

# INFORMATION DRAWING SET

## CITY OF WINNIPEG WTP

DUGALD, MB

### 4.16kV GENERATOR / UTILITY PARALLELING SWITCHGEAR

TOROMONT POWER SYSTEMS  
ISO PROJECT No. 35701

TABLE OF CONTENTS			
DESCRIPTION	SHEET	DESCRIPTION	SHEET
DRAWING LEGEND	G01	FIELD INTERCONNECTS - SYSTEM	F01
CIRCUIT BREAKER SCHEDULE	G02	FIELD INTERCONNECTS - SYSTEM	F02
FRONT ELEVATION AND ONE-LINE (E-100)	G03	FIELD INTERCONNECTS - GEN 1	F03
FRONT ELEVATION AND ONE-LINE (E-200)	G04	FIELD INTERCONNECTS - GEN 2	F04
PLAN AND SIDE VIEW - 1	G05	FIELD INTERCONNECTS - GEN 3	F05
PLAN VIEW - 2	G06	FIELD INTERCONNECTS - EMERGENCY TIE 1 & 2	F06
CONTROL ONE LINE (E-100)	G07		
CONTROL ONE LINE (E-200)	G08		
AUTOMATION COMMUNICATIONS PLAN	G09		
CONTROL CONDUIT SCHEDULE	G10		
CONTROL CONDUIT SCHEDULE	G11		
SEQUENCE OF OPERATIONS	G12		
SEQUENCE OF OPERATIONS	G13		



TITLE		CITY OF WINNIPEG WTP	
TITLE SHEET		4.16kV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV.	0.4
DATE APPROVED	08-09-06	DRAWN BY	EM
FILE NAME	35701-TS	DATE CREATED	04-07-06
		DATE MODIFIED	
		SHEET NUMBER	

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B	ISSUED FOR LONG LEAD RELEASE	04-25-06
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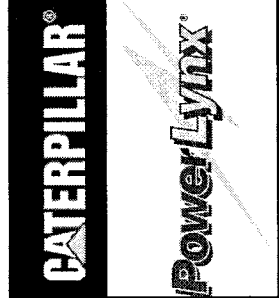
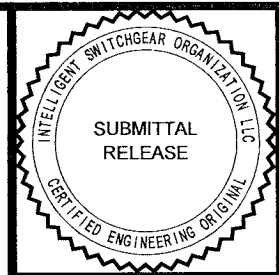
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**ABBREVIATION LEGEND**

ABBREVIATION	DESCRIPTION
15/25	SYNCHRONIZER with SYNC CHECK
2	TIMER
25/25D	SYNC CHECK RELAY/DEAD BUS ONLY
27/59	UNDER/OVER VOLTAGE RELAY
32	REVERSE POWER RELAY
32/62	REVERSE POWER RELAY WITH TIMER
3P	3 POLE
3w	3 WIRE SYSTEM
40	LOSS OF EXCITATION RELAY
40/62	LOSS OF EXCITATION RELAY WITH TIMER
46	NEGATIVE SEQUENCE OVERCURRENT RELAY
47	UNDERVOLTAGE PHASE SEQUENCE RELAY
4w	4 WIRE SYSTEM
50	INSTANTANEOUS OVERCURRENT RELAY
50/51	INSTANTANEOUS TIME OVERCURRENT
51	TIME OVERCURRENT RELAY
52	CIRCUIT BREAKER
59	OVERVOLTAGE RELAY
62	TIME DELAY RELAY
65	GOVERNOR
67	DIRECTIONAL OVERCURRENT
723	WOODWARD DIGITAL GOVERNOR
79	RECONNECT TIME DELAY
810/U	OVER/UNDER FREQUENCY RELAY
86	LOCKOUT RELAY
87	DIFFERENTIAL RELAY
90	REGULATING DEVICE
A	AMPERE
AC	ALTERNATING CURRENT
AF	AMPERAGE FRAME RATING
AI	ANALOG INPUT
AL	ALUMINUM
AM	AMPERE METER
AN	ANNUNCIATOR
AO	ANALOG OUTPUT
AP	AUTOMATION PROCESSOR
ARP	AMPERAGE RATING PLUG
AS	AMMETER SELECTOR
AT	AMPERAGE TRIP RATING
ATS	AUTOMATIC TRANSFER SWITCH
ATSR	ATS RUN REQUEST
ATSR	ATS RUN REQUEST RELAY
AUX	AUXILIARY
AVR	AUTOMATIC VOLTAGE REGULATOR
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BCM	BATTERY CHARGER MALFUNCTION
BMS	BUILDING MANAGEMENT SYSTEM
CAP	SURGE CAPACITOR
CB	CIRCUIT BREAKER
CBCL	CIRCUIT BREAKER CLOSE
CBOP	CIRCUIT BREAKER OPEN
CBCS	CIRCUIT BREAKER CONTROL SWITCH
CCM	CATERPILLAR COMMUNICATIONS MODULE
CCW	COUNTER CLOCKWISE
CGR	BATTERY CHARGER
CI	CUSTOMER INTERFACE
CIM	CUSTOMER INTERFACE MODULE
CL	CLOSE LOCKOUT
CLO	CLOSED
COMS	COMMUNICATIONS
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CELL SWITCH
CT	CURRENT TRANSFORMER
CTB	CURRENT TEST BLOCK
CTL	CONTROL
CTS	CURRENT TEST SWITCH
CTSB	CT SHORTING BLOCK
CU	COPPER
CW	CLOCKWISE
D	DIODE
DC	DIRECT CURRENT
df/dt	RATE OF CHANGE OF FREQUENCY
DI	DIGITAL INPUT
DIST	DISTRIBUTION BLOCK

ABBREVIATION	DESCRIPTION
D.O.	DRAWOUT
DO	DIGITAL OUTPUT
DRP	DROOP
DII	DATA TABLE INTERFACE
E	ELECTRONIC
E.I.	ELECTRICAL INTERLOCK
E.O.	ELECTRICALLY OPERATED
EC	ENGINE CONTROL
ECP	ENGINE CRANKING PANEL
ECS	ENGINE CONTROL SWITCH
EI	ENGINE INTERFACE
ENG	ENGINE
EPB	EMERGENCY PANELBOARD
ERR	ENGINE RUN REQUEST
ES	ETHERNET SWITCH
FBP	FRONT BASE PLATE
FBO	FURNISHED BY OTHERS
FLA	FULL LOAD AMPS
FLD	FIELD
FLT	FAULT
FOR	FIBER OPTIC REPEATER
FM	FREQUENCY METER
F.M.	FIXED MOUNTED
FU	FUSE
GB	GENERATOR BYPASS
GEN	GENERATOR
GF	GROUND FAULT
GND	GROUND
GPS	GENERATOR PARALLELING SWITCHBOARD
HBR	HOT BUS RELAY
HET	HIGH ENGINE TEMP
HRN	HORN
Hz	FREQUENCY (HERTZ)
I	INSTANTANEOUS TRIP
IA	ISOLATOR AMPLIFIER
ILS	LOAD SHARING MODULE
INV	INVERTER
IO	I/O PLC
ITSM	INTEGRATED THERMO SENSING MODULE
k	1000 (KILO)
kW	KILOWATT
kWh	KILOWATT HOUR
L	LONG TIME TRIP
LA	LIGHTNING ARRESTOR
LET	LOW ENGINE TEMP
LFL	LOW FUEL LEVEL
LOP	LOW OIL PRESSURE
LOR	LOCKOUT RELAY
LI	LONG AND INSTANTANEOUS TRIP
LIG	LI WITH GROUND FAULT TRIP
LS	LOAD SHED RELAY
LSI	LONG, SHORT AND INSTANTANEOUS TRIP
LSIA	LSI WITH GROUND FAULT ALARM
LSIG	LSI WITH GROUND FAULT TRIP
LT	LIGHT (for colors)
LWL	LOW WATER LEVEL
LYNX	ISO POWERLYNX MODULE
M	MOTOR
MAG	MAGNETIC
MALF	MALFUNCTION
M.O.	MANUALLY OPERATED
MCCB	MOLDED CASE CIRCUIT BREAKER
MCM	1000 CIRCULAR MILS
M.I.	MECHANICAL INTERLOCK
MFR	MULTI FUNCTION RELAY
MISC	MISCELLANEOUS
MOC	MECHANISM OPERATED CELL SWITCH
MR	MULTI RATIO
MTR	METER (DEVICE)
MUF	MULTIPLE UTILITY FAILURE
N6	#2-600MCM MECHANICAL LUG
N/A	NOT APPLICABLE
N/R	NOT REQUIRED
N.C.	NORMALLY CLOSED
SVM	SOURCE VOLTAGE METER
SFM	SOURCE FREQUENCY METER
NIA	NOT IN AUTOMATIC

ABBREVIATION	DESCRIPTION
NEU	NEUTRAL
NES	NON-ESSENTIAL LOAD SHED RELAY
NGR	NEUTRAL GROUND RESISTOR
N.O.	NORMALLY OPEN
OC	OVER CRANK
OIP	OPERATOR INTERFACE PANEL
OP	OPEN
OP CTR	OPERATION COUNTER
OS	OVER SPEED
PB	PUSHBUTTON
PC	PERSONAL COMPUTER
PF	POWER FACTOR
PHET	PRE HIGH ENGINE TEMP
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLOP	PRE LOW OIL PRESSURE
POS	POSITION
POD	UPS CONTROL SWITCHBOARDS
POT	POTENTIOMETER
P.O.T.S.	PLAIN OLD TELEPHONE SERVICE
PRG	PROGRAMMING PORT
PT	POTENTIAL TRANSFORMER
REF	REFERENCE
RP	RATING PLUG
S	SHORT TIME TRIP
SA	SURGE ARRESTOR
SAR	SAFETIES ARMING RELAY
SB	STATION BATTERY
SC	SHUNT COIL
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCT	SUMMING CURRENT TRANSFORMER
SECT	SECTION
SHLD	SHIELD/SHIELDED
SMP	SYNCH MODE PERMISSIVE
SMR	SYNCH MODE RUN
SMS	SYNCHRONIZING MODE SELECTOR
SPD	SPEED CONTROL
SR	SPRING RELEASE
SW	SELECTOR SWITCH
SS	SHIPPING SPLIT
SUF	SINGLE UTILITY FAILURE
T1	#6-350MCM MECHANICAL LUG
TB	TERMINAL BLOCK
TBD	TO BE DETERMINED
TIO	TERMINAL I/O MODULE
TM	THERMAL MAGNETIC
TMR	TIMING RELAY
TOC	TRUCK OPERATED CELL SWITCH
TS	TOUCHSCREEN
TSP	TOUCHSCREEN PROCESSOR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TWL	TEST WITH LOAD
UCLOS	UTILITY CLOSE LOCKOUT SWITCH
UPS	UNINTERRUPTABLE POWER SUPPLY
UVR	UNDER VOLTAGE RELEASE
VA	VOLT AMPERES
VAA	VOLT AMPERES APPARENT
VAR	VOLT AMPERES REACTIVE
VLT	VOLTAGE CONTROL
VM	VOLTMETER
VR	VOLTAGE REGULATOR
VT	VOLTAGE TRANSFORMER
VTS	VOLTAGE TEST SWITCH
W	WATT
WV	WATT/VAR
XDR	TRANSDUCER
a	NORMALLY OPEN CONTACT
b	NORMALLY CLOSED CONTACT
c	a AND b with COMMON
ba	NORMALLY OPEN BELL ALARM
mA	MILLIAMPERE
mV	MILLIVOLT
ØA	A-PHASE
ØB	B-PHASE
ØC	C-PHASE
BMV	BUS VOLTAGE METER
BFM	BUS FREQUENCY METER



