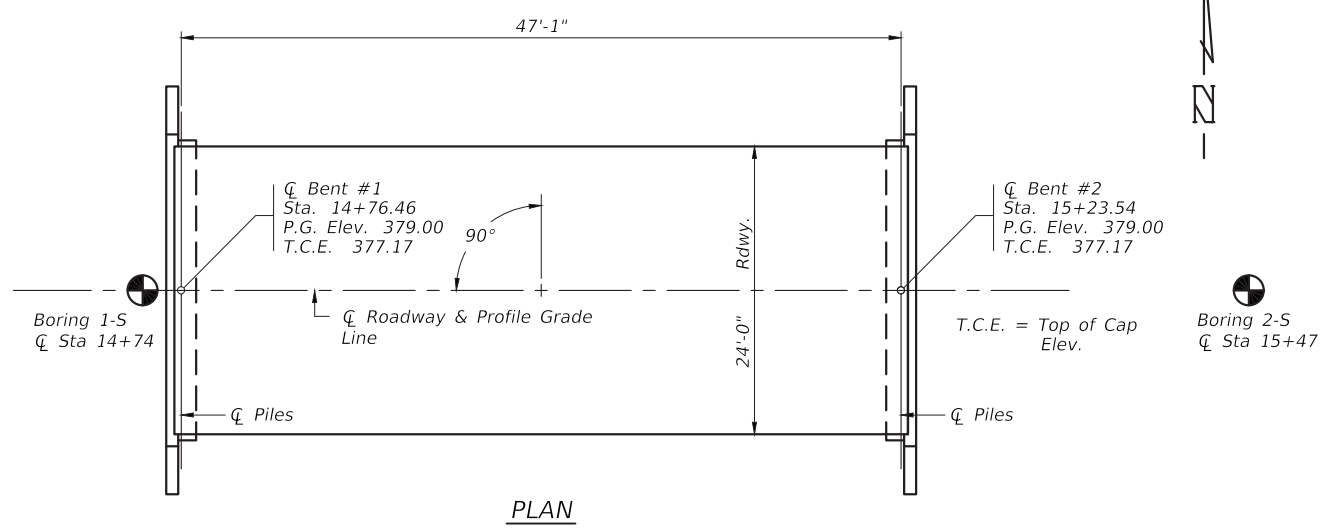
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	3
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	



Existing Structure - Timber deck with steel stringers on closed concrete abutments. 15.6' W x 27.0' L

GENERAL NOTES

- Steel H piles shall meet AASHTO M270 Grade 50 specifications.
- See special provisions for boring logs.
- A Corrosion inhibitor, as covered in the Standard Specifications, shall be used in the precast prestressed concrete deck beams.



TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Channel Excavation	Cu. Yds.			178	178
Stone Dumped Riprap, Class A4	Tons			355	355
Removal of Existing Structures	Each	1			1
Structure Excavation	Cu. Yds.			45	45
Concrete Structures	Cu. Yds.			17.6	17.6
Concrete Encasement	Cu. Yds.			2.7	2.7
P.P. Conc. Dk. Bm. 21" Dp.	Sq. Ft.	1,152			1,152
Reinforcement Bars	Pound			2,328	2,328
Steel Railing, Type S1	Foot	98			98
Furnishing Steel Piles HP10x42	Foot			480	480
Driving Piles	Foot			480	480
Name Plates	Each			1	1

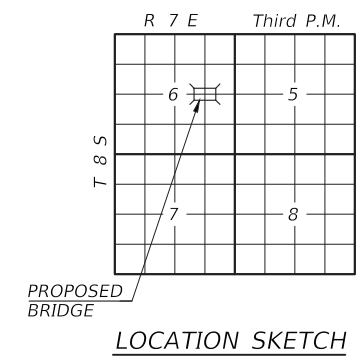
PILE DATA (2 ABUTS.)

Type & Size : Steel HP10x42
 Nominal Required Bearing : 247 kips
 Factored Resistance Available : Refusal
 Estimated Length : 60 Ft
 Number Required : 8

INDIAN CREEK
 SEC. 14-04121-00-BR BUILT 20 ____
 EAST ELDORADO TOWNSHIP
 SALINE COUNTY
 LOADING HL-93
 STR. NO. 083-3255

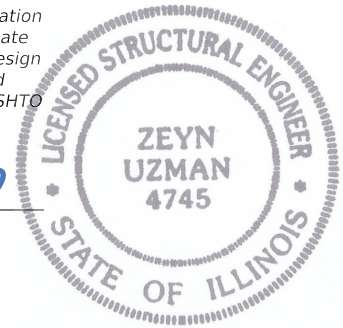
LETTERING FOR NAME PLATE

Locate Name Plate at southwest Corner of Bridge (See Sheet 8)



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 type of structure and complies with the requirements of the current AASHTO LRFD Specifications.

Zeyn B. Uzman
 Zeyn B. Uzman
 S.E. #81-4745
 Expires Nov. 30, 2020



DESIGN SPECIFICATIONS
 2014 AASHTO LRFD Bridge Design Specifications and all applicable interims.

LOADING HL-93
 Allow 50#/sq. ft. for future wearing surface

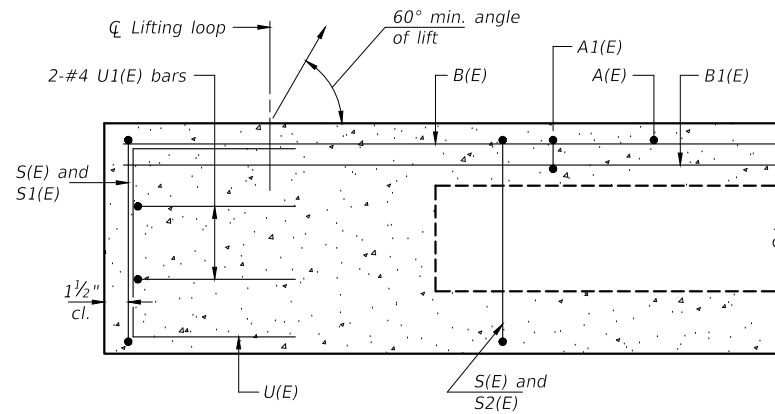
SEISMIC DATA
 Seismic Performance Zone (SPZ) = 3
 Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.326
 Design Spectral Acceleration at 0.2 sec. (S_{D5}) = 0.771
 Soil Site Class = D

WATERWAY INFORMATION

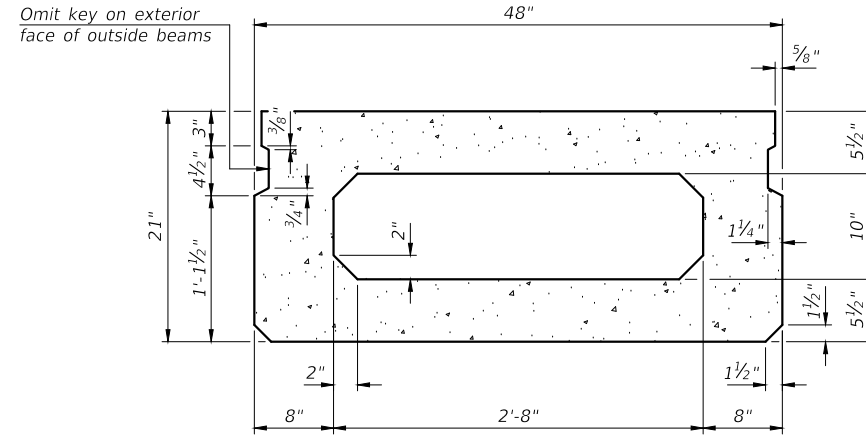
Drainage Area = 2.51 s.m.		Low Grade Elev. = 376.31		At Sta. 17+80					
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Head-Ft.		Headwater El.		
			Exist.	Prop.	H.W.E.	Exist.	Prop.	Exist.	Prop.
Design	20	1280	162.9	223.4	375.67	1.22	0.10	376.89	375.77
Overtopping	63	1758	162.9	247.4	376.16	2.17	0.15	378.33	376.31
Base	100	1950	162.9	280.5	376.61	0.73	0.54	377.34	377.15
Max. Calc.	500	2720	162.9	280.5	376.92	0.66	0.69	377.58	377.61
Over Road Flow (Sq. Ft.):					$Q_{(63)}$	$Q_{(100)}$	$Q_{(500)}$		
					Existing 2511.3	1228.5	1579.4		
					Proposed 406.7	1178.0			

GENERAL PLAN & ELEVATION
 TOWNSHIP ROUTE 276 (HAGAN ROAD)
 INDIAN CREEK
 SECTION 14-04121-00-BR
 SALINE COUNTY
 STRUCTURE NO. 083-3255

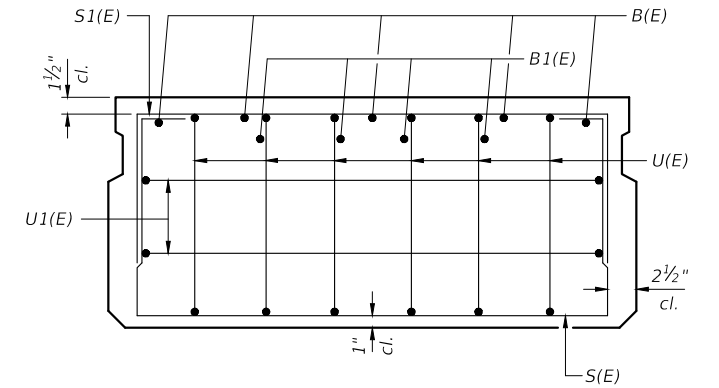
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	4
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	



