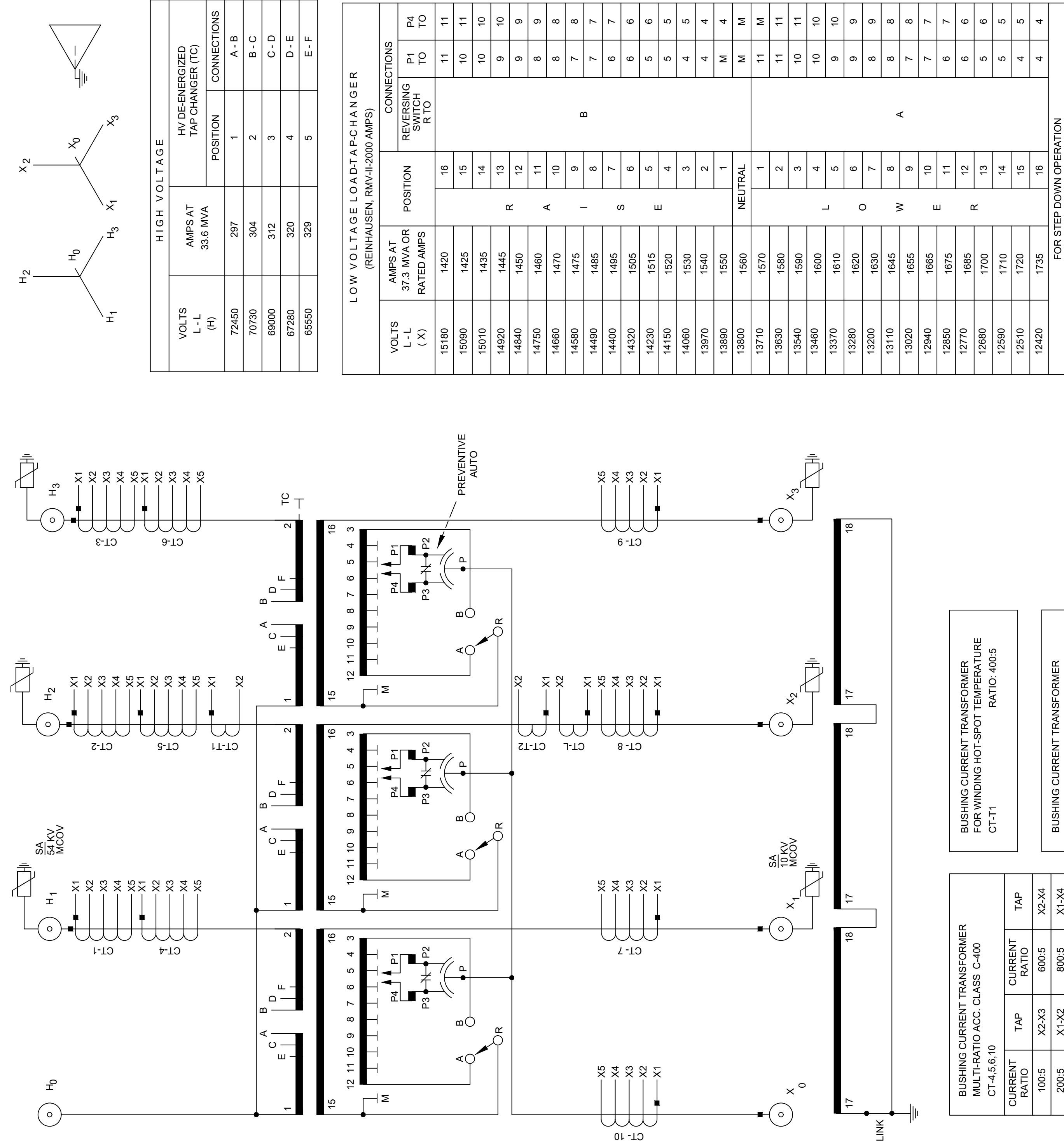


NOTE: PROVIDE 1/8" MOUNTING HOLE.

LOAD-TAP-CHANGING TRANSFORMER

S/N ONAN/ONAF/ONAF THREE PHASE 60 HERTZ
HV (KV) 350 KV/BIL 69000/39840 VOLTS
LV (KV) 110 KV/BIL 13800GRDY/7960 VOLTS
HV NEUTRAL 350 KV/BIL
LV NEUTRAL 110 KV/BIL
TV (KV) 35% BURIED 7960 VOLTS
CONT. TEMP. RISE 55° C 20/26.7/33.3 MVA
CONT. TEMP. RISE 65° C 22.4/29.9/37.3 MVA
IMPEDANCE % AT 69000 - 13800 VOLTS AND 20 MVA



HIGH VOLTAGE		
VOLTS L-L (H)	AMPS AT 33.6 MVA	HV DE-ENERGIZED TAP CHANGER (TC) POSITION CONNECTIONS
72450	287	1 A-B
70730	304	2 B-C
69000	312	3 C-D
67280	320	4 D-E
65550	329	5 E-F