CITY OF WINNIPEG WTP		DRAWING LEGEND		4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR		APPROVED BY	SCALE	N.T.S.	REV	0.4	DRAWN BY	EM	MODIFIED BY		
NO.	REVISION	DATE	ISSUED FOR LONG LEAD RELEASE	04-18-06		RAM	N.T.S.								
A		04-18-06	ISSUED FOR LONG LEAD RELEASE												
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0.0		05-22-06	ISSUED FOR SUBMITTAL												
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0.3		07-21-06	REISSUED FOR SUBMITTAL												
0.4		08-09-06	REISSUED FOR SUBMITTAL												
FILE NAME		35701-G01		DATE APPROVED		08-09-06		DATE CREATED		04-07-06		SHEET NUMBER		1 of 13	

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MV CIRCUIT BREAKER, LUGGING AND CONDUIT ENTRY SCHEDULE (E-100)

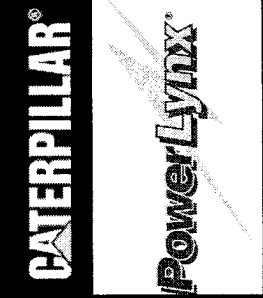
DEVICE	LOCATION	MANUFACTURE TYPE	FRAME (A)	INTERRUPT CAP. (MVA)	TRIP FUNCTIONS	OPERATION	MOUNTING	CHARGE	SHUNT CLOSE	SHUNT TRIP	ACCESSORIES				MECHANICAL LUGS			NAMEPLATE DESCRIPTION	CONDUIT ENTRY		
											AUXILIARY	KIRK KEY	MOC	TOC	LUGS PER PHASE	NEUTRAL LUGS	GROUND LUGS		TOP	BOTTOM	
52BK-E107A (FUTURE)	1B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	N/A	N/A	N/A	N/A						TBD	N/A	TBD	DISTRIBUTION 1 52BK-E107A		X
52BK-E106A (FUTURE)	2B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	N/A	N/A	N/A	N/A						TBD	N/A	TBD	DISTRIBUTION 2 52BK-E106A		X
52BK-E105A	3B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 3 52BK-E105A		X
52BK-E104A	4B	CUTLER HAMMER 50 VCP-W	3000	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	EMERGENCY TIE 1 52BK-E104A		X
52BK-E103A	5B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 5 52BK-E103A		X
52BK-E102A	6B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 6 52BK-E102A		X
52BK-E101A	7B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 7 52BK-E101A		X
52BK-E100A	9B	CUTLER HAMMER 50 VCP-W	3000	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					8-1000MCM	N/A	TBD	UTILITY MAIN 1 52BK-E100A		X
52BK-E100C	10B	CUTLER HAMMER 50 VCP-W	3000	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	UTILITY BUS TIE 52BK-E100C		X
52BK-E100B	11B	CUTLER HAMMER 50 VCP-W	3000	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					8-1000MCM	N/A	TBD	UTILITY MAIN 2 52BK-E100B		X
52BK-E101B	13B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 8 52BK-E101B		X
52BK-E102B	14B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 9 52BK-E102B		X
52BK-E103B	15B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 10 52BK-E103B		X
52BK-E104B	16B	CUTLER HAMMER 50 VCP-W	3000	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	EMERGENCY TIE 2 52BK-E104B		X
52BK-E105B	17B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	DISTRIBUTION 12 52BK-E105B		X
52BK-E106B (FUTURE)	18B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	N/A	N/A	N/A	N/A						TBD	N/A	TBD	DISTRIBUTION 13 52BK-E106B		X
52BK-E107B (FUTURE)	19B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	N/A	N/A	N/A	N/A						TBD	N/A	TBD	DISTRIBUTION 14 52BK-E107B		X

NOTE 1) CABLE SIZES AND QUANTITIES REQUIRED AT TIME OF RELEASE, OR ONLY STANDARD NEMA 2 HOLE PATTERN WILL BE SUPPLIED.

\*N6 LUGS (2 HOLE) ARE RATED FOR #2-600MCM  
T1 LUGS (1 HOLE) ARE RATED FOR #6-350MCM

MV CIRCUIT BREAKER, LUGGING AND CONDUIT ENTRY SCHEDULE (E-200)

DEVICE	LOCATION	MANUFACTURE TYPE	FRAME (A)	INTERRUPT CAP. (MVA)	TRIP FUNCTIONS	OPERATION	MOUNTING	CHARGE	SHUNT CLOSE	SHUNT TRIP	ACCESSORIES				MECHANICAL LUGS			NAMEPLATE DESCRIPTION	CONDUIT ENTRY		
											AUXILIARY	KIRK KEY	MOC	TOC	LUGS PER PHASE	NEUTRAL LUGS	GROUND LUGS		TOP	BOTTOM	
52BK-E201A	2B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	GENERATOR MAIN 1 52BK-E201A		X
52BK-E200C	3B	CUTLER HAMMER 50 VCP-W	3000	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	GEN BUS TIE 52BK-E200C		X
52BK-E201B	4B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	GENERATOR MAIN 2 52BK-E201B		X
52BK-E202B	6B	CUTLER HAMMER 50 VCP-W	1200	350	N/A	E.O.	D.O.	125VDC	125VDC	125VDC	X					TBD	N/A	TBD	GENERATOR MAIN 3 52BK-E202B		X



CITY OF WINNIPEG WTP CIRCUIT BREAKER SCHEDULE		4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
SCALE	REV.	DRAWN BY	MODIFIED BY
N.T.S.	0.4	EM	EM
DATE CREATED		DATE MODIFIED	
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SHEET NUMBER		of	
2		13	
APPROVED BY		FILE NAME	
RAM		35701-G02	
DATE APPROVED		DATE APPROVED	
08-09-06		08-09-06	

NO.	REVISION	DATE
A	ISSUED FOR LONG LEAD RELEASE	04-18-06
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C.4	REISSUED FOR SUBMITTAL	08-09-06

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GENERAL NOTES  
 SYSTEM: 5kV CLASS, 4.16kV, 3Ø, 3-WIRE  
 SYSTEM INTERRUPT: 350MVA. B.I.L. 60kV  
 SYSTEM RATING: 3000A  
 BUS MATERIAL: TIN PLATED COPPER  
 ENCLOSURE: NEMA1,  
 UL LABEL: UL MV CSA  
 ACCESSIBILITY: FRONT ARC-DESIGN, REAR COVERS  
 HANDLING: CRANE  
 COLOR: ANSI 61  
 SEISMIC: NONE

24VDC BATTERIES SHIPPED LOOSE FOR EXTERNAL MOUNTING.

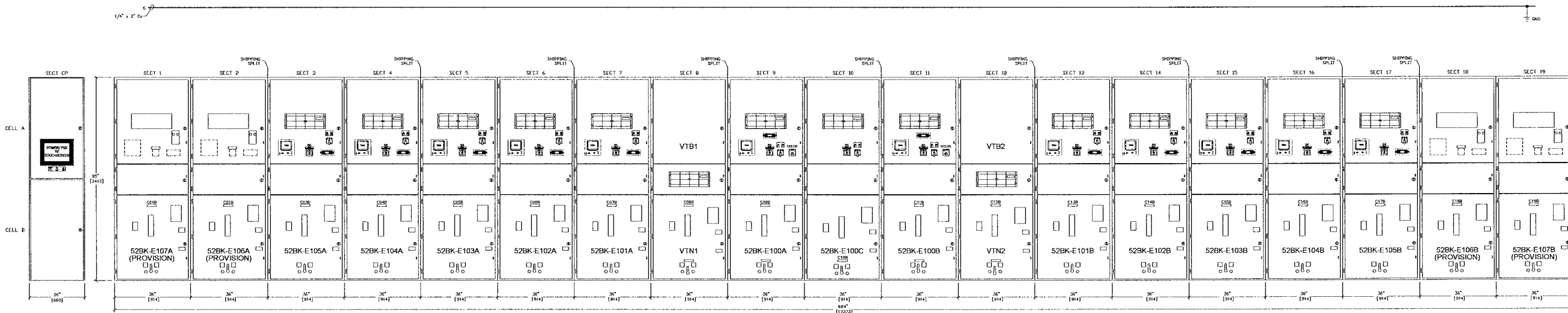
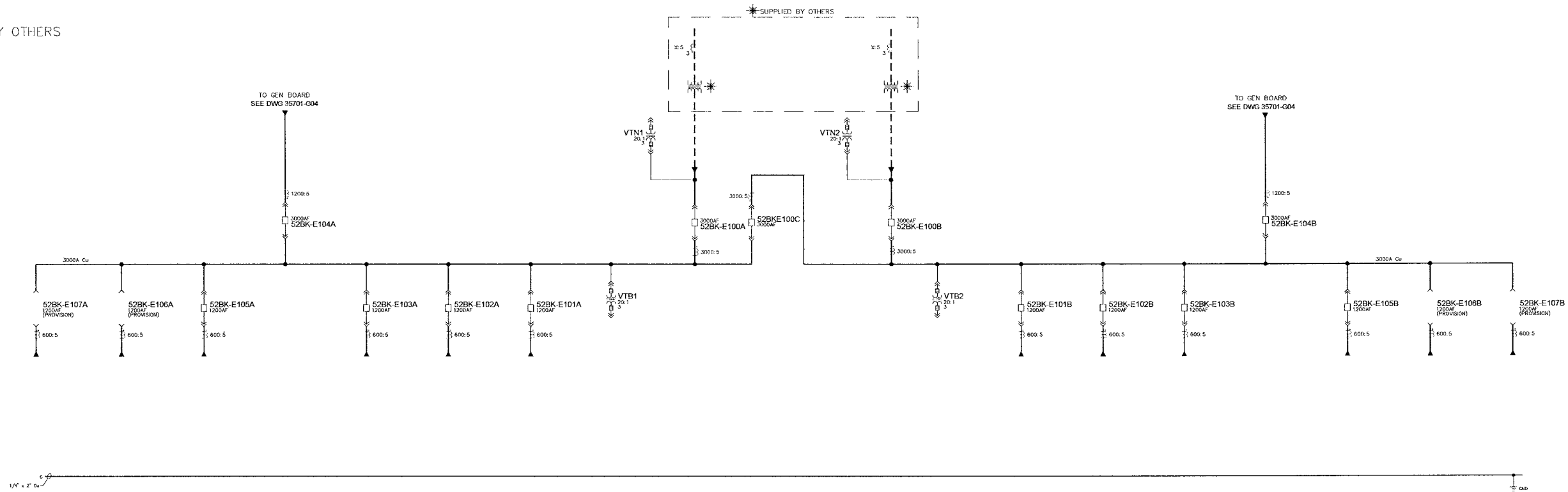
125VDC BATTERIES AND 125VDC BATTERY CHARGER SHIPPED LOOSE FOR EXTERNAL MOUNTING.

