

SURFACE TRANSPORTATION PROGRAM - BRIDGE
DETAIL PLANS FOR

PROPOSED BRIDGE

C.H. 17 (EMERALD ROAD) OVER BEAVER CREEK
SECTION 11-00100-00-BR
CLINTON COUNTY
PROJECT: BROS-027(044)
JOB NO: C-98-330-12

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 17 EMERALD ROAD	11-00100-00-BR	CLINTON	13	1
FEDERAL AID PROJECT:		CONTRACT NO. 97587		

INDEX OF SHEETS

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- GENERAL DATA
- SUPERSTRUCTURE
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- ABUTMENT DETAILS
- PIER DETAILS
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- 515001-03 NAME PLATE FOR BRIDGES
- 630301-06 SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
- 701901-04 TRAFFIC CONTROL DEVICES
- BLR 21-9 TYP. APPLICATION OF TRAF CONTROL DEVICES ON RUAL LOCAL HIGHWAYS
- BLR 27-1 TRAFFIC BARRIER TYPE 5A



DESIGN CLASSIFICATION

FUNCTIONAL CLASSIFICATION: MINOR COLLECTOR
DESIGN SPEED = 40 MPH
DESIGN A.D.T. = 375

UTILITIES:

CALL J.U.I.E. BEFORE YOU DIG
800-892-0123

ELECTRIC:

CLINTON COUNTY ELEC. COOP.
475 N. MAIN ST.
BREESE, IL. 62230
PHONE: (618) 526-7282

TELEPHONE:

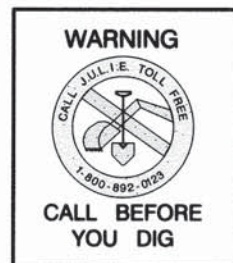
AT & T
210 N. LOCUST ST.
CENTRALIA, IL. 62801
TODD ISAAK
PHONE: (618) 533-3501

GAS

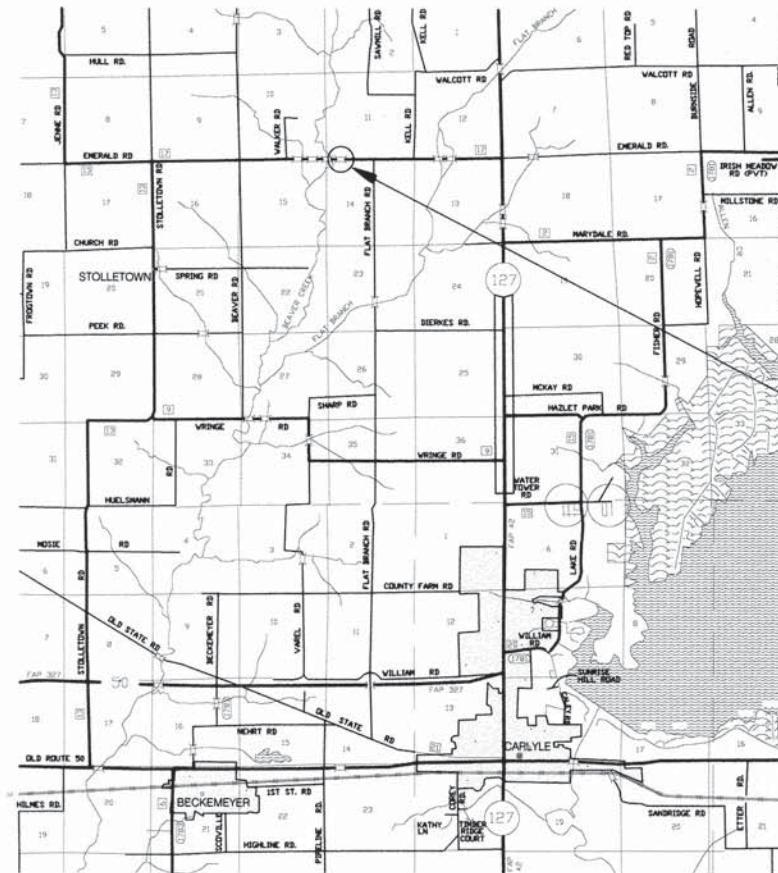
AMEREN IP
Phone: 1-800-755-5000

WATER:

CARLYLE NORTH WATER Co.
Carlyle, IL. 62231
Phone: (618)594-2508
Jack Karhoff (Manager)

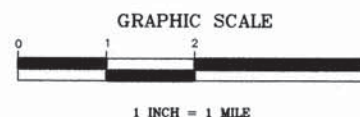


Daniel L. Behrens
COUNTY ENGINEER
ILLINOIS P.E. # 62-050860 EXPIRES 11/30/2015
DATE 4-3-15



LOCATION MAP

NET LENGTH OF PROJECT = 298.58 FEET OR 0.057 MILES



PROJECT LOCATION Exit. S.N. 014-3024

PROPOSED STRUCTURE NO. 014-5114 @ STATION 104+28
TRIPLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAMS,
(17" DEPTH) ON SPILL THRU PILE BENT ABUTMENTS AND PILE
BENT PIERS MEASURING 105'-7" BACK TO BACK OF
ABUTMENTS WITH 28'-0" CLEAR ROADWAY WIDTH.

BEGIN CONSTRUCTION STA. 102+81.71
END CONSTRUCTION STA. 105+80.29

ILLINOIS DEPARTMENT OF TRANSPORTATION	
APPROVED	April 3, 2015 <i>Daniel L. Behrens</i> CLINTON COUNTY, COUNTY ENGINEER
PASSED	April 13, 2015 <i>[Signature]</i> DISTRICT 8 ENGINEER OF LOCAL ROADS & STREETS
RELEASING FOR BID BASED ON LIMITED REVIEW	April 13, 2015 <i>[Signature]</i> DEPUTY DIRECTOR OF HIGHWAYS, REGION 5 ENGINEER

Printed by the Authority of the State of Illinois

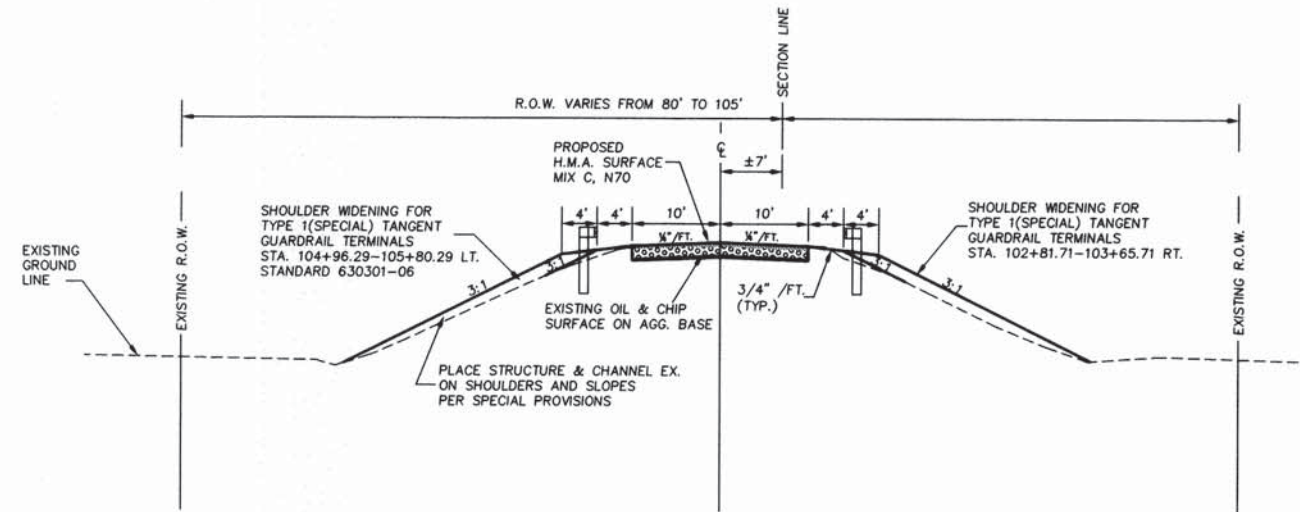
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 17 EMERALD ROAD	11-00100-00-BR	CLINTON	13	2
FEDERAL AID PROJECT		CONTRACT NO. 97587		

LOCATION OF WORK

SUMMARY OF QUANTITIES

SP	CODE NO.	ITEM	UNIT	QUANTITY
	20300100	CHANNEL EXCAVATION	CU. YD.	290
	28100807	STONE DUMPED RIPRAP, CLASS A4	TON	176
	40603315	HOT-MIX ASPHALT SURFACE, MIX C, N70	TON	65
	50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
	50300225	CONCRETE STRUCTURES	CU. YD.	56.4
	50300280	CONCRETE ENCASEMENT	CU. YD.	20.6
	50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ. FT.	2,913
	50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	7,140
*	50900205	STEEL RAILING, TYPE S1	FOOT	212
	51201600	FURNISHING STEEL PILES, HP 12X53	FOOT	392
	51201800	FURNISHING STEEL PILES, HP 14X73	FOOT	648
	51202305	DRIVING PILES	FOOT	1040
	51203600	TEST PILE STEEL HP 12X53	EACH	2
	51203800	TEST PILE STEEL HP 14X73	EACH	2
	51500100	NAME PLATES	EACH	1
	58100200	WATERPROOFING MEMBRANE SYSTEM	SQ. YD.	328
	59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU. YD.	15
*	63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	2
*	63100167	TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)	EACH	2
	67100100	MOBILIZATION	L. SUM	1
*	78201000	TERMINAL MARKER DIRECT APPLIED	EACH	2

* SPECIALTY ITEMS



EXISTING & PROPOSED ROADWAY TYPICAL SECTION

STA. 103+50 - STA. 105+00

EXTRA BARS FOR TEST SAMPLES
BILL OF MATERIALS

BAR	NO.	SIZE	LENGTH	SHAPE
h	1	#4	7'-10"	—
s1 (E)	1	#5	11'-7"	□
u (E)	1	#6	11'-1"	□
p (E)	1	#7	30'-8"	—

100 LBS OF TEST BARS

LOCATION	EARTH EXCAVATION	EARTH EXCAVATION ADJUSTED FOR SHRINKAGE	EMBANKMENT	EARTHWORK BALANCE WASTE (+) OR SHORTAGE (-)
	CUBIC YARD	CUBIC YARD	CUBIC YARD	CUBIC YARD
STA. 167+00 TO STA. 170+00	0	0	126	-126
ALLOWANCE FOR CHANNEL EXCAVATION	290	218		+218
ALLOWANCE FOR STRUCTURE EXCAVATION	24	18		+18
TOTAL	314	236	126	+110

EARTHWORK TABLE

CONTRACTOR SHALL PLACE SUITABLE CHANNEL EXCAVATION MATERIAL ON SLOPES AS DIRECTED BY ENGINEER. ALL OTHER UNSUITABLE CHANNEL EXCAVATION MATERIAL SHALL BE HAULED OFF AND DISPOSED OF AS PER ARTICLE 202.03. THIS WORK SHALL BE INCLUDED IN THE COST PER CU. YD. FOR CHANNEL EXCAVATION.

GENERAL NOTES

- ALL ELEVATION REFER TO U.S.G.S. MEAN SEA LEVEL.
- UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION AND THEIR TRUE LOCATION IS NOT GUARANTEED TO BE AS SHOWN ON THE PLANS. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF ALL UTILITIES AND CARRY ON HIS OPERATIONS ACCORDINGLY.
- ALL FENCE REMOVAL, TEMPORARY SEEDING AND FINAL SEEDING OF DISTURBED AREAS WILL BE DONE BY OTHERS.

COMMITMENTS

NONE

GENERAL NOTES
SUMMARY OF QUANTITIES
TYPICAL ROADWAY CROSS SECTIONS

C.H. 17 (EMERALD ROAD)
OVER BEAVER CREEK
SECTION 11-00100-00-BR
CLINTON COUNTY

BENCHMARK

Sta. 103+87.04 11.71' Lt.
Chiseled X on SE corner of curb on bridge deck over Beaver Creek.
EL. 455.28

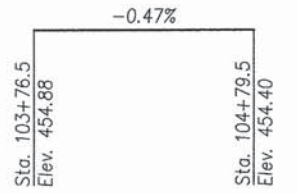
EXISTING STRUCTURE

The existing structure 014-3024 is a three span bridge with precast concrete channel beams on closed abutments and measures 76'-0" back to back of abutments and provides 20'-6" clear roadway width. The substructure has precast concrete pile caps with timber piles.

The Contractor shall remove and dispose of the existing structure in accordance with Section 501 of the Standard Specifications.

