

GENERAL NOTES:

DESIGN CRITERIA:

THE DETAILS SHOWN ON THESE PLANS ARE BASED ON THE AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS, FIRST EDITION WITH INTERIMS REVISIONS THROUGH 2022.

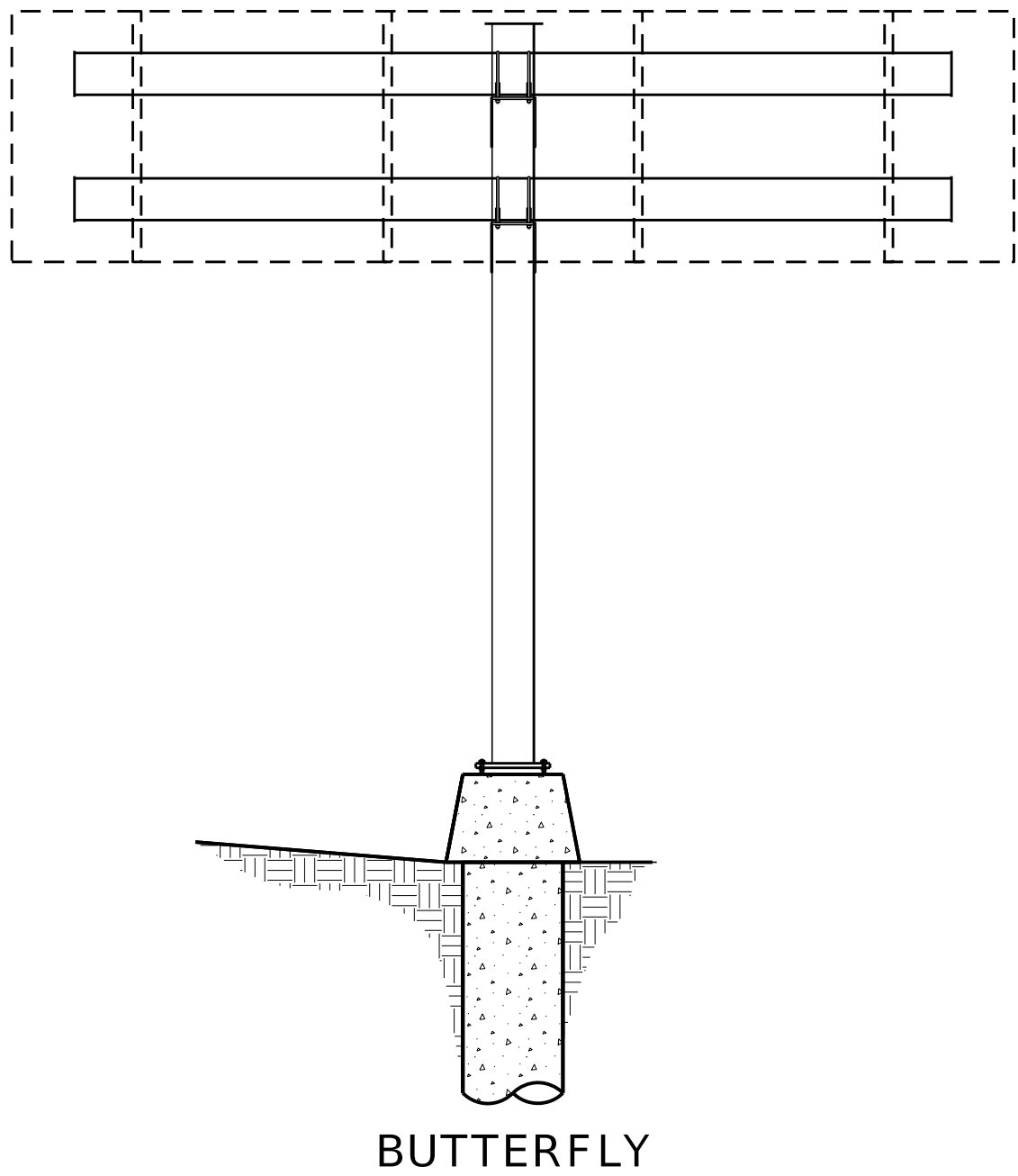
WIND LOAD:
STRENGTH LIMIT WIND 120 MPH
SERVICE LIMIT WIND 76 MPH
GUST FACTOR = 1.14

DEAD LOAD:
5 PSF STATIC SIGN

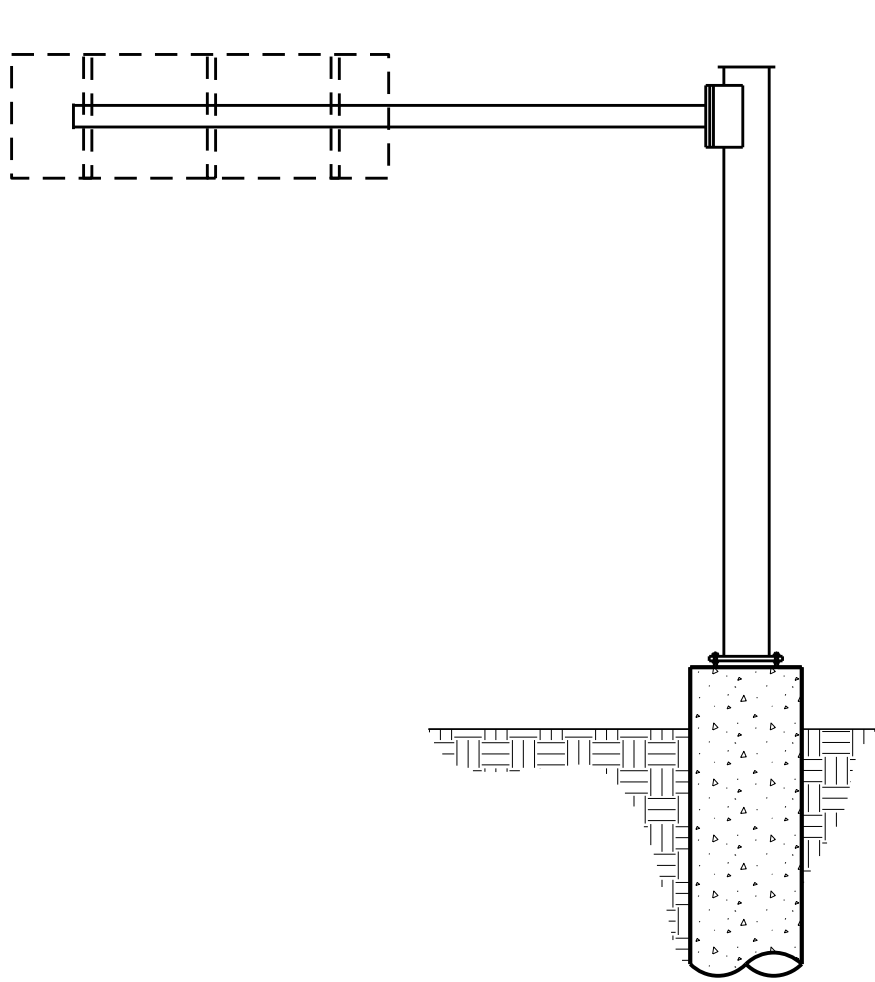
FATIGUE:
CATEGORY I

FOUNDATION DESIGNED ACCORDING TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION.

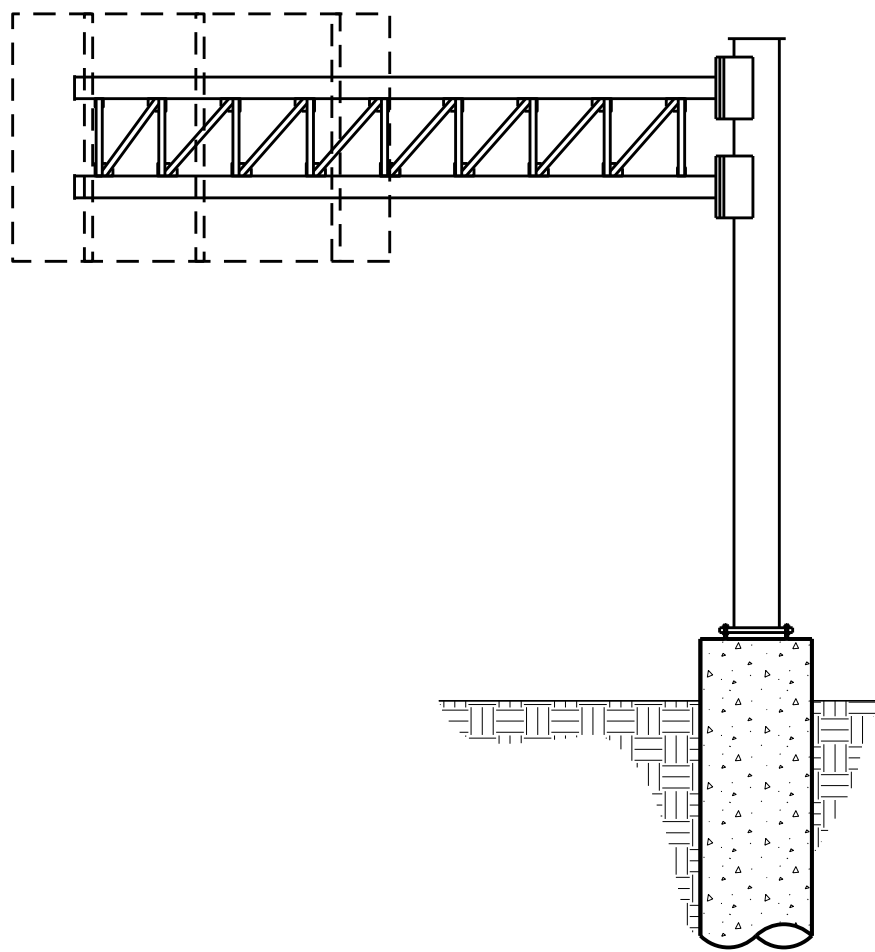
- PRIOR TO FABRICATION: VERIFY THE INSTALLED FOUNDATION ELEVATION WILL RESULT IN THE REQUIRED SIGN ELEVATION AND ADJUST THE POLE HEIGHT AS NEEDED.
- MATERIALS:
 - POLES, MAST ARMS, AND WEB MEMBERS:
 - ASTM A500 GRADE B OR API 5L, 46 KSI YIELD MINIMUM.
 - STEEL PLATES: ASTM A709 GRADE 50
 - WELD METAL: E70XX
 - BOLTS, NUTS AND WASHERS:
 - HIGH STRENGTH HEX HEAD BOLTS: ASTM F3125, GRADE A325, TYPE 1
 - U-BOLTS: ASTM A193, Grade B7
 - NUTS: ASTM A563 DH HEAVY-HEX
 - WASHERS: ASTM F436 TYPE 1, ONE UNDER TURNED ELEMENT
 - DIRECT TENSION INDICATOR WASHERS: ASTM F959
 - ANCHOR BOLTS, NUTS AND WASHERS:
 - ANCHOR BOLTS: ASTM F1554 GRADE 55
 - NUTS: ASTM A563 GRADE A HEAVY-HEX (5 PER ANCHOR BOLT)
 - PLATE WASHERS: ASTM A36 (2 PER BOLT)
 - POLE CAPS AND NUT COVERS: FABRICATE FROM CAST ALUMINUM OR GALVANIZED CARBON STEEL.
 - STAINLESS STEEL SCREWS: AISI TYPE 316
 - CONCRETE: CLASS B (3 KSI)
 - REINFORCING STEEL: SEC 1036
- FABRICATION:
 - WELDING:
 - SEC 1080
 - AASHTO LRFD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS SECTION 14.4.4
 - AWS D1.1
 - POLES AND TUBES:
 - BOLT HOLES DIAMETERS AS FOLLOWS:
 - BOLTS (EXCEPT ANCHOR BOLTS): BOLT DIAMETER PLUS 1/16" PRIOR TO GALVANIZING.
 - ANCHOR BOLTS: BOLT DIAMETER PLUS 1/2" (MAX.).
- GALVANIZED COATINGS:
 - ALL NUTS, BOLTS, WASHERS: ASTM A153
 - ALL OTHER STEEL ITEMS INCLUDING PLATE WASHERS: ASTM A123
- CONSTRUCTION:
 - FOUNDATION: SEC 701 DRILLED SHAFT AND SEC 903.3.1, EXCEPT THAT PAYMENT IS INCLUDED IN THE COST OF THE TUBULAR SUPPORT, AND CONCRETE AND CONCRETE COVER ARE AS DETAILED ON THESE PLANS.
 - INSTALL POLE VERTICALLY.



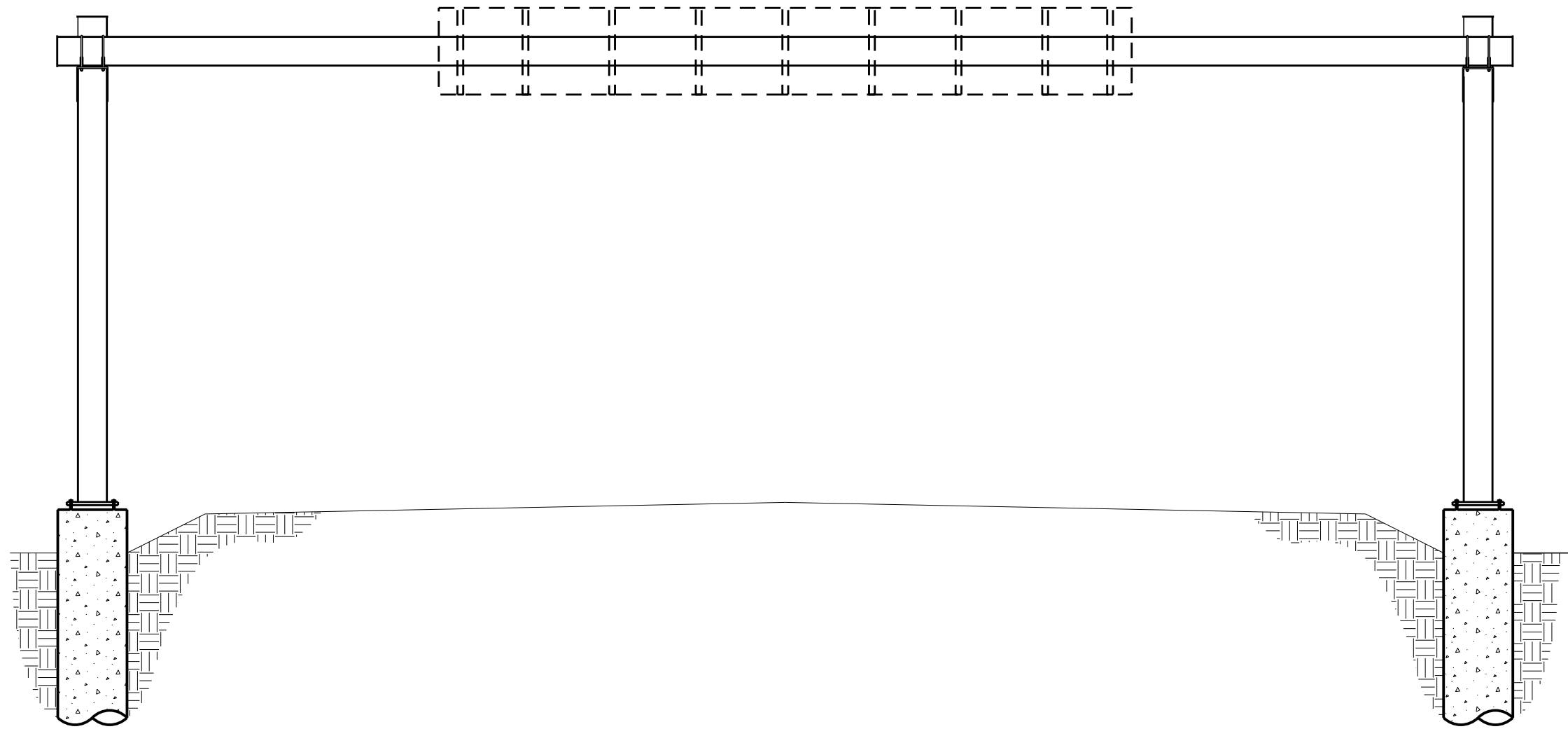
BUTTERFLY



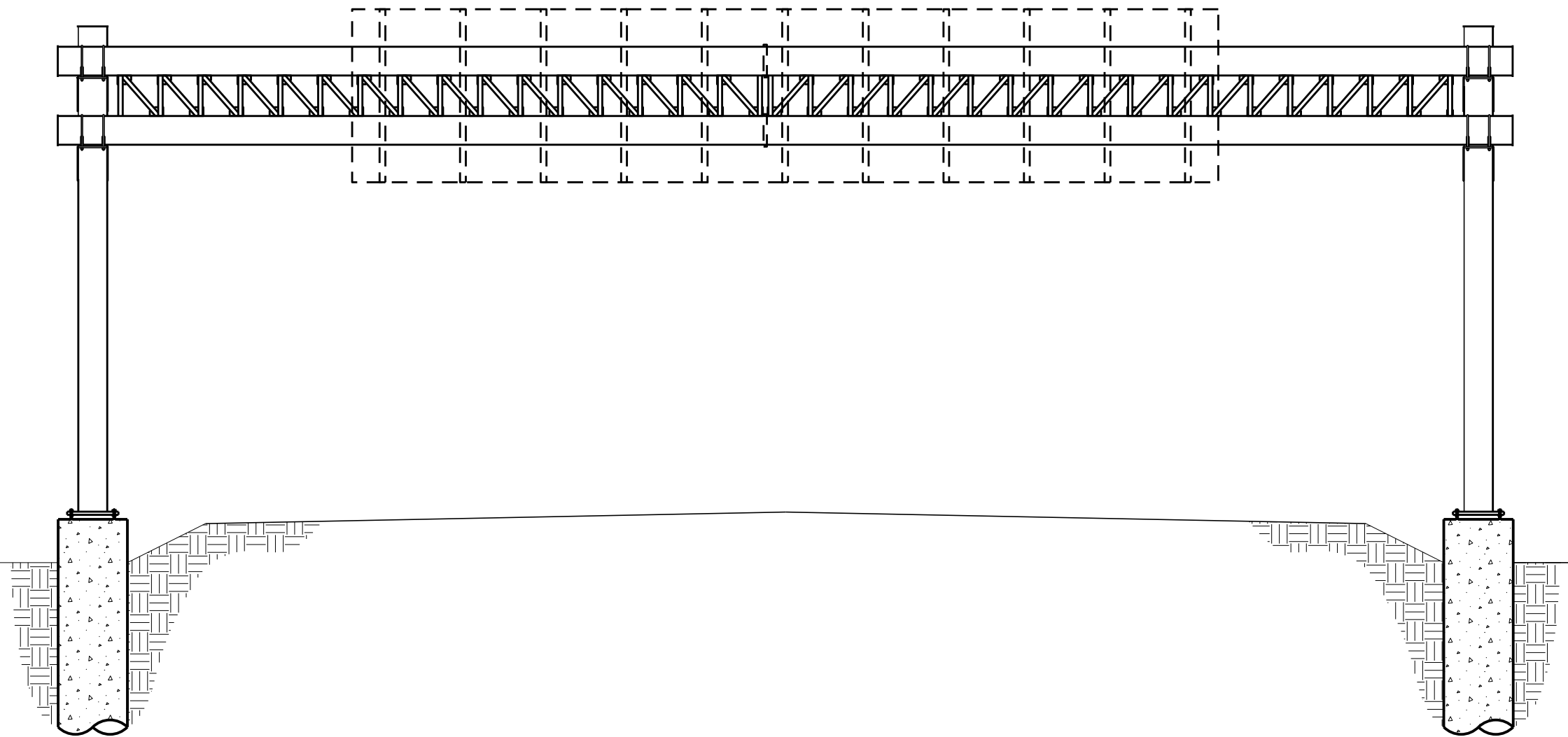
ONE TUBE CANTILEVER



TWO TUBE CANTILEVER



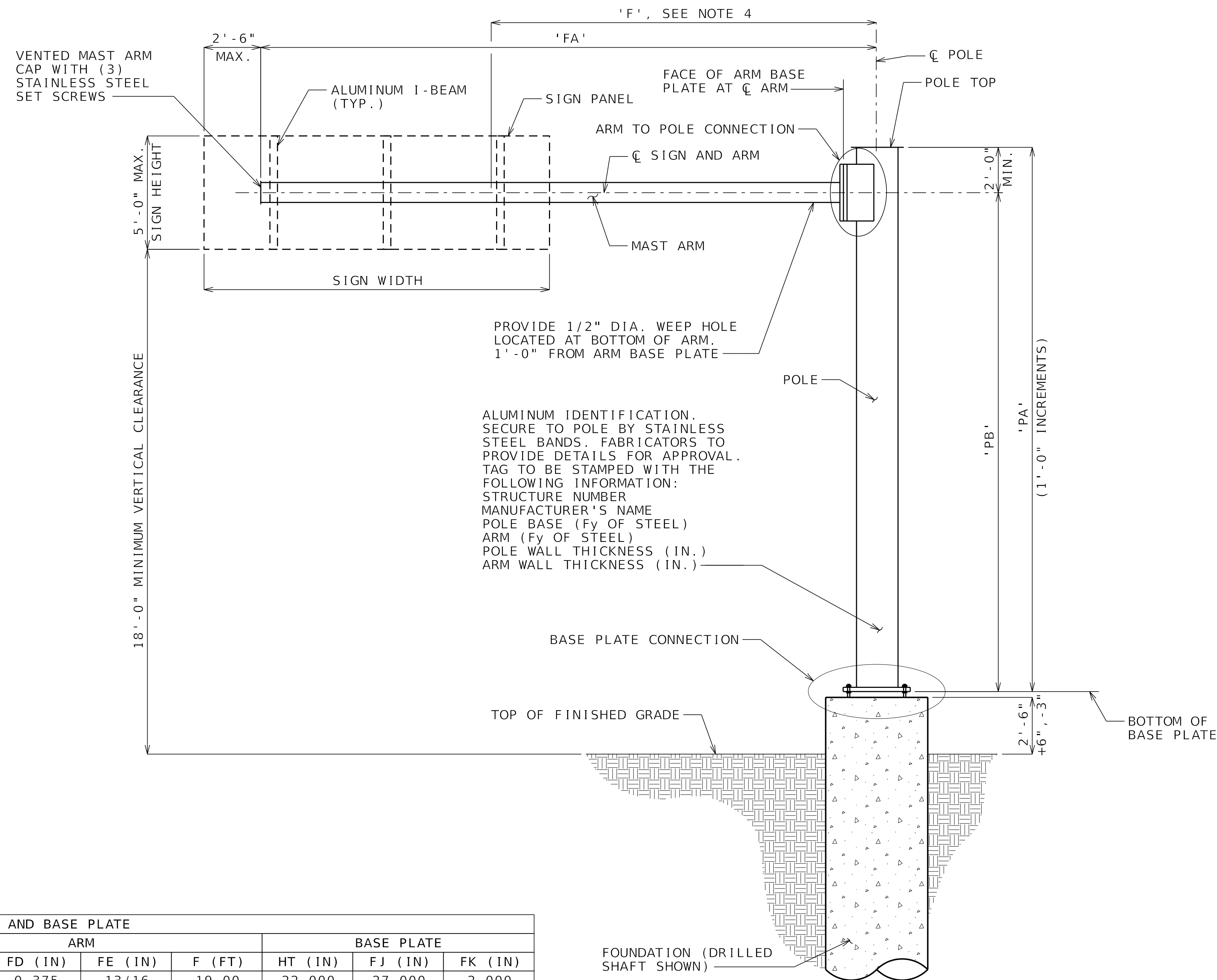
ONE TUBE SPAN



TWO TUBE SPAN

APPLICABLE STRUCTURES

M o DOT MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
TUBULAR SIGN SUPPORT		
GENERAL NOTES		
DATE EFFECTIVE:	903.XXX	SHEET NO.
DATE PREPARED: 11/10/2025		1 OF 15



ONE TUBE CANTILEVER

ARM AND BASE PLATE									
TYPE NUMBER	MAX. ARM LENGTH, FA (FT)	MAX. AREA (SQ. FT.)	ARM				BASE PLATE		
			FC (IN)	FD (IN)	FE (IN)	F (FT)	HT (IN)	FJ (IN)	FK (IN)
C-40-70	40	70	16.000	0.375	13/16	19.00	22.000	27.000	2.000
C-30-75	30	75	14.000	0.375	13/16	22.00	22.000	24.000	2.000
C-20-75	20	75	12.750	0.250	11/16	9.00	16.000	21.000	2.000
C-20-50	20	50	12.750	0.250	11/16	9.50	16.000	21.000	2.000

NOTES:

- FOR GENERAL NOTES, SEE SHEET 1 OF 15.
- SHOP DRAWINGS: THIS PLAN IS CONSIDERED FULLY DETAILED, ONLY SUBMIT SHOP DRAWINGS FOR MINOR MODIFICATIONS NOT DETAILED IN THE PLANS.
- DETAILS FOR SIGN LOCATIONS AND SIGN ATTACHMENT ARE NOT SHOWN FOR SIMPLICITY.
- 'F' IS THE MAXIMUM DISTANCE FROM THE POST THAT A PERSON CAN BE TIED-OFF TO THE STRUCTURE FOR FALL RESTRAINT. BEYOND THIS POINT, FALL RESTRAINT NEEDS TO BE SECURED BY OTHER MEANS.

