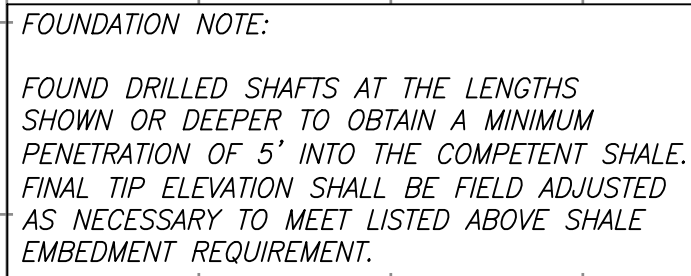
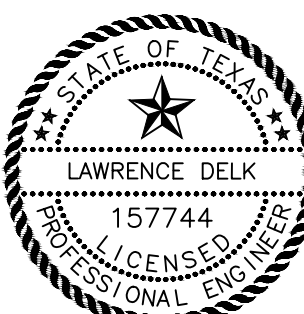


ELEVATION

B = 1

25. B. 33 QUESTO



HL93 - LOADING		
DATE	REVISION	BY
Honey Creek EB Bridge Layout SHEET 2 OF 2		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc. 2150 South Central Expressway Suite 300 McKinney, Texas 75070 Phone 214.620.2800 FRN - F-1386		
	LJA PROJECT ID NT852F-0285 DATE: JULY 2026 DESIGN: EH DRAWN: NC HORZ: 1"=20' VERT: 1"=20' SHEET B-2 OF B-57 SHEETS SCALE	
		
07 17 2026		



A circular professional engineer seal for the State of Texas. The outer ring contains the text "STATE OF TEXAS" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars on each side. In the center, there is a five-pointed star above the name "LAWRENCE DELK", the license number "157744", and the word "LICENSED".

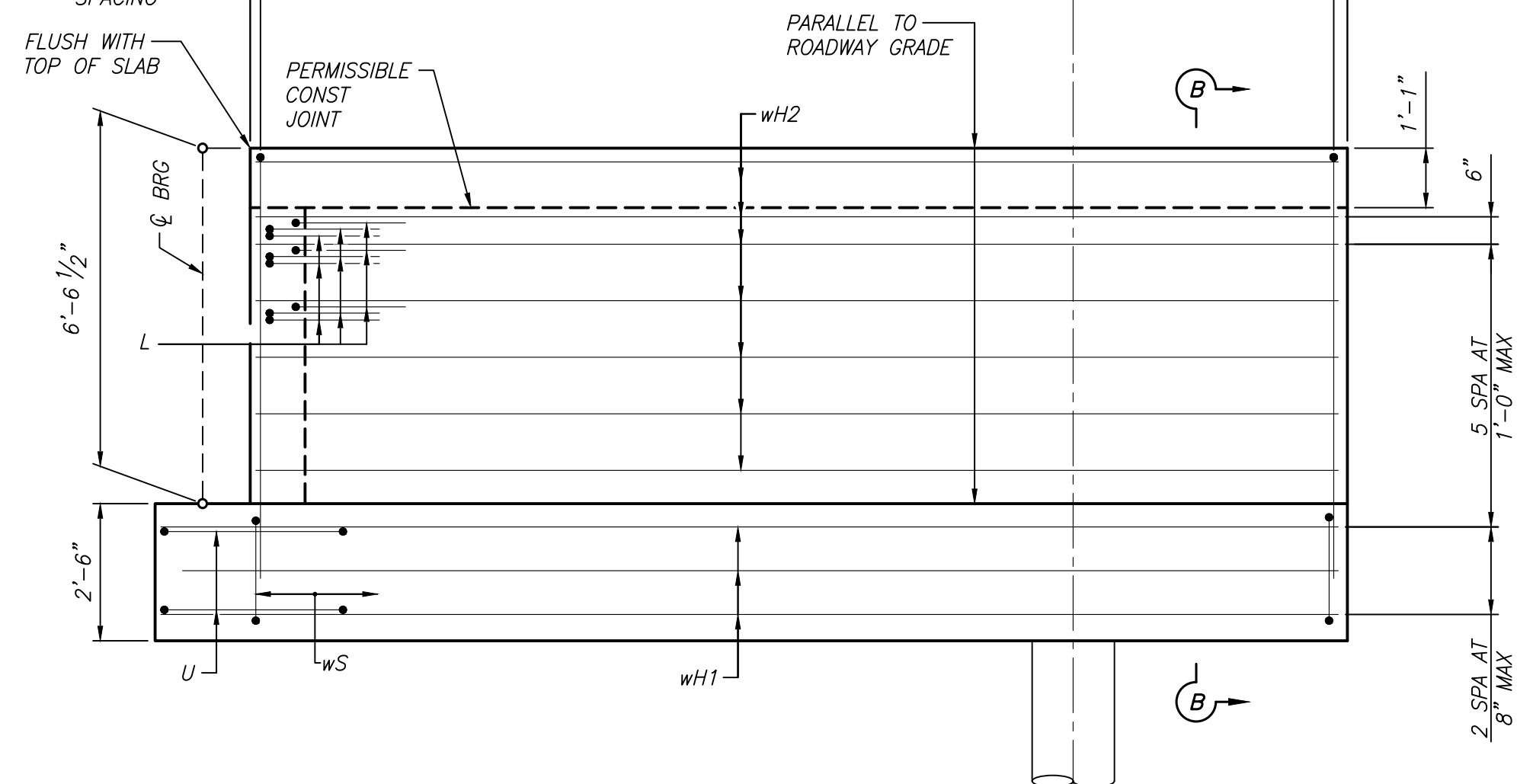
SUMMARY OF BRIDGE QUANTITIES														
ITEM	400	416	416	420	420	420	422	422	425	432	442	450	454	
DESCRIPTION CODE	7010	7002	7007	7012	7022	7038	7001	7013	7006	7043	7007	7012	7004	
ITEM DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (42 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX62)	RIPRAP (STONE PROTECTION) (18 IN)	STR STEEL (MISC NON-BRIDGE) ①	RAIL (TY T402)	PEDESTRIAN RAIL (CUSTOM) MOD	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LB	LF	LF	LF
2 ~ ABUTMENTS	390	160	400	90.4				92.4		825	135			
4 ~ INTERIOR BENTS			774		116.8	58.2				362	269			
PRESTR CONC GIRDER UNIT 1							13,125		1,307.51			564.9	282.4	104
PRESTR CONC GIRDER UNIT 2							17,675		1,760.02			747.0	373.5	52
TOTAL	390	160	1,174	90.4	116.8	58.2	30,800	92.4	3,067.53	1,187	404	1,311.9	655.9	156

① FOR BRIDGE SIDEWALK EXPANSION JOINT COVER PLATES, SEE "BS-EJCP" STANDARD.

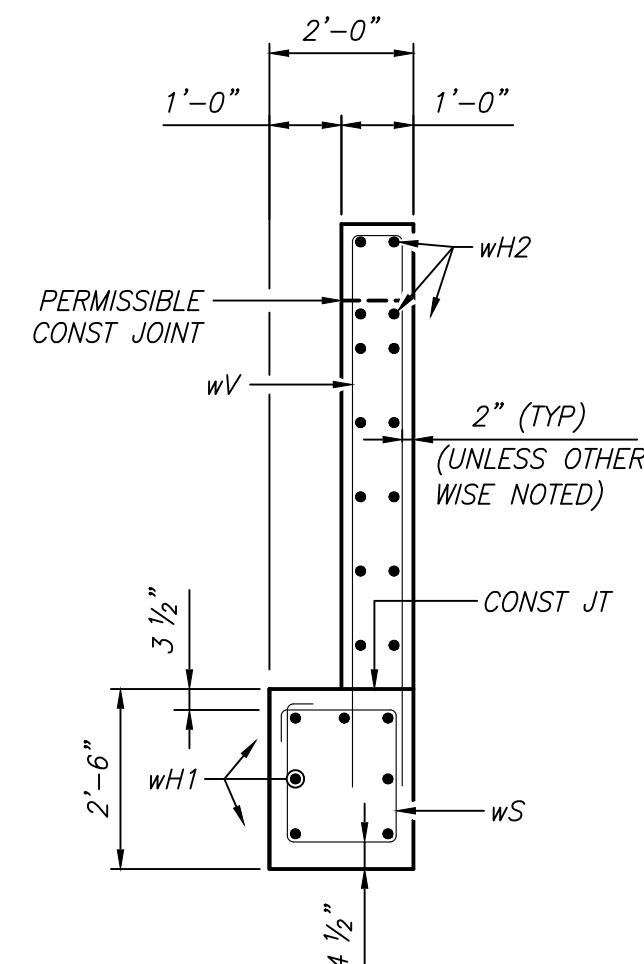
BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT 1	(FWD)	578.529	578.315	578.100	577.885	577.671
BENT 2	(BK)	579.175	578.961	578.746	578.532	578.317
	(FWD)	579.185	578.971	578.756	578.542	578.327
BENT 3	(BK)	579.832	579.617	579.402	579.188	578.973
	(FWD)	579.842	579.627	579.412	579.198	578.983
BENT 4	(BK)	580.488	580.273	580.059	579.844	579.630
	(FWD)	580.498	580.283	580.069	579.854	579.639
BENT 5	(BK)	581.144	580.930	580.715	580.500	580.286
	(FWD)	581.154	580.940	580.725	580.510	580.296
ABUT 6	(BK)	581.599	581.385	581.170	580.955	580.741

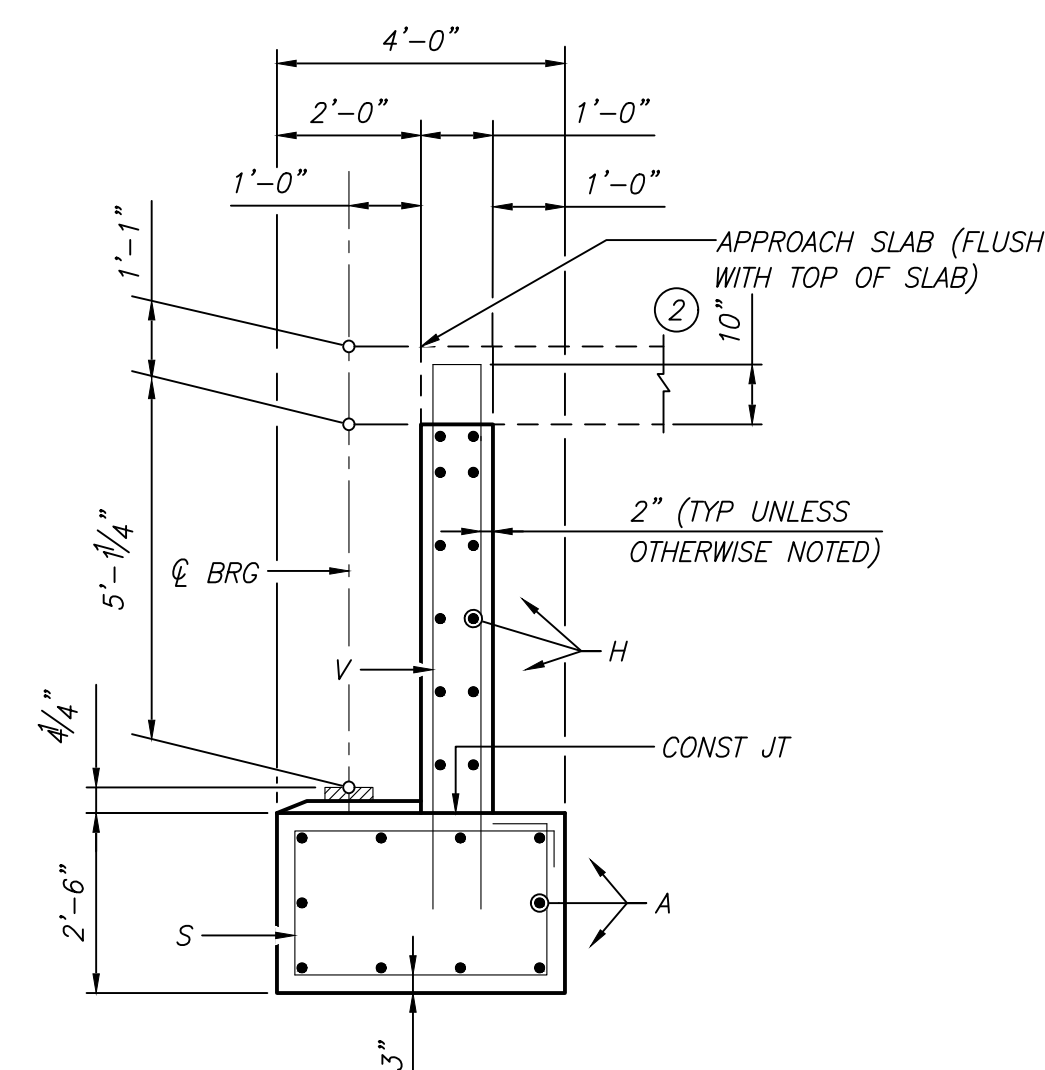
HL93 LOADING		



WINGWALL ELEVATION



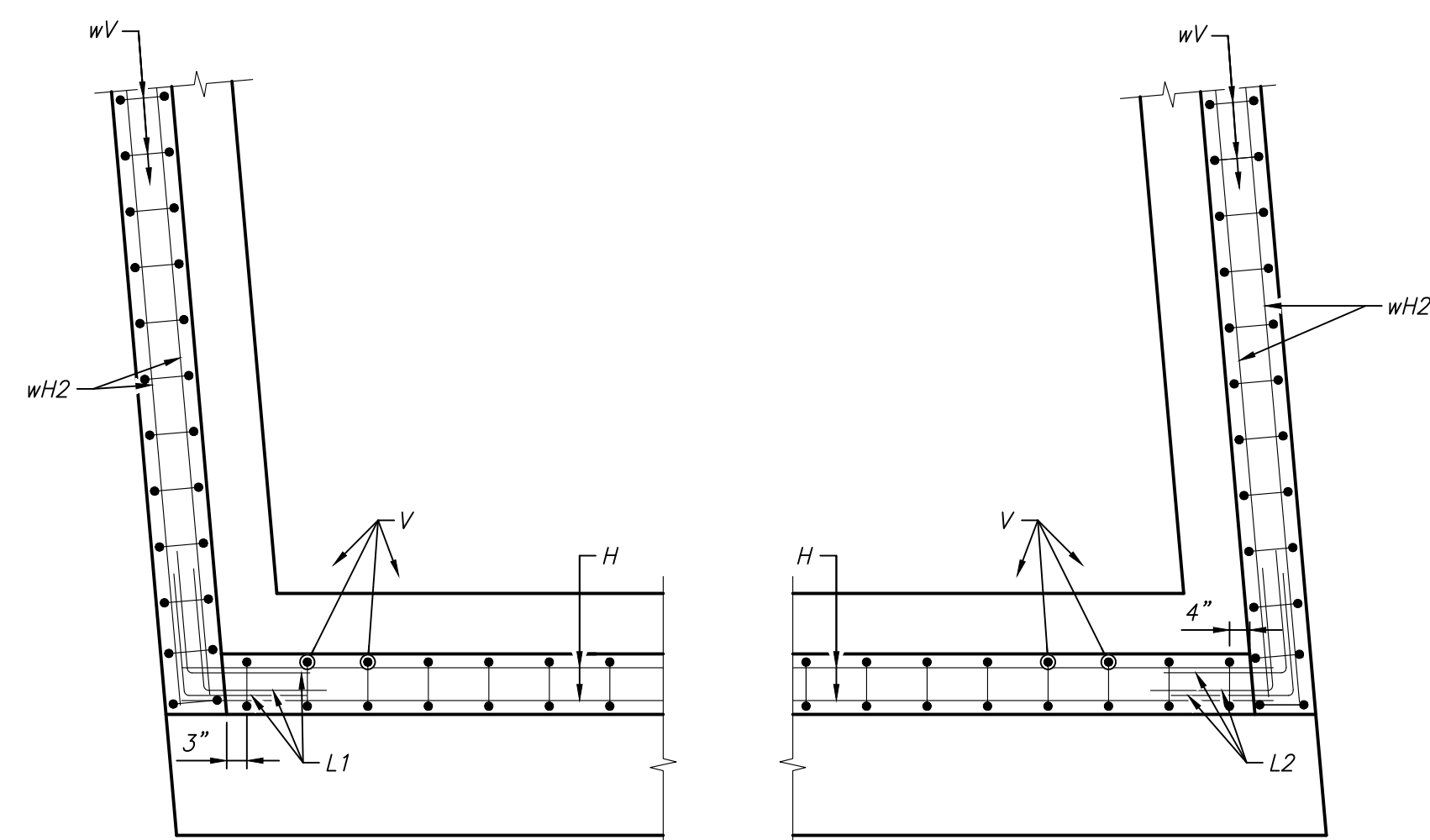
SECTION B-B



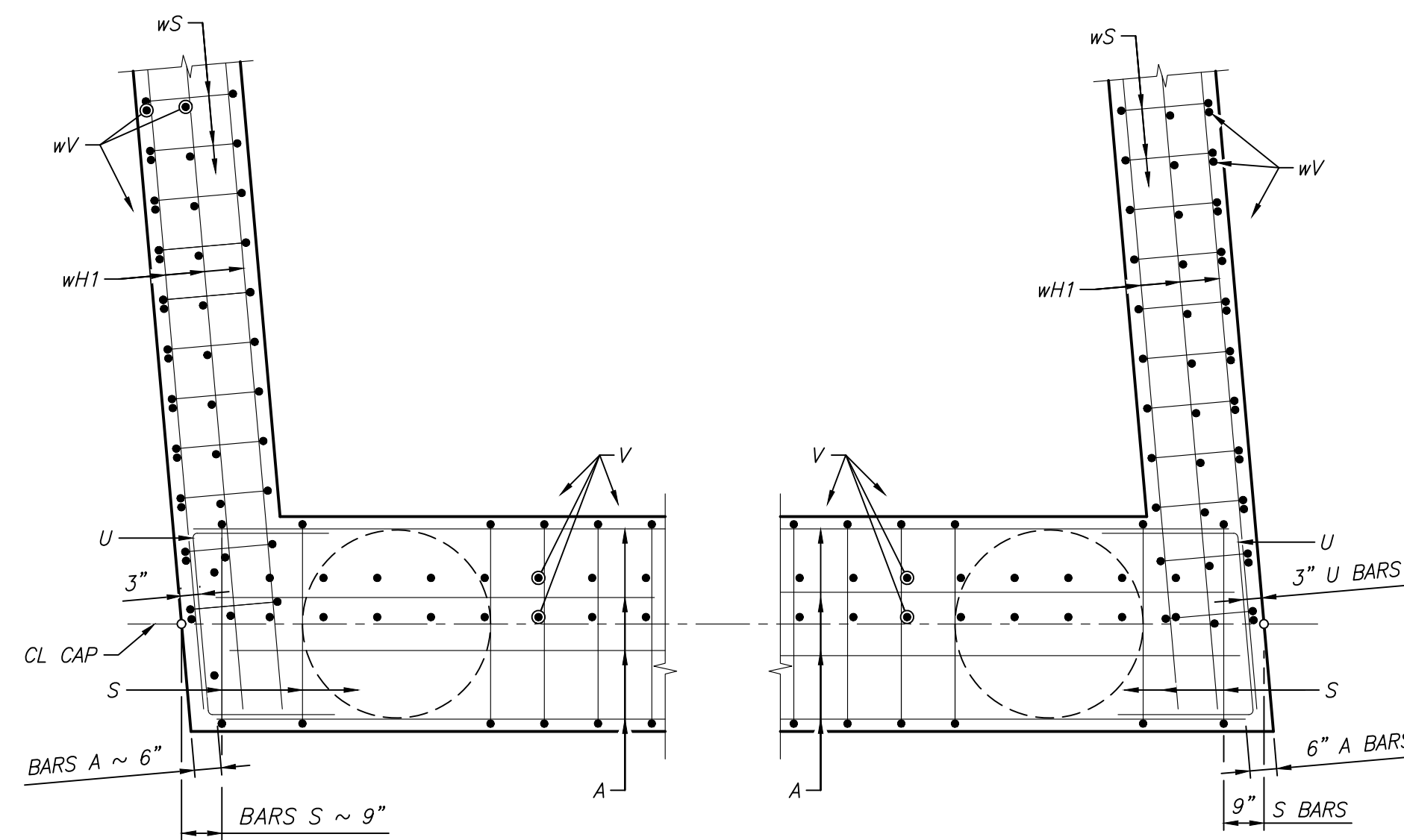
SECTION A-A

BAR	NO.	SIZE	LENGTH	WEIGHT
A	10	#11	49'-2"	2,613
H	12	#6	49'-10"	899
L	18	#6	4'-0"	109
S	66	#5	12'-8"	872
U	4	#6	8'-7"	52
V	49	#5	16'-11"	865
wH1	14	#6	21'-8"	456
wH2	28	#6	19'-8"	828
wS	42	#4	7'-10"	220
wV	42	#5	17'-1"	749
REINFORCING STEEL (LB) ③				7,663
CLASS "C" CONC (CBUT) (CY) ④				45.2

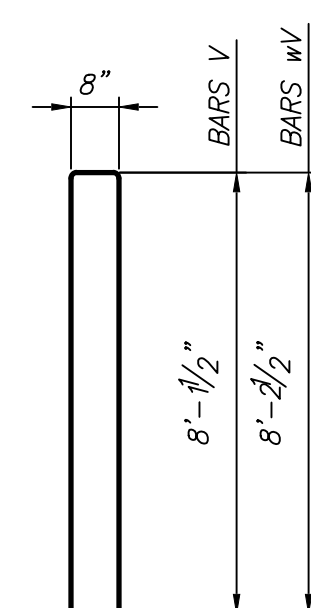
- ② INCREASE AS REQUIRED TO MAINTAIN 3" FROM FINISHED GRADE.
- ③ REINFORCING STEEL QUANTITIES ARE FOR CONTRACTOR'S INFORMATION ONLY.
- ④ QUANTITY INCLUDES SHEAR KEY VOLUME.



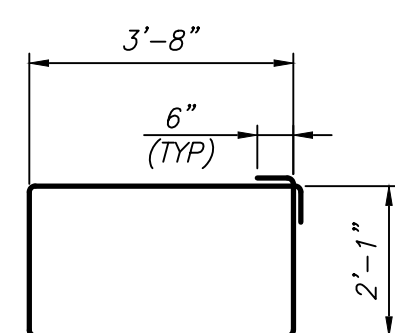
BACKWALL

CAP

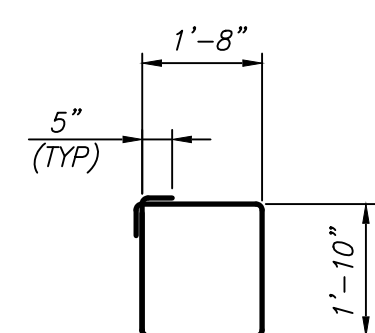
CORNER DETAILS



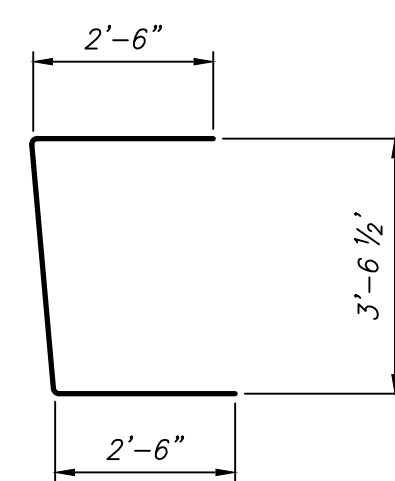
BARS V & wV



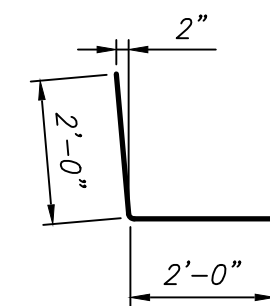
BARS S



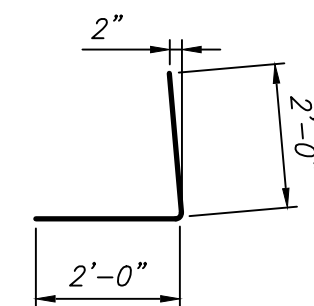
BARS wS



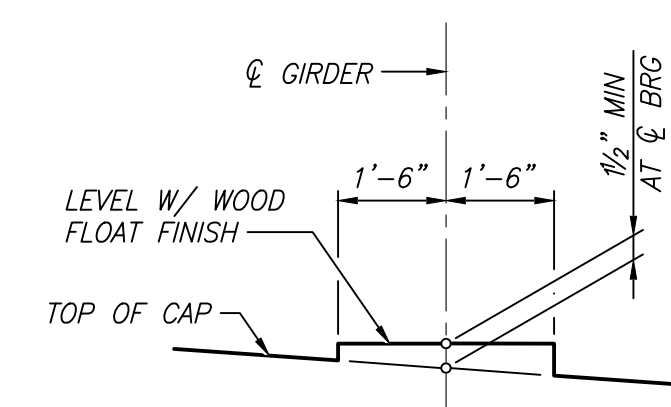
BARS U



BARS L1



BARS L2



BEARING SEAT DETAILS
(BEARING SURFACE MUST BE CLEAN AND
FREE OF ALL LOOSE MATERIAL BEFORE
PLACING BEARING PAD.)

HL93 LOADING		
DATE	REVISION	BY

EB ABUTMENT NO. 1 & 6
DETAILS

SHEET 2 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway Phone 214.620.2800
Suite 300
McKinney, Texas 75070 FRN - F-1386

	LJA PROJECT ID NT852F-0285
--	-------------------------------

DATE: JULY 2026

DESIGN:	EH
---------	----

DRAWN:	NC
--------	----

SCALE
HORZ: $\frac{3}{8}" = 1'$
VERT: $\frac{3}{8}" = 1'$

SHEET

B-6

OF B-57 SHEETS



07 17 2026

[illegible]

GIRDER REPORT

GIRDER REPORT, SPAN 1				
	HORIZONTAL DISTANCE		TRUE DISTANCE	GIRDER
	C-C BENT	C-C BRG.	BOT. GDB. FLG. ②	SLOPE
GIRDER 1	131.250	129.246	130.75	0.0050
GIRDER 2	131.250	129.246	130.75	0.0050
GIRDER 3	131.250	129.246	130.75	0.0050
GIRDER 4	131.250	129.246	130.75	0.0050
GIRDER 5	131.250	129.246	130.75	0.0050

GIRDER REPORT, SPAN 2				
	HORIZONTAL DISTANCE		TRUE DISTANCE	GIRDER
	C-C BENT	C-C BRG.	BOT. DBL. FLG. ②	SLOPE
GIRDER 2	131.250	129.250	130.75	0.0050
GIRDER 2	131.250	129.250	130.75	0.0050
GIRDER 3	131.250	129.250	130.75	0.0050
GIRDER 4	131.250	129.250	130.75	0.0050
GIRDER 5	131.250	129.250	130.75	0.0050

HL93 LOADING		
DATE	REVISION	BY

SHEET 1 OF 2

LJA Engineering, Inc.
2150 South Central Expressway Phone 214.620.2800
Suite 300
McKinney, Texas 75070 FRN - F-1386

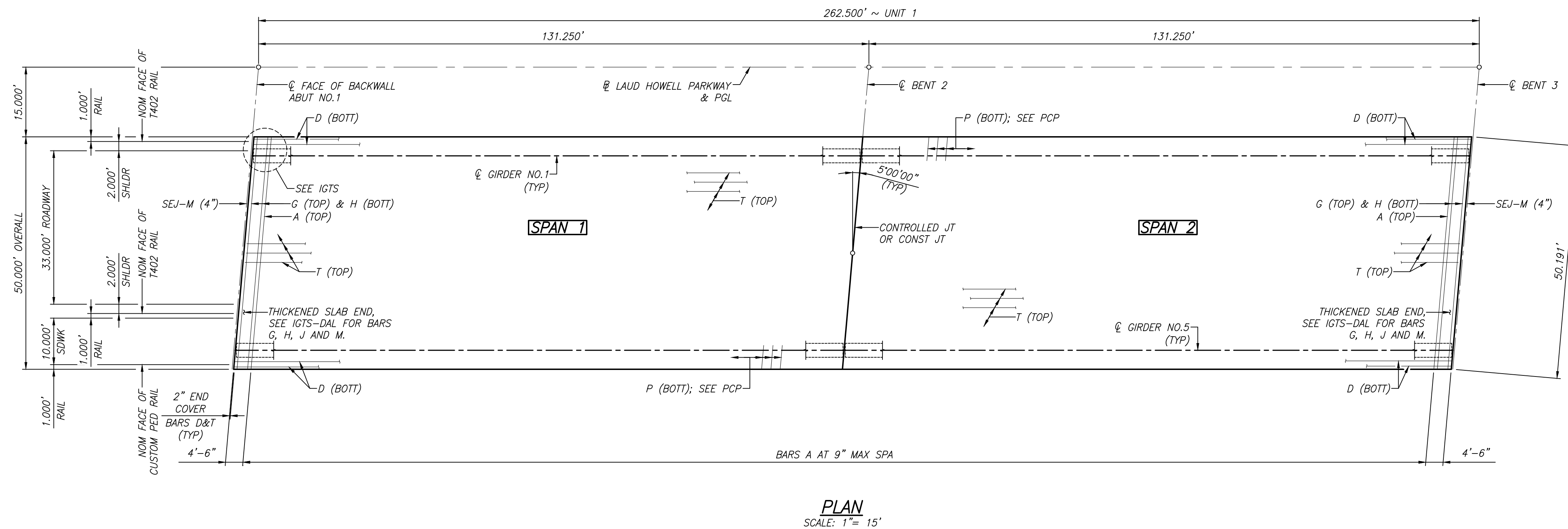


LJA PROJECT ID NT852F-0285	
DATE:	JULY 2026
DESIGN:	EH
DRAWN:	NC
SCALE	
HORZ:	1"=20'
VERT:	1"=20'
SHEET	
B-8	
OF B-57 SHEETS	

GIRDER REPORT

Date/Time : Mon, 20 Jul 2026 - 9:28am User Name : ehazard
Path Name : \\jaeger.com\shares\WY-LAND\0285 400LAND\425 Design Files\Loud Howell Parkway\Structures\Sheets\9 EB FRAMING PLAN.dwg

A circular professional engineer seal for the State of Texas. The outer ring contains the text "STATE OF TEXAS" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars on each side. The inner circle features a five-pointed star at the top, followed by the name "LAWRENCE DELK", the license number "157744", and the title "LICENSED ENGINEER" at the bottom.



GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION (2020) AND TxDOT BRIDGE DESIGN MANUAL (JAN 2024).
2. SEE "PRESTRESSED CONCRETE PANELS (PCP-DAL)" AND "PRESTRESSED CONCRETE PANEL FABRICATION DETAILS (PCP-FAB)" STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE "THICKENED SLAB END DETAILS (IGTS-DAL)" STANDARD FOR THICKENED SLAB END DETAILS STANDARD SHEET AND QUANTITY ADJUSTMENTS.
4. SEE "MISCELLANEOUS SLAB DETAILS STANDARD (IGMS-DAL)" FOR ADDITIONAL DETAILS.
5. SEE "TRAFFIC RAIL (T402)" AND "PEDESTRAIN RAIL (XXX)" STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE "PERMANENT METAL DECK FORMS (PMDF)" STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REINFORCING BARS DIMENSION SHOWN ARE OUT-TO-OUT OF BAR.

MATERIAL NOTES:

PROVIDE CLASS S CONCRETE ($f'_c = 4,000$ PSI).

PROVIDE GRADE 60 REINFORCING STEEL.

BAR LAPS, WHERE REQUIRED, ARE AS FOLLOWS:

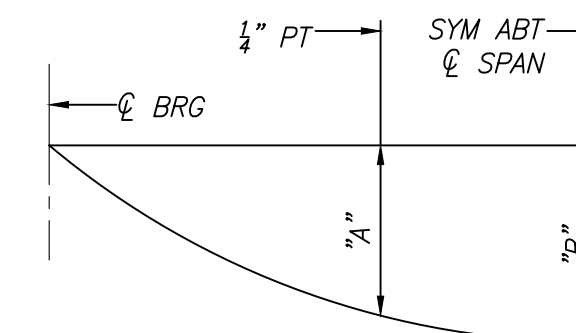
EPOXY COATED ~ #4 = 2'-5"
#5 = 3'-0"

- ① QUANTITIES SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE. SEE "FRAMING PLAN SHEET" FOR GIRDER LENGTHS.
- ② FOR CONTRACTOR'S INFORMATION ONLY. REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 PSF.
- ③ THEORETICAL DIMENSIONS.

TABLE OF ESTIMATED QUANTITIES			
SPAN NO.	REINF CONC SLAB	PRESTRESSED CONC GIRDERS	REINFORCING STEEL (SLAB)
		(1x62) ①	②
	SF	LF	LB
1	6,563	653.75	15,094
2	6,563	653.76	15,094
TOTAL	13,125	1,307.51	30,188

TABLE OF SECTION DEPTHS				
SPAN NO.	GIRDER NO.	"X" AT ℓ BRG	"Y" AT ℓ BRG	"Z" AT ℓ SPAN ③
1, 2	1, 5	1'-0 1/4"	6'-2 1/4"	9 3/4"
	2-4			10"

TABLE OF DEAD LOAD DEFLECTIONS			
SPAN NO.	GIRDER NO.	"A"	"B"
		FT	FT
1, 2	1, 5	0.156	0.222
	2-4	0.177	0.252



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY ($E_c=5,000$ ksi). ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

[illegible]

TYPICAL TRANSVERSE SECTION
SCALE: $\frac{3}{8}" = 1'-0"$

BAR TABLE	
BAR	SIZE
A	#5
D	#5
G	#5
H	#5
J	#5
M	#5
P	#4
T	#4

HL93 LOADING		
DATE	REVISION	BY

EB PRESTRESSED
CONCRETE GIRDER
UNIT 1

SHEET 1 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

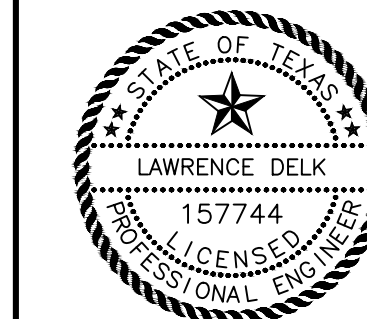
LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

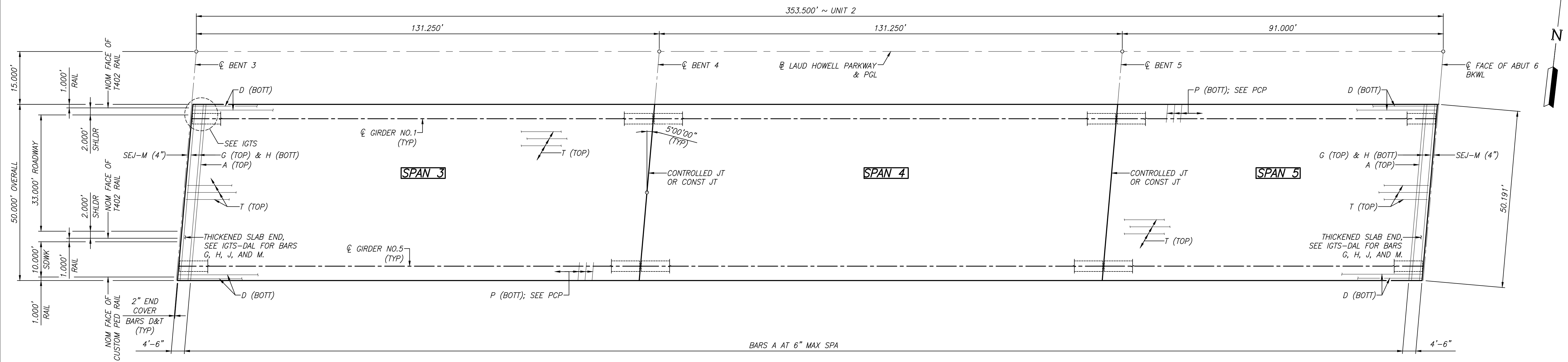
Phone 214.620.2800

FRN - F-1386



07 17 2026

LJA PROJECT ID NT852F-0285	
DATE:	JULY 2026
DESIGN:	EH
DRAWN:	NC
SCALE	
HORIZ: AS SHOWN	
VERT: AS SHOWN	
SHEET	
B-10	
OF B-57 SHEETS	



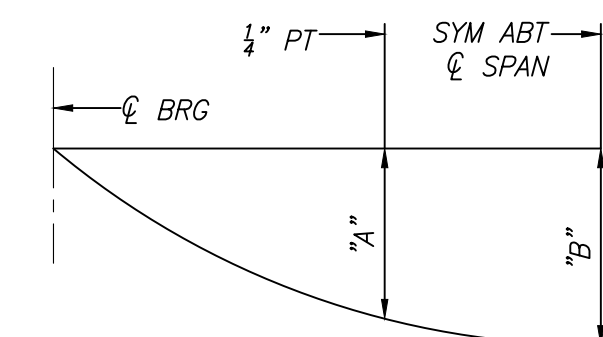
PLAN
SCALE: 1" = 15'

- ① QUANTITIES SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE. SEE FRAMING PLAN SHEET FOR GIRDER LENGTHS.
- ② FOR CONTRACTOR'S INFORMATION ONLY. REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 PSF.
- ③ THEORETICAL DIMENSIONS.

TABLE OF ESTIMATED QUANTITIES			
SPAN NO.	REINF CONC SLAB	PRESTRESSED CONC GIRDS	REINFORCING STEEL (SLAB)
		(Tx62) ①	②
	SF	LF	LB
3	6,563	653.76	15,094
4	6,563	653.76	15,094
5	4,550	452.50	10,465
TOTAL	17,675	1,760.02	40,653

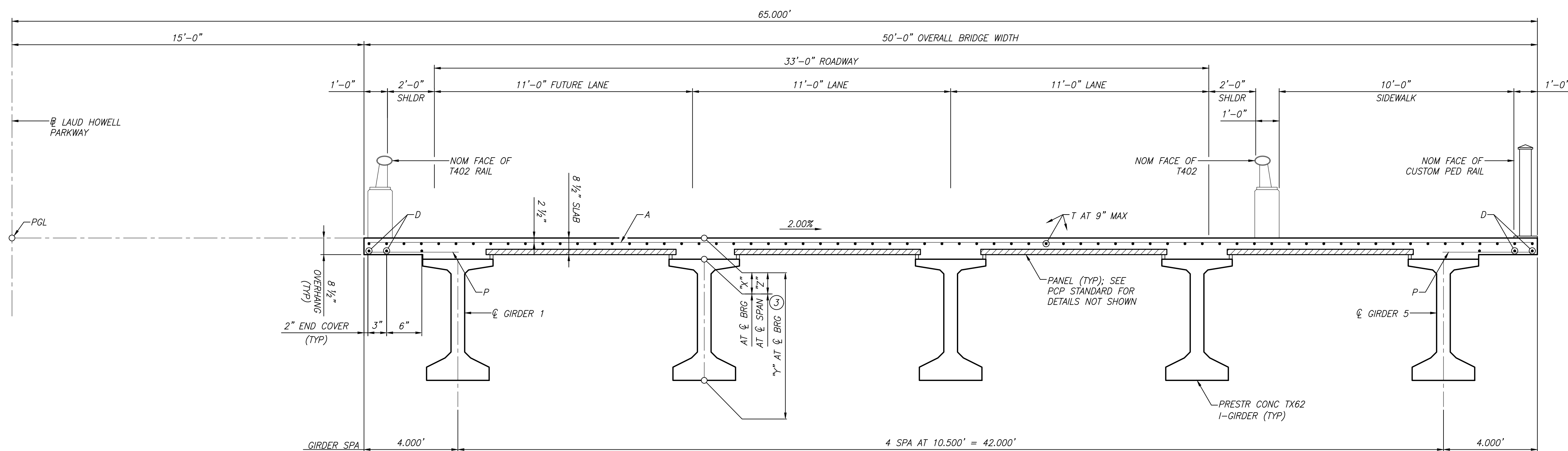
TABLE OF SECTION DEPTHS				
SPAN NO.	GIRDER NO.	"X" AT & BRG	"Y" AT & BRG	"Z" AT & SPAN ③
3, 4	1, 5	1'-0 1/4"	6'-2 1/4"	9 3/4"
	2-4			10"
5	1, 5			10"
	2-4			10 1/8"

TABLE OF DEAD LOAD DEFLECTIONS			
SPAN NO.	GIRDER NO.	"A"	"B"
		FT	FT
3, 4	1, 5	0.156	0.222
	2-4	0.177	0.252
5	1, 5	0.035	0.050
	2-4	0.040	0.057



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY ($E_c=5,000$ ksi). ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.



TYPICAL TRANSVERSE SECTION
SCALE: $\frac{3}{8}" = 1'-0"$

<i>BAR TABLE</i>	
<i>BAR</i>	<i>SIZE</i>
<i>A</i>	<i>#5</i>
<i>D</i>	<i>#5</i>
<i>G</i>	<i>#5</i>
<i>H</i>	<i>#5</i>
<i>J</i>	<i>#5</i>
<i>M</i>	<i>#5</i>
<i>P</i>	<i>#4</i>
<i>T</i>	<i>#4</i>

HL93 LOADING		
DATE	REVISION	BY

EB PRESTRESSED
CONCRETE GIRDER
UNIT 2

SHEET 2 OF 2

Laud Howell
Parkway

CITY OF MCKINNEY
COLLIN COUNTY, TEXAS

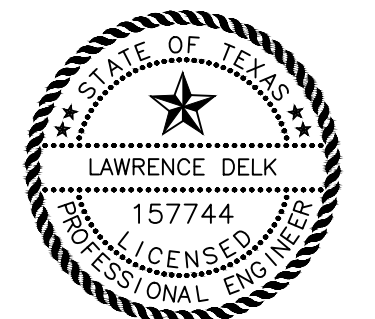
LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

Phone 214.620.2800
FRN - F-1386

LJA

ERN - F-1386



Lauren Deek
07.17.2026

LJA PROJECT ID
NT852F-0285

DATE: JULY 2026

DATE: JULY 2026

DESIGN: EH

DRAWN: NC

SCALE

HORZ:AS SHOWN
VERT: AS SHOWN

SHEET

D 11

B-11

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DATE: _____
FILE: _____

FILE:

STRUCTURE	DESIGNED GIRDERS									DEPRESSED STRAND PATTERN		CONCRETE		OPTIONAL DESIGN						LOAD RATING FACTORS		
	SPAN NO.	GIRDER NO.	GIRDER TYPE	NON-STD STRAND PATTERN	TOTAL NO.	SIZE	STRGTH	"e" ¢	"e" END					DESIGN LOAD COMP STRESS (TOP ¢) (SERVICE I)	DESIGN LOAD TENSILE STRESS (BOTTOM ¢) (SERVICE III)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (kip-ft)	LIVE LOAD DISTRIBUTION FACTOR					
																	NO.	TO END (in)	① f'cl (ksi)	MINIMUM 28 DAY COMP STRENGTH f'c (ksi)	②	Moment
	Inv	Opr	Inv																			
LAUD HOWELL PARKWAY; HONEY CREEK EB BRIDGE	1-4 5	ALL ALL	Tx62 Tx62	* 	54 42	0.6 0.6	270 270	22.67 23.78	12.44 16.78	12 6	58.5 55.5	6.000 6.000	8.500 8.500	4.468 2.197	-4.834 -2.514	11769 8708	0.759 0.840	1.000 1.222				

NON-STANDARD STRAND PATTERNS	
PATTERN	STRAND ARRANGEMENT AT $\frac{1}{2}$ OF GIRDER
*	2.5(ABCDEF), 4.5(ABCDEF), 6.5(ABCDEF), 8.5(ABCD), 10.5(A), 12.5(A)

① Based on the following allowable stresses (ksi):

$$\text{Compression} = 0.65 f_{ci}$$
$$Tension = 0.24 \sqrt{f'ci}$$

Optional designs must likewise conform.