ESTIMATED SHIPPING WEIGHTS:  
 SECT 1 THRU SECT 19 - 2,400 LBS EACH.

CIRCUIT BREAKERS SHIPPED SEPARATELY AT 460 LBS. EACH.

DIMENSIONS - INCHES  
 [METRIC]

☼ SUPPLIED BY OTHERS



CITY OF WINNIPEG WTP		REV. 0.4		DRAWN BY EM		MODIFIED BY	
FRONT ELEVATION AND ONE - LINE (E-100)		SCALE N.T.S.		DATE CREATED 04-07-06		DATE MODIFIED	
APPROVED BY RAM		REV. 0.4		DATE APPROVED 08-09-06		SHEET NUMBER 3 of 13	
TITLE: CITY OF WINNIPEG WTP		FILE NAME: 35701-G03		G03			

NO.	REVISION	DATE
A	ISSUED FOR LONG LEAD RELEASE	04-18-06
B	REISSUED FOR LONG LEAD RELEASE	04-25-06
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	07-19-06
0.3	REISSUED FOR SUBMITTAL	07-21-06
0.4	REISSUED FOR SUBMITTAL	08-09-06

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GENERAL NOTES  
 SYSTEM: 5kV CLASS, 4.16kV, 3Ø, 3-WIRE  
 SYSTEM INTERRUPT: 350MVA. B.I.L. 60kV  
 SYSTEM RATING: 3000A  
 BUS MATERIAL: TIN PLATED COPPER  
 ENCLOSURE: NEMA1,  
 UL LABEL: UL MV CSA  
 ACCESSIBILITY: FRONT ARC-DESIGN, REAR COVERS  
 HANDLING: CRANE  
 COLOR: ANSI 61  
 SEISMIC: NONE

24VDC BATTERIES SHIPPED LOOSE FOR EXTERNAL MOUNTING.

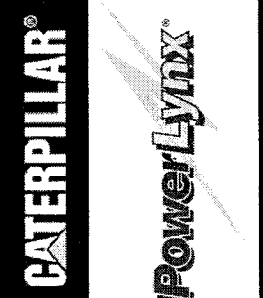
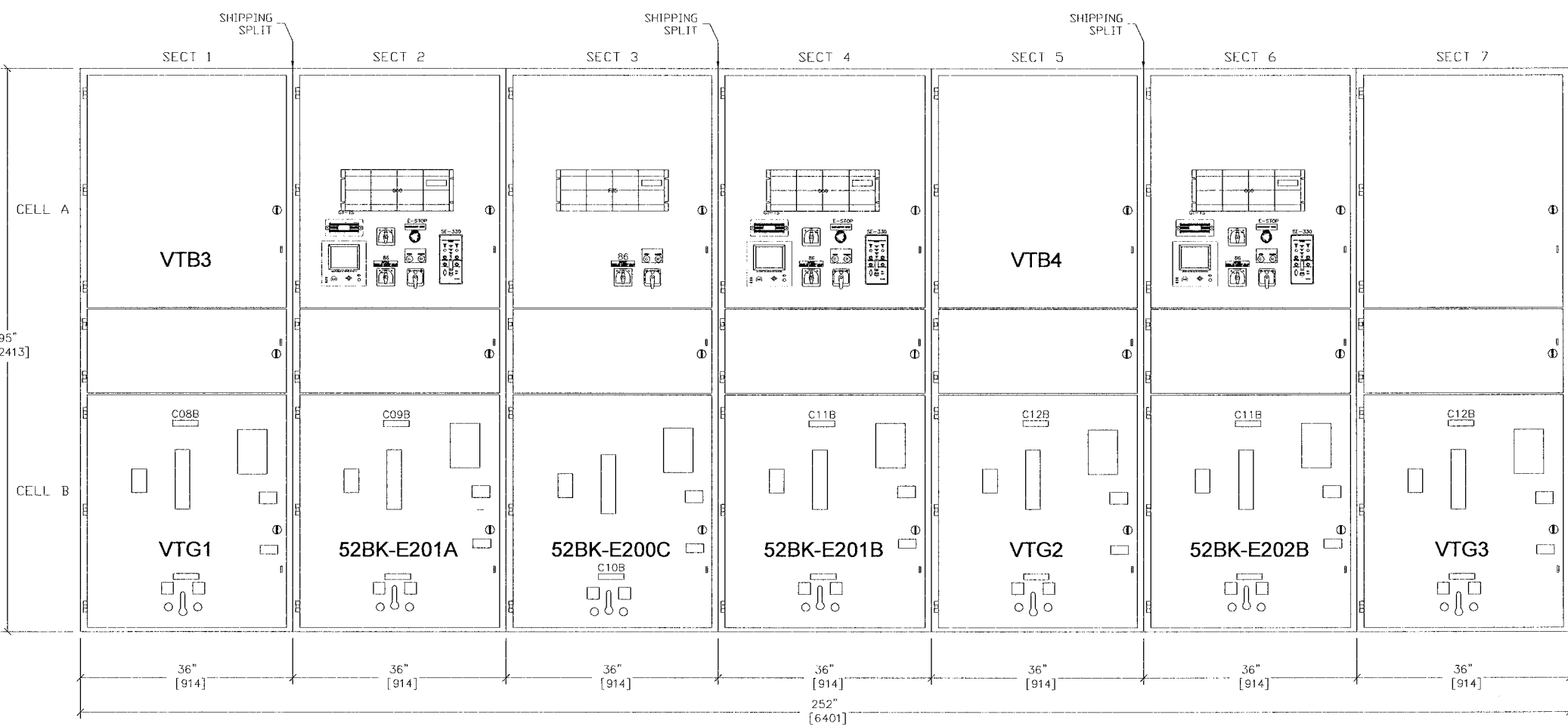
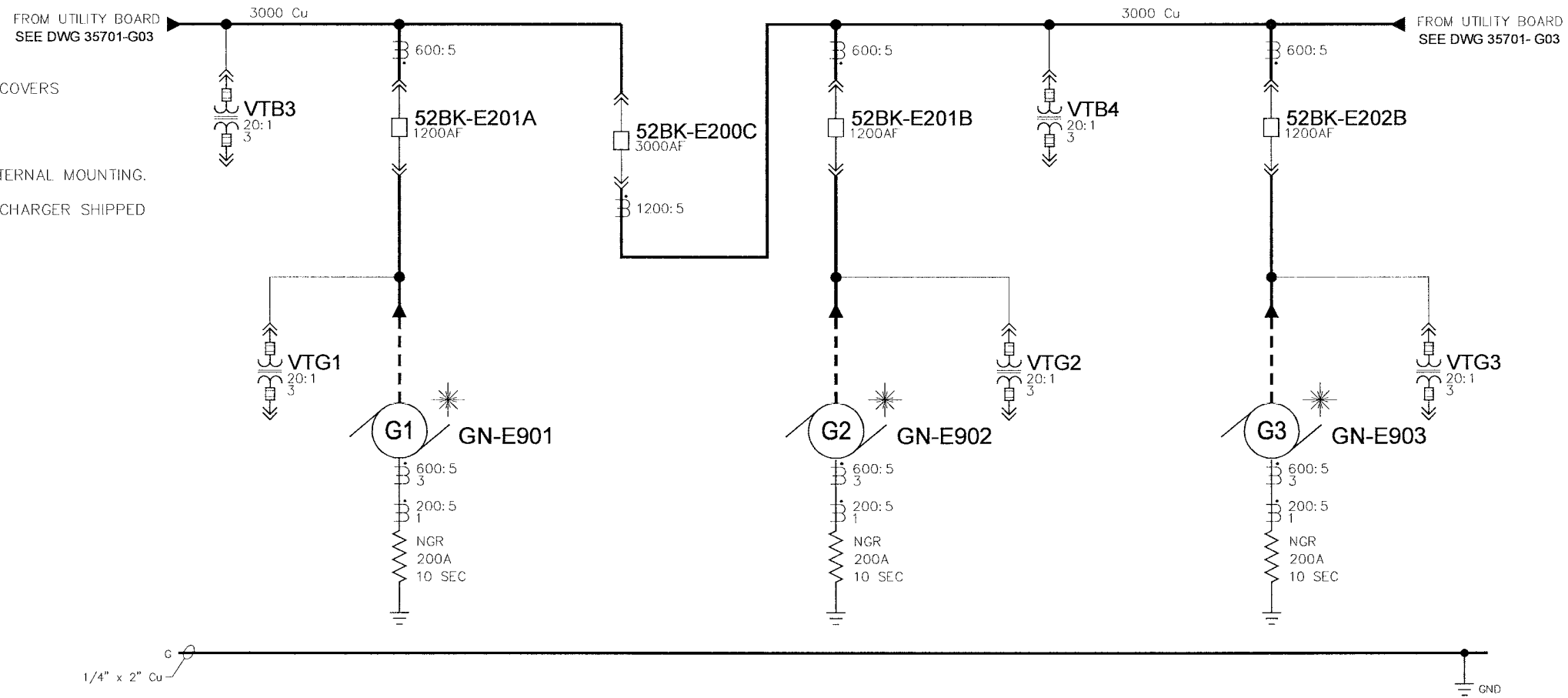
125VDC BATTERIES AND 125VDC BATTERY CHARGER SHIPPED LOOSE FOR EXTERNAL MOUNTING.