POLE, BASE PLATE AND ARM CONNECTION																		
TYPE NUMBER	ARM TO POLE CONNECTION						POLE					BASE PLATE						
	FL (IN)	FN (IN)	FP (IN)	FR (IN)	FS (IN)	FT (IN)	PA (FT)	PB (FT)	PD (IN)	PE (IN)	PF (IN)	NO. BOLTS	BA (IN)	BB (IN)	BC (IN)	BD (IN)	BF (IN)	BO (IN)
C-40-70	0.375	5/16	1.250	2.000	8.500	5/16	26'-0" (MAX.)	24'-0" (MAX.)	16.000	0.500	15/16	8	30.000	2.500	1.750	23.000	35.000	6.000
C-30-75	0.375	5/16	1.000	2.000	9.000	5/16	26'-0" (MAX.)	24'-0" (MAX.)	14.000	0.500	15/16	8	26.000	2.500	1.500	20.000	30.000	6.000
C-20-75	0.375	5/16	0.750	2.000	6.500	5/16	26'-0" (MAX.)	24'-0" (MAX.)	14.000	0.500	15/16	8	26.000	2.500	1.500	20.000	30.000	6.000
C-20-50	0.375	5/16	0.750	2.000	6.500	5/16	26'-0" (MAX.)	24'-0" (MAX.)	14.000	0.375	13/16	8	26.000	2.500	1.500	20.000	30.000	6.000

DRILLED SHAFT											
TYPE NUMBER	DA (FT)	DB (FT)	DC	RA	RB	RC	RD (IN)	RE	RF (IN)	RJ	RS (FT)
C-40-70	24.00	4.000	21.00	#8	19	9	12	2	12	#5	10.00
C-30-75	21.00	4.000	18.00	#8	19	9	12	2	12	#5	10.00
C-20-75	19.00	3.500	16.00	#8	15	9	12	2	12	#5	8.75
C-20-50	18.00	3.500	15.00	#8	15	9	12	2	12	#5	8.75

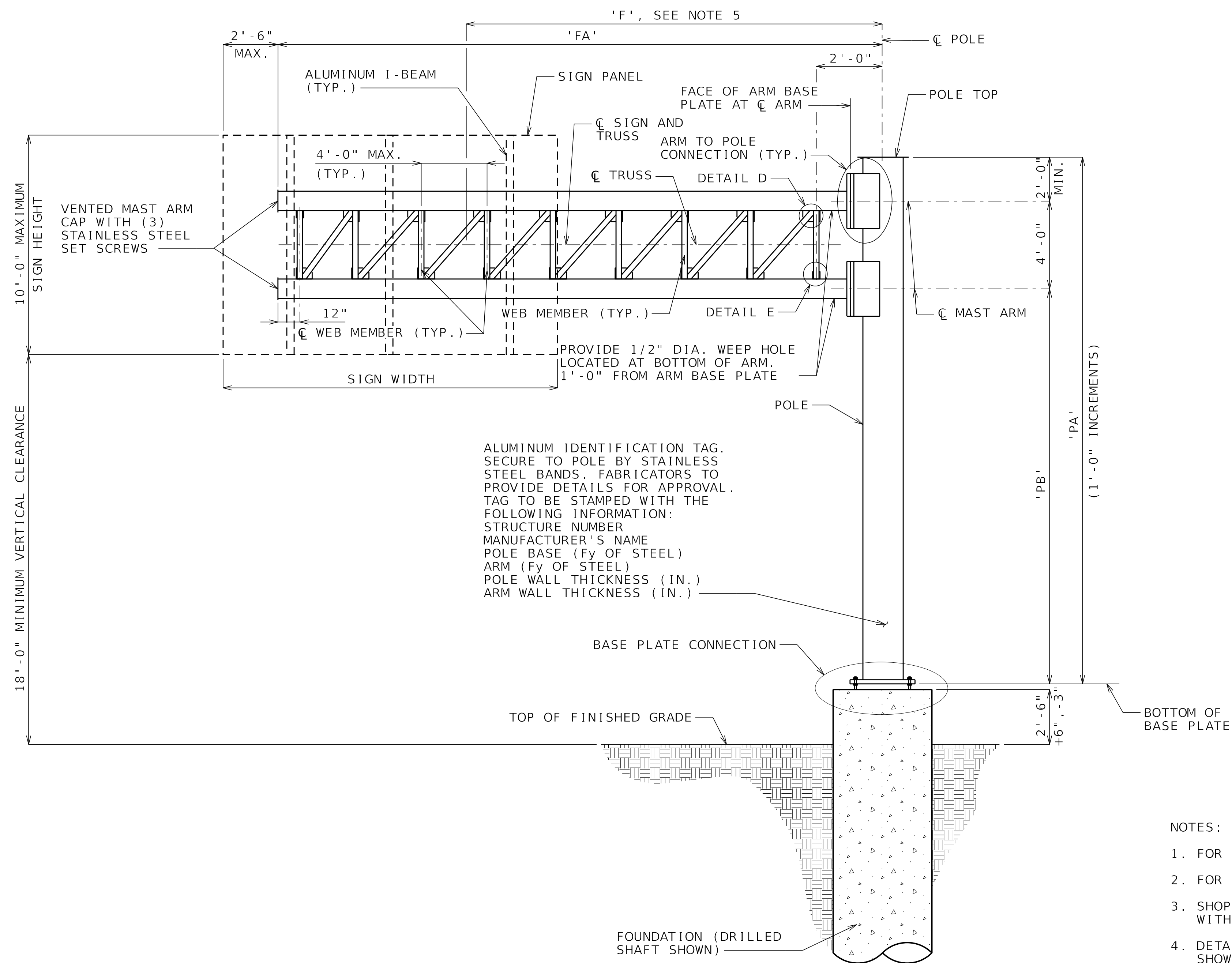
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CANTILEVER TUBULAR SIGN
SUPPORT TYPE C
ONE TUBE

DATE EFFECTIVE: 11/11/2025
DATE PREPARED: 11/11/2025

903.XXX

SHEET NO.
2 OF 15



TWO TUBE CANTILEVER

NOTES:

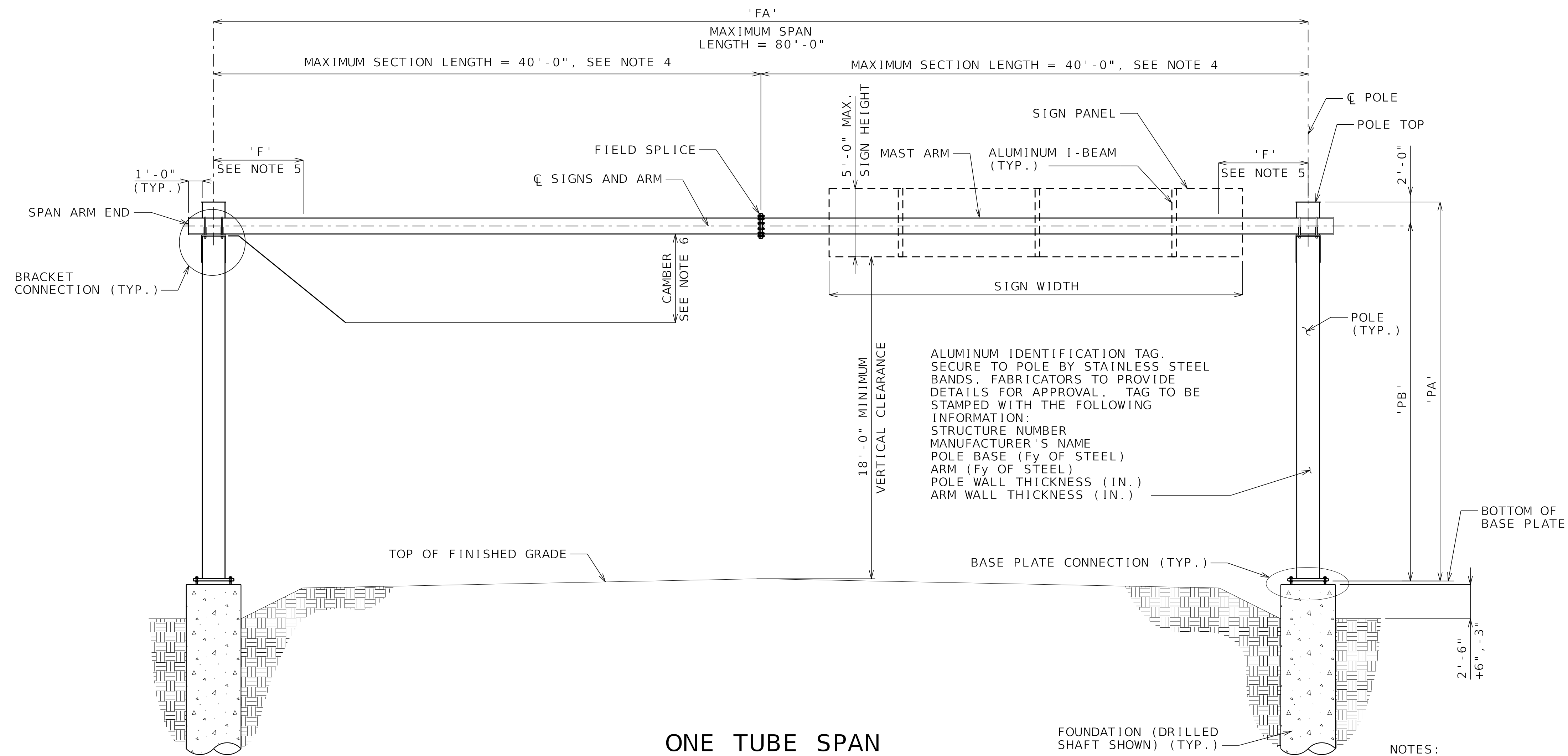
- FOR GENERAL NOTES, SEE SHEET 1 OF 15.
- FOR DETAILS D & E, SEE SHEET 5 OF 15.
- SHOP DRAWINGS: SHOP DRAWINGS ARE REQUIRED IN ACCORDANCE WITH SEC 1080.
- DETAILS FOR SIGN LOCATIONS AND SIGN ATTACHMENT ARE NOT SHOWN FOR SIMPLICITY.
- 'F' IS THE MAXIMUM DISTANCE FROM THE POST THAT A PERSON CAN BE TIED-OFF TO THE STRUCTURE FOR FALL RESTRAINT. BEYOND THIS POINT, FALL RESTRAINT NEEDS TO BE SECURED BY OTHER MEANS.

ARM AND BASE PLATE									
TYPE NUMBER	MAX. ARM LENGTH, FA (FT)	MAX. AREA (SQ. FT.)	ARM				BASE PLATE		
			FC (IN)	FD (IN)	FE (IN)	F (FT)	HT (IN)	FJ (IN)	FK (IN)
C-40-200	40	200	20.000	0.500	15/16	40.00	29.000	36.000	2.000
C-30-200	30	200	16.000	0.500	15/16	28.50	23.000	35.000	2.000

TYPE NUMBER	ARM TO POLE CONNECTION						POLE					BASE PLATE						
	FL (IN)	FN (IN)	FP (IN)	FR (IN)	FS (IN)	FT (IN)	PA (FT)	PB (FT)	PD (IN)	PE (IN)	PF (IN)	NO. BOLTS	BA (IN)	BB (IN)	BC (IN)	BD (IN)	BF (IN)	BO (IN)
C-40-200	0.500	5/16	1.250	2.000	12.000	5/16	30'-0" (MAX.)	24'-0" (MAX.)	24.000	0.375	13/16	8	40.000	2.750	2.000	32.000	40.000	6.000
C-30-200	0.375	5/16	1.250	2.000	9.000	5/16	30'-0" (MAX.)	24'-0" (MAX.)	24.000	0.375	13/16	8	40.000	2.750	2.000	32.000	40.000	6.000

DRILLED SHAFT											
TYPE NUMBER	DA (FT)	DB (FT)	DC (FT)	RA	RB	RC	RD (IN)	RE	RF (IN)	RJ	RS (FT)
C-40-200	43.00	4.500	40.00	#9	19	9	12	2	12	#5	11.25
C-30-200	31.00	4.500	28.00	#9	19	9	12	2	12	#5	11.25

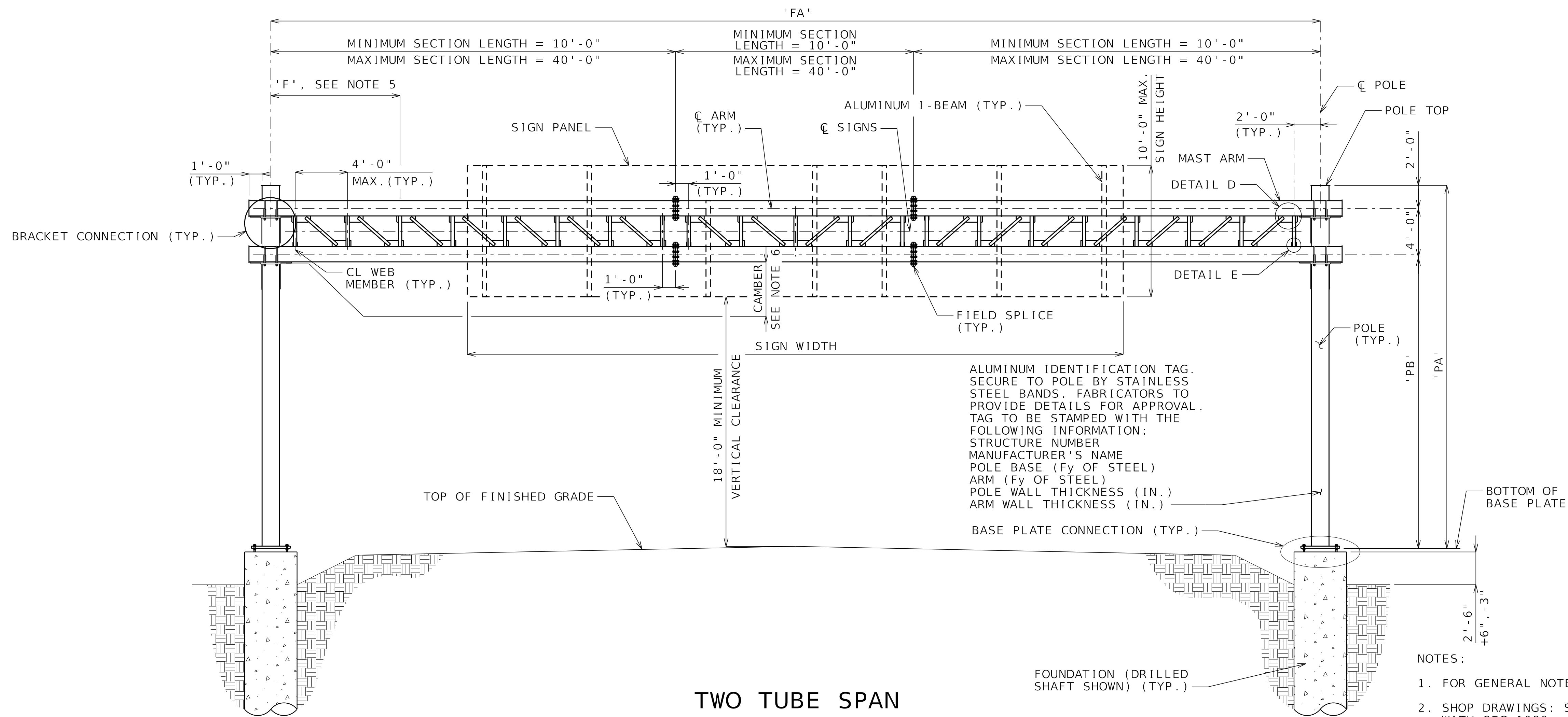
		MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
		105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
		CANTILEVER TUBULAR SIGN SUPPORT TYPE C	
		TWO TUBE	
DATE EFFECTIVE:		SHEET NO.	
DATE PREPARED: 11/10/2025		3 OF 15	
		903.XXX	



NOTES:

- FOR GENERAL NOTES, SEE SHEET 1 OF 15.
- SHOP DRAWINGS: SHOW DRAWINGS ARE REQUIRED IN ACCORDANCE WITH SEC 1080.
- DETAILS FOR SIGN LOCATIONS AND SIGN ATTACHMENT ARE NOT SHOWN FOR SIMPLICITY.
- NO MORE THAN TWO FIELD SECTIONS ARE ALLOWED. THE SECTIONS ARE NOT REQUIRED TO BE EQUAL LENGTHS.
- 'F' IS THE MAXIMUM DISTANCE FROM THE POST THAT A PERSON CAN BE TIED-OFF TO THE STRUCTURE FOR FALL RESTRAINT. BEYOND THIS POINT, FALL RESTRAINT NEEDS TO BE SECURED BY OTHER MEANS.
- CAMBER AT THE QUARTER POINT OF THE SPAN IS APPROXIMATELY 75% OF THE CAMBER AT MID-SPAN.

 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
SPAN TUBULAR SIGN SUPPORT TYPE S ONE TUBE		
DATE EFFECTIVE: DATE PREPARED: 11/10/2025	903.XXX	SHEET NO. 4 OF 15



TWO TUBE SPAN

- NOTES:
1. FOR GENERAL NOTES, SEE SHEET 1 OF 15.
 2. SHOP DRAWINGS: SHOP DRAWINGS ARE REQUIRED IN ACCORDANCE WITH SEC 1080.
 3. DETAILS FOR SIGN LOCATIONS AND SIGN ATTACHMENT ARE NOT SHOWN FOR SIMPLICITY.
 4. NO MORE THAN TWO TUBE SECTIONS ARE ALLOWED ON SPANS UP TO 76'. NO MORE THAN THREE SECTIONS ALLOWED ON LONGER SPANS. THE SECTIONS ARE NOT REQUIRED TO BE EQUAL LENGTHS. THE DISTANCE FROM THE CL OF POLE TO THE FIELD SPLICE SHALL BE A MINIMUM OF 10'.
 5. 'F' IS THE MAXIMUM DISTANCE FROM THE POST THAT A PERSON CAN BE TIED-OFF TO THE STRUCTURE FOR FALL RESTRAINT. BEYOND THIS POINT, FALL RESTRAINT NEEDS TO BE SECURED BY OTHER MEANS.
 6. CAMBER AT THE QUARTER POINT OF THE SPAN IS APPROXIMATELY 75% OF THE CAMBER AT MID-SPAN.

 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
SPAN TUBULAR SIGN SUPPORT TYPE S TWO TUBE		
DATE EFFECTIVE: DATE PREPARED: 11/11/2025	903.XXX	SHEET NO. 5 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

TABLE OF VARIABLES - ONE TUBE SPAN																														
ARM AND CONNECTION																														
TYPE NUMBER	MAX. ARM LENGTH, FA (FT)	MAX AREA (SQ. FT.)	ARM				SPLICE PLATE						BRACKET CONNECTION																	
			FC (IN)	FD (IN)	F (FT)	CAMBER (IN)	NO. BOLTS	CA (IN)	CB (IN)	CC (IN)	CO (IN)	CT (IN)	UB (IN)	DU (IN)	LS (IN)	WS (IN)	SW (IN)	KH (IN)	KW (IN)	HP (IN)	WH (IN)	LH (IN)	FH (IN)	SH (IN)	HW (IN)	VP (IN)	LV (IN)	WV (IN)	PW (IN)	VW (IN)
S-80-200	80	200	14.000	0.375	7.00	3.750	12	22.000	18.000	1.000	5.000	2.000	1.000	13.000	5.750	2.000	5/16	0.875	3/16	1.250	18.000	19.500	2.500	1.500	3/8	0.500	20.000	27.000	3/16	5/16
S-80-100	80	100	14.000	0.375	0.00	3.750	12	22.000	18.000	1.000	4.250	2.000	0.875	11.375	5.938	2.000	5/16	0.750	3/16	1.000	16.000	18.938	2.313	1.313	5/16	0.500	16.000	25.438	3/16	5/16
S-60-200	60	200	10.750	0.375	3.00	2.500	10	18.750	14.750	1.000	4.250	2.000	0.750	11.750	4.438	2.000	5/16	0.750	3/16	1.000	16.000	15.125	2.125	1.125	5/16	0.500	14.000	21.625	3/16	5/16
S-60-150	60	150	10.750	0.375	5.00	2.500	8	18.750	14.750	1.000	4.000	2.000	0.750	10.500	4.438	2.000	5/16	0.750	3/16	1.000	15.250	15.125	2.375	1.375	5/16	0.750	12.000	21.000	1/4	5/16
S-60-75	60	75	10.750	0.250	0.00	2.500	8	17.750	14.250	0.875	3.250	2.000	0.625	8.875	4.563	2.000	5/16	0.750	3/16	1.000	12.750	14.563	1.938	0.938	1/4	0.500	10.000	19.438	3/16	5/16
S-40-200	40	200	8.625	0.500	4.00	1.500	8	16.625	12.625	1.000	4.000	2.000	0.625	10.875	3.500	2.000	5/16	0.750	3/16	1.000	14.750	12.438	1.938	0.938	1/4	0.500	10.000	18.313	3/16	1/4
S-40-150	40	150	8.625	0.500	4.00	1.500	8	15.625	12.125	0.875	3.250	2.000	0.625	8.875	3.500	2.000	5/16	0.750	3/16	1.000	12.750	12.438	1.938	0.938	1/4	0.500	10.000	17.313	3/16	1/4
S-40-100	40	100	8.625	0.375	4.00	1.500	8	15.625	12.125	0.875	3.250	2.000	0.625	8.875	3.500	2.000	5/16	0.750	3/16	1.000	12.750	12.438	1.938	0.938	1/4	0.500	10.000	17.313	3/16	1/4

POLE AND BASE PLATE												
TYPE NUMBER	POLE				BASE PLATE							
	PA (FT)	PB (FT)	PD (IN)	PE (IN)	NO. BOLTS	BA (IN)	BB (IN)	BC (IN)	BD (IN)	BF (IN)	BO (IN)	
S-80-200	28'-0" (MAX.)	26'-0" (MAX.)	16.000	0.500	8	32.000	2.000	2.000	24.000	35.000	5.000	
S-80-100	28'-0" (MAX.)	26'-0" (MAX.)	14.000	0.500	8	26.000	2.000	1.500	20.000	35.000	4.250	
S-60-200	28'-0" (MAX.)	26'-0" (MAX.)	14.000	0.500	8	28.000	2.250	1.750	21.000	35.000	4.250	
S-60-150	28'-0" (MAX.)	26'-0" (MAX.)	12.750	0.500	8	26.750	2.000	1.750	19.750	35.000	4.000	
S-60-75	28'-0" (MAX.)	26'-0" (MAX.)	10.750	0.500	8	22.750	2.000	1.500	16.750	35.000	3.250	
S-40-200	28'-0" (MAX.)	26'-0" (MAX.)	12.750	0.375	8	24.750	2.000	1.500	18.750	35.000	4.000	
S-40-150	28'-0" (MAX.)	26'-0" (MAX.)	10.750	0.500	8	22.750	2.000	1.500	16.750	35.000	3.250	
S-40-100	28'-0" (MAX.)	26'-0" (MAX.)	10.750	0.500	8	22.750	2.000	1.500	16.750	35.000	3.250	

DRILLED SHAFT												
TYPE NUMBER	DA (FT)	DB (FT)	DC (FT)	RA	RB	RC	RD (IN)	RE	RF (IN)	RJ	RS (FT)	
S-80-200	31.00	3.50	28.00	#8	16	9	12	3	12	#5	8.75	
S-80-100	25.00	3.50	22.00	#8	15	9	12	3	12	#5	8.75	
S-60-200	28.00	3.50	25.00	#8	16	9	12	3	12	#5	8.75	
S-60-150	28.00	3.00	25.00	#8	14	9	12	3	12	#5	7.50	
S-60-75	23.00	3.00	20.00	#8	14	9	12	3	12	#5	7.50	
S-40-200	25.00	3.00	22.00	#8	14	9	12	3	12	#5	7.50	
S-40-150	25.00	3.00	22.00	#8	14	9	12	3	12	#5	7.50	
S-40-100	23.00	3.00	20.00	#8	14	9	12	3	12	#5	7.50	

