

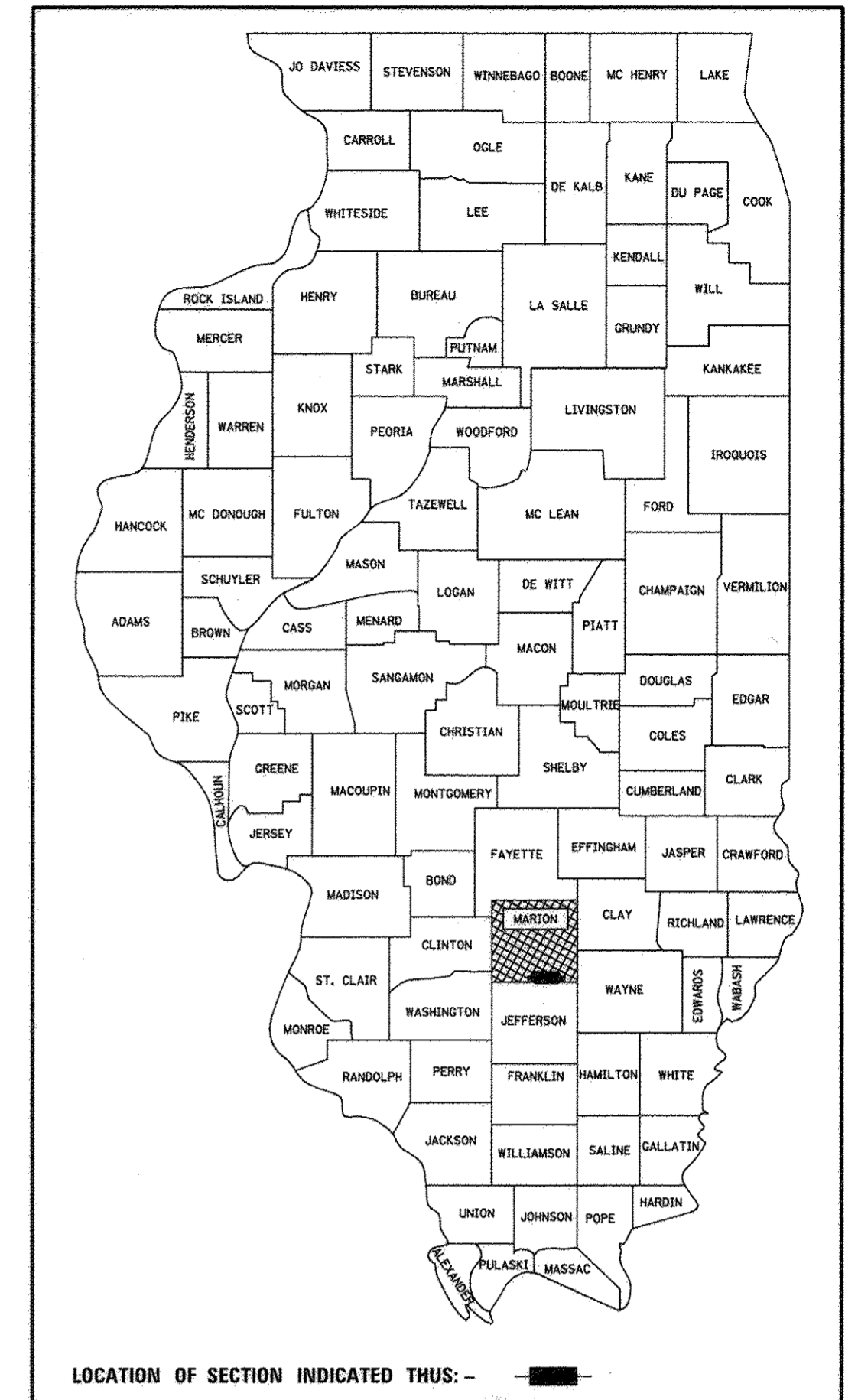
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**PLANS FOR PROPOSED  
STP-BRIDGE**

**CH 30 (KELL ROAD)  
OVER HORSE CREEK  
SECTION 13-00350-00-BR  
PROJECT NO. BROS-0121(063)  
MARION COUNTY  
JOB NO. C-98-320-14**

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 30	13-00350-00-BR	MARION	14	1
				CONTRACT NO. 97637
FED. AID PROJECT				

RAAI JOB NO. 51915



LOCATION OF SECTION INDICATED THUS: - [Symbol] -

**INDEX OF SHEETS**

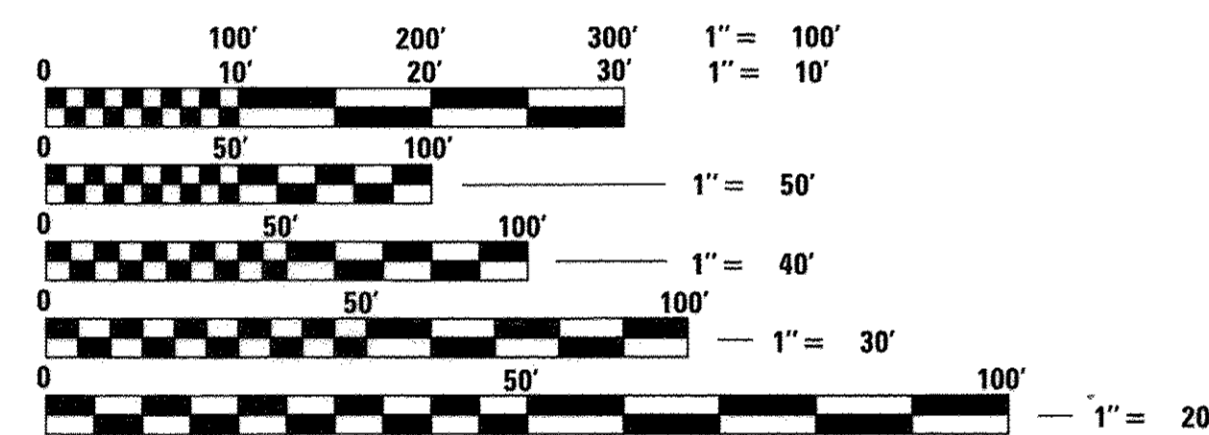
1. COVER SHEET
2. SUMMARY OF QUANTITIES, TYPICAL SECTIONS, AND GENERAL NOTES
3. PLAN AND PROFILE OF ROADWAY
4. GENERAL PLAN AND ELEVATION
- 5.-8. PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
9. STEEL RAILING, TYPE S1 DETAILS
10. ABUTMENT DETAILS
11. PIER DETAILS
12. HP PILE DETAILS
- 13.-14. CROSS SECTIONS OF ROADWAY

- HIGHWAY STANDARDS (SEE SPECIFICATIONS)
- 000001-06 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
  - 515001-03 NAME PLATE FOR BRIDGES
  - 630301-07 SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
  - 701901-06 TRAFFIC CONTROL DEVICES
  - 725001-01 OBJECT AND TERMINAL MARKERS
  - BLR 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS
  - BLR 23-4 TRAFFIC BARRIER TERMINAL, TYPE 1
  - BLR 24-2 MAILBOX TURNOUT FOR LOCAL ROADS
  - BLR 27-1 TRAFFIC BARRIER TERMINAL, TYPE 5A

SOIL BORINGS (SEE SPECIFICATIONS)

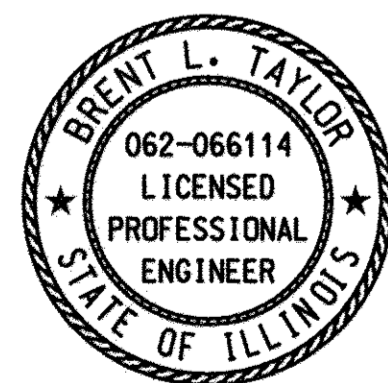
DESIGN CLASSIFICATION: RURAL LOCAL ROAD  
ADT<sub>2015</sub> : 125

DESIGN SPEED: 30 MPH

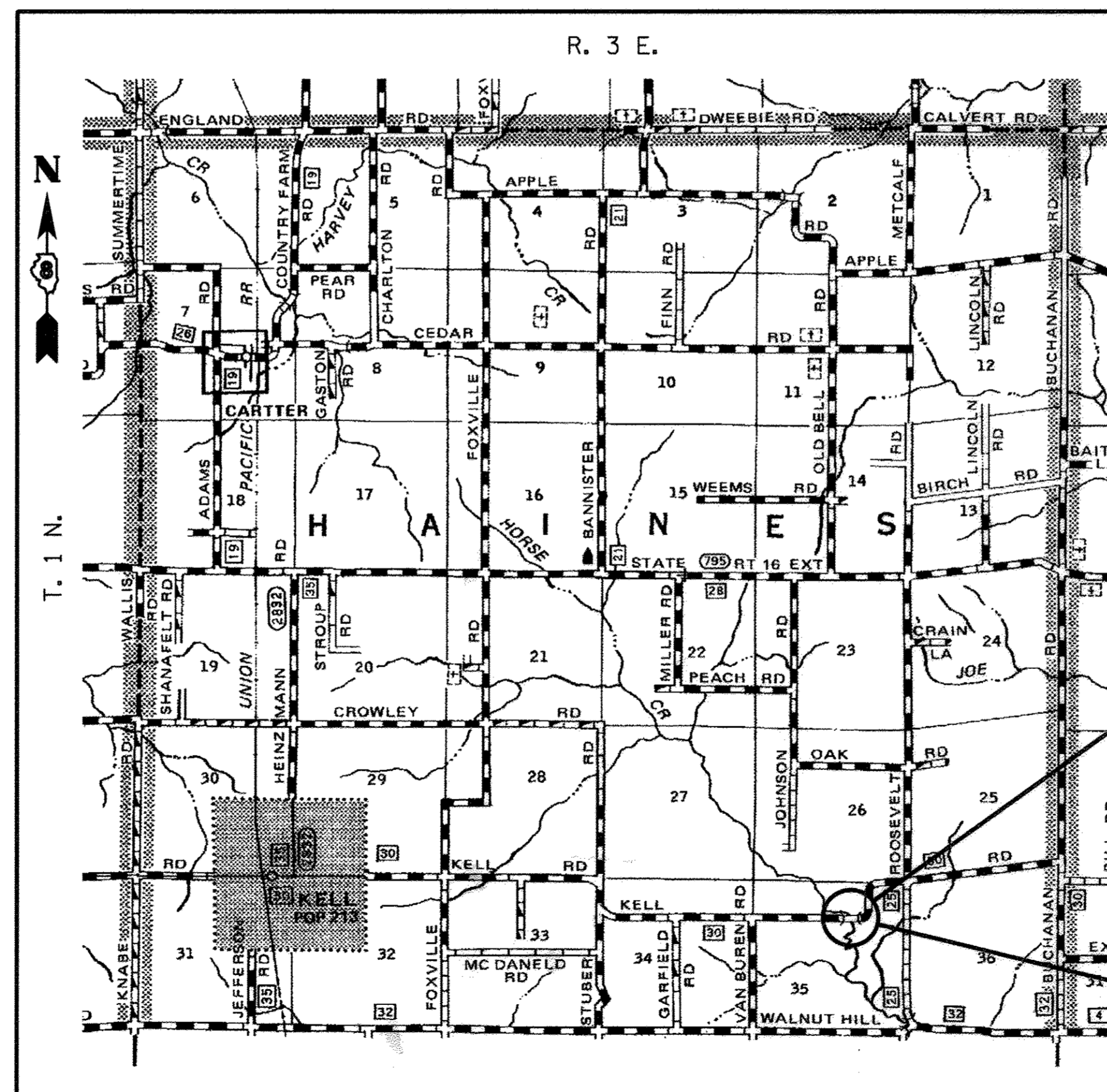


FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS  
1-800-892-0123 or 811 Website: <http://www.illinois1call.com>



*Brent L. Taylor* 10/07/2016  
BRENT L. TAYLOR  
CENTRALIA, ILLINOIS  
ILLINOIS LICENSED PROFESSIONAL  
ENGINEER NO. 062-066114  
EXPIRES NOV. 30, 2017



SECTION BEGINS  
STA. 47+35.00

SECTION 13-00350-00-BR INCLUDES THE CONSTRUCTION OF A THREE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE CARRYING CH 30 (KELL ROAD) OVER HORSE CREEK, 115'-8" BK. TO BK. ABUTMENTS X 24' WIDE. NO SKEW. EXISTING STRUCTURE NO. 061-3010 PROPOSED STRUCTURE NO. 061-3321

SECTION ENDS  
STA. 52+55.00

LOCATION: NEAR THE SE CORNER OF THE NW 1/4 OF THE NE 1/4, SECTION 35, T1N, R3E, 3RD P.M.  
NET LENGTH OF PROJECT: 520.00 FT. = 0.098 MI.

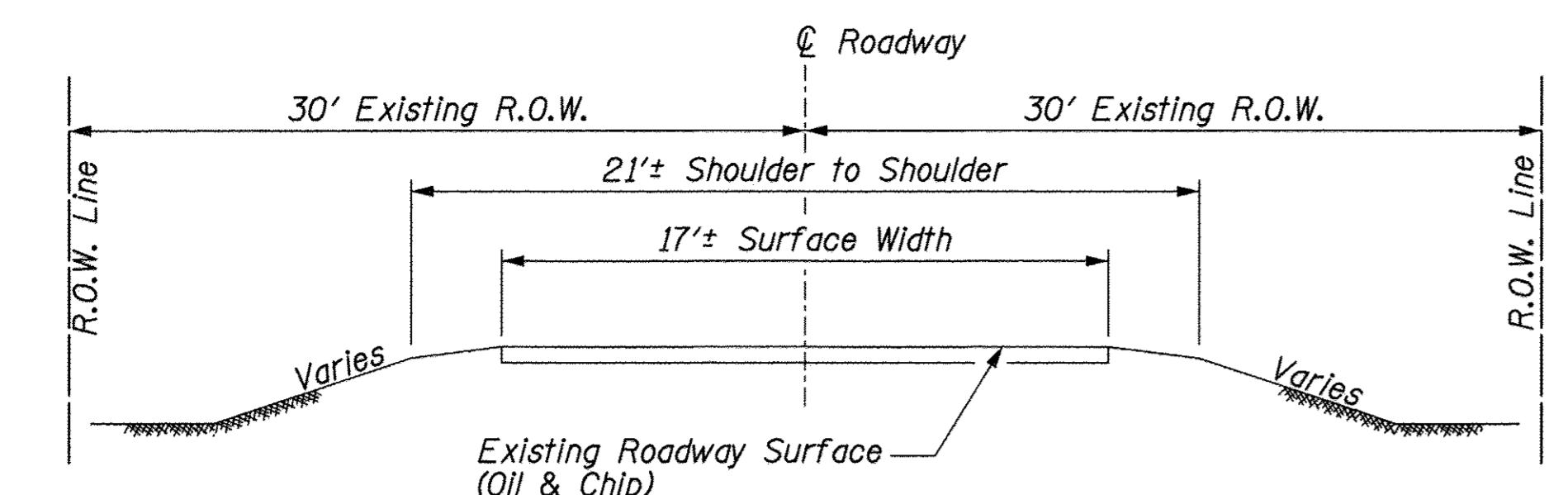
MARION COUNTY  
HIGHWAY DEPARTMENT

APPROVED *[Signature]*, 2016  
MARION COUNTY, COUNTY ENGINEER

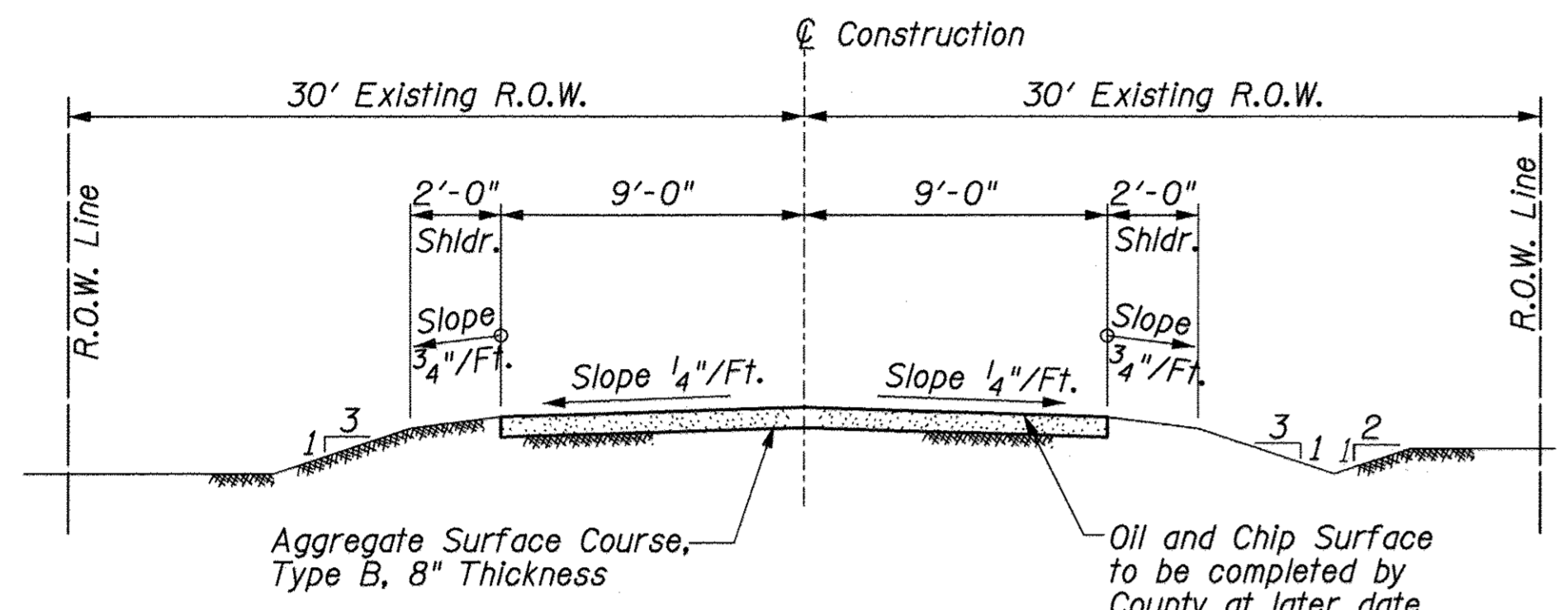
PASSED *[Signature]*, 2016  
DISTRICT EIGHT ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID  
BASED ON LIMITED  
REVIEW *[Signature]*, 2016  
REGION FIVE ENGINEER

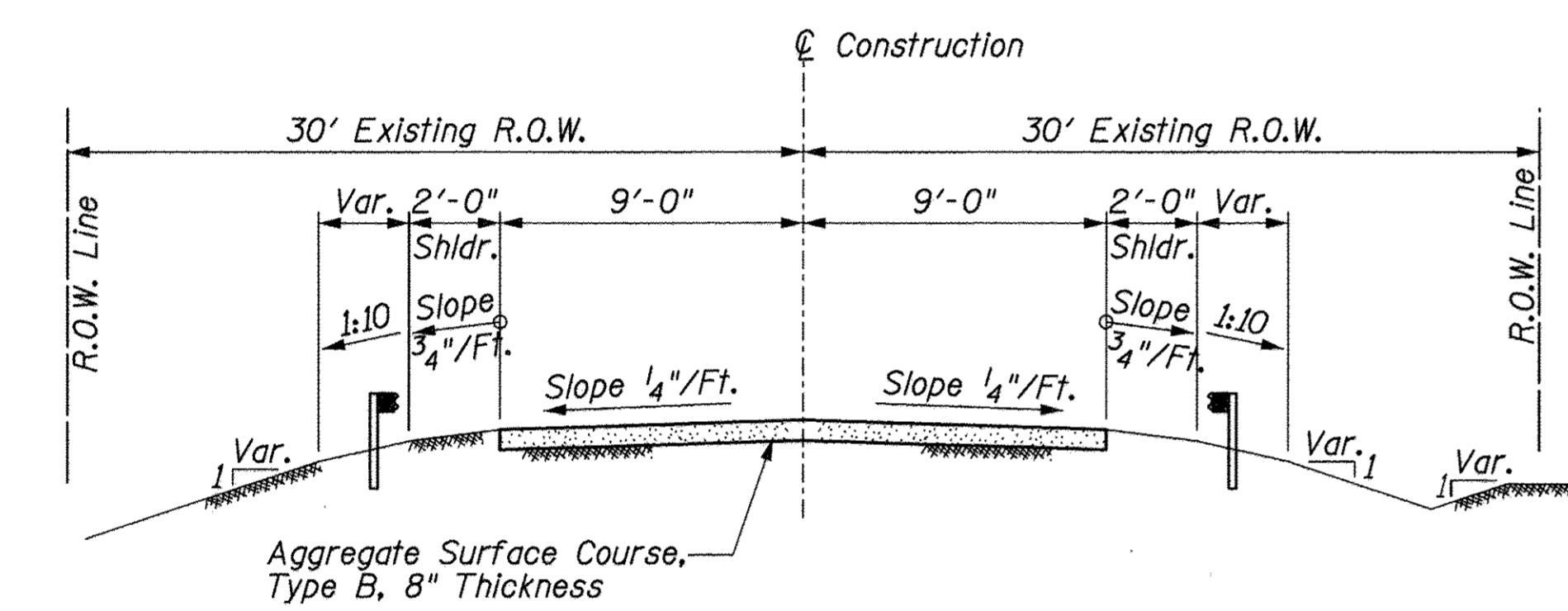
**PRINTED BY THE AUTHORITY  
OF THE STATE OF ILLINOIS**



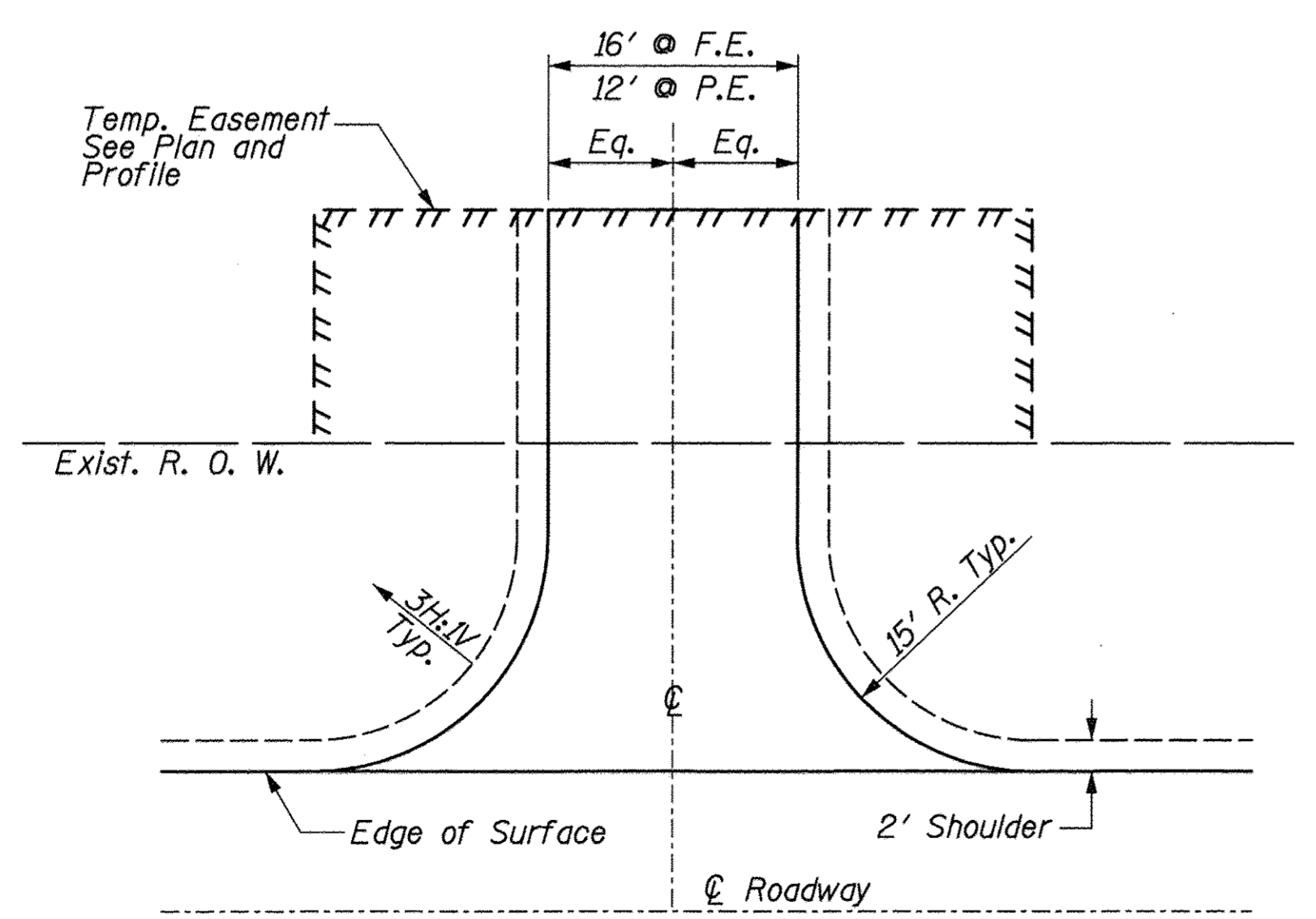
**TYPICAL SECTION  
EXISTING APPROACH ROADWAY**



**TYPICAL SECTION  
PROPOSED APPROACH ROADWAY  
Without Guardrail**



**TYPICAL SECTION  
PROPOSED APPROACH ROADWAY  
With Guardrail**



**TYPICAL ENTRANCE DETAIL**  
Lt., Sta. 48+36 (Turf Surface)  
Rt., Sta. 48+82 (6" Agg. Surf. 26 Ton)  
Lt., Sta. 51+48 (Turf Surface)

See General Note 4  
for Mailbox Turnout

**UTILITIES**

J.U.L.I.E. Dig No. X2120954  
Electric:  
Tri-County Electric Cooperative  
Dennis Ivers  
3906 Broadway  
Mount Vernon, IL 62864  
Phone: 618-244-5151  
Water:  
Raccoon Water Company  
Jason Green  
Phone: 618-292-7622  
Phone: 618-533-3474  
Telephone:  
AT&T  
Todd Isaak (Engineering Dept.)  
3526 State Route 161  
Centralia, IL 62801  
Phone: 618-533-3501

**EXTRA BARS FOR  
TEST SAMPLES**

Bar	No.	Size	Length	Shape
s	2	#4	11'-3"	□
v	3	#5	4'-0"	—
h	2	#6	7'-10"	—
p	1	#7	24'-8"	—
Reinforcement Bars			Pound	100

These bars shall be identical to and delivered with the bars of the same mark listed on the bridge sheets. This chart assumes that all bars of the same size on the job will have the same heat numbers. If bars of the same size on the job have different heat numbers, then the Contractor shall supply additional bars from other heat numbers for sampling by the Engineer at no additional cost.

The weight of these extra bars has been included in the Summary of Quantities for the project.

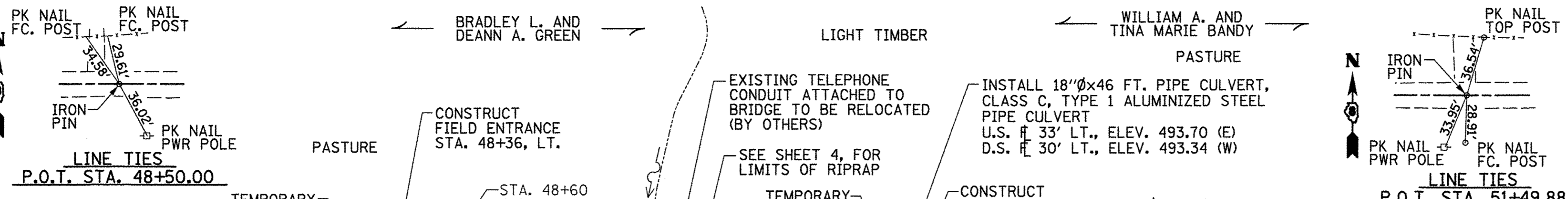
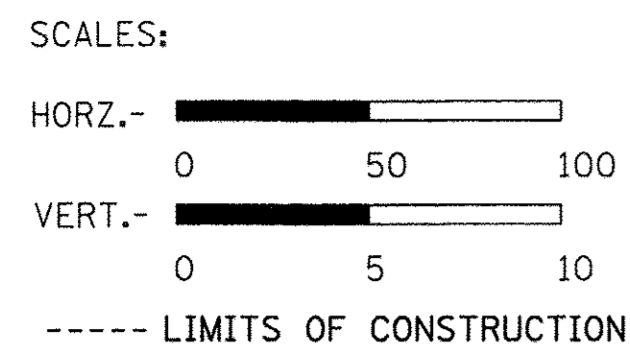
**SUMMARY OF QUANTITIES**

Code No.	Item	Unit	Quantity
20100500	Tree Removal, Acres	Acre	0.2
20200100	Earth Excavation	Cu Yd	65
20300100	Channel Excavation	Cu Yd	652
20400800	Furnished Excavation	Cu Yd	738
20700110	Porous Granular Embankment	Ton	72
28100807	Stone Dumped Riprap, Class A4	Ton	534
40200800	Aggregate Surface Course, Type B	Ton	409
50100100	Removal of Existing Structures	Each	1
50105220	Pipe Culvert Removal	Foot	27
50300225	Concrete Structures	Cu Yd	40.6
50300280	Concrete Encasement	Cu Yd	20.8
50400405	Precast Prestressed Concrete Deck Beams (21" Depth)	Sq Ft	2736
50800105	Reinforcement Bars	Pound	5640
* 50900205	Steel Railing, Type S1	Foot	232
51201600	Furnishing Steel Piles HP12x53	Foot	748
51201900	Furnishing Steel Piles HP14x89	Foot	748
51202305	Driving Piles	Foot	1496
51203600	Test Pile Steel HP12x53	Each	1
51203900	Test Pile Steel HP14x89	Each	1
51500100	Name Plates	Each	1
542C0223	Pipe Culverts, Class C, Type 1 18"	Foot	46
* 63100075	Traffic Barrier Terminal, Type 5A	Each	4
* 63100167	Traffic Barrier Terminal, Type 1 (Special) Tangent	Each	3
67100100	Mobilization	L Sum	1
* 72501000	Terminal Marker - Direct Applied	Each	4
X2501000	Seeding, Class 2 (Special)	Acre	0.3
X7010216	Traffic Control and Protection (Special)	L Sum	1
* LR631020	Traffic Barrier Terminal, Type 1	Each	1

\* Specialty Item

**GENERAL NOTES**

- This section shall be constructed according to the plans, the Special Provisions, and the "Standard Specifications for Road and Bridge Construction", adopted April 1, 2016.
- Roadway Centerline profiles refer to the finished surface.
- Existing utilities shown are located from surface observations or information provided by the respective utilities and must be considered approximate and are only included for the convenience of the bidder. There may be others, the exact location of which are unknown and not shown. The Contractor will be responsible for notifying the respective utilities before work is begun. Field marking of underground utilities may be obtained by providing a minimum of 48 hours advance notice through the J.U.L.I.E. system by calling 1-800-892-0123, 811, or by direct contact with non-members of J.U.L.I.E.
- There is 1 mailbox within the Limits of Construction. Relocate per Article 107.20 and Std. BLR 24-2. Utilize Aggregate Surface Course, Type B, 6" depth. 3 Ton each turnout (included in Summary of Quantities).
- Factors used for quantity calculations are as follows:  
Porous Granular Embankment 2.1 tons/cu. yd.  
Stone Dumped Riprap 130 pounds/cu. ft.  
Aggregate Surface Course 2.1 tons/cu. yd.
- If Ash trees are removed on the Project, the Contractor shall become familiar with and comply with measures specified by the Illinois Department of Agriculture (IDOA) to prevent the spread of the Emerald Ash Borer. The IDOA information for Ash tree removal can be found on the IDOA website at [www.agr.state.il.us/eab](http://www.agr.state.il.us/eab).
- Commitments:  
Existing fence removal and replacement within the limits of construction will be done by others and will be coordinated by the Marion County Highway Department. The removal will be completed prior to the start of construction.  
Impacts to trees will be mitigated by the Marion County Highway Department per IDOT Departmental Policy D&E-18 Preservation and Replacement of Trees.  
No work will be conducted on the bridge from April 1 through August 15 of any construction year in order to protect nesting birds under the bridge. If the bridge work cannot be started until after April 1, netting or other obstructions will be placed under the bridge prior to April 1 to prevent birds or bats from nesting under the bridge. See special provisions.  
The County Engineer will perform a bridge assessment for signs of bats prior to construction.  
As of August 3, 2016, no other commitments have been made.



