

01-20-2017 LETTING ITEM 140



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

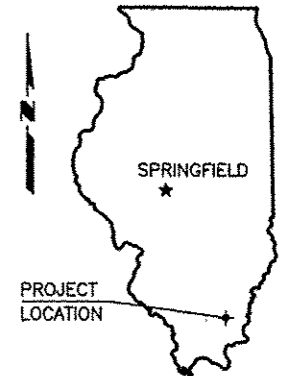
**SURFACE TRANSPORTATION PROGRAM
OFF SYSTEM BRIDGE**

TOWNSHIP ROUTE 274 (BARTON TRAIL ROAD)
EAST ELDORADO TOWNSHIP
SECTION 11-04120-00-BR

PROJECT NO. BROS-0165(039)
JOB NO. C-99-541-12
TRIBUTARY TO SPOIL BANK DITCH

SALINE COUNTY

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	1
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	



SUMMARY OF QUANTITIES

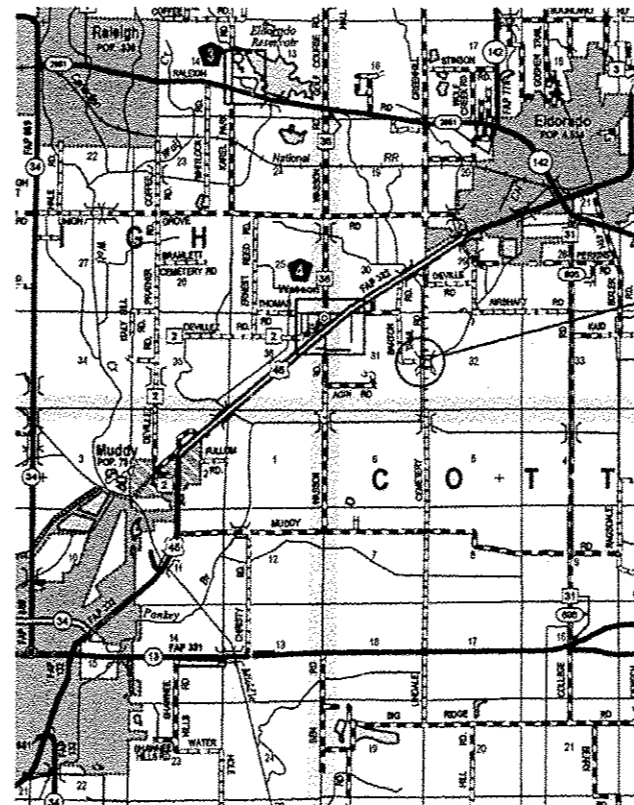
CODE NO.	PAY ITEM	UNIT	TOTAL
* X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.7
* X5000015	REMOVE AND RE-INSTALL PIPE CULVERTS	FOOT	61
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	70
20200100	EARTH EXCAVATION	CU YD	602
* 20300100	CHANNEL EXCAVATION	CU YD	43
* 20400100	BORROW EXCAVATION	CU YD	1,125
* 28100807	STONE DUMPED RIPRAP, CLASS A4	TON	185
* 40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	840
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	41
50300225	CONCRETE STRUCTURES	CU YD	21.2
50300280	CONCRETE ENCASEMENT	CU YD	2.1
50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ FT	1,020
50800105	REINFORCEMENT BARS	POUND	2,610
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	88
51201400	FURNISHING STEEL PILES HP10X42	FOOT	268
51202305	DRIVING PILES	FOOT	268
51500100	NAME PLATES	EACH	1
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	20.8
60100935	PIPE DRAINS 10"	FOOT	10
* 60801018	FLAP GATE 18"	EACH	1
67100100	MOBILIZATION	LSUM	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. 17" X 36" PPC DECK BEAM
 5. 17" X 36" PPC DECK BEAM DETAILS
 6. 17" X 48" PPC DECK BEAM
 7. 17" X 48" PPC DECK BEAM DETAILS
 8. ABUTMENT
 9. STEEL RAILING, TYPE S-1
 10. NAME PLATES
 11. PILING DETAILS
 - 12.-13. CROSS SECTIONS
- STANDARDS 000001-06 STD SYMBOLS, ABBREVIATIONS & PATTERNS
280001-07 TEMPORARY EROSION CONTROL SYSTEMS
701901-06 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

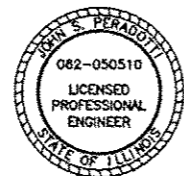


LOCATION MAP

SCALE: 1" = 2 MILES

NET LENGTH OF IMPROVEMENT = 805.77 FT. = 0.1526 MILES

CONTRACT NO. 99571



John S. Peradotti 8/19/16
John S. Peradotti
PROFESSIONAL ENGINEER
#062-050510
EXPIRES NOV. 30, 2017

E. MILLER ENGINEERING, INC.
CONSULTING ENGINEERS
HARRISBURG, ILLINOIS

ILLINOIS DEPARTMENT OF TRANSPORTATION	
Approved	<u>09-12-16</u> <i>Doug McKinnon</i> East Eldorado Township Road Commissioner
Approved	<u>09-12-16</u> <i>[Signature]</i> Saline County Engineer
Passed	<u>11/2/2016</u> <i>Dani W. Hallock</i> District 9 Engineer of Local Roads and Streets
Releasing for Bid Based on Limited Review	<u>11/2/2016</u> <i>Jeffrey L. Keirn</i> Region Five Engineer

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	2
PROJECT NO. BR05-0165(039)			CONTRACT NO. 99571	

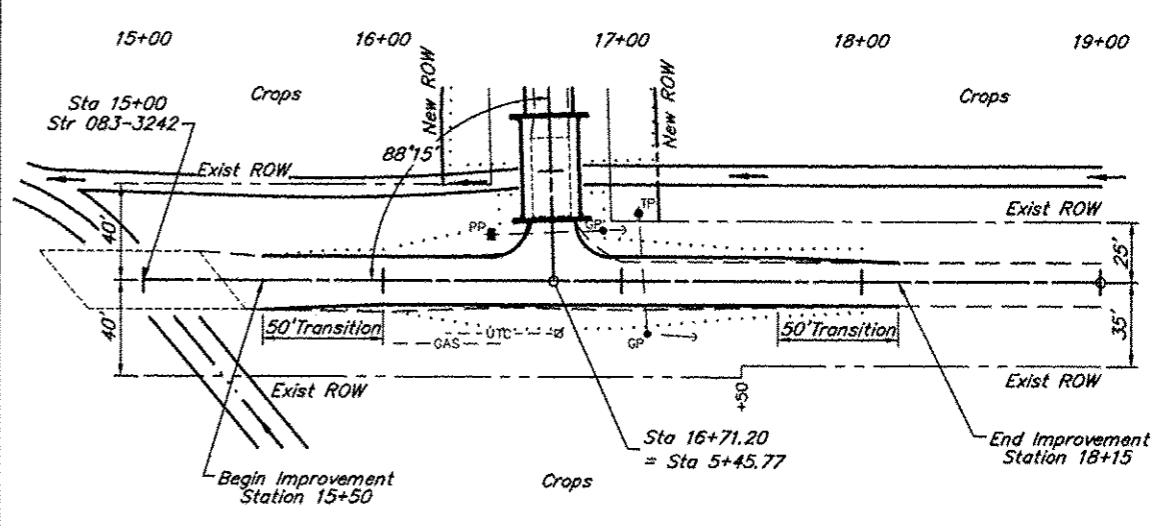
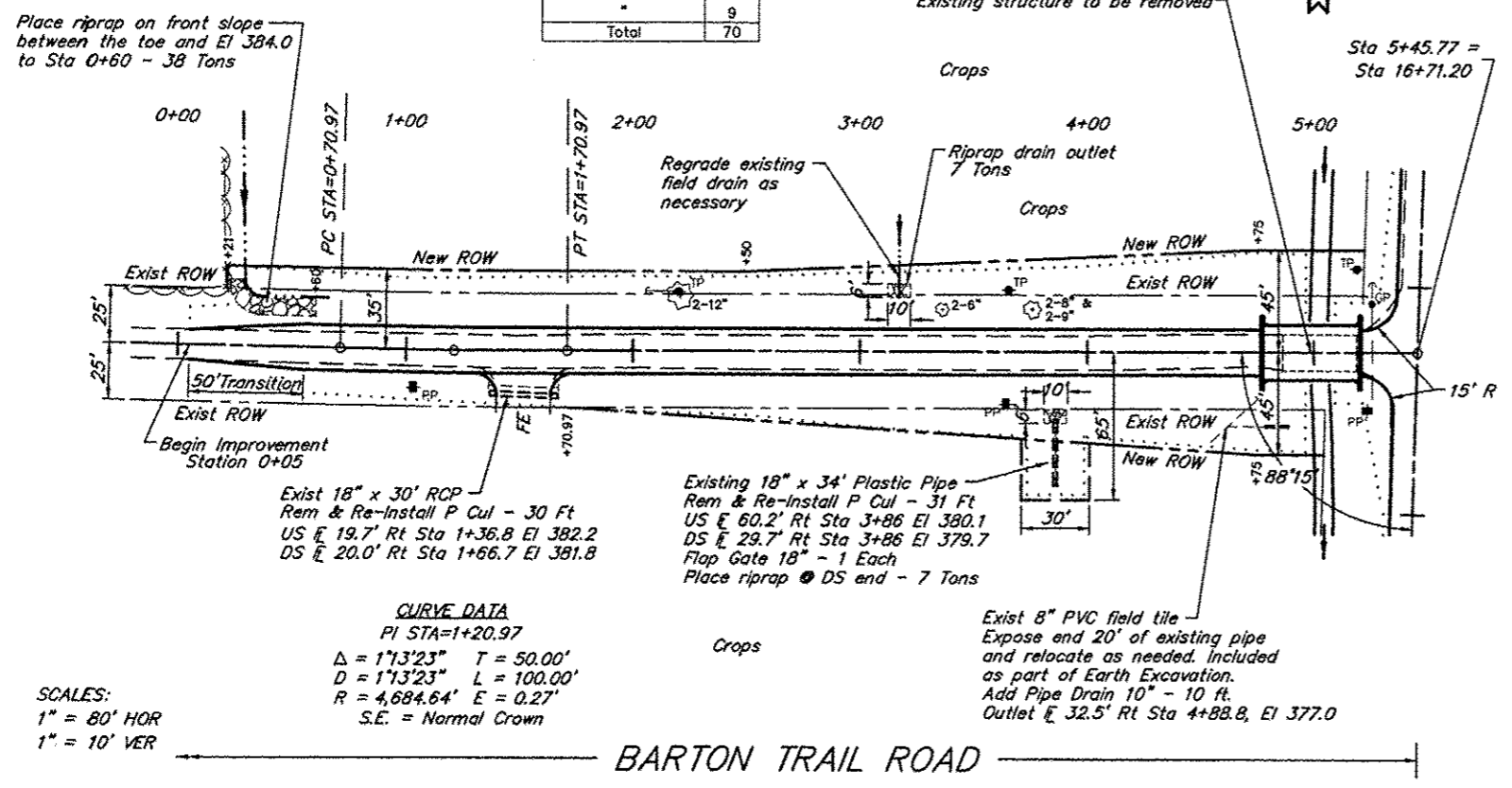
B.M. - Dbl. nails in Power Pole
 20' Lt. Sta. 16+46
 Assumed Elev. 385.00
 (Approximately 369.0 USGS)

