

Weld No.	Rec'd	Size	ANSI Rating	Service	Obj. of	Protection	Welding	Fillet Weld Size	Bill of Mat'l	Remarks	Elevation	Angle
N1	1	#16 [406mm]	SX350 LP2 150F	WASTE GAS INLET CONNECTION	Nozzle Neck	inside	Fluorid	Detail Number	A	B	C	D
N2	1	#2 [60.3mm]	SX350 LP2 150F	GAS ASSIST INLET CONNECTION	2.3/8" [60.3]	0"	24	3.5	3/8"	1.11	4.28	225

Rev.	Description	By	M	D	
3	UPDATED PILE LAYOUT DIMENSION (ANCHOR RADIUS)	EW	08	01	22
2	AS BUILT	AL	07	09	12
1	REVISED SOME HEIGHT DIMENSIONS	AL	07	09	12
0	ISSUED FOR APPROVAL PURPOSES	EW	07	06	18

**General Notes:**  
 100% RADIOGRAPHY TESTING ON ALL LONGITUDINAL & CIRCUMFERENTIAL BUTT WELDS IN CONTACT WITH FLARE GAS  
 100% MAGNETIC PARTICLE OR DYE PENETRANT TESTING OF ALL LOAD BEARING FILLET WELDS (CARBON & S.S.)

**Tag #:**  
 Max. Horiz. Load At Base: 3,011 LBS.  
 Max. Vertical Load At Base: 30,447 LBS.

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**Paint:**  
 SANDBLAST SSPC-SP6  
 RUSTOLEUM 4285 GRAY FINISH

**Ignition System**  
 RETRACTABLE FUEL GAS (45°)  
 PILOT MODEL TSI#6 c/w AUTO RELITE  
 SYSTEM MODEL TPMR-A FS 120VAC

**Approx. Weight:** 11,005 LBS.  
**Mag Particle Procedure:** NO  
**Radiography / Xray:** 90% OF BUT WELDS IN CONTACT WITH W.G.

**Coolant Tracing:** NO  
**Aluminum Cladding:** NO  
**Corrosion Allowance:** .0625"  
**Weld Procedure #:** #1323.2  
**Q.C. Program #:** AQP-1266

**Dwg. By:** EMW  
**DWG#:** HUS-7-4674a  
**Date:** 07 06 18  
**Y M D**

**Salesperson:** JOHN CASSIDY  
**JOB#:** 7-4674  
**QUOTE#:** JC07-ST135

**Title:** #16" x 131'-0" TALL GUYWIRE SUPPORTED FLARE STACK c/w #16" INLET CONNECTION  
**Customer:** HUSKY OIL OPERATIONS LTD.  
**P.O.#:** 4500192187  
**REV.:** 3  
**EDSON, ANSELL**  
 CODE 222009089

**TORNADO Technologies Inc.**

**PHONE# (403)883-2400**  
**FAX# (403)883-2550**  
**TOLL FREE# 1-800-661-4128**  
**WEB SITE: WWW.TORNADOTECH.NET**

**UPPER GUYWIRE LUG CONNECTIONS**

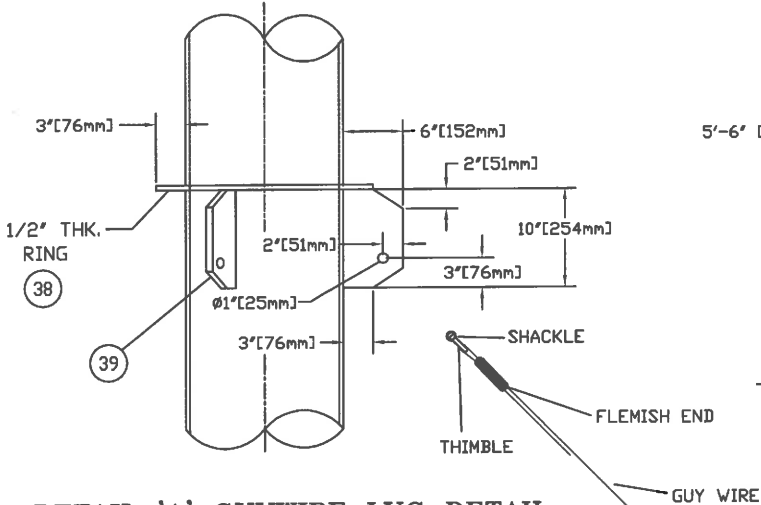
ONE - 1" G2130 SCREW PIN SAFETY SHACKLE  
 ONE - 5/8" GALVANIZED HEAVY THIMBLE  
 LOT - 5/8" 6 x 26 GALV. IRWC CABLE  
 (TYP. 3 SETS TOP)

