APPENDIX A. SUBSTATION EQUIPMENT DATABASE

Equipment Type	Voltage (kV)	Manufacturer	Model	Qualification Procedure	Report Date	Horizontal Qualification Level (g)	Vertical Qualification Level (g)	Spectrum	X Maximum Displacement (inch)	Y Maximum Displacement (inch)	Z Maximum Displacement (inch)	Fundamental frequency (Hz)	Direction/ Mode	Other Natural Frequency (Hz)	Direction/ Mode	Damping ratio (%)	First modal participation factor	Total Mass (kg)	Modal Mass (kg)	Contributor	Notes
Bushing (1)a	550	ABB	550X2000 UW									8.2	X-Dir			4	-	3740	-	PEER	
Bushing (1)b	550	ABB	550X2000 UW									7.9	Y-Dir			4	-	3740	-	PEER	
Bushing (2)a	550	ABB	550SEIS2000-1									8	X-Dir			4	-	3740	-	PEER	
Bushing (2)b	550	ABB	550SEIS2000-1									8.2	Y-Dir			4	-	3740	-	PEER	
Bushing (3)a	550	ABB	550SEIS2000-1									8	X-Dir			4	-	3740	-	PEER	
Bushing (3)b	550	ABB	550SEIS2000-1									7.8	Y-Dir			4	-	3740	-	PEER	
Bushing (1)a	230	GE	Serial #-1795450 3000-A, type U									20	X-Dir			2	-	920		PEER	Test Set 1-6; Effective modal weight depends on test performed.
Bushing (1)b	230	GE	Serial #-1795450 3000-A, type U									18	Y-Dir			2	-	920		PEER	Test Set 1-6; Effective modal weight depends on test performed.
Bushing (1)a	230	GE	Serial #-1795450 3000-A, type U									20	X-Dir			3	-	920		PEER	Test Set 18-20; Effective modal weight depends on test performed.
Bushing (1)b	230	GE	Serial #-1795450 3000-A, type U									18	Y-Dir			2	-	920		PEER	Test Set 18-20; Effective modal weight depends on test performed.
Bushing (2)a	230	GE	Serial #-1795451 3000-A, type U									20	X-Dir			3	-	920		PEER	Test Set 1, 12-16; Effective modal weight depends on test performed.
Bushing (2)b	230	GE	Serial #-1795451 3000-A, type U									18	Y-Dir			2	-	920		PEER	Test Set 1, 12-16; Effective modal weight depends on test performed.
Bushing (2)a	230	GE	Serial #-1795451 3000-A, type U									20	X-Dir			3	-	920		PEER	Test Set 26-28; Effective modal weight depends on test performed.
Bushing (2)b	230	GE	Serial #-1795451 3000-A, type U									18	Y-Dir			2	-	920		PEER	Test Set 26-28; Effective modal weight depends on test performed.
Bushing (2)a	230	GE	Serial #-1795451 3000-A, type U									14*	X-Dir			3	-	920		PEER	Test Set 31-33; a second mode frequency of 26.5 Hz was evident in both directions

Bushing: Transformer	230	Haefely Trench		Time History	01-Jul-96	1	0.8	IEEE 693-97 Draft High	0.46			5.3	1 st	25.6	2 nd	4.5		838		Rulon-Frank	Composite
Bushing: Transformer	230	Haefely Trench		Sine Beat	01-Jul-96	1	0.8	IEEE 693-97 Draft High	1.26			5.3	1 st	25.6	2 nd	4.5		838		Rulon-Frank	Composite
Bushing: Transformer	500	Haefely Trench		Time History	01-Jul-96	1	0.8	IEEE 693-97 Draft High	2.44			3.9	1 st	20.7	2 nd	6		1852		Rulon-Frank	Composite
Bushing: Transformer	500	Haefely Trench		Sine Beat	01-Jul-96	1	0.8	IEEE 693-97 Draft High	4.46			3.9	1 st	20.7	2 nd	6		1852		Rulon-Frank	Composite
Bushing: Transformer	196	GEC Alsthom		Time History	03-Nov-97	1	0.8	IEEE 693-97 Draft High									No contract. Test plan only. No test info			Rulon-Frank	
Bushing: Transformer	196	Reyrolle Ltd		Sin beat	19-Mar-98	1	0.8	IEEE 693-97 High	20 mm			8.6	X Axis	10	Y Dir	2		380		Rulon-Frank	
Bushing: Transformer	196	Reyrolle Ltd		Time History	19-Mar-98	1	0.8	IEEE 693-97 High	12 mm			8.6	X Axis	10	Y Dir	2		380		Rulon-Frank	
Bushing: DC (Spares)	500	ABB		Sine Beat	05-Oct-98	1	0.8	IEEE 693-97 High												Rulon-Frank	Tested as Spare; Supported top and bottom
Bushing: DC (Spares)	500			Time History		1	0.8	IEEE 693-97 High												Rulon-Frank	Tested as Spare; Supported top and bottom
Bushing	230	HSP Hochspannungsgerate		Time History	19-Jul-00	1	0.8	IEEE 693-97 High	1.18			9.8	1st			2		90.7		Rulon-Frank	Composite Insulator, Transformer support
Bypass Breaker	595	GEC Alsthom		Dynamic Analysis	01-Jul-94	0.2	0.16	LADWP Spectra	0.6	0.6		3.2	X Axis	3.2	Y Axis	2	mode 1- 20.2 Y dir; mode 2 - 20.2 X dir; mode 3 - 36.8 x dir; mode 4 - 36.8 y dir; mode 5 - 110 y dir; mode 6 - 10.0 x dir; mode 7 - 20 x dir; mode 8 - 20 y dir; mode 9 - 10 x dir; mode 10 - 10 y dir.	1527		Rulon-Frank	Steel frame
Capacitor : Shunt				Dynamic Analysis	01-Feb-98	0.4	0.32	IEEE 693	0.69	0.86		4.32	Y Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt				Dynamic Analysis	01-Feb-98	0.4	0.32	IEEE 693	0.36	0.46		6.36	Y Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt				Dynamic Analysis	01-Feb-98	0.4	0.32	IEEE 693	0.4	0.5		6.08	Y Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt				Dynamic Analysis	01-Jan-97	0.4	0.27	IEEE 693	0.25	0.98		2.2	X Axis			2*				PG+E	Welded aluminum frame
Capacitor : Shunt				Dynamic Analysis	01-Oct-98	0.4		IEEE 693-1997	1.38			3.71	1st Res Freq			2*				PG+E	Aluminum structure
Capacitor : Shunt				Dynamic Analysis	01-Dec-98	0.4		IEEE 693-1997	1.68			2.78	1st Res Freq			2*				PG+E	
Capacitor : Shunt				Dynamic Analysis	01-Nov-98	0.4		IEEE 693-1997	1.43			3.71	1st Res Freq			2*				PG+E	Aluminum Structure
Capacitor : Shunt				Dynamic Analysis	01-Oct-98	0.4		IEEE 693-1997	1.13			4.06	1st Res Freq			2*				PG+E	Aluminum Structure
Capacitor : Shunt				Static Analysis	01-Mar-97	0.2		Static	0.7	0.01	0.01					2*				PG+E	Aluminum Frame
Capacitor : Shunt				Dynamic Analysis	01-Feb-98	0.4	0.32	IEEE 693	0.92	1.06		3.95	Y Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt				Dynamic Analysis	01-Feb-98	0.4	0.32	IEEE 693	0.55	0.67		5.08	Y Axis			2*				PG+E	Welded Aluminum Frame

Capacitor : Shunt				Dynamic Analysis	01-Feb-98	0.4	0.32	IEEE 693	0.68	0.83		4.65	Y Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt	118.47			Dynamic Analysis	01-Dec-95	0.3		IEEE 693	0.99	0.08		3.2	X Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt	230			Dynamic Analysis	01-Oct-98	0.4	0.32	IEEE 693-97	0.77	0.56		5.36	X Axis			2*				PG+E	Welded Aluminum Frame
Capacitor : Shunt	230			Dynamic Analysis	01-Oct-98	0.4	0.32	IEEE 693-97	0.58	0.37		6.07	X Axis			2*				PG+E	Welded aluminum frame
Circuit Breaker	161	Contact Hydro-Quebec	RE-GC-90-1 PVH									2.03				2*	1.56	-	-	Hydro-Quebec	
Circuit Breaker	230	Contact Hydro-Quebec	RE-GC-90-1 PVH									1.5				2*	1.41	-	-	Hydro-Quebec	
Circuit Breaker	230	Contact Hydro-Quebec	RE-GC-90-1 PK4V									1.5				2*	1.15	-	-	Hydro-Quebec	
Circuit Breaker	315	Contact Hydro-Quebec	RE-GC-90-1 PVH									1.34				2*	1.41	-	-	Hydro-Quebec	
Circuit Breaker	315	Contact Hydro-Quebec	RE-GC-90-1 PK4B									1.75				2*	1.14	-	-	Hydro-Quebec	
Circuit Breaker	735	Contact Hydro-Quebec	RE-GC-90-1 PKV8D									0.95				2*	1.17	-	-	Hydro-Quebec	
Circuit Breaker	735	Contact Hydro-Quebec	RE-GC-90-1 PKV8D									1.24				2*	1.17	-	-	Hydro-Quebec	
Circuit Breaker	735	Contact Hydro-Quebec	RE-GC-90-1 PK8D									0.89				2*	1.15	-	-	Hydro-Quebec	
Circuit Breaker	735	Contact Hydro-Quebec	RE-GC-90-1 PK8C									0.89				2*	1.15	-	-	Hydro-Quebec	
Circuit Breaker	735	Contact Hydro-Quebec	RE-GC-90-1									0.59				2*	1.38	-	-	Hydro-Quebec	
Circuit Breaker	735	Contact Hydro-Quebec	RE-GC-90-1									0.57				2*	1.25	-	-	Hydro-Quebec	
Circuit Breaker SF6	230	Contact Hydro-Quebec	RE-GC-90-1									2.82				2*	0.65	-	-	Hydro-Quebec	Heavy latticed support.
Circuit Breaker SF6	300	Contact Hydro-Quebec	RE-GC-90-1 DCVF									3.92				2*	0.72	-	-	Hydro-Quebec	Heavy latticed support.
Circuit Breaker	300	Contact Hydro-Quebec	RE-GC-90-1 40AF									1.73				2*	1.20	-	-	Hydro-Quebec	
Circuit Breaker	330	Contact Hydro-Quebec	GFX									2.66				2*	1.82	-	-	Hydro-Quebec	
Circuit Breaker SF6	765	Contact Hydro-Quebec	668-PE-010? GFX-5DS									1.02				2*	1.09	-	-	Hydro-Quebec	
Circuit Breaker	145	Contact Hydro-Quebec	680-PE-0501B 1AC									1.24				2*	1.42	-	-	Hydro-Quebec	Support 5.21 m
Circuit Breaker	145	Contact Hydro-Quebec	680-PE-0501-B 1AC									3.026				2*	1.29	-	-	Hydro-Quebec	Support 3.075 m
Circuit Breaker SF6	330	Contact Hydro-Quebec	680 PE-0201-B ELF SP5-2									2.56				3	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	230	Contact Hydro-Quebec	680-PE-0301-B ELF SP4-2									4.0				3	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	145	Contact Hydro-Quebec	680-PE-0402-B ELF SP3-1									8.3				3.91	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	765	Contact Hydro-Quebec	680-PE-0101A GFX-4D									0.80				2*	1.29	-	-	Hydro-Quebec	see also 0102A, 0121A
Circuit Breaker SF6	765	Contact Hydro-Quebec	680-PE-0101-B ELF SP8-6									0.90				2*	1.02	-	-	Hydro-Quebec	Measured values: 0.84 Hz and 3.5%.
Circuit Breaker SF6	765	Contact Hydro-Quebec	680-PE-0103-A ELF SP8-41									0.82				3.5	-	-	-	Hydro-Quebec	