ESTIMATED SHIPPING WEIGHTS:  
 SECT 1 THRU SECT 7 - 2,400 LBS EACH.

CIRCUIT BREAKERS SHIPPED SEPARATELY AT 460 LBS. EACH.

DIMENSIONS - INCHES  
 [METRIC]

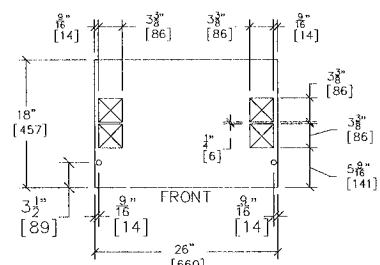
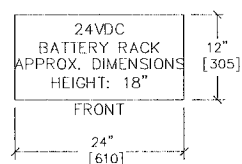
⚡ SUPPLIED BY TOROMONT CAT



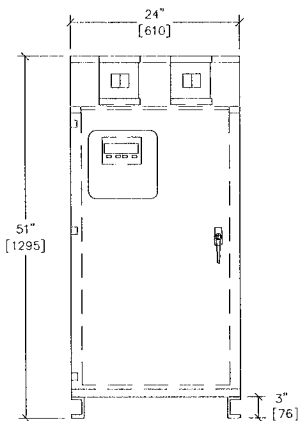
CITY OF WINNIPEG WTP		REV. 0.4		DRAWN BY: EM		MODIFIED BY:	
FRONT ELEVATION AND ONE - LINE (E-200)		SCALE: N.T.S.		DATE CREATED: 04-07-06		DATE MODIFIED:	
4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR		REV. 0.4		DATE APPROVED: 08-09-06		SHEET NUMBER: 4 of 13	
APPROVED BY: RAM		SCALE: N.T.S.		DATE APPROVED: 08-09-06		SHEET NUMBER: 4 of 13	
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TITLE: FRONT ELEVATION AND ONE - LINE (E-200)		SCALE: N.T.S.		DATE APPROVED: 08-09-06		SHEET NUMBER: 4 of 13	
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TITLE: B ISSUED FOR LONG LEAD RELEASE		SCALE: N.T.S.		DATE APPROVED: 08-09-06		SHEET NUMBER: 4 of 13	
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TITLE: 0.4 ISSUED FOR SUBMITTAL		SCALE: N.T.S.		DATE APPROVED: 08-09-06		SHEET NUMBER: 4 of 13	

