

CONTRACT NO. 95834

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
STP OFF-SYSTEM BRIDGE FUNDING

TR 312 (COUNTY ROAD 2450E)
OVER UNNAMED STREAM
SECTION 17-16124-00-BR
PROJECT NO. K195(008)
RICHLAND TOWNSHIP
SHELBY COUNTY
JOB NO. C-97-063-18

INDEX OF SHEETS

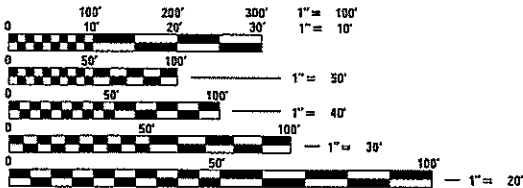
1. COVER SHEET
2. SUMMARY OF QUANTITIES, TYPICAL SECTIONS, AND GENERAL NOTES
3. PLAN AND PROFILE OF ROADWAY
4. GENERAL PLAN AND ELEVATION
- 5.-6. PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
7. STEEL RAILING, TYPE S1 DETAILS
8. ABUTMENT DETAILS
9. HP PILE DETAILS
- 10.-11. CROSS SECTIONS OF ROADWAY

HIGHWAY STANDARDS (SEE PROPOSAL BOOKLET)
000001-06 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
280001-07 TEMPORARY EROSION CONTROL SYSTEMS
515001-03 NAME PLATE FOR BRIDGES
542401-03 METAL FLARED END SECTION FOR PIPE CULVERTS
701901-07 TRAFFIC CONTROL DEVICES
725001-01 OBJECT AND TERMINAL MARKERS
BLR 21-9 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

SOIL BORINGS (SEE PROPOSAL BOOKLET)

DESIGN CLASSIFICATION: RURAL LOCAL ROAD
ADT₂₀₁₅ = 75

DESIGN SPEED: 30 MPH



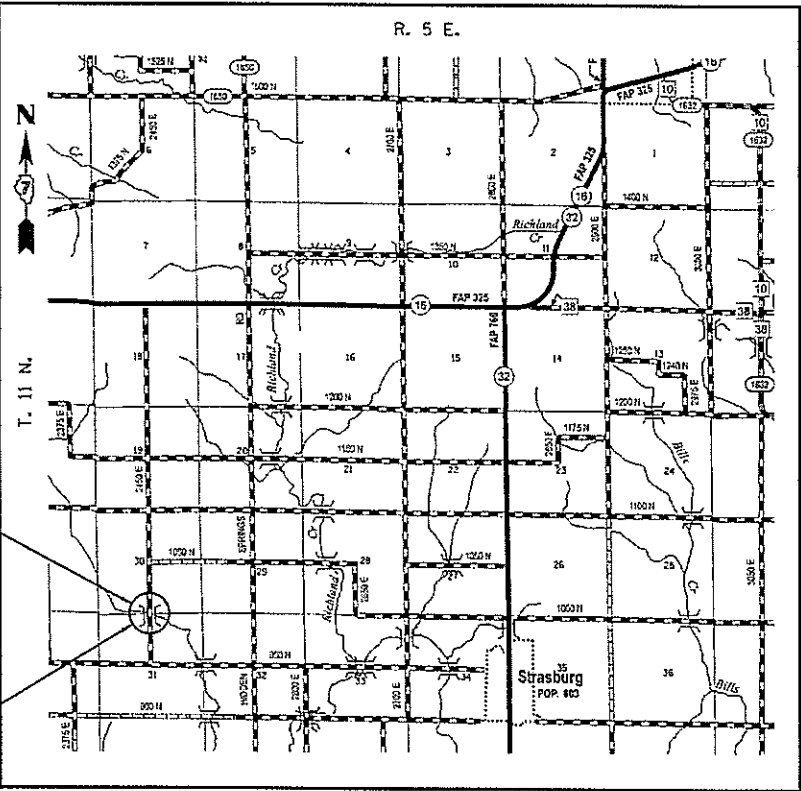
FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD
ENGINEERING SCALES, REDUCED SIZE PLANS WILL NOT
CONFORM TO STANDARD SCALES, IN MAKING MEASUREMENTS
ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

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

SECTION 17-16124-00-BR INCLUDES
THE CONSTRUCTION OF A SINGLE SPAN
PRECAST PRESTRESSED CONCRETE
DECK BEAM BRIDGE CARRYING TR 312
OVER UNNAMED STREAM, 10° AHEAD
LEFT SKEW, 60'-4 1/4" BK. TO BK.
ABUTMENTS X 24' WIDE
EXISTING STRUCTURE NO. 087-3280
PROPOSED STRUCTURE NO. 087-3589

SECTION ENDS
STA. 52+50.00

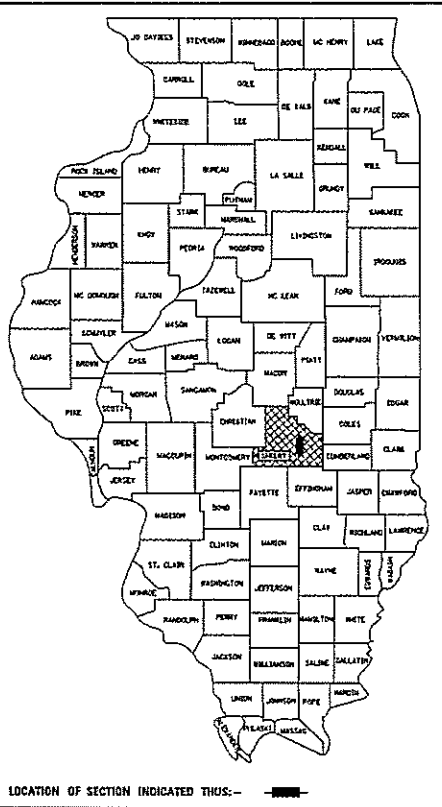
SECTION BEGINS
STA. 47+45.00



LOCATION: NEAR THE NW CORNER OF THE NE 1/4, SECTION 31, T11N, R5E, 3RD P.M.
NET LENGTH OF PROJECT: 505.00 FT. = 0.096 MI.
NOT TO SCALE

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 312	17-16124-00-BR	SHELBY	11	1
CONTRACT NO. 95834				

RAL JOB NO. 53816



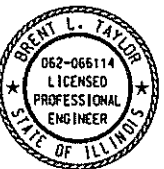
APPROVED 28 FEB 2018
RICHLAND TOWNSHIP ROAD COMMISSIONER

APPROVED 03/09/2018
SHELBY COUNTY, COUNTY ENGINEER

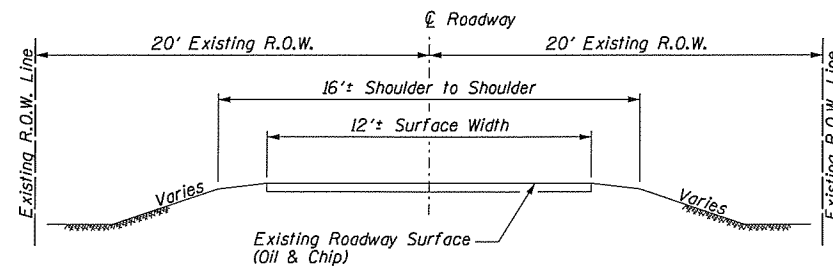
PASSED APRIL 10 2018
DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID
BASED ON LIMITED REVIEW
APRIL 10 2018
REGION FOUR ENGINEER

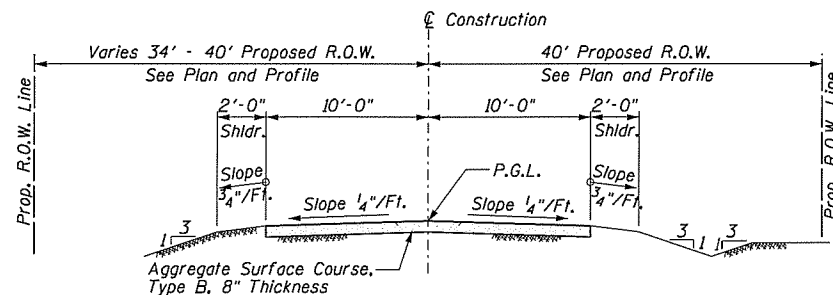
PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS



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

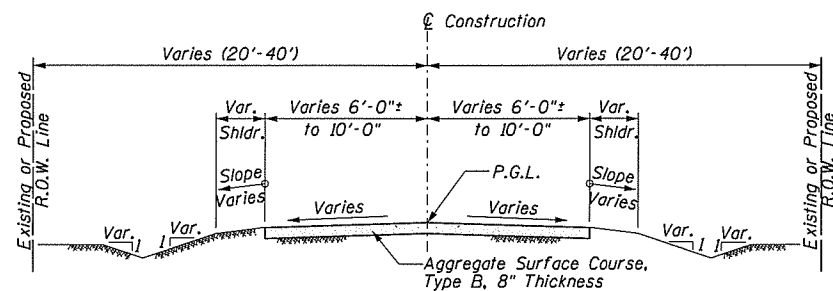


**TYPICAL SECTION
EXISTING APPROACH ROADWAY**



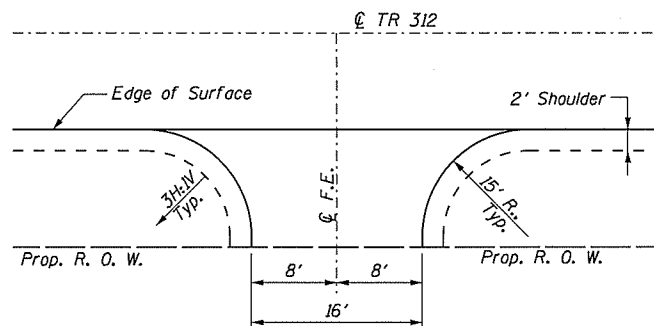
**TYPICAL SECTION
PROPOSED APPROACH ROADWAY**

(Looking North)
Sta. 48+65.00 to Sta. 49+68.44
Sta. 50+28.80 to Sta. 51+30.00



**TYPICAL TRANSITION SECTION
PROPOSED APPROACH ROADWAY**

Sta. 47+45.00 to Sta. 48+65.00
Sta. 51+30.00 to Sta. 52+50.00



TYPICAL FIELD ENTRANCE

Aggregate Surface Course, Type B 6" Depth
Rt., Sta. 50+55 - 23 Ton
(Included in Summary of Quantities)
Note: F.E. Lt., Sta. 47+50 and Rt., Sta. 47+57
to remain (No reconstruction required)

UTILITIES

J.U.L.I.E. Dig No. X2842049-00X

TELEPHONE
Consolidated Communications
121 South 17th Street
Mattoon, IL 61938
Mr. Jason Rhodes
Phone: 217-273-8320

WATER
EJ Water Cooperative, Inc.
Milano & Grunloh Engineers, LLC
114 West Washington Avenue
P.O. Box 897
Effingham, IL 62401
Mr. Lee Beckman, P.E., P.L.S.
Phone: 217-347-7262

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

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 Dumped Riprap 130 Pounds/Cu Ft
Aggregate Surface Course 2.1 Ton/Cu Yd
Fertilizer Nutrients, Each 90 Pounds/Acre
Temporary Erosion Control Seeding (2 Apps.) 100 Pounds/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 as part of the effort to conserve the Indiana and Northern Long-Eared bat. See Special Provisions.

Existing fence removal and replacement within the limits of construction will be done by others and will be coordinated by Richland Township. The removal will be completed prior to the start of construction.