Circuit Breaker SF6	330	Contact Hydro-Quebec	680-PE-020? GFX-2D									1.39				2*	1.23	-	-	Hydro-Quebec	
Circuit Breaker SF6	330	Contact Hydro-Quebec	680-PE-0201B ELF SP5-2									2.2				5.3	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	330	Contact Hydro-Quebec	680-PE-0201C GFX-2A									1.56				2*	1.38	-	-	Hydro-Quebec	Without dampers. Analysis also made with dampers.
Circuit Breaker SF6	330	Contact Hydro-Quebec	680-PE-0201 D ELF SP5-2									2.3				6.3	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	245	Contact Hydro-Quebec	680-PE-0202 A ELF SL6-2									2.5				3.0	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	245	Contact Hydro-Quebec	680-PE-0203-D ELF SP4-2									4				4	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	330	Contact Hydro-Quebec	680-PE-02023-D ELF SP5-2									2.56				3.02	-	-	-	Hydro-Quebec	
Circuit Breaker SF6	245	Contact Hydro-Quebec	680-PE-0301 C GFX-1A									1.21				2*	1.32	-	-	Hydro-Quebec	
Circuit Breaker SF6	170	Contact Hydro-Quebec	680-PE-0401-A GFX-1A									2.01				2*	1.37	-	-	Hydro-Quebec	
Circuit Breaker. SF6	170	Contact Hydro-Quebec	680-PE-0401-A GFX-1A									1.55				2*	1.35	-	-	Hydro-Quebec	
Circuit Breaker	170	Contact Hydro-Quebec	680-PE-0402-E ELF SP3-1									8.25				3.9	-	-	-	Hydro-Quebec	
Circuit Breaker	170	Contact Hydro-Quebec	680-PE-0501-C ELF SP3-1									8.25				3.9	-	-	-	Hydro-Quebec	
Circuit Breaker.	170	Contact Hydro-Quebec	680-PE-0403-B HPL 170									5.6				2*	1.12	-	-	Hydro-Quebec	
Circuit Breaker SF6	145	Contact Hydro-Quebec	680-PE-0501B GFX-1A									2.64				2*	1.29	-	-	Hydro-Quebec	
Circuit Breaker. SF6	145	Contact Hydro-Quebec	680-PE-0501B GFX-1A									3.05				2*	1.35	-	-	Hydro-Quebec	
Circuit Breaker. SF6	145	Contact Hydro-Quebec	680-PE-0501-D HGF 112/1Cs									2.6				4	-	-	-	Hydro-Quebec	Displacement at CG only.
Circuit Breaker. SF6	145	Contact Hydro-Quebec	680-PE-0501-E 680-PE-0501-F HPL 145 A1									5.94				2*	-	-	-	Hydro-Quebec	First flexural frequency used. Lower frequencies exist for other modes.
Circuit Breaker. SF6	145	Contact Hydro-Quebec	680-PE-0511-B HPL 145/2501									5.48				2*	-	-	-	Hydro-Quebec	Simultaneous analysis with current transformer.
Circuit Breaker. SF6	145	Contact Hydro-Quebec	680-PE-0511-C GFX-1AC									4.49				2*	1.78	-	-	Hydro-Quebec	

Circuit Breaker. SF6	145	Contact Hydro-Quebec	680-PE-0513-A HGF 112/1Cs									2.6				4	-	-	-	Hydro-Quebec	Same as 501D above.
Circuit Breaker	765	Contact Hydro-Quebec	680-PE-0101-A PKVD									2.01				2*	1.20	-	-	Hydro-Quebec	
Circuit Breaker	230	Contact Hydro-Quebec	RE-GC-90-1									1.34				2*	1.31	-	-	Hydro-Quebec	
Circuit Breaker	315	Contact Hydro-Quebec	RE-GC-90-1 HLR 420/2504E									1.08				2*	1.27	-	-	Hydro-Quebec	
Circuit Breaker	315	Contact Hydro-Quebec	RE-GC-90-1 HLR 420/2504E FORM LT									0.93				2*	1.26	-	-	Hydro-Quebec	
Circuit Breaker	315	Contact Hydro-Quebec	IREQ/analysis AT									1.24				2*	1.04	-	-	Hydro-Quebec	
(SF6 Circuit Breaker)a	800	Contact Hydro-Quebec	-									1.98				0.9	-	-	-	Hydro-Quebec	High Tension Cables not connected.
(SF6 Circuit Breaker)a	800	Contact Hydro-Quebec	-									1.7				-	-	-	-	Hydro-Quebec	High Tension Cables connected.
(SF6 Circuit Breaker)b	800	Contact Hydro-Quebec	-									1.98				1	-	-	-	Hydro-Quebec	High Tension Cables not connected.
(SF6 Circuit Breaker)b	800	Contact Hydro-Quebec	-									1.85				4.9	-	-	-	Hydro-Quebec	High Tension Cables connected.
Circuit Breaker : Gas-Live Tank	550			Dynamic Analysis	01-Jun-94	0.5		IEEE & PG&E	5			1.7	1st Res Freq			5				PG+E	Steel and Aluminum
Circuit Breaker : Oil-Live Tank By-Pass	595			Dynamic Analysis	01-Jul-94	0.2		LADWP	25.4			3.24	1st Res Freq			2*				PG+E	Steel Support
Vac Circuit Breaker	15			Static	01-Nov-96	1	0.8													Rulon-Frank	
Circuit Breaker	138	Siemens		Dynamic Analysis	16-Jan-98	0.5	0.4	IEEE 693-97 Draft High	0.9			8.8	1st	11.8	2 nd	2.0%	Mode x dir y dir z dir 1 -0.0174 2.871 0.0605 2 0.0819 -.278 -.433 3.69 - 0.003.81 0.0051 4 0.062 1.96 0.014 5 - 0.35 0.022 0.0268 6	3413		Rulon-Frank	Composite bushing, Steel frame support
Circuit Breaker	145	Siemens		Dynamic Analysis	21-Apr-99	0.5	0.4	IEEE 693-97 Draft High	0.15	0.71	0.2	11.8	X Dir	12.6	Y Dir	2.0%		4010		Rulon-Frank	12.6Hz z axis; composite bushing, Steel fram support
Live Tank Circuit Breaker	550	ABB		Time History	22-Mar-99	0.25	0.2	IEEE 693-97	2.78			0.8				25.0%		1600		Rulon-Frank	Composite and base isolation, Steel Pipe 1.96 in
Circuit Breaker	242	Mitsubishi		Sine Beat	06-Jul-99	0.5	0.4	IEEE 693-97 High	0.42	0.89		11.1	X Dir	10.6	Y Dir	2.7%				Rulon-Frank	Steel frame
Circuit Breaker	72	Siemens		Dynamic Analysis	31-Mar-98	0.5	0.4	IEEE 693-97 High	0.104			21.9	X Dir	24.2	Y Dir	2.0%		2081		Rulon-Frank	Steel frame
Circuit Switcher	145			Dynamic Analysis	12-Jan-95	0.4		PG&E	1.97			3.28	1st Res Freq			2*				PG+E	6X6 TUBE; H-frame
Circuit Switcher	145			Dynamic Analysis	11-Sep-95	0.4		PG&E	1.97	0.32		3.28	Y Axis			2*				PG+E	6X8X3/8 Pedestals
Circuit Switcher	145			Dynamic Analysis	26-Jun-95	0.5		PSEUDO-IEEE 693-1995	1.78			4.95	ofp			2*				PG+E	Tubular Pedestal

Current Transducers	500	ABB		Time History	10-Feb-99	1	0.8	IEEE 693-97 Draft High	0.79	0.79	0.08	2.3	X Axis	2.5	Y Dir	3.5		1950		Rulon-Frank	Guyed; Porcelain support, Polymer bracing, 9.71 cm tall support bracket
Current Transducers	500	Ritz		Sine Beat	31-Mar-97	0.5	0	IEEE 693-97 Draft High	4.96	6.61		2.9	X Axis	2.16	Y Dir	6.5				Rulon-Frank	
Disconnect Switch	765	Contact Hydro-Quebec	682-PE-0112-A BCVB									0.87 o 1.20 f				5	0.89 rot/o 0.80 mac/o 1.39 rot/f 1.25 mac/f	-	-	Hydro-Quebec	Frame Type
Disconnect Switch	500	Contact Hydro-Quebec	682-PE-0112-A BCVB									1.15 o 1.66 f				2*	0.88 rot/o 0.90 mac/o 1.51 rot/f 1.54 mac/f	-	-	Hydro-Quebec	Frame Type
Disconnect Switch	230	Contact Hydro-Quebec	682-PE-0312 ? BCGB-G									4.89/o 5.58/f				2*	1.01 rot/o 0.71 mac/o 1.16 rot/f 1.09 mac/f	-	-	Hydro-Quebec	Frame Type
Disconnect Switch	145	Contact Hydro-Quebec	682-Pe-0766-C CGCB									10.04/o 15.4/f				2*	-	-	-	Hydro-Quebec	Negligible displacements.
Ground Disconnect Switch	765	Contact Hydro-Quebec	682-PE-1011-A ECGS									1.73				2*	1.44	-	-	Hydro-Quebec	Candle-like (not frame).
Ground Disconnect Switch	800	Contact Hydro-Quebec	682-PE-5001-A BCVB-G									1.09/o 1.31/f				2*	0.92 rot/o 1.08 mac/o 1.18 rot/f 1.19 mac/f	-	-	Hydro-Quebec	Frame Type
Disconnect Switch	245/ 330	Contact Hydro-Quebec	682-PE-5313-A BCVB									1.99/o 2.85/f				5	0.66 rot/o 0.26 mac/o 1.39 rot/f 0.53 mac/f	-	-	Hydro-Quebec	Frame Type
Disconnect Switch (SW2)a	230	ABB	Type TTR-8									6/f 6/o				3/f 2/o	-	280	-	PEER	Values are for "Pole C" & "Post 1" only. SW2 refers to arrangement. See report.
Disconnect Switch (SW2)b	230	ABB	Type TTR-8									6/f 6/o				2/f 2/o	-	280	-	PEER	Values are for "Pole C" & "Post 1" only. SW2 refers to arrangement. See report.
Disconnect Switch (SW2a)a	230	ABB	Type TTR-8									6/f 6/o				3/f 3/o	-	280	-	PEER	Values are for "Pole C" & "Post 1" only. SW2a refers to arrangement. See report.
Disconnect Switch (SW2a)b	230	ABB	Type TTR-8									6/f 6/o				3/f 3/o	-	280	-	PEER	Values are for "Pole C" & "Post 1" only. SW2a refers to arrangement. See report.
Disconnect Switch (SW3)a	230	ABB	Type TTR-8									8,6/f 8/o				2,2/f 2/o	-	110	-	PEER	Values are for "Pole C" & "Post 1" only. SW3 refers to arrangement. See report.
Disconnect Switch (SW3)b	230	ABB	Type TTR-8									8/f 8/o				2/f 2/o	-	110	-	PEER	Values are for "Pole C" & "Post 1" only. SW3 refers to arrangement. See report.
Disconnect Switch (SW4)a	230	ABB	Type DR9									3/f 2/o				4/f 4/o	-	380	-	PEER	Values are for "Pole C" & "Post 1" only. SW4 refers to arrangement. See report.