② Portion of full HL93.

DESIGN NOTES:

*Designed according to AASHTO LRFD Bridge Design Specifications.
Load rated using Load and Resistance Factor Rating according to
AASHTO Manual for Bridge Evaluation.*

Optional designs for girders 120 feet or longer must have a calculated residual camber equal to or greater than that of the designed girder.

Prestress losses for the designed girders have been calculated for a relative humidity of __ percent. Optional designs must likewise conform.

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

Use low relaxation strands, each pretensioned to 75 percent of f_{pu} .

Strand debonding must comply with Item 424.4.2.2.2.4.

Full-length debonded strands are only permitted in positions marked **Δ**. Double wrap full-length debonded strands in outer most position of each row.

When shown on this sheet, the Fabricator has the option of furnishing either the designed girder or an approved optional design. All optional design submittals must be signed, sealed and dated by a Professional Engineer registered in the State of Texas. **Seal cracks in girder ends exceeding 0.005" in width as directed by the Engineer. The Fabricator is permitted to decrease the spacing of Bars R and S by providing additional bars to help limit crack width provided the decreased spacing results in no less than 1" clear between bars. The Fabricator must take an approved corrective action if cracks greater than 0.005" form on a repetitive basis.**

DEPRESSED STRAND DESIGNS:

Locate strands or the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc., beginning each row in the "A" position and working outward until the required number of strands is reached. All strands in the "A" position must be depressed, maintaining the 2" spacing so that, at the girder ends, the upper two strands are in the position shown in the table.

To complete this sheet input the girder designs in the table and the relative humidity under Design Notes. In all cases, remove this block. This sheet must be signed, sealed, and dated by a registered Professional Engineer.

</

HL93 LOADING		
DATE	REVISION	BY

EB BRIDGE
PRESTRESSED CONCRETE
I-GIRDER DESIGNS

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

Phone 214.620.2800

FRN - F-1386



Lauren Delk

LJA PROJECT ID
NT852F-0285

DATE: JULY 2026

DESIGN: EH

DRAWN: NC

SCALE
HORIZ: NTS
VERT: NTS

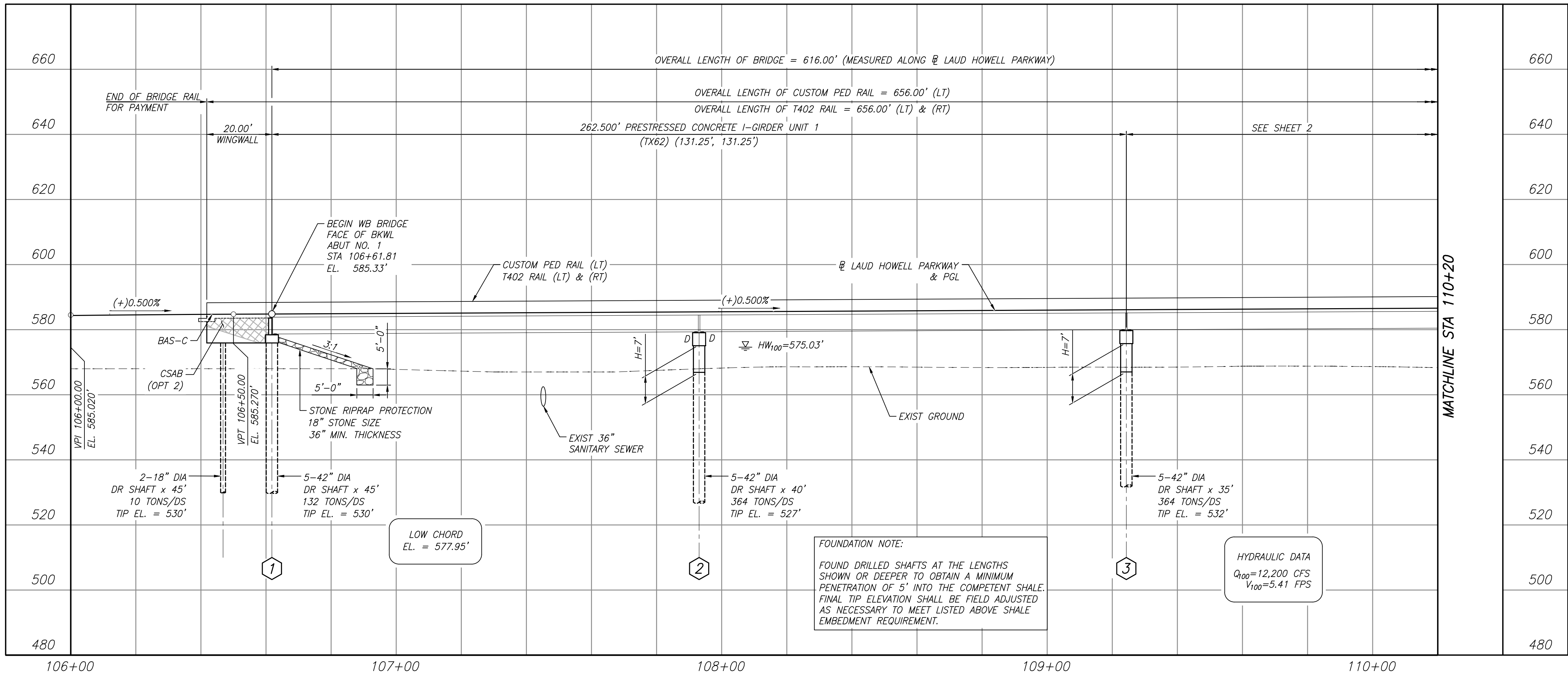
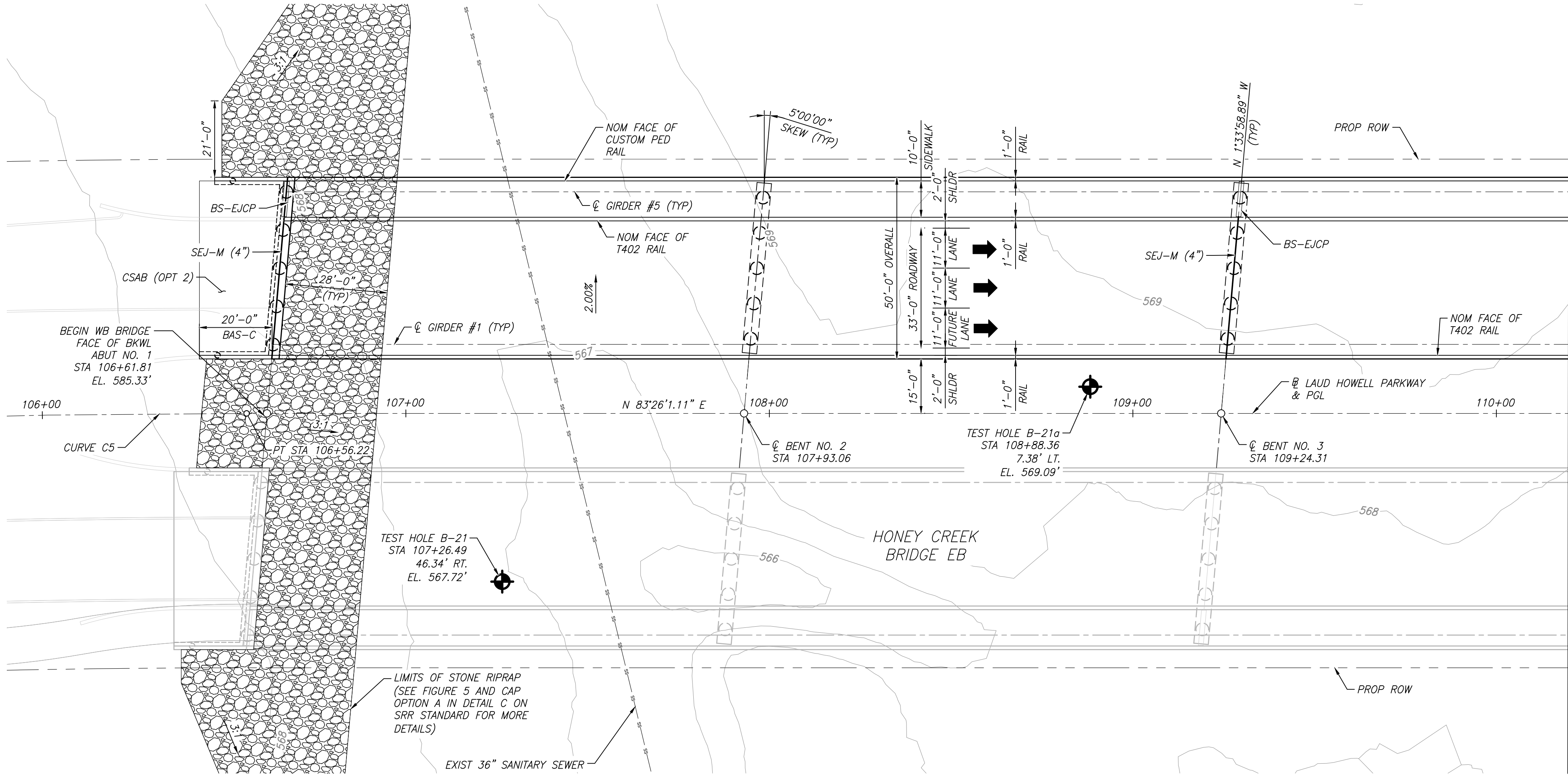
SHEET

B-12

OF B-57 SHEETS

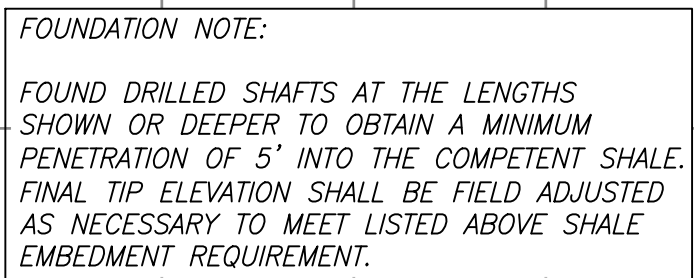
\\jeng.com\shares\WY-LAND\0285\400LAND\025 Design Files\Laud Howell Parkway\Structures\Sheets\WESTBOUND BRIDGE\1-1 WB BRIDGE LAYOUT.dwg
Data\\Time : Mon, 20 Jul 2026 - 9:30am User Name : ehazord
Path Name : \\jeng.com\shares\WY-LAND\0285\400LAND\025 Design Files\Laud Howell Parkway\Structures\Sheets\WESTBOUND BRIDGE\1-1 WB BRIDGE LAYOUT.dwg

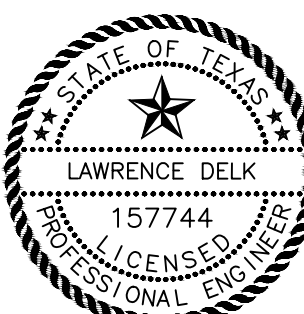
CURVE DATA
VPI STATION = 106+00.00
EL = 585.02'
EX = 0.25'
K = 80.00'
L = 100.00'



HL93 LOADING		
DATE	REVISION	BY
Honey Creek WB Bridge Layout SHEET 1 OF 2		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc. 2150 South Central Expressway Suite 300 McKinney, Texas 75070 Phone 214.620.2800 FRN - F-1386		
LJA PROJECT ID NT852F-0285		
DATE: JULY 2026		
DESIGN: EH		
DRAWN: NC		
SCALE HORZ: 1"=20' VERT: 1"=20'		
SHEET B-13 OF B-57 SHEETS		

STATE OF TEXAS
LAWRENCE DELK
LICENSED PROFESSIONAL ENGINEER
157744
Jawrence Delk
07 17 2026



HL93 - LOADING		
DATE	REVISION	BY
Honey Creek WB Bridge Layout SHEET 2 OF 2		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc. 2150 South Central Expressway Suite 300 McKinney, Texas 75070 Phone 214.620.2800 FRN - F-1386		
	LJA PROJECT ID NT852F-0285 DATE: JULY 2026 DESIGN: EH DRAWN: NC SCALE HORZ: 1"=20' VERT: 1"=20' SHEET B-14	
<i>Lawrence Delk</i> 07 17 2026	OF B-57 SHEETS	

SUMMARY OF BRIDGE QUANTITIES														
ITEM	400	416	416	420	420	420	422	422	425	432	442	450		454
DESCRIPTION CODE	7010	7002	7007	7012	7022	7038	7001	7013	7006	7043	7007	7012		7004
ITEM DESCRIPTION	CEM STABIL BKFL	DRILL SHAFT (18 IN)	DRILL SHAFT (42 IN)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (TX62)	RIPRAP (STONE PROTECTION) (18 IN)	STR STEEL (MISC NON-BRIDGE) ①	RAIL (TY T402)	PEDESTRIAN RAIL (CUSTOM) MOD	SEALED EXPANSION JOINT (4 IN) (SEJ - M)
	CY	LF	LF	CY	CY	CY	SF	CY	LF	CY	LB	LF	LF	LF
2 ~ ABUTMENTS	390	160	400	90.4				92.4		825	135			
4 ~ INTERIOR BENTS			745		116.8	53.2				408	269			
PRESTR CONC GIRDER UNIT 1							13,125		1,307.51			564.9	282.4	104
PRESTR CONC GIRDER UNIT 2							17,675		1,760.02			747.0	373.5	52
TOTAL	390	160	1,145	90.4	116.8	53.2	30,800	92.4	3,067.53	1,233	404	1,311.9	655.9	156

① FOR BRIDGE SIDEWALK EXPANSION JOINT COVER PLATES, SEE "BS-EJCP" STANDARD.

BEARING SEAT ELEVATIONS

		GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
ABUT 1	(FWD)	578.546	578.340	578.135	577.930	577.724
BENT 2	(BK)	579.192	578.987	578.781	578.576	578.370
	(FWD)	579.202	578.997	578.791	578.586	578.380
BENT 3	(BK)	579.848	579.643	579.437	579.232	579.027
	(FWD)	579.858	579.653	579.447	579.242	579.037
BENT 4	(BK)	580.505	580.299	580.094	580.888	579.683
	(FWD)	580.514	580.309	580.104	579.898	579.693
BENT 5	(BK)	581.161	580.955	580.750	580.545	580.339
	(FWD)	581.171	580.965	580.760	580.555	580.349
ABUT 6	(BK)	581.616	581.410	581.205	581.000	580.794

			HL93 LOADING			
DATE		REVISION				BY
WB ESTIMATED QUANTITIES						
Laud Howell Parkway						
CITY OF MCKINNEY COLLIN COUNTY, TEXAS						
LJA Engineering, Inc. 2150 South Central Expressway Suite 300 McKinney, Texas 75070						
						Phone 214.620.2800
						FRN - F-1386
The seal features a star in the center, surrounded by "STATE OF TEXAS". Below it are "LAWRENCE DELK" and "LICENSED PROFESSIONAL ENGINEER". The number "157744" is above "LICENSED". A signature "Lawrence Delk" is at the bottom left, followed by the date "07 17 2026".			LJA PROJECT ID NT852F--0285			
			DATE: JULY 2026			
			DESIGN: EH			
			DRAWN: NC			
			SCALE			
			HORIZ:			
			VERT:			
			SHEET			
			B-15			
			OF B-57 SHEETS			

GENERAL NOTES:

DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS,
9TH EDITION (2020) AND TXDOT BRIDGE DESIGN MANUAL (SEP 2024).

SEE "WB BRIDGE LAYOUT" FOR DRILLED SHAFT SIZE AND LENGTH.

FOR BEARING SEAT ELEVATIONS, SEE "WB ESTIMATED QUANTITIES AND BEARING SEAT ELEVATIONS" SHEET.

SEE "COMMON FOUNDATION DETAILS (FD)" STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES NOT SHOWN.

SEE "SHEAR KEY DETAILS (IGSK)" STANDARD SHEET FOR DIMENSIONS
NOTES, AND DETAILS NOT SHOWN.

SEE T402 RAIL STANDARD SHEET FOR RAIL ANCHORAGE IN WINGWALLS.

CALCULATED FOUNDATION LOAD =
 42" DIA DR SH = 131 TONS/DR SH (ABUT 1)
 42" DIA DR SH = 103 TONS/DR SH (ABUT 6)
 18" DIA DR SH = 10 TONS/DR SH

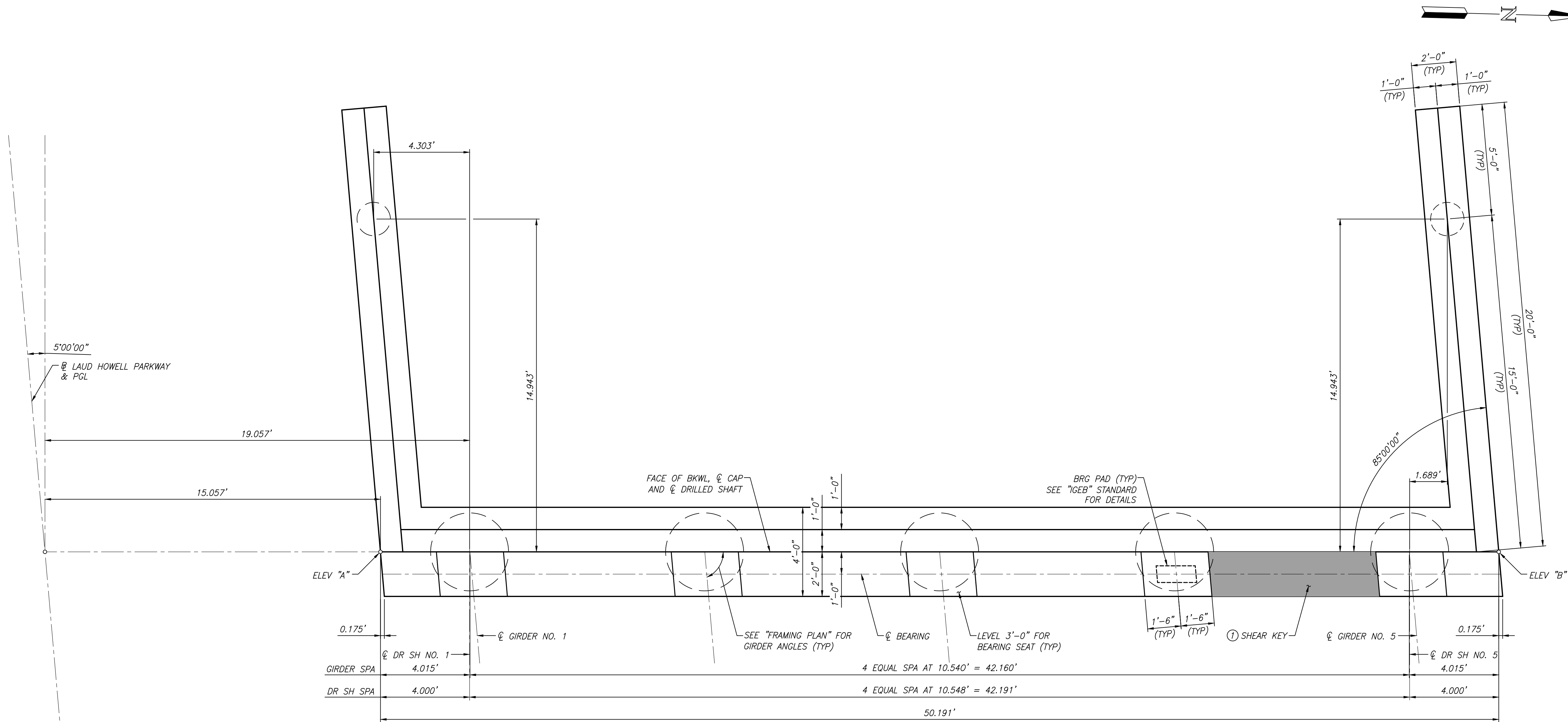
COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REINFORCING BARS DIMENSION SHOWN ARE OUT-TO-OUT OF BAR.

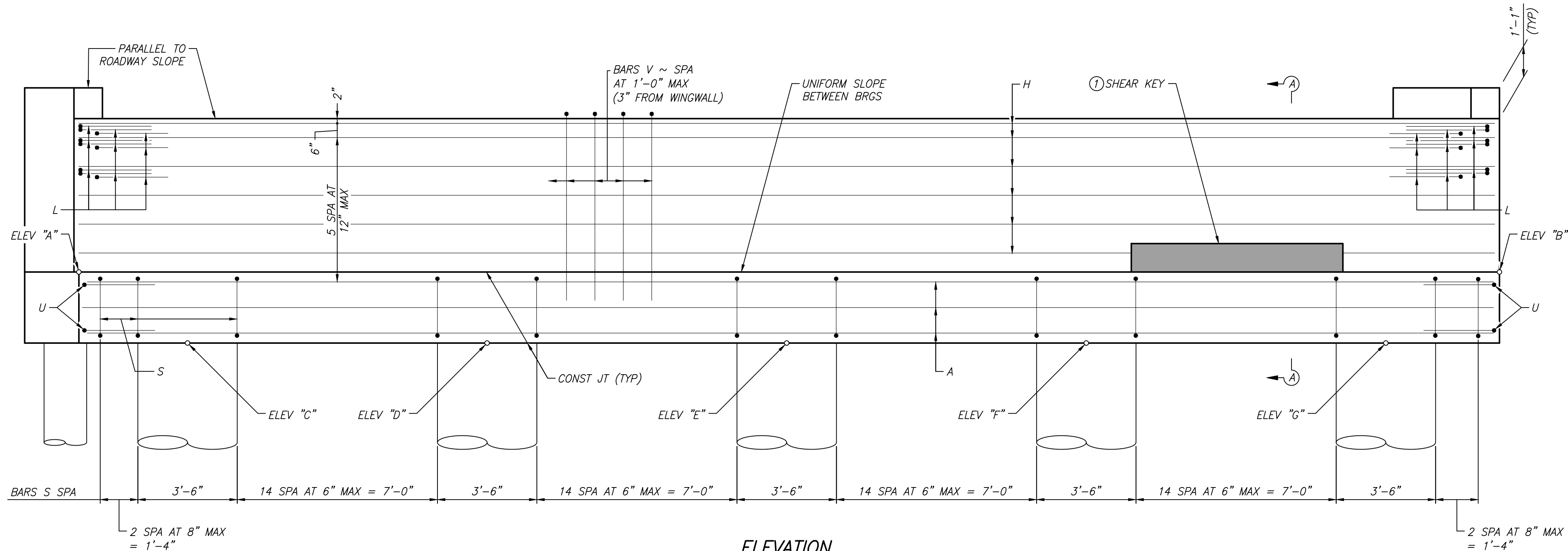
MATERIAL NOTES:

PROVIDE CLASS C CONCRETE ($f'_c = 3,600$ PSI).

PROVIDE GRADE 60 REINFORCING STEEL.



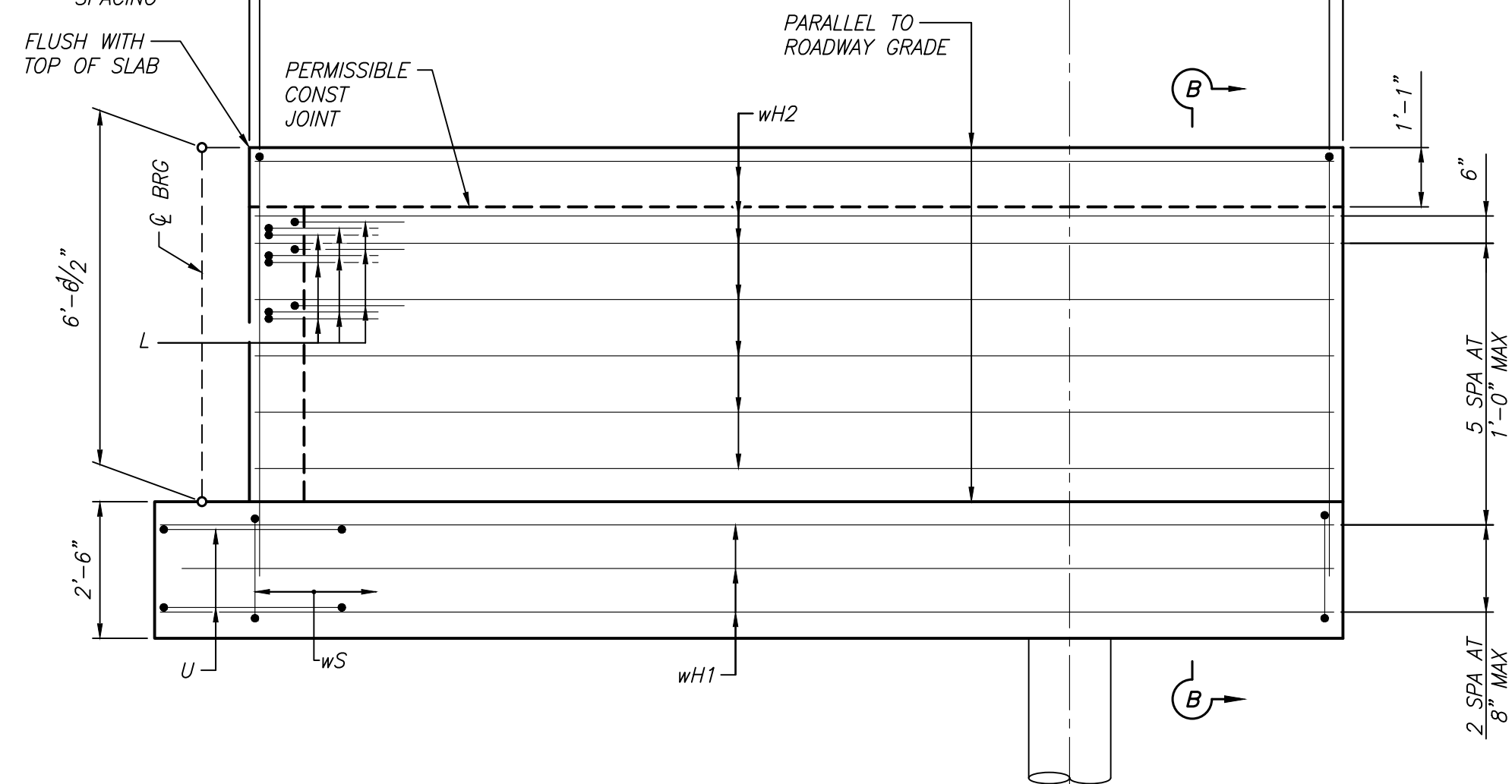
PLAN
ABUT 6 SYMMETRICAL BY OPPOSITE HAND
SCALE: $\frac{3}{8}" = 1' - 0"$



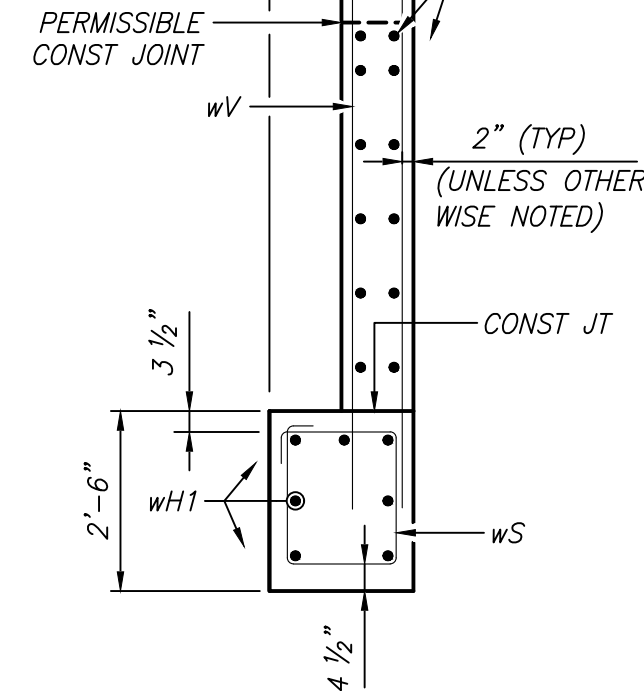
ELEVATION
SCALE: $\frac{3}{8}" = 1'-0"$

	TOP OF CAP ELEVATIONS		TOP OF DRILLED SHAFT ELEVATIONS				
ABUT	ELEV "A"	ELEV "B"	ELEV "C"	ELEV "D"	ELEV "E"	ELEV "F"	ELEV "G"
1	578.503	577.521	575.922	575.711	575.500	575.289	575.078
6	581.569	580.957	578.989	578.778	578.567	578.356	578.145

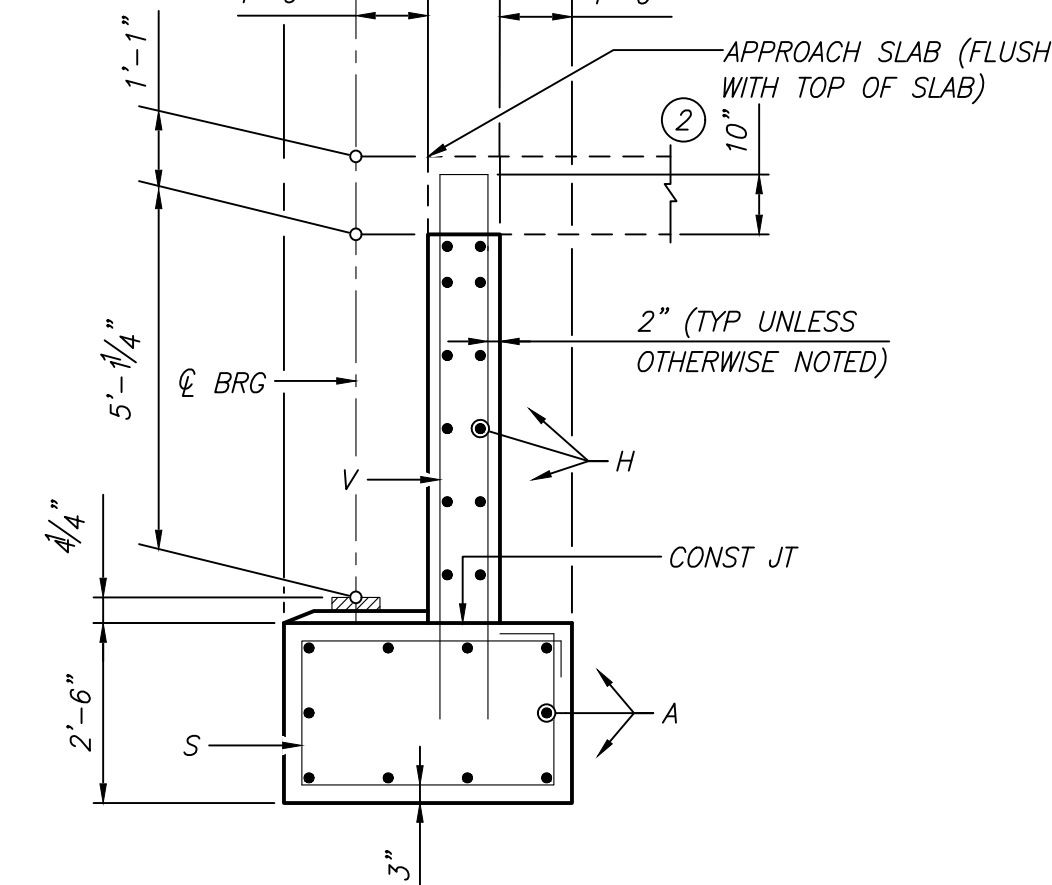
[illegible]



WINGWALL ELEVATION



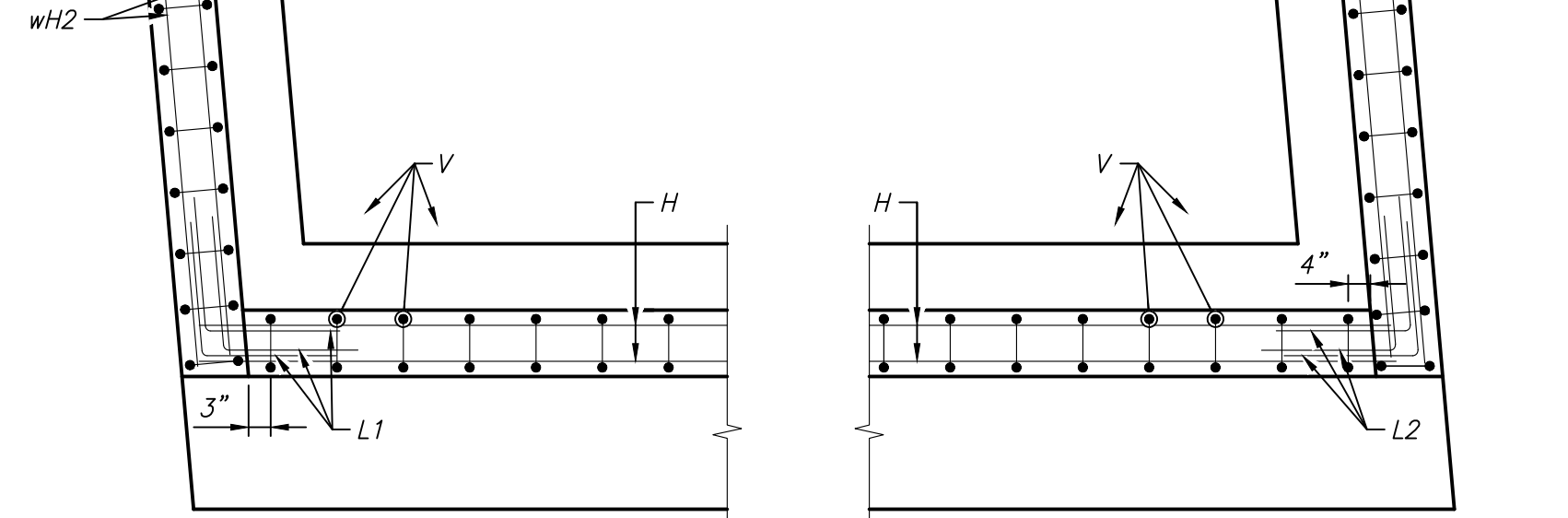
SECTION B-B



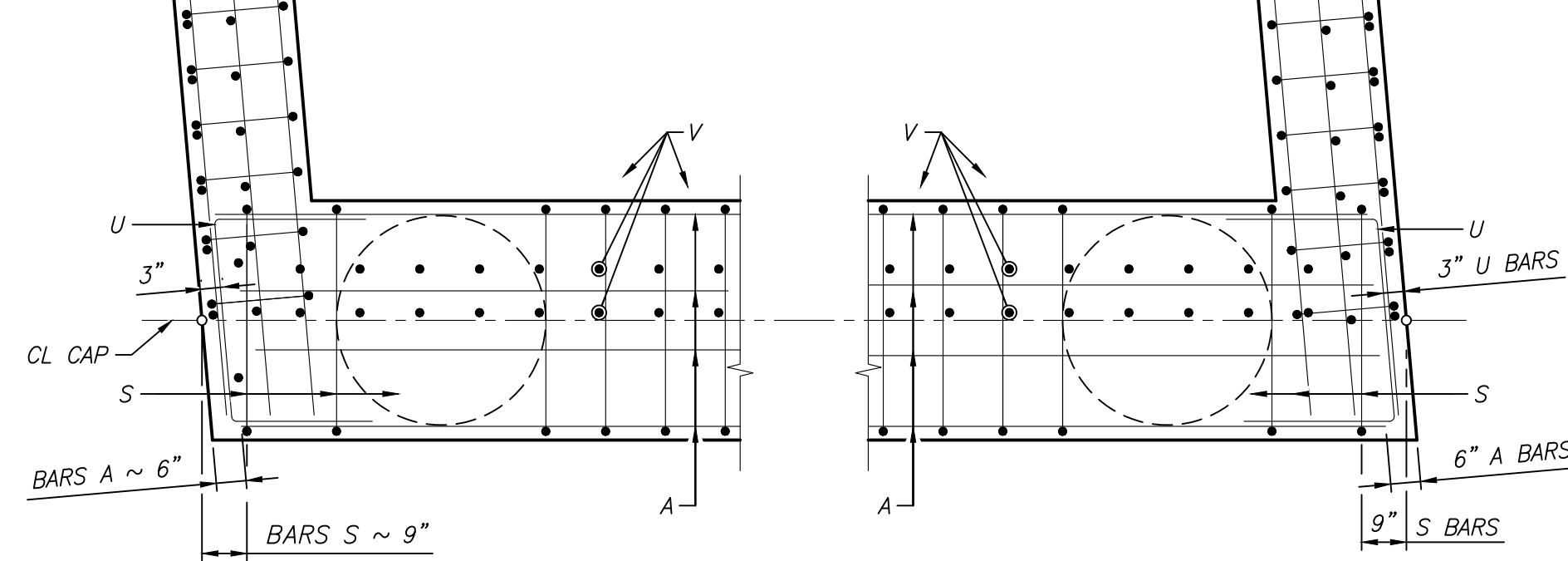
SECTION A-A

TABLE OF ESTIMATED QUANTITIES				
BAR	NO.	SIZE	LENGTH	WEIGHT
A	10	#11	49'-2"	2,613
H	12	#6	49'-10"	899
L	18	#6	4'-0"	109
S	66	#5	12'-8"	872
U	4	#6	8'-7"	52
V	49	#5	16'-11"	865
wH1	14	#6	21'-8"	456
wH2	28	#6	19'-8"	828
wS	42	#4	7'-10"	220
wV	42	#5	17'-1"	749
REINFORCING STEEL (LB) ③				7,663
CLASS "C" CONC (CBU) (CY) ④				45.2

- ② INCREASE AS REQUIRED TO MAINTAIN 3" FROM FINISHED GRADE.
- ③ REINFORCING STEEL QUANTITIES ARE FOR CONTRACTOR'S INFORMATION ONLY.
- ④ QUANTITY INCLUDES SHEAR KEY VOLUME.



BACKWALL

CAP

CORNER DETAILS



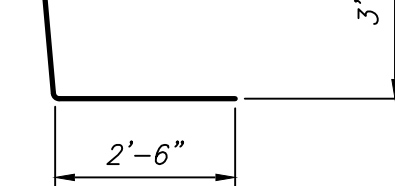
BARS V & wV



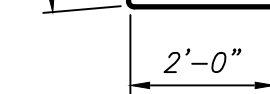
BARS S



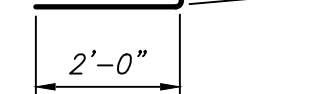
BARS wS



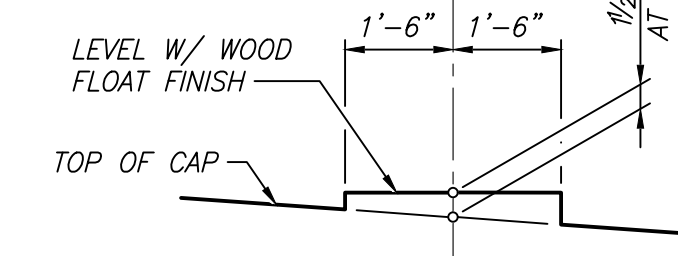
BARS U



BARS L1



BARS L2



BEARING SEAT DETAILS
(BEARING SURFACE MUST BE CLEAN AND
FREE OF ALL LOOSE MATERIAL BEFORE
PLACING BEARING PAD.)

HL93 LOADING		
DATE	REVISION	BY

WB ABUTMENT NO. 1 & 6
DETAILS

SHEET 2 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

Phone 214.620.2800

FRN - F-1386



07 17 2026

LJA PROJECT ID
NT852F-0285

DATE: JULY 2026

DESIGN:	EH
RAWN:	NO

SCALE

HÖRZ: 3" = 1'

SHEET

B-17

OF B-57 SHEETS

GIRDER REPORT

GIRDER REPORT, SPAN 2				
	HORIZONTAL DISTANCE		TRUE DISTANCE	GIRDER
	C-C BENT	C-C BRG.	BOT. GDR. FLO. ②	SLOPE
GIRDER 1	131.250	129.250	130.75	0.0050
GIRDER 2	131.250	129.250	130.75	0.0050
GIRDER 3	131.250	129.250	130.75	0.0050
GIRDER 4	131.250	129.250	130.75	0.0050
GIRDER 5	131.250	129.250	130.75	0.0050

WB FRAMING PLAN

SHEET 1 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

EN - F-1386



07 17 2026

LJA PROJECT ID

DATE: JULY 2026

DESIGN: EH

RAWN: NC

SCALE

HORIZ: 1"=20'

SHEET

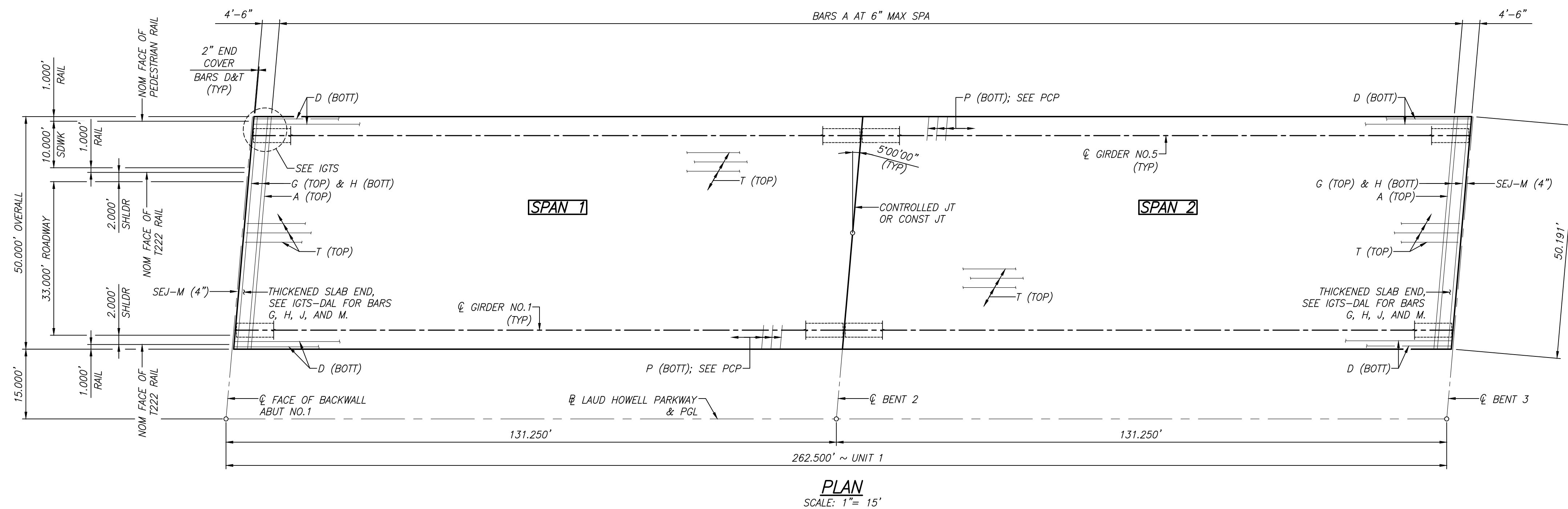
D. 10

B-19

Plan view of the bridge deck showing three spans (Span 3, Span 4, Span 5) with girders, bents, and abutments. The diagram includes labels for 'GIRDER #1 (TYP)', 'GIRDER #5 (TYP)', 'GIRDER ANGLE (TYP)', 'BENT NO. 3', 'BENT NO. 4', 'BENT NO. 5', 'FACE OF BACKWALL ABUT. NO. 6', 'LAUD HOWELL PARKWAY & PGL', and stationing markers 110+00, 111+00, 112+00. The spans are labeled 'SPAN 3 (TX62 GIRDERS)', 'SPAN 4 (TX62 GIRDERS)', and 'SPAN 5 (TX62 GIRDERS)'.