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	0.2
20200100	Earth Excavation	Cu Yd	134
20300100	Channel Excavation	Cu Yd	270
20400800	Furnished Excavation	Cu Yd	1181
25000200	Seeding, Class 2	Acre	0.4
25000400	Nitrogen Fertilizer Nutrient	Pound	36
25000500	Phosphorus Fertilizer Nutrient	Pound	36
25000600	Potassium Fertilizer Nutrient	Pound	36
25100115	Mulch, Method 2	Acre	0.4
28000250	Temporary Erosion Control Seeding	Pound	80
28000305	Temporary Ditch Checks	Foot	30
28000400	Perimeter Erosion Barrier	Foot	40
28000500	Inlet and Pipe Protection	Each	2
28100807	Stone Dumped Riprap, Class A4	Ton	225
28200200	Filter Fabric	Sq Yd	305
40200800	Aggregate Surface Course, Type B	Ton	435
50100100	Removal of Existing Structures	Each	1
50200100	Structure Excavation	Cu Yd	74
50300225	Concrete Structures	Cu Yd	23.6
50300280	Concrete Encasement	Cu Yd	2.8
50400505	Precast Prestressed Concrete Deck Beams (27" Depth)	Sq Ft	1416
50800205	Reinforcement Bars, Epoxy Coated	Pound	3960
* 50900205	Steel Railing, Type S1	Foot	121
51201600	Furnishing Steel Piles HPI2x53	Foot	156
51202305	Driving Piles	Foot	156
51203600	Test Pile Steel HPI2x53	Each	2
51204650	Pile Shoes	Each	8
51500100	Name Plates	Each	1
54262860	Metal Flared End Sections, Equivalent Round-Size 60"	Each	2
542D0229	Pipe Culverts, Class D, Type 1 24"	Foot	48
542D5515	Pipe Culverts, Class D, Type 1 Equivalent Round-Size 60"	Foot	155
67100100	Mobilization	L Sum	1
* 72501000	Terminal Marker - Direct Applied	Each	4

* Specialty Item



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 -	02/26/2018	REVISED -	

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

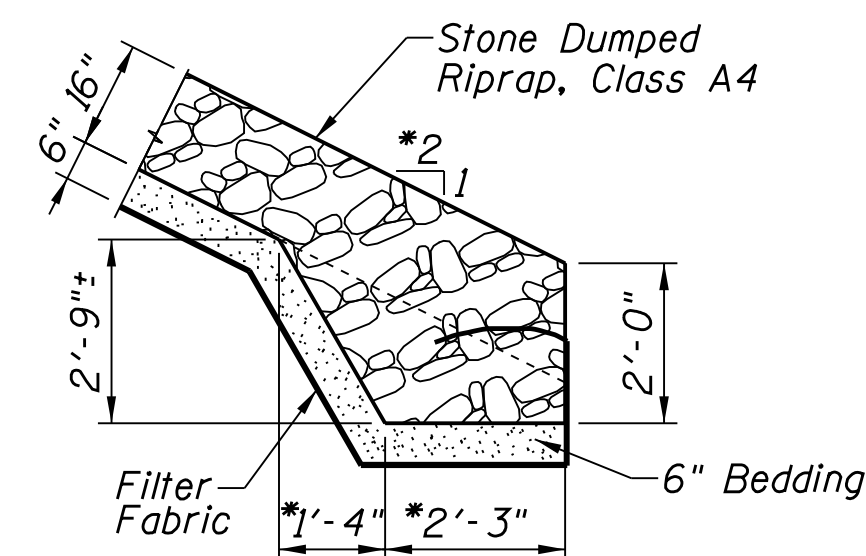
SUMMARY OF QUANTITIES, TYPICAL SECTIONS, AND GENERAL NOTES

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 312	17-16124-00-BR	SHELBY	11	2
CONTRACT NO. 95834				

RAAI JOB NO. 53916

AI JOB NO. 53916

TBM 2 - RR spike in 30"φ tree,
22.78' Rt. of Sta. 51+64.56 - Elev. 620.64

WATERWAY DATA

Drainage Area = 3.36 Sq. Mi.			Existing Low Grade Elev. 619.25 @ Sta. 48+50 Proposed Low Grade Elev. 620.57 @ Sta. 47+57					
Flood	Freq.	Q	Opening	Sq. Ft.	Natural	Head	Ft.	Headwater E.
	Yr.	C.F.S.	Exist.	Prop.	H.W.E.	Exist.	Prop.	Exist.
Design	15	1060	202	295	619.56	0.07	0.16	619.63
Base	100	1780	202	350	621.11	0.83	0.12	621.94
Max. Calc.	500	2460	202	350	621.68	0.96	0.67	622.64

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

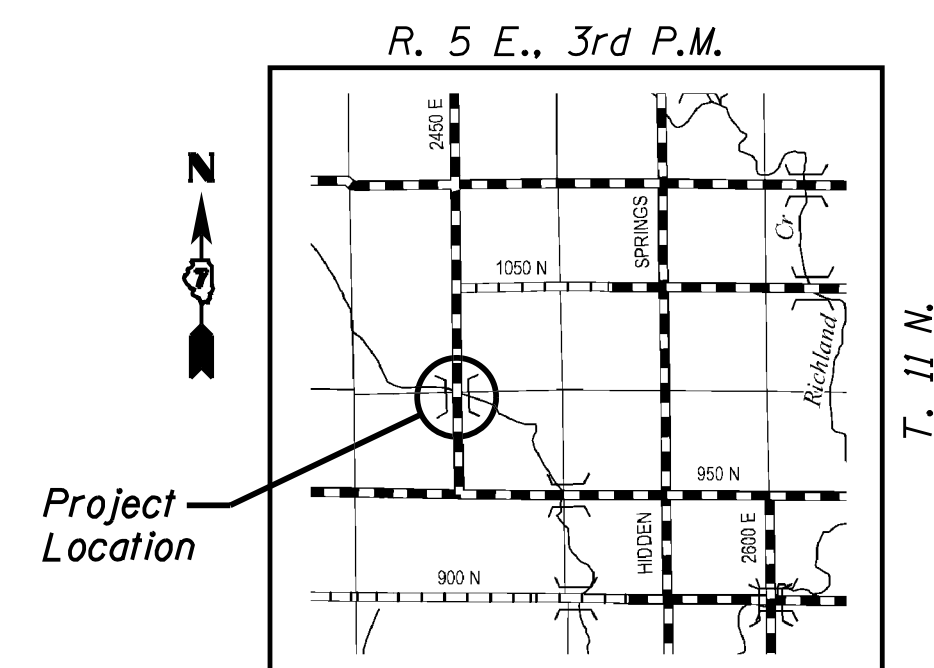
Seismic Performance Zone (SPZ) = 1
Soil Site Classification = C
 $S_{D1} = 0.133$ $S_{D5} = 0.300$

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

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

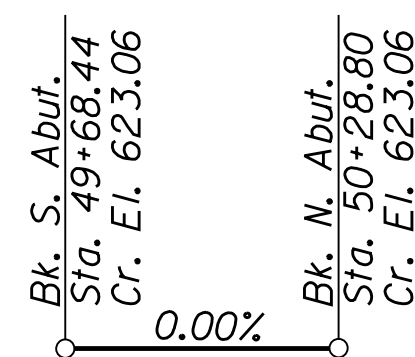
FIELD UNITS

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



UNNAMED STREAM
BUILT 201_ BY
SHELBY COUNTY
SEC. 17-16124-00-BR
T.R. 312 STA. 49+98.62
LOADING HL-93
STR NO. 087-3589

(See State Standard 515001 for details)



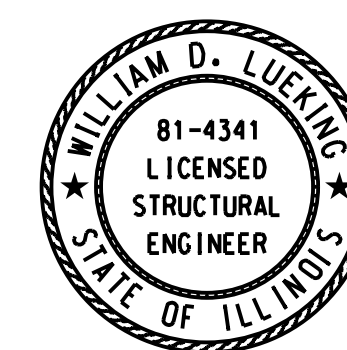
Along $\mathbb{C}$ Roadway

	ITEM	UNIT	TOTAL
	Channel Excavation	Cu Yd	270
**	Stone Dumped Riprap, Class A4	Ton	185
**	Filter Fabric	Sq Yd	261
	Removal of Existing Structures	Each	1
	Structure Excavation	Cu Yd	74
	Concrete Structures	Cu Yd	23.6
	Concrete Encasement	Cu Yd	2.8
	PPCDB (27" Depth)	Sq Ft	1416
	Reinforcement Bars, Epoxy Coated	Pound	3960
	Steel Railing, Type S1	Foot	121
	Furnishing Steel Piles HP12x53	Foot	156
	Driving Piles	Foot	156
	Test Pile Steel HP12x53	Each	2
	Pile Shoes	Each	8
	Name Plates	Each	1
	Terminal Marker - Direct Applied	Each	4

GENERAL NOTES

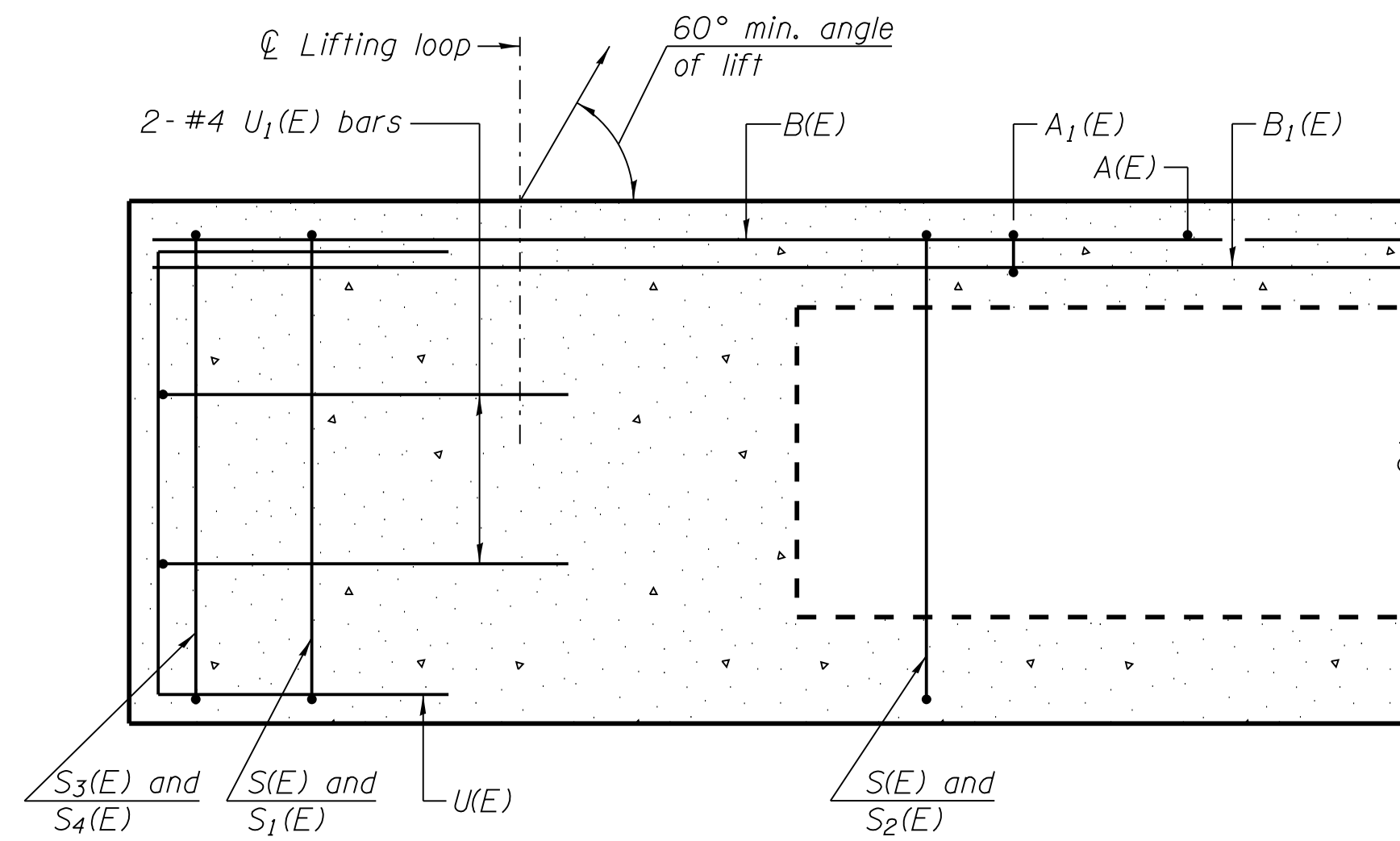
The bearing seat surfaces for the precast prestressed concrete deck beams shall be adjusted by shimming to assure firm and even bearing. As required, ½" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing. The top surface of the beams shall be finished according to the IDOT Manual for Fabrication of Precast Prestressed Concrete Products.

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AASHTO Standard Specifications for Highway Bridges.