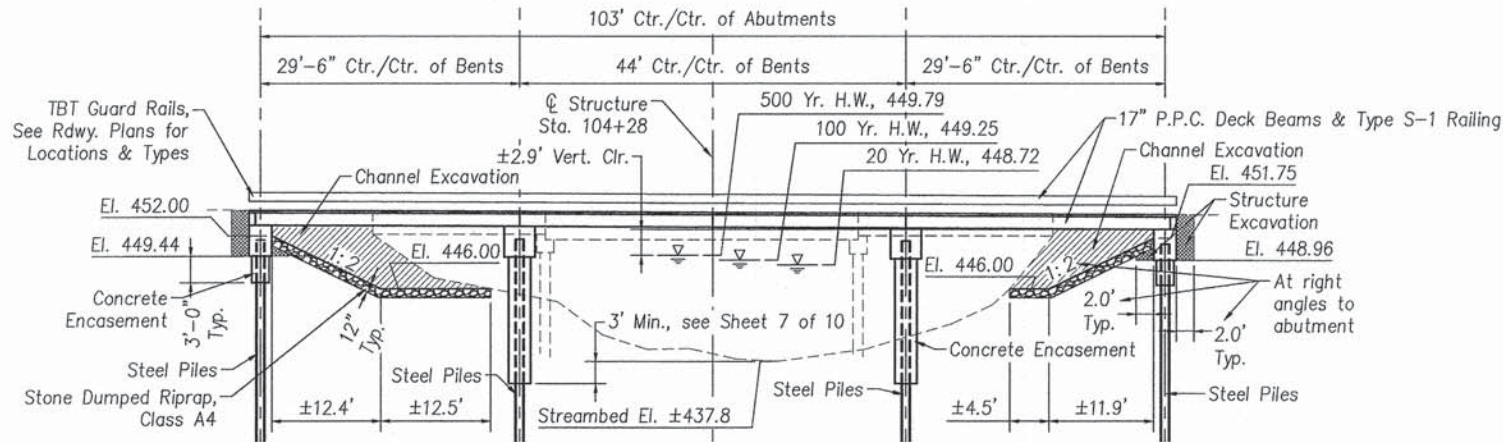
SALVAGE

N/A



PROFILE GRADE

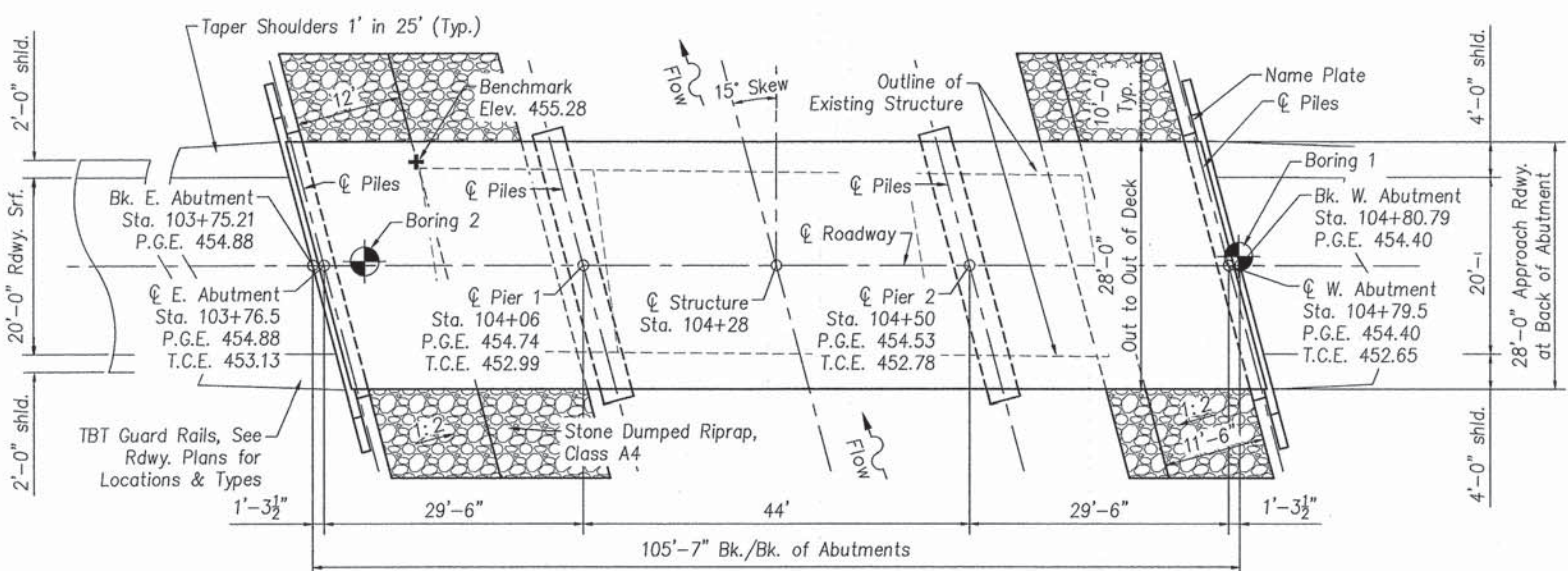
(along roadway centerline, top PPC deck beam elevations)



ELEVATION

Looking South, Scale: 1"=10'

Note: Channel excavation shall be transitioned from the edge of the proposed deck to match the existing channel at the R.O.W. as directed by Engineer.



PLAN

Scale: 1"=10'

P.G.E. = Profile Grade Elevation
T.C.E. = Top of Cap Elevation (See Abutment & Pier Plans)

WATERWAY INFORMATION

determined by Clinton County on 7/24/2014

Drainage Area = 73.4 Mi ²		Low Grade El = 453.4		@ Sta 106+50		
Flood	Freq. Yr.	Q. C.F.S.	Opening Sq. Ft.*	Nat. H.W.E.	Head-Ft.	Headwater El.
			Exist. Prop.		Exist. Prop.	Exist. Prop.
Design	20	6,950	1,202 1,283	448.72	0.62 0.59	449.34 449.31
Base	100	10,000	1,299 1,380	449.25	1.14 1.12	450.39 450.37
Overtopping	N/A					
Max. Calc.	500	13,000	1,378 1,480	449.79	1.85 1.78	451.64 451.57

* Sum of Areas of Beaver Creek Bridge and Overflow Bridges

DESIGN SCOUR ELEVATION TABLE

determined by Clinton County

Design Scour Elev. (Feet)	E. Abut.	Pier 1	Pier 2	W. Abut.
	449	437.6	432.7	448.75

TOTAL BILL OF MATERIALS

ITEM	UNIT	SUPER.	SUB.	TOTAL
Channel Excavation	Cu. Yd.	---	---	290
Stone Dumped Riprap, Class A4	Ton	---	---	176
Removal of Existing Structures	Each	---	---	1
Concrete Structures	Cu. Yd.	---	56.4	56.4
Concrete Encasement	Cu. Yd.	---	20.6	20.6
Precast Prestressed Concrete Deck Beams (17" Depth)	Sq. Ft.	2,913	---	2,913
Reinforcement Bars, Epoxy Coated	Pound	---	7,038	7,038
Steel Railing, Type S-1	Foot	212	---	212
Furnishing Steel Piles HP 12x53	Foot	---	392	392
Furnishing Steel Piles HP 14x73	Foot	---	648	648
Driving Piles	Foot	---	1040	1040
Test Pile Steel HP 12x53	Each	---	2	2
Test Pile Steel HP 14x73	Each	---	2	2
Waterproofing Membrane System	Sq. Yd.	328	---	328
Hot-Mix Asphalt Surf. Course, Mix "C", N50 or N70 per County	Ton	65	---	65
Name Plates	Each	---	---	1

INDEX OF STRUCTURE SHEETS

- 1 General Plan and Elevation
- 2 General Data
- 3 Superstructure
- 4 17" x 48" P.P.C. Deck Beam
- 5 17" x 48" P.P.C. Deck Beam Details
- 6 Abutment Details
- 7 Pier Details
- 8 Steel Railing, Type S-1
- 9 HP Pile Details
- 10 Soil Boring Logs

DESIGN SPECIFICATIONS

AASHTO LRFD Bridge Design Specifications, 6th Edition with 2013 Interims

LOADING HL-93

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

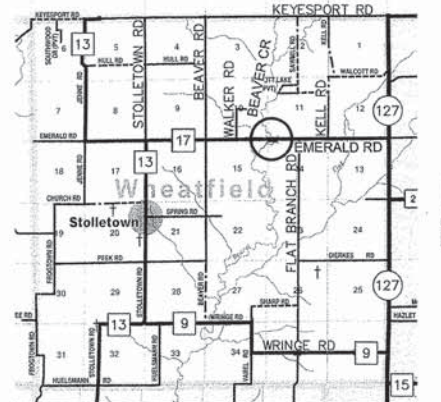
SEISMIC DATA

Seismic Performance Zone (SPZ) = 2
Design Spectral Acceleration at 1.0s (S₀₁) = 0.251 g
Design Spectral Acceleration at 0.2s (S₀₅) = 0.577 g

DESIGN STRESSES

FIELD UNITS
f_c = 3,500 psi
f_y = 60,000 psi (reinforcement)
f_y = 50,000 psi (M270 Grade 50)

PRECAST PRESTRESSED UNITS
f_c = 6,000 psi
f_{ci} = 5,000 psi
f_{si} = 270,000 psi (1/2" dia. low lax. strands)
f_{sii} = 201,960 psi (1/2" dia. low lax. strands)



LOCATION SKETCH

GENERAL PLAN AND ELEVATION

C.H. 17 (EMERALD RD) OVER BEAVER CREEK
SEC. 11-00100-00-BR
CLINTON COUNTY
STATION 104+28
STRUCTURE NO. 014-5114

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

Patrick R. Netemeyer
Licensed Structural Engineer in Illinois No. 081-004357
Expires: November 30, 2016



DESIGNED --	REVISION	DATE	REMARKS	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	C.H. 17 (EMERALD ROAD) OVER BEAVER CREEK CLINTON COUNTY, ILLINOIS	GENERAL PLAN & ELEVATION	T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
DRAWN --	1	03/31/2015	REVISE FOR FINAL SUBMITTAL				11-00100-00-BR	CLINTON	13	4	
CHECKED -- PRN							S.N. 014-5114	CONTRACT # C-98-330-12			
DATE -- 01/14/2015							ILLINOIS				

NETEMEYER 20140495

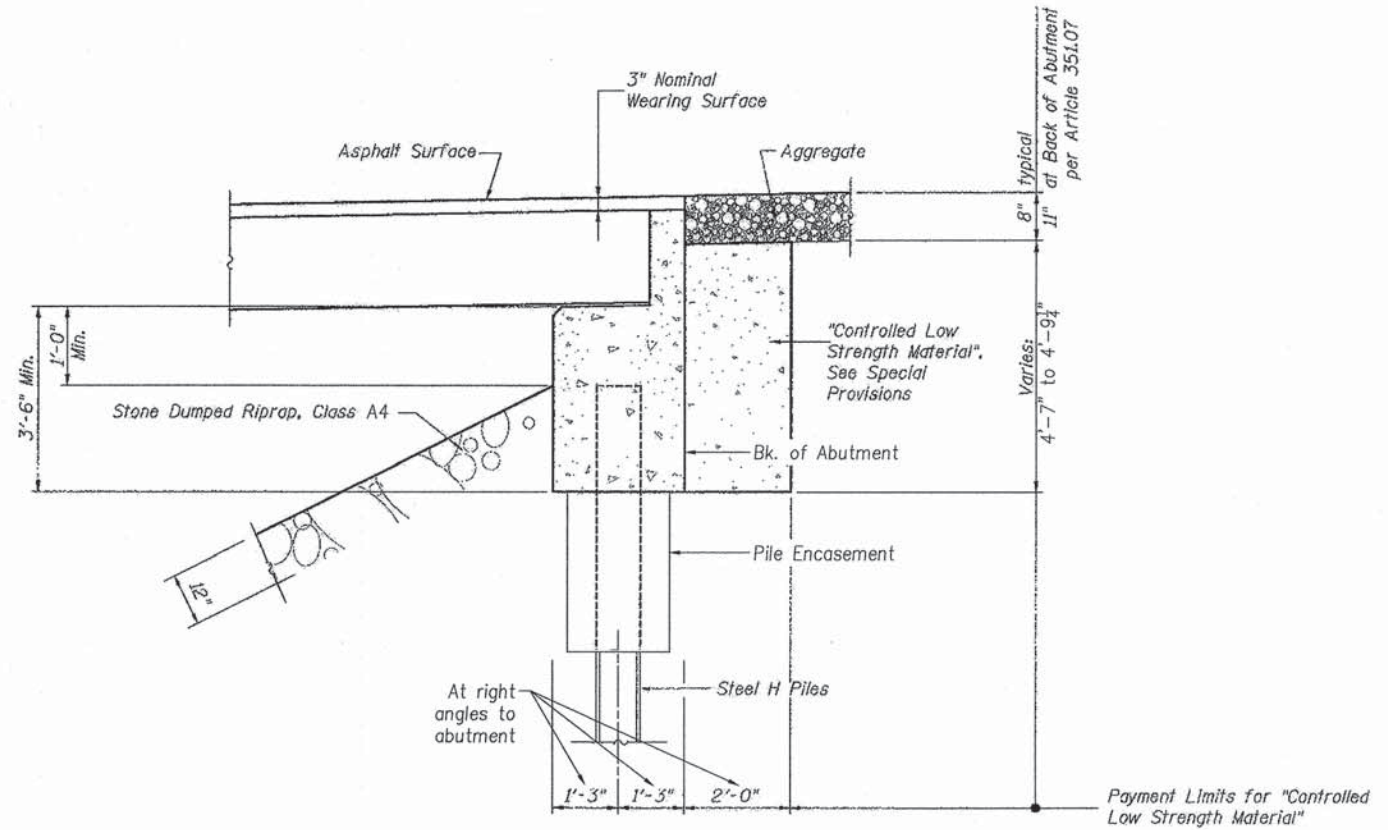
GENERAL NOTES

1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
4. The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.
5. The Contractor shall drive test piles to 110% of the nominal required bearing specified in the production location at the substructures specified or approved by the Engineer before ordering remaining piles.
6. Hot-mix asphalt surface course overlay for the bridge deck shall be constructed in accordance with applicable portions of Section 582 of the Standard Specifications.
7. Waterproofing membrane system for the bridge shall be in accordance with material and construction requirements of the applicable portions of Section 581 of the Standard Specifications.
8. Deck beams shall be cleaned to the satisfaction of the engineer before placing the waterproofing member system.