EXISTING STRUCTURE: STA. 50+00, THREE SPAN BRIDGE WITH PRECAST CONCRETE CHANNEL BEAMS, CLOSED TIMBER ABUTMENTS WITH TIMBER PILE BENT PIERS, 60'Lx26.25'W, NO SKEW, TO BE REMOVED. SEE SPECIAL PROVISIONS.

TREE REMOVAL, ACRES	
LOCATION	ACRE
LT., STA. 48+40 TO STA. 51+40	0.2
<b>TOTAL</b>	<b>0.2</b>

EARTHWORK SCHEDULE				
LOCATION	EARTH EXCAVATION CU. YD.	EARTH EXCAVATION ADJUSTED FOR SHRINKAGE* CU. YD.	EMBANKMENT CU. YD.	EARTHWORK BALANCE** WASTE (+) OR SHORTAGE (-) CU. YD.
STA. 47+35.00 TO STA. 49+35.17	35	26	476	-450
STA. 50+50.83 TO STA. 52+55.00	30	23	311	-288
<b>TOTAL</b>	<b>65</b>	<b>49</b>	<b>787</b>	<b>-738</b>

\*25% SHRINKAGE      \*\*FURNISHED EXCAVATION

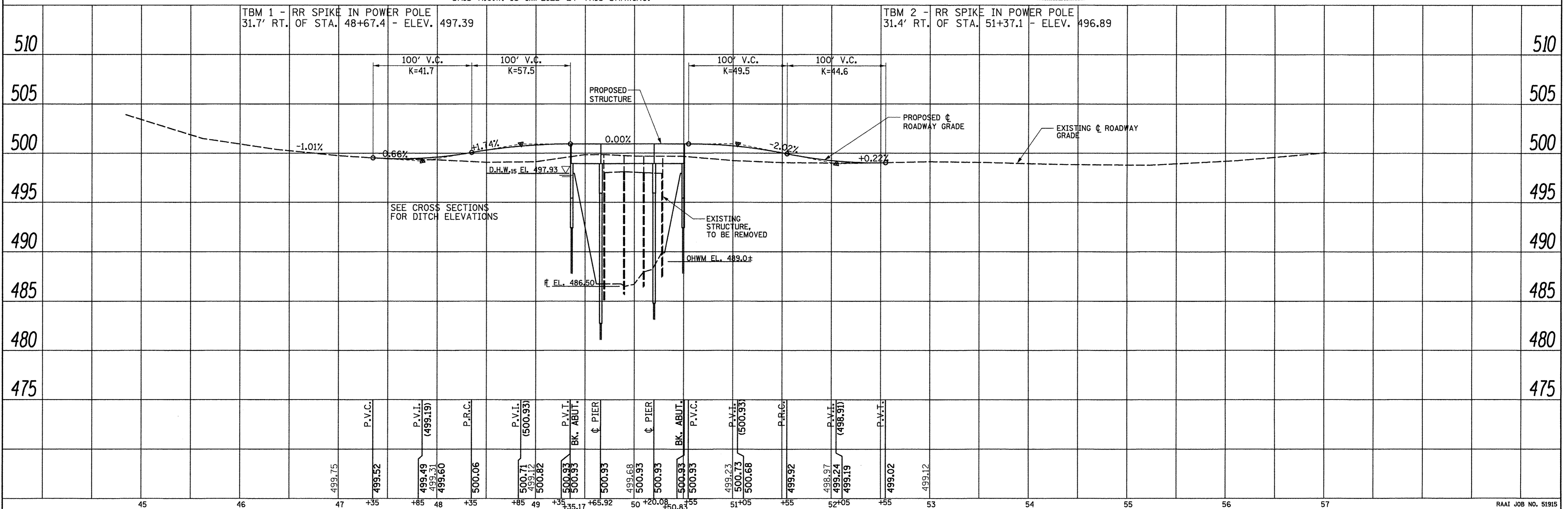
\* TRANS. FROM EXISTING PAVEMENT WIDTH OF 17' (STA. 47+35.00) TO PROPOSED PAVEMENT WIDTH OF 18' (STA. 47+65.00)

\*\* TRANS. FROM PROPOSED PAVEMENT WIDTH OF 18' (STA. 52+25.00) TO EXISTING PAVEMENT WIDTH OF 17' (STA. 52+55.00)

THE EXISTING RIGHT OF WAY SHOWN HEREON HAS BEEN PROTRACTED FROM EXISTING RECORDS AND IS TO BE USED FOR REFERENCE PURPOSES ONLY. FURTHERMORE, NO COMPLETE SURVEY OF SAID R.O.W. IS IMPLIED BY THIS DRAWING.

DATE	
BY	
PLAN	
NO.	
REVISIONS	
NO.	
DATE	
BY	
DESCRIPTION	

DATE	
BY	
PROFILE	
NO.	
REVISIONS	
NO.	
DATE	
BY	
DESCRIPTION	



DESIGNED - JN	REVISED -	ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
DRAWN - JN	REVISED -	CH 30	13-00350-00-BR	MARION	14	3	
CHECKED - BLT	REVISED -					CONTRACT NO. 97637	
DATE - 10/07/2016	REVISED -					FED. AID PROJECT	

**RHUTASEL and ASSOCIATES, INC.**  
CONSULTING ENGINEERS • LAND SURVEYORS  
CENTRAL ILLINOIS      FRESBURG, ILLINOIS  
ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

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

**PLAN AND PROFILE OF ROADWAY**

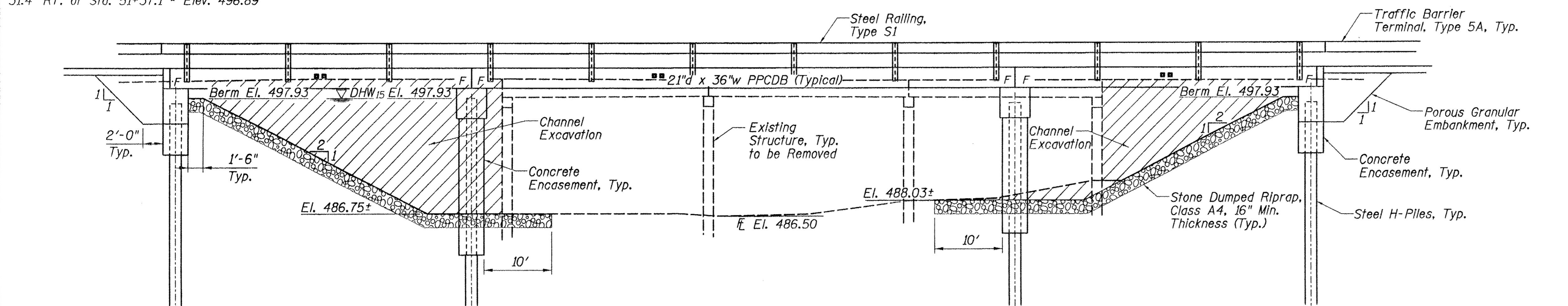
SCALE: 1"=50'      STA. 45+00 TO STA. 57+00

RAAF JOB NO. 51915

TBM 1 - RR spike in power pole,  
31.7' Rt. of Sta. 48+67.4 - Elev. 497.39

TBM 2 - RR spike in power pole,  
31.4' RT. of Sta. 51+37.1 - Elev. 496.89

Existing Structure: Three span bridge with precast concrete channel beams on closed timber abutments and timber pile bent piers. To be removed.  
60'L. x 26.25'W. No skew. See Special Provisions.



**BILL OF MATERIALS (BRIDGE ONLY)**

ITEM	UNIT	TOTAL
Channel Excavation	Cu Yd	652
Porous Granular Embankment	Ton	72
Stone Dumped Riprap, Class A4	Ton	534
Removal of Existing Structures	Each	1
Concrete Structures	Cu Yd	40.6
Concrete Encasement	Cu Yd	20.8
PPCDB (21" Depth)	Sq Ft	2736
Reinforcement Bars	Pound	5640
Steel Railing, Type S1	Foot	232
Furnishing Steel Piles HP12x53	Foot	748
Furnishing Steel Piles HP14x89	Foot	748
Driving Piles	Foot	1496
Test Pile Steel HP12x53	Each	1
Test Pile Steel HP14x89	Each	1
Name Plates	Each	1

\* 354 Ton At Bridge (Bk to Bk Abuts)  
Roadway Embankment:  
Lt., Sta. 48+70.00 to Sta. 49+35.17 - 92 Ton  
Lt., Sta. 50+50.83 to Sta. 51+15.00 - 88 Ton

**GENERAL NOTES**

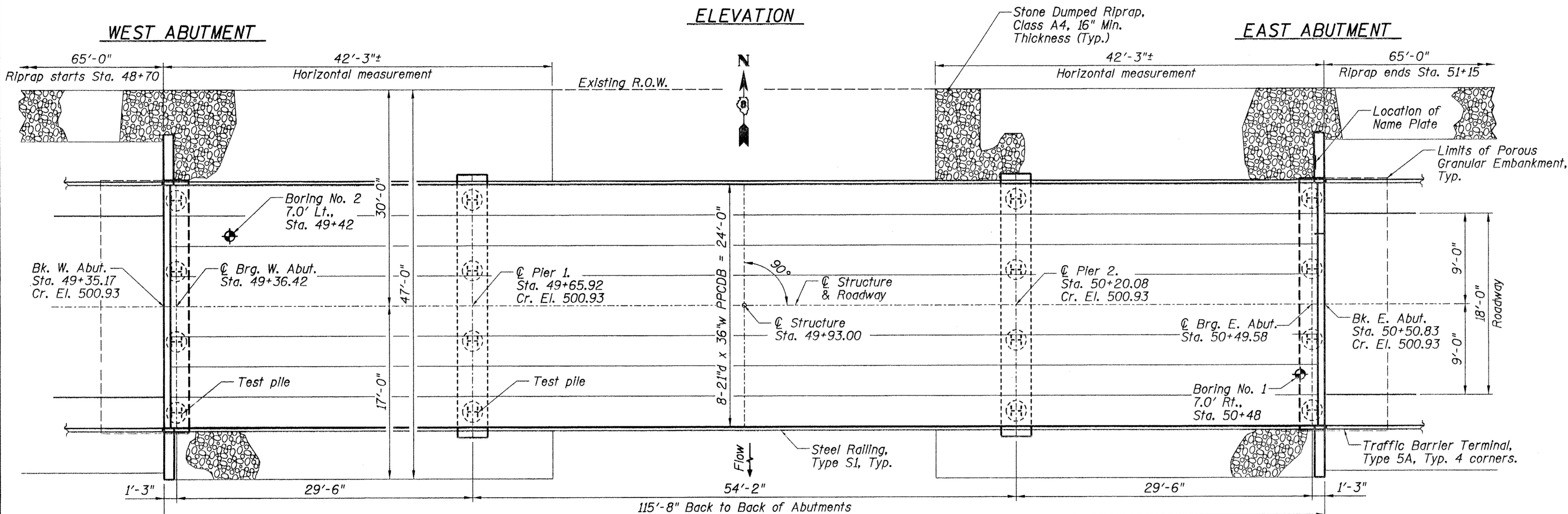
Channel excavation shall be excavated as shown within the limits of the proposed bridge, then tapered to the existing channel at the ROW line. If the Engineer deems the material satisfactory, it may be used to construct the roadway embankment.

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

See Specifications for Soil Borings.

Do not scale these drawings.

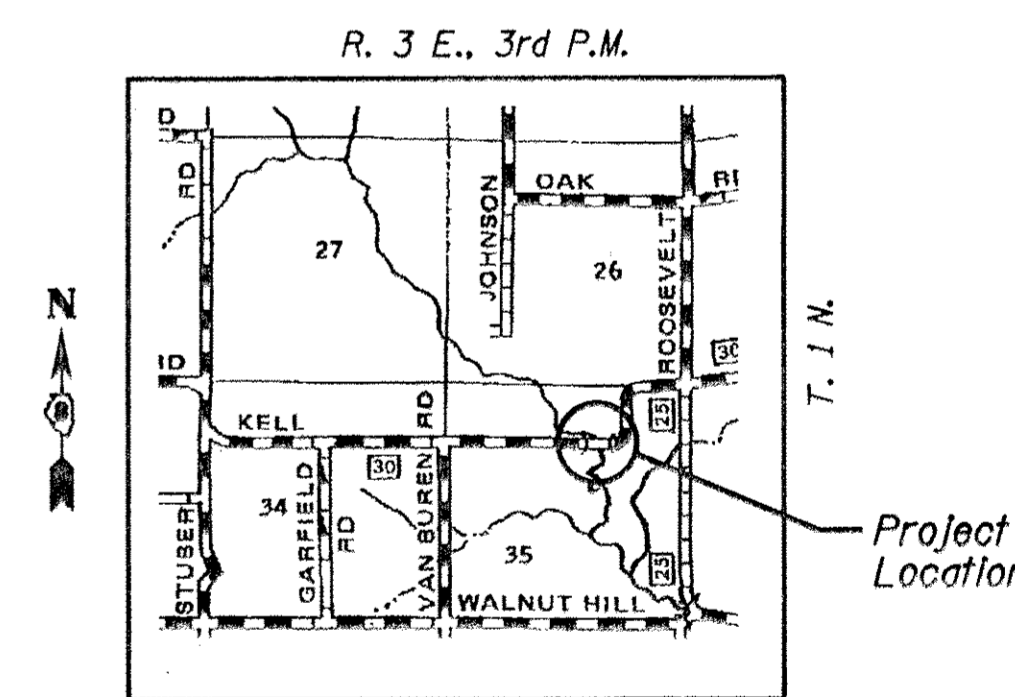
The bearing seat surfaces for the precast prestressed concrete deck beams shall be adjusted by shimming to assure firm and even bearing. As required, 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing.



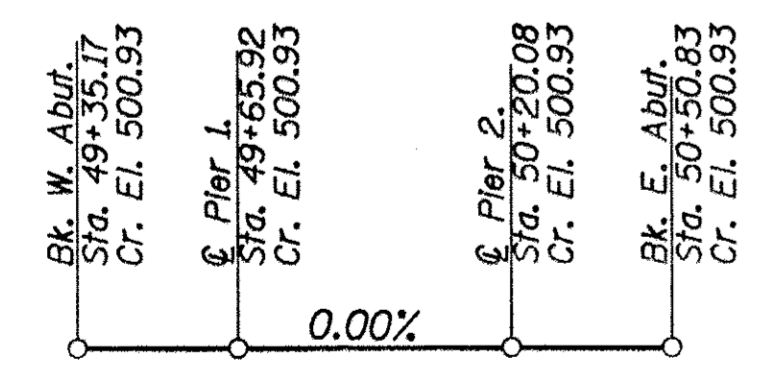
**PLAN**

**DESIGN SCOUR TABLE**

Event/Limit	Design Scour Elevations (ft.)				Item
	W. Abut.	Pier 1	Pier 2	E. Abut.	
State	N/A	475.8	475.8	N/A	113
Q100	N/A	474.5	474.5	N/A	5
Qoverlapping(145)	N/A	474.5	474.5	N/A	
Design	495.34	475.8	475.8	495.34	
Check	495.34	474.5	474.5	495.34	



**LOCATION SKETCH**



**PROFILE GRADE ACROSS STRUCTURE**  
Along Centerline of Roadway

**HORSE CREEK  
BUILT 201 BY  
MARION COUNTY  
SEC. 13-00350-00-BR  
LOADING HL-93  
STRUCTURE NO. 061-3321**

**NAME PLATE**  
(See State Standard 515001 for details)

**WATERWAY DATA**

Drainage Area = 11.02 Sq. Mi. Existing Low Grade Elev. 498.8 @ Sta. 55+23  
Proposed Low Grade Elev. 498.8 @ Sta. 55+23

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exlst.	Opening Sq. Ft. Prop.	Natural H.W.E.	Head - Ft. Exlst.	Head - Ft. Prop.	Headwater El. Exlst.	Headwater El. Prop.
Design	15	3400	627	917	497.93	0.43	0.09	498.36	498.02
Base	100	5660	627	1028	498.99	1.48	0.39	500.47	499.38
Overlapping	145±	6329	627	1028	499.26	1.88	0.48	501.14	499.74
Max. Calc.	500	7890	627	1028	499.83	2.30	0.95	502.13	500.78

**PRECAST PRESTRESSED UNITS**

$f'_c = 6,000$  psi  
 $f'_{ci} = 5,000$  psi  
 $f_{pu} = 270,000$  psi (1/2"  $\phi$  low lax. strands)  
 $f_{pbt} = 201,960$  psi (1/2"  $\phi$  low lax. strands)  
 $f_y = 60,000$  psi (reinforcement)

**LOADING HL-93**

50#/sq. ft. included in dead load for future wearing surface.

**DESIGN SPECIFICATIONS**

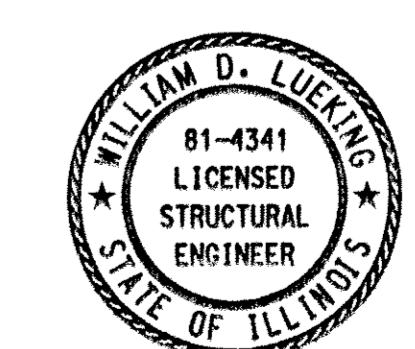
2012 (6th Ed.) AASHTO LRFD Bridge Design Specifications

**DESIGN STRESSES**

**FIELD UNITS**  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)

**SEISMIC DATA**

Seismic Performance Zone (SPZ) = 2  
Soil Site Classification = D  
 $S_{D1} = 0.279$   $S_{D5} = 0.663$



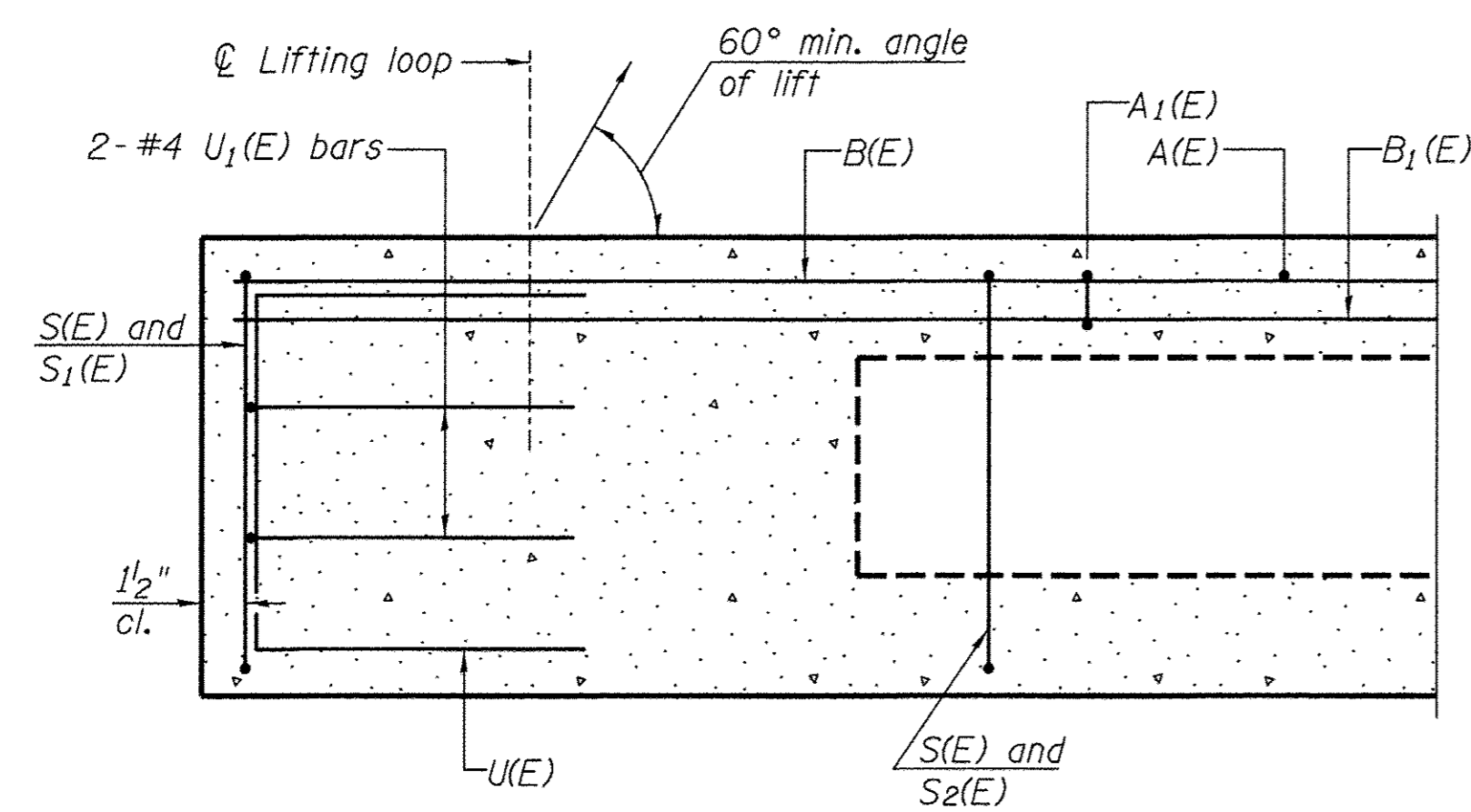
*William D. Lueking*  
William D. Lueking  
10-7-2016  
Date of Signing  
11-30-2016  
Date of License Expiration

DESIGNED - BLT	REVISED -
DRAWN - JN	REVISED -
CHECKED - WDL	REVISED -
DATE - 10/07/2016	REVISED -

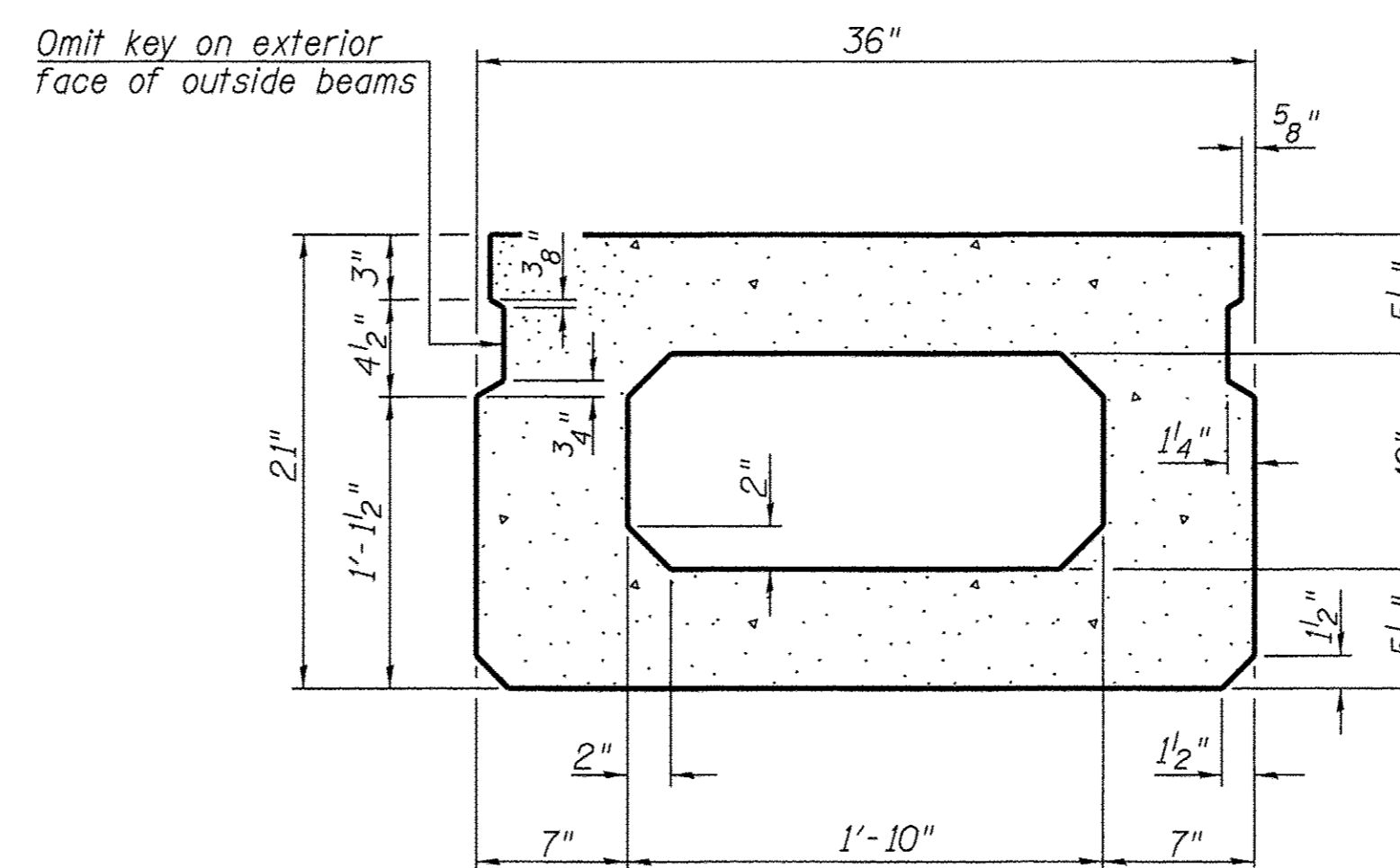
RAAI JOB NO. 51915

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 30	13-00350-00-BR	MARION	14	4