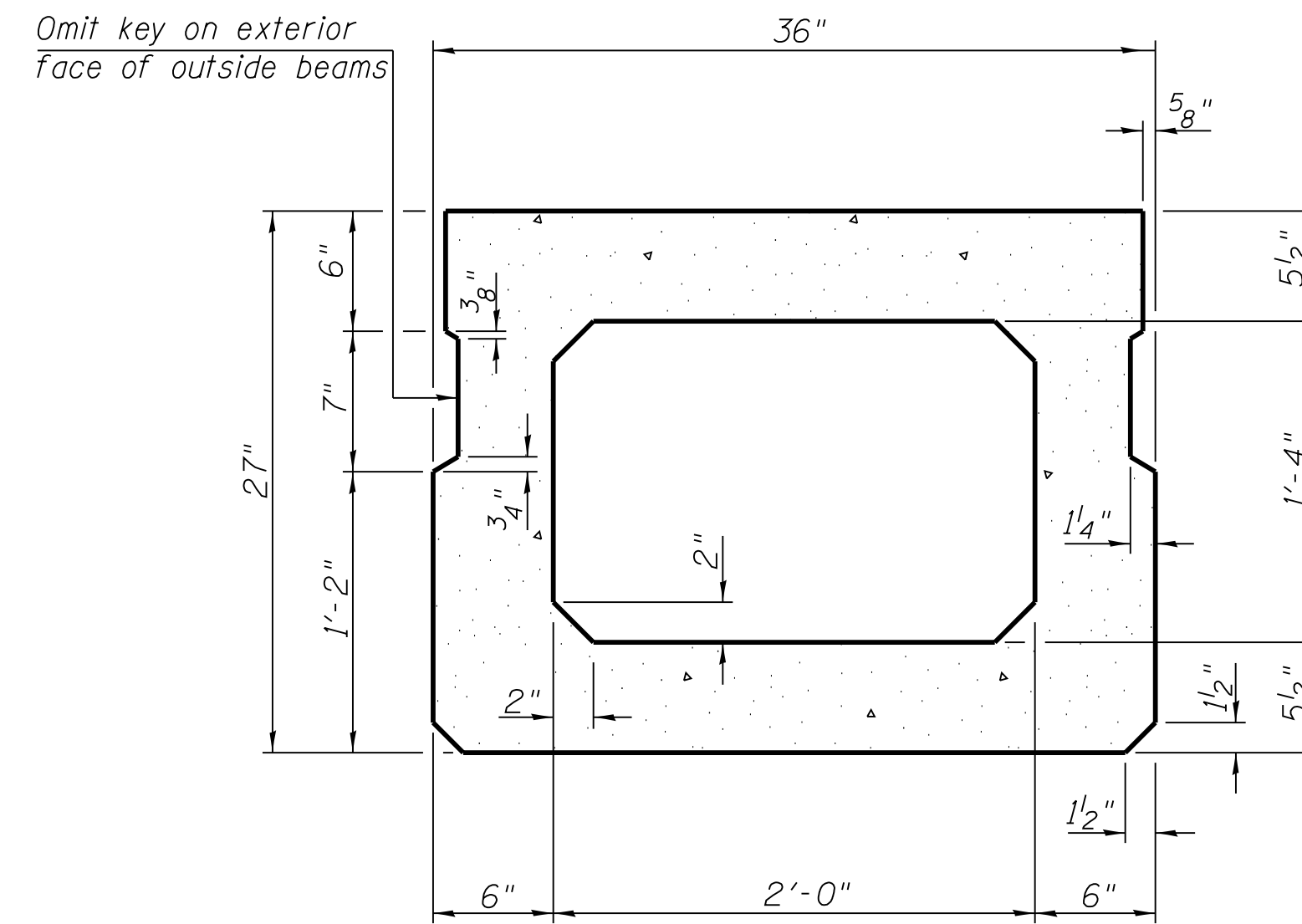


William D Lucking 02/27/2018

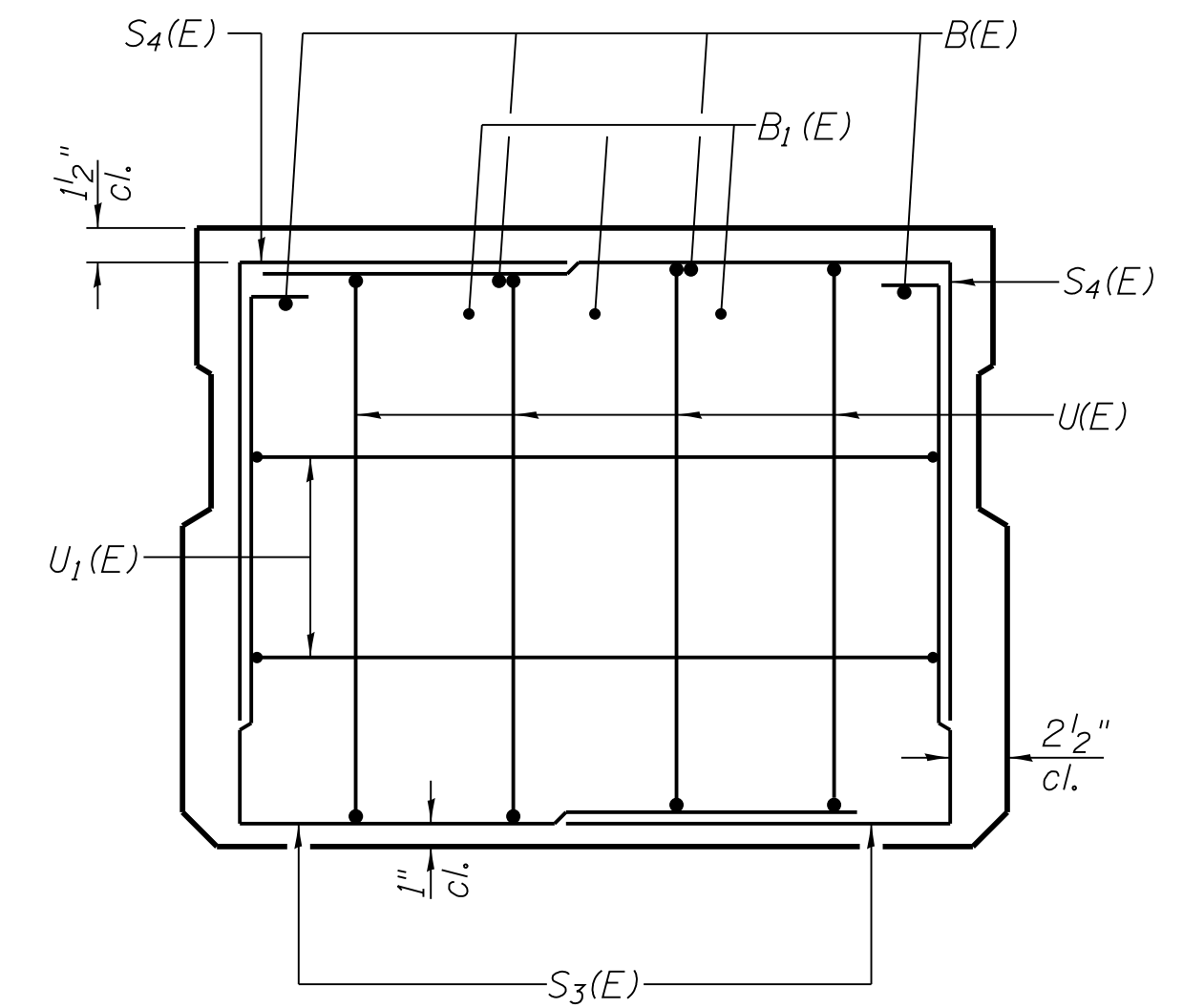
William D. Lueking
Salem, Illinois
Illinois Licensed Structural
Engineer No. 081-4341
Expires Nov. 30, 2018



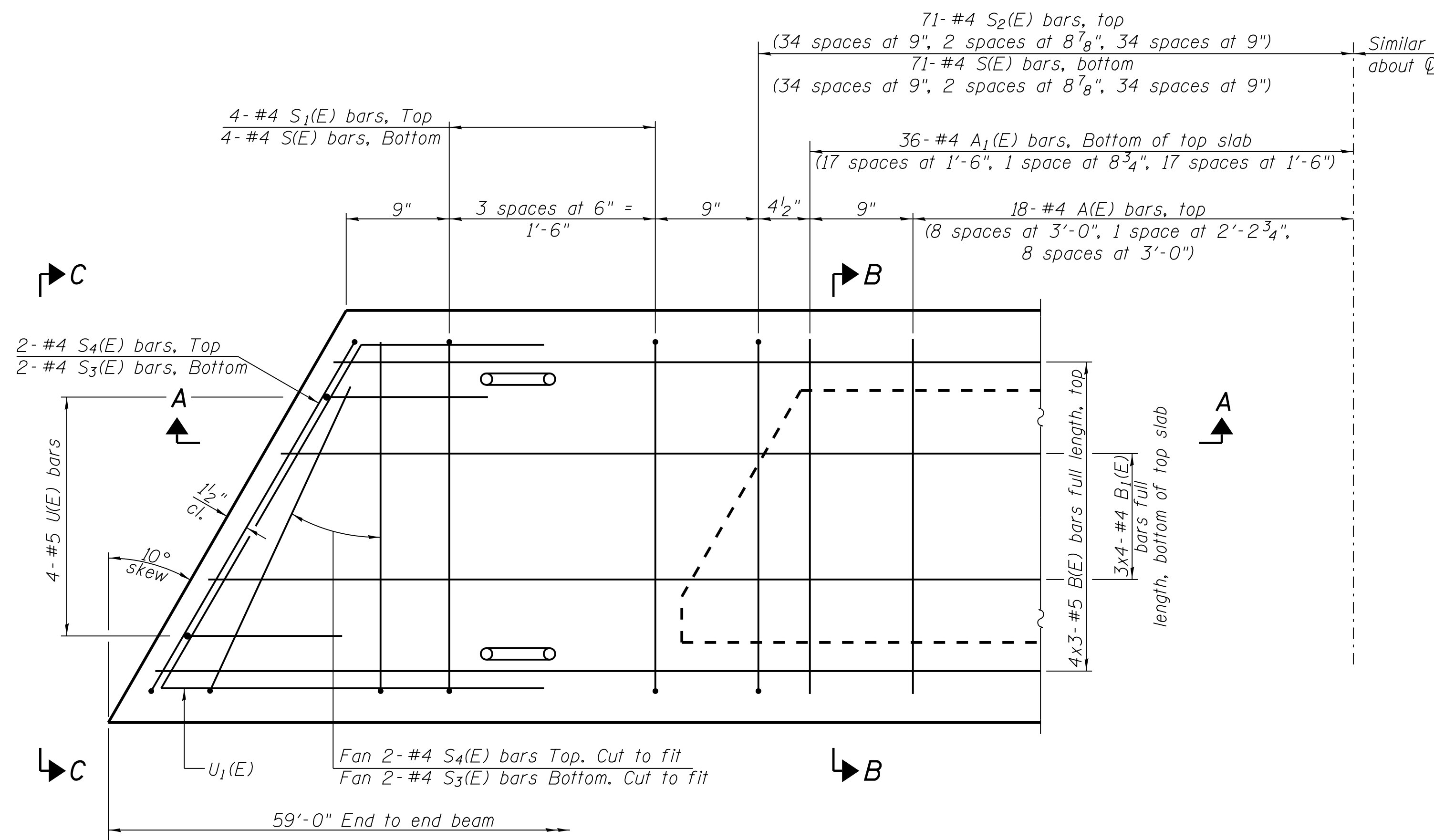
SECTION A-A



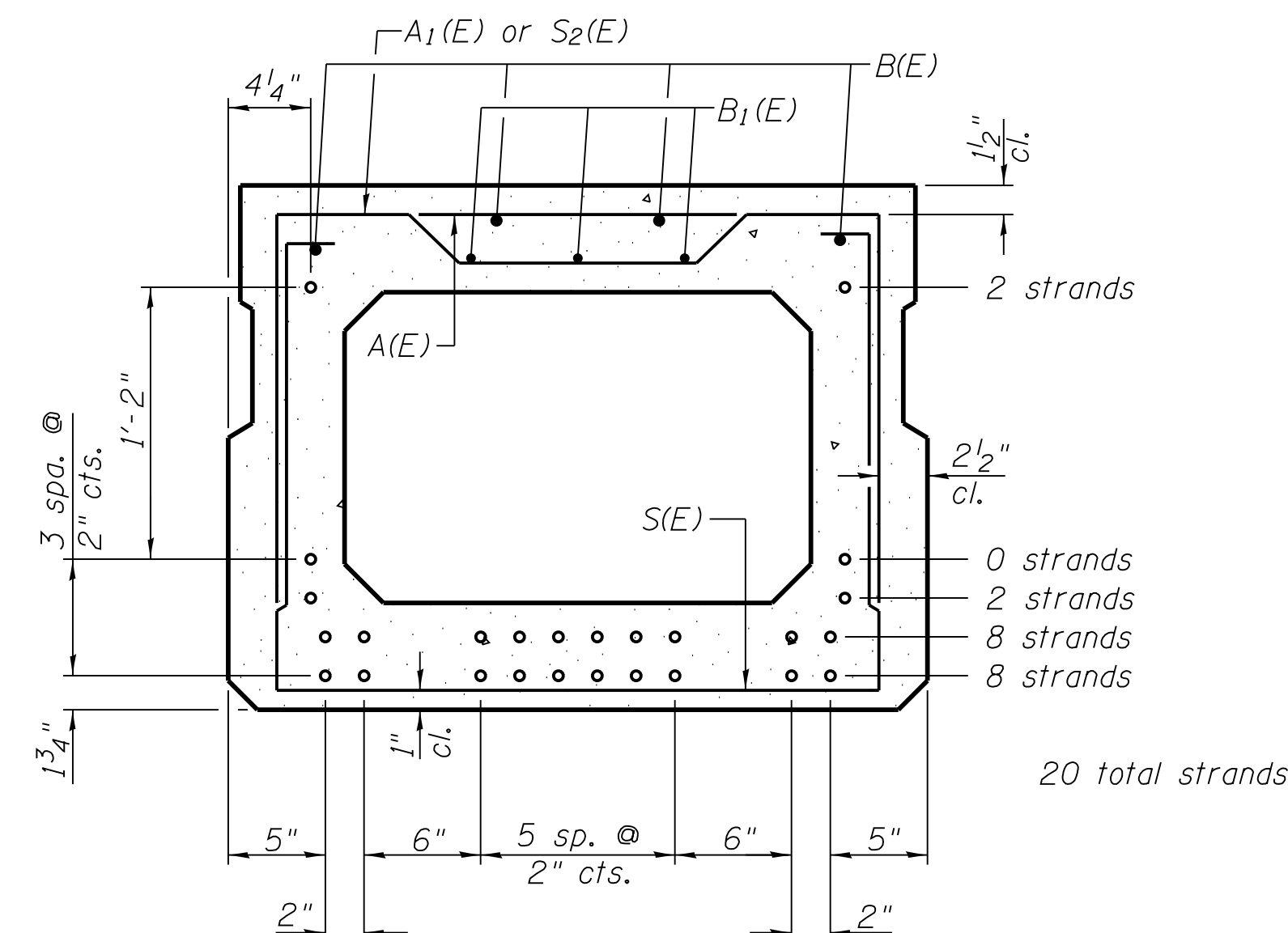
SECTION B-B
(Showing dimensions)



VIEW C-C



PLAN VIEW



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.