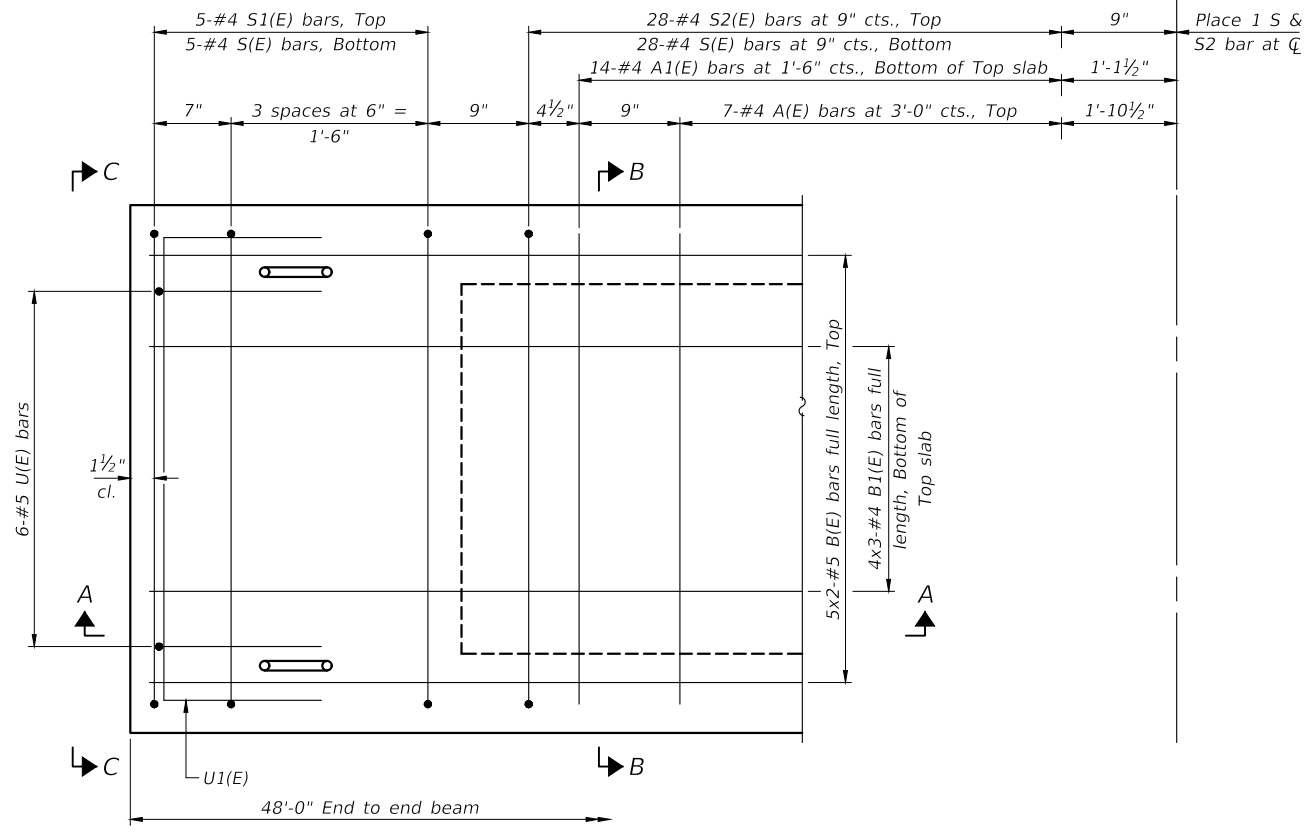
SECTION A-A



SECTION B-B
(Showing dimensions)

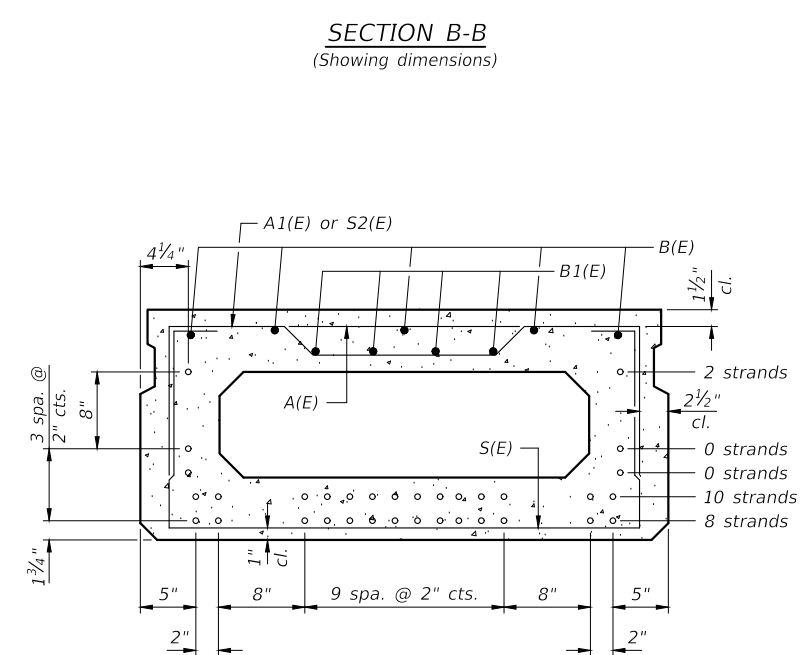


VIEW C-C



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.



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.

BAR LIST
ONE BEAM ONLY
(For information only)

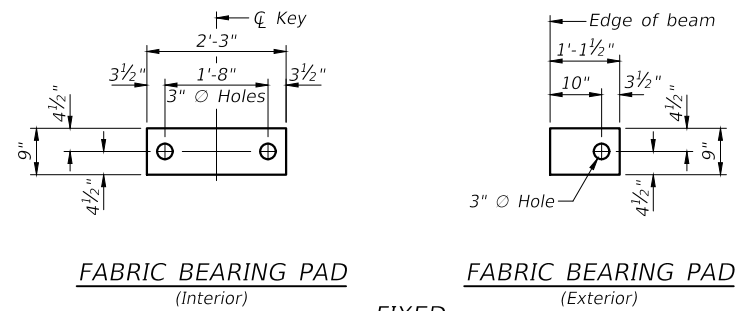
Bar	No.	Size	Length	Shape
A(E)	14	#4	3'-7"	—
A1(E)	28	#4	3'-10"	~
B(E)	10	#5	25'-2"	—
B1(E)	12	#4	17'-3"	—
S(E)	67	#4	7'-5"	□
S1(E)	10	#4	5'-11"	□
S2(E)	57	#4	6'-2"	□
U(E)	12	#5	4'-0"	□
U1(E)	4	#4	6'-0"	□

Notes:
See sheet 5 of 11 for additional details and Bill of Materials.
Bars noted thus 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

MINIMUM BAR LAP
#4 bar = 1'-11"
#5 bar = 2'-6"

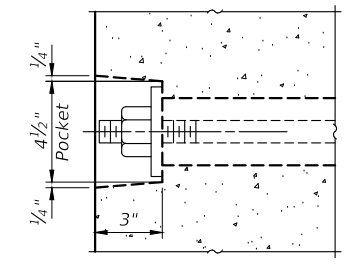
21" X 48" PPC DECK BEAM
TOWNSHIP ROUTE 276 (HAGEN ROAD)
INDIAN CREEK
SECTION 14-04121-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3255

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	5
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	

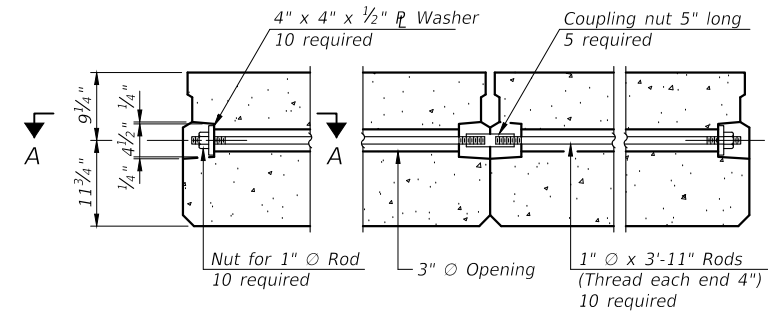


FABRIC BEARING PAD
(Interior) **FABRIC BEARING PAD**
(Exterior)

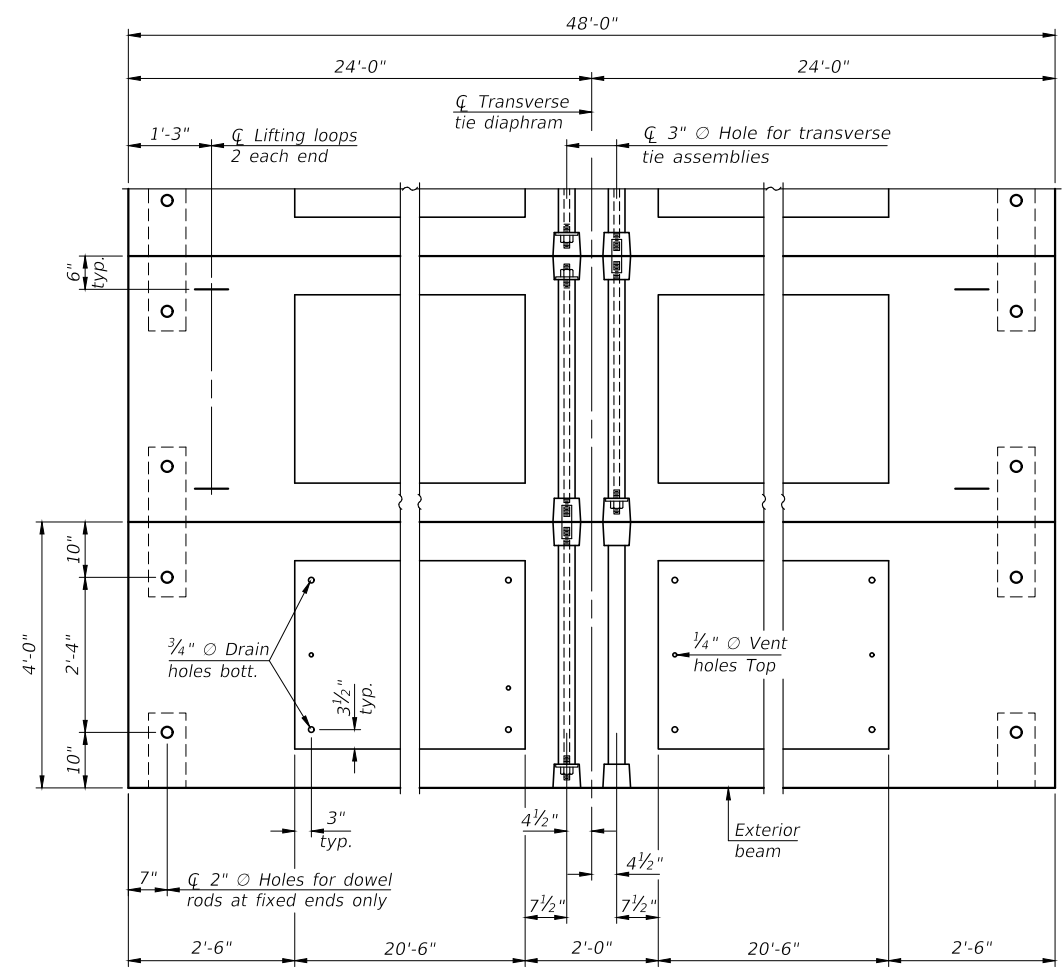
Notes:
All bearing pads shall be 1" thick.
Omit holes when using expansion bearings.
Expansion bearing pads shall be bonded to the substructure.