TABLE OF VARIABLES - TWO TUBE SPAN																														
ARM AND CONNECTION																														
TYPE NUMBER	MAX. ARM LENGTH, FA (FT)	MAX AREA (SQ. FT.)	ARM				SPLICE PLATE						BRACKET CONNECTION																	
			FC (IN)	FD (IN)	F (FT)	CAMBER (IN)	NO. BOLTS	CA (IN)	CB (IN)	CC (IN)	CO (IN)	CT (IN)	UB (IN)	DU (IN)	LS (IN)	WS (IN)	SW (IN)	KH (IN)	KW (IN)	HP (IN)	WH (IN)	LH (IN)	FH (IN)	SH (IN)	HW (IN)	VP (IN)	LV (IN)	WV (IN)	PW (IN)	VW (IN)
S-90-500	90	500	14.000	0.500		4.250	8	24.000	19.000	1.250	4.250	2.000	1.000	17.000	5.813	2.000	5/16	0.750	3/16	1.000	23.500	19.500	3.250	2.250	1/4	1.250	25.000	29.000	5/16	3/8
S-90-225	90	225	12.750	0.500		4.625	8	22.750	17.750	1.250	4.000	2.000	1.000	13.000	5.188	2.000	5/16	0.750	3/16	0.875	18.500	18.250	2.750	1.750	1/4	0.750	21.000	25.750	1/4	5/16
S-70-500	70	500	12.750	0.375		3.000	8	22.750	17.750	1.250	4.000	2.000	1.000	15.000	5.188	2.000	5/16	0.750	3/16	0.750	20.000	18.250	2.500	1.500	1/4	0.500	18.000	26.750	3/16	5/16
S-70-350	70	350	12.750	0.375		2.750	8	20.750	16.750	1.000	4.000	2.000	1.000	15.000	5.188	2.000	5/16	0.750	3/16	0.625	20.500	18.250	2.750	1.750	1/4	0.750	15.000	26.750	1/4	5/16
S-70-175	70	175	12.750	0.375		2.500	8	20.750	16.750	1.000	4.000	2.000	1.000	11.000	5.188	2.000	5/16	0.750	3/16	0.625	16.500	18.250	2.750	1.750	1/4	0.750	15.000	24.750	1/4	5/16
S-50-500	50	500	10.750	0.500		2.000	8	17.750	14.250	0.875	3.250	2.000	1.000	13.000	4.188	2.000	5/16	0.750	3/16	1.000	18.250	16.250	2.625	1.625	1/4	0.625	21.000	23.750	1/4	5/16
S-50-375	50	375	10.750	0.500		2.000	8	18.750	14.750	1.000	3.250	2.000	1.000	13.000	4.188	2.000	5/16	0.750	3/16	0.875	18.500	16.250	2.750	1.750	1/4	0.750	18.000	23.750	1/4	5/16
S-50-250	50	250	8.625	0.500		2.500	8	15.625	12.125	0.875	2.750	2.000	1.000	11.000	3.125	2.000	5/16	0.750	3/16	0.875	16.500	14.125	2.750	1.750	1/4	0.750	18.000	20.625	1/4	5/16

POLE AND BASE PLATE												
TYPE NUMBER	POLE				BASE PLATE							
	PA (FT)	PB (FT)	PD (IN)	PE (IN)	NO. BOLTS	BA (IN)	BB (IN)	BC (IN)	BD (IN)	BF (IN)	BO (IN)	
S-90-500	33'-0" (MAX.)	27'-0" (MAX.)	20.000	0.500	8	42.000	2.750	2.750	31.000	50.000	6.000	
S-90-225	33'-0" (MAX.)	27'-0" (MAX.)	16.000	0.500	8	30.000	2.250	1.750	23.000	50.000	5.000	
S-70-500	33'-0" (MAX.)	27'-0" (MAX.)	18.000	0.500	8	36.000	2.500	2.250	27.000	50.000	5.500	
S-70-350	33'-0" (MAX.)	27'-0" (MAX.)	18.000	0.500	8	32.000	2.500	1.750	25.000	50.000	5.500	
S-70-175	33'-0" (MAX.)	27'-0" (MAX.)	14.000	0.500	8	26.000	2.250	1.500	20.000	50.000	4.250	
S-50-500	33'-0" (MAX.)	27'-0" (MAX.)	16.000	0.500	8	30.000	2.500	1.750	23.000	50.000	5.000	
S-50-375	33'-0" (MAX.)	27'-0" (MAX.)	16.000	0.500	8	30.000	2.250	1.750	23.000	50.000	5.000	
S-50-250	33'-0" (MAX.)	27'-0" (MAX.)	14.000	0.500	8	26.000	2.000	1.500	20.000	50.000	4.250	

DRILLED SHAFT												
TYPE NUMBER	DA (FT)	DB (FT)	DC (FT)	RA	RB	RC	RD (IN)	RE	RF (IN)	RJ	RS (FT)	
S-90-500	48.00	4.50	45.00	#10	19	9	12	4	12	#5	11.25	
S-90-225	34.00	4.00	31.00	#8	19	9	12	4	12	#5	10.00	
S-70-500	53.00	4.00	50.00	#10	19	9	12	4	12	#5	10.00	
S-70-350	43.00	4.00	40.00	#8	19	9	12	4	12	#5	10.00	
S-70-175	32.00	3.50	29.00	#8	16	9	12	4	12	#5	8.75	
S-50-500	38.00	4.00	35.00	#8	19	9	12	4	12	#5	10.00	
S-50-375	36.00	4.00	33.00	#8	19	9	12	4	12	#5	10.00	
S-50-250	36.00	3.50	33.00	#8	16	9	12	4	12	#5	8.75	



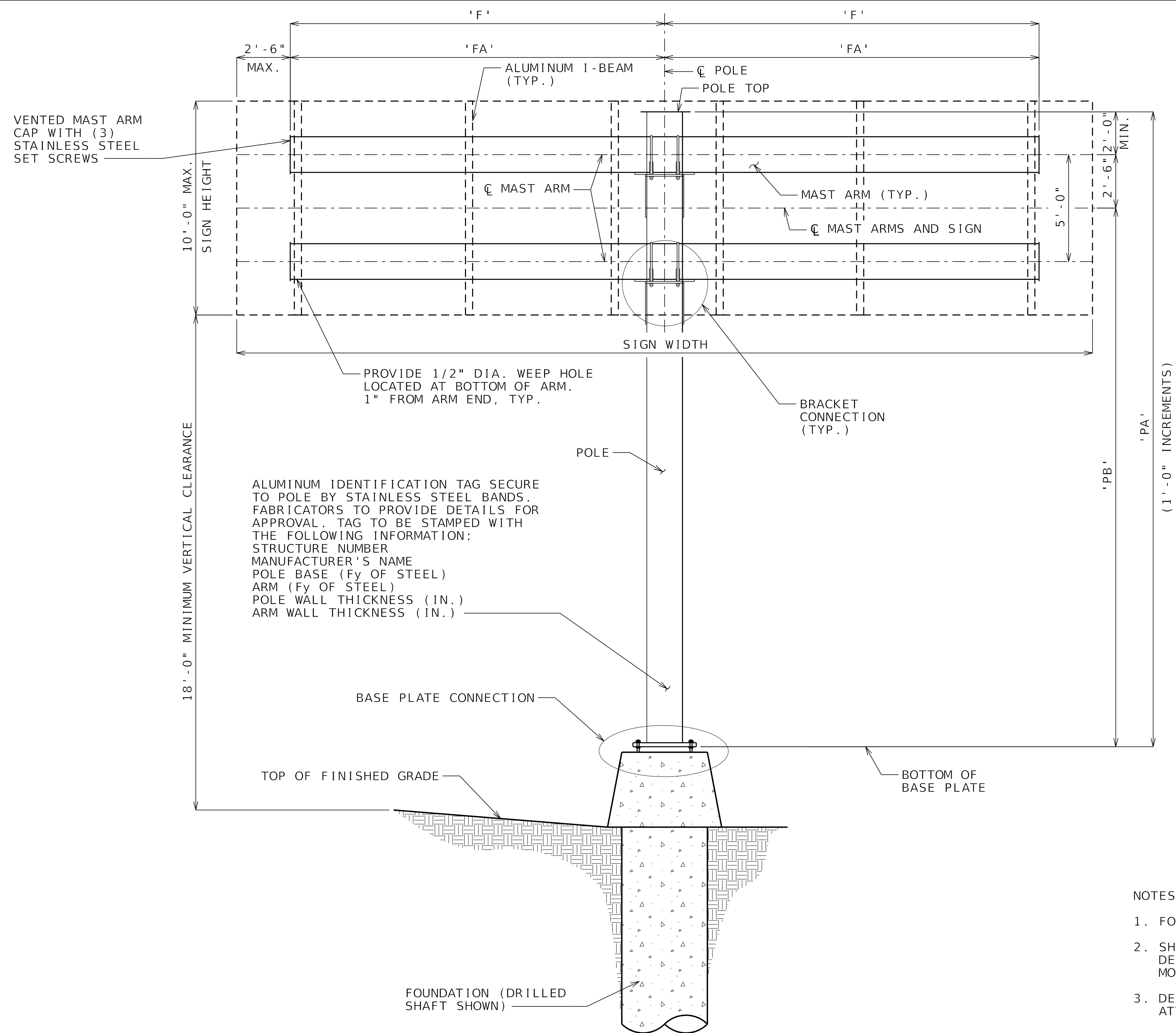
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPAN TUBULAR SIGN
SUPPORT TYPE S

TABLE OF VARIABLES

DATE EFFECTIVE:



- NOTES:
1. FOR GENERAL NOTES, SEE SHEET 1 OF 15.
 2. SHOP DRAWINGS: THIS PLAN IS CONSIDERED FULLY DETAILED. ONLY SUBMIT SHOP DRAWINGS FOR MINOR MODIFICATIONS NOT DETAILED IN THE PLANS.
 3. DETAILS FOR SIGN LOCATIONS AND SIGN ATTACHMENT ARE NOT SHOWN FOR SIMPLICITY.

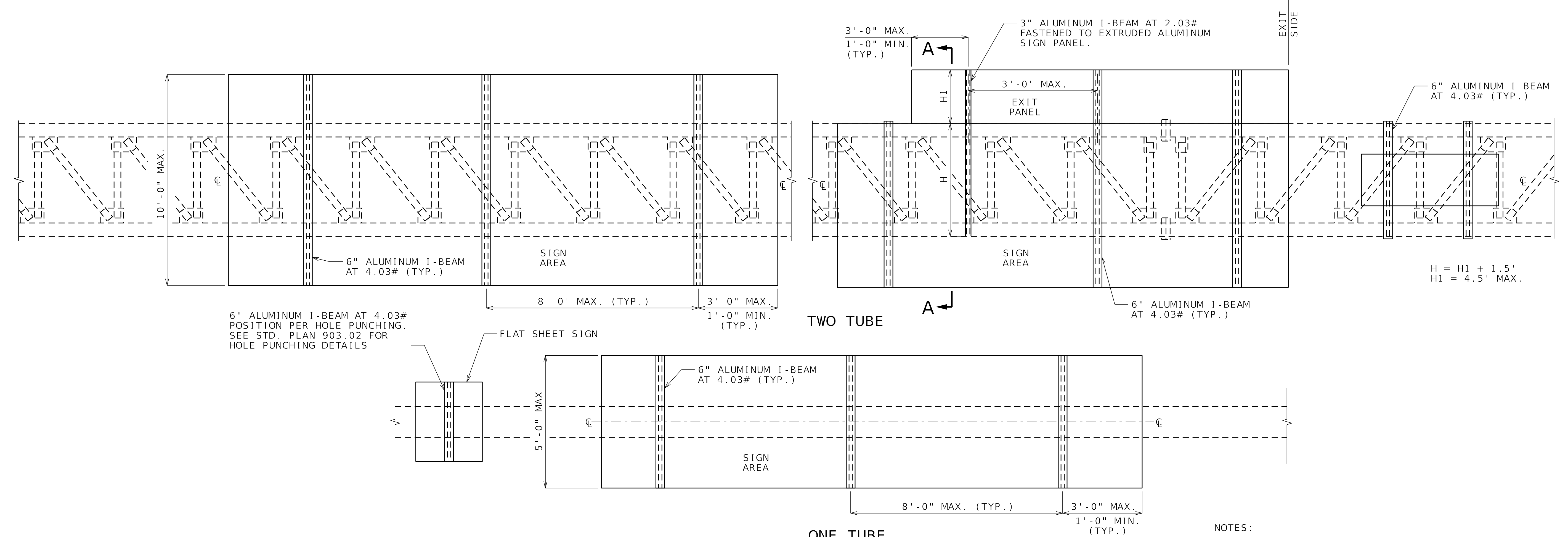
TABLE OF VARIABLES - BUTTERFLY SPAN		
TYPE NUMBER	MAX. ARM LENGTH, FA (FT)	MAX AREA (SQ. FT.)
B-20-400	20	400

ARM AND BRACKET CONNECTION																					
TYPE NUMBER	ARM			BRACKET CONNECTION																	
	FC (IN)	FD (IN)	F (FT)	UB (IN)	DU (IN)	LS (IN)	WS (IN)	SW (IN)	KH (IN)	KW (IN)	HP (IN)	WH (IN)	LH (IN)	FH (IN)	SH (IN)	HW (IN)	VP (IN)	LV (IN)	VW (IN)	PW (IN)	VV (IN)
B-20-400	10.750	0.500	20.000	0.875	21.375	4.313	2.000	5/16	0.750	3/16	0.875	26.500	15.688	2.563	1.563	3/16	0.750	16.000	27.188	1/4	5/16

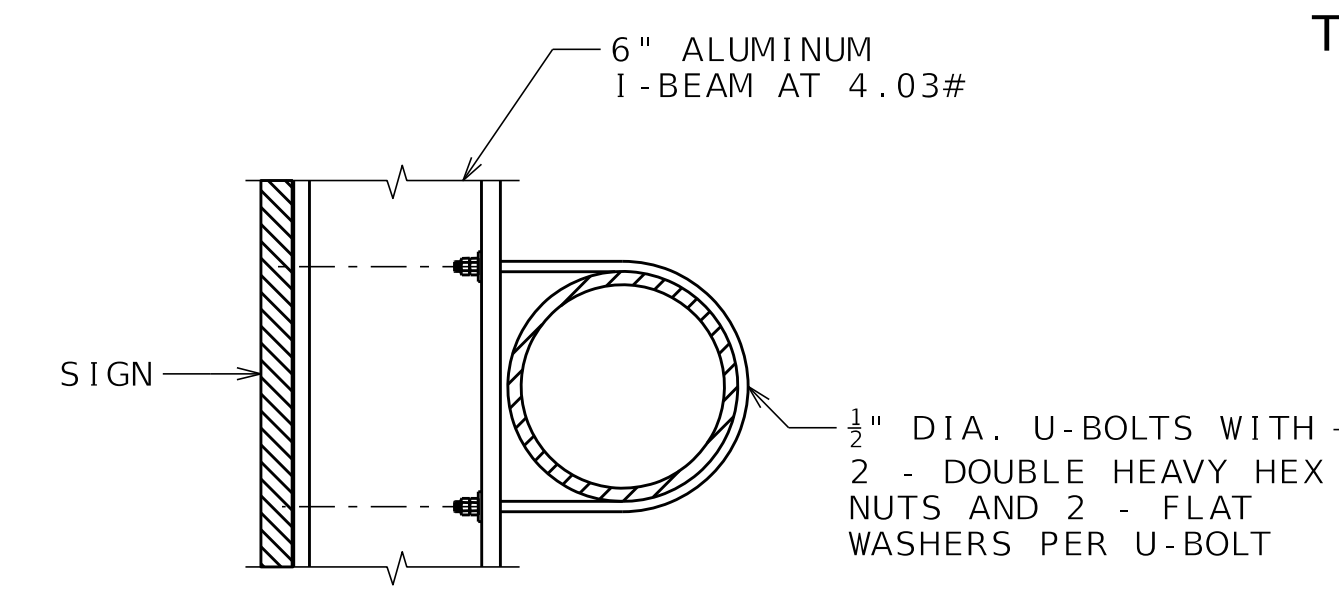
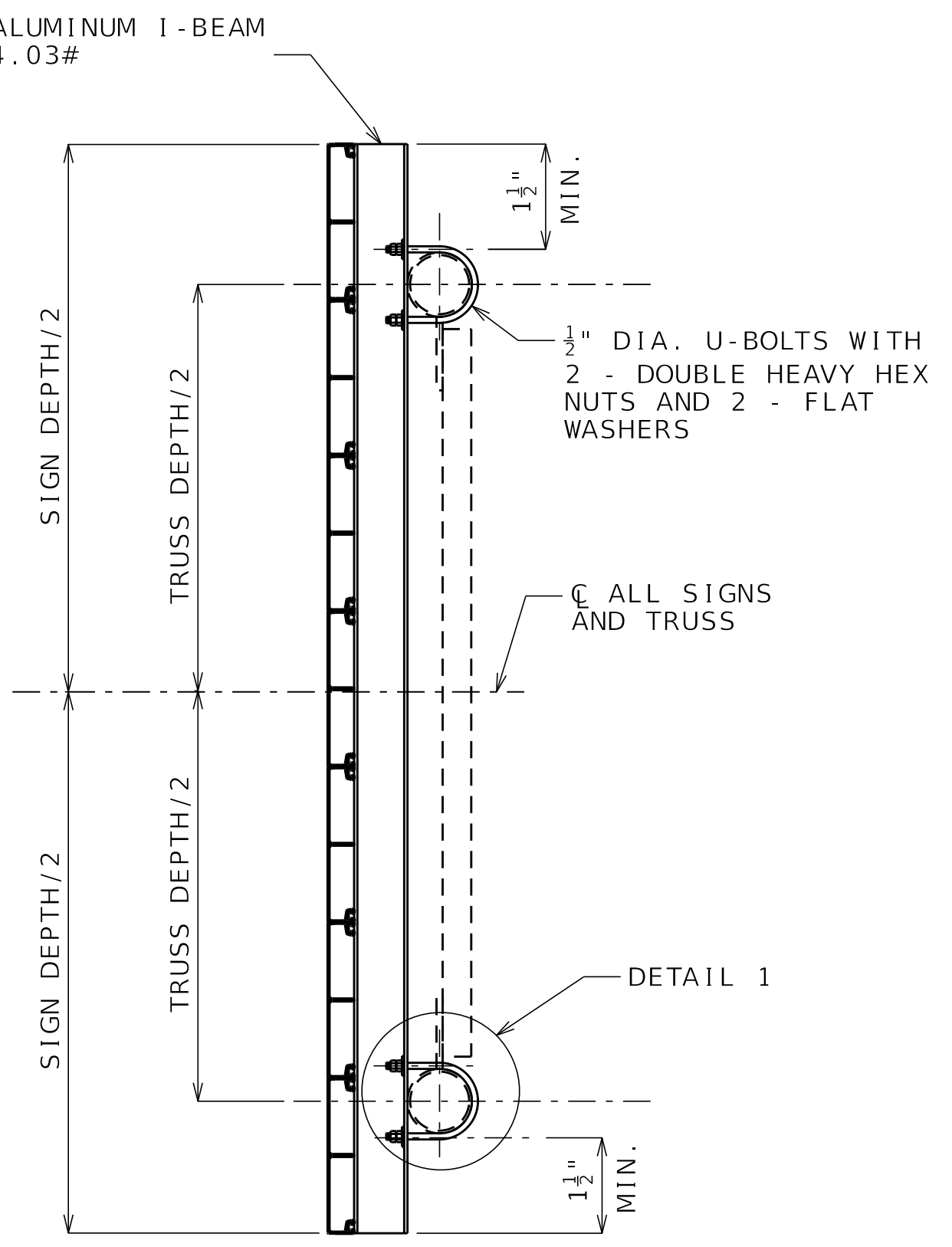
POLE AND BASE PLATE											
TYPE NUMBER	POLE				BASE PLATE						
	PA (FT)	PB (FT)	PD (FT)	PE (IN)	NO. BOLTS	BA (IN)	BB (IN)	BC (IN)	BD (IN)	BF (IN)	BO (IN)
B-20-400	26' - 6" (MAX.)	22' - 0" (MAX.)	24.000	0.375	8.000	37.000	2.000	1.750	30.000	46.000	7.500

TYPE NUMBER	DRILLED SHAFT										
	DA (FT)	DB (FT)	DC (FT)	RA	RB	RC	RD (IN)	RE	RF (IN)	RJ	RS
B-20-400	26.00	4.00	22.50	#8	19	9	12	4	12	#5	10.00

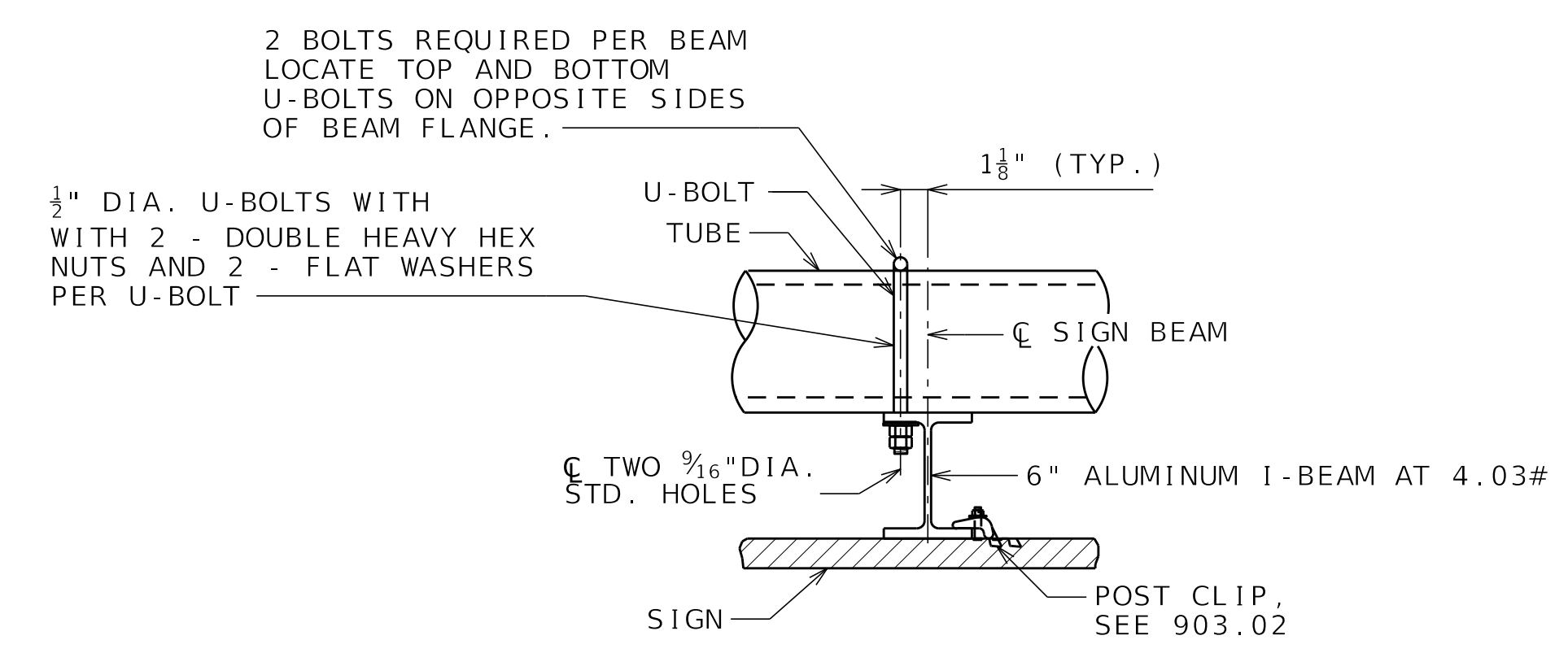
		MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
		TUBULAR SIGN SUPPORT TYPE B BUTTERFLY	
DATE EFFECTIVE: _____ DATE PREPARED: <u>11/10/2025</u>	903.XXX		SHEET NO. 7 OF 15



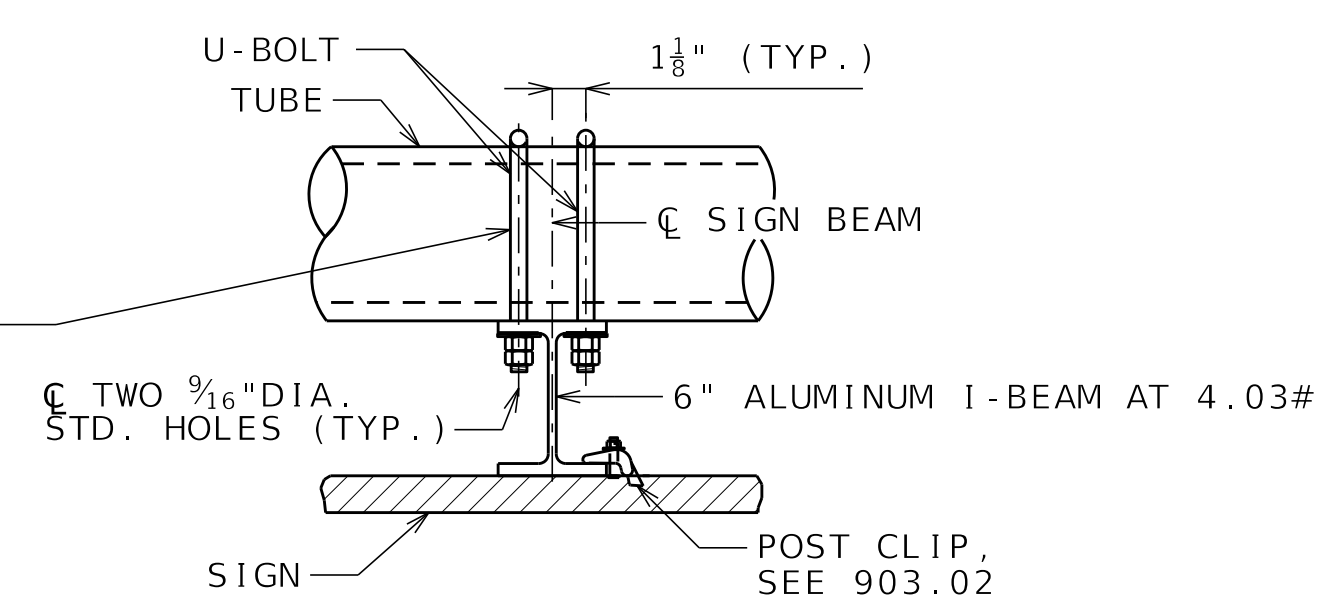
TYPICAL ELEVATION OF SIGN COMPONENTS



DETAIL 1



TWO TUBE TRUSS SIGN CONNECTION



ONE TUBE SIGN CONNECTION

NOTES:

ALUMINUM I-BEAMS SHALL MEET ASTM B308 OR B221, ALLOY 6061-T6.