Existing Structure - Timber deck on steel stringers with closed concrete abutments.
 15.2' Wide x 30.0' Long

Tree Rem (6-15 Units Dia)

Location	Units
Sta 2+21, 25' Lt	12
Sta 3+36, 19' Lt	6
Sta 3+76, 19' Lt	8
"	8
"	9
"	9
Total	70

Legend
 Construction Limits
 Temporary Easement - - - - -



Place riprap on front slope between the toe and El 384.0 to Sta 0+60 - 38 Tons

Regrade existing field drain as necessary

Riprap drain outlet 7 Tons

Station 4+98.72 - Single span precast prestressed concrete deck beam bridge 44'-1" bk-bk Abutments

Station 5+45.77 = Sta 16+71.20

Existing structure to be removed

Crops

New ROW

Exist ROW

50' Transition

Begin Improvement Station 0+05

Exist 18" x 30' RCP Rem & Re-Install P Cul - 30 Ft
 US E 19.7' Rt Sta 1+36.8 El 382.2
 DS E 20.0' Rt Sta 1+66.7 El 381.8

Exist 18" x 34' Plastic Pipe Rem & Re-Install P Cul - 31 Ft
 US E 60.2' Rt Sta 3+86 El 380.1
 DS E 29.7' Rt Sta 3+86 El 379.7
 Flap Gate 18" - 1 Each
 Place riprap @ DS end - 7 Tons

Exist 8" PVC field tile Expose end 20' of existing pipe and relocate as needed. Included as part of Earth Excavation.
 Add Pipe Drain 10" - 10 ft.
 Outlet E 32.5' Rt Sta 4+88.8, El 377.0

CURVE DATA
 PI STA=1+20.97
 $\Delta = 173'23"$ T = 50.00'
 D = 173'23" L = 100.00'
 R = 4,684.64' E = 0.27'
 S.E. = Normal Crown

SCALES:
 1" = 80' HOR
 1" = 10' VER

BARTON TRAIL ROAD

Sta 15+00 Str 083-3242

Exist ROW

New ROW

88'15"

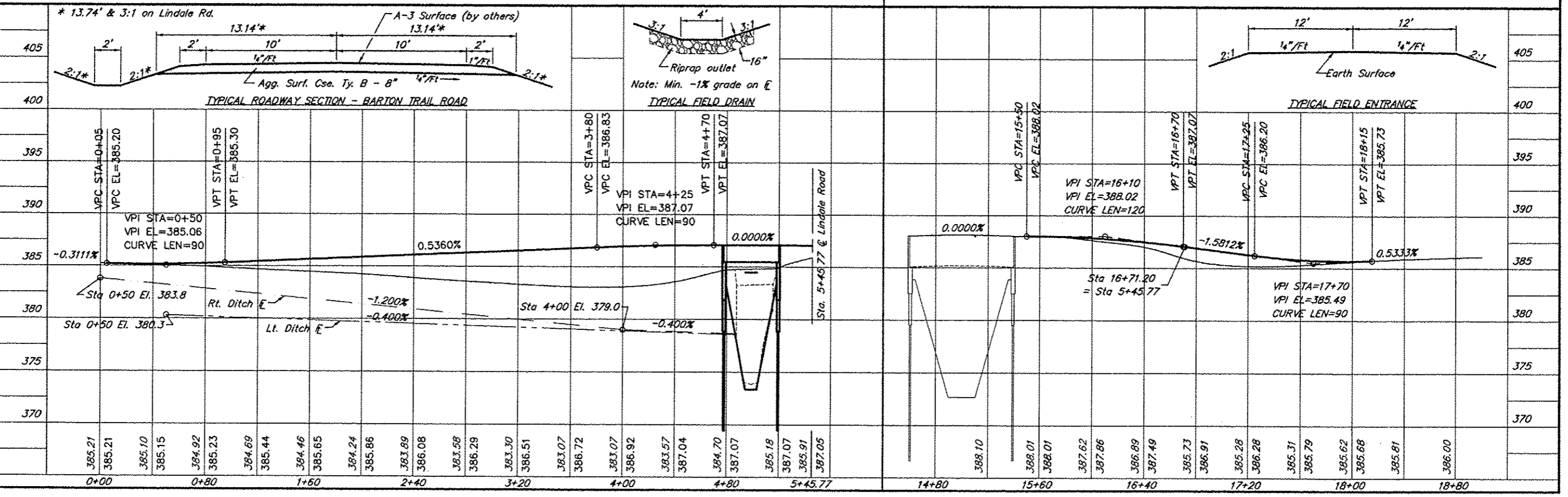
50' Transition

Begin Improvement Station 15+50

Sta 16+71.20 = Sta 5+45.77

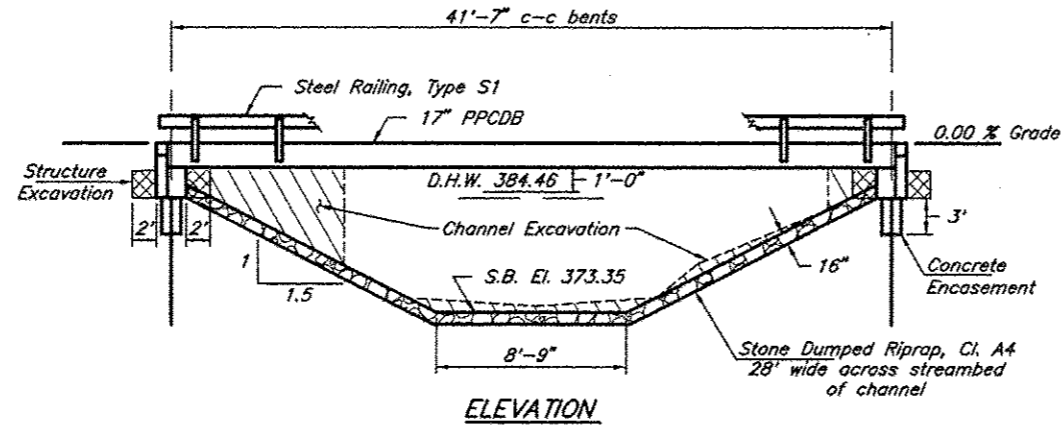
End Improvement Station 18+15

LINDALE ROAD

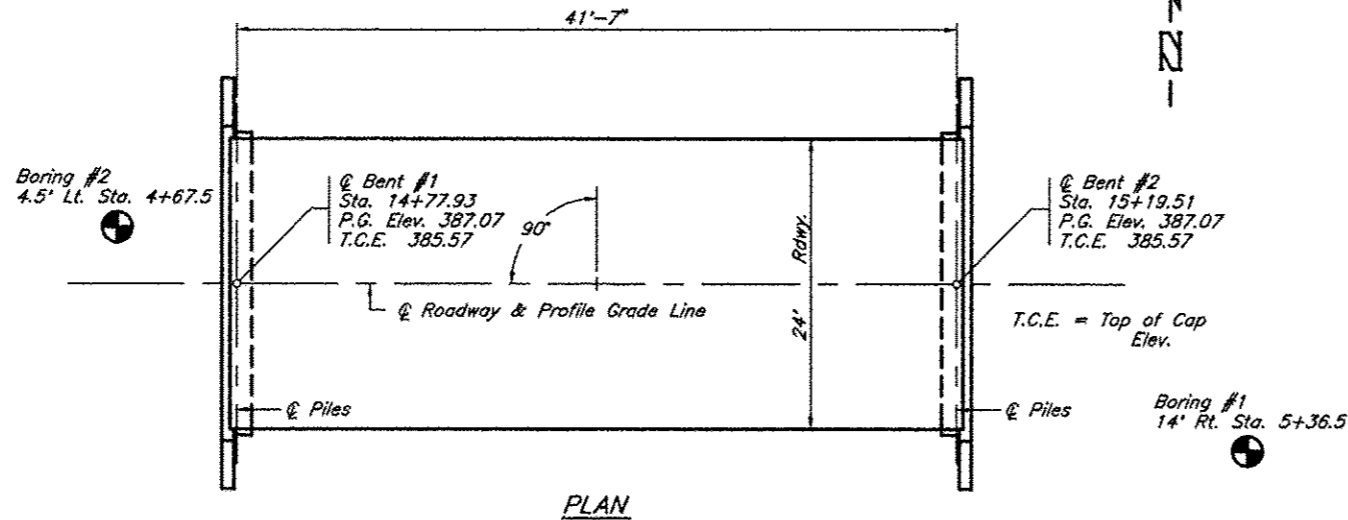


B.M. - Dbl. Nails in PP
 20' Lt Sta 16+46
 Assumed Elev. 385.00
 (Approx. 369.0 USGS)