GIRDER REPORT

HL93 LOADING	
DATE	REVISION
BY	DATE
WB FRAMING PLAN	
SHEET 2 OF 2	
Laud Howell Parkway	
CITY OF MCKINNEY COLLIN COUNTY, TEXAS	
LJA Engineering, Inc. 2150 South Central Expressway Suite 300 McKinney, Texas 75070 Phone 214.620.2800 FRN - F-1386	
	LJA PROJECT ID NT852F-0285 DATE: JULY 2026 DESIGN: EH DRAWN: NC SCALE HORZ: 1"=20' VERT: 1"=20' SHEET B-20 OF B-57 SHEETS
07 17 2026	



GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION (2020) AND TxDOT BRIDGE DESIGN MANUAL (JAN 2024).
2. SEE "PRESTRESSED CONCRETE PANELS (PCP-DAL)" AND "PRESTRESSED CONCRETE PANEL FABRICATION DETAILS (PCP-FAB)" STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE "THICKENED SLAB END DETAILS (IGTS-DAL)" STANDARD FOR THICKENED SLAB END DETAILS STANDARD SHEET AND QUANTITY ADJUSTMENTS.
4. SEE "MISCELLANEOUS SLAB DETAILS STANDARD (IGMS-DAL)" FOR ADDITIONAL DETAILS.
5. SEE "TRAFFIC RAIL (T402)" AND "PEDESTRAIN RAIL (XXX)" STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE "PERMANENT METAL DECK FORMS (PMDF)" STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REINFORCING BARS DIMENSION SHOWN ARE OUT-TO-OUT OF BAR.

MATERIAL NOTES:

PROVIDE CLASS S CONCRETE ($f'_c = 4,000$ PSI).

PROVIDE GRADE 60 REINFORCING STEEL.

BAR LAPS, WHERE REQUIRED, ARE AS FOLLOWS:

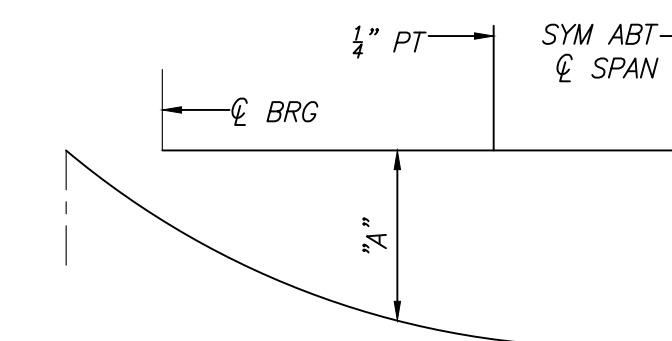
EPOXY COATED ~ #4 = 2'-5"
#5 = 3'-0"

- ① QUANTITIES SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE. SEE "FRAMING PLAN SHEET" FOR GIRDER LENGTHS.
- ② FOR CONTRACTOR'S INFORMATION ONLY. REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 PSF.
- ③ THEORETICAL DIMENSIONS.

TABLE OF ESTIMATED QUANTITIES			
SPAN NO.	REINF CONC SLAB	PRESTRESSED CONC GIRDERS	REINFORCING STEEL (SLAB)
		(Tx62) ①	②
	SF	LF	LB
1	6,563	653.75	15,094
2	6,563	653.76	15,094
TOTAL	13,125	1,307.51	30,188

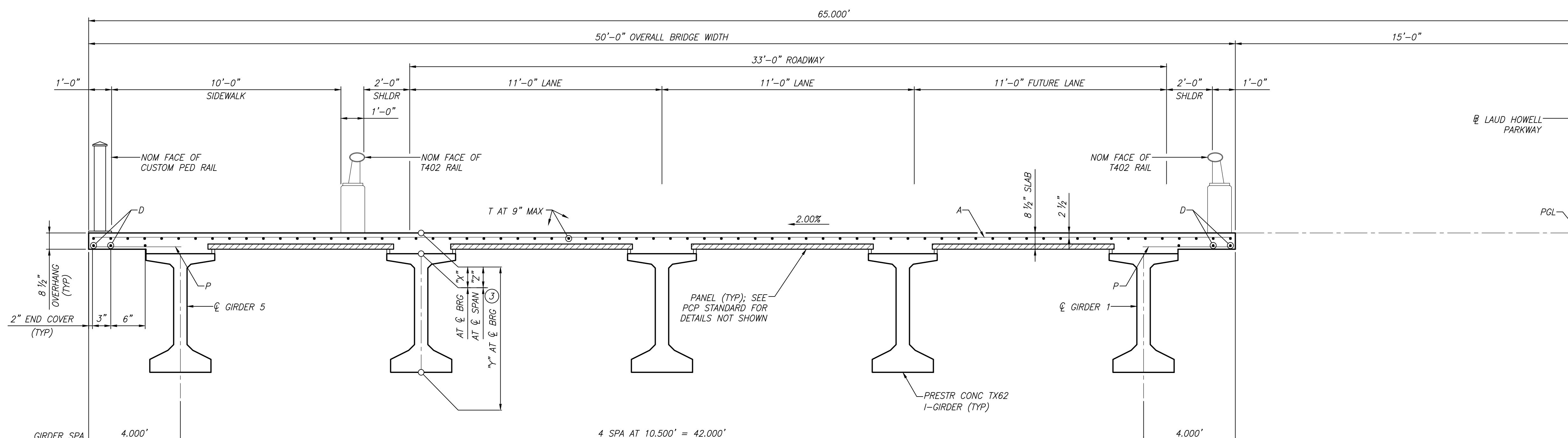
TABLE OF SECTION DEPTHS				
SPAN NO.	GIRDER NO.	"X" AT $\frac{1}{2}$ BRG	"Y" AT $\frac{1}{2}$ BRG	"Z" AT $\frac{1}{2}$ SPAN
1, 2	1-5	1'-0 1/4"	6'-2 1/4"	9 3/4"
	2-4			10"

TABLE OF DEAD LOAD DEFLECTIONS			
SPAN NO.	GIRDER NO.	"A"	"B"
		FT	FT
1 & 2	1, 5	0.156	0.222
	2-4	0.177	0.252



DEAD LOAD DEFLECTION DIAGRAM

NOTE: DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY ($E_c=5,000$ ksi). ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.



TYPICAL TRANSVERSE SECTION

SCALE: $\frac{3}{8}" = 1' - 0"$

BAR TABLE	
BAR	SIZE
A	#5
D	#5
G	#5
H	#5
J	#5
M	#5
P	#4
T	#4

[illegible]WB PRESTRESSED
CONCRETE GIRDER
UNIT 1

SHEET 1 OF 2

Laud Howell
Parkway

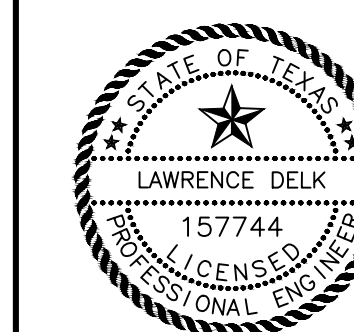
**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

FRN - F-1386



Lawrence Deek
07 17 2026

LJA PROJECT ID NT852F-0285

DATE: JULY 2026

DESIGN:	EH
---------	----

DRAWN:	NC
--------	----

SCALE
HORIZONTAL SHOWN

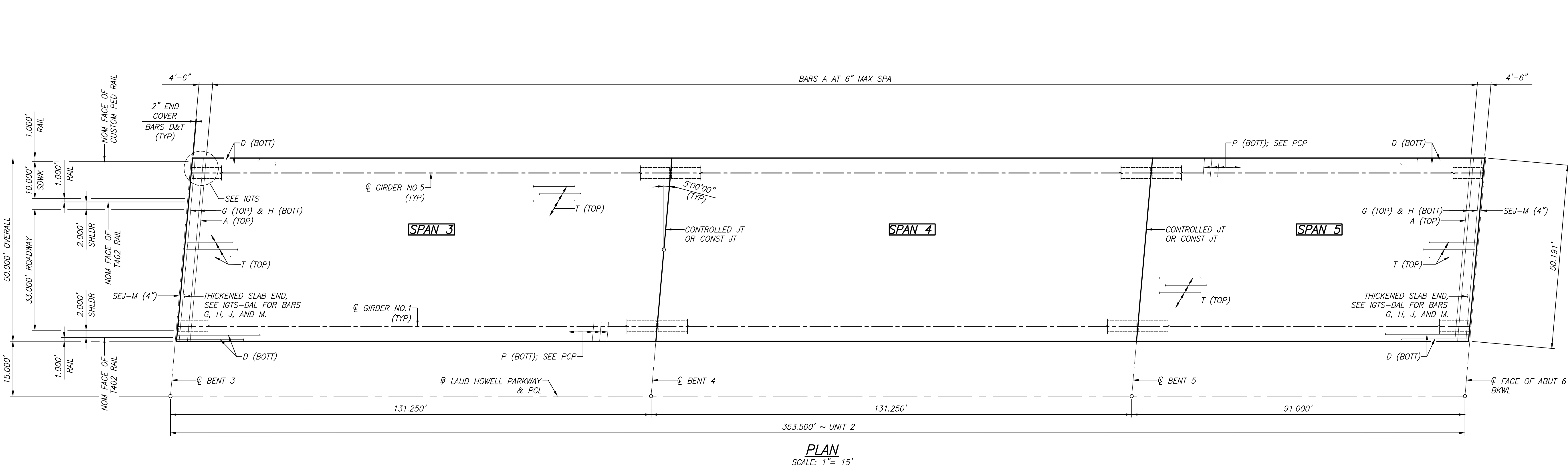
HURZ:AS SHOWN
VERT: AS SHOWN

SHEET

B-21

OF B-57 SHEETS

\\jeng.com\shares\WY-LAND\0285\400LAND\0285\Design Files\Laud Howell Parkway\Structures\Sheets\WB PRESTRESSED CONCRETE GIRDER UNIT 2.dwg
Date\\Time : Mon, 20 Jul 2026 - 9:31am User Name : ehazord
Print Name : \\jeng.com\shares\WY-LAND\0285\400LAND\0285\Design Files\Laud Howell Parkway\Structures\Sheets\WB PRESTRESSED CONCRETE GIRDER UNIT 2.dwg



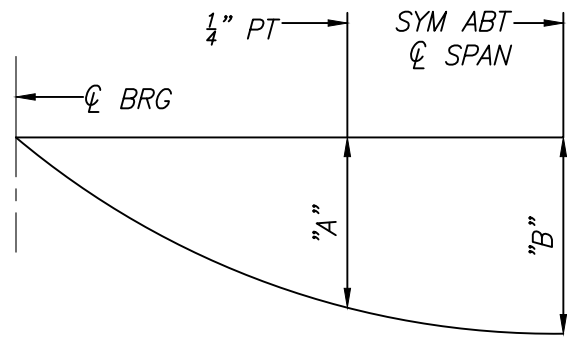
GENERAL NOTES:
SEE SHEET 1 FOR GENERAL NOTES

- QUANTITIES SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE. SEE FRAMING PLAN SHEET FOR GIRDER LENGTHS.
- FOR CONTRACTOR'S INFORMATION ONLY. REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 PSF.
- THEORETICAL DIMENSIONS.

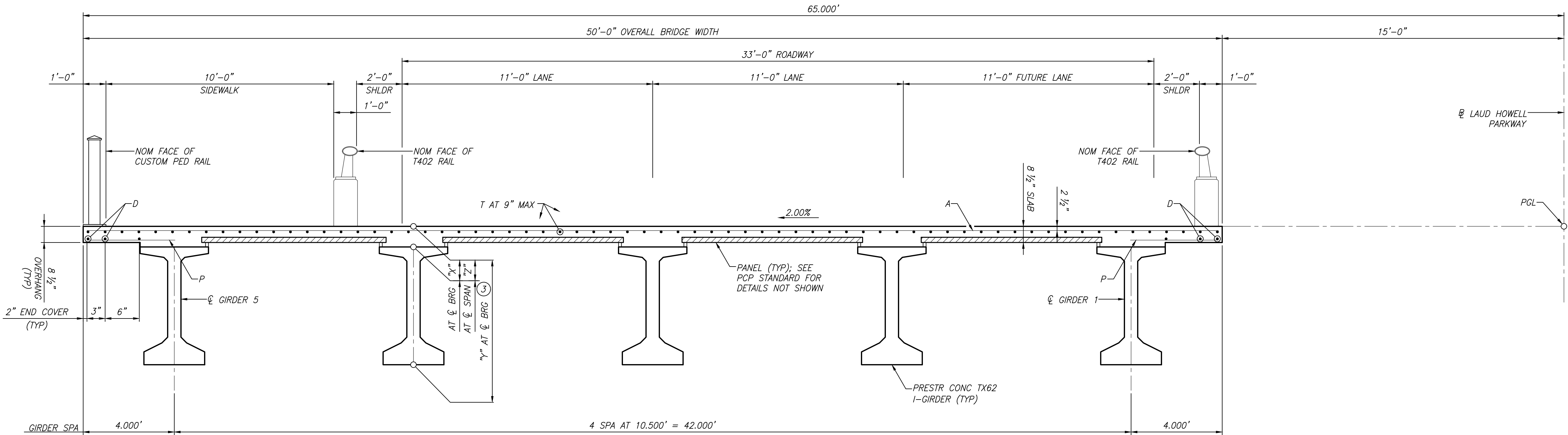
TABLE OF ESTIMATED QUANTITIES			
SPAN NO.	REINF CONC SLAB	PRESTRESSED CONC GIRDERS	REINFORCING STEEL (SLAB) ②
		(Tx62) ①	
	SF	LF	LB
3	6,563	653.76	15,094
4	6,563	653.76	15,094
5	4,550	452.50	10,465
TOTAL	17,675	1,307.52	30,188

TABLE OF SECTION DEPTHS				
SPAN NO.	GIRDER NO.	"x" AT & BRG	"y" AT & BRG	"z" AT & SPAN ③
3, 4	1, 5	1'-0 1/4"	6'-2 1/4"	9 3/4"
	2-5			10"
5	1, 5			10"
	2-4			10 1/8"

TABLE OF DEAD LOAD DEFLECTIONS			
SPAN NO.	GIRDER NO.	"A"	"B"
		FT	FT
3, 4	1, 5	0.156	0.222
	2-4	0.177	0.252
5	1, 5	0.035	0.050
	2-4	0.040	0.057



DEAD LOAD DEFLECTION DIAGRAM
NOTE: DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY (Ec=5,000 ksi). ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.



BAR TABLE	
BAR	SIZE
A	#5
D	#5
G	#5
H	#5
J	#5
M	#5
P	#4
T	#4

TYPICAL TRANSVERSE SECTION
SCALE: 3/8"=1'-0"

HL93 LOADING		
DATE	REVISION	BY
WB PRESTRESSED CONCRETE GIRDER UNIT 2		
SHEET 2 OF 2		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc. LJA 2150 South Central Expressway Phone 214.620.2800 Suite 300 McKinney, Texas 75070 FRN - F-1386		
	LJA PROJECT ID NT852F-0285	
	DATE: JULY 2026	
	DESIGN: EH	
	DRAWN: NC	
	SCALE HORZ: AS SHOWN VERT: AS SHOWN	
SHEET B-22		OF B-57 SHEETS

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: _____
FILE: _____

FILE:

STRUCTURE	DESIGNED GIRDERS									DEPRESSED STRAND PATTERN		CONCRETE		OPTIONAL DESIGN						LOAD RATING FACTORS		
	SPAN NO.	GIRDER NO.	GIRDER TYPE	PRESTRESSING STRANDS										DESIGN LOAD COMP STRESS (TOP ϵ) (SERVICE I)	DESIGN LOAD TENSILE STRESS (BOTTOM ϵ) (SERVICE III)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (kip-ft)	LIVE LOAD DISTRIBUTION FACTOR					
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE	STRGTH	"e" ϵ	"e" END								②					
LAUD HOWELL PARKWAY; HONEY CREEK WB BRIDGE	1-4 5	ALL ALL	Tx62 Tx62	* 	54 42	0.6 0.6	270 270	22.67 23.78	12.44 16.49	12 6	58.5 57.5	6.000 6.000	8.500 8.500	4.468 2.197	-4.834 -2.514	11769 8708	0.759 0.840	1.000 0.985				

NON-STANDARD STRAND PATTERNS	
PATTERN	STRAND ARRANGEMENT AT $\frac{1}{2}$ OF GIRDER
*	2.5(ABCDEFGF), 4.5(ABCDEFGF), 6.5(ABCDEFGF), 8.5(ABCD), 10.5(A), 12.5(A)

① Based on the following allowable stresses (ksi):

$$\text{Compression} = 0.65 f_{ci}$$
$$Tension = 0.24 \sqrt{f'ci}$$

Optional designs must likewise conform.

② Portion of full HL93.

DESIGN NOTES:

*Designed according to AASHTO LRFD Bridge Design Specifications.
Load rated using Load and Resistance Factor Rating according to
AASHTO Manual for Bridge Evaluation.*

Optional designs for girders 120 feet or longer must have a calculated residual camber equal to or greater than that of the designed girder.

Prestress losses for the designed girders have been calculated for a relative humidity of __ percent. Optional designs must likewise conform.

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

Use low relaxation strands, each pretensioned to 75 percent of f_{pu} .

Strand debonding must comply with Item 424.4.2.2.2.4.

Full-length debonded strands are only permitted in positions marked **Δ**. Double wrap full-length debonded strands in outer most position of each row.

When shown on this sheet, the Fabricator has the option of furnishing either the designed girder or an approved optional design. All optional design submittals must be signed, sealed and dated by a Professional Engineer registered in the State of Texas. Seal cracks in girder ends exceeding 0.005" in width as directed by the Engineer. The Fabricator is permitted to decrease the spacing of Bars R and S, by providing additional bars to help limit crack width provided the decreased spacing results in no less than 1" clear between bars. The Fabricator must take an approved corrective action if cracks greater than 0.005" form on a repetitive basis.

DEPRESSED STRAND DESIGNS:

Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc., beginning each row in the "A" position and working outward until the required number of strands is reached. All strands in the "A" position must be depressed, maintaining the 2" spacing so that, at the girder ends, the upper two strands are in the position shown in the table.

To complete this sheet input the girder designs in the table and the relative humidity under Design Notes. In all cases, remove this block. This sheet must be signed, sealed, and dated by a registered Professional Engineer.

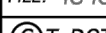


TEXAS DEPARTMENT OF TRANSPORTATION

***Bridge
Division
Standard***

PRESTRESSED CONCRETE I-GIRDER DESIGNS (NON-STANDARD SPANS)

IGND

FILE: IG-IGND-22 WB.dgn	DN: TxDOT	CK: TxDOT	DW: EFC	CK: TAR
 August 2017 REVISIONS	CONT	SECT	JOB	HIGHWAY
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HL93 LOADING		
DATE	REVISION	BY

WB BRIDGE
PRESTRESSED CONCRETE
I-GIRDER DESIGNS

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

Phone 214.620.2800

FRN - F-1386



Laraine Deek

LJA PROJECT ID
NT852F-0285

DATE: JULY 2026

DESIGN: EH

DRAWN: NC

SCALE

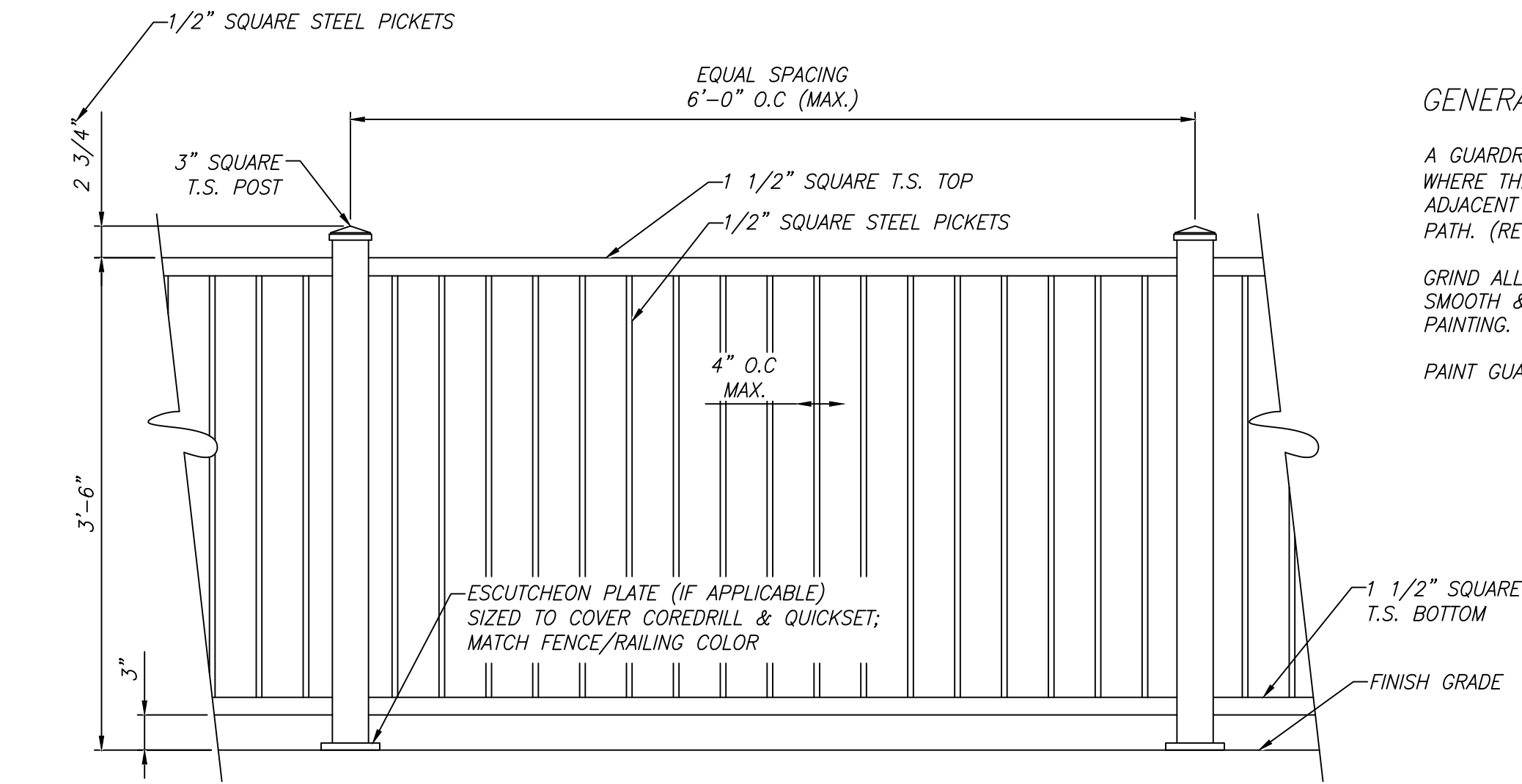
HURZ: NTS
VERT: NTS

SHEET

R-23

OF B. 63 SHEETS

Date\\Time : Mon, 20 Jul 2026 - 9:32am User Name : ehazard
Path\\Name : \\joeing.com\\viores\\NIX-LAND\\0285\\00LAND\\425 Design Files\\Laud Howell Parkway\\Structures\\Sheets\\24 42in RAILING WITH THICKENED CONCRETE EDGE.dwg

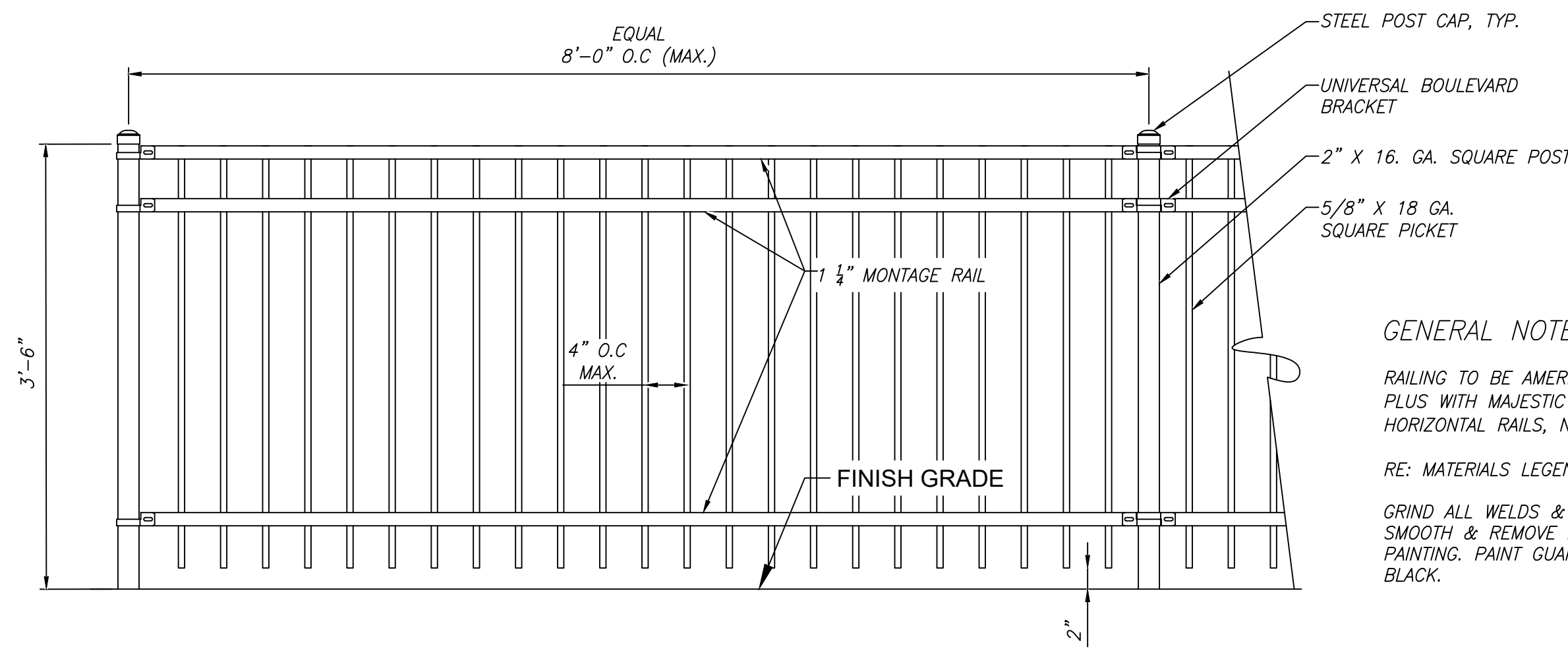


GENERAL NOTES:

A GUARDRAIL ($\geq 42"$ HT.) IS REQUIRED WHERE THE GRADE DROP IS $\geq 30"$ ADJACENT TO PEDESTRIAN SIDEWALK OR PATH. (RE: PLANS FOR LOCATIONS)

GRIND ALL WELDS & SHARP EDGES SMOOTH & REMOVE RUST PRIOR TO PAINTING.

PAINT GUARDRAIL SEMI-GLOSS BLACK.



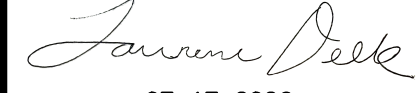
GENERAL NOTES:

RAILING TO BE AMERISTAR MONTAGE PLUS WITH MAJESTIC STYLE. (3 HORIZONTAL RAILS, NO FINALS)

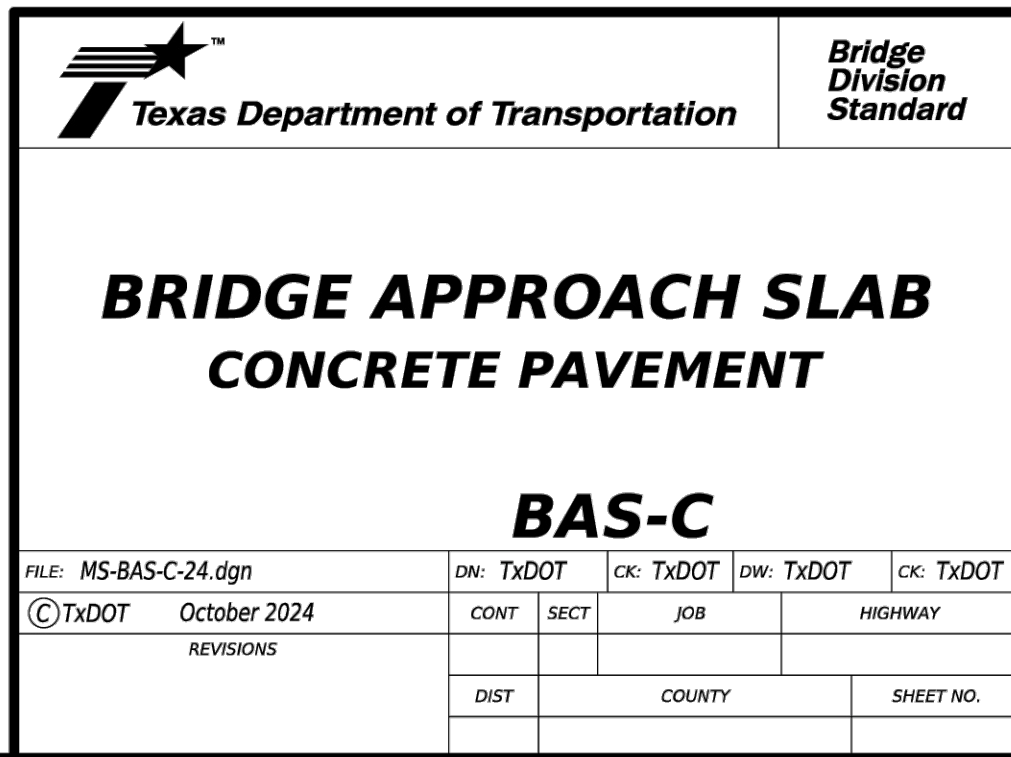
RE: MATERIALS LEGEND/L1.00

GRIND ALL WELDS & SHARP EDGES SMOOTH & REMOVE RUST PRIOR TO PAINTING. PAINT GUARDRAIL SEMI-GLOSS BLACK.

ELEVATION
SCALE: 1"=1'-0"

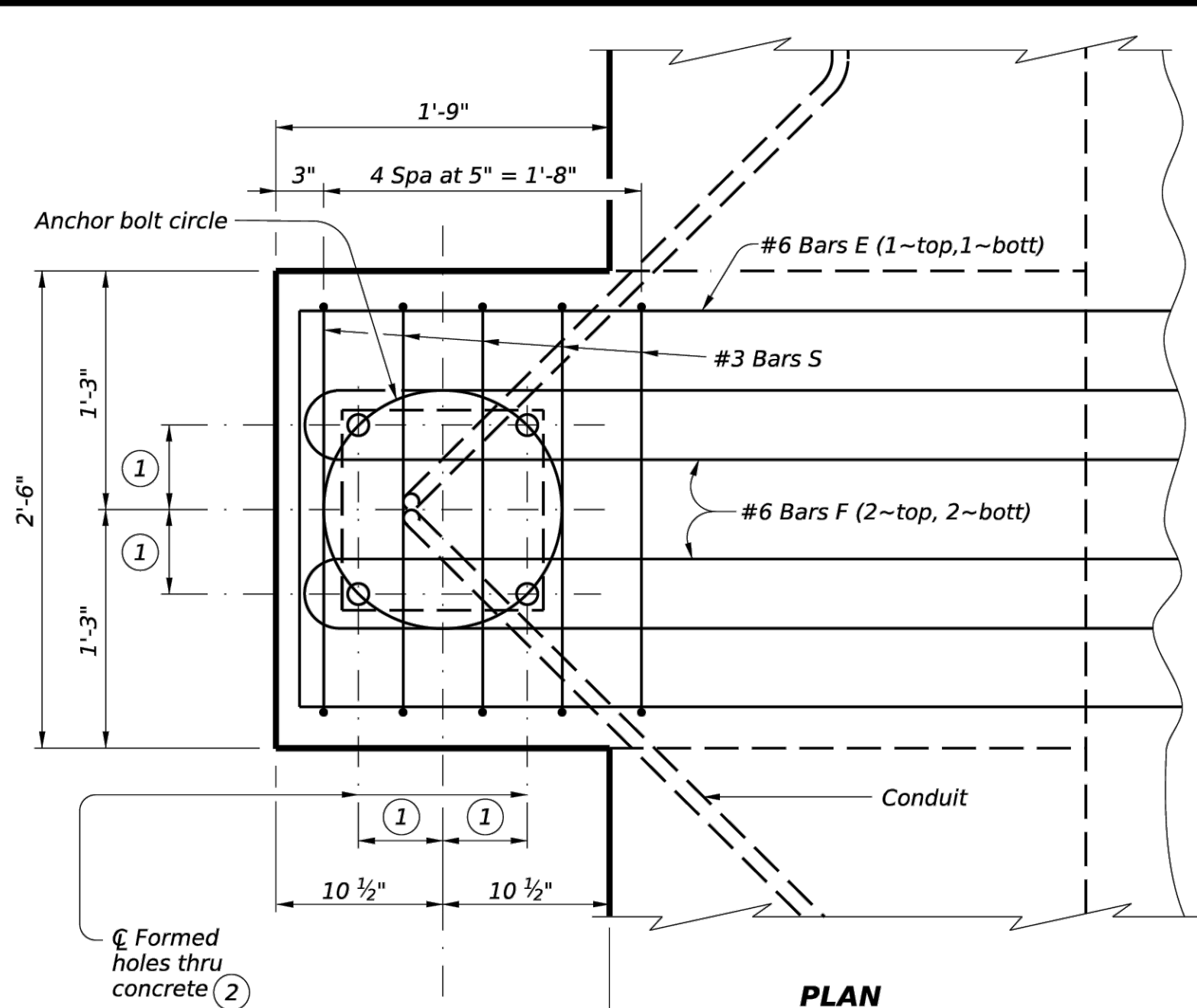
HL93 LOADING		
DATE	REVISION	BY
42" RAILING W/ THICKENED CONCRETE EDGE		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc. 		
2150 South Central Expressway Suite 300 McKinney, Texas 75070		Phone 214.620.2800 FRN - F-1386
  07 17 2026	LJA PROJECT ID NT852F-0285	
	DATE: JULY 2026	
	DESIGN: EH	
	DRAWN: NC	
	SCALE HORZ: AS SHOWN VERT: AS SHOWN	
SHEET B-24		OF B-57 SHEETS

DATE: _____
FILE: _____

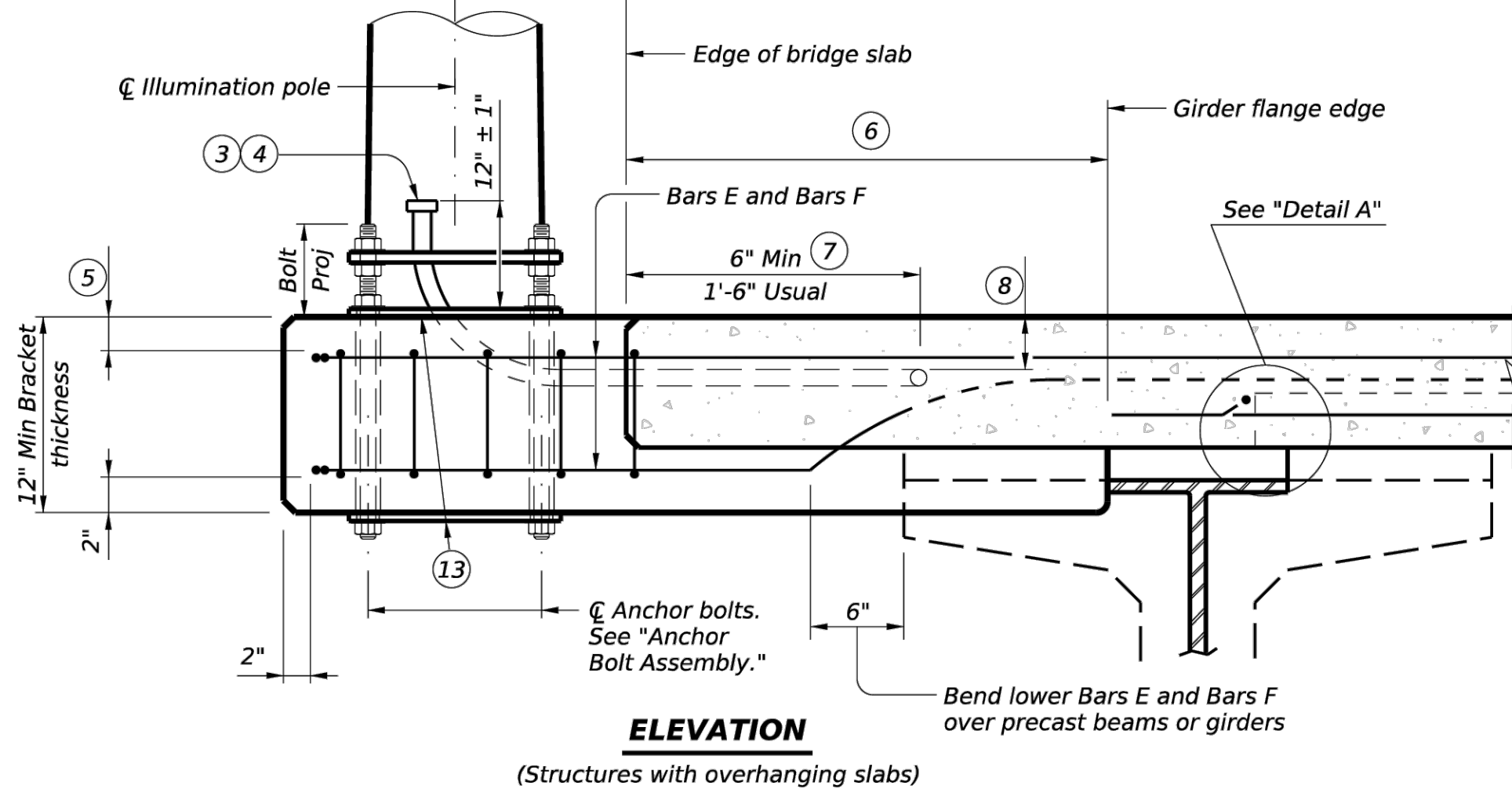


DATE:	JULY 2026
DESIGN:	EH
DRAWN:	MS
SCALE	
HORZ:	
VERT:	
SHEET	
B-25	
OF B-57 SHEETS	

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PLAN



ILLUMINATION POLE BRACKET LOCATION AND REINFORCING

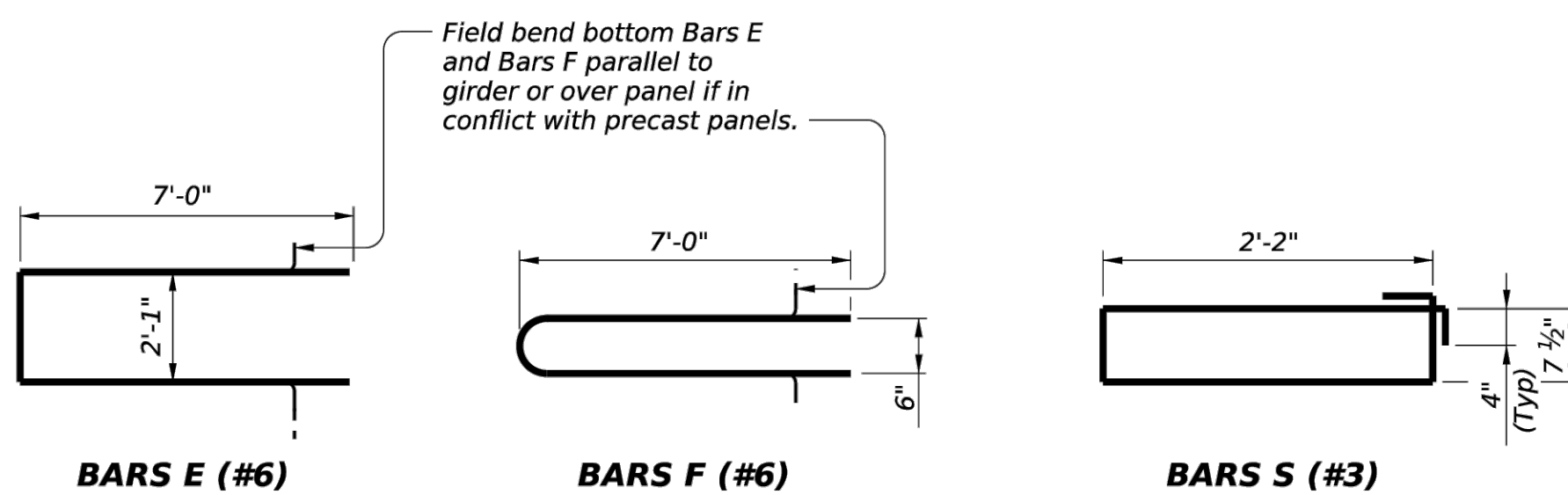


TABLE OF ANCHOR BOLT AND ANCHOR BOLT PLATE INFORMATION

Anchor Bolt Circle Diameter	Anchor Bolt Offset	Anchor Bolt Diameter	Anchor Bolt Hole Size		Top And Bottom Anchor Bolt Plate Size	Center Hole Diameter In Top Anchor Bolt Plate
			Concrete	Steel		
IN	IN	IN	IN	IN	IN	IN
13	4 ⁹ / ₁₆	1	1 ¹ / ₄	1 ¹ / ₄	PL ¹ / ₂ X 13 X 1'-1"	9 ¹ / ₂
15	5 ⁹ / ₁₆	1 ¹ / ₄	1 ¹ / ₂	1 ¹ / ₂	PL ¹ / ₂ X 15 ¹ / ₂ X 1'-3 ¹ / ₂ "	10 ¹ / ₂

ESTIMATED QUANTITIES
(ONE BRACKET)

Item	Unit	Quantity
CONCRETE (9, 10)	CY	0.2
REINFORCING STEEL (10)	LB	146
STRUCTURAL STEEL (10, 11)	LB	112
CONDUIT (12)	LF	4

- ① See Table for anchor bolt offset dimension.
- ② See Table for hole diameter size.
- ③ If lighting is to be placed on future contract, extend conduit only 6" and provide water tight cap.
- ④ Ream burrs and install bell ends or bushings on all conduit ends.
- ⑤ Provide same clear cover required for bridge slab. Place Bars E and F beneath top slab reinforcing only if necessary to provide this cover.
- ⑥ If slab edge to girder flange edge exceeds 3'-11", lengthen Bars E and F proportionally to ensure Bars E and F extend 1'-6" minimum beyond girder flange edge.
- ⑦ Clear rail anchors, drains, etc 1½" minimum.
- ⑧ 1½" Minimum cover placed beneath top layer slab reinforcing.
- ⑨ Variation due to slab thickness is insignificant.
- ⑩ For Contractor's information only.
- ⑪ Anchor bolts, nuts, washers, and 2 plates. Verify anchor bolt lengths prior to ordering.
- ⑫ Additional to main run (size and type as shown elsewhere on the plans).
- ⑬ See Anchor Bolt Assembly, Anchor Bolt Plate, and Table for anchor bolt and anchor bolt plate information.

MATERIAL NOTES:

Galvanize anchor bolts, nuts, washers, and anchor bolt plates.
Repair galvanizing damage from tack welding per Item 445.
"Galvanizing."
Provide Grade 60 reinforcing steel.
Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.
Concrete for illumination pole brackets must be of the same type and placed monolithically with the bridge slab. The bracket quantity is considered subsidiary to the Item "Reinforced Concrete Slab."