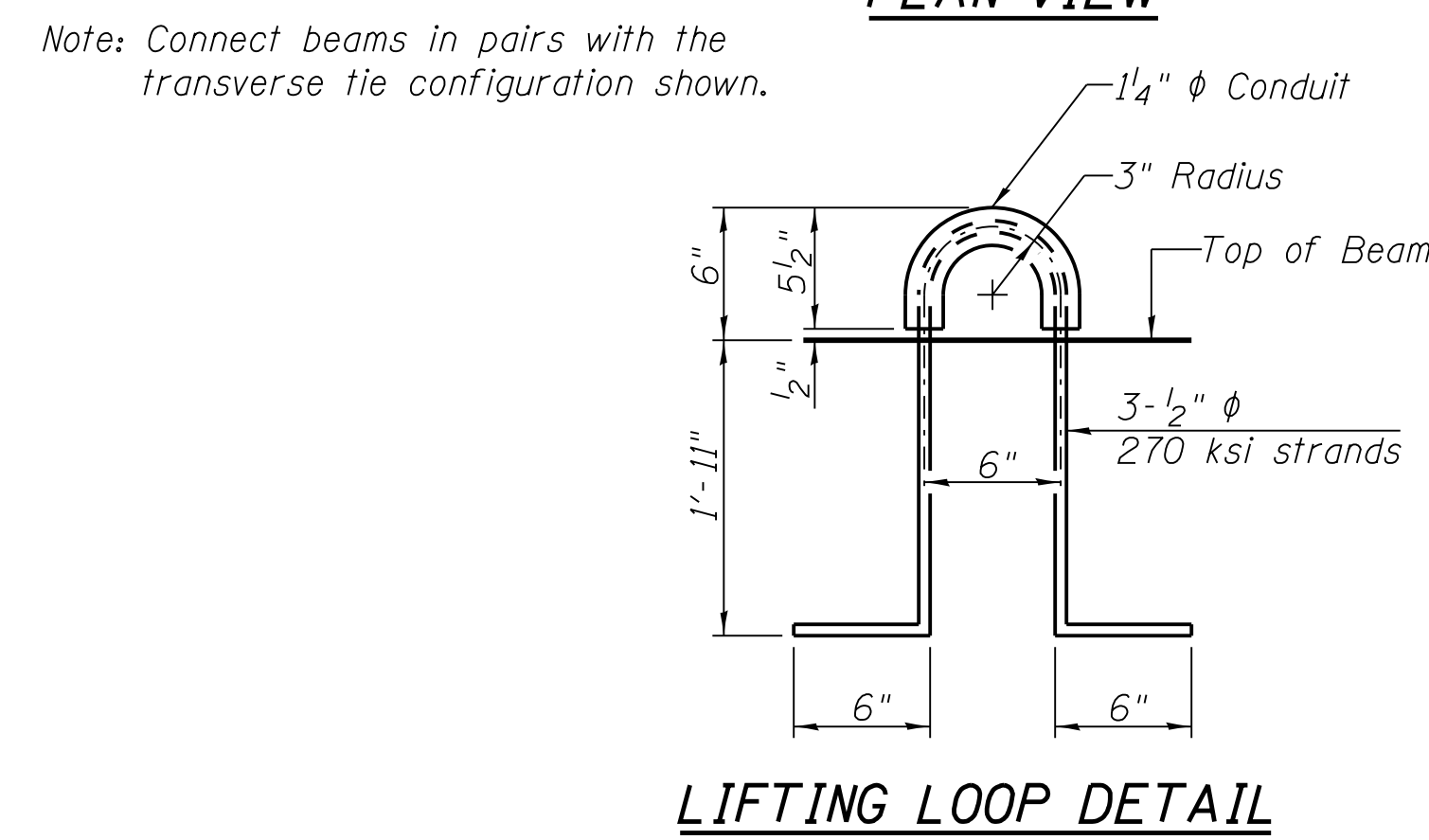
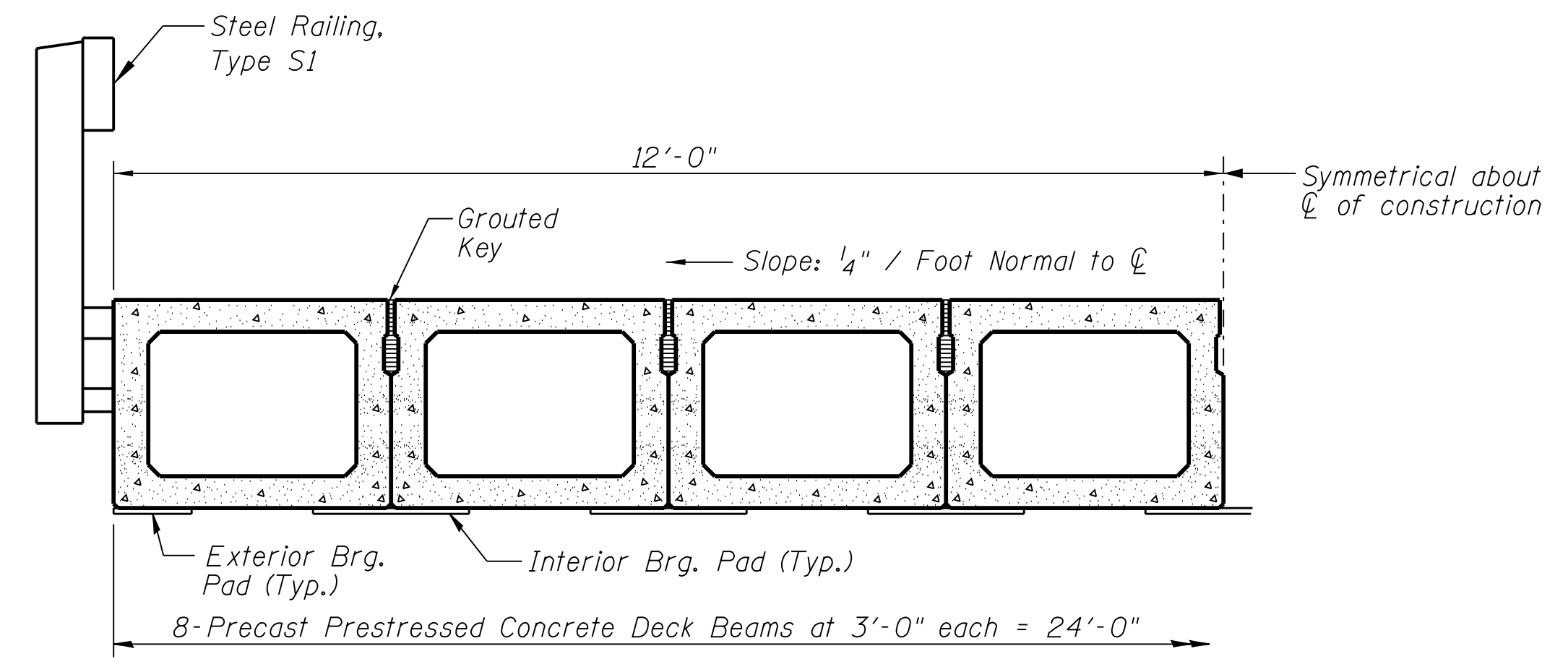
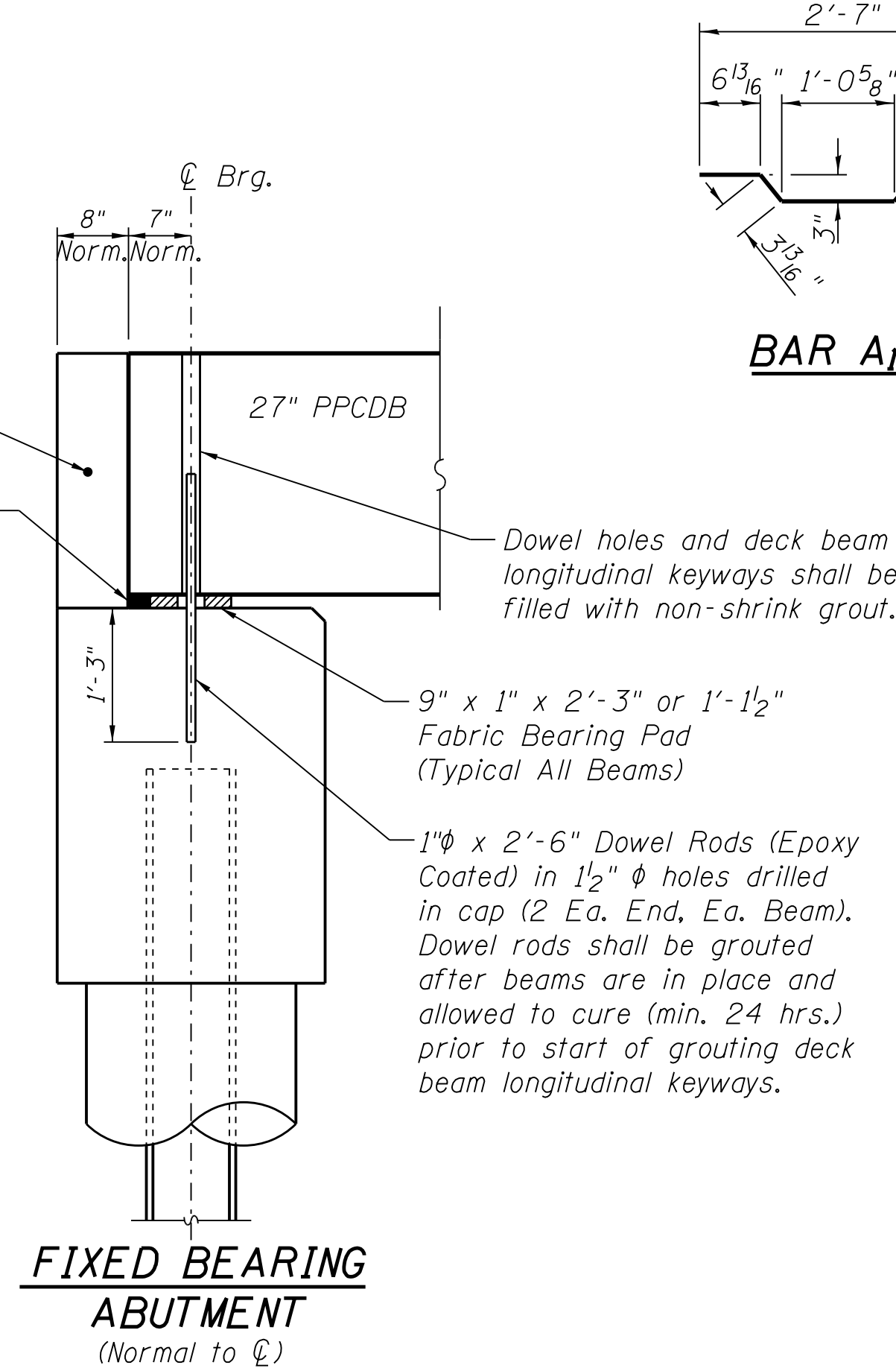
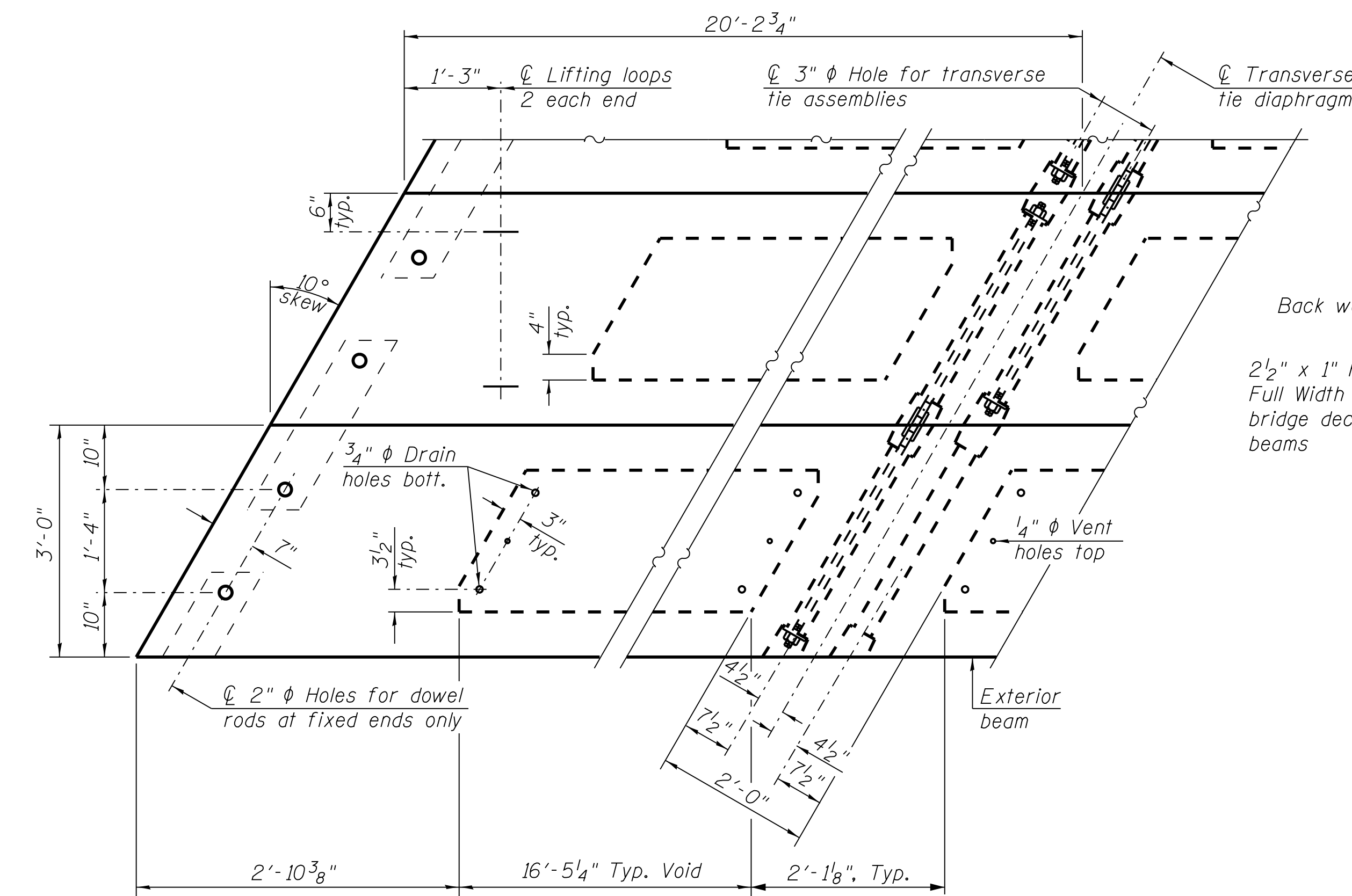
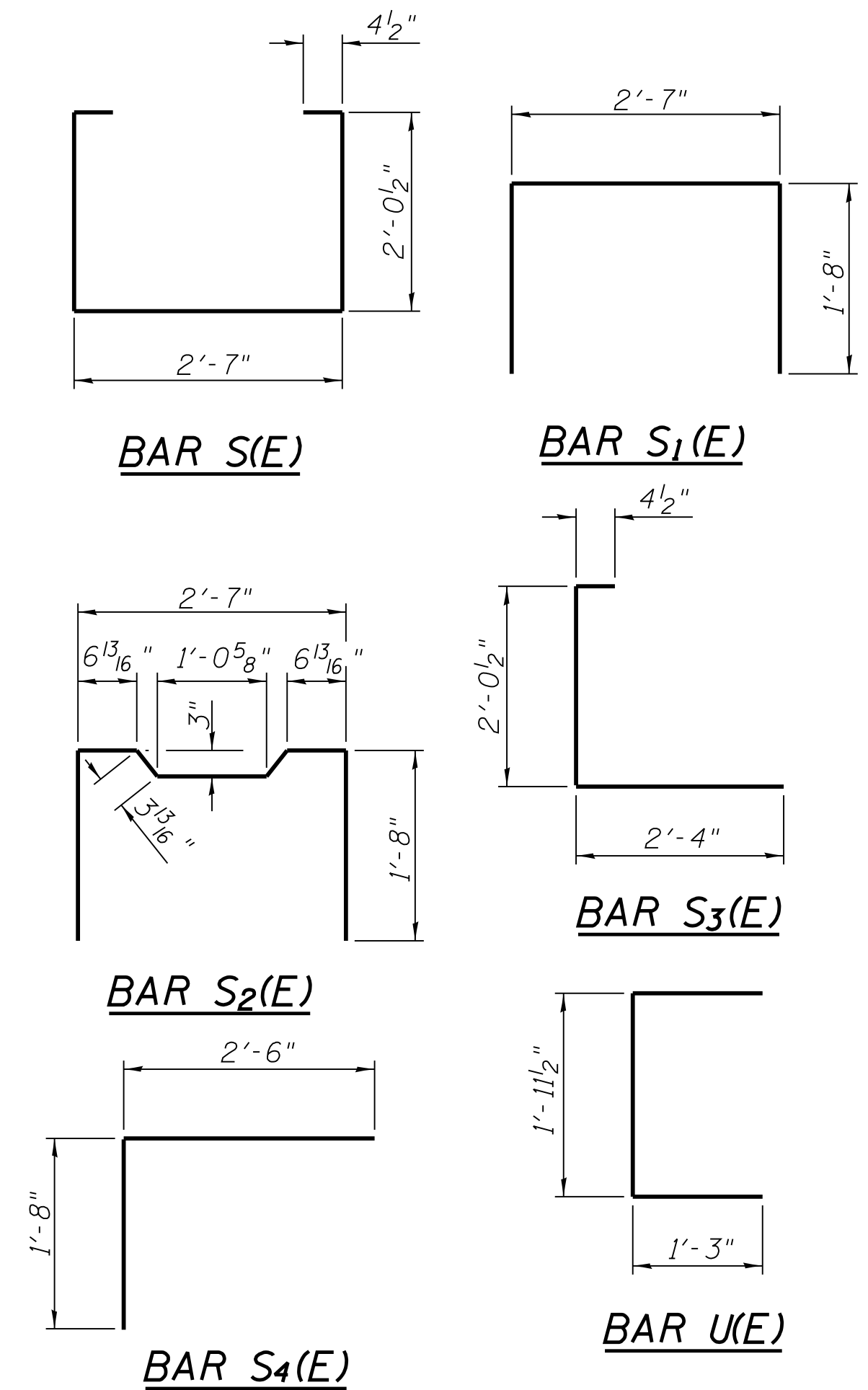
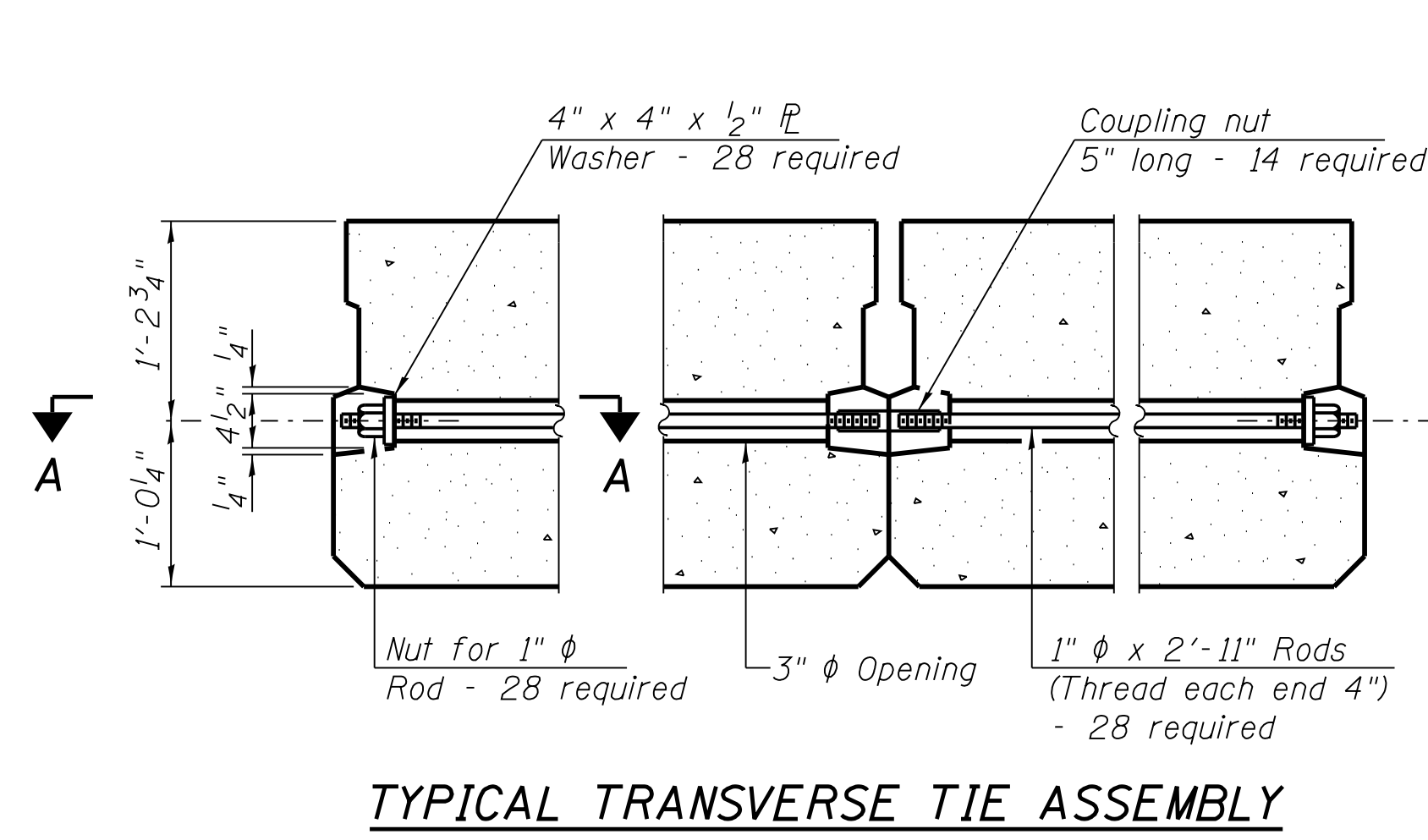
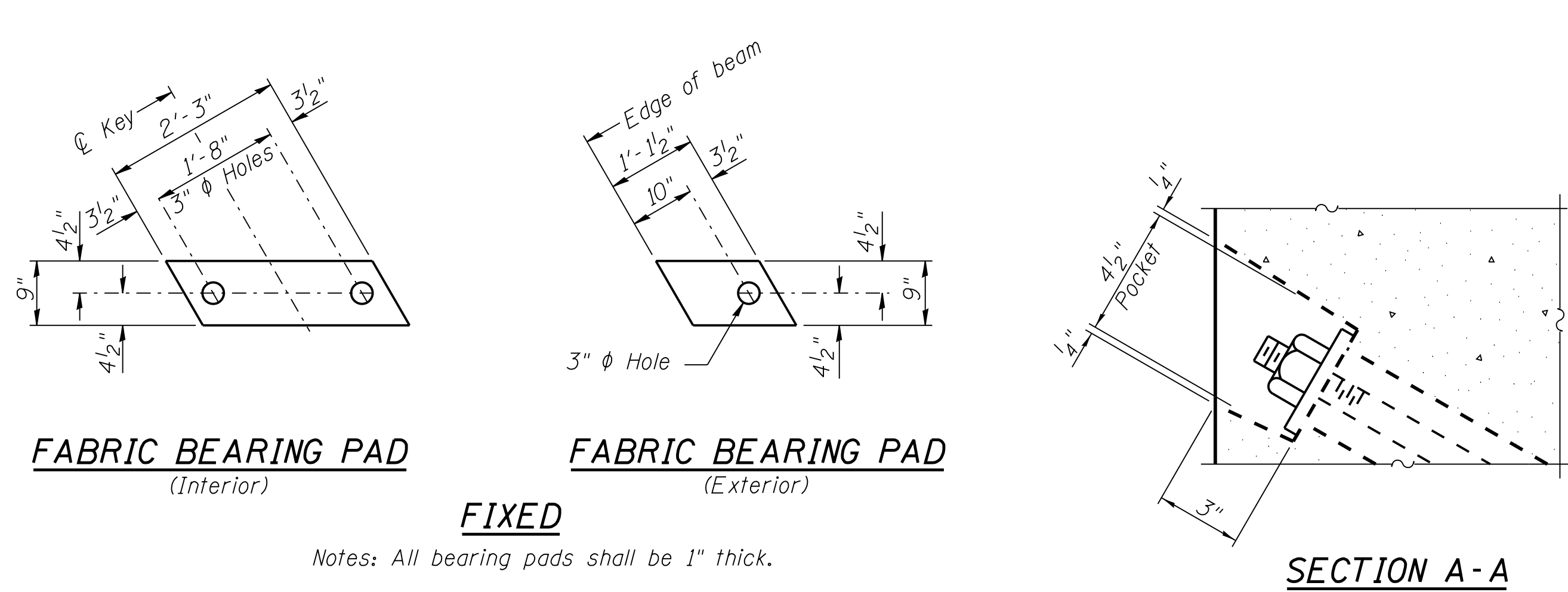
BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	18	#4	2'-7"	—
A1(E)	36	#4	2'-10"	—
B(E)	12	#5	2'-3"	—
B1(E)	12	#4	16'-2"	—
S(E)	79	#4	7'-5"	⌈
S1(E)	8	#4	5'-11"	⌈
S2(E)	71	#4	6'-2"	⌈
S3(E)	8	#4	4'-9"	⌈
S4(E)	8	#4	4'-2"	⌈
U(E)	8	#5	4'-6"	⌈
U1(E)	4	#4	5'-6"	⌈

