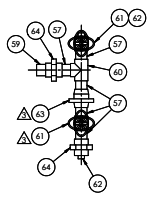
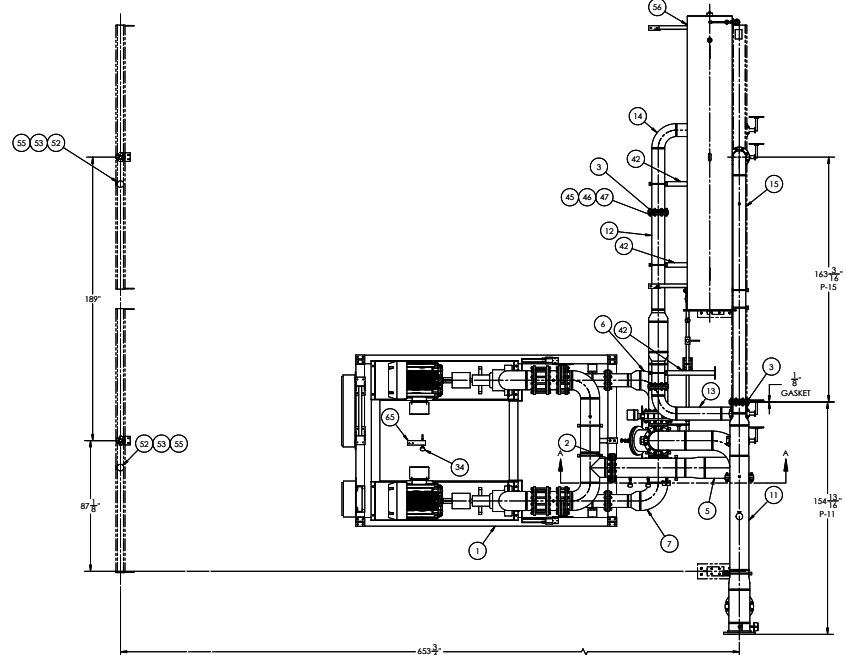
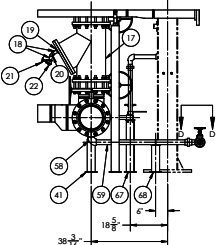


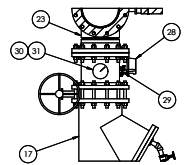
PIPING ASSEMBLY BOLTING LIST			
Item	Qty	Description	Where Used
B1	18	5/8"-11 X 2 1/2" LG. HEX BOLT	12" Inlet Pipe Supports to Tube Bundle Beam 8" Inlet Pipe Supports to Tube Bundle Beam Stub Column Pipe Support to Stub Column Main Beam
B2	18	5/8"-11 HEX NUT	
B3	18	5/8" FLAT WASHER	
B4	18	5/8" LOCK WASHER	
			A194 GR 4 OR 7
			AISI304
			AISI304



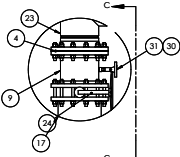
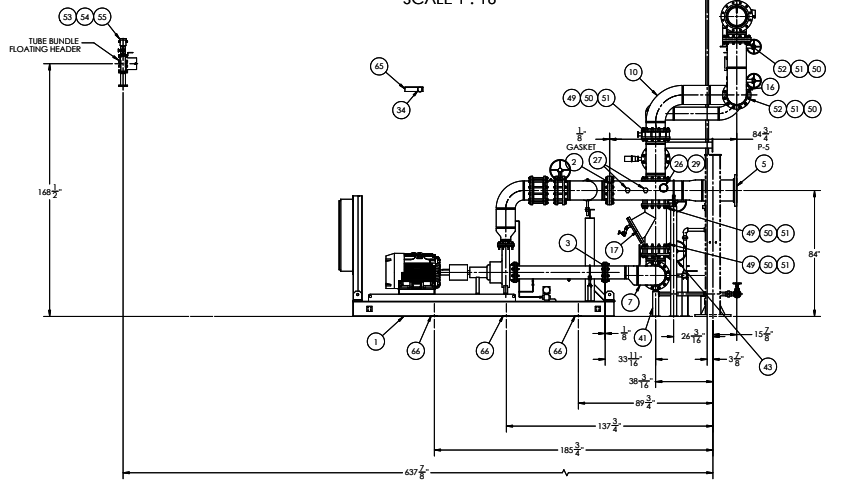
SECTION D-D
SCALE 1 : 10



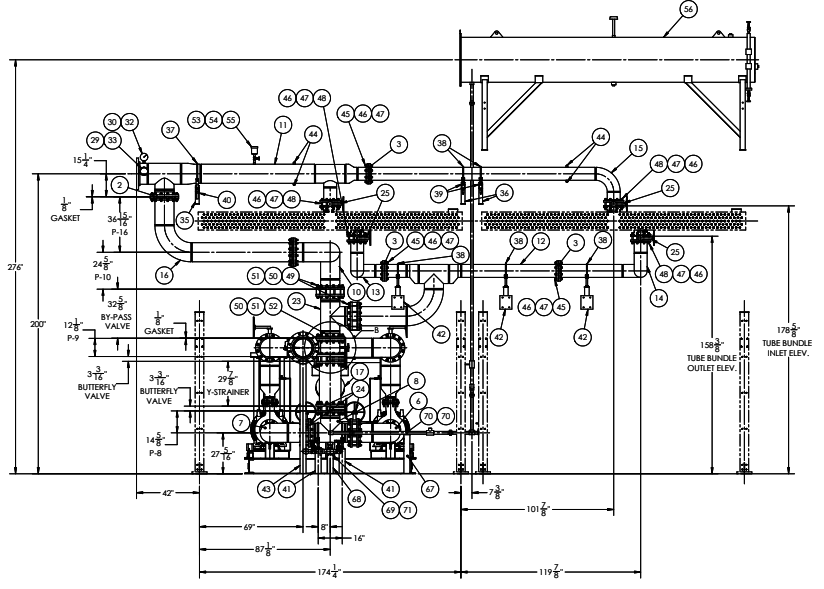
SECTION A-A
SCALE 1 : 24



SECTION C-C
(TYPICAL PRESSURE GAUGE INSTALLATION)
SCALE 1 : 16



DETAIL B
SCALE 1 : 16



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NO.	PART NO.	WT
1	1	PIPE END ASSEMBLY	STAINLESS STEEL	14494-109-001		2627
2	1	GASKET FOR 12" INLET PIPE FLANGE OF THE	ASBESTOS		1172-0201-020100-0001-0200	0.33
3	3	GASKET FOR 8" INLET PIPE FLANGE OF THE	ASBESTOS		1172-0201-020100-0001-0200	0
4	4	GASKET FOR 12" INLET PIPE FLANGE OF THE	ASBESTOS		1172-0201-020100-0001-0200	0.33
5	1	PIPE SPOOL P-3	STAINLESS STEEL	14494-109-010		2313
6	1	PIPE SPOOL P-4	STAINLESS STEEL	14494-109-010		2317
7	1	PIPE SPOOL P-5	STAINLESS STEEL	14494-109-010		2319
8	1	PIPE SPOOL P-6	STAINLESS STEEL	14494-109-010		2327
9	1	PIPE SPOOL P-7	STAINLESS STEEL	14494-109-010		2328
10	1	PIPE SPOOL P-8	STAINLESS STEEL	14494-109-010		4611
11	1	PIPE SPOOL P-9	STAINLESS STEEL	14494-109-010		10273
12	1	PIPE SPOOL P-10	STAINLESS STEEL	14494-109-010		779
13	1	PIPE SPOOL P-11	STAINLESS STEEL	14494-109-010		343
14	1	PIPE SPOOL P-12	STAINLESS STEEL	14494-109-010		343
15	1	PIPE SPOOL P-13	STAINLESS STEEL	14494-109-010		462
16	1	PIPE SPOOL P-14	STAINLESS STEEL	14494-109-010		462
17	1	1" STRAINER WITH COVER	STAINLESS STEEL	14494-109-010		779
18	2	WIPER 1/2" SCH 40 S.T. S.F.L.E.	FORGED IS		1107-NIP-0201-0201-0200-0200	2.9
19	1	1/2" BUSHING 2" R.F. FORGED STEEL S.C.O.	FORGED IS		1107-NIP-0201-0201-0200-0200	0.17
20	1	CONNECTION FROM 1" TO 2" FORGED STEEL S.C.O.	FORGED IS		1107-NIP-0201-0201-0200-0200	0.17
21	1	VALVE GATE 1/2" SCH 40 S.F.L.E.	FORGED IS		1449-VEV-0201	0.2
22	1	PIPE FLUG 1" WPT	FORGED IS		1107-PLUG-100-0201	4.3
23	1	BY-PASS VALVE	STAINLESS STEEL		1449-BPV-0201	4.4
24	4	VALVE BUTTERFLY 1/2" WATER TIGHT MANUAL WHEEL WITH BUNA SEAL	STAINLESS STEEL		1449-VEV-0201	14.89
25	4	VALVE BUTTERFLY 1/2" WATER TIGHT MANUAL WHEEL BUNA SEAL	STAINLESS STEEL		1449-VEV-0201	5.84
26	1	PRESSURE GAUGE ASCITECH RANGE 0 TO 100 PSIG 200 KPA	STAINLESS STEEL		1449-PSG-0201	1.0
27	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
28	1	PRESSURE GAUGE ASCITECH RANGE 0 TO 100 PSIG 200 KPA	STAINLESS STEEL		1449-PSG-0201	1.0
29	1	PRESSURE GAUGE ASCITECH RANGE 0 TO 100 PSIG 200 KPA	STAINLESS STEEL		1449-PSG-0201	1.0
30	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
31	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
32	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
33	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
34	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
35	1	1/2" HOSE END CONNECTION ASSEMBLY	STAINLESS STEEL		1449-HEC-0201	0.2
36	1	ADJUSTABLE PIPE SADDLE SUPPORT FOR 12" O.D. 1/2" DIA. S.C.O.	STAINLESS STEEL		1107-PPS-STANCHION-1171-120-02	15.1
37	1	ADJUSTABLE PIPE SADDLE SUPPORT FOR 12" O.D. 1/2" DIA. S.C.O.	STAINLESS STEEL		1107-PPS-STANCHION-1171-120-02	15.1
38	1	ADJUSTABLE PIPE SADDLE SUPPORT FOR 12" O.D. 1/2" DIA. S.C.O.	STAINLESS STEEL		1107-PPS-STANCHION-1171-120-02	15.1
39	1	ADJUSTABLE PIPE SADDLE SUPPORT FOR 12" O.D. 1/2" DIA. S.C.O.	STAINLESS STEEL		1107-PPS-STANCHION-1171-120-02	15.1
40	1	ADJUSTABLE PIPE SADDLE SUPPORT FOR 12" O.D. 1/2" DIA. S.C.O.	STAINLESS STEEL		1107-PPS-STANCHION-1171-120-02	15.1
41	2	HEAVY WELDED 3" DIA. S.C.O.	STAINLESS STEEL		1172-0201-0201-0201-0200	6.2
42	1	STUB COLUMN PIPE SUPPORT	STAINLESS STEEL		1449-109-010	272
43	1	STUB COLUMN PIPE SUPPORT	STAINLESS STEEL		1449-109-010	272
44	4	PIPE FLUG 1/2" WPT 1" O.D.	FORGED IS		1107-PLUG-100-0201	4.3
45	2	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-0201-0201-0201-0200-0200	11.4
46	1	WASHER 1/2" X 3/4"	STAINLESS STEEL		1172-WASH-0201-0201-0200	0.2
47	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
48	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
49	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
50	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
51	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
52	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
53	4	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
54	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
55	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
56	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
57	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
58	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
59	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
60	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
61	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
62	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
63	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
64	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
65	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
66	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
67	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
68	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
69	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
70	1	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
71	4	1/2" WIPER 1/2" SCH 40 S.T. S.F.L.E. WITH FLANGED CONNECTIONS	FORGED IS		1172-WASH-0201-0201-0200-0200	11.4
						TOTAL WEIGHT 22420