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	3
PROJECT NO. BROS-0185(039)			CONTRACT NO. 99571	



Existing Structure - Timber deck on steel stringers with closed concrete abutments 15.2' Wide x 30.0' Long



GENERAL NOTES

1. Steel H piles shall meet AASHTO M270 Grade 50 specifications.
2. See special provisions for boring logs.
3. 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.			43	43
Stone Dumped Riprap, Cl. A4	Tons			133	133
Removal of Existing Structures	Each	1			1
Structure Excavation	Cu. Yds.			41	41
Concrete Structures	Cu. Yds.			21.2	21.2
Concrete Encasement	Cu. Yds.			2.1	2.1
P.P. Conc. Dk. Bm. 17" Dp.	Sq. Ft.	1,020			1,020
Reinforcement Bars	Pound			2,610	2,610
Steel Railing, Type S1	Foot	88			88
Furnishing Steel Piles HP 10x42	Foot			268	268
Driving Piles	Foot			268	268
Name Plates	Each			1	1

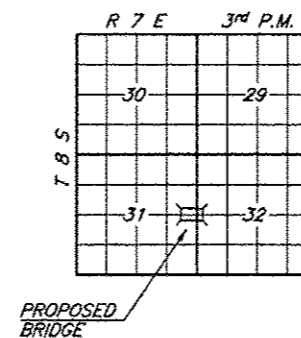
PILE DATA (2-ABUTS.)

Type & Size : HP10x42
 Nominal Required Bearing : 229 kips
 Factored Resistance Available : Refusal
 Estimated Length : 31' Bent #1, 36' Bent #2
 Number Required : 8

TRIBUTARY TO SPOIL BANK DITCH
 SEC. 11-04120-00-BR BUILT 20
 EAST ELDORADO TOWNSHIP
 SALINE COUNTY
 LOADING HL-93
 STR. NO. 083-3245

LETTERING FOR NAME PLATE

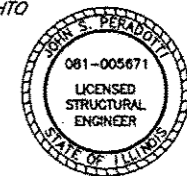
Locate Name Plate at southeast Corner of Bridge (See Sheet 10)



LOCATION SKETCH

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 comply with the requirements of the current AASHTO LRFD Specifications.

John S. Peradotti 8/19/16
 John S. Peradotti
 S.E. #81-5671
 Expires Nov. 30, 2016



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

Soil Site Class = D
 Design Spectral Acceleration at 0.2 sec. (S_{ps}) = 0.780
 Design Spectral Acceleration at 1.0 sec. (S_{p1}) = 0.330
 Seismic Performance Zone (SPZ) = 3

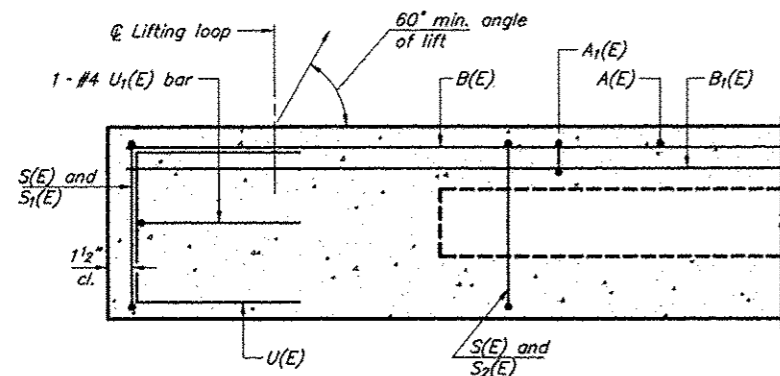
WATERWAY INFORMATION

Drainage Area = 3.05 Sq. Mi.		Low Grade Elev. = 385.15		At Sta. 0+37		
Flood	Freq.	Q	Opening Sq. Ft.	Natural	Head-Ft.	Headwater El.
	Yr.	C.F.S.	Exist. Prop.	H.W.E.	Exist. Prop.	Exist. Prop.
Design	20	1470	201.5* 280.5	384.46	0.04 0.20	384.50 384.66
Base	100	2250	201.5* 316.4*	385.38	0.10 0.65	385.48 386.03
Overtopping	±36	1749	296.1	384.86	0.29	385.15
Max. Calc.	500					

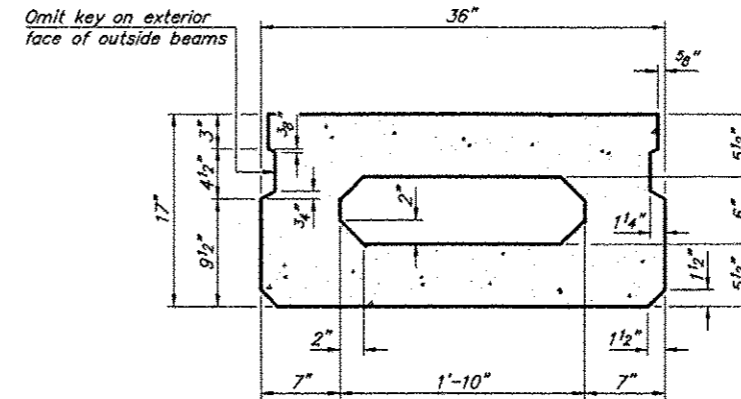
* Over Road Flow (Sq Ft): Exist. 318.9 730.1 Prop. 229.3

GENERAL PLAN & ELEVATION
 TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
 TRIBUTARY TO SPOIL BANK DITCH
 SECTION 11-04120-00-BR
 SALINE COUNTY
 STRUCTURE NO. 083-3245

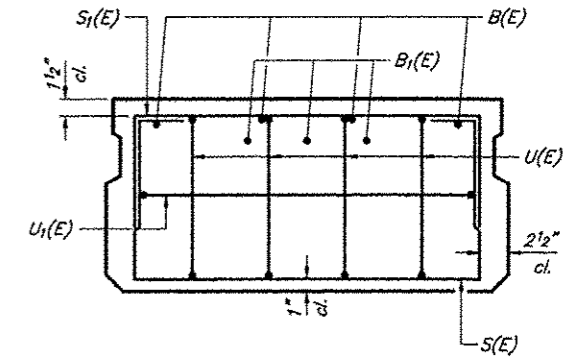
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	4
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	



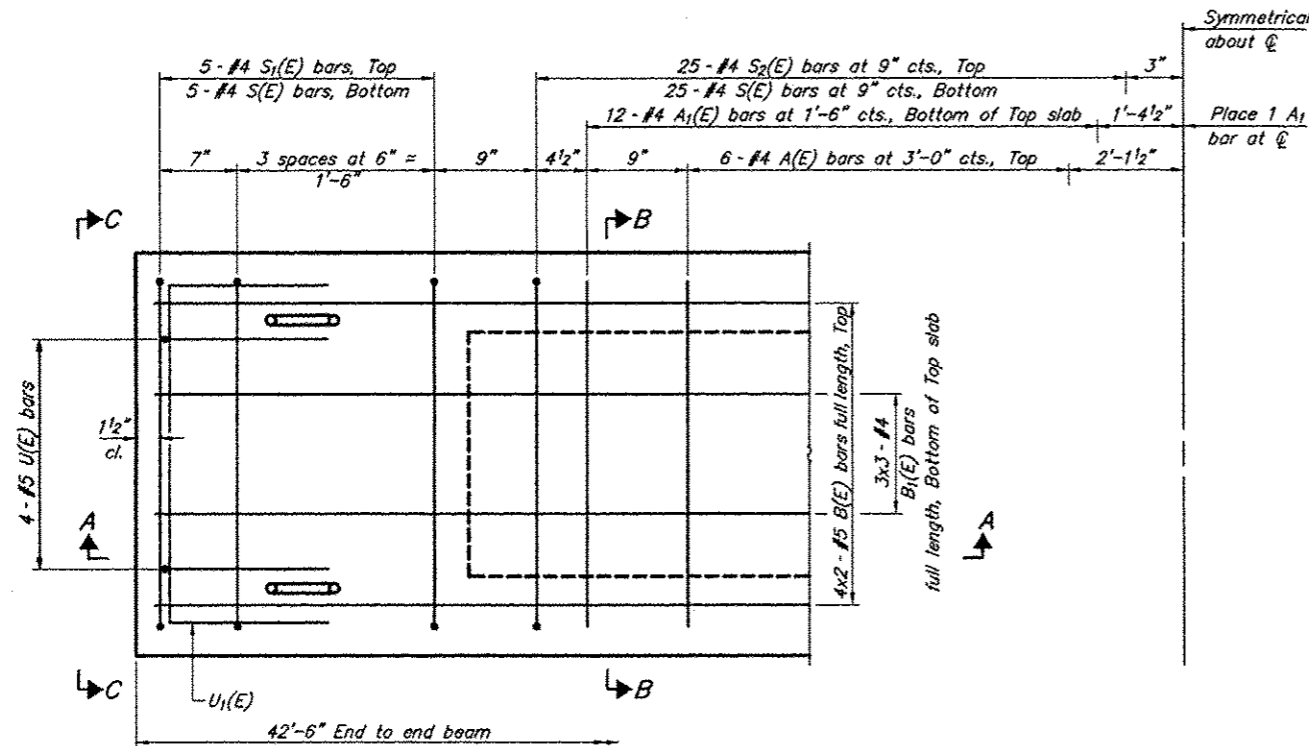
SECTION A-A



SECTION B-B
(Showing dimensions)

