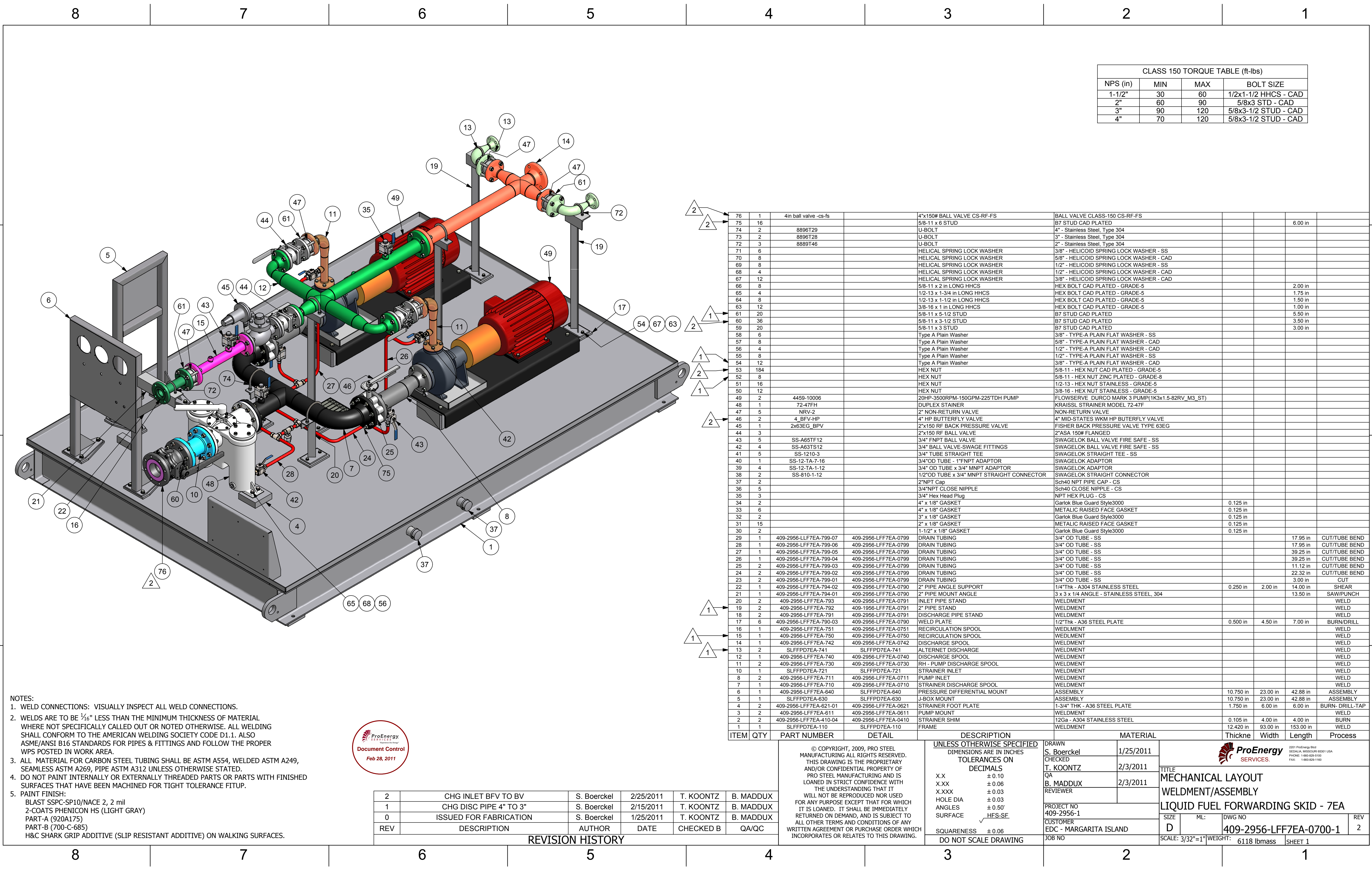


D

C

B

A



CLASS 150 TORQUE TABLE (ft-lbs)			
NPS (in)	MIN	MAX	BOLT SIZE
1-1/2"	30	60	1/2x1-1/2 HHCS - CAD
2"	60	90	5/8x3 STD - CAD
3"	90	120	5/8x3-1/2 STUD - CAD
4"	70	120	5/8x3-1/2 STUD - CAD