GENERAL NOTES:

Designed for up to 50 ft light pole with one 12 ft arm, 60 lb luminaire with 1.6 sq ft EPA at maximum design wind speed of 110 mph (3 second gusts). A special design is required if luminaire mounting height exceeds 100 ft above average surrounding terrain.

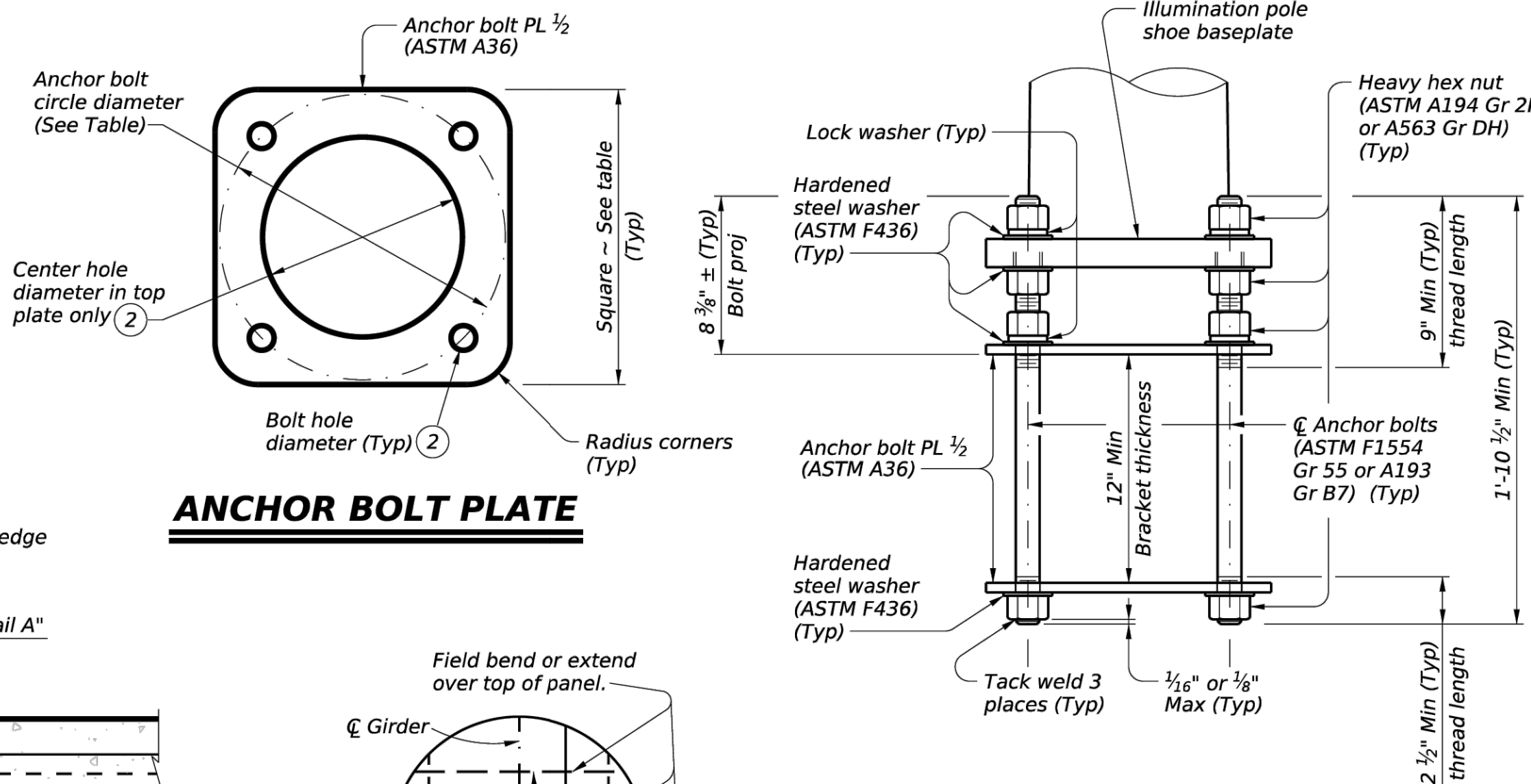
The anchor bolts, nuts, washers, and anchor bolt plates are subsidiary to the Item "Roadway Illumination Assemblies."

The type and size of conduit, the anchor bolt circle diameter, the number and location of brackets is shown elsewhere on the plans. Brackets found to conflict with other components of the bridge may be relocated as necessary.

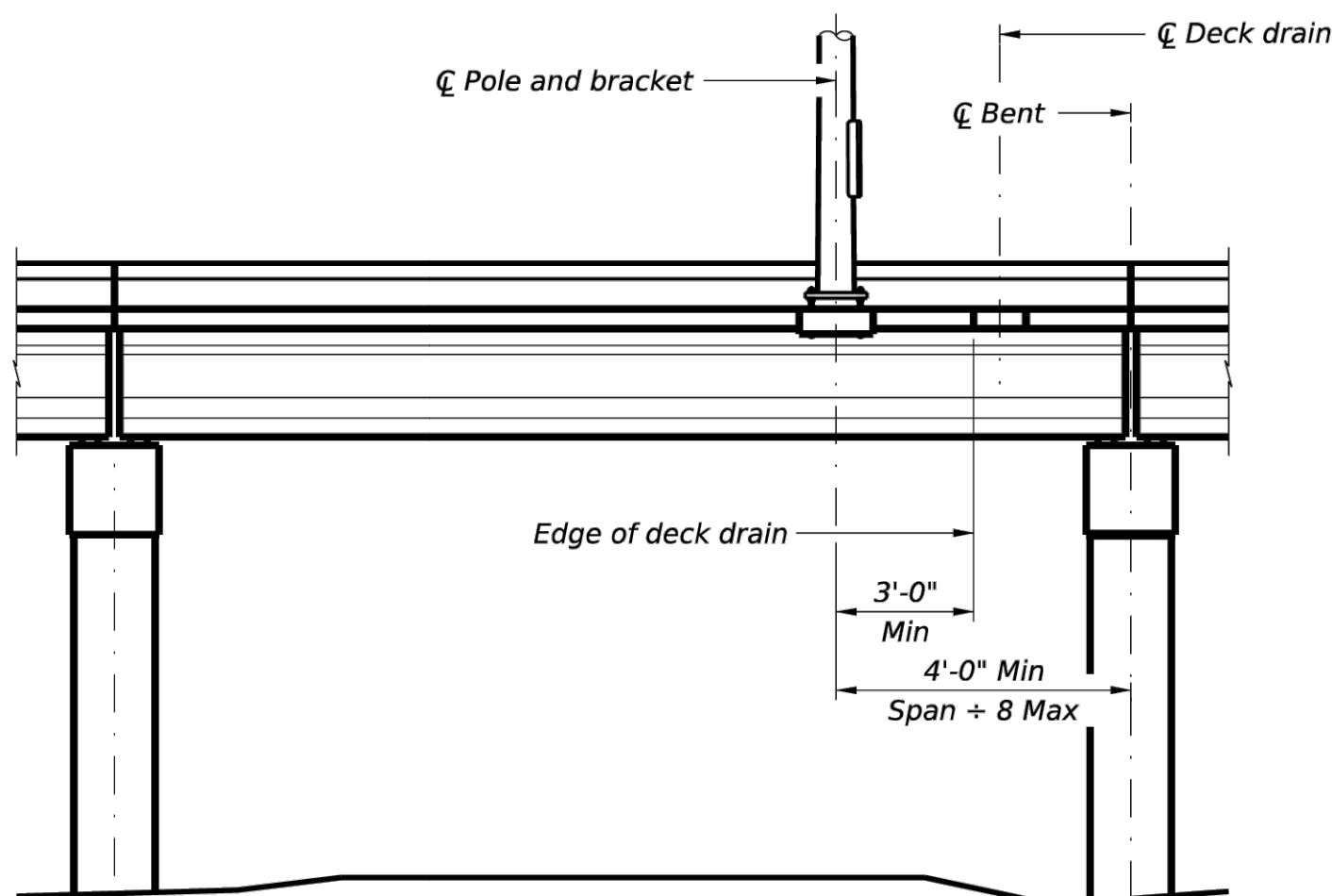
See Roadway Illumination Poles standard for details and notes not shown.

ANCHOR BOLT ASSEMBLY

(See Table for anchor bolt diameter)



DETAIL A



TYPICAL BRIDGE ELEVATION

DATE: _____
FILE: _____

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BRIDGE LIGHTING DETAILS

SHEET 1 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc

2150 South Central Expressway Phone 214.620.2800
Suite 300
McKinney, Texas 75070 FRN - F-138



07 17 2026

LJA PROJECT ID
NT852F-0285

DATE:	JULY 2026
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DRAWN:	MS

SCALE

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VERT:

SHEET

B-26

OF B-57 SHEETS

DATE: _____
FILE: _____

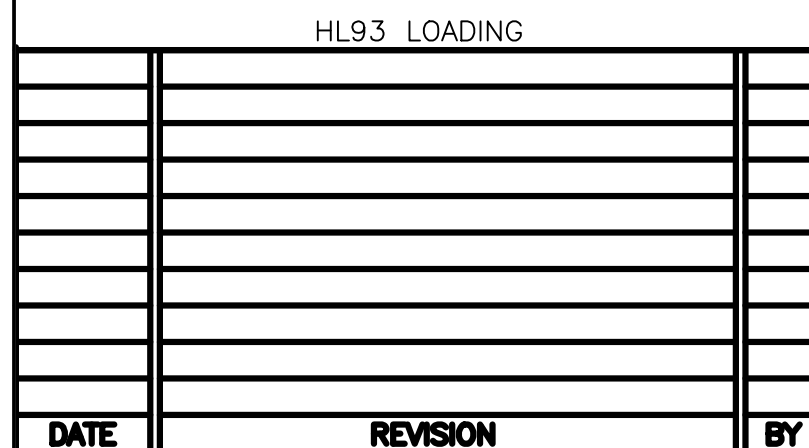


OPTION 1 ~ PLAN WITH MSE RETAINING WALLS



- GENERAL NOTES:**
- See the Bridge Layout for selected Option. Option 1 is intended for construction only requiring plasticity index (PI) controlled embankment fill or excavation in competent soils/rocks in order to construct the abutment. Option 2 is intended for new construction requiring high plasticity embankment fill with a PI greater than 30 or pavement built in poor native soil. Poor soils are defined as high plasticity clays or expansive clays.
- Construct abutment backfill in accordance with Item 400, "Excavation and Backfill for Structures."
- Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures," to the limits shown at bridge abutments.
- If required elsewhere in the plans, provide Flowable Backfill meeting the requirements of Item 401, "Flowable Backfill," to the limits shown at bridge abutments.
- Details are drawn showing left forward skew. See Bridge Layout for actual skew direction.
- These details do not apply when concrete block retaining walls are used in lieu of wingwalls.

SHEET 1 OF 2



CEMENT STABILIZED ABUTMENT BACKFILL

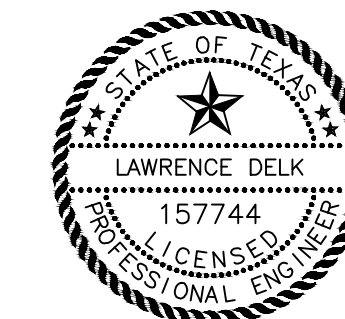
SHEET 1 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc

2150 South Central Expressway Phone 214.620.2800
Suite 300
McKinney, Texas 75070 FRN - F-1386



07 17 2026

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VERT:	
SHEET	
B-28	
OF B-57 SHEETS	

DATE: _____
FILE: _____

- ⑥ 1'-0" for BAS-A
1'-10" for BAS-C



WITH APPROACH SLAB
(Showing BAS-C, BAS-A similar.)



Texas Department of Transportation

CEMENT STABILIZED ABUTMENT BACKFILL BRIDGE ABUTMENTS

CSAB

FILE: MS-CSAB-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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[illegible]

CEMENT STABILIZED ABUTMENT BACKFILL

SHEET 2 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc

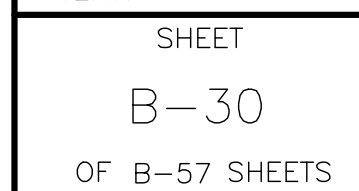
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SHEET B-29 OF B-57 SHEETS	

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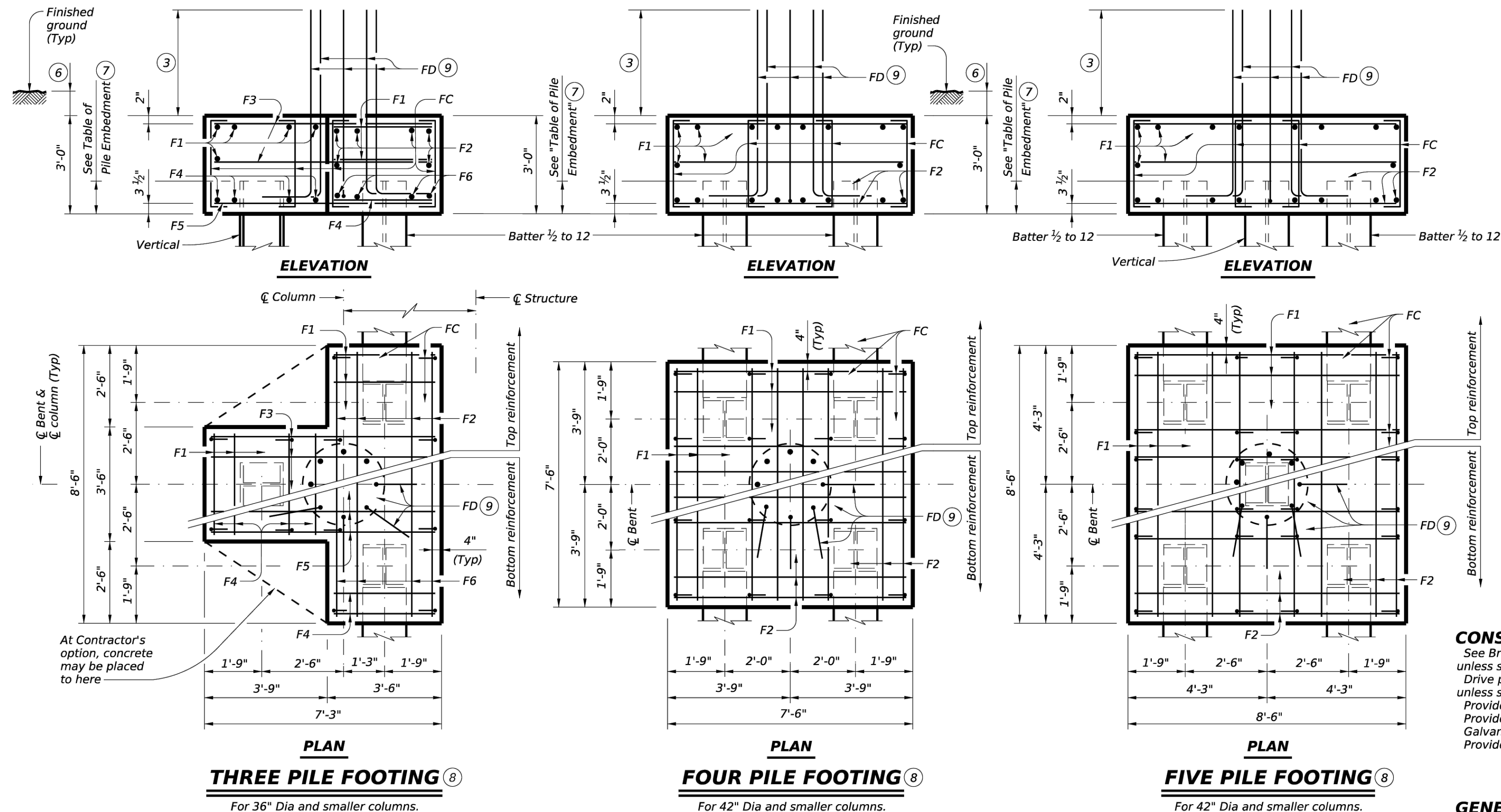


TABLE OF FOOTING QUANTITIES FOR 30" COLUMNS				
ONE 3 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	11	#4	3'- 2"	23
F2	6	#4	8'- 2"	33
F3	6	#4	6'- 11"	28
F4	8	#9	3'- 2"	86
F5	4	#9	6'- 11"	94
F6	4	#9	8'- 2"	111
FC	12	#4	3'- 6"	28
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	623
Class "C" Concrete			CY	4.8
ONE 4 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	7'- 2"	96
F2	16	#8	7'- 2"	306
FC	16	#4	3'- 6"	37
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	659
Class "C" Concrete			CY	6.3
ONE 5 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	8'- 2"	109
F2	16	#9	8'- 2"	444
FC	24	#4	3'- 6"	56
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	829
Class "C" Concrete			CY	8.0

CONSTRUCTION NOTES:
 See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.
 Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.
 Provide Class C Concrete ($f_c = 3,600$ psi), unless shown otherwise.
 Provide Grade 60 reinforcing steel.
 Galvanize reinforcing if shown elsewhere in the plans.
 Provide bar laps for drilled shaft reinforcing, where required, as follows:
 Uncoated or galvanized (#6) – 2'-6"
 Uncoated or galvanized (#7) – 2'-11"
 Uncoated or galvanized (#9) – 3'-9"

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

DESIGNER NOTES:
Do not use the drilled shaft details shown on this standard for retaining wall, noise wall, barrier, or sign foundations without structural evaluation.
Do not use the footings shown on this standard in direct contact with salt water or exposed to salt water spray.
Maximum allowable pile loads for the footings shown are:
72 Tons/Pile with 24" Dia Columns
80 Tons/Pile with 30" Dia Columns
100 Tons/Pile with 36" Dia Columns
120 Tons/Pile with 42" Dia Columns

SHEET 2 OF 2

 Texas Department of Transportation

**COMMUNITY DEVELOPMENT
FOUNDATION**

FOUNDATION

FILE: MS-FD-24.dgn		DN: TxDOT	
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		DIST	

HL93 LOADING		
DATE	REVISION	BY

COMMON FOUNDATION DETAILS

SHEET 2 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

Phone 214.620.2800

FRN - F-1386

A circular professional engineer seal for the State of Texas. The outer ring contains the text "STATE OF TEXAS" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars on each side. In the center, there is a five-pointed star above the name "LAWRENCE DELK", the license number "157744", and the word "LICENSED".

07 17 2026

LJA PROJECT ID
NT852F-0285

DATE: JULY 2026

DESIGN: EH

RAWN: MS

SCALE

KURZ:
VERT:

SHEET

B-31

OF B. 57 SHEETS

FOUNDATION DESIGN DATA					
Abutments			Bents		
Load Case	Strength I		Load Case	Strength I	
Axial Foundation Loads (tons/shaft, tons/pile)	Abut No. 1 Abut No.		Axial Foundation Loads (tons/shaft, tons/pile)	Bent No. Bent No.	
Nominal Friction Resistance (tons/square foot)	(soil type) (soil type)		Nominal Friction Resistance (tons/square foot)	(soil type) (soil type)	
Friction Resistance Factor(s)	(soil type) (soil type)		Friction Resistance Factor(s)	(soil type) (soil type)	
Cumulative Factor Friction Resistance (tons/shaft, tons/pile)			Cumulative Factor Friction Resistance (tons/shaft, tons/pile)		
Nominal Bearing Resistance (tons/square foot)			Nominal Bearing Resistance (tons/square foot)		
Bearing Resistance Factor			Bearing Resistance Factor		
Factored Bearing Resistance (tons/shaft, tons/pile)			Factored Bearing Resistance (tons/shaft, tons/pile)		
Additional Notes: (design basis and depth neglected)			Additional Notes: (design basis and depth neglected)		

DRIVEN PILE RESISTANCE						
Abutment / Bent No.	Pile Size (in)	Pile Type (Material, Shape)	Controlling Design Case	Factored Structural Resistance (tons/pile)	Nominal Skin Resistance in Scour Zone (tons/pile)	Nominal Driving Resistance (tons/pile)
			Strength I			
			Strength I			
			Strength I			
			Strength I			

NOTE TO DESIGNER:

This sheet is to be used to convey the foundation design intent. It is to be filled out by the foundation designer and provides design assumptions for drilled shafts or driven piles.

For standard bridges, Foundation Load Sheets for Designer's Information are provided to assist in filling out the tables.

To complete this sheet, input the foundation design data into the table. This sheet cannot be used without modification and in all cases notes not required must be removed. This note and the phrase "Not to be used as a standard" must be removed and the sheet must be signed and sealed by a Professional Engineer.

Complete the Driven Pile Resistance Table and include when using piles. Calculate dynamic resistance in accordance with the TxDOT Geotechnical Manual - LRFD.

This sheet may be combined with a Foundation Layout. Alter the title to be Foundation Layout and Notes. Remove the standard name, FDN.

The Foundation Design Data table may be altered by adding:
1. lateral loads below axial loads, when applicable
2. additional columns as needed to communicate the design data over the length of the bridge.

At a minimum, the Additional Notes should describe the basis of design and the depth neglected for the design. For example, "Design lengths based on side resistance (skin friction) alone and disregarded to an elevation of XXX feet."

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
See Bridge Layout for header slope and foundation type, size and length.
See Common Foundation Details (FD) standard sheet for all foundation details and notes.

HL93 LOADING

Bridge Division Standard

FOUNDATION NOTES
(Not to be used as a Standard)

FDN

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HL93 LOADING

DATE	REVISION	BY
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FOUNDATION NOTES

Laud Howell Parkway

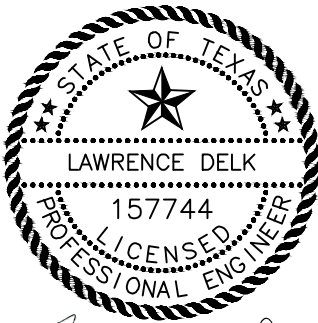
CITY OF MCKINNEY
COLLIN COUNTY, TEXAS

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

Phone 214.620.2800
FRN - F-1386



J. Lawrence Delk

LJA PROJECT ID NT852F--0285
DATE: JULY 2026
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DRAWN: MS
SCALE
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VERT:
SHEET B-32 OF B-57 SHEETS

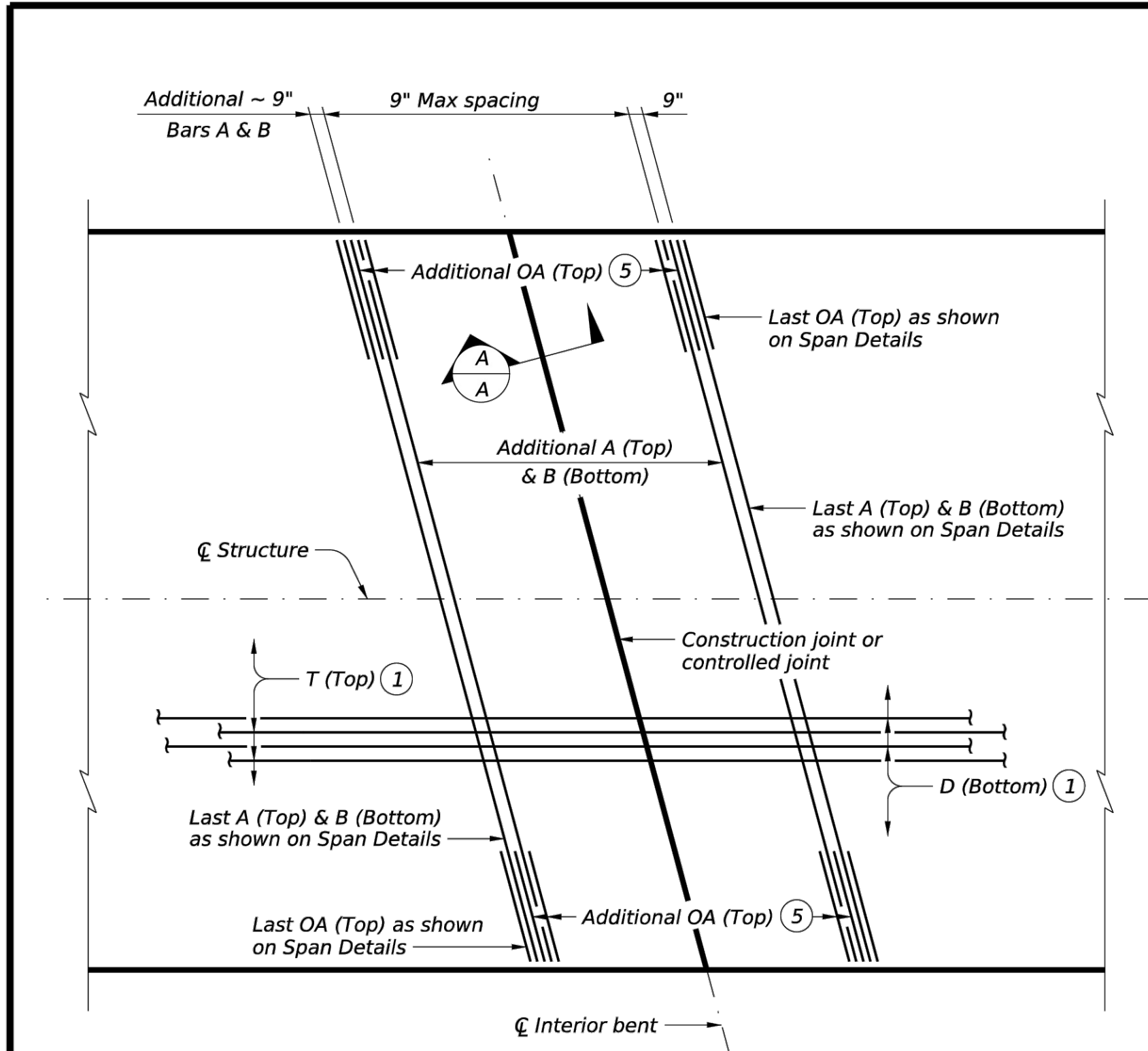
LAUD HOWELL PARKWAY

Date\\time : Fri, 17 Jul 2026 - 8:06am User Name : jones Path\\Name : \\jones\\com\\shores\\MX-LAND\\0285\\400LAND\\245 Design Files\\Laud Howell Parkway\\Structures\\TxDOT STD\\33 CONTINUOUS SLAB DETAILS.dwg

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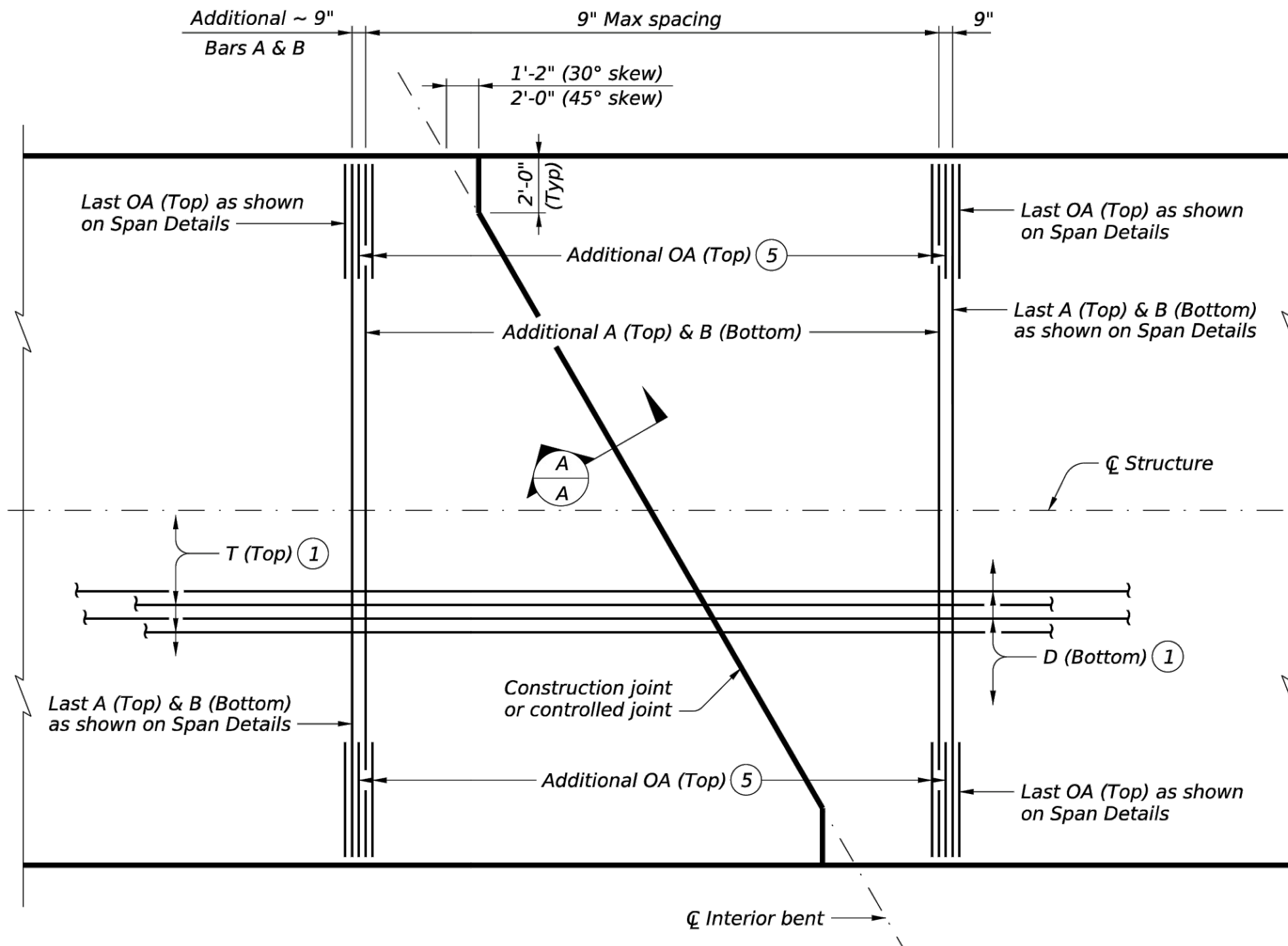
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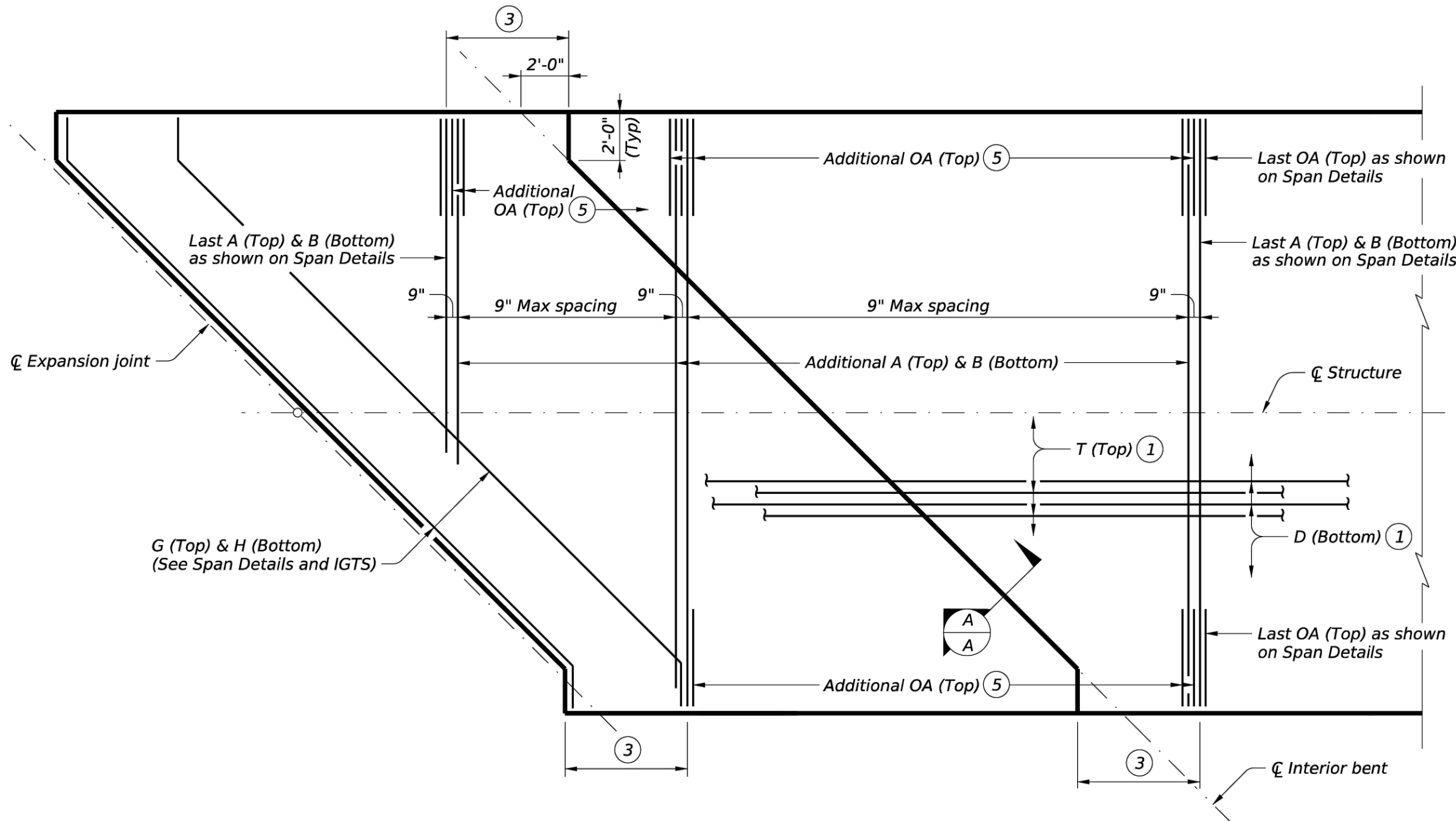
PLAN FOR 0° OR 15° SKEW

(Showing 15° skew)



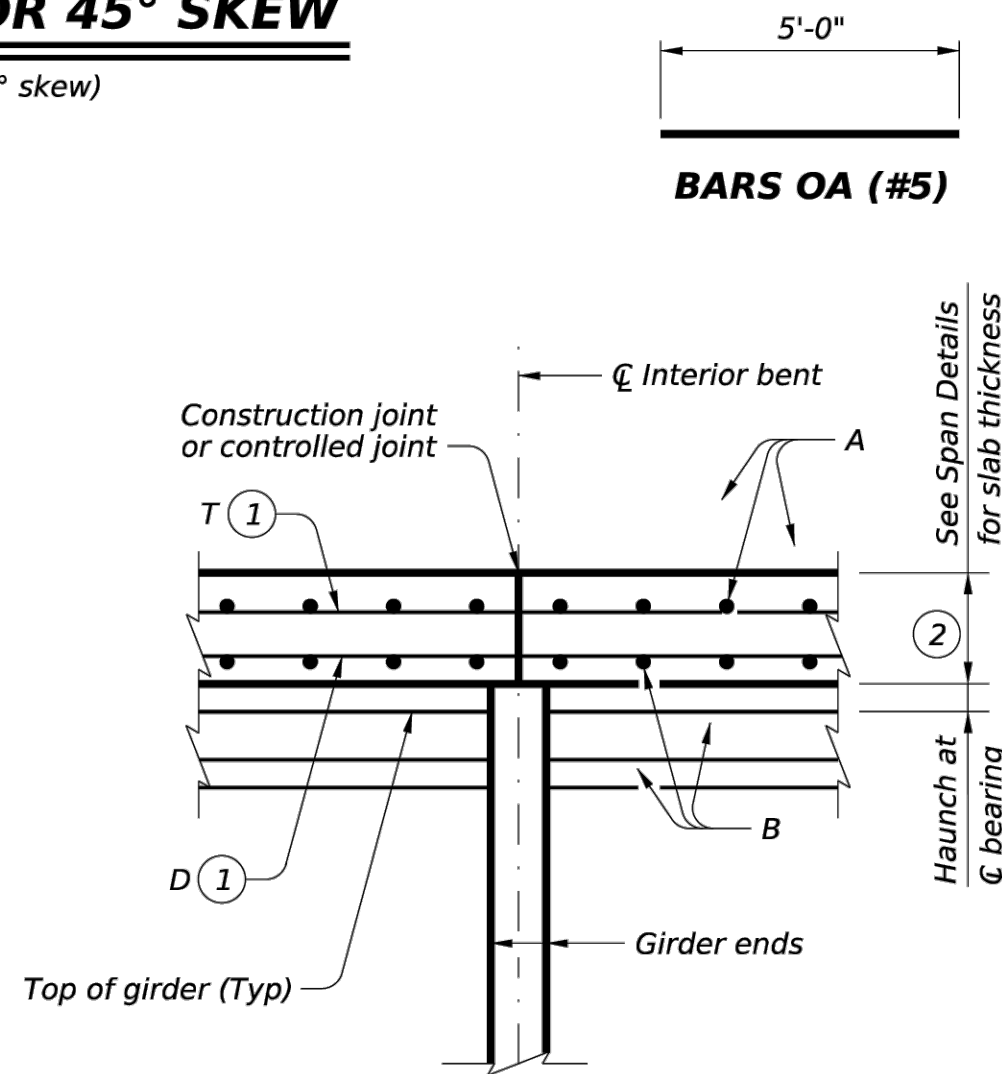
PLAN FOR 30° OR 45° SKEW

(Showing 30° skew)



PLAN FOR 45° SKEW 4

(Showing short span condition.)



SECTION A-A

Bars OA (Top) not shown for clarity.

- 1 Top and bottom mats must be continuous through joint.
- 2 Maintain a constant slab thickness over the bent.
- 3 5'-4" as shown on Span Details.
- 4 Use these details when no full slab width Bars A and B are shown on Span Details.
- 5 Bars OA (Top) at 9" Max spacing between Bars A (Top).
- 6 Values in table assume a temperature change of 70° F after erection when calculating thermal movement in one direction (not total).

TABLE OF ALLOWABLE UNIT LENGTH 6

Max Rdwy Grade, Percent	Unit Length Factor
0.00	4.1
1.00	3.9
2.00	3.7
3.00	3.5
4.00	3.3
5.00	3.1

Unit length must not exceed the length of the shortest end span times the Unit Length Factor shown in table or 400', whichever is less.

The details shown on this sheet are applicable for two and three span units comprised of the same girder type. Units may be comprised of different span lengths. See "Table of Allowable Unit Length."

BAR TABLE

BAR	SIZE
A	#4
B	#4
D	#4
T	#4
OA	#5

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications. This standard is drawn showing right forward skew. See Bridge Layout for actual skew direction.

CONSTRUCTION NOTES:

Where multi-span units are indicated on the Bridge Layout, the thickened slab end details and reinforcement shown on IGTS standard (Bars AA, G, H, J, K, and M) and on the Span Details will be omitted where slabs are continuous over interior bents. At these locations, the slab details and reinforcement will be as shown on this sheet or on PCP standard (if using this option). Thickened slab end reinforcement and details still apply at expansion joint locations (ends of units). See Span Details for remainder of slab reinforcement and details.

MATERIAL NOTES:

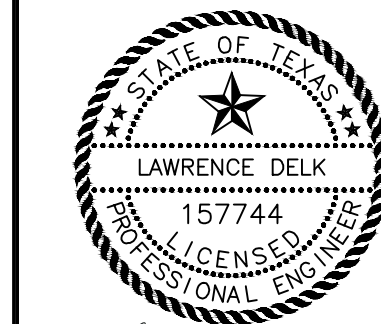
Provide Grade 60 reinforcing steel.
Provide Class "S" concrete ($f_c = 4,000$ psi).
Provide Class "S" (HPC) if shown elsewhere on the plans.
Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

The details shown on this sheet are applicable for use only with the Prestressed Concrete I-Girder Standard Designs shown on standards IGSD-24, IGSD-28, IGSD-30, IGSD-32, IGSD-34, IGSD-38, IGSD-40 and IGSD-44.

HL93 LOADING

		Bridge Division Standard	
CONTINUOUS SLAB DETAILS			
PRESTR CONC I-GIRDER SPANS			
IGCS			
FILE: IG-IGCS-24.dgn	DW: JMH	CK: TxDOT	DW: JTR
© TxDOT August 2017	CONT	SECT	JOB
REVISIONS		HIGHWAY	
10-19: Added Rubble note 6		DIST	
01-23: Added 34 ft. Roadway		COUNTY	
11-24: Flipped top mat		SHEET NO.	

HL93 LOADING		
DATE	REVISION	BY
CONTINUOUS SLAB DETAILS		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc. LJA		
2150 South Central Expressway Suite 300 McKinney, Texas 75070 Phone 214.620.2800 FRN - F-1386		
LJA PROJECT ID NT852F-0285		
DATE: JULY 2026		
DESIGN: EH		
DRAWN: MS		
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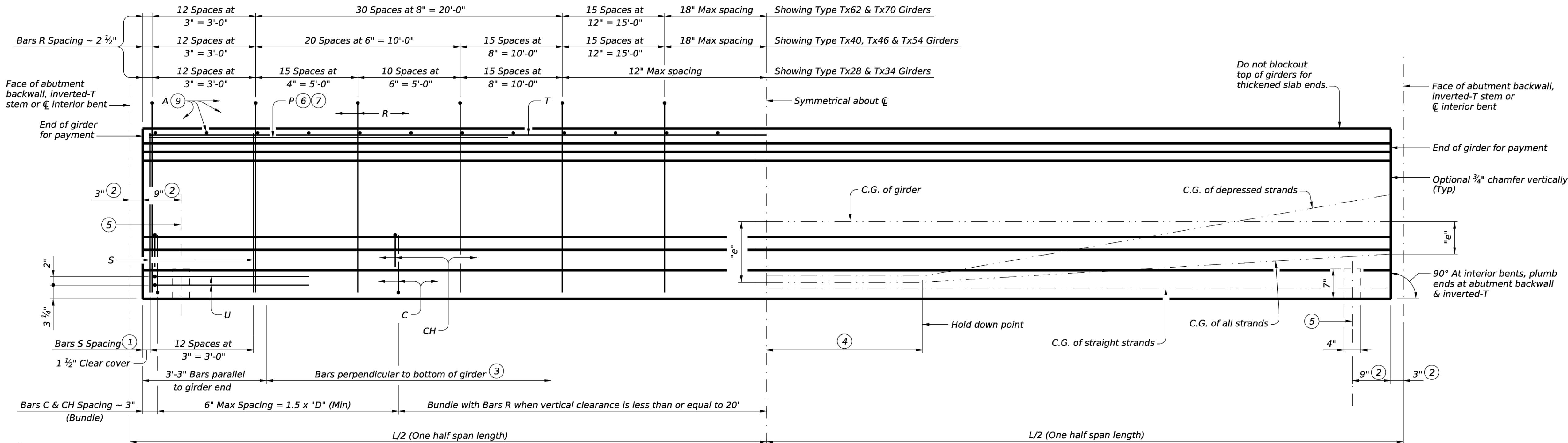
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Date\\Time : Fri, 17 Jul 2026 - 8:06am User Name : jones
Path\\Name : \\jceng\com\shores\TX-LAND\0285\400LAND\425 Design_Files\Laud Howell Parkway\Structures\YxDOT STD\34- PRESTRESSED CONCRETE I-GIRDER DETAILS-1.dwg

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DATE:

FILE:



- Bundle with Bars R.
- Measured along C.G. Girder at interior bents; perpendicular to abutment backwall or inverted-T stem.
- The average of the top and bottom spacing of Bars R cannot exceed the required spacing.
- L/20, but not less than 5'-0" (-0,+2').