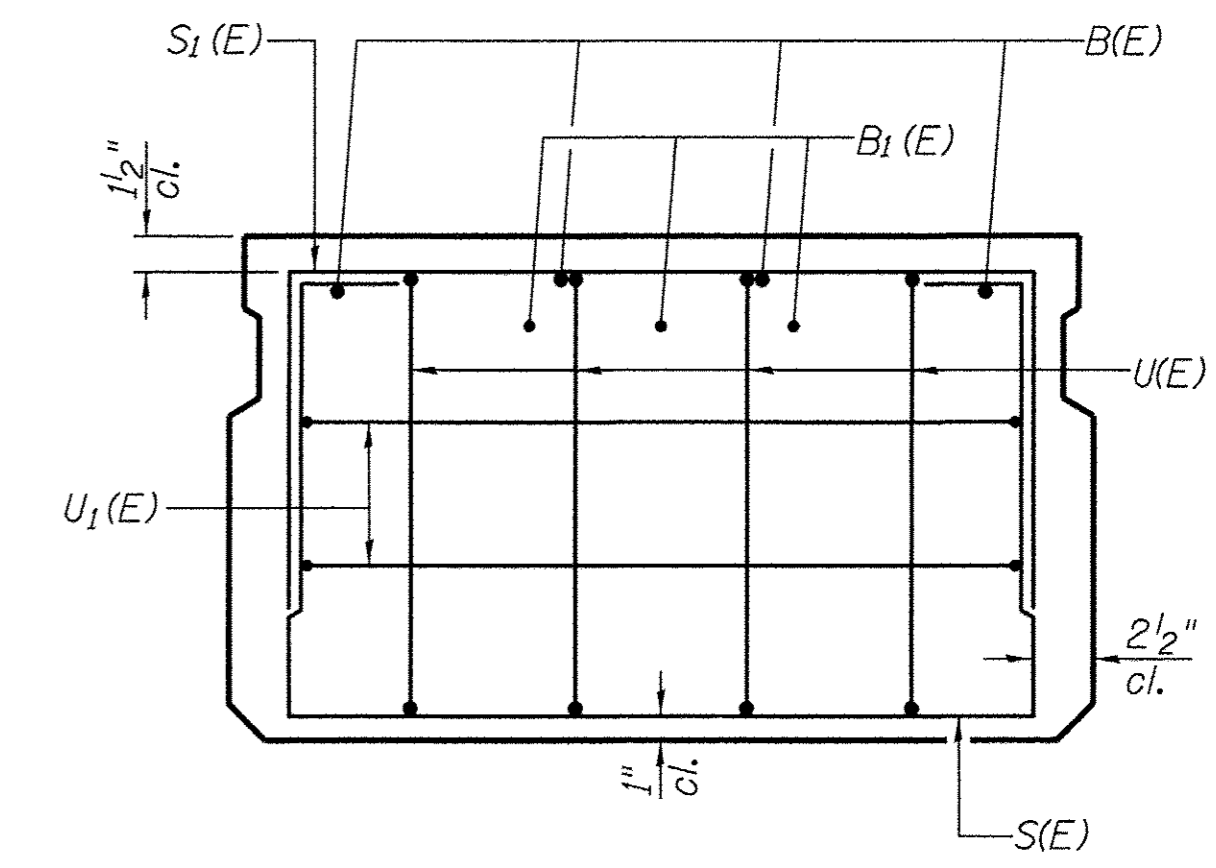
CONTRACT NO. 97637  
FED. AID PROJECT



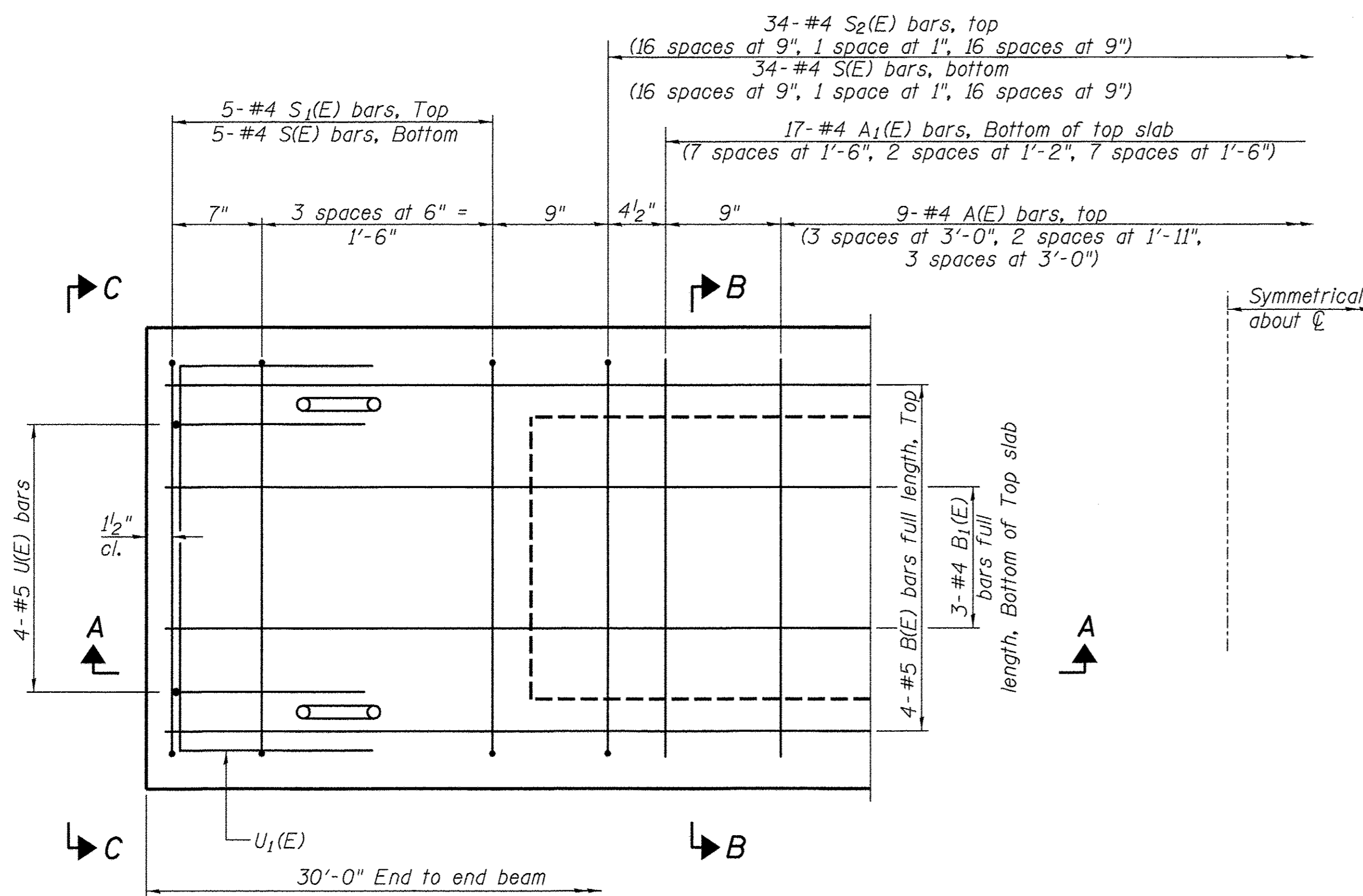
**SECTION A-A**



**SECTION B-B**  
(Showing dimensions)

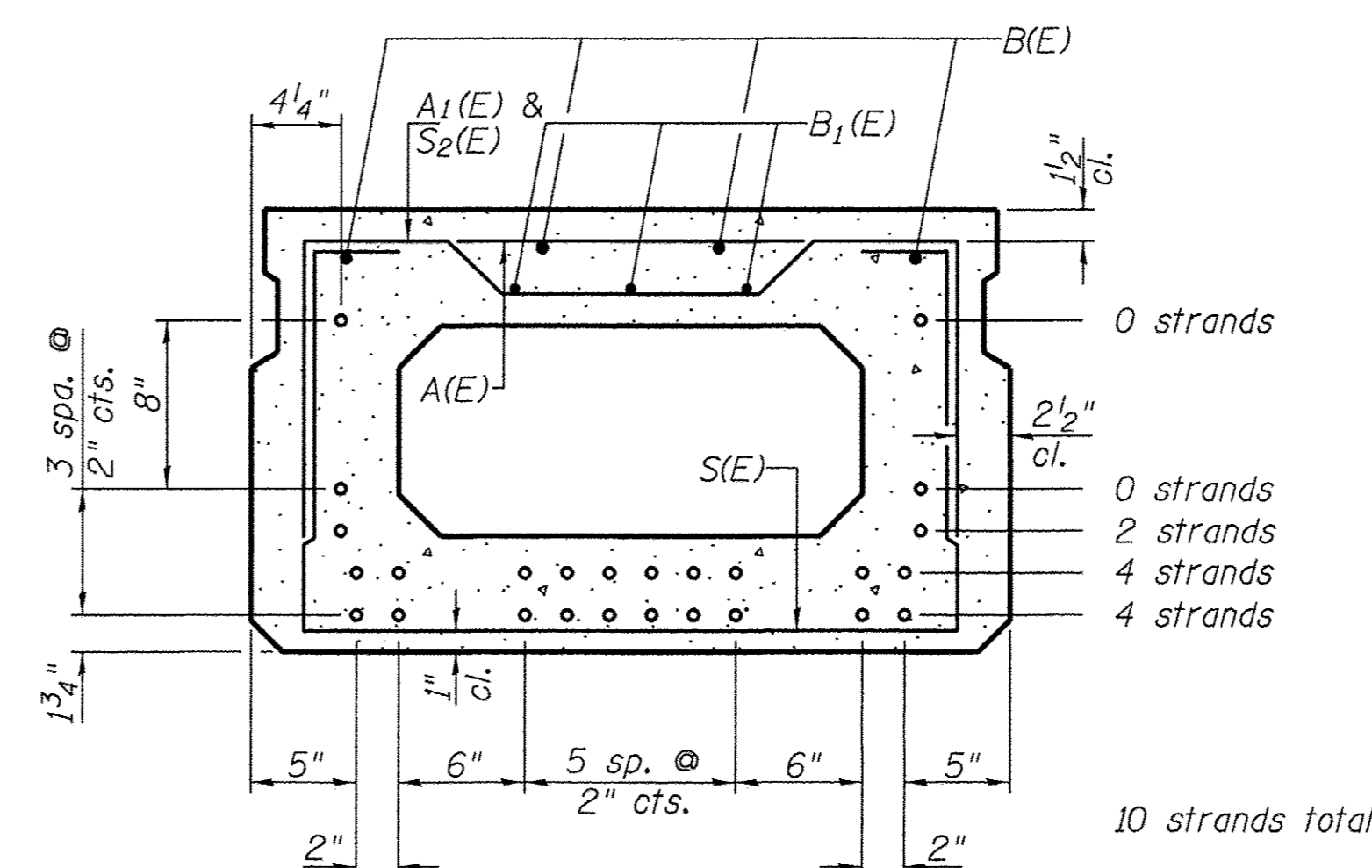


**VIEW C-C**



**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)

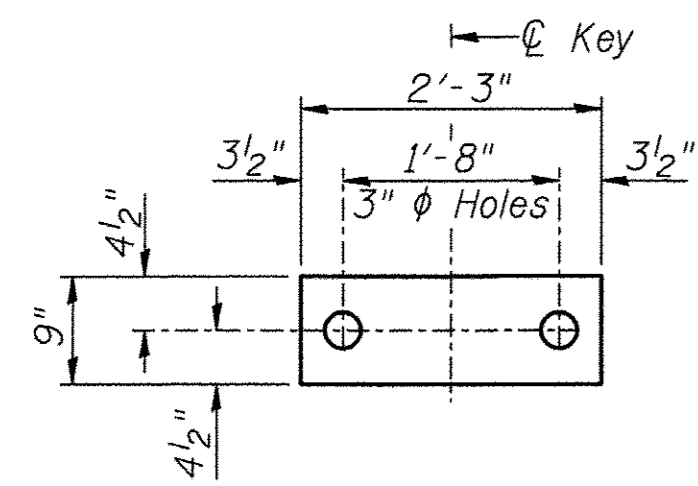
Bar	No.	Size	Length	Shape
A(E)	9	#4	2'-7"	—
A1(E)	17	#4	2'-10"	—
B(E)	4	#5	29'-9"	—
B1(E)	3	#4	29'-9"	—
S(E)	44	#4	6'-5"	⌈
S1(E)	10	#4	4'-11"	⌈
S2(E)	34	#4	5'-2"	⌈
U(E)	8	#5	4'-0"	⌈
U1(E)	4	#4	5'-0"	⌈

Note: See sheet 8 for additional details and Bill of Material.

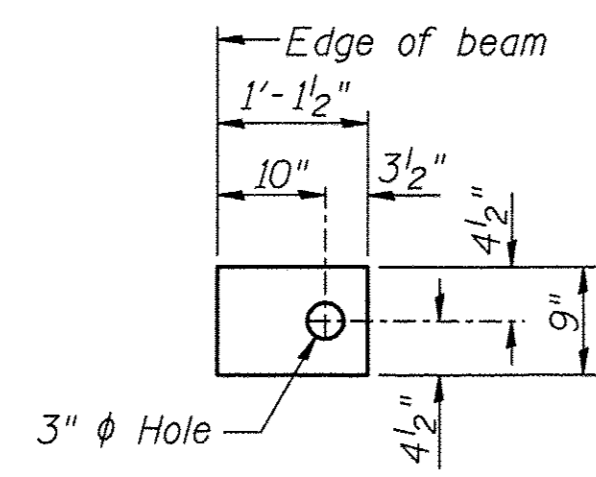
**MINIMUM BAR LAP**

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

**SPAN 1 AND 3**



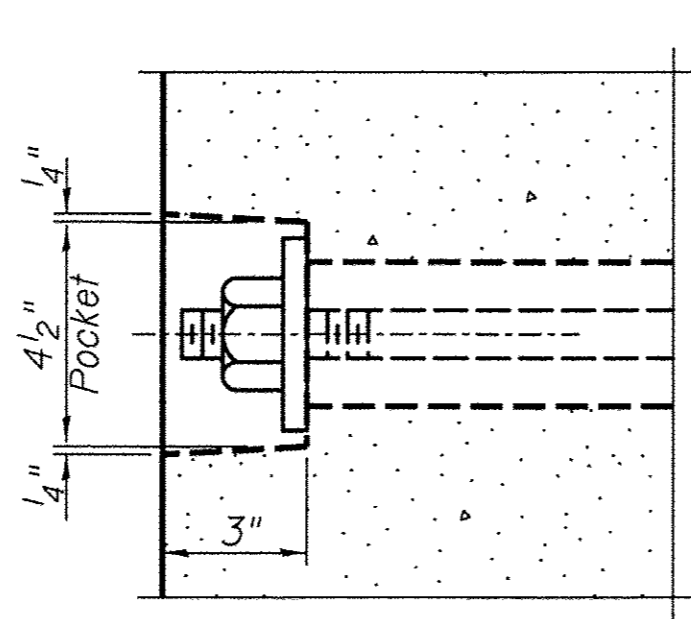
**FABRIC BEARING PAD**  
(Interior)



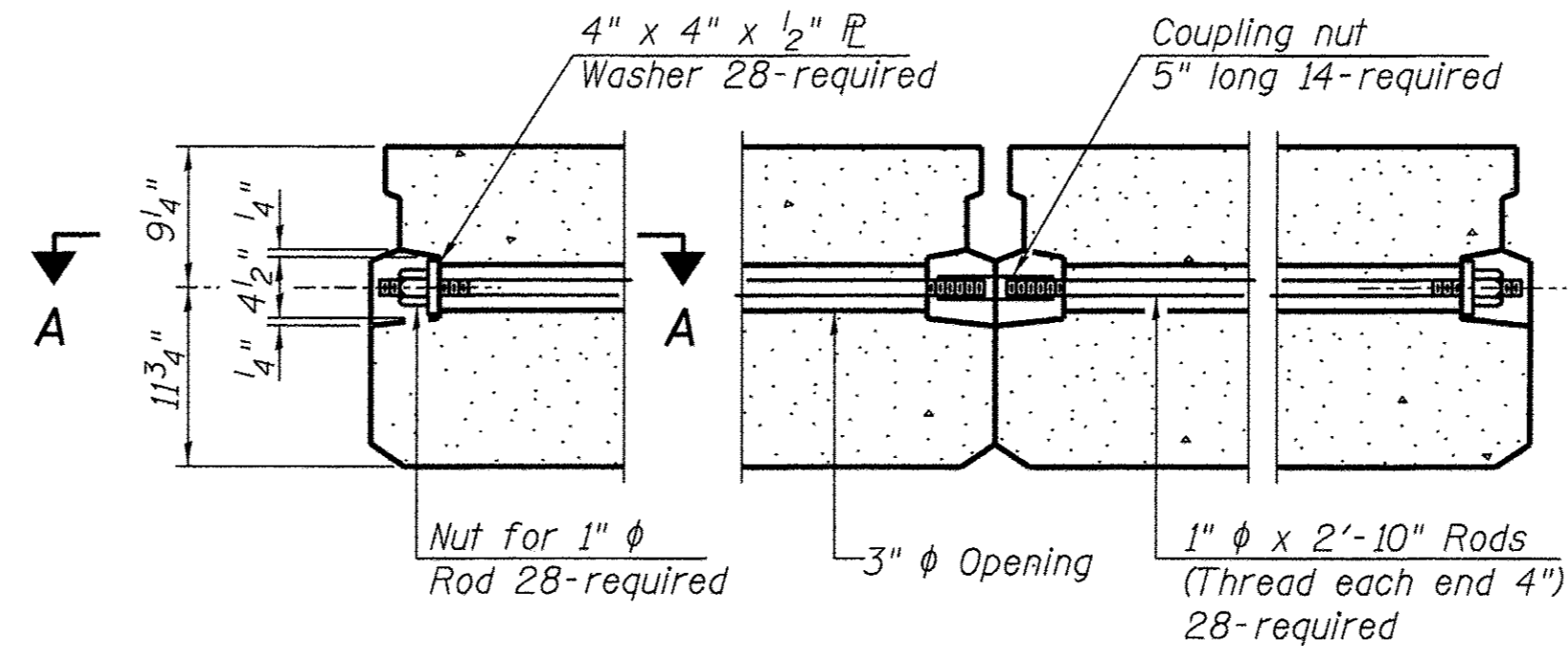
**FABRIC BEARING PAD**  
(Exterior)

**FIXED**

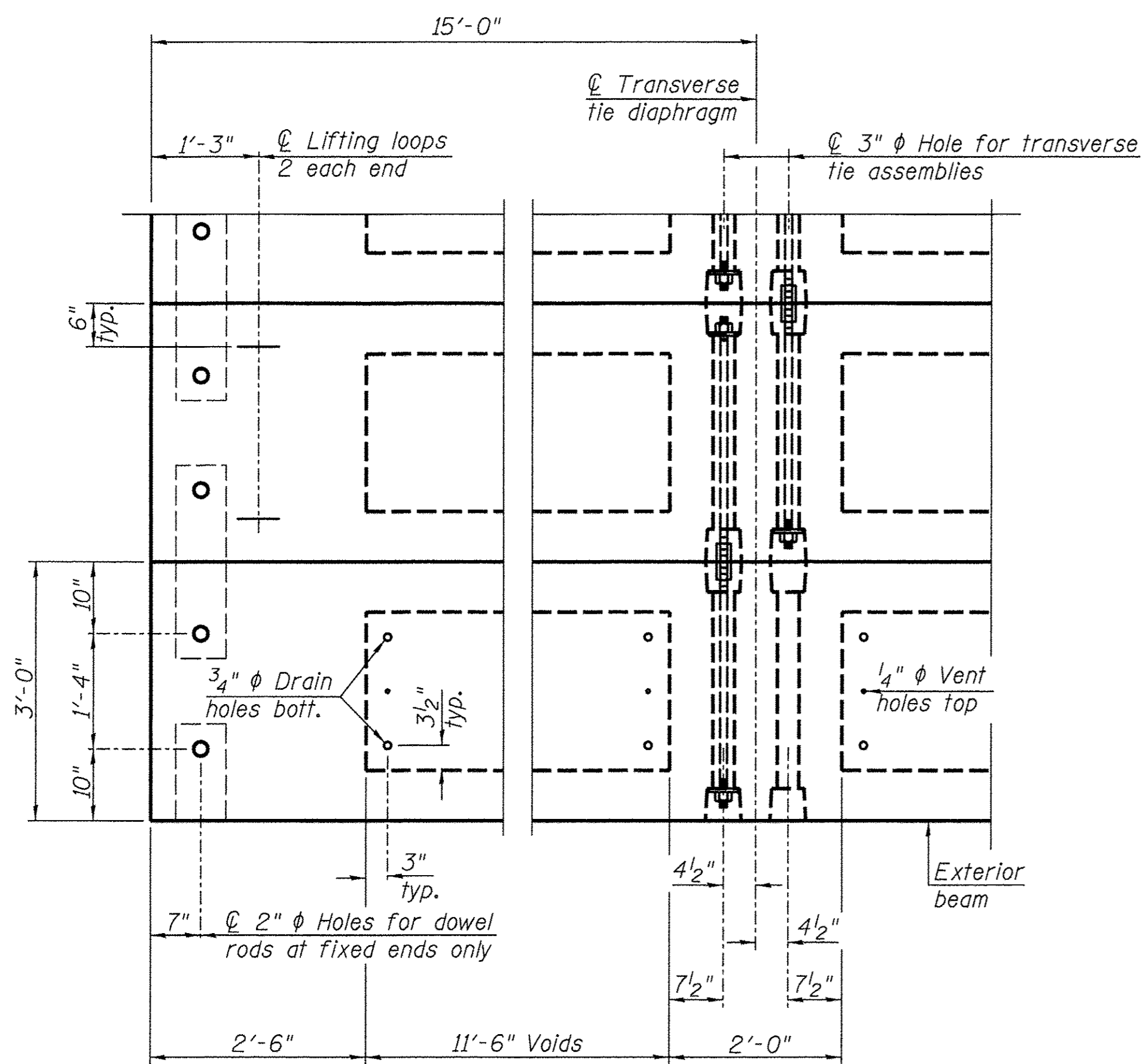
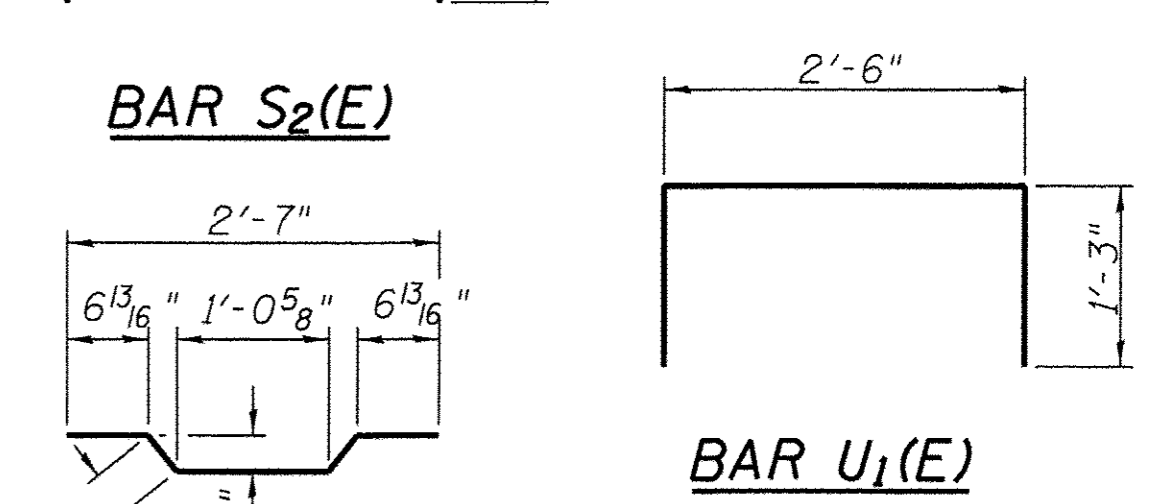
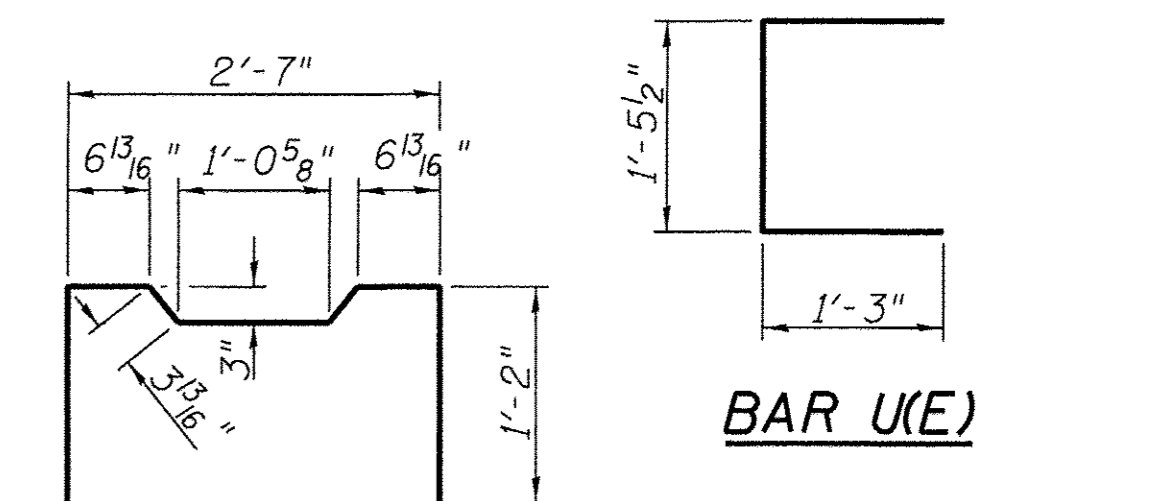
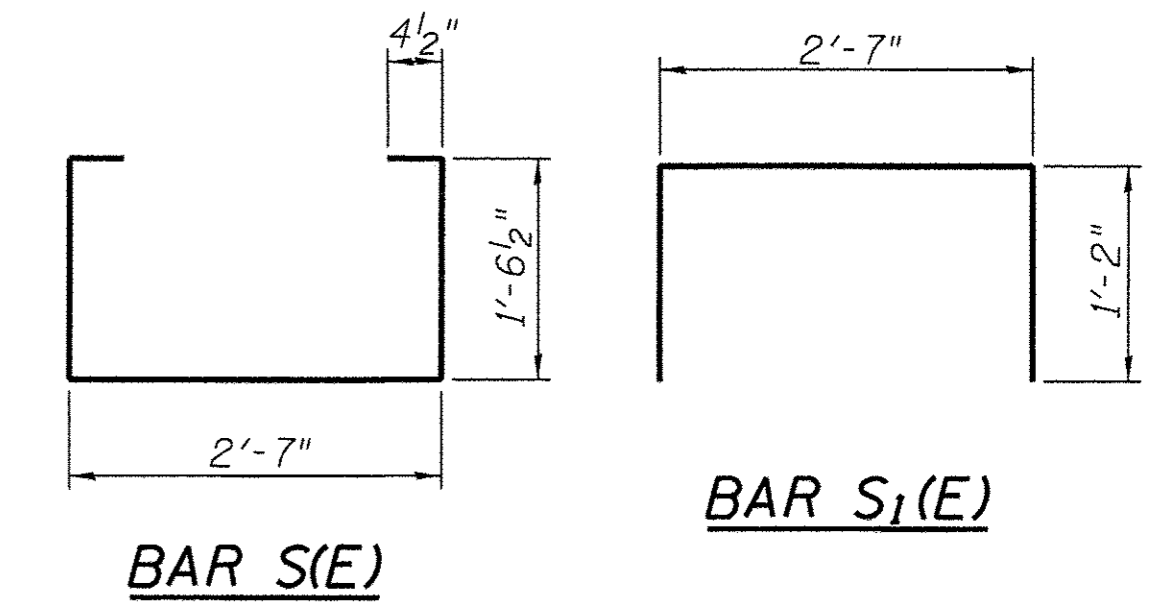
Note: All bearing pads shall be 1" thick.