UNLESS OTHERWISE SPECIFIED:	ALL DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF.
1	ASBESTOS
2	ASBESTOS
3	ASBESTOS
4	ASBESTOS
5	ASBESTOS
6	ASBESTOS
7	ASBESTOS
8	ASBESTOS
9	ASBESTOS
10	ASBESTOS
11	ASBESTOS
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13	ASBESTOS
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66	ASBESTOS
67	ASBESTOS
68	ASBESTOS
69	ASBESTOS
70	ASBESTOS
71	ASBESTOS

ECODYNE Heat Exchangers
 HEAT EXCHANGER
 TUBE BUNDLE AND BY-PASS PIPING ASSEMBLY
 PART NO. 14494-109-010
 SHEET NO. 132 REV. 3

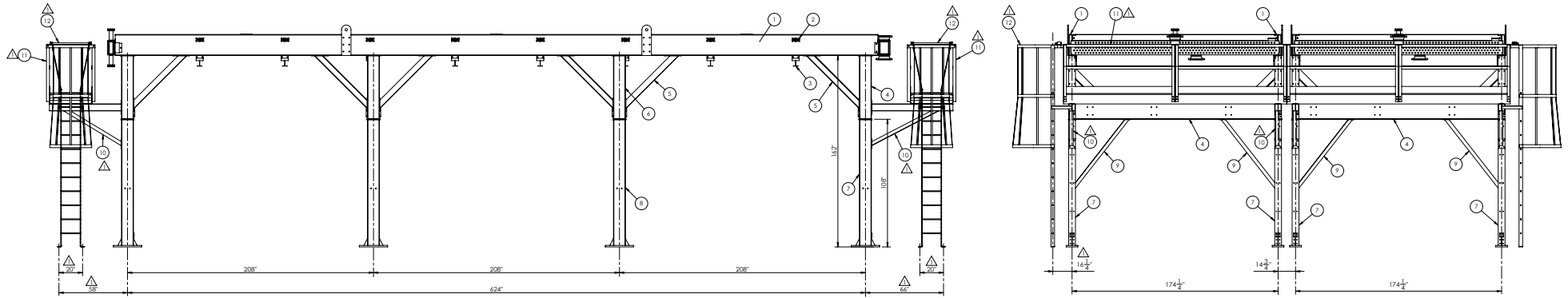
DESIGN VERIFICATION NOTES

1. GENERAL
 - 1.1 THE PROJECT HAS BEEN VERIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2014 ALBERTA BUILDING CODE.
 - 1.2 BUILDING IMPORTANCE CATEGORY (SNOW, WIND, AND EARTHQUAKE) IS NORMAL.
 - 1.3 THIS VERIFICATION DOES NOT INCLUDE MEMBER CONNECTIONS AND FOUNDATIONS.

2. LOADS ON STRUCTURE

- 2.1 LIVE
 - LL = 75 PSF
 - 2.2 SNOW
 - S_s = 45.8 PSF I_s = 1.0 (ULS)
 - S_r = 2.1 PSF I_s = 0.9 (SLS)
 - 2.3 WIND
 - q(1/50) = 6.7 PSF I_w = 1.0 (ULS)
 - C_s = 0.9 (1/5) NOT LESS THAN 0.9 I_w = 0.75 (SLS)
 - C_e = 2.0
 - C_d = 1.3
 - 2.4 EARTHQUAKE
 - S_o(0.2) = 0.1 PGA = 0.04 F_o = 1.3
 - S_o(0.5) = 0.06 SITE CLASS = D F_v = 1.4
 - S_o(1.0) = 0.03 R_o = 1.5 I_e = 1.0
 - S_o(2.0) = 0.01 R_o = 1.3
- SFRS CONSISTS OF CONVENTIONAL STEEL BRACED FRAMES.
METHOD OF ANALYSIS - STATIC

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	MATERIAL	DWG. NO.	WT
1	2	SIDE CHANNEL		14496-102-SHT1	4256
2	8	TOP TUBE SUPPORT		14496-102-SHT4	574
3	8	BOTTOM TUBE SUPPORT		14496-102-SHT7	1348
4	2	STUB COLUMN - END		14496-101-SHT12	1434
5	12	STUB COLUMN BRACE		14496-101-SHT9	768
6	2	STUB COLUMN - CENTER		14496-101-SHT13	1562
7	4	LOWER COLUMN - END		14496-101-SHT19	1184
8	4	LOWER COLUMN - INTERIOR		14496-101-SHT30	1176
9	8	LOWER END KNEE BRACE		14496-101-SHT18	320
10	4	HEADER WALKWAY SUPPORTS		14496-101-WG-SHT2	356
11	2	HEADER WALKWAYS		14496-101-WG-SHT1	2330
12	2	CAGED STEF-RNU LADDER		14496-101-WG-SHT7	494
TOTAL WEIGHT					15856



NOVEMBER 05, 2015
STEPHENSON ENGINEERING LTD.
ALBERTA PERMIT # P11864
FOR 2014 ABC VERIFICATION ONLY

ECODYNE Houston, Texas
HEAT EXCHANGERS (713) 675-3511

#15W-54L-313 INDUCED DRAFT
STRUCTURAL CERTIFICATION

PART NO. 14496-001STR-SHT1

SIZE: D SCALE: N.T.S. REV: 3

REV	DATE	BY	DESCRIPTION	CHKD	APPROVED
1			ORIGINAL RELEASE		
2			ADDED DESIGN CHECKS AS SHOWN.		
3			ADDED ITEMS TO 3981.12 AND UPDATED VENTS.		
3			DESIGN NOTES AS SHOWN.		

UNLESS OTHERWISE SPECIFIED:
TOLERANCES:
FINISHES: 1/16"
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DRY WT. PER YD ³	SLAB-BEAM 2000			FLOORED WT. PER YD ³ SLAB			SEISMIC FORCE AT 0.125X			WIND LOADING-27 PSF			SNOW LOADING-20 PSF		
	DEAD LOAD	LIVE LOAD	SEISMIC LOAD	DEAD LOAD	WIND LOAD	SEISMIC LOAD	DEAD LOAD	WIND LOAD	SEISMIC LOAD	DEAD LOAD	WIND LOAD	SEISMIC LOAD	DEAD LOAD	WIND LOAD	SEISMIC LOAD
15.5 (436)	15.5 (436)	17.5 (508)	17.5 (508)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)
13.7 (421)	15.1 (486)	15.1 (486)	15.1 (486)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)
1.8 (504)	7.2 (203)	5.2 (145)	5.2 (145)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)
PUMP SHD PER INCH	2.2 (88)	2.2 (134)	0.5 (22)	0.7 (31)	0.4 (18)	0.4 (27)	0.7 (31)	0.4 (18)	0.4 (27)	0.7 (31)	0.4 (18)	0.4 (27)	0.7 (31)	0.4 (18)	0.4 (27)

FOUNDATION LOADS CALCULATED PER IRC 2000
 WIND: V₅₀ = 100 MPH
 TERRAIN EXPOSURE = C
 OCCUPANCY CATEGORY II
 SEISMIC: OCCUPANCY CATEGORY II
 SITE CLASS D
 S_a = 0.47g
 S_v = 0.19g
 SNOW: P_y = 30 PSF
 OCCUPANCY CATEGORY II
 C_s = 1.0
 C_e = 1.0