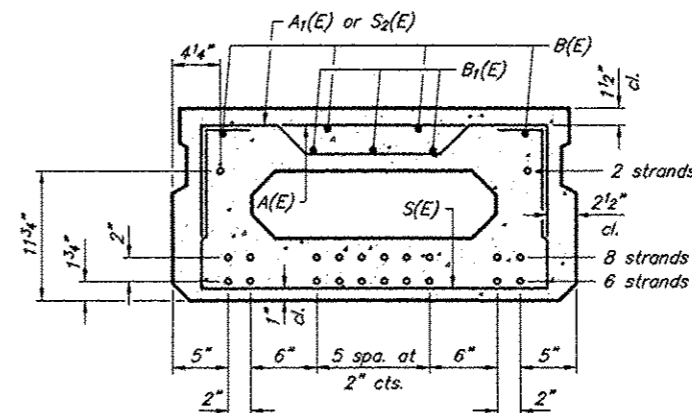


VIEW C-C



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)	12	#4	2'-7"	—
A1(E)	25	#4	2'-10"	—
B(E)	8	#5	22'-5"	—
B1(E)	9	#4	15'-5"	—
S(E)	60	#4	5'-9"	□
S1(E)	10	#4	4'-3"	□
S2(E)	50	#4	4'-6"	□
U(E)	8	#5	3'-8"	□
U1(E)	2	#4	5'-0"	□

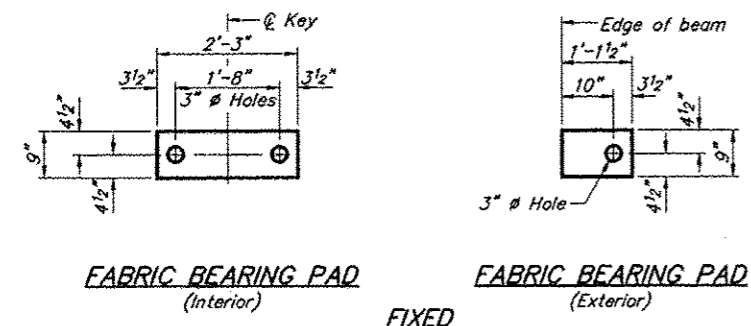
Notes:
See sheet 5 of 13 for additional details and Bill of Materials.
Bars noted thus 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

MINIMUM BAR LAP

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

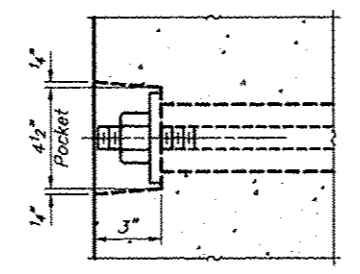
17" X 36" PPC DECK BEAM
TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
TRIBUTARY TO SPOIL BANK DITCH
SECTION 11-04120-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3245

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	5
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	

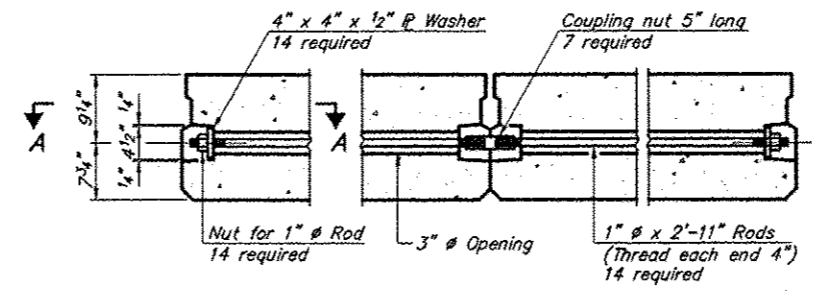


FABRIC BEARING PAD
(Interior) **FIXED** (Exterior)

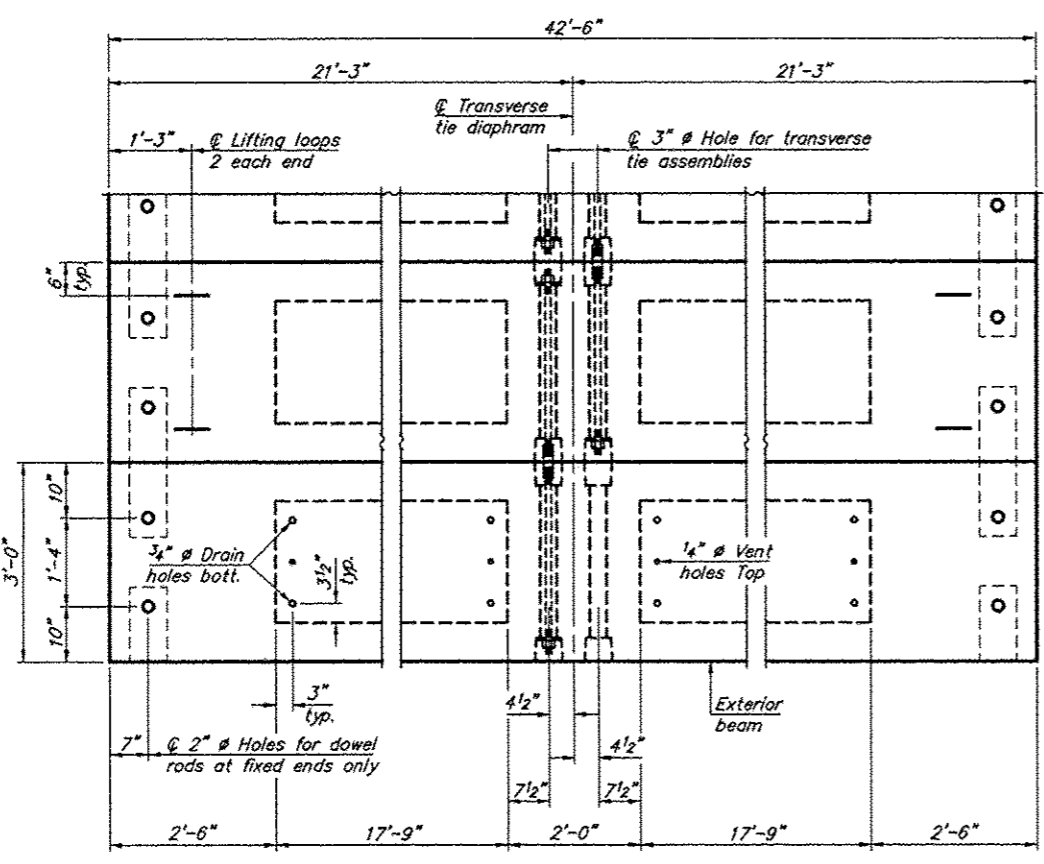
Notes:
All bearing pads shall be 1" thick.
Omit holes when using expansion bearings.
Expansion bearing pads shall be bonded to the substructure.



SECTION A-A

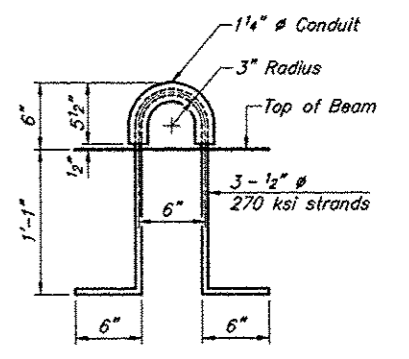
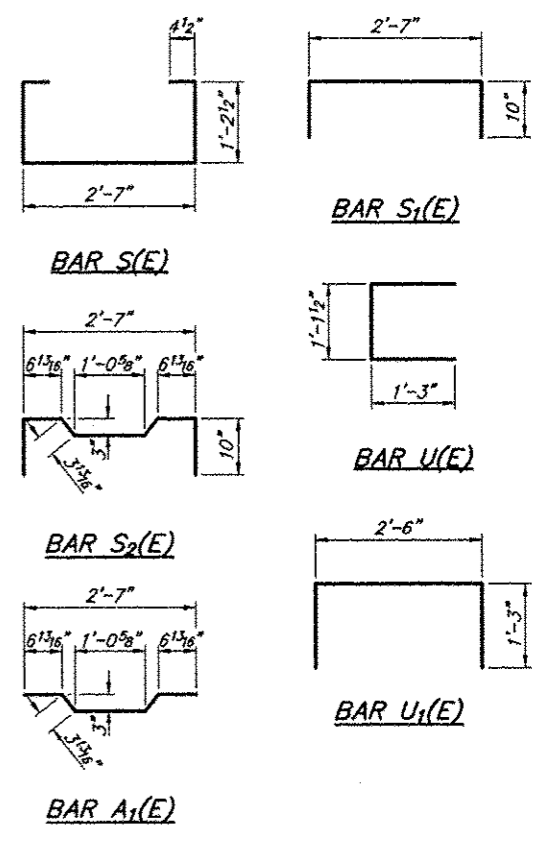


TYPICAL TRANSVERSE TIE ASSEMBLY

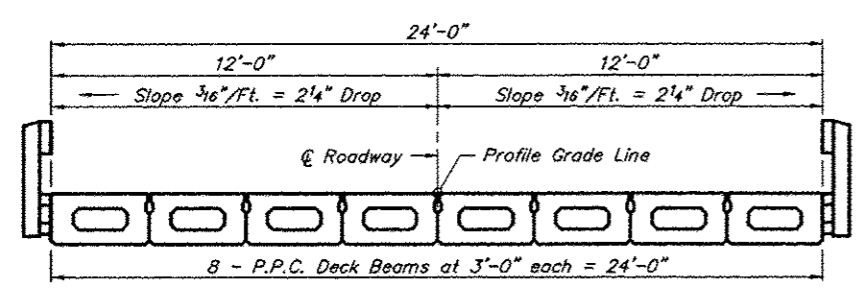


PLAN VIEW

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



LIFTING LOOP DETAIL



CROSS SECTION

NOTES

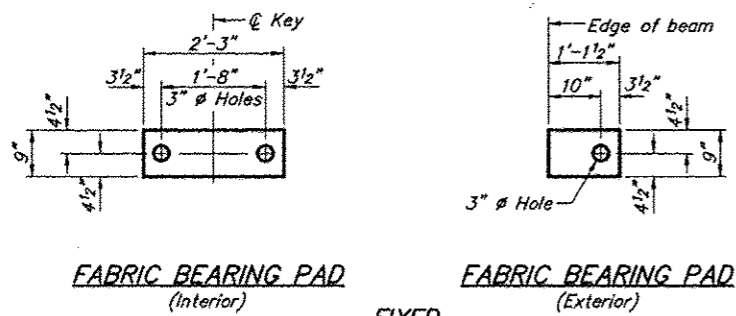
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior 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" 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.