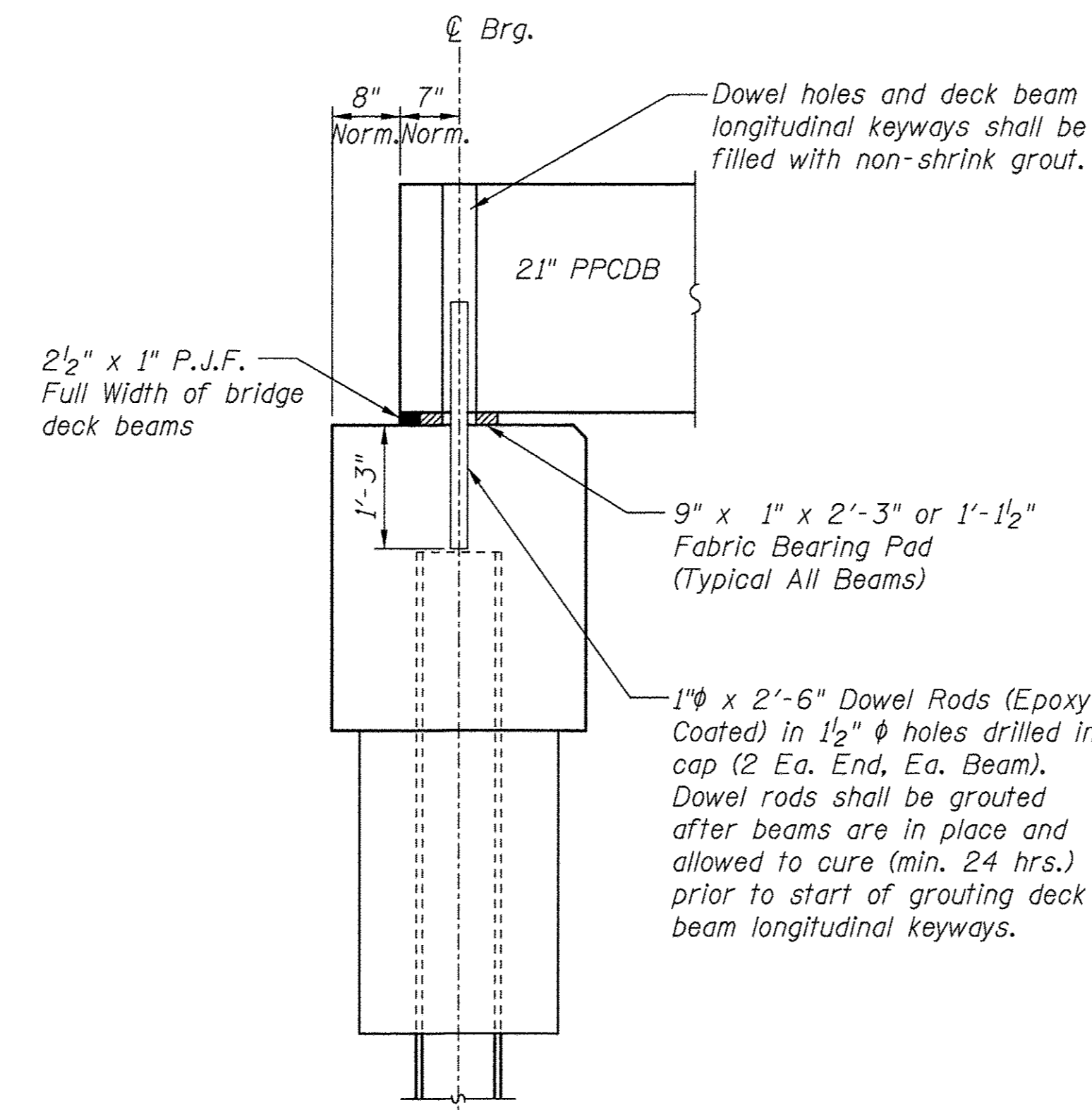
**SECTION A-A**



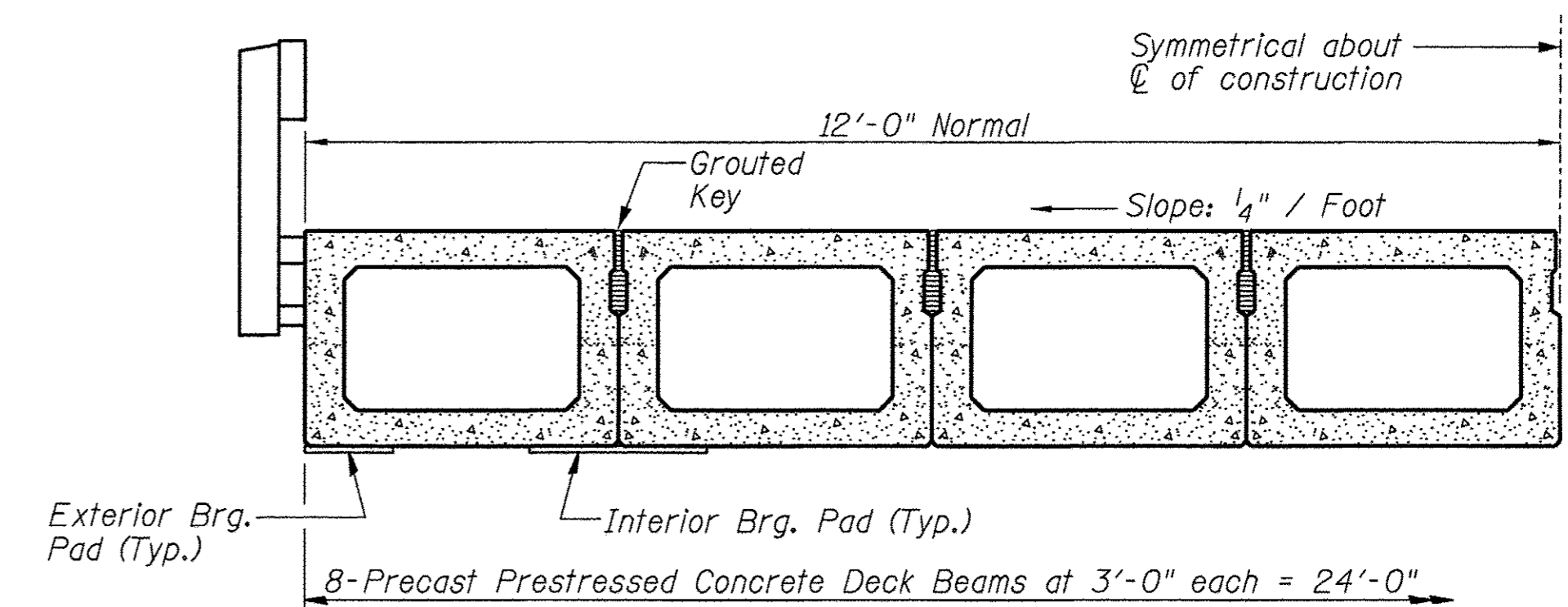
**TYPICAL TRANSVERSE TIE ASSEMBLY**



**PLAN VIEW**



**FIXED BEARING ABUTMENT**



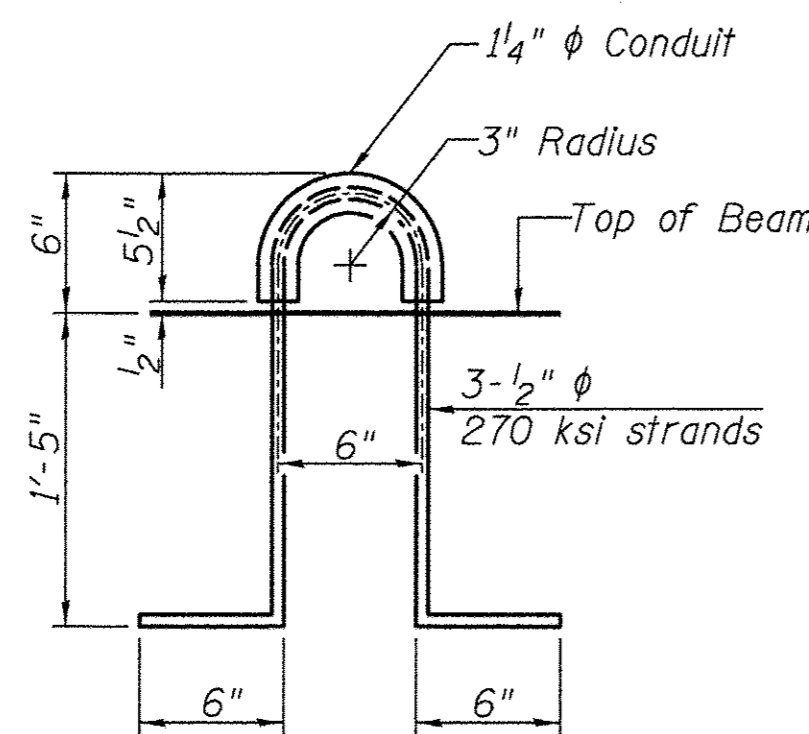
**HALF CROSS SECTION**

See Sheet 9 for the details showing the spacing and mounting of posts and rails to the PPCDB.

**SEE SHEET 8 FOR BILL OF MATERIAL**

**SPAN 1 AND 3**

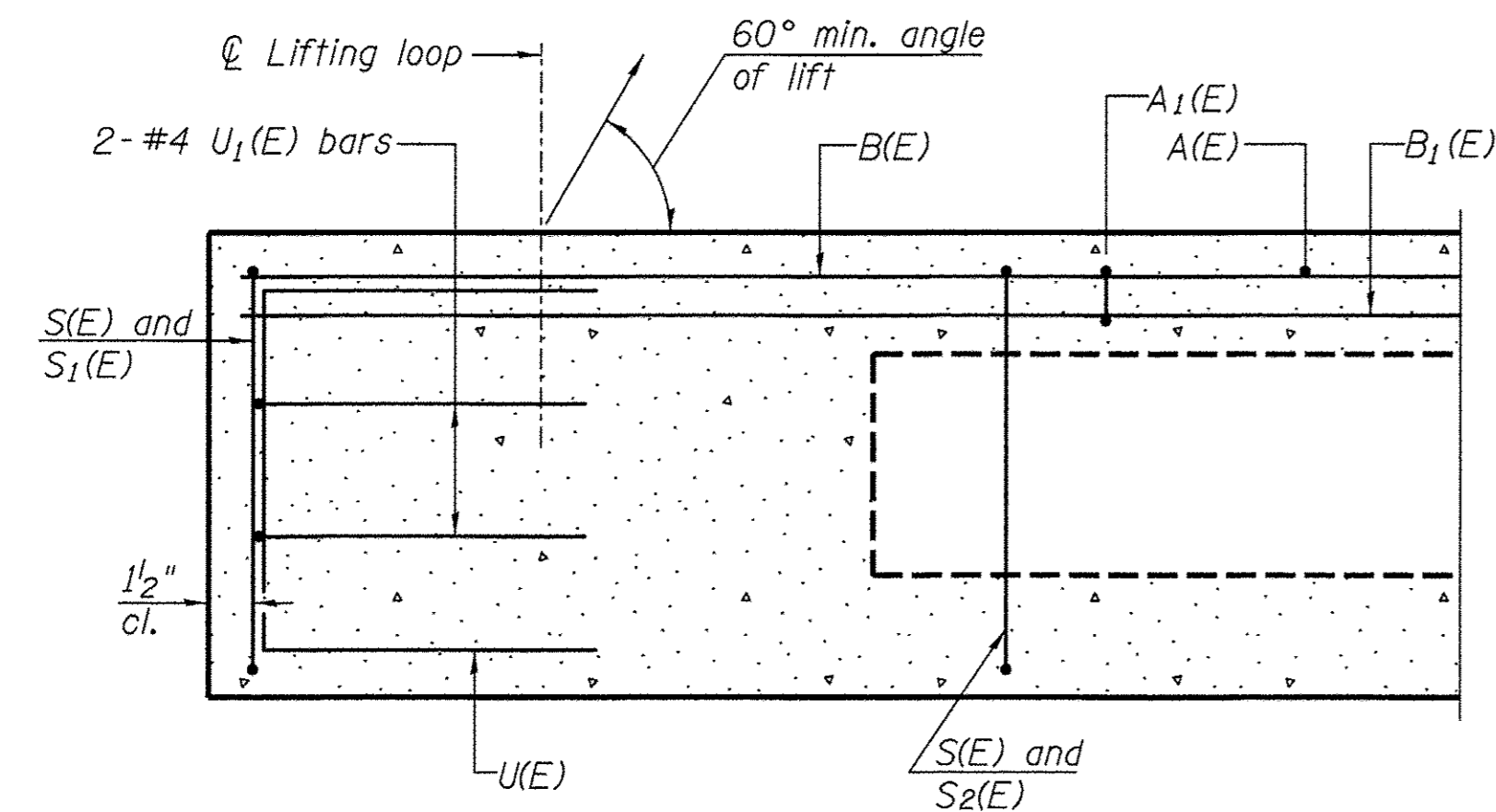
Note: Connect beams in pairs with the transverse tie configuration shown.



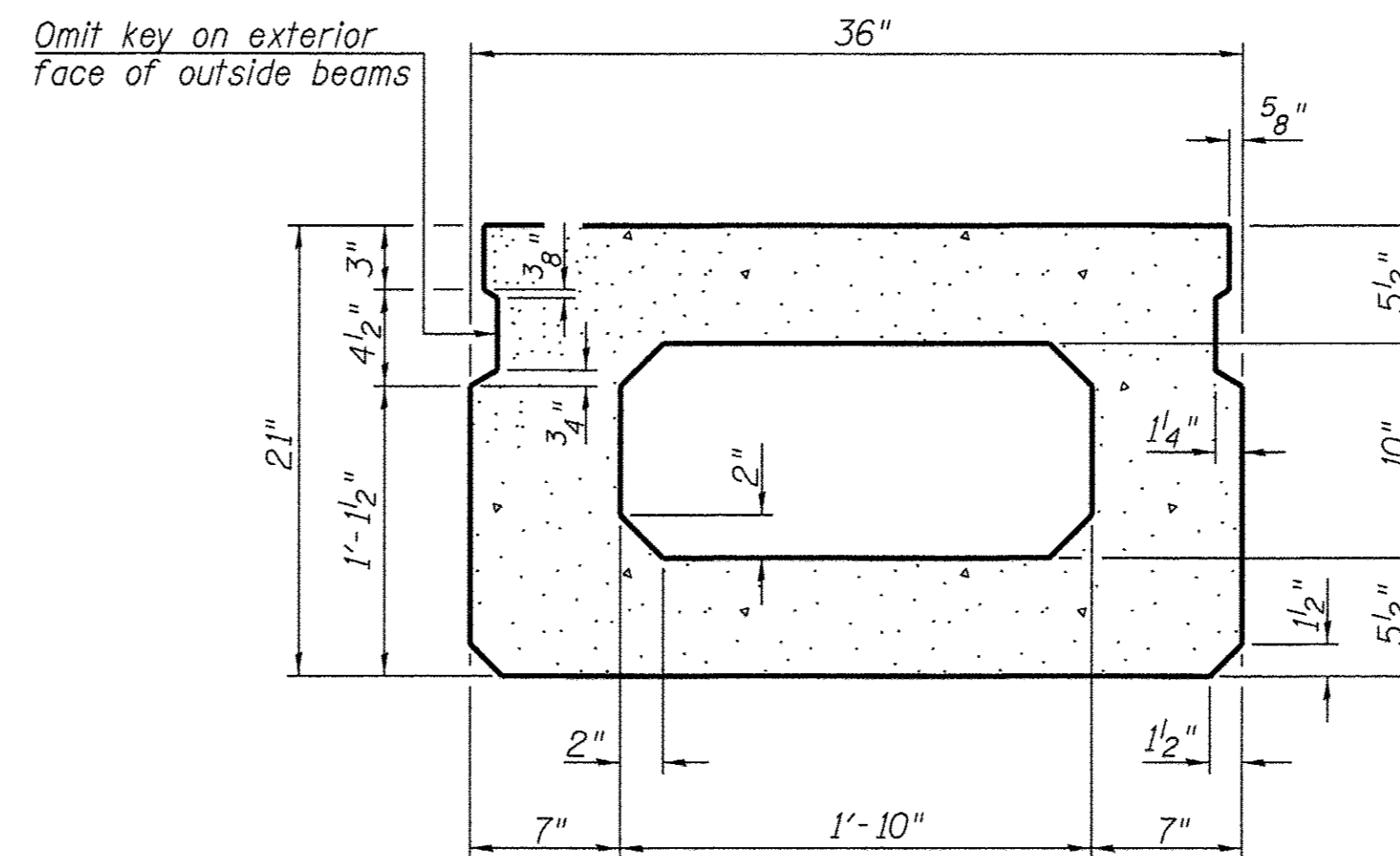
**LIFTING LOOP DETAIL**

**NOTES**

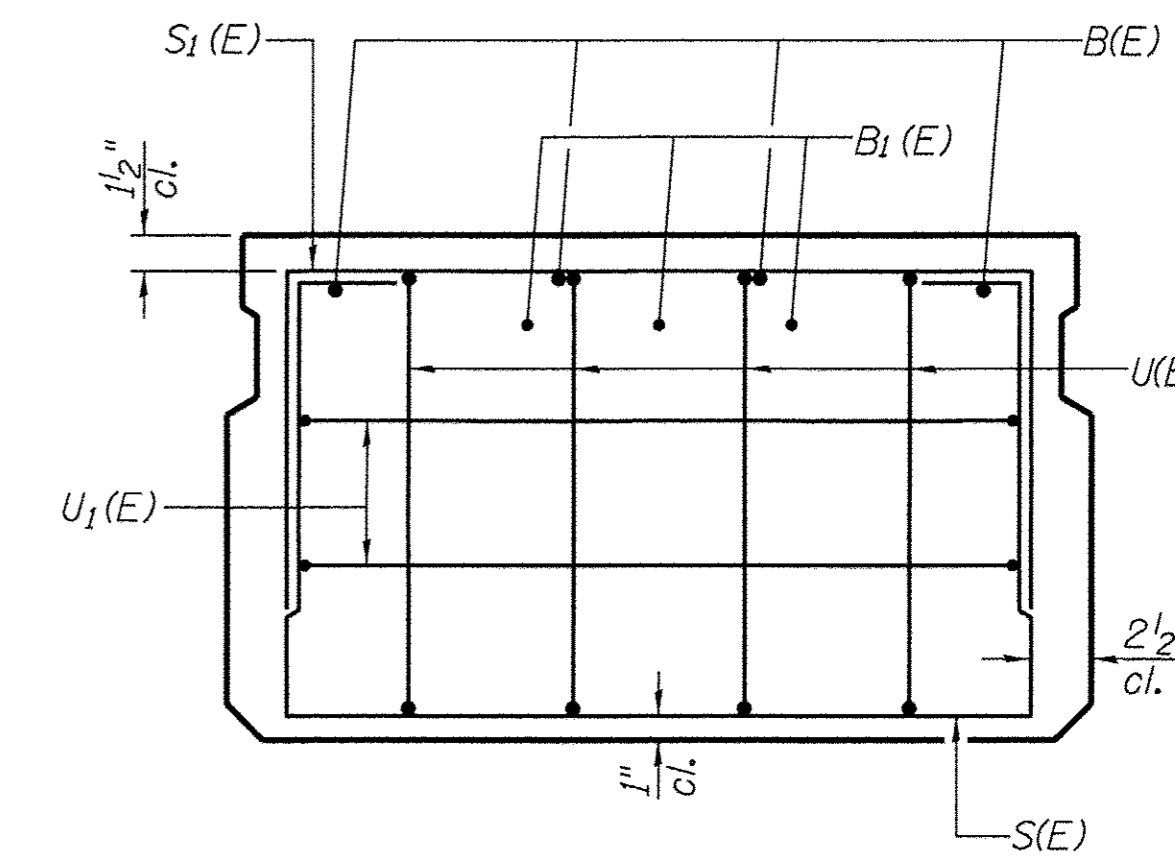
- 1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.
- 2. The 1" diameter rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.
- 3. Reinforcement bars shall conform to ASTM A 706, Grade 60, (IL Modified).
- 4. Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
- 5. A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling.
- 6. 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.
- 7. Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
- 8. Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



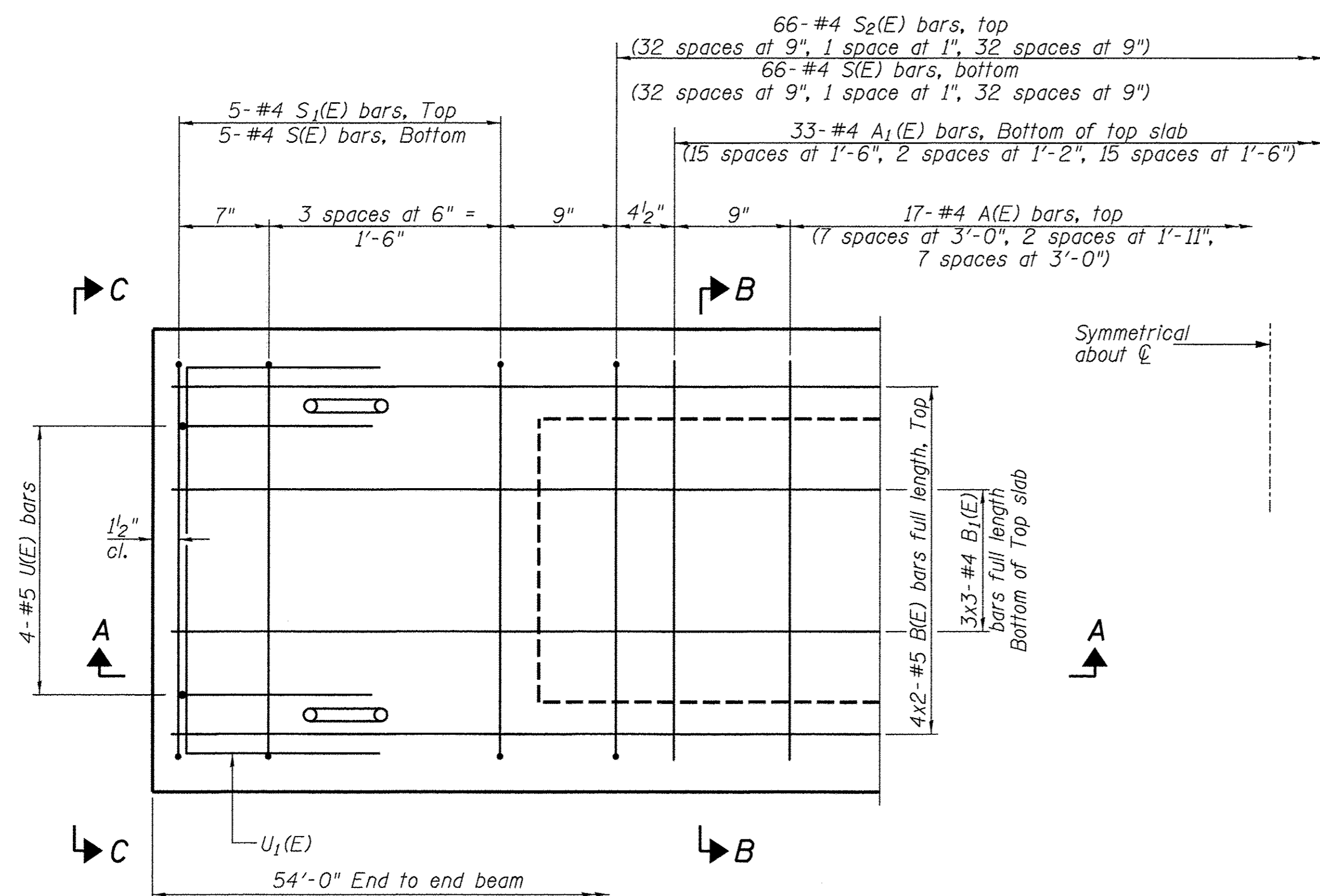
**SECTION A-A**



**SECTION B-B**  
(Showing dimensions)



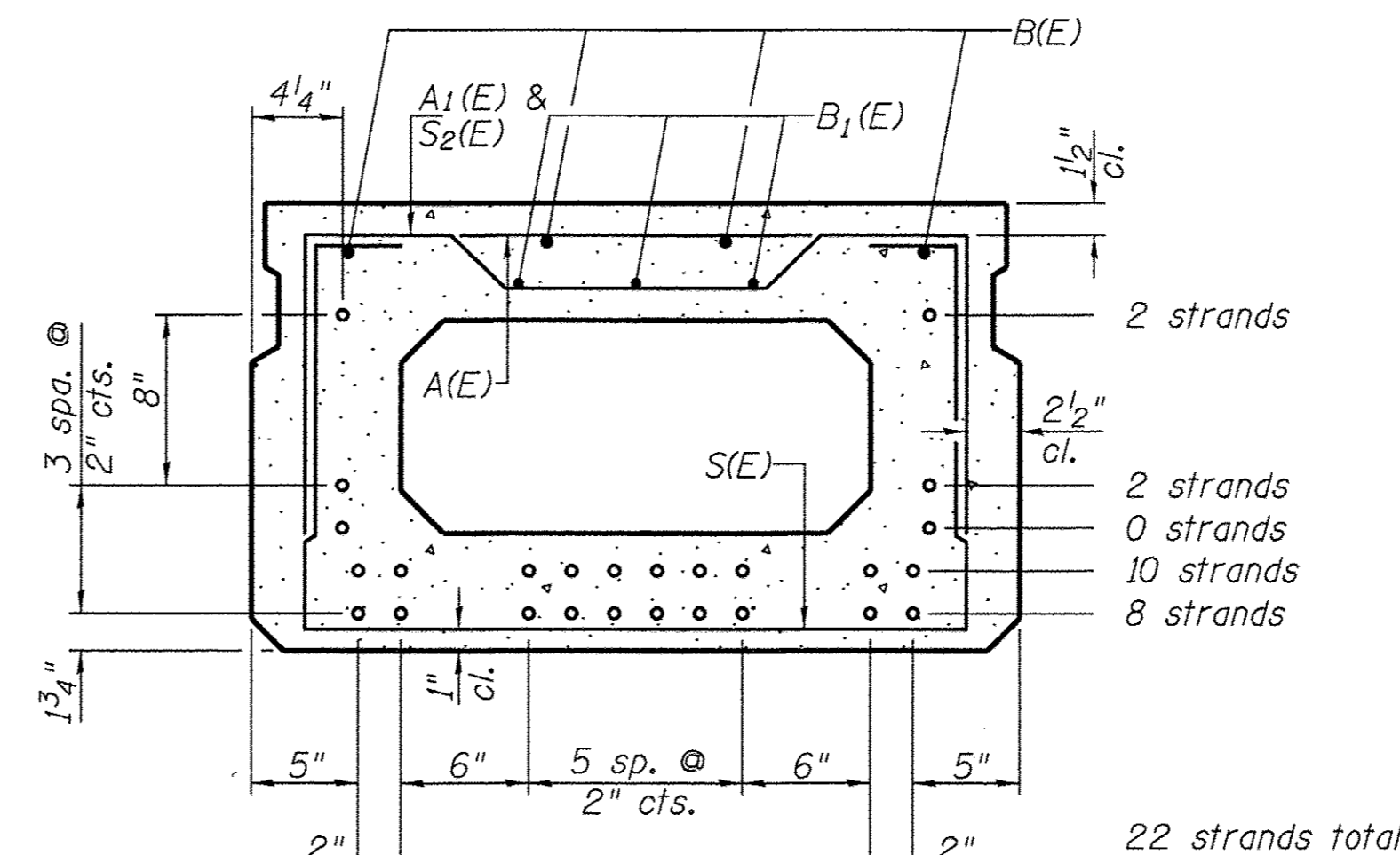
**VIEW C-C**



**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.

Bars indicated thus: 4x3-#5 etc. indicates 4 lines of bars with 3 lengths per line.



**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)

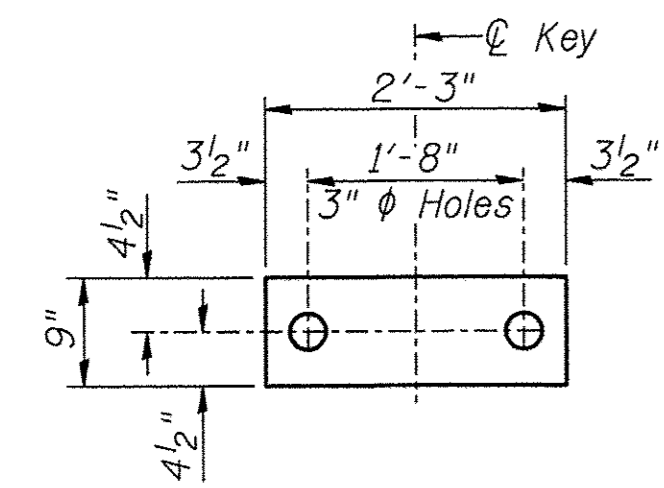
Bar	No.	Size	Length	Shape
A(E)	17	#4	2'-7"	—
A1(E)	33	#4	2'-10"	—
B(E)	8	#5	28'-2"	—
B1(E)	9	#4	19'-3"	—
S(E)	76	#4	6'-5"	U
S1(E)	10	#4	4'-11"	U
S2(E)	66	#4	5'-2"	U
U(E)	8	#5	4'-0"	U
U1(E)	4	#4	5'-0"	U

Note: See sheet 8 for additional details and Bill of Material.

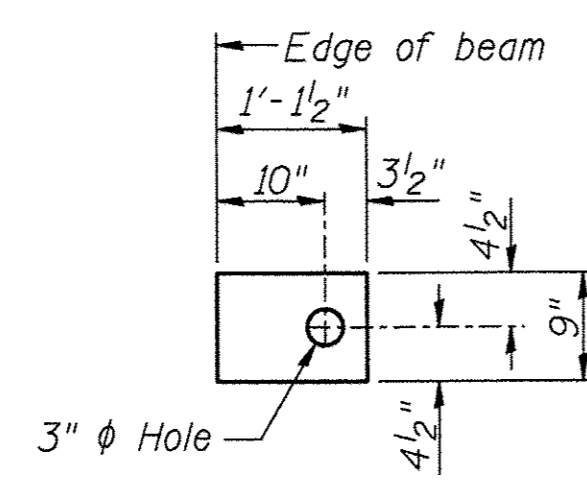
**MINIMUM BAR LAP**

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

**SPAN 2**



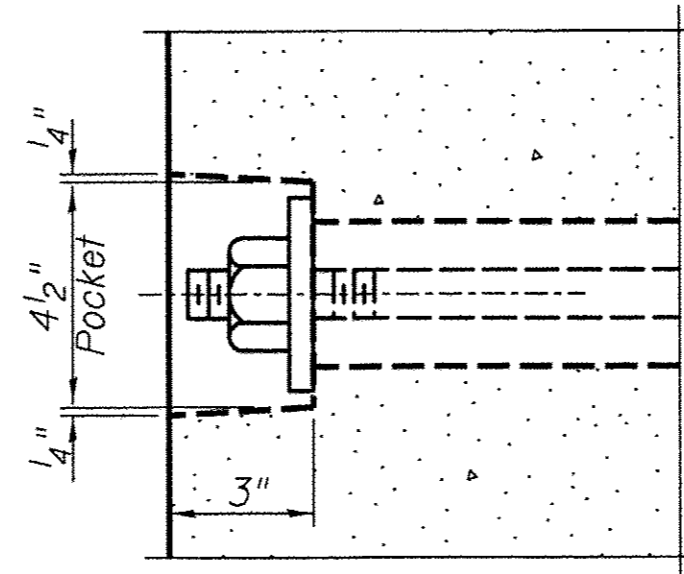
**FABRIC BEARING PAD**  
(Interior)



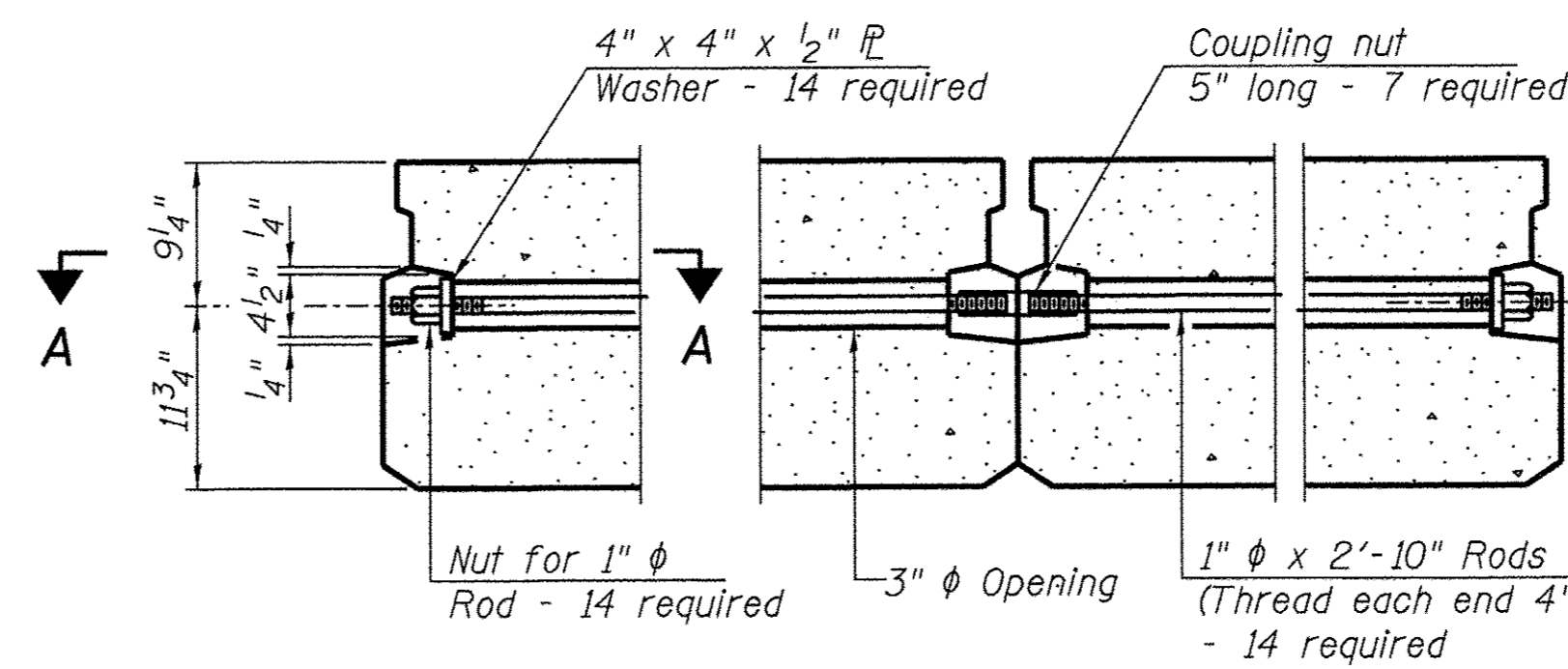
**FABRIC BEARING PAD**  
(Exterior)

**FIXED**

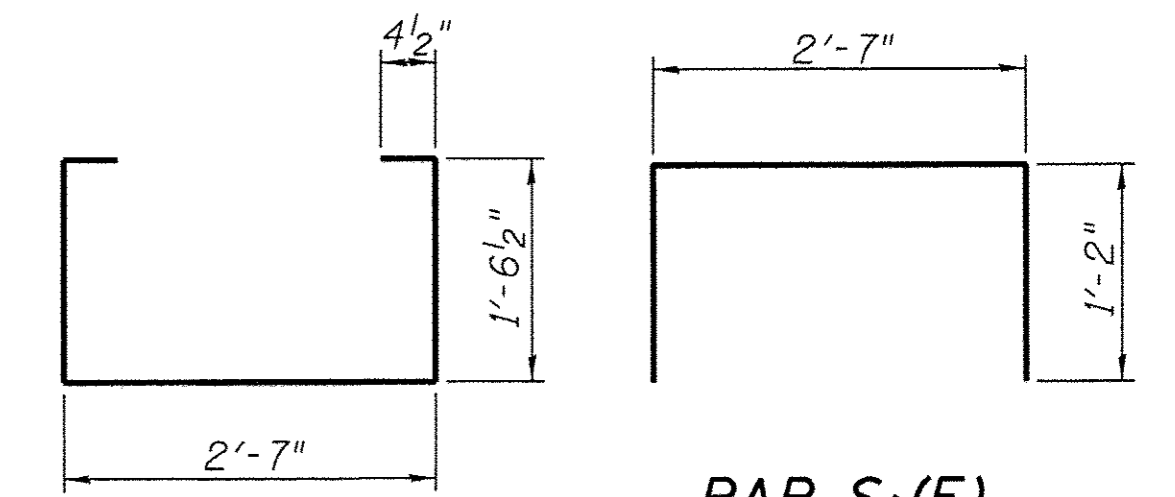
Notes:  
All bearing pads shall be 1" thick.