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DIMENSIONS - INCHES  
MM

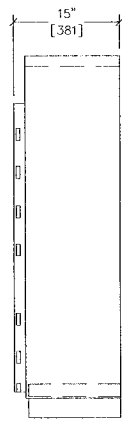


TYPICAL: CP  
SECTs 1 - 5

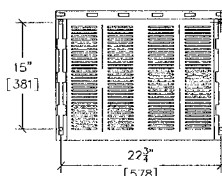


FRONT VIEW

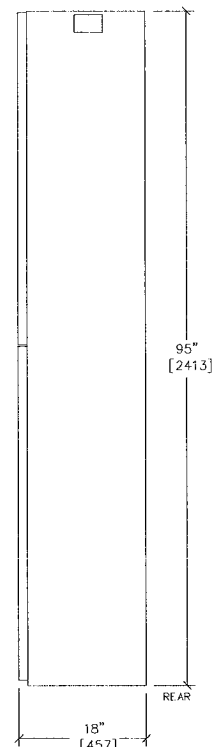
125VDC BATTERY CHARGER  
ARM-650



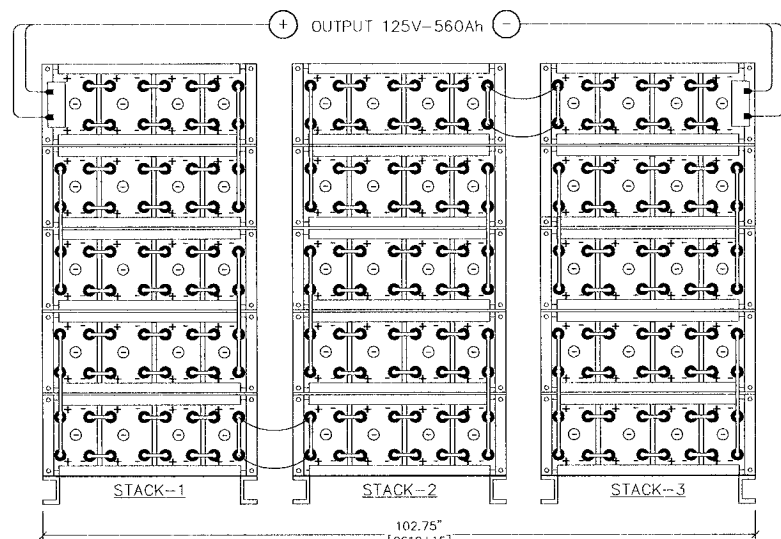
SIDE VIEW



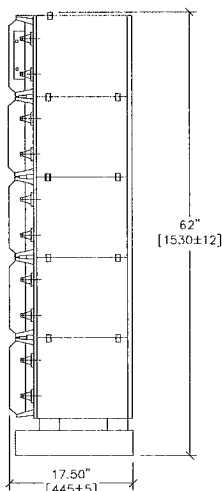
TOP VIEW



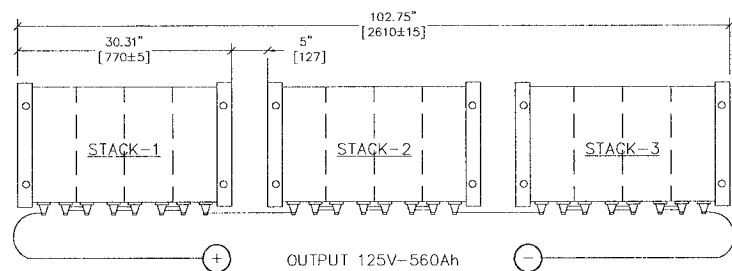
SIDE VIEW  
SECT CP  
SECTs 1 - 5



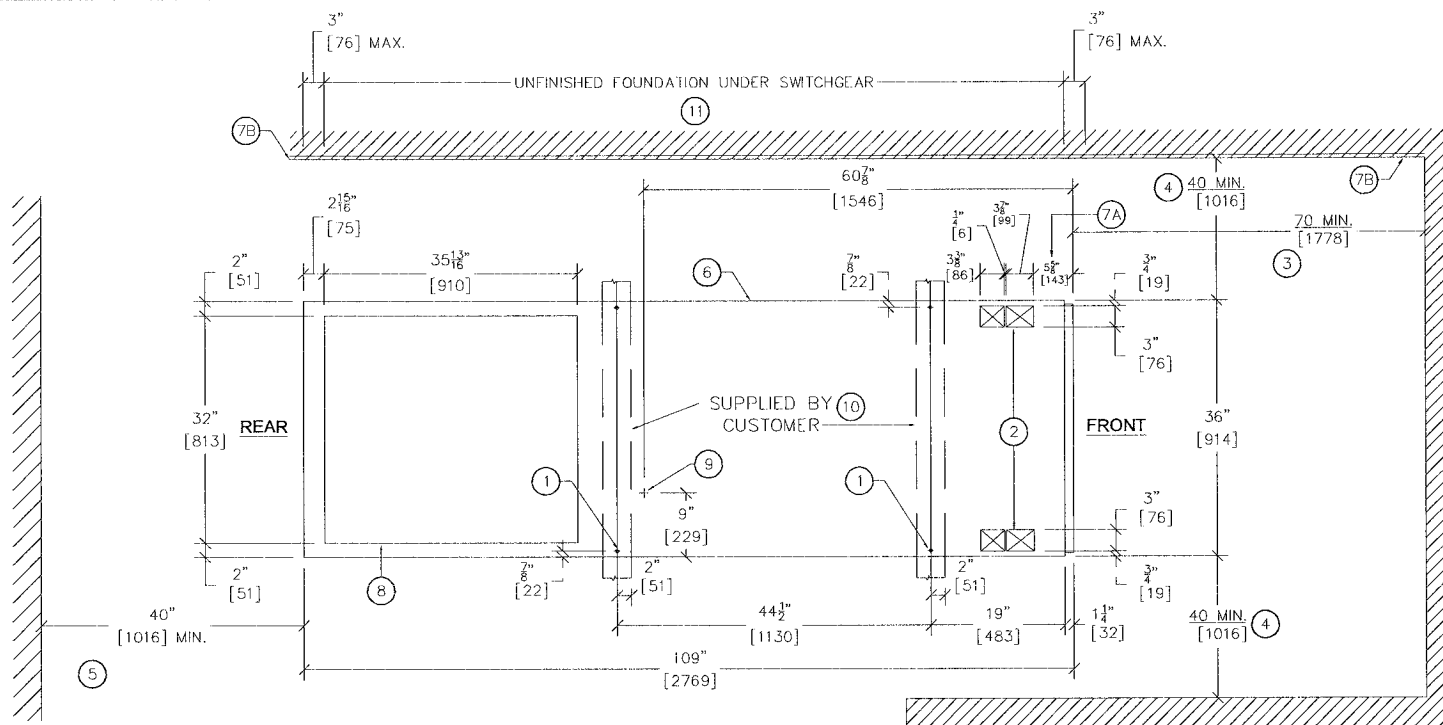
FRONT VIEW



SIDE VIEW

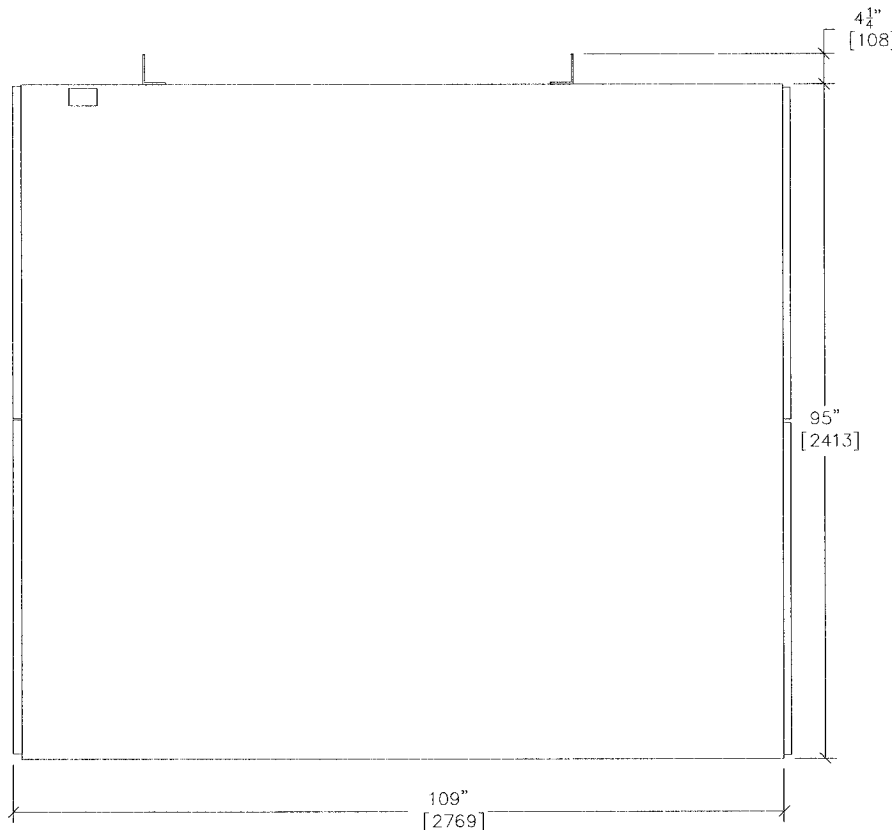


PLAN VIEW  
125VDC BATTERY RACK



TYPICAL FOR:  
SECTs 1 - 19, E-100  
SECTs 1 - 7, E-200

TOP VIEW

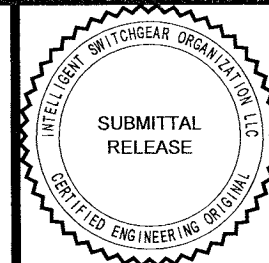


TYPICAL FOR:  
SECTs 1 - 19, E-100  
SECTs 1 - 7, E-200

SIDE VIEW

INSTALLING INDOOR SWITCHGEAR TYPE  
VACCLAD-W ARC

1. Suggested locations for 0.50in. (12.7mm) bolts or welding.
2. Secondary control wiring conduit openings, conduit projection must not exceed 1.0in (25.4mm).
3. Minimum front clearance when using the Cutler-Hammer portable lifter.
4. Minimum left or right hinged panel clearance.
5. Recommended minimum rear clearance.
6. Finished foundation surface (including floor steel) must be flat and level and in true plane.
- 7A. Floor steel, if used, must not exceed this dimension under the switchgear.
- 7B. Finished foundation (within 0.06in [1.5mm] clearance) must extend under the switchgear a minimum of 1.5in.(38.1mm) to maximum of 3.0in. (76.2mm).
8. Primary (H.V.) conduit projection must not exceed 2.0in. (50.8mm). See shop order base plan for conduit locations.
9. Customer's ground provisions, provided as shown by symbol on the shop order's sectional side views.
10. 4.0in. (101.6mm) minimum channel supplied by customer.
11. Foundation under the switchgear must be at least 3.0in. (76.2mm) thick.



CATERPILLAR

PowerLynx

CITY OF WINNIPEG WTP  
PLAN & SIDE VIEW - 1

4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR

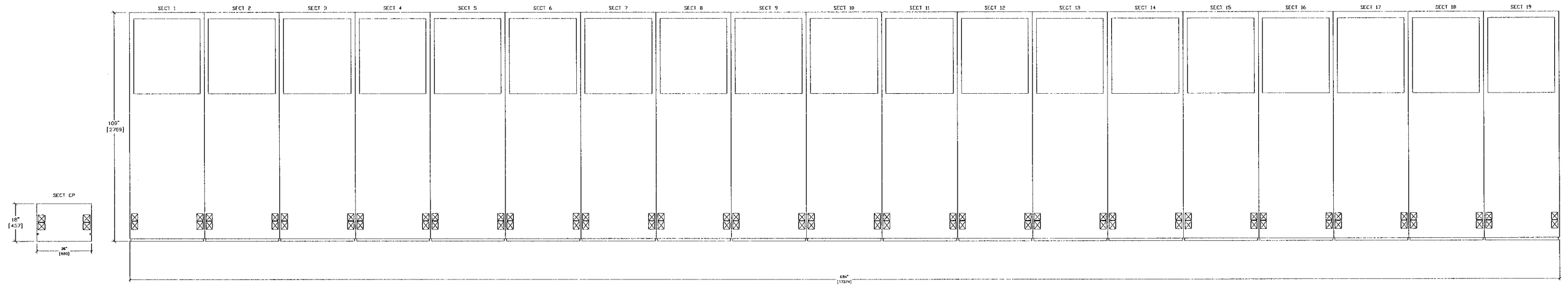
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B	REISSUED FOR LONG LEAD RELEASE	04-25-06																	
0.0	ISSUED FOR SUBMITTAL	05-22-06																	
0.1	REISSUED FOR SUBMITTAL	06-07-06																	
0.2	REISSUED FOR SUBMITTAL	07-19-06																	
0.3	REISSUED FOR SUBMITTAL	07-21-06																	
0.4	REISSUED FOR SUBMITTAL	08-09-06																	

G05

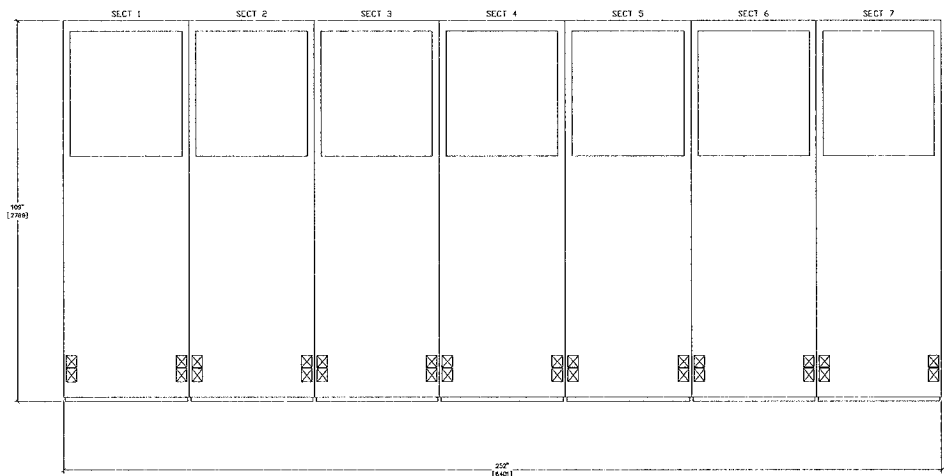
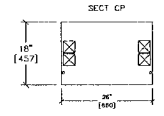
FILE NAME 35701-G05

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DIMENSIONS - INCHES  
MM



TOP VIEW  
SECTs CP, 1 - 19, E-100



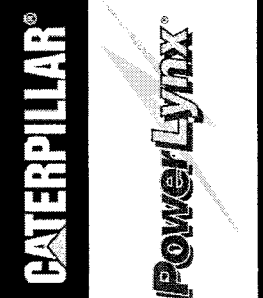
TOP VIEW  
SECTs 1 - 7, E-200



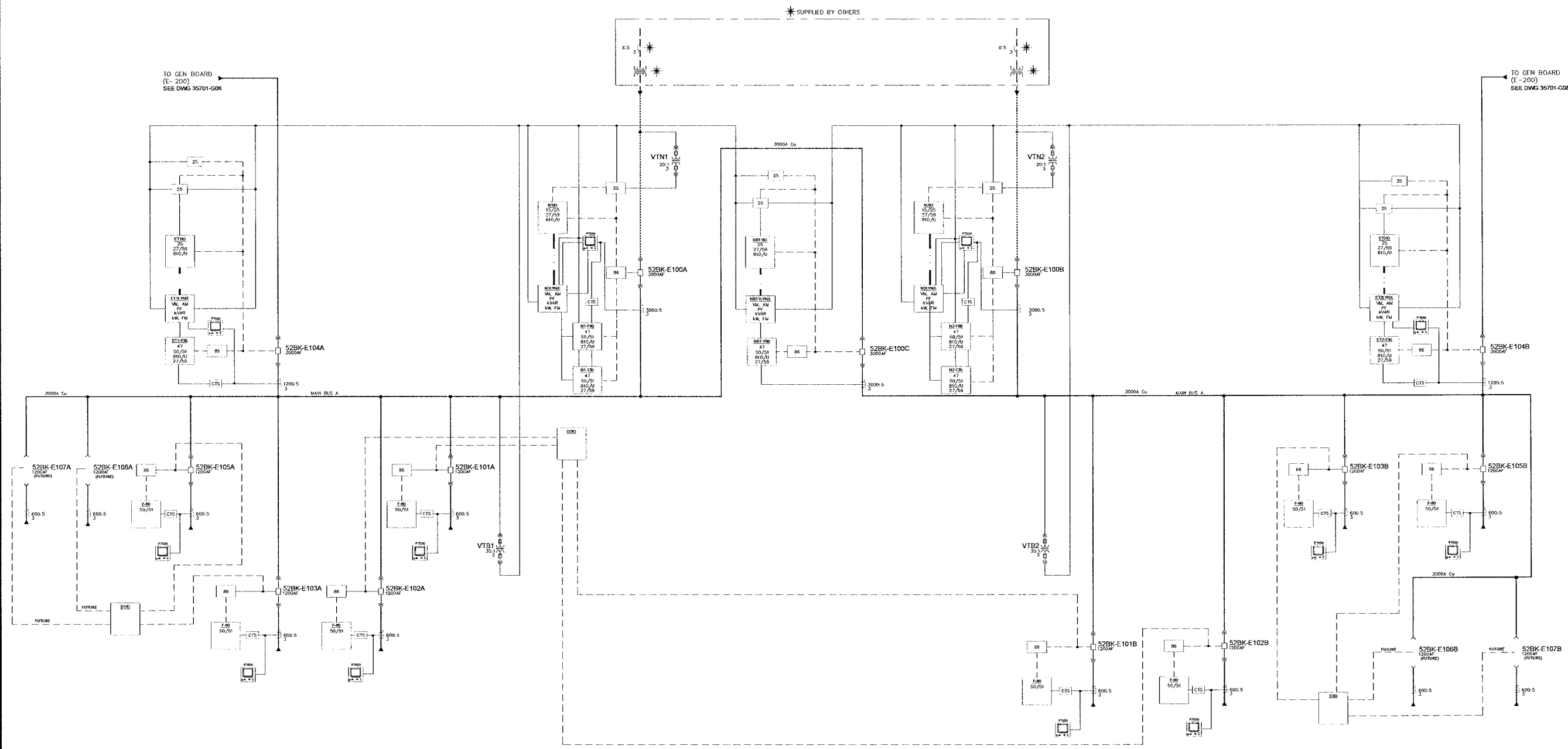
CITY OF WINNIPEG WTP		DRAWN BY		MODIFIED BY	
PLAN VIEW - 2		EM		EM	
4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR		DATE CREATED		DATE MODIFIED	
SCALE		REV.		SHEET NUMBER	
N.T.S.		0.4		6 of 13	
APPROVED BY		DATE APPROVED		FILE NAME	
RAM		08-09-06		35701-G06	
TITLE:		G06			

