

CONTRACT NO. 95858

08-02-2019 LETTING ITEM 034

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED STP OFF-SYSTEM BRIDGE FUNDING

TR 271A (900N) OVER DRAKE CREEK SECTION 17-01126-00-BR SECTION 17-02120-00-BR ASH GROVE TOWNSHIP BIG SPRING TOWNSHIP PROJECT NO. LLFU(387) SHELBY COUNTY JOB NO. C-97-021-19

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 271A	17-01126-00-BR 17-02120-00-BR	SHELBY	14	1
CONTRACT NO. 95858				

RAAJ JOB NO. 54017

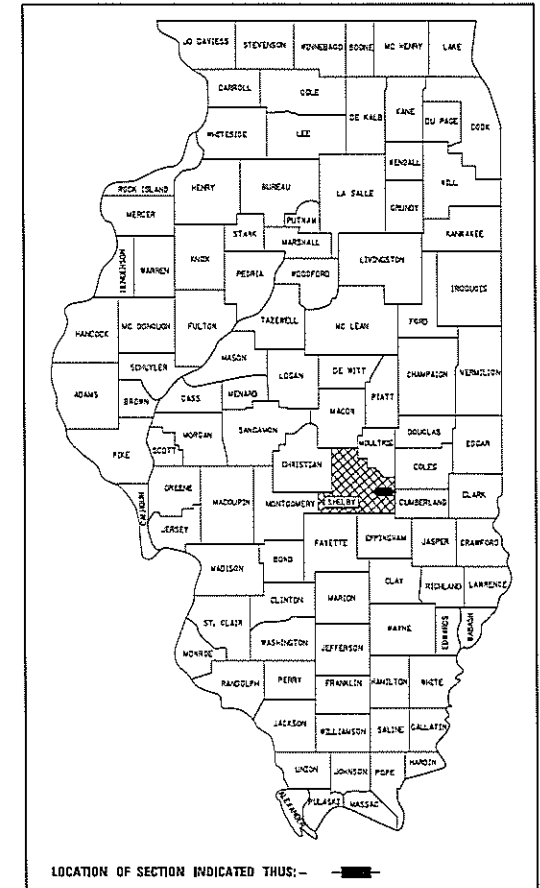
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- 5.-8. PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
- STEEL RAILING, TYPE S1 DETAILS
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- BLR 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

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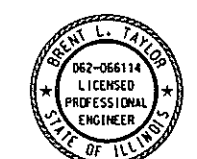


APPROVED: *[Signature]* 5-10 .2019
SHELBY COUNTY ENGINEER

PASSED: 5-29 .2019
[Signature]
DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID BASED ON LIMITED REVIEW: 5-29 .2019
[Signature]
REGION FOUR ENGINEER

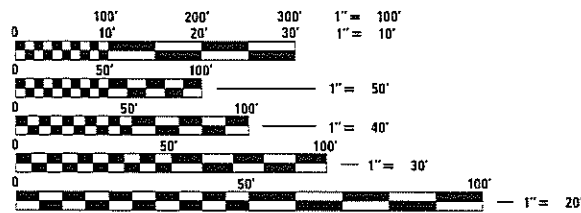
PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS



[Signature] 05/17/2019

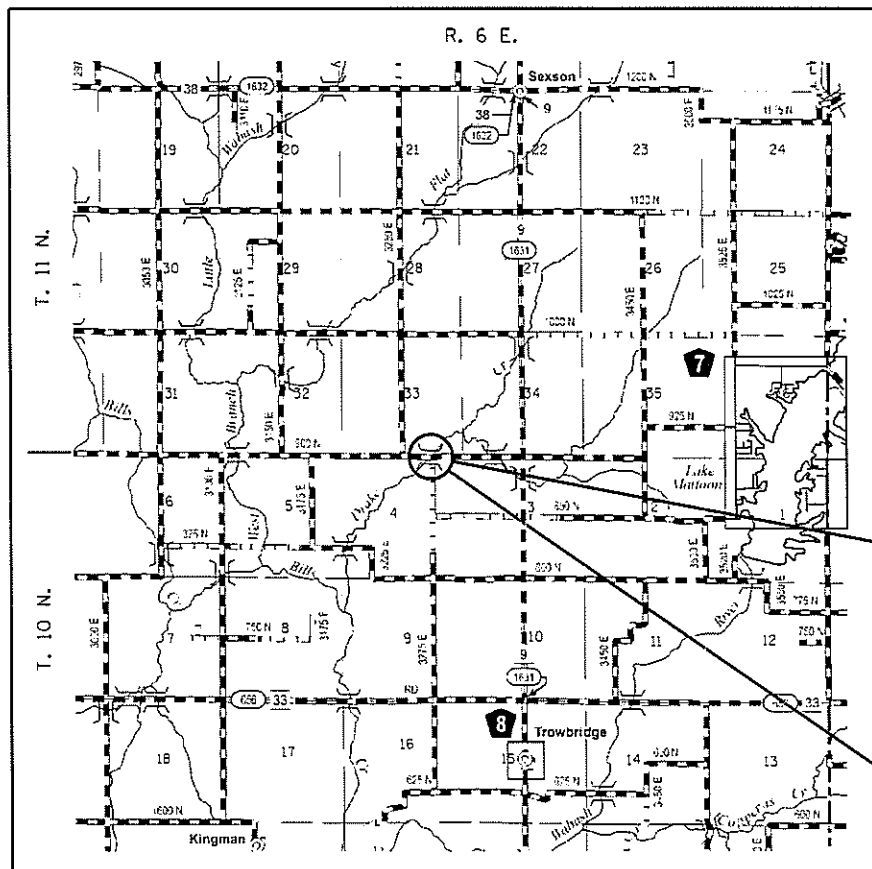
BRENT L. TAYLOR
SALEM, ILLINOIS
ILLINOIS LICENSED PROFESSIONAL
ENGINEER NO. 062-066114
EXPIRES NOV. 30, 2019

DESIGN CLASSIFICATION: RURAL LOCAL ROAD
ADT₂₀₁₅ : 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>



SECTION BEGINS
STA. 7+02.74

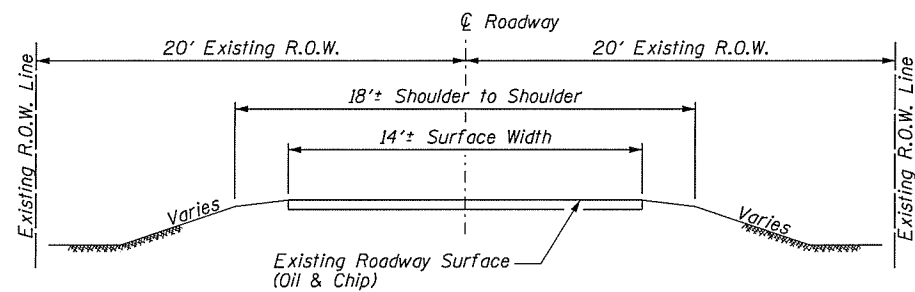
SECTION 17-01126-00-BR AND 17-02120-00-BR
INCLUDES THE CONSTRUCTION OF A THREE
SPAN PRECAST PRESTRESSED CONCRETE
DECK BEAM BRIDGE CARRYING TR 271A
OVER DRAKE CREEK, 45° AHEAD LEFT SKEW,
117'-4 1/4" BK. TO BK. ABUTMENTS X 24' WIDE
EXISTING STRUCTURE NO. 087-3037
PROPOSED STRUCTURE NO. 087-3592

SECTION ENDS
STA. 13+52.74

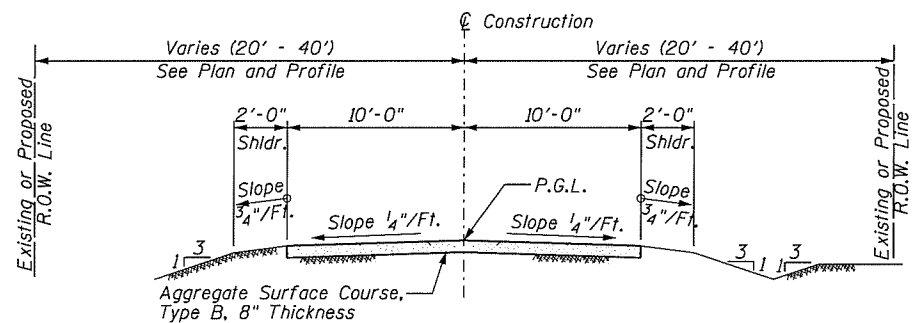
LOCATION: NEAR THE SE CORNER OF THE SW 1/4, SE 1/4, SECTION 33, T11N, R6E, 3RD P.M.
NET LENGTH OF PROJECT: 650.00 FT. = 0.123 MI.
NOT TO SCALE

05/13/2019

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

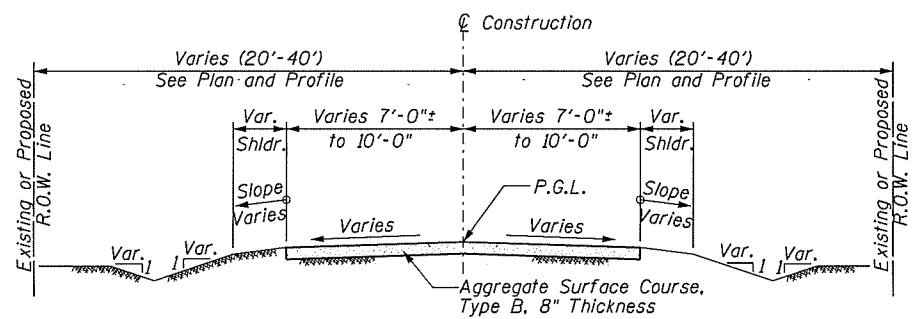


**TYPICAL SECTION
EXISTING APPROACH ROADWAY**



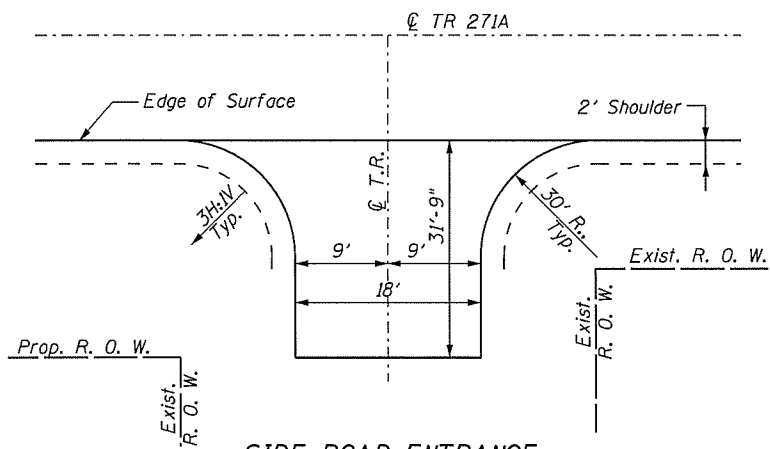
**TYPICAL SECTION
PROPOSED APPROACH ROADWAY**

Rt., Sta. 7+92.74 to Sta. 9+41.32
Lt., Sta. 8+55.00 to Sta. 9+41.32
Lt. & Rt., Sta. 10+58.68 to Sta. 12+62.74



**TYPICAL TRANSITION SECTION
PROPOSED APPROACH ROADWAY**

Rt., Sta. 7+02.74 to Sta. 7+92.74
Lt., & Rt., Sta. 12+62.74 to Sta. 13+52.74



SIDE ROAD ENTRANCE

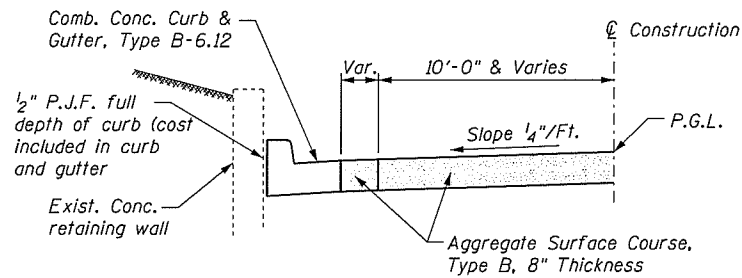
Aggregate Surface Course, Type B 8" Depth
Rt., Sta. 11+41 - 42 Ton
(Included in Summary of Quantities)

UTILITIES

J.U.L.I.E. Dig No. A2500253-00A

TELEPHONE
Consolidated Communications
121 South 17th Street
Mattoon, IL 61938
Mr. Wes Chambers
Phone: 217-235-3355

ELECTRIC
Shelby County Electric
P.O. Box 590
Shelbyville, IL 62565
Mr. James L. Matlock
Phone: 217-774-3986



**HALF SECTION
PROPOSED APPROACH ROADWAY**

Lt., Sta. 7+02 to Sta. 8+55

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.
- Before ordering pipe culverts, contractor shall consult with the Engineer to verify lengths.
- The Aggregate Surface Course, Type B gradation shall be CA 6 or CA 10. Only crushed stone will be approved for use on this project.
- Factors used for quantity calculations are as follows:
Stone Riprap 130 pounds/cu. ft.
Aggregate Surface Course 2.1 tons/cu. yd.
Fertilizer Nutrients, Each 90 lbs./Acre
Temp. Erosion Control Seeding (2 Apps) 100 lbs./Acre
Mulch, Method 2 2 ton/Acre
- Areas to be seeded shall consist of all disturbed earth surfaces within the Right-of-way as directed by the Engineer.
- Commitments:
No tree clearing will be allowed or performed from April 1 through September 30, to prevent any adverse effects to the federally threatened Northern Long-eared bat or federally endangered Indiana bat.

Existing fence replacement within the limits of construction will be done by others and will be coordinated by the Township.

The County Engineer will notify public service providers prior to the start of construction.

SUMMARY OF QUANTITIES

Code No.	Item	Unit	Quantity
20100500	Tree Removal, Acres	Acre	0.7
20200100	Earth Excavation	Cu Yd	118
20300100	Channel Excavation	Cu Yd	1103
20400800	Furnished Excavation	Cu Yd	1062
25000200	Seeding, Class 2	Acre	0.5
25000400	Nitrogen Fertilizer Nutrient	Pound	45
25000500	Phosphorus Fertilizer Nutrient	Pound	45
25000600	Potassium Fertilizer Nutrient	Pound	45
25100115	Mulch, Method 2	Acre	0.5
28000250	Temporary Erosion Control Seeding	Pound	100
28000305	Temporary Ditch Checks	Foot	110
28000400	Perimeter Erosion Barrier	Foot	340
28000500	Inlet and Pipe Protection	Each	1
28100205	Stone Riprap, Class A3	Ton	5
28100207	Stone Riprap, Class A4	Ton	333
28200200	Filter Fabric	Sq Yd	480
40200800	Aggregate Surface Course, Type B	Ton	578
50100100	Removal of Existing Structures	Each	1
50200100	Structure Excavation	Cu Yd	123
50300225	Concrete Structures	Cu Yd	60.2
50300280	Concrete Encasement	Cu Yd	34.1
50400405	Precast Prestressed Concrete Deck Beams (21" Depth)	Sq Ft	2760
50800205	Reinforcement Bars, Epoxy Coated	Pound	7820
50900205	Steel Railing, Type S1	Foot	236
51201600	Furnishing Steel Piles HP12x53	Foot	444
51201800	Furnishing Steel Piles HP14x73	Foot	555
51202305	Driving Piles	Foot	999
51203600	Test Pile Steel HP12x53	Each	2
51203800	Test Pile Steel HP14x73	Each	2
51204650	Pile Shoes	Each	22
51500100	Name Plates	Each	1
542D0220	Pipe Culverts, Class D, Type 1 15"	Foot	38
60603800	Combination Concrete Curb and Gutter, Type B-6.12	Foot	153
67100100	Mobilization	L Sum	1
* 72501000	Terminal Marker - Direct Applied	Each	4

* Specialty Item

RAAI JOB NO. 54017

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

DESIGNED -	BLT	REVISED -	
DRAWN -	JN	REVISED -	
CHECKED -	GLH	REVISED -	
DATE -	05/13/2019	REVISED -	

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES, TYPICAL SECTIONS, AND GENERAL NOTES

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 271A	17-01126-00-BR 17-02120-00-BR	SHELBY	14	2
CONTRACT NO. 95858				

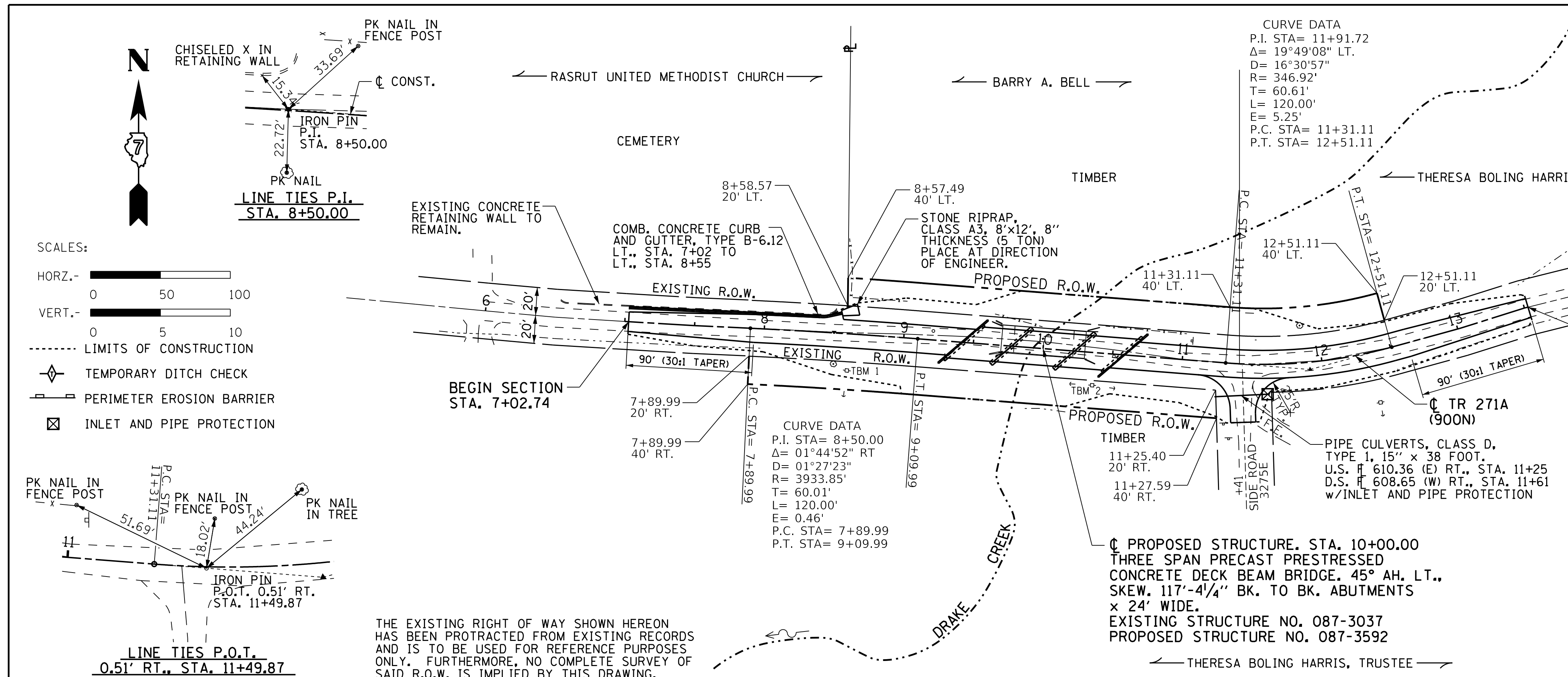
EXISTING STRUCTURE: STRUCTURE NO. 087-3037. THREE SPAN BRIDGE WITH CONCRETE DECK ON A STEEL GIRDER AND FLOOR BEAM SYSTEM ON CLOSED STEEL PIERS AND CONCRETE ABUTMENTS ON STEEL PILES WITH CONCRETE AND TIMBER WINGWALLS. 60'± L. x 20.9'± W. TO BE REMOVED.

TREE REMOVAL, ACRES	
LOCATION (C TO PROPOSED R.O.W.)	TREE REMOVAL ACRES
RT., STA. 8+50 TO STA. 11+30	0.3
LT., STA. 8+50 TO STA. 13+50	0.4
TOTAL	0.7

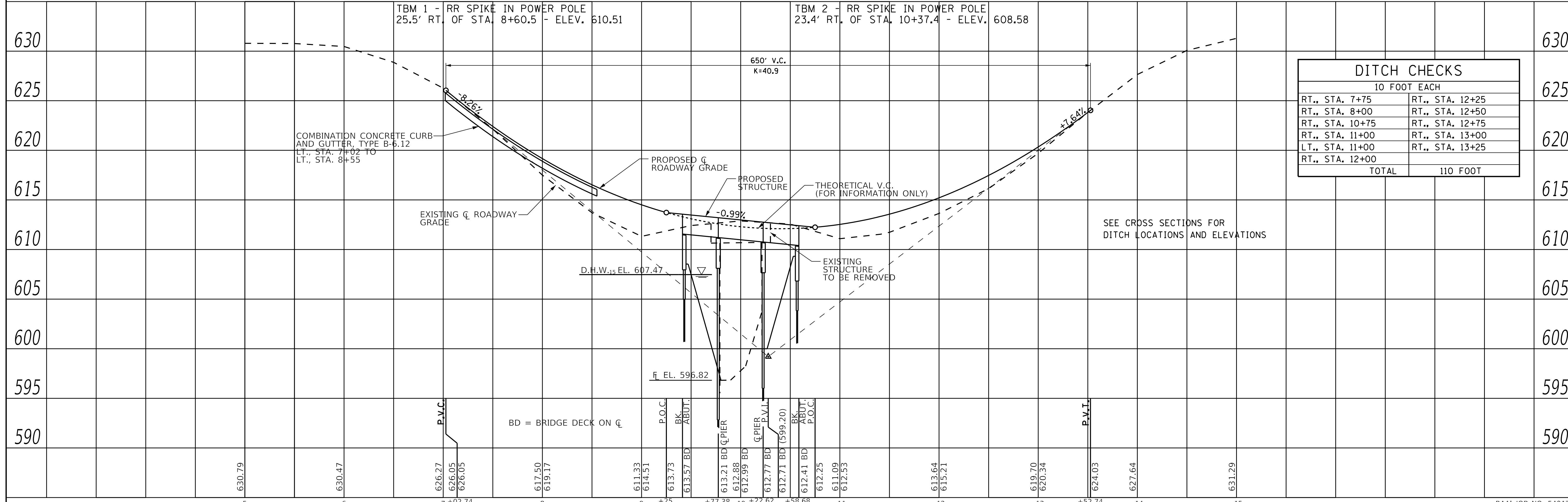
PERIMETER EROSION BARRIER	
LOCATION	FOOT
LT., STA. 8+55 TO STA. 9+50	95
RT., STA. 8+25 TO STA. 9+20	95
BRIDGE	-
LT., STA. 11+75 TO STA. 13+25	150
TOTAL	340

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. 7+02.74 TO STA. 9+41.32	57	43	591	-548
STA. 10+58.68 TO STA. 13+52.74	61	46	560	-514
TOTAL	118	89	1151	-1062

*25% SHRINKAGE **FURNISHED EXCAVATION



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.



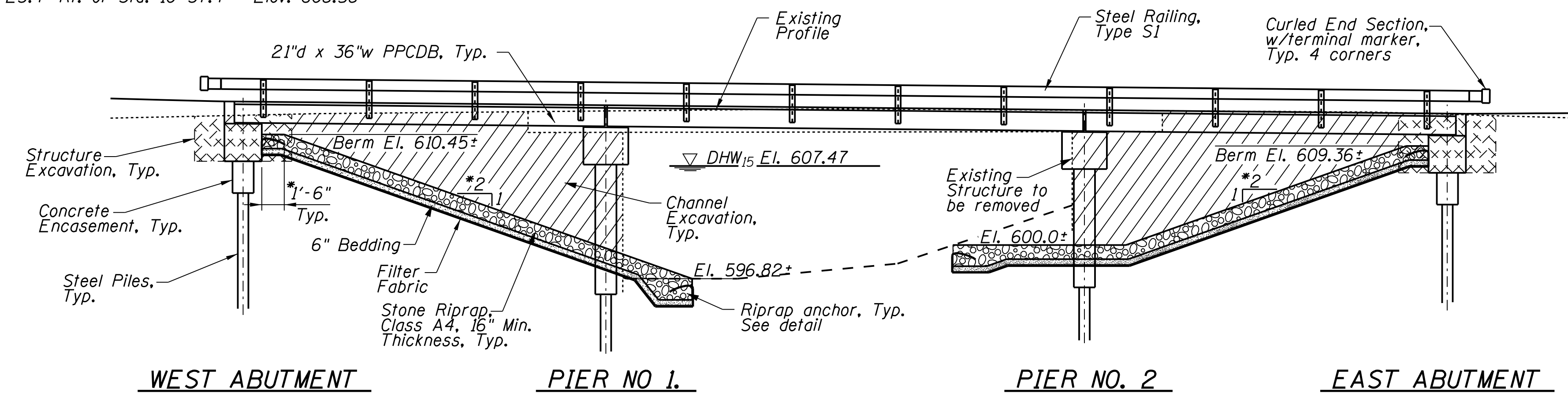
DITCH CHECKS	
10 FOOT EACH	
RT., STA. 7+75	RT., STA. 12+25
RT., STA. 8+00	RT., STA. 12+50
RT., STA. 10+75	RT., STA. 12+75
RT., STA. 11+00	RT., STA. 13+00
RT., STA. 11+00	RT., STA. 13+25
TOTAL	110 FOOT

DATE	BY	SURVEYED	PLOTTED	CHECKED	RT. OF WAY CHECKED	NO.