EXIT NO. PANELS SHALL BE MOUNTED FLUSH WITH THE EXIT SIDE OF THE GUIDE SIGN.

ALL SIGNS SHALL BE CENTERED VERTICALLY ABOUT THE HORIZONTAL C OF THE TRUSS. CENTER THE OVERALL SIGN HEIGHT INCLUDING THE EXIT PANEL ON THE TRUSS.

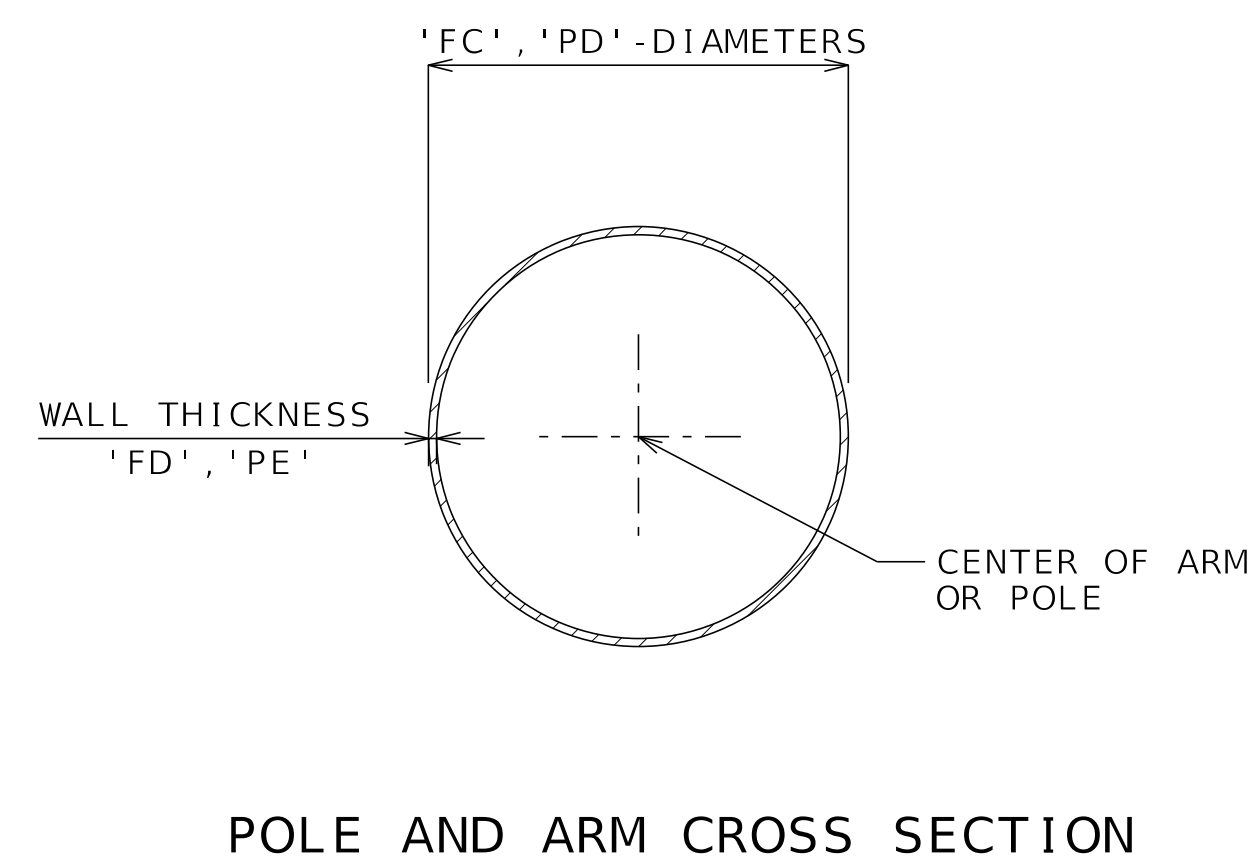
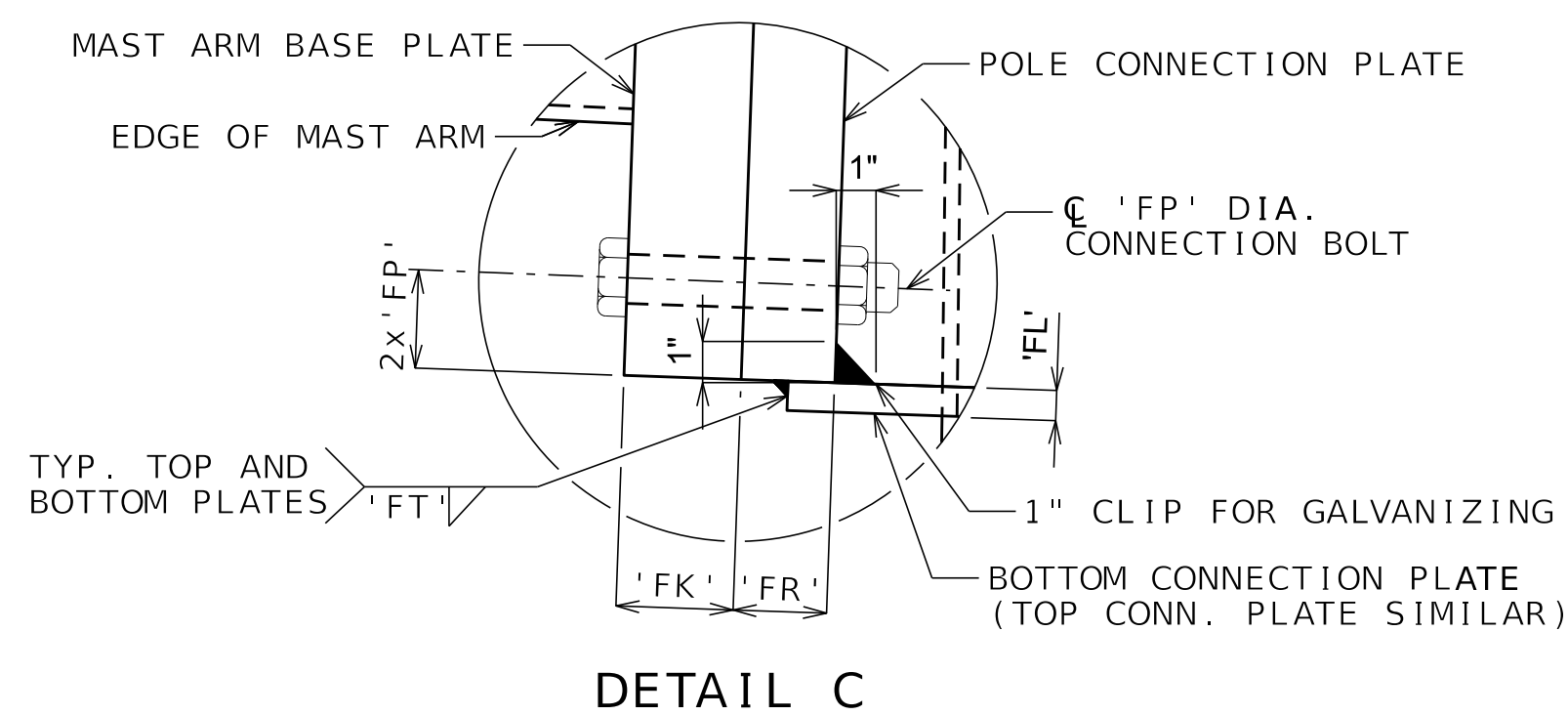
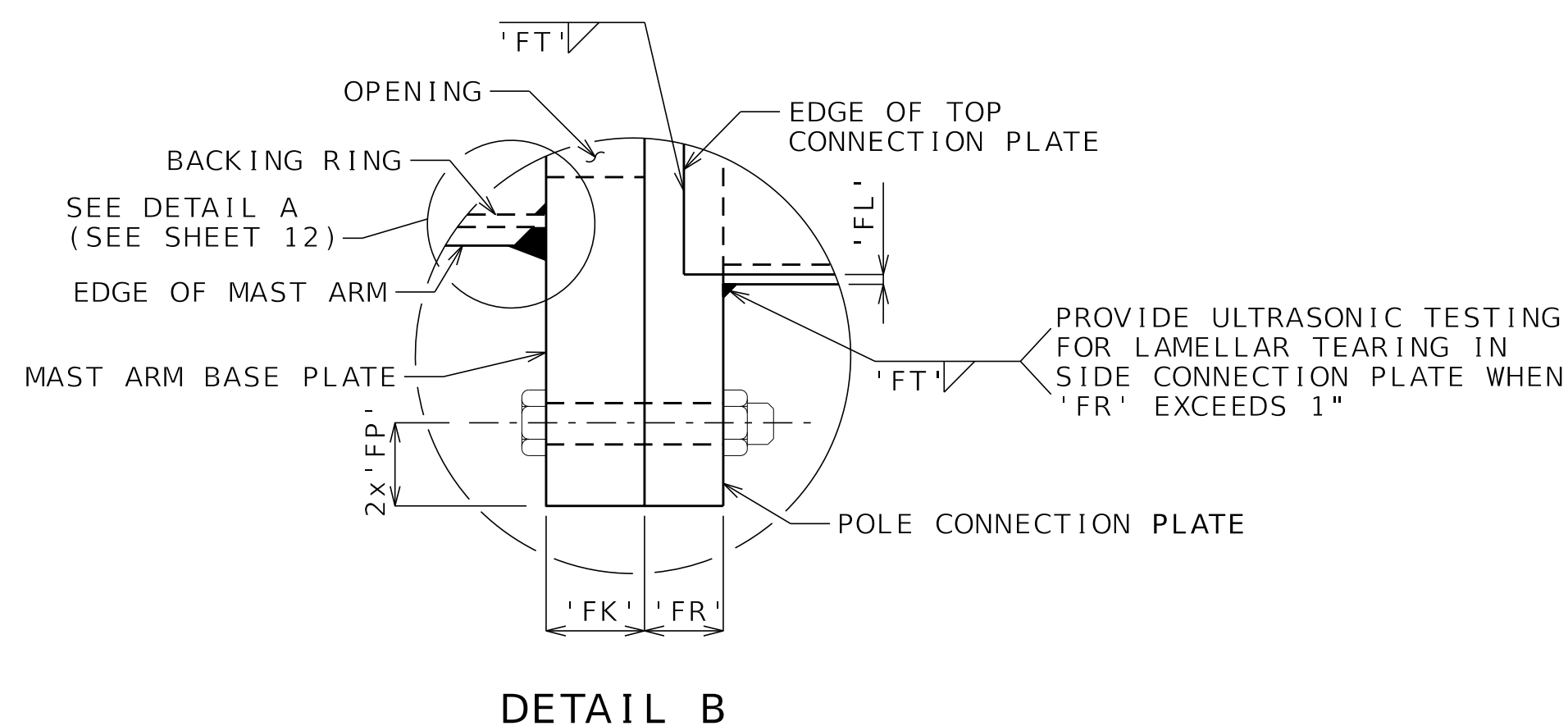
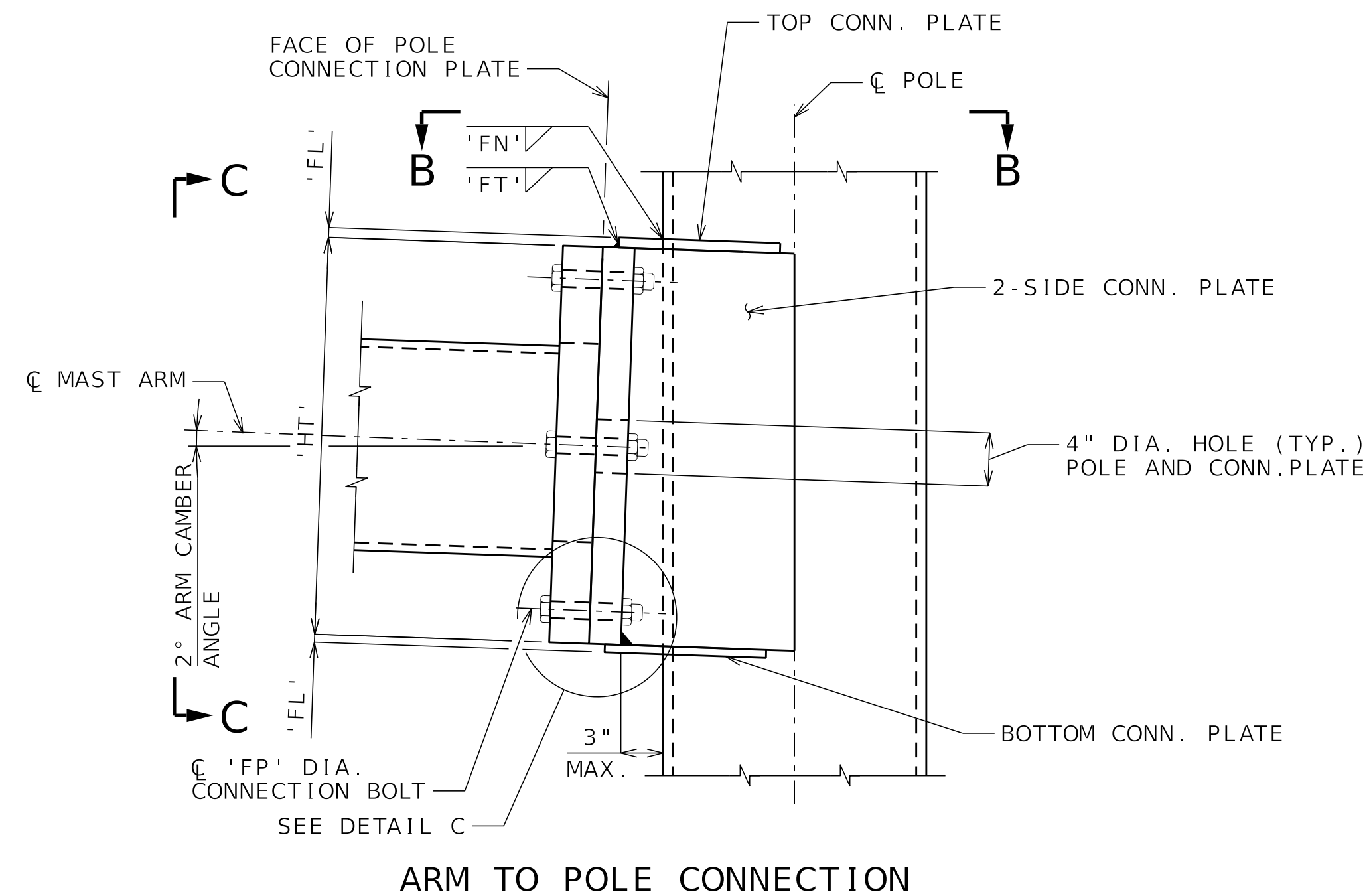
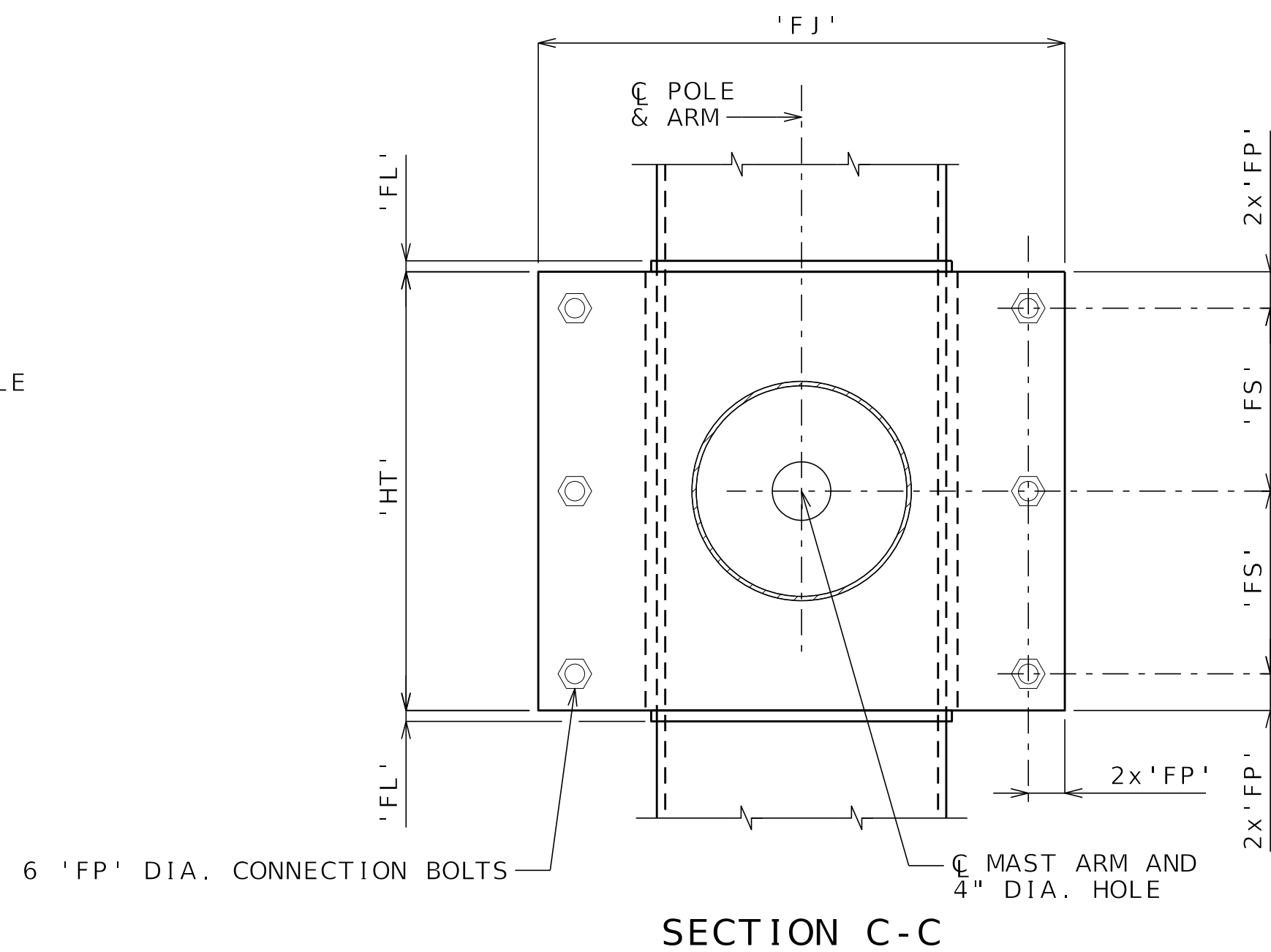
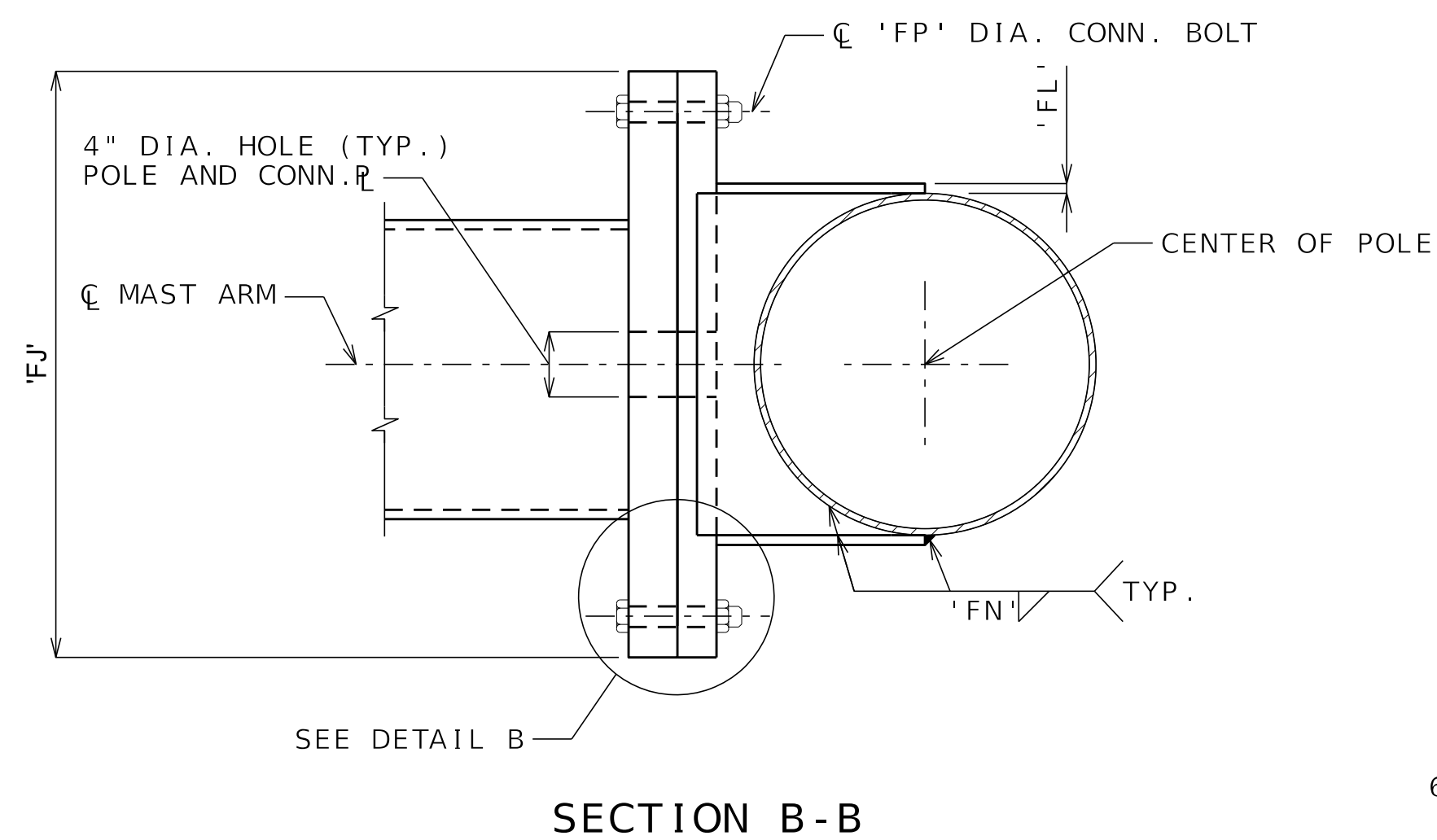
THE ALUMINUM I-BEAM SUPPORT SHALL NOT EXTEND BEYOND THE TOP OR BOTTOM OF THE SIGN MORE THAN 1", WITH THE EXCEPTION THAT THE 6" ALUMINUM I-BEAM SIGN SUPPORT SHALL EXTEND A MINIMUM OF 1 1/2" ABOVE AND BELOW THE TOP AND BOTTOM CENTER LINE OF U-BOLT HOLES OF THE TWO TUBE SUPPORT REGARDLESS OF THE HEIGHT OF THE SIGN.

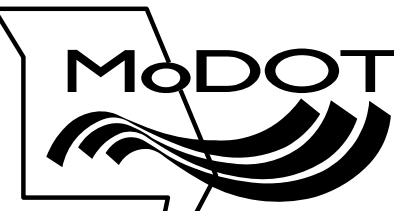
THE MAXIMUM SIGN HEIGHT OF A SIGN MOUNTED ON A ONE TUBE SUPPORT SHALL NOT EXCEED 5'-0".

THE MAXIMUM SIGN HEIGHT OF A SIGN MOUNTED ON A TWO TUBE SUPPORT, INCLUDING THE EXIT PANEL, SHALL NOT EXCEED 10'-0".

