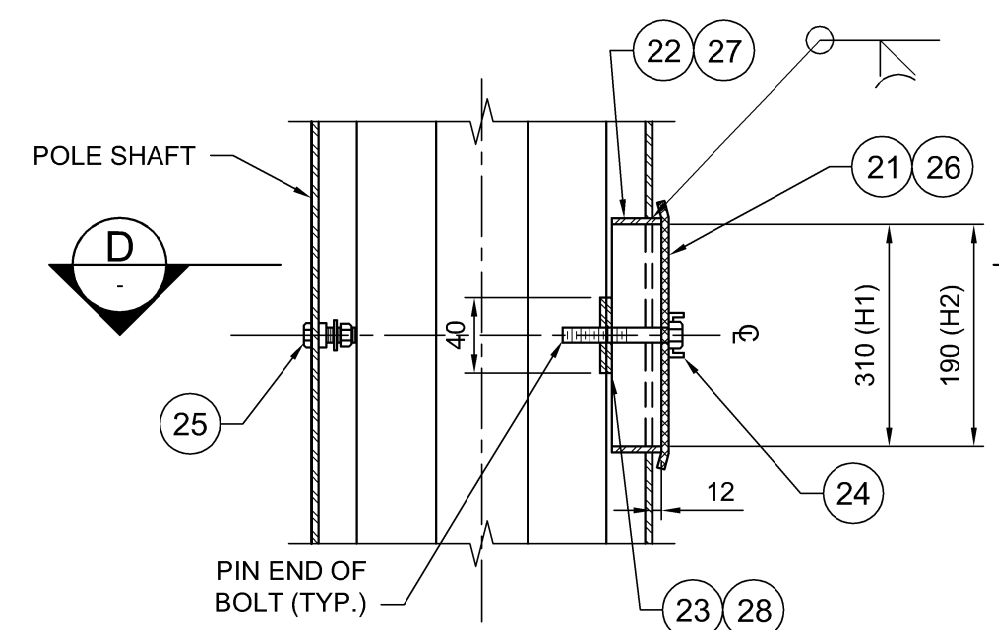
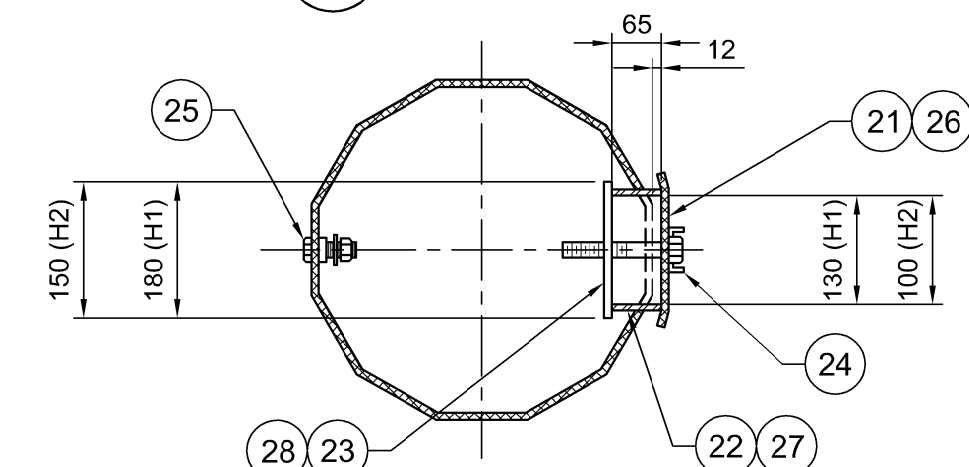