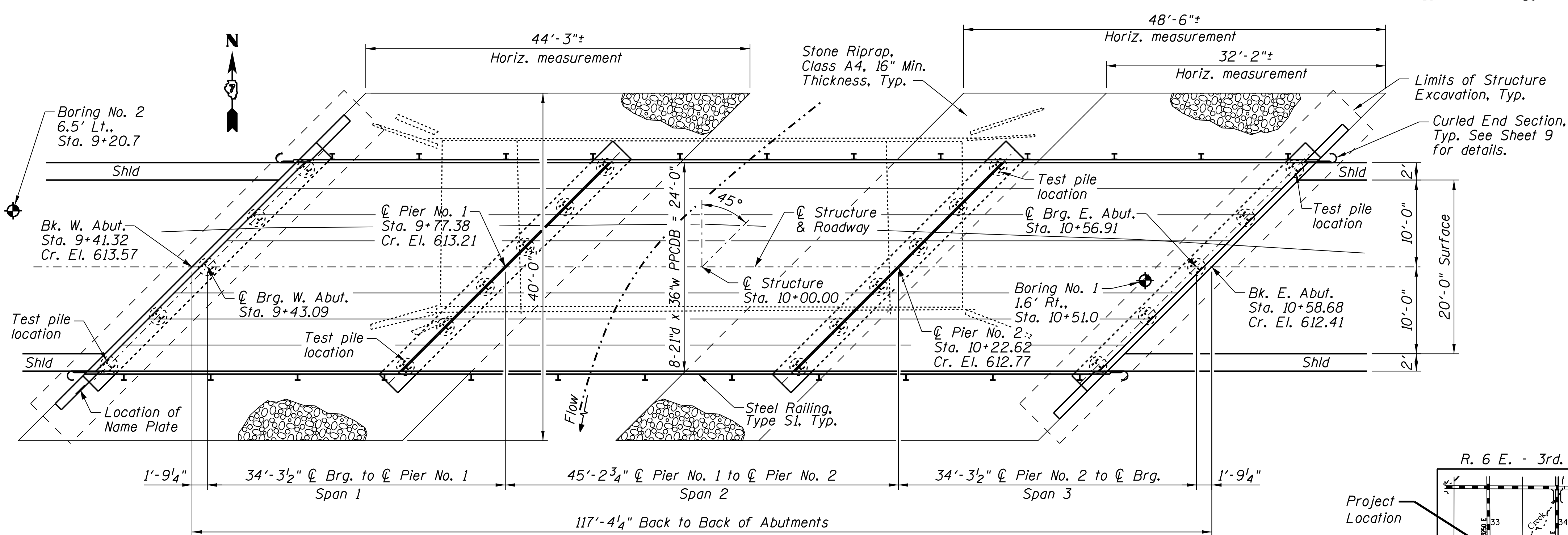
DATE	BY	SURVEYED	PLOTTED	CHECKED	B.M. NOTED	STRUCTURE NOTATIONS CHECKED

TBM 1 - RR spike in power pole
25.5' Rt. of Sta. 8+60.5 - Elev. 610.51

TBM 2 - RR spike in power pole
23.4' Rt. of Sta. 10+37.4 - Elev. 608.58



ELEVATION
*Normal to channel



PLAN

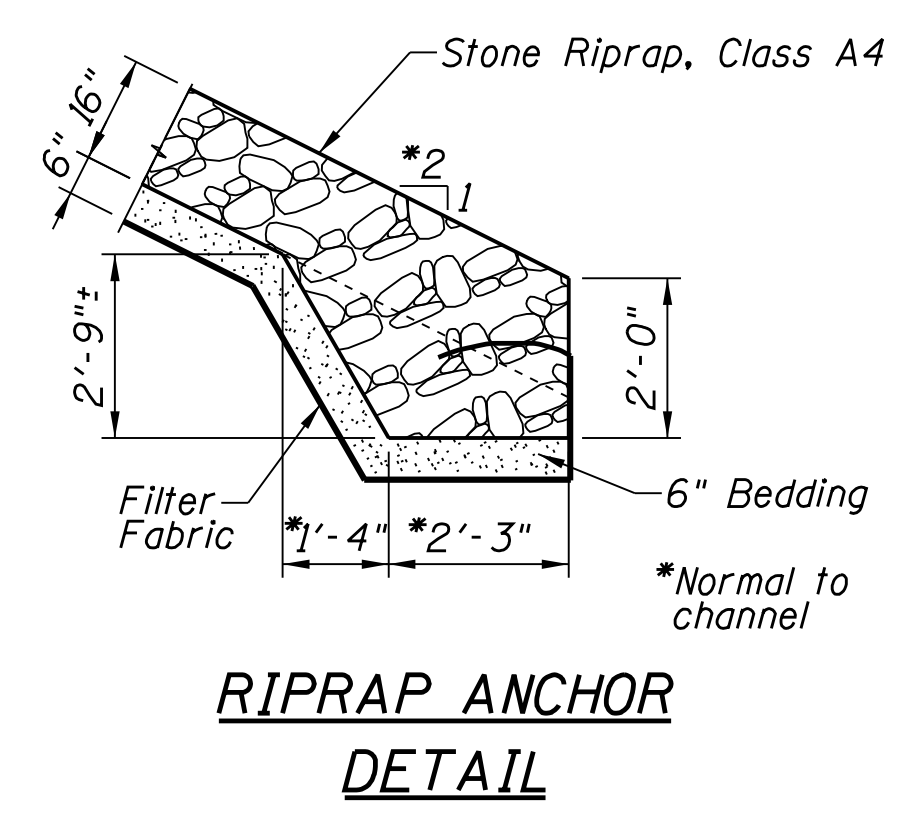
DESIGN SCOUR TABLE

Event/Limit	Design Scour Elevations (ft.)				Item
	W. Abut.	Pier 1	Pier 2	E. Abut.	
State	NA	593.6	593.6	NA	113
Q ₁₀₀	NA	593.6	593.6	NA	8
Q ₂₀₀	NA	593.6	593.6	NA	
Design	607.8	593.6	593.6	606.7	
Check	607.8	593.6	593.6	606.7	

WATERWAY INFORMATION

Drainage Area = 9.2 sq. mi. Existing Low Grade Elev. 611.09 @ Sta. 11+00. Proposed Low Grade Elev. 612.25 @ Sta. 10+75.

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.		Head - Ft.		Headwater El.	
			Exist.	Prop.	H.W.E.	Exist.	Prop.	Exist.	Prop.	
Design	15	1950	372	635	607.47	0.05	0.18	607.52	607.65	
Base	100	3150	451	816	609.33	0.33	0.30	609.66	609.63	
Max. Calc.	500	4260	505	921	610.60	0.68	0.38	611.28	610.98	



RIPRAP ANCHOR DETAIL

LOADING HL-93

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

DESIGN SPECIFICATIONS

2014 (7th ED.) w/2015 & 2016 Revisions
AASHTO LRFD Bridge Design Specifications.

DESIGN STRESSES

FIELD UNITS

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

PRECAST PRESTRESSED UNITS

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

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Soil Site Classification = C
 $S_{D1} = 0.134$ $S_{D5} = 0.302$

Existing Structure: Structure No. 087-3037. Three span bridge with concrete deck on a steel girder and floor beam system on closed steel piers and concrete abutments on steel piles with concrete and timber wingwalls. 60'± L. x 20.9'± W. To be removed.

BILL OF MATERIALS (BRIDGE ONLY)

ITEM	UNIT	TOTAL
Channel Excavation	Cu Yd	1103
Stone Riprap, Class A4	Ton	333
Filter Fabric	Sq Yd	480
Removal of Existing Structures	Each	1
Structure Excavation	Cu Yd	123
Concrete Structures	Cu Yd	60.2
Concrete Encasement	Cu Yd	34.1
PPCDB (21" Depth)	Sq Ft	2760
Reinforcement Bars	Pound	7820
Steel Railing, Type S1	Foot	236
Furnishing Steel Piles HP12x53	Foot	444
Furnishing Steel Piles HP14x73	Foot	555
Driving Piles	Foot	999
Test Pile Steel HP12x53	Each	2
Test Pile Steel HP14x73	Each	2
Pile Shoes	Each	22
Name Plates	Each	1
Terminal Marker - Direct Applied	Each	4

GENERAL NOTES

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

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.

The cost of the bedding material shall be included in the cost of the Stone Riprap, Class A4 (per the Standard Specifications) and no additional compensation will be allowed. The estimated quantity for the bedding material is 146 tons (For information only).

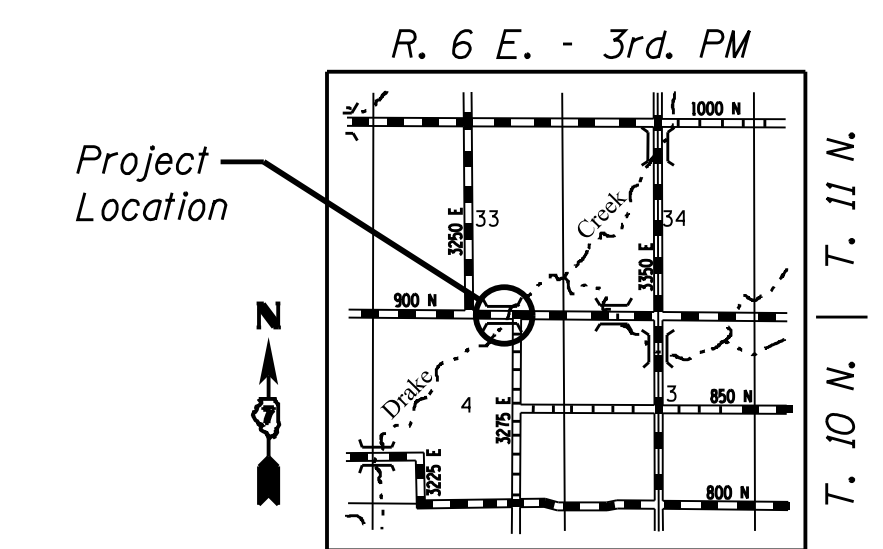
See Specifications for soil borings.

Do not scale these drawings.

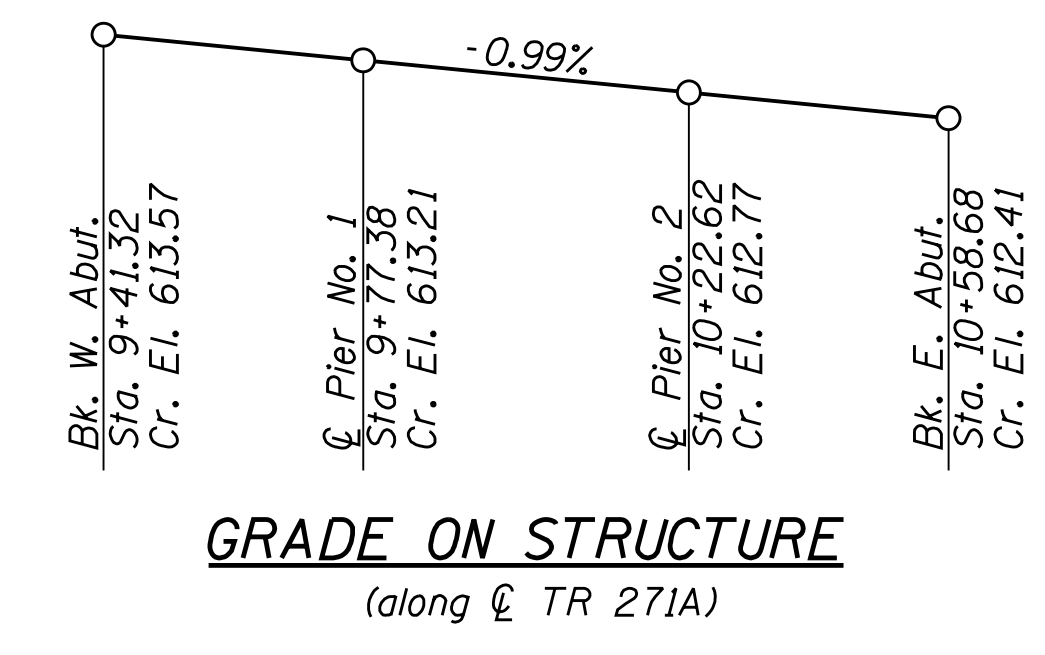
The bearing seat surfaces for the precast prestressed concrete deck beams shall be adjusted by shimming to assure firm and even bearing. As required, $\frac{1}{8}$ " fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing. The top surface of the beams shall be finished according to the IDOT Manual for Fabrication of Precast Prestressed Concrete Products.

All reinforcement bars shall be Epoxy Coated (E).

The locations of several pier piles appear to be near the existing substructure location. Care must be taken during construction to locate any existing substructure elements to prevent damage or conflicts with the new pile locations. If conflicts arise and modifications are required of the pile locations or design shown on the plans, the Structural Engineer of record should be notified for approval of revisions.



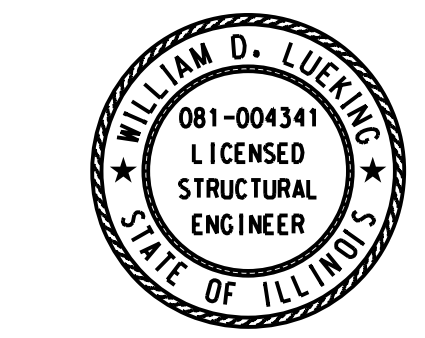
LOCATION SKETCH



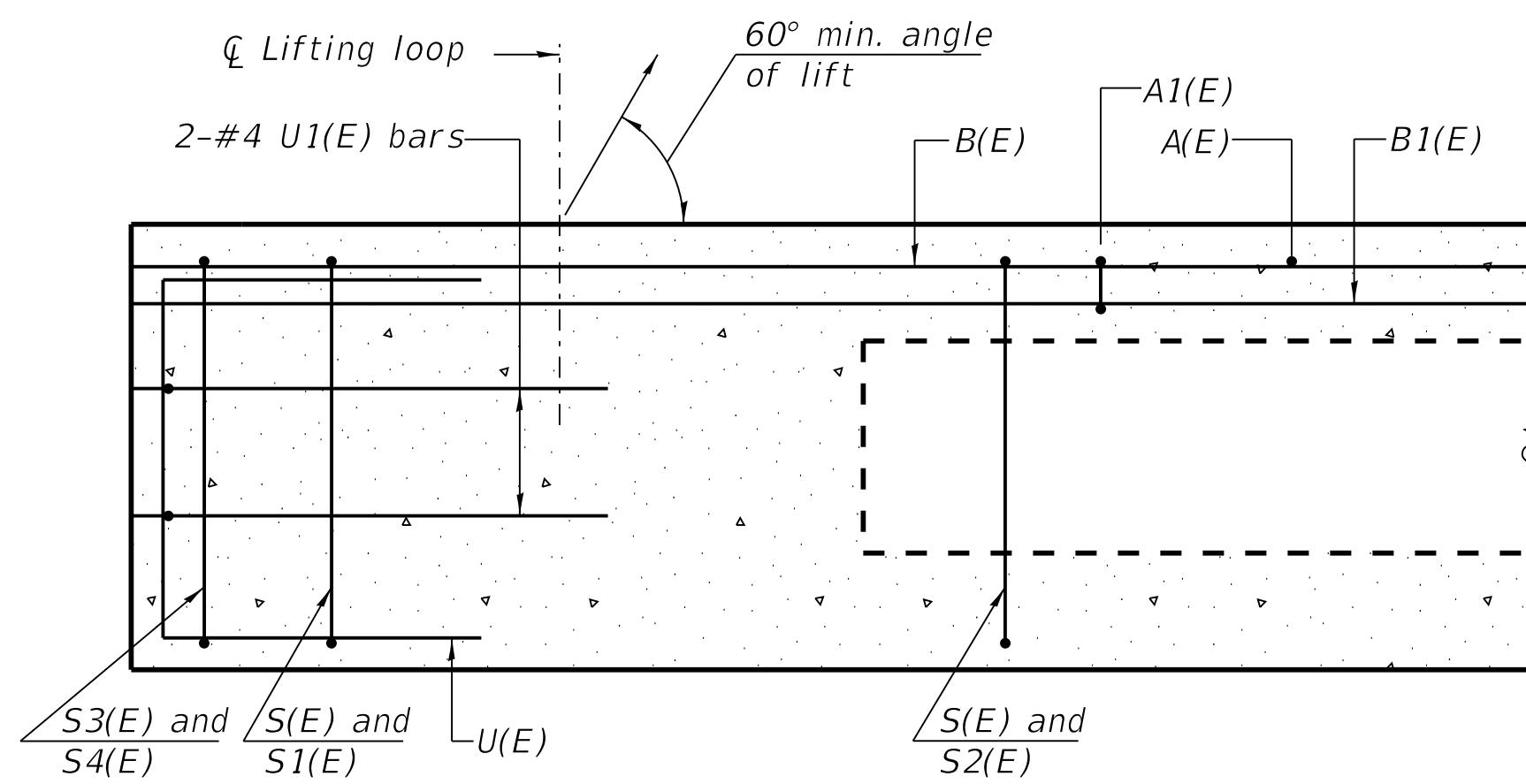
GRADE ON STRUCTURE
(along ϕ TR 271A)

DRAKE CREEK
BUILT 20__ BY
SHELBY COUNTY
SEC. 17-01126-00-BR /17-02120-00-BR
TR 271A STA. 10+00
LOADING HL-93
STRUCTURE NO. 087-3592

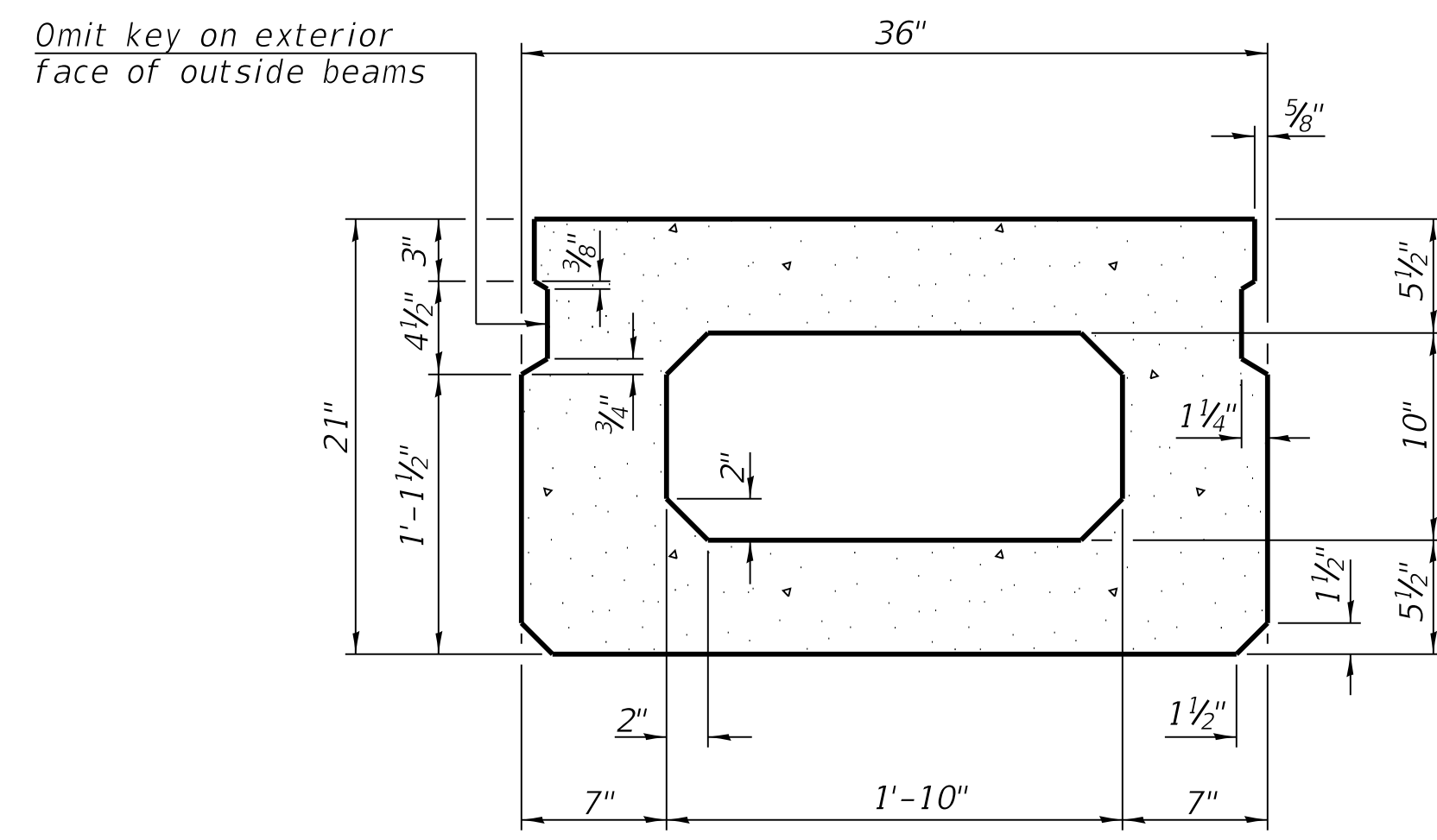
NAME PLATE
See Std. 515001



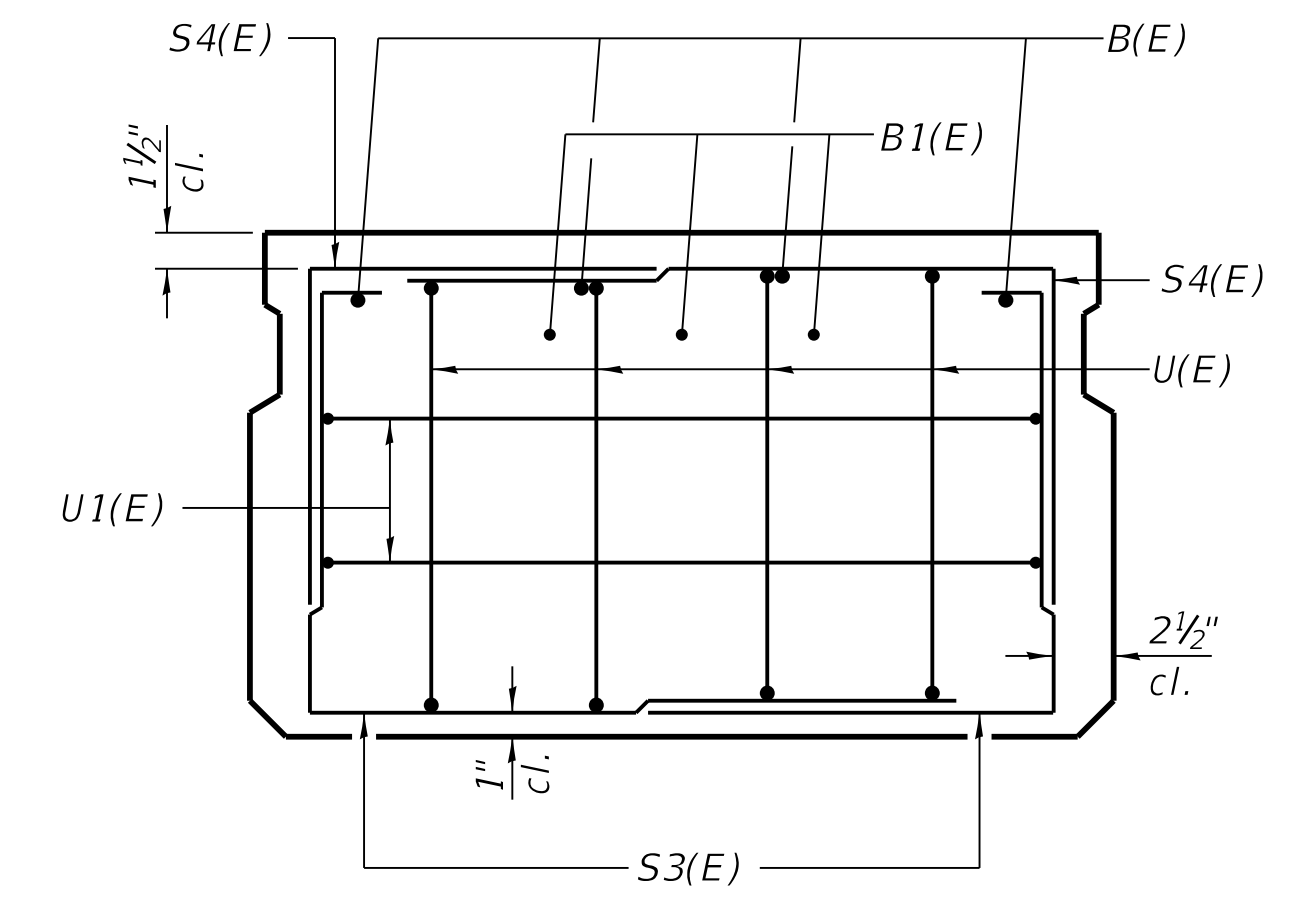
William D. Lueking 05/13/2019
William D. Lueking
11/30/2020
Date of License Expiration



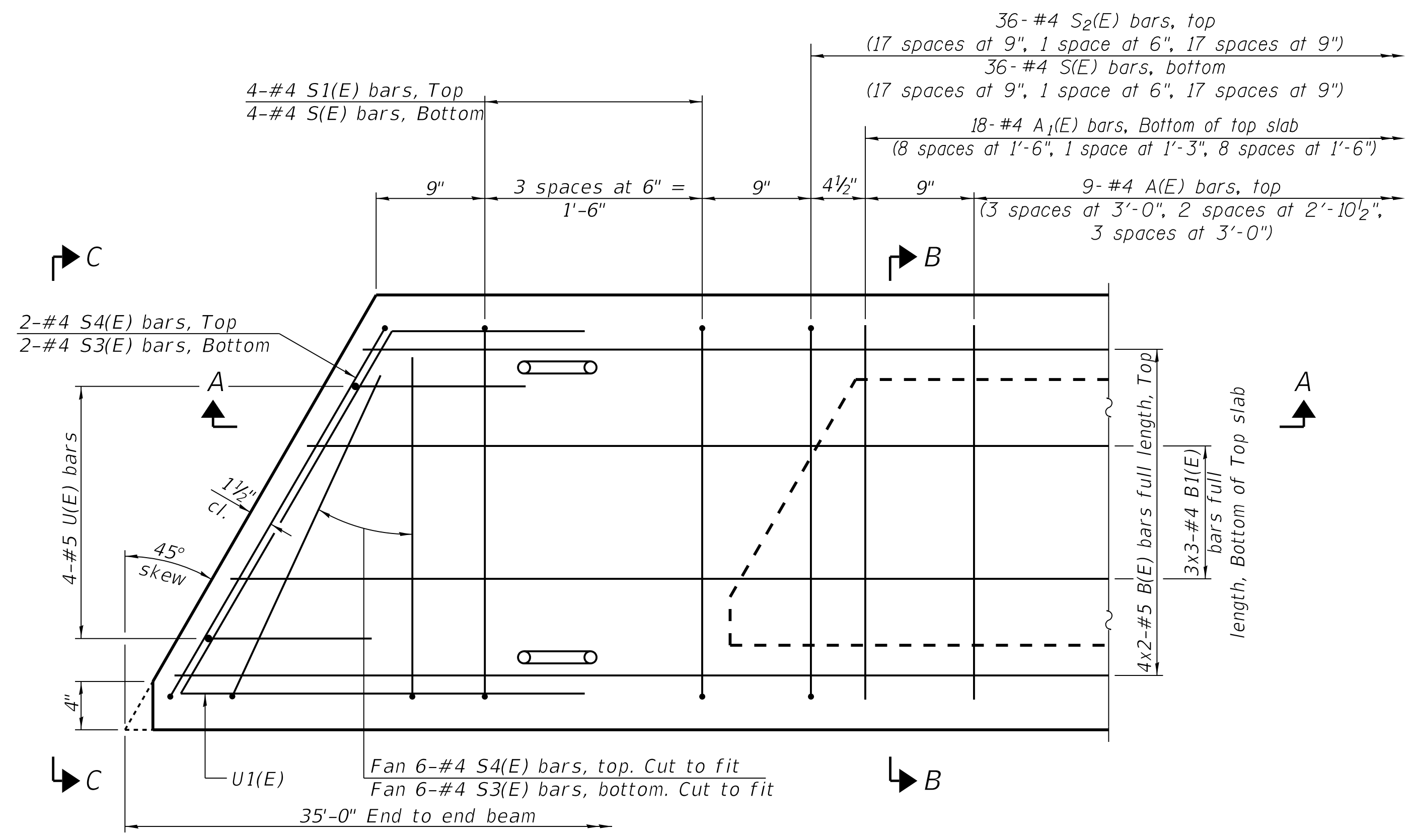
SECTION A-A



SECTION B-B
(Showing dimensions)



VIEW C-C



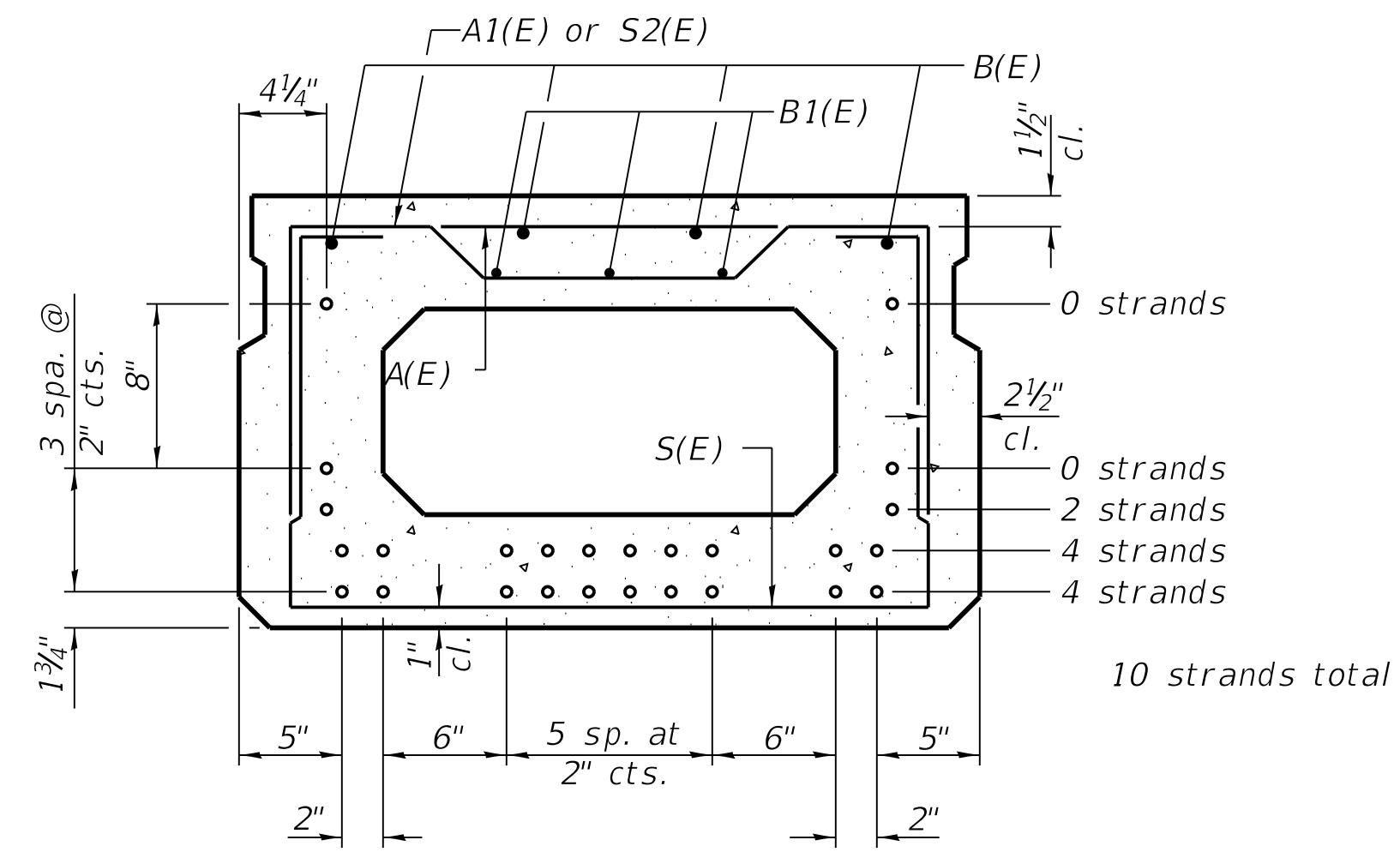
PLAN VIEW

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.