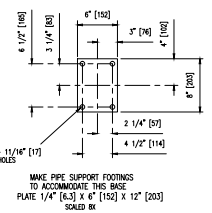
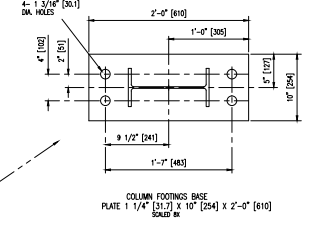
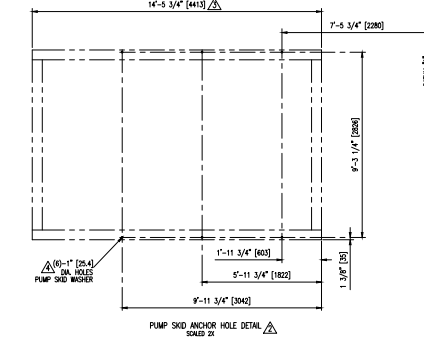
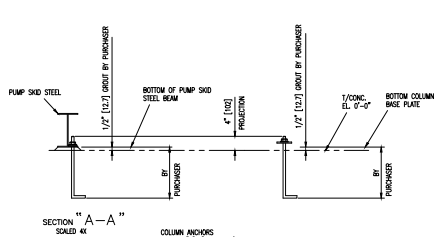
STRUCTURE LOADS CALCULATED PER IRC 2000
 WIND: V₅₀ = 100 MPH
 TERRAIN EXPOSURE = C
 OCCUPANCY CATEGORY II
 SEISMIC: OCCUPANCY CATEGORY II
 SITE CLASS D
 IMPORTANCE FACTOR I = 1.5
 S_a = 0.47g
 S_v = 0.19g
 SNOW: P_y = 30 PSF
 OCCUPANCY CATEGORY II
 C_s = 1.0
 C_e = 1.0

* WEIGHTS SHOWN EQUATE TO 120% OF CALCULATED LOAD VALUES

- DESIGN VERIFICATION NOTES**
- GENERAL
 - 1.1 THE PROJECT HAS BEEN VERIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2014 ALBERTA BUILDING CODE.
 - 1.2 BUILDING IMPORTANCE CATEGORY (SNOW, WIND AND EARTHQUAKE) IS NORMAL. THIS VERIFICATION DOES NOT INCLUDE MEMBER CONNECTIONS AND FOUNDATIONS.
 - 1.3 THIS VERIFICATION DOES NOT INCLUDE MEMBER CONNECTIONS AND FOUNDATIONS.
 - LOADS ON STRUCTURE
 - 2.1 LIVE LL = 75 PSF
 - 2.2 SNOW S_a = 45.8 PSF
 - 2.3 WIND w_{f(50)} = 62 PSF
 - 2.4 EARTHQUAKE S_a(0.2) = 0.1, S_v(0.2) = 0.08, S_a(0.5) = 0.06, S_v(0.5) = 0.03, S_a(2.0) = 0.01
- REMARKS: THIS VERIFICATION DOES NOT INCLUDE MEMBER CONNECTIONS AND FOUNDATIONS.

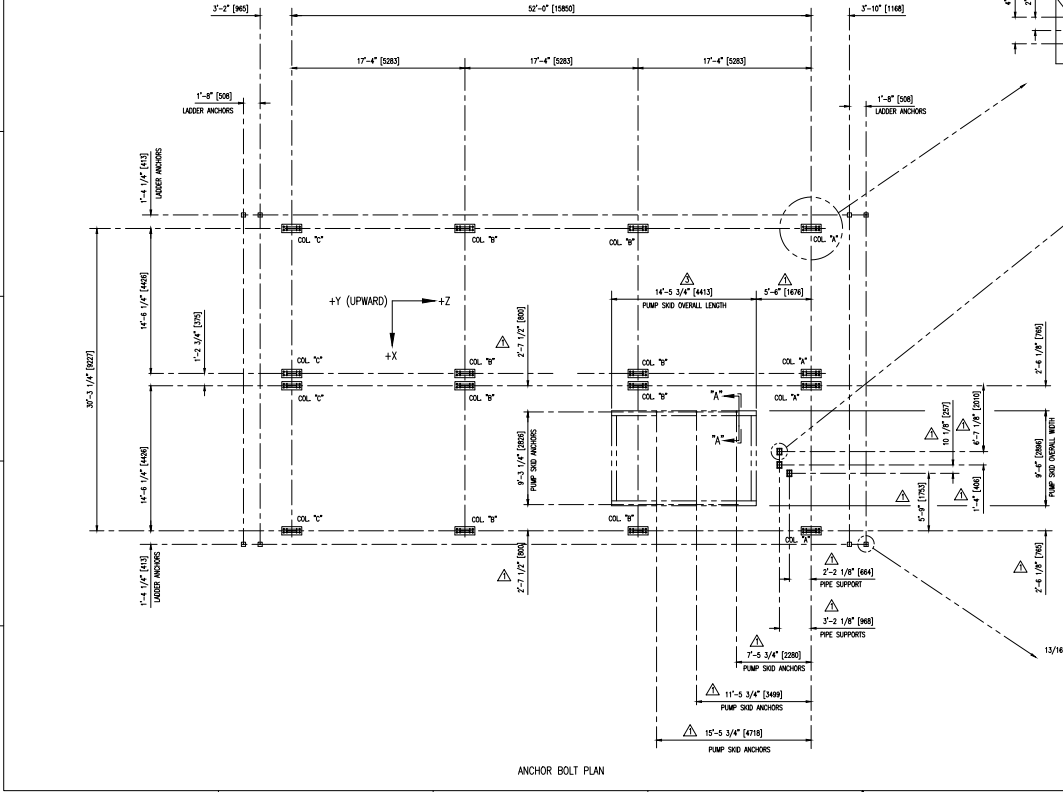
2014 ALBERTA BUILDING CODE VERIFICATION

COLUMN "A"	DEAD LOAD		WIND LOAD		SEISMIC LOAD		SNOW LOAD	
	DEAD LOAD	FLOORED	WIND LOAD	WIND LOAD	SEISMIC LOAD	SEISMIC LOAD	SNOW LOAD	SNOW LOAD
15.5 (436)	15.5 (436)	17.5 (508)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)	3.2 (1120)
13.7 (421)	15.1 (486)	15.1 (486)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)	5.5 (245)
1.8 (504)	7.2 (203)	5.2 (145)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)	2.8 (1120)
PUMP SHD PER INCH	2.2 (88)	2.2 (134)	0.5 (22)	0.7 (31)	0.4 (18)	0.4 (27)	0.7 (31)	0.4 (18)



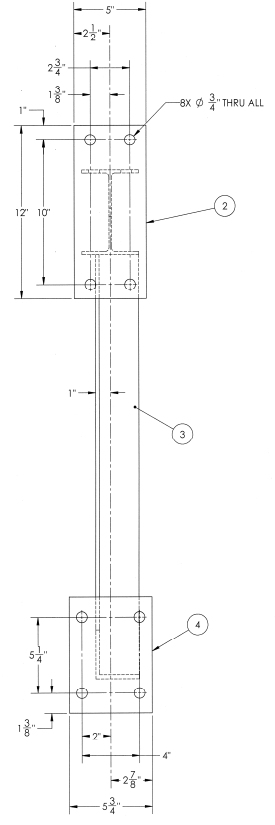
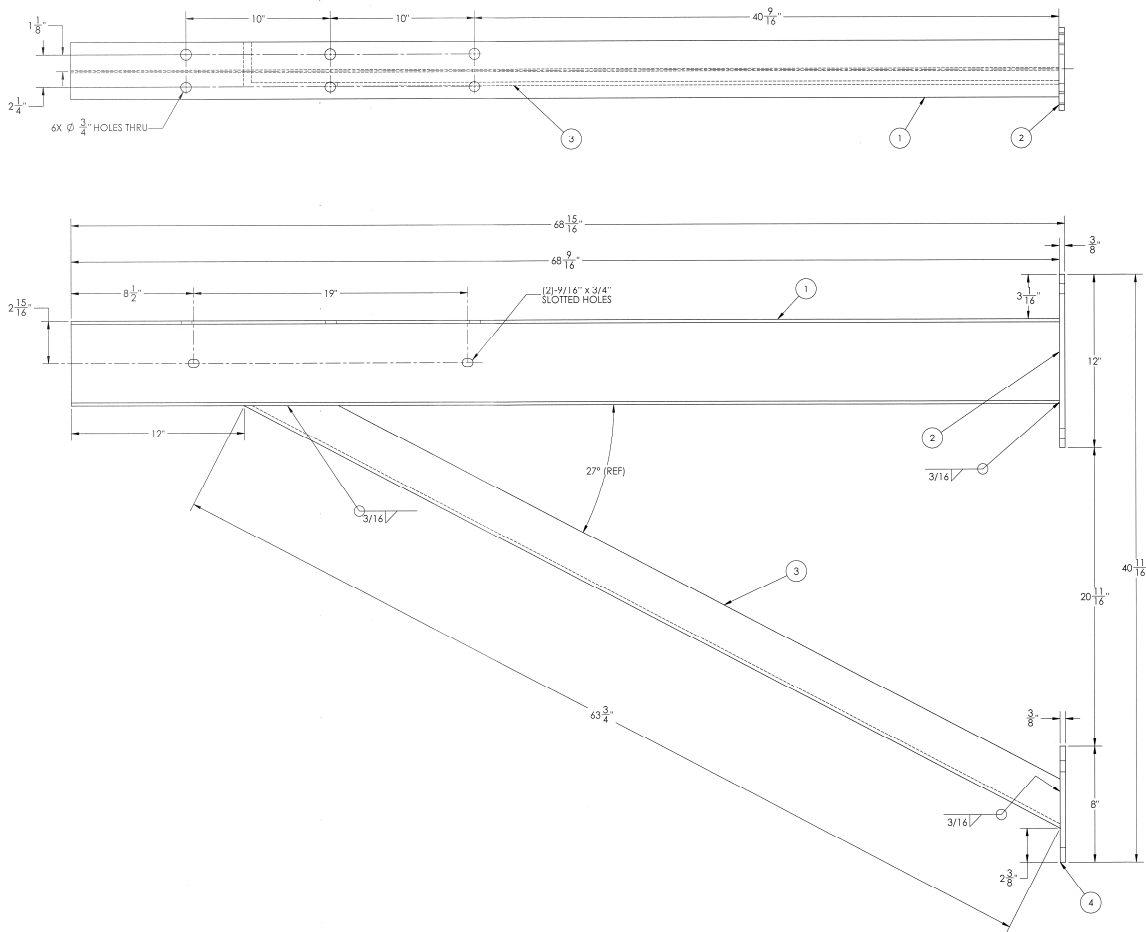
- NOTES**
- LOADS SHOWN ARE MAXIMUM VALUES FOR GRADE MOUNTING.
 - ANCHORS ARE TO BE FURNISHED BY THE PURCHASER.
 - FOOTING DESIGN AND ANCHOR LENGTHS ARE TO BE DETERMINED BY THE PURCHASER.
 - EXCESSIVE HEAT EXCHANGERS IS TO BE NOTIFIED OF ANY ADDITIONAL LOADS INCURRED ON THE HEAT EXCHANGER UNITS.
 - ANCHOR BOLTS TO BE FABRICATED USING MATERIAL WITH A MINIMUM ALLOWABLE AXIAL TENSION STRESS OF 181 MPa (L16.4) AS PER AISC.