**FRONT ELEVATION**  
1:10



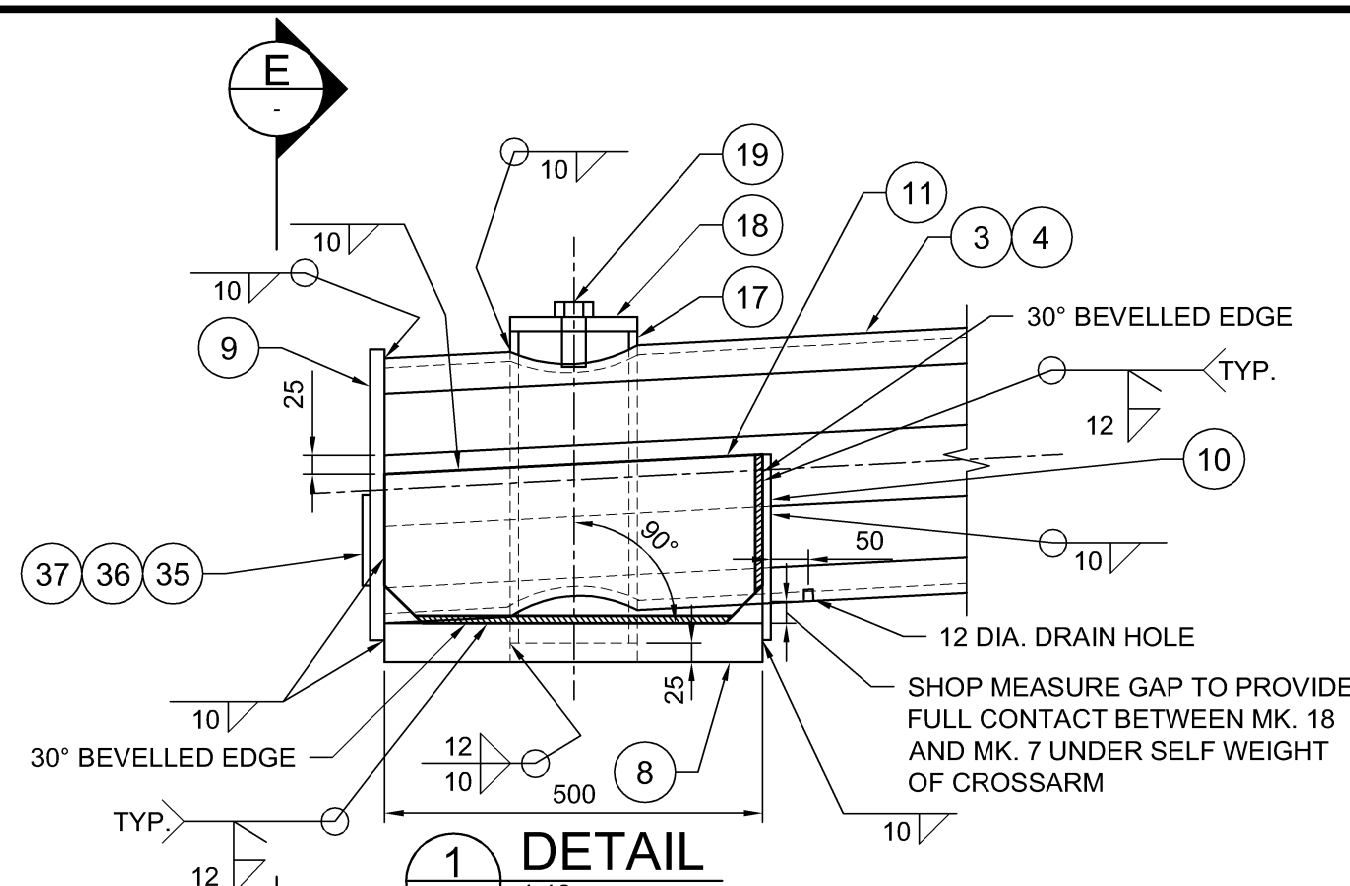
**SECTION C**  
1:10



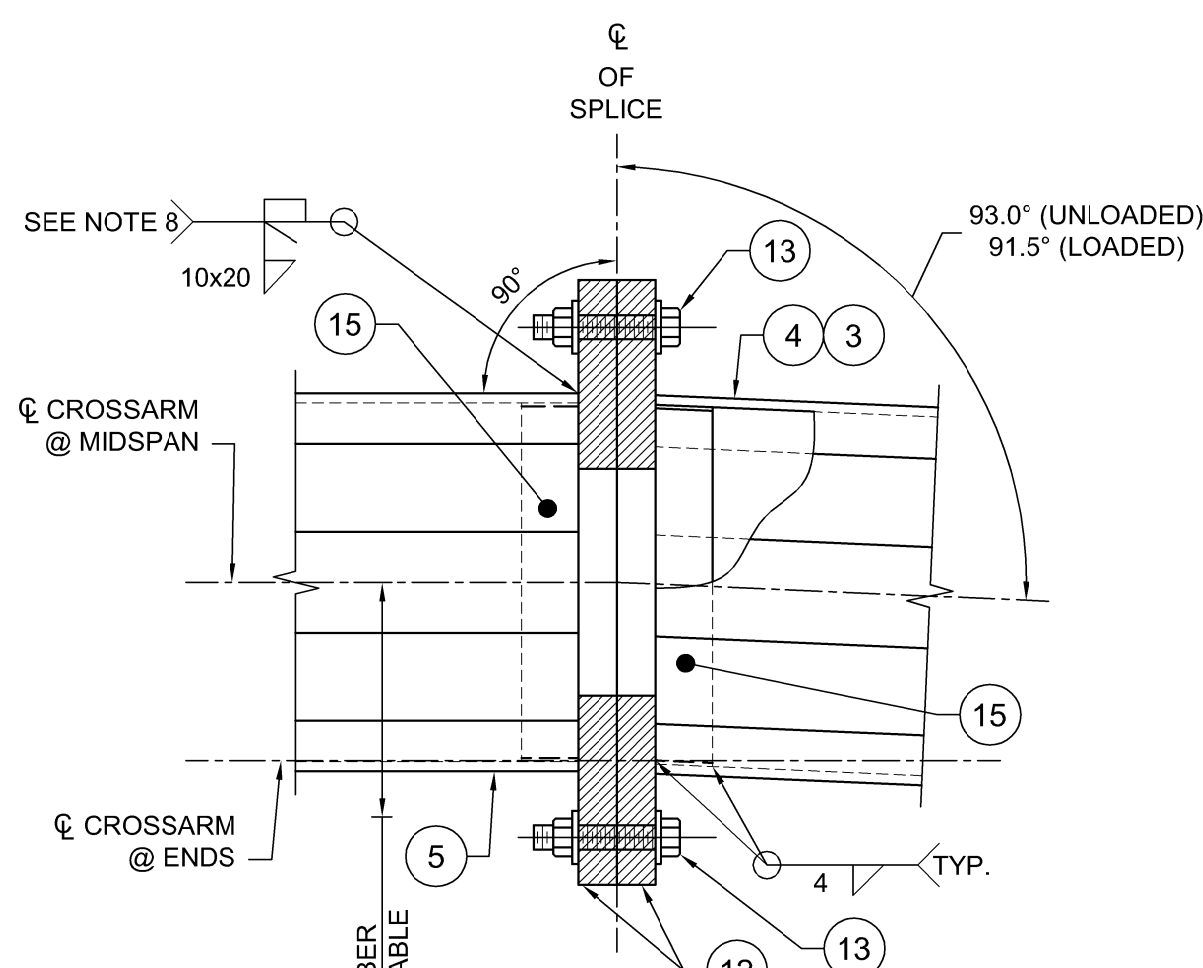
**SECTION D**  
1:10

NOTE: REFER TO ORIENTATION DETAIL FOR LOCATION OF HANDHOLES. WELDED JOINTS TO COMPLETE REINFORCING RING SHALL BE 100% PENETRATION.