- NOTES:
- WELD CONNECTIONS: VISUALLY INSPECT ALL WELD CONNECTIONS.
  - WELDS ARE TO BE 3/16" LESS THAN THE MINIMUM THICKNESS OF MATERIAL WHERE NOT SPECIFICALLY CALLED OUT OR NOTED OTHERWISE. ALL WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE D1.1. ALSO ASME/ANSI B16 STANDARDS FOR PIPES & FITTINGS AND FOLLOW THE PROPER WPS POSTED IN WORK AREA.
  - ALL MATERIAL FOR CARBON STEEL TUBING SHALL BE ASTM A554, WELDED ASTM A249, SEAMLESS ASTM A269, PIPE ASTM A312 UNLESS OTHERWISE STATED.
  - DO NOT PAINT INTERNALLY OR EXTERNALLY THREADED PARTS OR PARTS WITH FINISHED SURFACES THAT HAVE BEEN MACHINED FOR TIGHT TOLERANCE FITUP.
  - PAINT FINISH:  
BLAST SSPC-SP10/NACE 2, 2 mil  
2-COATS PHENICON HS (LIGHT GRAY)  
PART-A (920A175)  
PART-B (700-C-685)  
H&C SHARK GRIP ADDITIVE (SLIP RESISTANT ADDITIVE) ON WALKING SURFACES.



2	CHG INLET BVF TO BV	S. Boerckel	2/25/2011	T. KOONTZ	B. MADDUX
1	CHG DISC PIPE 4" TO 3"	S. Boerckel	2/15/2011	T. KOONTZ	B. MADDUX
0	ISSUED FOR FABRICATION	S. Boerckel	1/25/2011	T. KOONTZ	B. MADDUX
REV	DESCRIPTION	AUTHOR	DATE	CHECKED B	QA/QC
REVISION HISTORY					