Beaver Creek
 Built 201 By
 Clinton County
 Section 11-00100-00-BR
 Proj. No. BROS-0027(044)
 Station 104+28
 S.N. 014-5114 Loading HL-93

NAME PLATE

See Std. 515001
 Locate name plate as shown in plan view.



SECTION THRU ABUMENT
 (at Right Angle)

DESIGNED —	REVISION	DATE	REMARKS
DRAWN —	1	03/31/2015	REVISE FOR FINAL SUBMITTAL
CHECKED — PRN			
DATE — 01/14/2015			

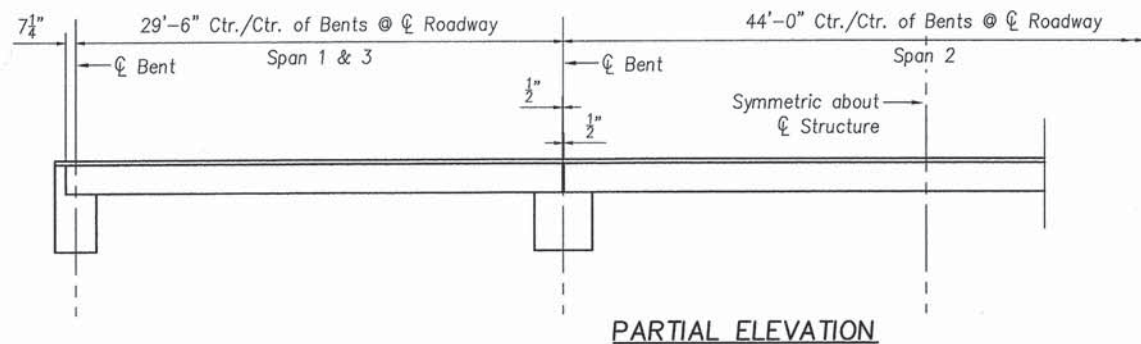
NETEMEYER ENGINEERING ASSOCIATES, INC.
 3300 Highline Road
 Addison, IL 60101-1018
 ph: 618-228-7816
 fax: 618-228-7900

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

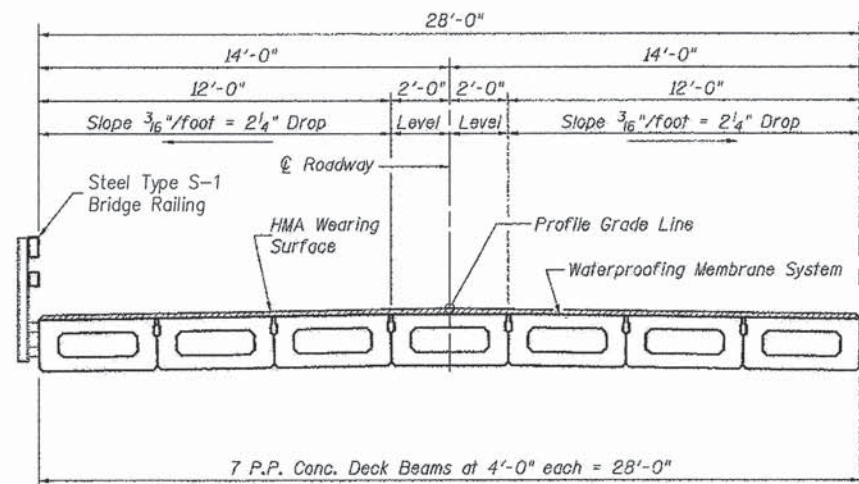
C.H. 17 (EMERALD ROAD)
 OVER BEAVER CREEK
 CLINTON COUNTY, ILLINOIS

GENERAL DATA
 SCALE: SHEET 2 OF 10 SHEETS STA. TO STA.

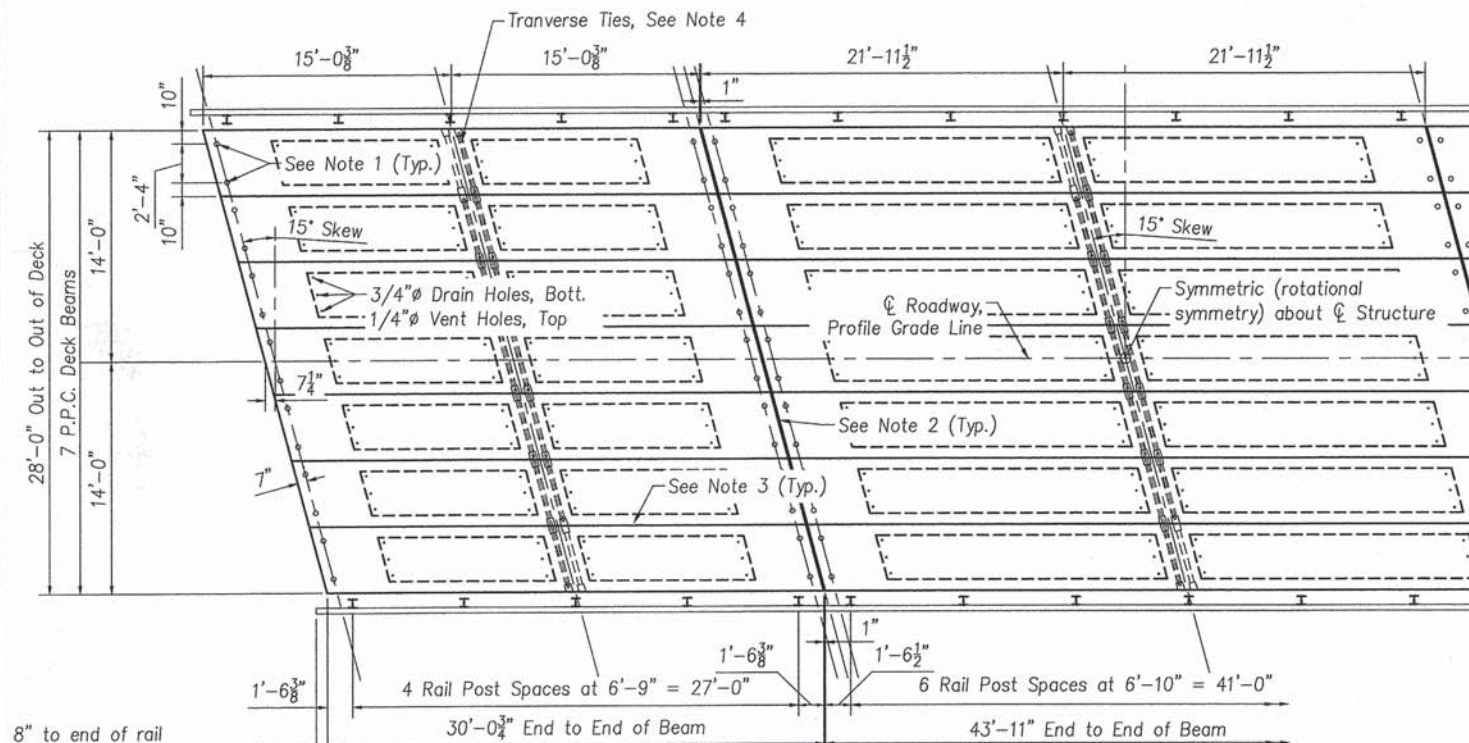
T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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S.N. 014-5114		CONTRACT # C-98-330-12		
ILLINOIS				



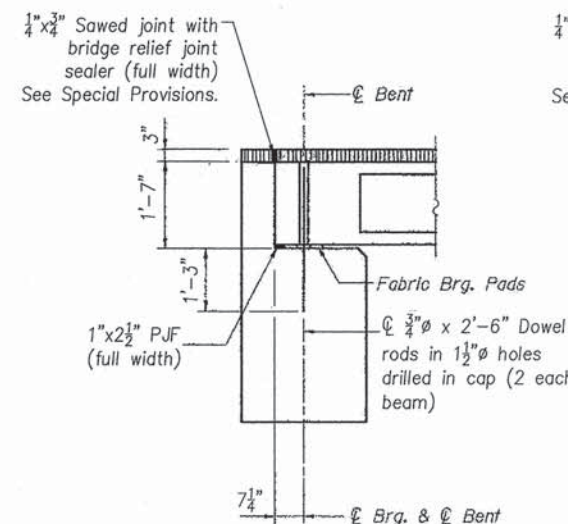
PARTIAL ELEVATION



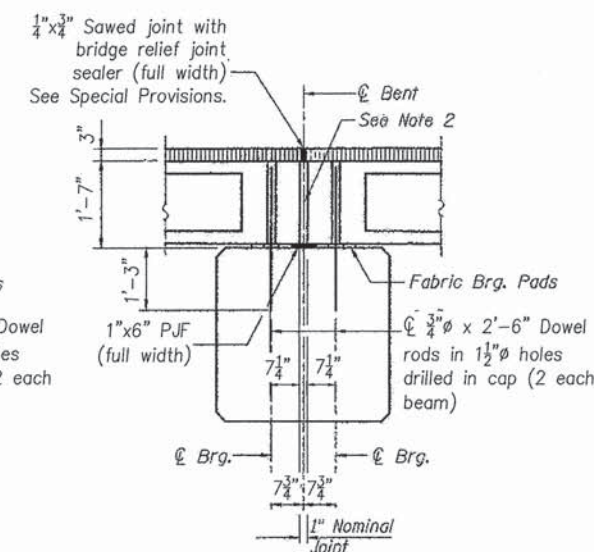
CROSS SECTION



PARTIAL PLAN



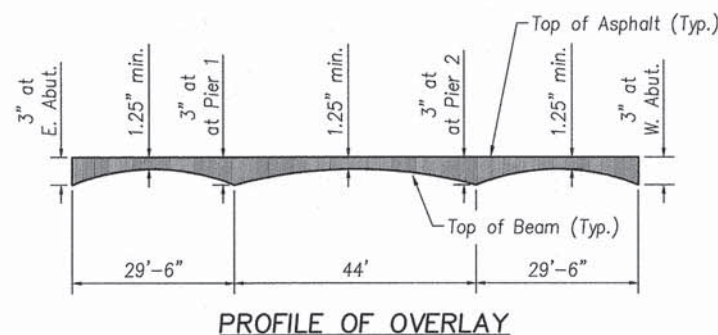
SECTION AT ABUTMENTS
(Along C Beams)



SECTION AT PIERS
(Along C Beams)

NOTES

1. After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure a minimum of 24 hours prior to grouting the shear keys.
2. Nominal 1" joint at centerline of pier shall be filled with non-shrink grout. 1" dimension may vary to accommodate tolerance in beam lengths.
3. Longitudinal keys shall be grouted.
4. The 1" dia. rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bars shall be filled with grout after transverse tie assembly is in place.