**MIDDLE GUYWIRE LUG CONNECTIONS**

ONE - 7/8" G2130 SCREW PIN SAFETY SHACKLE  
 ONE - 1/2" GALVANIZED HEAVY THIMBLE  
 LOT - 1/2" 6 x 26 GALV. IRWC CABLE  
 (TYP. 3 SETS TOP)

**LOWER GUYWIRE LUG CONNECTIONS**

ONE - 7/8" G2130 SCREW PIN SAFETY SHACKLE  
 ONE - 1/2" GALVANIZED HEAVY THIMBLE  
 LOT - 1/2" 6 x 26 GALV. IRWC CABLE  
 (TYP. 3 SETS TOP)



**DETAIL 'A' GUYWIRE LUG DETAIL**

**UPPER GUYWIRE BASE CONNECTIONS**

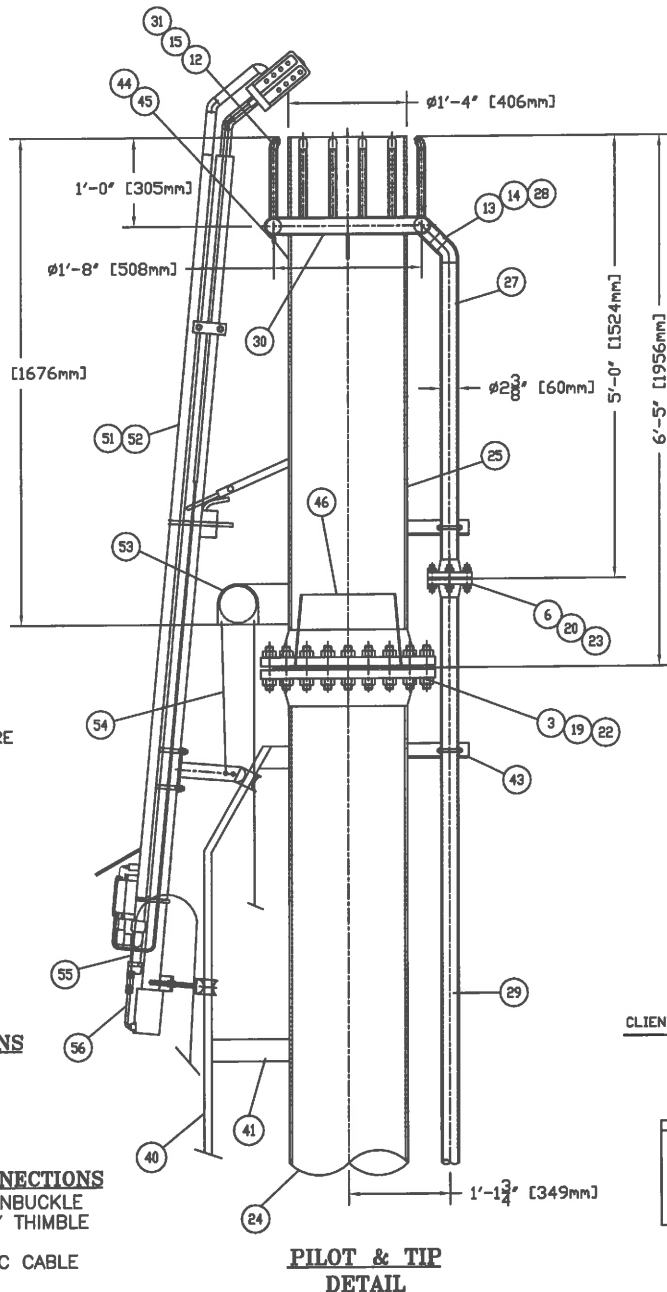
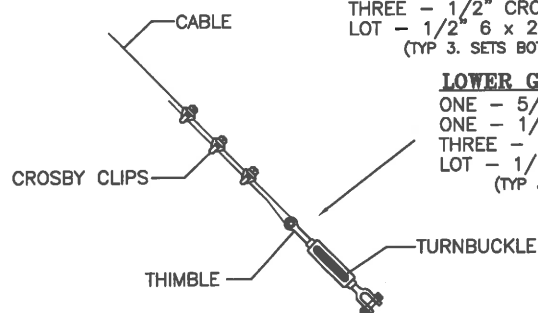
ONE - 1" x 18" J & J TURNBUCKLE  
 ONE - 5/8" GALVANIZED HEAVY THIMBLE  
 THREE - 5/8" CROSBY CLIPS  
 LOT - 5/8" 6 x 26 GALV. IRWC CABLE  
 (TYP. 3. SETS BOTTOM)