**HANDHOLE - MK. H1 & H2**  
1:10

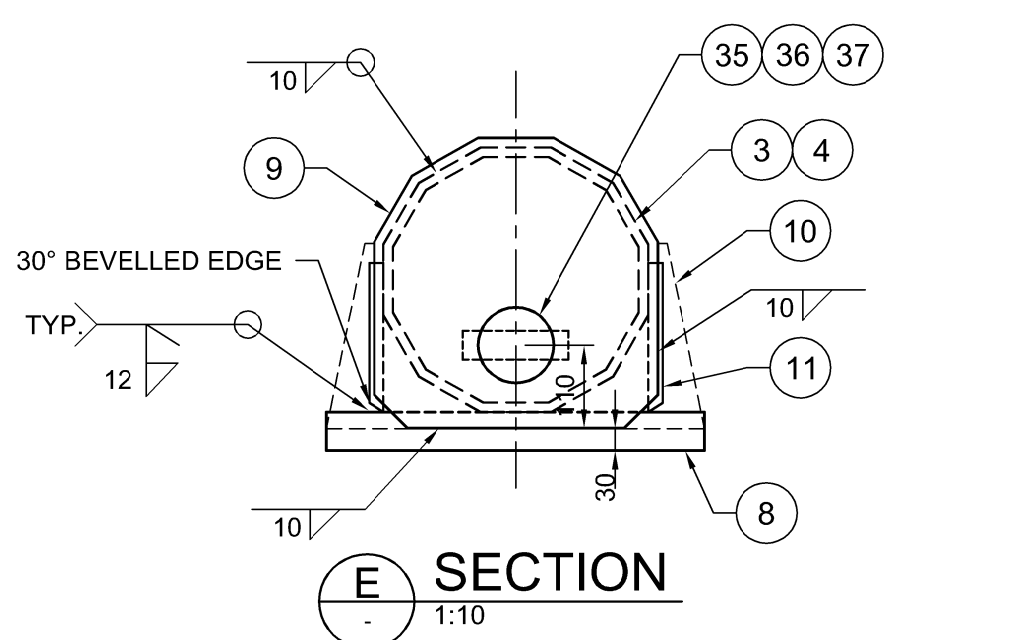


**DETAIL 1**  
1:10  
SHOWING END OF CROSSARM ONLY

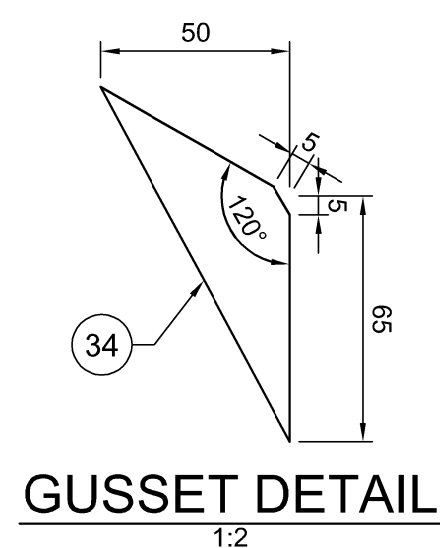


**DETAIL 2**  
1:10

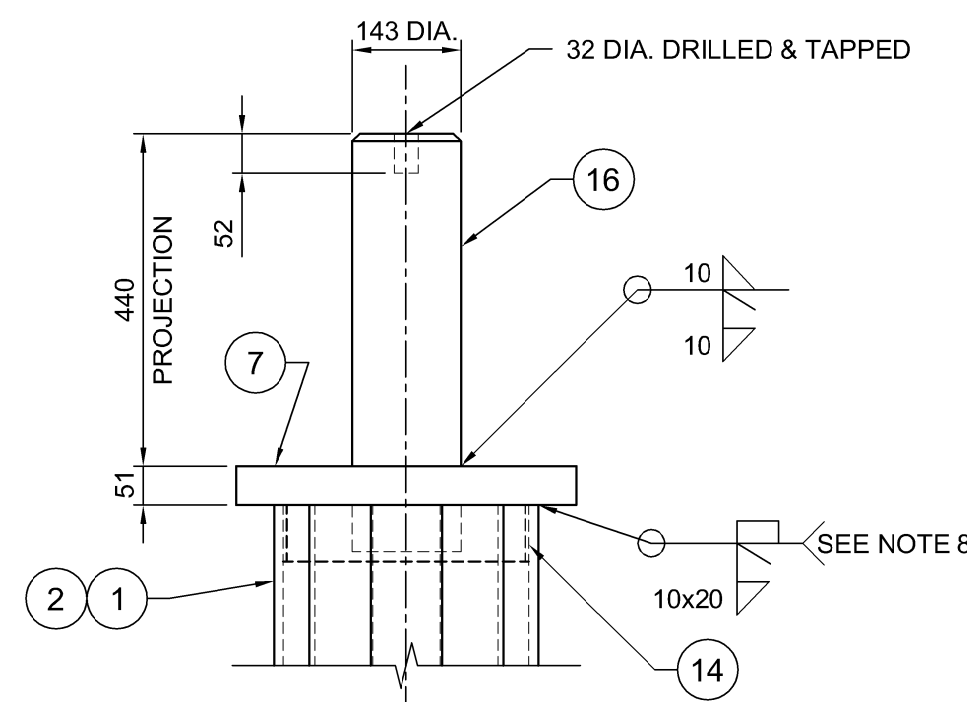
CAMBER TABLE	
CAMBER (UNLOADED)	472 mm
DEFLECTION DUE TO DEAD LOADS (CROSSARMS, ATTACHMENTS)	180 mm
CAMBER (DEAD LOAD ONLY)	292 mm
DEFLECTION DUE TO ICE LOAD	39 mm
CAMBER (DEAD LOAD + ICE LOAD)	253 mm