**SECTION A-A**

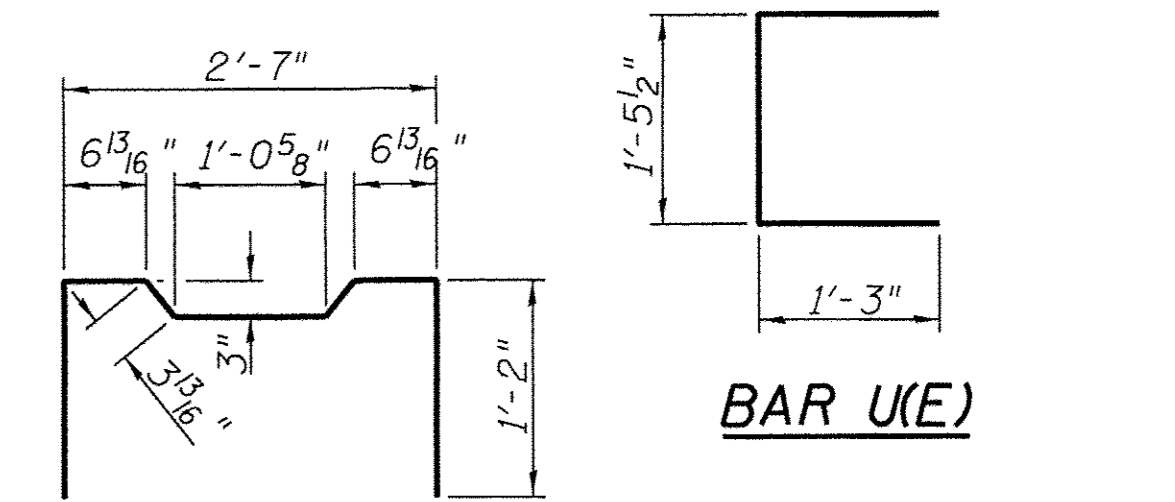


**TYPICAL TRANSVERSE TIE ASSEMBLY**



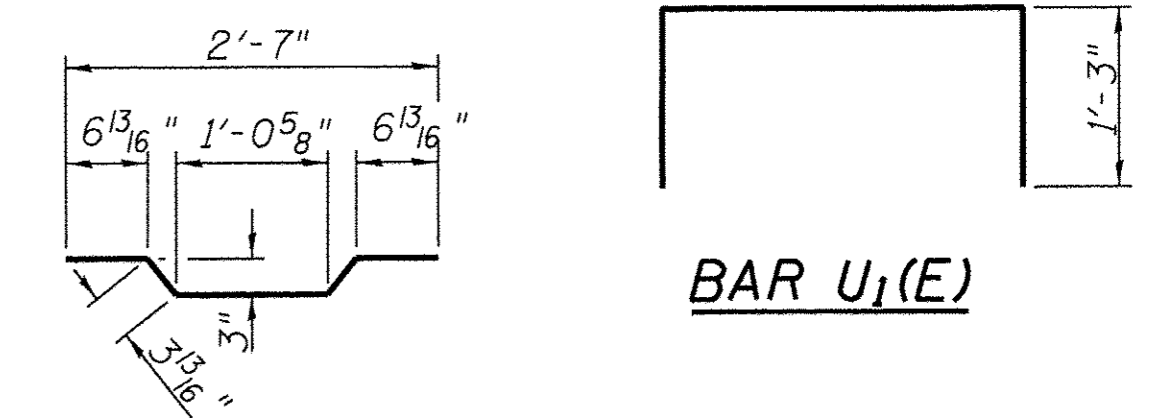
**BAR S(E)**

**BAR S1(E)**



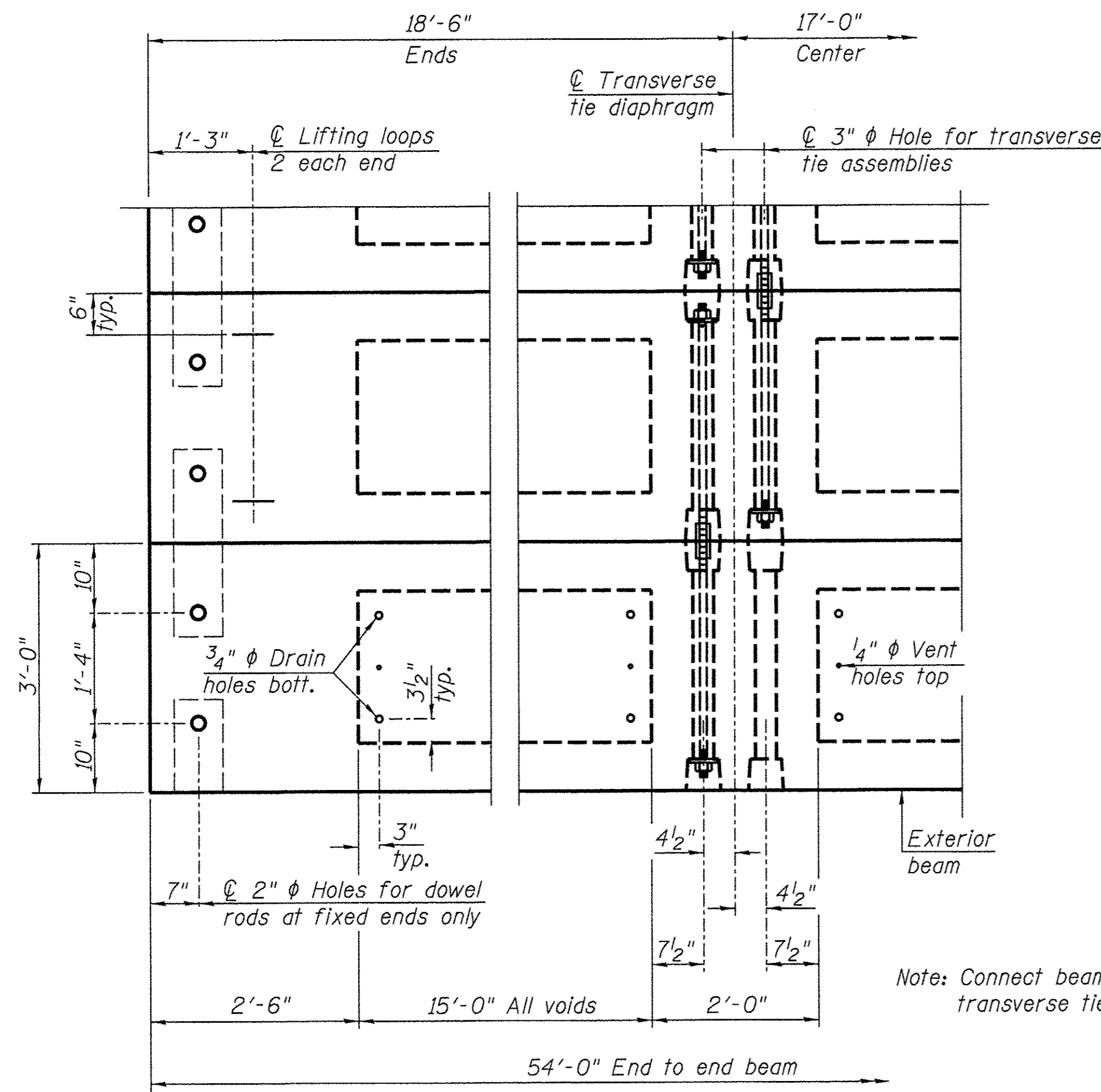
**BAR S2(E)**

**BAR UE(E)**

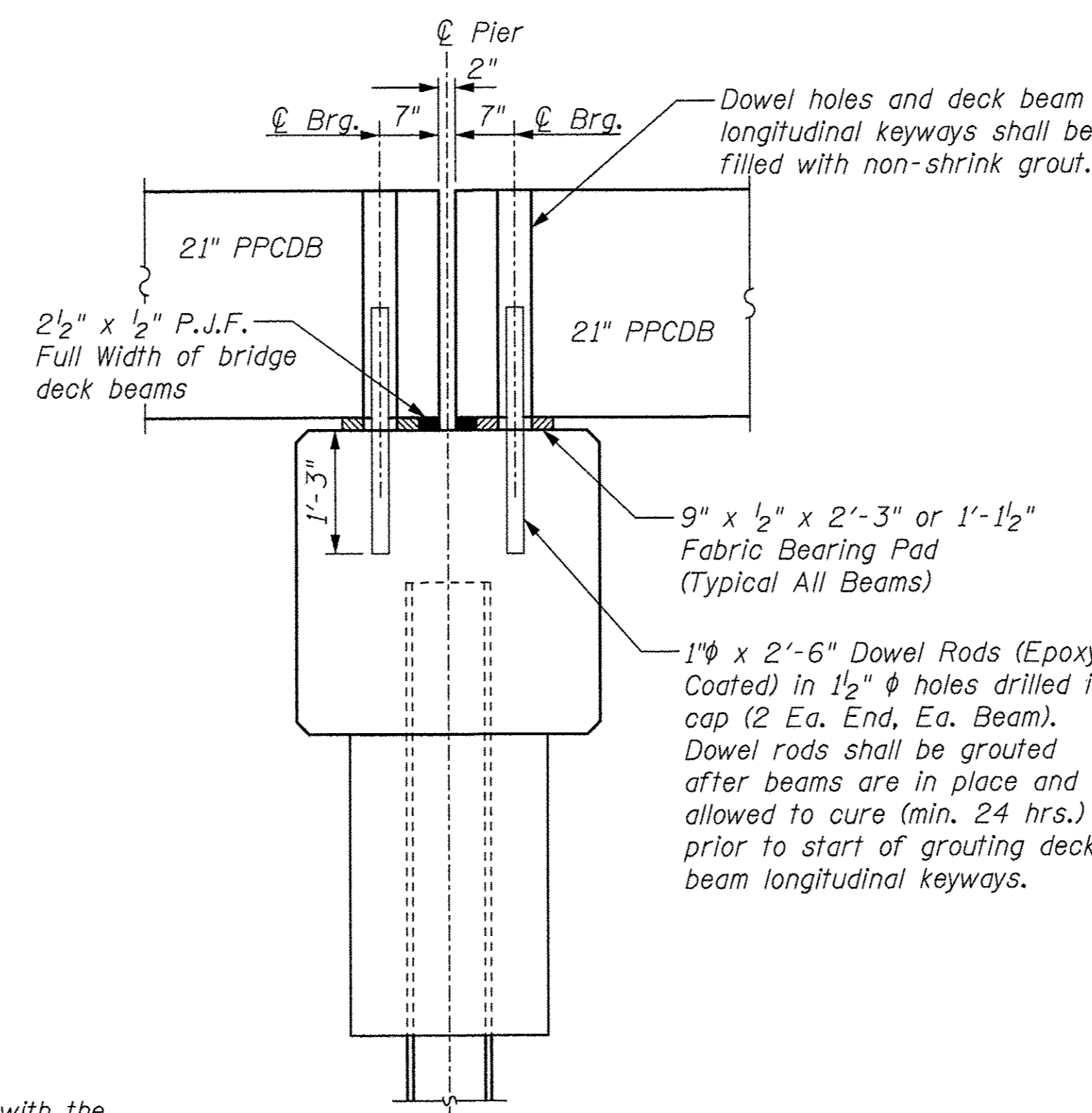


**BAR A1(E)**

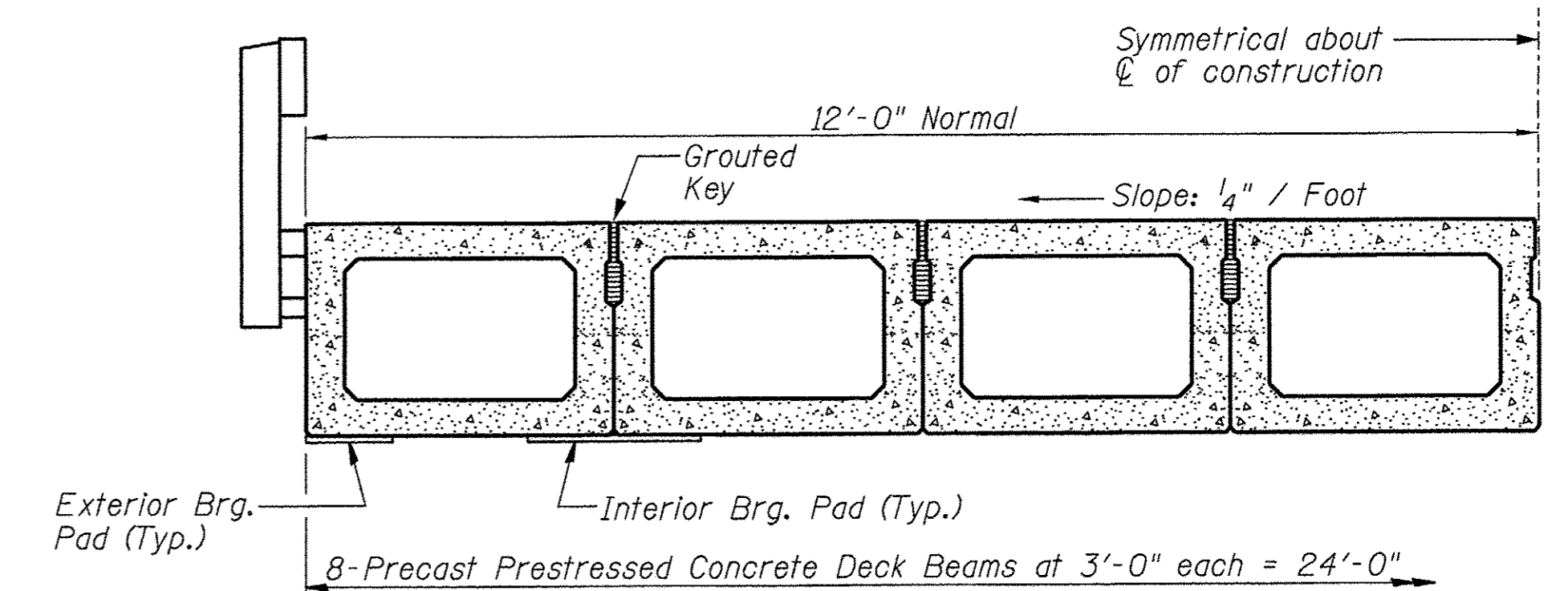
**BAR U1(E)**



**PLAN VIEW**

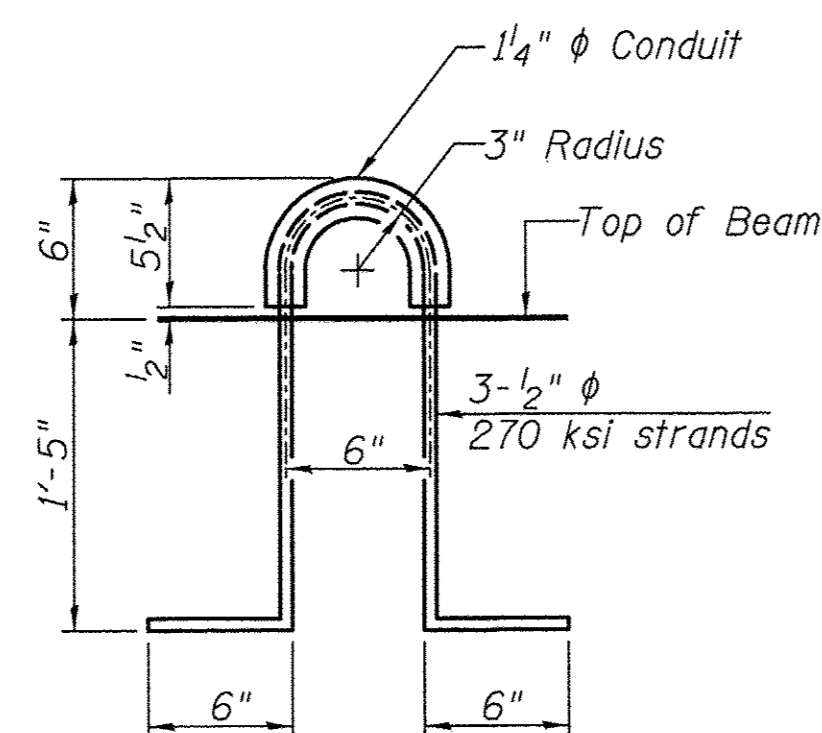


**FIXED BEARING PIER**



**HALF CROSS SECTION**

See Sheet 9 for the details showing the spacing and mounting of posts and rails to the PPCDB.



**LIFTING LOOP DETAIL**

**NOTES**

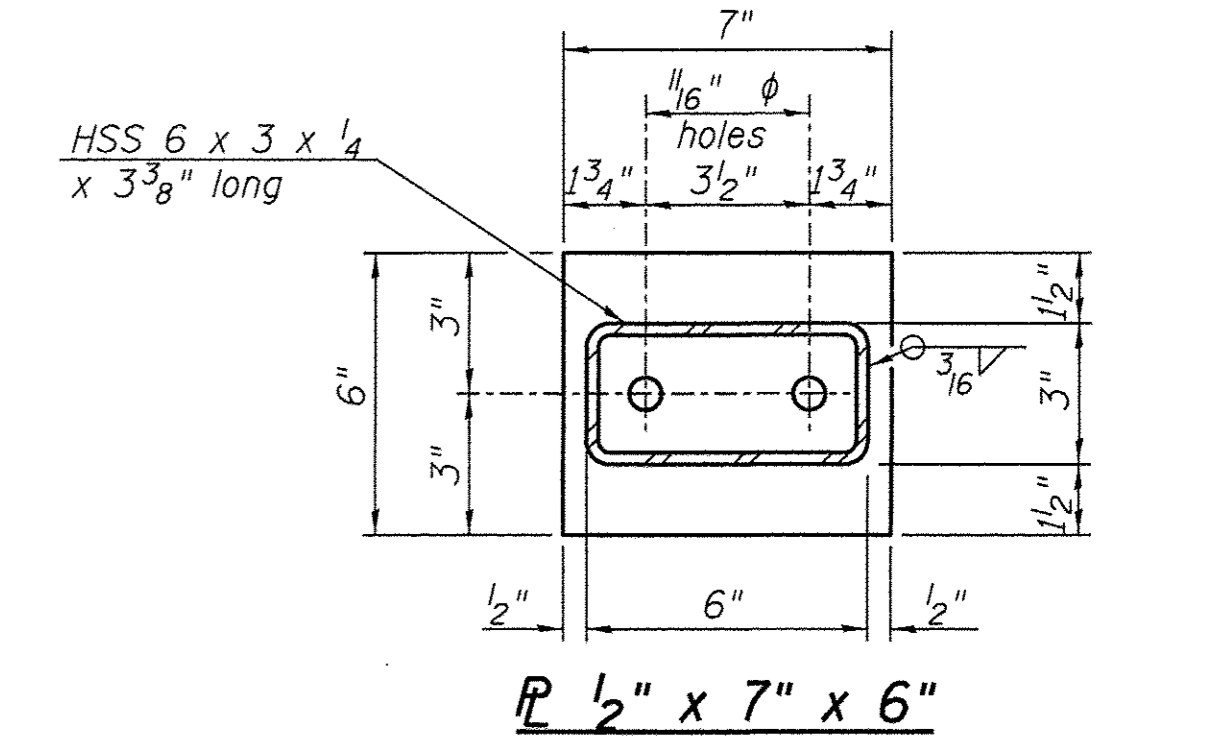
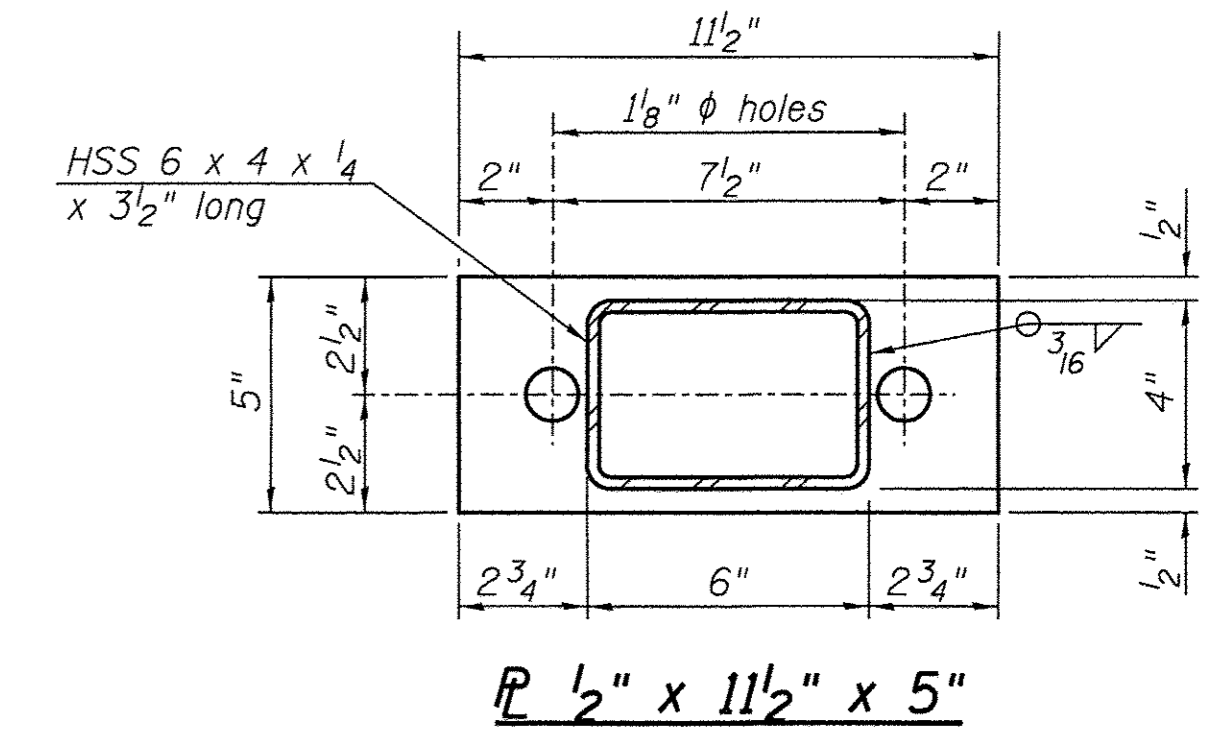
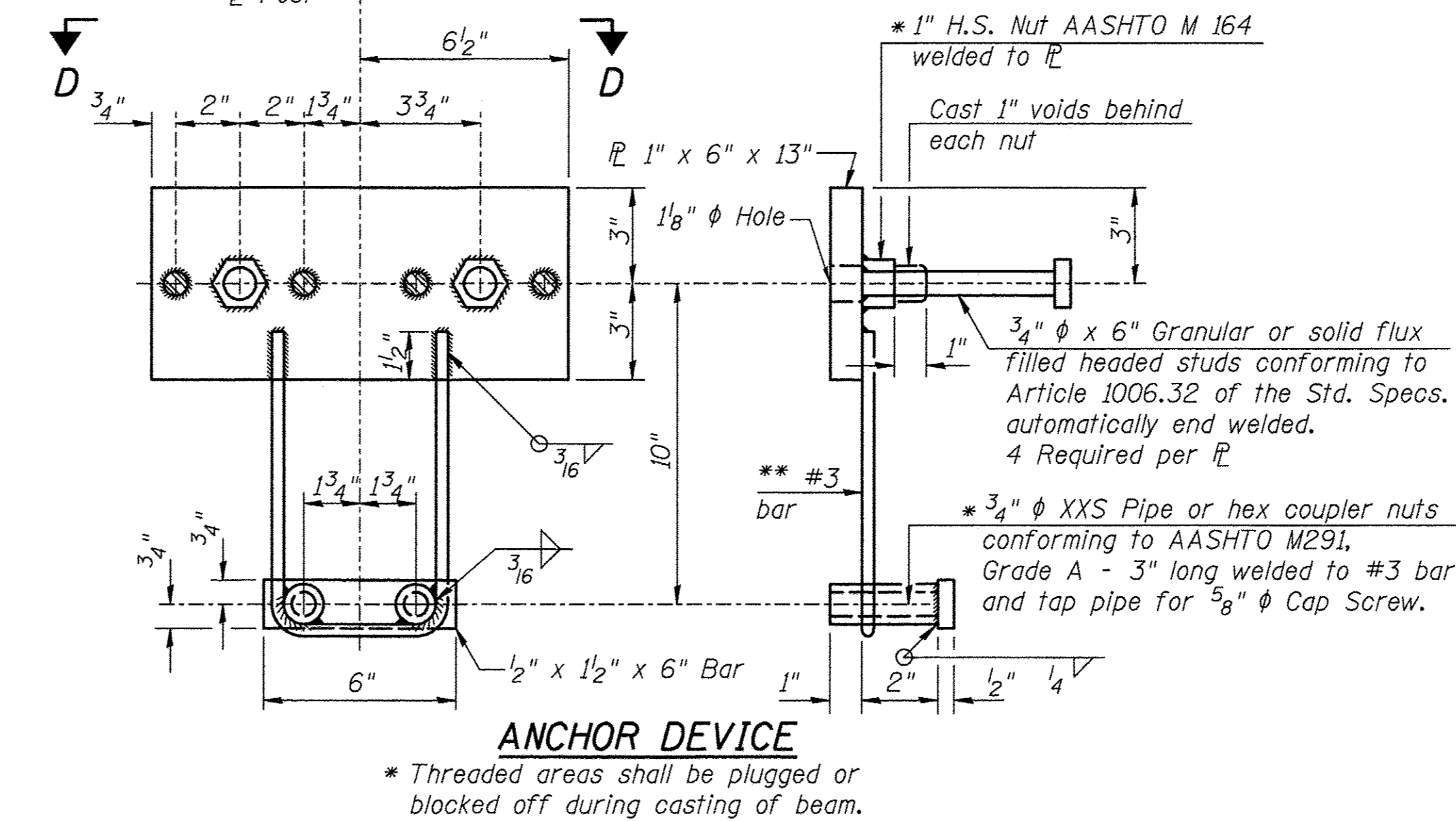
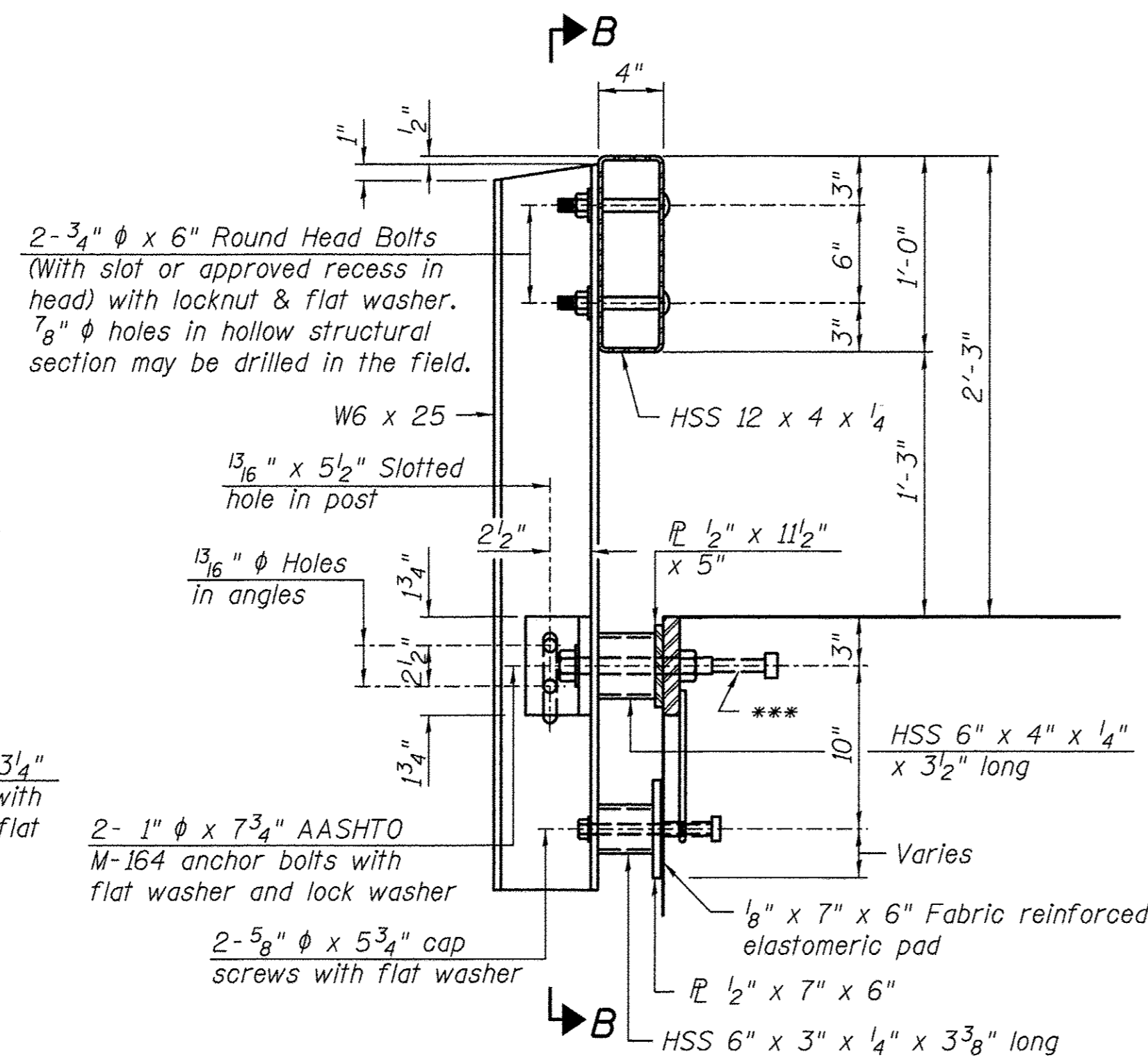
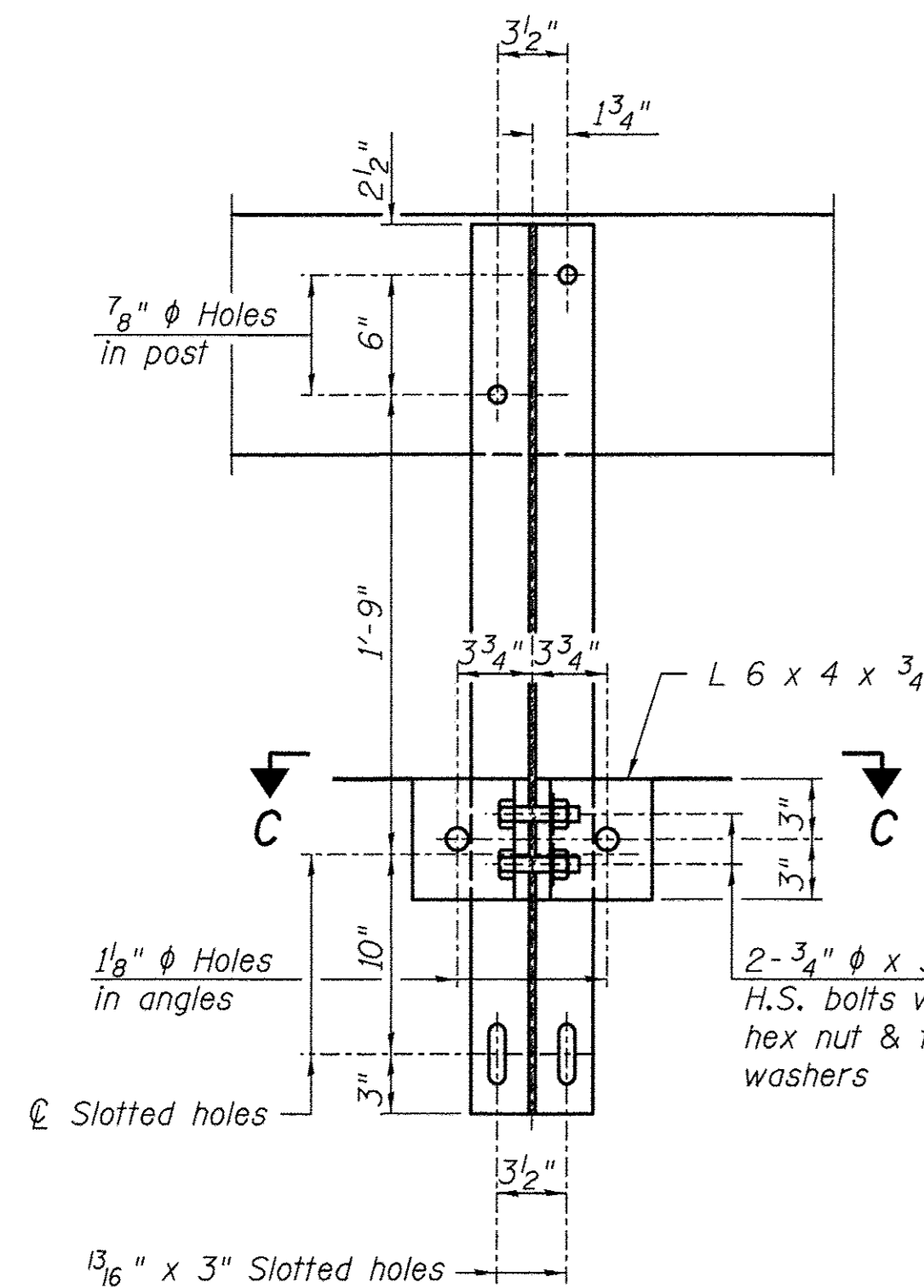
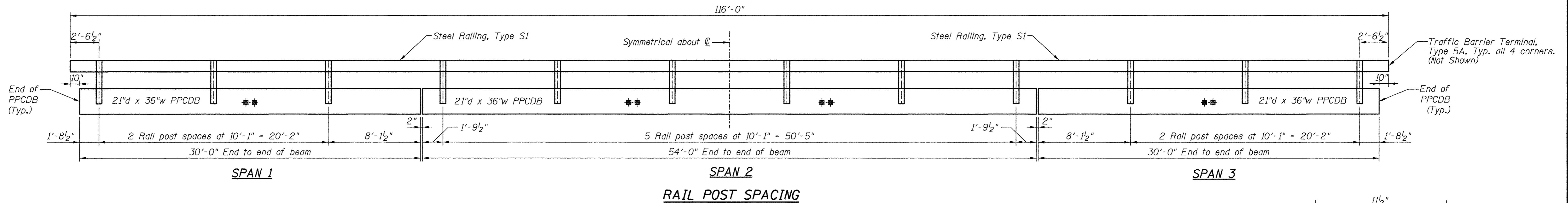
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.  
The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.  
Reinforcement bars shall conform to ASTM A 706, Grade 60. (IL Modified).  
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.