**MIDDLE GUYWIRE BASE CONNECTIONS**

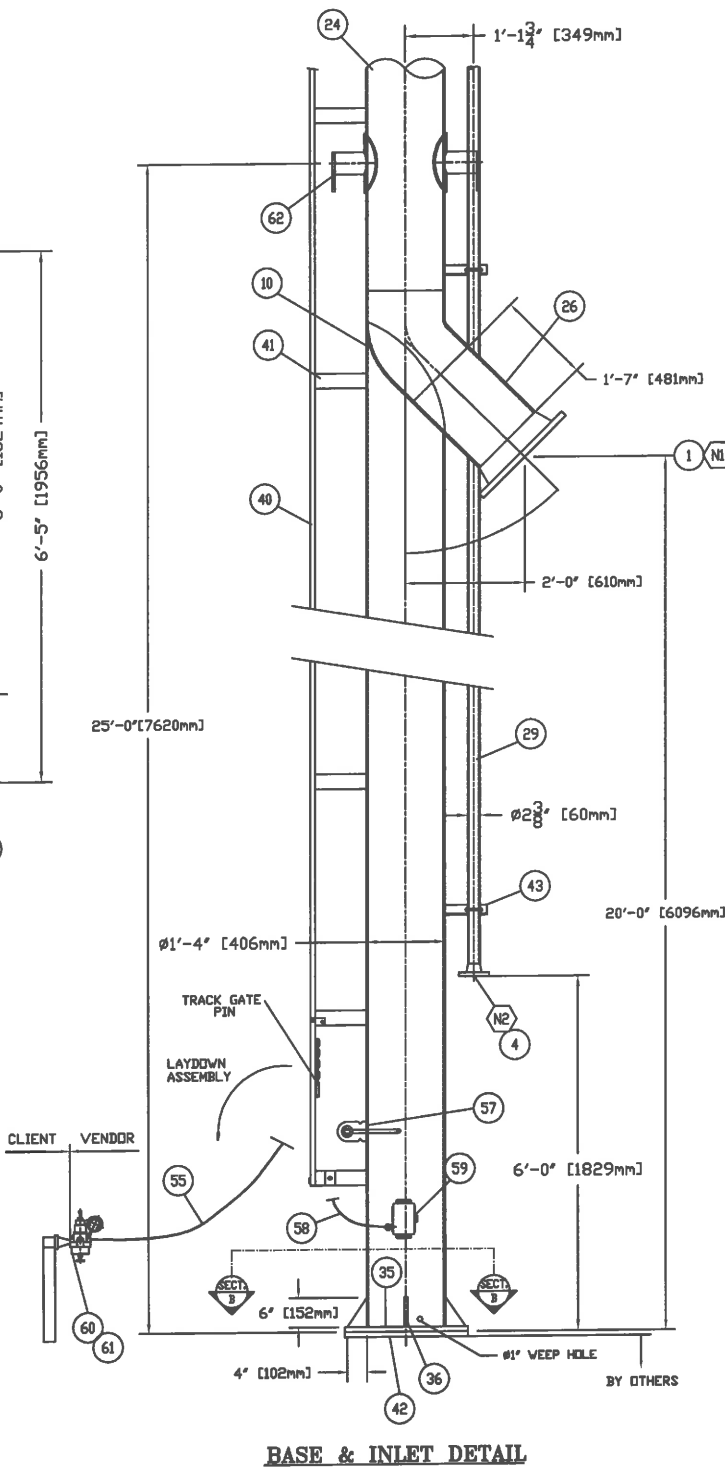
ONE - 5/8" x 18" J & J TURNBUCKLE  
 ONE - 1/2" GALVANIZED HEAVY THIMBLE  
 THREE - 1/2" CROSBY CLIPS  
 LOT - 1/2" 6 x 26 GALV. IRWC CABLE  
 (TYP. 3. SETS BOTTOM)