All reinforcement bars shall be Epoxy Coated (E).

Bars indicated thus: 4x2-#5 etc. indicates 4 lines of bars with 2 lengths per line.

Similar about \bar{C}



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.

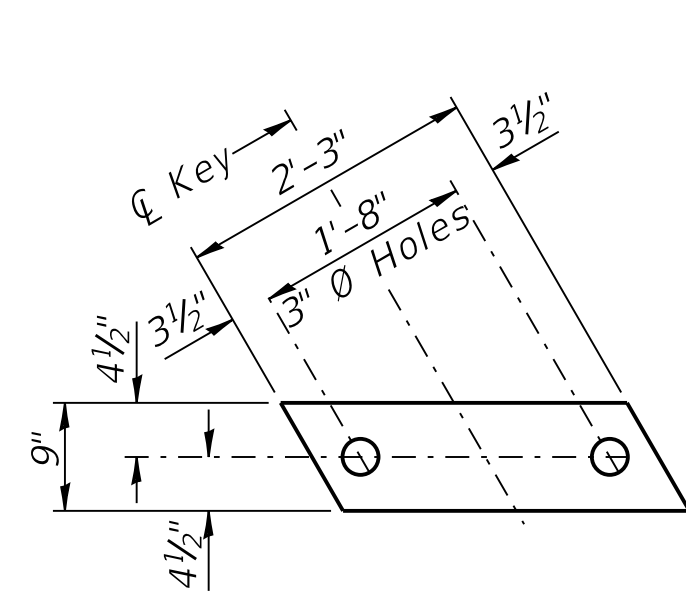
BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	9	#4	2'-7"	—
A1(E)	18	#4	2'-10"	~
B(E)	8	#5	18'-7"	—
B1(E)	9	#4	12'-11"	—
S(E)	44	#4	6'-5"	⌊
S1(E)	8	#4	4'-11"	⌊
S2(E)	36	#4	5'-2"	⌊
S3(E)	16	#4	4'-2"	⌊
S4(E)	16	#4	3'-5"	⌊
U(E)	8	#5	4'-0"	⌊
U1(E)	4	#4	8'-6"	⌊

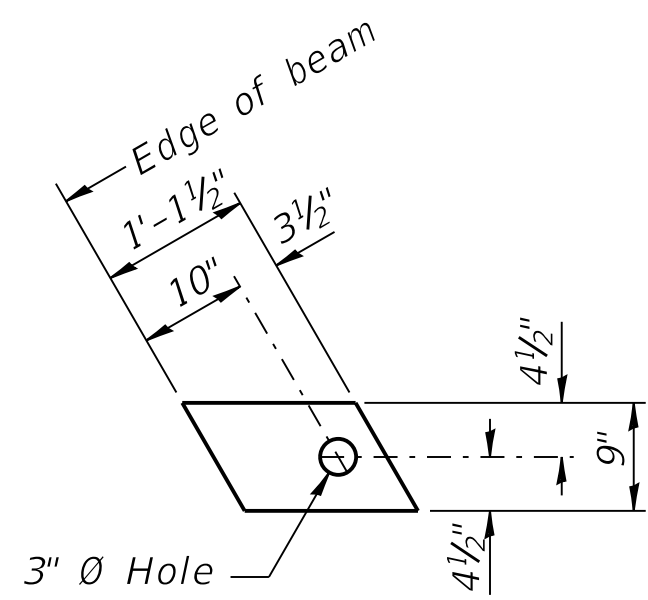
Note: See sheet 6 for additional details and Bill of Material.

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

SPAN 1 AND 3



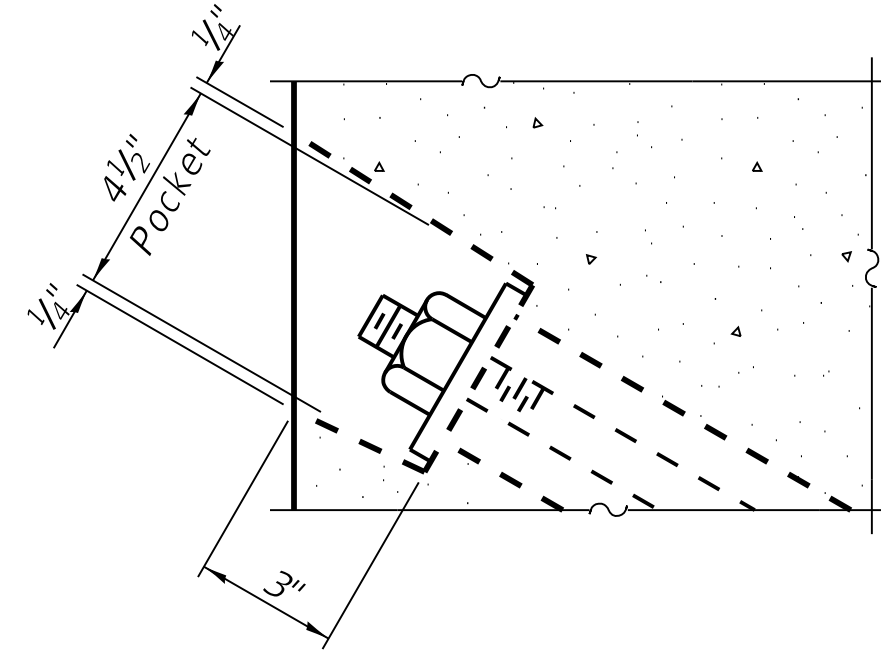
FABRIC BEARING PAD
(Interior)



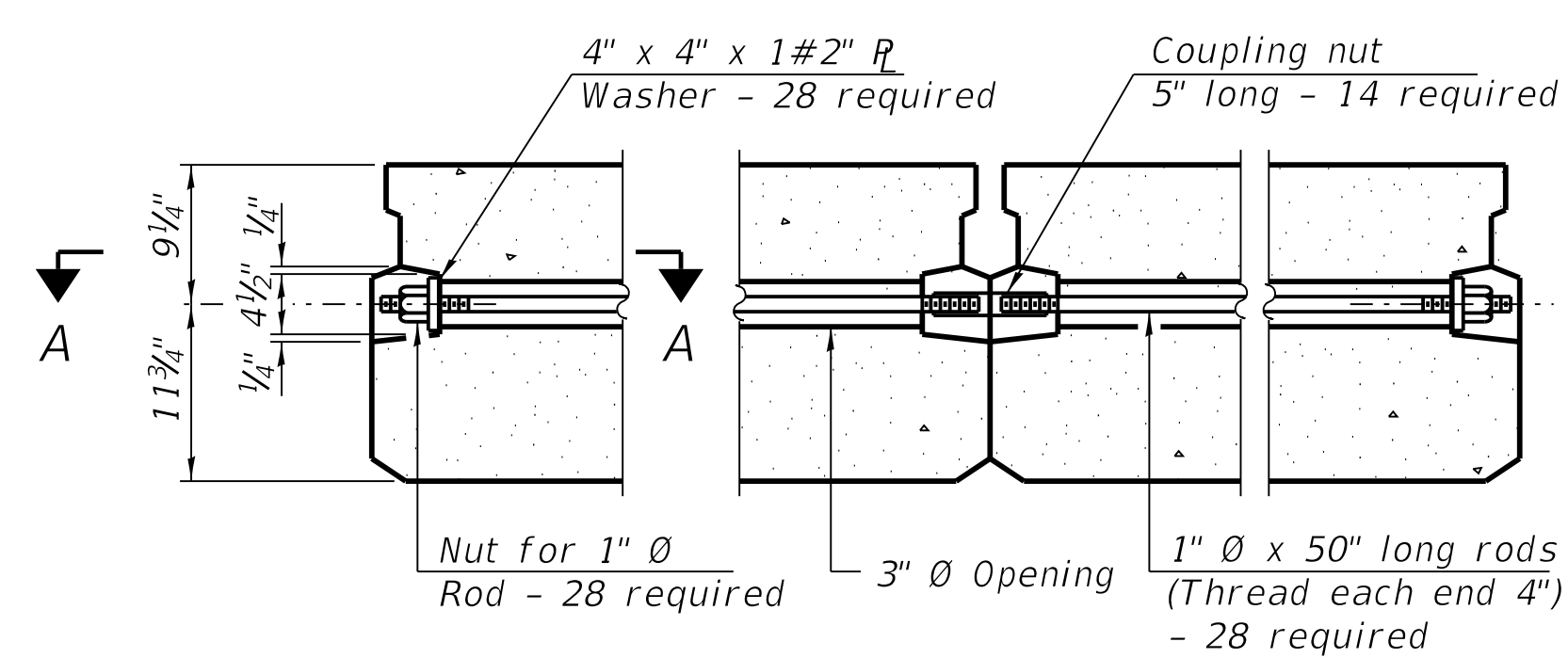
FABRIC BEARING PAD
(Exterior)

FIXED

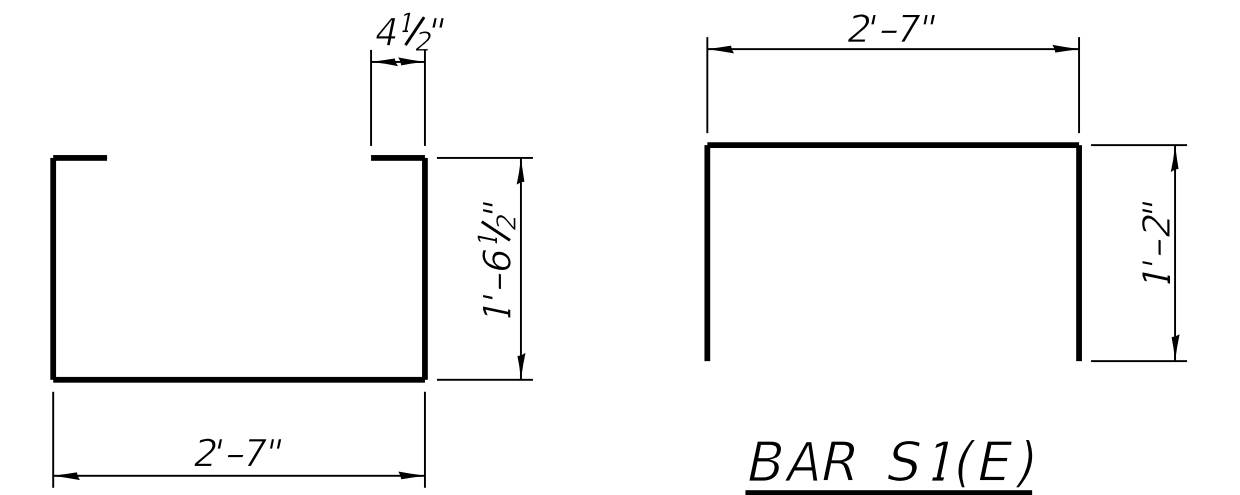
Note: All bearing pads shall be 1" thick.



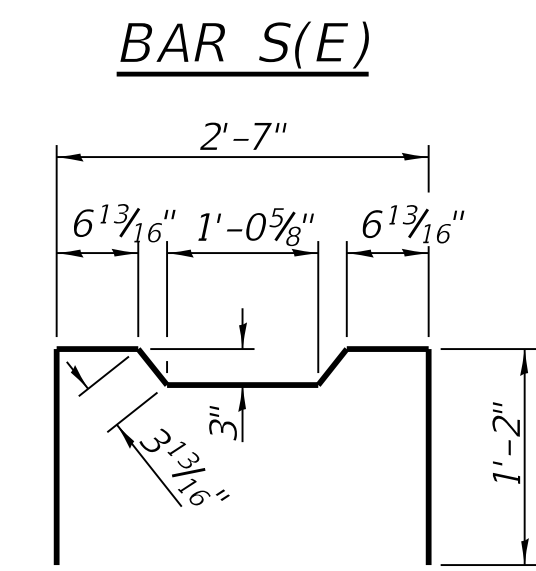
SECTION A-A



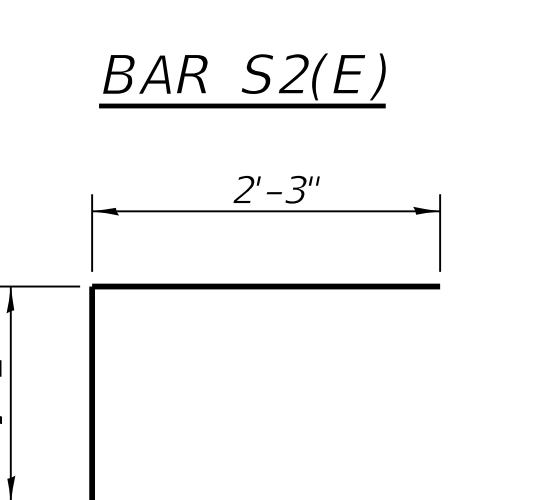
TYPICAL TRANSVERSE TIE ASSEMBLY



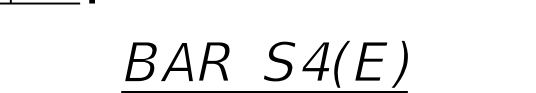
BAR S1(E)



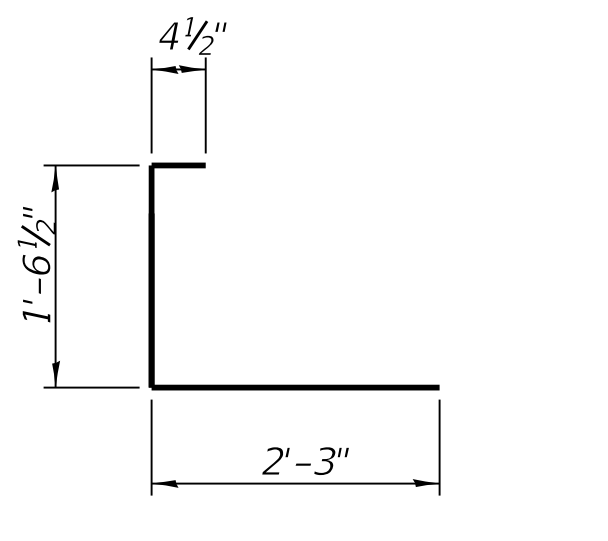
BAR S(E)



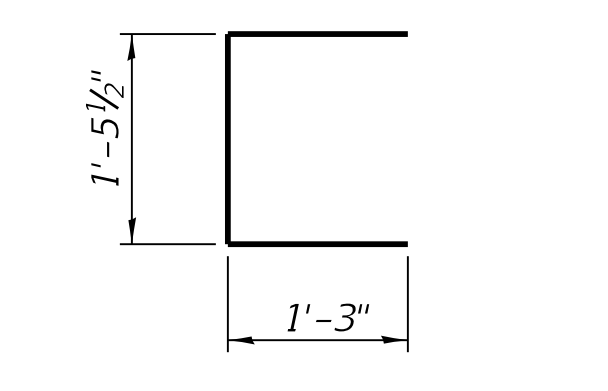
BAR S2(E)



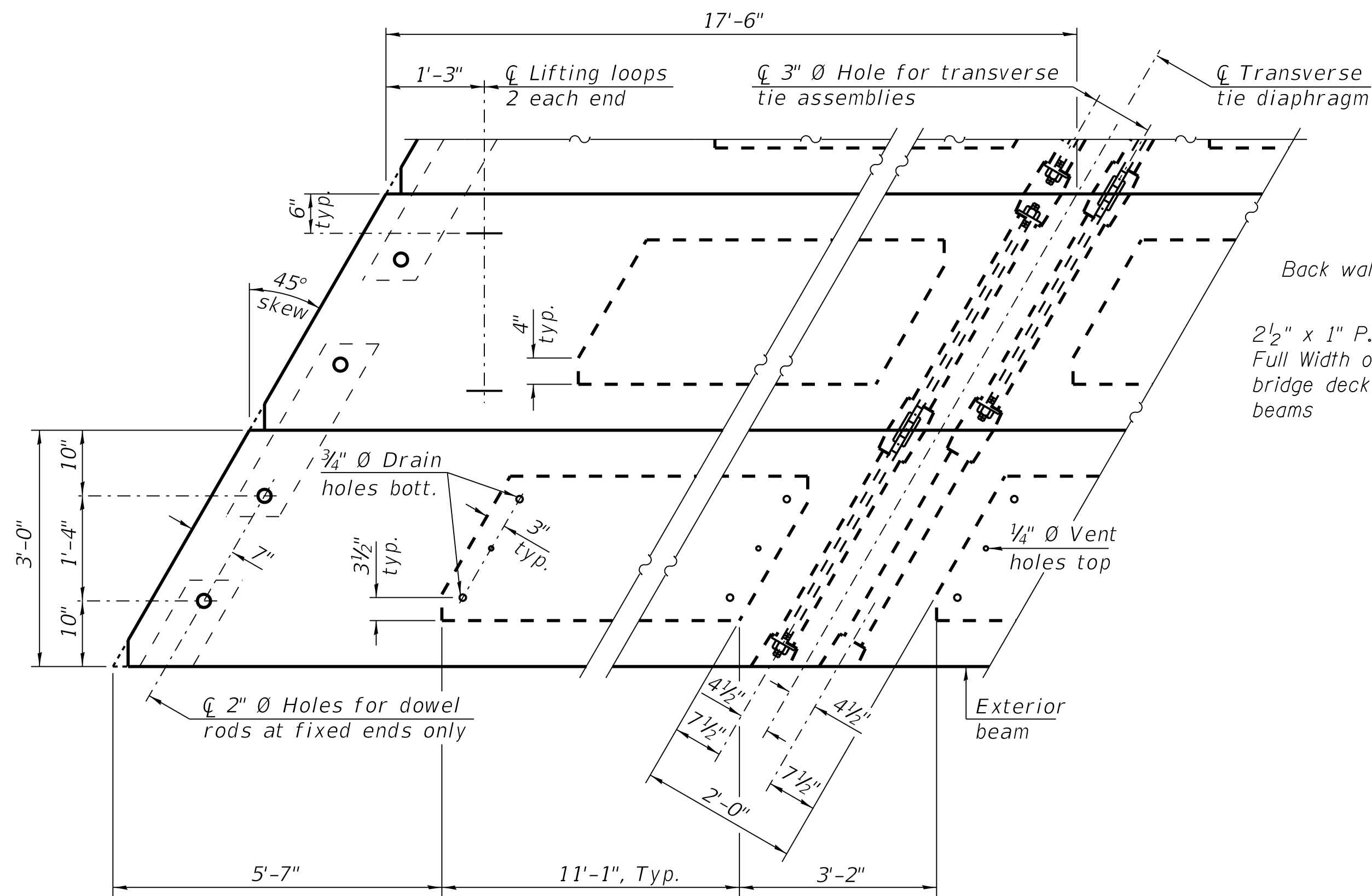
BAR S4(E)



BAR S3(E)

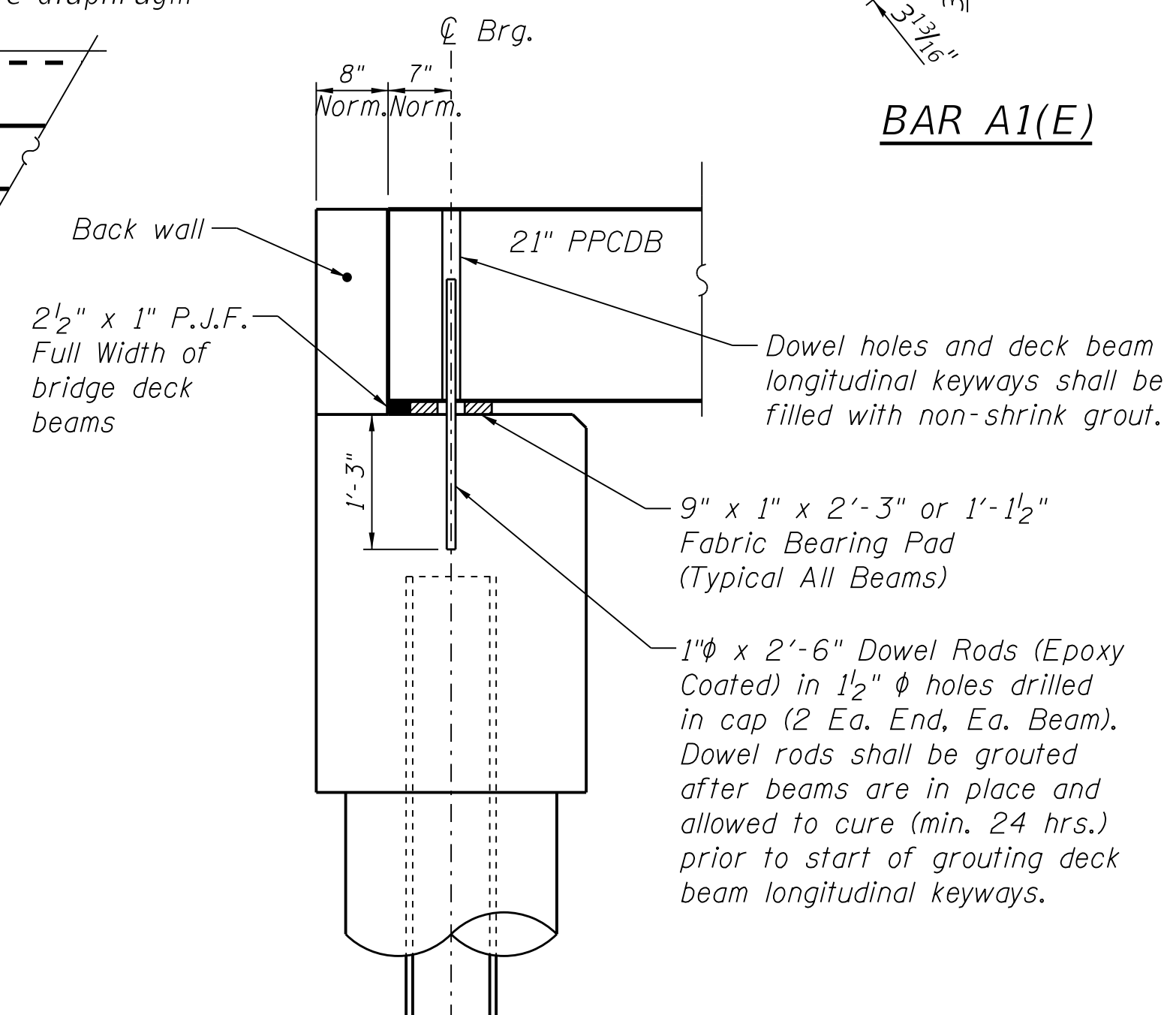


BAR U(E)



PLAN VIEW

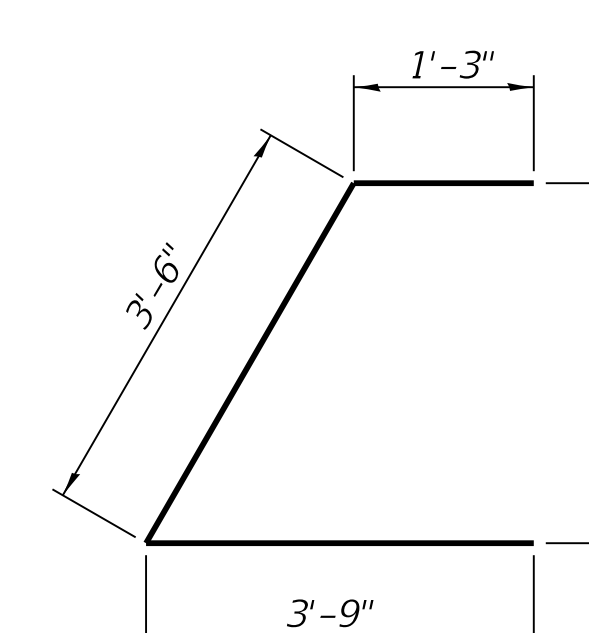
Note: Connect beams in pairs with the transverse tie configuration shown.



FIXED BEARING ABUTMENT
(Normal to C)

NOTES

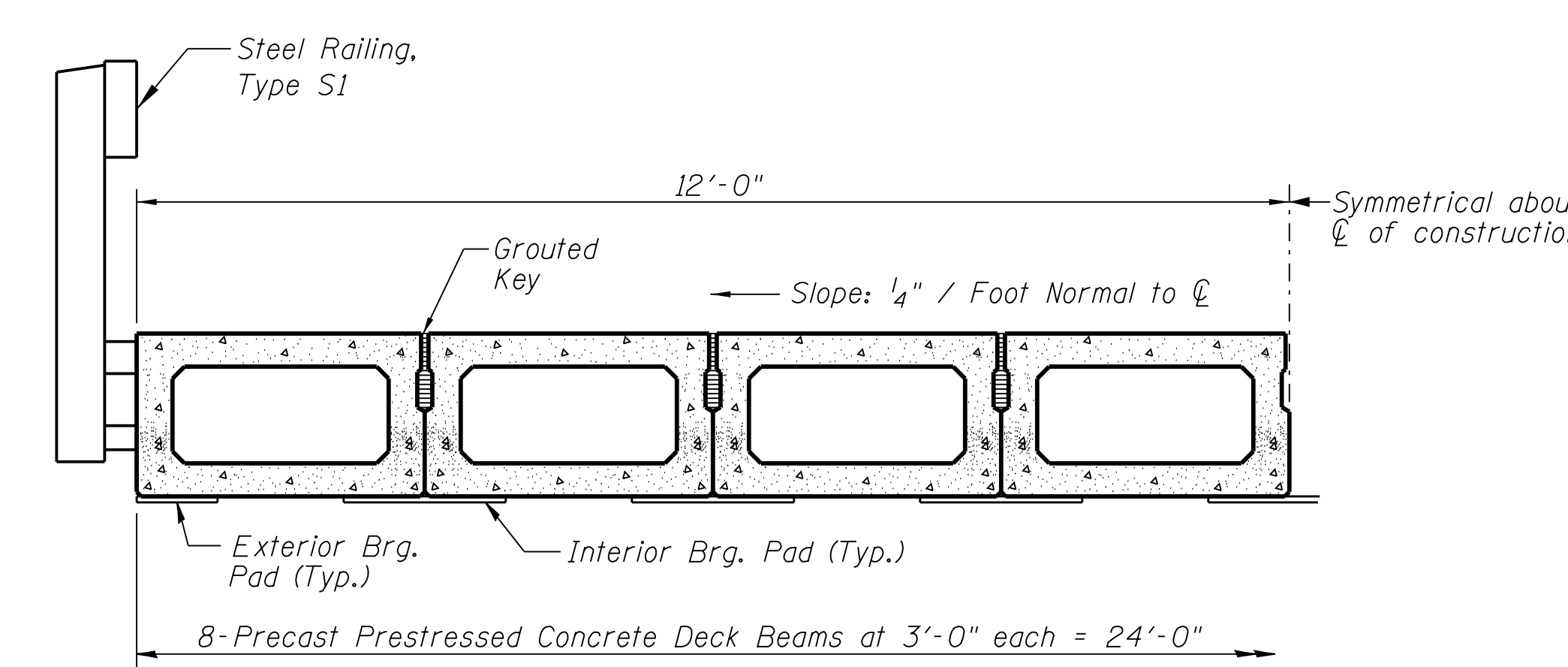
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place. Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location. A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling. Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams. Compressive strength of prestressed concrete, f'c, shall be 6000 psi. Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi. Reinforcement bars shall conform to ASTM A 706, Grade 60. (IL. Modified).