SECTION A-A

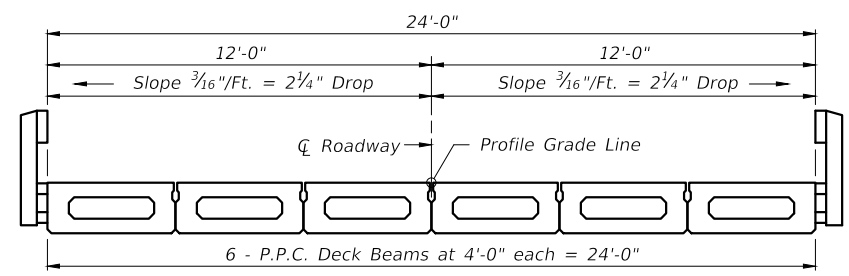


TYPICAL TRANSVERSE TIE ASSEMBLY



PLAN VIEW

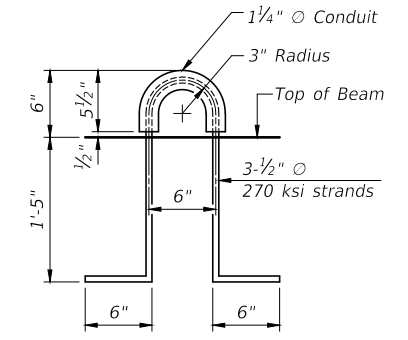
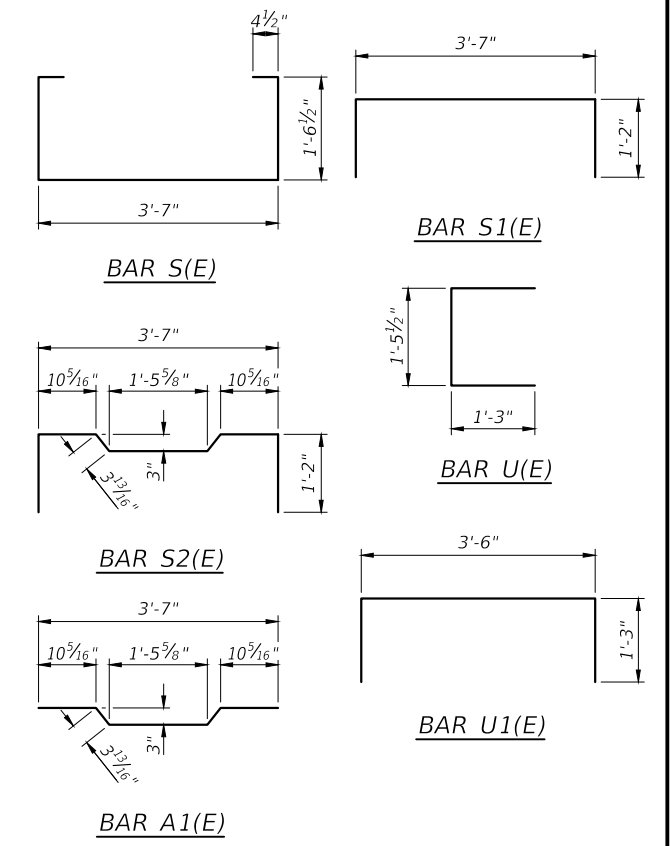
Note: Connect beams in pairs with the transverse tie configuration shown.



CROSS SECTION

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.
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" diameter lifting pin shall be used to engage the lifting loops during handling.
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 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.



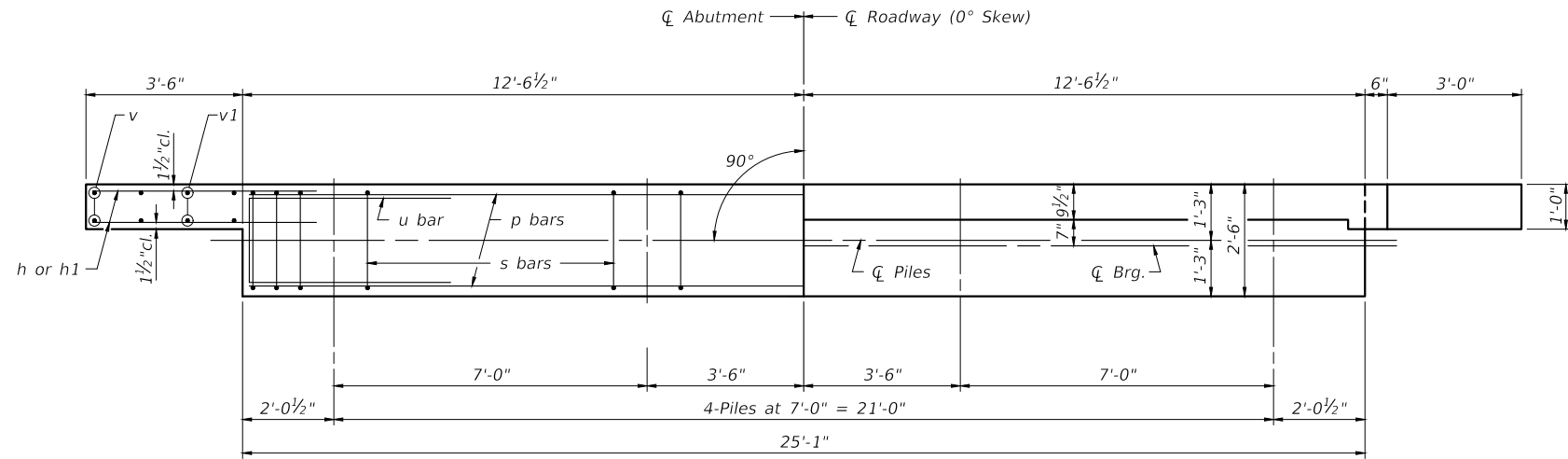
LIFTING LOOP DETAIL

BILL OF MATERIAL

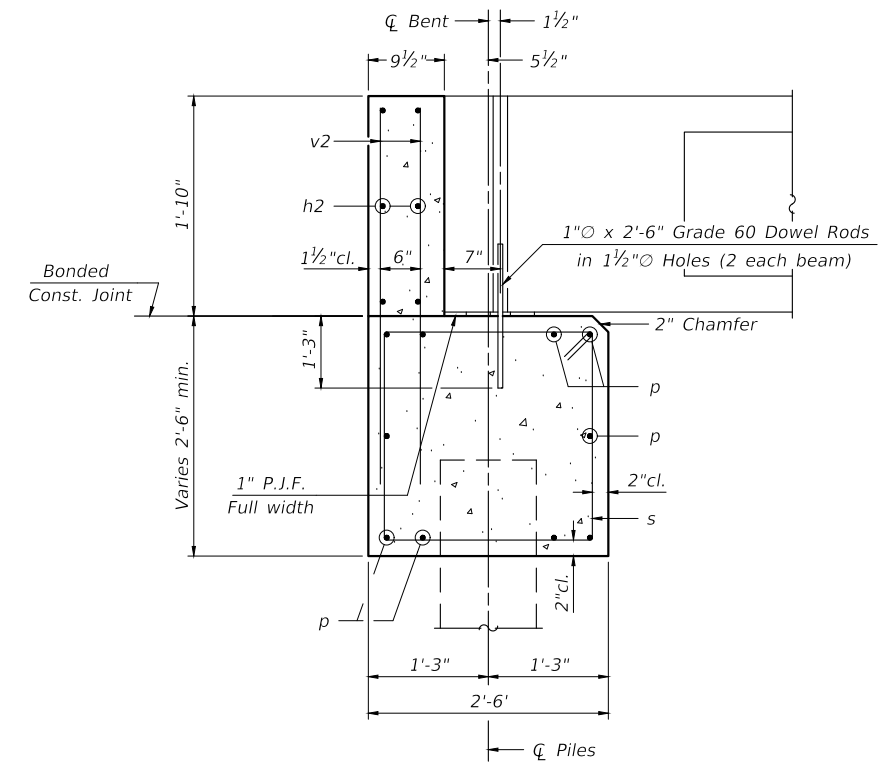
Precast Prestressed Concrete Deck Beams (21" depth)	Sq. Ft.	1,152
-----------------------------------------------------	---------	-------

21" X 48" PPC DECK BEAM DETAILS
TOWNSHIP ROUTE 276 (HAGEN ROAD)
INDIAN CREEK
SECTION 14-04121-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3255

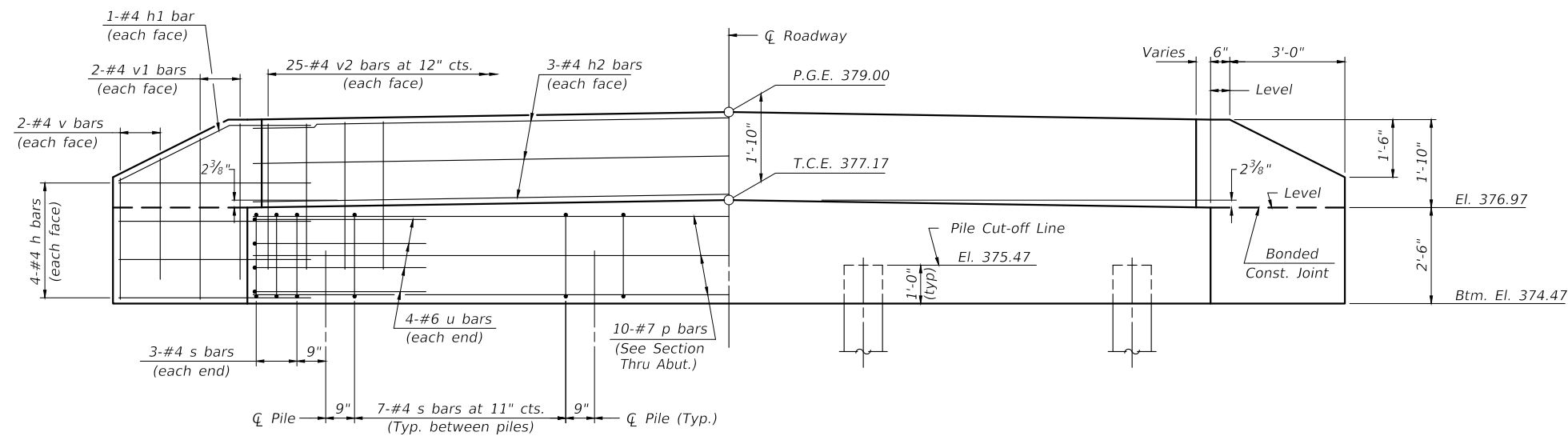
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TR 276	14-04121-00-BR	SALINE	11	6
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	



PLAN



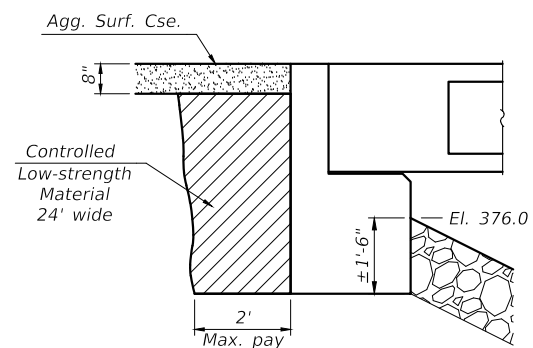
SECTION THRU ABUT.
(At Right Angles)



ELEVATION

BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-4"	—
h2	6	#4	24'-9"	—
p	10	#7	24'-9"	—
s	27	#4	9'-5"	□
u	8	#6	11'-1"	—
v	8	#4	2'-8"	—
v1	8	#4	3'-10"	—
v2	50	#4	3'-5"	—
Concrete Structures			8.4	Cu. Yds.
Reinforcement Bars			1,125	Lbs.