**LOWER GUYWIRE BASE CONNECTIONS**

ONE - 5/8" x 18" J & J TURNBUCKLE  
 ONE - 1/2" GALVANIZED HEAVY THIMBLE  
 THREE - 1/2" CROSBY CLIPS  
 LOT - 1/2" 6 x 26 GALV. IRWC CABLE  
 (TYP. 3. SETS BOTTOM)



**PILOT & TIP DETAIL**



**BASE & INLET DETAIL**

**Bill of Materials**

No	Qty	Size	Sch.	Rating	Face	Type	Material Specification	Remarks	Heat#
1	1	#16[406]	STD.	150#	R.F.	W.N.	SA350 LF2	N1 - FLARE GAS INLET CONNECTION	19086
2	4	#16[406]	STD.	150#	R.F.	W.N.	SA350 LF2	STACK FLUE BREAK FLANGES	19086
3	2	#16[273]	STD.	150#	R.F.	W.N.	SA350 LF2	STACK TIP BREAK FLANGES	19086
4	1	#2[60.3]	XH	150#	R.F.	W.N.	SA350 LF2	N2 - GAS ASSIST INLET CONNECTION	10939
5	4	#2[60.3]	XH	150#	R.F.	W.N.	SA350 LF2	GAS ASSIST RISER BREAK FLANGES	10939
6	2	#2[60.3]	XH	150#	R.F.	W.N.	SA350 LF2	GAS ASSIST TIP BREAK FLANGES	10939
7									
8									
9									
10	1	#16[406]	STD.	45			SA 420 WPL6	STACK INLET CONN. WELD ELL	203042
11									
12	10	#3/4[217]	80	45			316L S.S.	INJECTOR TIP WELD ELL	37465
13	1	#2[60.3]	80	45			316L S.S.	GAS ASSIST TIP WELD ELL	42930
14	1	#2[3603]	80				316L S.S.	GAS ASSIST TIP WELD TEE	56806
15	10	#3/4[27]		#13 ORIFICE			316L S.S., SCH. 80	INJECTOR TIPS	
16									
17									
18	2	#16[406]	SPIRAL	WOUND			FLEXITALIC 304 S.S.	STACK FLUE BREAK FLANGES	
19	2	#16[406]	SPIRAL	WOUND			FLEXITALIC 304 S.S.	STACK TIP BREAK FLANGES	
20	3	#2[60.3]	SPIRAL	WOUND			FLEXITALIC 304 S.S.	GAS ASSIST RISER BREAK FLANGES	
21	32	16	2	1[25]	7[178]		SA193 B7M SA194 2HM 2,18	STACK FLUE BREAK FLANGES	
22	16	16	1	1[25]	7.25[184]		SA193 B7M SA194 2HM 3,19	STACK TIP BREAK FLANGES	
23	12	4	3	#5/8"	4.25[108]		SA193 B7M SA194 2HM 5,6,20	GAS ASSIST RISER BREAK FLOS.	
24	1	#16[406]	SMLS	STD.			SA333 GR. 6 x 125'-0"[38100mm] LG.	STACK FLUE	50496
25	1	#16[406]	TP	312	STD.		316L S.S. x 6'-0"[1829mm] LG.	STACK FLUE TIP	VL608000
26	1	#16[406]	SMLS	STD.			SA333 GR. 6 x 1'-7"[481mm] LG.	N1 - FLARE GAS INLET EXT.	50496
27	1	#2[60.3]	TP	312	80		316L S.S. x 3'-4 1/4"[1022] LG.	GAS ASSIST RISER TIP	0600-128
28	1	#2[60.3]	TP	312	80		316L S.S. x 1[25] LG.	GAS ASSIST RISER TIP	0600-128
29	1	#2[60.3]	SMLS	XH			SA333 GR. 6 x 120'-0"[36576] LG.	GAS ASSIST RISER	0625941V
30	1	#2[60.3]	SMLS	80			316L S.S. x 1'-8"[508] DIA. C/L	ROLLED INJECTOR RING	
31	10	#3/4[27]	SMLS	80			316L S.S. x 9 1/4"[235] LG.	VERTICAL INJECTOR RISERS	0546069
32									
33									
34									
35	1	25" x 25"					1" THK. SA 516-70N CS PLATE	BASEPLATE	54878
36	4	6" x 4"					1/2" THK. SA 516-70N CS PLATE	BASEPLATE GUSSETS	6400H-04
37									
38	3	#22[559mm] O.D. x 16 1/4" I.D.					1/2" THK. SA 516-70N CS PLATE	GUYWIRE SUPPORT RING	6400H-04
39	9	10" x 5"					1/2" THK. SA 516-70N CS PLATE	GUYWIRE LUGS	6400H-04
40	LOT	2" x 1"					1/8" THK. HSS TUBING	PILOT TRACKING	
41	LOT	3[76mm] FLAT					1/4" THK. SA 38 CS PLATE	TRACKING SUPPORTS	
42	1	25" x 25"					1" THK. SA 516-70N CS PLATE	MATING BASEPLATE	
43	LOT	2" x 2" x 1/4" ANGLE IRON					c/w U-BOLT CLAMPS	RISER STANDOFF BRACKETS	
44	3	2 3/4[70] x 3 1/4[82]					1/4" THK. 316L S.S. PLATE	INJECTOR RING SUPPORT PLATE	
45	1	1 3/8[35] x 2 1/2[64]					1/4" THK. 316L S.S. PLATE	INJECTOR RING LOCKDOWN TAB	
46	1	#16[406mm] FLANGED TYPE					304L S.S. PLATE	VELOCITY AIRRESTOR	
47									
48									
49									
50									
51	1								
52	1								
53	1								
54	LOT								
55	LOT								
56	LOT								
57	1								
58	LOT								
59	1								
60	1								
61	1								
62	2								
63	2								