PROFILE OF OVERLAY

BILL OF MATERIALS

Item	Unit	Quantity
Waterproofing Membrane System	Sq. Yd.	328
Hot-Mix Asphalt Surf. Course, Mix "C", N50 or N70 per County	Ton	65

DESIGNED -	REVISION	DATE	REMARKS
DRAWN -	1	03/31/2015	REVISE FOR FINAL SUBMITTAL
CHECKED - PRN			
DATE - 01/14/2015			

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

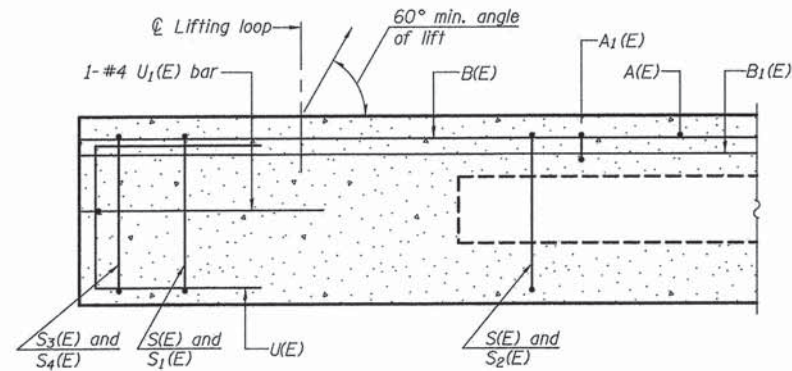
C.H. 17 (EMERALD ROAD)
OVER BEAVER CREEK
CLINTON COUNTY, ILLINOIS

SUPERSTRUCTURE

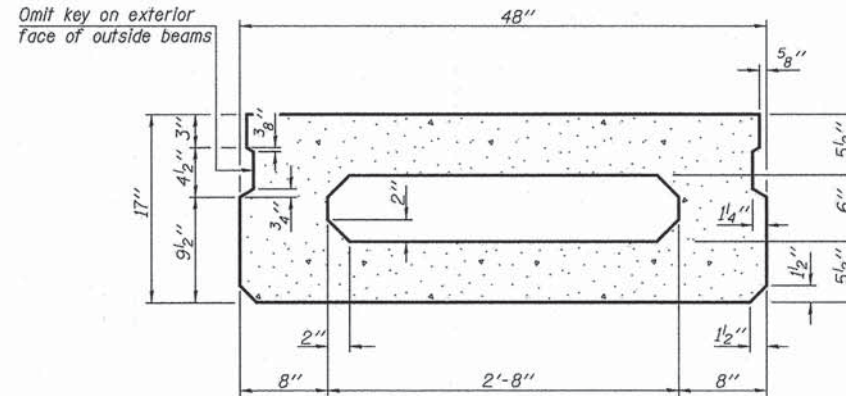
SCALE: SHEET 3 OF 10 SHEETS STA. TO STA.

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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S.N. 014-5114			CONTRACT # C-98-330-12	
ILLINOIS				

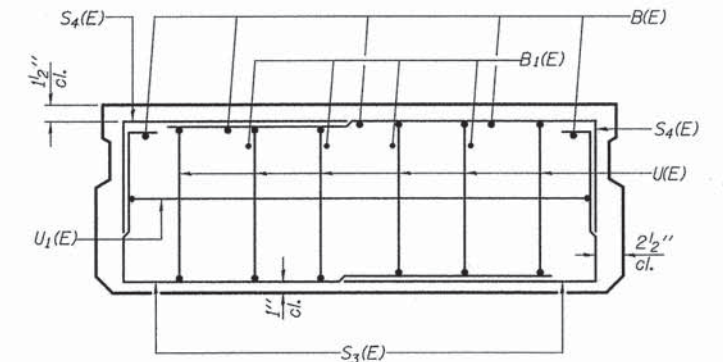
NETEMEYER 20140465



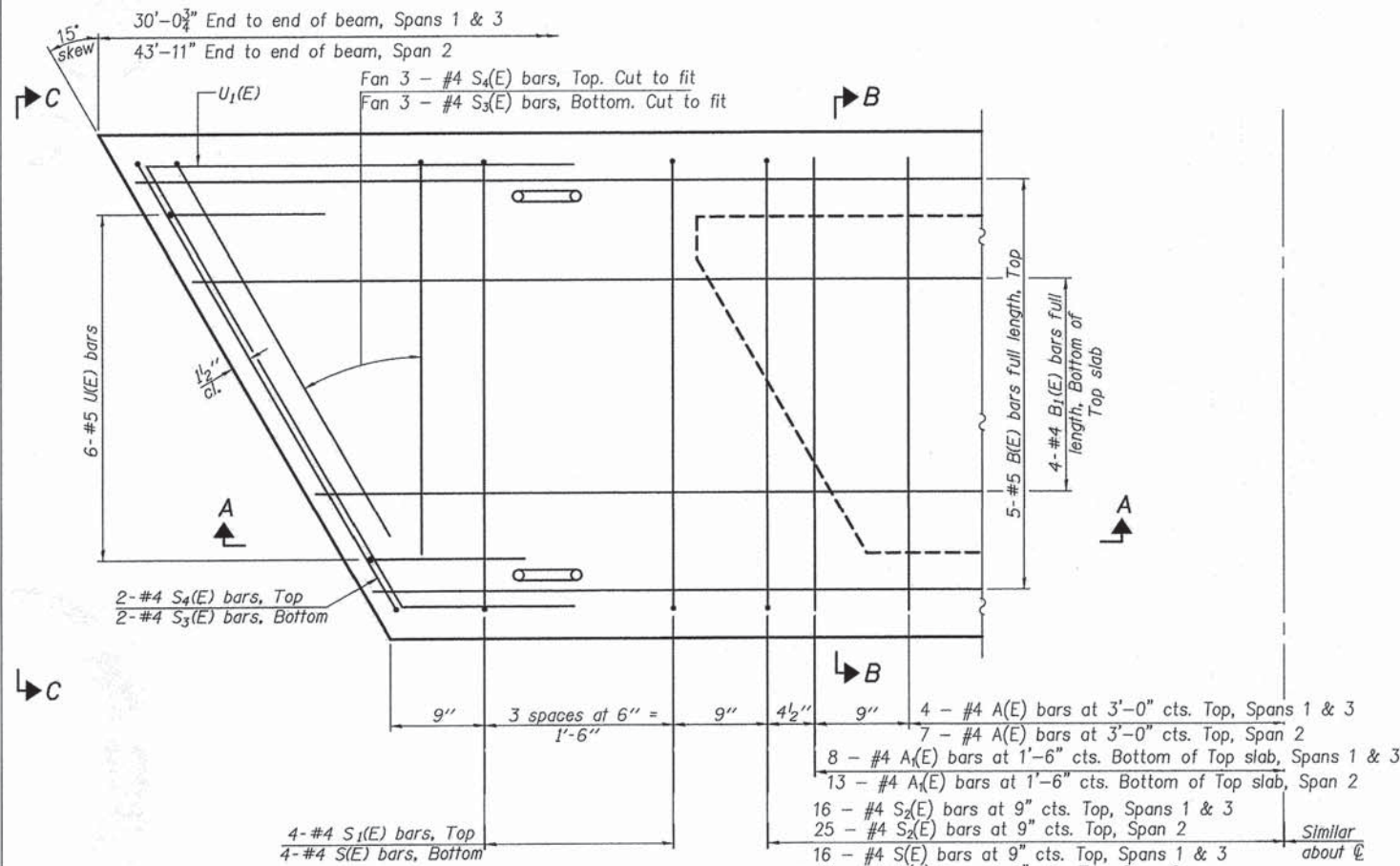
SECTION A-A



SECTION B-B
(Showing dimensions)



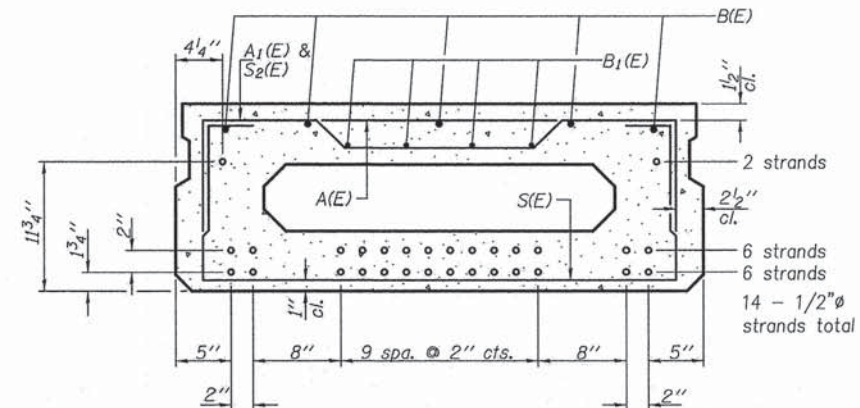
VIEW C-C



PLAN VIEW

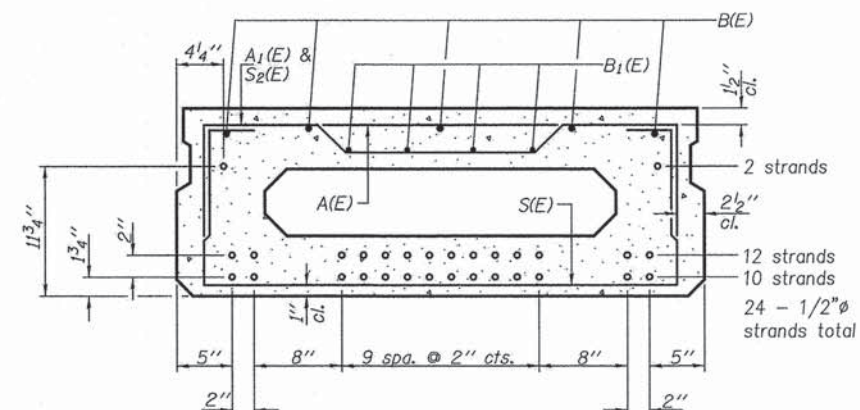
MINIMUM BAR LAP
 #4 bar = 2'-0"
 #5 bar = 2'-6"

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.



SECTION B-B, SPANS 1 & 3
(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.



SECTION B-B, SPAN 2
(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, SPANS 1 & 3
ONE BEAM ONLY
 (For information only)

Bar	No.	Size	Length	Shape
A(E)	8	#4	3'-7"	—
A1(E)	16	#4	3'-10"	—
B(E)	5	#5	29'-9 1/4"	—
B1(E)	4	#4	29'-9 3/4"	—
S(E)	40	#4	6'-9"	U
S1(E)	8	#4	5'-3"	U
S2(E)	32	#4	5'-6"	U
S3(E)	10	#4	5'-3 1/2"	U
S4(E)	10	#4	4'-6 1/2"	U
U(E)	12	#5	3'-8"	U
U1(E)	2	#4	7'-0 3/4"	U

Note: See sheet 5 of 10 for additional details and Bill of Material.

BAR LIST, SPAN 2
ONE BEAM ONLY
 (For information only)

Bar	No.	Size	Length	Shape
A(E)	14	#4	3'-7"	—
A1(E)	26	#4	3'-10"	—
B(E)	5	#5	43'-8"	—
B1(E)	4	#4	43'-8"	—
S(E)	58	#4	6'-9"	U
S1(E)	8	#4	5'-3"	U
S2(E)	50	#4	5'-6"	U
S3(E)	10	#4	5'-3 1/2"	U
S4(E)	10	#4	4'-6 1/2"	U
U(E)	12	#5	3'-8"	U
U1(E)	2	#4	7'-0 3/4"	U

Note: See sheet 5 of 10 for additional details and Bill of Material.

PD-1748-R

7-1-10

DESIGNED	REVISION	DATE	REMARKS
—	1	03/31/2015	REVISE FOR FINAL SUBMITTAL
DRAWN —			
CHECKED — PRN			
DATE — 01/14/2015			

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

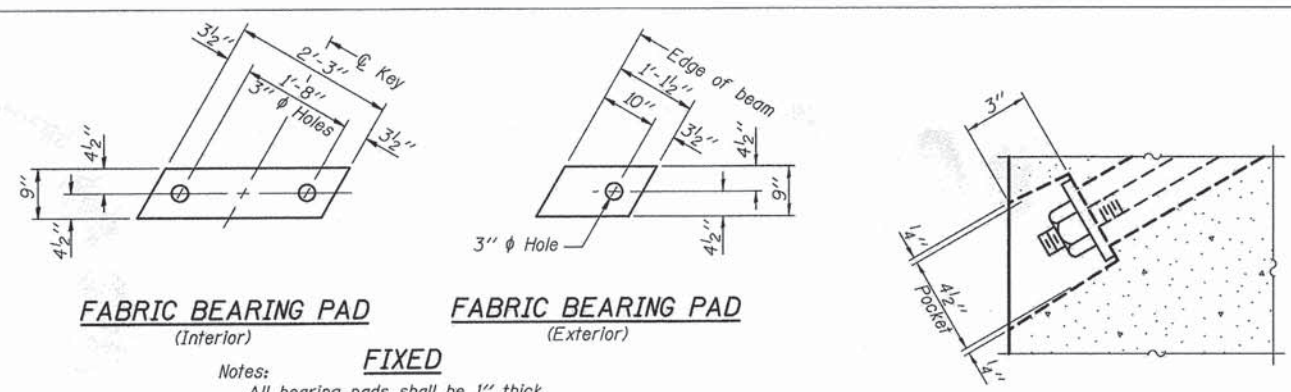
C.H. 17 (EMERALD ROAD)
 OVER BEAVER CREEK
 CLINTON COUNTY, ILLINOIS

17" x 48" PPC DECK BEAM

SCALE: SHEET 4 OF 10 SHEETS STA. TO STA.