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B	REISSUED FOR LONG LEAD RELEASE	04-25-06
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0.2	REISSUED FOR SUBMITTAL	07-19-06
0.3	REISSUED FOR SUBMITTAL	07-21-06
0.4	REISSUED FOR SUBMITTAL	08-09-06

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CITY OF WINNIPEG WTP CONTROL ONE - LINE (E-100)	
4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
APPROVED BY: <i>RAM</i>	SCALE: N.T.S.
DATE APPROVED: 08-09-06	REV: 0.4
FILE NAME: 35701-G07	
DRAWN BY: EM	MODIFIED BY:
DATE CREATED: 04-14-06	DATE MODIFIED:
SHEET NUMBER: 7	of 13



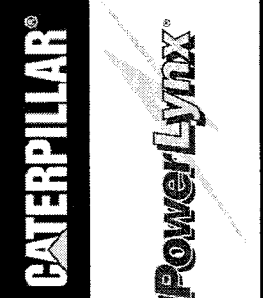
⚡ SUPPLIED BY OTHERS

LINE LEGEND	
— — — — —	POWER CABLE
- - - - -	CONTROL
—○—○—	MODBUS +
- · - · -	RS-232

NOTE 1) FOR A COMPLETE LIST OF PROTECTIVE RELAY FUNCTIONS REFER TO MANUAL

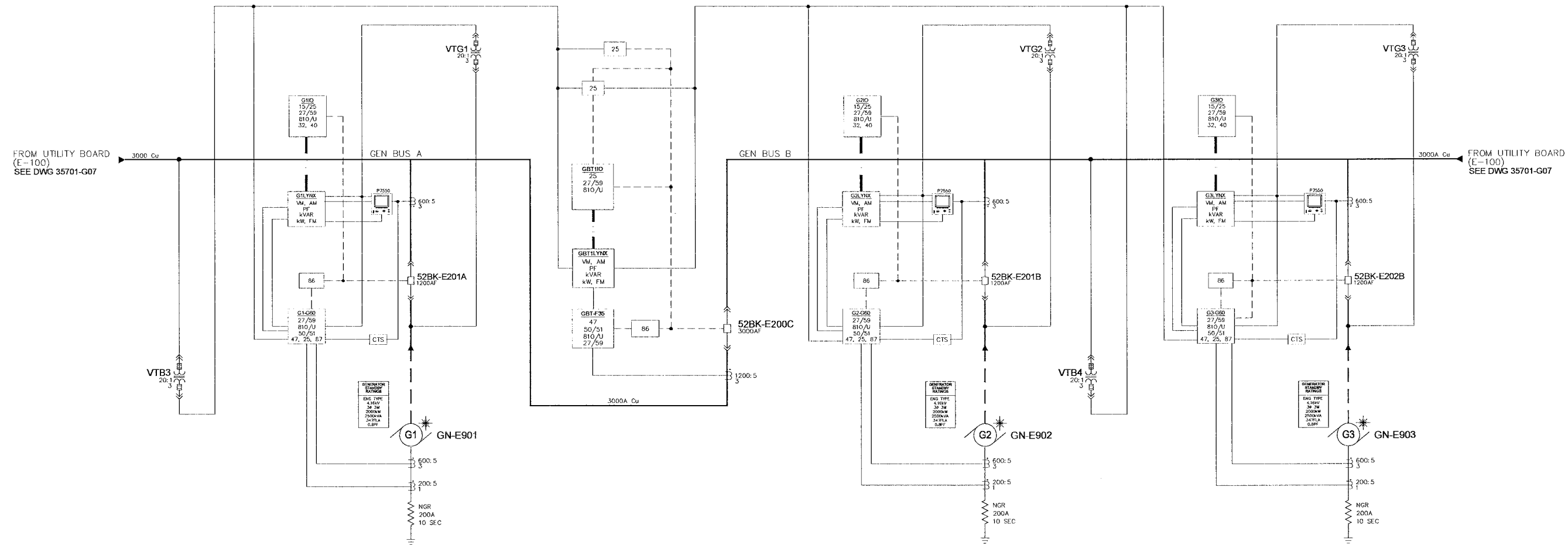
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B	REISSUED FOR LONG LEAD RELEASE	04-25-06
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	07-19-06
0.3	REISSUED FOR SUBMITTAL	07-21-06
0.4	REISSUED FOR SUBMITTAL	08-09-06

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CITY OF WINNIPEG WTP		CONTROL ONE - LINE (E-200)	
4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV.	DATE
RAM	N.T.S.	0.4	04-14-06
DATE APPROVED	08-09-06	DRAWN BY	EM
FILE NAME	35701-G08	MODIFIED BY	
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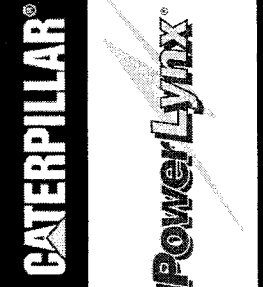
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	07-19-06
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⊛ SUPPLIED BY OTHERS

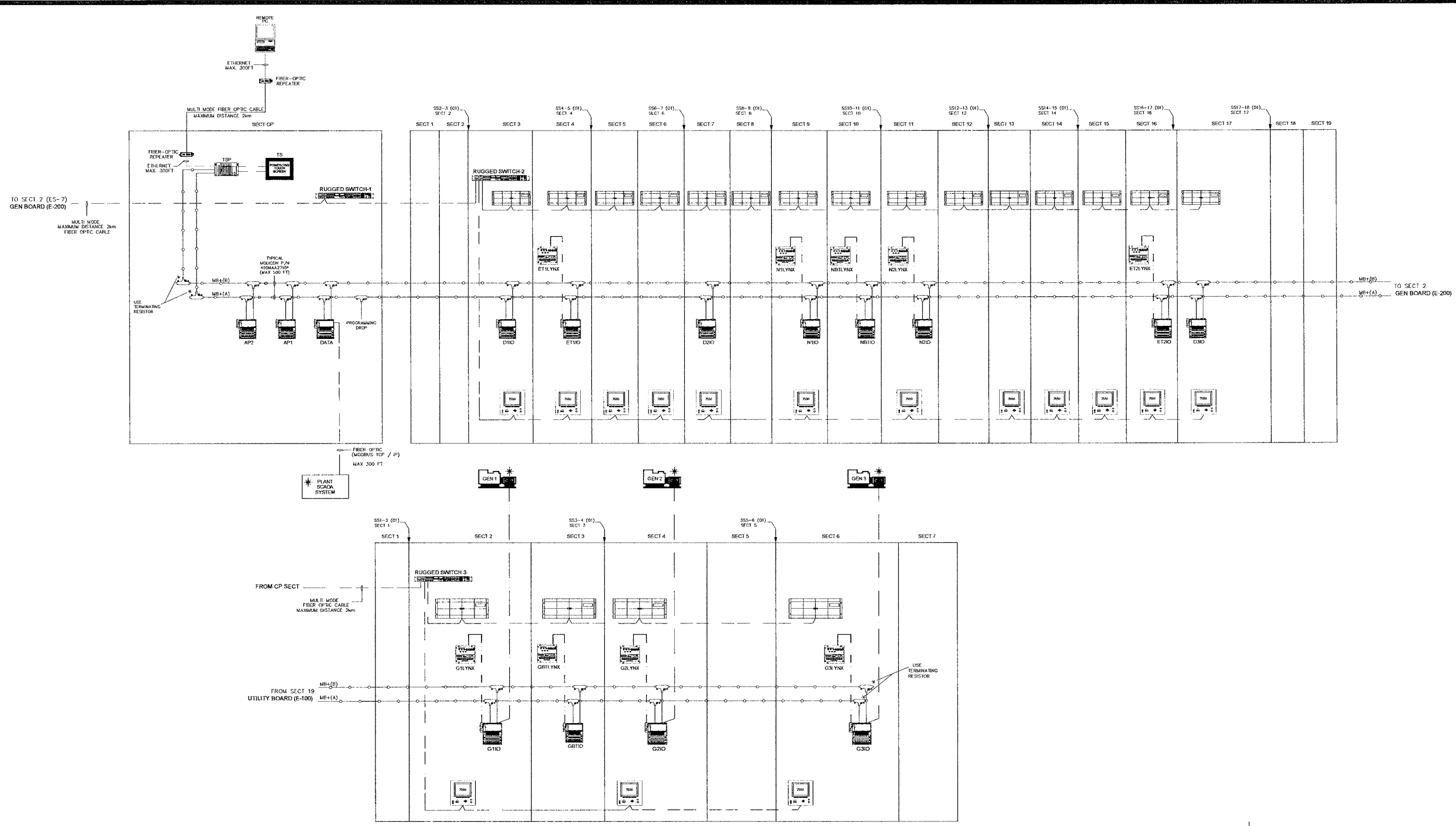
LINE LEGEND	
---	POWER CABLE
- - - - -	CONTROL
○-○-○-○	MODBUS +
⋯⋯⋯	RS-232