**BILL OF MATERIAL**

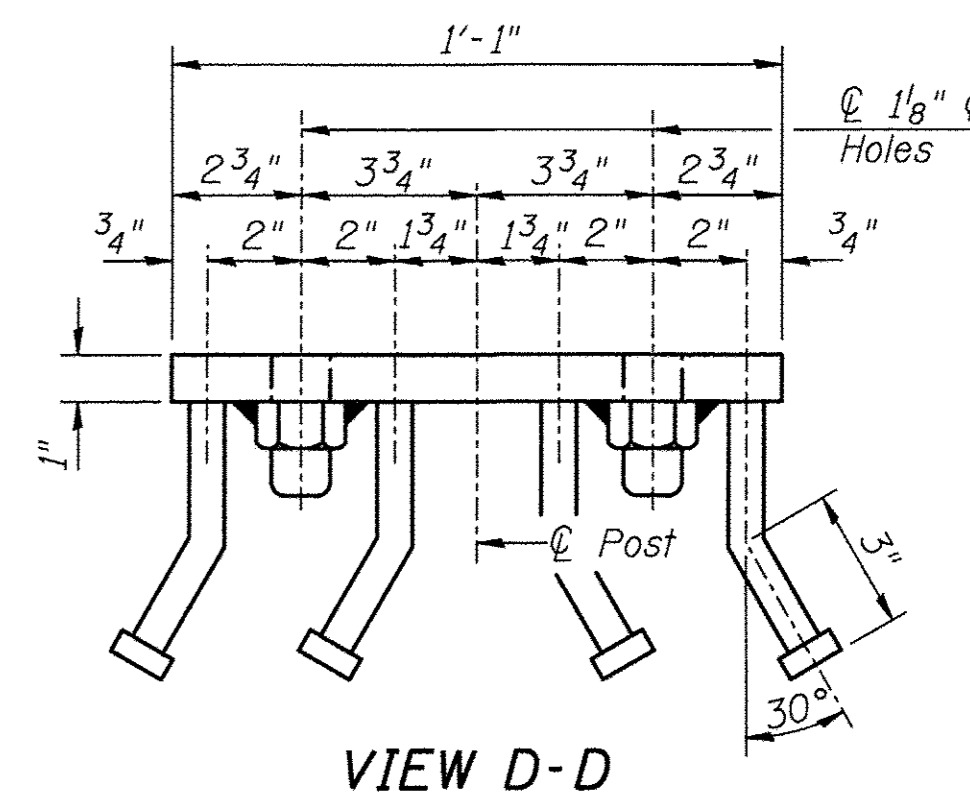
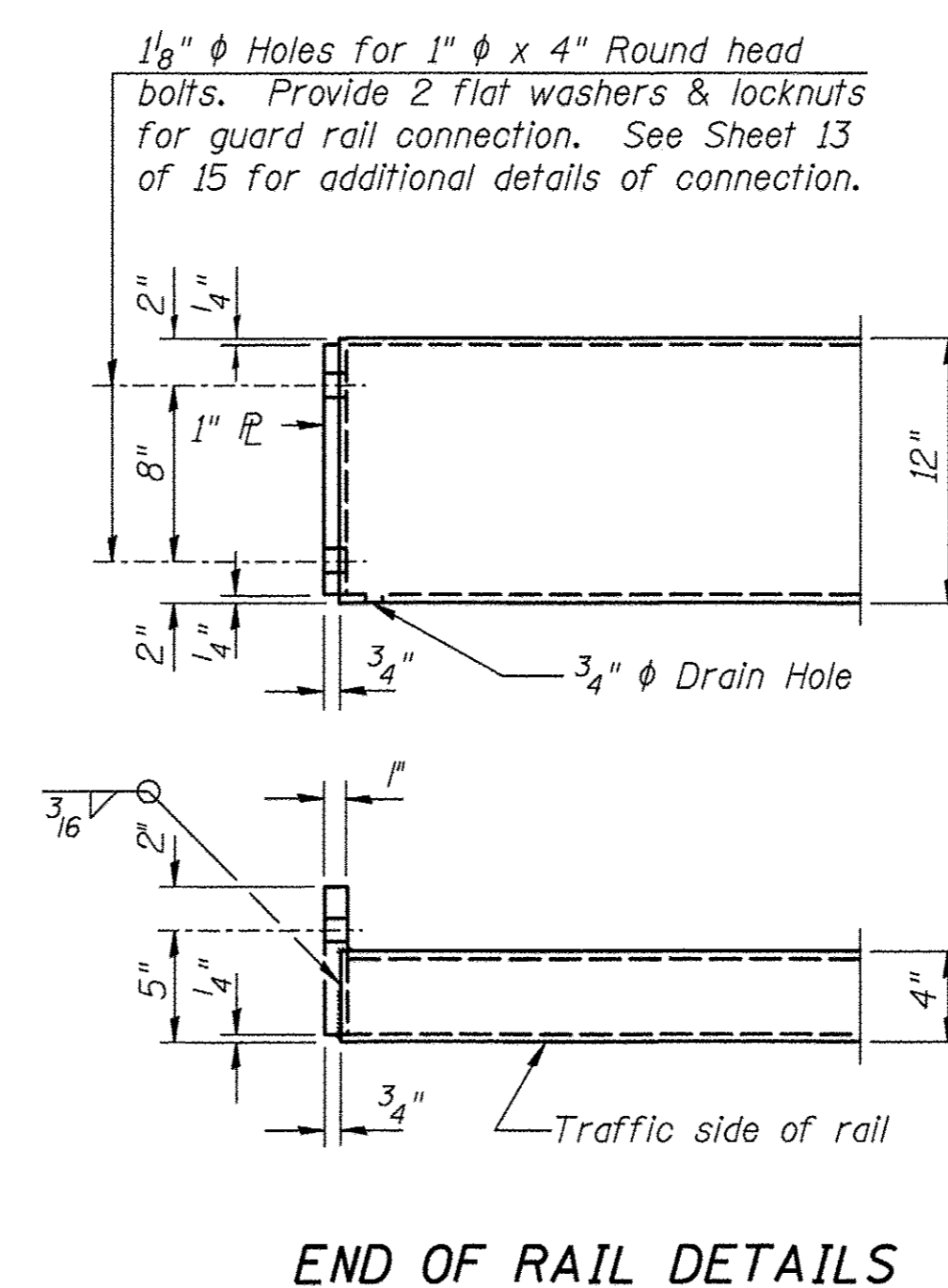
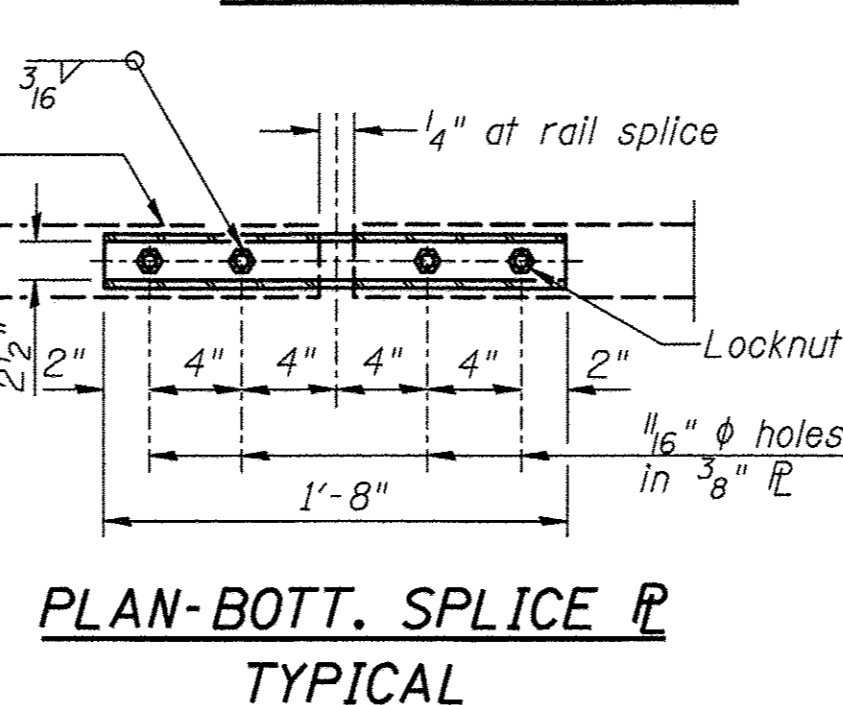
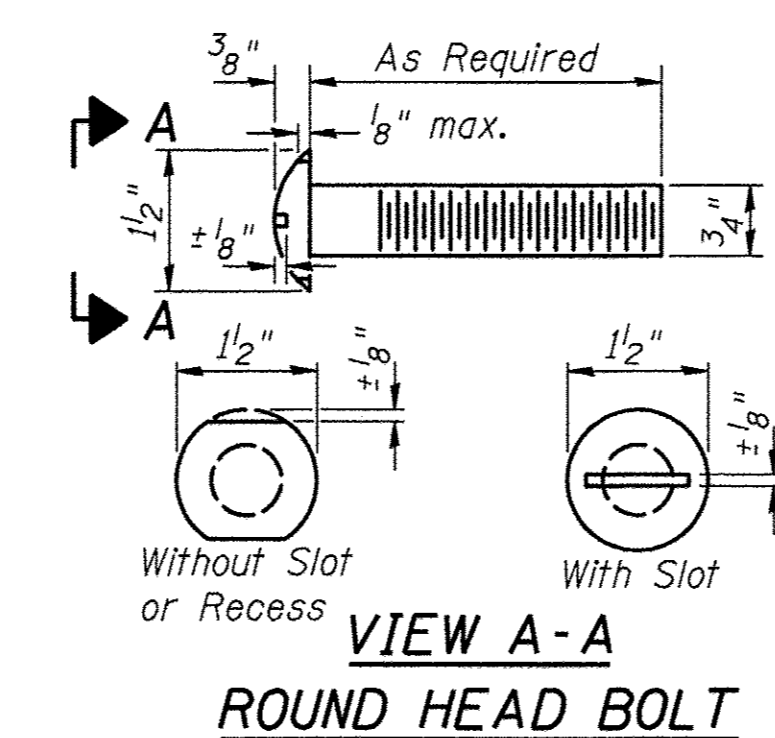
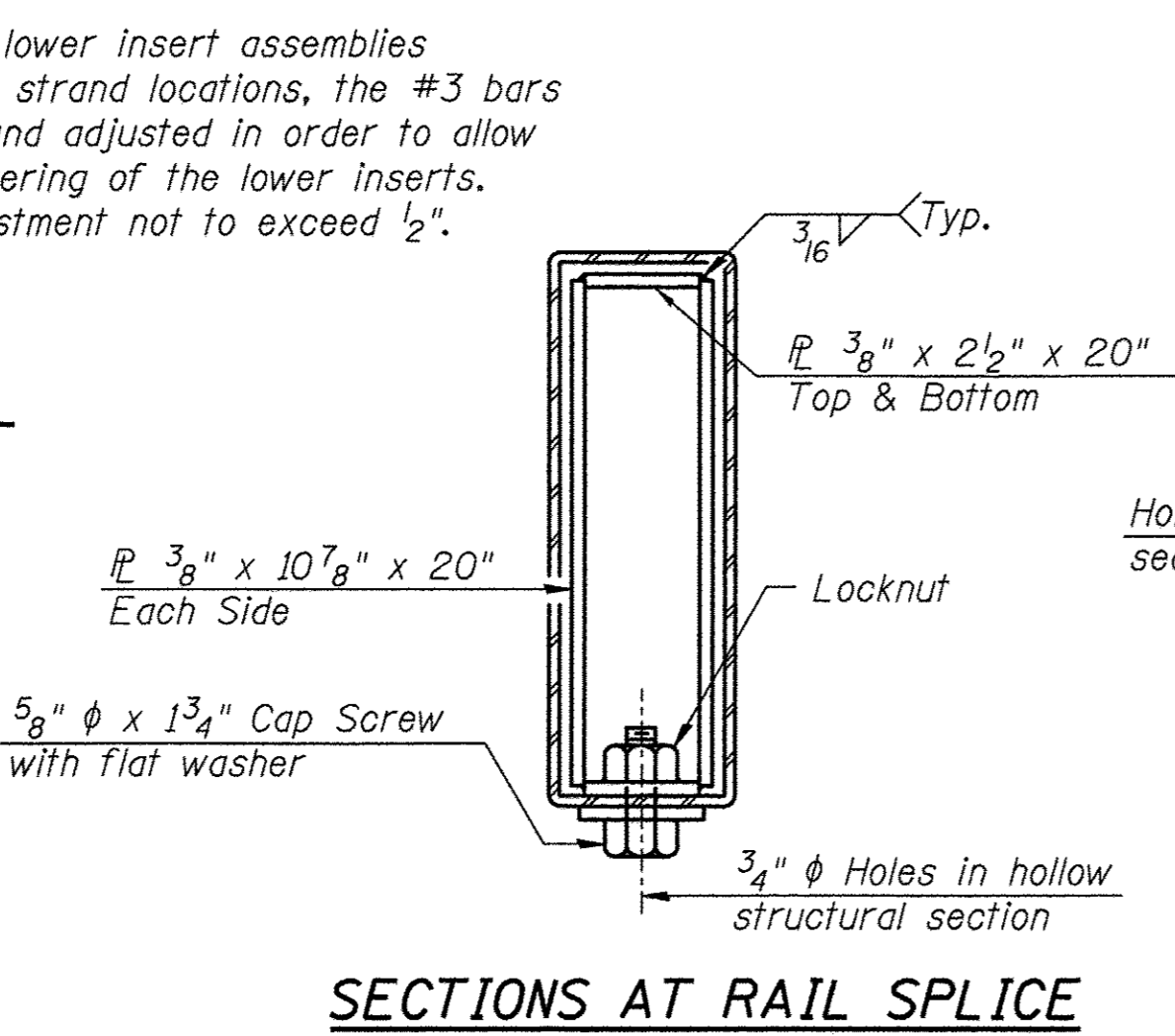
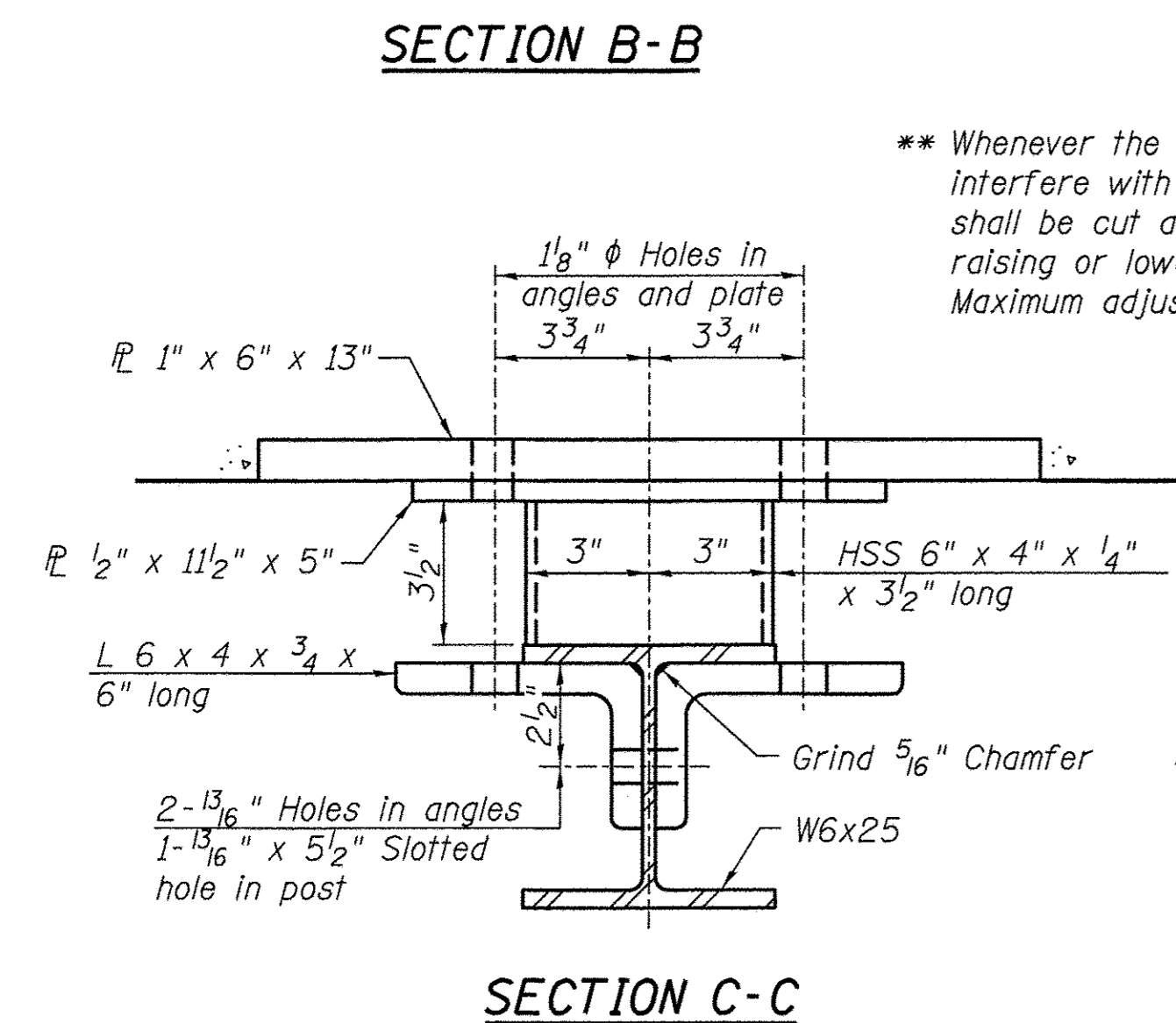
Precast Prestressed Concrete Deck Beams (21" depth)	Sq. Ft.	2736
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**SPAN 2**



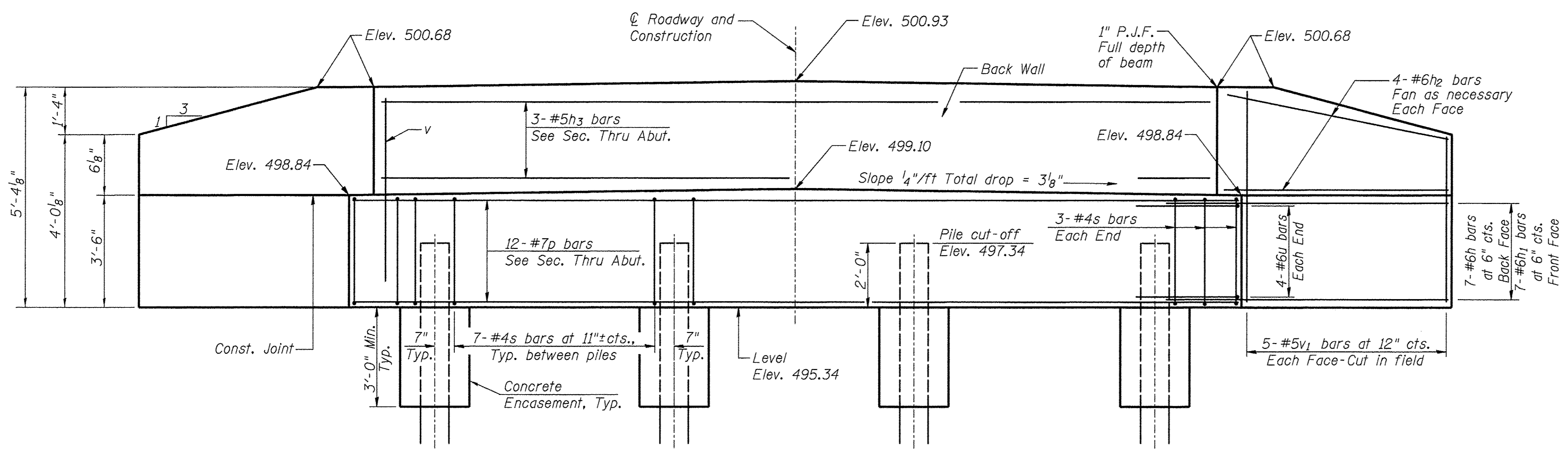


**Notes:**  
 All field drilled holes shall be coated with an approved zinc rich paint before erection.  
 All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.  
 \*\*\* The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