BILL OF MATERIAL

Precast Prestressed Concrete Deck Beams (17" depth)	Sq. Ft.	1,020
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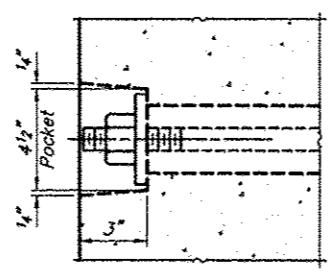
17" X 36" PPC DECK BEAM DETAILS
TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
TRIBUTARY TO SPOIL BANK DITCH
SECTION 11-04120-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3245

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	7
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	

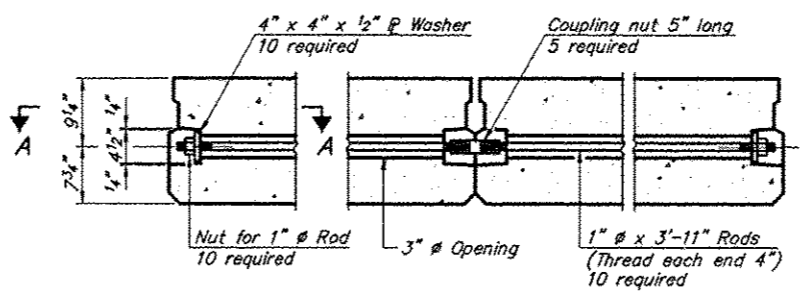


FABRIC BEARING PAD
(Interior) **FIXED** (Exterior)

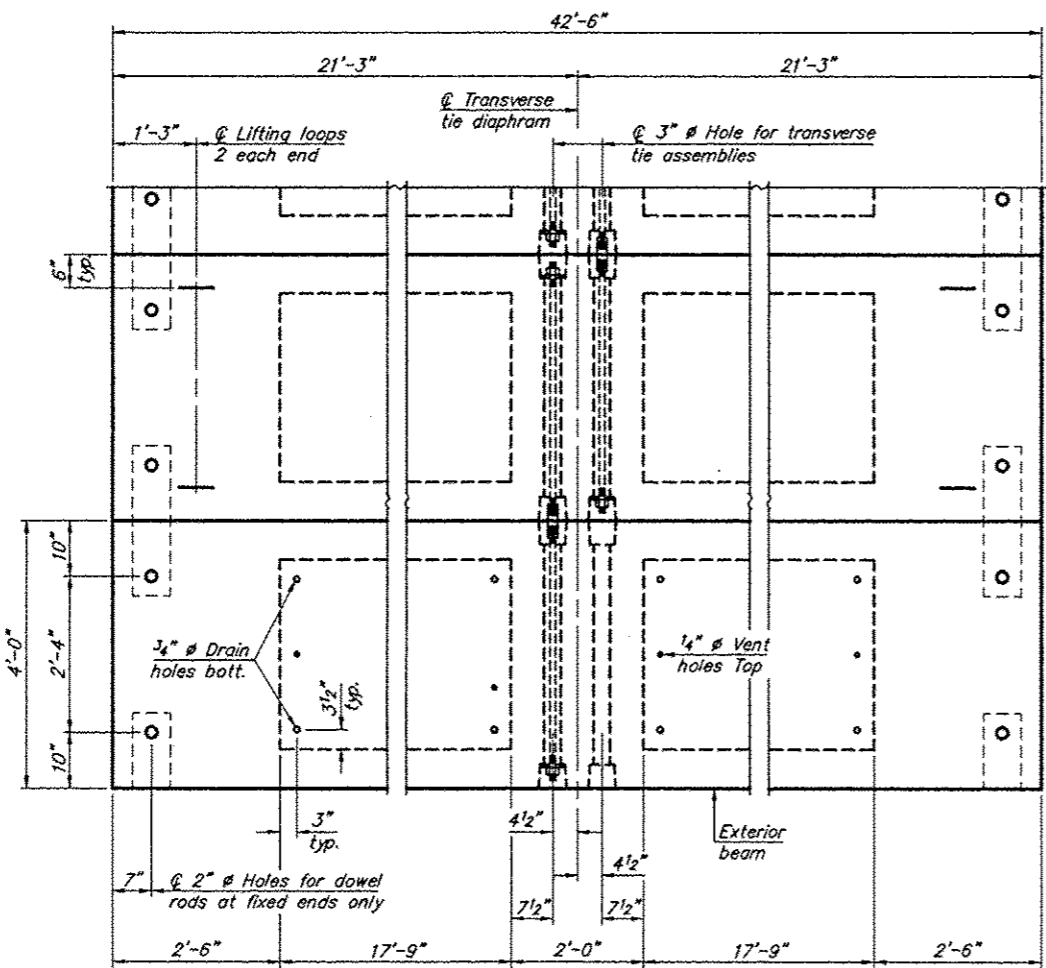
Notes:
All bearing pads shall be 1" thick.
Omit holes when using expansion bearings.
Expansion bearing pads shall be bonded to the substructure.



SECTION A-A

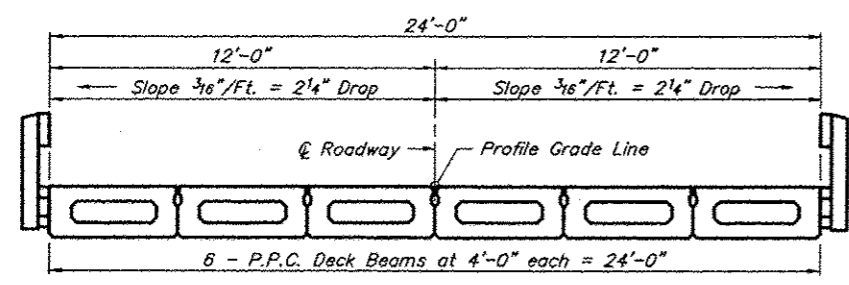


TYPICAL TRANSVERSE TIE ASSEMBLY



PLAN VIEW

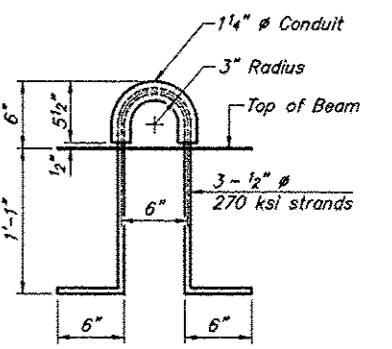
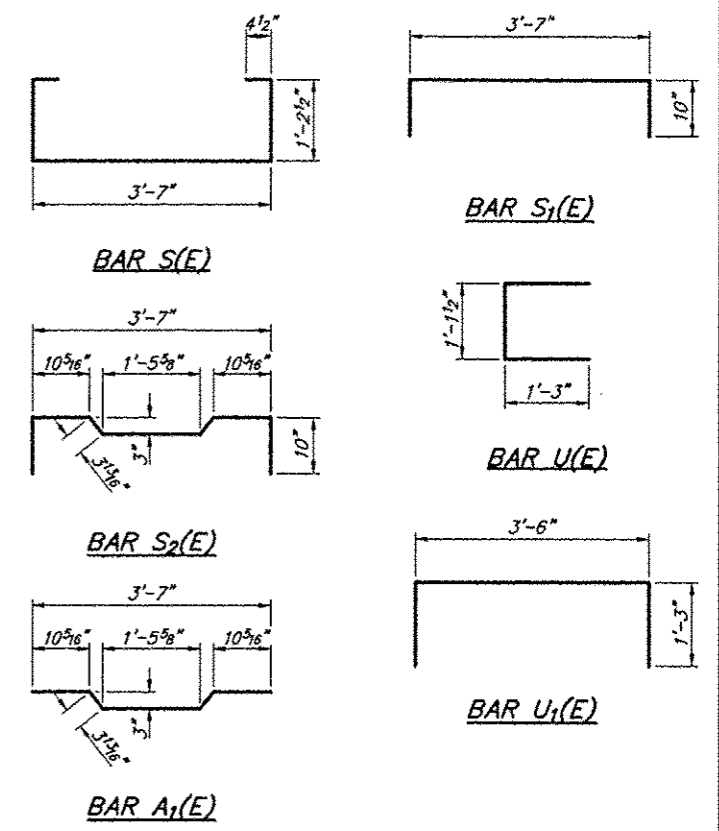
Note: Connect beams in pairs with the transverse tie configuration shown.



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" 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.