T.R. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	11-00100-00-BR	CLINTON	13	7
	S.N. 014-5114		CONTRACT # C-98-330-12	
		ILLINOIS		

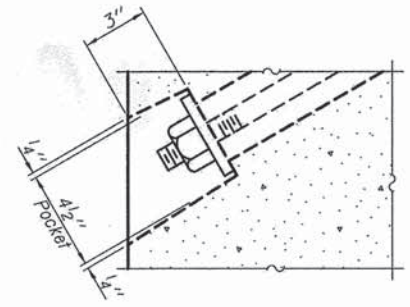
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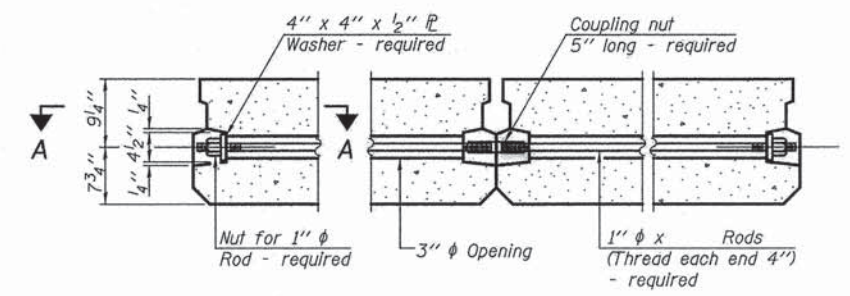
FABRIC BEARING PAD
(Interior)

FABRIC BEARING PAD
(Exterior)

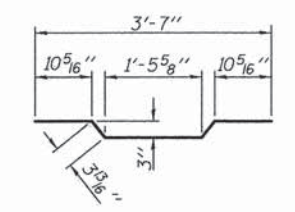
Notes:
FIXED
 All bearing pads shall be 1" thick.
 Omit holes when using expansion bearings.
 Expansion bearing pad shall be bonded to the substructure.



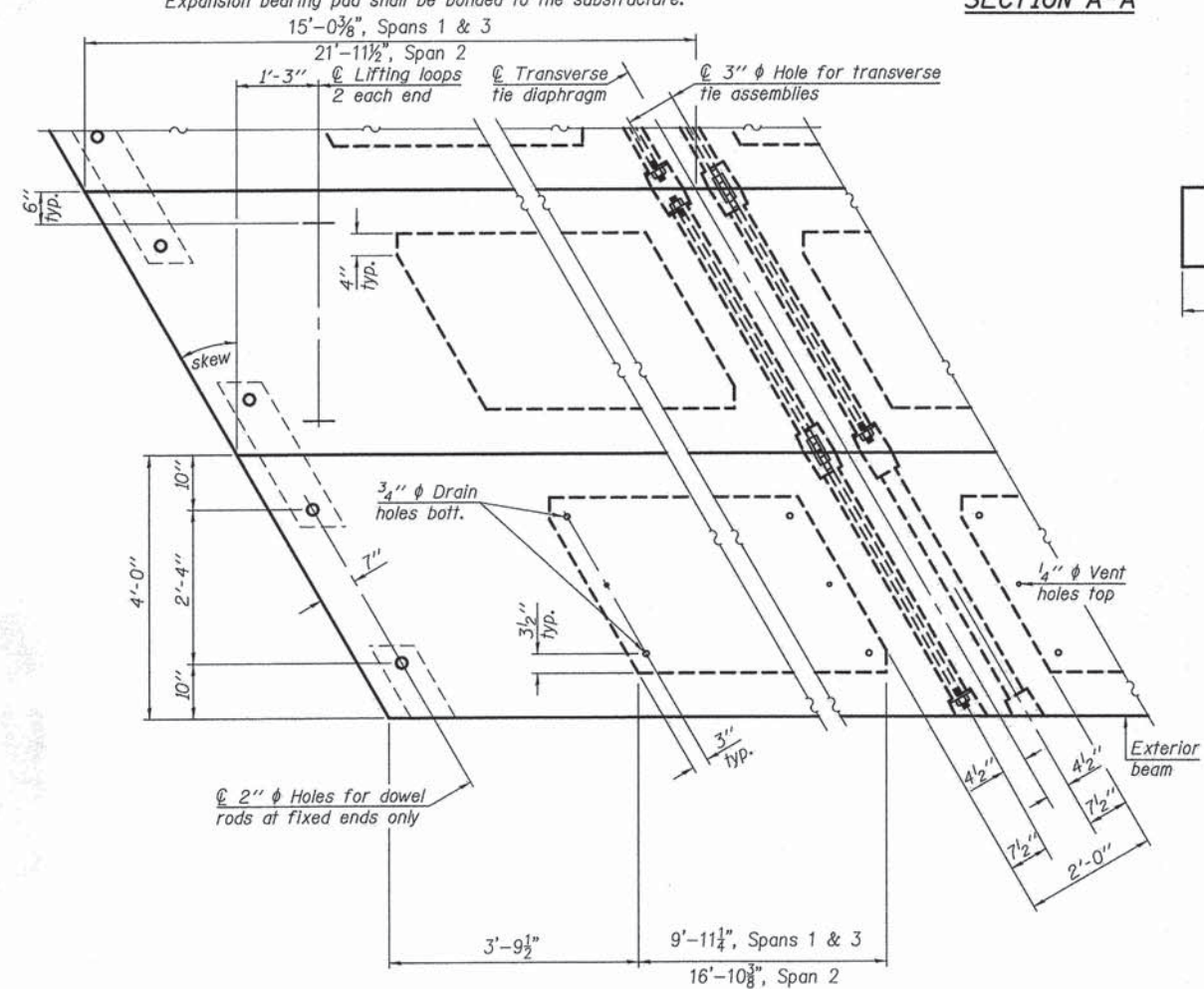
SECTION A-A



TYPICAL TRANSVERSE TIE ASSEMBLY



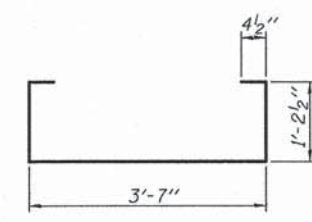
BAR A1(E)



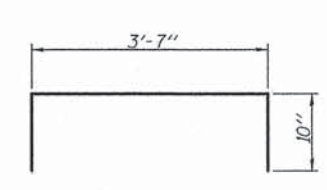
PLAN VIEW

NOTES

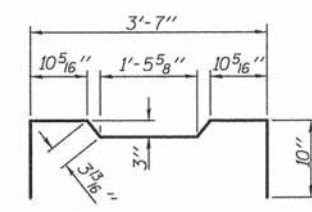
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" diameter rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets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



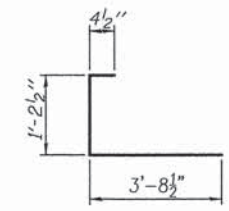
BAR S(E)



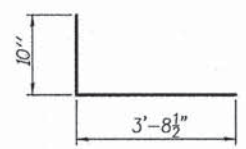
BAR S1(E)



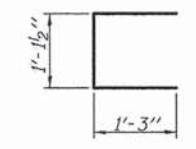
BAR S2(E)



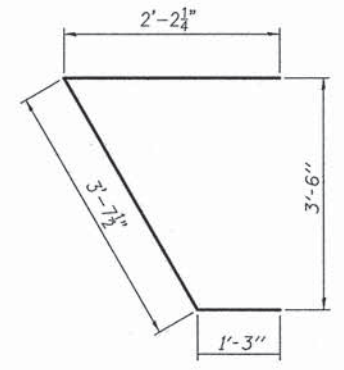
BAR S3(E)



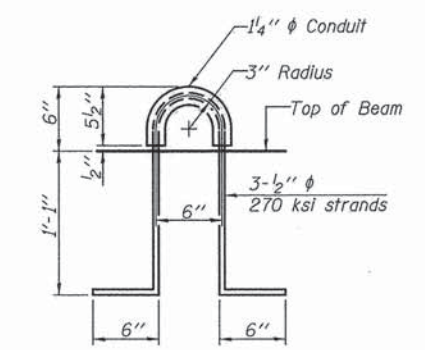
BAR S4(E)



BAR U(E)



BAR U1(E)



LIFTING LOOP DETAIL

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

BILL OF MATERIAL

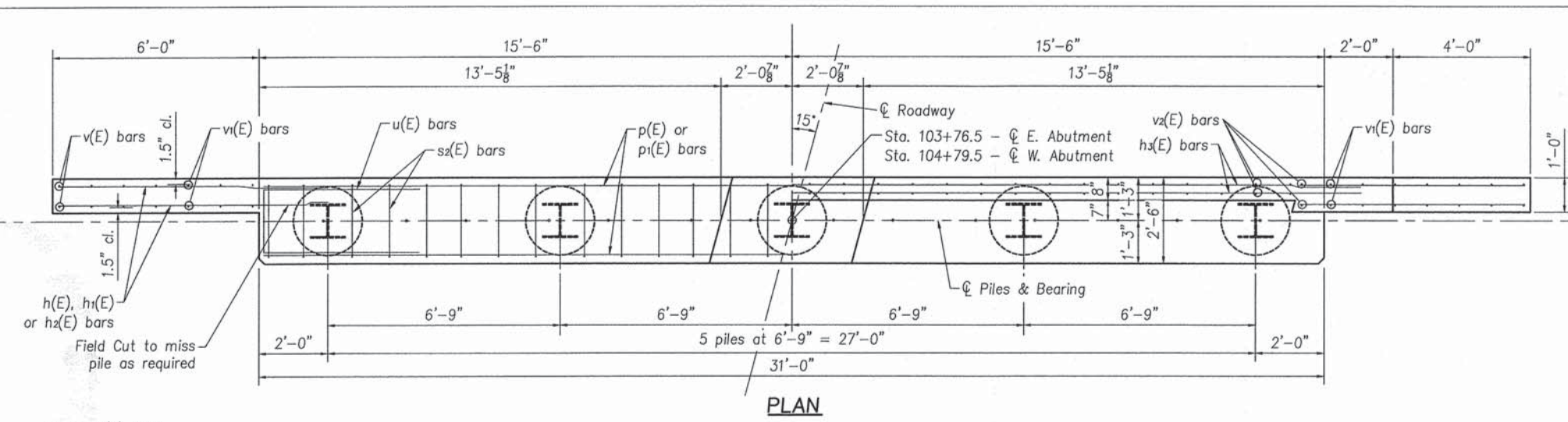
Precast Prestressed Conc. Deck Bms. (17" depth)	Sq. Ft.	2,913
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PD-1748-RD

