

**TRAVERSE CITY LIGHT & POWER DEPARTMENT
 GRAND TRAVERSE SUBSTATION
 CONTROL PANELS - BILL OF MATERIAL
 CONTROL PANEL NO.1**

ITEM NO.	EST. QUANTITY	SPARE QUANTITY	ITEM DESCRIPTION	MANUFACTURER	PART #
	Owner Furnished	0	Multi function meter, 4 wire, 3 element, 125VDC, DNP3.0	Novatech (Bitronics)	M650B3U511
	3	1 lamp only	Indicating light, White, 120 VAC, with LED lamp	G.E. ET-16	#116B6708G4-5-W73-N4
	2	1 lamp only	Indicating light, Amber, 125 VDC 2000 ohm, with LED lamp	G.E. ET-16	#116B6708G43A73A4
	1	0	SEL3530 Real-Time Automation Controller RTAC	Schweitzer	SEL-3530 (35303B0DX211A0XXXXXX)
	1	0	Multi function relay, overcurrent, ground, reclosing, event recording, metering, 125VDC, DNP3.0, Load Profiling	Schweitzer	SEL-311C (Bus) (0311C113H4E54X1)
	1	0	Synchroscope, "Slow -Fast"	Crompton	007-146A-PRAE-C6
	1	0	SEL2523 36 window annunciator with configurable labels, 125VDC	Schweitzer	SEL-2523 (2523013100XA0XX)
	2	0	Bus Tripping Relay , 125 VDC, Hand Reset	Electroswitch	Series LOR 7808D
	1	0	Test switch (1TS1 THRU 1TS3) for SEL311C, FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=036, POS C=036	ABB FT-19R	FR3G183036036
	1	0	Test switch (1TS4 THRU 1TS6) for LOR, FT-19, 30 pole, Full Length Clear Covers Pos A = 036, POS B=036, POS C=036	ABB FT-19R	FR3G036036036
	16	1	12 pt Terminal blocks, Slide-Link, #10-32 studs terminals, with white marking strip	States	Series NT M-25012
	5	1	4pt Terminal block, Shorting type, #10/32 stud terminals, with white marking strip	States	Series NT M-25104G
	2	0	SEL Communication Cable 10'	Schweitzer	SEL C273A
	2	0	3-pole Fuse Block, Class K, 30A, 250V, Class R	Bussman	R25030-3
	6	6	Fuse, 6A, 250V. Class K-1, Limitron, Potential circuit	Bussman	FRN-R-6

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CONTROL PANEL NO.2

ITEM NO.	EST. QUANT	SPARE QUANTITY	ITEM DESCRIPTION	MANUFACTURER	PART #
	1	0	Multi function relay, transformer differential, overcurrent, 125VDC	Schweitzer	SEL-587 (0587103X531)
	1	0	Multi function relay, overcurrent, metering, 125VDC	Schweitzer	SEL-501 (0501003X5613XB)
	2	0	Line relay, current differential, 125VDC	Schweitzer	SEL-311L (0501003X5613XB)
	Owner Furnished	0	Multi function meter, 4 wire, 3 element, 125VDC, DNP3.0	Novatech (Bitronics)	M650B3U511
	1	0	Circuit Switcher control switch relay, w/ nameplate "CIRCUIT SWITCHER"	Electroswitch	Series 2457D
	1	0	Circuit Switcher control switch relay, w/ nameplate "MOAB"	Electroswitch	Series 2457D
	2	1 lamp only	Indicating light, Red, 125 VDC 2000 ohm, with LED lamp	G.E. ET-16	#116B6708G43R73R4
	2	1 lamp only	Indicating light, Green, 125 VDC 2000 ohm, with LED lamp	G.E. ET-16	#116B6708G43G73G4
	1	0	LTC Auto/Man control switch, electrically operated, 125VDC, 3 deck, w/ nameplate "AUTO-MAN"	Electroswitch	Series 31LSR (9303DD)
	1	0	LTC Raise/Lower control switch, w/ nameplate "RAISE-LOWER"	Electroswitch	Series 2457D
	1	0	Transformer LTC Rotary Position Indicator, W RS232 OUTPUT	INCON	1250-LTC-0-I-S-120
	2	0	Local-Remote selector switch, 2 N.O., 2 N.C. contacts, face plate inscribed "REMOTE-LOCAL", standard handle.	G.E	CR104PSG21B92
	1	0	Multi function relay, overcurrent, ground, reclosing, event recording, metering, 125VDC, DNP3.0, Load Profiling, additional I/O	Schweitzer	SEL-351S (0351S6X3D3E5421)
	1	0	Transformer Tripping Relay , 125 VDC, Hand Reset	Electroswitch	Series LOR 7808D
	1	1 lamp only	Indicating light, Amber, 125 VDC 2000 ohm, with LED lamp	G.E. ET-16	#116B6708G43A73A4
	1	0	Test switch (2TS1 THRU 2TS3) for SEL587, FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=183, POS C=036	ABB FT-19R	FR3G183183036
	1	0	Test switch (2TS4 THRU 2TS6) for SEL501, FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=209, POS C=036	ABB FT-19R	FR3G183209036
	1	0	Test switch (2TS7 THRU 2TS9) for SEL351S, FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=036, POS C=183	ABB FT-19R	FR3G183036183
	3	0	SEL Communication Cable 15'	Schweitzer	SEL C273A
	1	0	RS232 Cable 15'		
	14	1	12 pt Terminal blocks, Slide-Link, #10-32 studs terminals, with white marking strip	States	Series NT M-25012
	6	1	4pt Terminal block, Shorting type, #10/32 stud terminals, with white marking strip	States	Series NT M-25104G
	2	0	3-pole Fuse Block, Class K, 30A, 250V, Class R	Bussman	R25030-3
	2	1 lamp only	Indicating light, White, 120 VAC, with LED lamp	G.E. ET-16	#116B6708G4-5-W73-N4
	6	6	Fuse, 6A, 250V. Class K-1, Limitron, Potential circuit	Bussman	FRN-R-6