LOW VOLTAGE LOAD TAP CHANGER (REINHAUSEN, RMV-HI-2000/AMPS)			
VOLTS L-L (X)	AMPS AT 37.3 MVA OR RATED AMPS	POSITION	CONNECTIONS P1 TO P4
15180	1420	16	11 11
15090	1425	15	10 11
15010	1435	14	10 10
14920	1445	13	9 10
14840	1450	R	9 9
14750	1460	A	8 9
14660	1470	10	8 8
14580	1475	I	7 8
14490	1485	7	7 7
14400	1495	S	6 7
14320	1505	6	6 6
14230	1515	E	5 6
14150	1520	4	5 5
14060	1530	3	4 5
13970	1540	2	4 4
13890	1550	1	M 4
13800	1560	NEUTRAL	M M
13710	1570	1	11 M
13630	1580	2	11 11
13540	1590	3	10 11
13460	1600	4	10 10
13370	1610	L	9 10
13280	1620	6	9 9
13200	1630	O	8 9
13110	1645	8	8 8
13020	1655	9	7 8
12940	1665	10	7 7
12850	1675	E	6 7
12770	1685	11	6 6
12680	1700	R	5 6
12590	1710	12	5 5
12510	1720	13	4 5
12420	1735	14	4 4
		15	4 4
		16	4 4

APPROXIMATE	WEIGHTS (LBS)
UNTANKING (CORE & COIL)	65,000
TANK & FITTINGS	44,475
OIL - MAIN TANK (5.175 GAL)	38,825
OIL - RADIATORS (875 GAL)	5,075
OIL - LTC TANK (350 GAL)	2,625
TOTAL (6,200 GAL)	156,000

* INCLUDES 2000 LBS. PREVENTIVE AUTO. BUSHING CURRENT TRANSFORMER FOR WINDING HOT-SPOT TEMPERATURE RATIO: 1800:5 CT-12

BEFORE INSTALLING OR OPERATING, READ INSTRUCTIONS. THE UNIT DID NOT CONTAIN PCB AT TIME OF INITIAL FILLING.

DELTA STAR, INC.
 LYNCHBURG OPERATION
 3550 MAYFLOWER DR., LYNCHBURG, VA 24506
 (434) 842-0911

YEAR OF MANUFACTURE 2002

OIL LEVEL BELOW TOP OF MANHOLE FLANGE AT 25° C (77.0 INCHES). OIL LEVEL CHANGES 0.88 INCHES PER 10° C CHANGE IN OIL TEMPERATURE. TRANSFORMER TANK TO WITHSTAND FULL VACUUM AND 15 LBS. POSITIVE PRESSURE. TRANSFORMER FILLED WITH INHIBITED OIL.

BUSHING CURRENT TRANSFORMER MULTI-RATIO ACC. CLASS C-400 CT-4,5,6,10			
CURRENT RATIO	TAP	CURRENT RATIO	TAP
100:5	X2-X3	600:5	X2-X4
200:5	X1-X2	800:5	X1-X4
300:5	X1-X3	900:5	X3-X5
400:5	X4-X5	1000:5	X2-X5
500:5	X3-X4	1200:5	X1-X5

BUSHING CURRENT TRANSFORMER MULTI-RATIO ACC. CLASS C-400 CT-1,2,3			
CURRENT RATIO	TAP	CURRENT RATIO	TAP
50:5	X2-X3	300:5	X2-X4
100:5	X1-X2	400:5	X1-X4
150:5	X1-X3	450:5	X3-X5
200:5	X4-X5	500:5	X2-X5
250:5	X3-X4	600:5	X1-X5

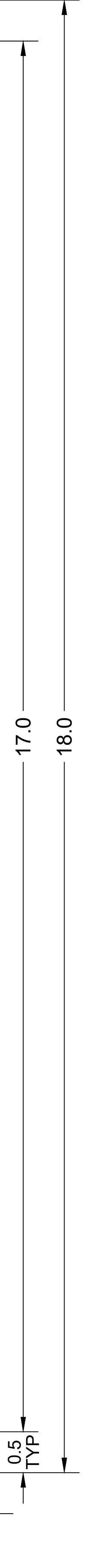
BUSHING CURRENT TRANSFORMER FOR WINDING HOT-SPOT TEMPERATURE RATIO: 400:5 CT-11

BUSHING CURRENT TRANSFORMER MULTI-RATIO ACC. CLASS C-400 CT-7,8,9			
CURRENT RATIO	TAP	CURRENT RATIO	TAP
300:5	X3-X4	1200:5	X1-X3
400:5	X1-X2	1500:5	X1-X4
500:5	X4-X5	1600:5	X2-X5
800:5	X2-X3	2000:5	X1-X5
1100:5	X2-X4		

SERIAL NUMBER	MVA	VOLTAGE (KV)	IMPEDANCE (%)
	20	69 - 138	
	20	69 - 138	

NOTE: TRANSFORMER IS DESIGNED FOR A NOMINAL 8.5% IMPEDANCE (HV - LV) ON A 20 MVA BASE, WITH A ± 7.5% STANDARD TOLERANCE. EXACT IMPEDANCE VALUE TO BE ADDED AFTER FACTORY TESTING.

TRAVERSE CITY LIGHT & POWER DEPT.
 S.O. # F-6850/51
 P.O. # CONTRACT
 HALL STREET SUBSTATION



DRAWING		855		FILE		M105002	
TRAVERSE CITY LIGHT & POWER				TRAVERSE CITY, MICHIGAN			
HALL STREET SUBSTATION				TRANSFORMER NO.1 - NAMEPLATE			
URS architecture, inc.				1004 East 8th Street Traverse City, Michigan 231-947-0860			
GRAND RAPIDS, MI. 3850 EAST 7TH AVE. S.E.				DA/E PKM DR PKM CK PKM APP PKM MILANEY IN CHARGE			
DATE				ISSUED FOR			
05/26/2004		APPROVED FINAL RECORD DRAWINGS		07/07/03		FINAL RECORD DRAWINGS	
02/17/03		RECORD DRAWINGS		02/16/02		BIDS AND CONSTRUCTION	
01/27/02		PRELIMINARY DESIGN		01/27/02		PRELIMINARY DESIGN	