BAR A1(E)



BAR U1(E)



HALF CROSS SECTION

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

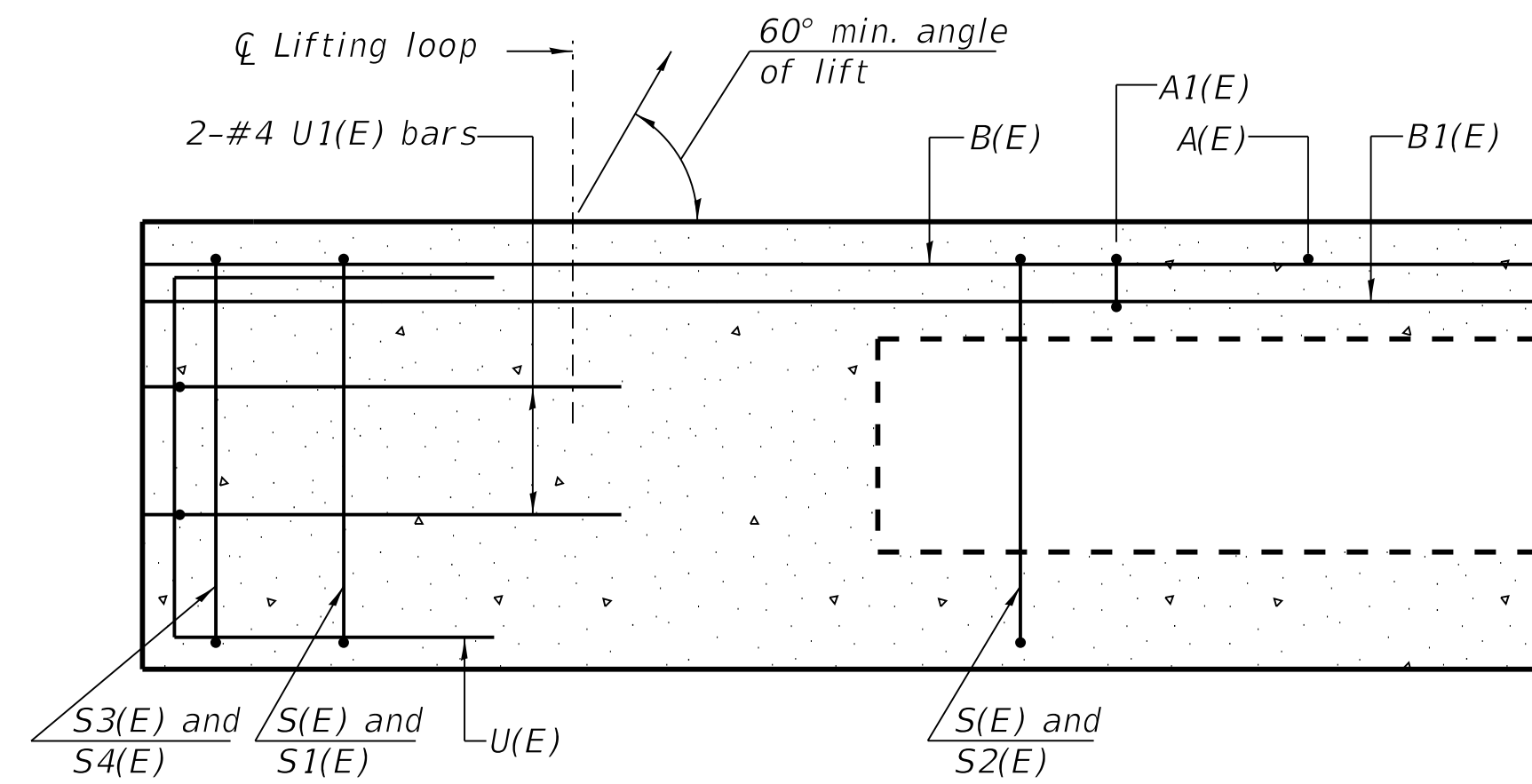
BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (21" depth)	Sq. Ft.	1680
(840 Sq. Ft. each span)		

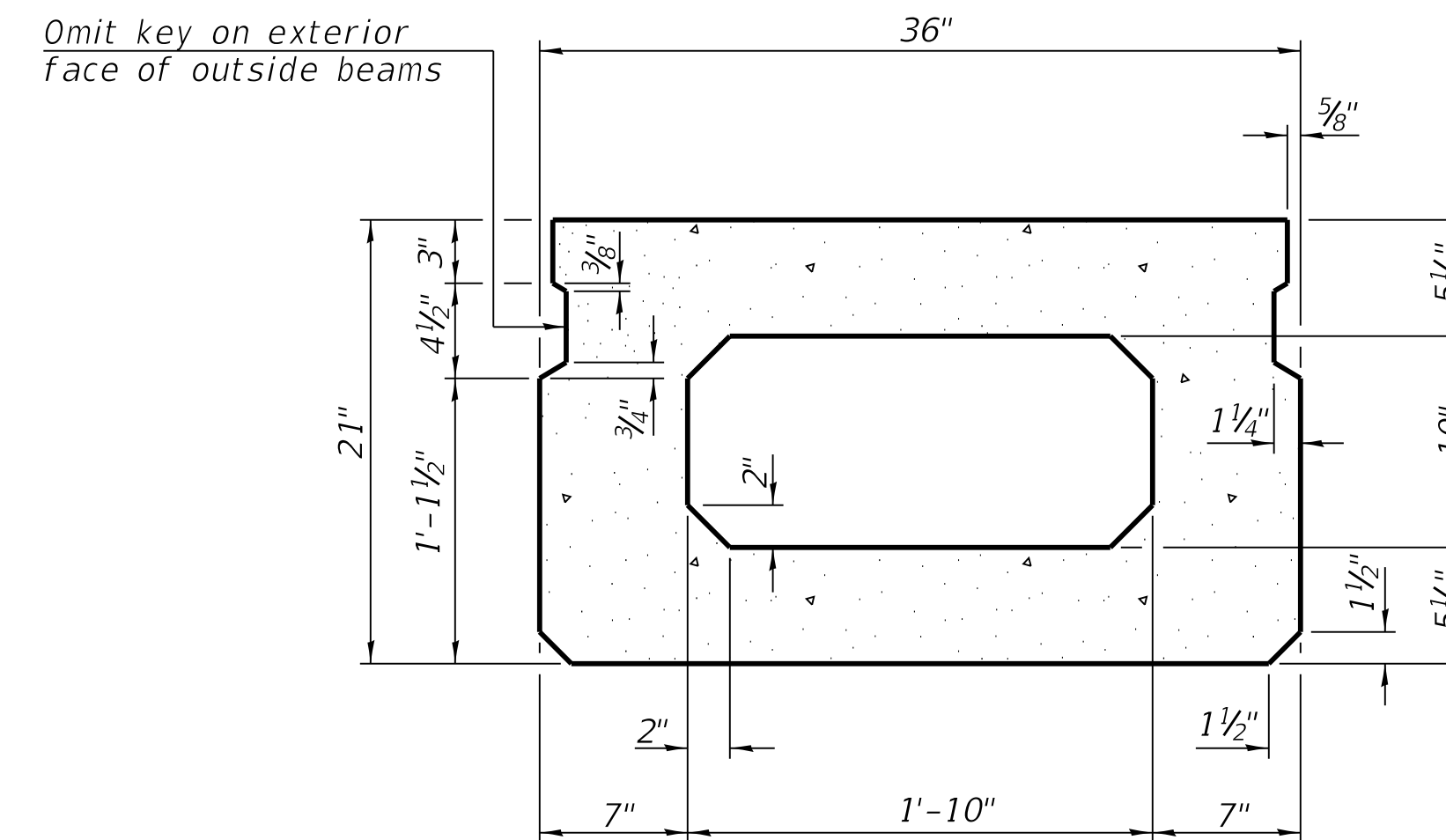
SPAN 1 AND 3

DESIGNED - WDL	REVISED -
DRAWN - JN	REVISED -
CHECKED - WDL	REVISED -
DATE - 05/13/2019	REVISED -

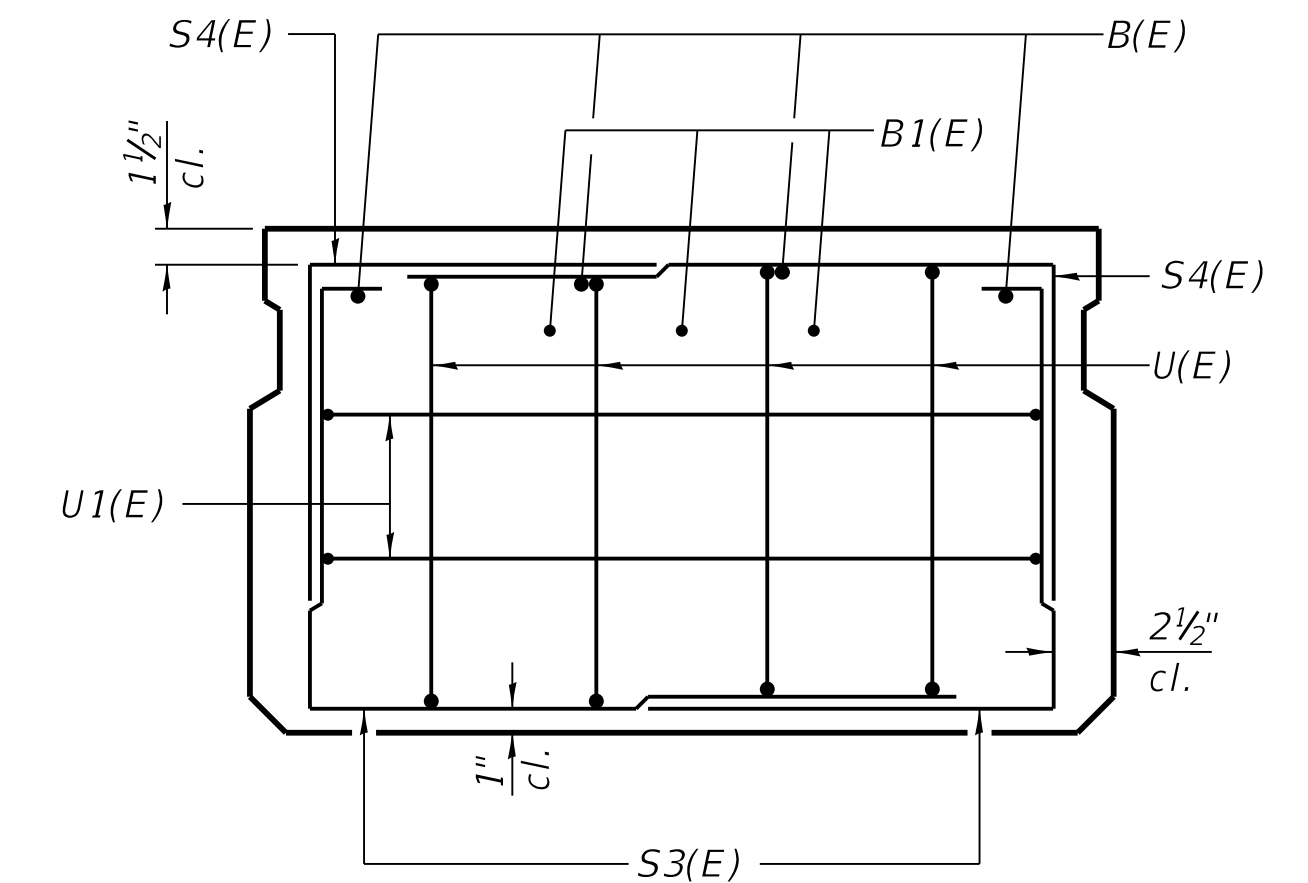
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 271A	17-01126-00-BR 17-02120-00-BR	SHELBY	14	6
			CONTRACT NO. 95858	



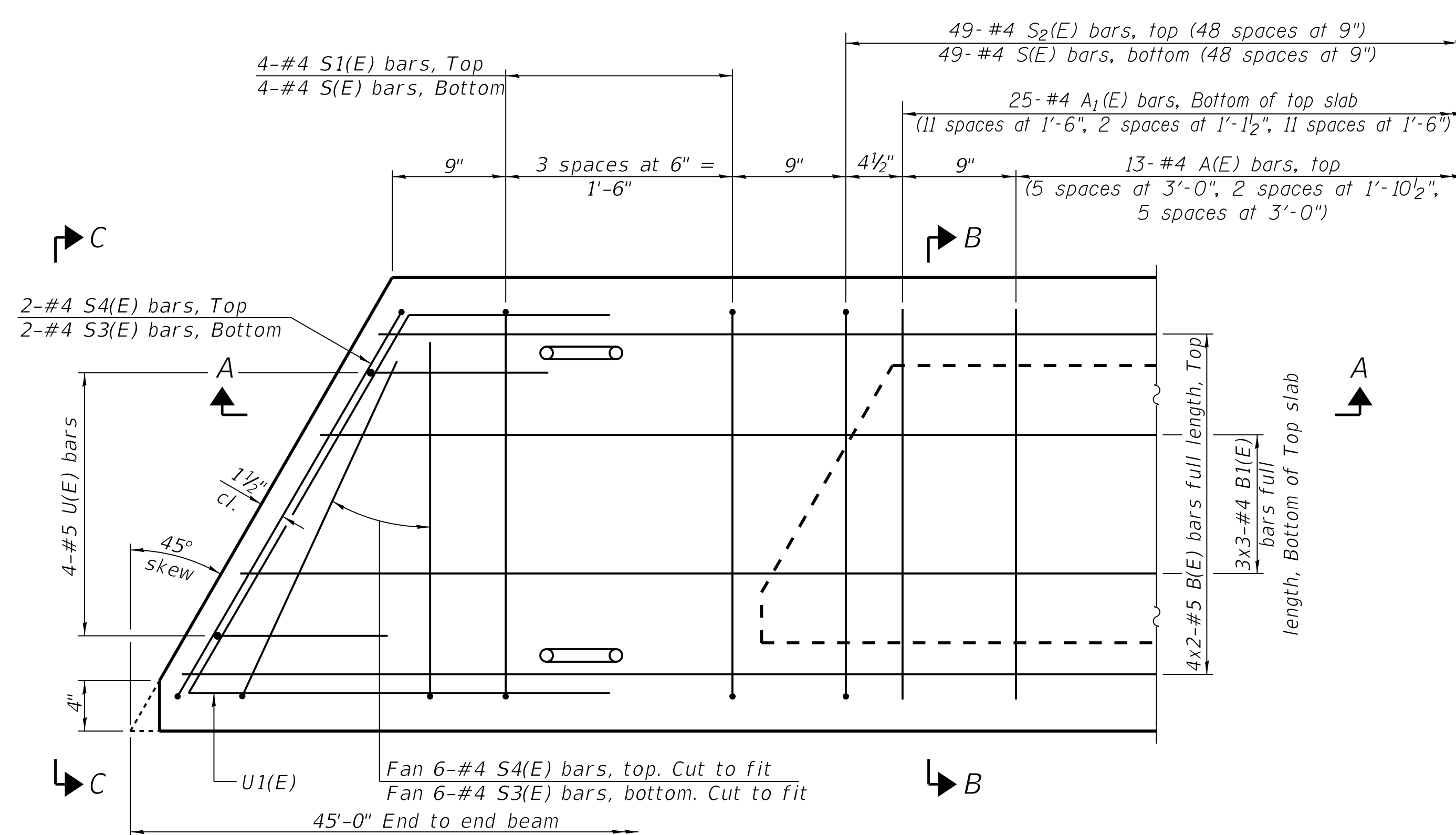
SECTION A-A



SECTION B-B
(Showing dimensions)

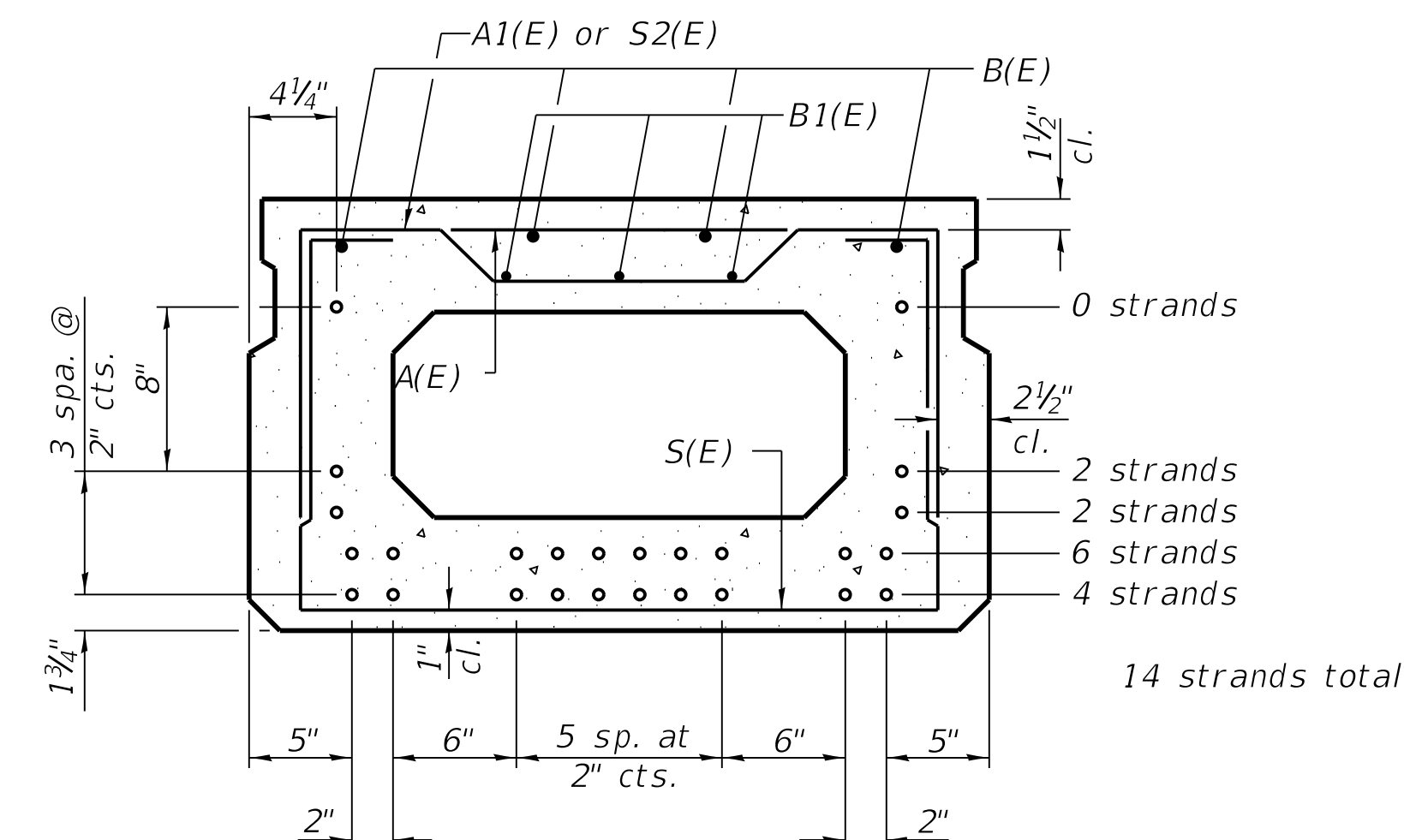


VIEW C-C



PLAN VIEW

Similar about \bar{C}



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)	13	#4	2'-7"	—
A1(E)	25	#4	2'-10"	~
B(E)	8	#5	23'-7"	—
B1(E)	9	#4	16'-3"	—
S(E)	57	#4	6'-5"	⌊
S1(E)	8	#4	4'-11"	⌊
S2(E)	49	#4	5'-2"	⌊
S3(E)	16	#4	4'-2"	⌊
S4(E)	16	#4	3'-5"	⌊
U(E)	8	#5	4'-0"	⌊
U1(E)	4	#4	8'-6"	⌊

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

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.