Disconnect Switch (SW4)b	230	ABB	Type DR9									4/f 3/o				4/f 2/o	-	380	-	PEER	Values are for "Pole C" & "Post 1" only. SW4 refers to arrangement. See report.
(Disconnect Switch)a	800	Contact Hydro-Quebec	BCVB-G									0.85				0.5	-	7540	-	Hydro-Quebec	Conductor Blade Closed; High Tension Cables not connected
(Disconnect Switch)a	800	Contact Hydro-Quebec	BCVB-G									0.85				1.3	-	7540	-	Hydro-Quebec	Conductor Blade Closed; High Tension Cables connected
(Disconnect Switch)a	800	Contact Hydro-Quebec	BCVB-G									0.59				1	-	7540	-	Hydro-Quebec	Conductor Blade Open; High Tension Cables not connected
(Disconnect Switch)a	800	Contact Hydro-Quebec	BCVB-G									0.62				1.9	-	7540	-	Hydro-Quebec	Conductor Blade Open; High Tension Cables connected
(Disconnect Switch)b	800	Contact Hydro-Quebec	BCVB-G									1				0.7	-	7540	-	Hydro-Quebec	Conductor Blade Closed; High Tension Cables not connected
(Disconnect Switch)b	800	Contact Hydro-Quebec	BCVB-G									1				5.7	-	7540	-	Hydro-Quebec	Conductor Blade Closed; High Tension Cables connected
(Disconnect Switch)b	800	Contact Hydro-Quebec	BCVB-G									0.76				1.7	-	7540	-	Hydro-Quebec	Conductor Blade Open; High Tension Cables not connected
(Disconnect Switch)b	800	Contact Hydro-Quebec	BCVB-G									0.84				4.1	-	7540	-	Hydro-Quebec	Conductor Blade Open; High Tension Cables connected
(Disconnect Switch)a	800	Contact Hydro-Quebec	BCVB									0.88				0.4	-	7300	-	Hydro-Quebec	Conductor Blade Closed.
(Disconnect Switch)a	800	Contact Hydro-Quebec	BCVB									0.67				1.1	-	7300	-	Hydro-Quebec	Conductor Blade Open.
(Disconnect Switch)b	800	Contact Hydro-Quebec	BCVB									1				0.7	-	7300	-	Hydro-Quebec	Conductor Blade Closed.
(Disconnect Switch)b	800	Contact Hydro-Quebec	BCVB									0.82				1.5	-	7300	-	Hydro-Quebec	Conductor Blade Open.
Disconnect Switch	138			Static		3.2	2.56													Rulon-Frank	
Disconnect Switch	138	GEC Alsthom		Dynamic Analysis	01-Oct-97	0.5	0.4	IEEE 693-97 Draft High	0.2			11.2	X Dir	11.8	Y Dir	2	32.4 x; 57.5 y; 2.6 z	2437		Rulon-Frank	15.5 Hz z axis, Steel frame
Disconnect Switch	230	GEC Alsthom		Sine Beat	01-Oct-97	0.5	0.4	IEEE 693-97 Draft High	3.6	3.8	0.5	5.1	X Dir	5	Y Dir	3		3212		Rulon-Frank	28 Hz z axis, Steel frame
Disconnect Switch	230	GEC Alsthom		Time History	01-Oct-97	0.5	0.4	IEEE 693-97 Draft High	2.9	4.5	3.3	5.1	X Dir	5	Y Dir	3		3212		Rulon-Frank	28 Hz z axis, Steel frame
Disconnect Switch	230			Sine Beat		0.5	0.4					4						7,711		Rulon-Frank	Steel frame
Disconnect Switch	230	GEC Alsthom		Sine Beat	31-Jul-97	0.5	0.8	IEEE 693-97 High	7.1			5	X Dir	18	Y Dir	3		3324		Rulon-Frank	9'-1 5/8" tall; 4 pipe 8 5/8" OD; knee braced wt=3327lbs legs+braces; wt=1401lbs horiz platform; wt=2301lbs insulators; wt=297 horiz brake blades.
Disconnect Switch	230	GEC Alsthom		Time History	31-Jul-97	0.5	0.8	IEEE 693-97 High	5.2			5	X Dir	18	Y Dir	3		3324		Rulon-Frank	9'-1 5/8" tall; 4 pipe 8 5/8" OD; knee braced wt=3327lbs legs+braces; wt=1401lbs horiz platform; wt=2301lbs insulators; wt=297 horiz brake blades.
Lightning Arrester	765	Contact Hydro-Quebec	771-PE-0103-C Tranquell									1.11				2*	1.49	-	-	Hydro-Quebec	Support 219 in (5.56 m)

Lightning Arrester	765	Contact Hydro-Quebec	771-PE-0103-C Tranquell									1.44				2*	1.59	-	-	Hydro-Quebec	Support 165 in (4.19 m)
Lightning Arrester	330	Contact Hydro-Quebec	771-PE-0103-C Tranquell									3.03				2*	1.25	-	-	Hydro-Quebec	Support 178 in (4.52 m)
Lightning Arrester	330	Contact Hydro-Quebec	771-PE-0103-C Tranquell									4.31				2*	1.28	-	-	Hydro-Quebec	Support 118 in (3.00 m)
Lightning Arrester	245	Contact Hydro-Quebec	771-PE-0103-C Tranquell									4.08				2*	1.20	-	-	Hydro-Quebec	Support 178 in (4.52 m)
Lightning Arrester	245	Contact Hydro-Quebec	771-PE-0103-C Tranquell									6.35				2*	1.24	-	-	Hydro-Quebec	Support 118 in (3.00 m)
Lightning Arrester	612	Contact Hydro-Quebec	771-PE-0101-D SMX									0.88				10	1.44	-	-	Hydro-Quebec	Standardized HQ support.
Lightning Arrester	396	Contact Hydro-Quebec	771-PE-0201D SMX									1.46				5	1.47	-	-	Hydro-Quebec	Lattice type candle-like support.
Lightning Arrester	372	Contact Hydro-Quebec	771-PE-0201-D SMX									2.8				5	1.08	-	-	Hydro-Quebec	With support.
Lightning Arrester	735	Contact Hydro-Quebec	771-PE-0201-E XAP800S									0.60				5	1.52	-	-	Hydro-Quebec	Support HQ 5.6 m
Lightning Arrester	735	Contact Hydro-Quebec	771-PE-0201-E XAP800S									0.61				5	1.46	-	-	Hydro-Quebec	Support 2.5 m
Pothead	138	G&W Electric Co		Static Pull Test	31-Jul-98	345		IEEE 693-97 Draft High	0.375									220		Rulon-Frank	
Pothead	230	G&W Electric Co		Static Coefficient	01-Mar-98	1.5*1.6g	.8*horiz	IEEE 693-97 Draft High	0.76	0.76						2		726		PG+E	
Reactor	121			Dynamic Analysis	01-Apr-94	0.5		IEEE 693	1.03			4.1	1st Res Freq			2*				PG+E	8" steel pipe
Reactor	230			Dynamic Analysis	01-Feb-99	0.4	0.32	IEEE 693-1997	0.27			7.6	1st Res Freq			2*				PG+E	Ground Mounted
Reactor : Current Limiting	19.6			Dynamic Analysis	14-Oct-92	0.36	0.24		0.38			5.9	1st Res Freq			2*				PG+E	
Reactor : Current Limiting	121			Dynamic Analysis	01-May-95	0.5	0.33	IEEE 693-1984	1.02			4.1	1st Res Freq			2*				PG+E	Steel pipe (ASTM A 53 grade B)
Reactor: Air Core	138	Haefely Trench		Dynamic Analysis	03-Sep-00	0.5	0.4	IEEE 693-97 High	0.02			20.4	Translational	23.9	Rotational	2	See separate sheet	7593		Rulon-Frank	Sloped insulator base
Shunt Inductance	735	Contact Hydro-Quebec	675-PE-0102-A									16.8				2*	-	-	-	Hydro-Quebec	Analysis of bushing. Negligible displacement.
Station Post Insulator				Sin beat - Time History		0.65														Rulon-Frank	Composite
Surge Arrester	500			Dynamic Analysis	01-Apr-98	0.6	0.5	IEEE 693-1997	0.47			7.78	1st Res Freq			2*				PG+E	NO STRUCTURE USED A 1.2 AMPL FACTOR
Surge Arrester	500			Dynamic Analysis	01-Apr-98	0.6	0.5	IEEE 693-1997	0.72			6.3	1st Res Freq			2*				PG+E	NO STRUCTURE USED A 1.2 AMPL FACTOR
Surge Arrester 59.2"	120	ABB		Time History	21-Nov-97	1	0.8	IEEE 693-97 Draft High	3.5			2.1	1st	12.2	2nd	2*		40.37		Rulon-Frank	Composite
Surge Arrester	120	ABB		Time History	21-Nov-97	1	0.8	IEEE 693-97 Draft High	3.5			2.1	1st	12.2	2nd	2*		48.08		Rulon-Frank	Composite

ester 84.9"	180	ABB		Time History	21-Nov-97	1	0.8	IEEE 693-97 Draft High	5			4.3	1 st	25	2 nd			57.15		Rulon-Frank	Composite
ester 88.4"	180	ABB		Time History	21-Nov-97	1	0.8	IEEE 693-97 Draft High	5in			4.3	1 st	25	2 nd			64.86		Rulon-Frank	Composite
Arrester	475	Siemens		Time History	05-Nov-98	1	0.8	IEEE 693-97 Draft High	13.6	15		2.37	X Axis	2.33	Y Dir	2		390		Rulon-Frank	Composite
Arrester	420	ABB		Time History	01-Sep-98	0.5	0.4	IEEE 693-97 Draft High	8.3			2				2		1202		PG+E	Guyed composite insulators structure equipment, Pedestal steel support
Arrester	420	ABB		Time History	01-Sep-98	0.5	0.4	IEEE 693-97 Draft High	9			1.6				2		1347		PG+E	Guyed composite insulators structure equipment, Pedestal steel support
Arrester	180	ABB		Sine Beat	18-May-00	1	0.8	IEEE 693-97 High	13.92			3.9	Y Axis			0.5		76		Rulon-Frank	Transformer (not included in data)
Arrester	180	ABB		Time History	18-May-00	1	0.8	IEEE 693-97 High				3.9	1st			0.5		76		Rulon-Frank	Transformer (not included in data)
vitchgear	550	Mitsubishi		Time History	01-Oct-96	0.5	0.4	IEEE 693-97 Draft High	2.99	3.31		5.9	X Axis	5.2	Y Axis	1.2		15225		Rulon-Frank	Composite bushings, equipment too large to test as a complete unit. Equipment was broken down to two parts with frames attached to simulate the part missing, Short steel leg supports
vitchgear	550	Mitsubishi		Sine Beat	01-Oct-96	0.5	0.4	IEEE 693-97 Draft High	2.83	3.43		5.9	X Axis	5.2	Y Axis	1.2		15225		Rulon-Frank	Composite bushings, equipment too large to test as a complete unit. Equipment was broken down to two parts with frames attached to simulate the part missing, Short steel leg supports
ole (SW1)a	230	ABB	-									3/o 3/f				3/o 3/f	-	629	540/f 516/o	PEER	Two-post porcelain horizontal-break switch
ole (SW1)b	230	ABB	-									3/o 5/f				4/o 4/f	-	629	562/f 587/o	PEER	Two-post porcelain horizontal-break switch
ole (SW2)a	230	ABB	-									5/o 5,6/f				3/o 3,2/f	-	989	741/f 719/o	PEER	Three-post porcelain vertical-break pole
ole (SW2)b	230	ABB	-									6/o 6/f				2/o 2/f	-	989	719/f 719/o	PEER	Three-post porcelain vertical-break pole
ole (SW3)a	230	ABB	-									7/o 6,7/f				2/o 2,2/f	-	450	293/f 293/o	PEER	Three-post composite vertical-break post
ole (SW3)b	230	ABB	-									8/o 8/f				2/o 2/f	-	450	315/f 293/o	PEER	Three-post composite vertical-break post
sformer				Dynamic Analysis	14-Jan-97	0.2		IEEE 693 - 84	8			1.24	X Axis			2*				PG+E	Welded to Pad
former : or Voltage CVT)	500			Dynamic Analysis	04-Feb-93	0.5		IEEE 693/PG&E	11.84			1.17	1st Res Freq			5				PG+E	Square Tube 16 x 16 x 5/16" Rubber pads at foundation connections
former : or Voltage CVT)	138	ABB		Time History	24-Sep-97	0.5	0.4	IEEE 693-97 Draft High	0.98			8.6	1st	10.9	2nd	9.5		1900		Rulon-Frank	ST 16x16x.375
former : or Voltage CVT)	138	ABB		Sine Beat	24-Sep-97	0.6	0.4	IEEE 693-97 Draft High	0.47			8.6	1st	10.9	2nd	9.5		1900		Rulon-Frank	ST 16x16x.375