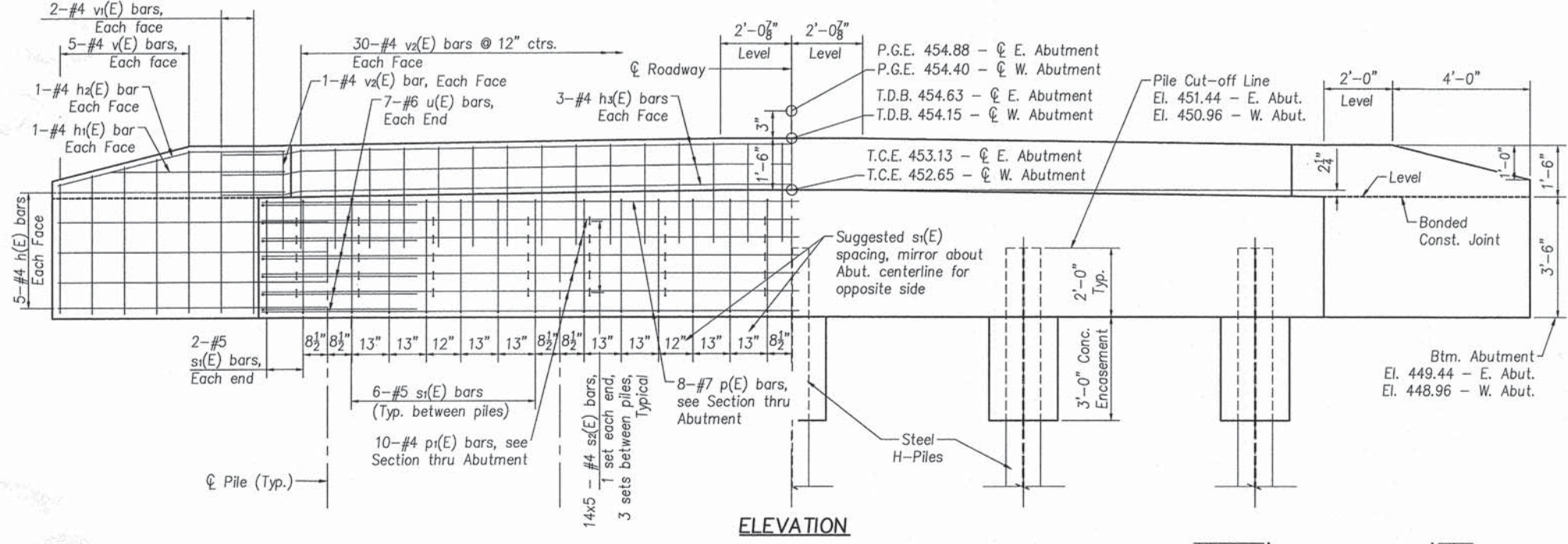
7-1-10

STRUCTURAL ENGINEER NETEMEYER ENGINEERING ASSOCIATES, INC. 3300 Highline Road Aviston, IL 62218-1018 ph: 618-229-7816 fax: 618-229-7800	DESIGNED — DRAWN — CHECKED — PRN DATE — 01/14/2015	REVISION 1 DATE 03/31/2015 REMARKS REVISE FOR FINAL SUBMITTAL	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	C.H. 17 (EMERALD ROAD) OVER BEAVER CREEK CLINTON COUNTY, ILLINOIS	17" x 48" DECK BEAM DETAILS SCALE: SHEET 5 OF 10 SHEETS STA. TO STA.	T.R. RT. SECTION COUNTY TOTAL SHEETS SHEET NO. 11-00100-00-BR CLINTON 13 8 S.N. 014-5114 CONTRACT # C-98-330-12 ILLINOIS
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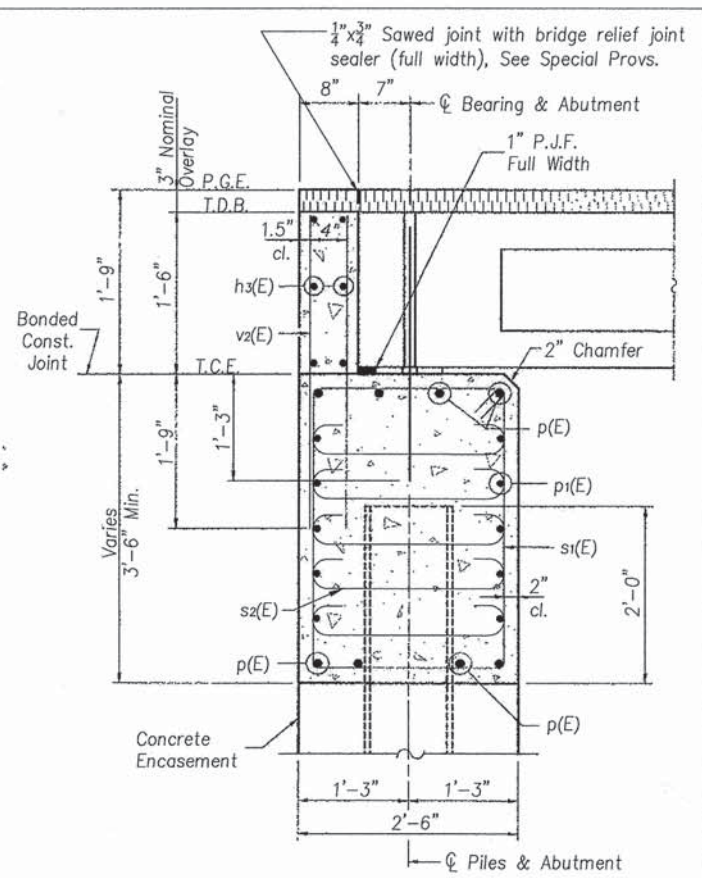
NETEMEYER 20140465



PLAN



ELEVATION



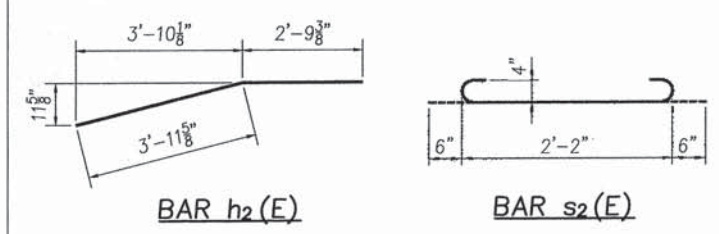
SECTION THRU ABUTMENT (at Right Angle)

BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h(E)	20	#4	7'-10"	—
h1(E)	4	#4	5'-1"	—
h2(E)	4	#4	6'-9"	—
h3(E)	6	#4	33'-1"	—
p(E)	8	#7	30'-8"	—
p1(E)	10	#4	30'-8"	—
s1(E)	28	#5	11'-7"	□
s2(E)	70	#4	4'-2"	U
u(E)	14	#6	11'-1"	□
v(E)	10	#4	8'-5"	—
v1(E)	8	#4	4'-8"	—
v2(E)	64	#4	3'-1"	—
Concrete Structures		Cu. Yd.	13.6	
Concrete Encasement		Cu. Yd.	1.8	
Reinforcement Bars, Epoxy Coated		Pound	1,955	
Furnishing Steel Piles, HP 12x53		Foot	196	
Driving Steel Piles		Foot	196	
Test Pile, Steel HP 12x53		Each	1	

PILE DATA

	EAST ABUT.	WEST ABUT.
Type:	Steel HP12x53	Steel HP12x53
Nominal Required Bearing:	178 kips	178 kips
Factored Resistance Available:	98 kips	98 kips
Estimated Length	49 feet	49 feet
No. of Production Piles	4	4
No. of Test Piles	1	1

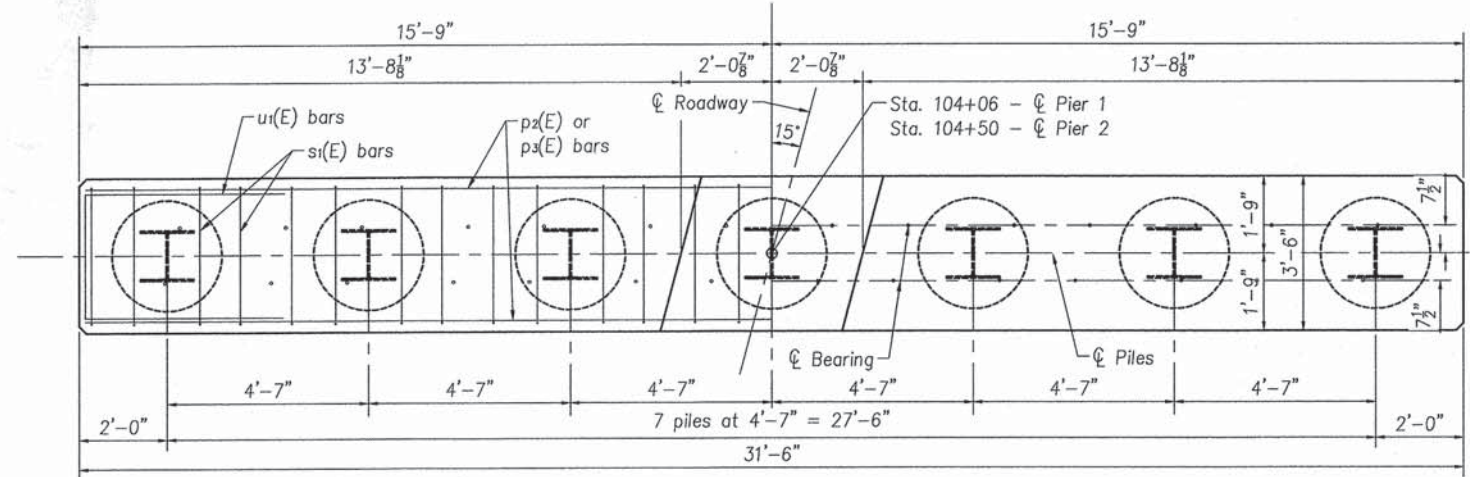


FIELD CUTTING DIAGRAM

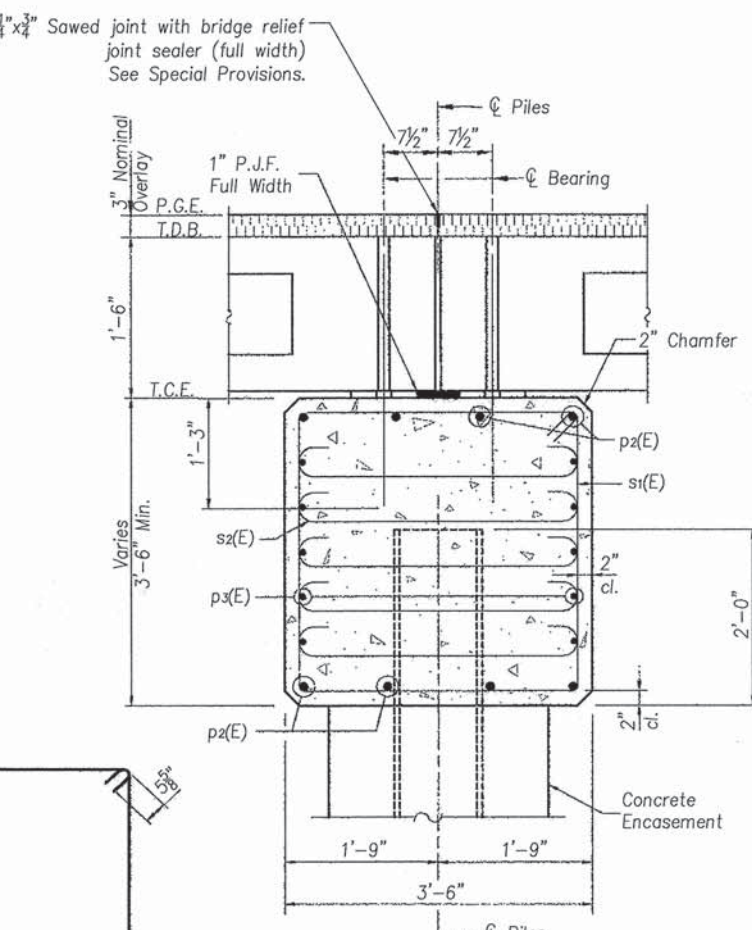
Order v(E) bars full length. Cut as shown and use remainder of bars on opposite face.