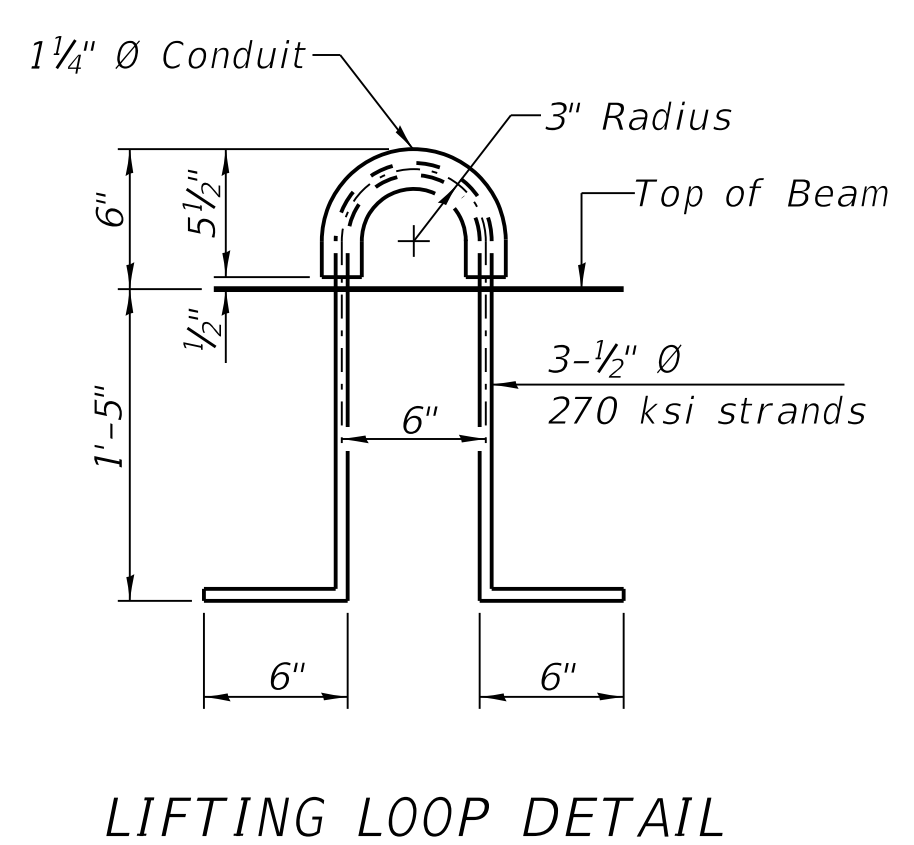
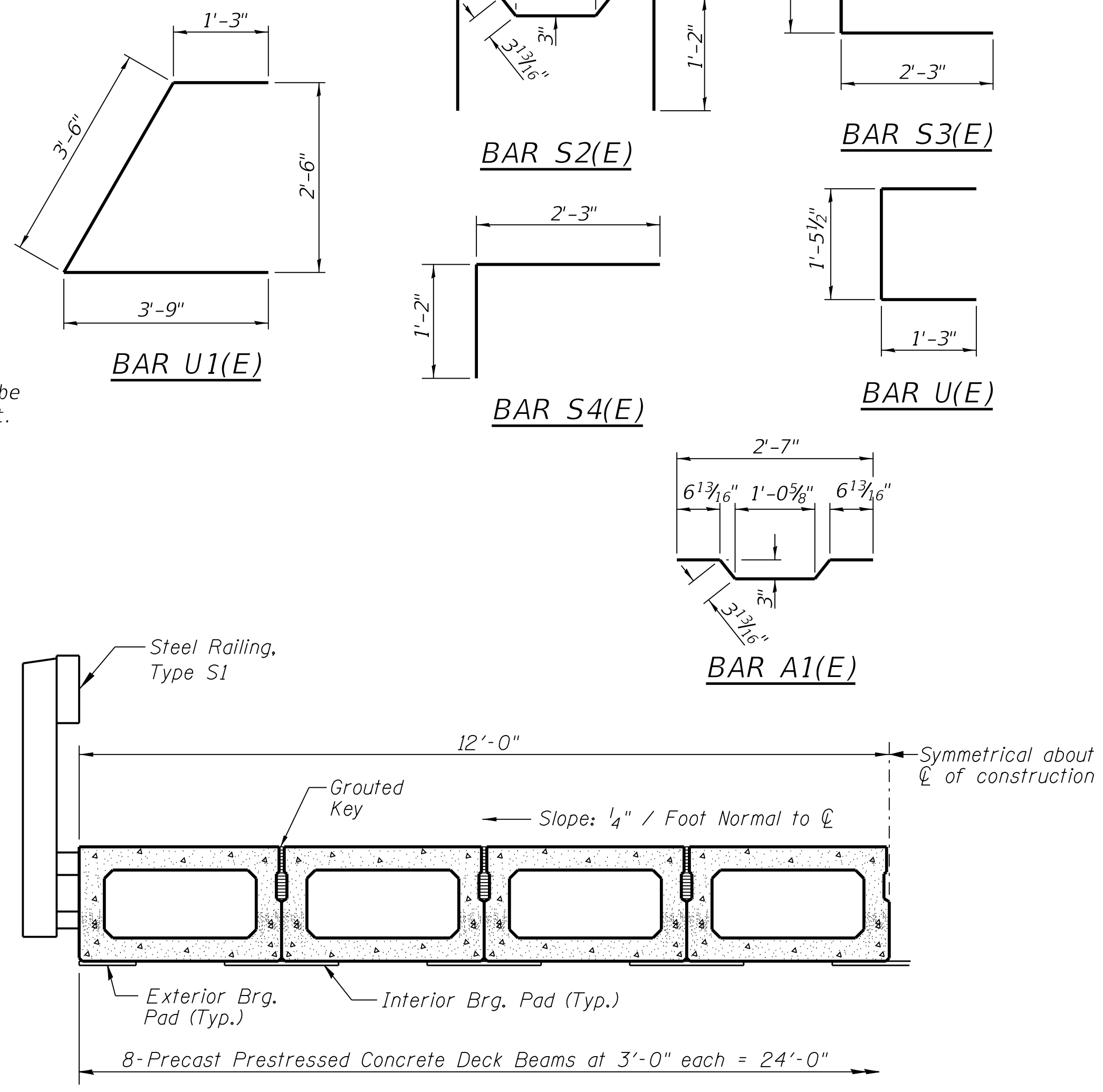
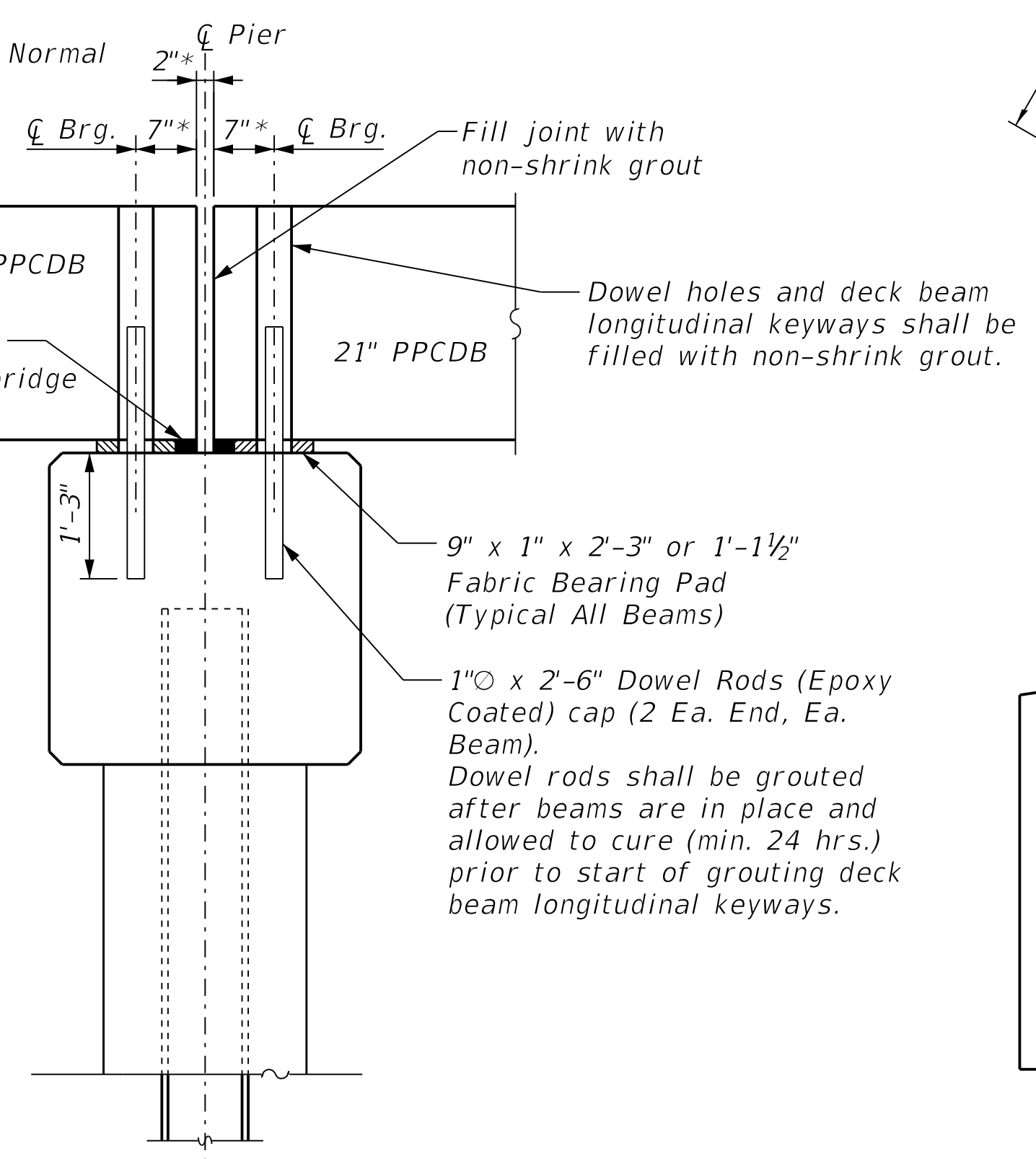
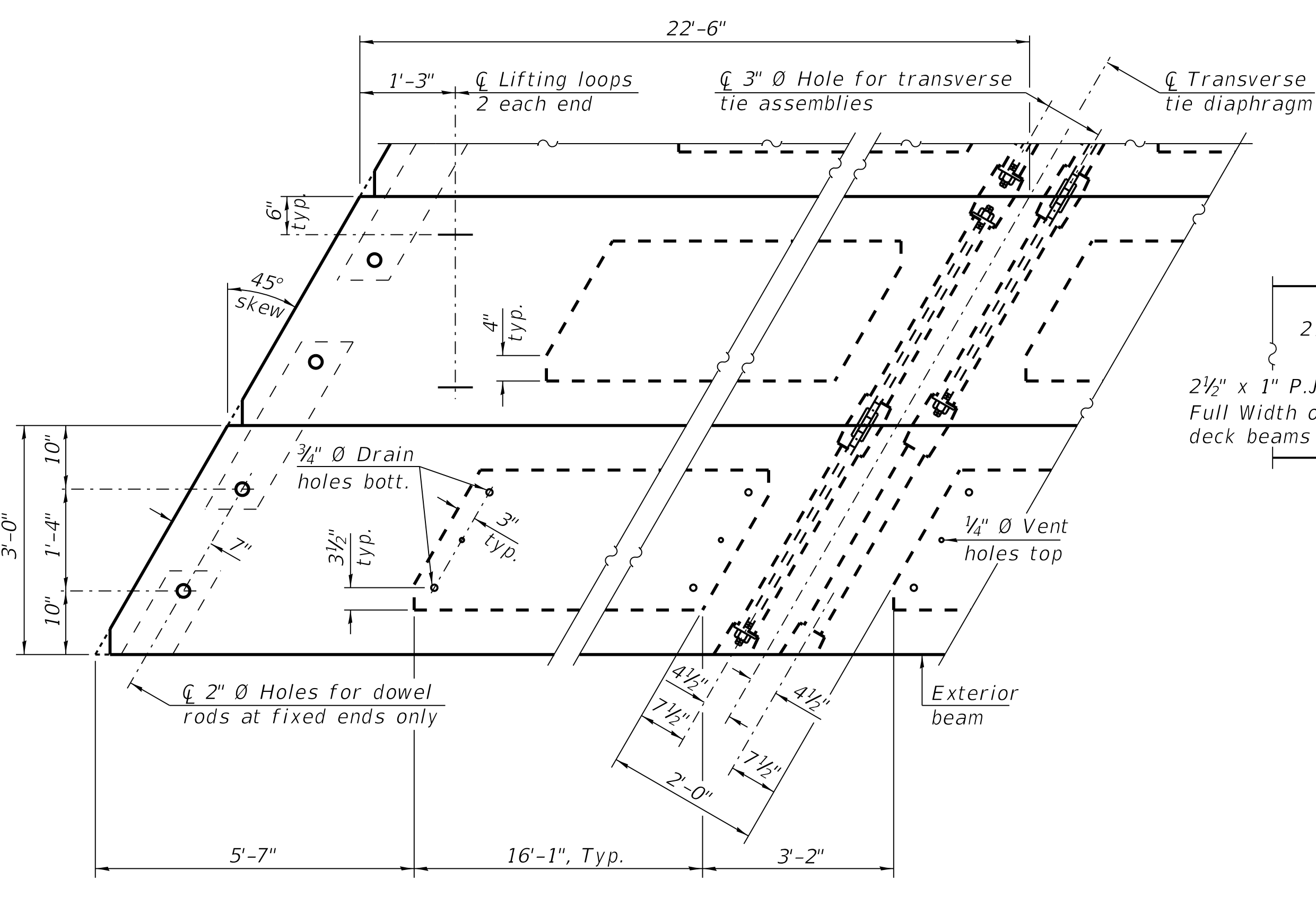
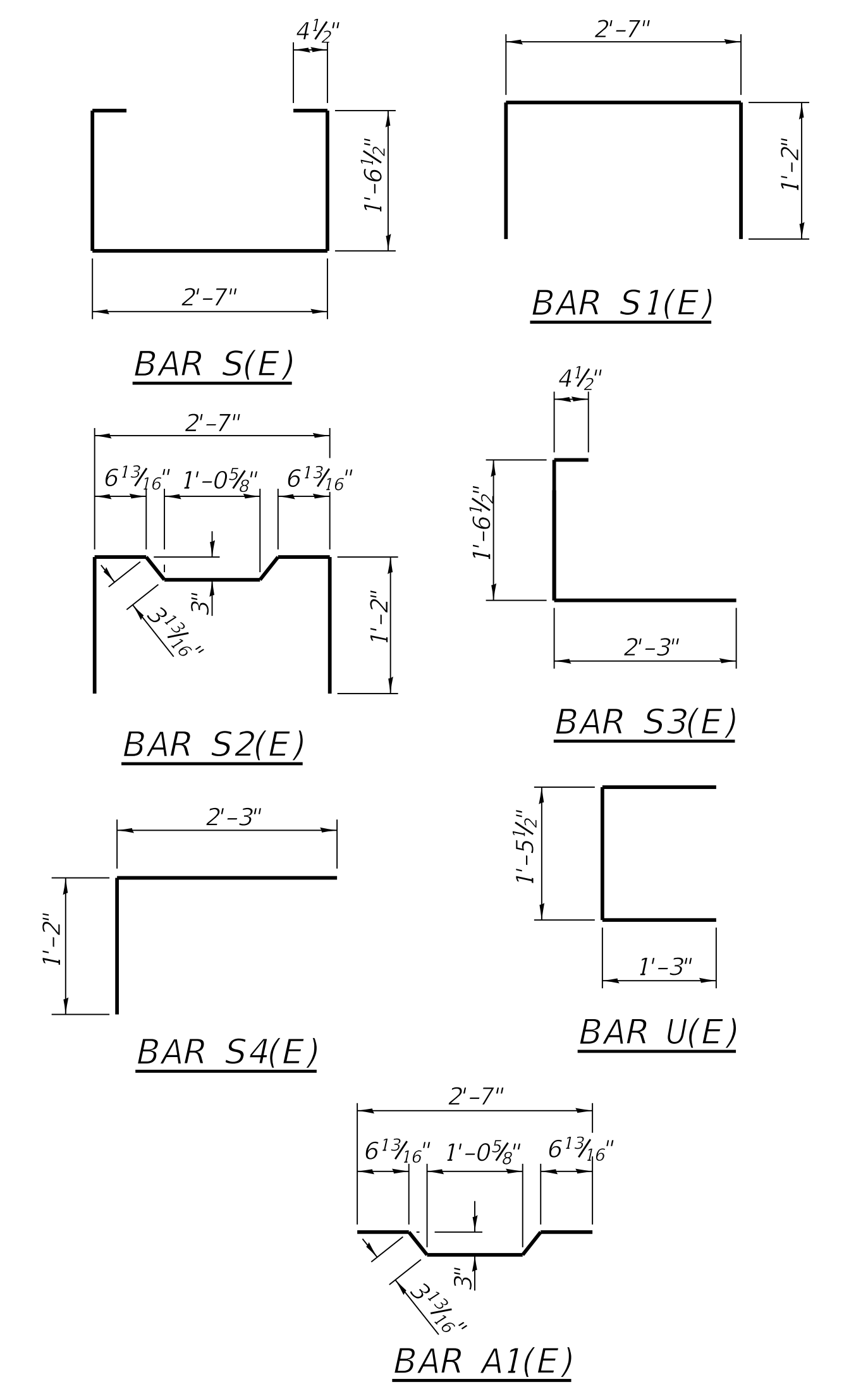
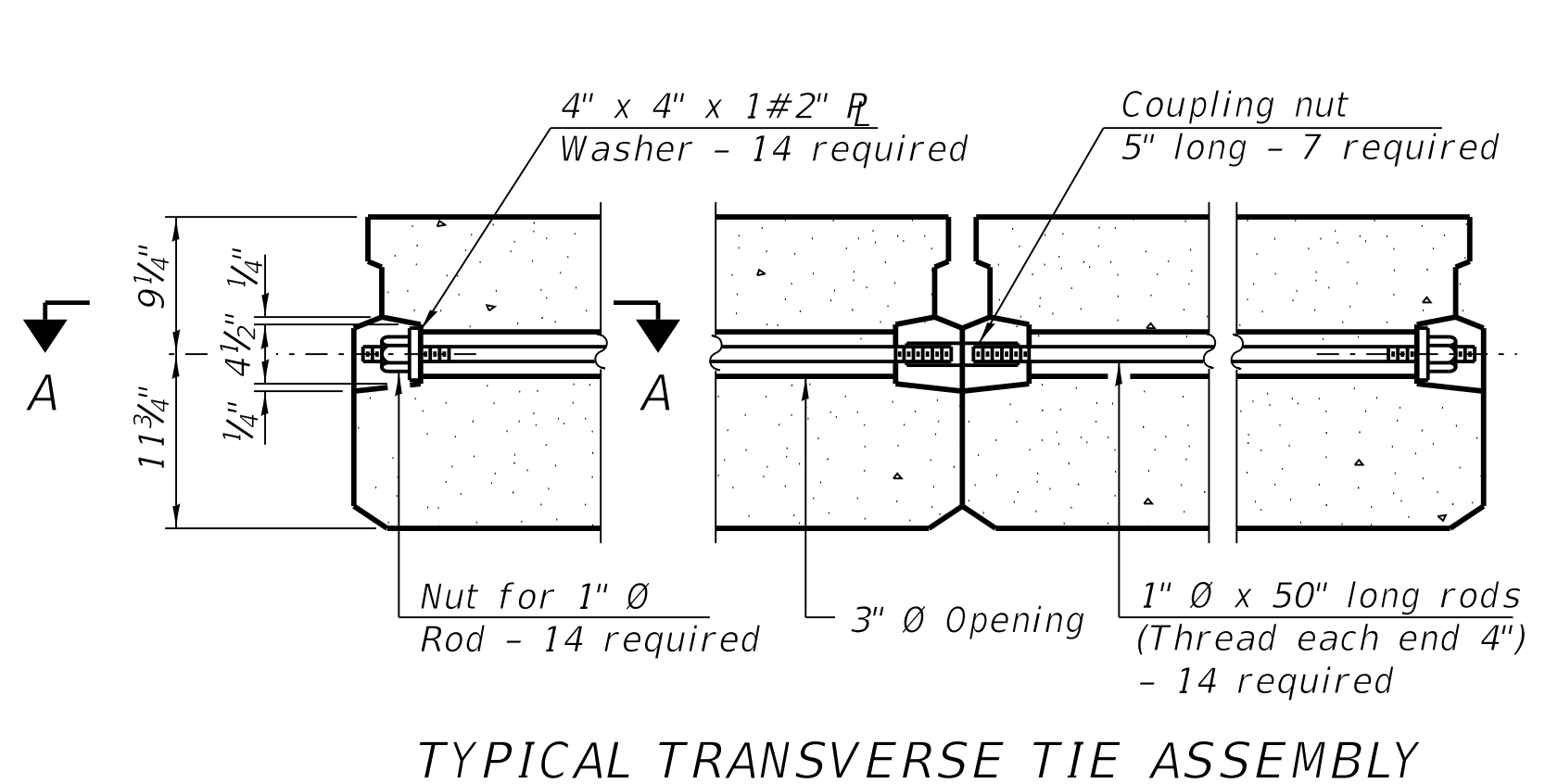
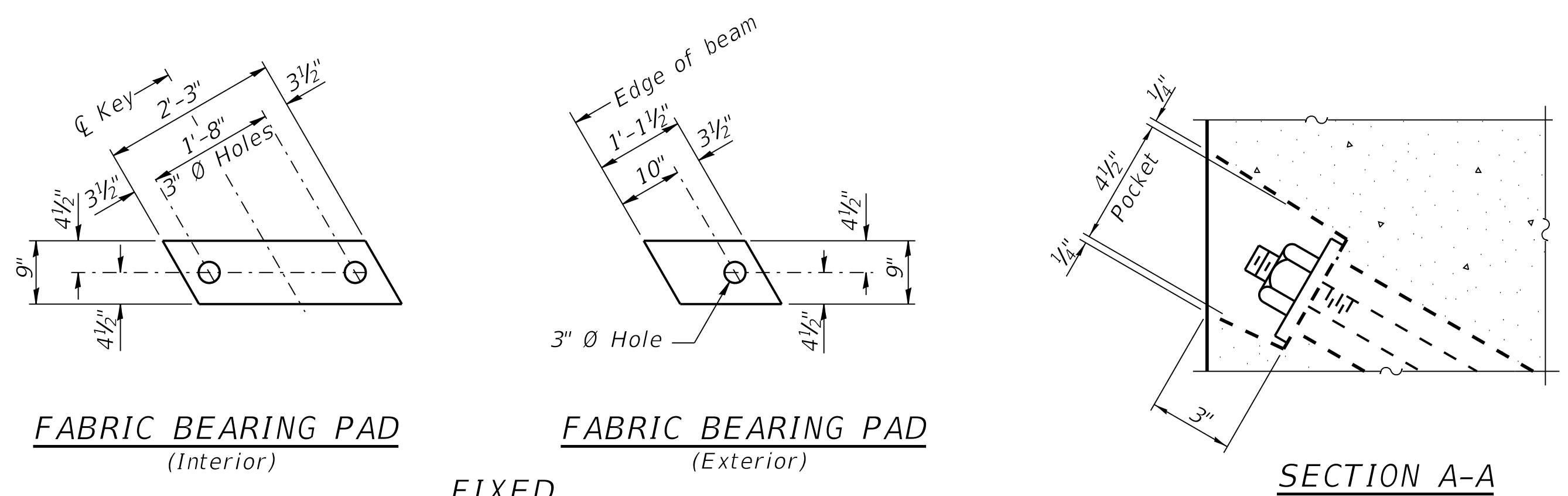
All reinforcement bars shall be Epoxy Coated (E).

Bars indicated 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"

SPAN 2



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

NOTES

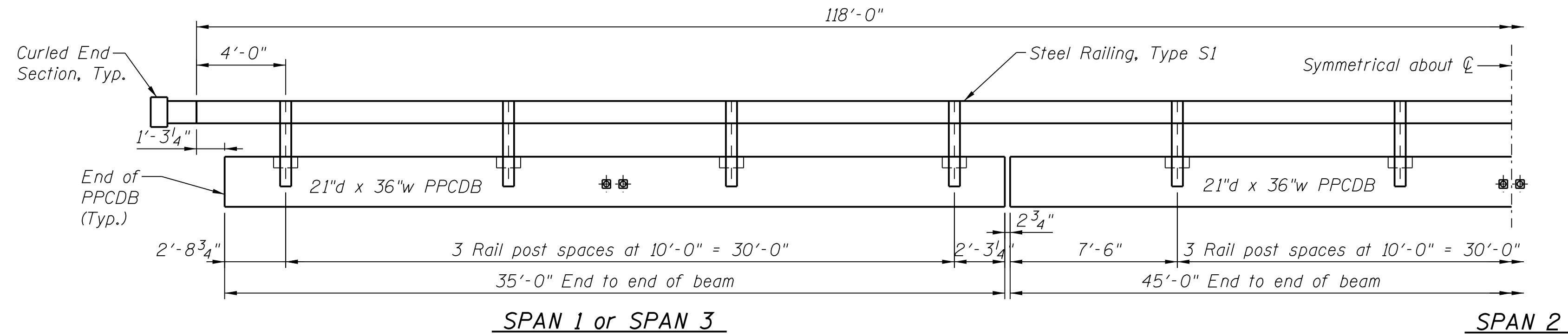
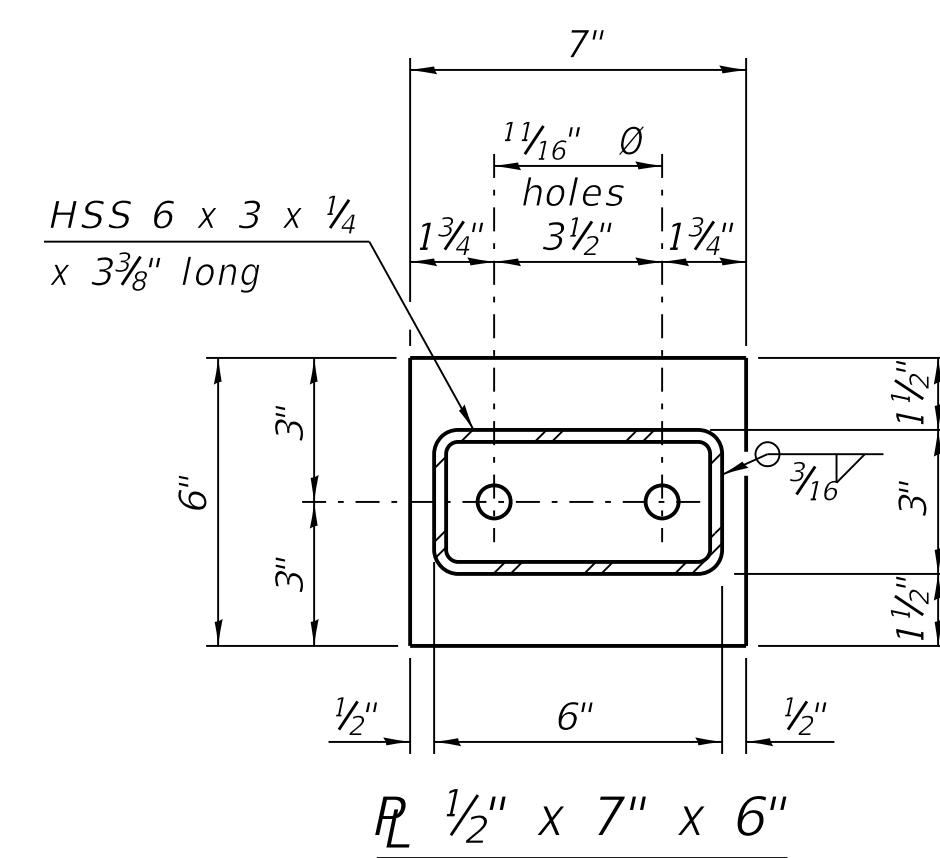
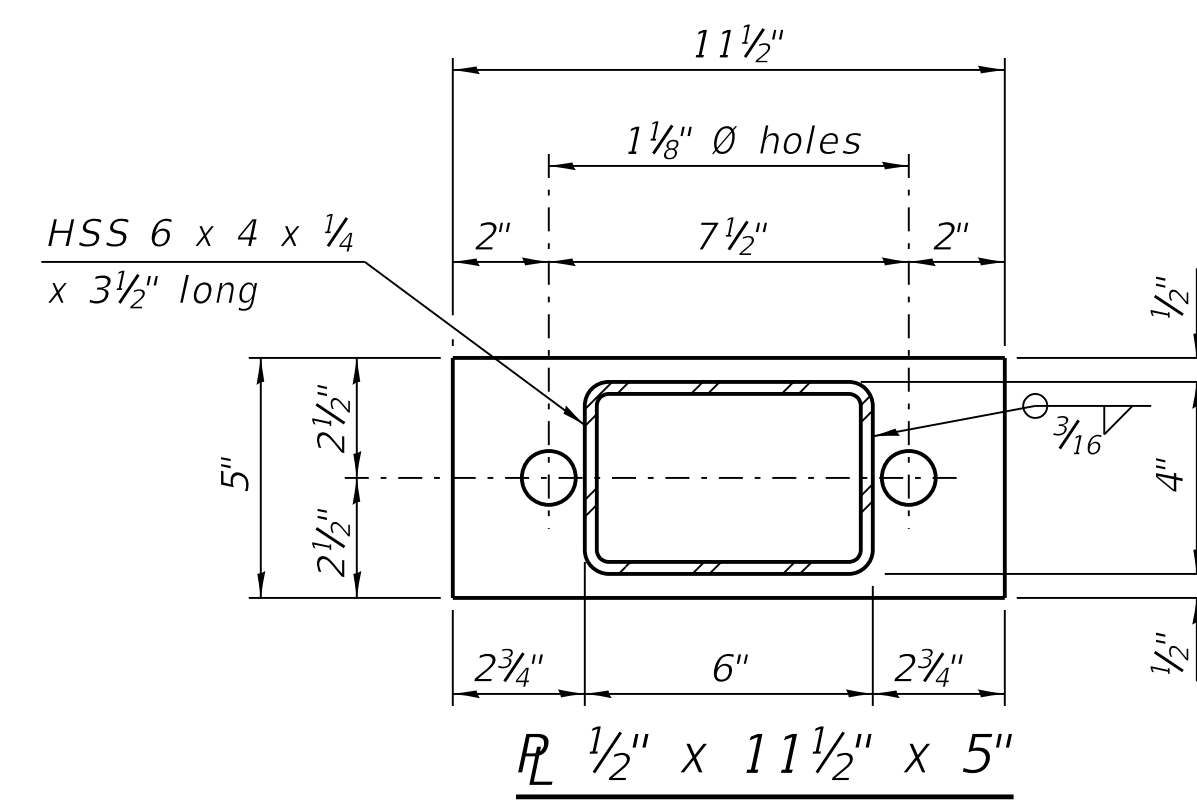
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place. Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location. A minimum 2 1/2" diameter lifting pin shall be used to engage the lifting loops during handling. Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams. Compressive strength of prestressed concrete, f'c, shall be 6000 psi. Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi. Reinforcement bars shall conform to ASTM A 706, Grade 60. (IL. Modified).

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

BILL OF MATERIAL

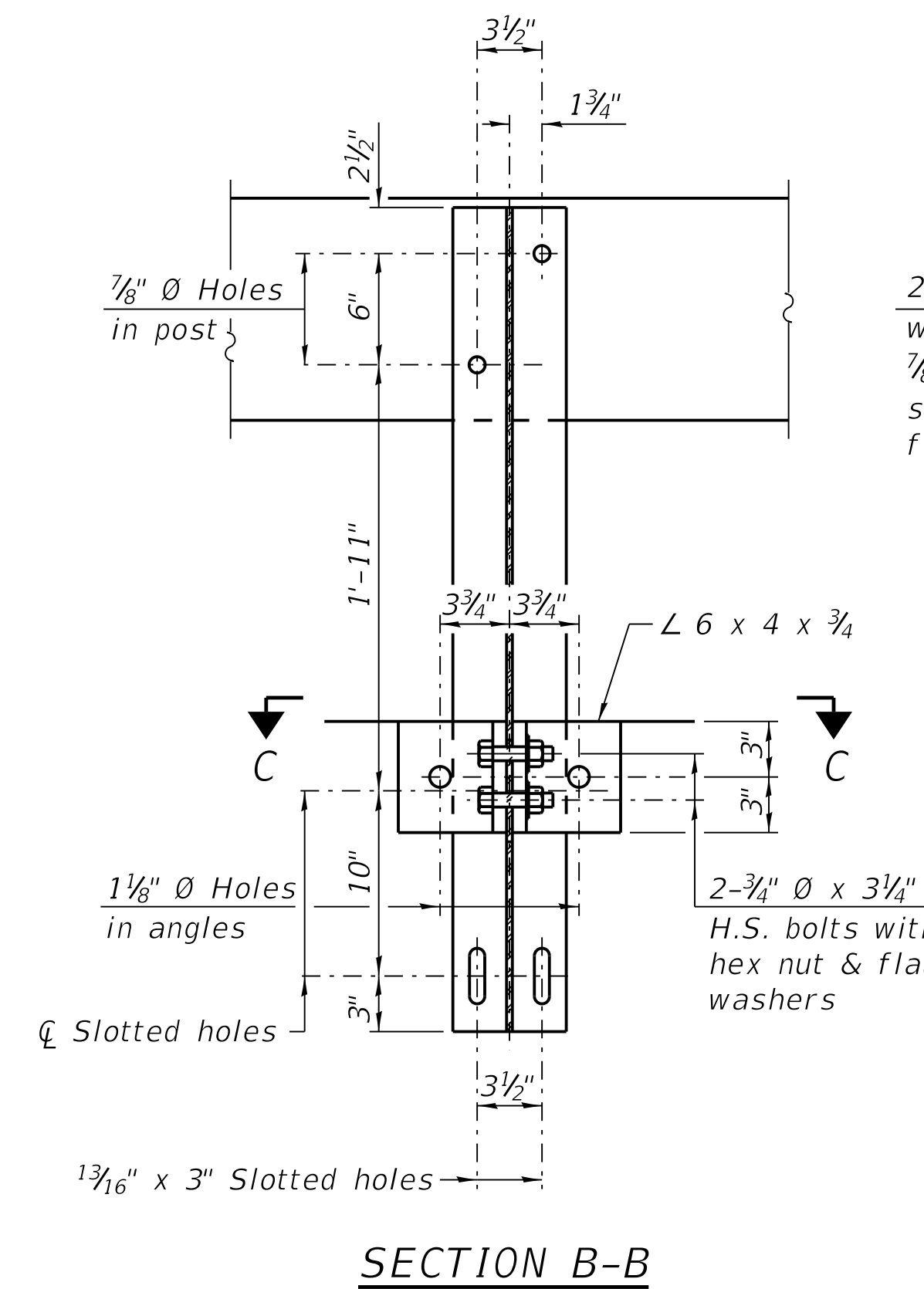
Precast Prestressed Conc. Deck Bms. (21" depth)	Sq. Ft.	1080
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SPAN 2