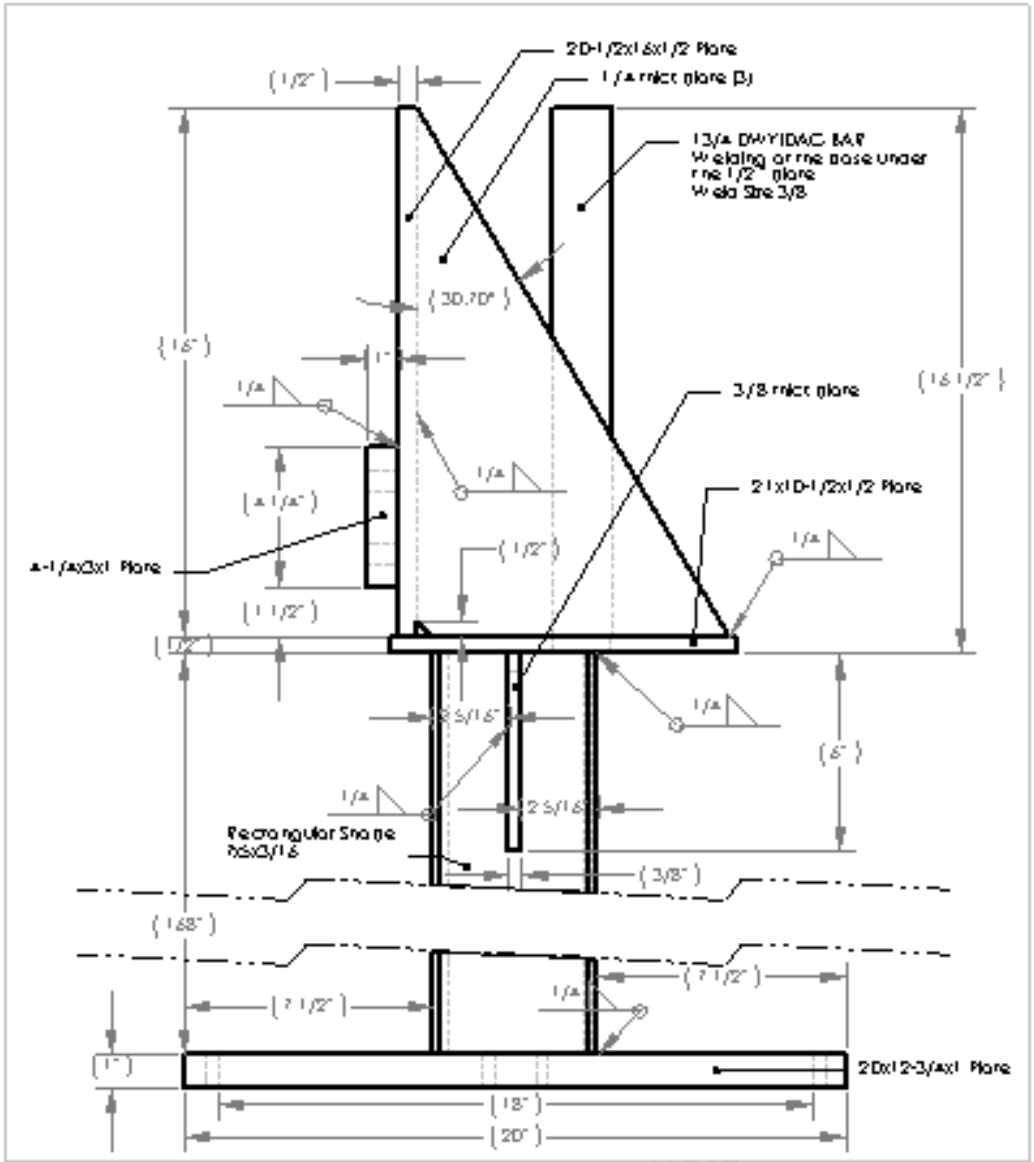
rmer : Voltage f)	230				10-Feb-95															Rulon-Frank	Composite - Report not complete
rmer : Voltage f)	525				10-Feb-95															Rulon-Frank	Composite - Report not complete
rmer : Voltage f)	230	Ritz		Time History	01-Nov-98	0.5	0.4	IEEE 693-97 Draft High	0.75			3.9	1st	17.2	2 nd	2		1893		Rulon-Frank	Steel Pipe 12" dia
rmer : Voltage f)	230	Ritz		Sine Beat	01-Nov-98	0.5	0.4	IEEE 693-97 Draft High	2.2			3.9	1st	17.2	2 nd	2		1893		Rulon-Frank	Steel Pipe 12" dia
rmer : Voltage f)	115	Ritz		Time History	01-Nov-98	0.5	0.4	IEEE 693-97 Draft High	0.54			2.7				2		1439		Rulon-Frank	Steel Pipe 12" dia
rmer : Voltage f)	115	Ritz		Sine Beat	01-Nov-98	0.5	0.4	IEEE 693-97 Draft High	1.5			2.7				2		1439		Rulon-Frank	Steel Pipe 12" dia
rmer : Capacitor ige	550			Dynamic Analysis	09-Feb-93	0.5			3.85			2.54	1st Res Freq			2*				PG+E	Steel Pedestal
: Current	230			Dynamic Analysis	15-Feb-95	0.5		IEEE 693/ PG&E	0.45			9.49	1st Res Freq			5				PG+E	Unknown
: Current	500			Dynamic Analysis	17-Jun-92	0.5		IEEE 693/ PG&E	4.6			1.93	1st Res Freq			5				PG+E	Square Tube 16 x 16 Rubber pads at foundation connections
: Current	500			Dynamic Analysis	18-May-94	0.4		PG&E	8.3	8.3		0.92	1st Res Freq			5				PG+E	Steel Pipe: 18 in. T=3/8 in The analysis used 0.4g in both directions and 0.27g in the vertical direction support, this support was mod to give 0.3g capacity
r: Current	230	Associated Engineering Company		Time History	05-Jun-91	0.6	0.48	LADWP & PG&E Spectra				2.6	1st	19.5	2nd	3.1		1633		Rulon-Frank	Composite Insulator, TS 16x16x3/8 support
r: Current	230	Associated Engineering Company		Sine Beat	05-Jun-91	0.5	0.4	LADWP & PG&E Spectra				2.6	1st	19.5	2nd	3.1		1633		Rulon-Frank	Composite Insulator, TS 16x16x3/8 support
r: Current	315	Contact Hydro-Quebec	668-PE-0212-A OSKF 1300									4.77				2*	-	-	-	Hydro-Quebec	Analysis without support.
r: Current	245	Contact Hydro-Quebec	668-PE-0301-?									5.5				2*	1.36	-	-	Hydro-Quebec	Support considered rigid.
r: Current	170	Contact Hydro-Quebec	668-PE-0301-?									5.7				2*	1.42	-	-	Hydro-Quebec	Support considered rigid.
r: Current	145	Contact Hydro-Quebec	668-PE-501-B OSKF 650									6.48				5.6	1.39	-	-	Hydro-Quebec	Support considered rigid.
r: Current	145	Contact Hydro-Quebec	668-PE-0511-F									4.1				13	-	-	-	Hydro-Quebec	
r: Current	765	Contact Hydro-Quebec	668-PE-0102-A OSKF 2100									0.88				6	-	-	-	Hydro-Quebec	fy=1.53 Hz, z=5.5%
r: Current	765	Contact Hydro-Quebec	668-PE-0112-C FGC-750M									0.49				2*	1.14	-	-	Hydro-Quebec	Support 5.7 m
r: Current	765	Contact Hydro-Quebec	668-PE-0112-C FGC-750M									0.70				2*	1.51	-	-	Hydro-Quebec	Support 3.7 m

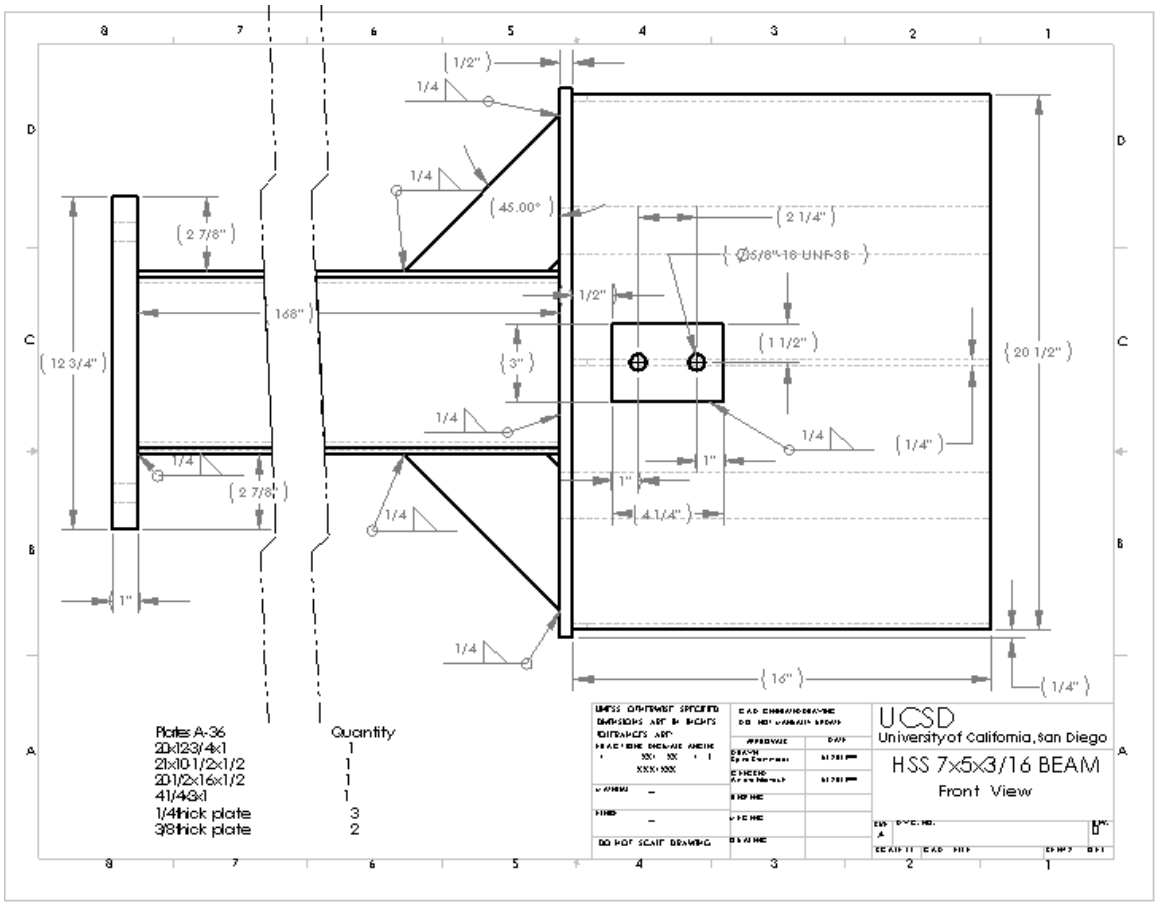
er: Current	765	Contact Hydro-Quebec	668-PE-0101-A IMBE									0.40				2*	1.5	-	-	Hydro-Quebec	Support 5.6 m
er: Current	765	Contact Hydro-Quebec	668-PE-0101-A IMBE									0.55				2*	1.42	-	-	Hydro-Quebec	Support 3.6 m
er: Current	315	Contact Hydro-Quebec	IREQ/analysis									0.90				2*	1.18	-	-	Hydro-Quebec	
er: Current	315	Contact Hydro-Quebec	IREQ/analysis									0.60				2*	1.24	-	-	Hydro-Quebec	
er: Current	145	Contact Hydro-Quebec	680-PE-0511-B HPL 145/2501									-				2*	-	-	-	Hydro-Quebec	Simultaneous analysis with circuit breaker.
ormer : Capacitor (CCVT)	138	Trench		Dynamic Analysis	01-Mar-00	0.5	0.4	IEEE 693-97 High	0.25			9.99	X Dir	10.02	Y Dir	2		1320		Rulon-Frank	97" TS10x10x3/8 Wt 675
ormer : Capacitor (CCVT)	230	Trench		Triaxial Time History	13-Apr-00	1	0.8	IEEE 693-97 High	0.97			5.5	X Dir	5.5	Y Dir	2	mode 1 - 81.1 ydir; mode 2 - 81.7 x dir; mode 3 - 9.0 y dir; mode 4 - 8.7 x dir.	1480		Rulon-Frank	88" TS10x10 3/8
ormer : Capacitor (CCVT)	500	ABB		Sine Beat	24-Oct-97	0.6	0.23	IEEE 693-97 Draft High	4.6			2.34	1st	11.72	2nd	13.5		3910		Rulon-Frank	Damping device wt=130 lbs, 89.5" TS16x16 0.375 1080 lbs
ormer : Capacitor (CCVT)	500	ABB		Time History	24-Oct-97	0.5	0.31	IEEE 693-97 Draft High	1.4			2.34	1st	11.72	2nd	13.5		3910		Rulon-Frank	Damping device wt=130 lbs, 89.5" TS16x16 0.375 1080 lbs
former	230			Static																Rulon-Frank	
former	34.5			Static		0.5	0.8	IEEE 693-97 High												Rulon-Frank	
former	230			Static																Rulon-Frank	
Divider	500	Schniewindt		Time History	15-Jan-99	0.5	0.4	IEEE 693-97 Draft High	3.15			2.9				0.4		950		Rulon-Frank	Composite
Divider	500	Haefely Trench		Sine Beat	17-May-99	1	0.8	IEEE 693-97 High	7.823			4.8	1st	34.5	2nd	2		785		Rulon-Frank	HVDC SF6 Composite
Divider	500	Haefely Trench		Time History	17-May-99	1	0.8	IEEE 693-97 High	3.45			4.8	1st	34.5	2nd	2		785		Rulon-Frank	HVDC SF6 Composite
Resulator				Static on tank																Rulon-Frank	
ransformer	230	Contact Hydro-Quebec	667-PE-0202-A TEVF									4.61				2*	1.57	-	-	Hydro-Quebec	
ransformer	300	Contact Hydro-Quebec	667-PE-0202-A TEVF									3.72				2*	1.60	-	-	Hydro-Quebec	
ransformer	145	Contact Hydro-Quebec	668-PE-020?? CPA145									16.9				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	170	Contact Hydro-Quebec	668-PE-020?? CPA170									14.2				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	245	Contact Hydro-Quebec	668-PE-020?? CPA245									8.94				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	245	Contact Hydro-Quebec	668-PE-020?? CPA245									2.79				2*	1.47	-	-	Hydro-Quebec	
ransformer	315	Contact Hydro-Quebec	668-PE-020?? CPA300									5.63				2*	-	-	-	Hydro-Quebec	Without support.