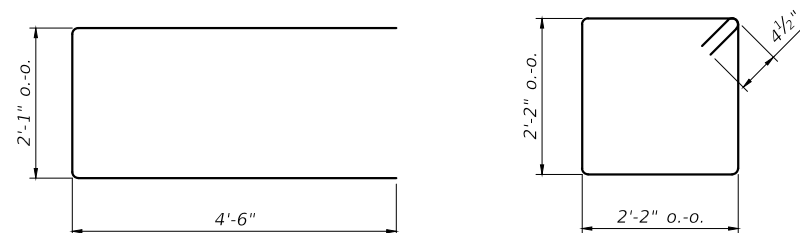
BACKFILL & BERM DETAIL
(At Right Angles to Abut.)

NOTES

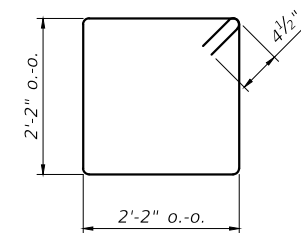
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall be according to ASTM A 706, Grade 60.

DESIGN STRESSES

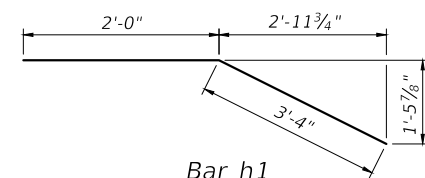
$f'_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$



Bar u



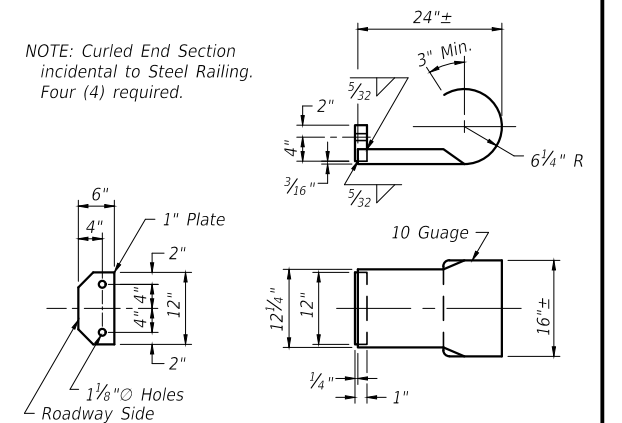
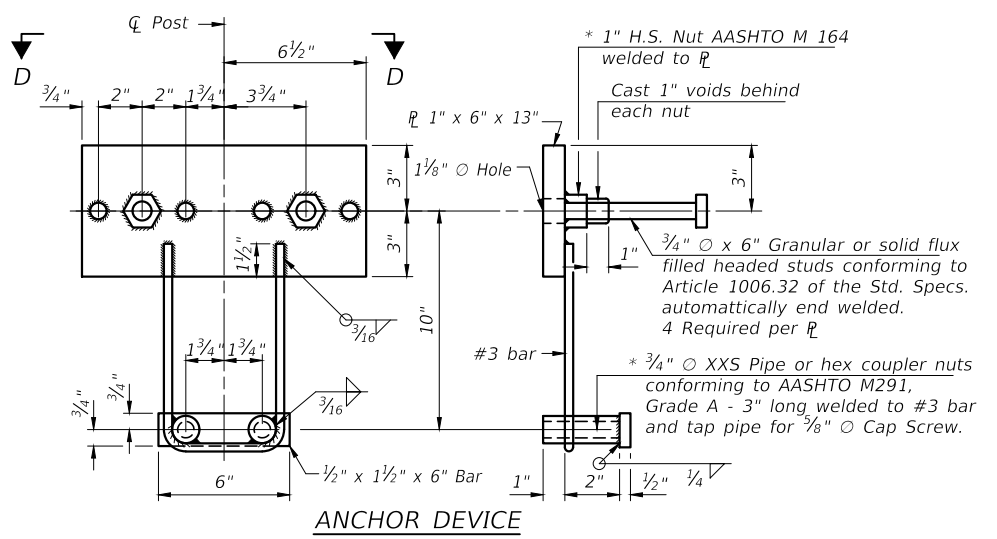
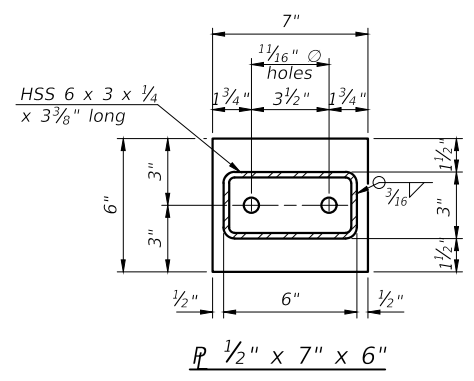
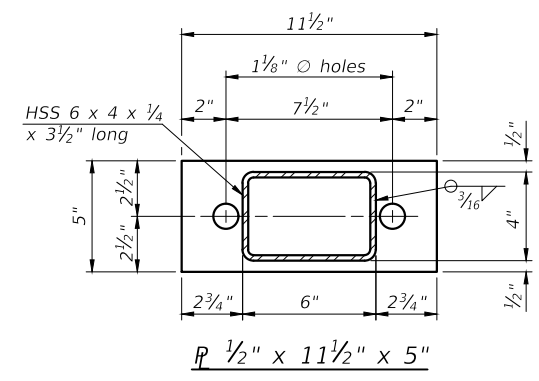
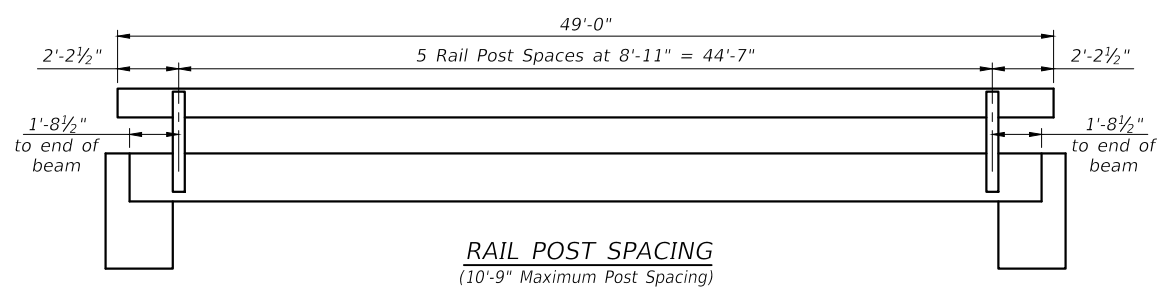
Bar s



Bar h1

ABUTMENT
TOWNSHIP ROUTE 276 (HAGEN ROAD)
INDIAN CREEK
SECTION 14-04121-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3255