- 4" x 1 1/2" Vertical Slotted Hole at doweled girder end (labeled (D) on Bridge Layout). Required for outside girder only or as shown on substructure details. Anchorage holes may be tapered (4 3/4" x 1 3/8") at base. If holes are formed with sheet metal, forms may be left in place.

GIRDER ELEVATION

- Bars P (#6 x 15'-0") required in Tx62 and Tx70 girders. At the Fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.
- Bars P (#6 x 15'-0") are only required in Tx28, Tx34, Tx40, Tx46, and Tx54 girders when "e" at girder ends exceeds 0.25 x "D". At the Fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.
- 1 3/8" Clear Cover to Bars S.
- Space Bars A at 6" Max for girders requiring overhang bracket hangers. Space at 12" Max for all other girders. Tie to Bars R as necessary. See standard IGMS for "Deck Forming Notes."
- Based on 155 pcf total weight of concrete and reinforcing steel.
- Smooth trowel finish on the slab overhang side of exterior girder.

GIRDER DIMENSIONS AND SECTION PROPERTIES								
Girder Type	"D" (in.)	"B" (in.)	"Yt" (in.)	"Yb" (in.)	Area (in. ²)	"Ix" (in. ⁴)	"Iy" (in. ⁴)	Weight (10) (plf)
Tx28	28	6	15.02	12.98	585	52,772	40,559	630
Tx34	34	12	18.49	15.51	627	88,355	40,731	675
Tx40	40	18	21.90	18.10	669	134,990	40,902	720
Tx46	46	22	25.90	20.10	761	198,089	46,478	819
Tx54	54	30	30.49	23.51	817	299,740	46,707	880
Tx62	62	37 1/2	33.72	28.28	910	463,072	57,351	980
Tx70	70	45 1/2	38.09	31.91	966	628,747	57,579	1,040

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications. Provide Class H concrete.
Provide Grade 60 reinforcing steel.
An equal area of deformed Welded Wire Reinforcement (WWR) (ASTM A1064) may be substituted for Bars A, C, R or T unless otherwise noted.
It is permissible for bars or strands to come in contact with materials used in forming anchor holes.
When vertical clearance of the span is less than or equal to 20', provide additional Bars C and CH in every girder of that span.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

IGD

FILE: IG-IGD-23.dgn

DN: TxDOT

CK: JMH

DW: JTR

CK: TAR

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REVISIONS

10-19: Added Bars C and CH full length for VC <= 20'

3-23: Clarified C and CH requirement

CONT

SECT

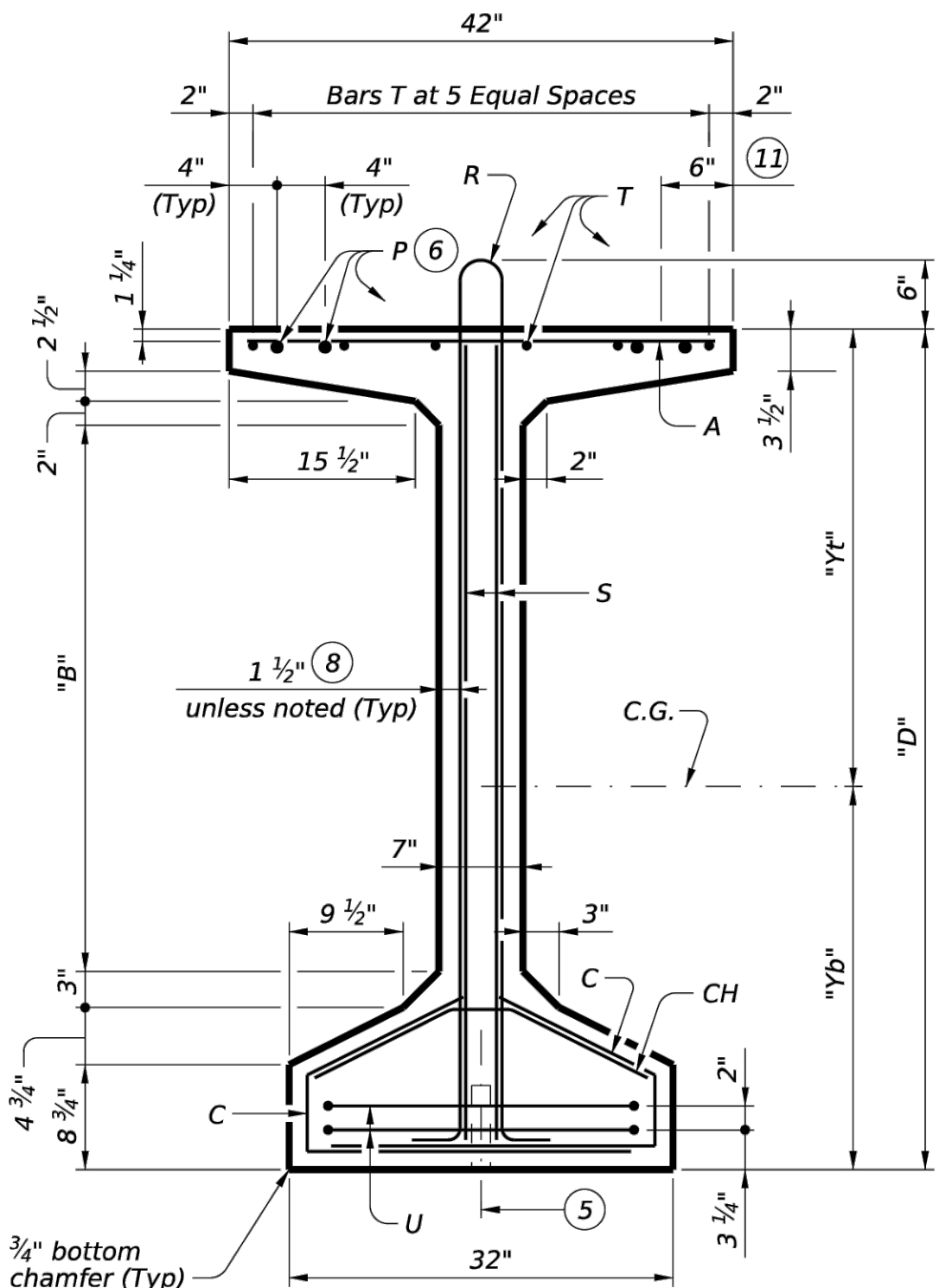
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HIGHWAY

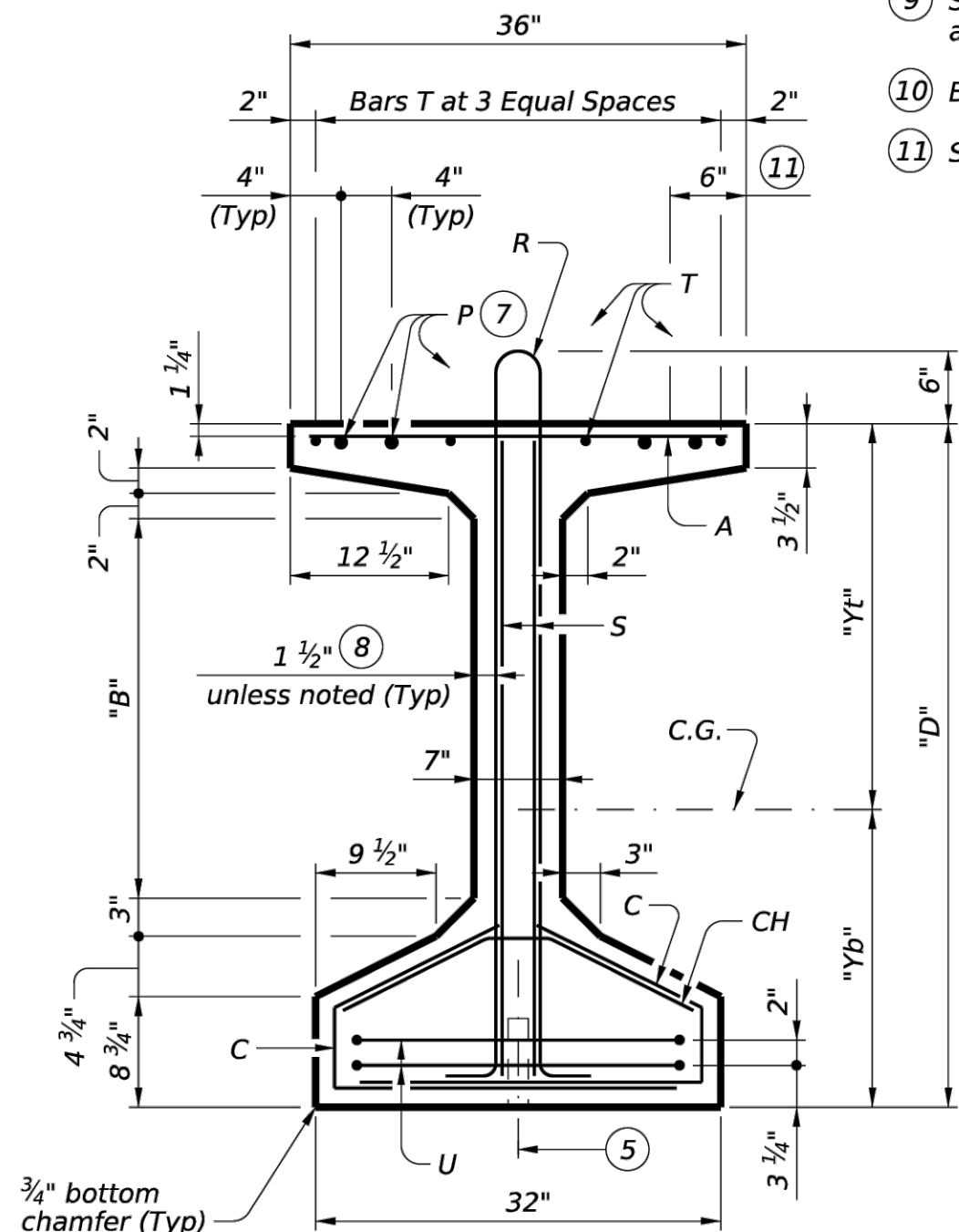
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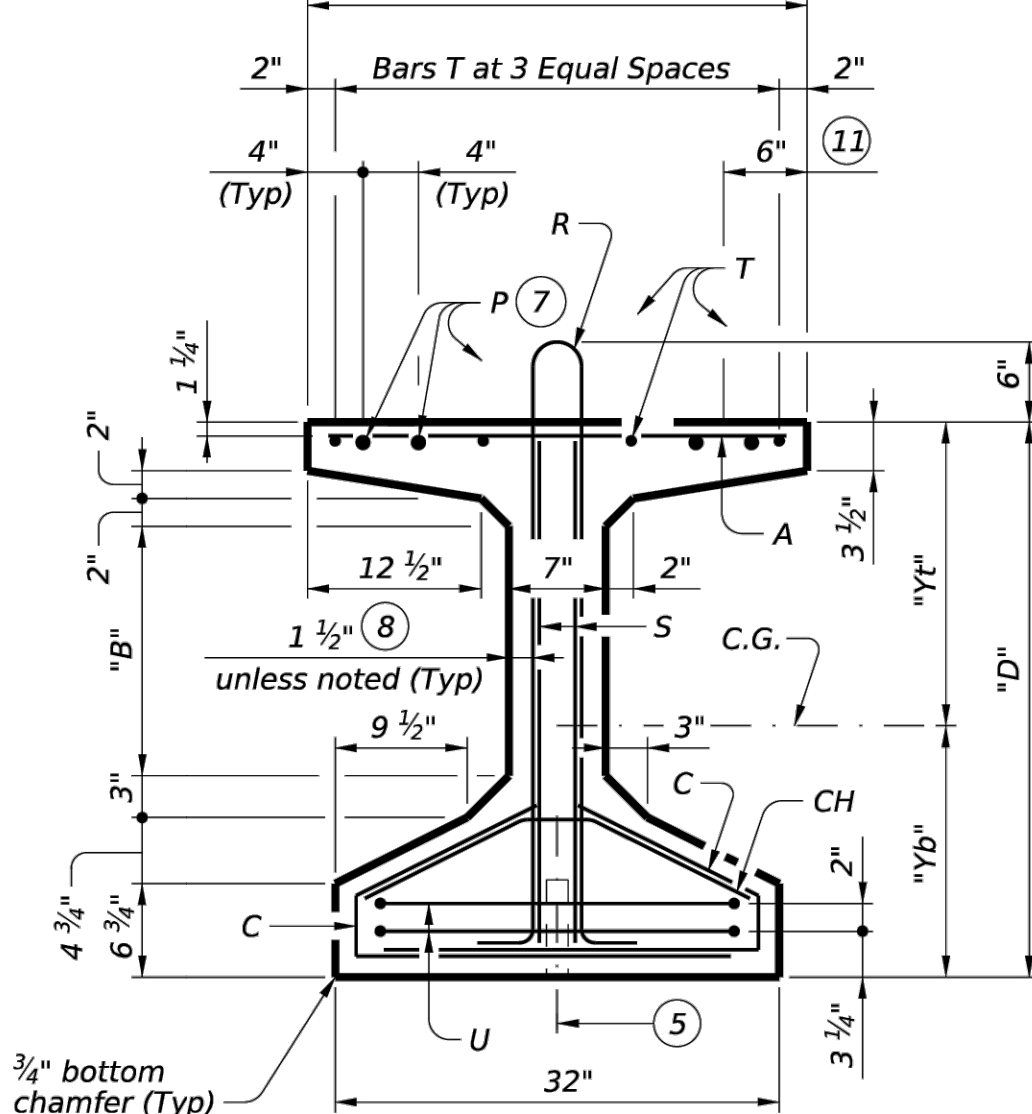
SHEET NO.



TYPE Tx62 & Tx70



TYPE Tx46 & Tx54



TYPE Tx28, Tx34 & Tx40

HL93 LOADING

SHEET 1 OF 2

PRESTRESSED CONCRETE I-GIRDER DETAILS

SHEET 1 OF 2

Laud Howell Parkway

CITY OF MCKINNEY
COLLIN COUNTY, TEXAS

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

Phone 214.620.2800
FRN - F-1386

LJA PROJECT ID
NT852F-0285

DATE: JULY 2026

DESIGN: EH

DRAWN: MS

SCALE

HORZ:

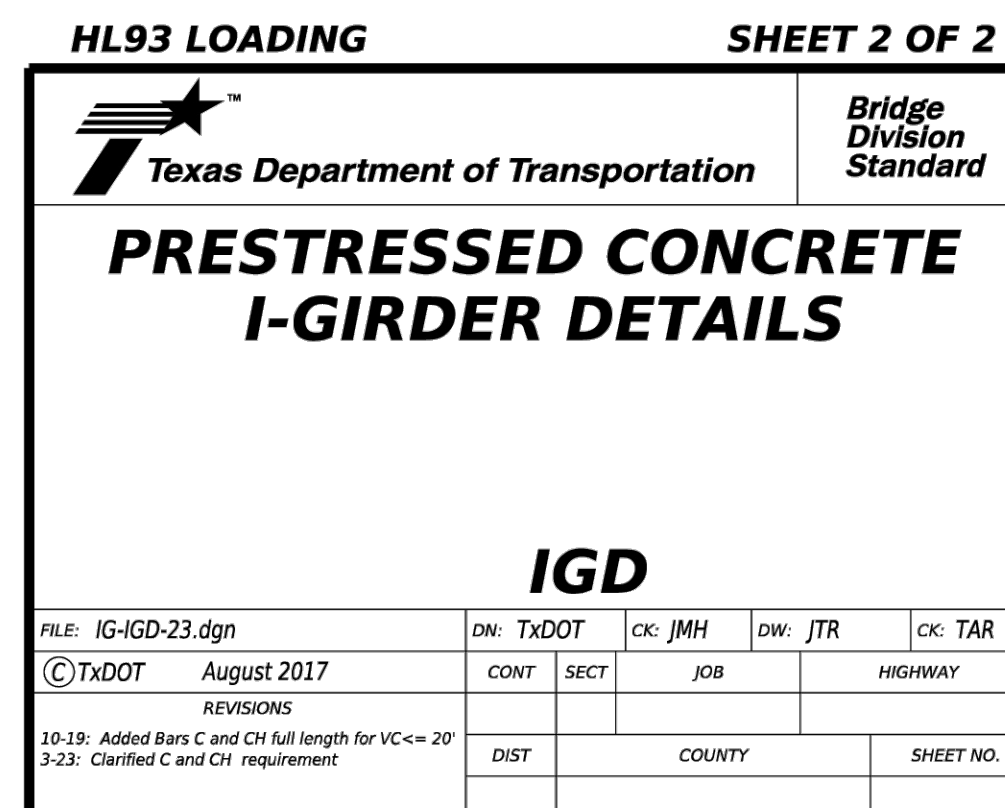
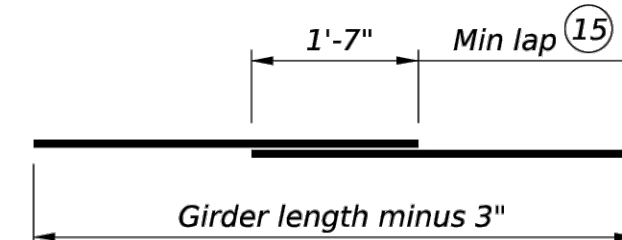
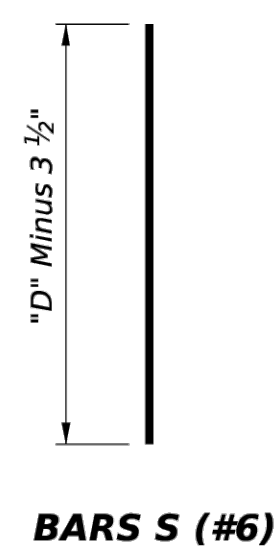
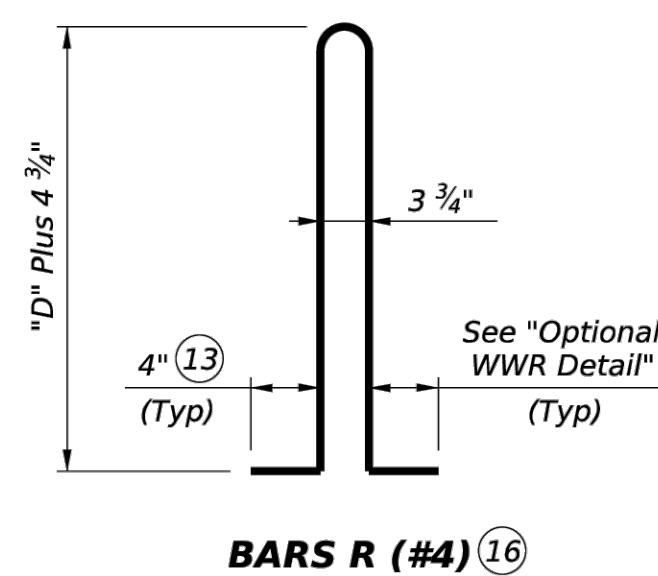
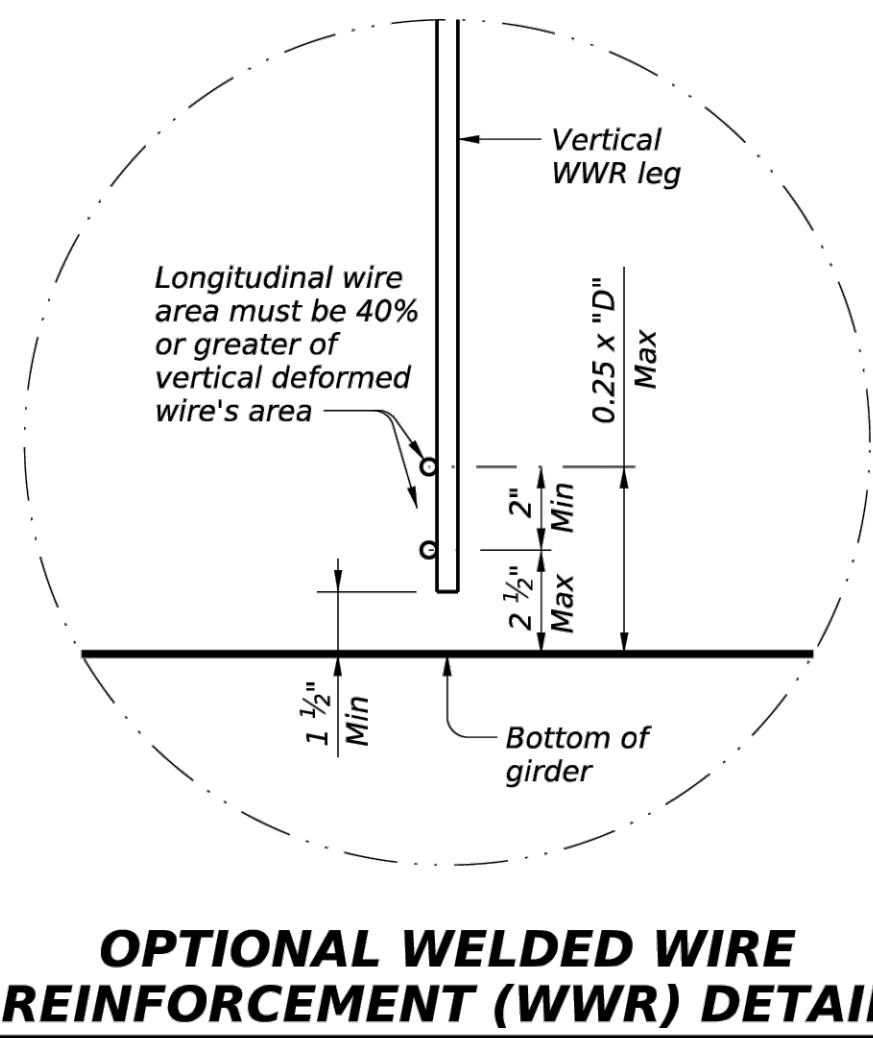
VERT:

SHEET
B-34
OF B-57 SHEETS

STATE OF TEXAS
LAWRENCE DELK
LICENSED PROFESSIONAL ENGINEER

07 17 2026

DATE: _____
FILE: _____

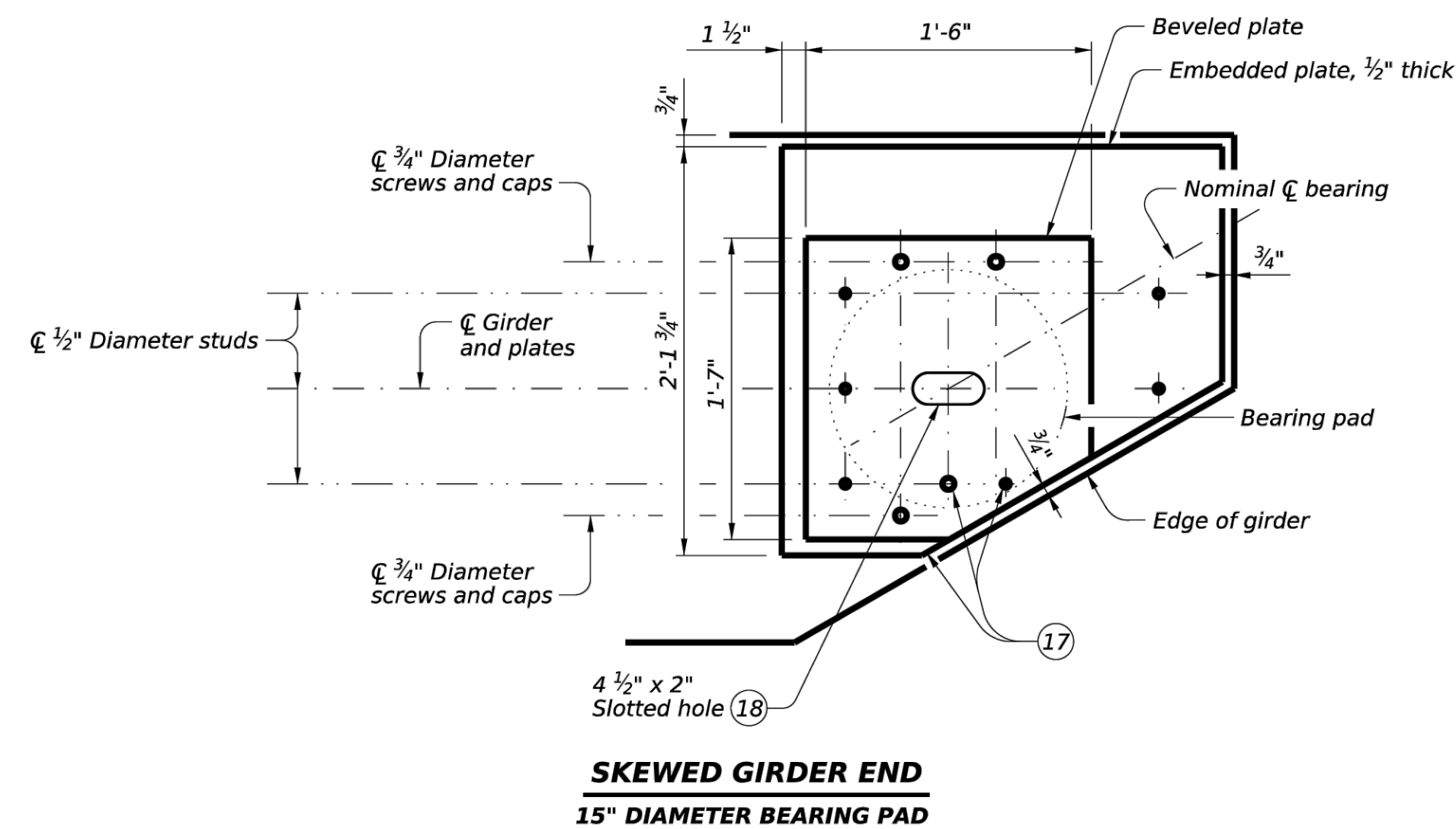
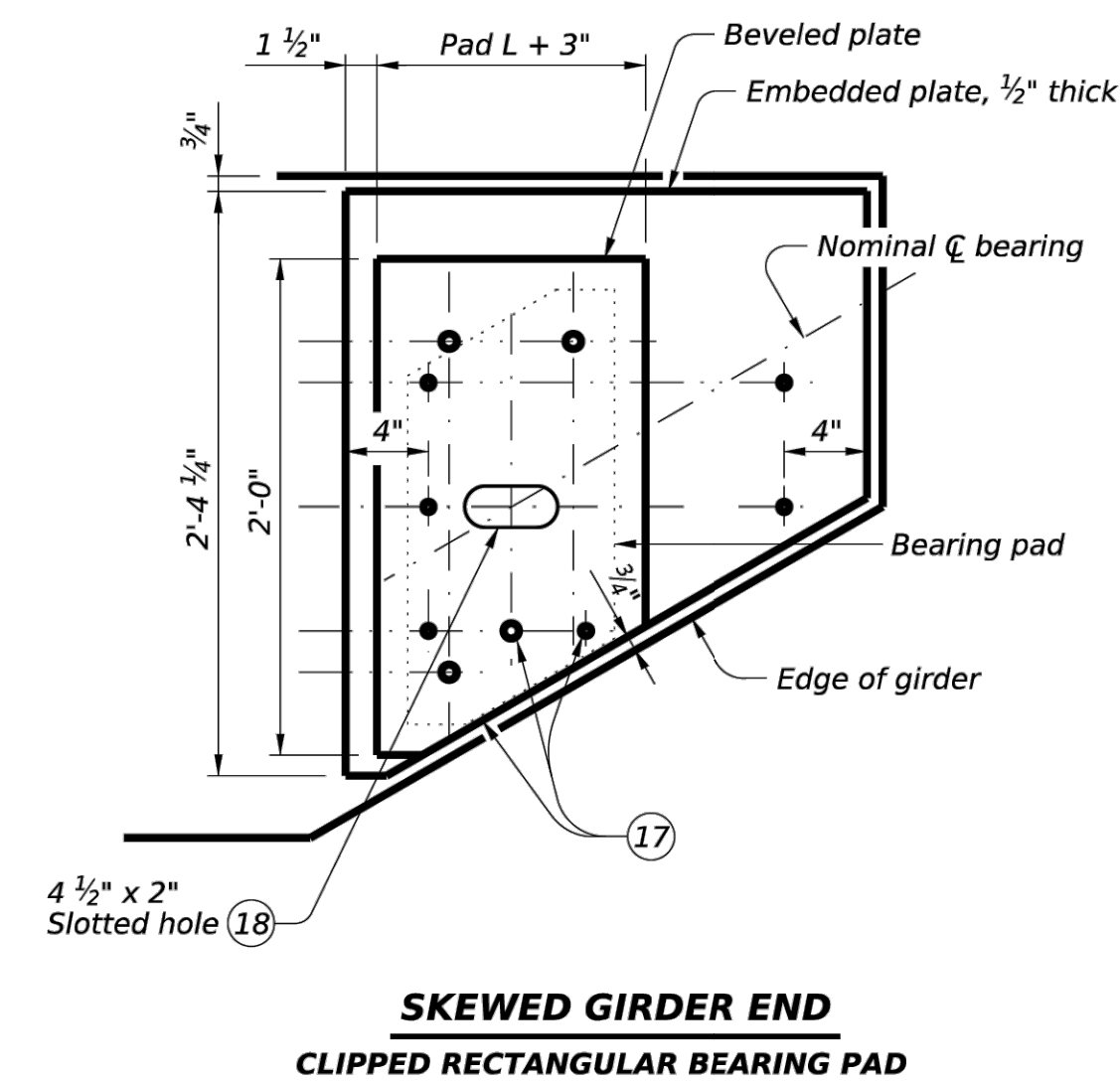
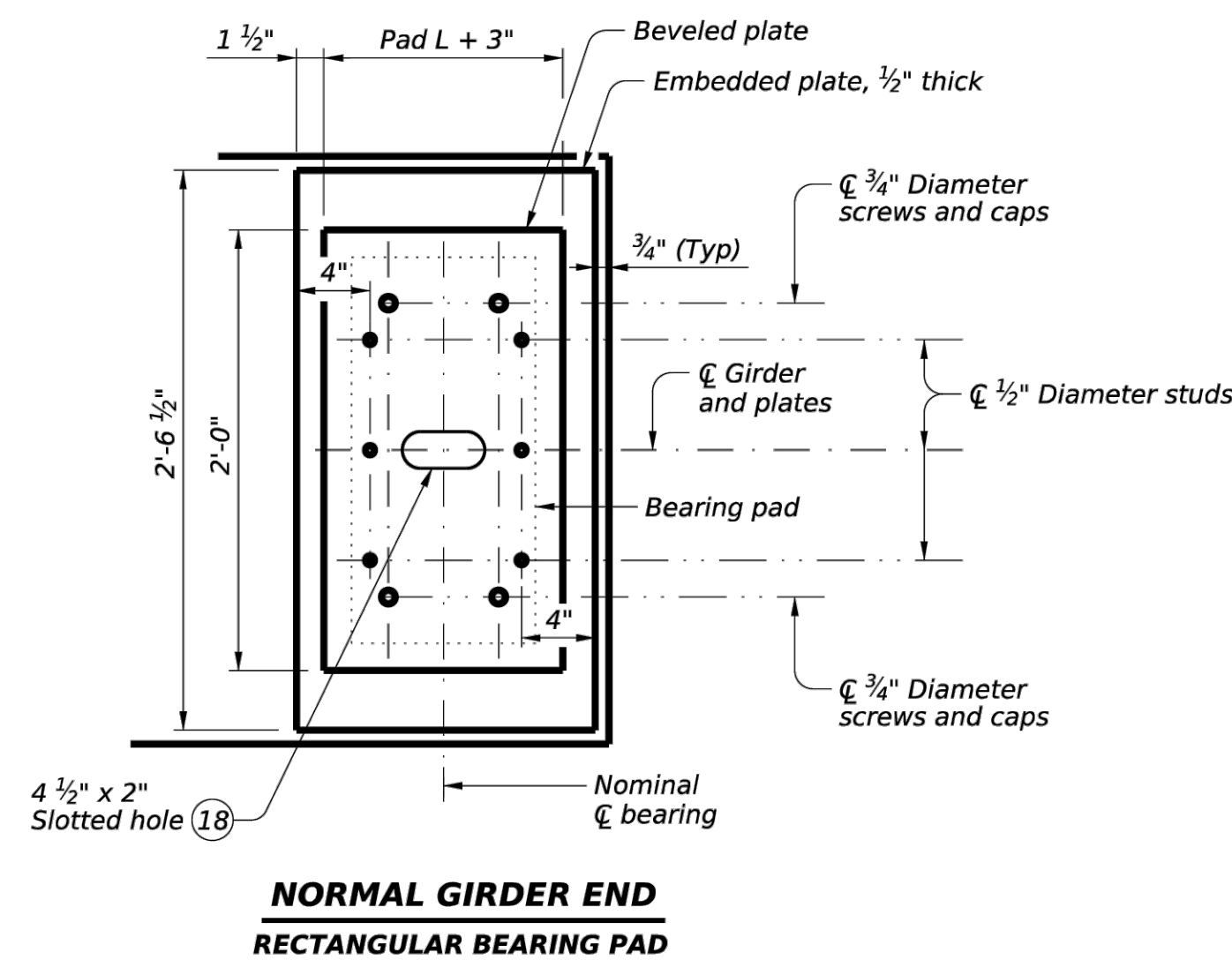


A circular professional engineer seal for the State of Texas. The outer ring contains the text "STATE OF TEXAS" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by stars. The center of the seal features a five-pointed star above the name "LAWRENCE DELK", the license number "157744", and the word "LICENSED".

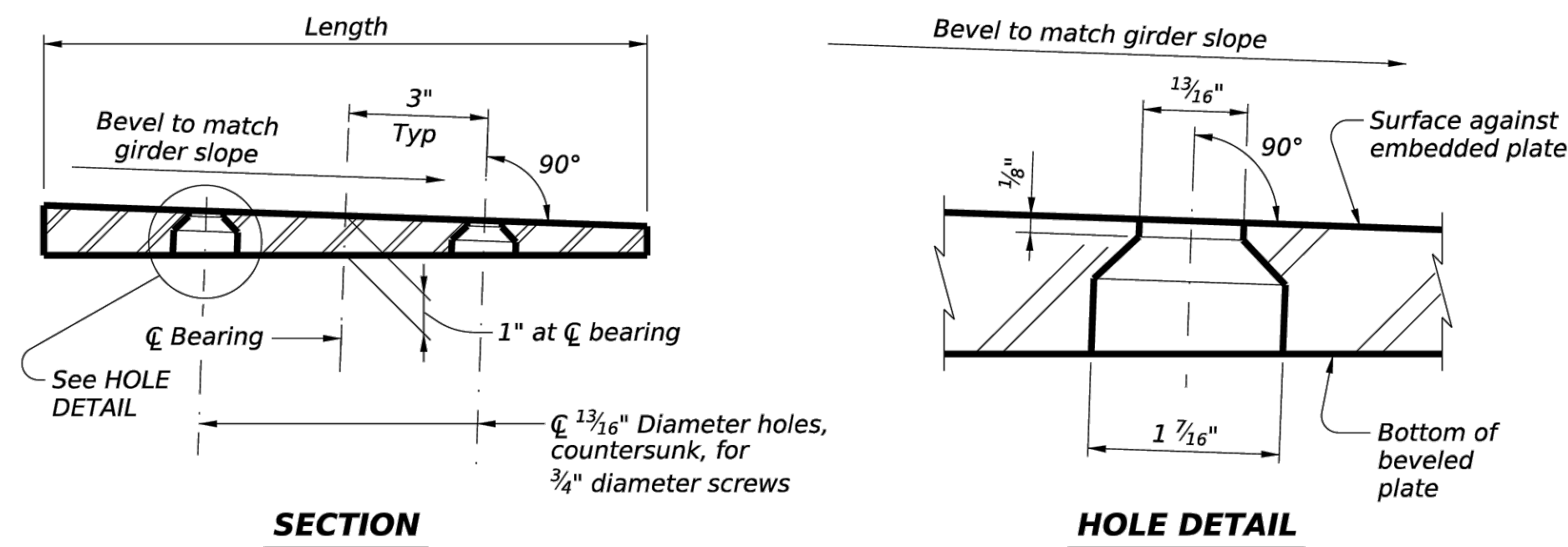
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DATE:	JULY 2026
DESIGN:	EH
DRAWN:	MS
SCALE	
HORZ:	
VERT:	
SHEET	
B-35	
OF B-57 SHEETS	

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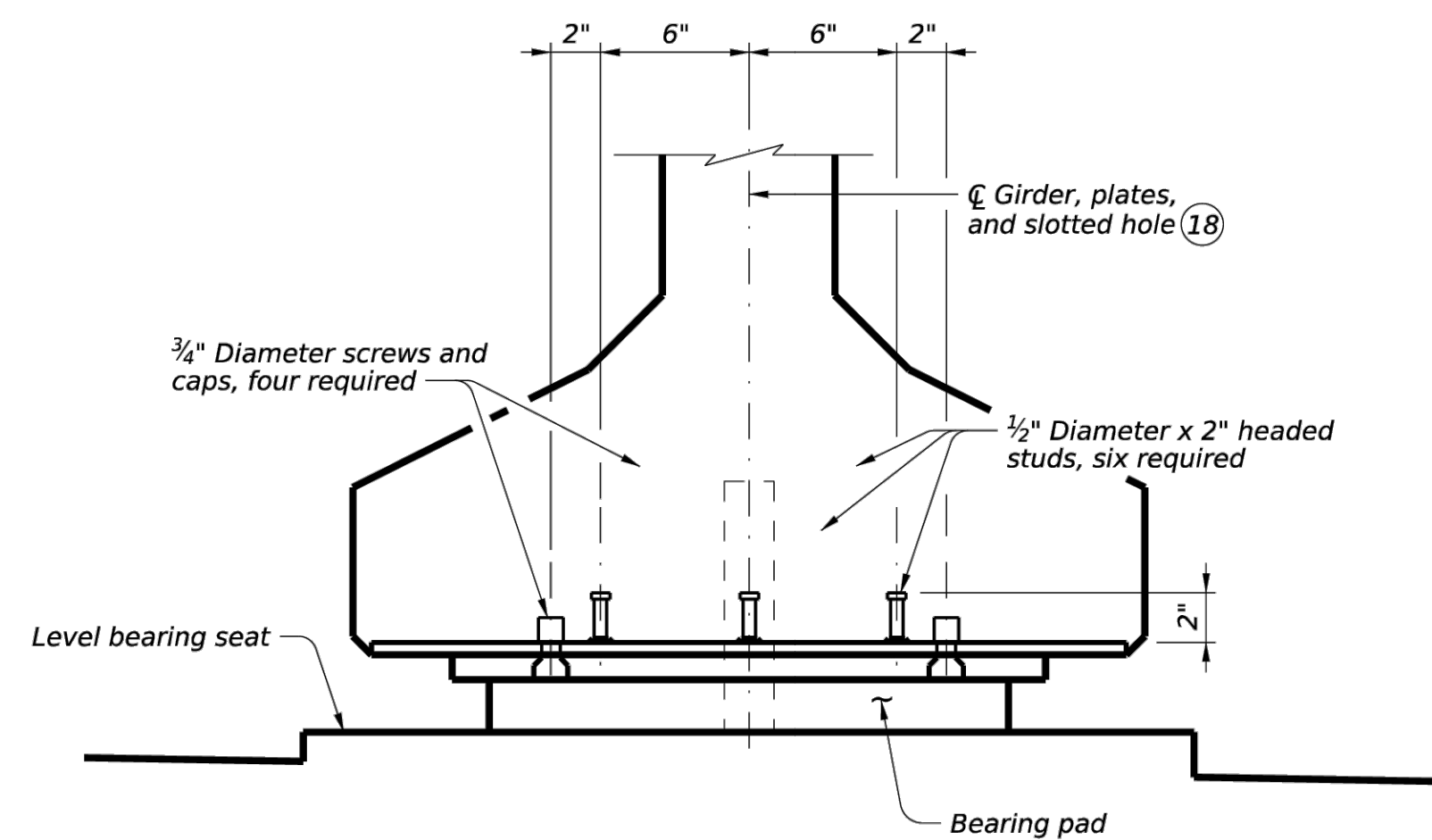
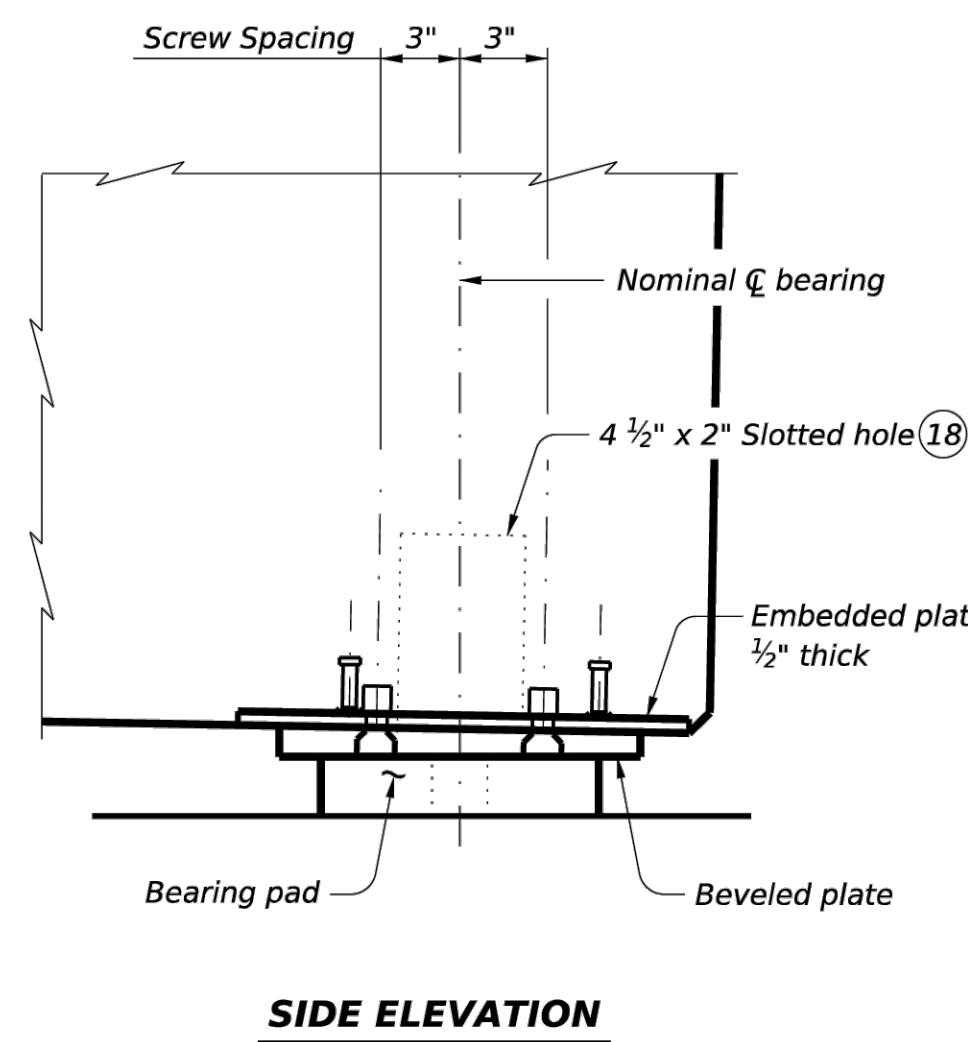


PLAN VIEW OF SOLE PLATE DETAILS



BEVELED PLATE DETAILS

- (17) *Cut beveled and embedded plates to match girder end skew. Adjust location of screw and stud as shown when necessary.*
- (18) *Slotted hole is required at doweled girder end locations.*



GIRDER DETAILS

END ELEVATION
Showing normal girder end.