Rev.	Description	By	Y	M	D
3	AS BUILT	AL	07	09	12
2	REVISED TIP DIMENSION	AL	07	09	12
1	UPDATED PART ITEM #26	EW	07	08	13
0	ISSUED FOR APPROVAL PURPOSES	EW	07	06	18

**General Notes:**  
 100% RADIOGRAPHY TESTING ON ALL LONGITUDINAL & CIRCUMFERENTIAL BUTT WELDS IN CONTACT WITH FLARE GAS.  
 100% MAGNETIC PARTICLE OR DYE PENETRANT TESTING OF ALL LOAD BEARING FILLET WELDS (CARBON & S.S.)

**Tag #:**  
 Max. Horiz. Load At Base: 3,011 LBS.  
 Max. Vertical Load At Base: 30,447 LBS.

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**Paint:** SANDBLAST SSPC-SP6  
 RUSTOLEUM 4285 GRAY FINISH

**Ignition System:** RETRACTABLE FUEL GAS (45') PILOT MODEL TSI#6 c/w AUTO RELITE SYSTEM MODEL TPMA-A FS 120VAC

**Approx. Weight:** 11,005 LBS.

**Mag Particle Procedure:** NO

**Radiography / Xr:** 100% OF BUTT WELDS IN CONTACT WITH W.G.

**Coolant Tracing:** NO

**Aluminum Cladding:** NO

**Corrosion Allowance:** .0625"

**Weld Procedure #:** #1323.2

**Q.C. Program #:** AQP-1266

**Dwg. By:** EMW  
**DWG#:** HUS-7-4674b

**Date:** 07 06 18  
 Y M D

**Salesperson:** JOHN CASSIDY

**JOB#:** 7-4674  
**QUOTE#:** JC07-ST135

**Sheet:** 2 of 3

**Title:** #16" x 131'-0" TALL GUYWIRE SUPPORTED FLARE STACK c/w #16" INLET CONNECTION

**Customer:** HUSKY OIL OPERATIONS LTD.

**P.O.#:** 4500192187

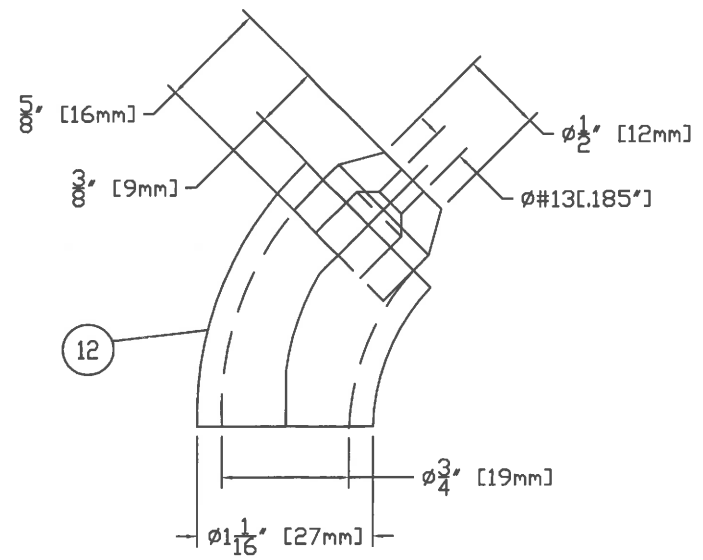
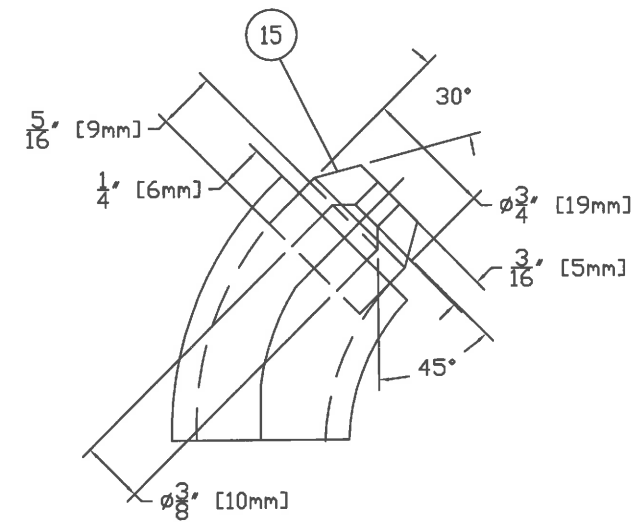
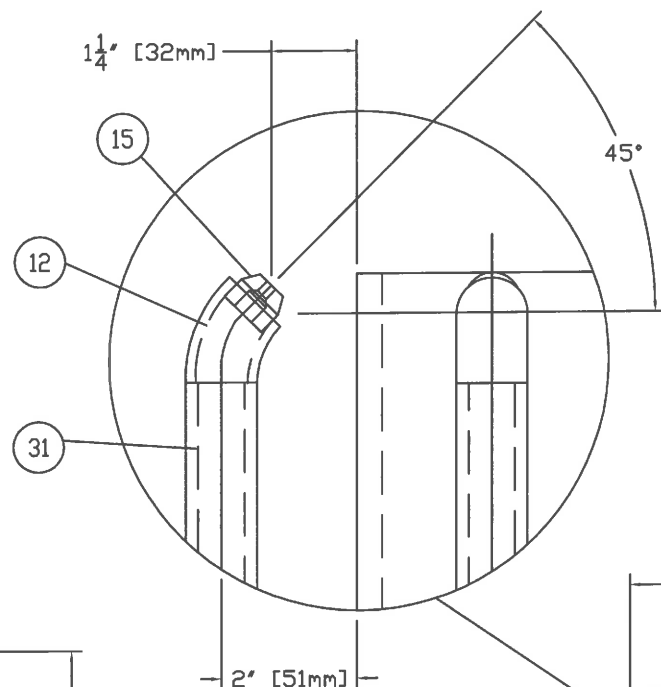
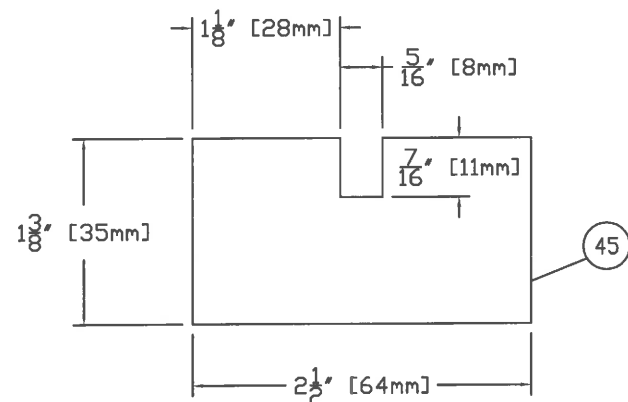
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**EDSON, ANSELL**  
 CODE 222009089