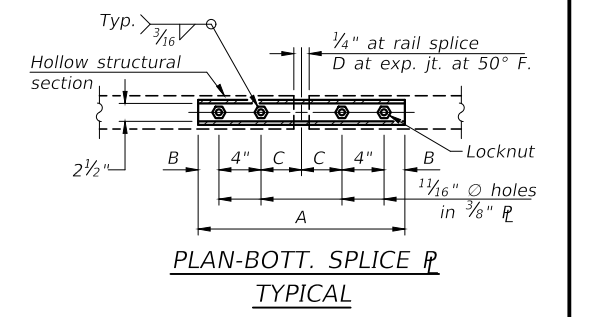
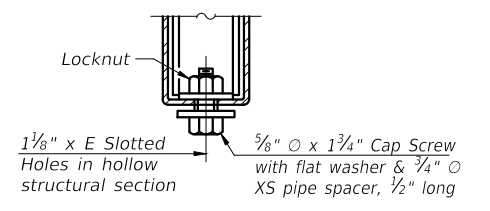
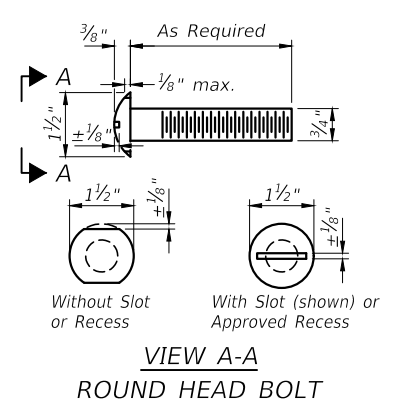
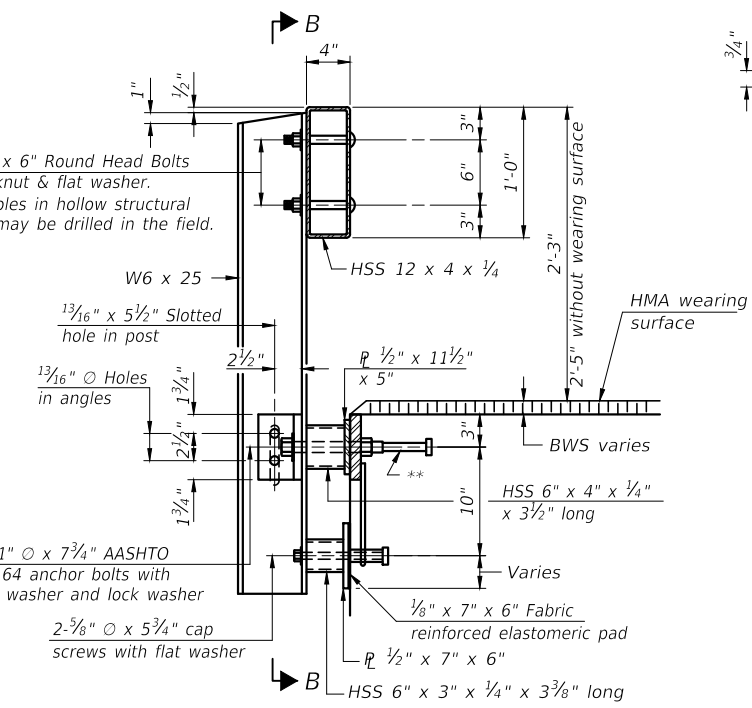
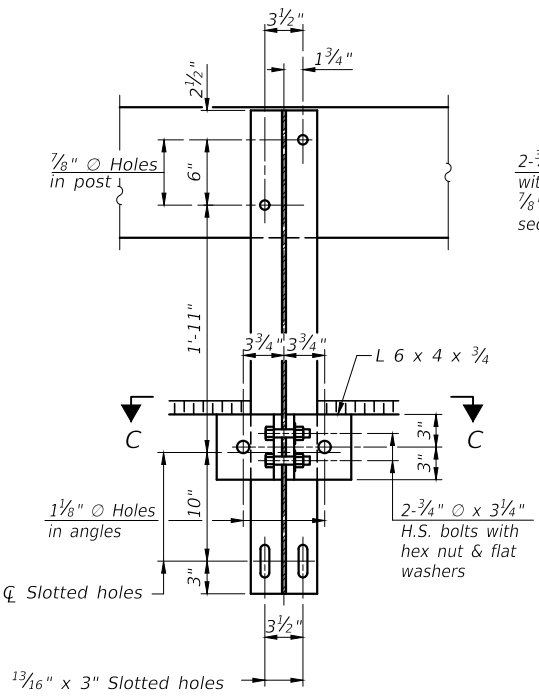
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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SPLICE DIMENSIONS

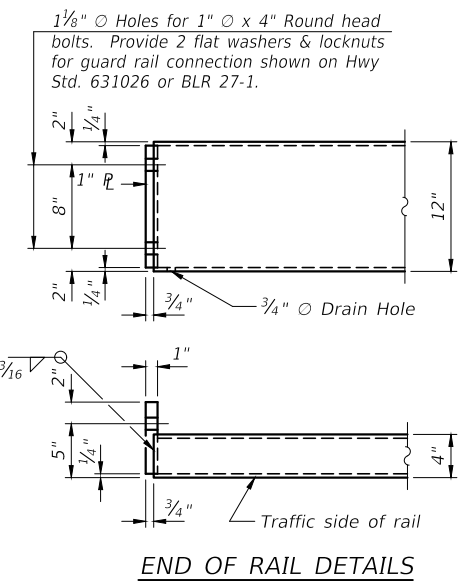
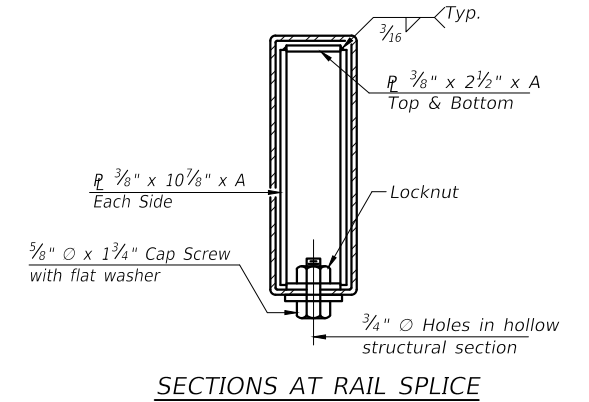
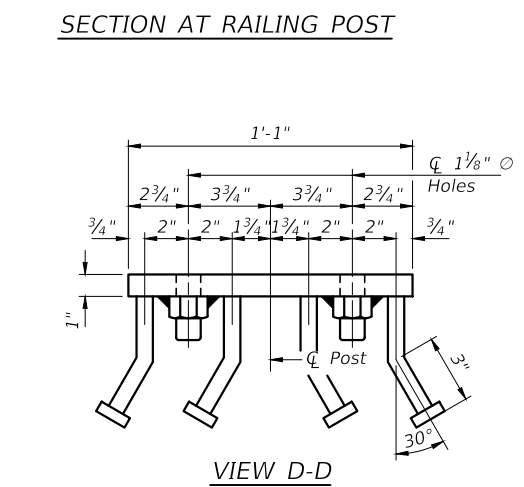
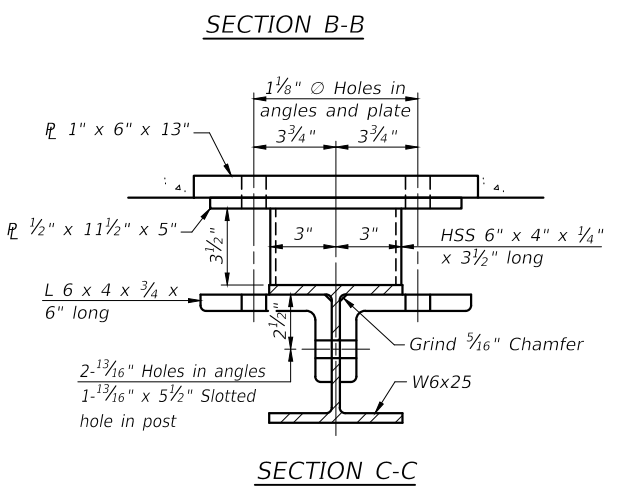
T	D	A	B	C	E
Up to 4"	2 1/2"	1'-8"	2"	4"	2 1/2"
>4" to 6 1/2"	3 3/4"	2'-0"	2 1/2"	5 1/2"	3 1/2"
>6 1/2" to 9"	5"	2'-4"	3 1/2"	6 1/2"	9"
>9" to 13"	7"	2'-10"	4 1/2"	8 1/2"	11"
Rail Splice	1/4"	1'-8"	2"	4"	—

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



Notes:
For multi-span bridges, sufficient 1/4 x 6" x 1'-2" 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" to accommodate the top reinforcement bar placement.

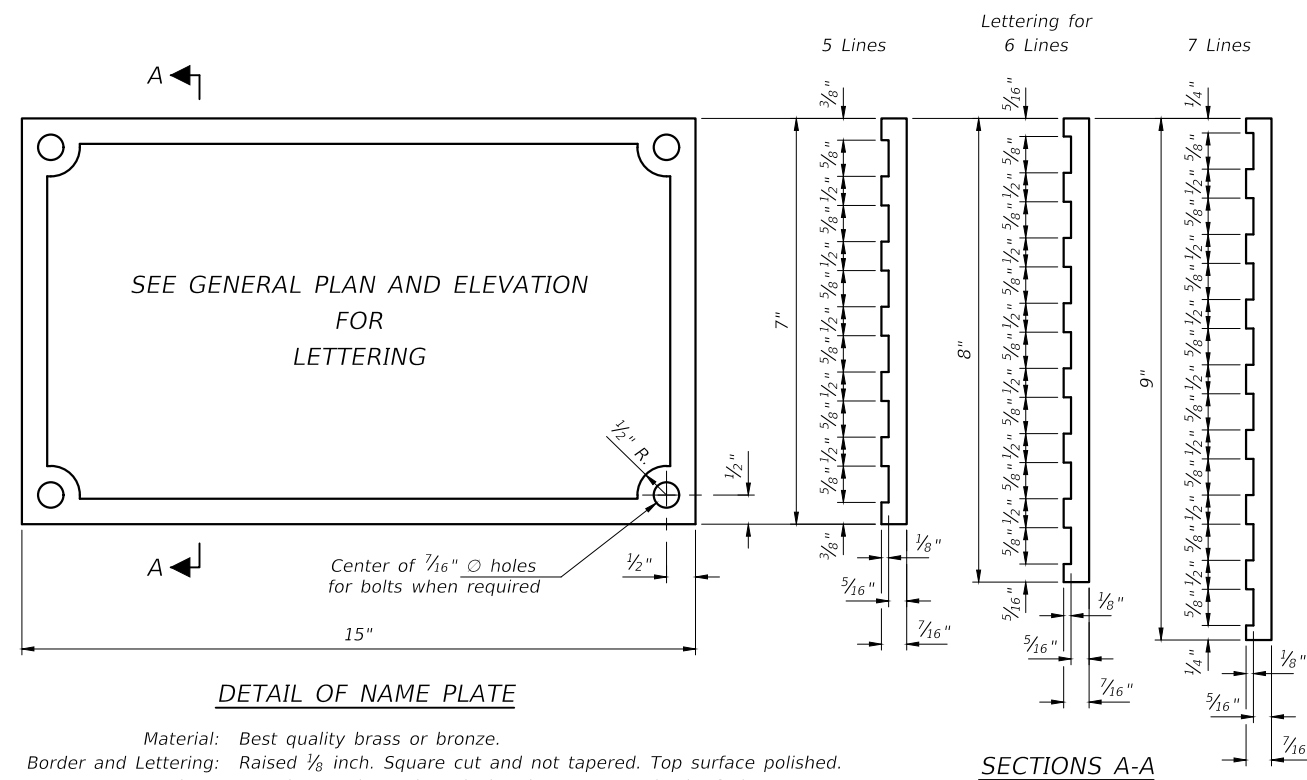


BILL OF MATERIAL

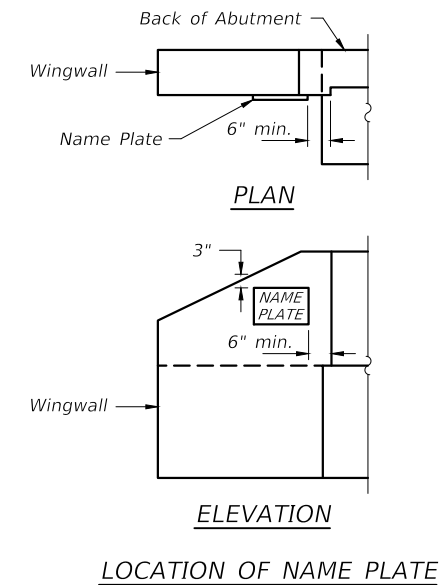
Item	Unit	Quantity
Steel Railing, Type S-1	Foot	98

**STEEL RAILING, TYPE S-1
TOWNSHIP ROUTE 276 (HAGEN ROAD)
INDIAN CREEK
SECTION 14-04121-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3255**

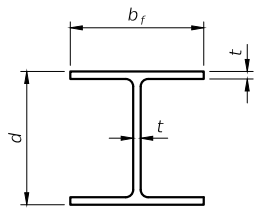
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	8
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	



Material: Best quality brass or bronze.
 Border and Lettering: Raised $\frac{1}{8}$ inch. Square cut and not tapered. Top surface polished.
 Fastenings: Four lugs at least three inches long, cast on back of plate.