NOTES

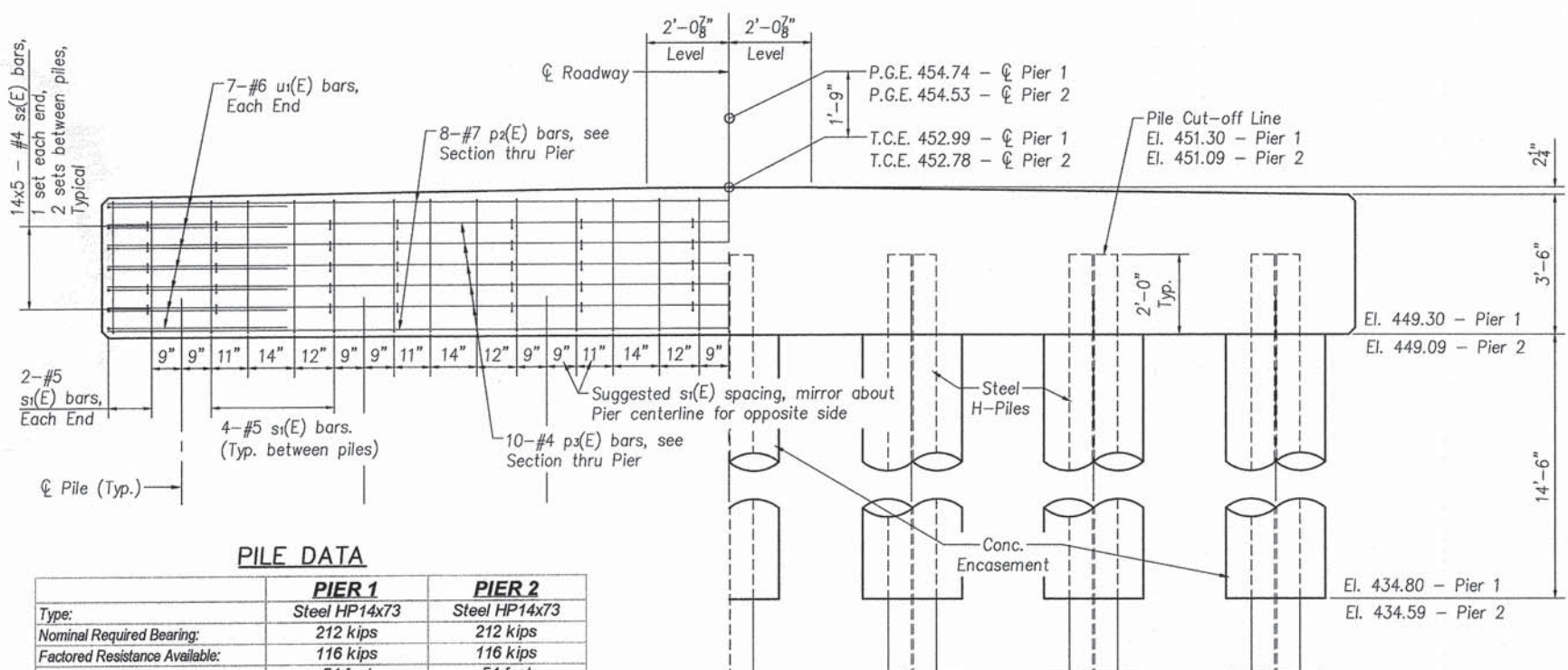
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
- Space reinforcement in pile cap to miss dowel rods.
- For details of piles and concrete encasement, see sheet 9 of 10.



PLAN



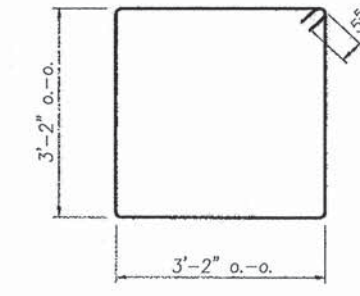
SECTION THRU PIER
(at Right Angle)



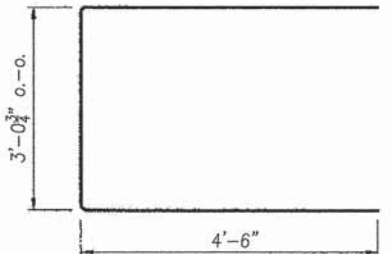
ELEVATION

PILE DATA

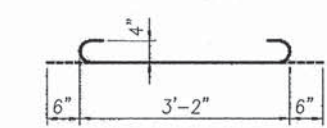
	PIER 1	PIER 2
Type:	Steel HP14x73	Steel HP14x73
Nominal Required Bearing:	212 kips	212 kips
Factored Resistance Available:	116 kips	116 kips
Estimated Length	54 feet	54 feet
No. of Production Piles	6	6
No. of Test Piles	1	1



BAR s1(E)



BAR u1(E)



BAR s2(E)

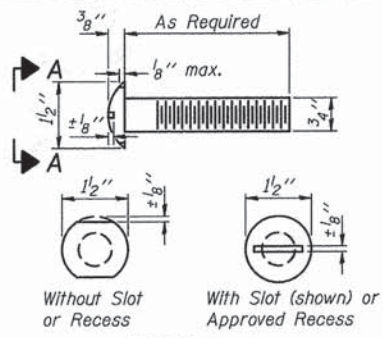
BILL OF MATERIAL
FOR ONE PIER

Bar	No.	Size	Length	Shape
p2(E)	8	#7	31'-2"	—
p3(E)	10	#4	31'-2"	—
s1(E)	28	#5	13'-7"	□
s2(E)	70	#4	4'-2"	⌋
u1(E)	14	#6	12'-1"	—
Concrete Structures			Cu. Yd.	14.6
Concrete Encasement			Cu. Yd.	17.9
Reinforcement Bars, Epoxy Coated			Pound	1,564
Furnishing Steel Piles, HP 14x73			Foot	324
Driving Steel Piles			Foot	324
Test Pile, Steel HP 14x73			Each	1

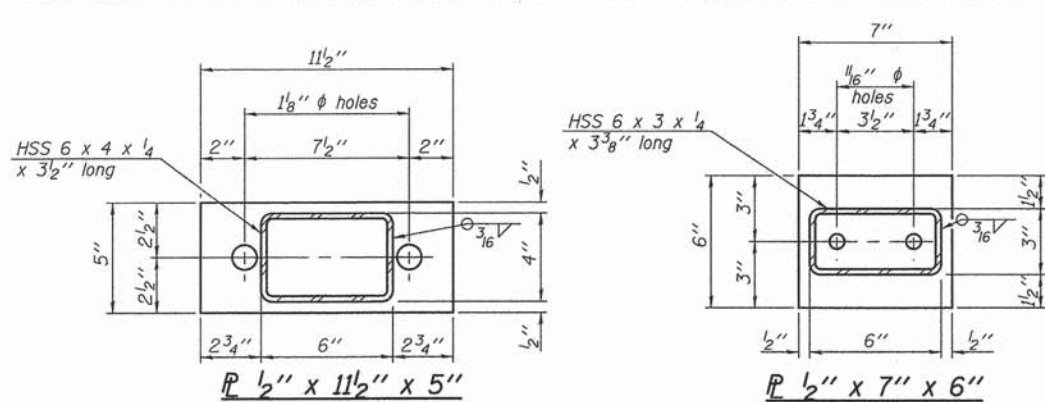
NOTES

- For details of piles and concrete encasement, see sheet 9 of 10.
- Space reinforcement in pile cap to miss dowel rods.
- If a portion of the concrete encasement is under water, reinforcement may be under water into forms. Concrete shall be tremied according to Article 503.08 of the Standard Specifications to an elevation of 1'-0" above the water line at the time of construction.

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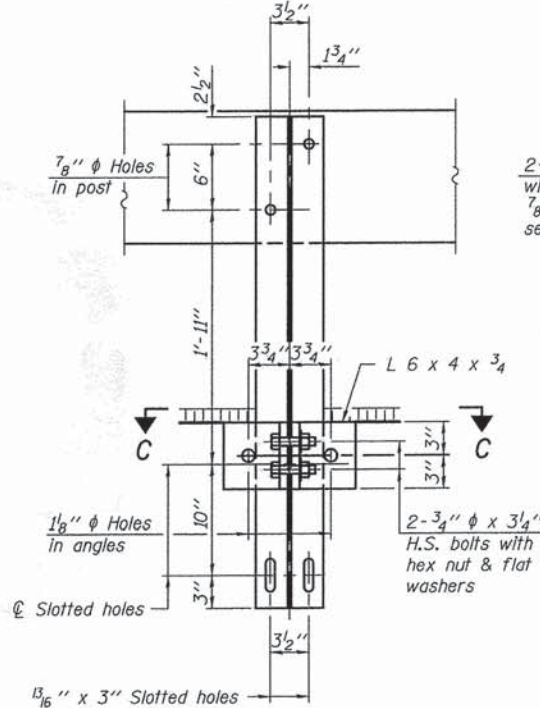


**VIEW A-A
ROUND HEAD BOLT**

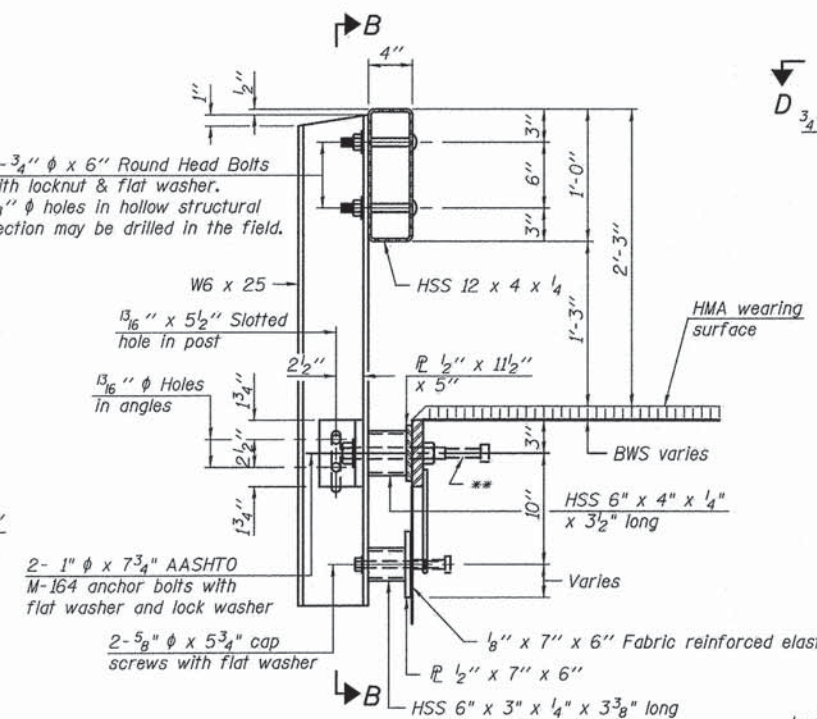


R 1/2" x 11 1/2" x 5"

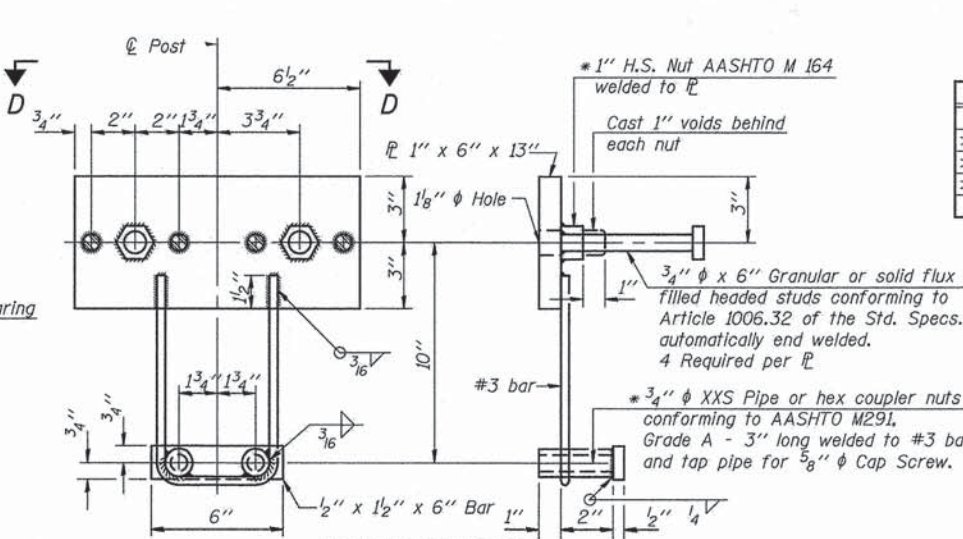
R 1/2" x 7" x 6"



SECTION B-B



SECTION AT RAILING POST



ANCHOR DEVICE

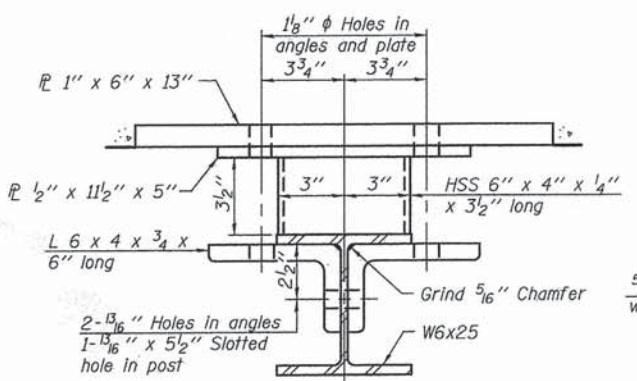
* Threaded areas shall be plugged or blocked off during casting of beam.