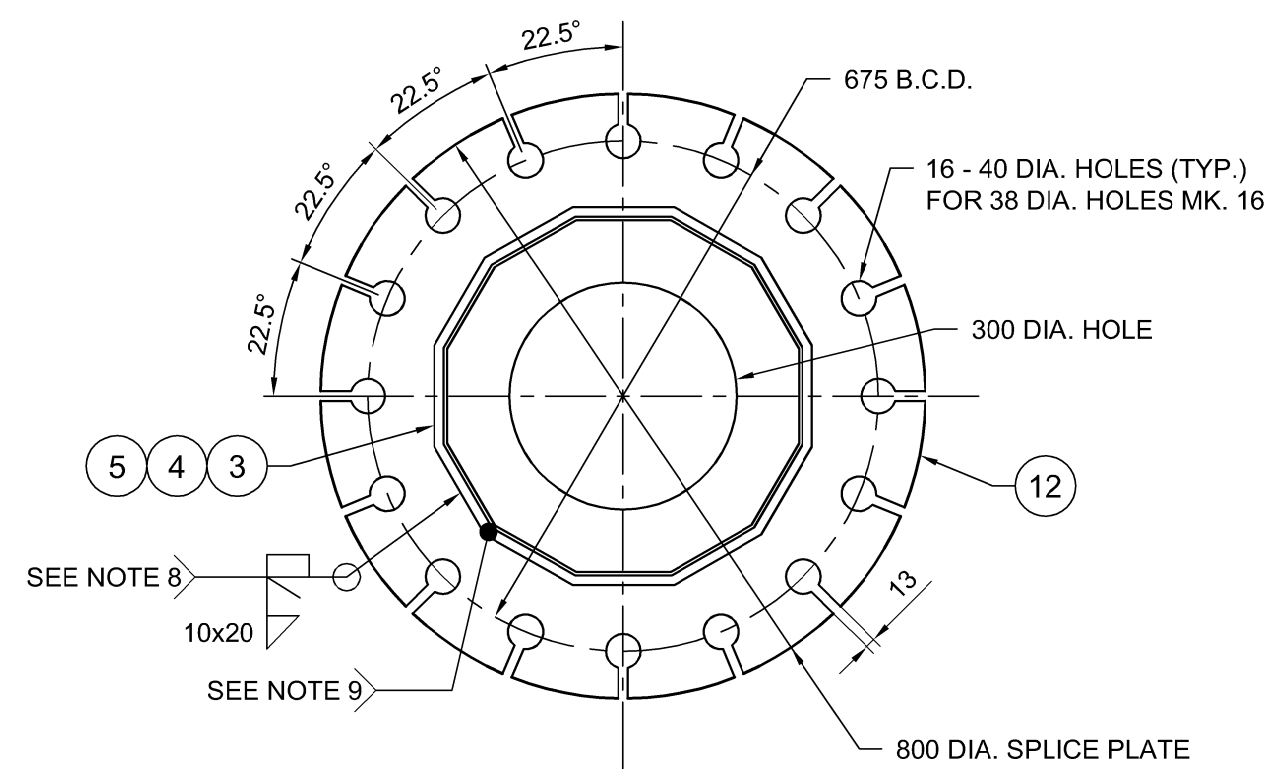
**SECTION E**  
1:10



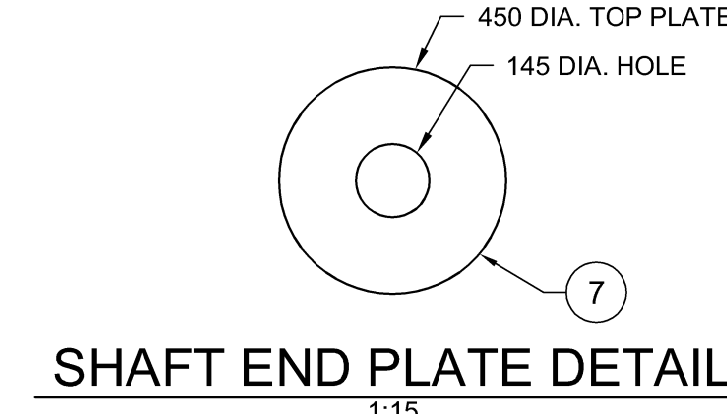
**GUSSET DETAIL**  
1:2



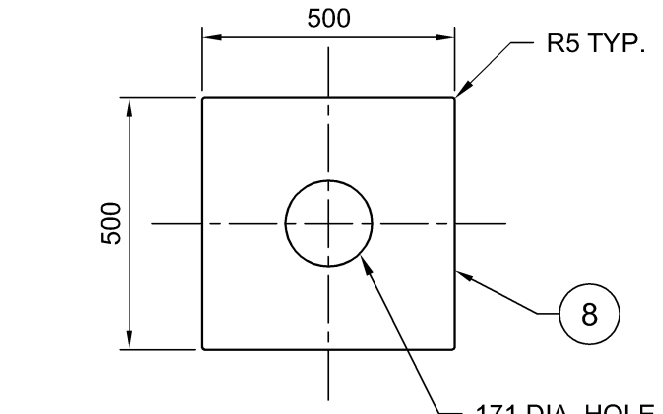
**DETAIL 1**  
1:10  
SHOWING TOP OF SHAFT ONLY