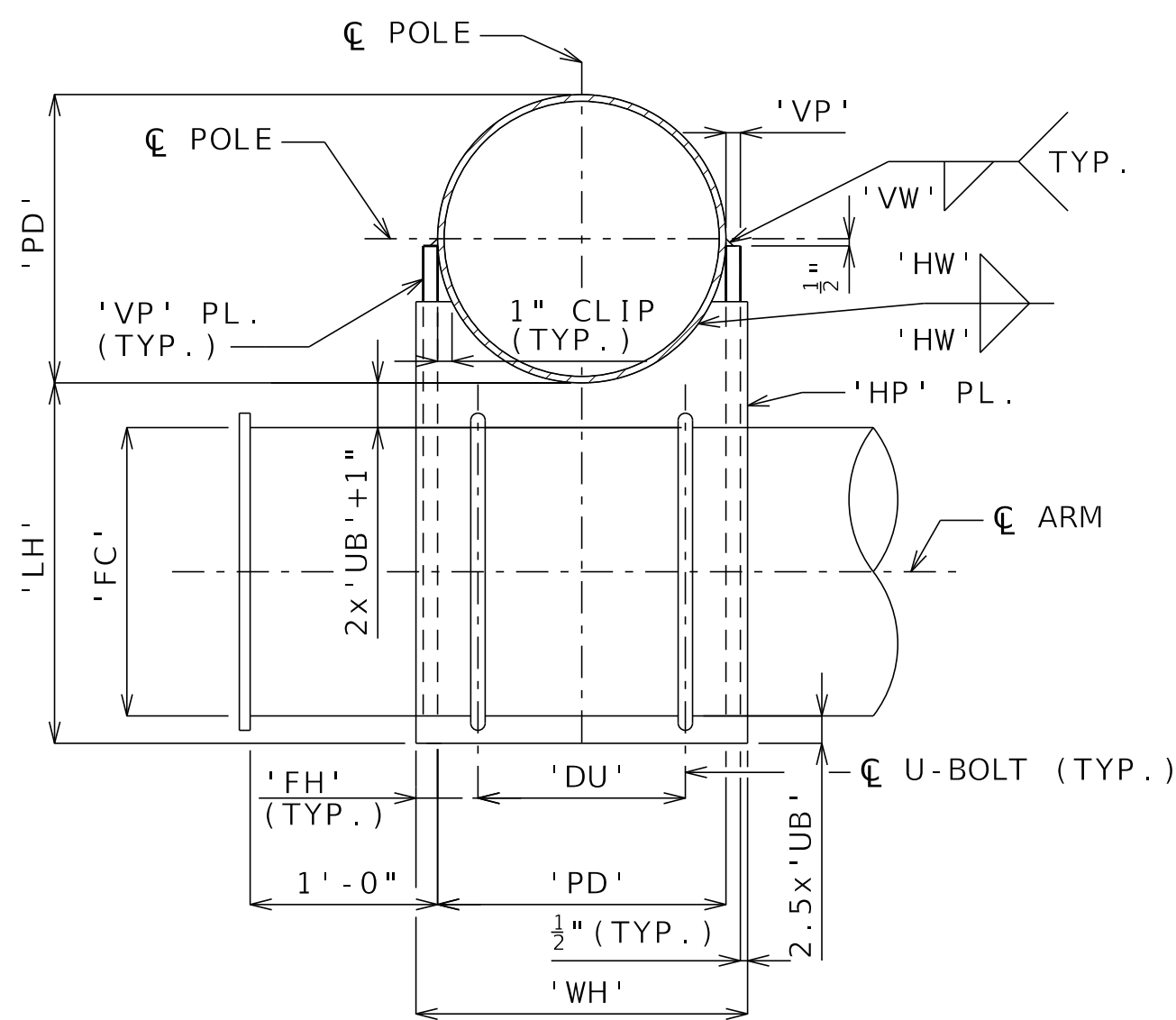
SEE STD. PLAN 903.03 FOR SIGN TO I-BEAM MOUNTING DETAILS.

 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION		
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TUBULAR SIGN SUPPORT SIGN MOUNTING DETAIL		
DATE EFFECTIVE: DATE PREPARED: 11/10/2025	903.XXX	SHEET NO. 8 OF 15

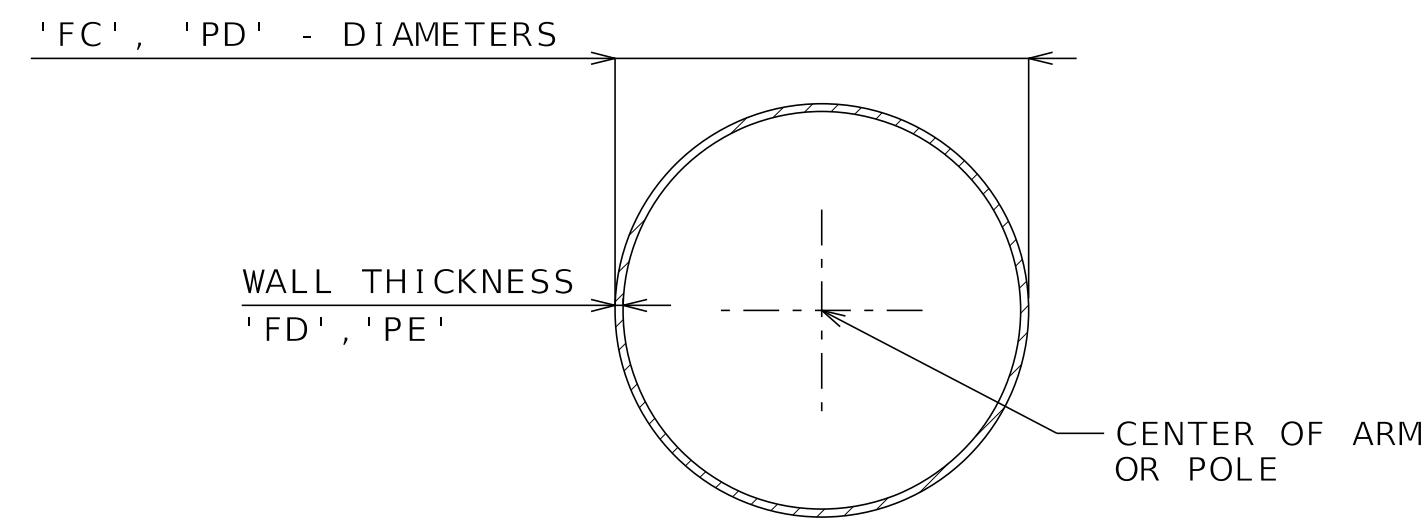


 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
CANTILEVER TUBULAR SIGN SUPPORT TYPE C ARM TO POLE CONNECTION		
DATE EFFECTIVE: DATE PREPARED: 11/11/2025	903.XXX	SHEET NO. 9 OF 15

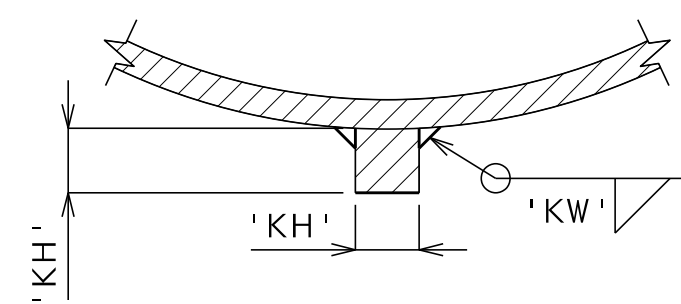
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



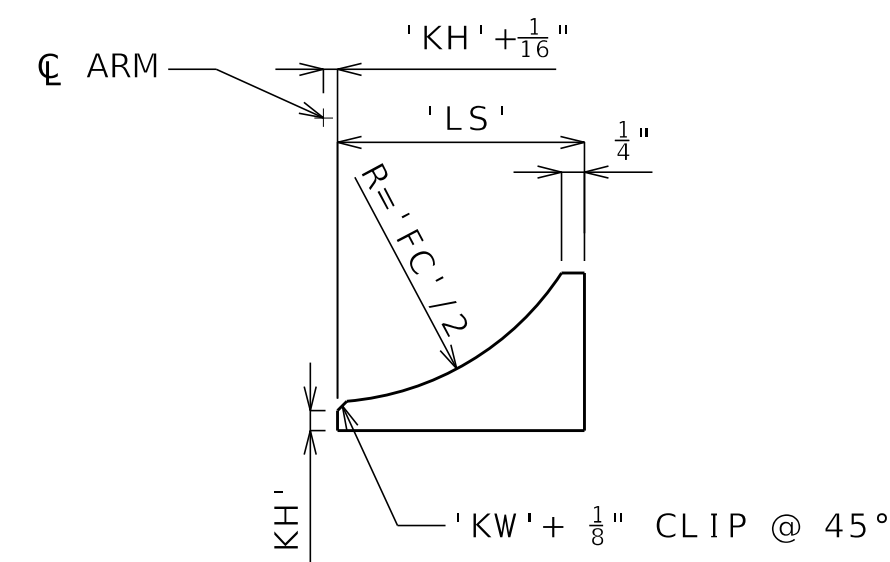
PLAN VIEW



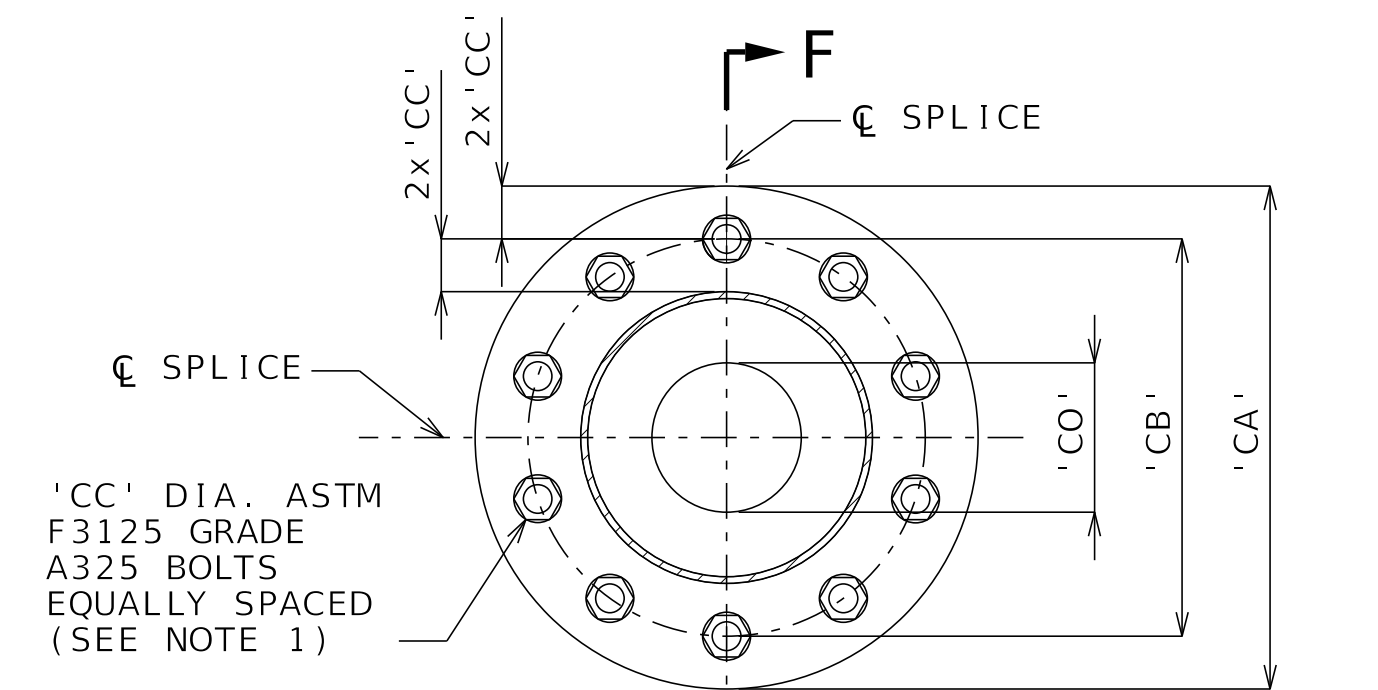
POLE AND ARM CROSS SECTION



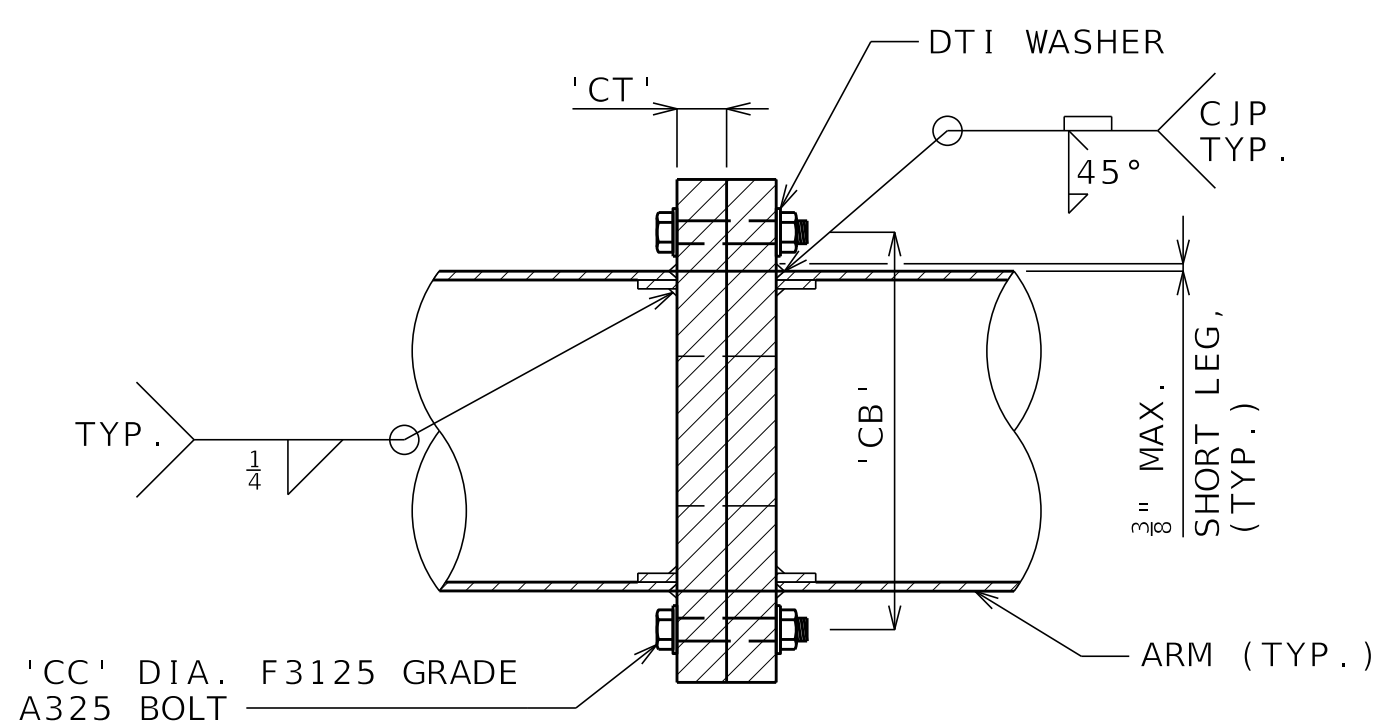
SADDLE KEY



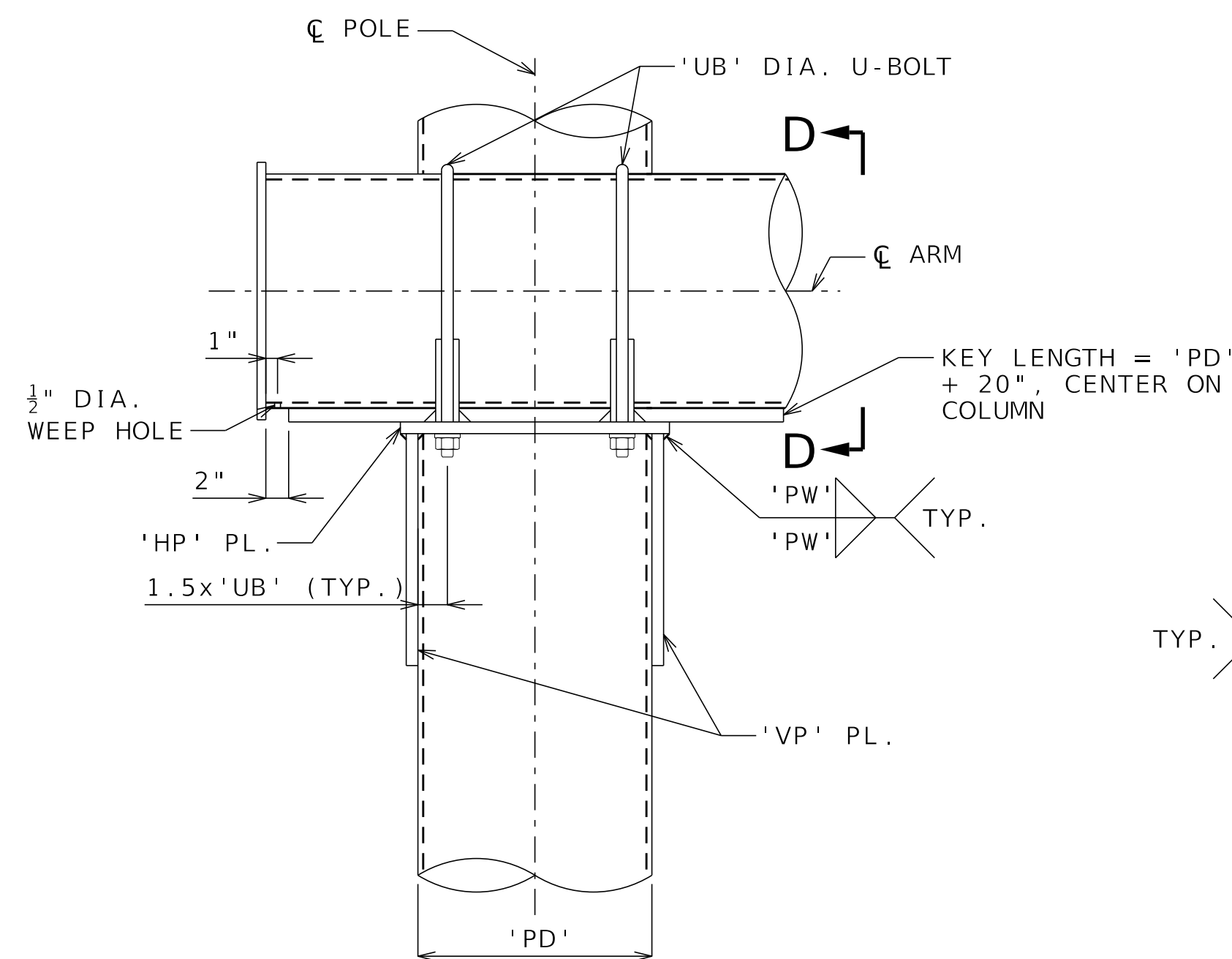
SADDLE DETAIL



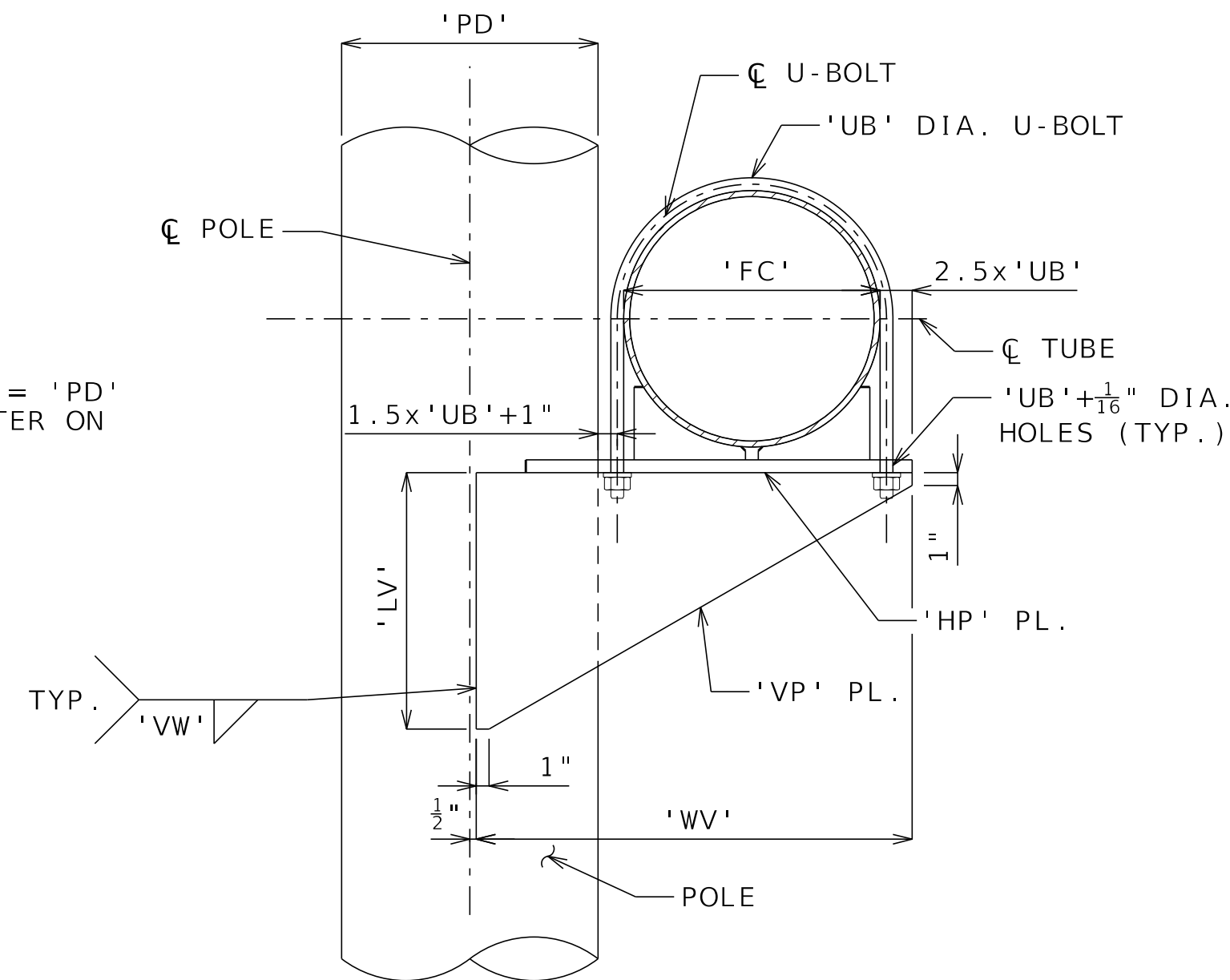
SIDE ELEVATION



SECTION F-F
ARM SPLICE PLATE DETAIL
(10 BOLTS SHOWN, OTHER LAYOUTS SIMILAR)

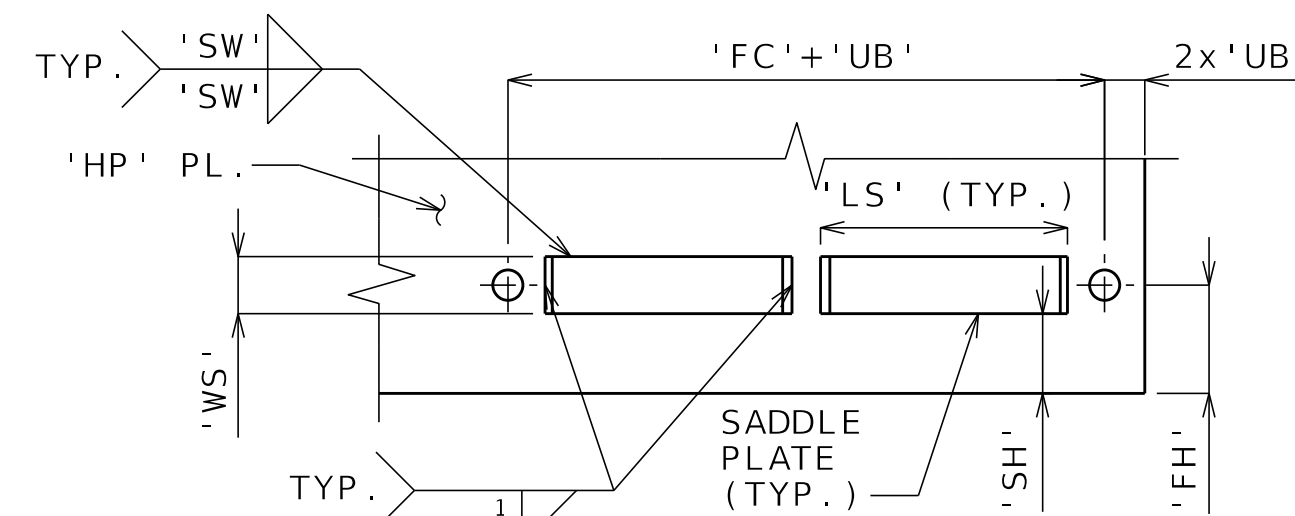


ELEVATION VIEW

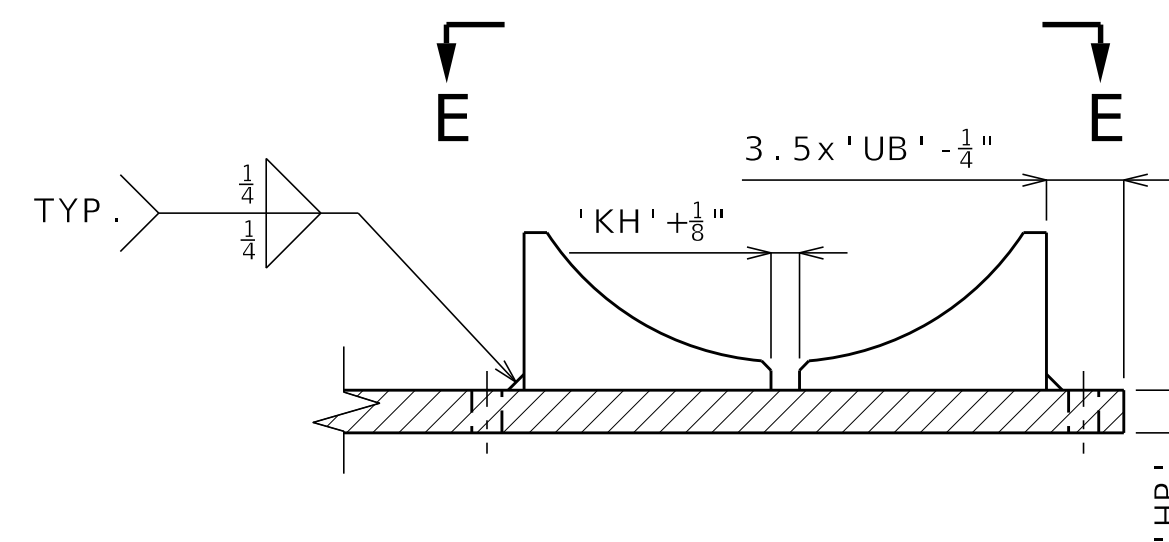


VIEW D-D

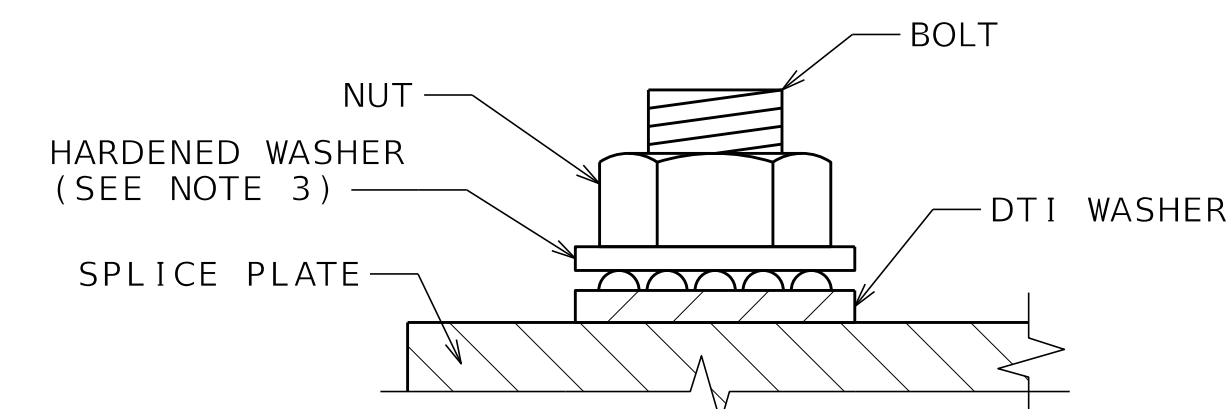
BRACKET CONNECTION
(SPAN TYPE SHOWN, BUTTERFLY SIMILAR)



VIEW E-E



SADDLE DETAIL



DIRECT TENSION INDICATOR (DTI) DETAIL

NOTES:

1. SEE TABLE OF VARIABLES FOR ACTUAL QUANTITY OF BOLTS IN THE SPLICE PLATE.
2. ALL WELDS TO BE SEAL WELDS FOR GALVANIZING.
3. HARDENED WASHER AND DTI CONFIGURATION SHOWN IS USED WHEN THE NUT IS TURNED AND DTI IS PLACED UNDER NUT. FOLLOW RCSC SPECIFICATION FOR STRUCTURAL JOINTS SECTION 6.2.4 AND MANUFACTURER SPECIFICATIONS FOR OTHER ORIENTATIONS.