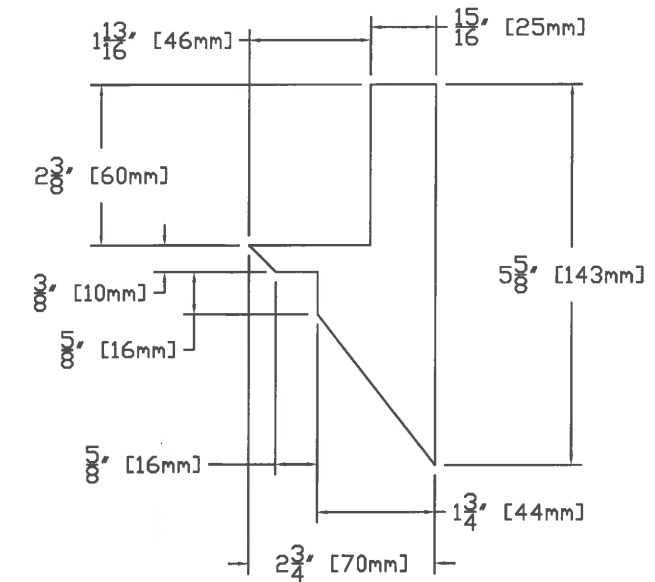
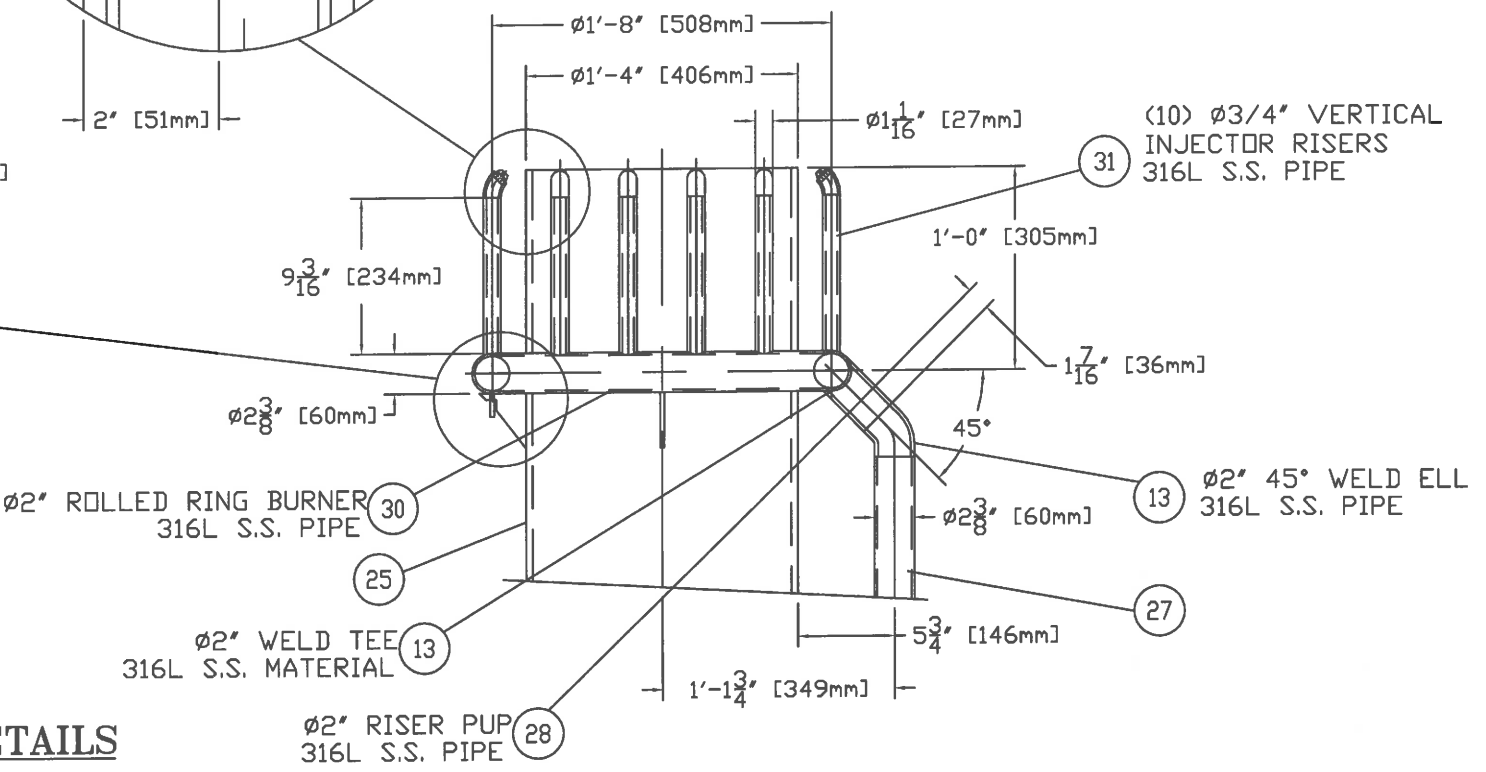