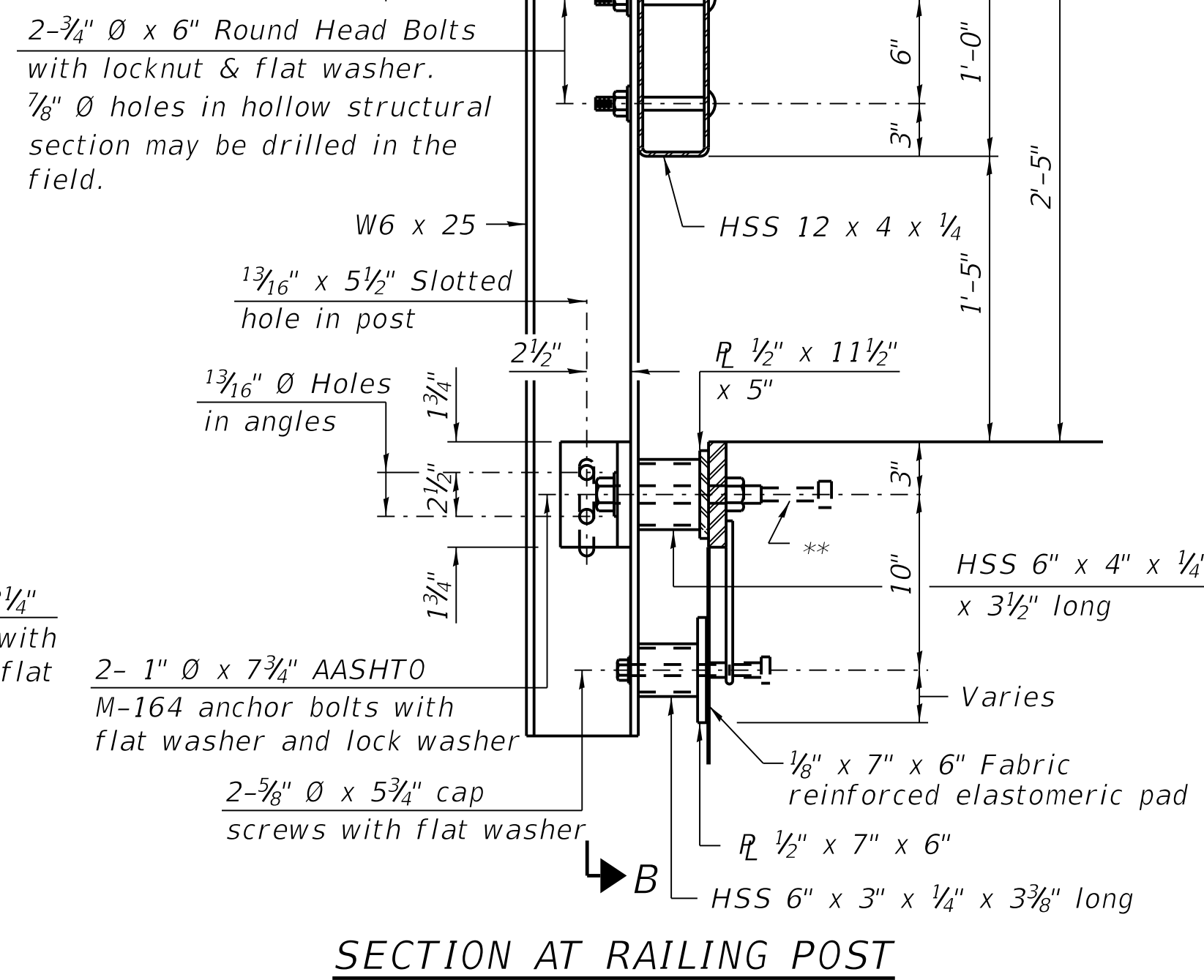


RAIL POST SPACING

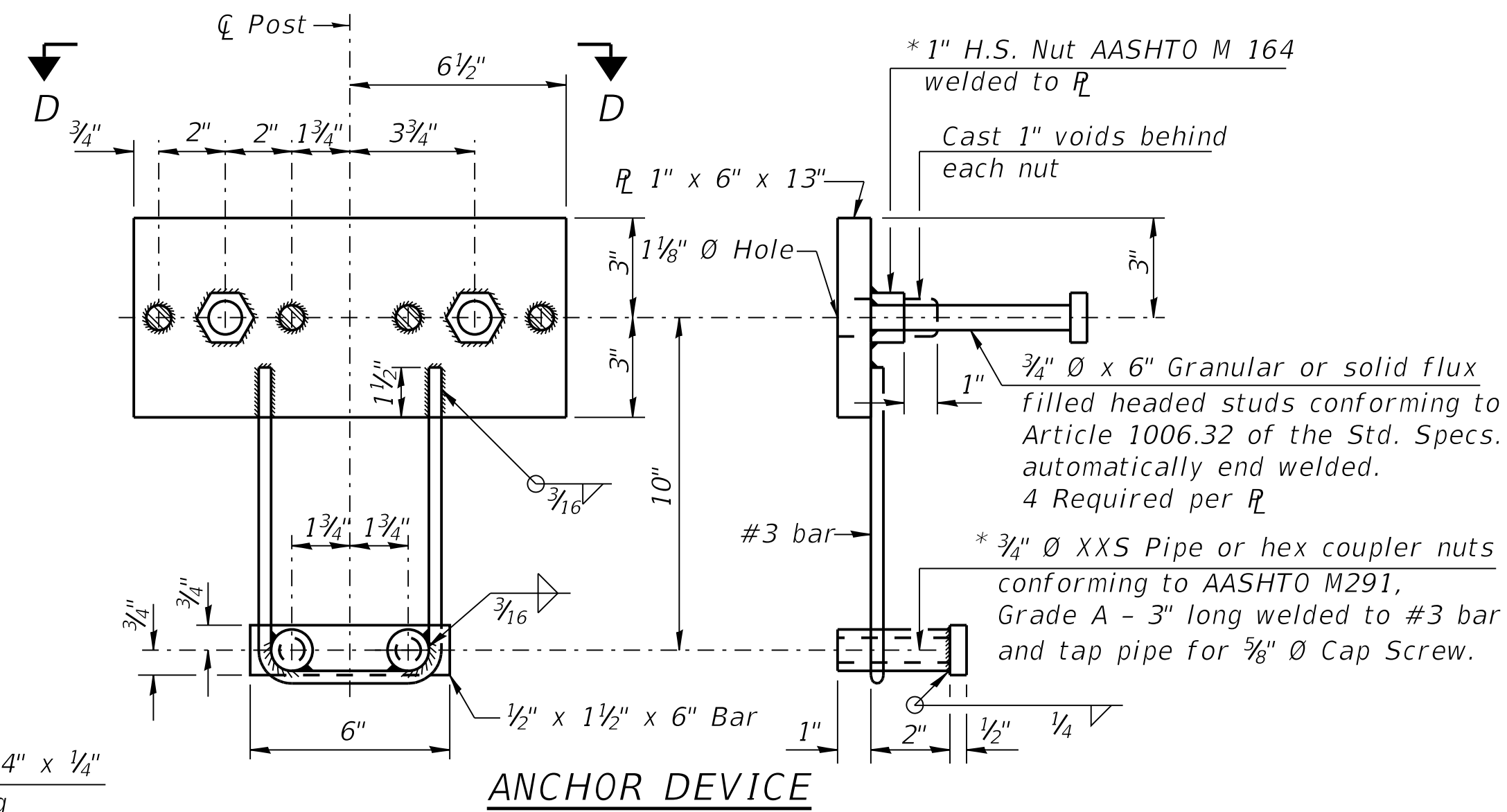
Note: The cost of the Curled End Sections shall be included in the contract unit price per foot for "STEEL RAILING, TYPE S1", and no additional compensation will be allowed.



SECTION B-B

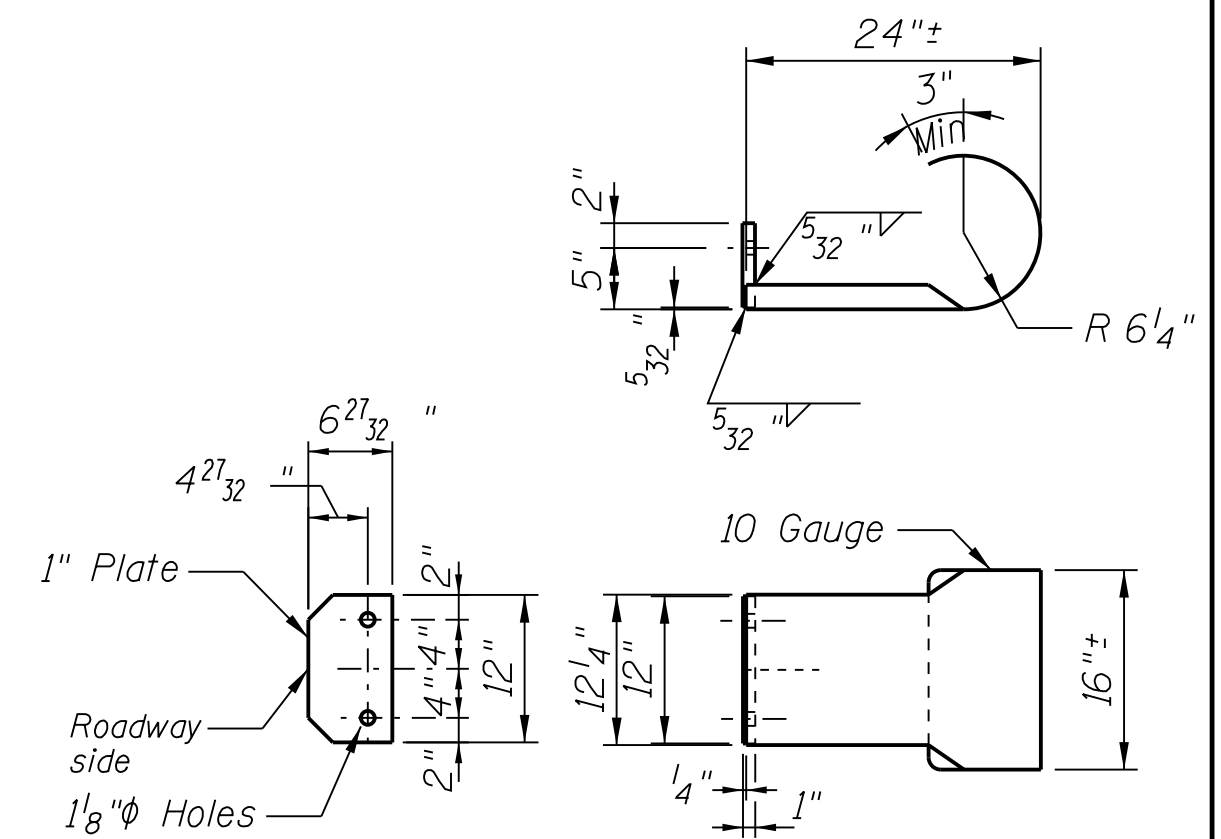


SECTION AT RAILING POST



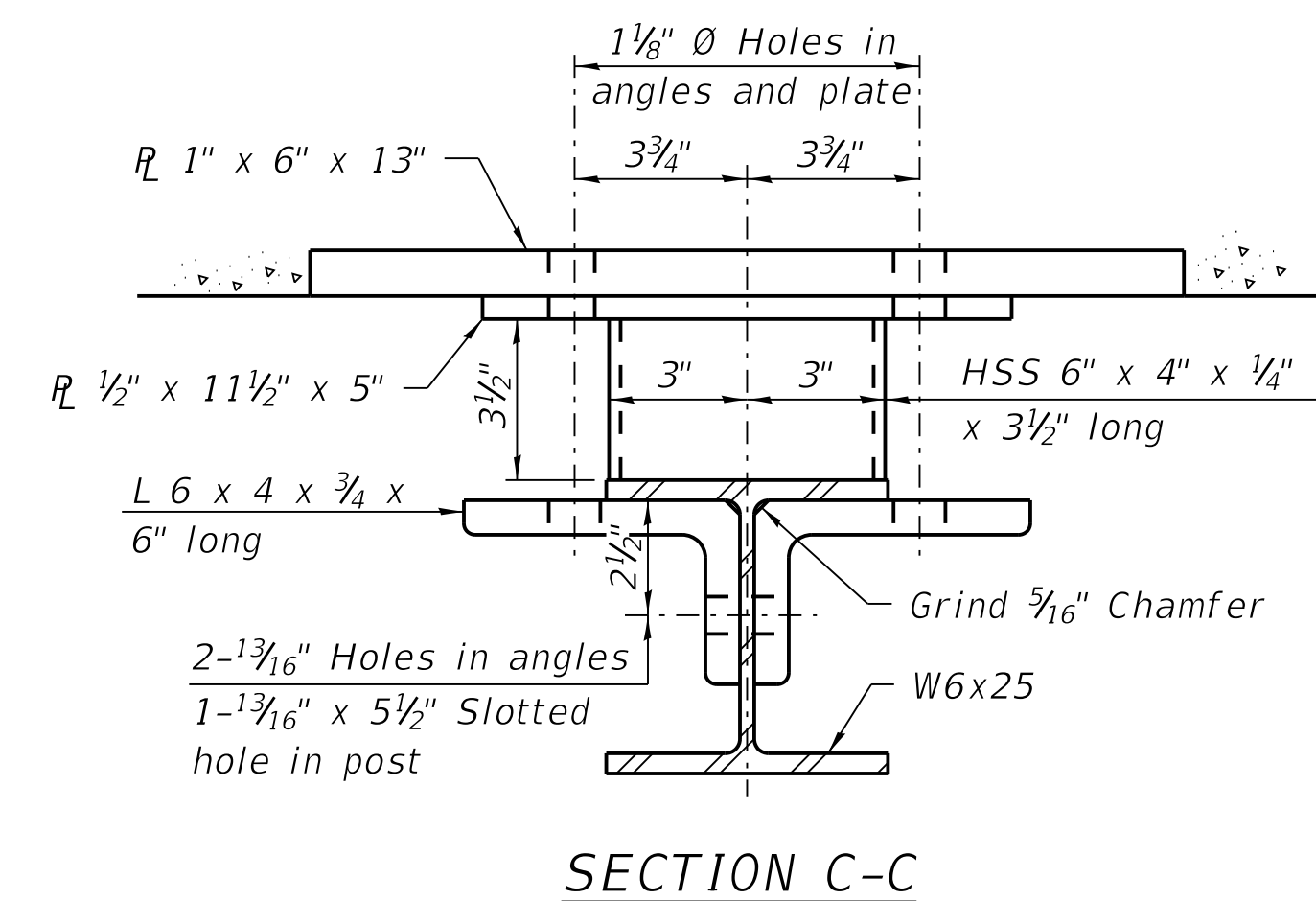
ANCHOR DEVICE

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

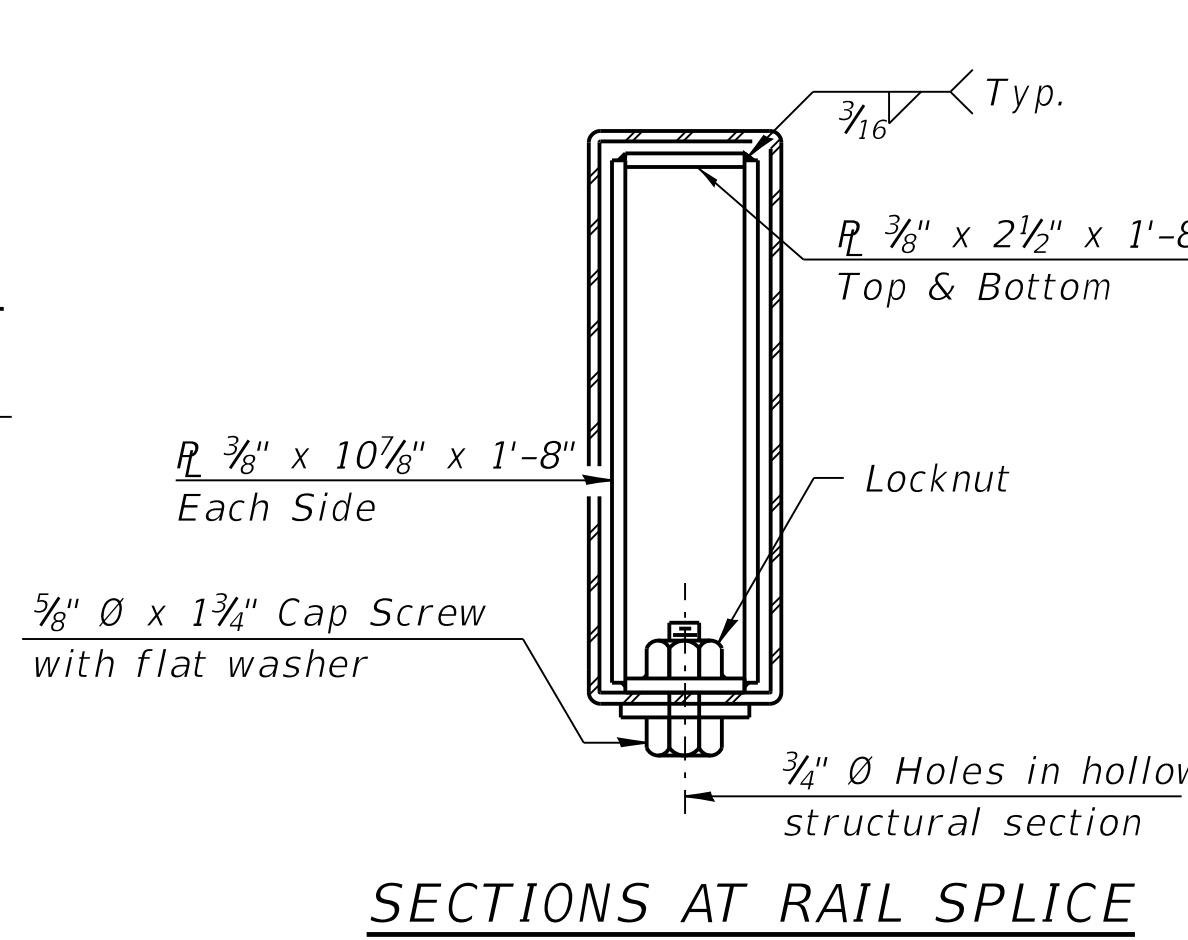


CURLED END SECTION DETAILS
4 Each req'd

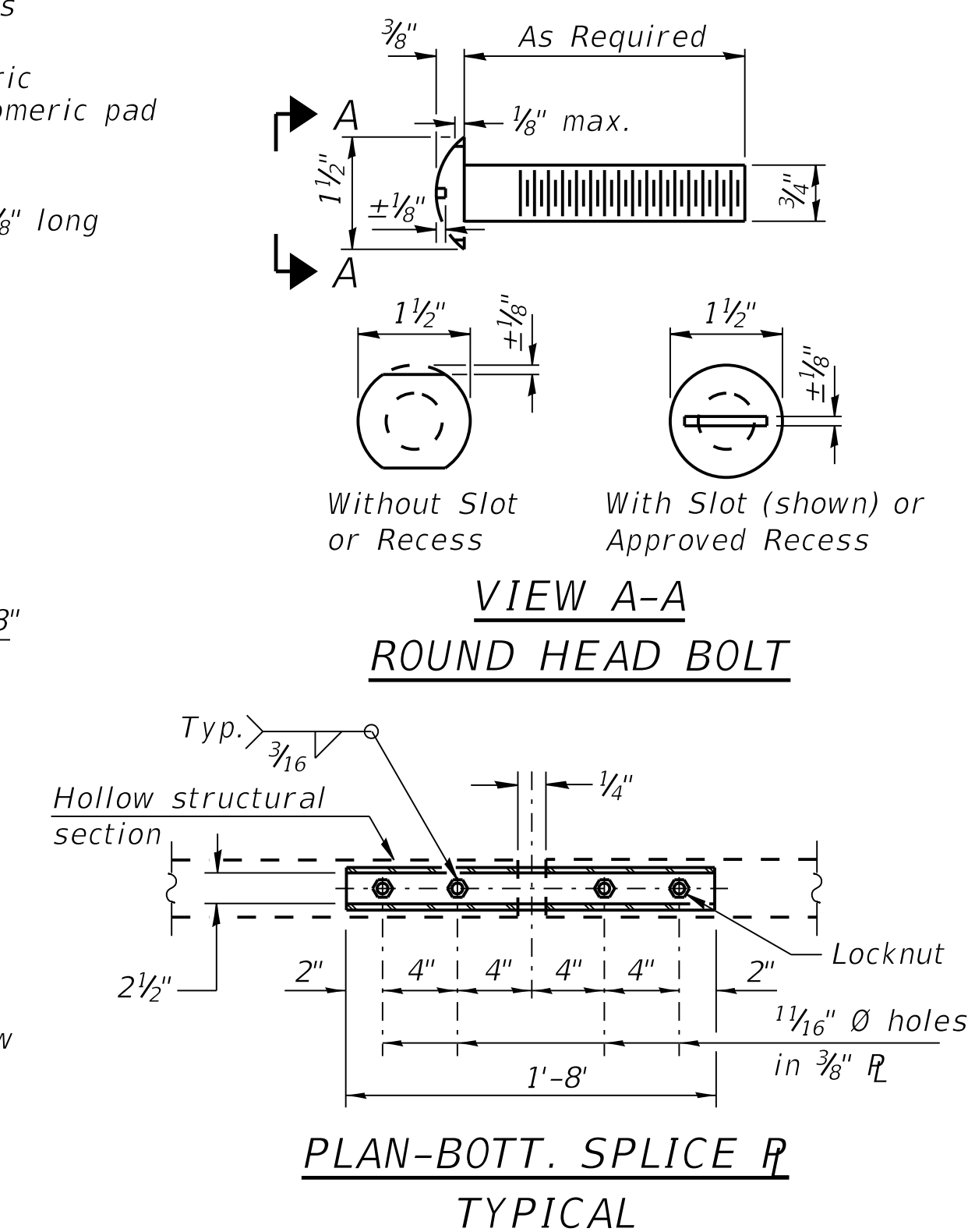
Notes:
All field drilled holes shall be coated with an approved zinc rich paint before erection.
For multi-span bridges, sufficient 1/4 inch x 6 inch x 1-2 inch galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S1.
All steel rail elements 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.



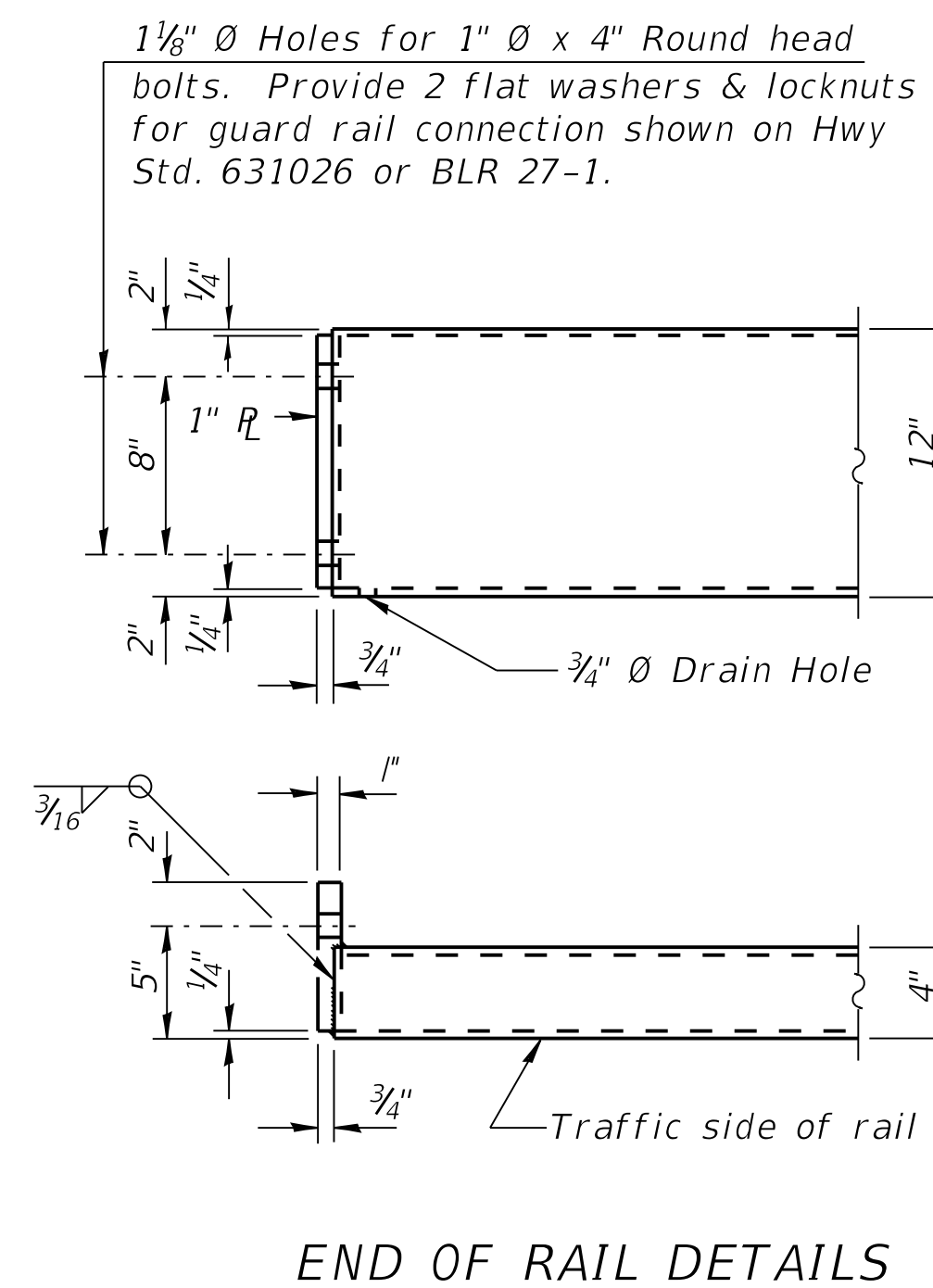
SECTION C-C



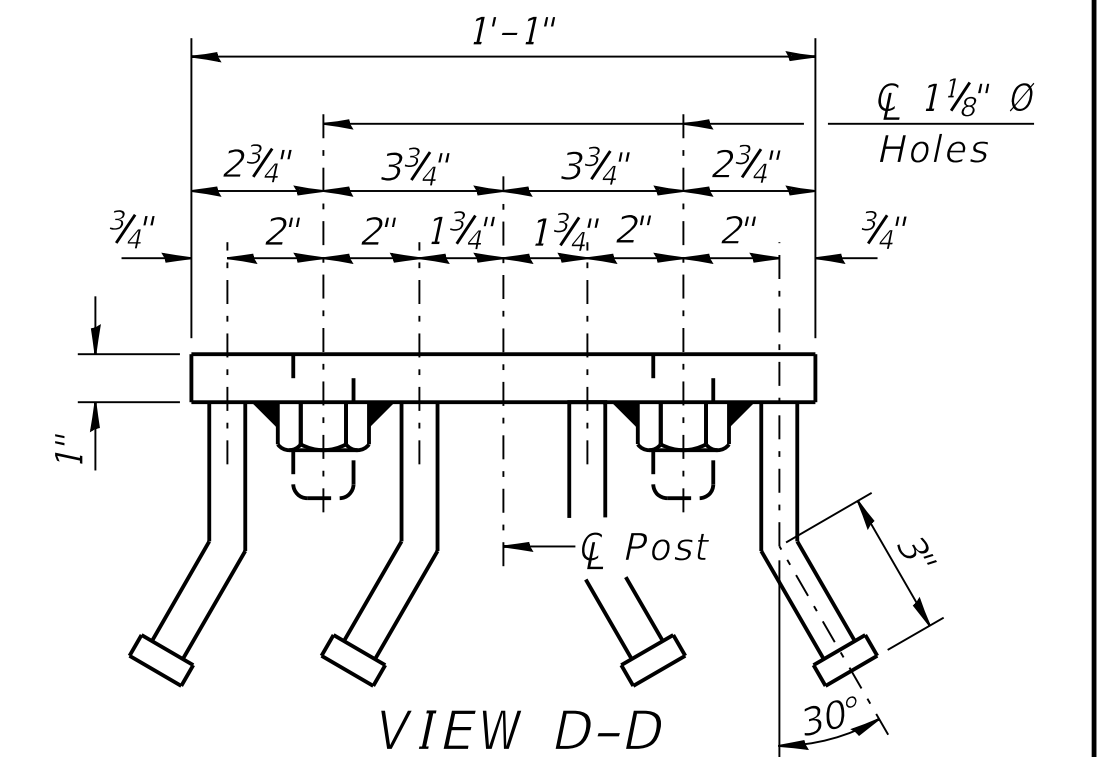
SECTIONS AT RAIL SPLICE



VIEW A-A ROUND HEAD BOLT
PLAN-BOTT. SPLICE R TYPICAL



END OF RAIL DETAILS

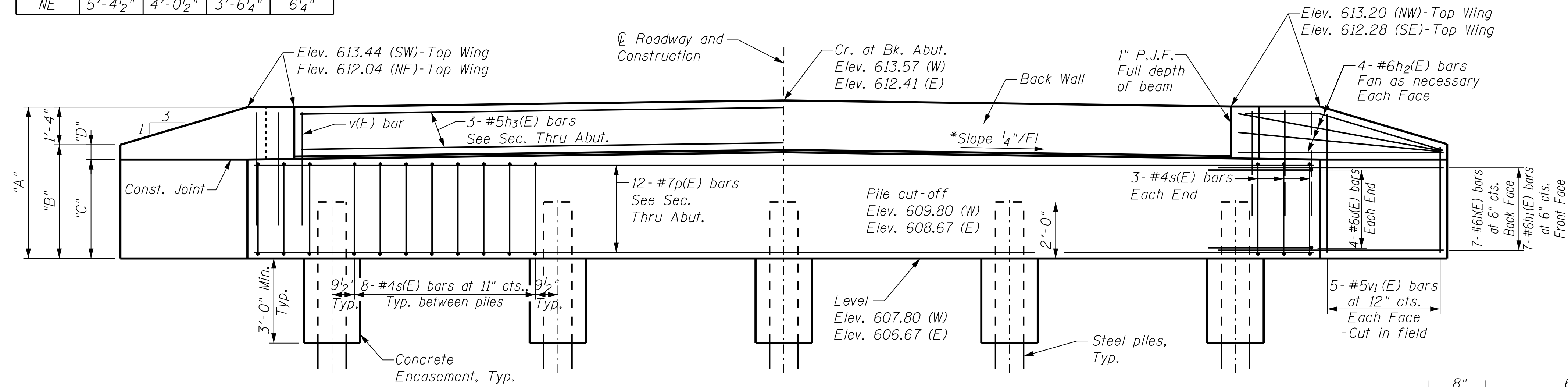


VIEW D-D

BILL OF MATERIAL

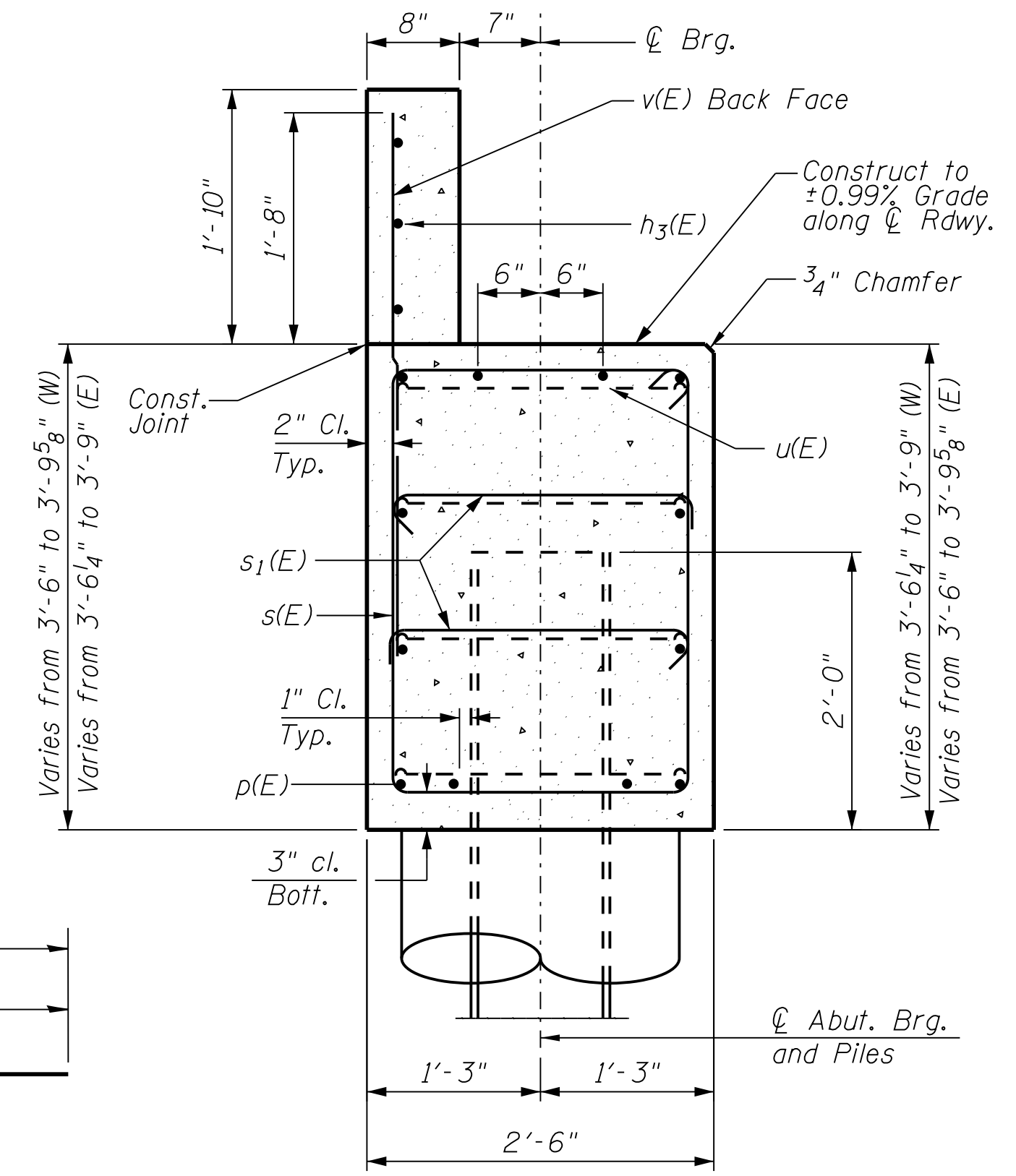
Item	Unit	Quantity
Steel Railing, Type S1	Foot	236