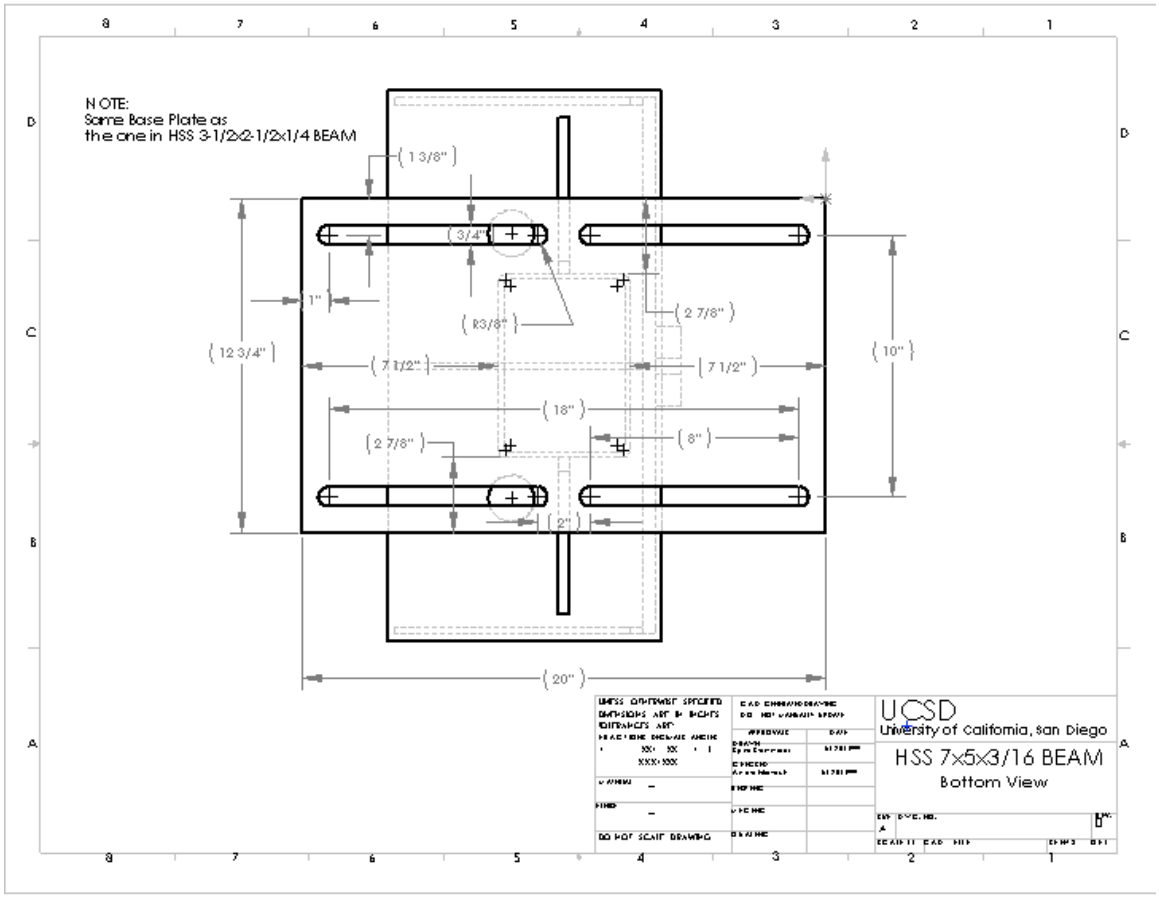
ransformer	315	Contact Hydro-Quebec	668-PE-020?? CPA362									4.66				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	420	Contact Hydro-Quebec	668-PE-020?? CPA420									3.75				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	550	Contact Hydro-Quebec	668-PE-020?? CPA550									2.60				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	550	Contact Hydro-Quebec	668-PE-020?? CPA550									1.18				2*	1.44	-	-	Hydro-Quebec	
ransformer	420	Contact Hydro-Quebec	668-PE-020?? CPA420									3.10				2*	-	-	-	Hydro-Quebec	Without support.
ransformer	245	Contact Hydro-Quebec	667-PE-0302-C SHCI-245									6.5				5.80	-	-	-	Hydro-Quebec	
ransformer	161	Contact Hydro-Quebec	667-PE-0402B									13.5				7.1	-	-	-	Hydro-Quebec	Without support.
ransformer	500	Pauwels	-									3.4				1.5	-	401982	-	PEER	Single phase.
ransformer	500	Westinghouse	-									2.4				3.6	-	463936	-	PEER	Single phase.
ransformer	230	Smit	-									4.1				4.5	-	-	-	PEER	Three phase.
ransformer	230	Westinghouse	-									3.8				1.4	-	-	-	PEER	Single phase.

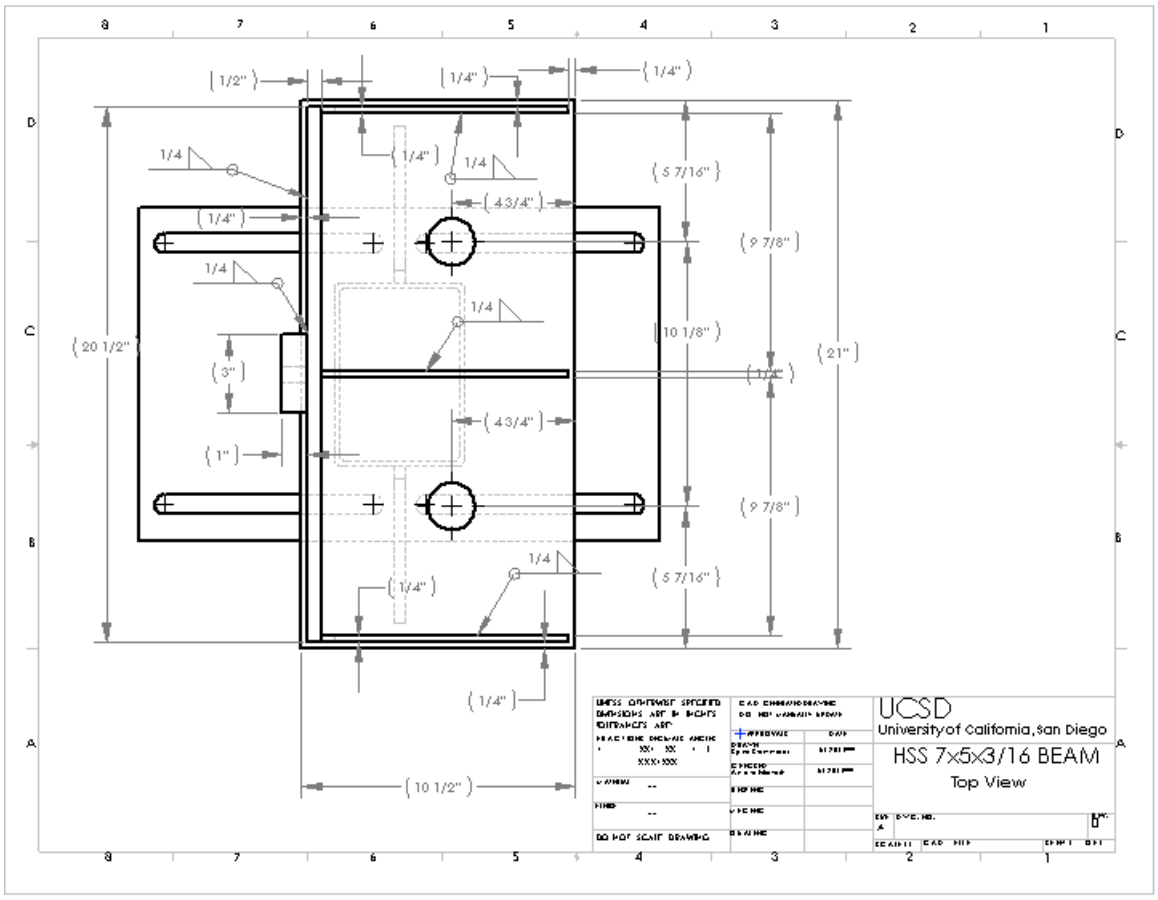
APPENDIX B. SHOP DRAWINGS OF GENERIC EQUIPMENT SPECIMENS

EQUIPMENT 1

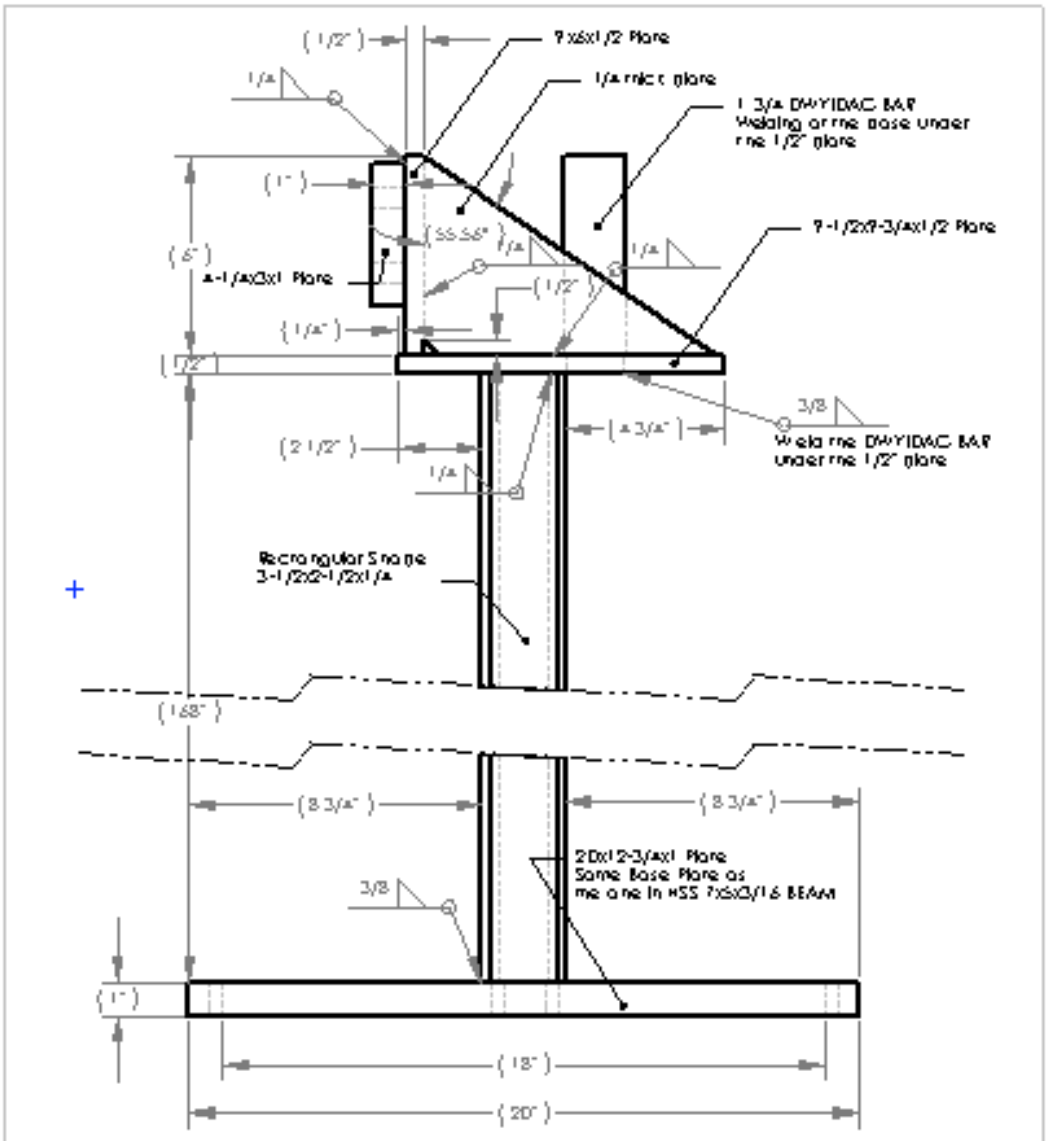

2D-1/2x16x1/2 Plate
1/4 mict plate Bj
13/4 DWYIDAC BAR
Welding of the base under
the 1/2" plate
Weld Size 3/8
3/8 mict plate
2 1x10-1/2x1/2 Plate
4-1/4x3x1 Plate
Rectangular Shape
7x3/16
2Dx12-3/4x1 Plate
UCSD
University of California, San Diego
HSS 7x5x3/16 BEAM
Side View
DO NOT SCALE DRAWING