SOLE PLATE NOTES:

Provide constant thickness elastomeric bearings with beveled and embedded steel sole plates in accordance with these details when the girder slope exceeds 5 percent or if otherwise required in the plans. Provide all for girders in the span.

On the shop drawings, dimension sole plates to the nearest $\frac{1}{16}$ " based on required thickness at centerline of bearing and slope of girder. Thickness tolerance variation from the approved shop drawings is $\pm \frac{1}{16}$ " +/-, except variation from a plane parallel to the theoretical top surface can not exceed $\frac{3}{16}$ " total. Bearing surface tolerances listed in Item 424, "Precast Concrete Structural Members (Fabrication)" apply to embedded and beveled plates.

Steel plate must conform to ASTM A36, A572 Gr 50, or A709 Gr 36 or Gr 50. Hot dip galvanize both the embedded plate and beveled sole plate after fabrication. Seal weld caps to embedded plate before galvanizing.

When determining if relocation of screw holes and studs are necessary for skewed girder ends, minimum clearance from screw or stud centerline to plate edge is 1.25".

Tap threads in the embedded plate only. Drill and tap prior to galvanizing.

$\frac{1}{4}$ " diameter screws must be electroplated, socket flat head cap screws conforming to ASTM F835. Electroplating must conform to ASTM B633, SC 2, Type I. Provide screws long enough to maintain a $\frac{3}{4}$ " minimum embedment into the embedded plate and galvanized cap. Provide galvanized steel caps (16 ga Min) with a nominal 1" inside diameter and deep enough to accommodate the screws, but not less than $\frac{1}{2}$ " deep or deeper than 1".

Install beveled sole plates prior to shipping girders. Installed screw heads must not protrude below the bottom of the beveled plate.

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ELASTOMERIC BEARING AND GIRDER END DETAILS

SHEET 3 OF 3

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

LJA

Phone 214.620.2800

FRN - F-1386



Lauren Deek
07.17.2026

LJA PROJECT ID NT852F-0285	
DATE:	JULY 2026
DESIGN:	EH
DRAWN:	MS
SCALE	
HORZ:	
VERT:	
SHEET	
B-38	
OF B-57 SHEETS	

HL93 LOADING

SHEET 3 OF 3



**Bridge
Division
Standard**

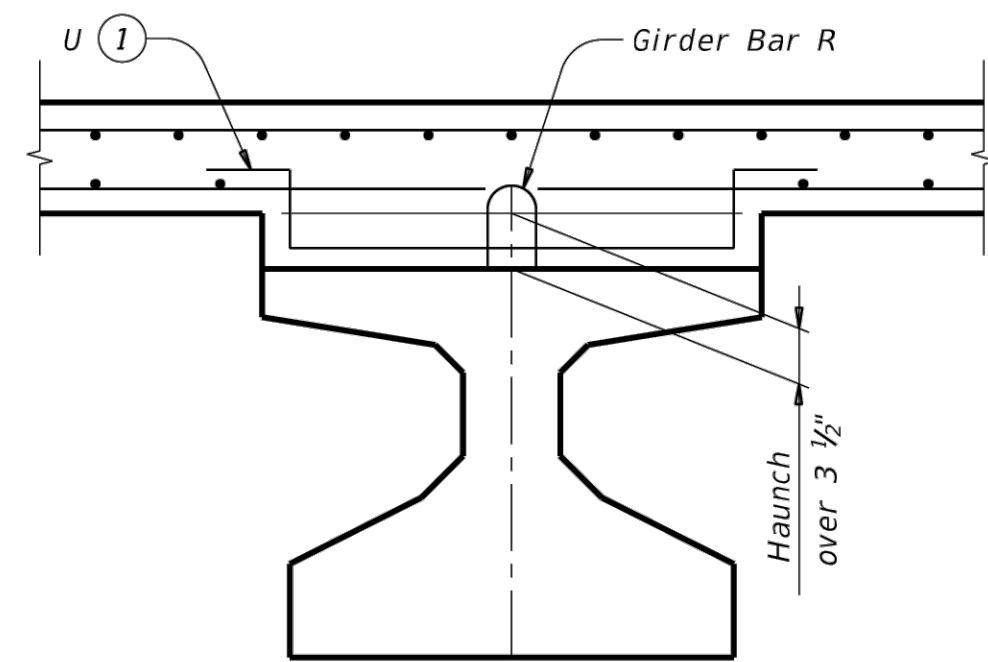
**ELASTOMERIC BEARING
AND GIRDER END DETAILS
PRESTR CONCRETE I-GIRDERS**

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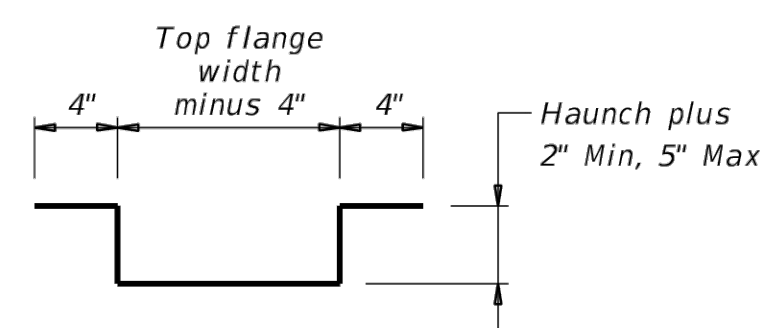
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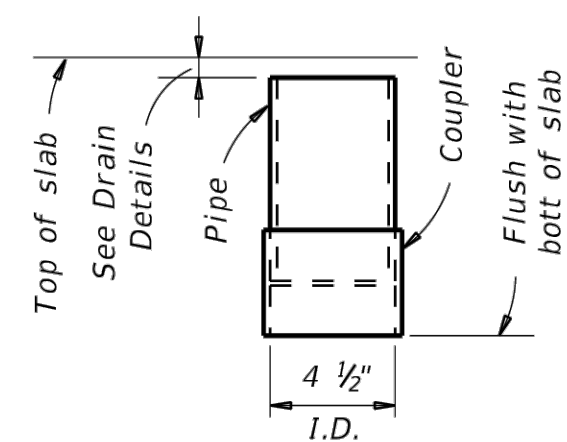
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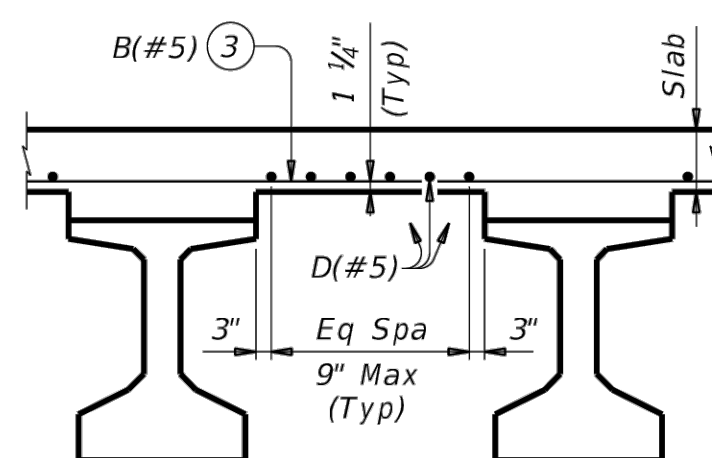
HAUNCH REINFORCING DETAIL



BARS U (#4)

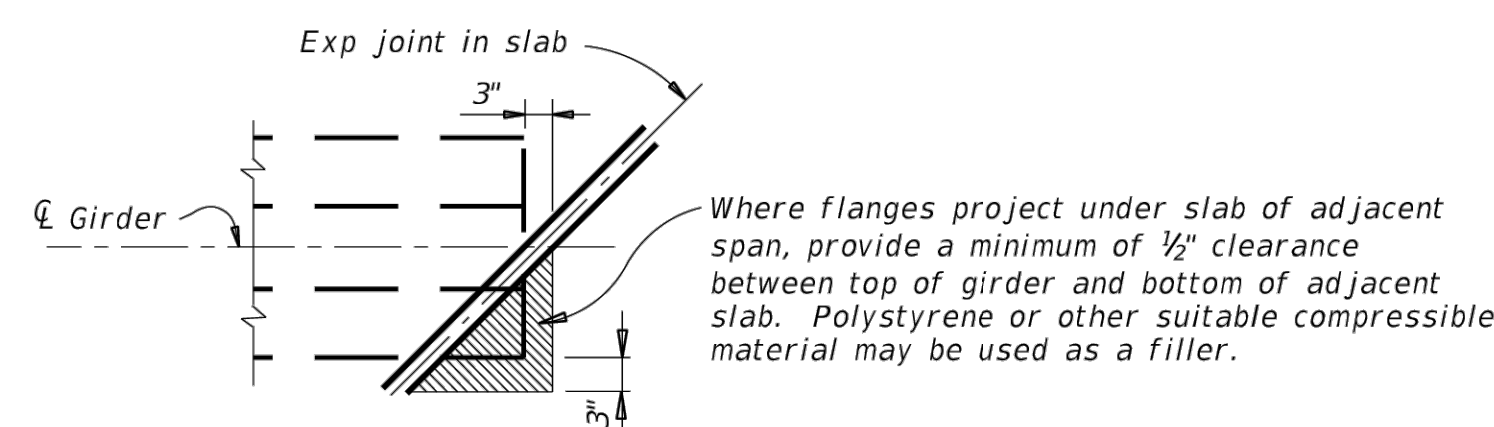


C-I-P DRAIN DETAIL ②

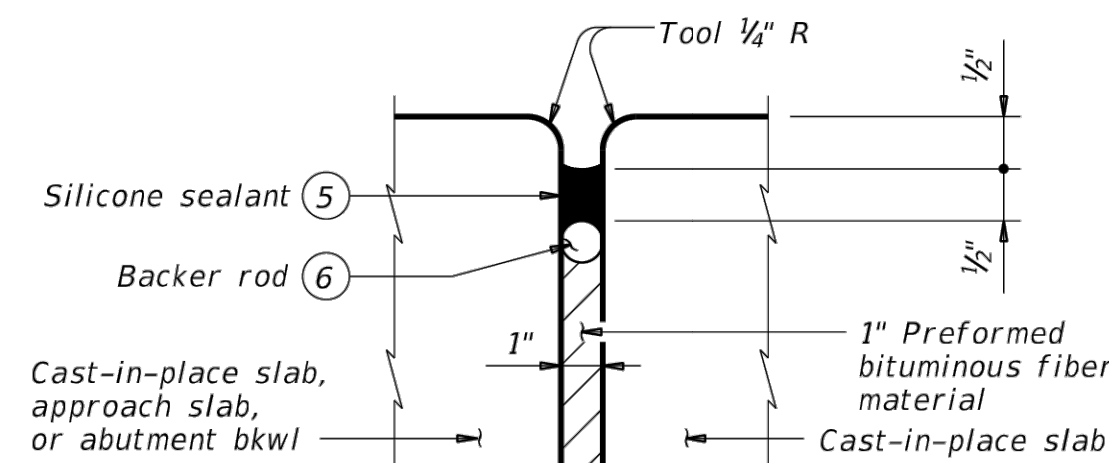


TYPICAL PART TRANSVERSE
SLAB SECTION WITHOUT PCP ⁽⁴⁾

Top reinforcing steel not shown for clarity.

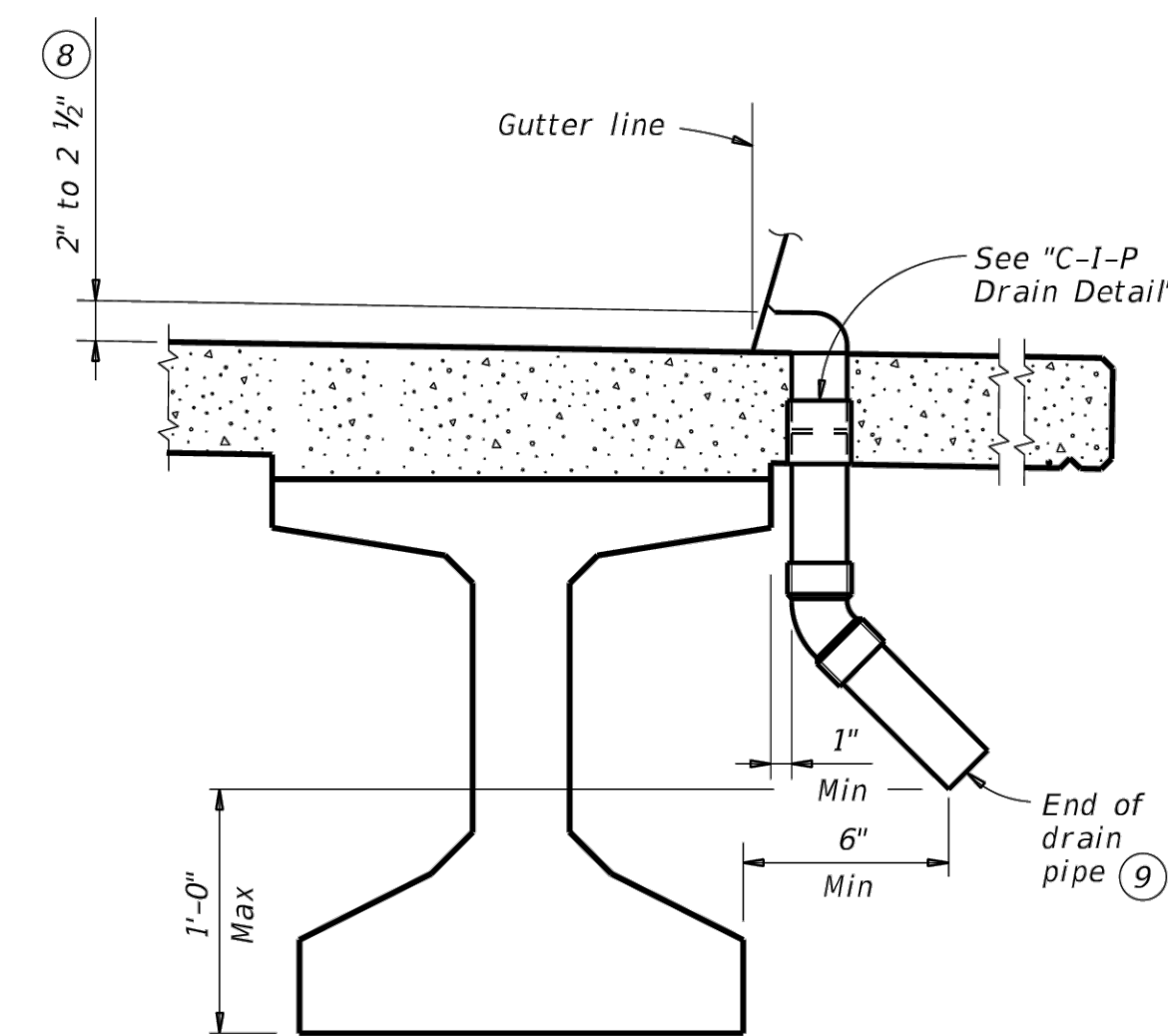


TREATMENT AT GIRDER END FOR SKEWED SPANS



TYPE A JOINT DETAIL ⁽⁷⁾

- ① Space Bars U with girder Bars R in all areas where measured haunch exceeds 3' 0".
- ② Roughen outside of PVC with coarse rasp or equal to ensure bond with cast-in-place concrete.
- ③ Bars B(#5) spaced at 6" Max with 2" end cover. Overhang option, Contractor's may end alternating bars B(#5) at centerline outside girder.
- ④ Provide Grade 60 reinforcing steel. Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
 ~ #5 = 2'-0"
Epoxy coated ~ #4 = 2'-5"
 ~ #5 = 3'-0"
- ⑤ Class 7 silicone sealant that conforms to DMS-6310. Install when ambient temperature is between 55°F and 85°F and rising. Engineer to determine allowable hours for sealant application.
- ⑥ 1 1/2" backer rod must be compatible with joint sealant. Use of multiple pieces to create a backer rod cross section is not permitted. Top of backer rod must be convex as shown.
- ⑦ The maximum distance between Type A expansion joints is 100'. See Bridge Layout for location of joints.
- ⑧ Drain entrance formed in rail or sidewalk.
- ⑨ Water may not be discharged onto girders.
- ⑩ All drain pipe and fittings to be 4" diameter (Sch 40) PVC. See Item 481 "Pipe for Drains" for pipe, connections and solvent welding. Bend reinforcing steel to clear PVC 1". Drain length and location is as directed by the Engineer. Drains are not permitted over roadways or railways, or within 10'-0" of bent caps. Degrease outside of exposed PVC, apply acrylic water base primer, then coat with same surface finishing material as used for outside girder face. Variations of the above designs, as required for the type of rail used and its location on the structure, may be installed with the approval and direction of the Engineer.



DRAIN DETAIL⁽¹⁰⁾

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Payment for Type A joint will be as per Item 454, "Bridge Expansion Joints."
All other items (reinforcing steel, drains, etc.) shown on this sheet are subsidiary to other bid items.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

DECK FORMWORK NOTES:

Overhang bracket hangers are limited to a safe working load of 3,600 lbs, applied to and along the axis of a coil rod at 45 degrees from vertical, regardless of higher loads permitted by hanger manufacturers. Do not place a hanger less than 12" from girder end. Space hangers accordingly.

SHEET 1 OF 2

 Texas Department of Transportation	Bridge Division Standard								
MISCELLANEOUS SLAB DETAILS PRESTR CONCRETE I-GIRDERS									
IGMS-DAL									
FILE: igmstsl-19.dgn	DN: TxDOT CK: TxDOT DW: JTR CK: TxDOT								
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DIST	COUNTY	SHEET NO.							
DAL	DALLAS	861							

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DATE	REVISION	BY

MISCELLANEOUS SLAB DETAILS

SHEET 1 OF 2

Laud Howell
Parkway

**CITY OF MCKINNEY
COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway Phone 214.620.2800
Suite 300
McKinney, Texas 75070 FRN - F-1386



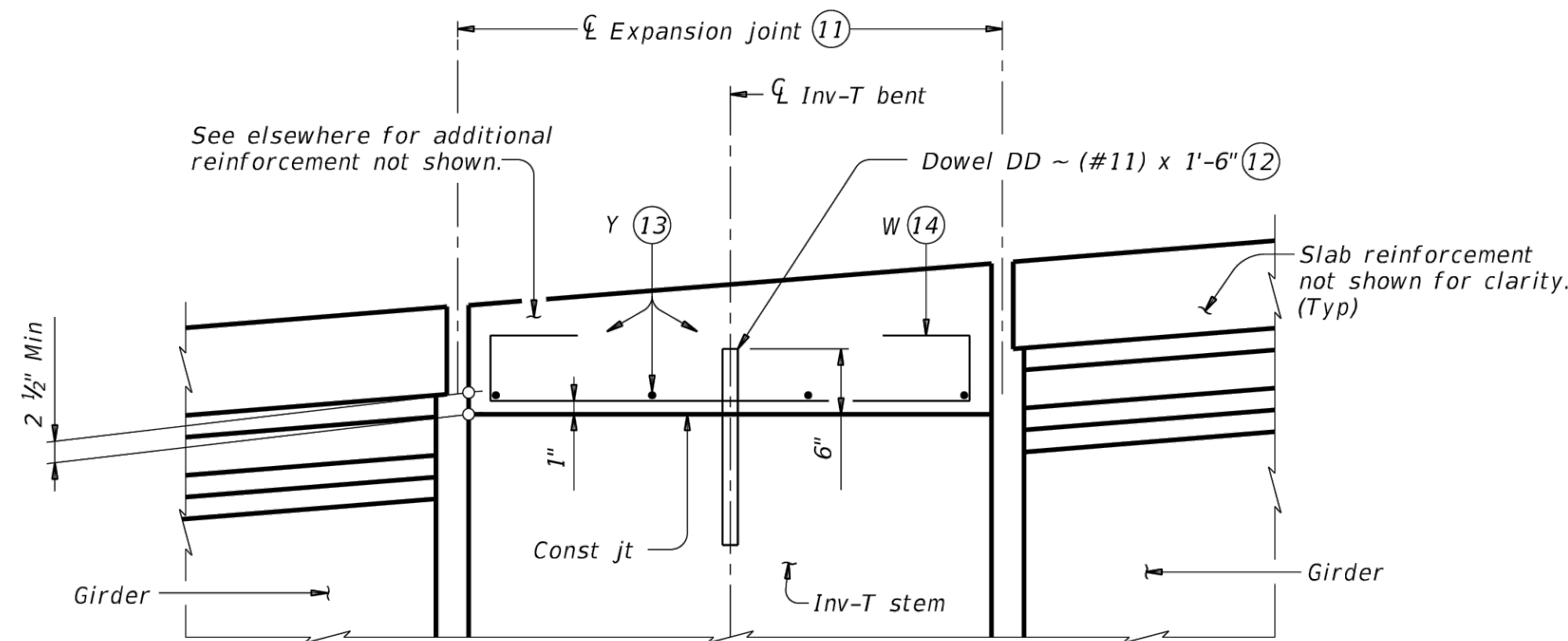
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07 17 2026

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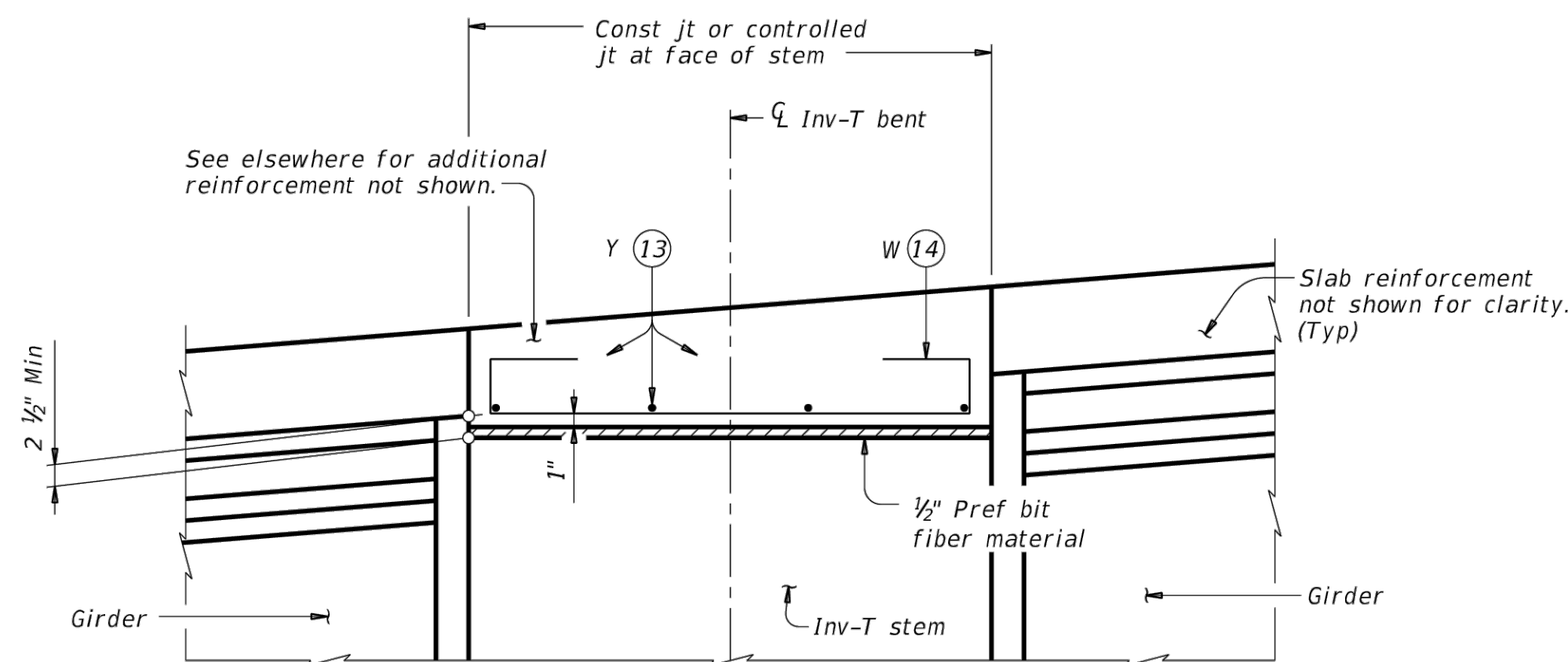
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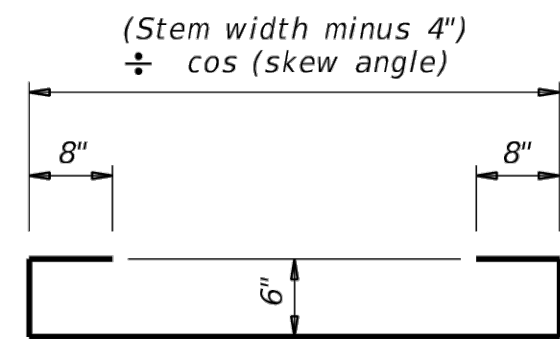
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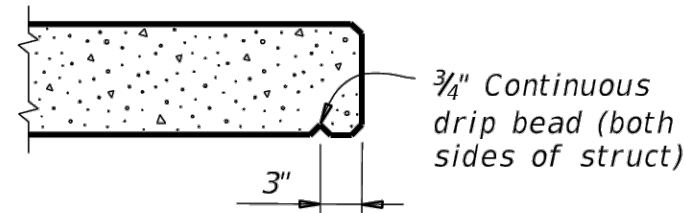
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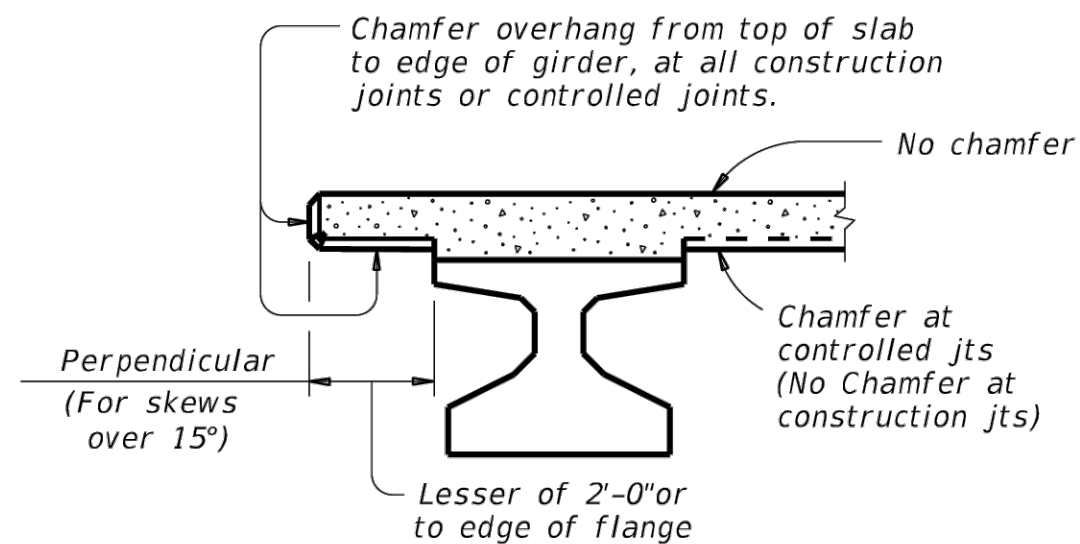
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REINFORCEMENT OVER INV-T BENTS**



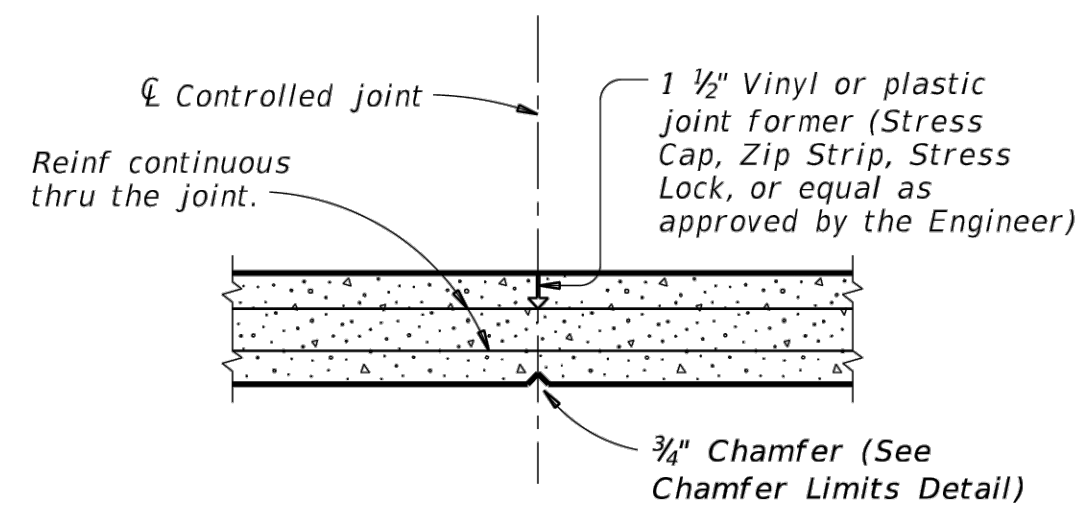
BARS W (#4)



DRIP BEAD DETAIL



CHAMFER LIMITS DETAIL 15



CONTROLLED JOINT DETAIL
(Saw-cutting is not allowed)

- 11 See Layout for joint type.
12 Dowels DD (#11) spaced at 5 Ft Max. See Inv-T bents for quantity and location.
13 Space Bars Y (#4) at 12" Max. Use 2" end cover. Number of Bars Y must satisfy spacing limit. Place parallel to bent.
14 Space Bars W at 12" Max (3" from end of cap). Tilt if necessary to maintain cover requirements. Place parallel to longitudinal slab reinforcement.
15 See Span details for type of joint and joint locations.

SHEET 2 OF 2

MISCELLANEOUS SLAB DETAILS PRESTR CONCRETE I-GIRDERS			
IGMS-DAL			
FILE: igmsst1-19.dgn	DN: TxDOT	CK: TxDOT	JTR
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MISCELLANEOUS SLAB DETAILS		
SHEET 2 OF 2		
Laud Howell Parkway		
CITY OF MCKINNEY COLLIN COUNTY, TEXAS		
LJA Engineering, Inc.		
2150 South Central Expressway Suite 300 McKinney, Texas 75070 Phone 214.620.2800 FRN - F-1386		
LJA PROJECT ID NT852F-0285		
DATE: JULY 2026		
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HORZ: VERT:		
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B-40		
OF B-57 SHEETS		

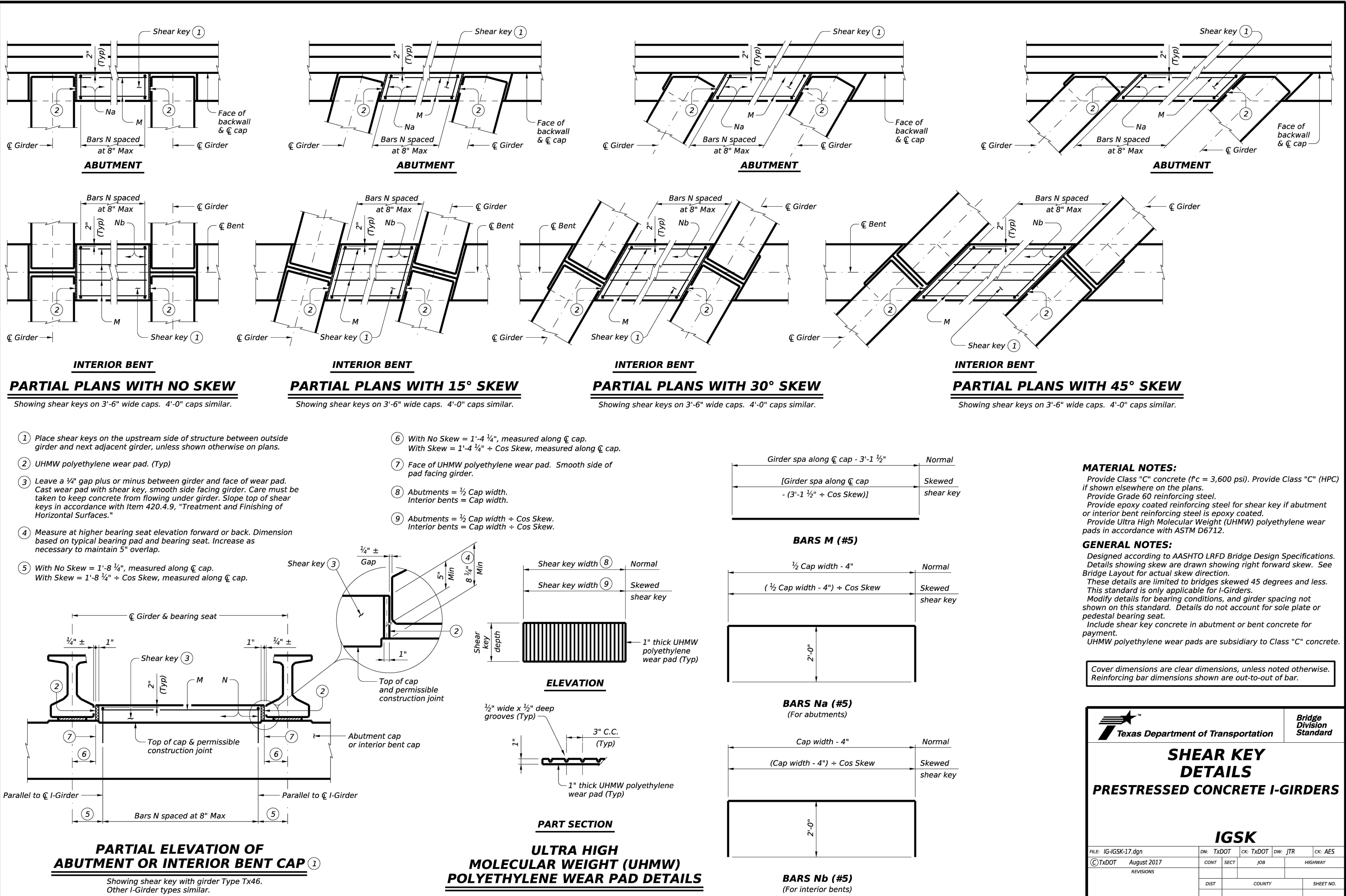
LAUD HOWELL PARKWAY

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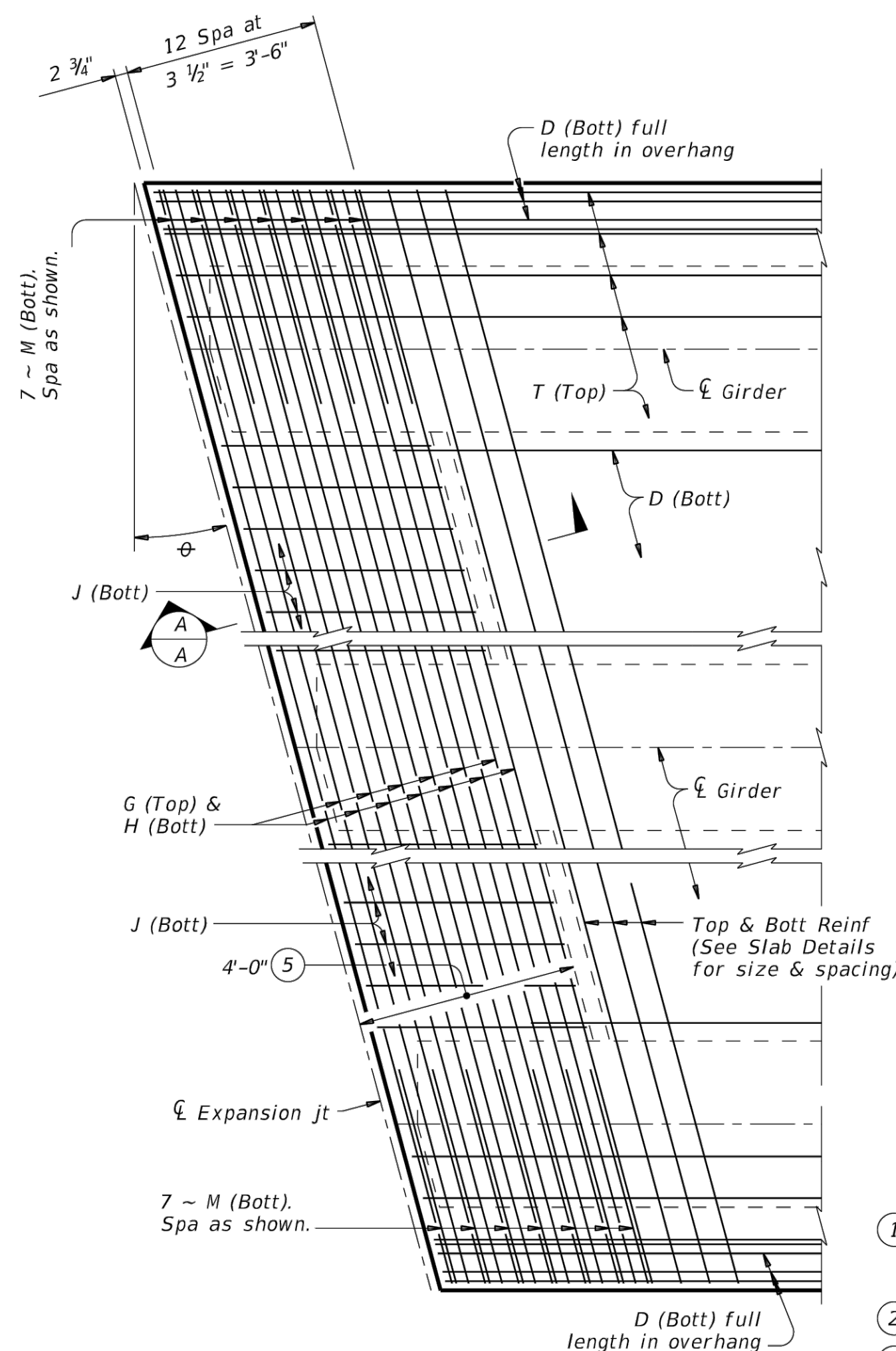
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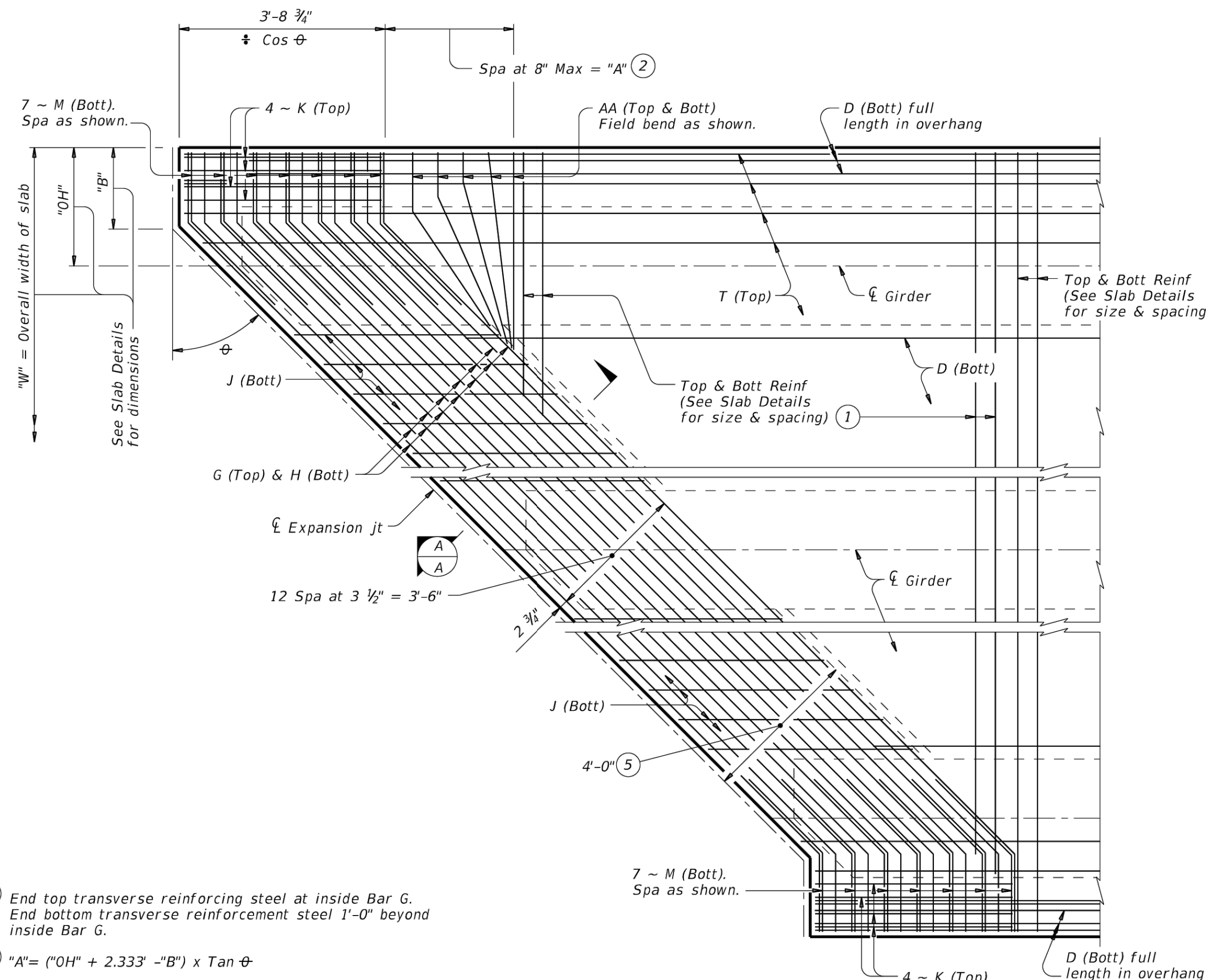
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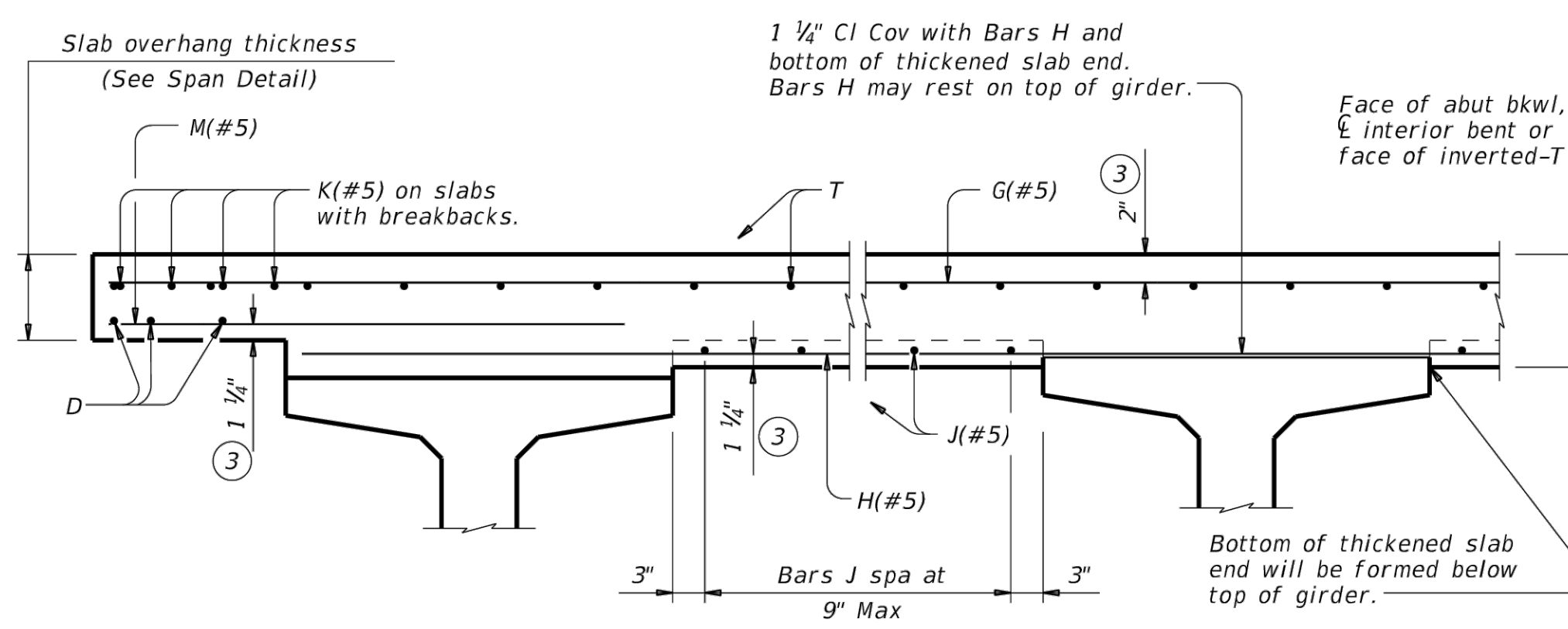
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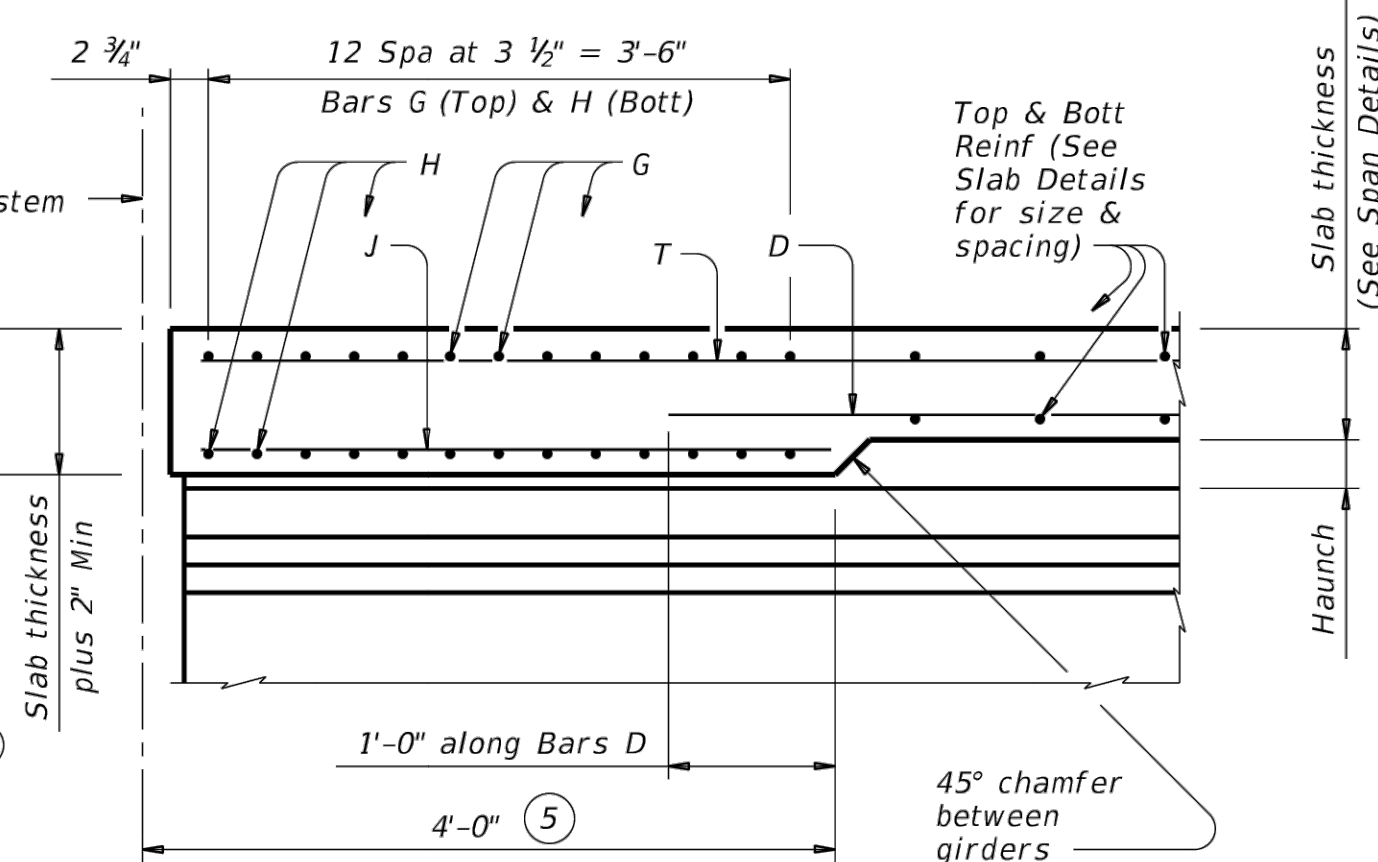
*PARTIAL PLAN FOR
SLABS WITHOUT BREAKBACK*