Note: See sheet 6 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.

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



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. Reinforcement bars shall conform to the requirements of ASTM A 706 Grade 60 (IL Modified). The 1" φ 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.

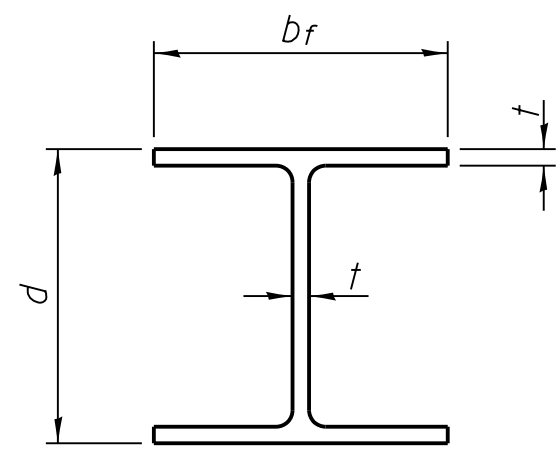
Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2 1/2" φ 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.

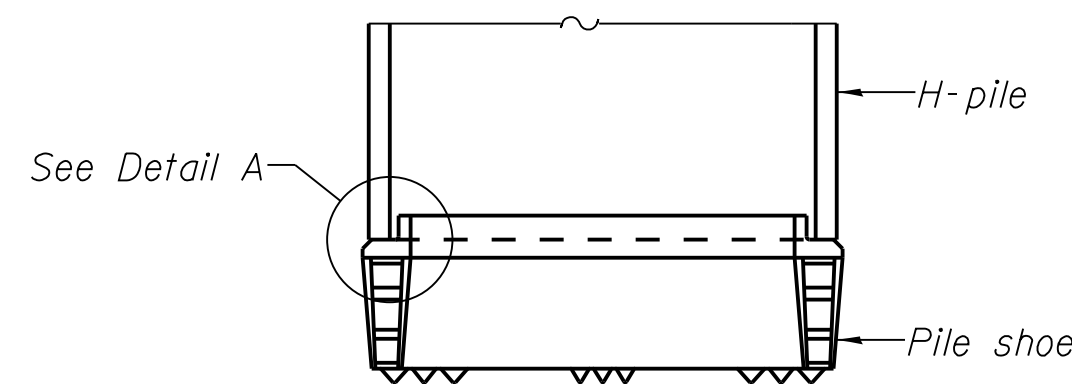
Compressive strength of prestressed concrete at release, f'cl, shall be 5000 psi.

BILL OF MATERIAL			
Precast Prestressed Conc. Deck Bms. (27" depth)	Sq. Ft.	1416	

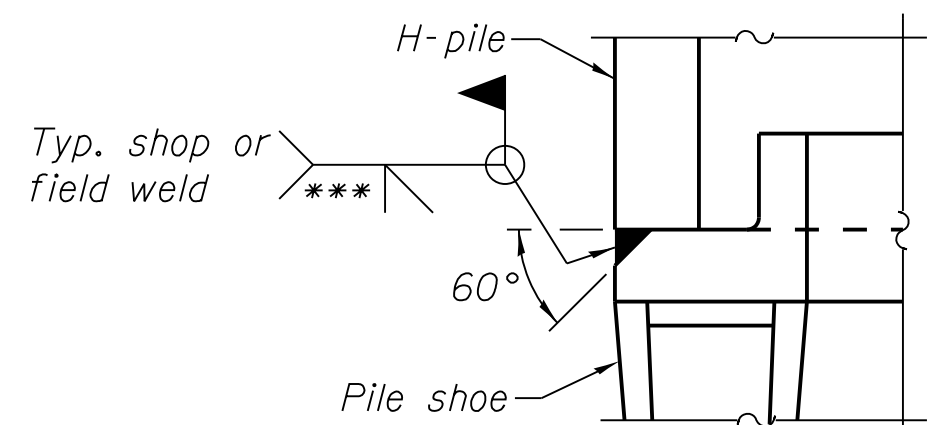


STEEL PILE TABLE

Designation	Depth d	Flange width b _f	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 ⁵ / ₈ "	30"
x73	13 ⁵ / ₈ "	14 ⁵ / ₈ "	1 ¹ / ₂ "	30"
HP 12x84	12 ¹ / ₄ "	12 ¹ / ₄ "	1 ¹ / ₁₆ "	24"
x74	12 ¹ / ₈ "	12 ¹ / ₄ "	5 ⁵ / ₈ "	24"
x63	12"	12 ¹ / ₈ "	1 ¹ / ₂ "	24"
x53	11 ³ / ₄ "	12"	7 ¹ / ₁₆ "	24"
HP 10x57	10"	10 ¹ / ₄ "	9 ⁹ / ₁₆ "	24"
x42	9 ³ / ₄ "	10 ¹ / ₈ "	7 ¹ / ₁₆ "	24"
HP 8x36	8"	8 ¹ / ₈ "	7 ¹ / ₁₆ "	18"