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CITY OF WINNIPEG WTP		AUTOMATION COMMUNICATIONS PLAN		4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	RAM	SCALE	N.T.S	REV.	0.4
DATE APPROVED	06-09-06	DRAWN BY	EM	DATE CREATED	04-07-06
FILE NAME	35701-G09	MODIFIED BY		DATE MODIFIED	
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NO.	REVISION	DATE
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0.2	ISSUED FOR SUBMITTAL	07-19-06
0.3	ISSUED FOR SUBMITTAL	07-21-06
0.4	ISSUED FOR SUBMITTAL	08-09-06



☀ SUPPLIED BY TOROMONT CAT

LINE LEGEND	
	RS-232
	MODBUS +
	VIDEO CABLE
	ETHERNET
	MODBUS RTU / RS-485
	DATA LINK
	FIBER OPTIC

DEVICE LEGEND	
	REMOTE PC
	15" TOUCHSCREEN
	POWERLYNX TOUCH SCREEN
	ISO POWERLYNX
	TOUCH SCREEN PROCESSOR
	RUGGED SWITCH RSG2100
	MOMENTUM PROCESSOR

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**CONTROL CIRCUIT CONDUIT SCHEDULE (SEE NOTE 1)**

CONDUIT		CONDUCTOR		CONDUIT SIZE	CONDUIT TABLE				
NO.	FROM	TO	QTY-SIZE	FUNCTION					
1	GEN 1	SECT 12	1 - 2 COND. #16 SHIELDED TWISTED PAIR, BELDEN 8719 OR EQUIVALENT	GEN 1 EMCP3.3 (DATA LINK)	NOTE 4 & 5	TYPE D NOTE 6			
			1 - 3 COND. #16 SHIELDED TWISTED, BELDEN 8618 OR EQUIVALENT	GEN 1 SPEED BRICK (SPEED CONTROL)					
			1 - 2 COND. #16 SHIELDED TWISTED PAIR, BELDEN 8719 OR EQUIVALENT	GEN 1 CDVR (ANALOG CONTROL)					
						3 - #14 AWG	GEN 1 CDVR (MANUAL CONTROL)	NOTE 4 & 5	TYPE A
						4 - #10 AWG	24VDC POWER		
			16 - #14 AWG	GEN 1 DISCRETE					
2	GEN 1 NGR	SECT 12	2 - #12 AWG	GEN 1 GROUND CT SIGNAL	NOTE 5	TYPE C			
3	GEN 1	SECT 12	6 - #12 AWG	GEN 1 CT SIGNALS FOR DIFFERENTIAL PROTECTION	NOTE 5	TYPE C			
4	GEN 2	SECT 13	1 - 2 COND. #16 SHIELDED TWISTED PAIR, BELDEN 8719 OR EQUIVALENT	GEN 2 EMCP3.3 (DATA LINK)	NOTE 4 & 5	TYPE D NOTE 6			
			1 - 3 COND. #16 SHIELDED TWISTED, BELDEN 8618 OR EQUIVALENT	GEN 2 SPEED BRICK (SPEED CONTROL)					
			1 - 2 COND. #16 SHIELDED TWISTED PAIR, BELDEN 8719 OR EQUIVALENT	GEN 2 CDVR (ANALOG CONTROL)					
						3 - #14 AWG	GEN 2 CDVR (MANUAL CONTROL)	NOTE 4 & 5	TYPE A
						4 - #10 AWG	24VDC POWER		
			16 - #14 AWG	GEN 2 DISCRETE					
5	GEN 2 NGR	SECT 13	2 - #12 AWG	GEN 2 GROUND CT SIGNAL	NOTE 5	TYPE C			
6	GEN 2	SECT 13	6 - #12 AWG	GEN 2 CT SIGNALS FOR DIFFERENTIAL PROTECTION	NOTE 5	TYPE C			
7	GEN 3	SECT 14	1 - 2 COND. #16 SHIELDED TWISTED PAIR, BELDEN 8719 OR EQUIVALENT	GEN 3 EMCP3.3 (DATA LINK)	NOTE 4 & 5	TYPE D NOTE 6			
			1 - 3 COND. #16 SHIELDED TWISTED, BELDEN 8618 OR EQUIVALENT	GEN 3 SPEED BRICK (SPEED CONTROL)					
			1 - 2 COND. #16 SHIELDED TWISTED PAIR, BELDEN 8719 OR EQUIVALENT	GEN 3 CDVR (ANALOG CONTROL)					
						3 - #14 AWG	GEN 3 CDVR (MANUAL CONTROL)	NOTE 4 & 5	TYPE A
						4 - #10 AWG	24VDC POWER		
			16 - #14 AWG	GEN 3 DISCRETE					
8	GEN 3 NGR	SECT 14	2 - #12 AWG	GEN 3 GROUND CT SIGNAL	NOTE 5	TYPE C			
9	GEN 3	SECT 14	6 - #12 AWG	GEN 3 CT SIGNALS FOR DIFFERENTIAL PROTECTION	NOTE 5	TYPE C			
10	EMERGENCY POWER PANEL	SECT 1 (UTILITY BOARD E-100)	3 - #10 AWG	208VAC FOR SPACE HEATERS (1Ø, 30A)	NOTE 5	TYPE C			
11	EMERGENCY POWER PANEL	SECT 9 (UTILITY BOARD E-100)	3 - #10 AWG	208VAC FOR SPACE HEATERS (1Ø, 30A)	NOTE 5	TYPE C			
12	EMERGENCY POWER PANEL	SECT 11 (UTILITY BOARD E-100)	3 - #10 AWG	208VAC FOR SPACE HEATERS (1Ø, 30A)	NOTE 5	TYPE C			
13	EMERGENCY POWER PANEL	SECT 2 (GEN BOARD E-200)	3 - #10 AWG	208VAC FOR SPACE HEATERS (1Ø, 30A)	NOTE 5	TYPE C			
14	EMERGENCY POWER PANEL	SECT 6 (GEN BOARD E-200)	3 - #10 AWG	208VAC FOR SPACE HEATERS (1Ø, 30A)	NOTE 5	TYPE C			
15	EMERGENCY POWER PANEL	CP BOARD	3 - #14 AWG	120VAC, 20A FOR 24VDC BATTERY CHARGER	NOTE 5	TYPE C			
16	24VDC STATION BATTERIES 1	CP BOARD	4 - #10 AWG	24VDC POWER	NOTE 5	TYPE B			
17	PLANT SCADA SYSTEM	CP BOARD	1 - 2 COND. #18 SHIELDED TWISTED PAIR, BELDEN 3073 OR EQUIVALENT FIBER OPTIC CABLE	DATA TABLE INTERFACE	NOTE 5	TYPE D			
18	EMERGENCY POWER PANEL	125VDC BATTERY CHARGER	3 - #8 AWG	208VAC, 3Ø, 40A	NOTE 5	TYPE C			
19	125VDC BATTERY CHARGER	125VDC BATTERIES	2 - #10 AWG	125VDC POWER	NOTE 5	TYPE B			
20	125VDC BATTERIES	SECT 3 (UTILITY BOARD E-100)	2 - #10 AWG	125VDC POWER	NOTE 5	TYPE B			
21	125VDC BATTERIES	SECT 2 (GEN BOARD E-200)	4 - #10 AWG	125VDC POWER	NOTE 5	TYPE B			
22	125VDC BATTERY CHARGER	CP SECT	2 - #14 AWG	125VDC BATTERY CHARGER STATUS (MALFUNCTION)	NOTE 5	TYPE A			
23	LOAD SHED	SECT 15	AS REQUIRED BY OPERATION	LOAD SHED	NOTE 5	TBD			
24	CP BOARD	SECT 1 (UTILITY BOARD E-100)	4 - #8 AWG	24VDC POWER	NOTE 5	TYPE A			
25	SECT 17 (UTILITY BOARD E-100)	SECT 2 (UTILITY BOARD E-100)	4 - #8 AWG	24VDC POWER	NOTE 5	TYPE A			
26	SECT 1 (GEN BOARD E-200)	SECT 4 (UTILITY BOARD E-100)	4 - #12 AWG	120VAC (VT VOLTAGE FOR 52BK-E104A ;E1)	NOTE 5	TYPE C			
27	SECT 1 (GEN BOARD E-200)	SECT 4 (UTILITY BOARD E-100)	4 - #12 AWG	120VAC (VT VOLTAGE FOR 52BK-E104B ;E2)	NOTE 5	TYPE C			
28	CP BOARD	SECT 3 (UTILITY BOARD E-100)	MODICON P/N 490NAA2710*	COMMUNICATION	NOTE 5	TYPE A			
29	SECT 17(UTILITY BOARD E-100)	SECT 2 (GEN BOARD E-200)	MODICON P/N 490NAA2710*	COMMUNICATION	NOTE 5	TYPE A			
30	CP BOARD	SECT 2 (GEN BOARD E-200)	FIBER OPTIC CABLE	COMMUNICATION	NOTE 5	TYPE E			
31	CP BOARD	SECT 3 UTILITY BOARD E-100	FIBER OPTIC CABLE	COMMUNICATION	NOTE 5	TYPE E			
32	CP BOARD	REMOTE PC	FIBER OPTIC MULTIMODE WITH ST CONNECTOR	REMOTE PC COMMUNICATION	NOTE 5	TYPE D			
33	CP BOARD	(GEN BOARD E-200)	12 - #14 AWG	ENGINE RUN REQUEST (52BK-E201A, 52BK-E201B, 52BK-E202B)					
33A	CP BOARD	SECT 2 (GEN BOARD E-200)	4 - #14 AWG	ENGINE RUN REQUEST (52BK-E201A)	NOTE 5	TYPE A			
33B	CP BOARD	SECT 4 (GEN BOARD E-200)	4 - #14 AWG	ENGINE RUN REQUEST (52BK-E201B)					
33C	CP BOARD	SECT 6 (GEN BOARD E-200)	4 - #14 AWG	ENGINE RUN REQUEST (52BK-E202B)					
34	SECT 12 (UTILITY BOARD E-100)	CP BOARD	2 - #14 AWG	POWER FOR HOT BUS RELAY 2 (FROM VTB2)	NOTE 5	TYPE C			
35	SECT 8 (UTILITY BOARD E-100)	CP BOARD	2 - #14 AWG	POWER FOR HOT BUS RELAY 1 (FROM VTB1)	NOTE 5	TYPE C			
36	CP BOARD	SECT 3 (GEN BOARD E-200)	2 - #14 AWG	CONTROL (GEN BUS TIE 52BK-E200C)					
37	CP BOARD	UTILITY BOARD E-100	6 - #14 AWG	CONTROLS (52BK-E100C, 52BK-E104A, 52BK-E104B)					
37A	CP BOARD	SECT 4 (UTILITY BOARD E-100)	2 - #14 AWG	CONTROL (EMERGENCY TIE1 52BK-E104A)	NOTE 5	TYPE A			
37B	CP BOARD	SECT 10 (UTILITY BOARD E-100)	2 - #14 AWG	CONTROL (UTILITY BUS TIE 52BK-E100C)					
37C	CP BOARD	SECT 16 (UTILITY BOARD E-100)	2 - #14 AWG	CONTROL (EMERGENCY TIE2 52BK-E104B)					
38	UTILITY BOARD E-100	CP BOARD	4 - #14 AWG	CONTROLS (APPLC OK) FROM 52BK-E100A; 52BK-E100B)					
38A	SECT 9 UTILITY BOARD E-100	CP BOARD	2 - #14 AWG	CONTROL (APPLC OK) FROM 52BK-E100A	NOTE 5	TYPE A			
38B	SECT 11 UTILITY BOARD E-100	CP BOARD	2 - #14 AWG	CONTROL (APPLC OK) FROM 52BK-E100B					
39	125VDC BATTERIES	SECT 3 (UTILITY BOARD E-100)	2 - #10 AWG	125VDC POWER	NOTE 5	TYPE B			
40	24VDC STATION BATTERIES 2	CP BOARD	4 - #10 AWG	24VDC POWER	NOTE 5	TYPE B			