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CONTROL PANEL NO.3

ITEM NO.	EST. QUANTITY	SPARE QUANTITY	ITEM DESCRIPTION	MANUFACTURER	PART #
	1	0	SEL GPS Clock, Antenna, and C953 COAX Cable	Schweitzer	SEL-2407 (240700013)
	Owner Furnished	0	Multi function meter, 4 wire, 3 element, 125VDC, DNP3.0	Novatech (Bitronics)	M650B3U511
	1	1 lamp only	Indicating light, White, 120 VAC, with LED lamp	G.E. ET-16	#116B6708G4-5-W73-N4
	6	1 lamp only	Indicating light, White, 70 VAC, with LED lamp	G.E. ET-16	#116B6708G4-7-W73-N4
	1	0	Multi function relay, overcurrent, ground, reclosing, event recording, metering, 125VDC, DNP3.0, Load Profiling, additional I/O	Schweitzer	SEL-311C (Primary) (0311C113R3E54X1)
	1	0	Multi function relay, overcurrent, ground, reclosing, event recording, metering, 125VDC, DNP3.0, Load Profiling	Schweitzer	SEL-311C (Backup) (0311C113H4E54X1)
	1	0	Test switch (3TS1 THRU 3TS3) for SEL311C (PRI), FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=036, POS C=183	ABB FT-19R	FR3G183036183
	1	0	Test switch (3TS4 THRU 3TS6) for SEL311C (BU), FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=036, POS C=036	ABB FT-19R	FR3G183036036
	10	1	12 pt Terminal blocks, Slide-Link, #10-32 studs terminals, with white marking strip	States	Series NT M-25012
	4	1	4pt Terminal block, Shorting type, #10/32 stud terminals, with white marking strip	States	Series NT M-25104G
	2	0	SEL Communication Cable 25'	Schweitzer	SEL C273A
	5	0	3-pole Fuse Block, Class K, 30A, 250V, Class R	Bussman	R25030-3
	1	0	1-pole Fuse block, Class K, 30A, 250V, Class R	Bussman	R25030-1
	16	16	Fuse, 6A, 250V. Class K-1, Limitron, Potential circuit	Bussman	FRN-R-6

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CONTROL PANEL NO.4

ITEM NO.	EST. QUANTITY	SPARE QUANTITY	ITEM DESCRIPTION	MANUFACTURER	PART #
	Owner Furnished	0	Multi function meter, 4 wire, 3 element, 125VDC, DNP3.0	Novatech (Bitronics)	M650B3U511
	1	1 lamp only	Indicating light, White, 120 VAC, with LED lamp	G.E. ET-16	#116B6708G4-5-W73-N4
	6	1 lamp only	Indicating light, White, 70 VAC, with LED lamp	G.E. ET-16	#116B6708G4-7-W73-N4
	1	0	Multi function relay, overcurrent, ground, reclosing, event recording, metering, 125VDC, DNP3.0, Load Profiling , additional I/O	Schweitzer	SEL-311C (Primary) (0311C113R3E54X1)
	1	0	Multi function relay, overcurrent, ground, reclosing, event recording, metering, 125VDC, DNP3.0, Load Profiling , additional I/O	Schweitzer	SEL-311C (Backup) (0311C113H4E54X1)
	1	0	Test switch (4TS1 THRU 4TS3) for SEL311C (PRI), FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=036, POS C=183	ABB FT-19R	FR3G183036183
	1	0	Test switch (4TS4 THRU 4TS6) for SEL311C (BU), FT-19, 30 pole, Full Length Clear Covers Pos A = 183, POS B=036, POS C=036	ABB FT-19R	FR3G183036036
	10	1	12 pt Terminal blocks, Slide-Link, #10-32 studs terminals, with white marking strip	States	Series NT M-25012
	4	1	4pt Terminal block, Shorting type, #10/32 stud terminals, with white marking strip	States	Series NT M-25104G
	2	0	SEL Communication Cable 30'	Schweitzer	SEL C273A
	5	0	3-pole Fuse Block, Class K, 30A, 250V, Class R	Bussman	R25030-3
	1	0	1-pole Fuse block, Class K, 30A, 250V, Class R	Bussman	R25030-1
	16	16	Fuse, 6A, 250V. Class K-1, Limitron, Potential circuit	Bussman	FRN-R-6