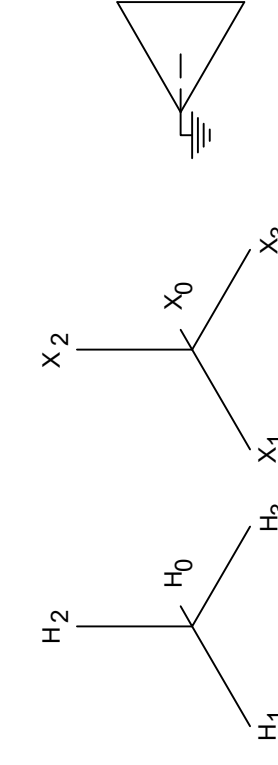


LOAD-TAP-CHANGING TRANSFORMER

S/N HV (CU) CLASS ONAN/ONAF/NAF THREE PHASE 60 HERTZ
 HV (CU) 350 KV/BIL 69000/39840 VOLTS
 HV NEUTRAL 110 KV/BIL 138000GRDY/7960 VOLTS
 LV NEUTRAL 350 KV/BIL
 LV (CU) 110 KV/BIL
 TV (CU) 110 KV/BIL
 CONT. TEMP. RISE 35% BURIED 7960 VOLTS
 CONT. TEMP. RISE 55° C 20/26.7/33.3 MVA
 IMPEDANCE 65° C 22.4/29.9/37.3 MVA
 69000 - 138000 VOLTS AND 20 MVA



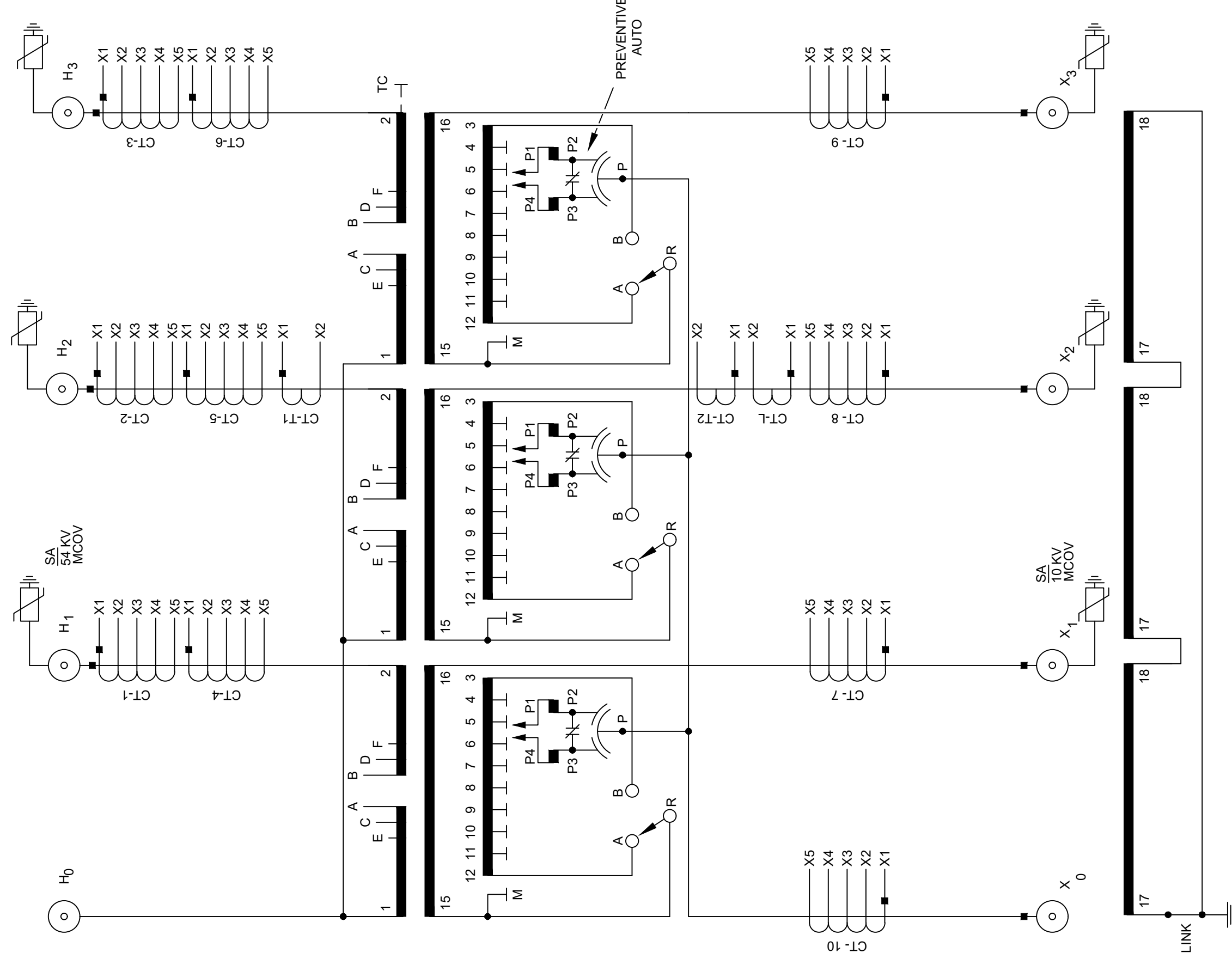
VOLTS L-L (H)	AMPS AT 33.6 MVA	HV/DE-ENERGIZED TAP CHANGER (TC)	POSITION	CONNECTIONS
72450	297		1	A-B
70730	304		2	B-C
69000	312		3	C-D
67280	320		4	D-E
65500	329		5	E-F