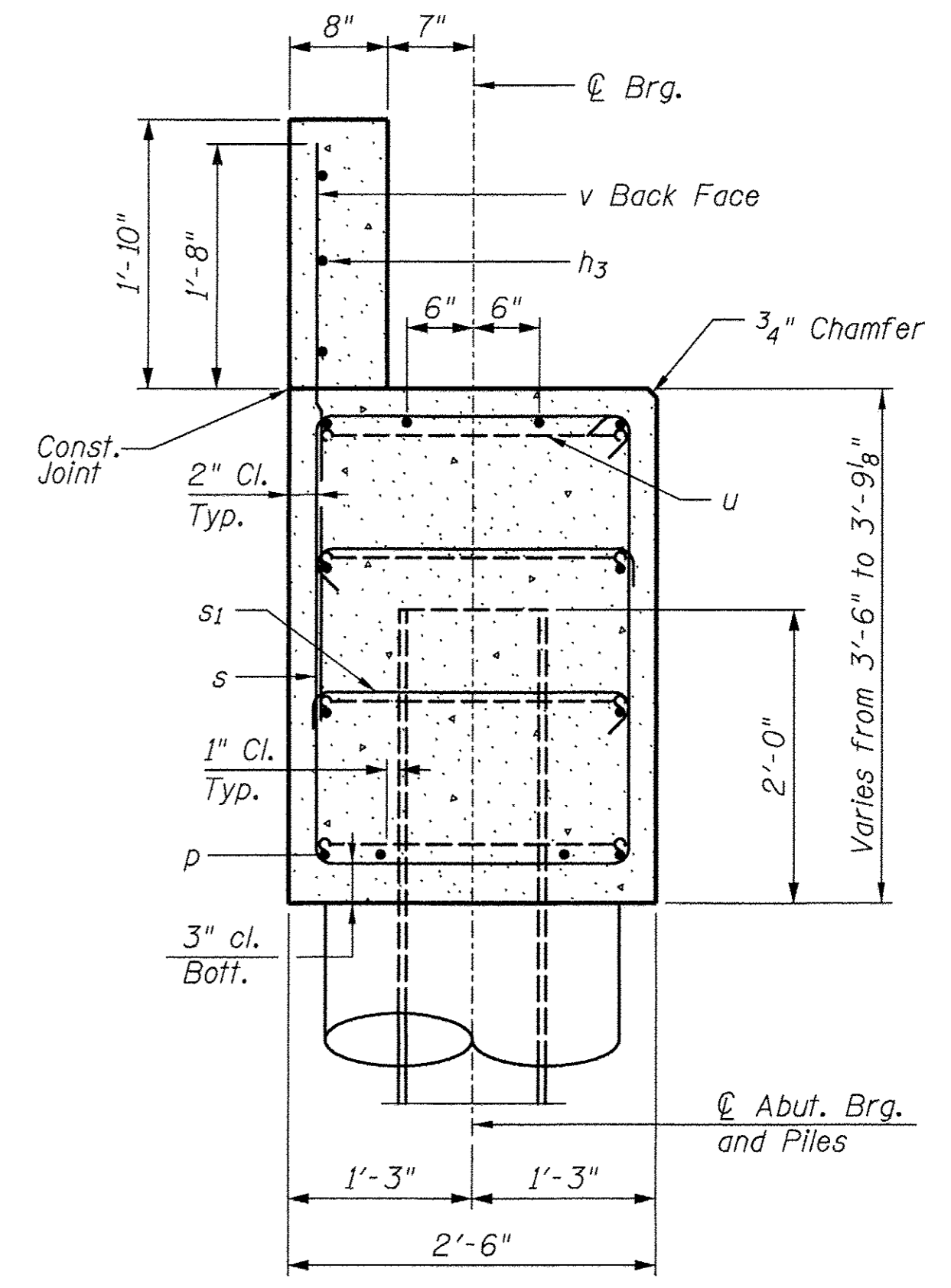


**BILL OF MATERIAL**

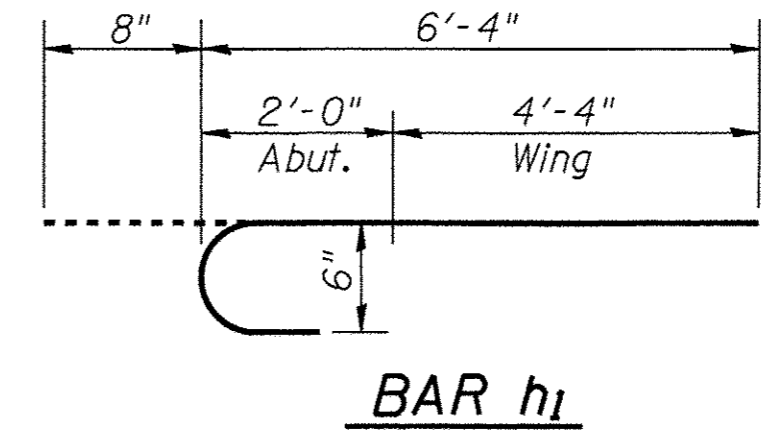
Item	Unit	Quantity
Steel Railing, Type S1	Foot	232



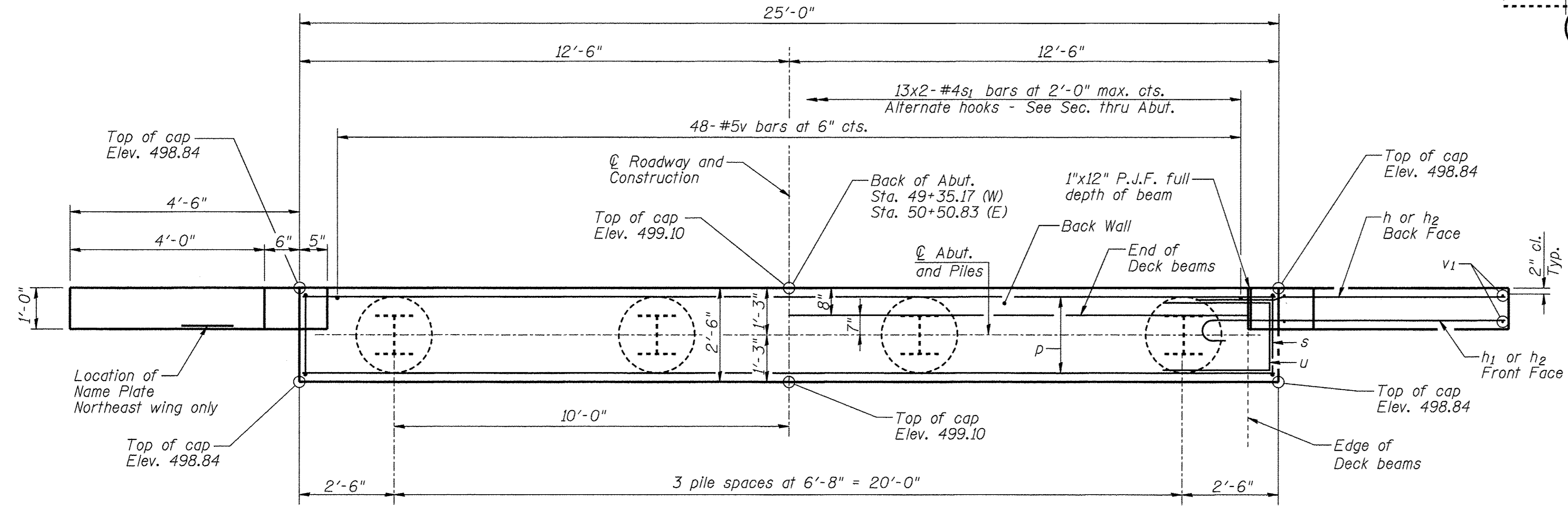
**ELEVATION**



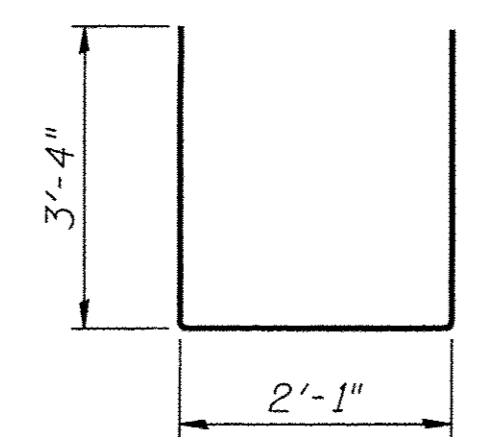
**SEC. THRU ABUT.**  
(Normal to Cl.)



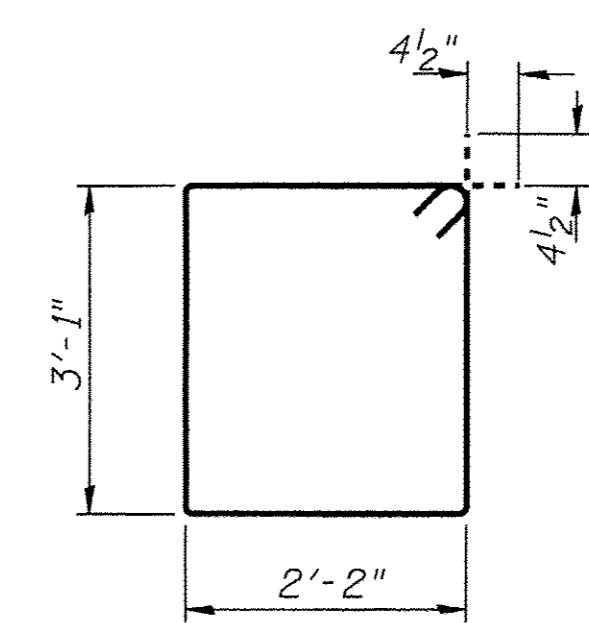
**BAR h1**



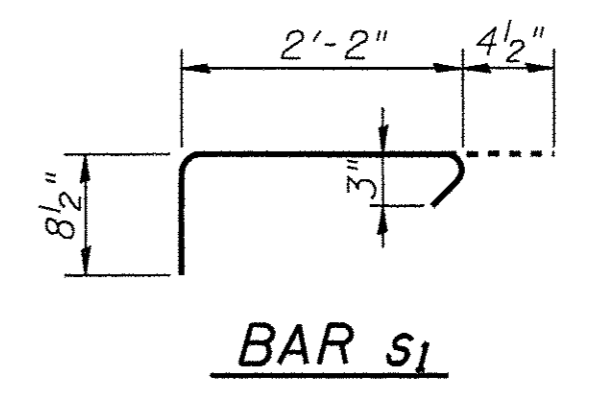
**PLAN**



**BAR u**



**BAR s**



**BAR s1**

**BILL OF MATERIAL FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
h	14	#6	7'-10"	—
h1	14	#6	7'-0"	—
h2	16	#6	4'-8"	—
h3	3	#5	23'-8"	—
p	12	#7	24'-8"	—
s	27	#4	11'-3"	□
s1	26	#4	3'-3"	□
u	8	#6	8'-9"	—
v	48	#5	4'-0"	—
v1	20	#5	5'-0"	CUT IN FIELD
Concrete Structures			Cu. Yd.	11.2
Reinforcement Bars			Pound	1770
Furnishing Steel			Foot	324
Piles, HP12x53			W Abut	424
Driving Piles			Foot	324
Test Pile, Steel HP12x53			W Abut	1
			E Abut	0

For details of piles and Concrete Encasement, see HP Pile Details Sheet.

**PILE DATA WEST ABUTMENT**

Type: Steel HP12x53  
 Nominal Required Bearing: 418 kips  
 Factored Resistance Available: 230 kips  
 Estimated Length: 108'/pile  
 No. Production Piles: 3  
 No. Test Piles: 1

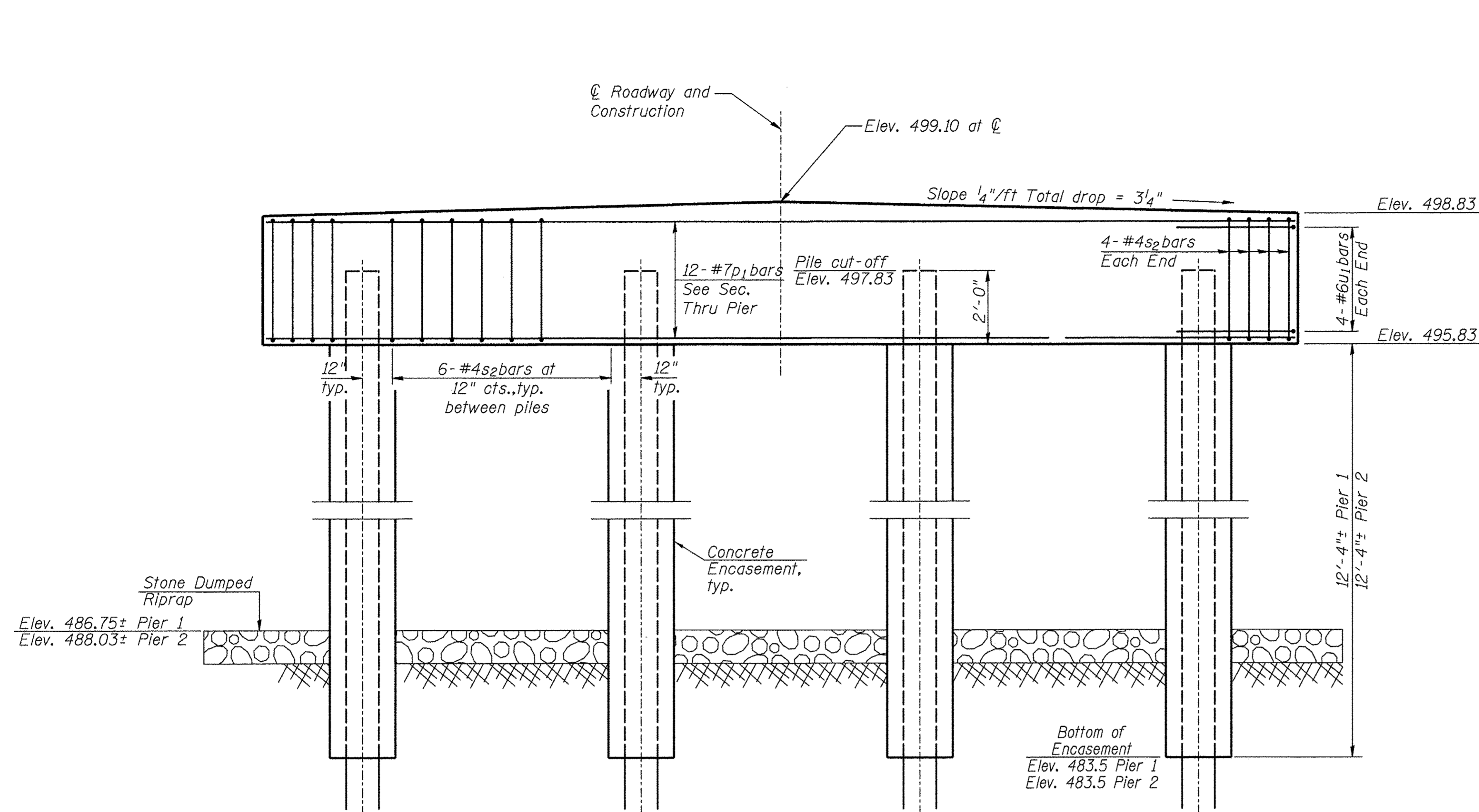
**PILE DATA EAST ABUTMENT**

Type: Steel HP12x53  
 Nominal Required Bearing: 418 kips  
 Factored Resistance Available: 230 kips  
 Estimated Length: 106'/pile  
 No. Production Piles: 4  
 No. Test Piles: 0

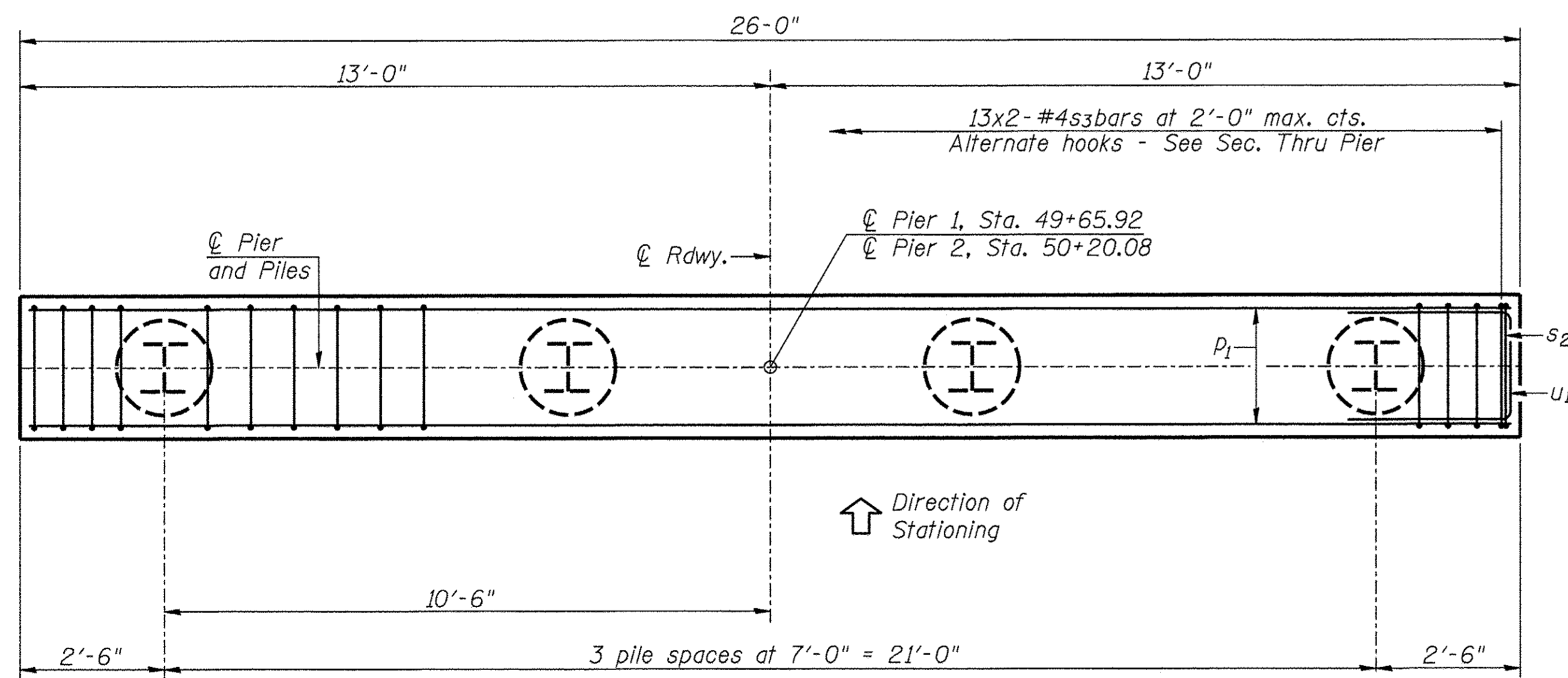
**GENERAL NOTES**

Reinforcement bars shall conform to the requirements of ASTM A 706 Grade 60 (Illinois Modified).  
 All exposed edges shall have standard 3/4" chamfer, unless otherwise noted or as directed by the Engineer.  
 All clearances between rebar and form surface shall be 2", unless otherwise noted.  
 Space reinforcement in cap to miss PPCDB dowel rods.  
 The position of the 90° & 135° hooked ends of the s1 bar shall be alternated between adjacent bars as shown, both vertically and horizontally.

The back wall and portion of the wingwalls above the construction joint shall be cast against the in-place deck beams.  
 The Steel H-piles shall be according to AASHTO M270 Grade 50.  
 The Contractor shall drive one (1) Test Pile in a production location of the type, size, and location as indicated on the plans and as directed by the Engineer before ordering the remainder of the piles.  
 The Test Pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.



**ELEVATION**



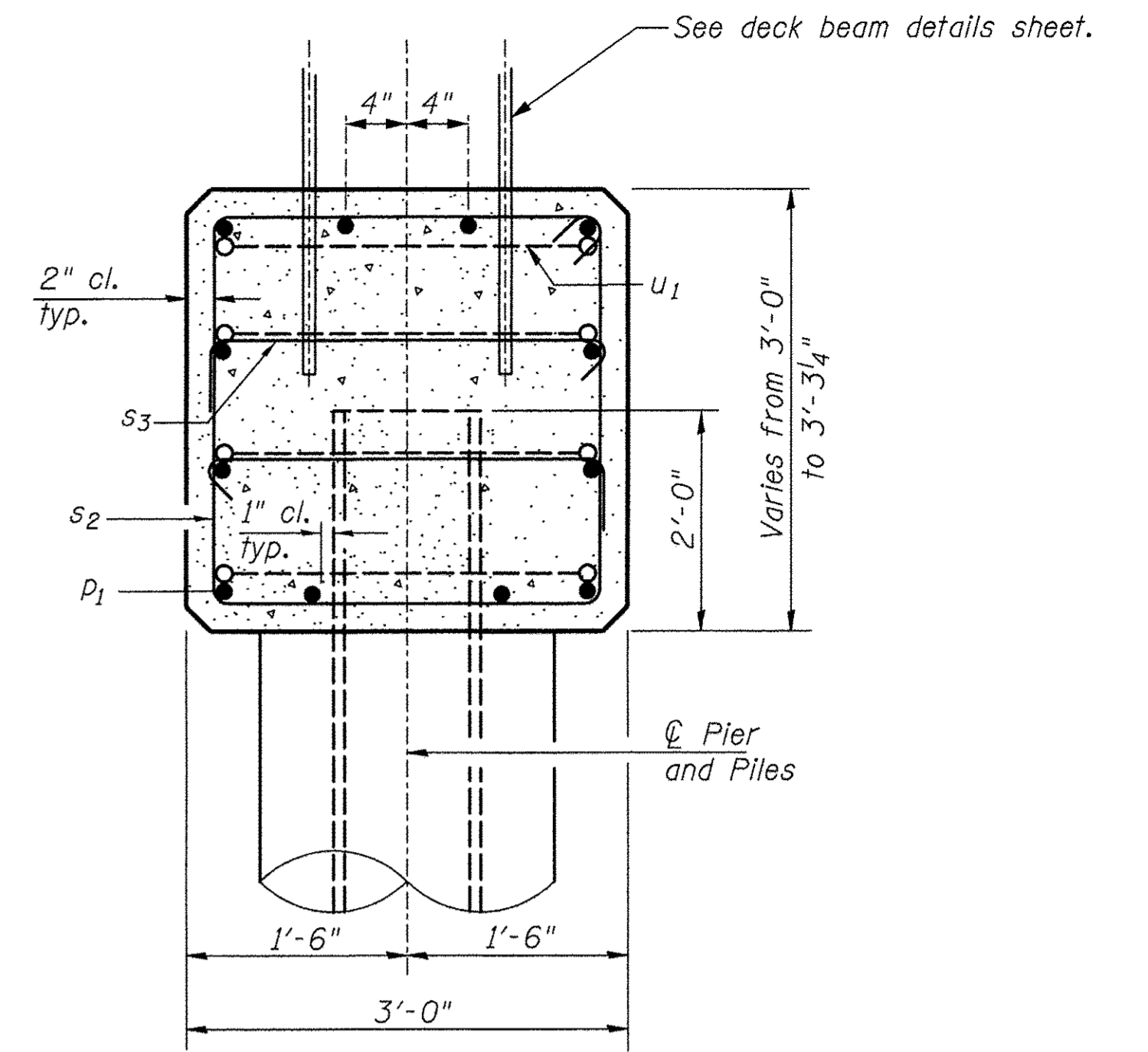
**PLAN**

**PILE DATA  
PIER 1 (WEST)**

Type: Steel HP14x89  
 Nominal Required Bearing: 418 kips  
 Factored Resistance Available: 230 kips  
 Est. Length: 108 foot/pile  
 No. Production Piles: 3  
 No. Test Piles: 1

**PILE DATA  
PIER 2 (EAST)**

Type: Steel HP14x89  
 Nominal Required Bearing: 418 kips  
 Factored Resistance Available: 230 kips  
 Est. Length: 106 foot/pile  
 No. Production Piles: 4  
 No. Test Piles: 0



**SEC. THRU PIER**

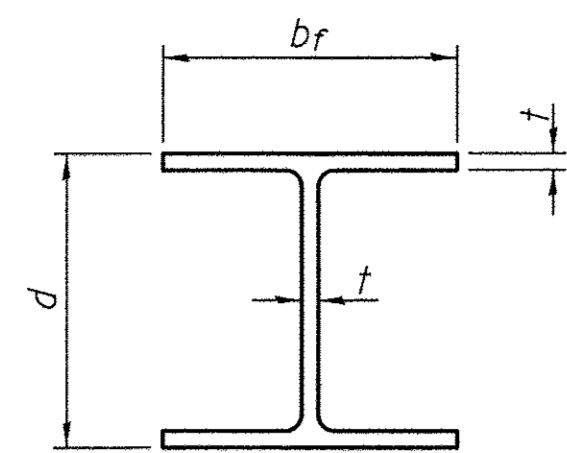
**GENERAL NOTES**

- All exposed edges shall have standard 3/4" chamfer, unless otherwise noted.
- All clearances between rebar and form surface shall be 2", unless otherwise noted.
- Space reinforcement in cap to miss PPCDB dowel rods.
- The Steel H-piles shall be according to AASHTO M270 Grade 50.
- The Contractor shall drive one (1) Test Pile in a production location of the type, size, and location as indicated on the plans and as directed by the Engineer before ordering the remainder of the piles.
- The Test Pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.
- The position of the 90° & 135° hooked ends of the S3 bar shall be alternated between adjacent bars as shown, both vertical and horizontally.

**BILL OF MATERIAL  
FOR ONE PIER**

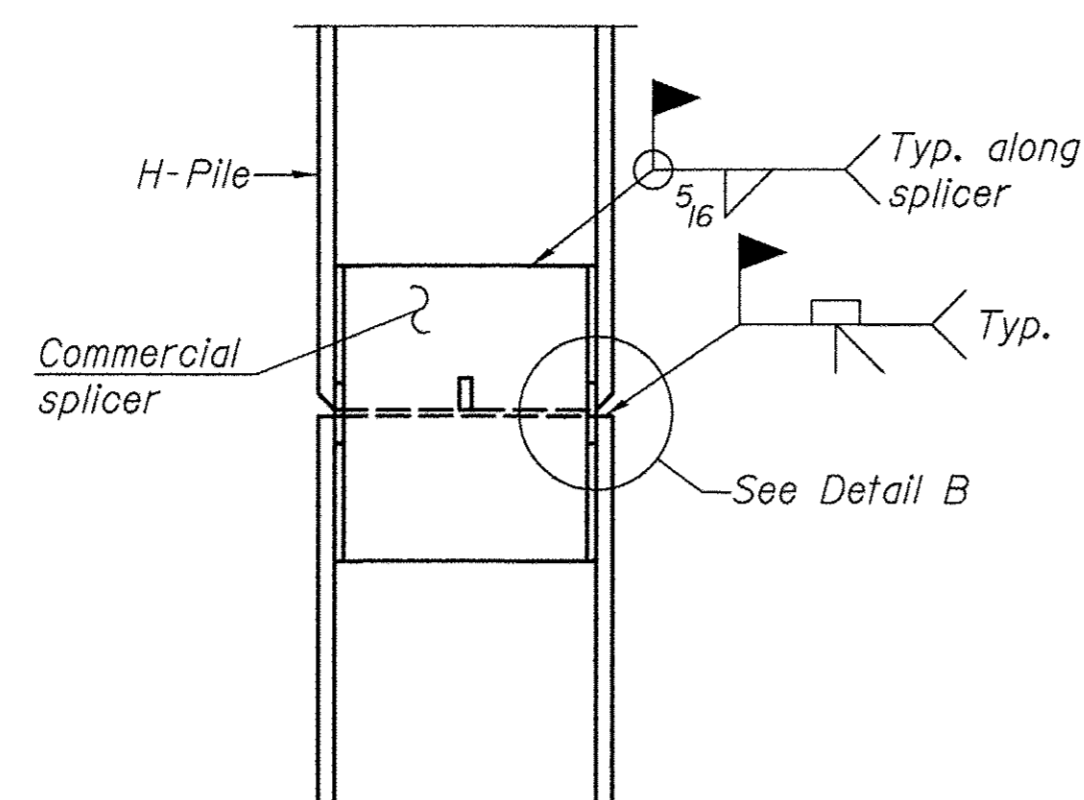
Bar	No.	Size	Length	Shape
P1	12	#7	25'-8"	—
S2	26	#4	11'-5"	□
S3	26	#4	3'-9"	┌
U1	8	#6	9'-3"	—
Concrete Structures		Cu Yd	9.1	
Concrete Encasement		Cu Yd	Pier 1 9.0 Pier 2 9.0	
Reinforcement Bars		Pound	1000	
Furnishing Steel Piles, HP14x89		Foot	Pier 1 324 Pier 2 424	
Driving Piles		Foot	Pier 1 324 Pier 2 424	
Test Pile, Steel HP14x89		Each	Pier 1 1 Pier 2 0	

For details of piles and Concrete Encasement, see HP Pile Details Sheet.