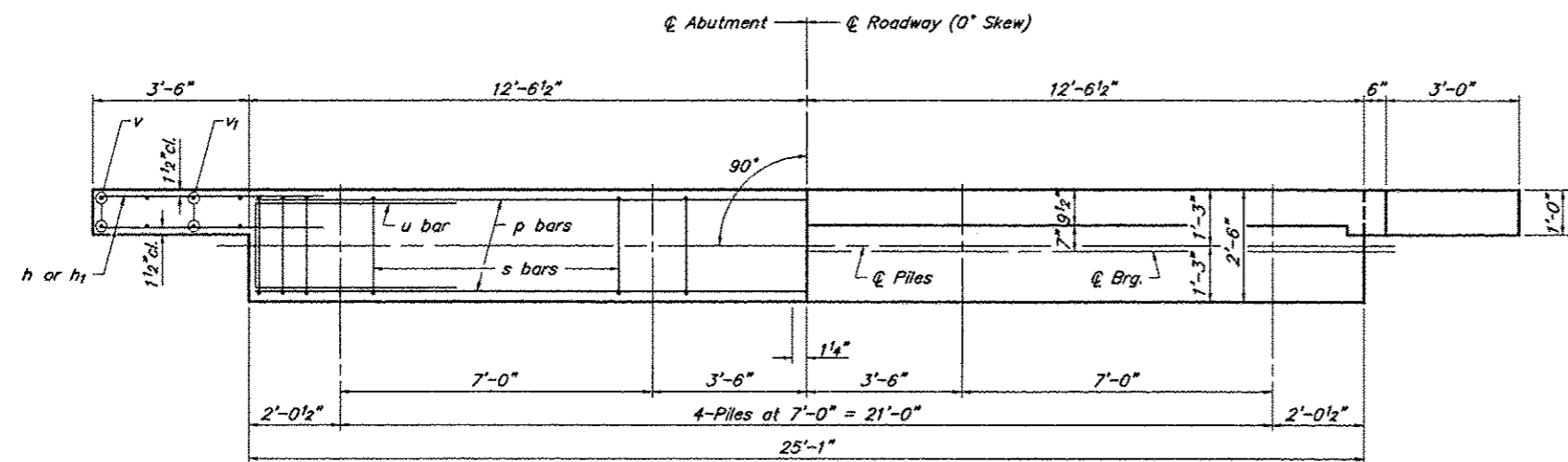
LIFTING LOOP DETAIL

BILL OF MATERIAL

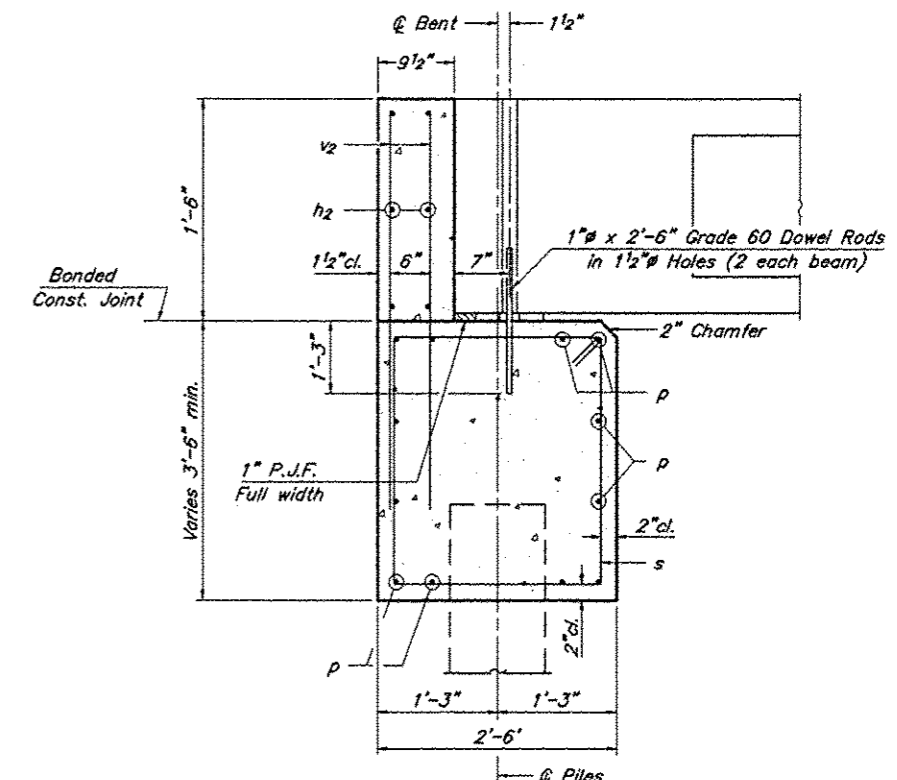
Precast Prestressed Concrete Deck Beams (17" depth)	Sq. Ft.	1,020
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17" X 48" PPC DECK BEAM DETAILS
TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
TRIBUTARY TO SPOIL BANK DITCH
SECTION 11-04120-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3245

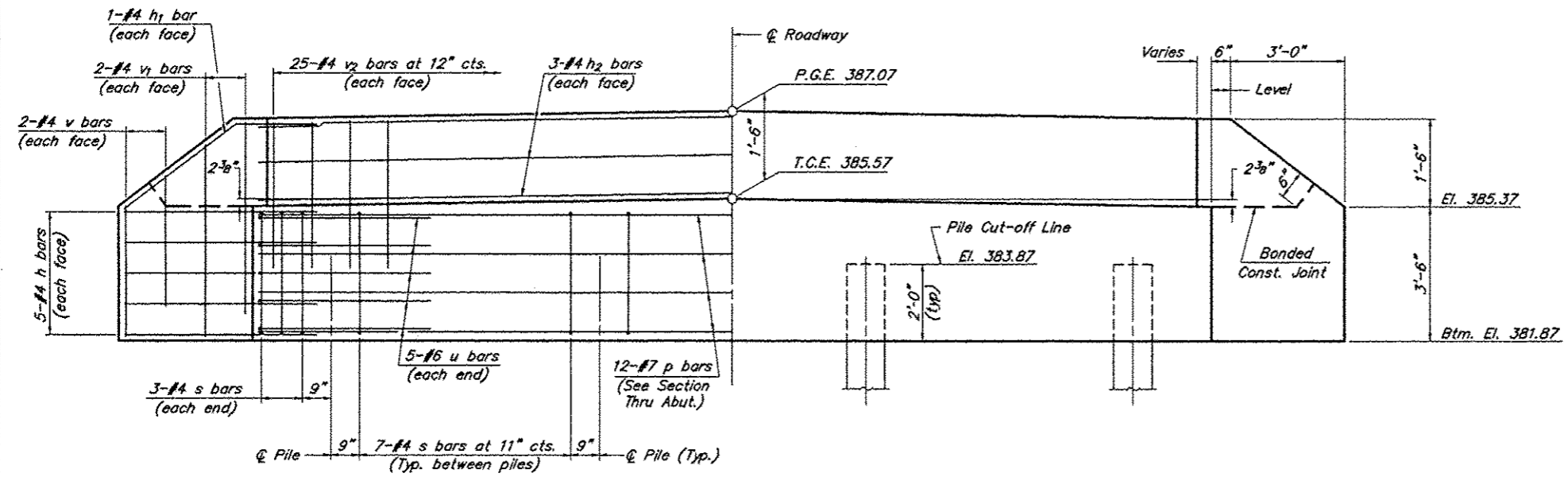
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	8
PROJECT NO. BROS-D185(039)			CONTRACT NO. 99571	



PLAN



SECTION THRU ABUT.
(At Right Angles)



ELEVATION

BILL OF MATERIAL FOR ONE ABUTMENT

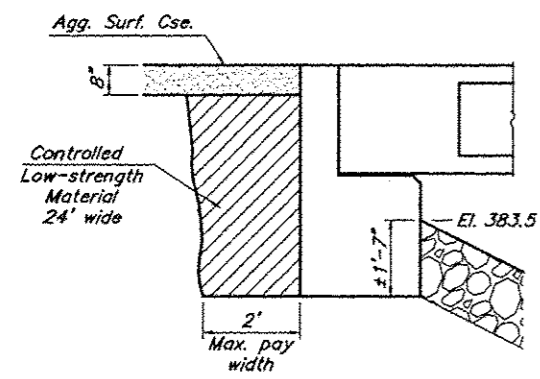
Bar	No.	Size	Length	Shape
h	20	#4	5'-0"	—
h1	4	#4	5'-4"	—
h2	6	#4	24'-9"	—
p	12	#7	24'-9"	—
s	27	#4	11'-5"	□
u	10	#6	11'-1"	□
v	8	#4	3'-4"	—
v1	8	#4	4'-5"	—
v2	50	#4	3'-1"	—
Concrete Structures			10.6	Cu. Yds.
Reinforcement Bars			1305	Lbs.

NOTES

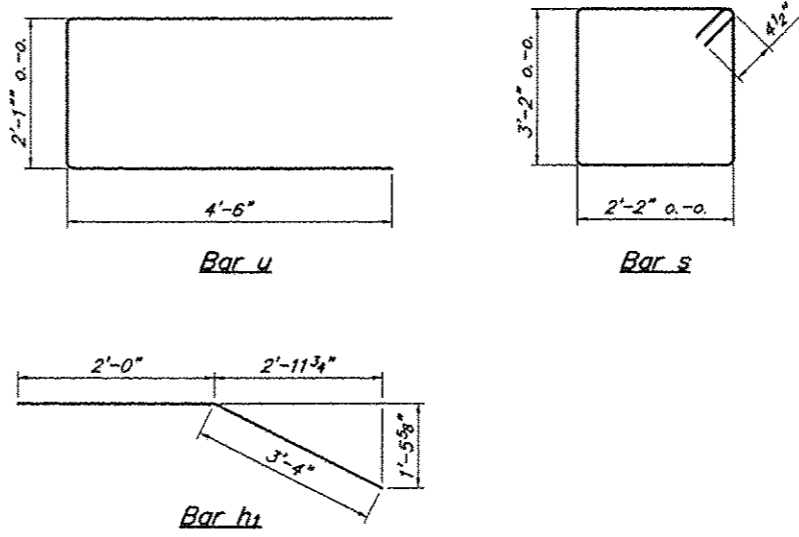
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Reinforcement bars shall conform to A.A.S.H.T.O. M-31, M-42 or M-53, Grade 60.