VOLTS L-L (X)		AMPS AT 37.3 MVA OR RATED AMPS	POSITION	REFRESHING SWITCH R TO	CONNECTIONS P1 TO P4
15180	1420	1420	16	11	11
15090	1425	1425	15	10	11
15010	1435	1435	14	10	10
14920	1445	1445	13	9	10
14840	1450	1450	12	9	9
14750	1460	1460	11	8	9
14660	1470	1470	10	8	8
14580	1475	1475	9	7	8
14490	1485	1485	8	7	7
14400	1495	1495	7	6	7
14320	1505	1505	6	6	6
14230	1515	1515	5	5	6
14150	1520	1520	4	5	5
14060	1530	1530	3	4	5
13970	1540	1540	2	4	4
13890	1550	1550	1	M	4
13800	1560	1560	NEUTRAL	M	M
13710	1570	1570	1	11	M
13630	1580	1580	2	11	11
13540	1590	1590	3	10	11
13460	1600	1600	4	10	10
13370	1610	1610	5	9	10
13280	1620	1620	6	9	9
13200	1630	1630	7	8	9
13110	1645	1645	8	8	8
13020	1655	1655	9	7	8
12940	1665	1665	10	7	7
12850	1675	1675	11	6	7
12770	1685	1685	12	6	6
12680	1700	1700	13	5	6
12590	1710	1710	14	5	5
12510	1720	1720	15	4	5
12420	1735	1735	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 (675 GAL.)	5,075
OIL - LTC TANK (350 GAL.)	2,625
TOTAL	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.
 F685010
 REVISION 0



BUSHING CURRENT TRANSFORMER MULTI-RATIO ACC. CLASS C-400 CT-11	
TAP	CURRENT RATIO
300:5	1200:5
400:5	1600:5
500:5	2000:5
1100:5	2000:5

BUSHING CURRENT TRANSFORMER MULTI-RATIO ACC. CLASS C-400 CT-12,3	
TAP	CURRENT RATIO
50:5	300:5
100:5	400:5
150:5	450:5
200:5	500:5
250:5	600:5

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

OIL LEVEL BELOW TOP OF MANHOLE FLANGE AT 25° C 13.0 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.

DELTA STAR, INC.
 LYNCHBURG OPERATION
 3550 MAYFLOWER DR., LYNCHBURG, VA 24506

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

TRAVERSE CITY LIGHT & POWER
 HALL STREET SUBSTATION
 TRANSFORMER NO.1 - NAMEPLATE

DRAWING
 855
 FILE
 M105002

URS architecture interiors, inc.
 1004 East 8th Street
 Traverse City, Michigan
 231-947-0660

DATE	ISSUED FOR
05/26/2004	APPROVED FINAL RECORD DRAWINGS
07/07/03	FINAL RECORD DRAWINGS
02/17/03	RECORD DRAWINGS
05/16/02	BIDS AND CONSTRUCTION
03/27/02	75% ANKER REVIEW
03/27/02	PRELIMINARY DESIGN