76	1	4in ball valve -cs-fs	4"x150# BALL VALVE CS-RF-FS	BALL VALVE CLASS-150 CS-RF-FS					
75	16		5/8-11 x 6 STUD	B7 STUD CAD PLATED				6.00 in	
74	2	8896T29	U-BOLT	4" - Stainless Steel, Type 304					
73	2	8896T28	U-BOLT	3" - Stainless Steel, Type 304					
72	3	8889T46	U-BOLT	2" - Stainless Steel, Type 304					
71	6		HELICAL SPRING LOCK WASHER	3/8" - HELICOID SPRING LOCK WASHER - SS					
70	8		HELICAL SPRING LOCK WASHER	5/8" - HELICOID SPRING LOCK WASHER - CAD					
69	8		HELICAL SPRING LOCK WASHER	1/2" - HELICOID SPRING LOCK WASHER - SS					
68	4		HELICAL SPRING LOCK WASHER	1/2" - HELICOID SPRING LOCK WASHER - CAD					
67	12		HELICAL SPRING LOCK WASHER	3/8" - HELICOID SPRING LOCK WASHER - CAD					
66	8		5/8-11 x 2 in LONG HHCS	HEX BOLT CAD PLATED - GRADE-5				2.00 in	
65	4		1/2-13 x 1-3/4 in LONG HHCS	HEX BOLT CAD PLATED - GRADE-5				1.75 in	
64	8		1/2-13 x 1-1/2 in LONG HHCS	HEX BOLT CAD PLATED - GRADE-5				1.50 in	
63	12		3/8-16 x 1 in LONG HHCS	HEX BOLT CAD PLATED - GRADE-5				1.00 in	
61	20		5/8-11 x 5-1/2 STUD	B7 STUD CAD PLATED				5.50 in	
60	36		5/8-11 x 3-1/2 STUD	B7 STUD CAD PLATED				3.50 in	
59	20		5/8-11 x 3 STUD	B7 STUD CAD PLATED				3.00 in	
58	6		Type A Plain Washer	3/8" - TYPE-A PLAIN FLAT WASHER - SS					
57	8		Type A Plain Washer	5/8" - TYPE-A PLAIN FLAT WASHER - CAD					
56	4		Type A Plain Washer	1/2" - TYPE-A PLAIN FLAT WASHER - CAD					
55	8		Type A Plain Washer	1/2" - TYPE-A PLAIN FLAT WASHER - SS					
54	12		Type A Plain Washer	3/8" - TYPE-A PLAIN FLAT WASHER - CAD					
53	184		HEX NUT	5/8-11 - HEX NUT CAD PLATED - GRADE-5					
52	8		HEX NUT	5/8-11 - HEX NUT ZINC PLATED - GRADE-8					
51	16		HEX NUT	1/2-13 - HEX NUT STAINLESS - GRADE-5					
50	12		HEX NUT	3/8-16 - HEX NUT STAINLESS - GRADE-5					
49	2	4459-10006	20HP-3500RPM-150GPM-225"TDH PUMP	FLOWERVEY DURCO MARK 3 PUMP(1K3x1.5-82RV_M3_ST)					
48	1	72-47FH	DUPLEX STRAINER	KRAISSL STRAINER MODEL 72-47F					
47	5	NRV-2	2" NON-RETURN VALVE	NON-RETURN VALVE					
46	2	4. BFW-HP	4" HP BUTTERFLY VALVE	4" MID-STATES WKM HP BUTTERFLY VALVE					
45	1	2x63EG_BPV	2"x150 RF BACK PRESSURE VALVE	FISHER BACK PRESSURE VALVE TYPE 63EG					
44	3		2"x150 RF BALL VALVE	2"ASA 150# FLANGED					
43	5	SS-A65TF12	3/4" FNPT BALL VALVE	SWAGelok BALL VALVE FIRE SAFE - SS					
42	4	SS-A63TS12	3/4" BALL VALVE-SWAGE FITTINGS	SWAGelok BALL VALVE FIRE SAFE - SS					
41	5	SS-1210-3	3/4" TUBE STRAIGHT TEE	SWAGelok STRAIGHT TEE - SS					
40	1	SS-12-TA-7-16	3/4"OD TUBE - 1"FNPT ADAPTOR	SWAGelok ADAPTOR					
39	4	SS-12-TA-1-12	3/4" OD TUBE x 3/4" MNPT ADAPTOR	SWAGelok ADAPTOR					
38	2	SS-810-1-12	1/2"OD TUBE x 3/4" MNPT STRAIGHT CONNECTOR	SWAGelok STRAIGHT CONNECTOR					
37	2		2"NPT Cap	Sch40 NPT PIPE CAP - CS					
36	5		3/4"NPT CLOSE NIPPLE	Sch40 CLOSE NIPPLE - CS					
35	3		3/4" Hex Head Plug	NPT HEX PLUG - CS					
34	2		4" x 1/8" GASKET	Garlok Blue Guard Style3000	0.125 in				
33	6		4" x 1/8" GASKET	METALIC RAISED FACE GASKET	0.125 in				
32	2		3" x 1/8" GASKET	Garlok Blue Guard Style3000	0.125 in				
31	15		2" x 1/8" GASKET	METALIC RAISED FACE GASKET	0.125 in				
30	2		1-1/2" x 1/8" GASKET	Garlok Blue Guard Style3000	0.125 in				
29	1	409-2956-LFF7EA-799-07	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			17.95 in	CUT/TUBE BEND
28	1	409-2956-LFF7EA-799-06	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			17.95 in	CUT/TUBE BEND
27	1	409-2956-LFF7EA-799-05	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			39.25 in	CUT/TUBE BEND
26	1	409-2956-LFF7EA-799-04	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			39.25 in	CUT/TUBE BEND
25	2	409-2956-LFF7EA-799-03	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			11.12 in	CUT/TUBE BEND
24	2	409-2956-LFF7EA-799-02	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			22.32 in	CUT/TUBE BEND
23	2	409-2956-LFF7EA-799-01	409-2956-LFF7EA-0799	DRAIN TUBING	3/4" OD TUBE - SS			3.00 in	CUT
22	1	409-2956-LFF7EA-794-02	409-2956-LFF7EA-0790	2" PIPE ANGLE SUPPORT	1/4"Thk - A304 STAINLESS STEEL	0.250 in	2.00 in	14.00 in	SHEAR
21	1	409-2956-LFF7EA-794-01	409-2956-LFF7EA-0790	2" PIPE MOUNT ANGLE	3 x 3 x 1/4 ANGLE - STAINLESS STEEL, 304			13.50 in	SAW/PUNCH
20	2	409-2956-LFF7EA-793	409-2956-LFF7EA-0791	INLET PIPE STAND	WELDMENT				WELD
19	2	409-2956-LFF7EA-792	409-1956-LFF7EA-0791	2" PIPE STAND	WELDMENT				WELD
18	2	409-2956-LFF7EA-791	409-2956-LFF7EA-0791	DISCHARGE PIPE STAND	WELDMENT				WELD
17	6	409-2956-LFF7EA-790-03	409-2956-LFF7EA-0790	WELD PLATE	1/2"Thk - A36 STEEL PLATE	0.500 in	4.50 in	7.00 in	BURN/DRILL
16	1	409-2956-LFF7EA-751	409-2956-LFF7EA-0751	RECIRCULATION SPOOL	WEDLMNT				WELD
15	1	409-2956-LFF7EA-750	409-2956-LFF7EA-0750	RECIRCULATION SPOOL	WEDLMNT				WELD
14	1	409-2956-LFF7EA-742	409-2956-LFF7EA-0742	DISCHARGE SPOOL	WELDMENT				WELD
13	2	SLFFPD7EA-741	SLFFPD7EA-741	ALTERNET DISCHARGE	WELDMENT				WELD
12	1	409-2956-LFF7EA-740	409-2956-LFF7EA-0740	DISCHARGE SPOOL	WELDMENT				WELD
11	2	409-2956-LFF7EA-730	409-2956-LFF7EA-0730	RH - PUMP DISCHARGE SPOOL	WELDMENT				WELD
10	1	SLFFPD7EA-721	SLFFPD7EA-721	STRAINER INLET	WELDMENT				WELD
9	2	409-2956-LFF7EA-711	409-2956-LFF7EA-0711	PUMP INLET	WELDMENT				WELD
8	1	409-2956-LFF7EA-710	409-2956-LFF7EA-0710	STRAINER DISCHARGE SPOOL	WELDMENT				WELD
7	1	409-2956-LFF7EA-640	SLFFPD7EA-640	PRESSURE DIFFERENTIAL MOUNT	ASSEMBLY	10.750 in	23.00 in	42.88 in	ASSEMBLY
6	1	SLFFPD7EA-630	SLFFPD7EA-630	J-BOX MOUNT	ASSEMBLY	10.750 in	23.00 in	42.88 in	ASSEMBLY
5	1	409-2956-LFF7EA-621-01	409-2956-LFF7EA-0621	STRAINER FOOT PLATE	1-3/4" THK - A36 STEEL PLATE	1.750 in	6.00 in	6.00 in	BURN-DRILL-TAP
4	2	409-2956-LFF7EA-611	409-2956-LFF7EA-0611	PUMP MOUNT	WELDMENT				WELD
3	2	409-2956-LFF7EA-410-04	409-2956-LFF7EA-0410	STRAINER SHIM	12Ga - A304 STAINLESS STEEL	0.105 in	4.00 in	4.00 in	BURN
2	2	SLFFPD7EA-110	SLFFPD7EA-110	FRAME	WELDMENT	12.420 in	93.00 in	153.00 in	WELD
1	1								
ITEM	QTY	PART NUMBER	DETAIL	DESCRIPTION	MATERIAL	Thickne	Width	Length	Process