1/2"
1/4
45.00°
2 1/4"
Ø5/8"-16 UNF-3B
2 7/8"
168"
12 3/4"
3"
1 1/2"
20 1/2"
1"
4 1/4"
16"
Plates A-36 Quantity
20x123/4x1 1
21x10 1/2x1/2 1
20 1/2x16x1/2 1
41/4 3x1 1
1/4thick plate 3
3/8thick plate 2
UCSD
University of California, San Diego
HSS 7x5x3/16 BEAM
Front View

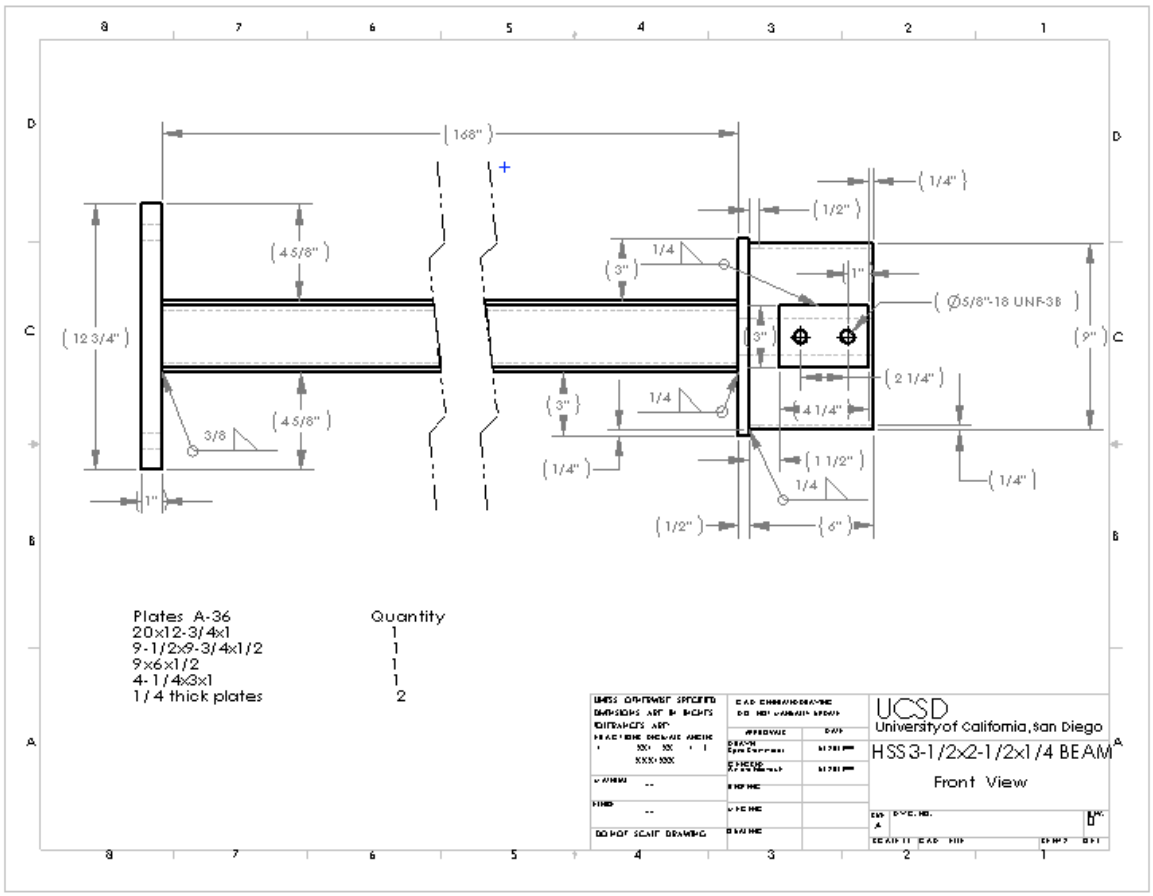

NOTE:
Same Base Plate as
the one in HSS 3-1/2x2-1/2x1/4 BEAM
1 3/8"
3/4"
1"
R3/8"
2 7/8"
12 3/4"
7 1/2"
7 1/2"
10"
18"
2 7/8"
8"
2"
20"
UCSD
University of California, San Diego
HSS 7x5x3/16 BEAM
Bottom View

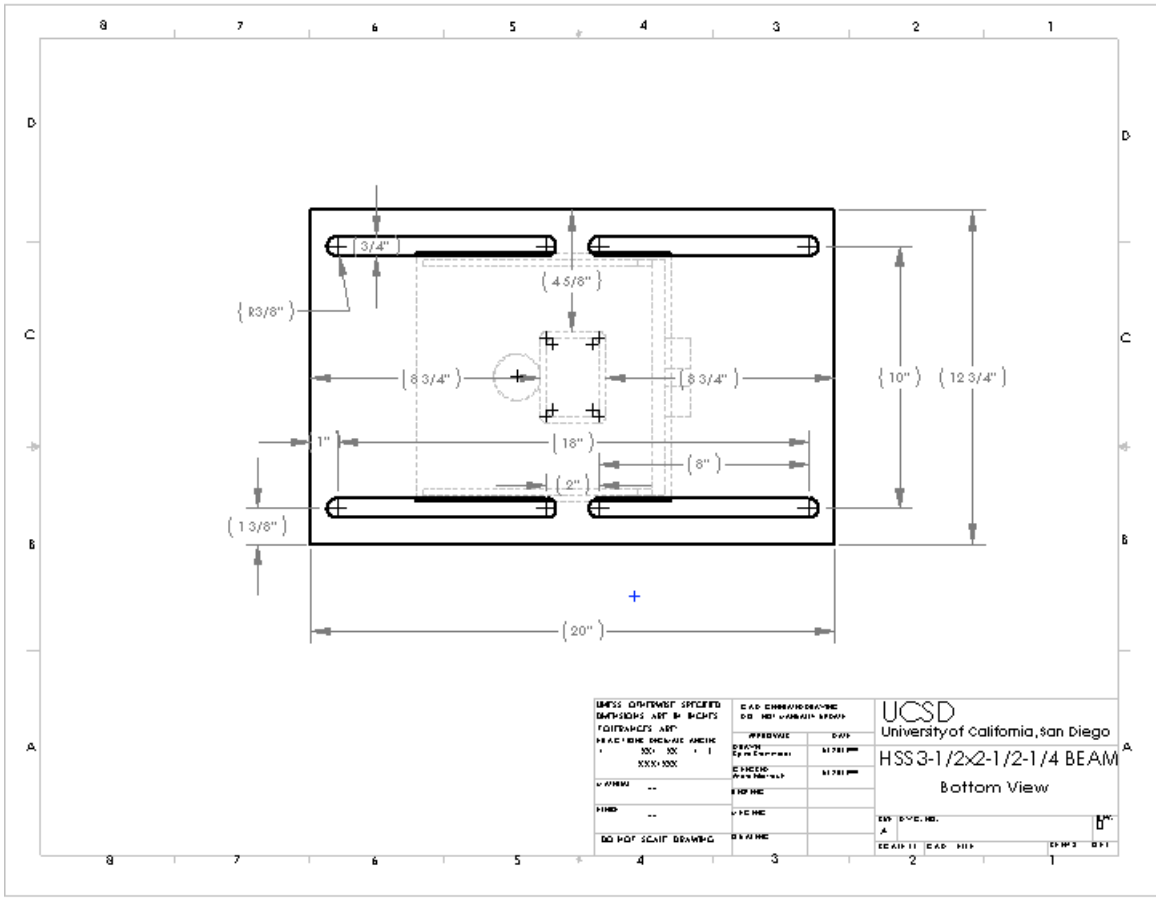

1/2"
1/4"
1/4"
1/4"
1/4
1/4
1/4"
4 3/4"
5 7/16"
9 7/8"
1/4
1/4
20 1/2"
10 1/8"
21"
3"
1/4"
1"
4 3/4"
9 7/8"
1/4
1/4"
5 7/16"
1/4"
10 1/2"
UCSD
University of California, San Diego
HSS 7x5x3/16 BEAM
Top View