DESIGN STRESSES

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

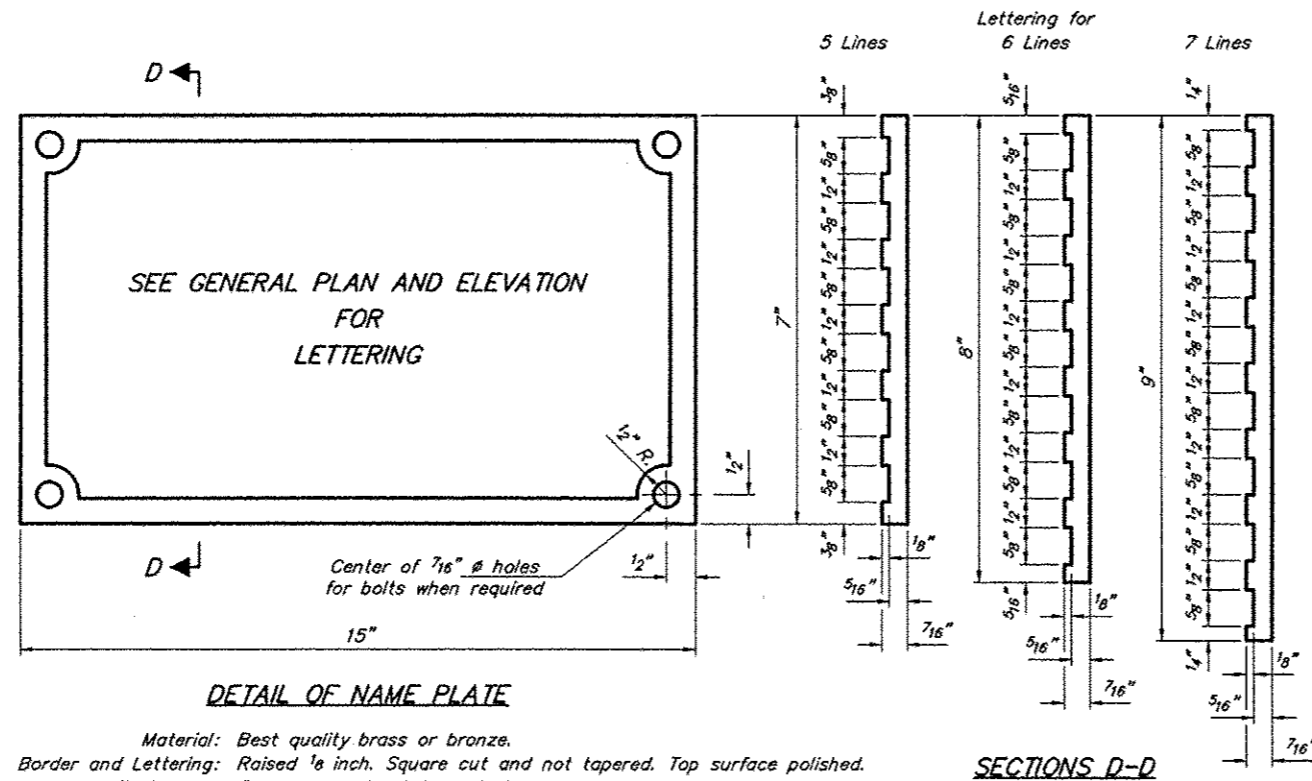


BACKFILL & BERM DETAIL
(At Right Angles to Abut.)

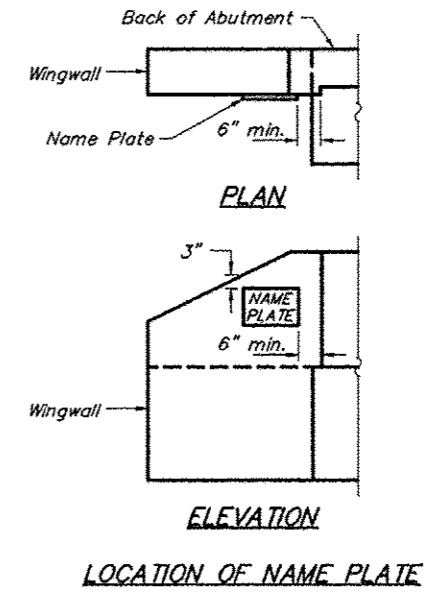


ABUTMENT
TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
TRIBUTARY TO SPOIL BANK DITCH
SECTION 11-04120-00-BR
SALINE COUNTY
STRUCTURE NO. 083-3245

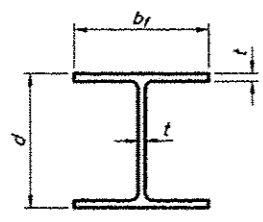
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	10
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	



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.



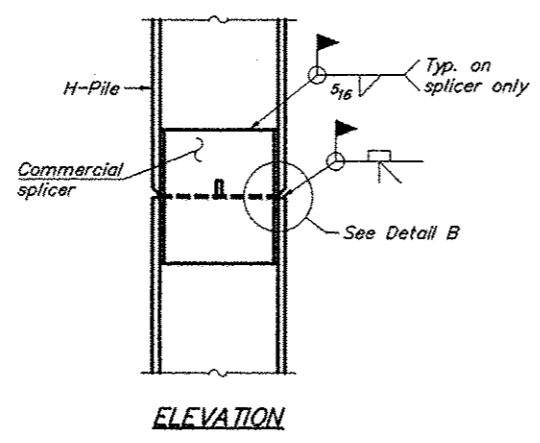
NAME PLATE
 TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
 TRIBUTARY TO SPOIL BANK DITCH
 SECTION 11-04120-00-BR
 SALINE COUNTY
 STRUCTURE NO. 083-3245



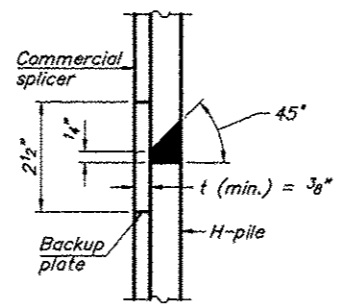
STEEL PILE TABLE

Designation	Depth d	Flange width bf	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 5/8"	14 5/8"	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.

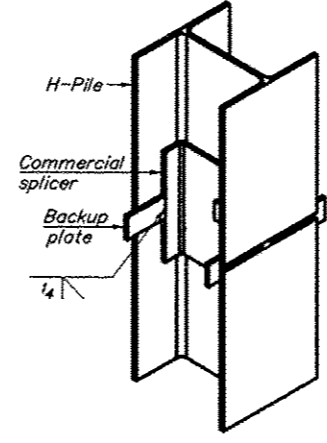


ELEVATION

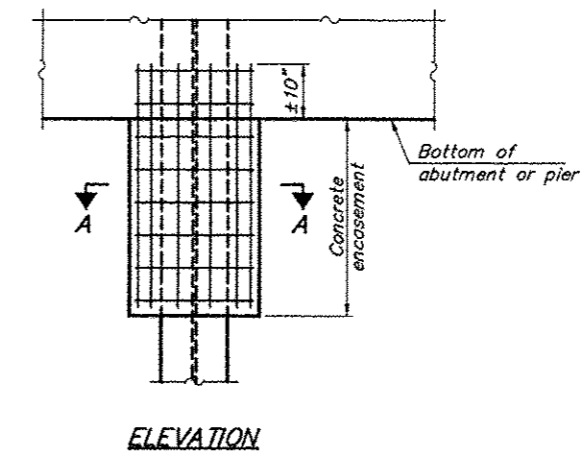


DETAIL "B"

WELDED COMMERCIAL SPLICE

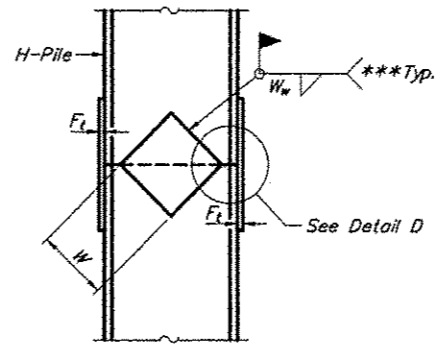


ISOMETRIC VIEW

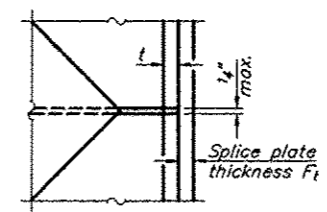


ELEVATION

PILE ENCASEMENT

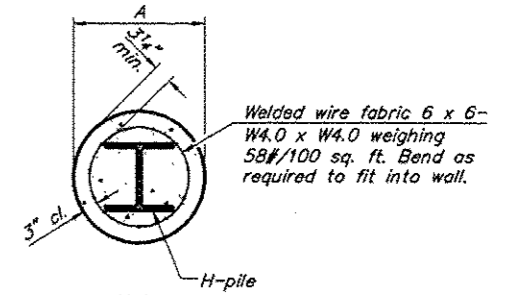


ELEVATION



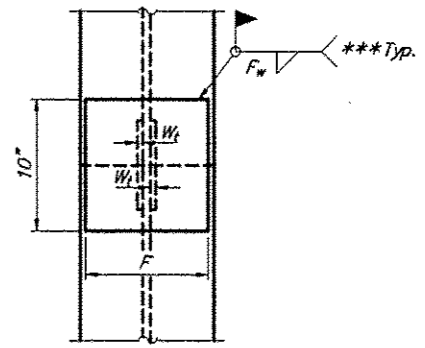
DETAIL D

WELDED PLATE FIELD SPLICE



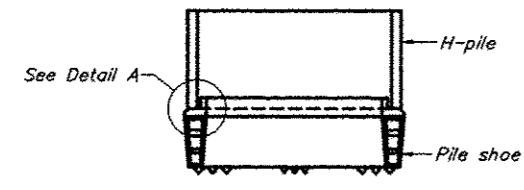
SECTION A-A

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

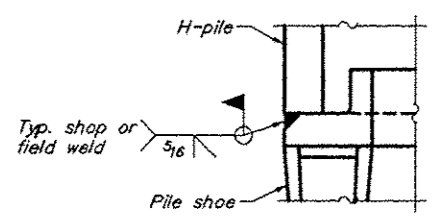


END VIEW

Designation	F	Ft	Fw	W	Wt	Ww
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"