MoDOT MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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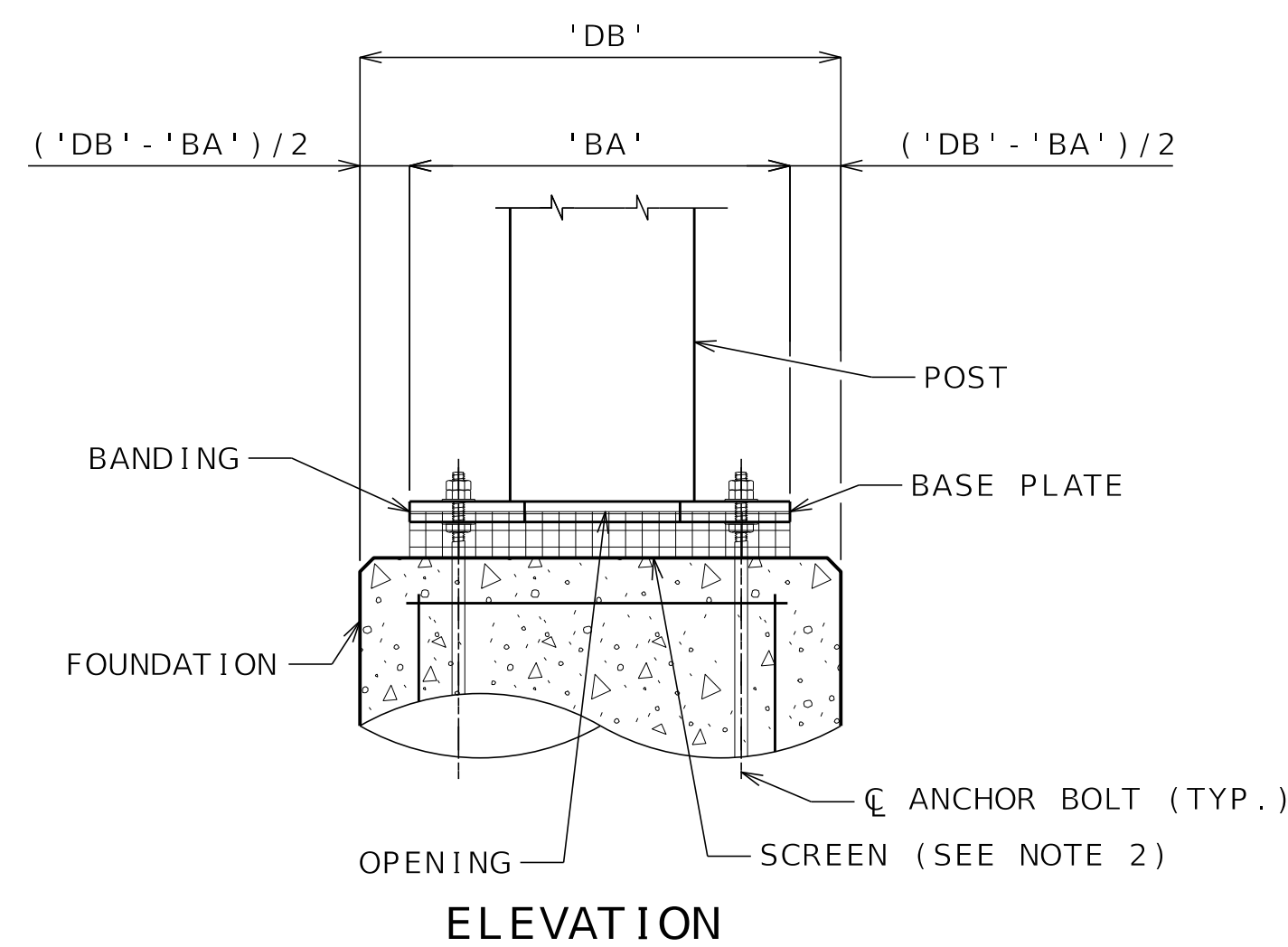
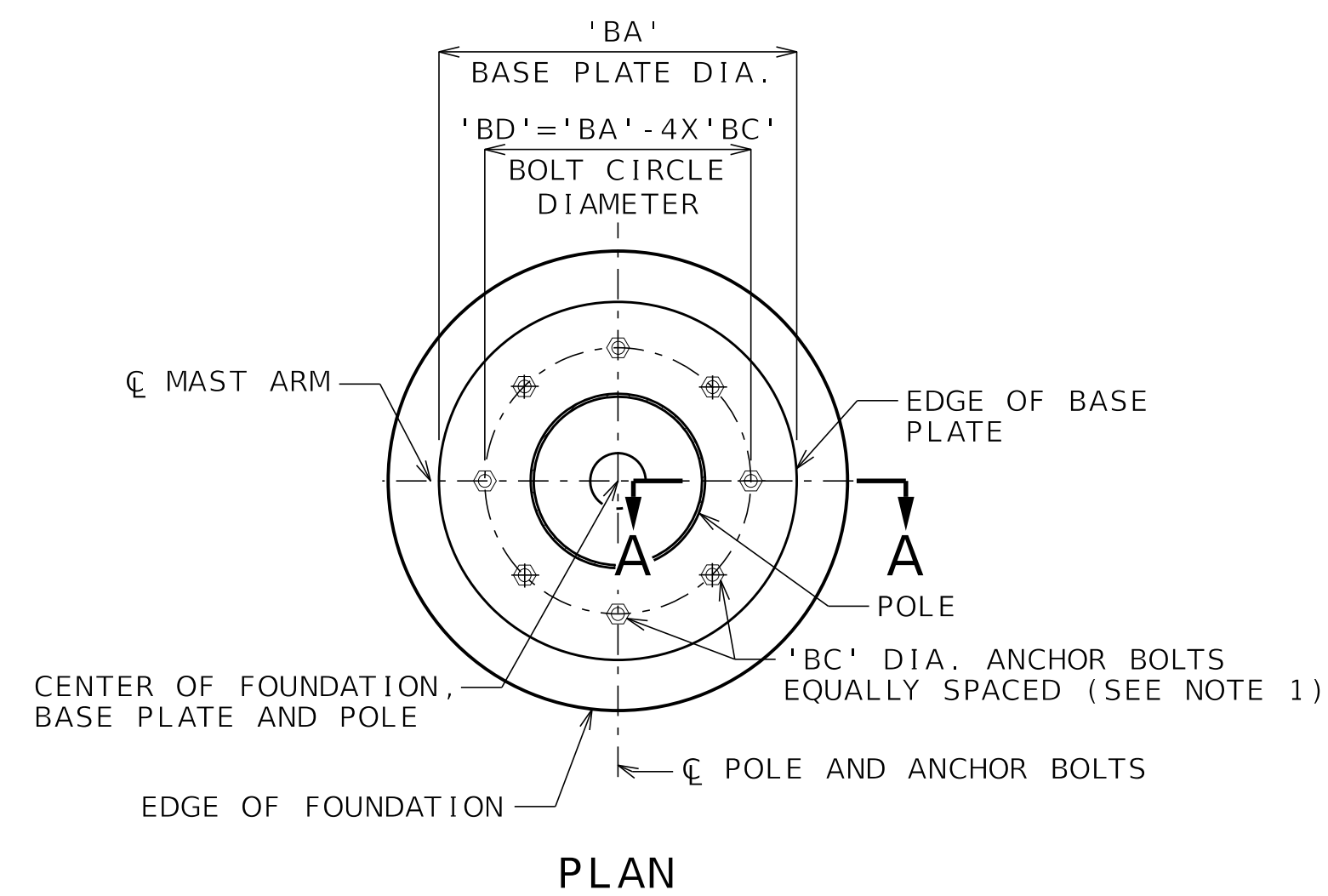
**TUBULAR SIGN
SUPPORT
BRACKET CONNECTION
& FIELD SPLICE**

DATE EFFECTIVE: 11/11/2025
DATE PREPARED: 11/11/2025

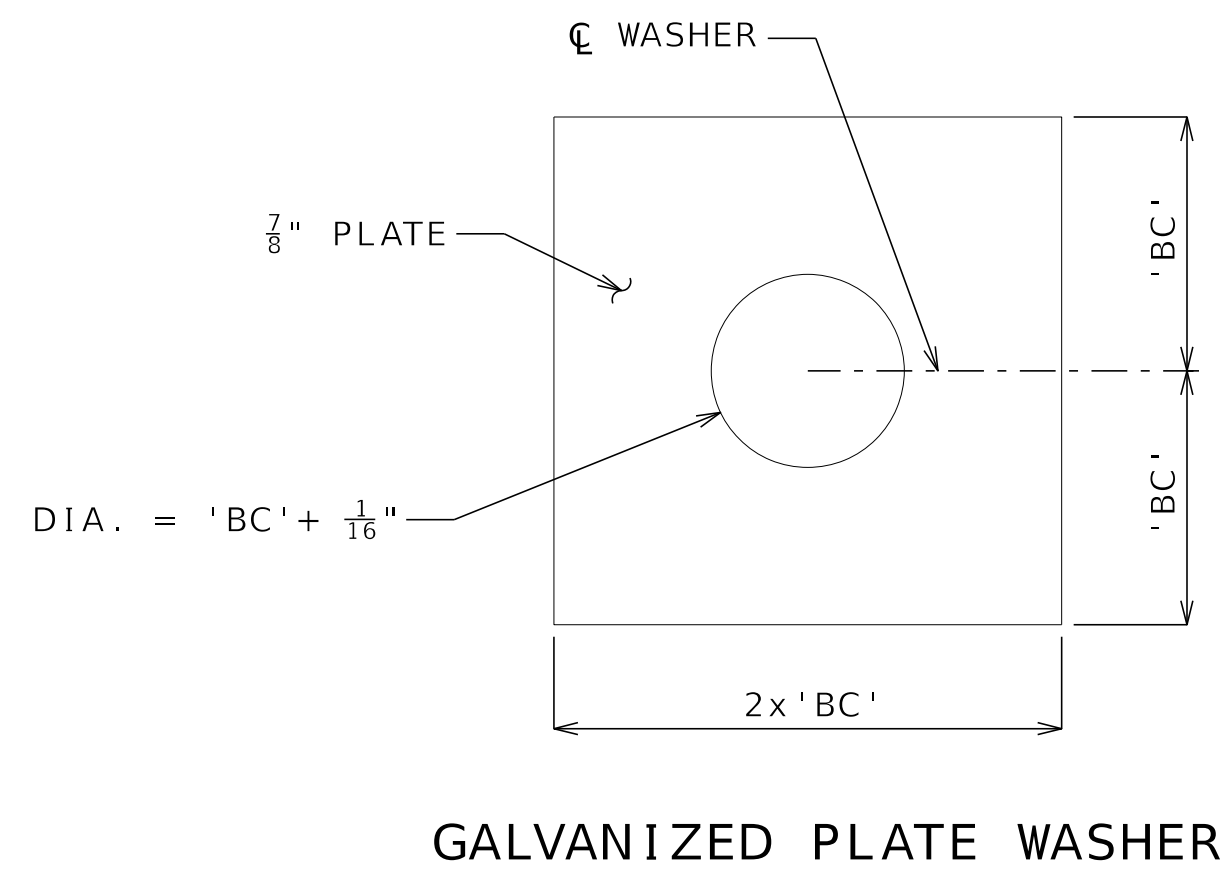
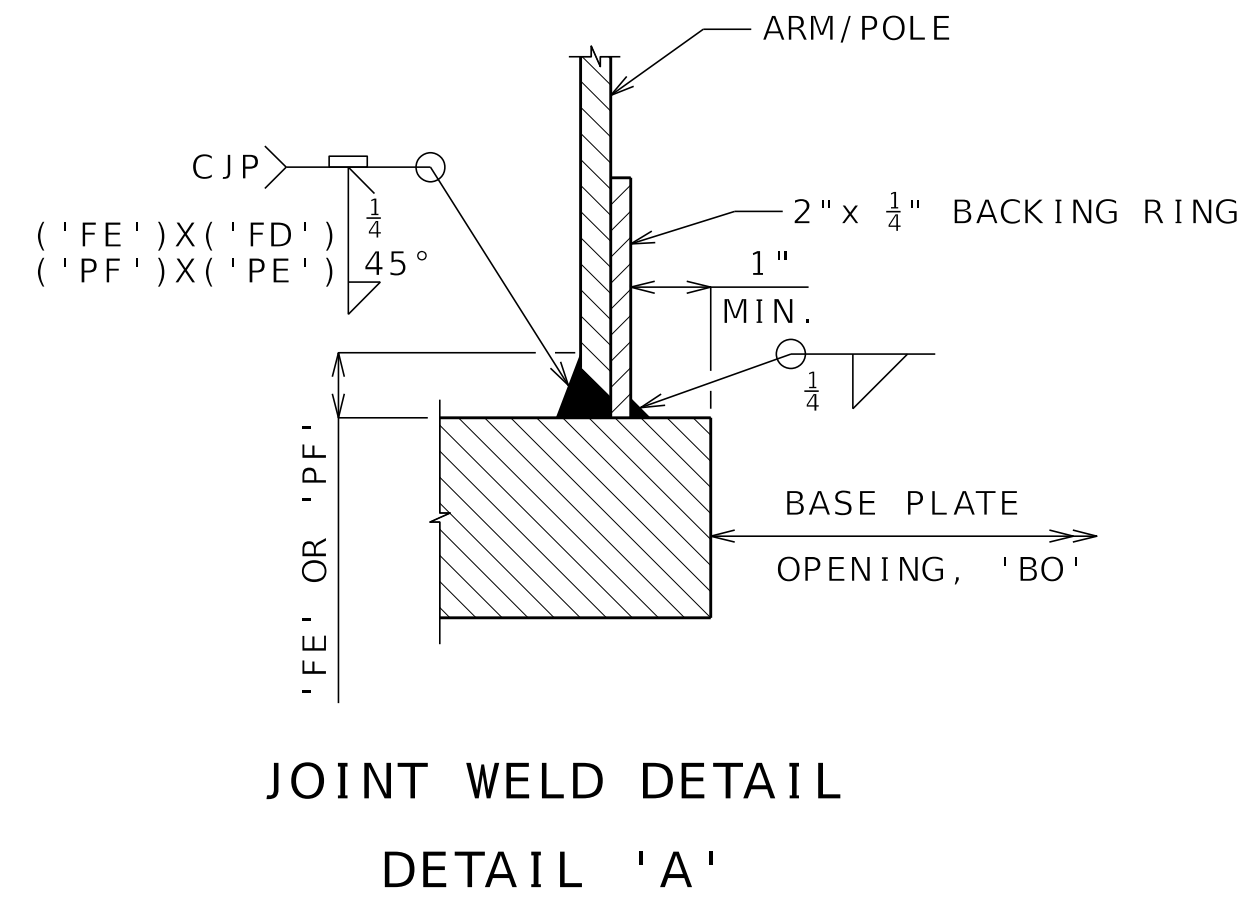
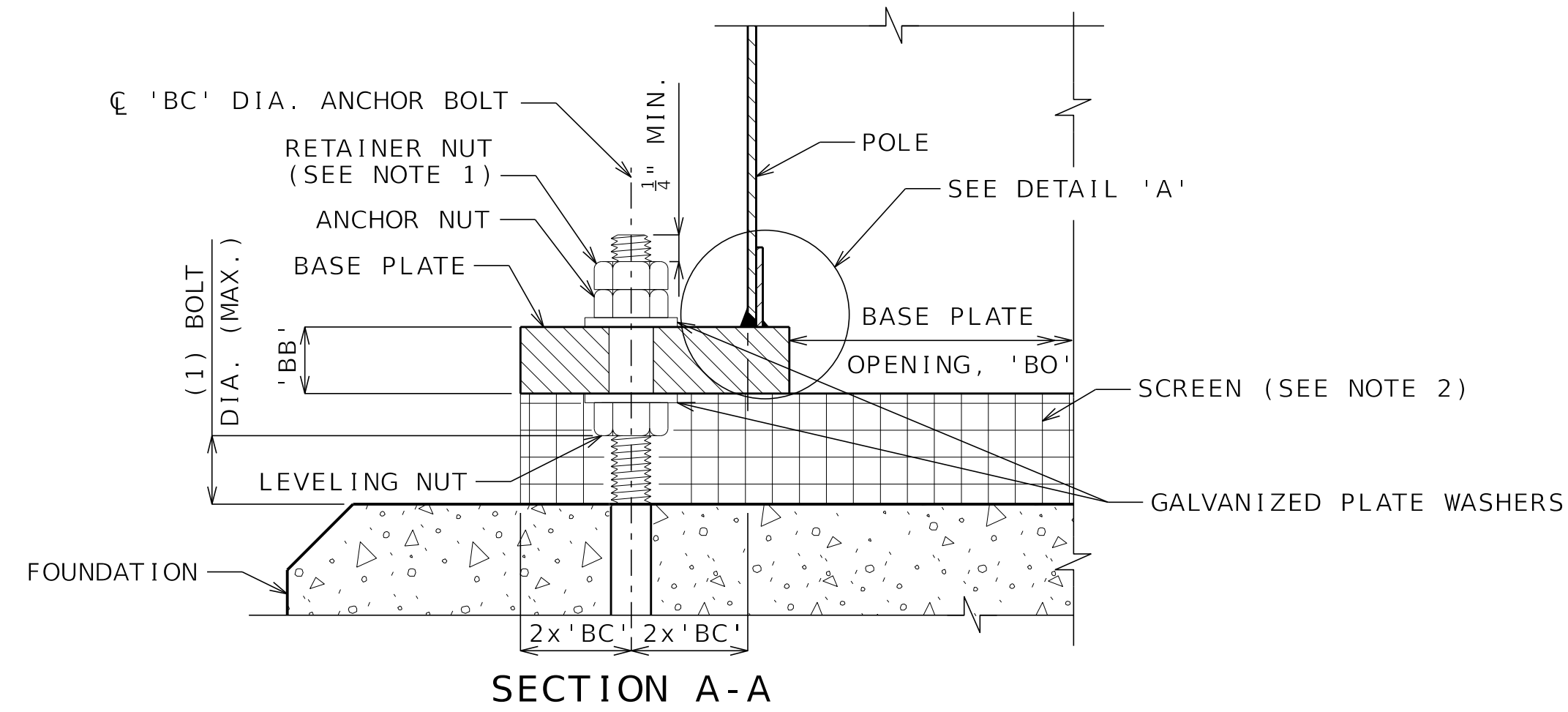
903.XXX

SHEET NO.
11 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

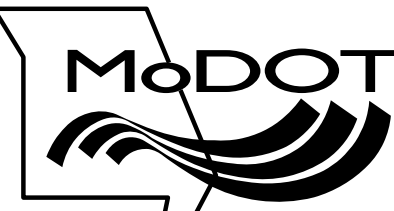


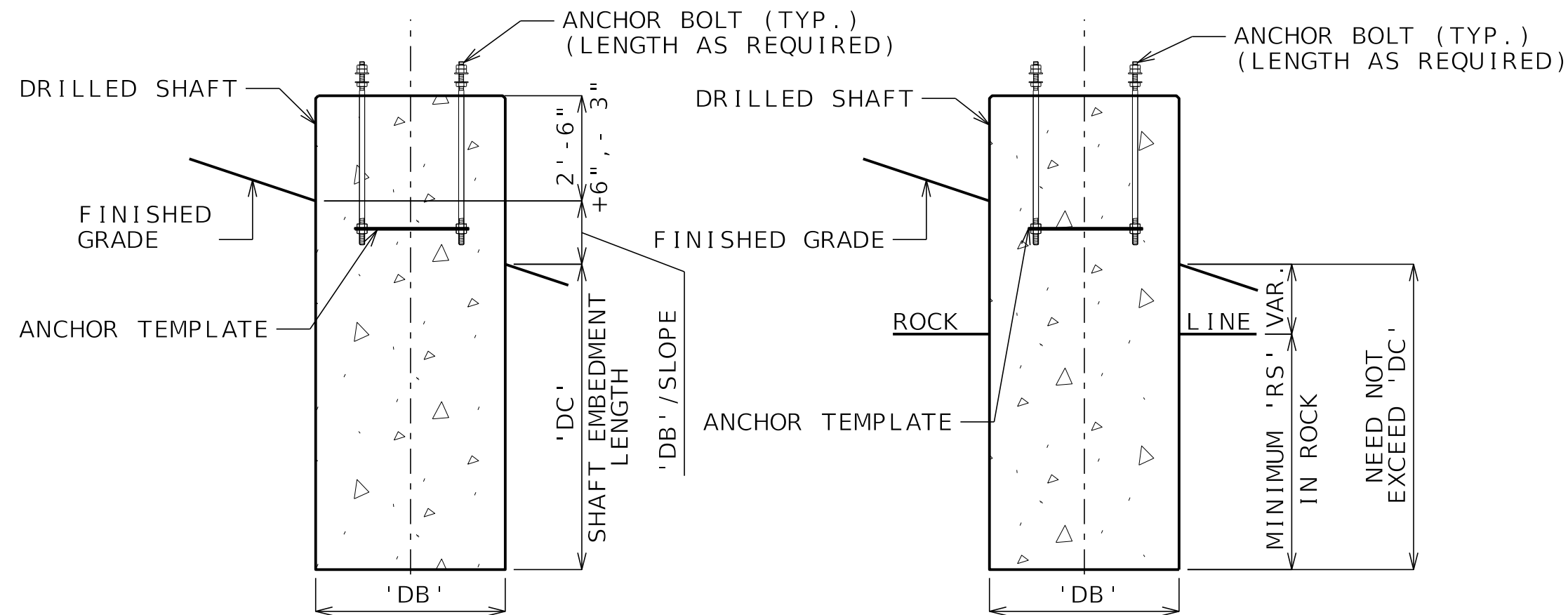
BASE PLATE CONNECTION



NOTES:

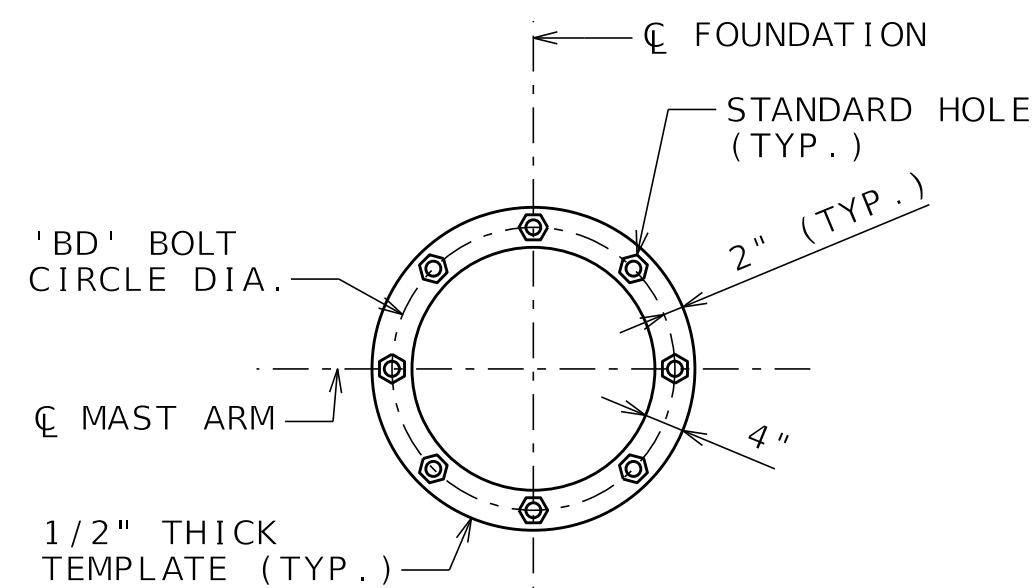
1. PROVIDE INDIVIDUAL NUT COVERS (NOT SHOWN) FOR EACH BOLT.
2. A SCREEN SHALL BE USED BETWEEN THE POST BASE PLATE AND THE CONCRETE BASE. SCREENS SHALL BE PRESS-FORMED OF 3 OR 4 MESH, 21 GAGE OR HEAVIER, STAINLESS STEEL OR HOT-DIPPED GALVANIZED WIRE SCREEN OR APPROVED EQUIVALENT. WRAP PERIMETER OF BASE PLATE TWICE AND SECURE WITH STAINLESS BAND. 1/4" MAX. GAP AT TOP OF CONCRETE. THE TOP HORIZONTAL WIRE OF THE SCREEN SHALL EXTEND TO THE BOTTOM OF THE BASE PLATE AND NOT ABOVE THE TOP OF THE BASE PLATE. VERTICAL SCREEN WIRES SHALL NOT EXTEND BEYOND THE TOP AND BOTTOM HORIZONTAL WIRES OF THE SCREEN.