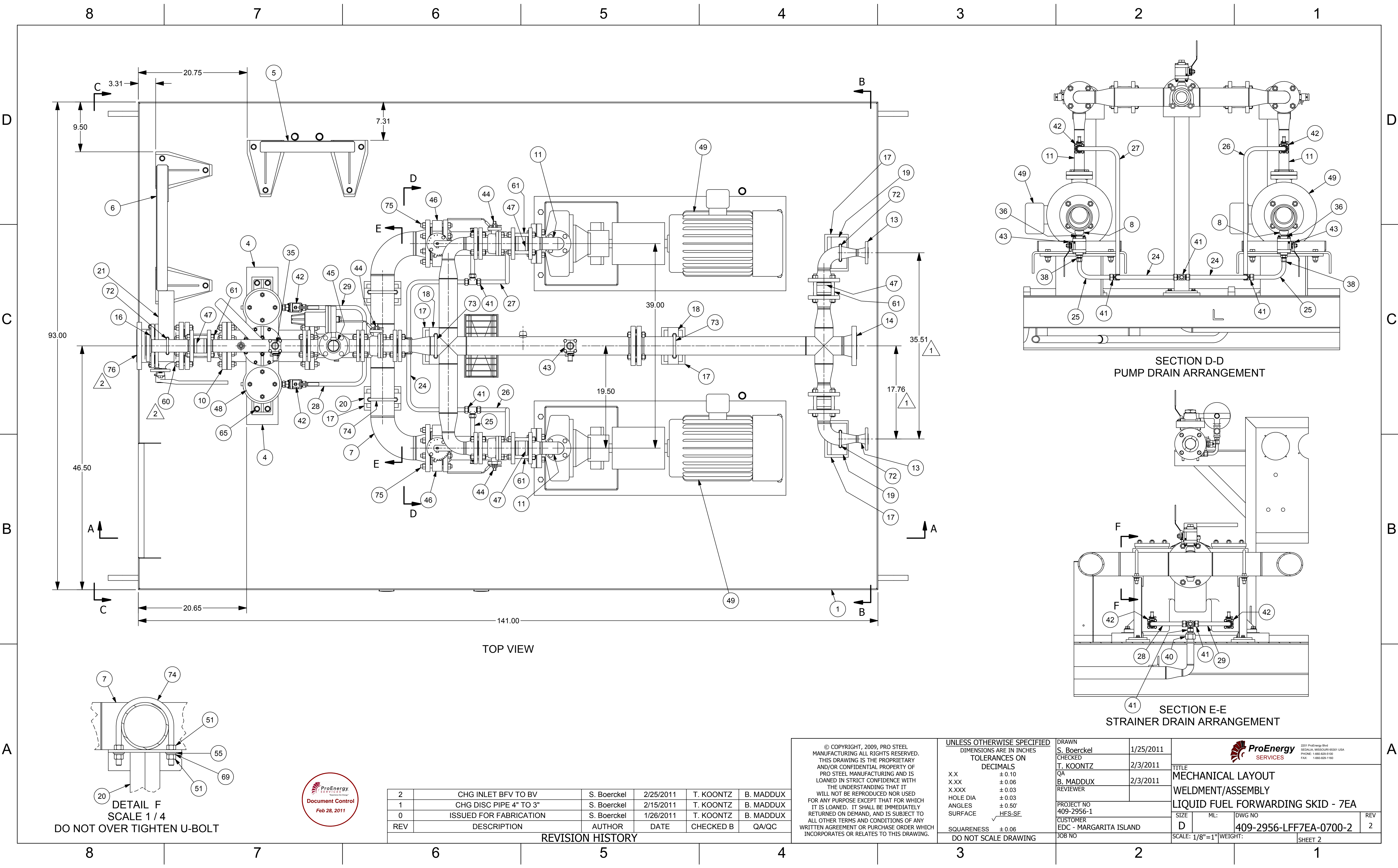
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UNLESS OTHERWISE SPECIFIED		DRAWN		TITLE	
DIMENSIONS ARE IN INCHES		S. Boerckel		MECHANICAL LAYOUT	
TOLERANCES ON		1/25/2011		WELDMENT/ASSEMBLY	
DECIMALS		2/3/2011		LIQUID FUEL FORWARDING SKID - 7EA	
X.X ± 0.10		QA		SIZE	
X.XX ± 0.06		B. MADDUX		ML:	
X.XXX ± 0.03		REVIEWER		DWG NO	
HOLE DIA ± 0.03		PROJECT NO		409-2956-1	
ANGLES ± 0.50°		CUSTOMER		D	
SURFACE HFS-SF		EDC - MARGARITA ISLAND		REV	
SQUARENESS ± 0.06		JOB NO		2	
DO NOT SCALE DRAWING		SCALE: 3/32"=1"		WEIGHT: 6118 lbmass	
				SHEET 1	