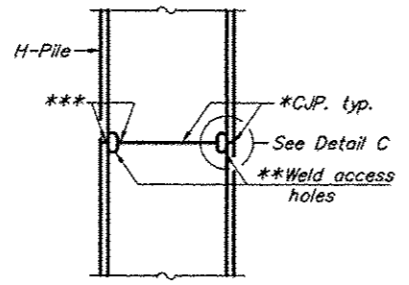


ELEVATION



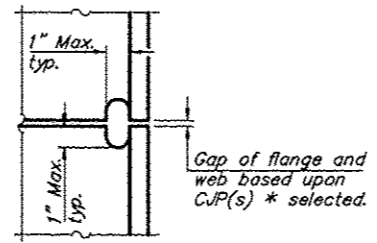
DETAIL A

H-PILE SHOE ATTACHMENT



ELEVATION

COMPLETE PENETRATION WELD SPLICE

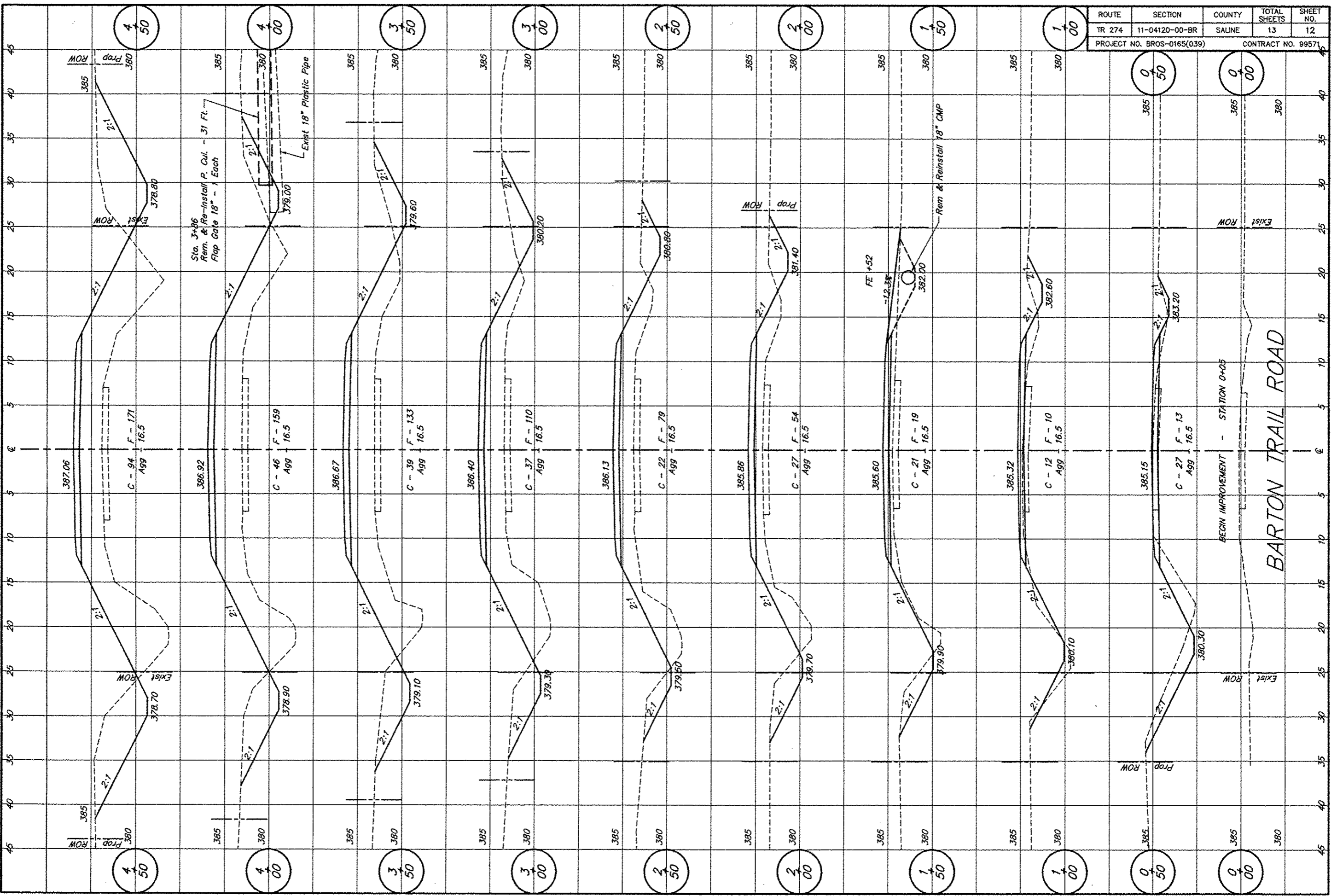


DETAIL C

*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.

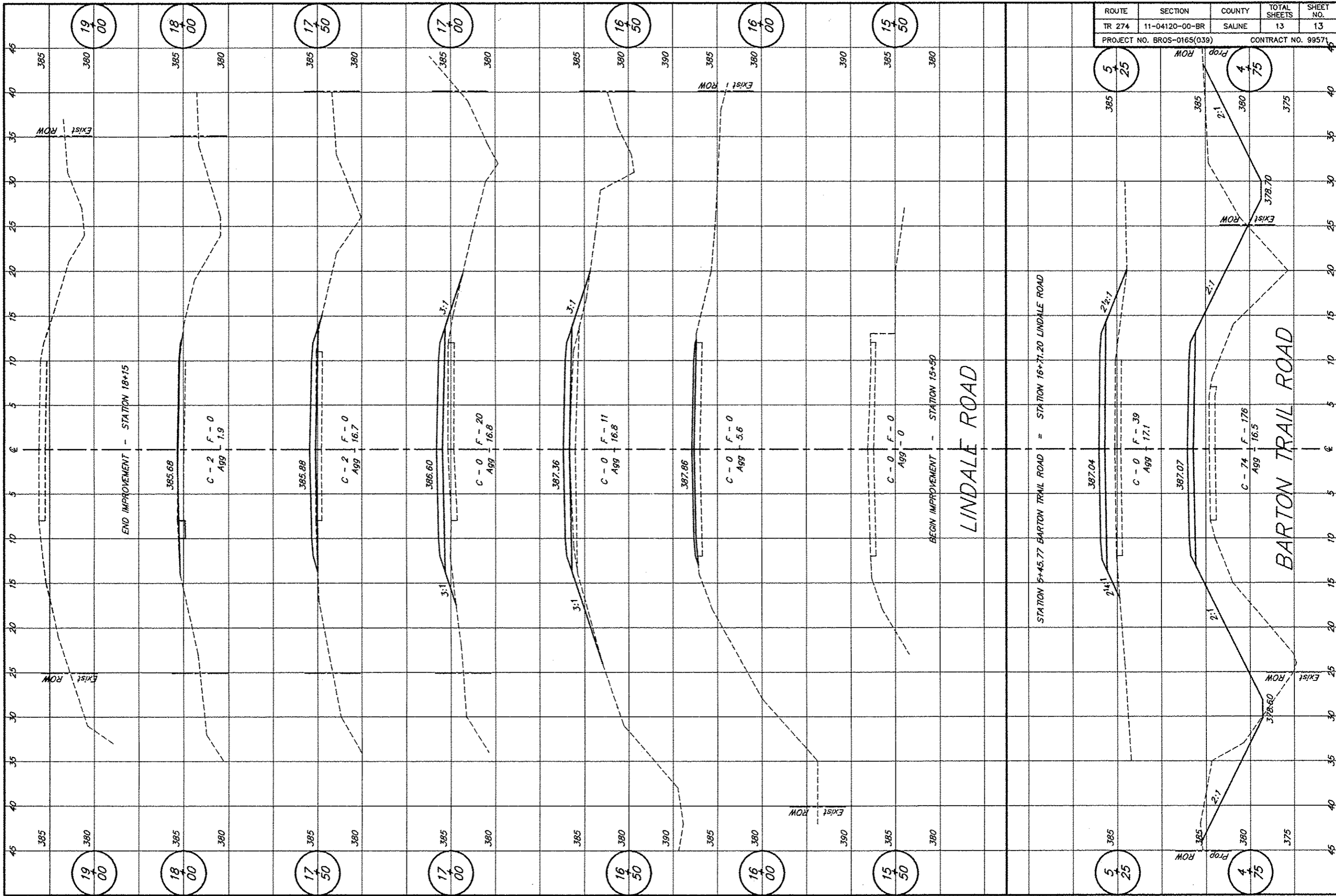
PILING DETAILS
 TOWNSHIP ROUTE 274 (BARTON TRAIL RD)
 TRIBUTARY TO SPOIL BANK DITCH
 SECTION 11-04120-00-BR
 SALINE COUNTY
 STRUCTURE NO. 083-3245

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	12
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	



BARTON TRAIL ROAD

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 274	11-04120-00-BR	SALINE	13	13
PROJECT NO. BROS-0165(039)			CONTRACT NO. 99571	



19
00

18
00

17
50

17
00

16
50

16
00

15
50

5
25

4
75

19
00

18
00

17
50

17
00

16
50

16
00

15
50

5
25

4
75