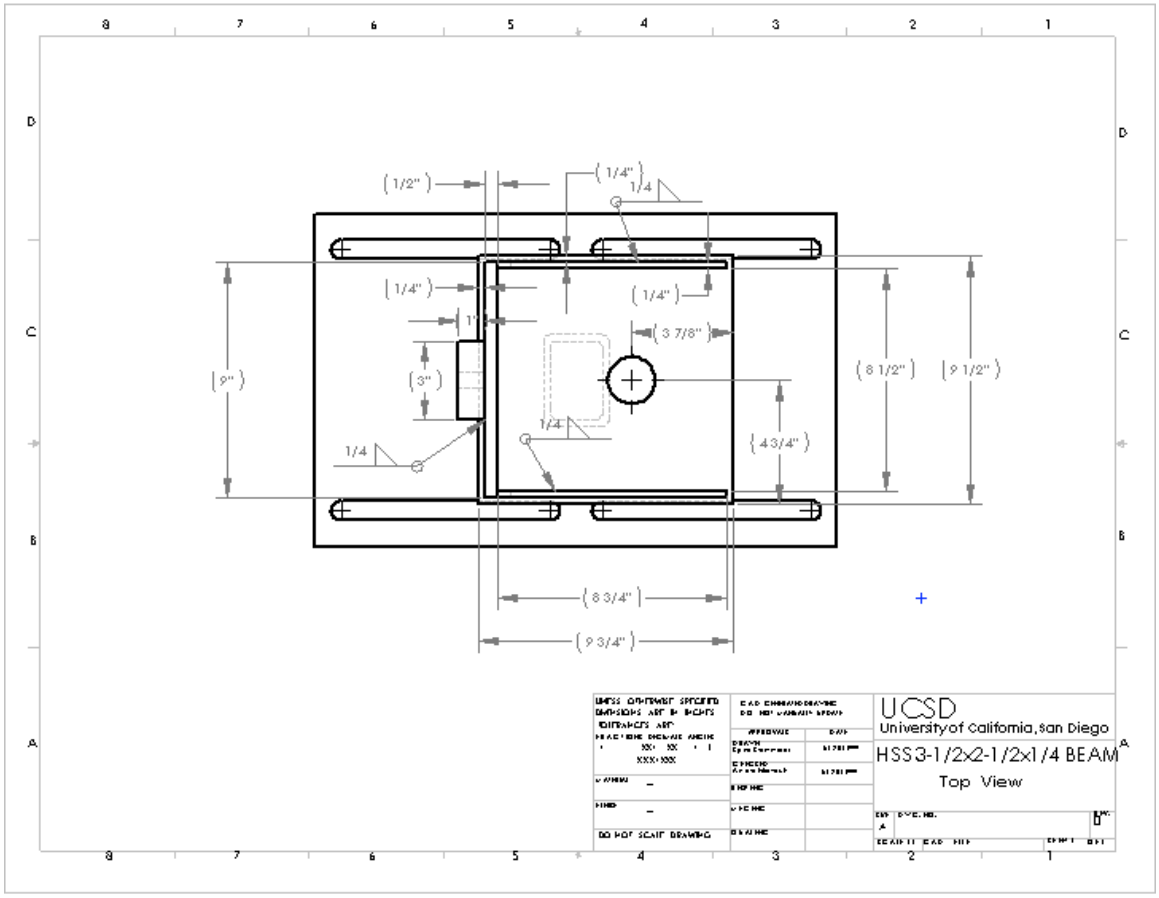
EQUIPMENT 2



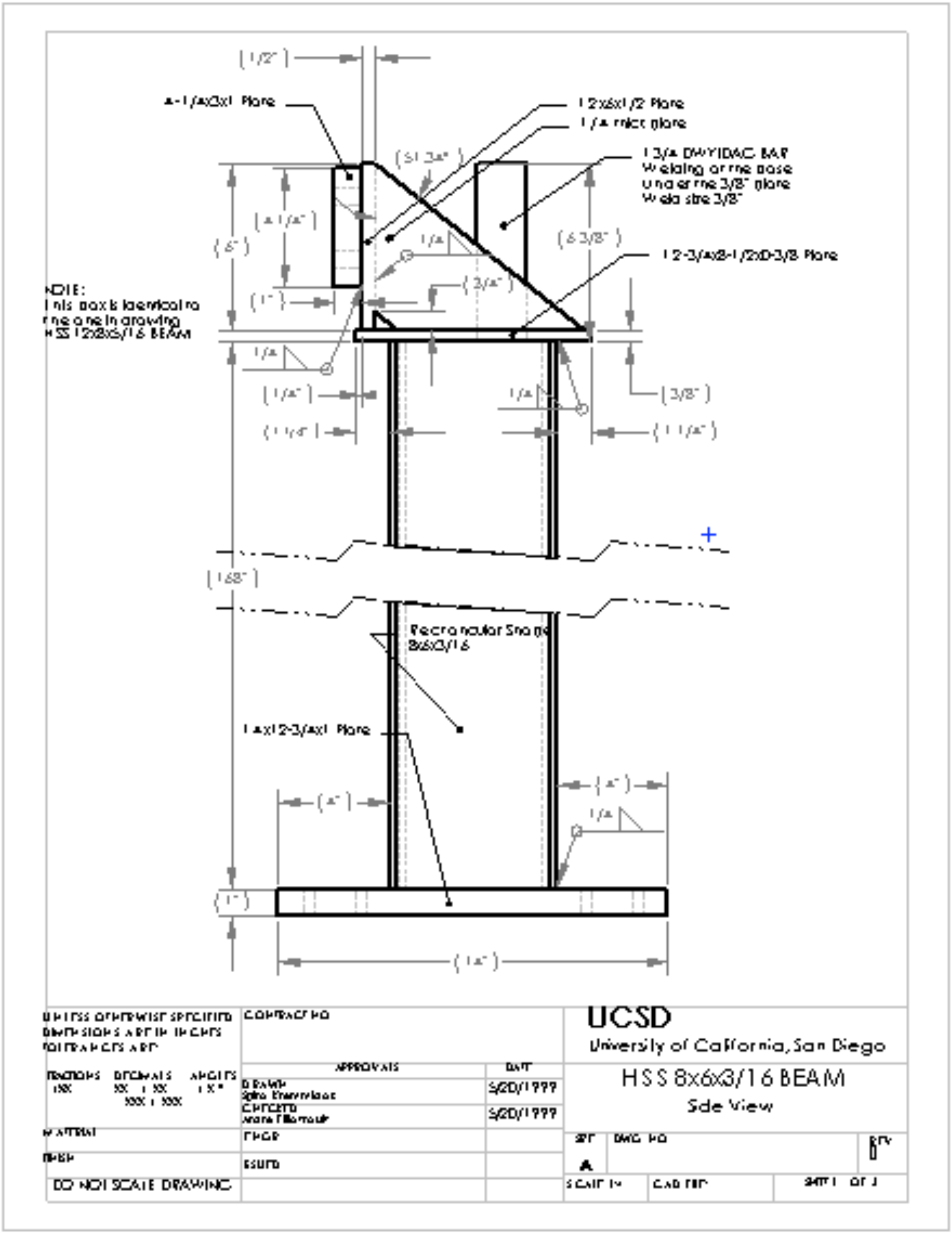
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:	CONTRACT NO		UCSD University of California, San Diego
FRACTIONS ±1/32 DECIMALS .XX ±.01 .XXX ±.005 ANGLES ±1°	APPROVALS	DATE	HSS 3-1/2x2-1/2x1/4 BEAM
	DRAWN Sylvia Encarnacion	5/20/1999	Side View
	CHECKED Mario Villarreal	5/20/1999	
MATERIAL	FINISH		SIZE A DWG NO REV 0
NEXT	ISSUED		
DO NOT SCALE DRAWING			SCALE 1/4 CAD FILE SHEET 1 OF 1

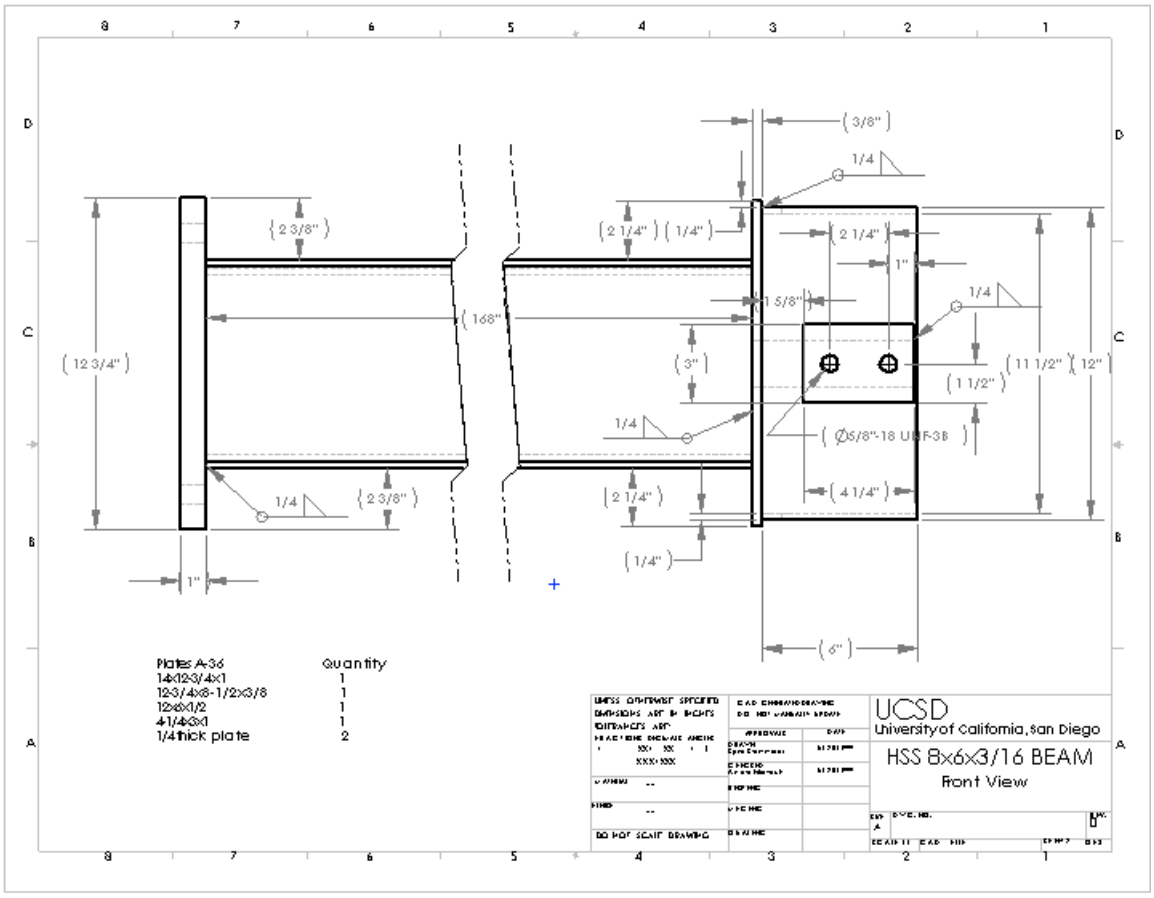

168"
1/4"
1/2"
4 5/8"
3"
1/4
1"
Ø5/8"-18 UNF-3B
12 3/4"
3"
9"
2 1/4"
4 1/4"
3"
1/4
4 5/8"
3/8
1/4"
1 1/2"
1/4
1/4"
1"
1/2"
6"
Plates A-36 Quantity
20x12-3/4x1 1
9-1/2x9-3/4x1/2 1
9x6x1/2 1
4-1/4x3x1 1
1/4 thick plates 2
UCSD
University of California, San Diego
HSS3-1/2x2-1/2x1/4 BEAM
Front View

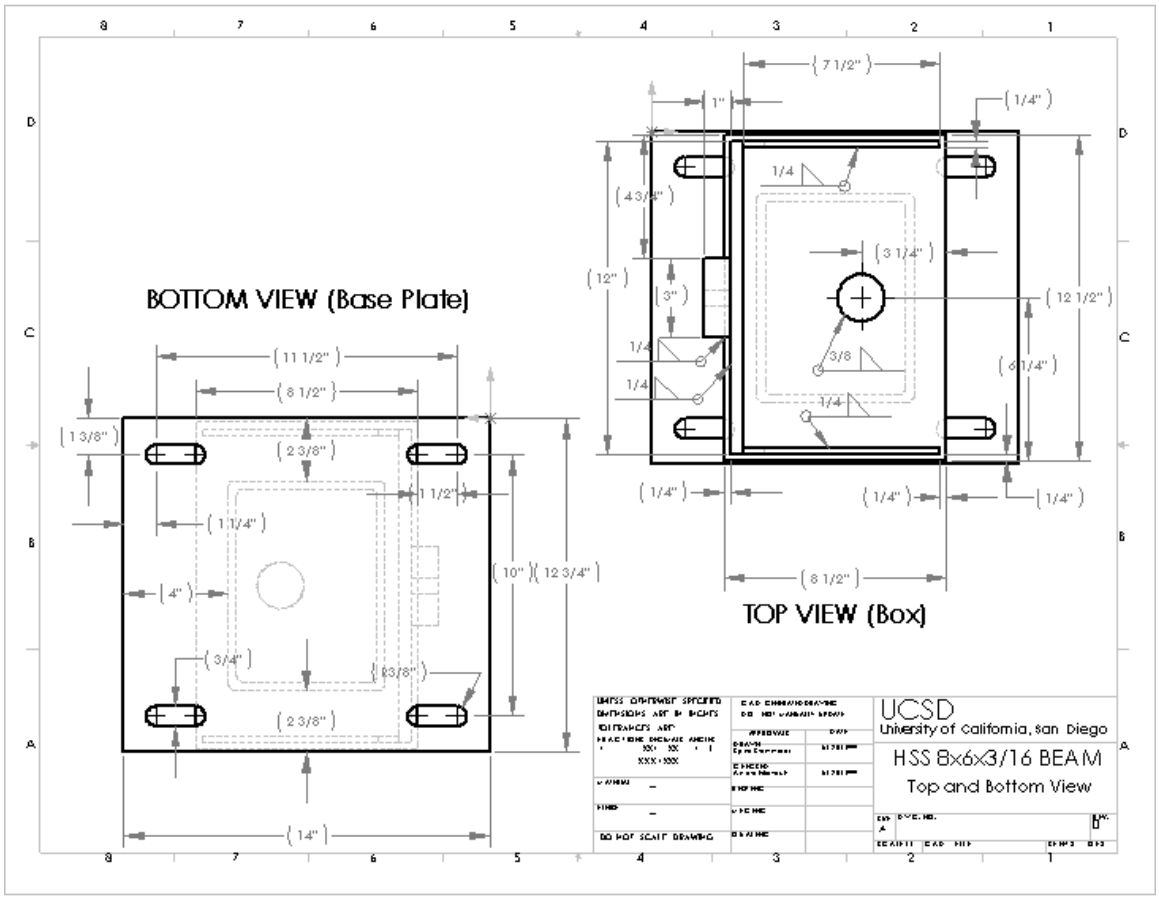

3/4"
(45/8")
(R3/8")
(8 3/4")
(8 3/4")
(10")
(12 3/4")
1"
(18")
(8")
(2")
(1 3/8")
(20")
UCSD
University of California, San Diego
HSS3-1/2x2-1/2-1/4 BEAM
Bottom View


1/2"
1/4"
1/4
1/4"
1/4"
1"
3 7/8"
9"
3"
8 1/2"
9 1/2"
1/4
1/4
4 3/4"
8 3/4"
9 3/4"
UCSD
University of California, San Diego
HSS3-1/2x2-1/2x1/4 BEAM
Top View