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TUBULAR SIGN SUPPORT BASE PLATE DETAILS		
DATE EFFECTIVE: DATE PREPARED: 11/11/2025	903.XXX	SHEET NO. 12 OF 15

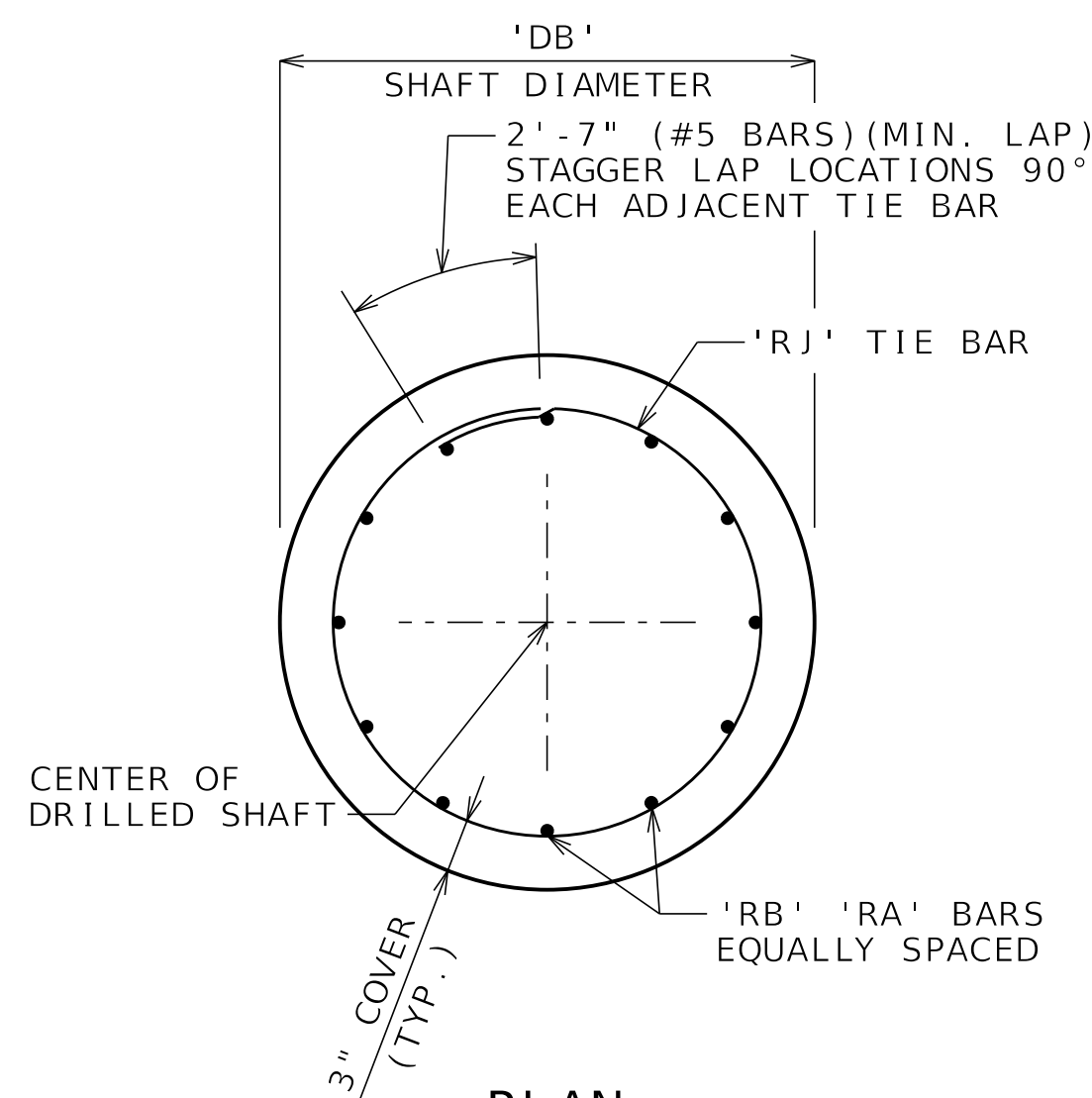


**DRILLED SHAFT
ELEVATION ON SLOPE**
(REINFORCING NOT SHOWN FOR CLARITY,
MATCH STANDARD REINFORCING)

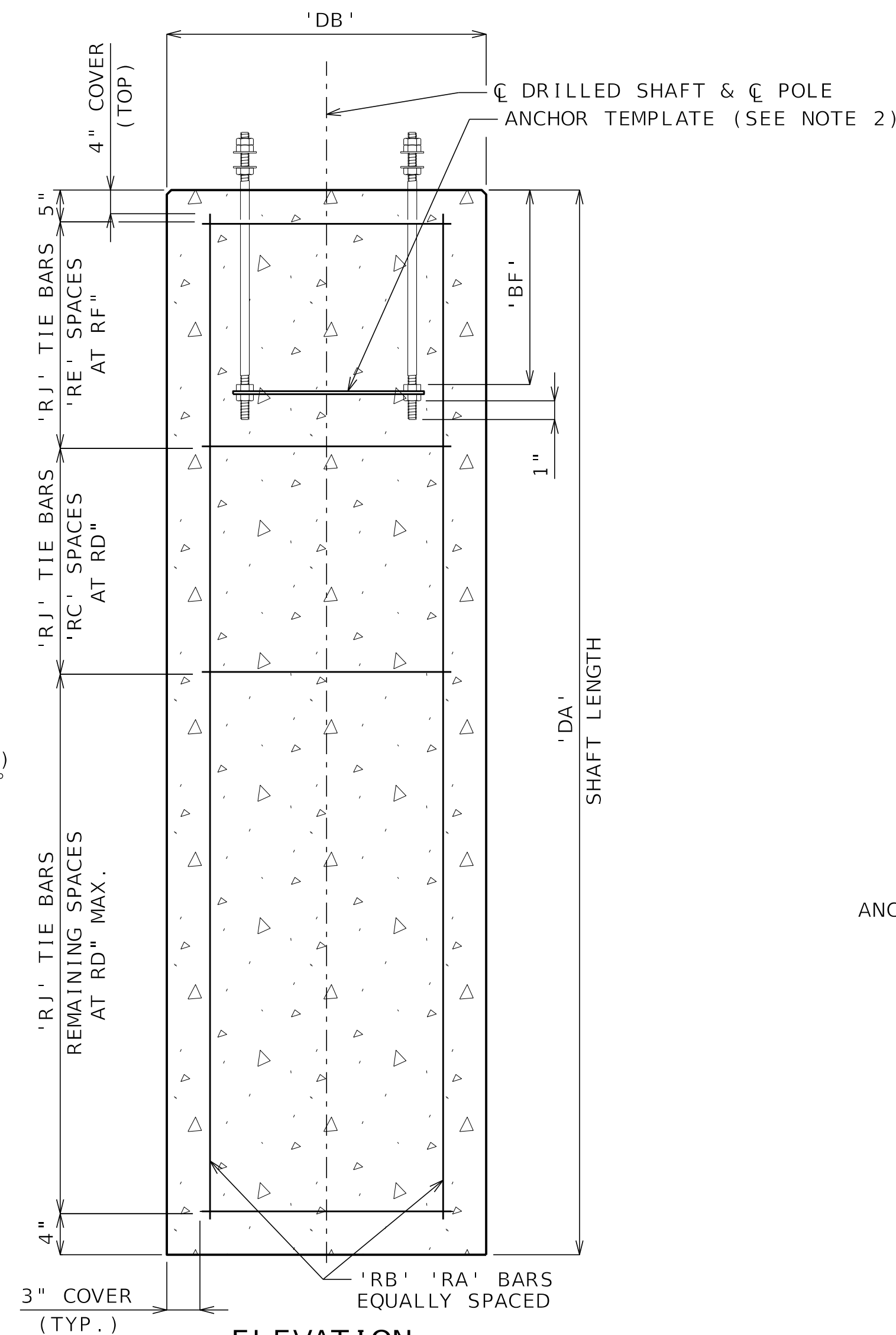
**DRILLED SHAFT
ELEVATION IN ROCK**
(REINFORCING NOT SHOWN FOR CLARITY,
MATCH STANDARD REINFORCING)



ANCHOR TEMPLATE



PLAN



ELEVATION

DRILLED SHAFT FOUNDATION

NOTES:

1. ADD 'DB'/SLOPE TO SHAFT LENGTH 'DA' WHEN PLACED IN A SLOPED LOCATION.
2. SHIP AND PLACE ANCHOR RODS WITH A TOP AND BOTTOM ANCHOR TEMPLATE.

TENSION ANCHOR BOLT NUTS IN ACCORDANCE WITH DESIGN CRITERIA TABLE C15.6.3-1. CLEAN AND LUBRICATE BOLT AND NUT THREADS. TIGHTEN ANCHOR NUT INTO SNUG TIGHT CONDITION DEFINED IN SEC 712.7.2. TIGHTEN LEVELING NUTS TO A SNUG TIGHT CONDITION. TIGHTEN ANCHOR NUT 1/12 TURN BEYOND SNUG TIGHT. PLACE RETAINER NUT AND TIGHTEN TO SNUG TIGHT. TIGHTEN RETAINER NUT 1/6 TURN BEYOND SNUG TIGHT. TOLERANCE IS PLUS 20 DEGREES BEYOND SPECIFIED TURN.

COMPLETE EACH ROUND OF TENSIONING IN A STAR PATTERN AS SHOWN.

PERMANENT CASINGS ARE NOT ALLOWED FOR DRILLED SHAFT FOUNDATIONS. COLD CONCRETE CONSTRUCTION JOINTS ARE NOT PERMITTED. PROVIDE 3/4\"/>

USE 1/2\"/>

PLACE AND FORM FOUNDATIONS PER SEC 903.3.1.1

DESIGN SOIL PARAMETERS:

THE WATER TABLE SHALL BE 10' MINIMUM BELOW THE FINISHED GRADE.

THE FOUNDATION DIMENSIONS SHOWN ON THIS SHEET HAVE BEEN DESIGNED WITH THE FOLLOWING ASSUMED PROPERTIES:

COHESIVE SOILS:

MIN. SHEAR STRENGTH: $C = 0.5$ ksf
UNIT WEIGHT OF SOIL: $\gamma = 115$ pcf

COHESIONLESS SOILS:

MIN. ANGLE OF FRICTION: $\phi = 25$ DEG.
SPT N_{60} : 5
UNIT WEIGHT OF SOIL: $\gamma = 115$ pcf

DESIGN ROCK PARAMETERS:

THE DRILLED SHAFT ROCK FOUNDATION DIMENSIONS SHOWN ON THIS SHEET HAVE BEEN DESIGNED WITH THE FOLLOWING PROPERTIES:

ROCK:

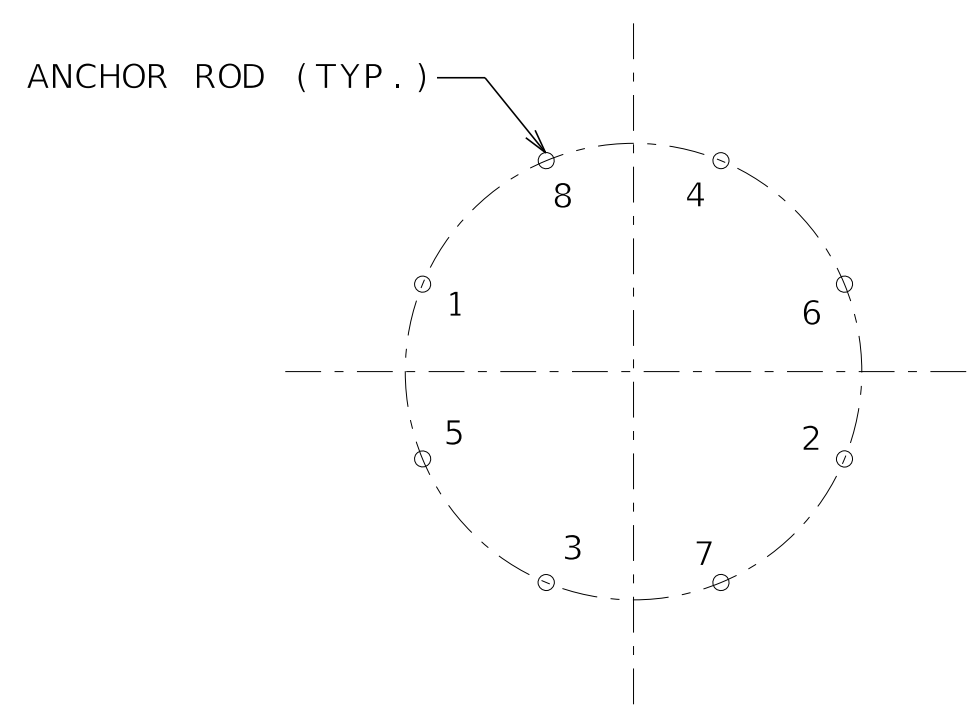
UNIAXIAL COMPRESSIVE STRENGTH: $Q_u = 5$ ksf
ROCK QUALITY DESIGNATION: $RQD = 50\%$

PRIOR TO INSTALLING A FOUNDATION IN ROCK, OBTAIN CERTIFICATION OF ROCK PROPERTIES FROM A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF MISSOURI.

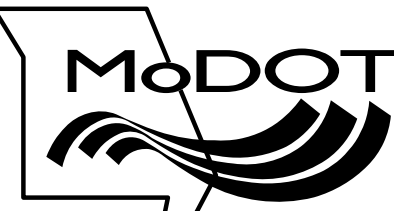
ROCK MUST BE ABLE TO BE CONSTRUCTED WITH CONVENTIONAL EQUIPMENT WITH NOMINALLY CLEAN SIDEWALLS. ROCK CANNOT SMEAR OR RAPIDLY DETERIORATE WHEN EXPOSED TO ATMOSPHERE, WATER, OR SLURRY. ROCK MUST ALLOW EXCAVATION OF AN UNSUPPORTED SOCKET WITHOUT CAVING. IF ROCK IS ENCOUNTERED NEAR THE SURFACE, IGNORE ALL ROCK WITHIN 2' OF THE GROUND SURFACE WHEN CONSIDERING ROCK SOCKET LENGTH.

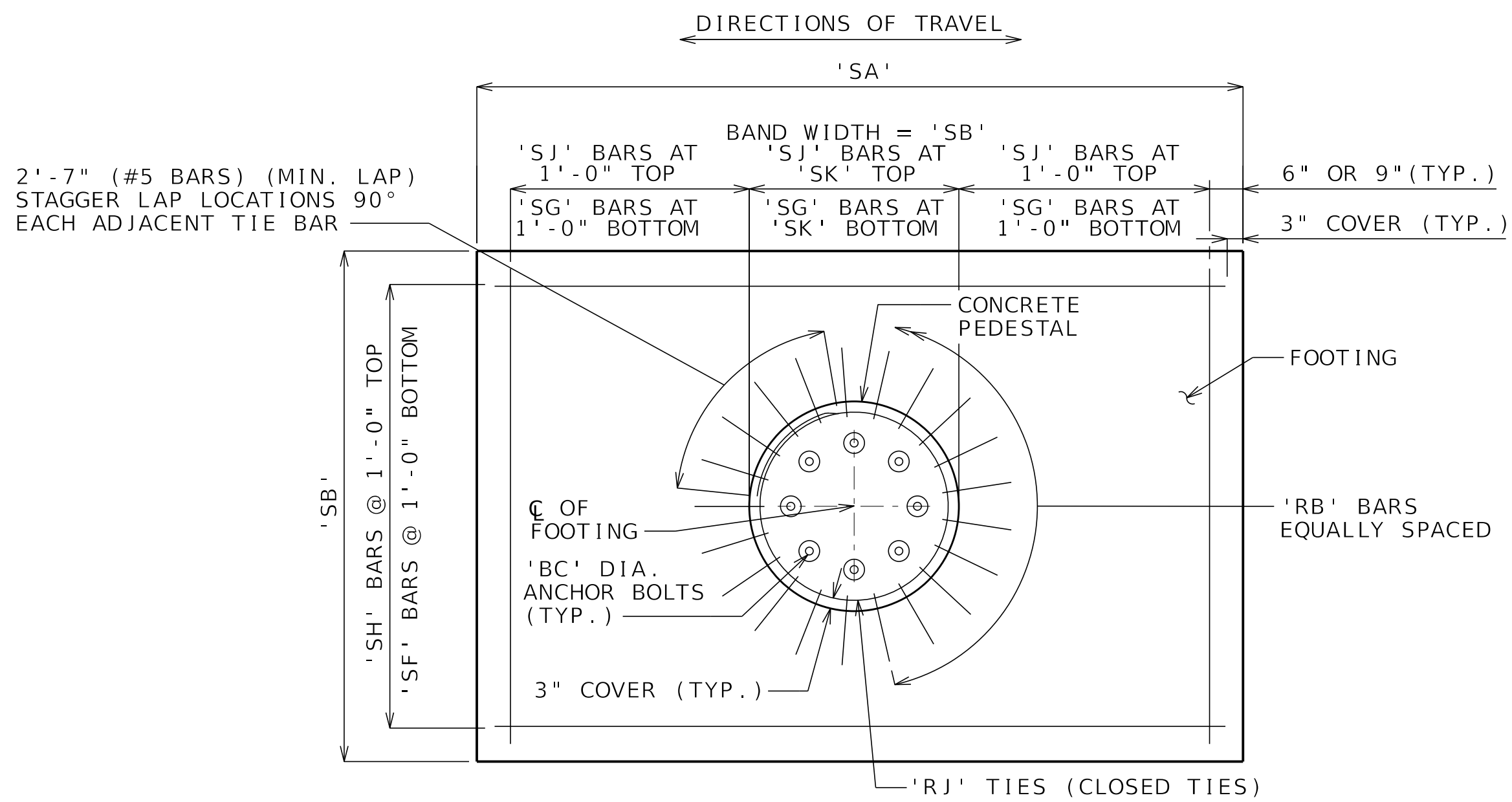
FOR SHAFT ENDING IN ROCK, THE DIAMETER MAY BE INCREASED BY UP TO 6\"/>

A SPECIAL FOUNDATION DESIGN IS REQUIRED IN CASES WHERE THE REQUIRED VALUES AND/OR CONDITIONS LISTED ABOVE ARE NOT MET. A SPECIAL FOUNDATION DESIGN MAY BE USED IN CASES WHERE THE VALUES AND CONDITIONS ABOVE ARE EXCEEDED.

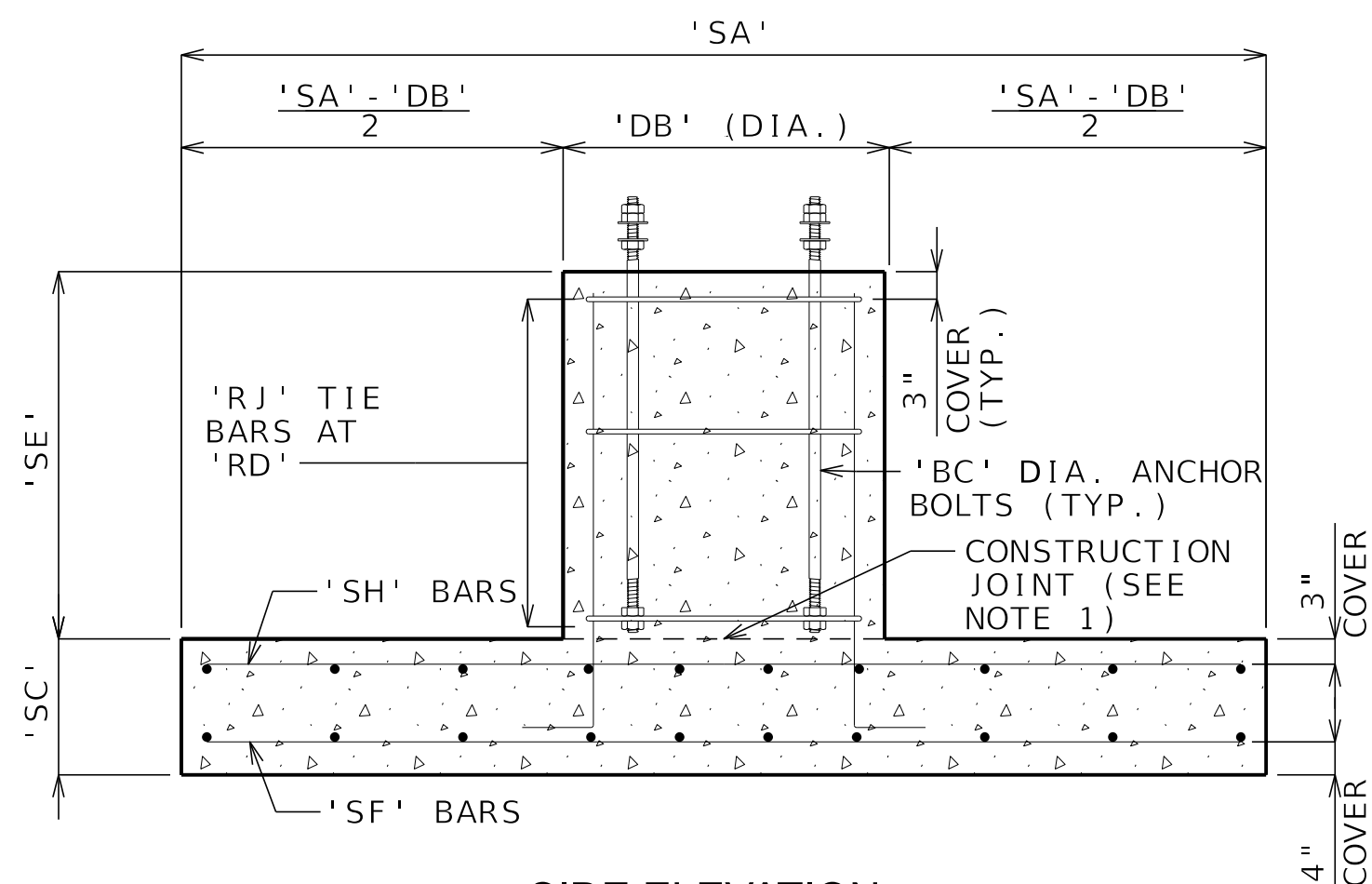


**ANCHOR ROD TIGHTENING SEQUENCE
(STAR PATTERN)**

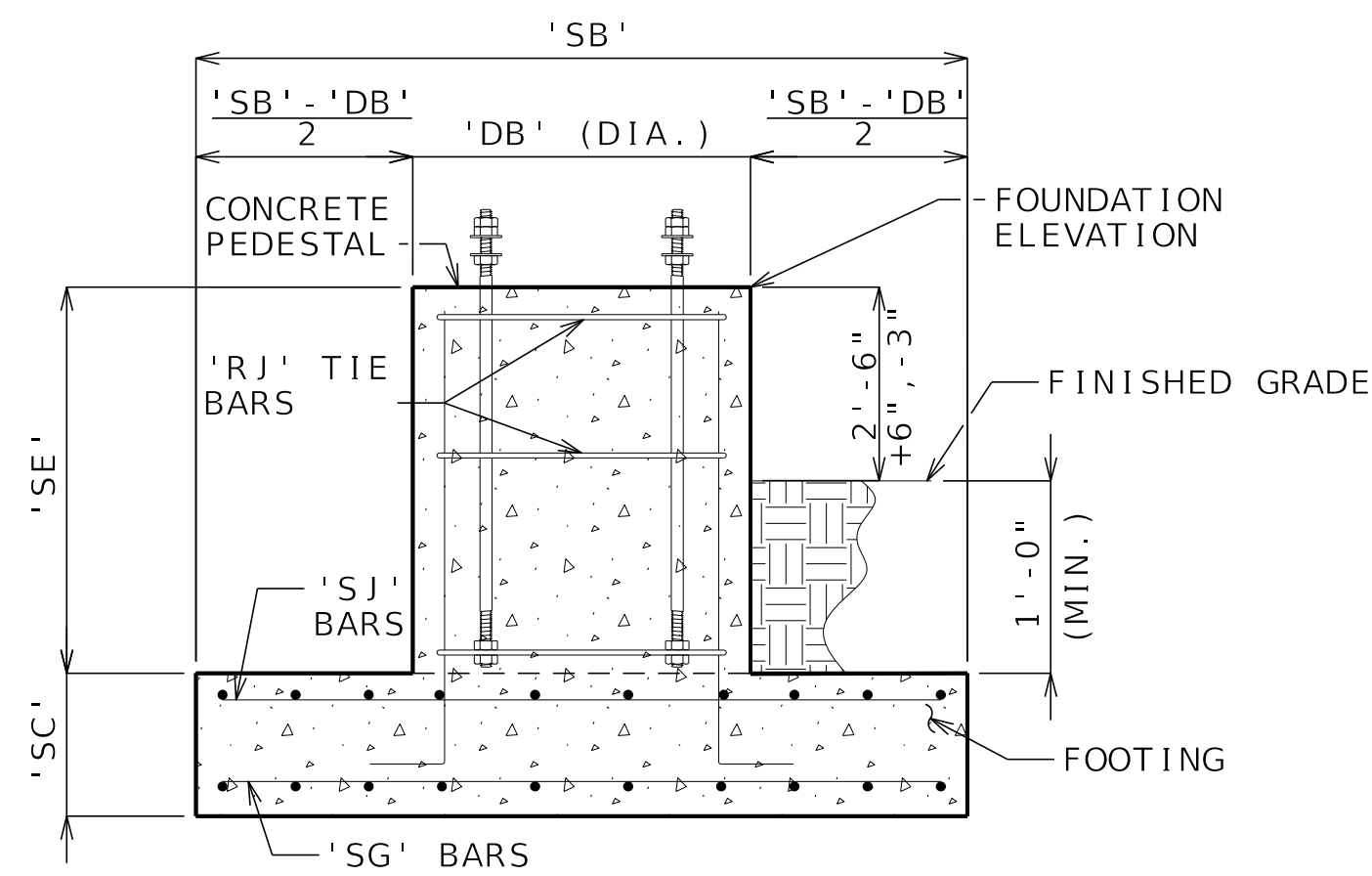
 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
TUBULAR SIGN SUPPORT ANCHOR AND DRILLED SHAFT DETAILS		
DATE EFFECTIVE: DATE PREPARED: 11/10/2025	903.XXX	SHEET NO. 13 OF 15