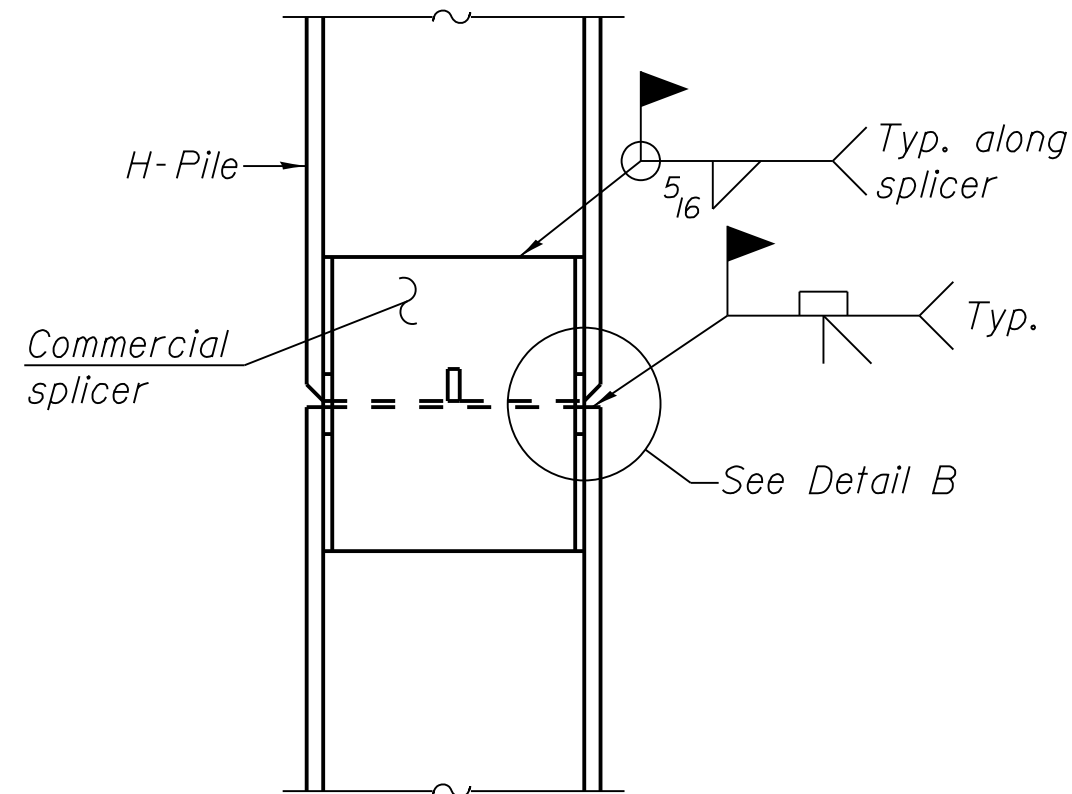


ELEVATION

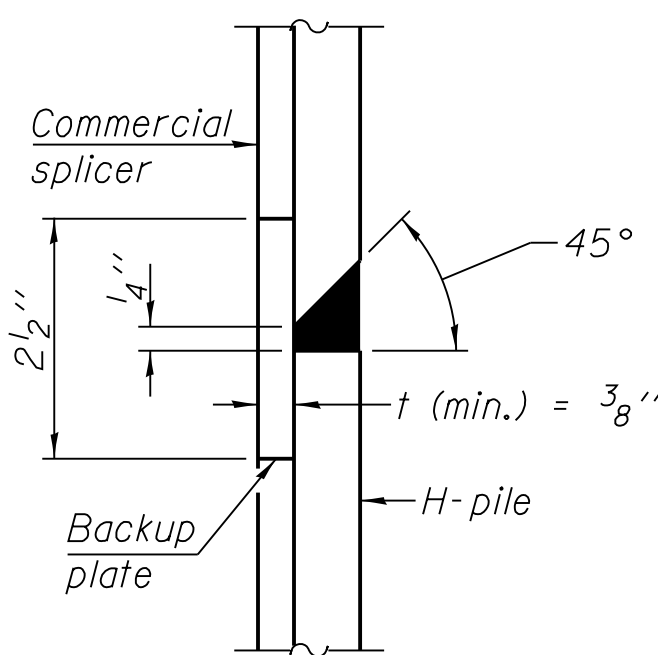


DETAIL A

H-PILE SHOE ATTACHMENT

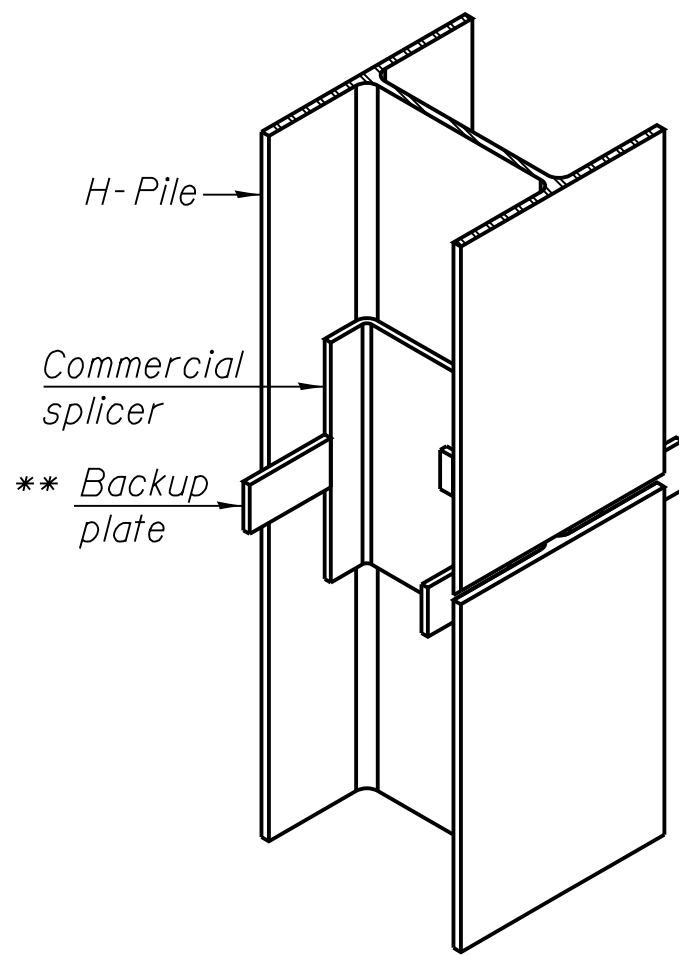


ELEVATION

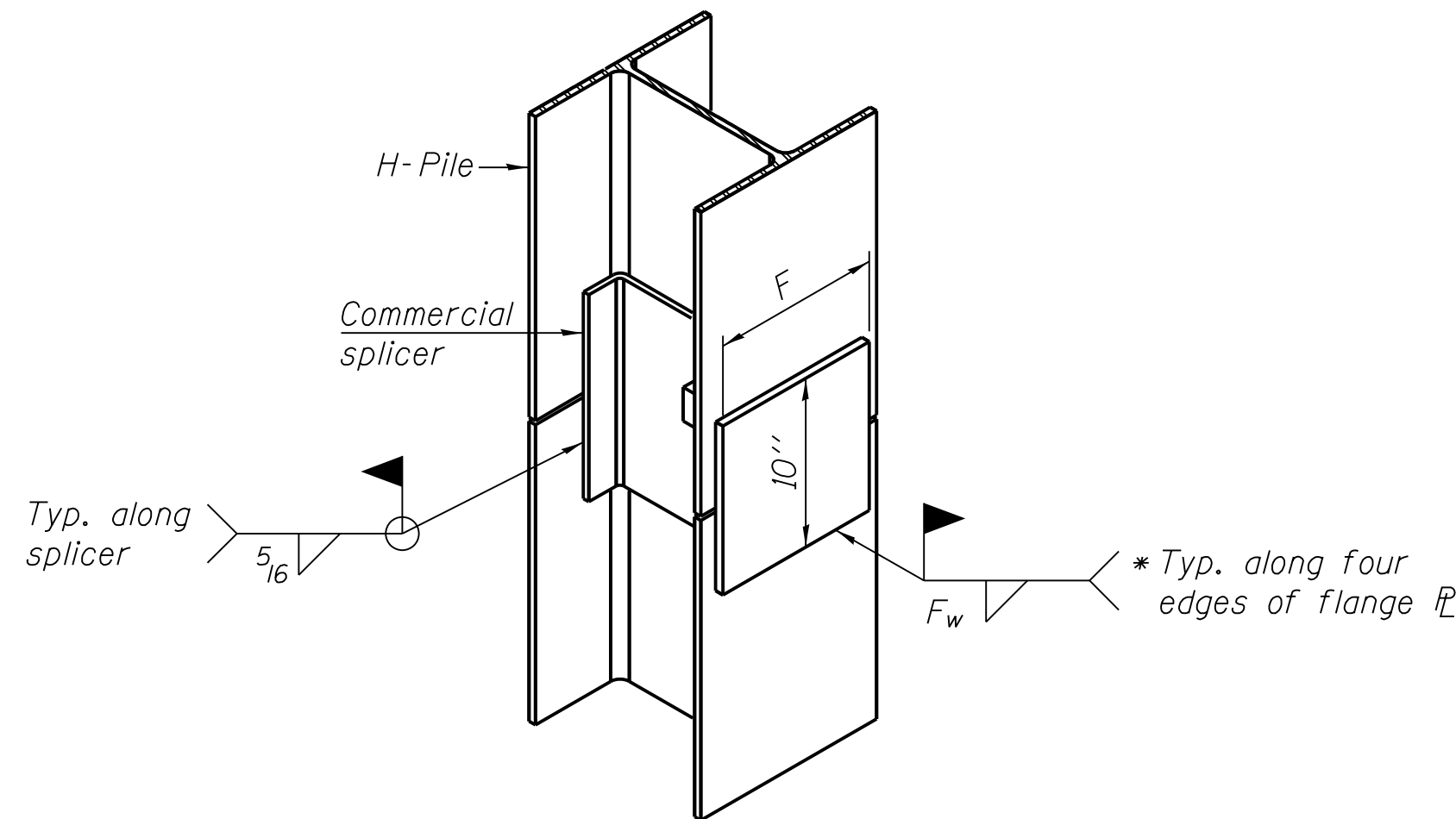


DETAIL "B"

WELDED COMMERCIAL SPLICE



ISOMETRIC VIEW



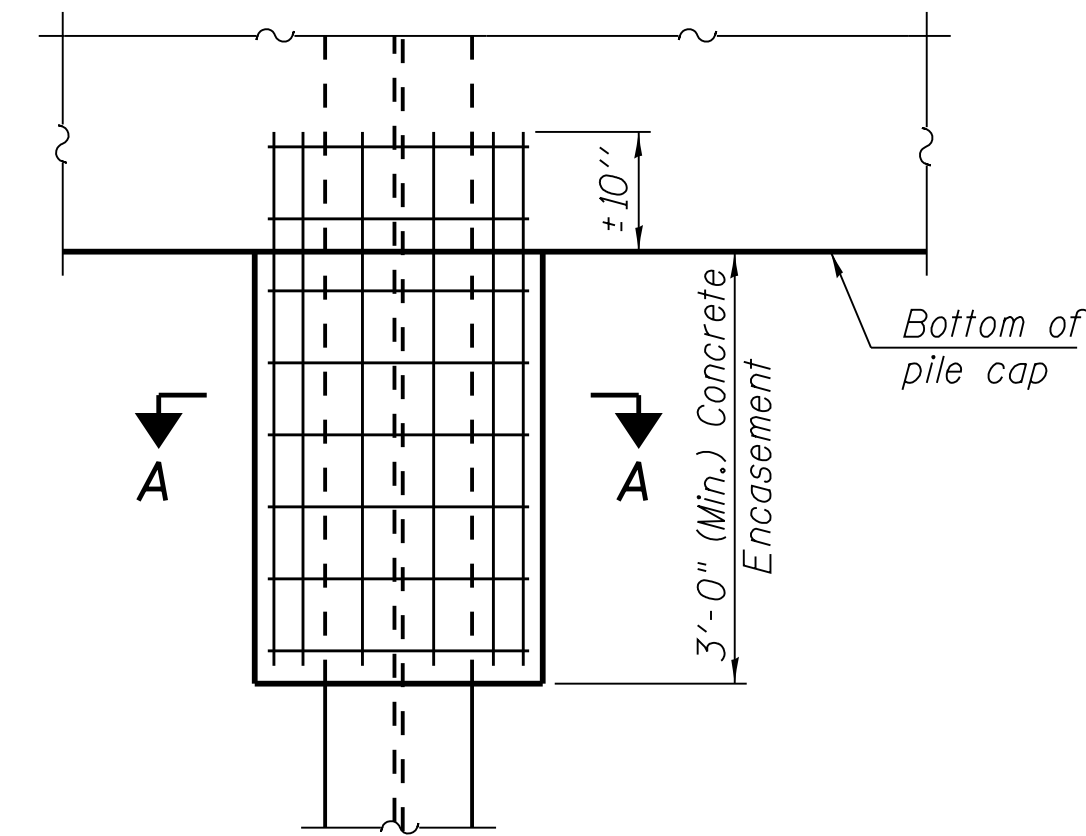
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

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

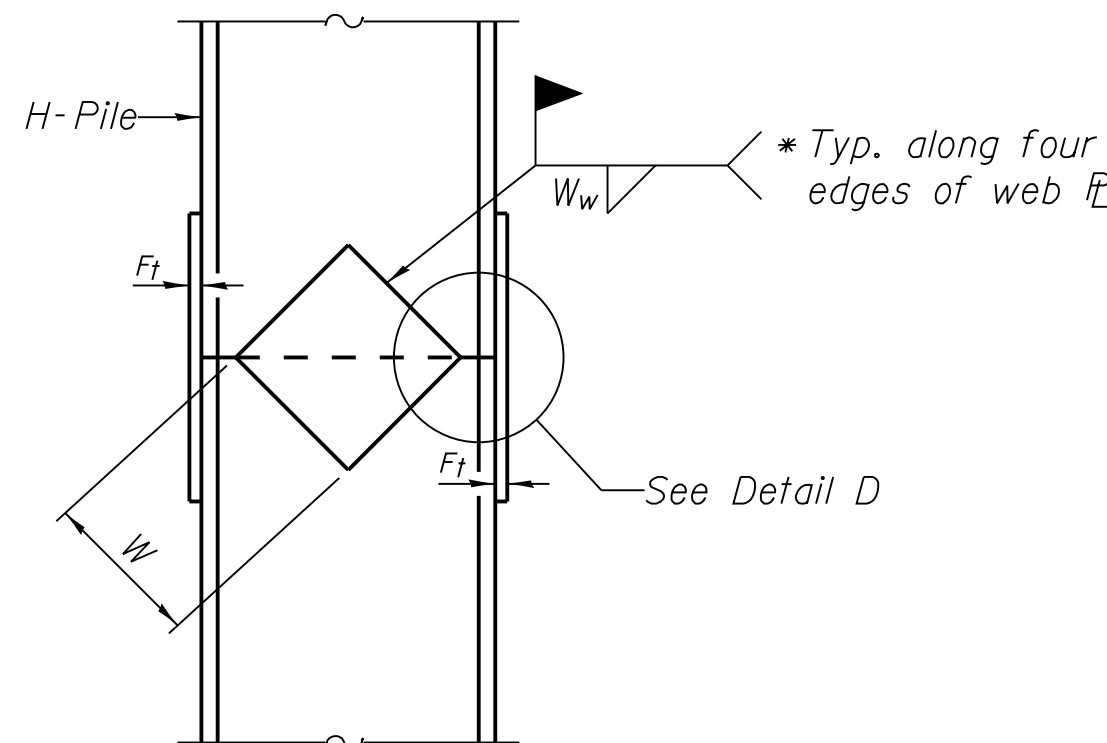
** Remove portions of backup plates that extend outside the flanges.