Corner	"A"	"B"	"C"	"D"
SW	5'-7 ⁵ / ₈ "	4'-3 ⁵ / ₈ "	3'-9 ⁵ / ₈ "	6"
NW	5'-4 ³ / ₄ "	4'-0 ³ / ₄ "	3'-6"	6 ³ / ₄ "
SE	5'-7 ³ / ₈ "	4'-3 ³ / ₈ "	3'-9"	6 ³ / ₈ "
NE	5'-4 ¹ / ₂ "	4'-0 ¹ / ₂ "	3'-6 ¹ / ₄ "	6 ¹ / ₄ "



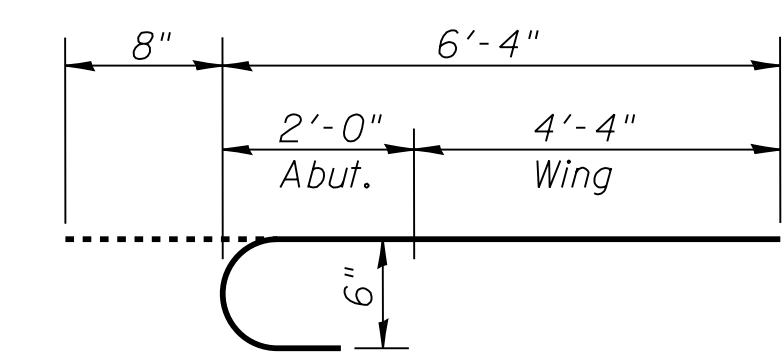
ELEVATION

* Normal to \bar{C} Roadway

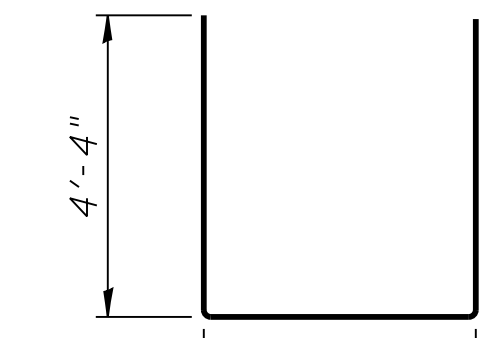


SEC. THRU ABUT.

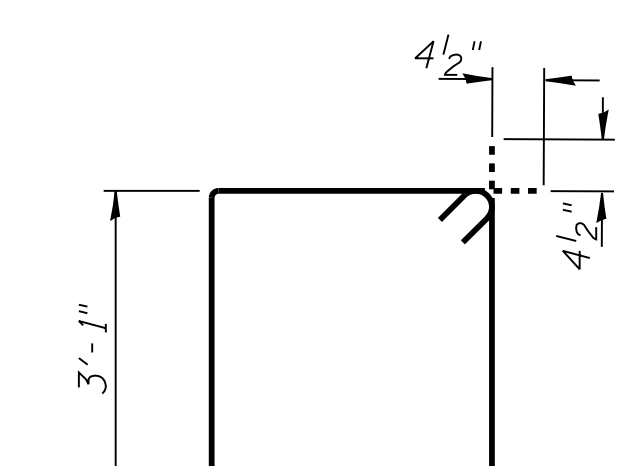
(Normal to \bar{C} Brg.)



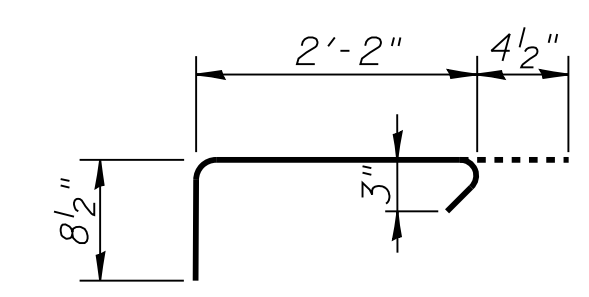
BAR h₁(E)



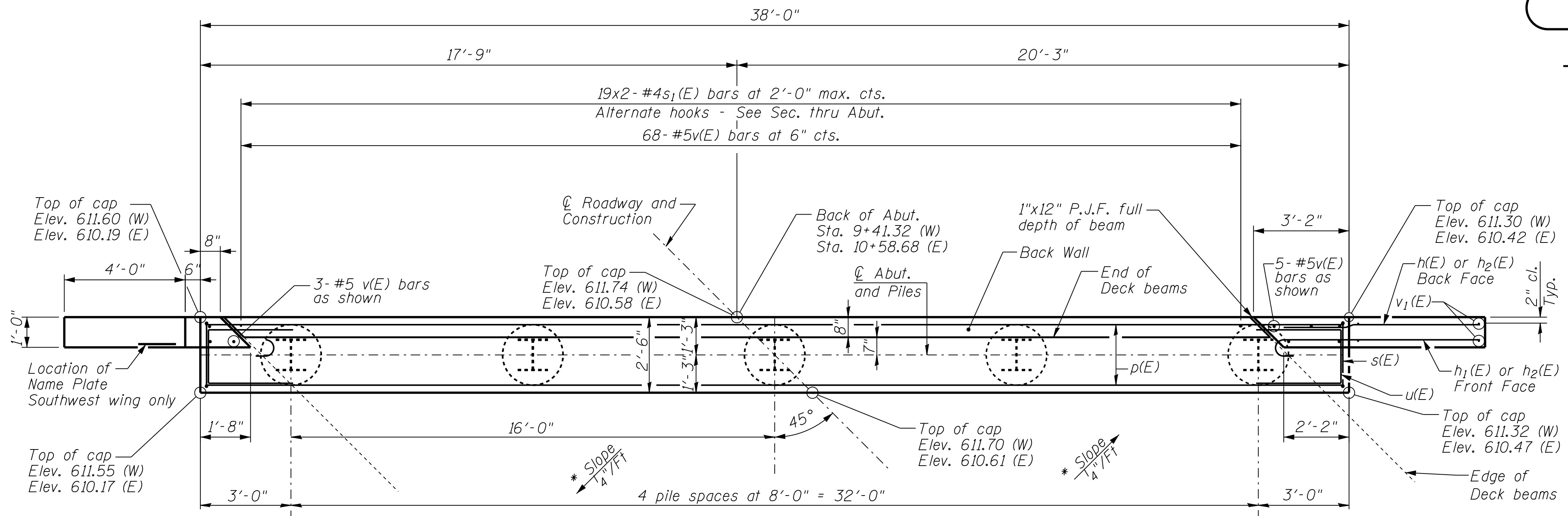
BAR u(E)



BAR s(E)



BAR s₁(E)



PLAN

PILE DATA WEST ABUTMENT

Type: Steel HP12x53
 Nominal Required Bearing: 418 kips
 Factored Resistance Available: 230 kips
 Estimated Length: 56'/pile
 No. Production Piles: 4
 No. Test Piles: 1

PILE DATA EAST ABUTMENT

Type: Steel HP12x53
 Nominal Required Bearing: 418 kips
 Factored Resistance Available: 230 kips
 Estimated Length: 55'/pile
 No. Production Piles: 4
 No. Test Piles: 1

GENERAL NOTES

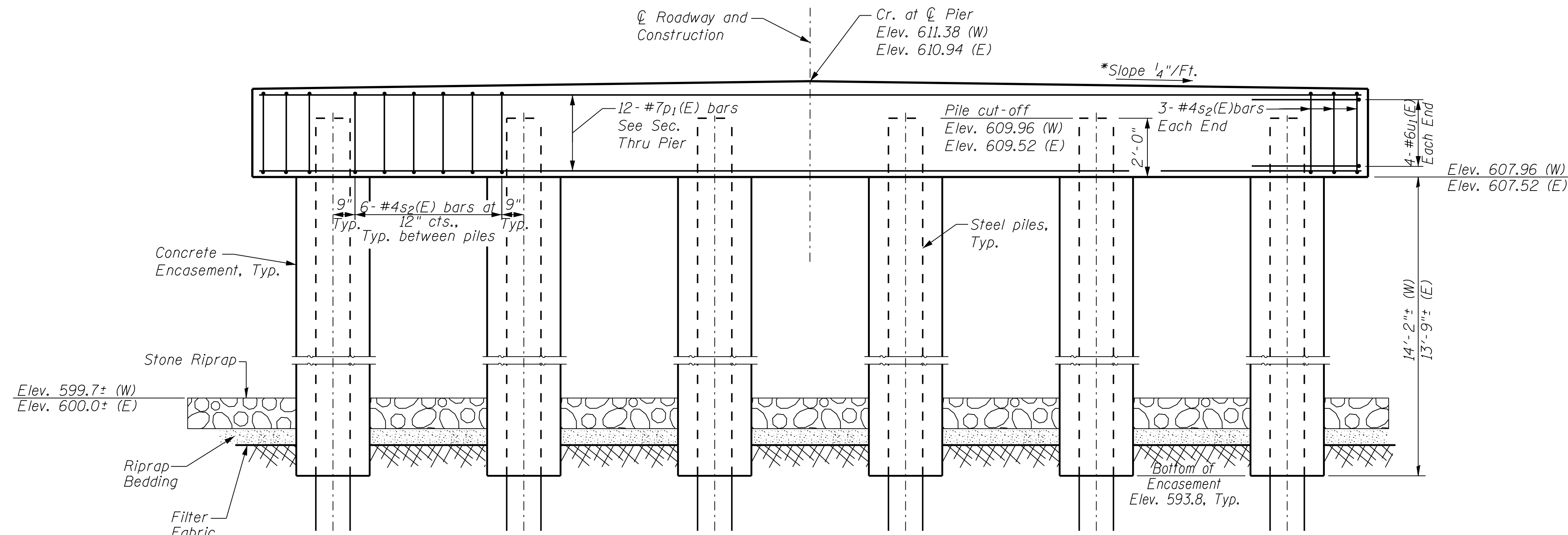
Reinforcement bars shall conform to the requirements of ASTM A 706 Grade 60 (Illinois Modified).
 All reinforcement bars shall be Epoxy Coated (E).
 All exposed edges shall have standard 3/4" chamfer, unless otherwise noted or as directed by the Engineer.
 All clearances between rebar and form surface 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 Test Piles 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 Piles shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.

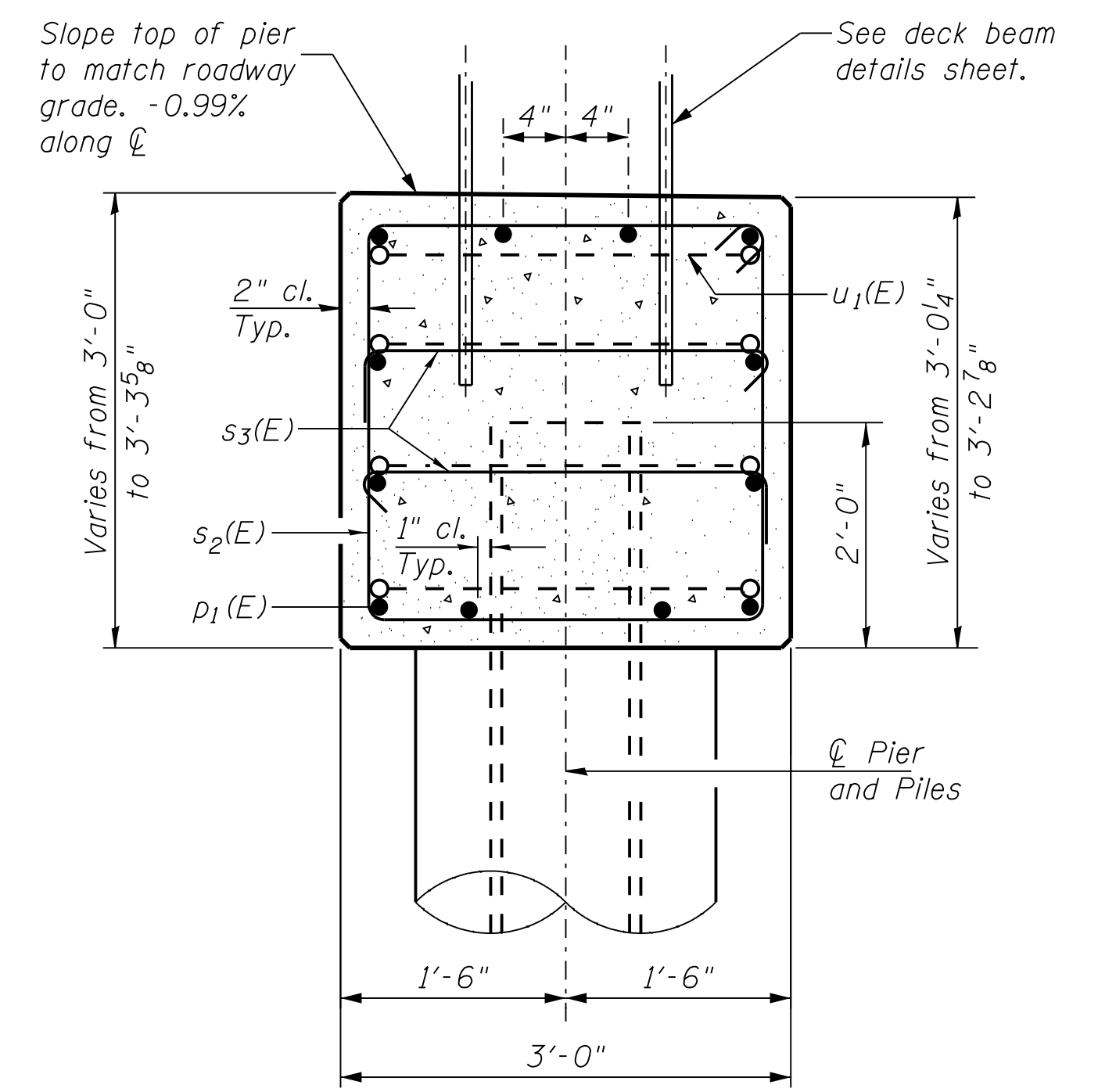
BILL OF MATERIAL FOR ONE ABUTMENT

Bar	No.	Size	Length	Shape
h(E)	14	#6	8'-8"	—
h ₁ (E)	14	#6	7'-0"	—
h ₂ (E)	16	#6	4'-10"	—
h ₃ (E)	3	#5	33'-7"	—
p(E)	12	#7	37'-8"	—
s(E)	38	#4	11'-3"	□
s ₁ (E)	38	#4	3'-3"	□
u(E)	8	#6	10'-9"	—
v(E)	76	#5	5'-0"	—
v ₁ (E)	20	#5	5'-4"	CUT IN FIELD
Concrete Structures		Cu Yd	W Abut 16.3 E Abut 16.3	
Concrete Encasement		Cu Yd	W Abut 1.8 E Abut 1.8	
Reinforcement Bars, Epoxy Coated		Pound	W Abut 2480 E Abut 2480	
Furnishing Steel Piles, HP 12x53		Foot	W Abut 224 E Abut 220	
Driving Piles		Foot	W Abut 224 E Abut 220	
Test Pile, Steel HP12x53		Each	W Abut 1 E Abut 1	
Pile Shoes		Each	W Abut 5 E Abut 5	

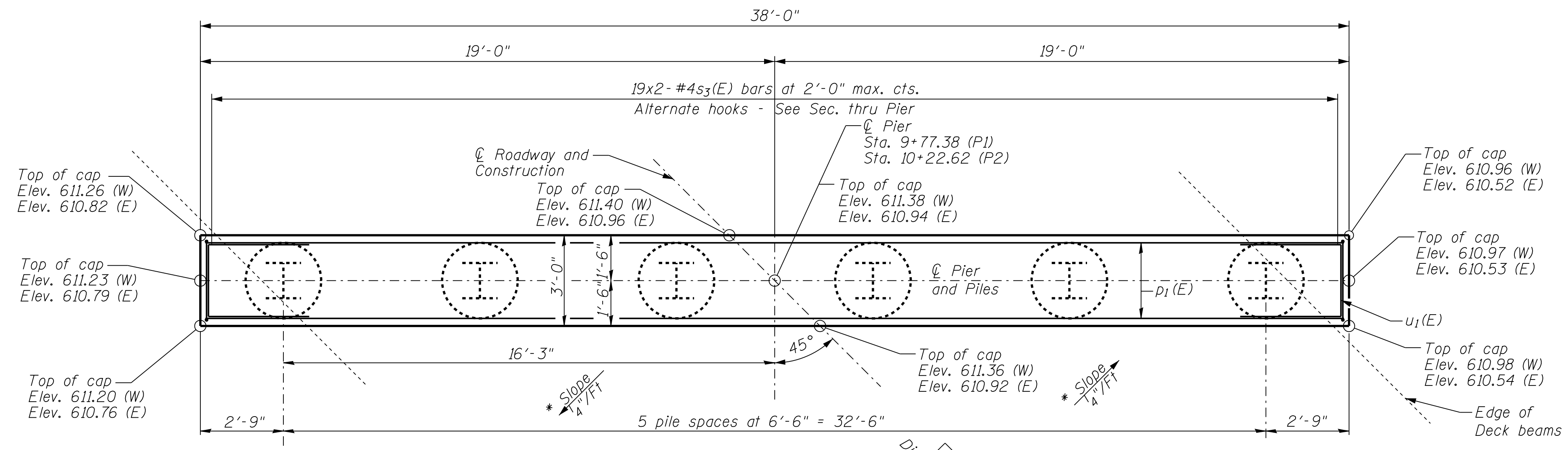
For details of piles and Concrete Encasement, see HP Pile Details Sheet.



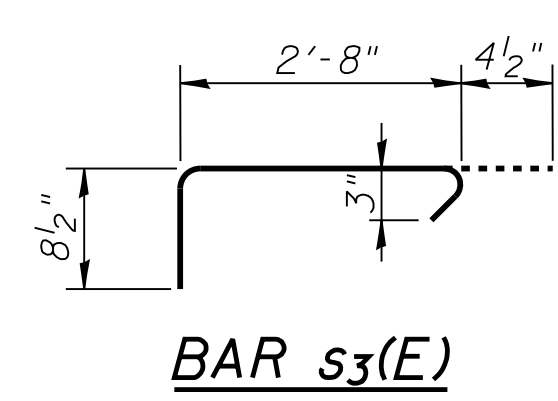
ELEVATION
* Normal to Center of Roadway



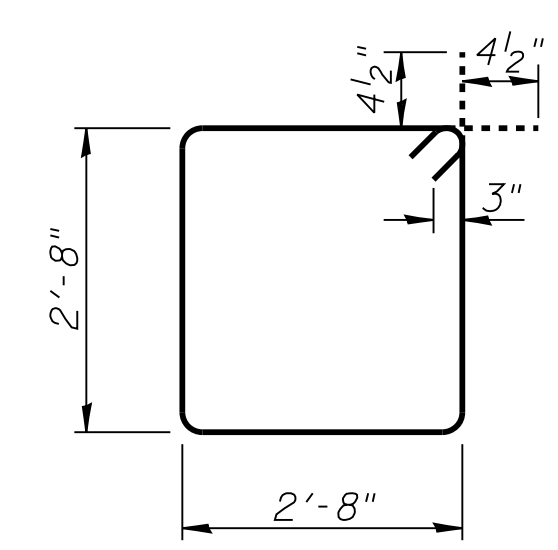
SEC. THRU PIER
(Normal to Center of Brg.)



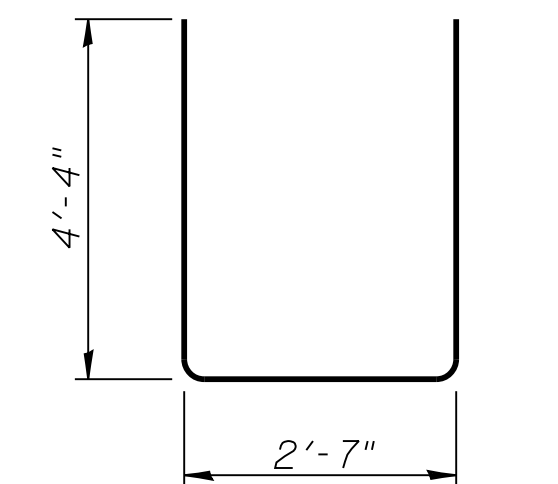
PLAN
Direction of Stationing



BAR s3(E)



BAR s2(E)



BAR u1(E)

BILL OF MATERIAL FOR ONE PIER

Bar	No.	Size	Length	Shape
p1(E)	12	#7	37'-8"	—
s2(E)	36	#4	11'-5"	□
s3(E)	38	#4	3'-9"	┌
u1(E)	8	#6	11'-3"	—
Concrete Structures	Cu Yd	Pier 1	13.8	
		Pier 2	13.8	
Concrete Encasement	Cu Yd	Pier 1	15.5	
		Pier 2	15.0	
Reinforcement Bars, Epoxy Coated	Pound	Pier 1	1430	
		Pier 2	1430	
Furnishing Steel Piles, HP 14x73	Foot	Pier 1	280	
		Pier 2	275	
Driving Piles	Foot	Pier 1	280	
		Pier 2	275	
Test Pile, Steel HP14x73	Each	Pier 1	1	
		Pier 2	1	
Pile Shoes	Each	Pier 1	6	
		Pier 2	6	

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

**PILE DATA
PIER NO. 1 (WEST)**

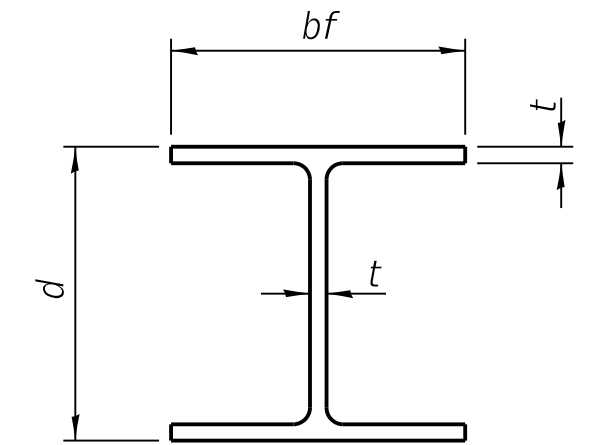
Type:	Steel HP14x73
Nominal Required Bearing:	455 kips
Factored Resistance Available:	250 kips
Estimated Length:	56'/pile
No. Production Piles:	5
No. Test Piles:	1

**PILE DATA
PIER NO. 2 (EAST)**

Type:	Steel HP14x73
Nominal Required Bearing:	455 kips
Factored Resistance Available:	250 kips
Estimated Length:	55'/pile
No. Production Piles:	5
No. Test Piles:	1

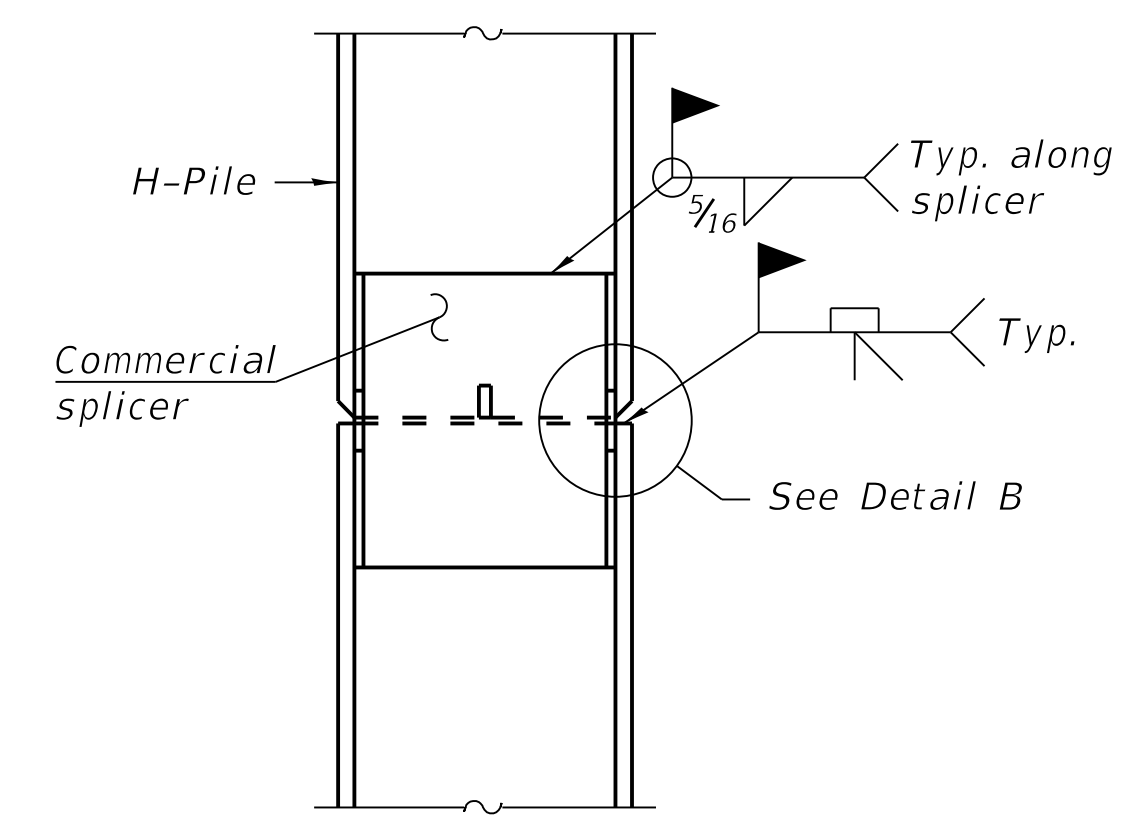
GENERAL NOTES

- Reinforcement bars shall conform to the requirements of ASTM A 706 Grade 60 (Illinois Modified).
- The Steel H-piles shall be according to AASHTO M270 Grade 50.
- All exposed edges shall have standard 3/4" chamfer, unless otherwise noted or as directed by the Engineer.
- The Contractor shall drive Test Piles 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.
- All clearances between rebar and form surface shall be 2", unless otherwise noted.
- The Test Piles shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.
- Space reinforcement in cap to miss PPCDB dowel rods.
- The position of the 90° & 135° hooked ends of the s3(E) bar shall be alternated between adjacent bars as shown, All reinforcement bars shall be Epoxy Coated (E), both vertically and horizontally.