RELATED DRAWINGS
 14496-001 SH 1 GENERAL ARRANGEMENT
 14496-002 SH 2 PROCESS INFORMATION SHEET
 14496-100 P & B DRAWING



EPCON ENGINEERING LTD. 14496-001 SH 1 GENERAL ARRANGEMENT

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC. 1	SPEC. 2	PART NO.
	1	1	BEAM - W6 X 9 X 68 9/16"	52	STEEL	A-992		
	2	1	PLATE - 3/8" X 5' X 12"	6	STEEL	A-36		
	3	1	ANGLE - 3" X 3" X 1/4" X 63 3/4"	26	STEEL	A-36		
	4	1	PLATE - 3/8" X 5 3/4" X 8"	5	STEEL	A-36		
TOTAL WEIGHT				89				



NOTES:
 1. BEAD WELD THE DRAWING NUMBER ON THE PART. METAL TAGS MAY ALSO BE USED.
 2. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF $\pm .015$, EXCEPT AS NOTED.
 3. REMOVE ALL SLAG, LOOSE RUST AND MILL SCALE, WELD SPATTER, OIL, DIRT, AND ANY OTHER FOREIGN MATTER.

SEE 14496-WELD/INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS

UNLESS OTHERWISE SPECIFIED:		TOLERANCES:		DECIMALS		FRACTIONS	
		±		±		±	
FINISH							
WELDING							
DRILLING							
TURNING							
CUTTING							
GRINDING							
THREADING							
FORMING							
OTHER							



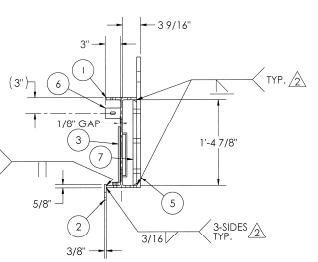
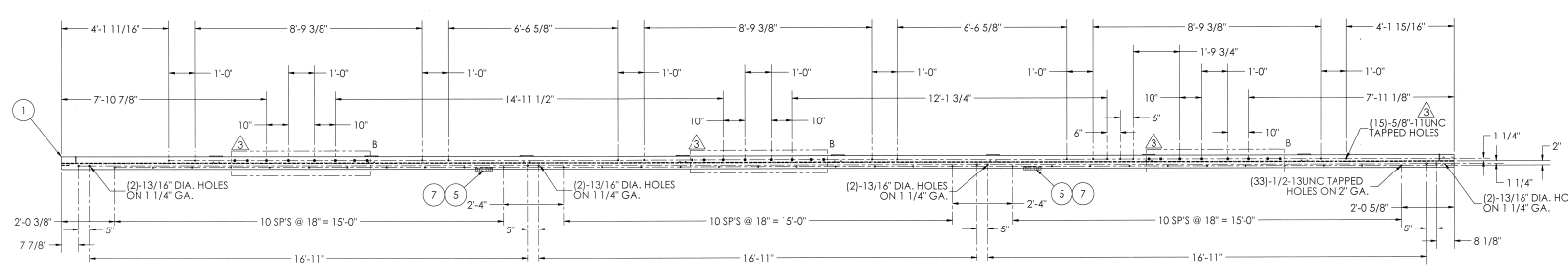
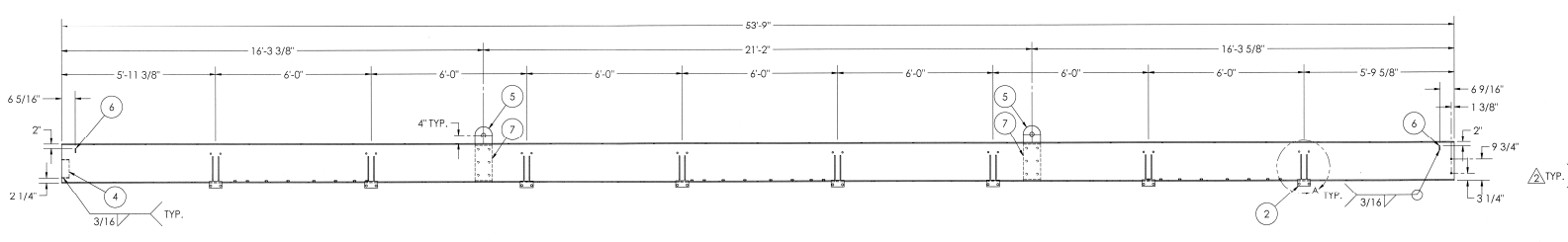
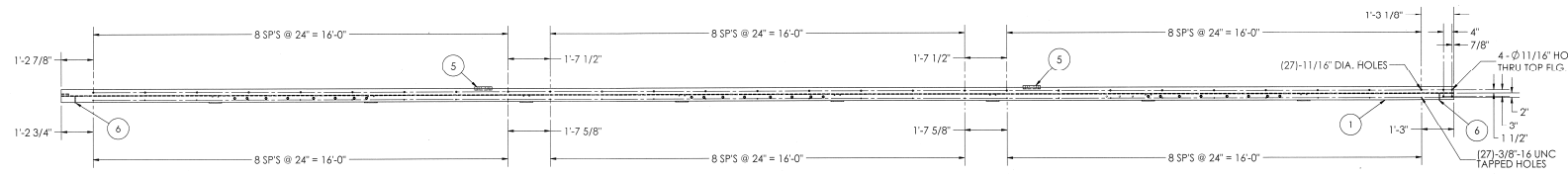
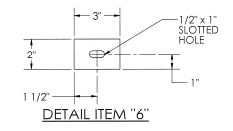
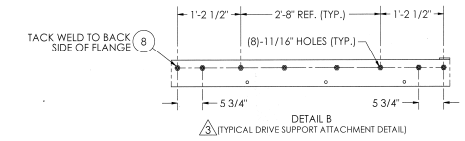
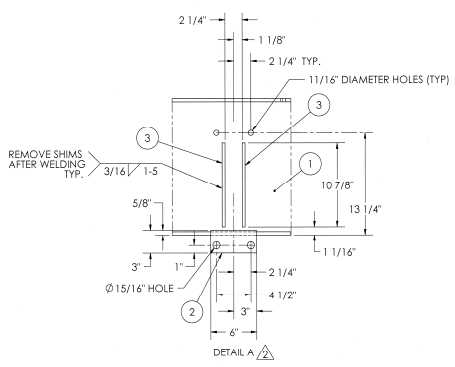
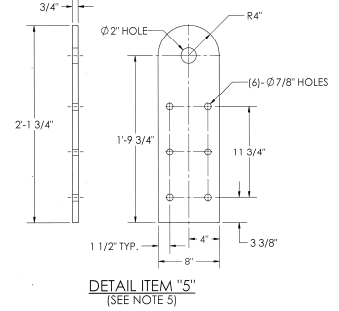
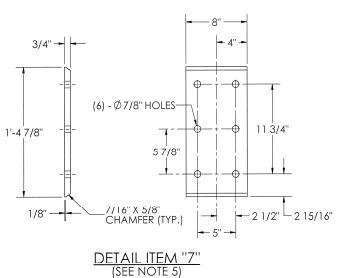
NOVEMBER 05, 2015
 STEPHEN ENGINEERING LTD.
 APEGA PERMIT # P11186
 FOR 2014 ABC VERIFICATION ONLY

ECODYNE Houston, Texas
 (713) 675-3311
HEAT EXCHANGERS

WALKWAY SUPPORT BEAM
 PART NO: **14496-101WL-SH 2**
 SCALE: N.T.S. REV: 0

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC. 1	SPEC. 2	PART NO.
1	1		BEAM W18 x 35 X 53'-9"	1881	STEEL	A992		
2	8		BOTTOM BLOCK 3/8" X 3" X 4"	14	STEEL	A-36		
3	16		POSITIONING BAR 3/8" X 3/8" X 10 7/8"	7	STEEL	A-36		
4	1		GUIDE-PIECE (FORMED) 1/4"	3	STEEL	A-36		14043 STD. PART
5	2		LIFTING LUG BAR 3/4" X 8" X 2-1 3/4" (SEE NOTE 5)	82	STEEL			
6	2		BAR 3/8" X 2" X 3"	2	STEEL	A-36		
7	2		LIFTING LUG BACK-UP 3/4" X 8" X 1-4 7/8" (SEE NOTE 5)	54	STEEL	SA-516 GR 70		
3	8	24	HEAVY HEX NUT, 5/8"-11 UNC		STEEL	A-194	GR. 4 OR 7	
TOTAL WEIGHT				2043				

- NOTES:**
1. BEAD WELD THE DRAWING NUMBER ON THE PART. METAL TAGS MAY ALSO BE USED.
 2. FOR EVERY TWO REQUIRED, ONE AS SHOWN, ONE OPPOSITE HAND.
 3. MAG. PARTICLE TESTING OF ALL LIFT LUG WELDS ARE REQUIRED BY AN ASNT-TC-1A CERTIFIED PERSON. TEST REPORT REQUIRED.
 4. LIFT LUG WELDS TO BE FCAW OR SMAW.
 5. LIFTING LUGS AND BACKUP BARS TO BE FABRICATED FROM MATERIAL CHAPPY IMPACT TESTED TO MEET 5 JOULES AT -40° F DOCUMENTATION IS TO BE PROVIDED.