2001 ProEnergy Blvd  
SEGLA, MISSOURI 65591 USA  
PHONE: 1-800-829-5100  
FAX: 1-800-829-1100

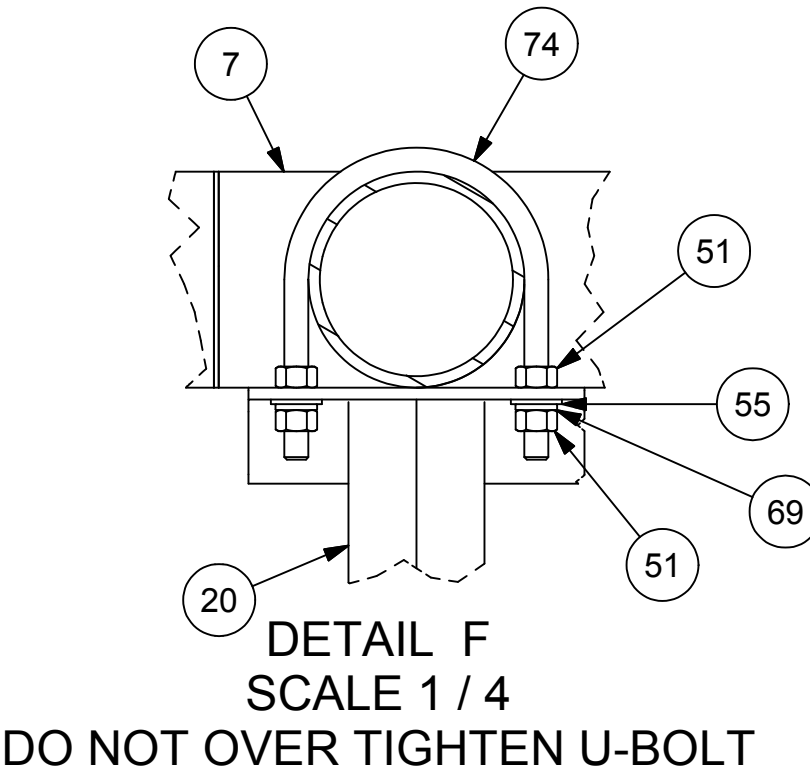




TOP VIEW

SECTION D-D  
PUMP DRAIN ARRANGEMENT

SECTION E-E  
STRAINER DRAIN ARRANGEMENT




REV	DESCRIPTION	AUTHOR	DATE	CHECKED B	QA/QC
2	CHG INLET BVF TO BV	S. Boerckel	2/25/2011	T. KOONTZ	B. MADDUX
1	CHG DISC PIPE 4" TO 3"	S. Boerckel	2/15/2011	T. KOONTZ	B. MADDUX
0	ISSUED FOR FABRICATION	S. Boerckel	1/26/2011	T. KOONTZ	B. MADDUX

REVISION HISTORY

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UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
TOLERANCES ON DECIMALS	
X.X	± 0.10
X.XX	± 0.06
X.XXX	± 0.03
HOLE DIA	± 0.03
ANGLES	± 0.50°
SURFACE	✓ HFS-SF
SQUARENESS	± 0.06
DO NOT SCALE DRAWING	

DRAWN	S. Boerckel	1/25/2011
CHECKED	T. KOONTZ	2/3/2011
QA	B. MADDUX	2/3/2011
REVIEWER		
PROJECT NO 409-2956-1		
CUSTOMER EDC - MARGARITA ISLAND		
JOB NO		

			
TITLE			
MECHANICAL LAYOUT			
WELDMENT/ASSEMBLY			
LIQUID FUEL FORWARDING SKID - 7EA			
SIZE	ML	DWG NO	REV
D		409-2956-LFF7EA-0700-2	2
SCALE: 1/8"=1" WEIGHT:			SHEET 2