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

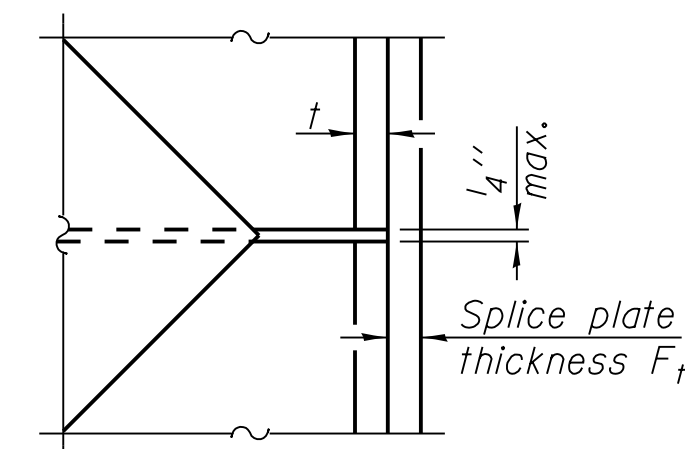


ELEVATION

PILE ENCASEMENT

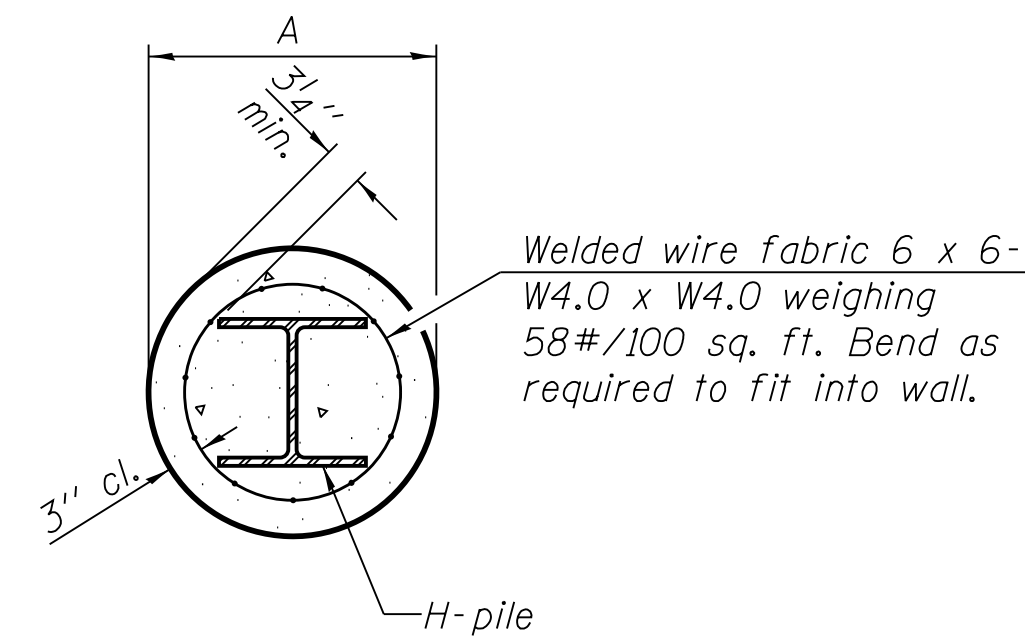


ELEVATION



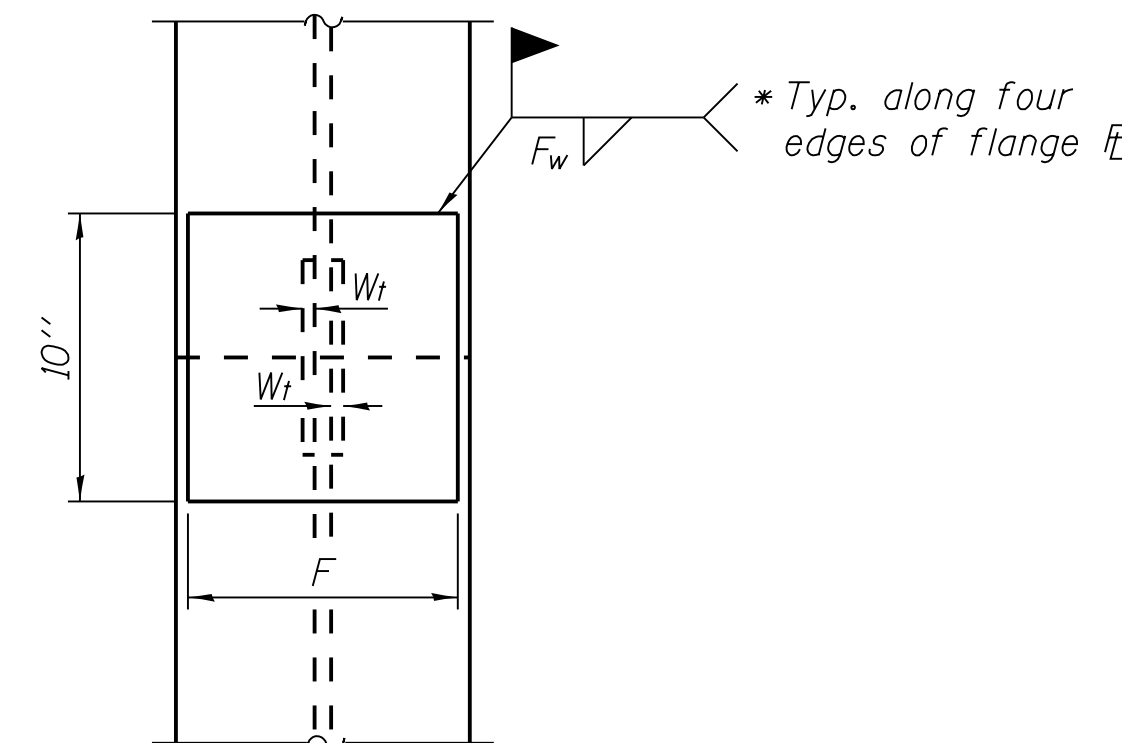
DETAIL D

WELDED PLATE FIELD SPLICE



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

SECTION A-A



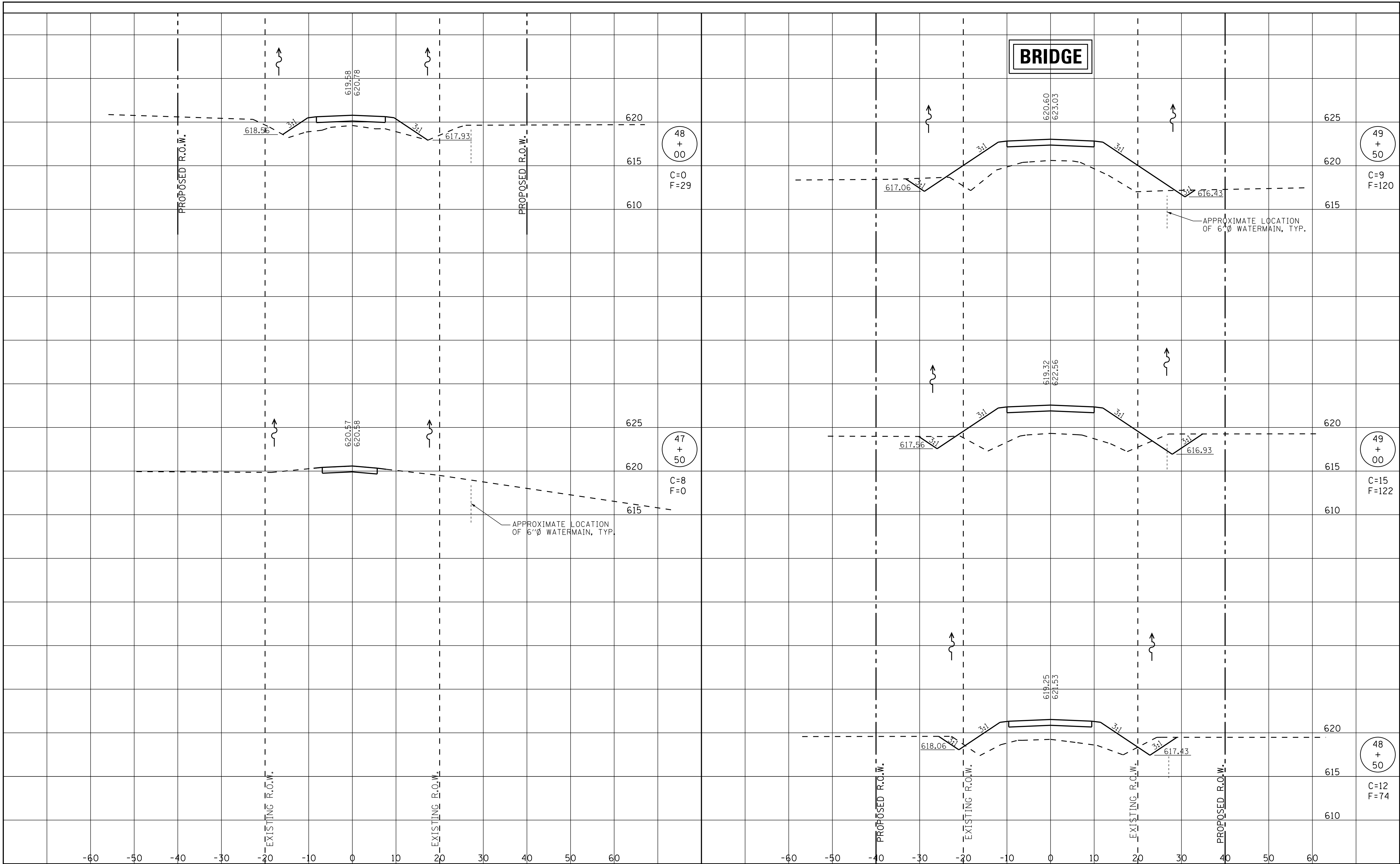
END VIEW

Designation	F	F _t	F _w	W	W _t	W _w
HP 14x117	12 ¹ / ₂ "	1"	7 ⁸ / ₈ "	7 ³ / ₄ "	5 ⁸ / ₈ "	1 ¹ / ₂ "
x102	12 ¹ / ₂ "	7 ⁸ / ₈ "	3 ⁴ / ₄ "	7 ³ / ₄ "	5 ⁸ / ₈ "	1 ¹ / ₂ "
x89	12 ¹ / ₂ "	3 ⁴ / ₄ "	1 ¹ / ₁₆ "	7 ³ / ₄ "	5 ⁸ / ₈ "	1 ¹ / ₂ "
x73	12 ¹ / ₂ "	5 ⁸ / ₈ "	9 ¹⁶ / ₁₆ "	7 ³ / ₄ "	5 ⁸ / ₈ "	1 ¹ / ₂ "
HP 12x84	10"	7 ⁸ / ₈ "	1 ¹ / ₁₆ "	6 ¹ / ₂ "	5 ⁸ / ₈ "	1 ¹ / ₂ "
x74	10"	7 ⁸ / ₈ "	1 ¹ / ₁₆ "	6 ¹ / ₂ "	5 ⁸ / ₈ "	1 ¹ / ₂ "
x63	10"	5 ⁸ / ₈ "	1 ² / ₂ "	6 ¹ / ₂ "	1 ² / ₂ "	3 ⁸ / ₈ "
x53	10"	5 ⁸ / ₈ "	1 ² / ₂ "	6 ¹ / ₂ "	1 ² / ₂ "	3 ⁸ / ₈ "
HP 10x57	8"	3 ⁴ / ₄ "	9 ¹⁶ / ₁₆ "	5 ¹ / ₄ "	1 ² / ₂ "	3 ⁸ / ₈ "
x42	8"	5 ⁸ / ₈ "	9 ¹⁶ / ₁₆ "	5 ¹ / ₄ "	1 ² / ₂ "	3 ⁸ / ₈ "
HP 8x36	7"	5 ⁸ / ₈ "	7 ¹⁶ / ₁₆ "	4 ¹ / ₄ "	1 ² / ₂ "	3 ⁸ / ₈ "

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

FINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED		
NOTE BOOK	TEMPLATE		
NO.	AREAS CHECKED		

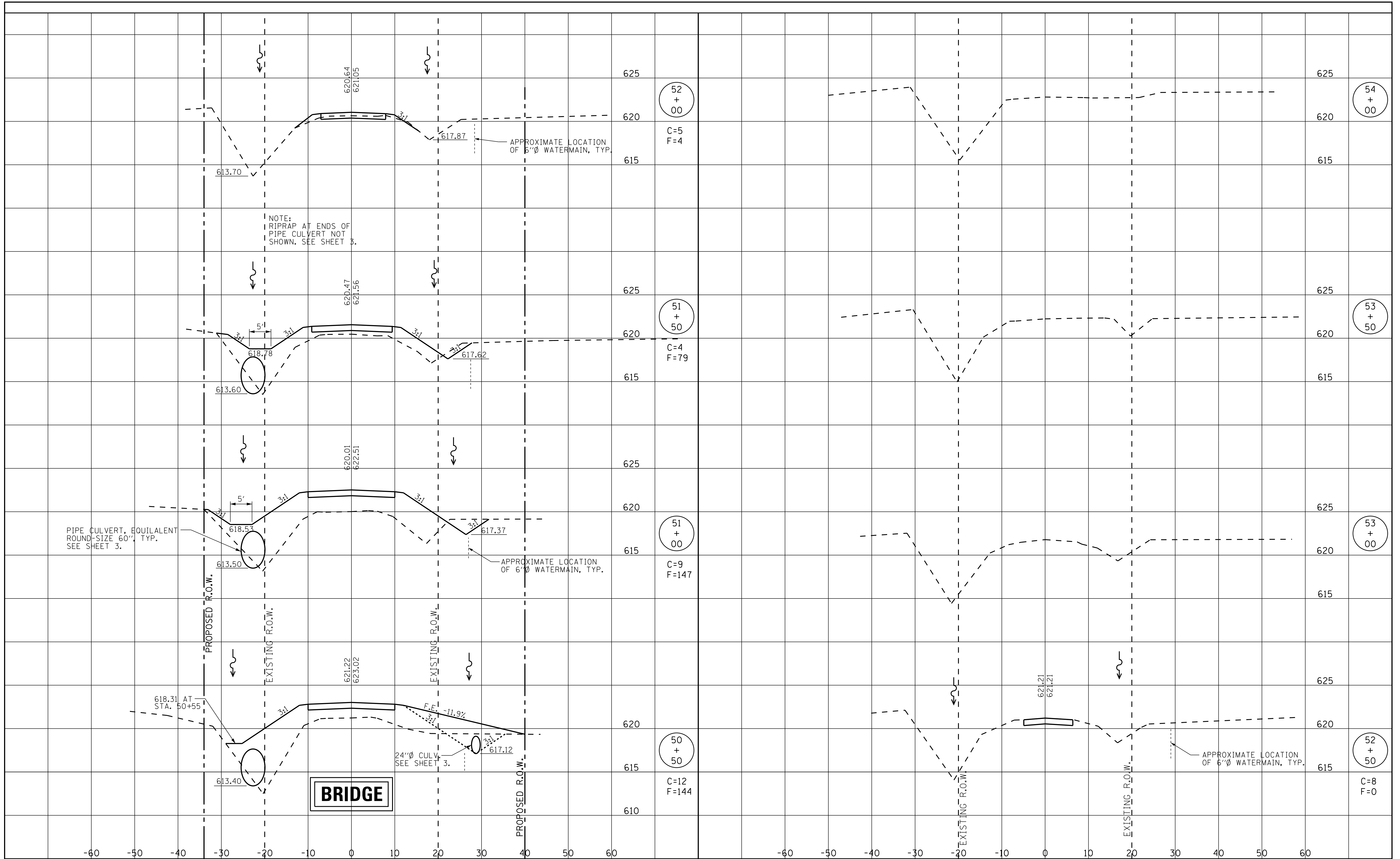
ORIGINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED		
NOTE BOOK	TEMPLATE		
NO.	AREAS CHECKED		



RAAI JOB NO. 53916														
 RHUTASEL and ASSOCIATES, INC. CONSULTING ENGINEERS • LAND SURVEYORS SALEM, ILLINOIS FREEBURG, ILLINOIS ILLINOIS DESIGN FIRM LICENSE NO. 184-000287	DESIGNED - BLT	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	CROSS SECTIONS OF ROADWAY					ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
	DRAWN - JN	REVISED -							TR 312	17-16124-00-BR	SHELBY	11	10	
	CHECKED - GLH	REVISED -							CONTRACT NO. 95834					
	DATE - 02/26/2018	REVISED -												
						STA. 47+50	TO	STA. 49+50						

FINAL	SURVEYED	DATE
SURVEY	PLOTTED	
NOTE BOOK	TEMPLATE	
NO.	AREAS CHECKED	

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



 RHUTASEL and ASSOCIATES, INC. CONSULTING ENGINEERS • LAND SURVEYORS SALEM, ILLINOIS FREEBURG, ILLINOIS ILLINOIS DESIGN FIRM LICENSE NO. 184-000287	DESIGNED - BLT	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	CROSS SECTIONS OF ROADWAY		ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	DRAWN - JN	REVISED -				TR 312	17-16124-00-BR	SHELBY	11	11
	CHECKED - GLH	REVISED -				CONTRACT NO. 95834				
	DATE - 02/26/2018	REVISED -				STA. 50+50 TO STA. 54+00				