NOVEMBER 05, 2015
 STEPHENSON ENGINEERING LTD.
 APECA PERMIT # P11864
 FOR 2014 ABC VERIFICATION ONLY

UNLESS OTHERWISE SPECIFIED:							
TOLERANCES:							
FRACTIONAL 1/16							
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P/N: 14496-102-5R - AS SHOWN
 P/N: 14496-102-5L - OPPOSITE HAND

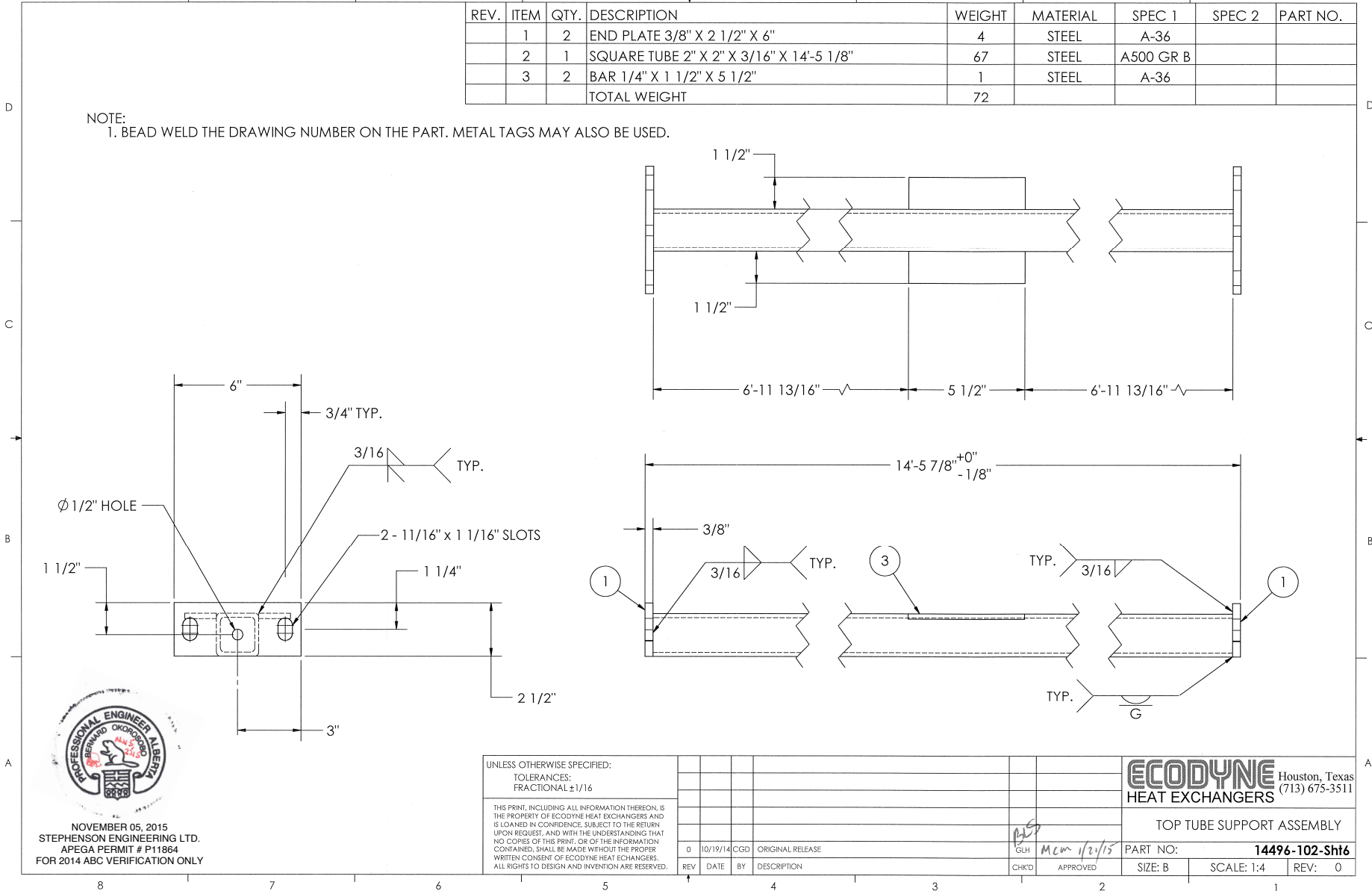
ECODYNE Houston, Texas
 HEAT EXCHANGERS (713) 675-3511

APPROVED: [Signature]
 DATE: [Date]

PART NO: 14496-102-5HS
 SCALE: 1:1.5
 REV: 3

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC 1	SPEC 2	PART NO.
	1	2	END PLATE 3/8" X 2 1/2" X 6"	4	STEEL	A-36		
	2	1	SQUARE TUBE 2" X 2" X 3/16" X 14'-5 1/8"	67	STEEL	A500 GR B		
	3	2	BAR 1/4" X 1 1/2" X 5 1/2"	1	STEEL	A-36		
			TOTAL WEIGHT	72				

NOTE:
1. BEAD WELD THE DRAWING NUMBER ON THE PART. METAL TAGS MAY ALSO BE USED.



NOVEMBER 05, 2015
STEPHENSON ENGINEERING LTD.
APEGA PERMIT # P11864
FOR 2014 ABC VERIFICATION ONLY

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TOLERANCES:
FRACTIONAL ± 1/16

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REV.	DATE	BY	DESCRIPTION	CHKD	APPROVED
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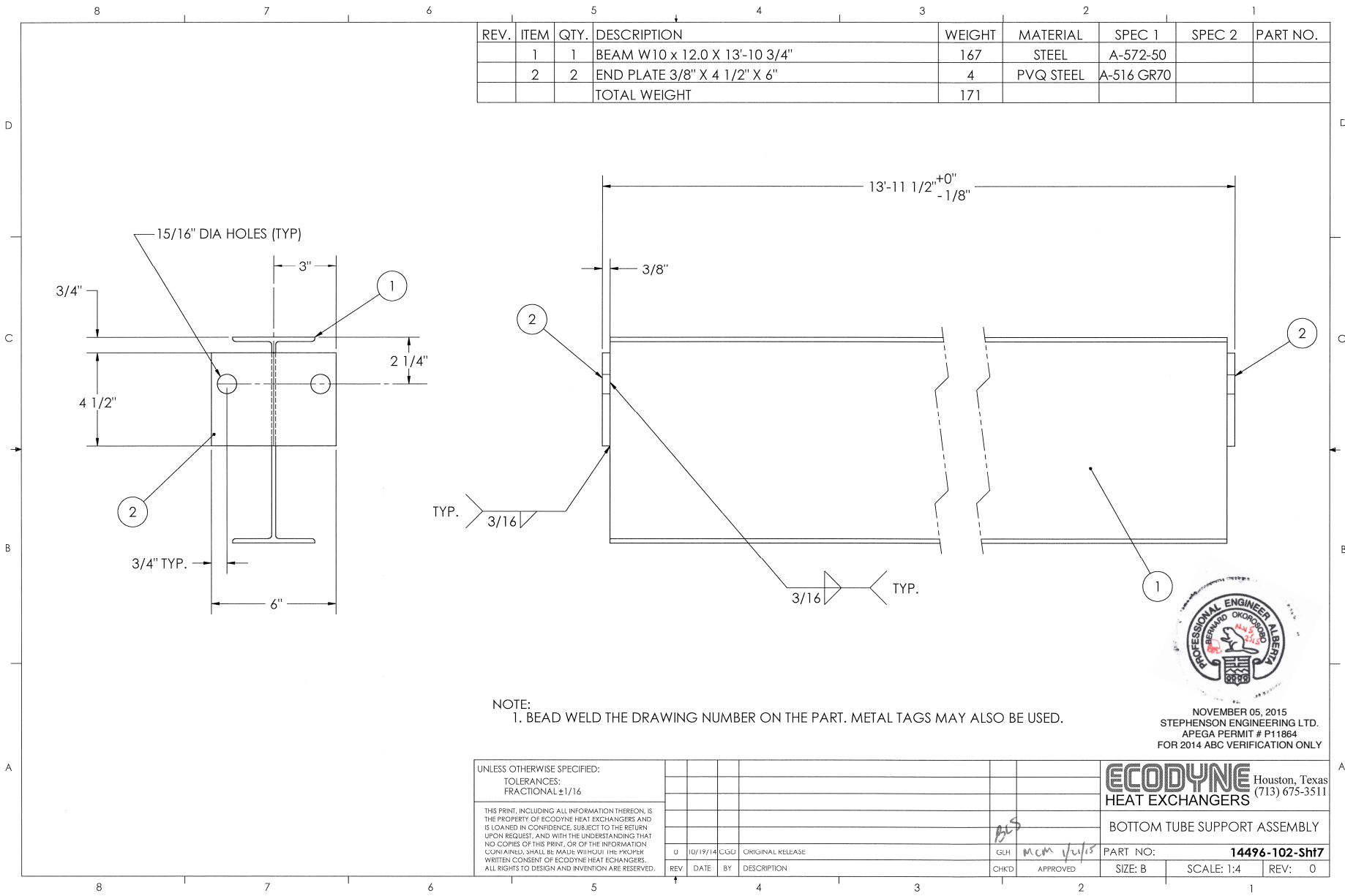
ECODYNE Houston, Texas
HEAT EXCHANGERS (713) 675-3511

TOP TUBE SUPPORT ASSEMBLY

PART NO: **14496-102-Sht6**

SIZE: B SCALE: 1:4 REV: 0

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC 1	SPEC 2	PART NO.
	1	1	BEAM W10 x 12.0 X 13'-10 3/4"	167	STEEL	A-572-50		
	2	2	END PLATE 3/8" X 4 1/2" X 6"	4	PVQ STEEL	A-516 GR70		
			TOTAL WEIGHT	171				



NOTE:
 1. BEAD WELD THE DRAWING NUMBER ON THE PART. METAL TAGS MAY ALSO BE USED.