8 7 6 5 4 3 2 1

D

C

B

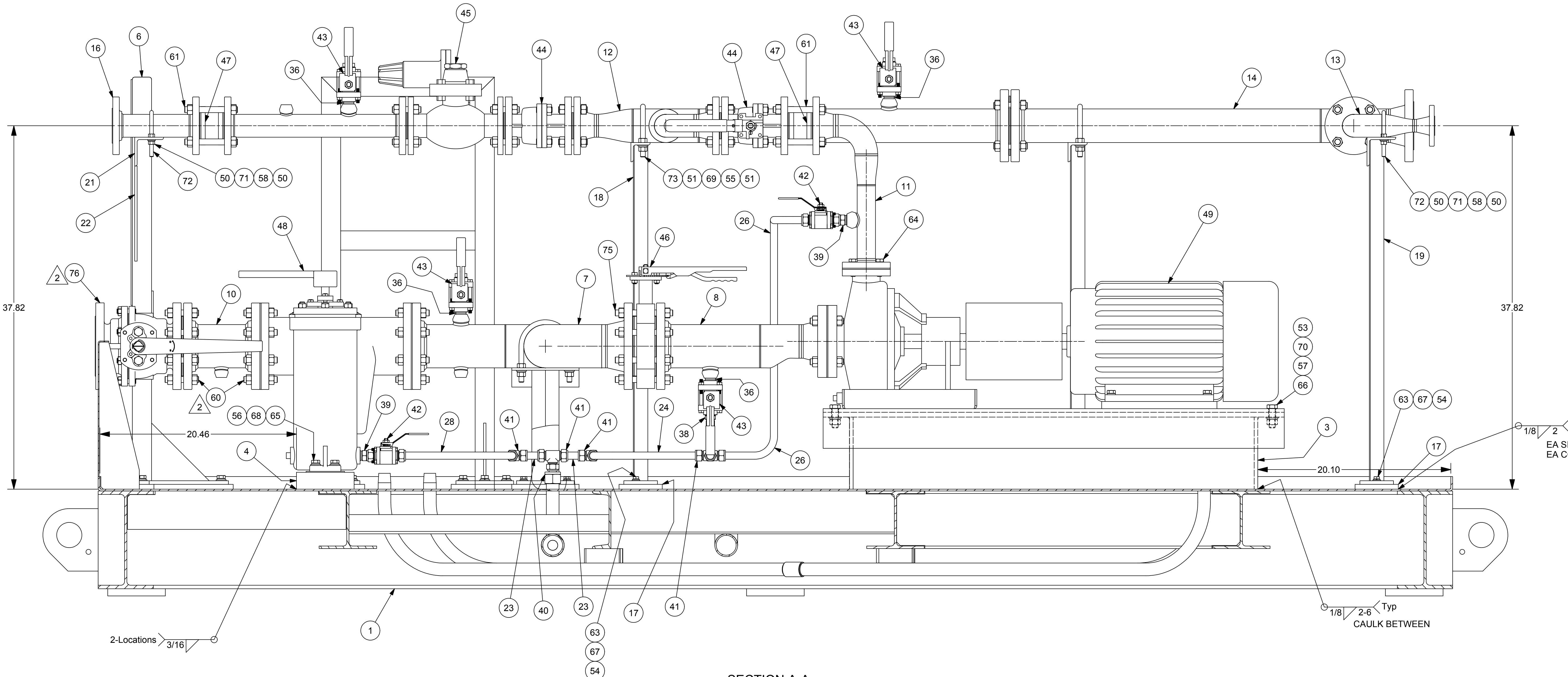
A

D

C

B

A



SECTION A-A



REV	DESCRIPTION	AUTHOR	DATE	CHECKED B	QA/QC
2	CHG INLET BFV TO BV	S. Boerckel	2/25/2011	T. KOONTZ	B. MADDUX
1	CHG DISC PIPE 4" TO 3"	S. Boerckel	2/15/2011	T. KOONTZ	B. MADDUX
0	ISSUED FOR FABRICATION	S. Boerckel	1/25/2011	T. KOONTZ	B. MADDUX
REVISION HISTORY					