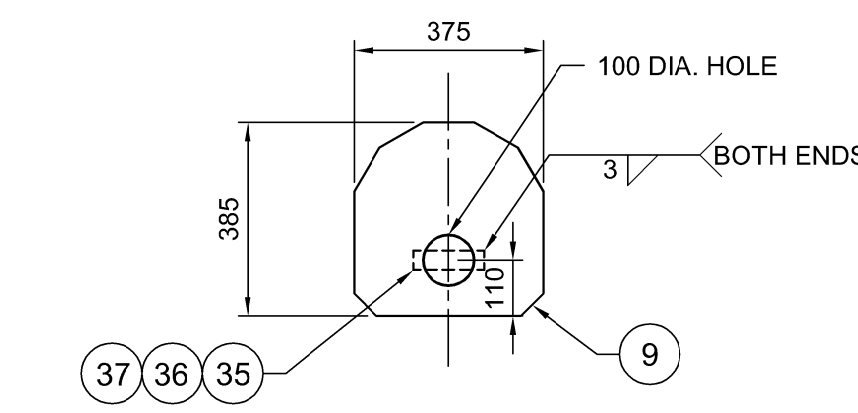
**SPLICE PLATE DETAIL**  
1:10



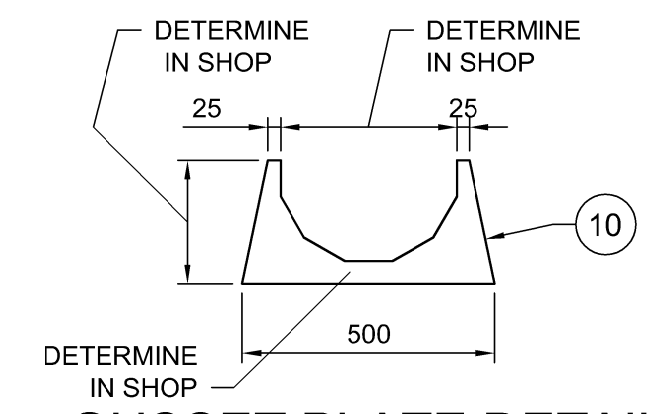
**SHAFT END PLATE DETAIL**  
1:15



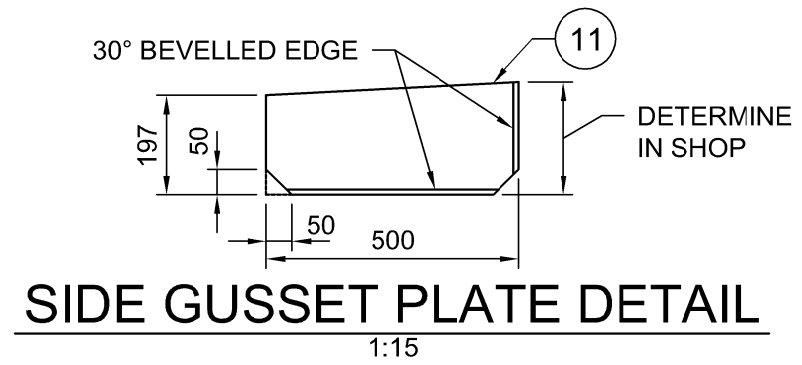
**FLANGE PLATE DETAIL**  
1:15



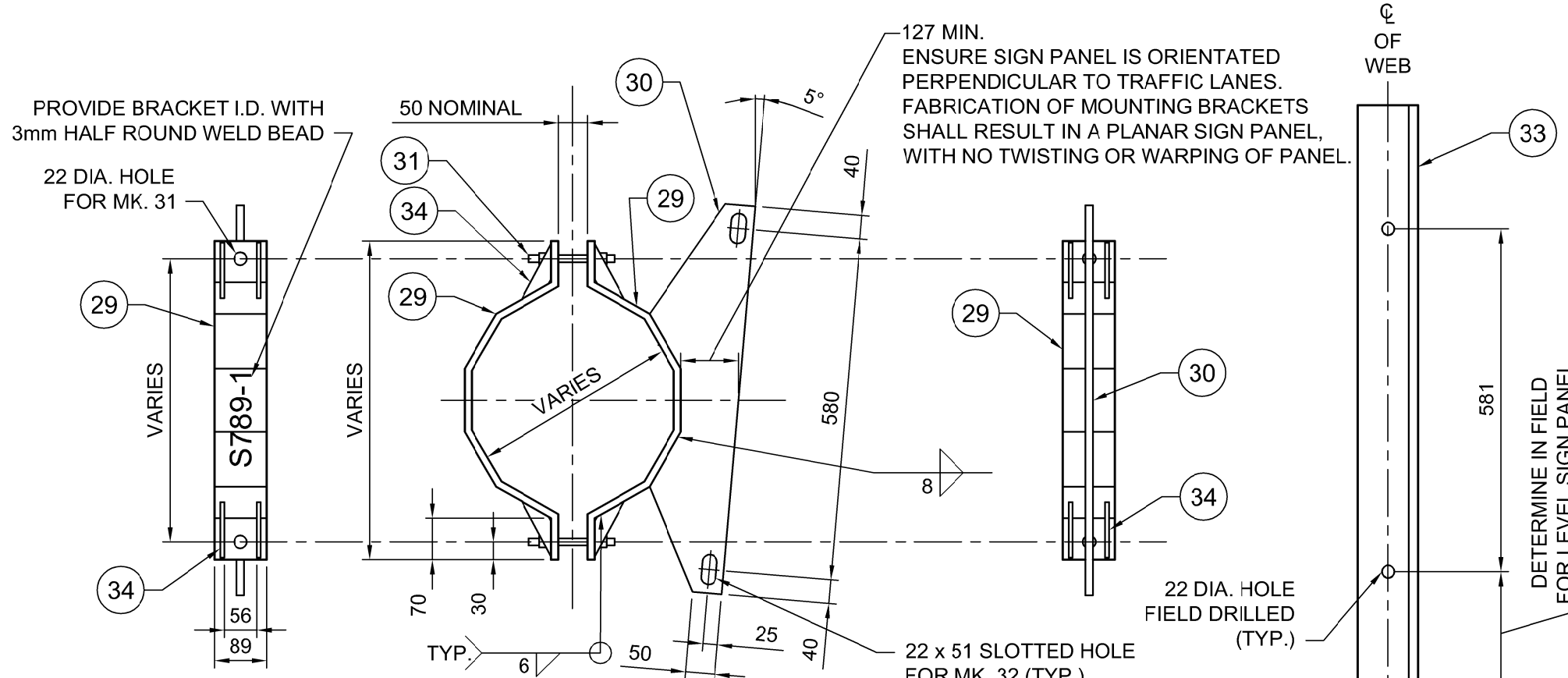
**CROSSARM END PLATE DETAIL**  
1:15



**GUSSET PLATE DETAIL**  
1:15



**SIDE GUSSET PLATE DETAIL**  
1:15



**SIGN MOUNTING BRACKET DETAIL**  
1:10

**\* NOTES ON BILL OF MATERIALS:**

- MARK NO. 13: BOLT (ASTM F3125M, GRADE A325 TYPE 1), NUT (ASTM A563, GRADE DH3), & 2 WASHERS (ASTM F436 TYPE 1).
- MARK NO. 19 C/W THREAD-LOCKER SUCH AS LOCK-TITE BLUE OR APPROVED EQUIVALENT.
- MARK NO. 23 AND 28 C/W 8-DIA. PUNCHED 10 N.C. TAPPED AT THE CENTER OF PLATE.
- MARK NO. 24 C/W CUP WASHER.
- MARK NO. 25 C/W 2-10 DIA. HEX NUT, 2-TERMINAL WASHER & 1-LOCKWASHER.
- MARK NO. 32 C/W NUT, 2 WASHERS AND 1 LOCKWASHER.

**METRIC**

WHOLE NUMBERS INDICATE MILLIMETRES  
DECIMALIZED NUMBERS INDICATE METRES

**WARNING**

IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT THE CONTRACTOR MUST:

- NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
- TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS SEE PROVINCIAL REGULATION 210/72 FOR DETAILS.
- OBTAIN EXCAVATION PERMITS PRIOR TO CONSTRUCTION.