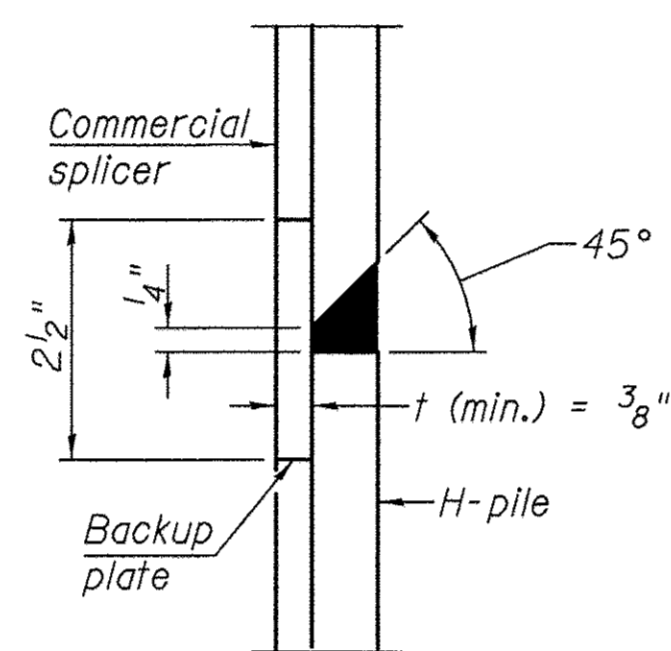


**STEEL PILE TABLE**

Designation	Depth <i>d</i>	Flange width <i>b<sub>f</sub></i>	Web and Flange thickness <i>t</i>	Encasement diameter <i>A</i>
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1 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 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"

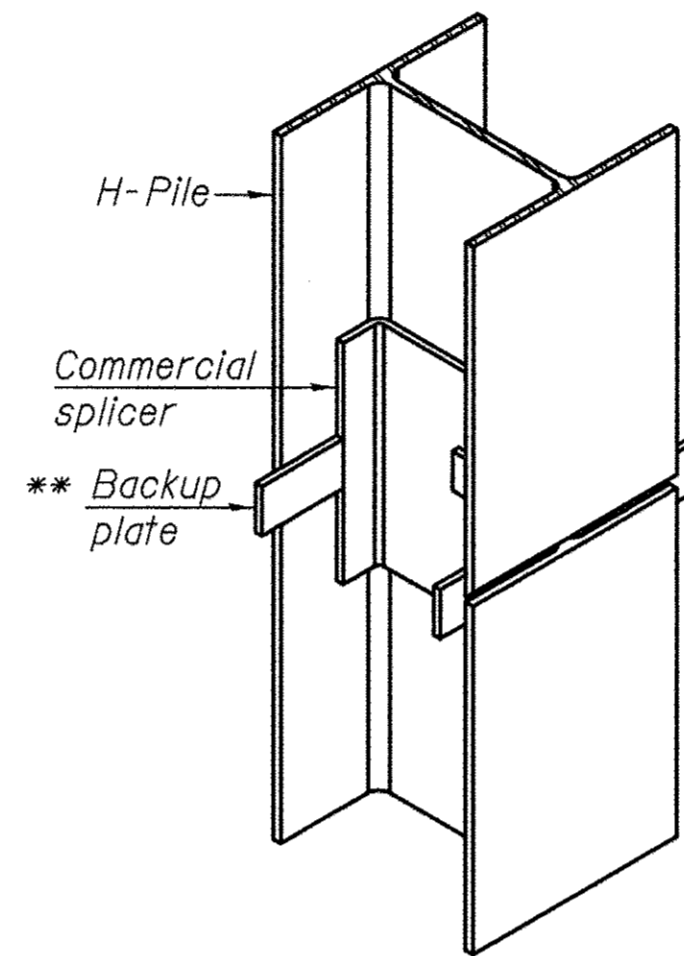


**ELEVATION**

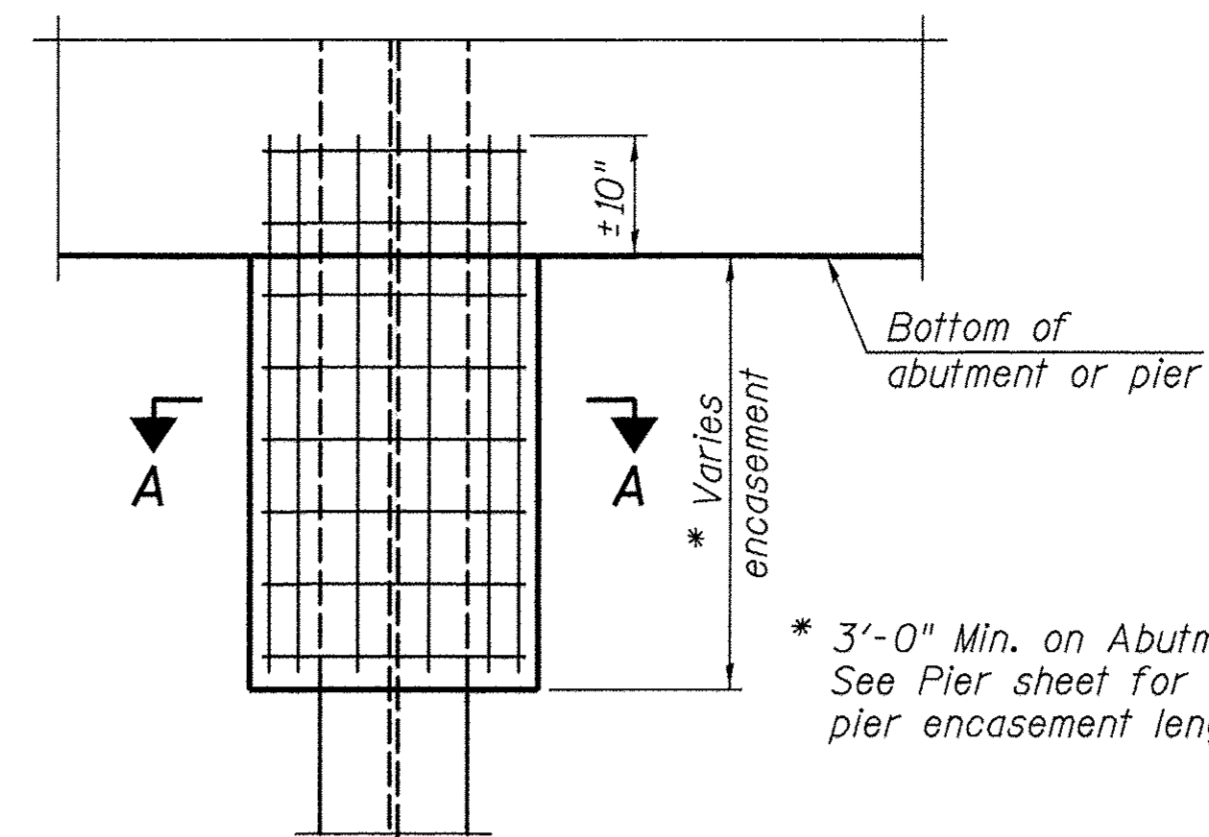


**DETAIL "B"**

**WELDED COMMERCIAL SPLICE**

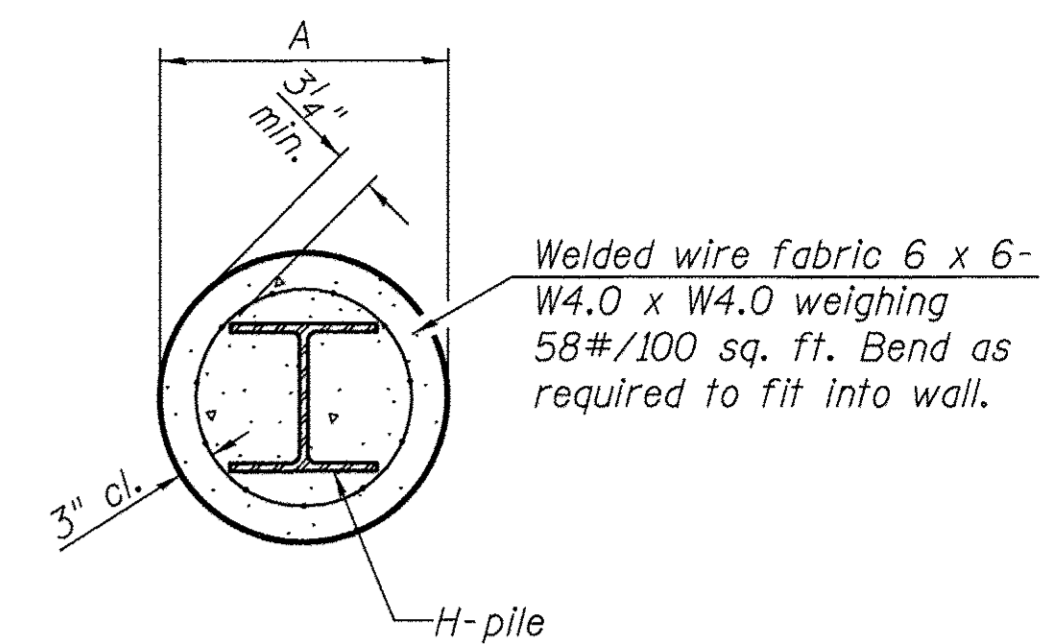


**ISOMETRIC VIEW**



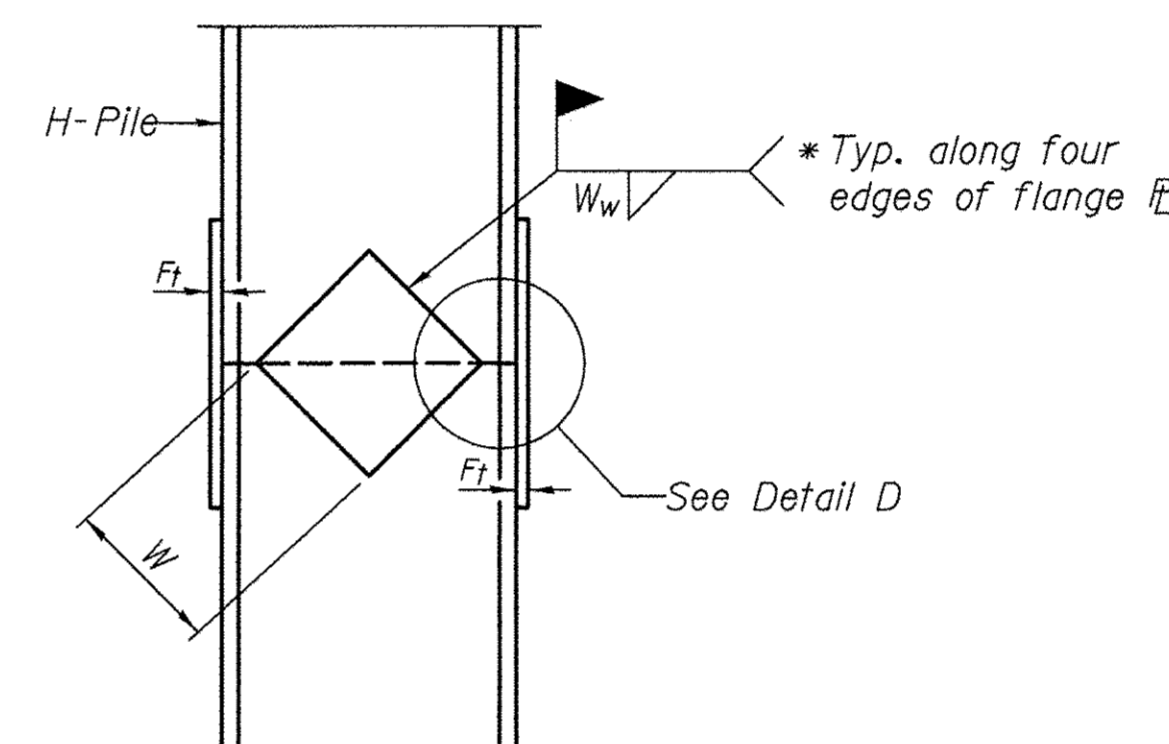
**ELEVATION**

**PILE ENCASEMENT**

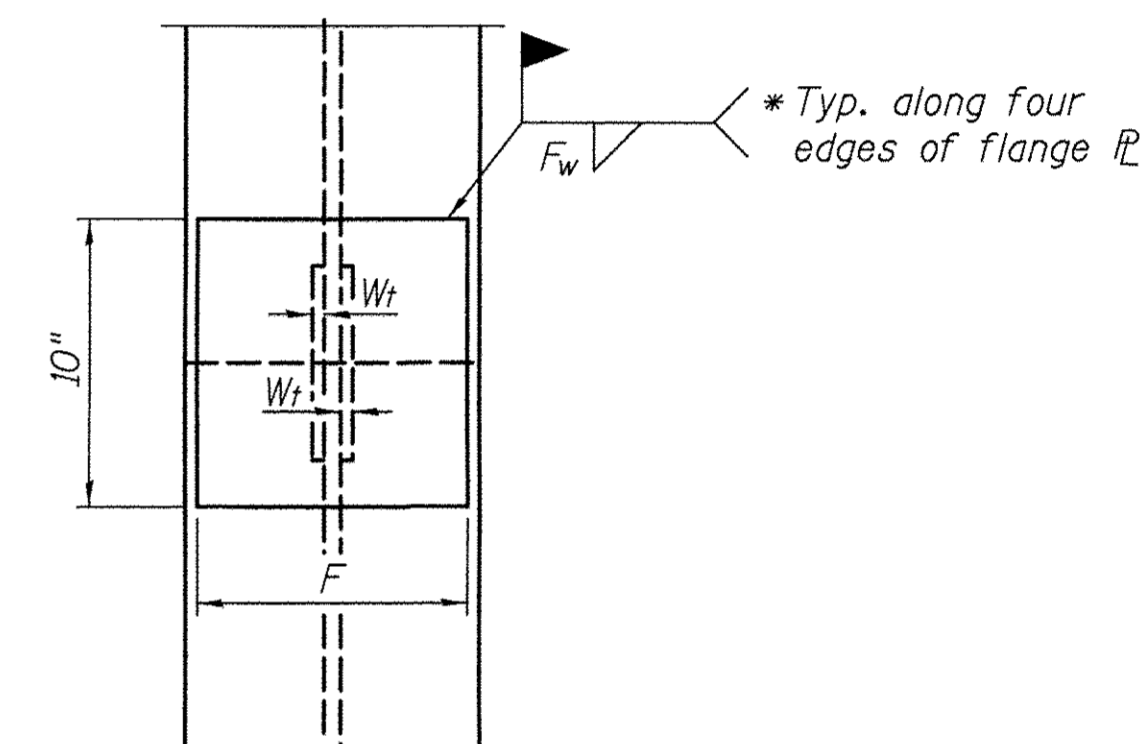


**SECTION A-A**

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

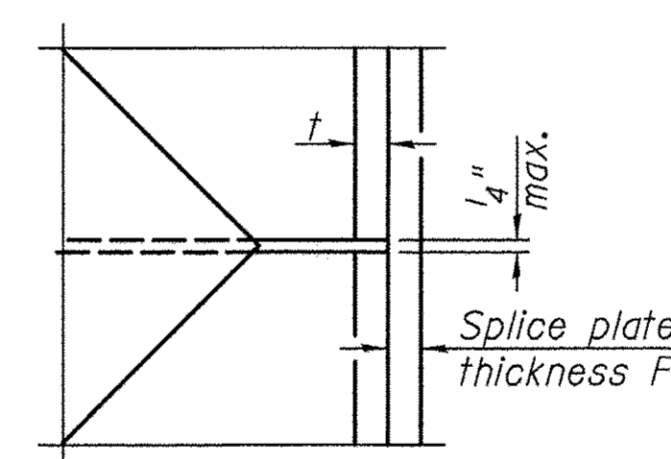


**ELEVATION**



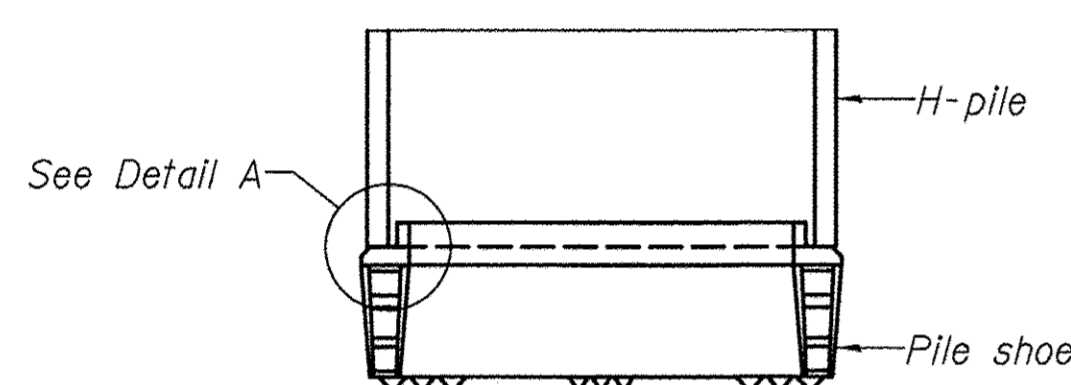
**END VIEW**

Designation	F	F <sub>t</sub>	F <sub>w</sub>	W	W <sub>t</sub>	W <sub>w</sub>
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"

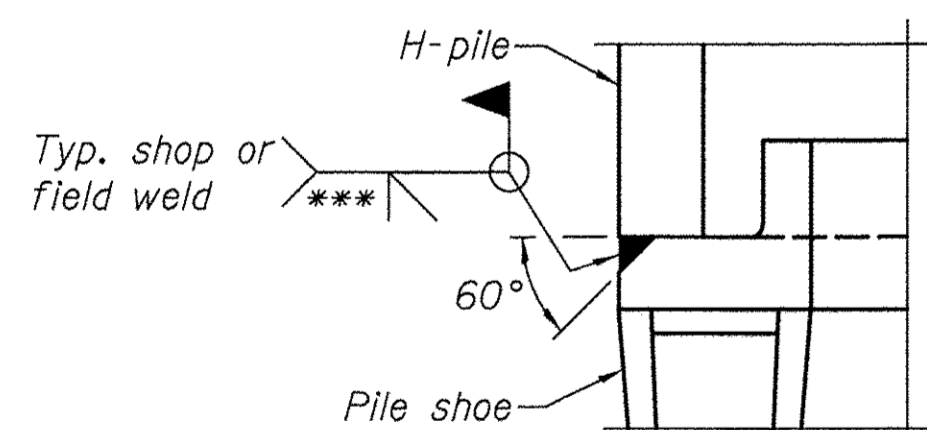


**DETAIL D**

**WELDED PLATE FIELD SPLICE**

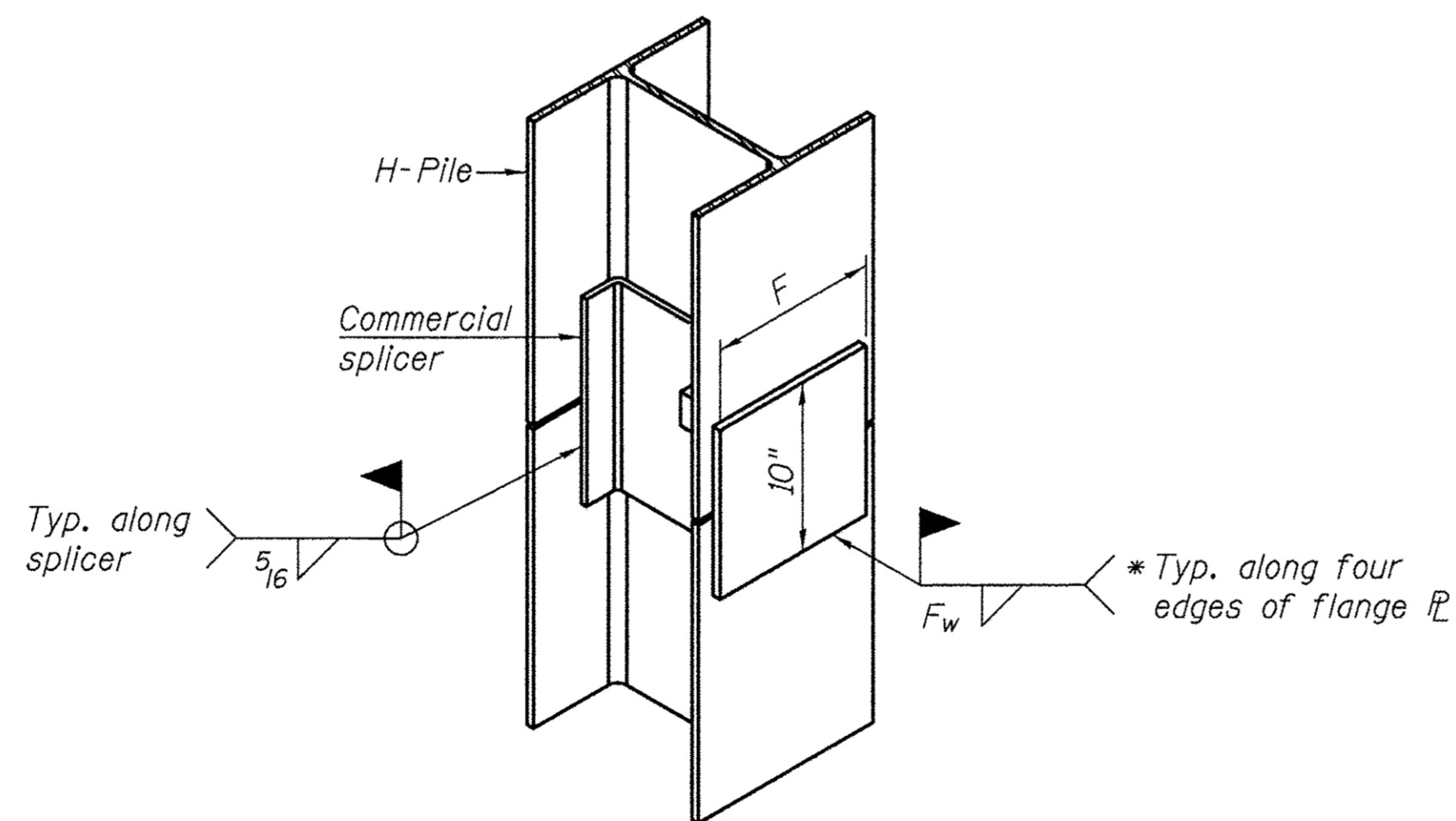


**ELEVATION**



**DETAIL A**

**H-PILE SHOE ATTACHMENT**



**ISOMETRIC VIEW**

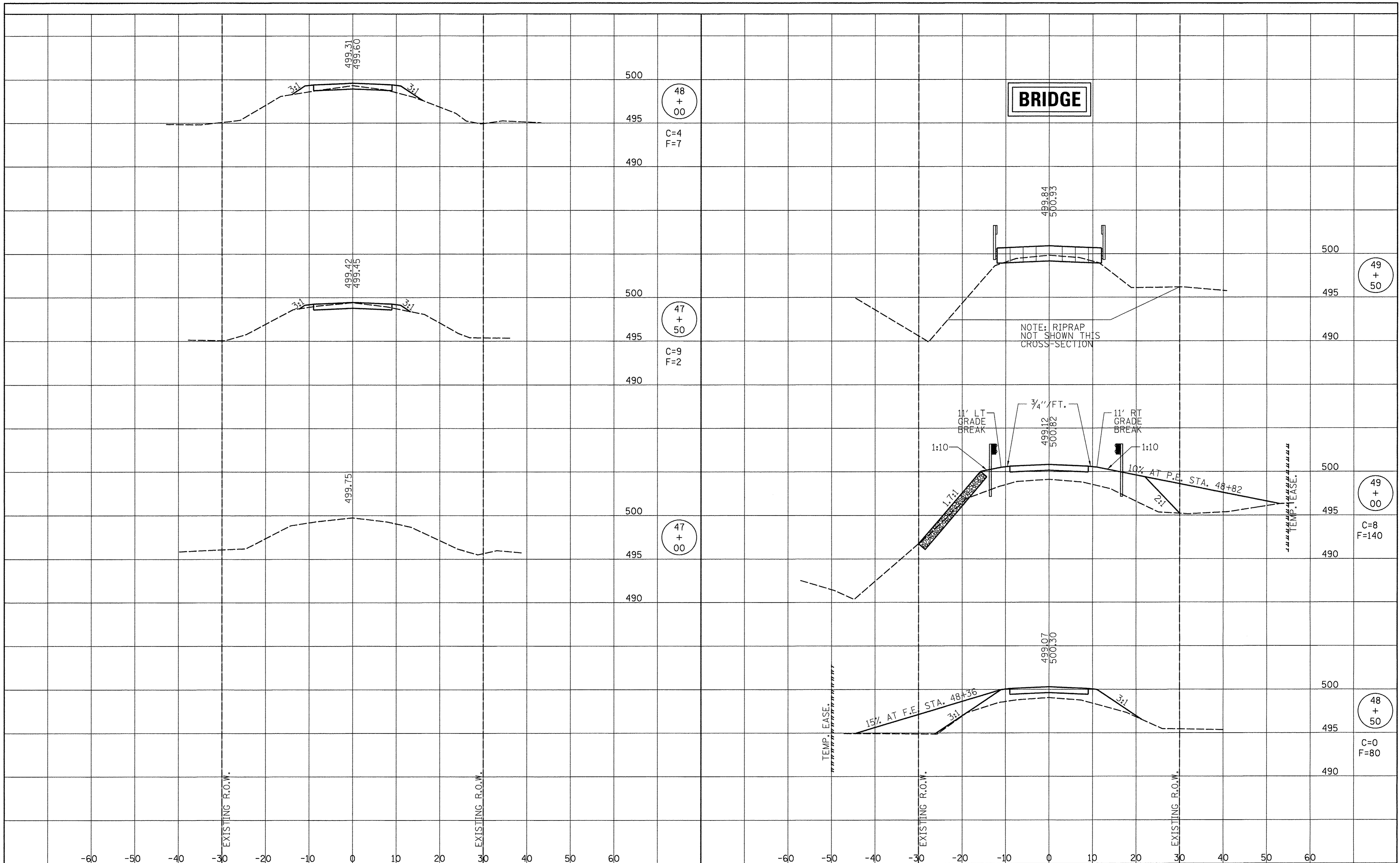
**WELDED COMMERCIAL SPLICE ALTERNATE**

- \* 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.).

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

DATE	
BY	
SURVEYED	
NOTE BOOK	
TEMPLATE	
AREAS CHECKED	
NO.	

DATE	
BY	
SURVEYED	
NOTE BOOK	
TEMPLATE	
AREAS CHECKED	
NO.	



**RHUTASEL and ASSOCIATES, INC.**  
 CONSULTING ENGINEERS • LAND SURVEYORS  
 CENTRALIA, ILLINOIS    FRESBURG, ILLINOIS  
 ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

DESIGNED - JN	REVISED -
DRAWN - JN	REVISED -
CHECKED - BLT	REVISED -
DATE - 10/07/2016	REVISED -

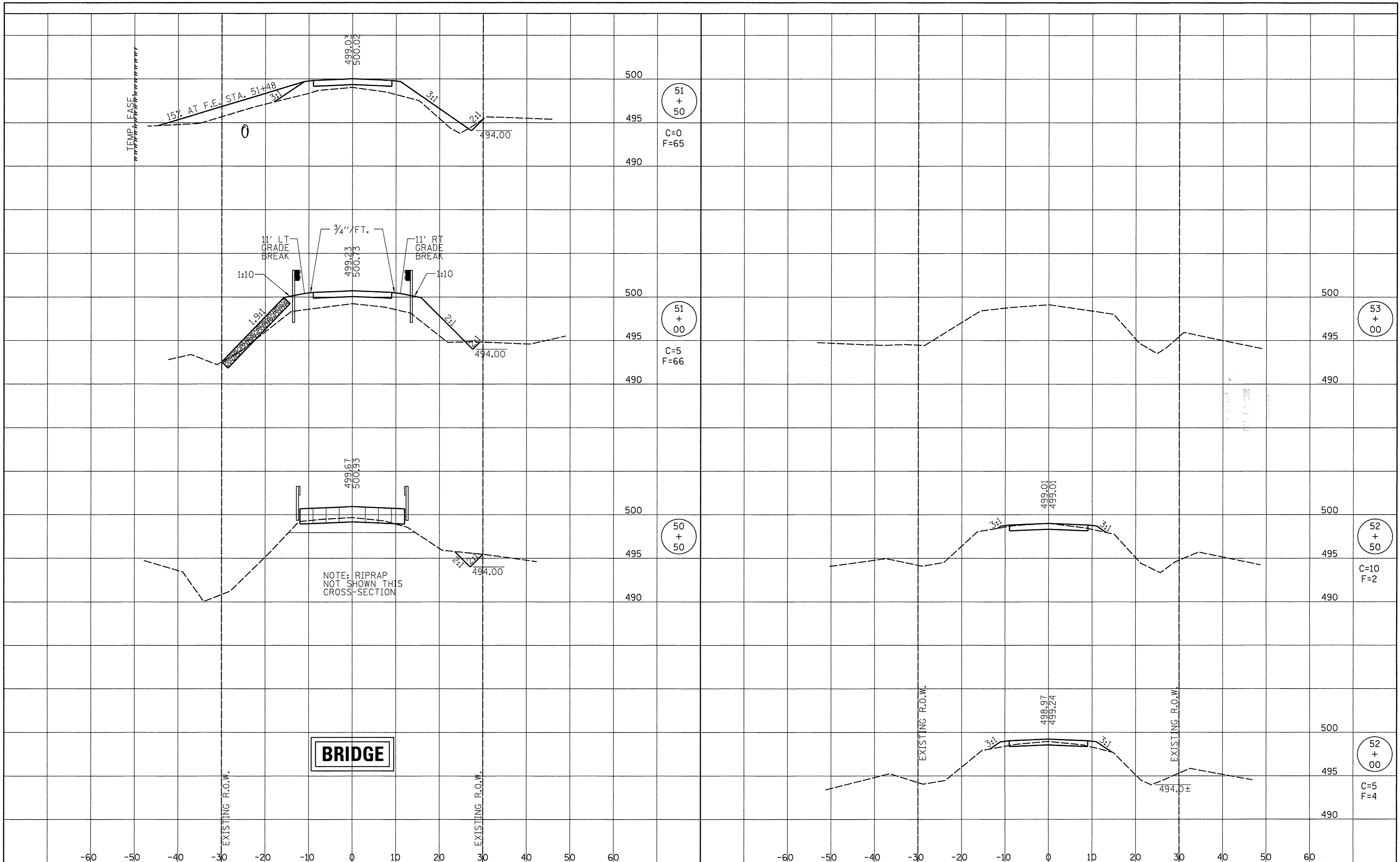
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**CROSS SECTIONS OF ROADWAY**

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 30	13-00350-00-BR	MARION	14	13
CONTRACT NO. 97637			RAAI JOB NO. 51915	
STA. 47+00 TO STA. 49+50		FED. AID PROJECT		

DATE	
BY	
SURVEYED	
NOTE BOOK	
TEMPLATE	
AREAS CHECKED	
NO.	

DATE	
BY	
SURVEYED	
NOTE BOOK	
TEMPLATE	
AREAS CHECKED	
NO.	



**RHUTASEL and ASSOCIATES, INC.**  
 CONSULTING ENGINEERS • LAND SURVEYORS  
 CENTRALIA, ILLINOIS    FREEBURG, ILLINOIS  
 ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

DESIGNED	- JN	REVISED	-
DRAWN	- JN	REVISED	-
CHECKED	- BLT	REVISED	-
DATE	- 10/07/2016	REVISED	-

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

**CROSS SECTIONS OF ROADWAY**

STA. 50+50 TO STA. 53+00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 30	13-00350-00-BR	MARION	14	14
CONTRACT NO. 97637			RAAI JOB NO. 51915	
FED. AID PROJECT				