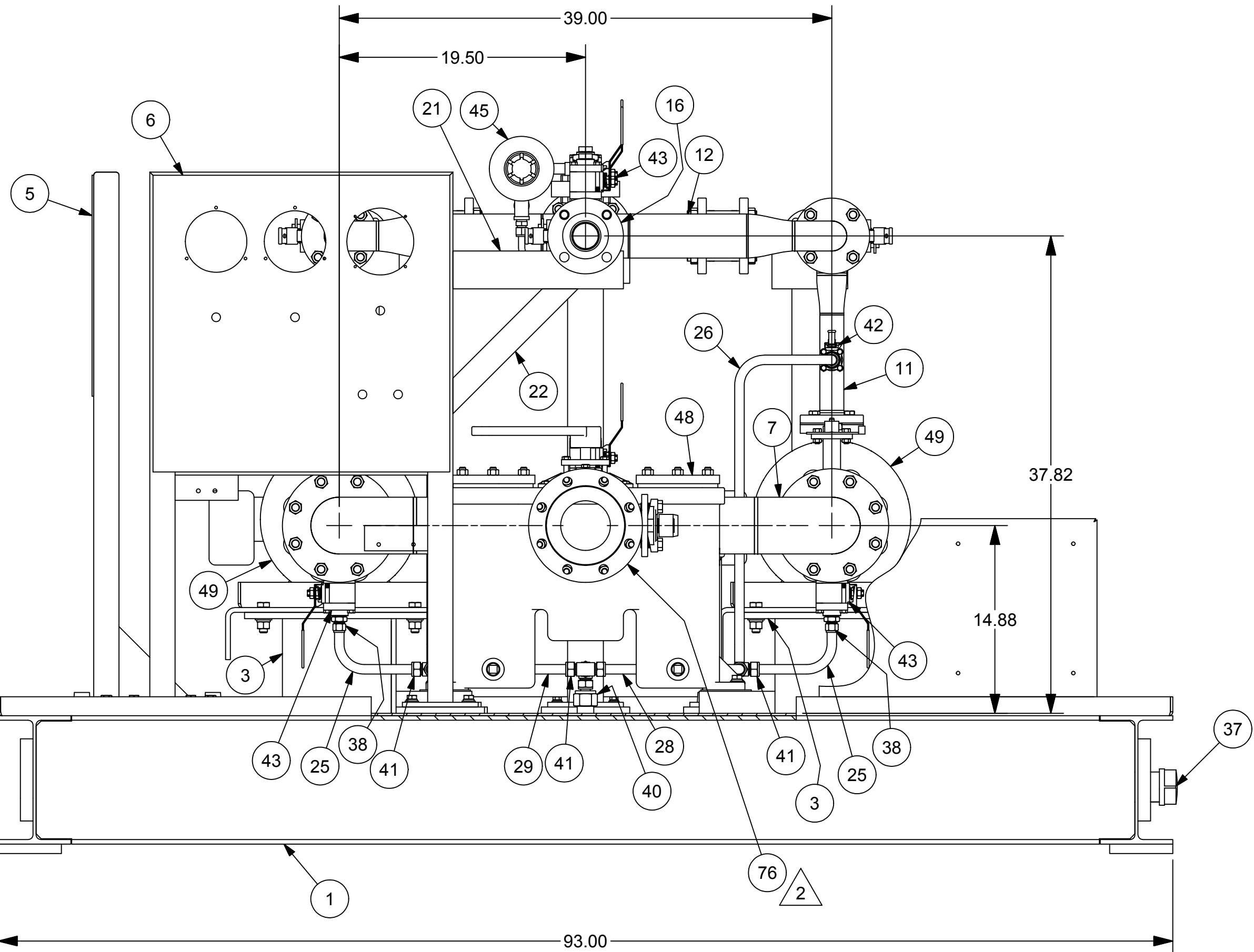
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UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ON  
DECIMALS  
X.X ± 0.10  
X.XX ± 0.06  
X.XXX ± 0.03  
HOLE DIA ± 0.03  
ANGLES ± 0.50°  
SURFACE HFS-SF  
SQUARENESS ± 0.06  
DO NOT SCALE DRAWING