PLAN

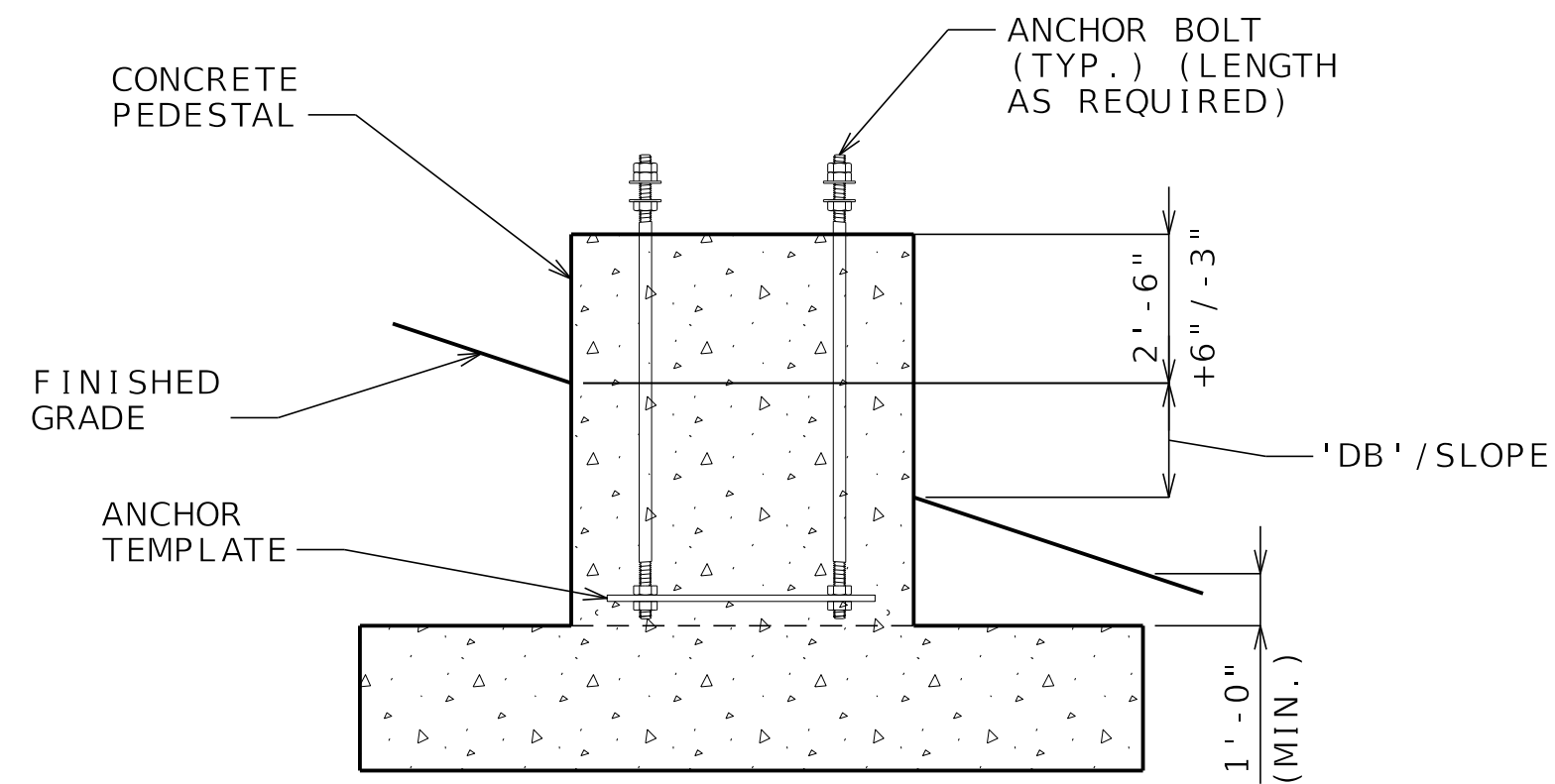


SIDE ELEVATION



FRONT ELEVATION

SPREAD FOOTING



SPREAD FOOTING
ELEVATION ON SLOPE
(REINFORCING NOT SHOWN FOR CLARITY,
MATCH STANDARD REINFORCING)

TYPE NUMBER	FOOTING DIMENSIONS					FOOTING REINFORCEMENT					PEDESTAL REINFORCEMENT			
	SA (FT)	SB (FT)	SC (FT)	DB (FT)	SE (FT)	SF	SG	SH	SJ	SK (IN)	RD (IN)	RJ	RA	RB
C-40-70	13.50	8.00	2.00	4.00	7'-0" (MAX.)	#5	#5	#5	#5	9	12	#5	#8	19
C-30-75	12.00	7.50	2.00	4.00	6'-11" (MAX.)	#5	#5	#5	#5	9	12	#5	#8	19
C-20-75	11.50	7.00	2.00	3.50	6'-8" (MAX.)	#5	#5	#5	#5	9	12	#5	#8	15
C-20-50	11.00	6.00	2.00	3.50	4'-11" (MAX.)	#5	#5	#5	#5	9	12	#5	#8	15
C-40-200	21.00	11.00	2.25	4.50	7'-11" (MAX.)	#7	#5	#5	#5	8	12	#5	#9	19
C-30-200	18.00	10.00	2.25	4.50	7'-8" (MAX.)	#7	#5	#5	#5	9	12	#5	#9	19
B-20-400	20.00	10.50	2.00	4.00	7'-8" (MAX.)	#7	#5	#5	#5	9	12	#5	#8	19

NOTES:

- CONSTRUCTION JOINT ALLOWED, ROUGHEN SURFACE TO 1/4" MINIMUM AMPLITUDE PRIOR TO PEDESTAL POUR.
- SEE OTHER TABLE FOR STRUCTURE TYPE FOR 'BC' ANCHOR BOLT DIAMETER.

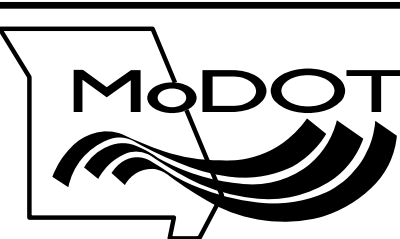
DESIGN SOIL PARAMETERS:

THE WATER TABLE SHALL BE AT THE BOTTOM OF FOOTING ELEVATION OR LOWER.

THE FOUNDATION DIMENSIONS SHOWN ON THIS SHEET HAVE BEEN DESIGNED WITH THE FOLLOWING ASSUMED PROPERTIES:

EXTREME AND STRENGTH LIMIT STATE:
MAXIMUM BEARING PRESSURE: 1.4 KSF
BEARING RESISTANCE FACTOR: 0.50
ALLOWABLE ECCENTRICITY = 1/3 'SA' OR 1/3 'SB'
TWO-WAY ECCENTRICITY LIMITED TO SUM OF ECCENTRICITY DIVIDED BY ALLOWABLE ECCENTRICITY IS EQUAL TO OR LESS THAN 1.0

A SPECIAL FOUNDATION DESIGN IS REQUIRED IN CASES WHERE THE REQUIRED VALUES AND/OR CONDITIONS LISTED ABOVE ARE NOT MET. A SPECIAL FOUNDATION DESIGN MAY BE USED IN CASES WHERE THE VALUES AND CONDITIONS ABOVE ARE EXCEEDED.



MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

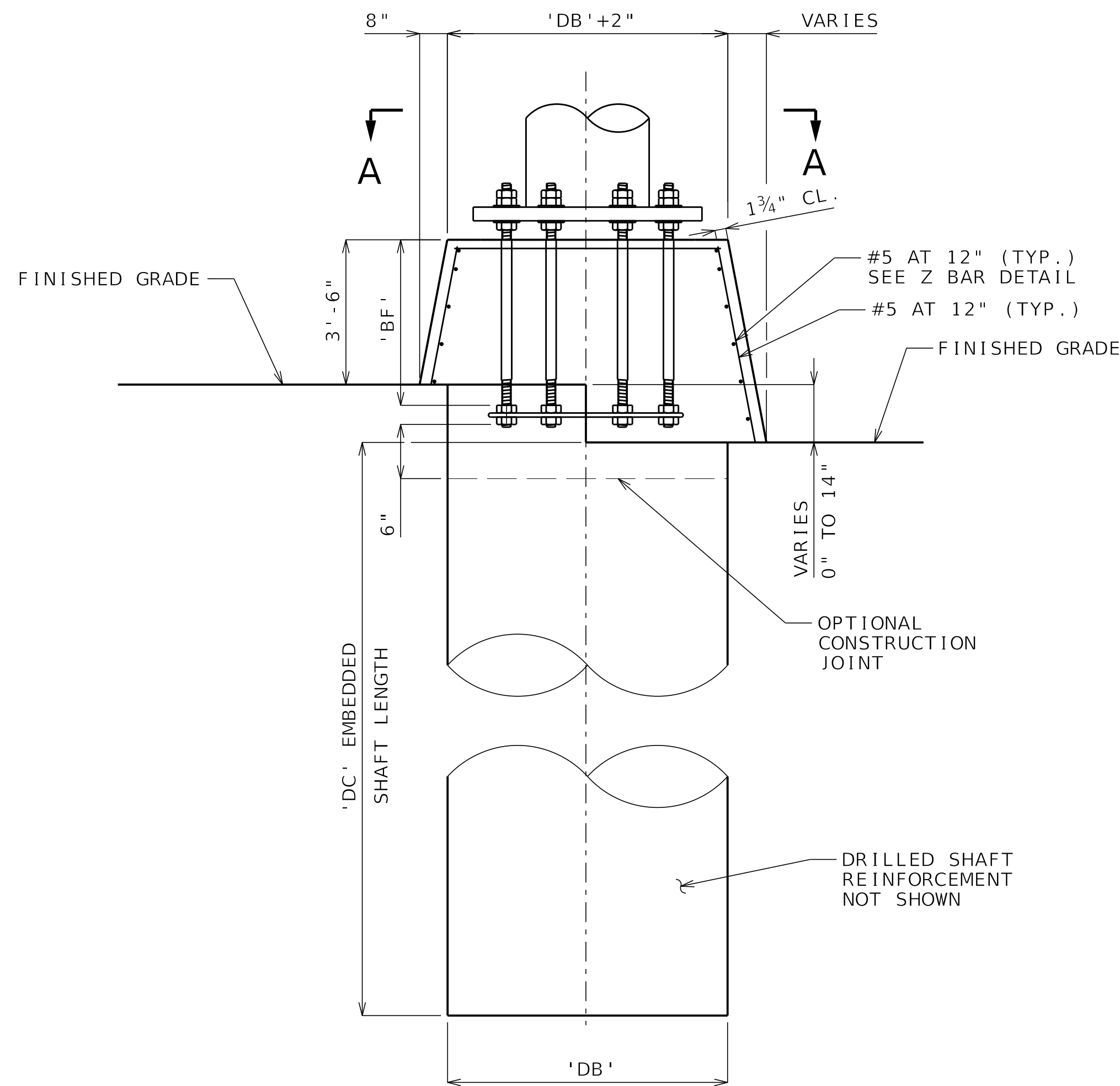
TUBULAR SIGN SUPPORT

SPREAD FOOTING DETAILS

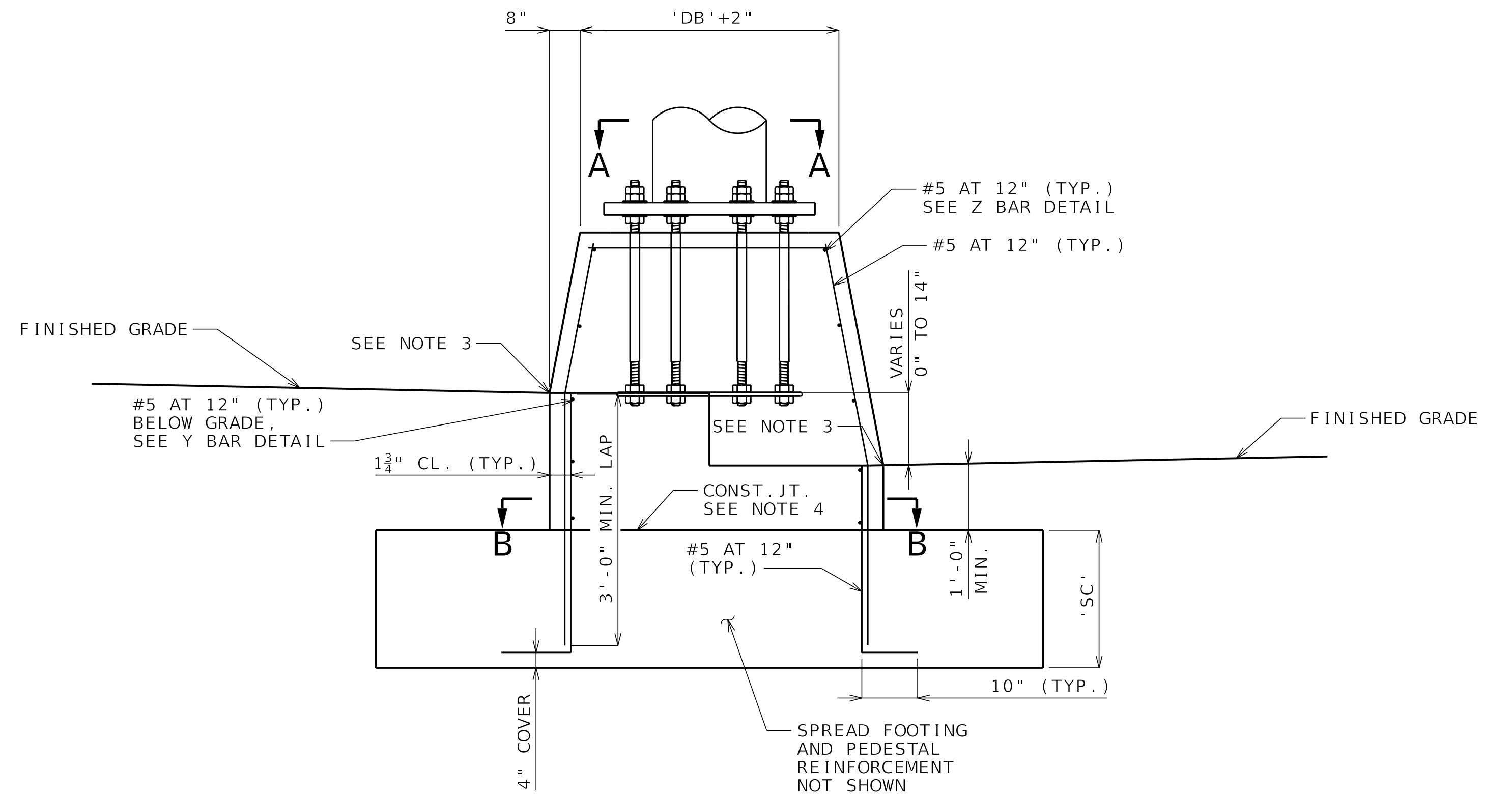
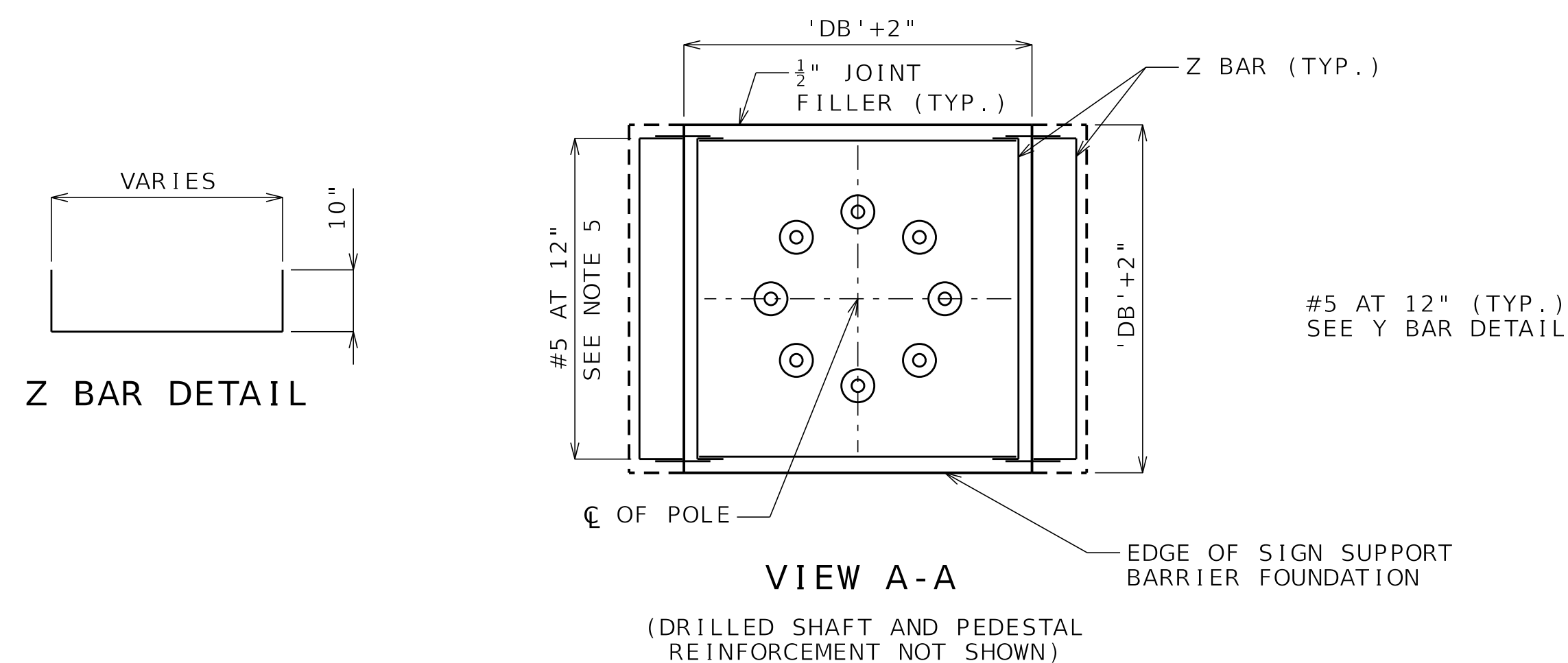
DATE EFFECTIVE:
DATE PREPARED: 11/10/2025

903.XXX

SHEET NO.
14 OF 15



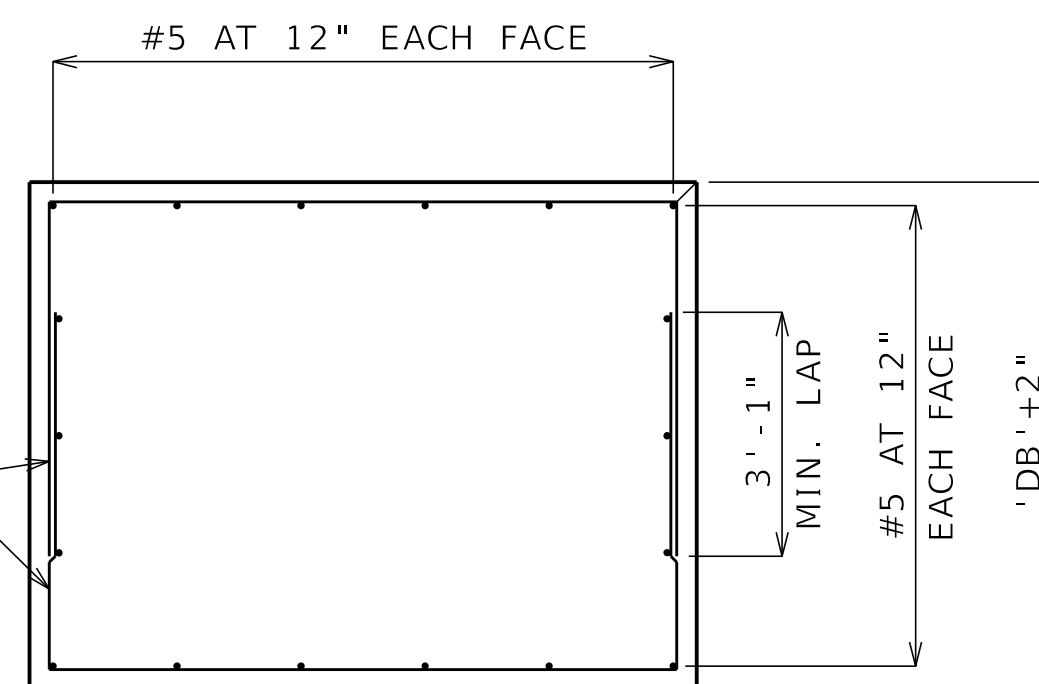
TUBULAR SIGN SUPPORT FOUNDATION AT
BARRIER, DRILLED SHAFT OPTION



TUBULAR SIGN SUPPORT FOUNDATION AT
BARRIER, SPREAD FOOTING OPTION



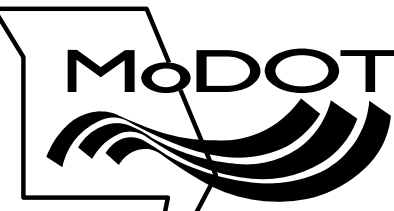
Y BAR DETAIL



SECTION B-B

NOTES:

1. SEE SHEET 5 OF 11 OF STANDARD PLAN 617.10N FOR BARRIER TRANSITION.
2. ALL REINFORCEMENT SHOWN SHALL BE EPOXY COATED. SEE OTHER FOUNDATION DETAILS FOR REINFORCEMENT NOT SHOWN. INCLUDE DRILLED SHAFT REINFORCEMENT FOR DRILLED SHAFT OPTION AND SPREAD FOOTING AND PEDESTAL REINFORCEMENT FOR SPREAD FOOTING OPTION.
3. 1/2" JOINT FILLER IF ADJACENT PAVEMENT IS CONCRETE.
4. CONSTRUCTION JOINT ALLOWED, ROUGH SURFACE TO 1/4" MINIMUM AMPLITUDE PRIOR TO POUR.
5. SHIFT WHEN IN CONFLICT WITH DRILLED SHAFT REINFORCEMENT OR ANCHOR RODS.

 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)		
TUBULAR SIGN SUPPORT BARRIER FOUNDATION DETAILS		
DATE EFFECTIVE: _____ DATE PREPARED: 11/11/2025	903.XXX	SHEET NO. 15 OF 15