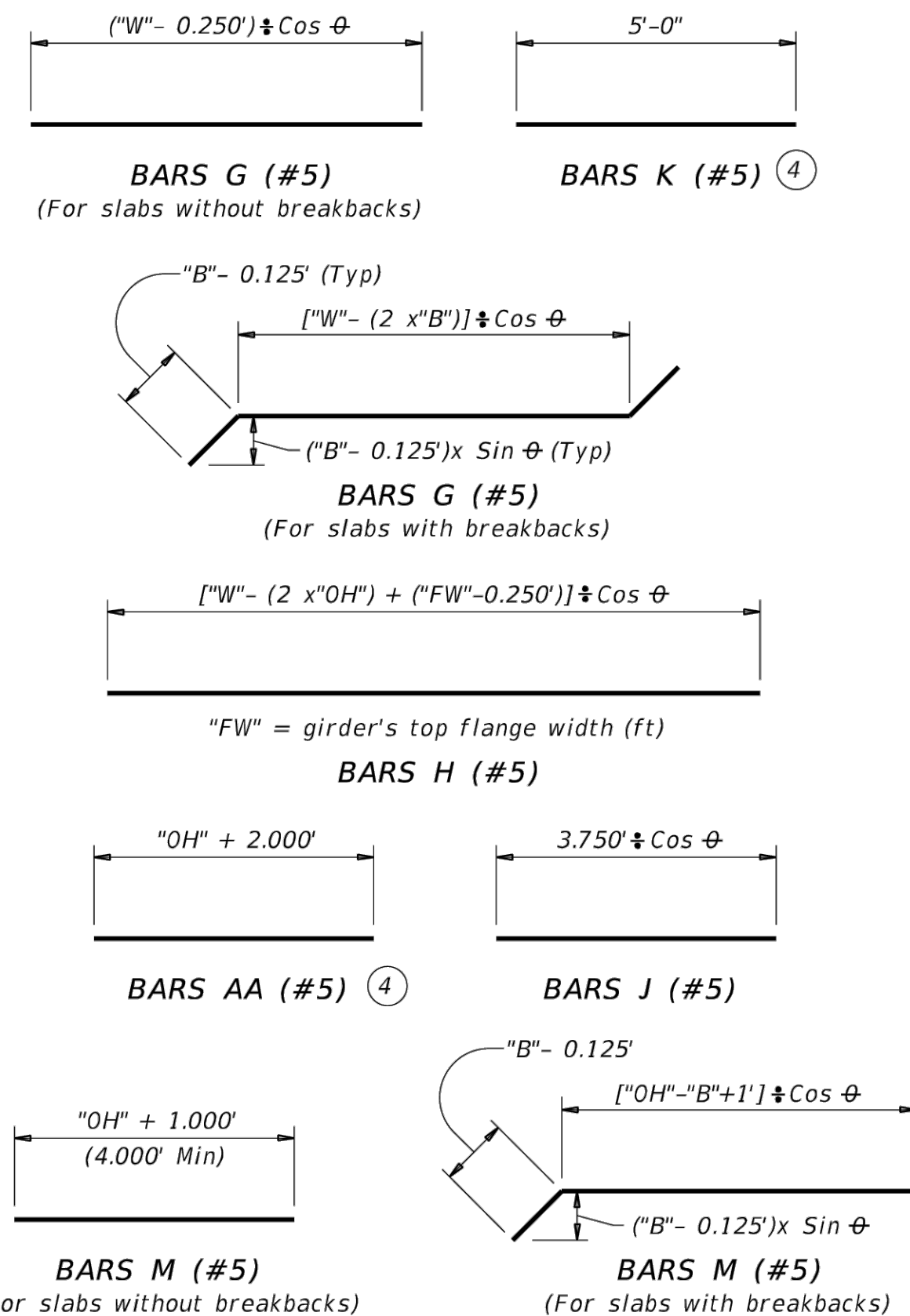
PARTIAL PLAN FOR
SLABS WITH BREAKBACK



TYPICAL TRANSVERSE SECTION



SECTION A-A
(Showing with 2" and more of haunch)



GENERAL NOTES:

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These details are restricted to Prestressed Concrete I-Girder Spans.
These details are to be used in conjunction with the Span Details and
PCP standard (if prestressed concrete panels are used).
When Option 2 from PCP standard is used, provide Bars AA, G and K
in the slab.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

If slab reinforcing steel is shown on the Slab Details to be epoxy coated, then Bars AA, G, K, H, J, M and OA must be epoxy coated. Provide bar laps, where required, as follows:

Uncoated ~ #4 = 1'-7"
~ #5 = 2'-0"
Epoxy Coated ~ #4 = 2'-5"
~ #5 = 3'-0"

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

**Bridge
Division
Standard**

*THICKENED SLAB END
DETAILS
PRESTRESSED CONCRETE
I-GIRDER SPANS*

IGTS-DAL

FILE: igssts1-17.dgn		DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
 August 2017 REVISIONS		CONT	SECT	JOB	HIGHWAY
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		DIST	COUNTY		SHEET NO.
		DAL	DALLAS		863



Laraine Deek
07 17 2026

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THICKENED SLAB END DETAILS

Laud Howell
Parkway

CITY OF MCKINNEY
COLLIN COUNTY, TEXAS

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

Phone 214.620.2800
FRN - F-1386

LJA PROJECT ID

DATE: JULY 2026

DESIGN: EH

DRAWN: MS

SCALE

HORZ:

VERT: _____

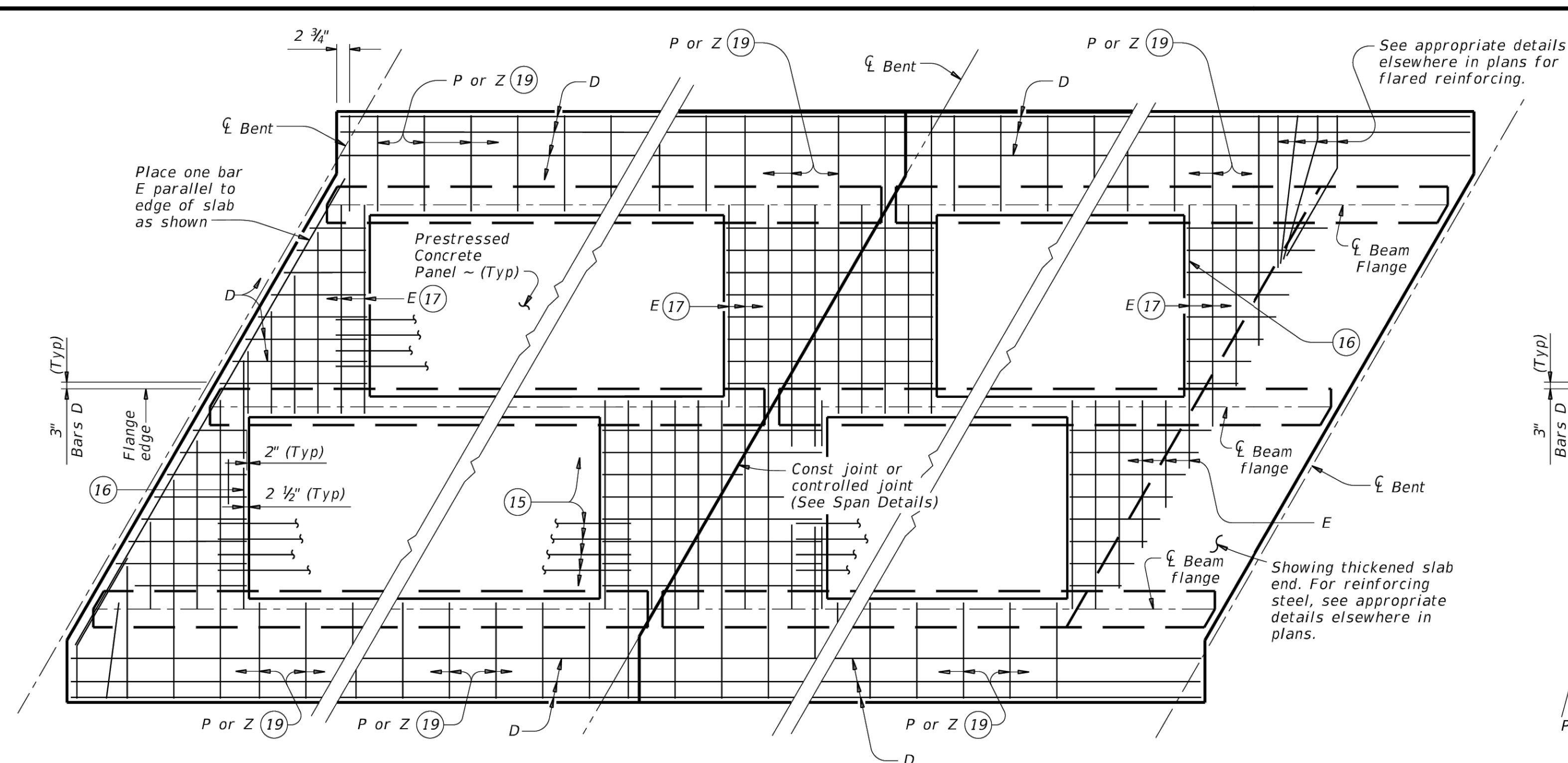
SHEET

B-42

OF B-57 SHEETS

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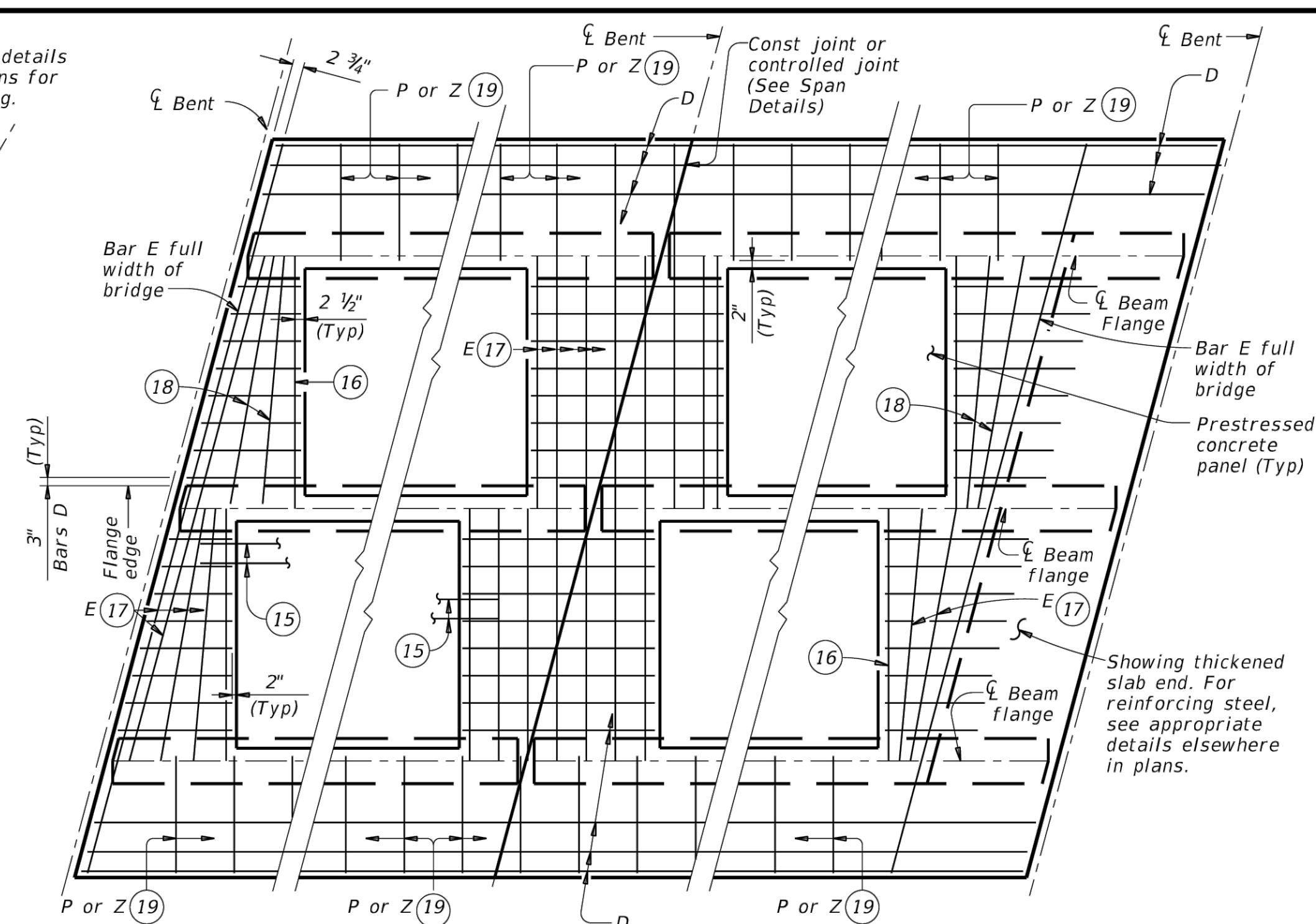


AT ALL SPAN
ENDS UNLESS
NOTED OTHERWISE

AT
INTERIOR
BENTS

AT
THICKENED
END SLABS

OPTION 1 ~ PLAN OF SLABS WITH NORMAL REINFORCEMENT



AT ALL SPAN
ENDS UNLESS
NOTED OTHERWISE

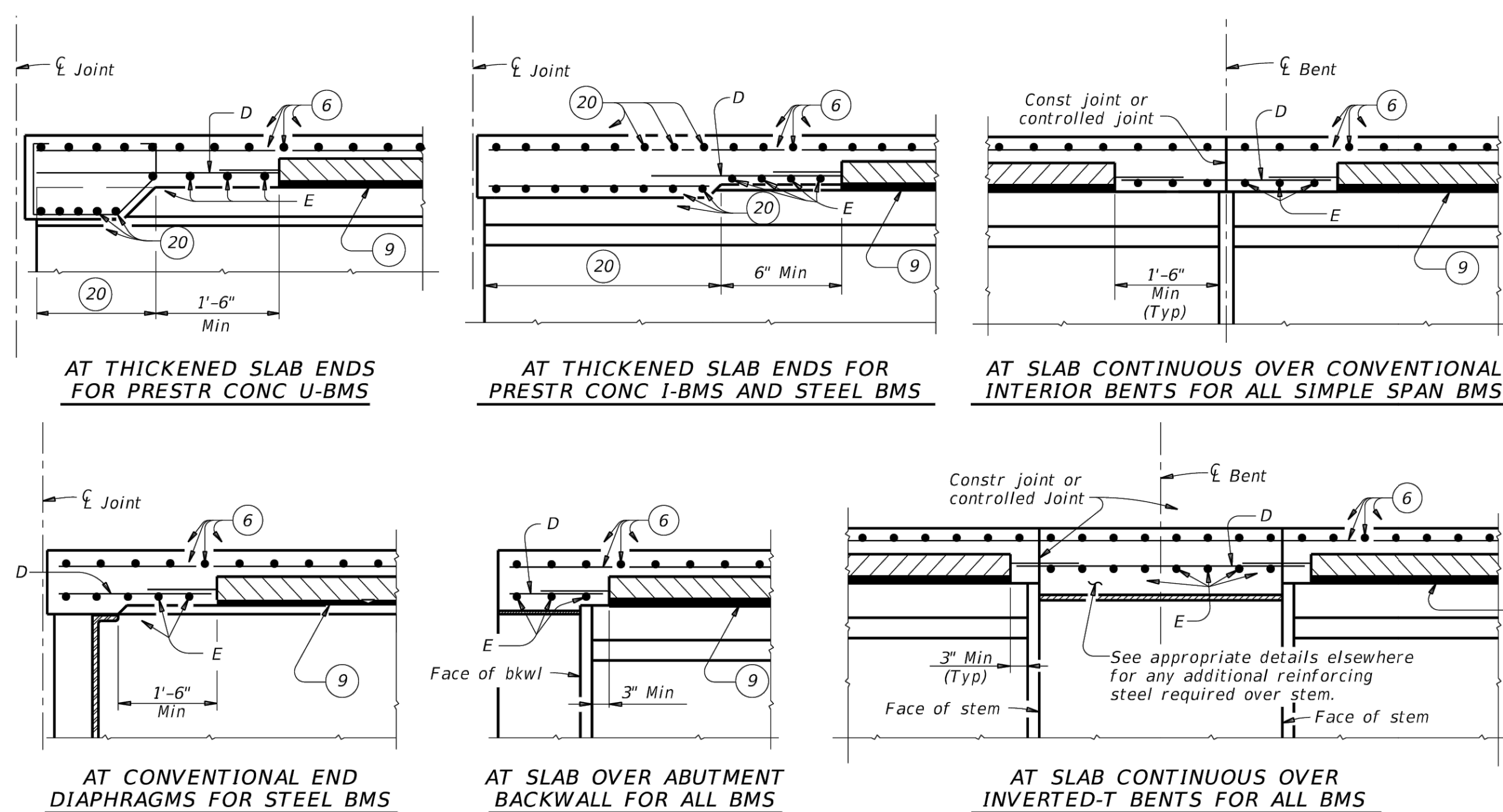
AT
INTERIOR
BENTS

AT
THICKENED
END SLABS

OPTION 1 ~ PLAN OF SLABS WITH SKEWED REINFORCEMENT

- ⑥ See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Longitudinal top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.
- ⑨ Butt adjacent bedding strips together with adhesive. Cut v-notches, approx 1/4" deep, in the top of the bedding strips at 8' o.c.
- ⑭ Max Spacing as listed unless otherwise shown.
- ⑮ At connection with cast-in-place slab, extend longitudinal panel reinforcement. See PCP-FAB for details.
- ⑯ Maintain one Bar E(#5) parallel to panel ends (Typ).
- ⑰ Bars E(#5) not continuous over beam flanges must overlap beam flange 6" Min.
- ⑱ Add flared Bars E(#5) (Min Spa = 2", Max Spa = 10") as required at panel ends.
- ⑲ Where possible, Bars E(#5) may be extended into overhangs to replace Bars P(#4). Bars Z(#4) are required for sloped overhangs with U-Beams.
- ⑳ See appropriate thickened slab end details for reinforcing and limits of thickened slab ends.

BAR	SIZE	Max Spa (in.)
D	#5	9
E	#5	6
P	#4	18
UP	#4	~
Z	#4	18



AT CONVENTIONAL END DIAPHRAGMS FOR STEEL BMS

AT SLAB OVER ABUTMENT
BACKWALL FOR ALL BMS

*AT SLAB CONTINUOUS OVER
INVERTED-T BENTS FOR ALL BMS*

OPTION 1 ~ ELEVATIONS AT BEAM ENDS

HL93 LOADING

SHEET 3 OF 4



PRESTRESSED CONCRETE PANELS DECK DETAILS

PCP-DAL

FILE:	DAL-MS-PCP-23.dgn			DN:	TxDOT		CK:	TxDOT		DW:	JTR		CK:	J	
		April 2019			CONT	SECT	JOB				HIGHWAY				
REVISIONS:															
3-23: Removed top flange tension limit.					0196	01	109				1H35E				
4-23: Revised reinforcement cut configuration and made District Standard.					DIST	COUNTY				SHEET					
6-23: Revised bars P and Z.					DAL	DALLAS				86					



Saravani Deek
07 17 2026

07 17 2026

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PRESTRESSED CONCRETE PANEL

SHEET 3 OF 4

Laud Howell
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LJA Engineering, Inc

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Suite 300
McKinney, Texas 75070

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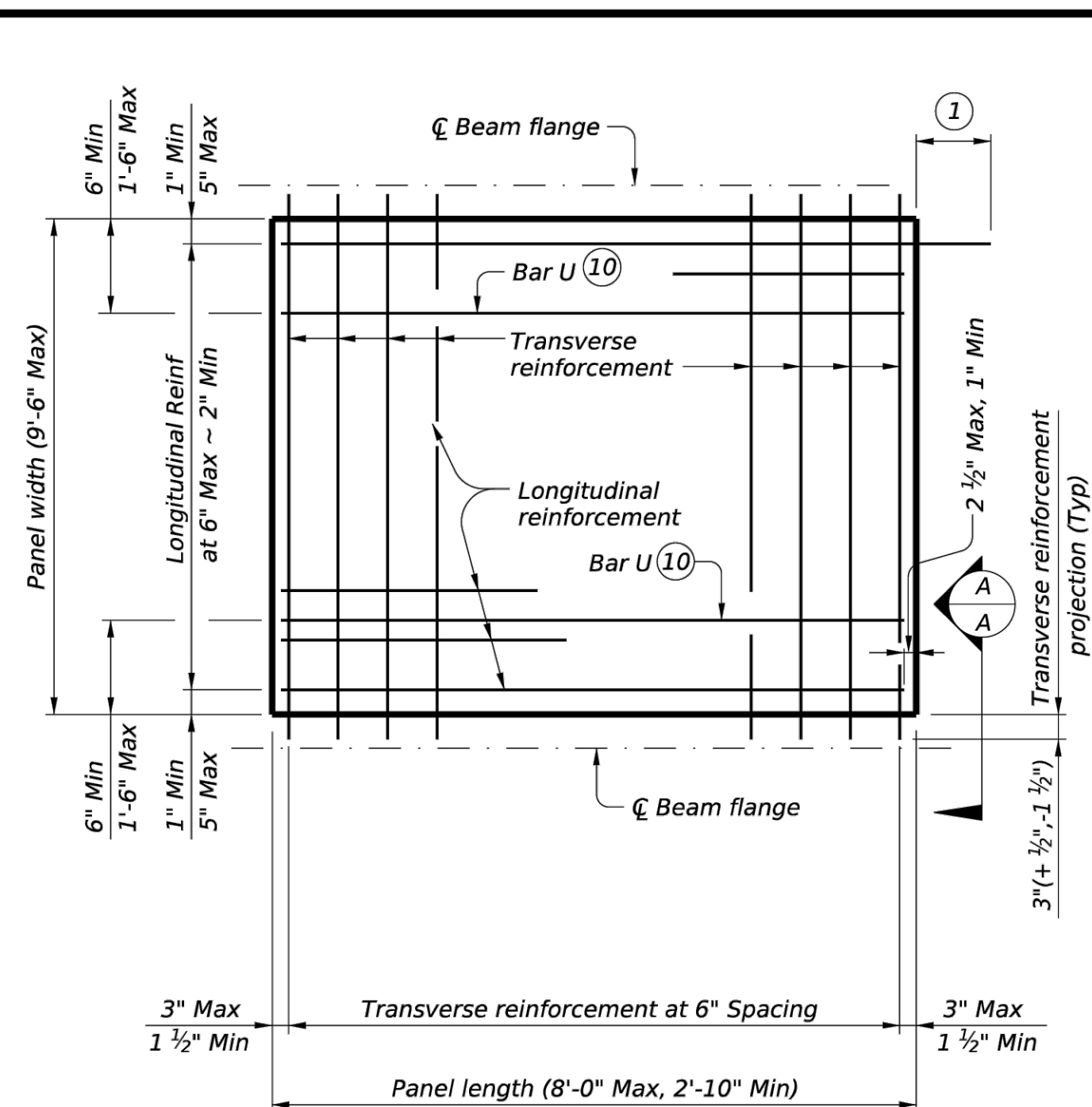
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B-45

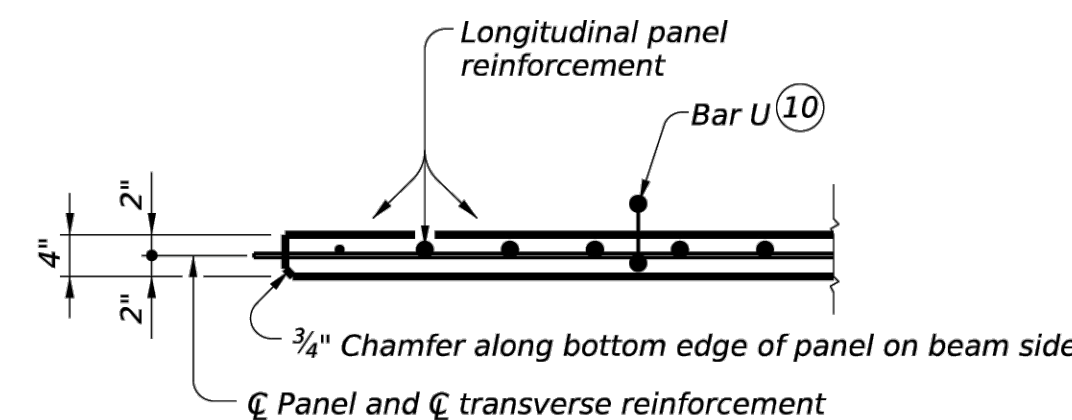
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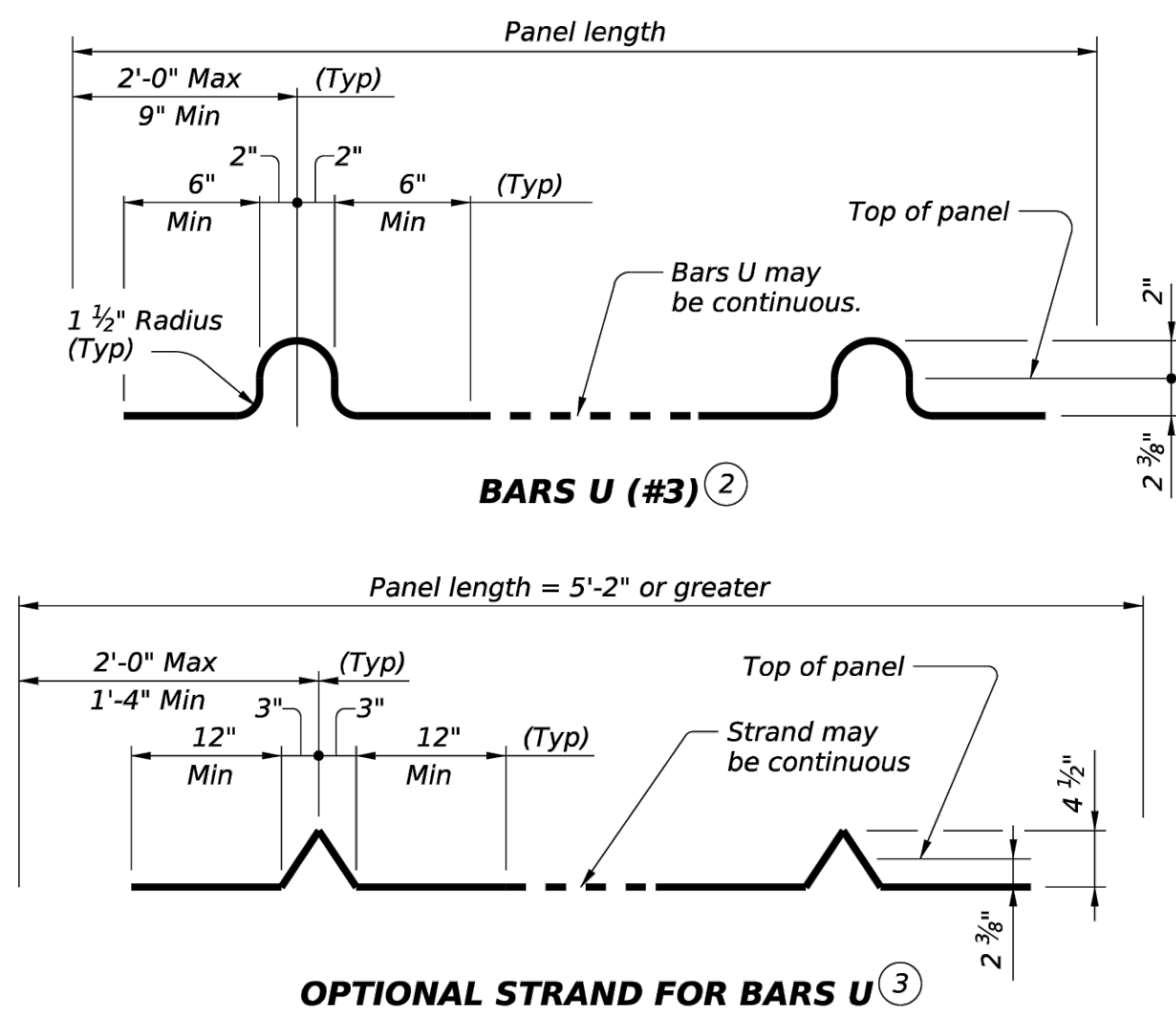


TYPICAL NON-SKEWED PANEL PLAN



SECTION A-A

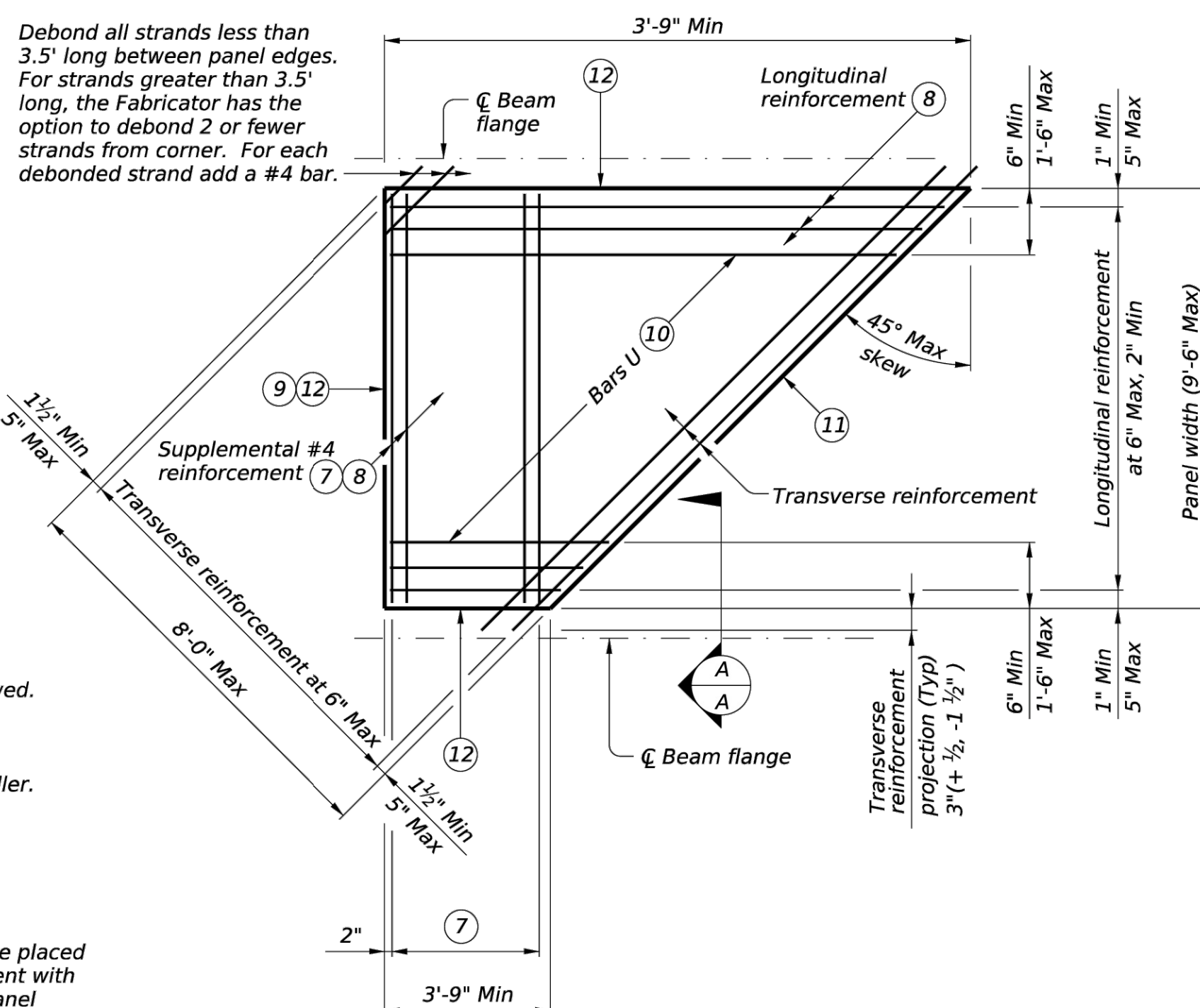
(Not showing supplemental #4 bars
for skewed end panels)



OPTIONAL STRAND FOR BARS U⁽³⁾

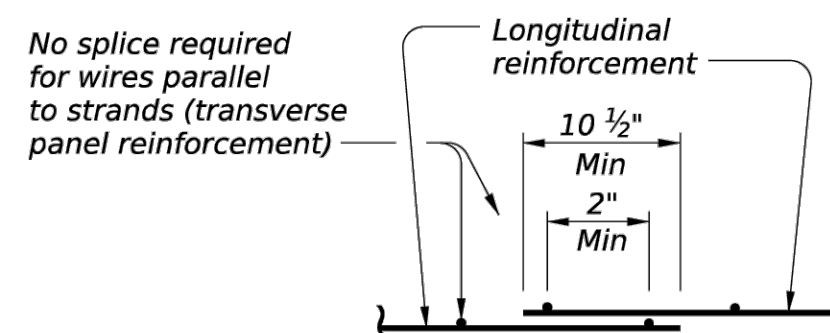
- ① At connection with cast-in-place slab, extend longitudinal panel reinforcement 1'-0" (+2", -0") past panel end. Alternatively, provide (#3) x 2'-0" dowels at 6" Max spacing and extend dowels 1'-0" past panel end.
- ② Four loops required per panel.
- ③ Four loops required per panel. $\frac{3}{8}$ " or $\frac{1}{2}$ " strands may be used.
- ④ Normal dimensions must be used on spans with parallel beams. Maximum and Minimum dimensions apply only to spans with flared beams.
- ⑤ See Normal Grading Detail on PCR standard for lap requirements and bedding strip dimensions. Some laps shown in tables cannot utilize all bedding strip widths.
- ⑥ One Splice allowed per panel. No more than two sheets of WWR are allowed.
- ⑦ Provide (#4) bars under transverse reinforcement, 10 Spaces at 4" = 3'-4". Omit for 5 degree (1:12) skew and smaller.
- ⑧ End Cover 2 $\frac{1}{2}$ " Max, 1" Min.
- ⑨ Recess strands on indicated panel edge in accordance with Item 424.
- ⑩ At the fabricator's option, Bars U may be placed parallel to transverse panel reinforcement horizontal legs in plane of transverse panel reinforcement.
- ⑪ Use length of indicated panel edge as panel width for purpose of determining type of transverse reinforcement.
- ⑫ Timber form work permissible this edge.

Debond all strands less than 3.5' long between panel edges. For strands greater than 3.5' long, the Fabricator has the option to debond 2 or fewer strands from corner. For each debonded strand add a #4 bar.

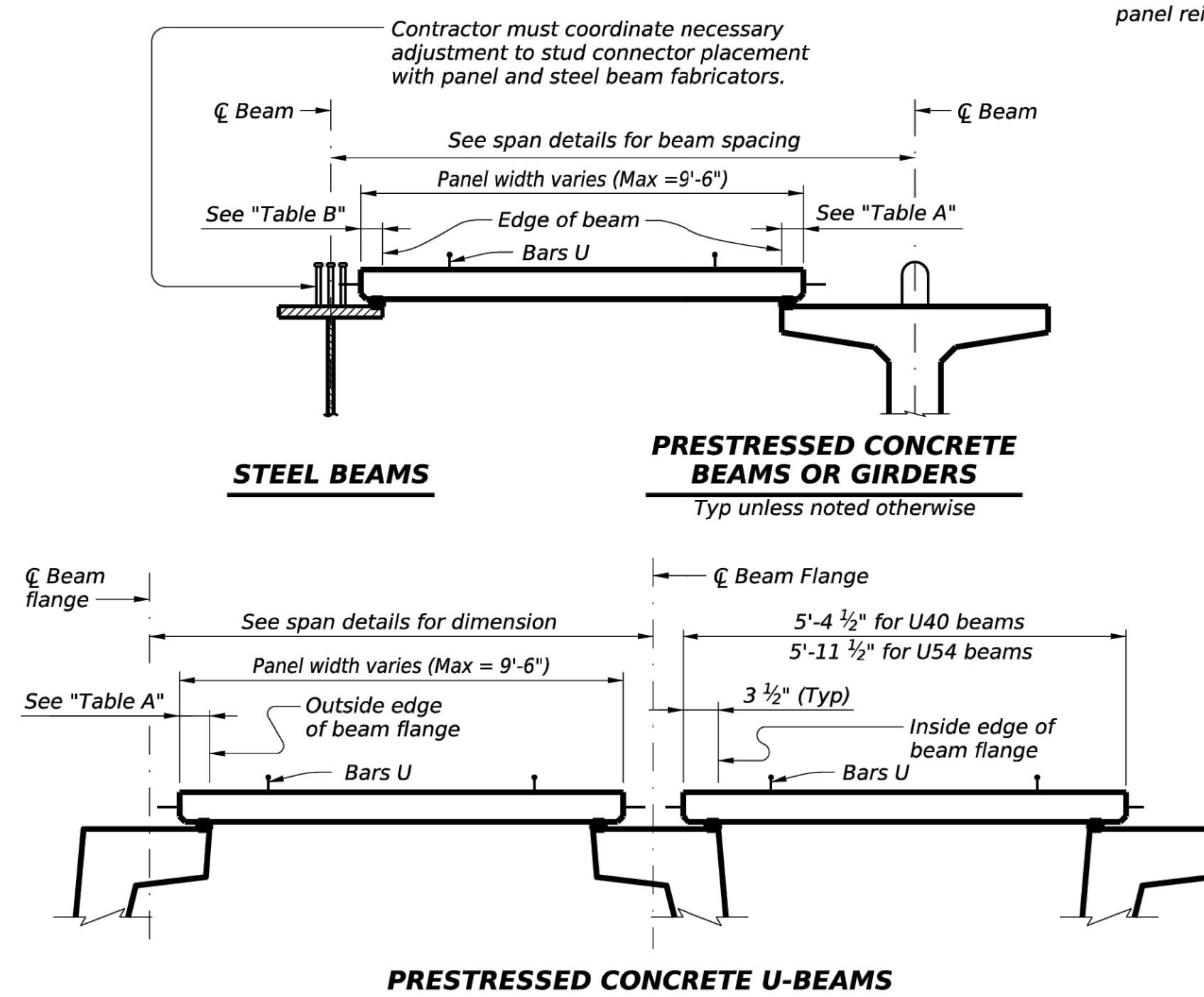


TYPICAL SKEWED END PANEL PLAN

(Only to be used with details shown elsewhere in the plans.)