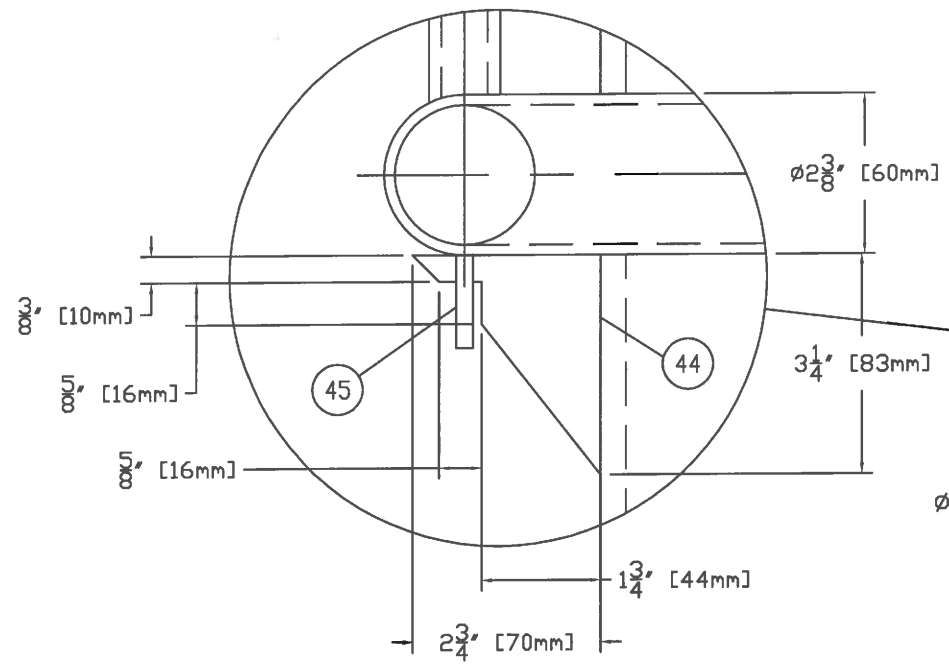
**TORNADO Technologies Inc.**