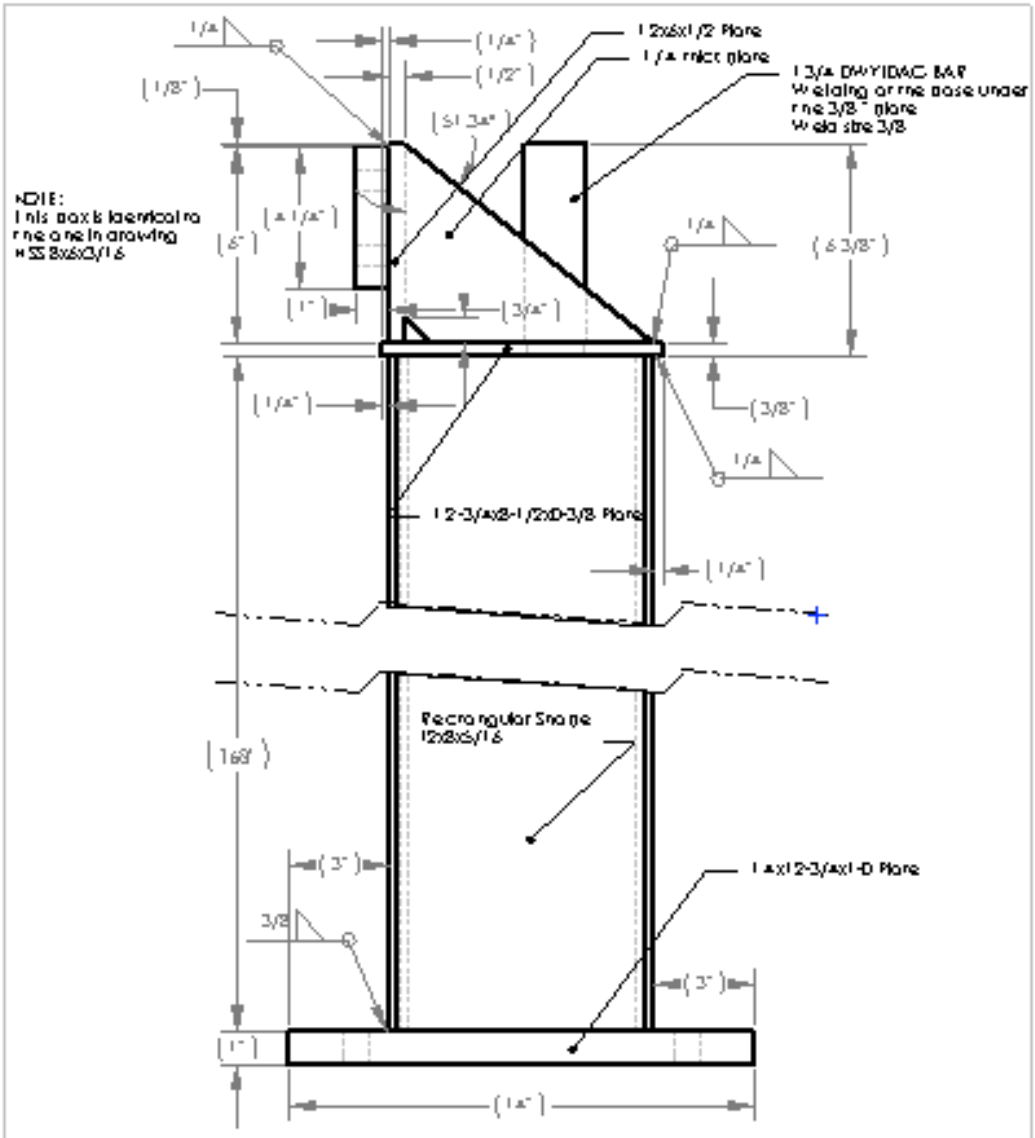
EQUIPMENT 3

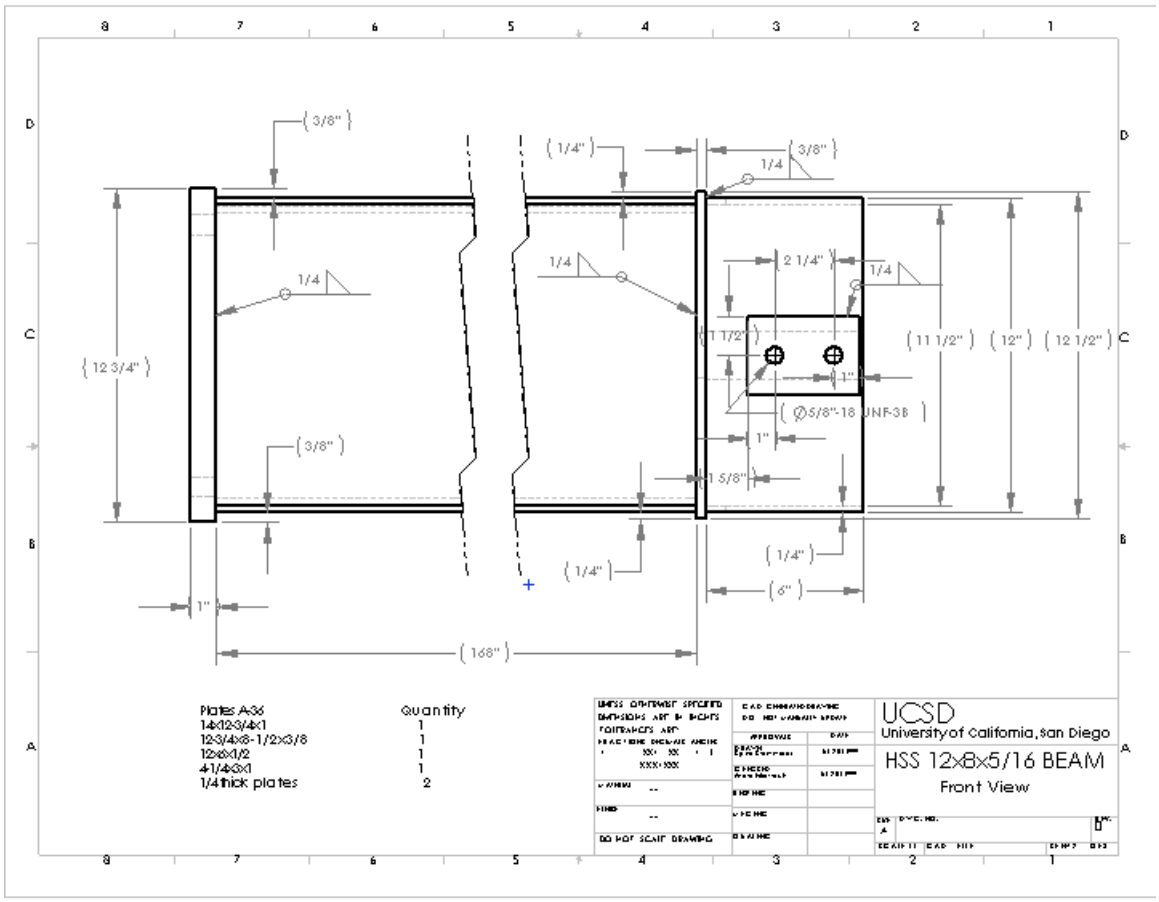

(1/2")
(6")
(6 3/8")
(3/8")
(14")
UCSD
University of California, San Diego
HSS 8x6x3/16 BEAM
Side View
DO NOT SCALE DRAWING

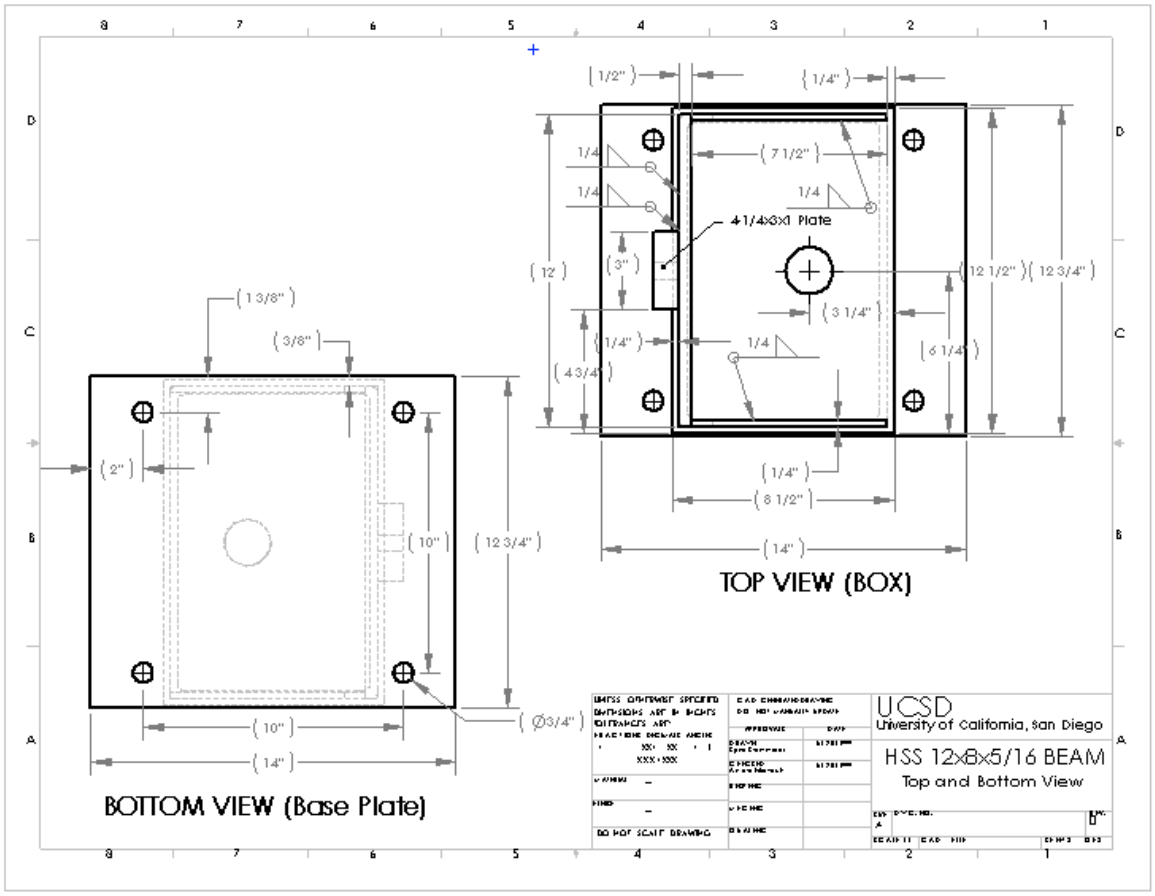

3/8"
1/4
2 3/8"
2 1/4"
1/4"
2 1/4"
1"
1 5/8"
1/4
168"
12 3/4"
3"
11 1/2"
12"
1 1/2"
1/4
Ø5/8"-18 UNF-3B
2 3/8"
1/4
2 1/4"
4 1/4"
1/4"
1"
6"
Plates A-36 Quantity
14x12-3/4x1 1
12-3/4x8-1/2x3/8 1
12x6x1/2 1
4-1/4x3x1 1
1/4thick plate 2
UCSD
University of California, San Diego
HSS 8x6x3/16 BEAM
Front View
DO NOT SCALE DRAWING


BOTTOM VIEW (Base Plate)
TOP VIEW (Box)
UCSD
University of California, San Diego
HSS 8x6x3/16 BEAM
Top and Bottom View

EQUIPMENT 4


NOTE:
This box is identical to the one in drawing HSS 8x6x3/16
12x6x1/2 Plate
1/4 mitre plate
13/4 DWYIDAG BAR
Welding on the base under the 3/8" plate
Weld size 3/8
12-3/4x8-1/2x0-3/8 Plate
Rectangular Shape
12x8x5/16
1 4x12-3/4x1-0 Plate
UCSD
University of California, San Diego
HSS12x8x5/16 BEAM
Side View
DO NOT SCALE DRAWING


3/8"
1/4
1/4
3/8"
1/4
2 1/4"
1/4
1 1/2"
1"
Ø5/8"-18 UNF-3B
1"
1 5/8"
12 3/4"
3/8"
11 1/2"
12"
12 1/2"
1/4"
1/4"
6"
1"
168"
Plates A-36
14x12-3/4x1
12-3/4x8-1/2x3/8
12x8x1/2
4-1/4x8x1
1/4 thick plates
Quantity
1
1
1
1
2
UCSD
University of California, San Diego
HSS 12x8x5/16 BEAM
Front View


TOP VIEW (BOX)
BOTTOM VIEW (Base Plate)
4 1/4x3x1 Plate
UCSD
University of California, San Diego
HSS 12x8x5/16 BEAM
Top and Bottom View