SPLICE DIMENSIONS

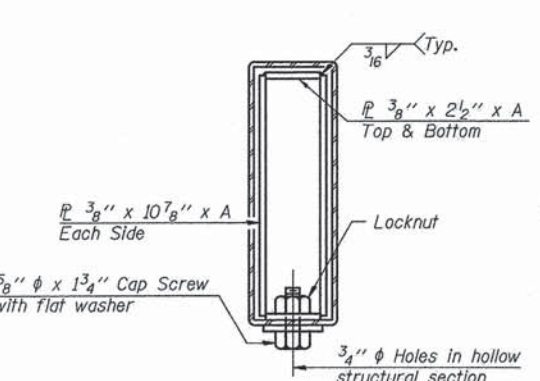
T	D	A	B	C	E
≤ 4"	2 1/2"	1'-8"	2"	4"	2 1/2"
> 4" ≤ 6 1/2"	3 3/4"	2'-0"	2 1/2"	5 1/2"	3 1/2"
> 6 1/2" ≤ 9"	5"	2'-4"	3 1/2"	6 1/2"	9"
> 9" ≤ 13"	7"	2'-10"	4 1/2"	8 1/2"	11"
Rail Splice	1 1/4"	1'-8"	2"	4"	

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

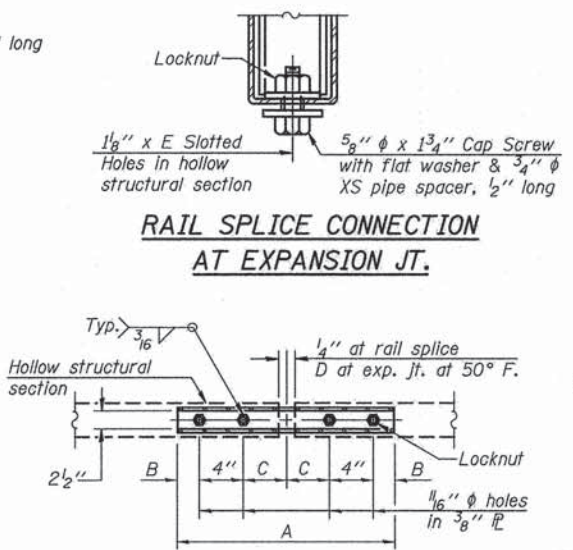
Notes:
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.
All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.
** The studs of 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.



SECTION C-C

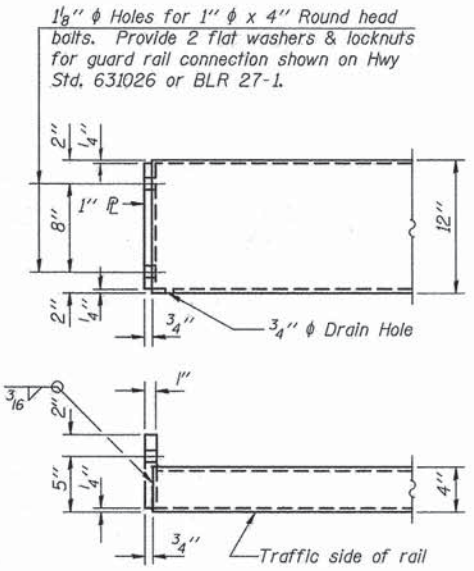


SECTIONS AT RAIL SPLICE

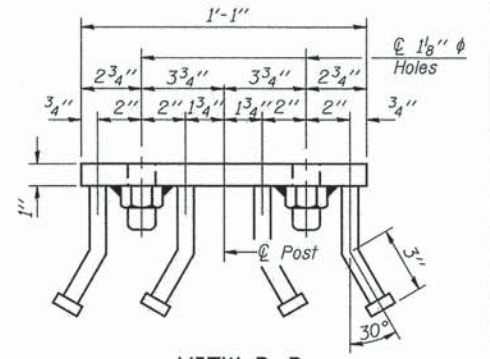


RAIL SPLICE CONNECTION AT EXPANSION JT.

PLAN-BOTT. SPLICE TYPICAL



END OF RAIL DETAILS



VIEW D-D

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	212

R-23A 1-12-15 (10'-9" Maximum Post Spacing)

DESIGNED	REVISION	DATE	REMARKS
---	1	03/31/2015	REVISE FOR FINAL SUBMITTAL
DRAWN ---			
CHECKED --- PRN			
DATE --- 01/14/2015			

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

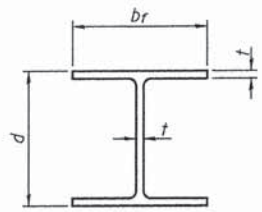
C.H. 17 (EMERALD ROAD)
OVER BEAVER CREEK
CLINTON COUNTY, ILLINOIS

STEEL RAILING, TYPE S-1

SCALE: SHEET 8 OF 10 SHEETS STA. TO STA.

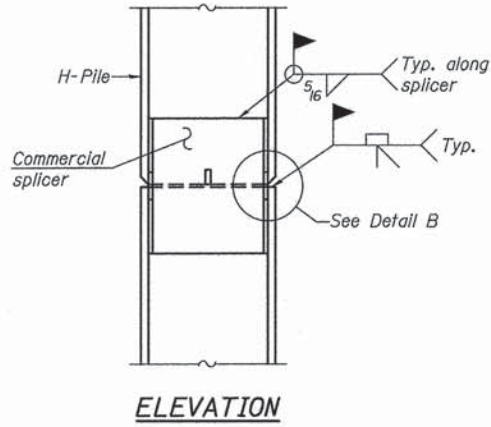
T.R. NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	11-00100-00-BR	CLINTON	13	11
	S.N. 014-5114	CONTRACT # C-98-330-12		
		ILLINOIS		

NETEMEYER 20140465

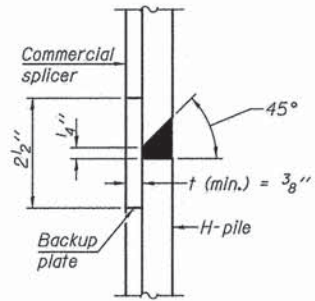


STEEL PILE TABLE

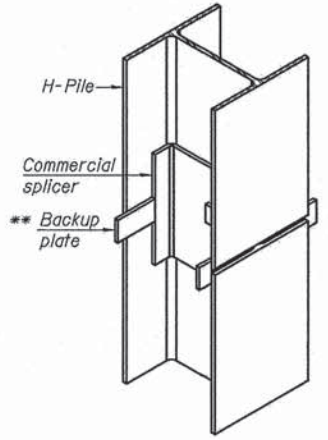
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	13/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11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



ELEVATION

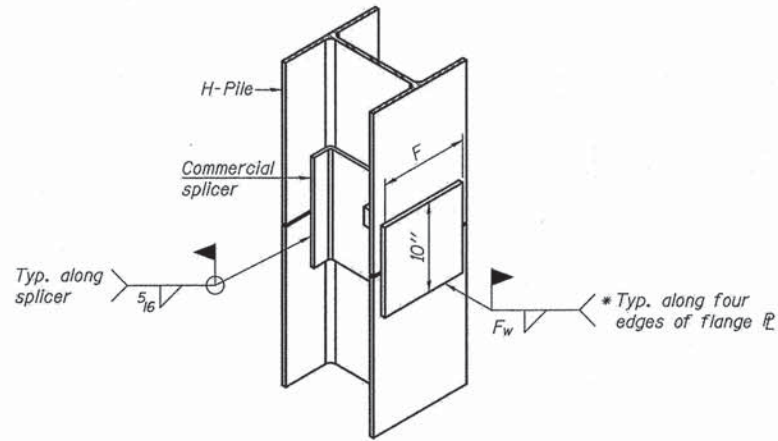


DETAIL "B"



ISOMETRIC VIEW

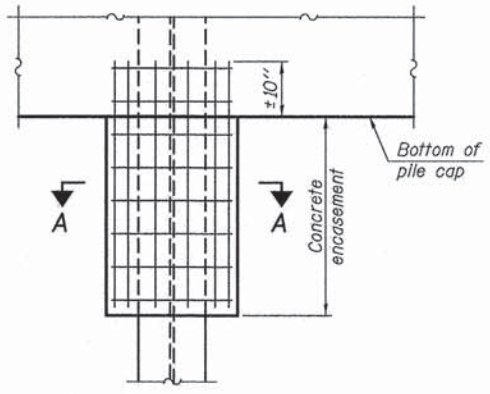
WELDED COMMERCIAL SPLICE



ISOMETRIC VIEW

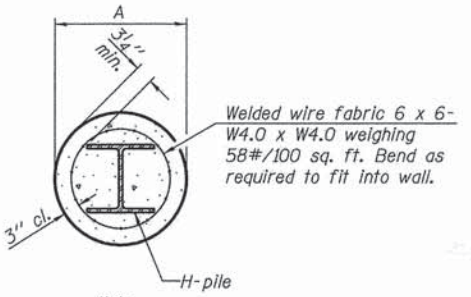
WELDED COMMERCIAL SPLICE ALTERNATE

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



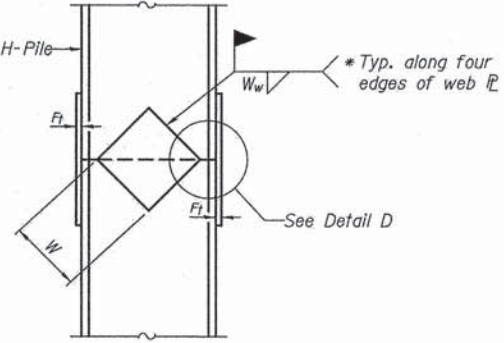
ELEVATION

PILE ENCASEMENT

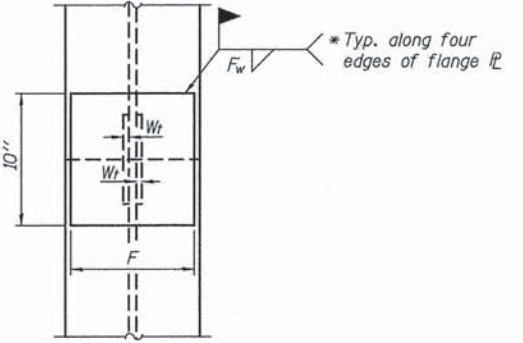


SECTION A-A

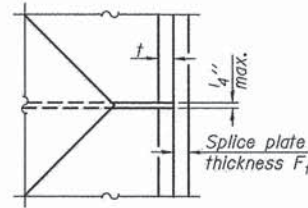
Note:
Forms for encasement may be omitted when soil conditions permit.



ELEVATION



END VIEW



DETAIL D

WELDED PLATE FIELD SPLICE

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"	1/16"	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"	1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	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"

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

F-HP

1-27-12

STRUCTURAL ENGINEER NETEMEYER ENGINEERING ASSOCIATES, INC. 3000 Highline Road Addison, IL 60101-1018 ph: 619-229-7916 fax: 619-229-7900	DESIGNED —	REVISION	DATE	REMARKS	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	C.H. 17 (EMERALD ROAD) OVER BEAVER CREEK CLINTON COUNTY, ILLINOIS	HP PILE DETAILS		T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.		
	DRAWN —	1	03/31/2015	REVISE FOR FINAL SUBMITTAL			SCALE:	SHEET 9 OF 10 SHEETS	STA.	TO STA.	11-00100-00-BR	CLINTON	13	12	
	CHECKED — PRN										S.N. 014-5114				
	DATE — 01/14/2015										ILLINOIS				CONTRACT # C-98-330-12

NETEMEYER 20140465



Bridge Foundation Boring Log

PROJECT BRIDGE County Highway 17 Date 8-27-85
ROUTE CH 17 Over Beaver Creek Bored By J. King
SEC. S.N. 3024 STA. 75+00 Checked By R. Nebelstick

Table with columns for Elevation, N, Qu t/s.f., w (%), Soil Description, and Test Results. Includes soil types like Brown and Gray Clay Till, Brown and Gray Silt, and Brown and Gray Silty Clay.

N-Standard Penetration Test-Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with 140 No. hammer falling 30".
Qu-Unconfined Compressive Strength - t/sf
w - Water Content - percentage of oven dry weight-%
Type failure: B - Bulge Failure, S - Shear Failure, E - Estimated Value, P - Penetrometer

BD 137 (Rev. 4-78)

BORING 1



Bridge Foundation Boring Log

PROJECT BRIDGE County Highway 17 Date 8-27-85
ROUTE CH 17 Over Beaver Creek Bored By J. King
SEC. S.N. 3024 STA. 75+00 Checked By R. Nebelstick

Table with columns for Elevation, N, Qu t/s.f., w (%), Soil Description, and Test Results. Includes soil types like Brown and Gray Clay Till, Brown and Gray Silty Clay, and Gray Silty Clay.

N-Standard Penetration Test-Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with 140 No. hammer falling 30".
Qu-Unconfined Compressive Strength - t/sf
w - Water Content - percentage of oven dry weight-%
Type failure: B - Bulge Failure, S - Shear Failure, E - Estimated Value, P - Penetrometer

BD 137 (Rev. 4-78)

BORING 2

BRIDGE FOUNDATION BORING LOG

Summary table for Bridge Foundation Boring Log with columns for Elevation, N, Qu t/s.f., w (%), Soil Description, and Test Results. Includes soil types like Brown and Gray Fine Grained Sand and Brown and Gray Medium Grained Sand.