**WELDED WIRE
REINFORCEMENT (WWR)
SPLICE DETAIL** (6)



TYPICAL SECTIONS FOR DETERMINING PANEL WIDTH

<i>Beam Type</i>	<i>Normal (In.)</i>	<i>Min (In.)</i>	<i>Max (In.)</i>
A	3	2 ½	3 ½
B	3	2 ½	3 ½
C	4	3	4 ½
IV	6	4	7 ½
VI	6 ½	4 ½	8 ½
U40 - 54	5 ½	5 ½	7
Tx28-70	6	5	7 ½
XB20 - 40	4	3	4 ¾
XSB12 - 15	4	3	4 ½

Top Flange Width	Normal (In.)	Min (In.)	Max (In.)
11" to 12"	2 ³ / ₄	2 ¹ / ₂	2 ³ / ₄
Over 12" to 15"	3 ¹ / ₄	3	3 ¹ / ₄
Over 15" to 18"	4	3	4 ¹ / ₄
Over 18"	5	3 ¹ / ₂	6 ¹ / ₄

GENERAL NOTES:

Provide Class H concrete for panels. Release strength $f'_{ci}=3,500$ psi. Minimum 28 day strength $f'_c=5,000$ psi.

Provide $\frac{3}{4}$ " chamfer along bottom edge of panel on beam side.

Do not use epoxy-coated reinforcing steel bar or strand in panels.

Remove laitance from top panel surface.

Finish top of panel to a roughness between a No. 6 and No. 9 concrete surface profile, inclusive, as specified by the International Concrete Repair Institute (ICRI).

Shop drawings for the fabrication of panels will not require the use of temporary fabrication in accordance with the details shown on this standard.

A panel layout which identifies location of each panel must be developed by the Fabricator. Permanently mark each panel in accordance with the panel layout. A copy of the layout is to be provided to the Engineer.

TRANSVERSE PANEL REINFORCEMENT:

For panel widths over 5', use $\frac{3}{8}$ " or $\frac{1}{2}$ " Dia (270K) prestressing strands with a tension of 14.4 kips per strand.

For panel widths over 3'-6" up to and including 5', use $\frac{3}{8}$ " or $\frac{1}{2}$ " Dia (270K) prestressing strands with a tension of 14.4 kip per strand. Optionally, (#4) Grade 60 reinforcing bars may be used in lieu of prestressed strands.

For panel widths up to 3'-6", use (#4) Grade 60 reinforcing bars (prestressed strands alone are not allowed). Place reinforcing bars at least two bar diameters away from each prestressed strand.

Place transverse panel reinforcement at panel centroid and space at 6" Max.

LONGITUDINAL PANEL REINFORCEMENT:

Any of the following options may be used for longitudinal panel reinforcement:

1. Grade 60 reinforcing steel at 6" Max Spacing. No splices allowed.
2. 3/8" Dia prestressing strands at 4 1/2" Max Spacing (unstressed). No splices allowed.
3. 1/2" or 5/8" Dia prestressing strands at 4" Max Spacing (unstressed). No splices allowed.
4. Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) providing 0.22 sq in per foot of panel width. Wires larger than D11 not permitted. Provide transverse wires to ensure proper handling of reinforcement. One splice per panel is allowed. See WWR Splice Detail.

No combination of longitudinal reinforcement options in a panel is allowed.

Place longitudinal panel reinforcement above or below transverse panel reinforcement. Must be placed above transverse panel reinforcement for skewed end panels with supplemental (#4) reinforcement.



Texas Department of Transportation

**Bridge
Division
Standard**

PRESTRESSED CONC PANEL FABRICATION DETAILS

PCP-FAB

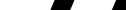
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PRESTRESSED CONC PANEL FABRICATION DETAILS

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OF B-57 SHEETS	

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**SLAB OVER INVERTED-T
STEM FOR STEEL BEAMS
WITHOUT THICKENED SLAB END**



- ① Slab thickness minus $\frac{5}{8}$ " if corrugations match reinforcing bars.
- ⑤ Provide 12 gauge bars with a minimum yield stress of 40 ksi.



WIDENING DETAILS

SHEET 2 OF 2



PERMANENT METAL DECK FORMS

PMDF

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PERMANENT METAL DECK FORMS

SHEET 2 OF 2

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COLLIN COUNTY, TEXAS**

LJA Engineering, Inc.

2150 South Central Expressway
Suite 300
McKinney, Texas 75070

Phone 214.620.2800
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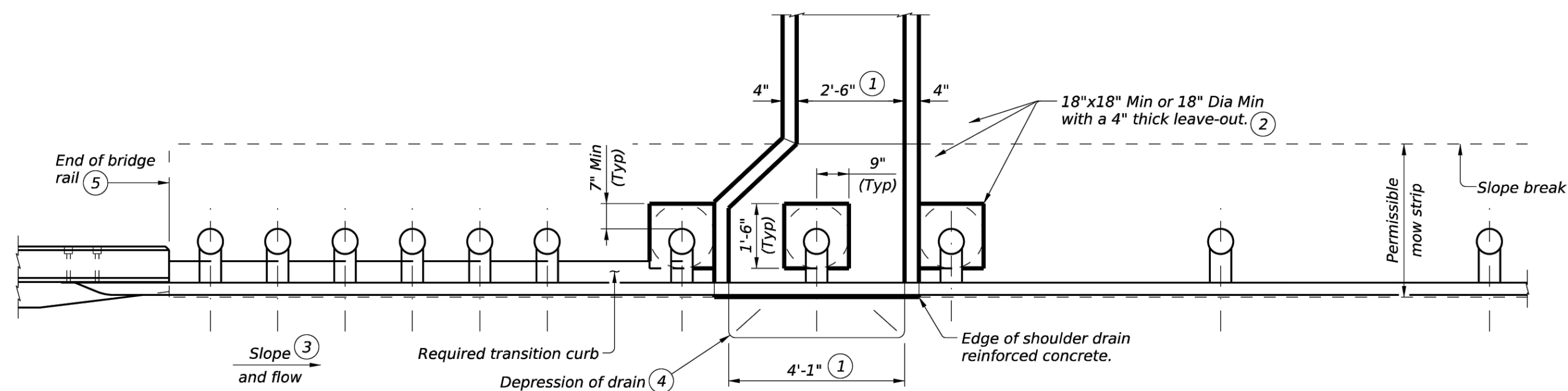
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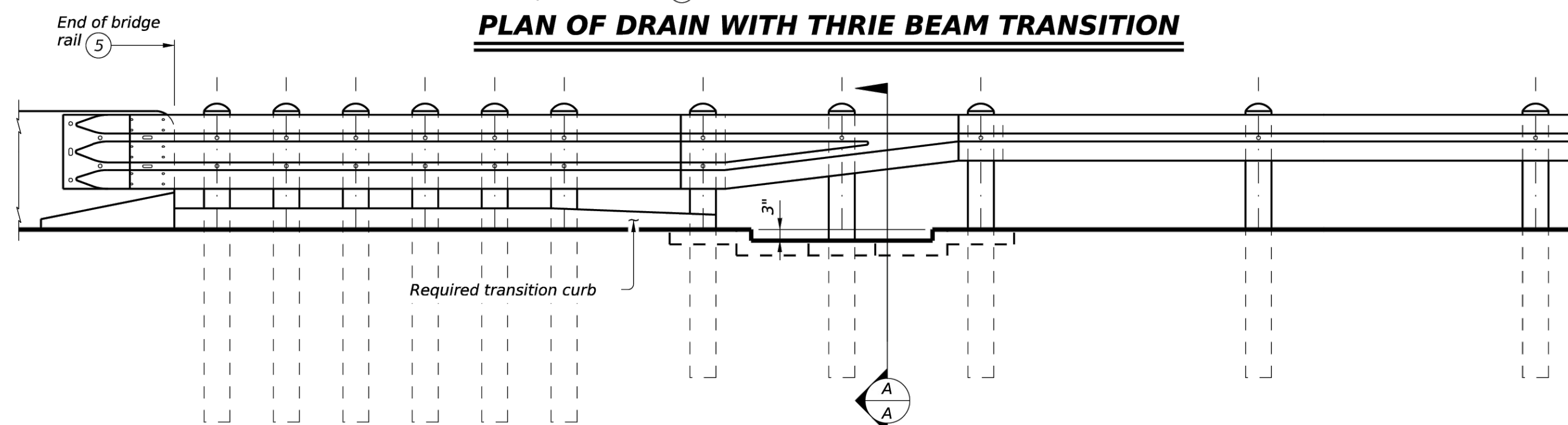
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OF B-57 SHEETS

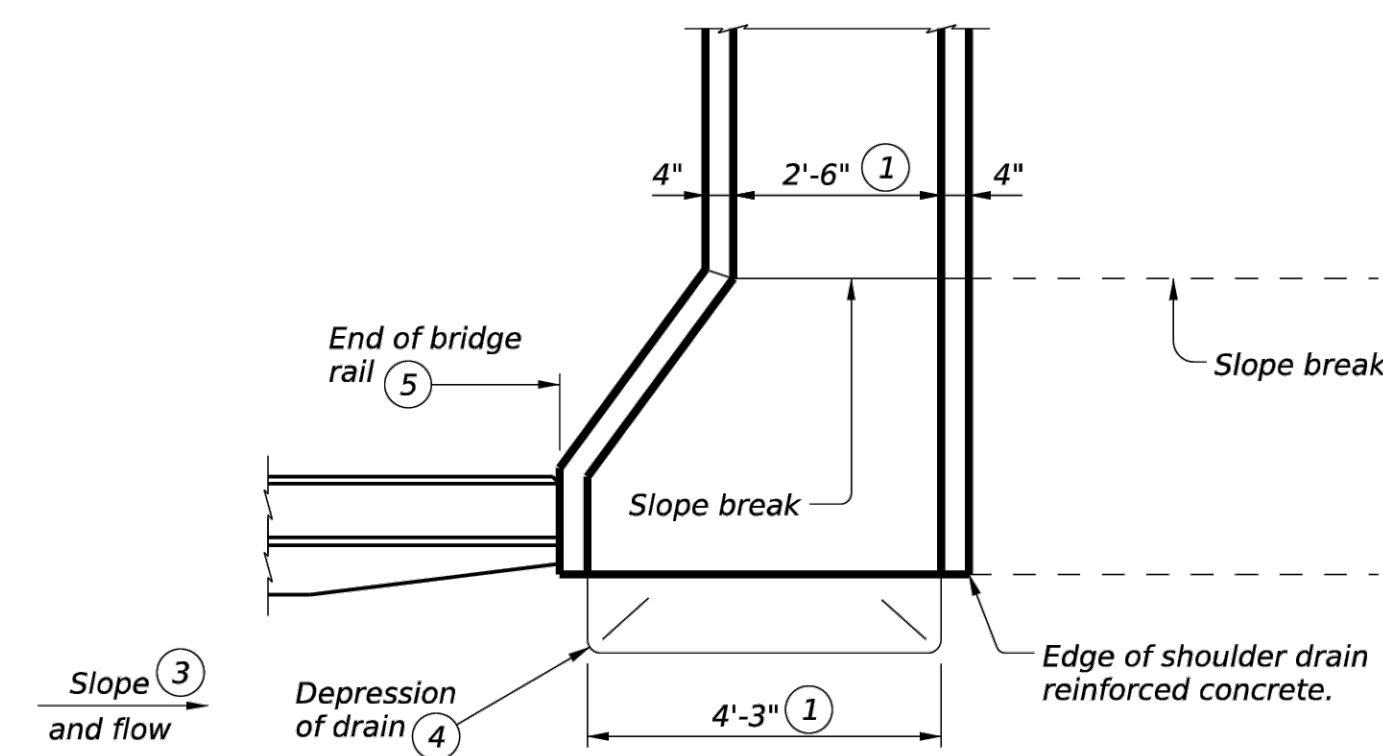
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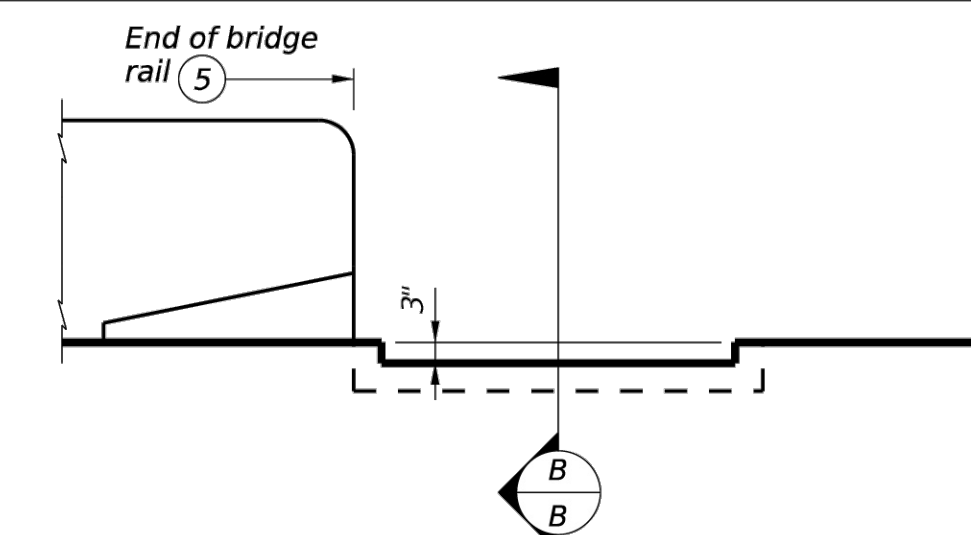
PLAN OF DRAIN WITH THRIE BEAM TRANSITION



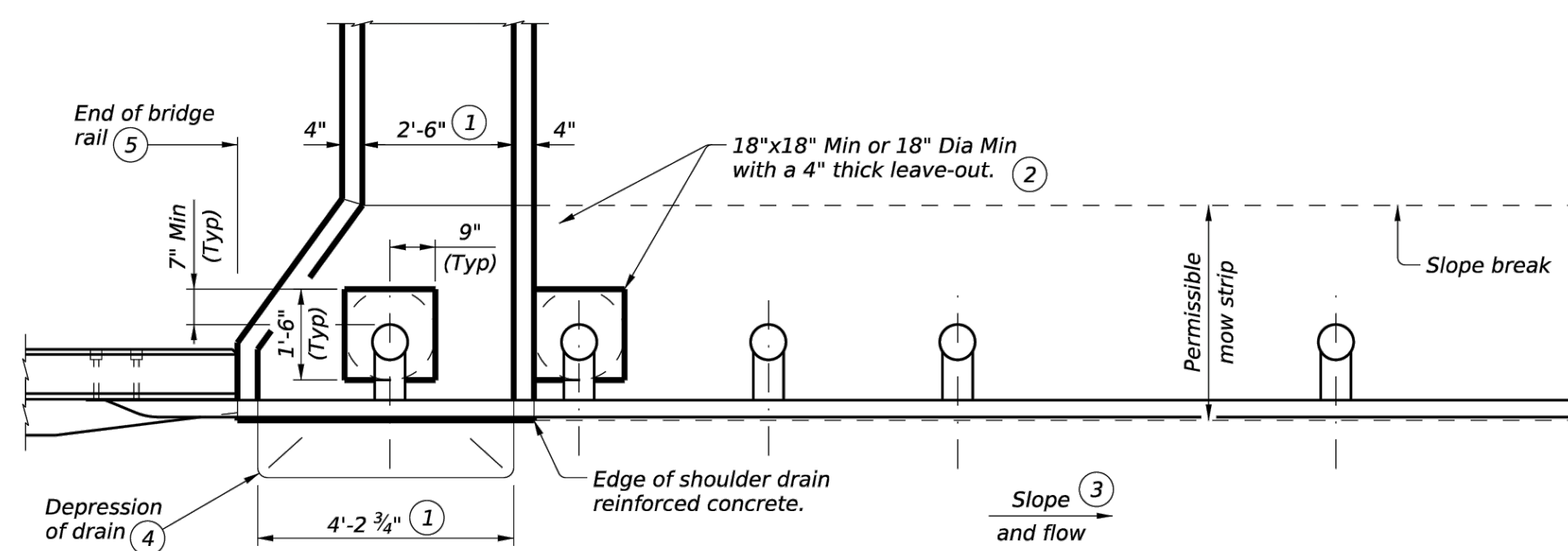
ROADWAY ELEVATION OF DRAIN WITH THRIE BEAM TRANSITION



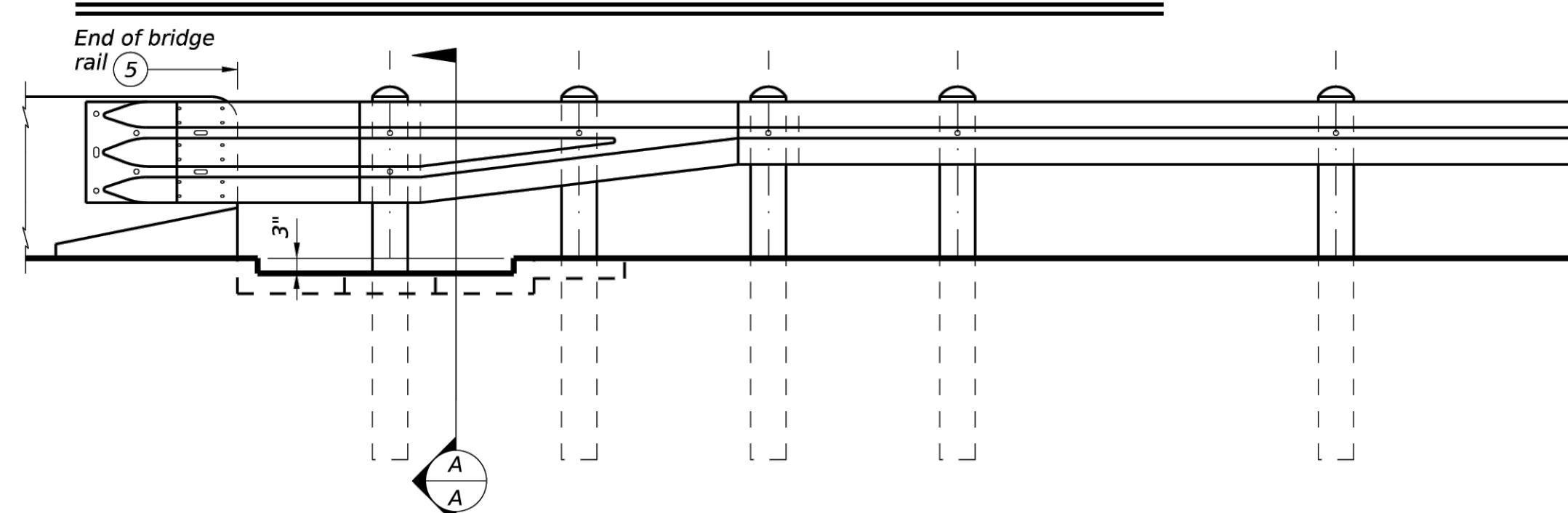
PLAN OF DRAIN WITHOUT MBGF TRANSITION



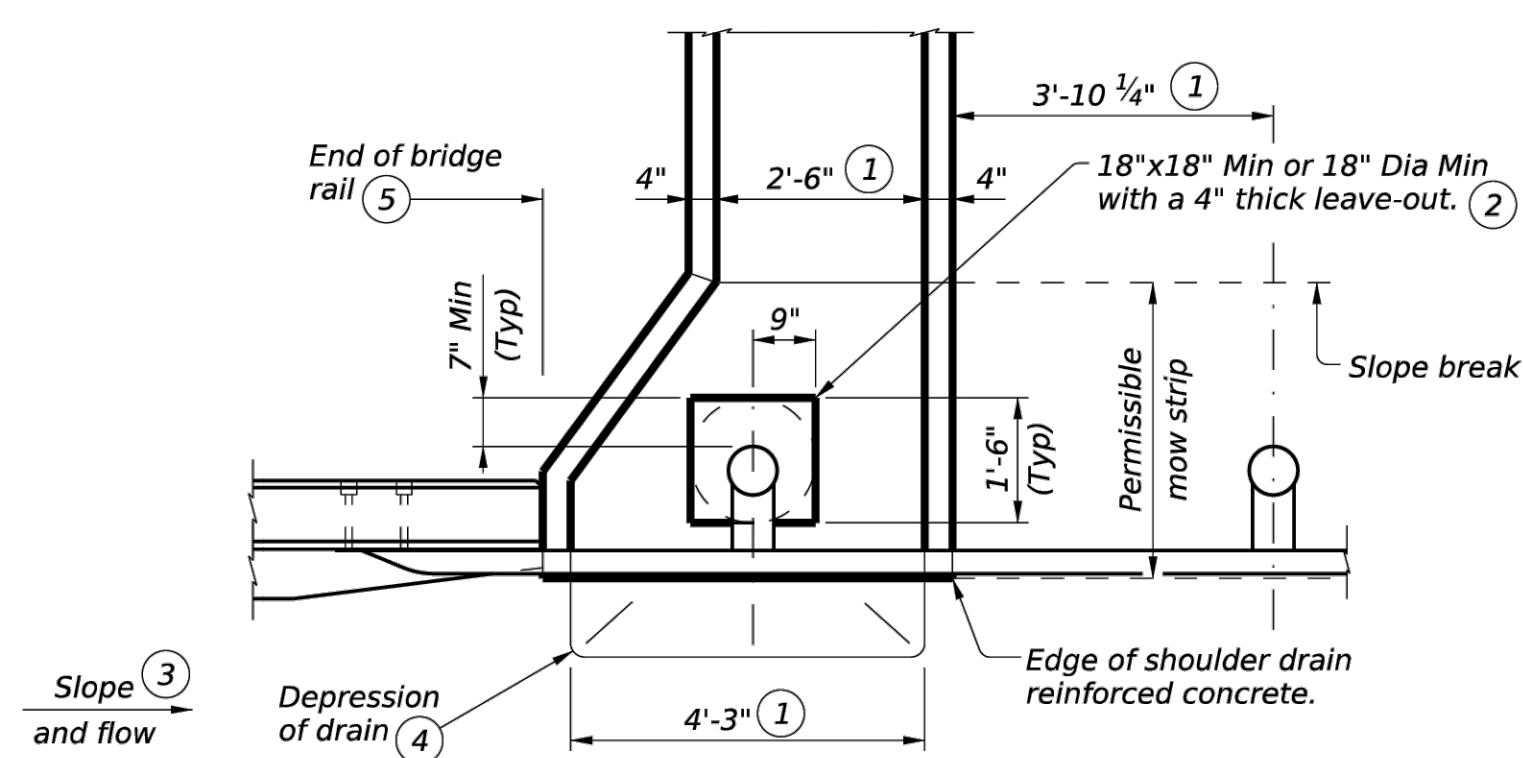
ROADWAY ELEVATION OF DRAIN WITHOUT MBGF TRANSITION



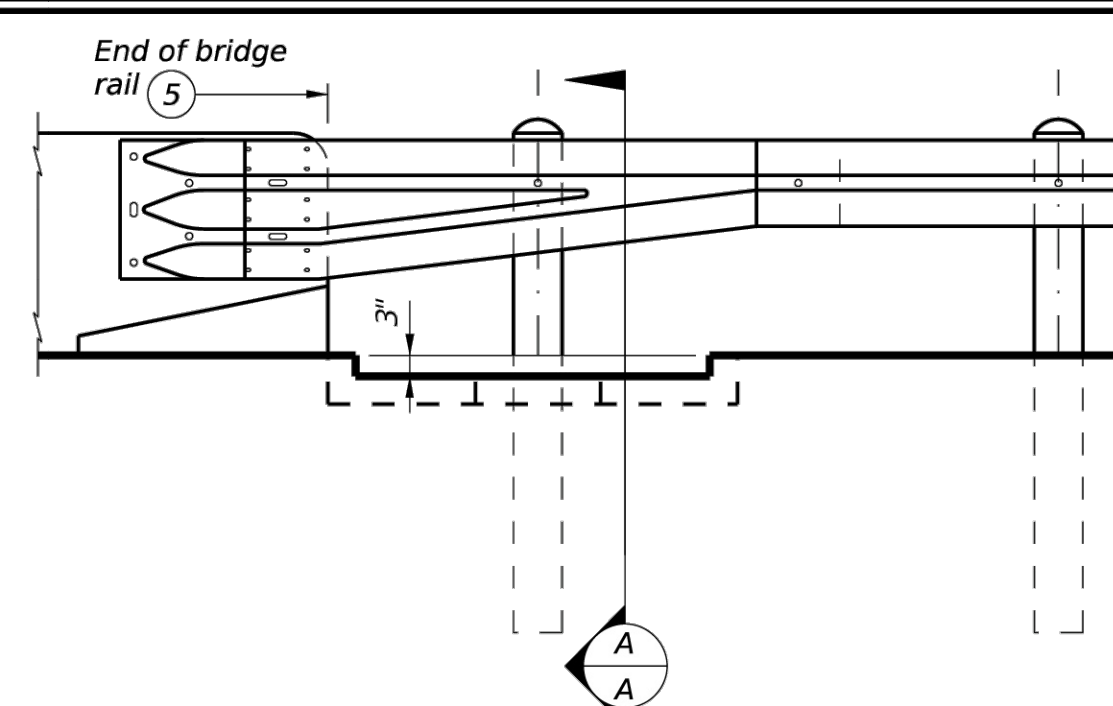
PLAN OF DRAIN WITH TL-2 (LOW SPEED) TRANSITION



ROADWAY ELEVATION OF DRAIN WITH TL-2 (LOW SPEED) TRANSITION



PLAN OF DRAIN WITH DOWNSTREAM ANCHOR TERMINAL



ROADWAY ELEVATION OF DRAIN WITH DOWNSTREAM ANCHOR TERMINAL

- ① Use *wide or other drain configurations if shown elsewhere in plans or if directed by the Engineer. Location of shoulder drains must consider limitation of approach slab transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.*
- ② Fill leave-outs with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of sufficient consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (20" Max leave-out).
- ③ For other slope and flow directions drain configuration may be mirrored wider or tapered wider if shown elsewhere in the plans or directed by the Engineer.
- ④ Form depression into concrete, asphalt pavement, or approach slab.
- ⑤ See Bridge Layout for rail type.

SHEET 1 OF 2



**SHOULDER DRAIN AT
END OF BRIDGE RAIL**

SD-EBR

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SHOULDER DRAIN AT END OF BRIDGE RAIL

SHEET 1 OF 2

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COLLIN COUNTY, TEXAS**

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LJA

Phone 214.620.2800

FRN - F-1386

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SECTION C-C

REINFORCEMENT DETAILS ^⑥

 Texas Department of Transportation	Bridge Division Standard																
SHOULDER DRAIN AT END OF BRIDGE RAIL																	
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OF B-57 SHEETS	

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① Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.



DETAIL C

Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.

See elsewhere in plans for locations and details of shoulder drains.

 Texas Department of Transportation	Bridge Division Standards
STONE RIPRAP	
SRR	

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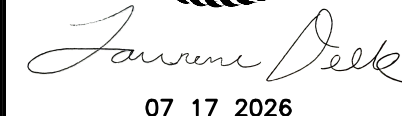
STONE RIPRAP

SHEET 1 OF 2

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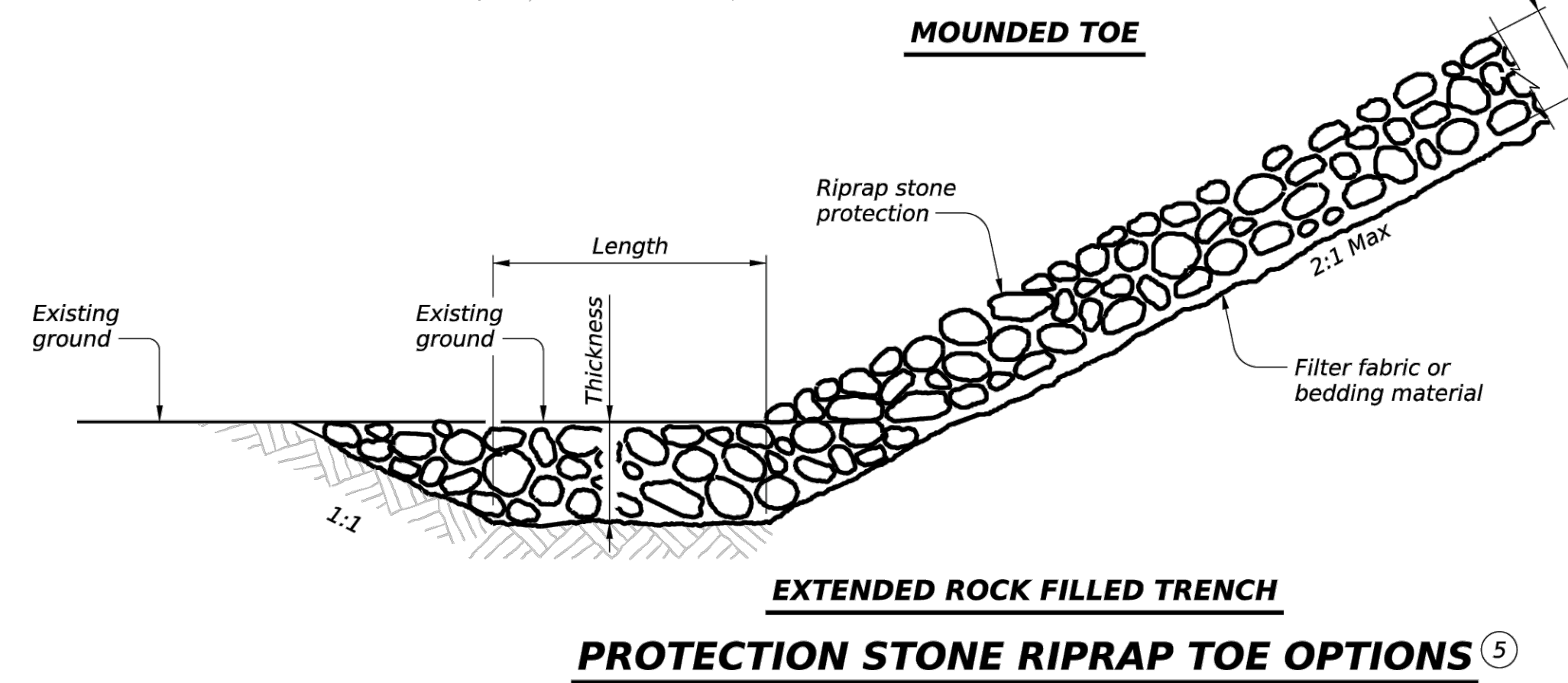
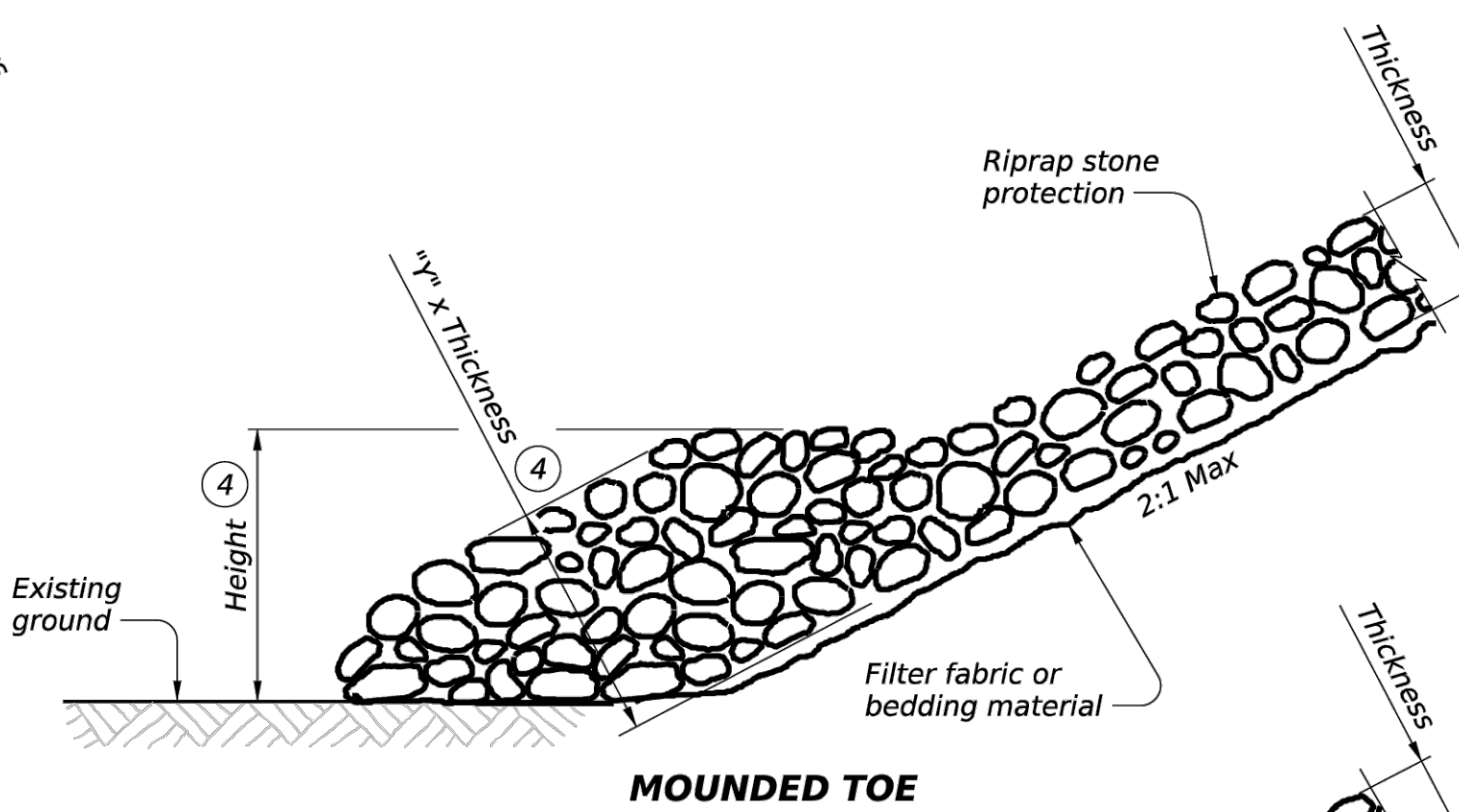
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- ② Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.
- ③ Minimum toe depth is 2 times the riprap thickness (typical) or as shown elsewhere in the plans.
- ④ "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.
- ⑤ List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



SHEET 2 OF 2



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**Bridge
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STONE RIPRAP

SRR

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STONE RIPRAP

SHEET 2 OF 2

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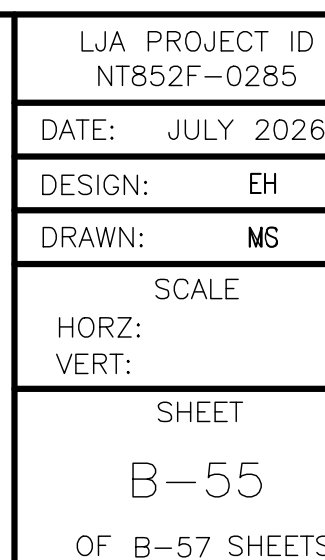
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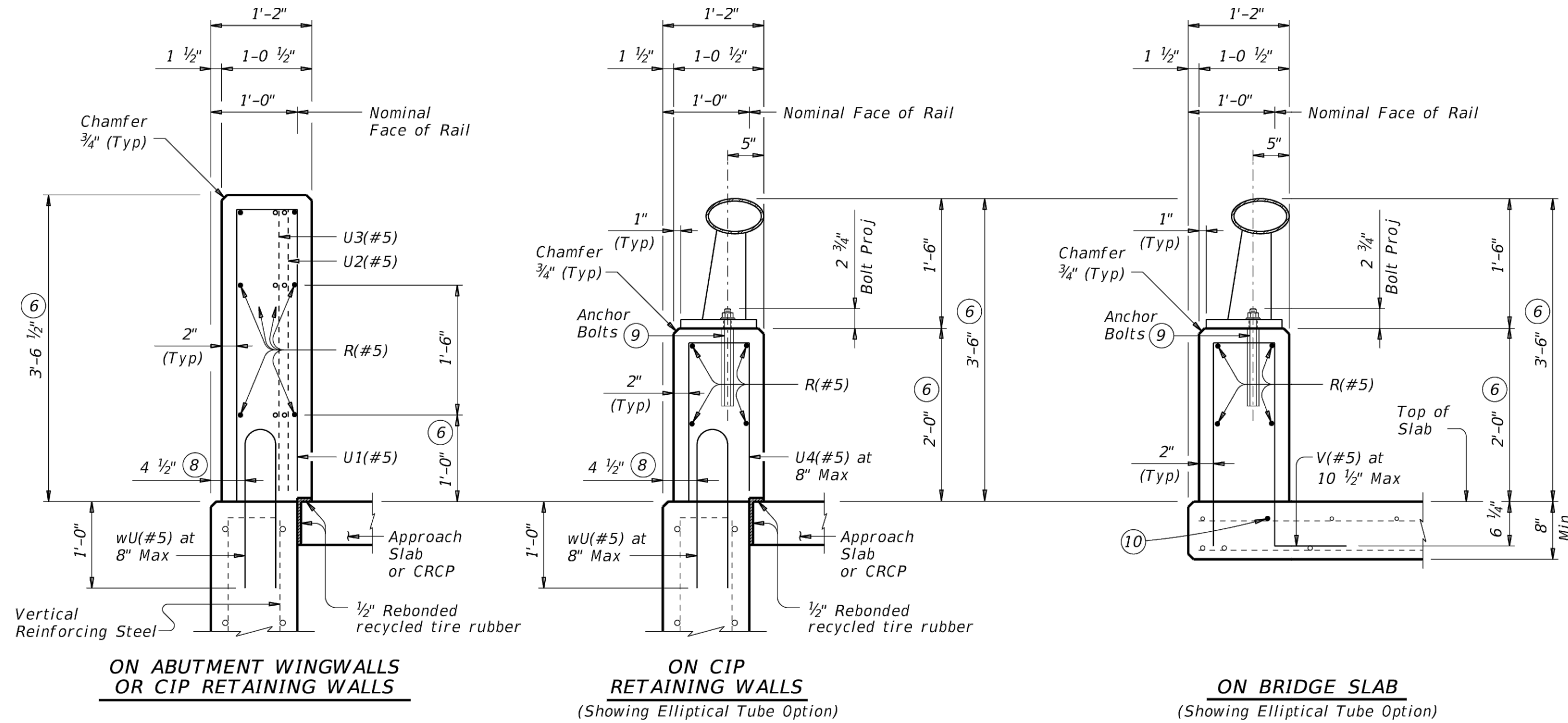
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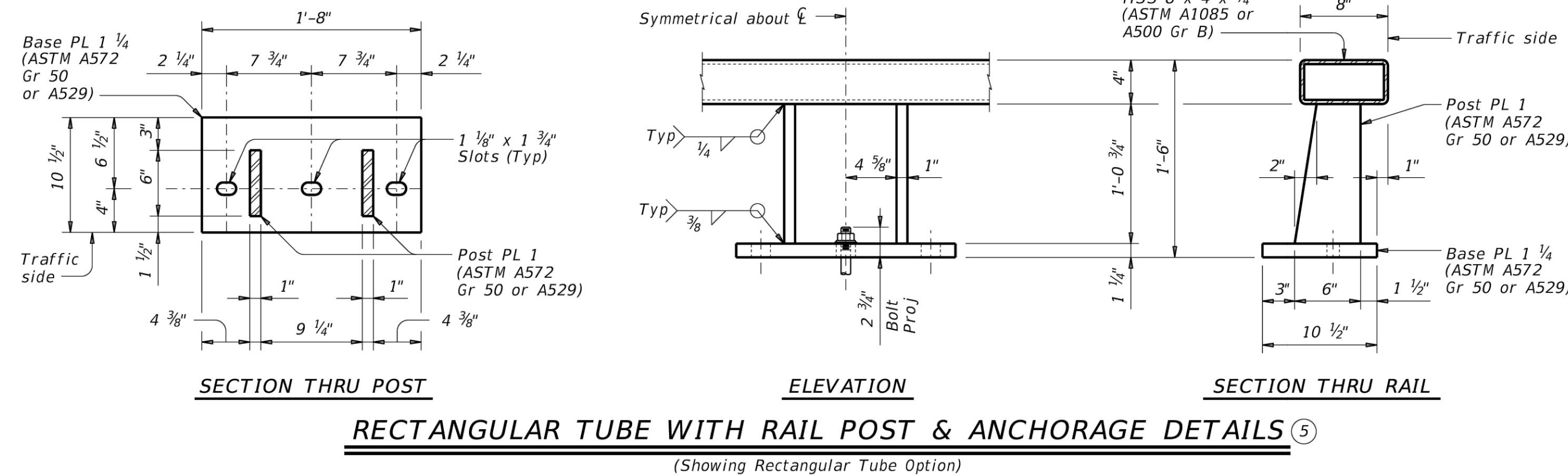
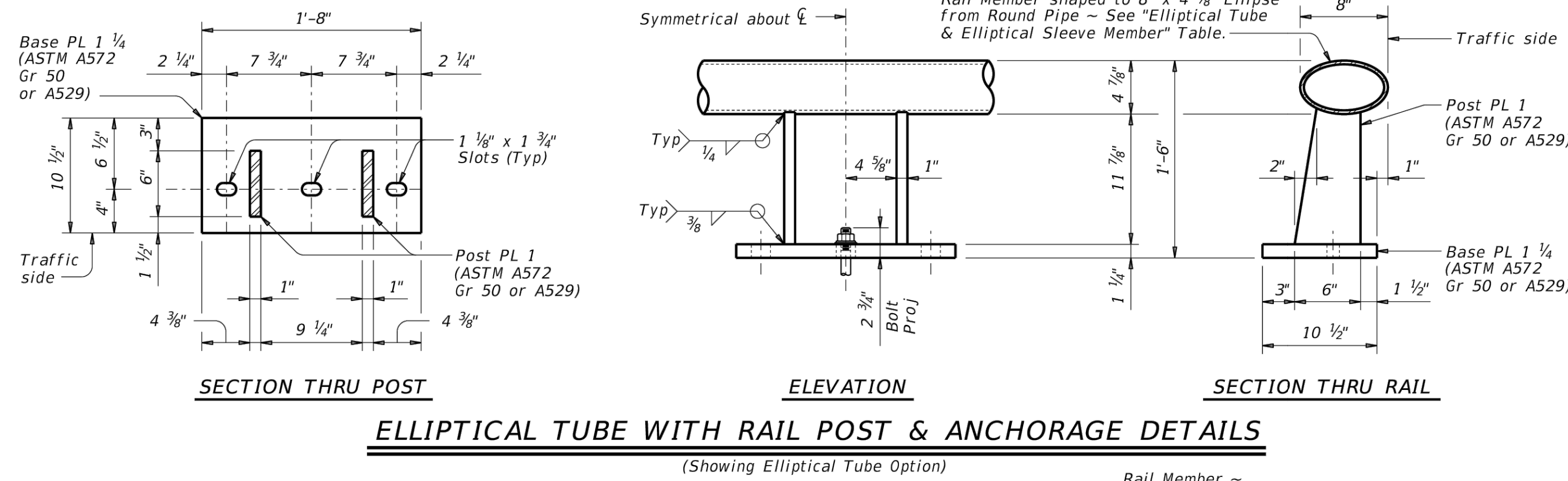
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SECTIONS THRU RAIL ⑤



- ⑤ Unless directed otherwise by the Engineer, the Fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.
- ⑥ Increase 2" for structures with overlay.
- ⑧ 5 1/4" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.
- ⑨ See "Material Notes" for anchor bolt information.
- ⑩ Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

SHEET 2 OF 3

Texas Department of Transportation

Bridge Division Standard

TRAFFIC RAIL

TYPE T402

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