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UNLESS OTHERWISE SPECIFIED:
 TOLERANCES:
 FRACTIONAL ±1/16

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REV	DATE	BY	DESCRIPTION	CHKD	APPROVED
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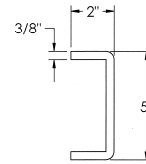
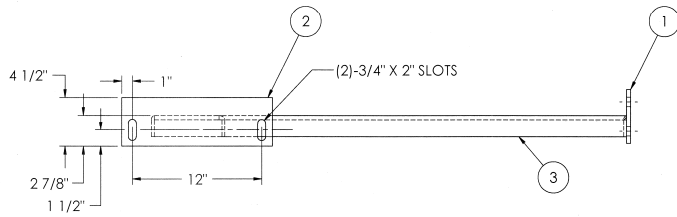
ECODYNE Houston, Texas
 HEAT EXCHANGERS (713) 675-3511

BOTTOM TUBE SUPPORT ASSEMBLY

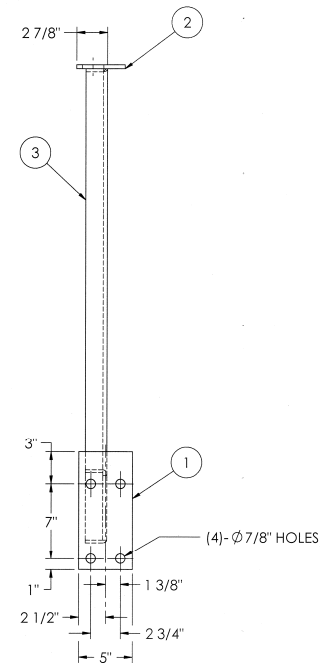
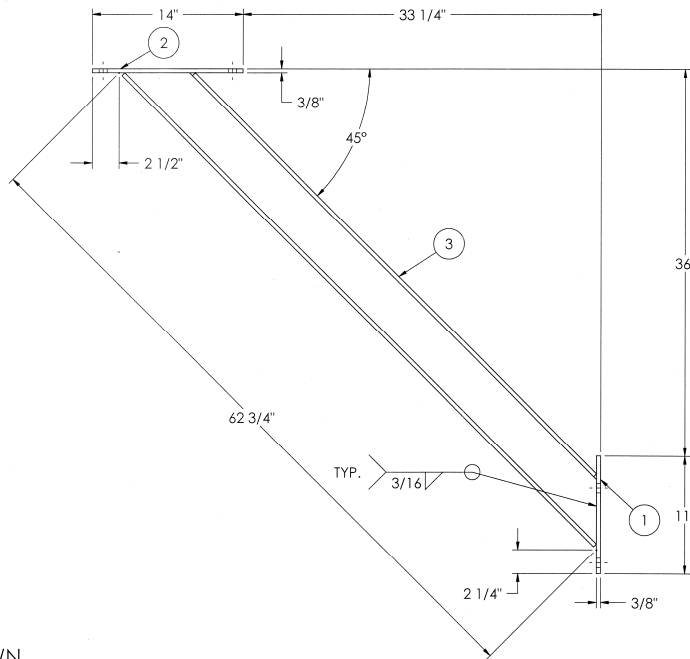
PART NO: **14496-102-3ht7**

SIZE: B SCALE: 1:4 REV: 0

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC 1	SPEC 2	PART NO.
1	1	1	BAR 3/8" X 5" X 11"	6	STEEL	A-516-70		
2	1	1	BAR 3/8" X 4 1/2" X 14"	6	STEEL	A-516-70		
1	3	1	CHANNEL (FORMED) 3/8" THK. X 7 1/2" X 62 3/4" LG. (M.B.E.)	49	STEEL	A-516-70		
			TOTAL WEIGHT	61				



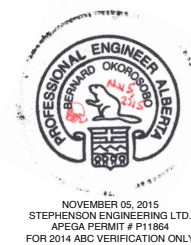
ITEM #3 PROFILE



14496-101-9R - AS SHOWN
14496-101-9L - OPP. HAND

NOTES:

1. PAINT DRAWING NUMBER ON PART. IF SANDBLASTED OR GALVANIZED, BEAD WELD. METAL TAGS MAY BE USED IF SANDBLASTED.
2. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF $\pm 1/16$ " EXCEPT NOTED.
3. REMOVE ALL SLAG, LOOSE MILL SCALE, WELD SPATTER, OIL, DIRT, AND OTHER FOREIGN MATTER.
4. COMPONENTS TO BE FABRICATED FROM MATERIAL **CHARPY IMPACT TESTED** TO MEET 5 JOULES AT -40°F DOCUMENTATION IS TO BE PROVIDED.
5. STAMP HEAT NUMBER ON PART.



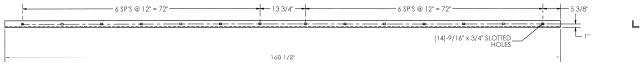
SEE 14496WELD/INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS

UNLESS OTHERWISE SPECIFIED: TOLERANCES: FRACTIONAL ±1/16						ECODYNE Houston, Texas HEAT EXCHANGERS (713) 675-3511 STUB COLUMN SIDE KNEE BRACE	
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	0	01/07/15	EGE				ORIGINAL RELEASE
REV	DATE	BY	DESCRIPTION	CHKD	APPROVED	SIZE: C	SCALE: 1:8
						REV: 1	

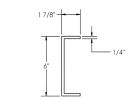
NOTES:

- 1. PAINT DRAWING NUMBER ON PART, IF SANDBLASTED OR GALVANIZED, BEAD WELD.
- 2. METAL TAGS MAY BE USED IF SANDBLASTED.
- 3. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF +/- 1/16" EXCEPT NOTED.
- 4. REMOVE ALL SLACK, LOCKS, MILL SCALE, WELD SPATTER, CHIP, DIRT AND OTHER FOREIGN MATTER.
- 5. ITEMS 2 THRU 5 TO BE FABRICATED FROM MATERIAL **CHARPY IMPACT TESTED TO MEET 5 JOULES AT -40°F** DOCUMENTATION IS TO BE PROVIDED.
- 6. STAMP HEAT NUMBER ON PART.

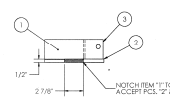
REV.	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC. 1	SPEC. 2	PART NO.
1	1	BEAM W/ 4 x 3/4 x 1/2 LG.	88	AFPP			
2	2	BAR 1/2" X 6" X 11"	19	STEEL	A-516-70		
3	2	BEAM W/ 3 x 3/4 x 3/4 LG.	19	STEEL	A-516-70		
4	2	BAR 3/8" x 4 x 3 x 1/2	17	STEEL	A-516-70		
5	2	FORWARD PLATE 1/2" x 9 1/2" x 45 LG.	56	STEEL	A-516-70		
6	1	ANGLE 2" x 2" x 1/4" x 168 1/2 LG.	45	STEEL	A-36		
7	2	BAR 1/4" x 4" x 10"	9	STEEL	A-36		
		TOTAL WEIGHT:	818				



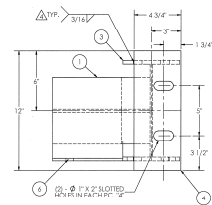
DETAIL ITEM "6"



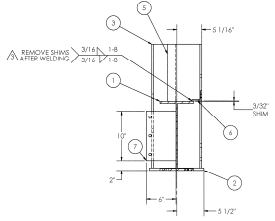
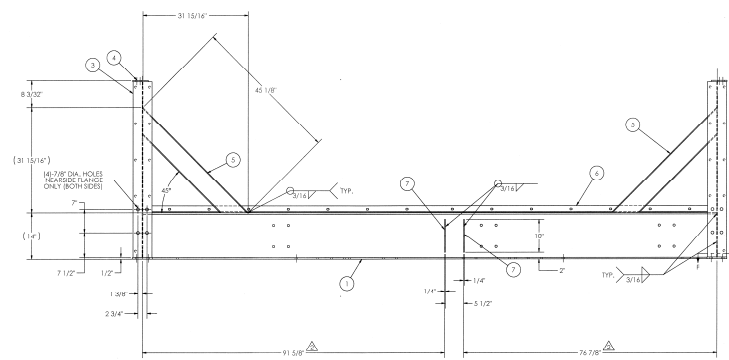
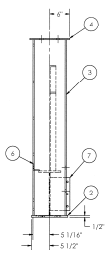
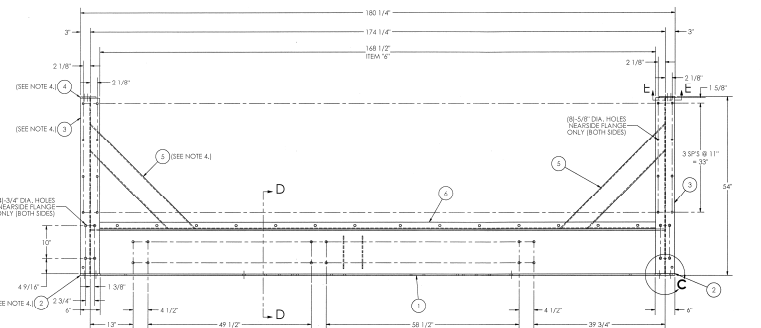
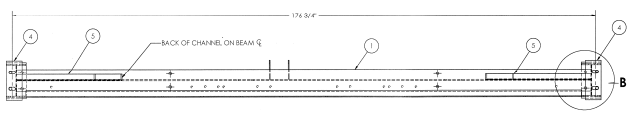
ITEM #5 PROFILE



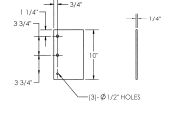
DETAIL C



DETAIL B



SECTION D-D



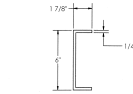
DETAIL ITEM "7"

SEE 14496-WELD/INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS	
REVISION	DESCRIPTION
1	AS PERMITTED
2	FOR 2014 ABC VERIFICATION ONLY

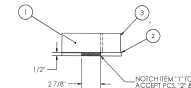
NOTES:

1. PAINT DRAWING NUMBER ON PART, IF SANDBLASTED OR GALVANIZED, BEAD WELD.
2. METAL TAGS MAY BE USED IF SANDBLASTED.
3. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF $\pm 1/16"$ EXCEPT NOTED.
4. REMOVE ALL SLAG, LOOSE MILL SCALE, WELD SPATTER, OIL, DIRT AND OTHER FOREIGN MATTER.
5. ITEMS 2 THRU 5 TO BE FABRICATED FROM MATERIAL **CHARPY IMPACT TESTED** TO MEET 5 JOULES AT -40°F DOCUMENTATION IS TO BE PROVIDED.
6. STAMP HEAT NUMBER ON PART.