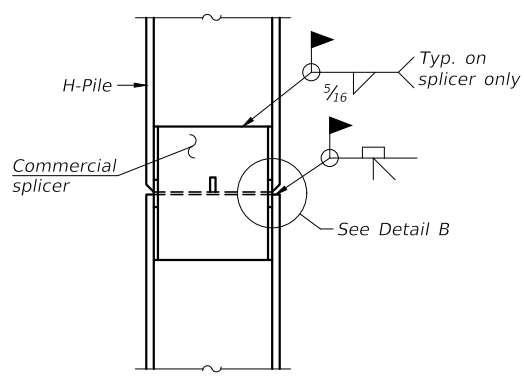
NAME PLATE
 TOWNSHIP ROUTE 276 (HAGEN ROAD)
 INDIAN CREEK
 SECTION 14-04121-00-BR
 SALINE COUNTY
 STRUCTURE NO. 083-3255



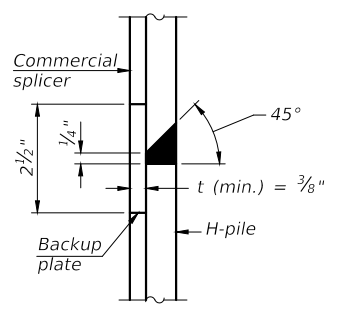
STEEL PILE TABLE

Designation	Depth d	Flange width b _f	Web and Flange thickness t	Encasement diameter A	Encasement Quantity/Ft. C.Y.
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"	0.173
x102	14"	14 3/4"	1 1/16"	30"	0.174
x89	13 7/8"	14 3/4"	5/8"	30"	0.175
x73	13 3/8"	14 3/8"	1/2"	30"	0.176
HP 12x84	12 1/4"	12 1/4"	1 1/16"	24"	0.110
x74	12 1/8"	12 1/4"	5/8"	24"	0.111
x63	12"	12 1/8"	1/2"	24"	0.112
x53	11 3/4"	12"	7/16"	24"	0.112
HP 10x57	10"	10 1/4"	9/16"	24"	0.112
x42	9 3/4"	10 1/8"	7/16"	24"	0.113
HP 8x36	8"	8 1/8"	7/16"	18"	0.063

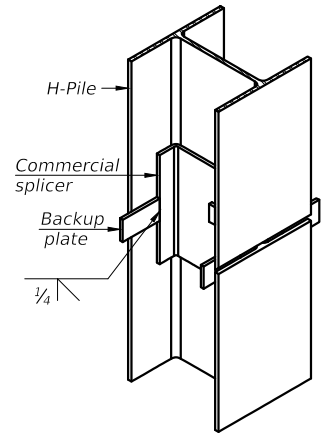
Note: The steel H-piles shall be according to AASHTO M270 Grade 50.



ELEVATION

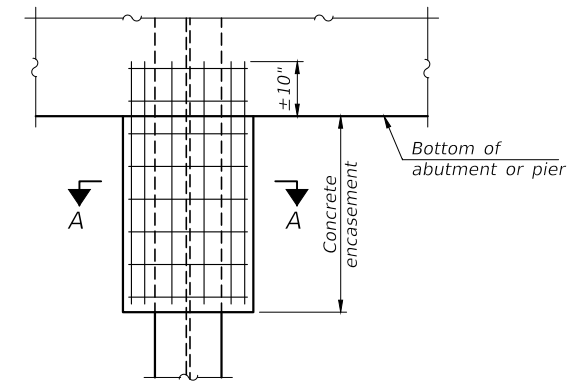


DETAIL "B"



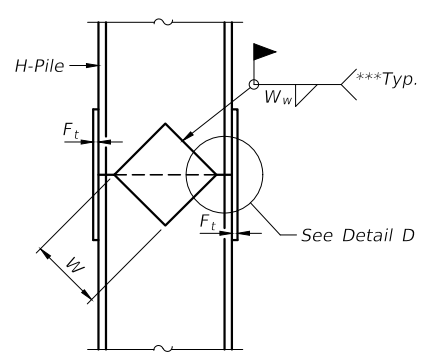
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE

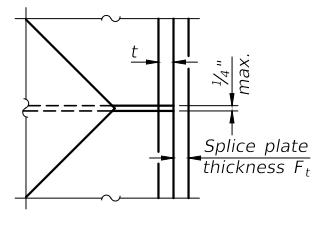


ELEVATION

PILE ENCASEMENT

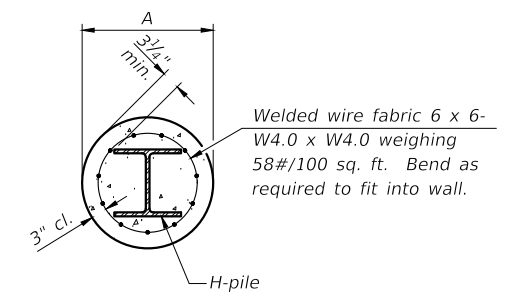


ELEVATION



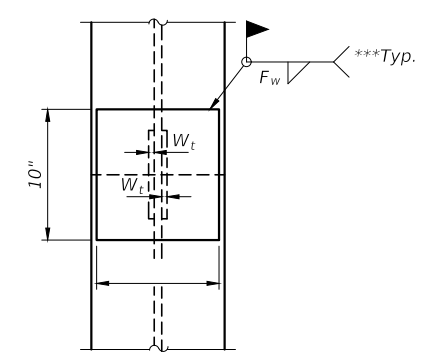
DETAIL D

WELDED PLATE FIELD SPLICE

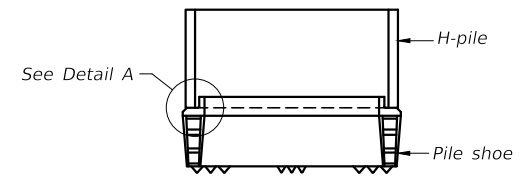


SECTION A-A

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

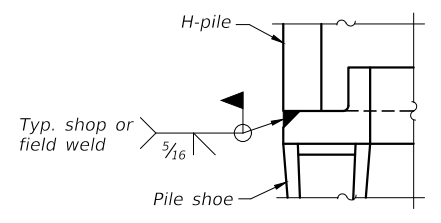


END VIEW

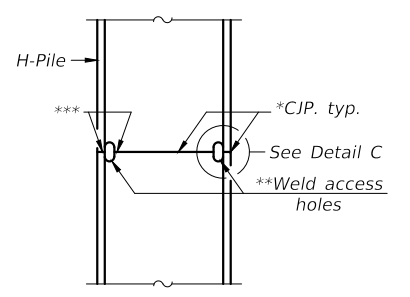


ELEVATION

H-PILE SHOE ATTACHMENT

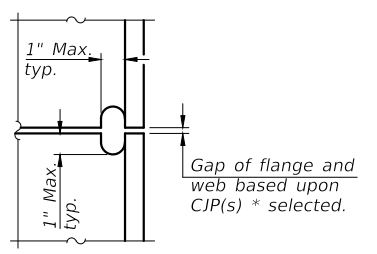


DETAIL A



ELEVATION

COMPLETE PENETRATION WELD SPLICE



DETAIL C

* Use joint conforming to Fig. 3.4 in AWS D1.1. Structure Welding Code - Steel.

** Preparation per Fig. 5.2 in AWS D1.1. Structure Welding Code - Steel.

*** Interrupt welds 1/4" from end of each pile.

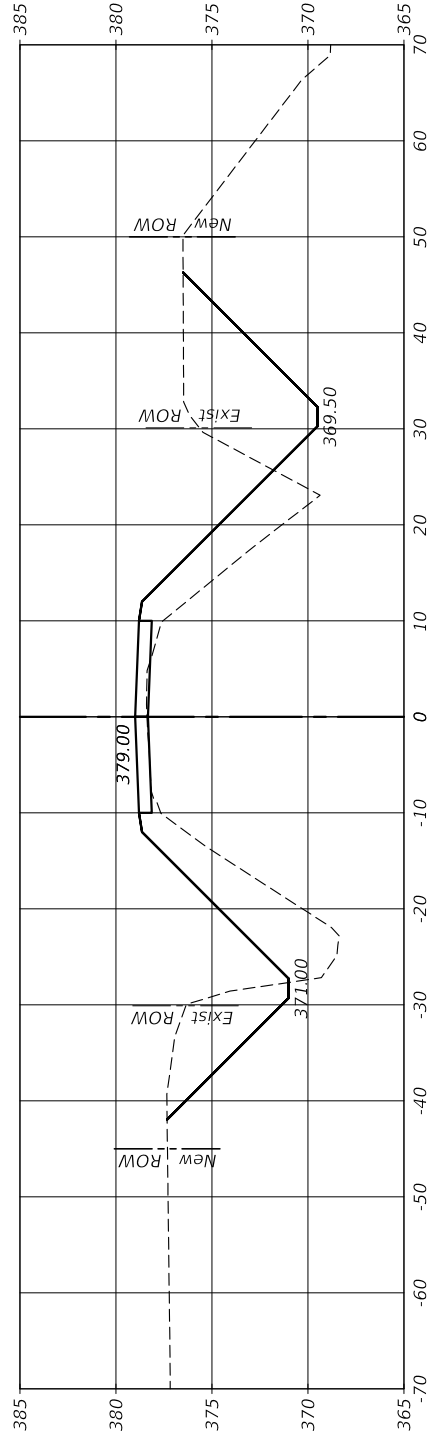
Designation	F	F _t	F _w	W	W _t	W _w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1 1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1 1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1 1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6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

PILING DETAILS
 TOWNSHIP ROUTE 276 (HAGEN ROAD)
 INDIAN CREEK
 SECTION 14-04121-00-BR
 SALINE COUNTY
 STRUCTURE NO. 083-3255