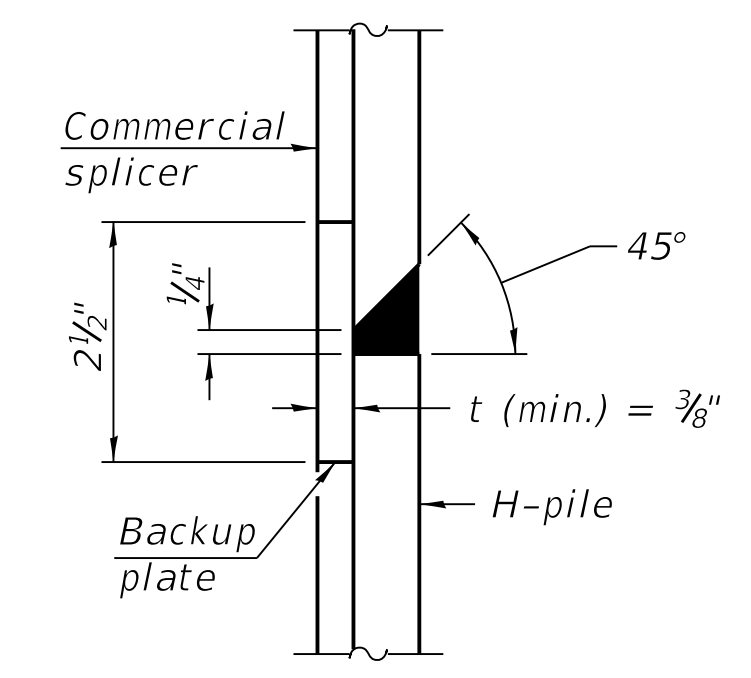


STEEL PILE TABLE

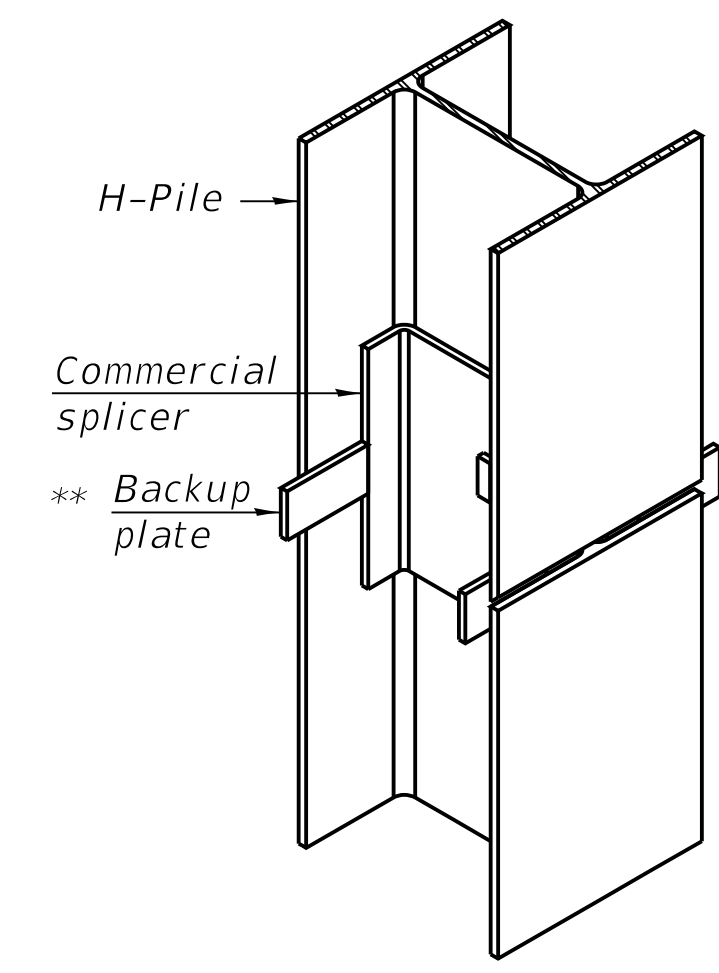
Designation	Depth d	Flange width bf	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1 1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1 1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
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

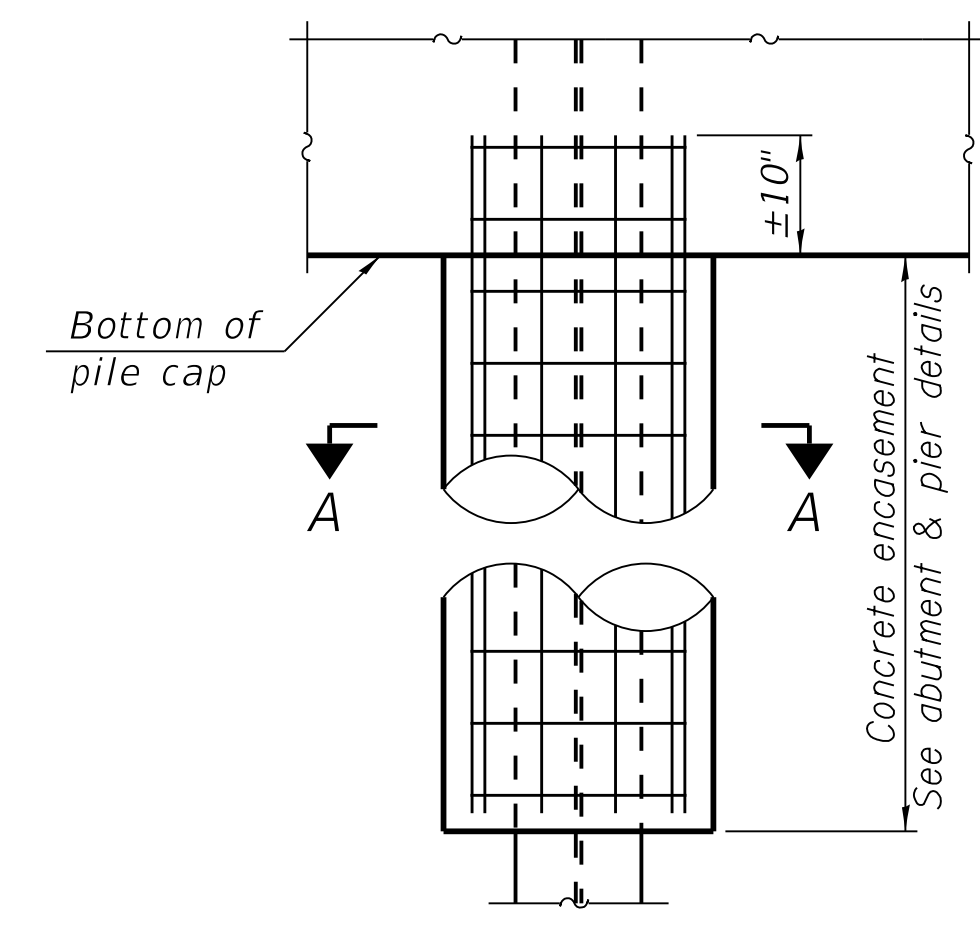


DETAIL "B"

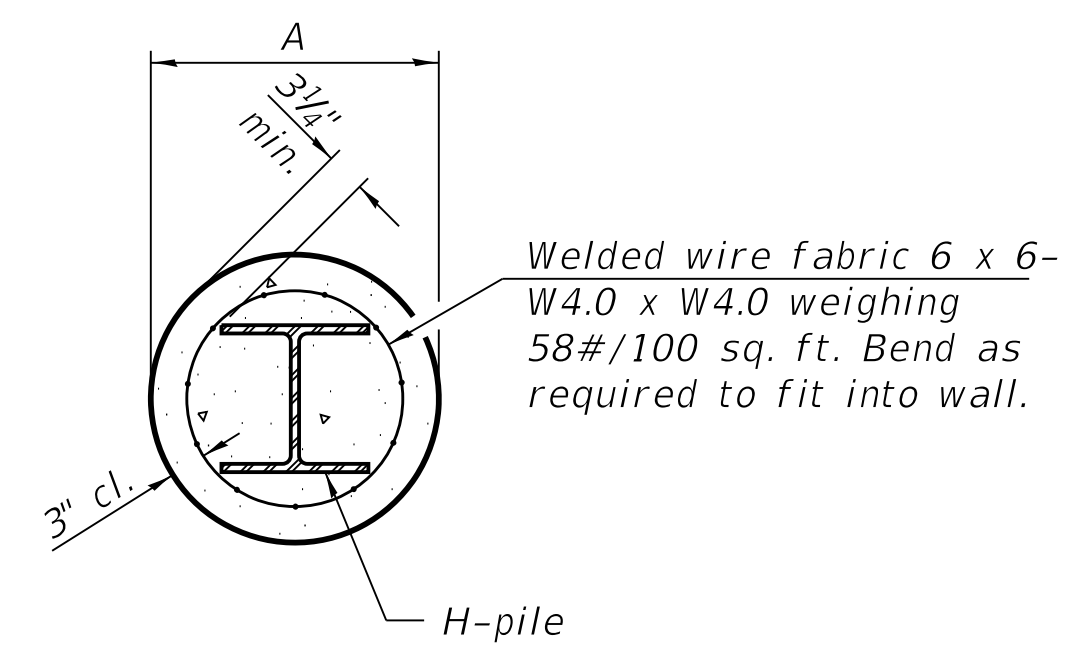


ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE

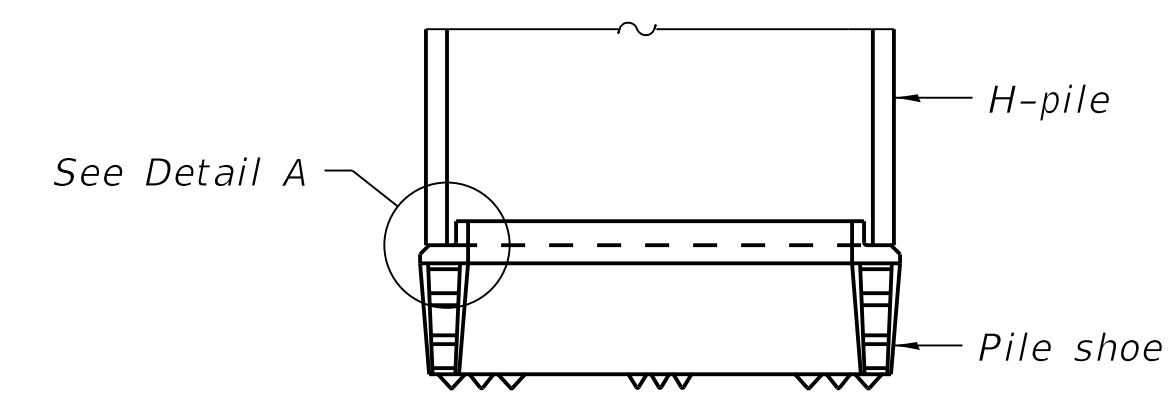


ELEVATION

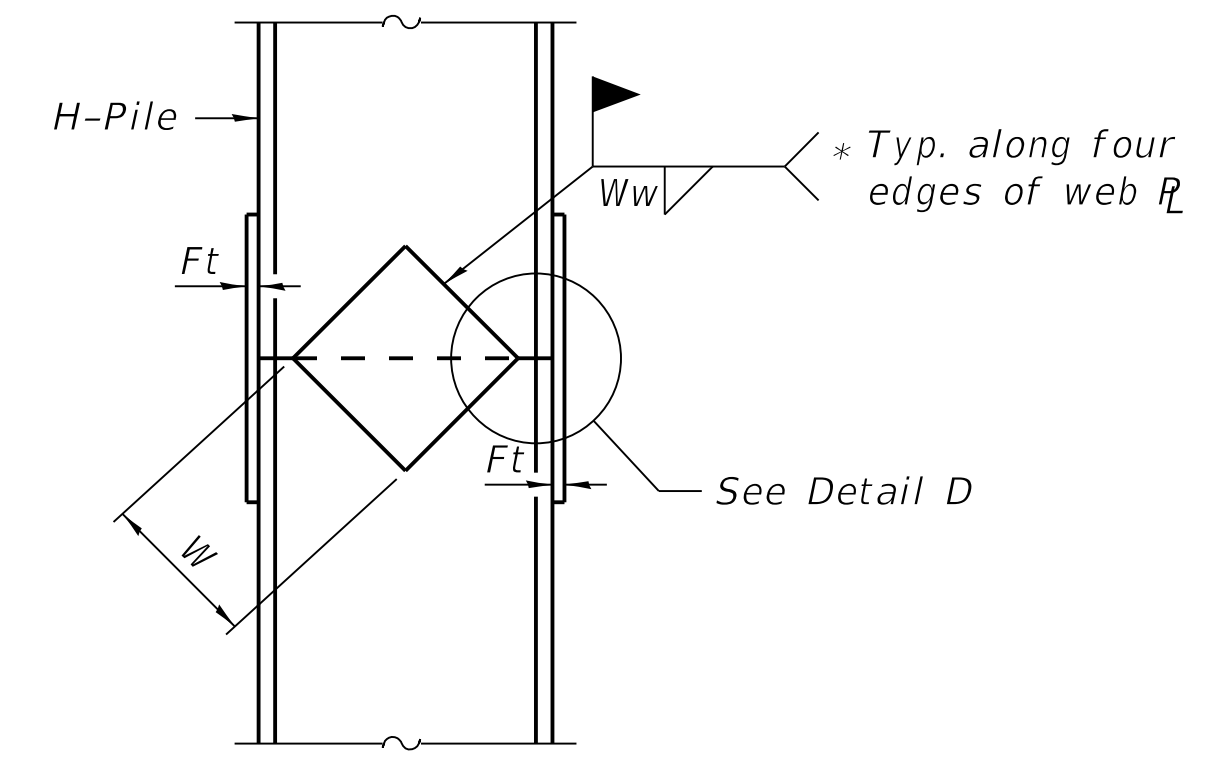


SECTION A-A

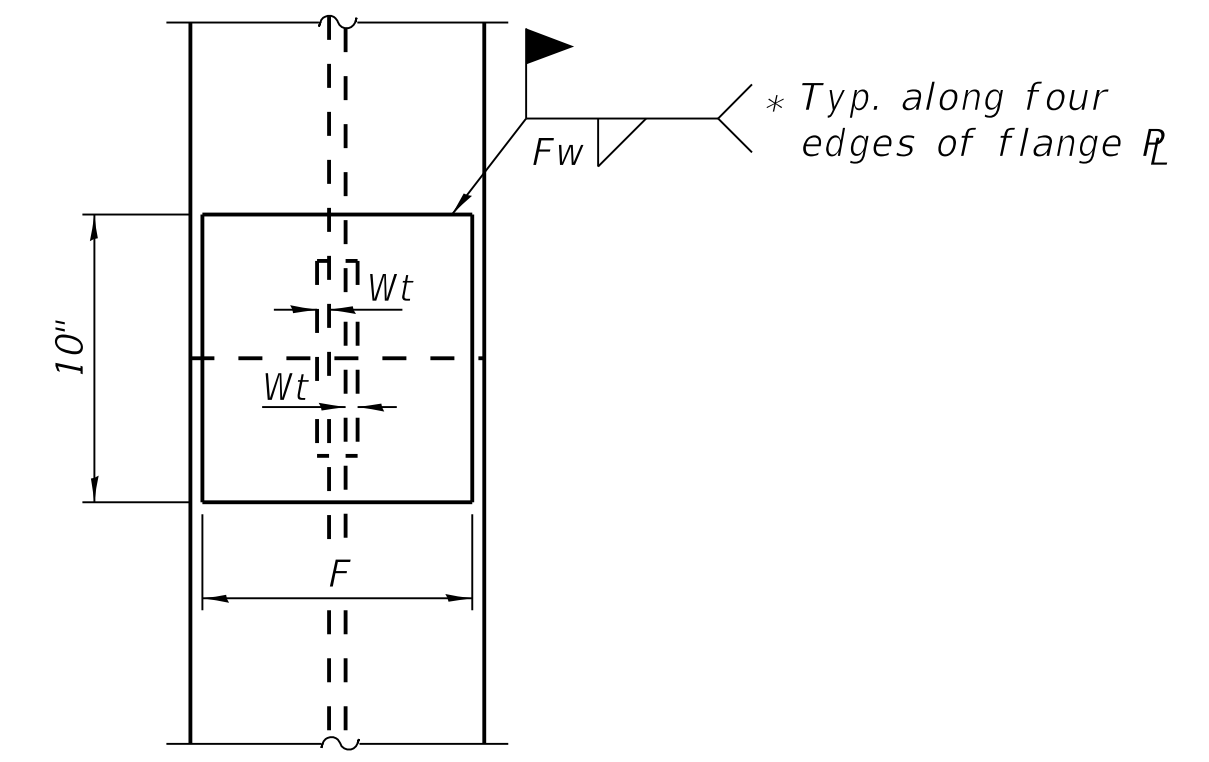
INDIVIDUAL PILE CONCRETE ENCASUREMENT
(Forms for encasement may be omitted when soil conditions permit).



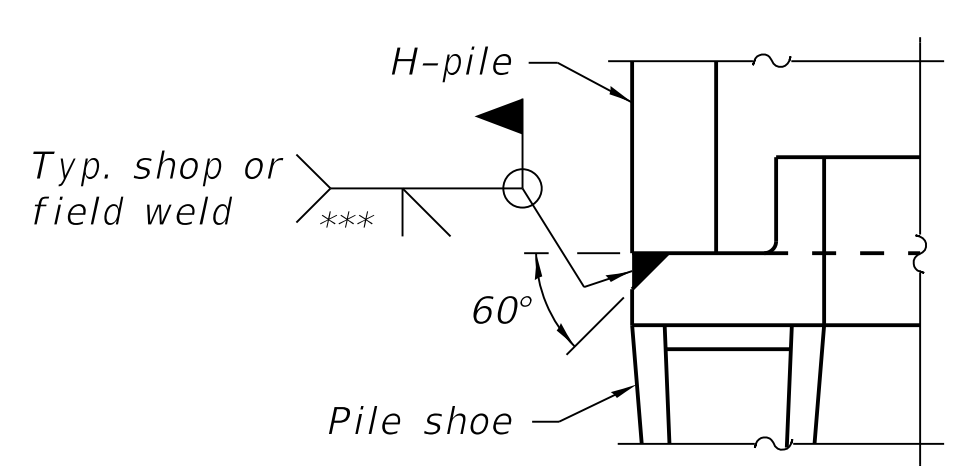
ELEVATION



ELEVATION

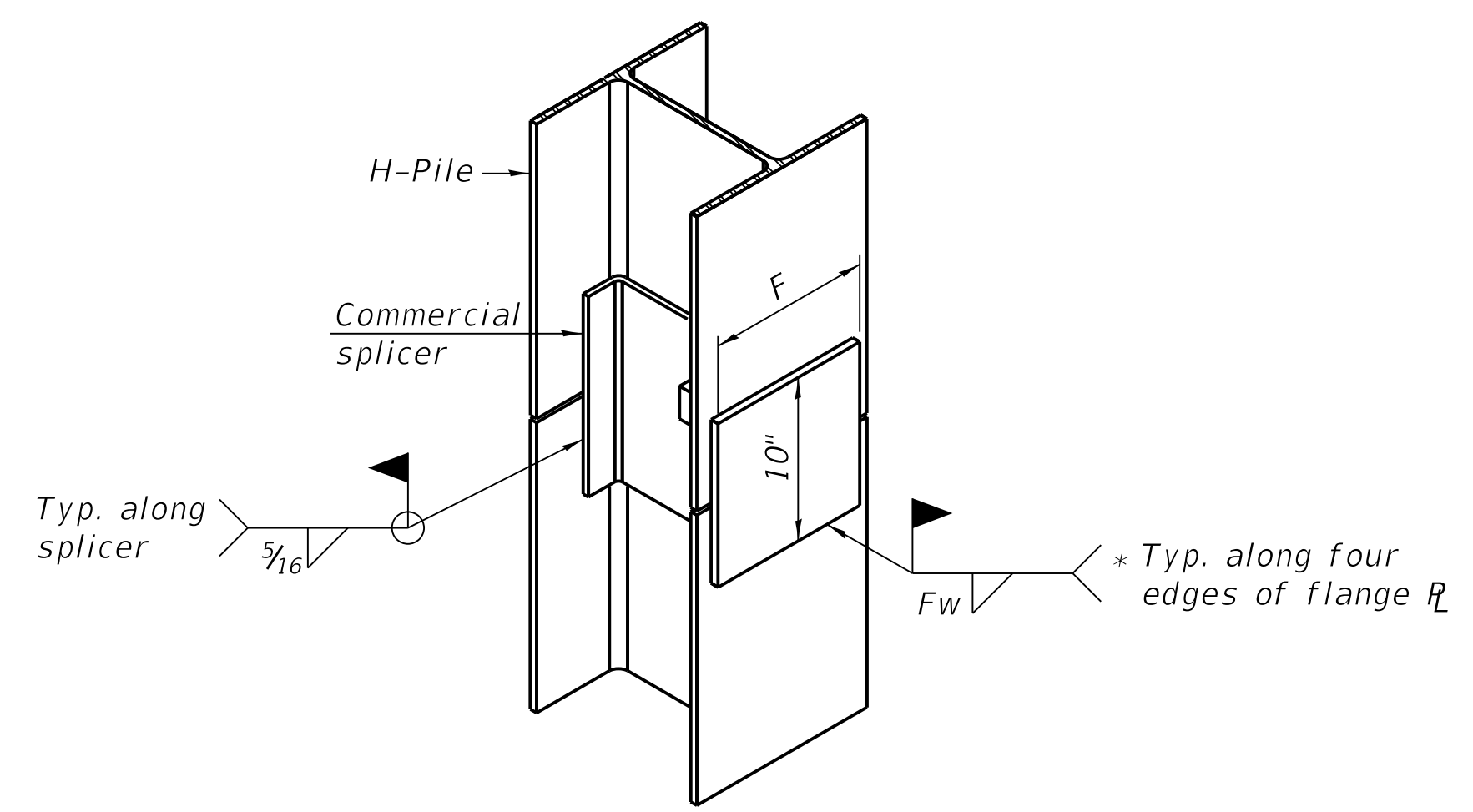


END VIEW



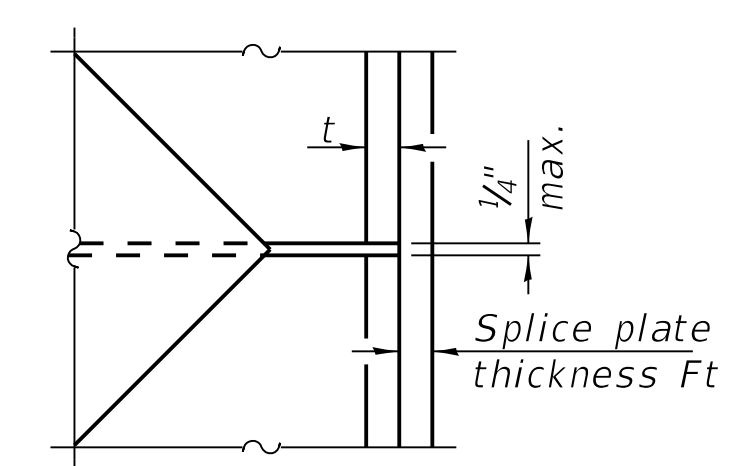
DETAIL A

SHOE ATTACHMENT



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE



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 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"

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

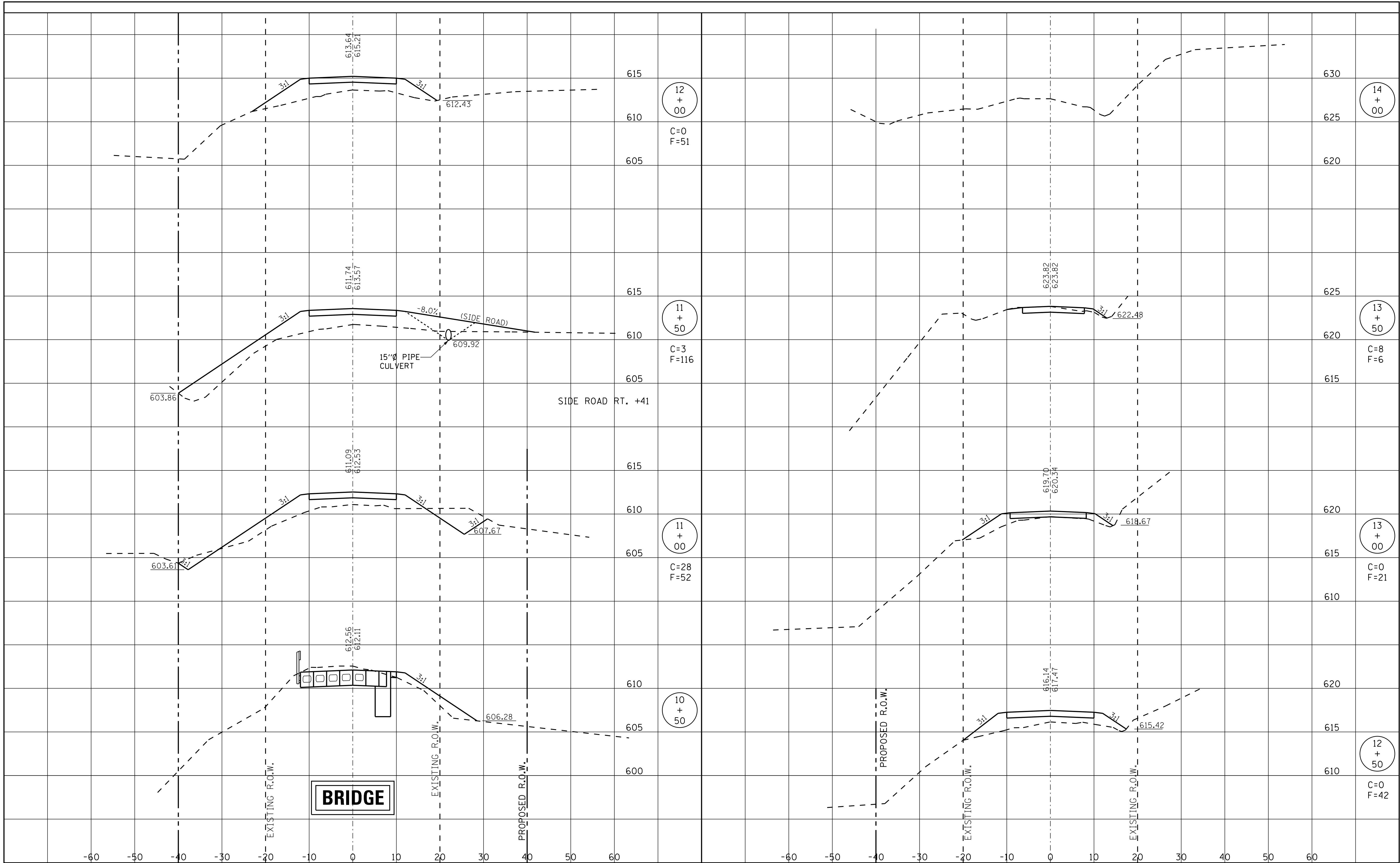
* Interrupt welds 1/4" from end of web and/or each flange.

** Remove portions of backup plates that extend outside the flanges.

*** Weld size per pile shoe manufacturer (5/16" min.).

DATE	
BY	
NO.	
ORIGINAL SURVEY	
PLOTTED	
TEMPLATE	
NOTE BOOK	
AREAS CHECKED	

DATE	
BY	
NO.	
ORIGINAL SURVEY	
PLOTTED	
TEMPLATE	
NOTE BOOK	
AREAS CHECKED	



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

DESIGNED	- BLT	REVISED	-
DRAWN	- JN	REVISED	-
CHECKED	- GLH	REVISED	-
DATE	- 05/13/2019	REVISED	-

DESIGNED	-	REVISED	-
DRAWN	-	REVISED	-
CHECKED	-	REVISED	-
DATE	-	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CROSS SECTIONS OF ROADWAY
 STA. 10+50 TO STA. 14+00

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 271A	17-01126-00-BR 17-02120-00-BR	SHELBY	14	14
CONTRACT NO. 95858				

RAAI JOB NO. 54017