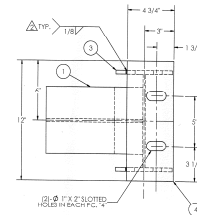
REV	ITEM	QTY	DESCRIPTION	WEIGHT	MATERIAL	SPEC	FINISH	PART NO.
1	1		BEAM W/14 x 34 x 174"	488	STEEL	A-36		
2	2		BAR 1/2" x 4" x 11"	19	STEEL	A-36		
3	3		BEAM W/10 x 22 x 53 1/8"	195	STEEL	A-36		
4	2		BAR 3/8" x 4" x 11"	12	STEEL	A-36		
5	2		POSSIBLE PLATE 1/4" x 114" x 43 13/16"	60	STEEL	A-36		
6	4		BAR 1/2" x 4" x 11"	17	STEEL	A-36		
TOTAL WEIGHT				781				



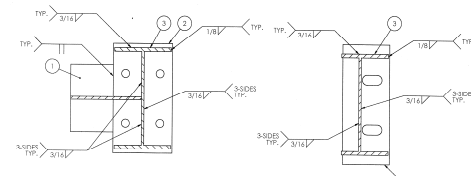
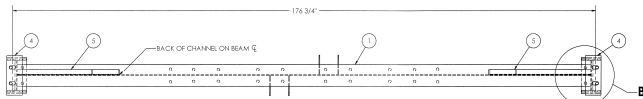
ITEM #5 PROFILE



DETAIL C

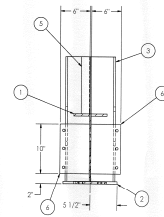
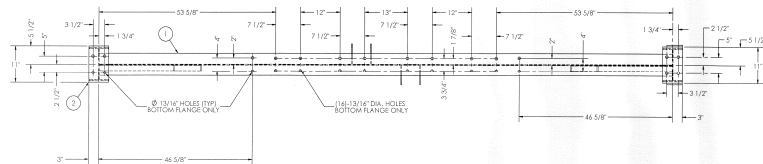
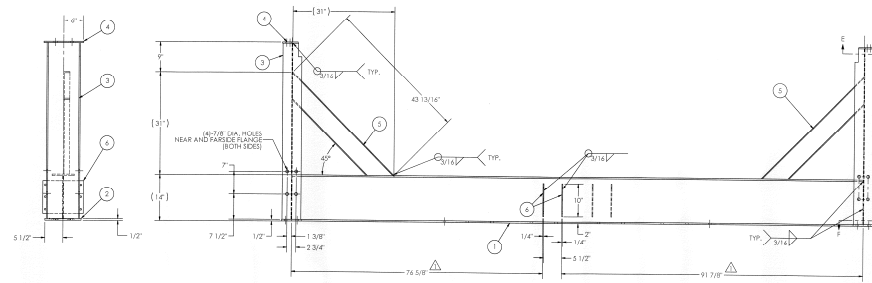
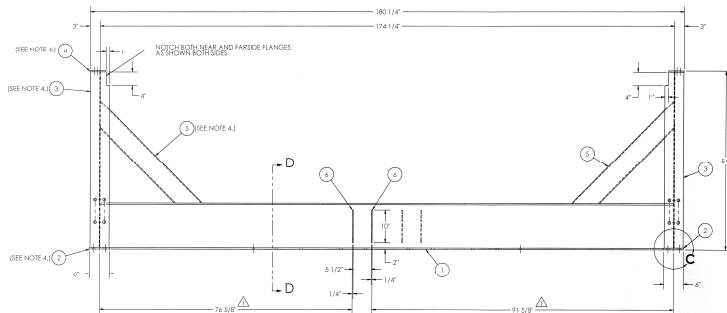


DETAIL B



SECTION F-F

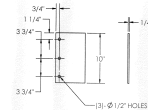
SECTION E-E



SECTION D-D



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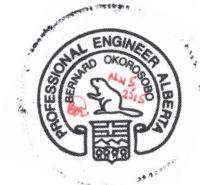
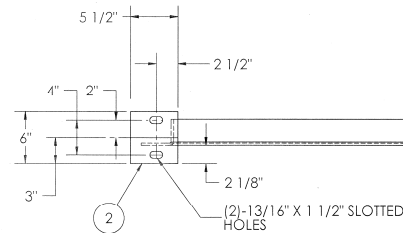
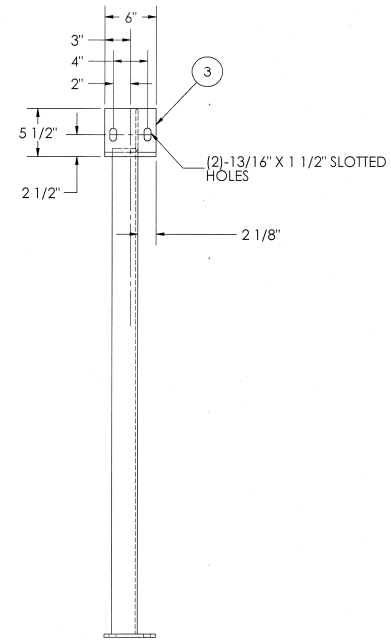
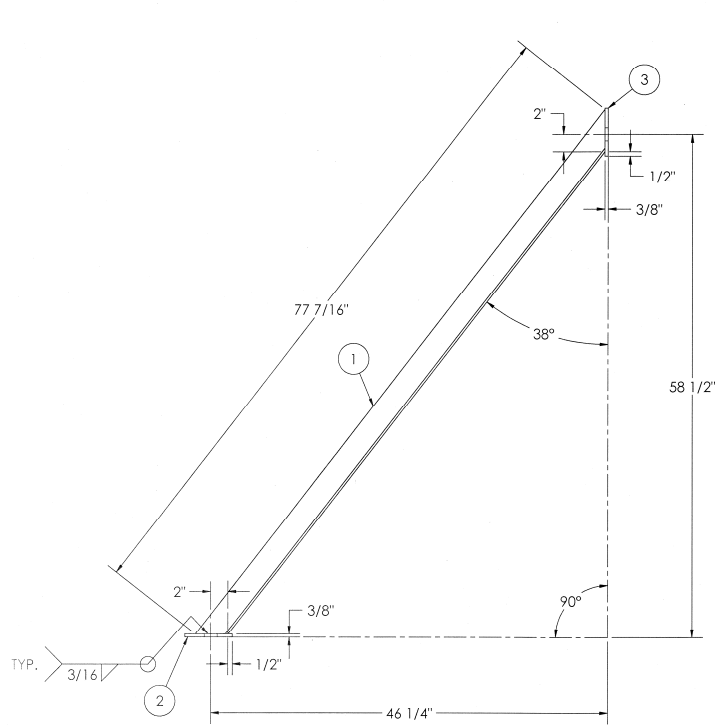
DETAIL ITEM '7'

SEE 14499 WELD INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS

DATE	DESCRIPTION	BY	CHKD	APP'D
11/05/15	DESIGN	[Signature]	[Signature]	[Signature]
11/05/15	CONSTRUCTION	[Signature]	[Signature]	[Signature]
11/05/15	INSPECTION	[Signature]	[Signature]	[Signature]
11/05/15	WELDING	[Signature]	[Signature]	[Signature]

HEAT EXCHANGERS
PART NO. 14476-101-5H13
SCALE: N.T.S. REV: 2

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC 1	SPEC 2	PART NO.
	1	1	FORMED ANGLE 3" X 3" X 1/4" THK. X 77 7/16" LG. (M.B.E.)	29	STEEL	A-516-70		
	2	1	BAR 3/8" X 5 1/2" X 6"	4	STEEL	A-516-70		
	3	1	BAR 3/8" X 5 1/2" X 6"	4	STEEL	A-516-70		
			TOTAL WEIGHT	37				



NOVEMBER 05, 2015
STEPHENSON ENGINEERING LTD.
APEGA PERMIT # P11864
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SEE 14496-WELD/INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS

NOTES:

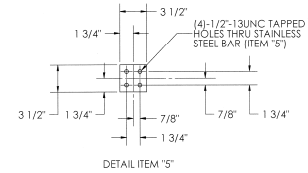
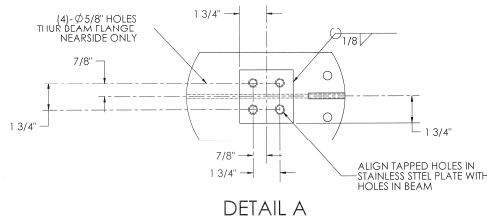
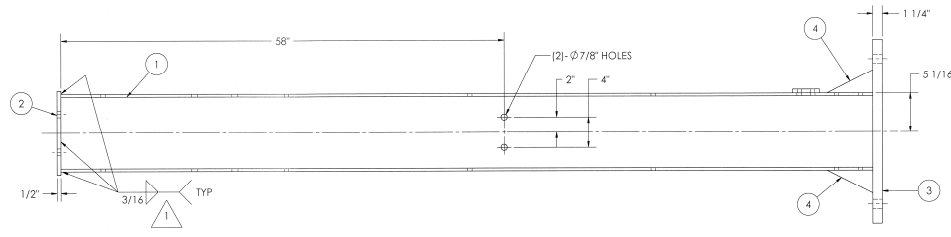
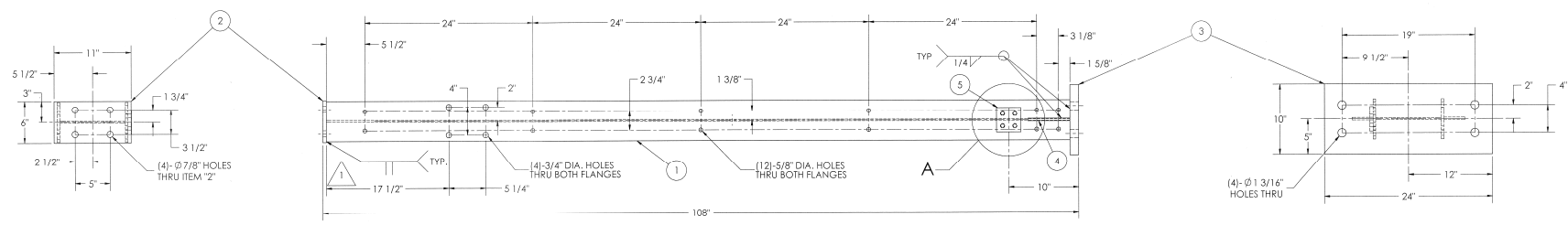
1. BEAD WELD THE DRAWING NUMBER ON THE PART. METAL TAGS MAY ALSO BE USED.
2. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF +/- 1/16" EXCEPT AS NOTED.
3. REMOVE ALL SLAG, LOOSE RUST AND MILL SCALE, WELD SPATTER, OIL, DIRT, AND ANY OTHER FOREIGN MATTER.
4. COMPONENTS TO BE FABRICATED FROM MATERIAL CHARPY IMPACT TESTED TO MEET 5 JOULES AT -40°F DOCUMENTATION IS TO BE PROVIDED.
5. STAMP HEAT NUMBER ON PART.

UNLESS OTHERWISE SPECIFIED:			
TOLERANCES:			
FRACTIONAL: ±1/16			
THE PRINT, INCLUDING ALL INFORMATION THEREON IS THE PROPERTY OF ECODYNE HEAT EXCHANGERS AND IS LOANED IN CONFIDENCE. SUBJECT TO THE RETURN UPON REQUEST, AND WITH THE UNDERSTANDING THAT NO COPIES OF THIS PRINT, OR OF THE INFORMATION CONTAINED, SHALL BE MADE WITHOUT THE PROPER WRITTEN CONSENT OF ECODYNE HEAT EXCHANGERS. ALL RIGHTS TO DESIGN AND INVENTION ARE RESERVED.			
REV	DATE	BY	DESCRIPTION
0	01/08/15	EG8	ORIGINAL RELEASE

ECODYNE Houston, Texas
HEAT EXCHANGERS (713) 675-3511

LOWER END KNEE BRACE
PART NO: **14496-101-Sh18**
SIZE: C SCALE: N.T.S. REV: 0

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC 1	SPEC 2	PART NO.
	1	1	BEAM W10 x 22# x 106 1/4" LG.	200	STEEL	A992		
	2	1	BAR 1/2" X 6" X 11"	9	STEEL	A-516-70		
	3	1	PLATE 1 1/4" X 10" X 24"	83	STEEL	A-516-70		
	4	2	BAR 3/8" X 3" X 6"	2	STEEL	A-516-70		
	5	1	BAR 1/2" X 3 1/2" X 3 1/2"	2	STAINLESS	STEEL	TYPE304	
TOTAL WEIGHT				296				



- NOTES:
1. PAINT DRAWING NO. ON PART. IF SANDBLASTED OR GALVANIZED, BEAD WELD, METAL TAGS MAY BE USED IF SANDBLASTED.
 2. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF +/- 1/16" EXCEPT AS NOTED.
 3. REMOVE ALL SLAG, LOOSE MILL SCALE, WELD SPATTER, OIL, DIRT AND OTHER FOREIGN MATTER.
 4. COMPONENTS TO BE FABRICATED FROM MATERIAL CHARTY IMPACT TESTED TO MEET 5 JOULES AT -40°F DOCUMENTATION IS TO BE PROVIDED.
 5. STAMP HEAT NUMBER ON PART.

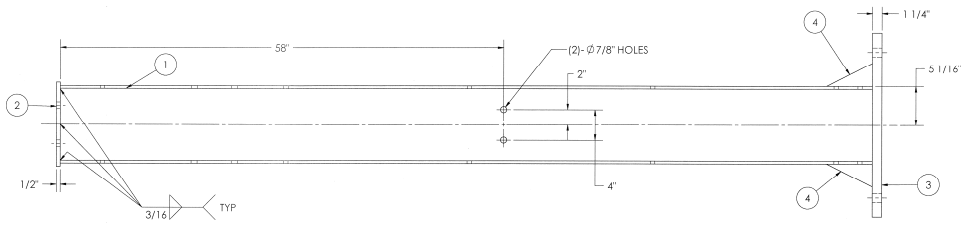
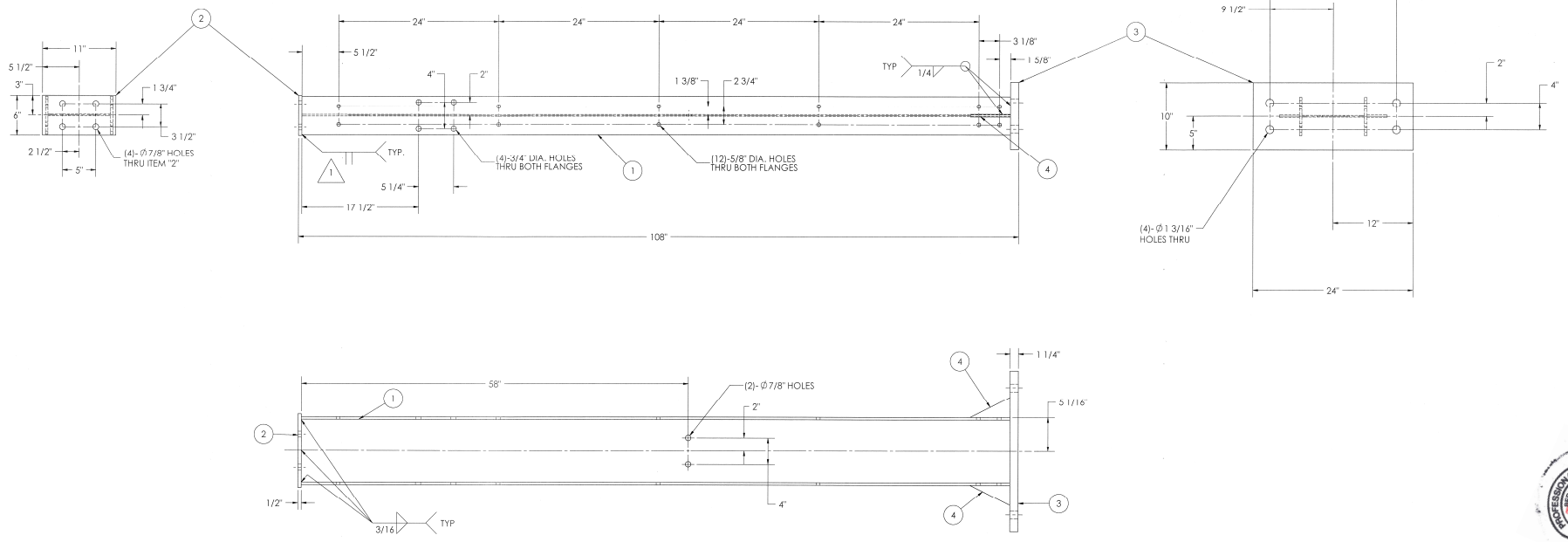
SEE 14496-WELD/INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS

NO.	DATE	BY	DESCRIPTION	DATE	APPROVED	REV.
1	04/05/18	AT	ADDED AND REVISED WELD SYMBOLS			
2	01/08/18	ESD	ORIGINAL RELEASE			



ECONVINE Houston, Texas
 (713) 675-2311
 LOWER COLUMN - END
 PART NO: **14496-101-Sh119**
 SEE D SCALE: N.T.S. REV: 1

REV.	ITEM	QTY.	DESCRIPTION	WEIGHT	MATERIAL	SPEC. 1	SPEC. 2	PART NO.
	1	1	BEAM W10 x 22# x 106 1/4" LG.	200	STEEL	A992		
	2	1	BAR 1/2" X 6" X 11"	9	STEEL	A-516-70		
	3	1	PLATE 1 1/4" X 10" X 24"	83	STEEL	A-516-70		
	4	2	BAR 3/8" X 3" X 6"	2	STEEL	A-516-70		
TOTAL WEIGHT				294				



NOVEMBER 05, 2015
 STEPHENSON ENGINEERS, LTD.
 APEGA PERMIT # F11864
 FOR 2014 ABC VERIFICATION ONLY

- NOTES:
1. PAINT DRAWING NO. ON PART. IF SANDBLASTED OR GALVANIZED, BEAD WELD. METAL TAGS MAY BE USED IF SANDBLASTED.
 2. ALL FRACTIONAL DIMENSIONS SHALL HAVE A TOLERANCE OF $\pm 1/16$ " EXCEPT AS NOTED.
 3. REMOVE ALL SLAG, LOOSE MILL SCALE, WELD SPATTER, OIL, DIRT AND OTHER FOREIGN MATTER.
 4. COMPONENTS TO BE FABRICATED FROM MATERIAL CHARTER IMPACT TESTED TO MEET 5 JOULES AT -40°F. DOCUMENTATION IS TO BE PROVIDED.
 5. STAMP HEAT NUMBER ON PART.

SEE 14496-WELD/INSPECTION/DOC FOR WELDING, INSPECTION AND DOCUMENTATION REQUIREMENTS

REV.	DATE	BY	DESCRIPTION	CHKD.	APPROVED
1	04/01/15	AT	ADDED & REVISED WELD SYMBOLS		
2	01/06/15	EGD	ORIGINAL RELEASE		

ECODYNE Houston, Texas
 (713) 975-5311
 LOWER COLUMN - INTERIOR
 PART NO: **14496-101-Sh30**
 SIZE: D SCALE: N.T.S. REV: 1