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	10
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	

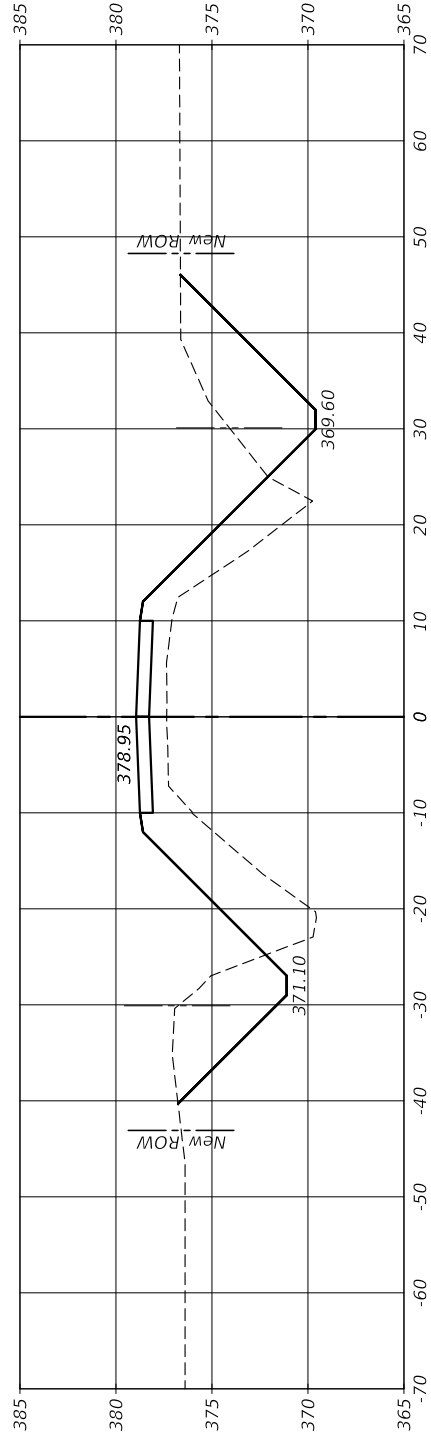
SECTION 14+75

Cut Area: 117.14
Fill Area: 102.00



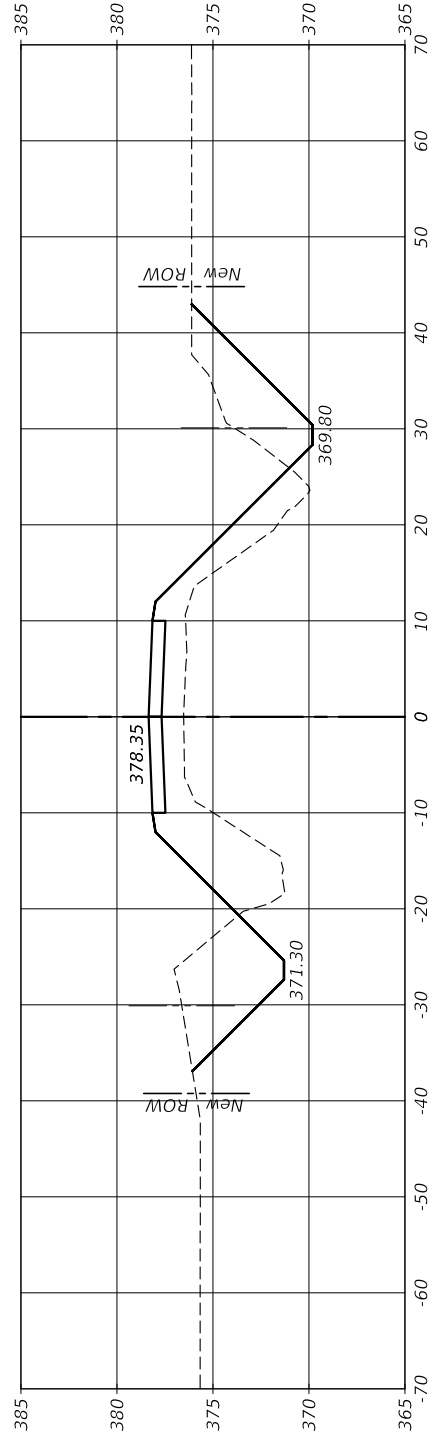
SECTION 14+50

Cut Area: 110.84
Fill Area: 110.30



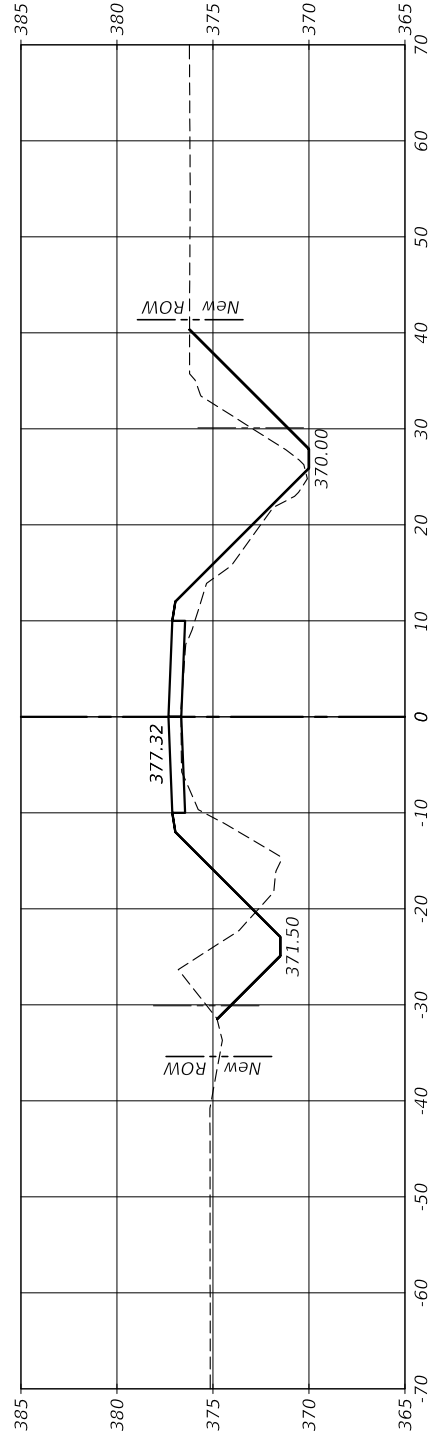
SECTION 14+00

Cut Area: 91.93
Fill Area: 94.15



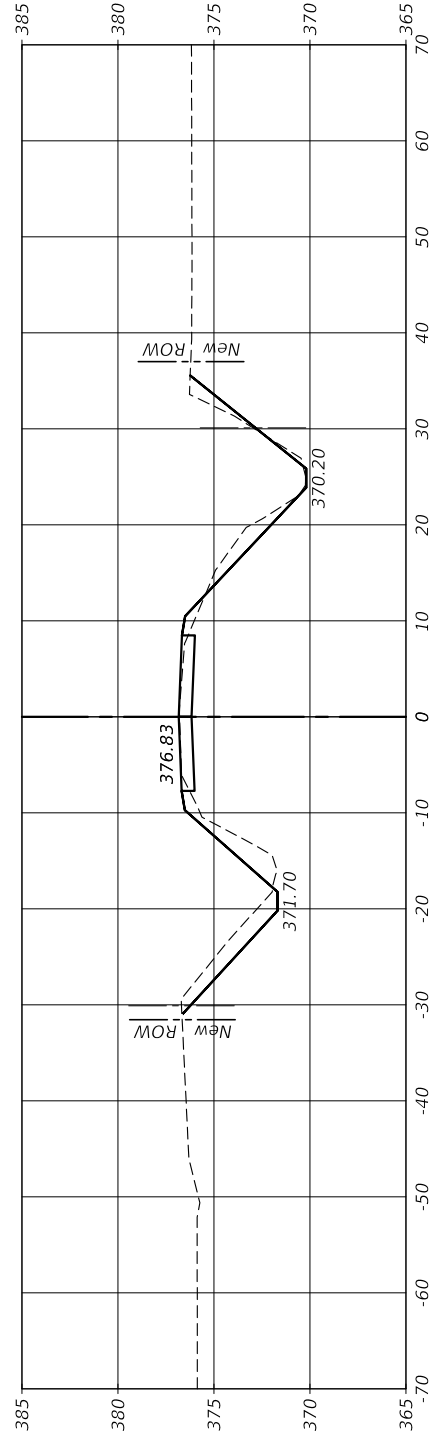
SECTION 13+50

Cut Area: 52.37
Fill Area: 43.60



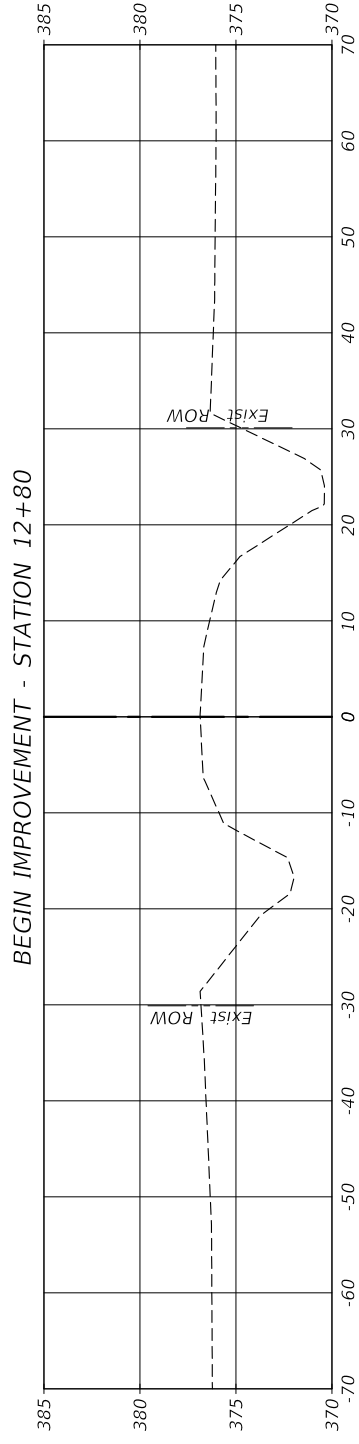
SECTION 13+00

Cut Area: 31.12
Fill Area: 12.18



SECTION 12+50

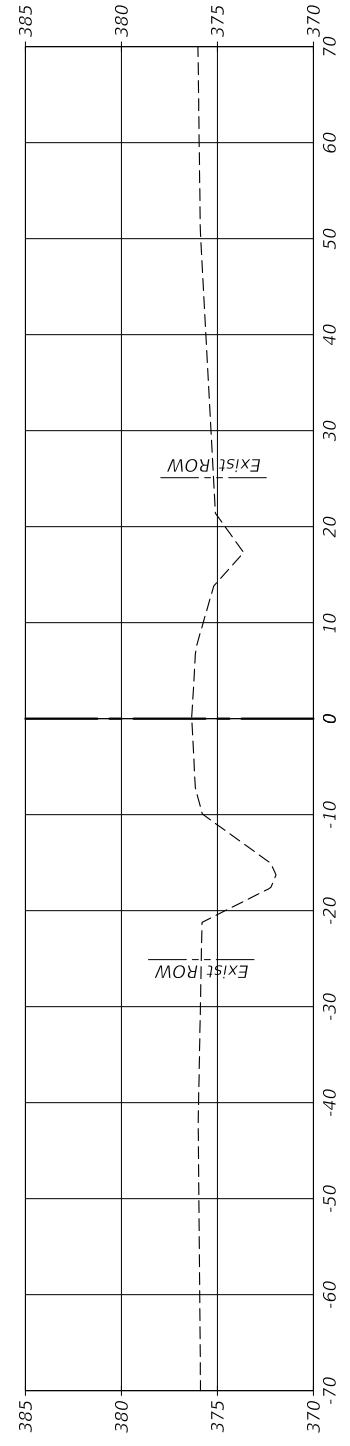
Cut Area: 0.00