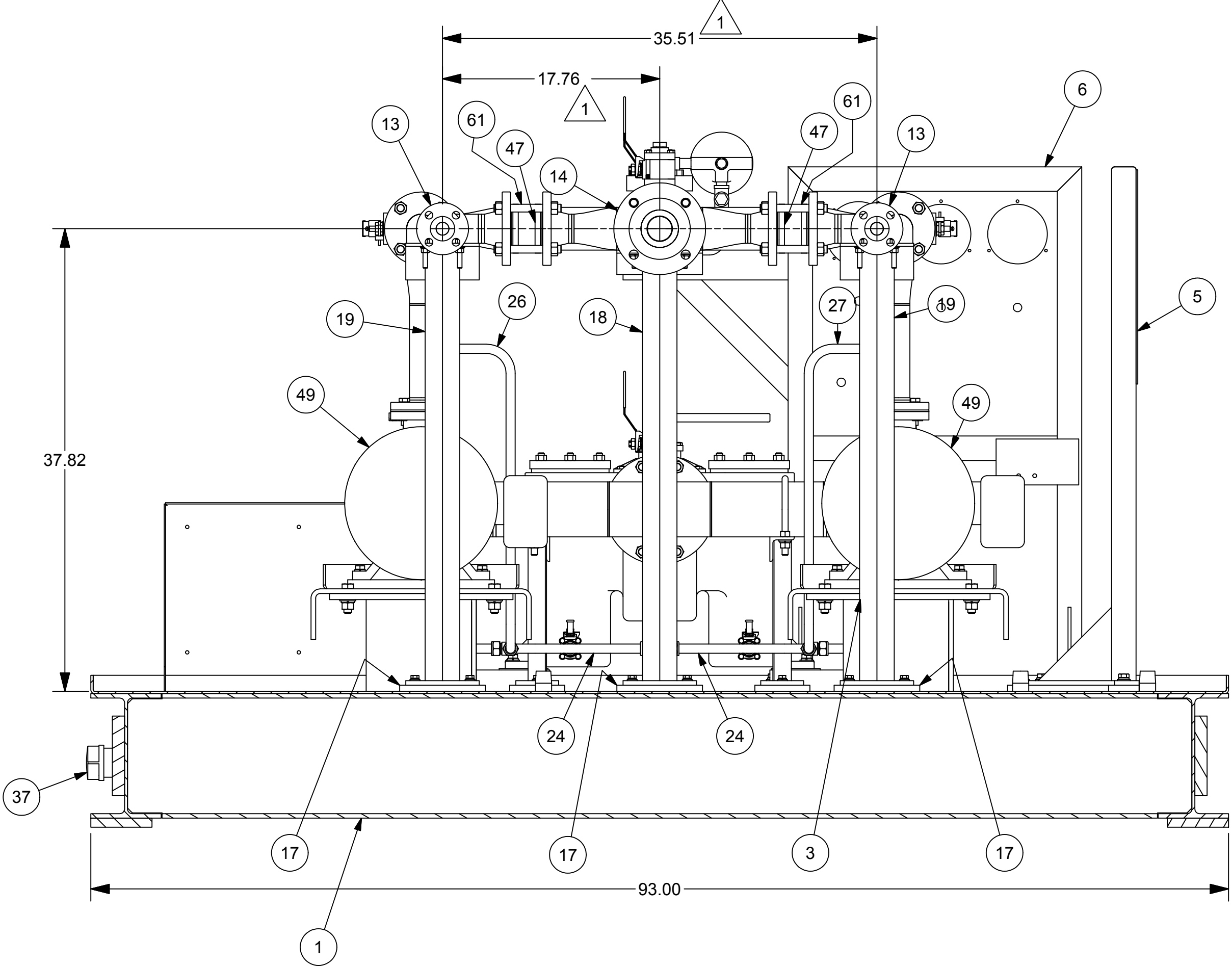
DRAWN S. Boerckel	1/25/2011
CHECKED T. KOONTZ	2/3/2011
QA B. MADDUX	2/3/2011
REVIEWER	
PROJECT NO 409-2956-1	
CUSTOMER EDC - MARGARITA ISLAND	
JOB NO	

 2201 ProEnergy Blvd SECALIA, MISSOURI 65501 USA PHONE: 1-800-829-5100 FAX: 1-800-829-1100			
TITLE MECHANICAL LAYOUT WELDMEN/ASSEMBLY LIQUID FUEL FORWARDING SKID - 7EA			
SIZE D	ML	DWG NO 409-2956-LFF7EA-0700-3	REV 2
SCALE: 3/16"=1"		WEIGHT: SHEET 3	





VIEW C-C



SECTION B-B




REV	DESCRIPTION	AUTHOR	DATE	CHECKED B	QA/QC
2	CHG INLET BVF TO BV	S. Boerckel	2/25/2011	T. KOONTZ	B. MADDUX
1	CHG DISC PIPE 4" TO 3"	S. Boerckel	2/15/2011	T. KOONTZ	B. MADDUX
0	ISSUED FOR FABRICATION	S. Boerckel	1/26/2011	T. KOONTZ	B. MADDUX
REV	DESCRIPTION	AUTHOR	DATE	CHECKED B	QA/QC

REVISION HISTORY

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INCORPORATES OR RELATES TO THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS	
X.X	± 0.10
X.XX	± 0.06
X.XXX	± 0.03
HOLE DIA	± 0.03
ANGLES	± 0.50°
SURFACE	HFS-SF
SQUARENESS	± 0.06
DO NOT SCALE DRAWING	

DRAWN S. Boerckel	1/25/2011
CHECKED T. KOONTZ	2/3/2011
QA B. MADDUX	2/3/2011
REVIEWER	
PROJECT NO 409-2956-1	
CUSTOMER EDC - MARGARITA ISLAND	
JOB NO	

 <div>2201 ProEnergy Blvd SEDAIA, MISSOURI 65201 USA PHONE: 1-800-829-5100 FAX: 1-800-829-1100</div>				TITLE MECHANICAL LAYOUT WELDMENT/ASSEMBLY LIQUID FUEL FORWARDING SKID - 7EA	
SIZE D	ML:	DWG NO 409-2956-LFF7EA-0700-4	REV 2	SCALE: 1/8"=1" WEIGHT:	
				SHEET 4	