**BILL OF MATERIALS**

MK.	QTY.	DESCRIPTION
1	1	DODECAGONAL SHAFT 450 A/F TO 350 A/F x 12.7
2	1	DODECAGONAL SHAFT 450 A/F TO 350 A/F x 12.7
3	1	DODECAGONAL CROSSARM 350 A/F TO 500 A/F x 12.7
4	1	DODECAGONAL CROSSARM 350 A/F TO 500 A/F x 12.7
5	1	DODECAGONAL CROSSARM 500 A/F x 12.7
6	2	BASE PLATE 750 DIA. x 51 THICK
7	2	SHAFT END PLATE 450 O.D. x 145 I.D. x 51 THICK
8	2	FLANGE PLATE 500 SQ. x 51 THICK
9	2	CROSSARM END PLATE 19 THICK
10	2	GUSSET PLATE 19 THICK
11	4	SIDE GUSSET PLATE 19 THICK
12	4	SPLICE PLATE 800 DIA. x 51 THICK (GR. 300W)
13	32	38 DIA. BOLTS C/W NUT & 2 WASHERS, GALV.
14	4	BACKUP STRIP 4.76 x 75 (FOR SHAFTS)
15	4	BACKUP STRIP 6 x 75 (FOR CROSSARMS)
16	2	SOLID ROUND PIN 143 DIA. x 600 LONG
17	2	6" SCH. 80 PIPE (168 O.D.) 415 LONG
18	2	PIN PLATE 168 O.D. 19 THICK
19	2	HEX HEAD BOLT 32 DIA. SAE GRADE 5 GALV.
20	64	PLATE WASHER 13 THICK
HANDHOLE MARK H1 (2 REQUIRED)		
21	1	COVER PLATE 11 GA. x 160 x 340 (ASTM A569)
22	1	REINFORCING RING 8 x 65 x 830
23	2	CLAMP BAR 6 x 40 x 180
24	2	10 DIA. x 140 BOLT S/S (TYPE 316)
25	1	GROUND STUD ASSEMBLY 10 DIA. x 40
HANDHOLE MARK H2 (2 REQUIRED)		
26	1	COVER PLATE 11 GA. x 130 x 220 (ASTM A569)
27	1	REINFORCING RING 8 x 65 x 555
28	1	CLAMP BAR 6 x 40 x 150
24	1	10 DIA. x 140 BOLT S/S (TYPE 316)
25	1	GROUND STUD ASSEMBLY 10 DIA. x 40
SIGN MOUNTING BRACKET (12 REQUIRED)		
29	2	CLAMP BAR 89 x 12 (LENGTH TO SUIT)
30	1	BRACKET PLATE 12 THICK
31	2	19 DIA. ASTM F1554 GRADE 55 THREADED ROD C/W 2 A563 GRADE A NUTS & F436 WASHER AND LOCK WASHER (ALL GALVANIZED)
32	2	19 DIA. x 50 S/S BOLT (TYPE 316)
33	1	ALUMINUM T-BAR 6061-T6 ASTM B221 102 x 76 x 8 LENGTH TO SUIT SIGN PANEL HEIGHT
34	8	GUSSET PLATE 6 THICK
35	2	CAP PLATE, 120 DIA. x 3 THICK
36	2	CAP RETAINER BACKING BAR 140 x 38 x 6, C/W THREADED HOLE AT CENTER FOR MK. 31
37	2	10 DIA. S/S BOLT C/W FLAT S/S WASHER



DESIGNED BY	DRA	CHECKED BY	SSR
DRAWN BY	MDG	APPROVED BY	MBL
HOR. SCALE	AS SHOWN	RELEASED FOR CONSTRUCTION	
VERTICAL	AS SHOWN		
ISSUED FOR TENDER	18/02/09	DRA	
NO. REVISIONS	DATE	BY	DATE
			2018/02/09

ENGINEER'S SEAL  
PROVINCE OF MANITOBA  
D.R.C. AMORIM  
Member 33215  
REGISTERED PROFESSIONAL ENGINEER  
CONSULTANT PROJECT NUMBER  
17-5932

**THE CITY OF WINNIPEG**  
PUBLIC WORKS DEPARTMENT  
Winnipeg  
**FERMOR AVENUE BRIDGE OVER SEINE RIVER**  
BRIDGE RE-HABILITATION, PEDESTRIAN-CYCLIST UNDERPASS STRUCTURE AND ROADWORKS FROM ST. ANNE'S ROAD TO ARCHIBALD STREET  
CITY DRAWING NUMBER  
P-3489-2017-CS-096  
SHEET 096 OF 100  
CONSULTANT DRAWING NUMBER  
CS-096  
S789 - FABRICATION DETAILS 2