Fill Area: 0.00



ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 276	14-04121-00-BR	SALINE	11	11
PROJECT NO. 7F6B(840)			CONTRACT NO. 99635	

SECTION 17+50

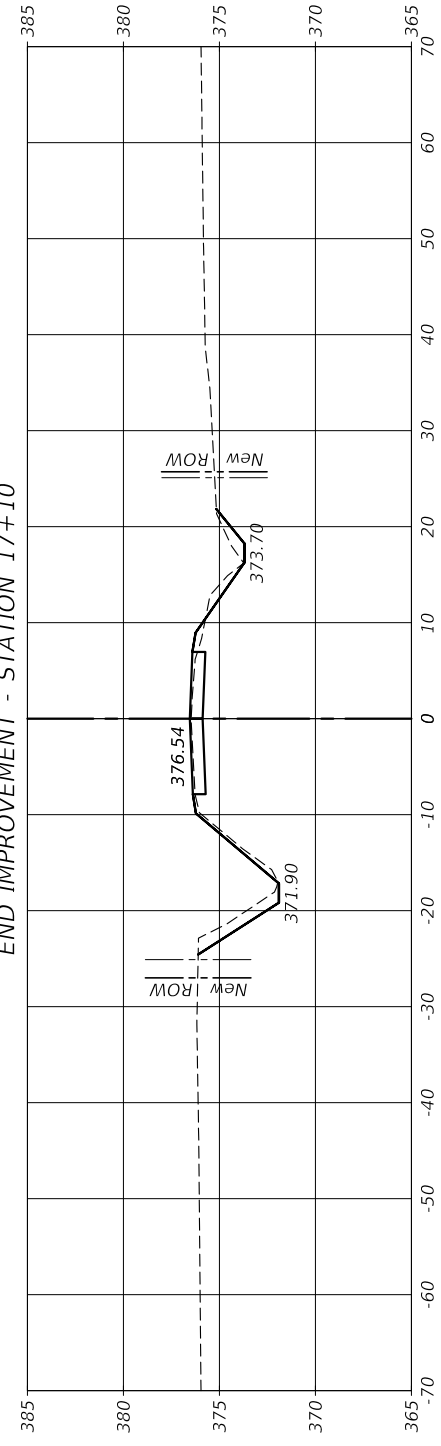
Cut Area: 0.00
Fill Area: 0.00



SECTION 17+00

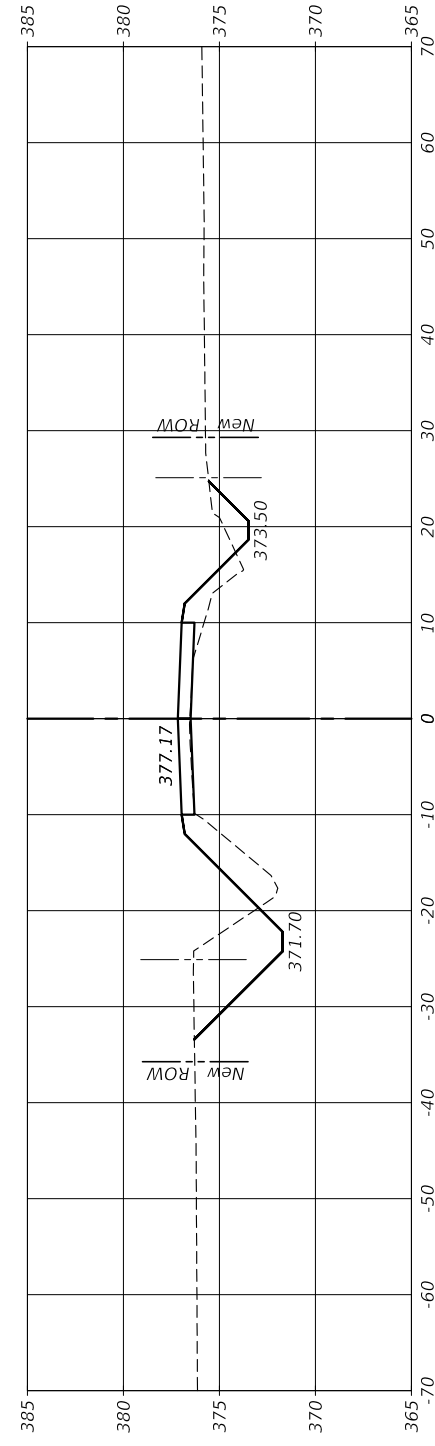
Cut Area: 18.63
Fill Area: 3.26

END IMPROVEMENT - STATION 17+10



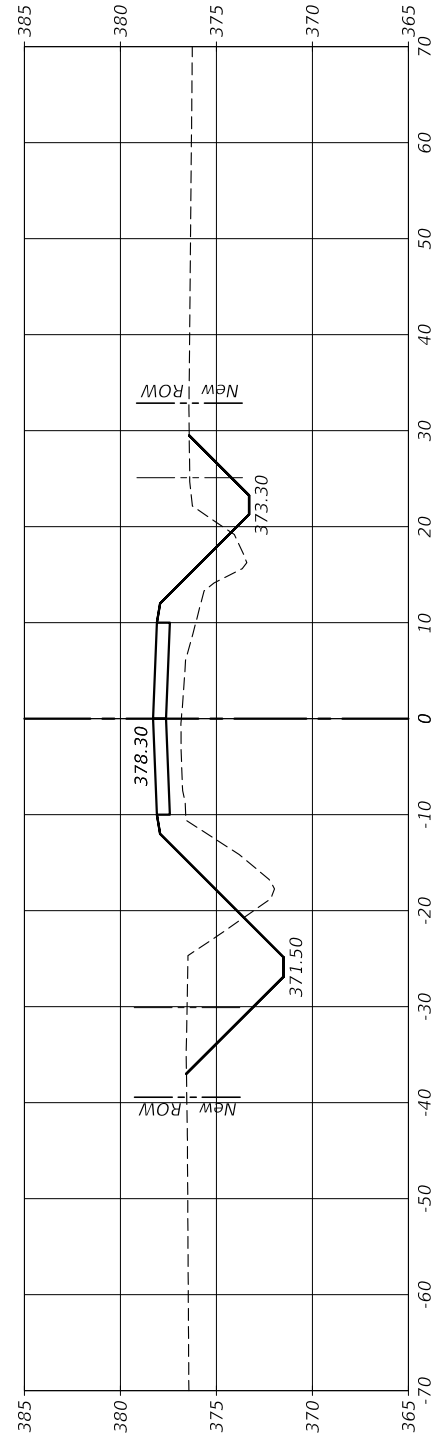
SECTION 16+50

Cut Area: 40.34
Fill Area: 25.60



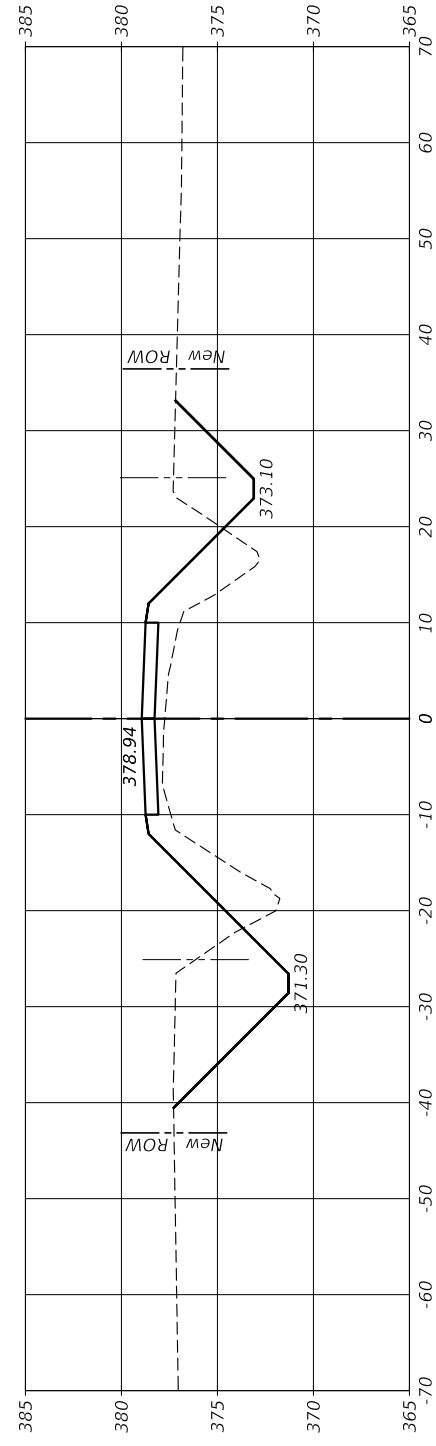
SECTION 16+00

Cut Area: 63.26
Fill Area: 59.90



SECTION 15+50

Cut Area: 93.07
Fill Area: 63.38



SECTION 15+25

Cut Area: 103.79
Fill Area: 53.67