**PHONE# (403)883-2400**  
**FAX# (403)883-2550**  
**TOLL FREE# 1-800-661-4128**  
**WEB SITE: WWW.TORNADOTECH.NET**

# ASSIST GAS INJECTOR RING & NOZZLE ORIFICE DETAILS



## ORIFICE DETAILS



## INJECTOR RING SUPPORT PLATE DETAILS

Rev.	Description	By	Y	M	D
0	ISSUED FOR REFERENCE PURPOSES	EW	07	07	20

**General Notes:**  
 100% RADIOGRAPHY TESTING ON ALL LONGITUDINAL & CIRCUMFERENTIAL BUTT WELDS IN CONTACT WITH  
 100% MAGNETIC PARTICLE OR DYE PENETRANT TESTING OF ALL LOAD BEARING FILLET WELDS (CARBON & S.S.)

**Tag #:**  
 3,011 LBS.  
 30,447 LBS.

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**Paint:** SANDBLAST SSPC-SP6  
 RUSTOLEUM 4285 GRAY FINISH

**Ignition System:** RETRACTABLE FUEL GAS (45°)  
 PILOT MODEL TSI#6 c/w AUTO RELIT SYSTEM MODEL TPRM-A FS 120VAC

**Approx. Weight:** 11,005 LBS.

**Mag Particle Procedure:** NO  
**Radiography / Xray:** NO  
**Coolant Tracing:** NO  
**Aluminum Cladding:** NO  
**Corrosion Allowance:** .0625"  
**Weld Procedure #:** #1323.2  
**Q.C. Program #:** AQP-1266

**Dwg. By:** EMW  
**DWG#:** HUS-7-4674tip  
**Date:** 07 07 20  
**Y M D**  
**Salesperson:** JOHN CASSIDY  
**JOB#:** 7-4674  
**QUOTE#:** JC07-ST135  
**Sheet** 1 **of** 1

**Title:** 16" x 131'-0" TALL GUYWIRE SUPPORTED FLARE STACK TIP ARRANGEMENT DETAILS  
**Customer:** HUSKY OIL OPERATIONS LTD.  
**P.O.#:** 4500192187  
**REV.** EDSON, ANSELL  
 CODE 222009089

**TORNADO Technologies Inc.**

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