**NOTES:**

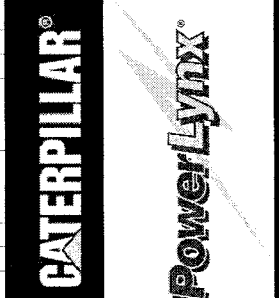
- ELECTRICAL CONTRACTOR RESPONSIBLE FOR ADHERENCE TO ALL APPLICABLE STANDARDS AND CODES.
- ELECTRICAL CONTRACTOR MAY MODIFY ROUTING AND COMBINE CONDUITS OF THE SAME TYPE.
- ELECTRICAL CONTRACTOR TO TERMINATE FIELD WIRING AT BOTH ENDS.
- CONDUIT TYPES A AND D MAY BE COMBINED.
- CONDUIT TO BE SIZED BY INSTALLER.

**NOTES:**

- SEPARATE METALLIC CONDUIT MUST BE USED FOR EACH WIRE TYPE (A, B, C, & D). WIRE TYPES A & D MAY BE COMBINED IN THE SAME METALLIC CONDUIT.
- SPARES TO BE LEFT 10' LONG, COILED AND TAPED IN BOTTOM OF ENCLOSURE.
- 4 POLE, 10A, 120VAC, FORM C DRY CONTACTS FOR LOAD SHED PURPOSES.
- ELECTRICAL CONTRACTOR TO PROVIDE 20% SPARES.
- ATS CONDUIT AND CONDUCTOR ARE REPRESENTATIVE OF ONE (1) ATS. NUMBER OF CONDUITS DEPENDENT ON NUMBER OF ATS.

**CONDUIT TABLE**

A	DC CONTROL <= 30V
B	DC CONTROL > 30V
C	AC CONTROL
D	SIGNAL LEVEL
E	FIBER OPTIC



**CITY OF WINNIPEG WTP  
CONTROL CIRCUIT SCHEDULE**

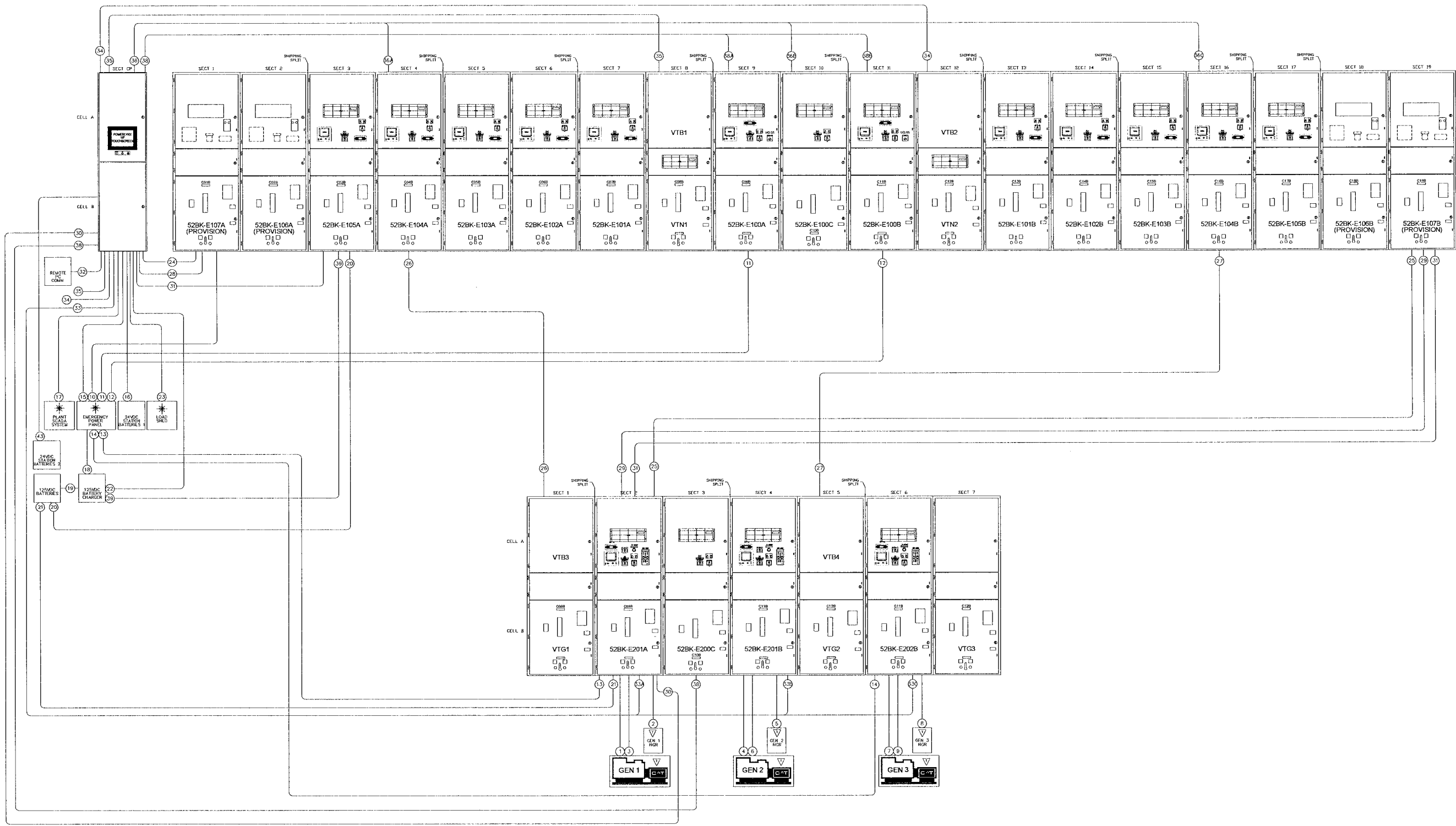
**4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR**

APPROVED BY: **RAM** N.T.S. SCALE: 0.4  
 DATE APPROVED: 08-09-06  
 FILE NAME: 36701-G10

DRAWN BY: EM REV: 0.4  
 DATE CREATED: 05-05-06  
 SHEET NUMBER: 10 of 13

DATE: 04-18-06  
 04-23-06  
 05-22-06  
 06-07-06  
 07-19-06  
 07-21-06  
 08-09-06

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CITY OF WINNIPEG WTP CONTROL CONDUIT SCHEDULE	
4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	RAM
SCALE	N.T.S.
REV.	0.4
DRAWN BY	EM
DATE CREATED	05-05-07
DATE MODIFIED	
SHEET NUMBER	11
OF	13
FILE NAME	35701-G11

NO.	REVISION	DATE
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B	REISSUED FOR LONG LEAD RELEASE	04-25-06
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	07-19-06
0.3	REISSUED FOR SUBMITTAL	07-21-06
0.4	REISSUED FOR SUBMITTAL	08-09-06

- SUPPLIED BY TOROMONT CAT  
 - SUPPLIED BY OTHERS

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**FUNCTIONAL SEQUENCE OF OPERATIONS**

The System Controls shall be designed and integrated with the other specified control components to provide a completely functional total system which shall automatically perform the following generally described sequence of operations:

**A. AUTOMATIC/STANDBY (UTILITY) MODE**

1. Normal mains 52BK-E100A and 52BK-E100B are closed.
2. Utility Tie 52BK-E100C is opened.
3. Generator Tie 52BK-E200C is closed.
4. Emergency Ties 52BK-E104A and 52BK-E104B are opened.
5. All distribution devices are closed.
6. The Generators are shut down and their main CBs (52G) are open.

**B. EMERGENCY MODE - FAILURE OF A SINGLE 4.16 kV SOURCES (A or B)**

**Entry**

1. Utility failure is sensed by the 47 device under voltage/phase sequence devices.
2. The respective Utility Main (52BK) is opened.
3. The Utility Tie 52BK-E100C is closed.

**Utility Restoration and Exit from Loss of a Single Utility**

1. The system senses Utility voltage and frequency within tolerance for an adjustable time period (or the operator has abbreviated the timer).
2. The respective Utility Main (52BK) is closed when in parallel.
3. The Utility Tie 52BK-E100C is opened.

**C. EMERGENCY MODE - FAILURE OF BOTH 4.16 KV SOURCES (52BK-E100A and 52BK-E100B)**

**Entry**

1. Utility failure is sensed by the 47 device under voltage/phase sequence devices.
2. 52BK-E100A and 52BK-E100B are opened; and all distribution loads are shed.
3. The generators are cranked. The first generator up to voltage and frequency is closed to the dead emergency bus.
4. Additional generators are synchronized and paralleled to the bus as they come up to voltage and frequency.
5. Emergency Ties 52BK-E104A and 52BK-E104B are closed.
6. Distribution loads are re-added by the Load Shed/Add automation as additional generators are added to the bus.

**Utility Restoration and Exit from Emergency Mode**

When one or both utility sources are detected by the 47 device to be in tolerance an adjustable Mode Exit Timer is begun for each good utility source.

If **both of the utilities are available** the system begins to re-transfer to Normal Mode as follows:

1. Following the expiration of an adjustable Utility Retransfer timer (or the operator has abbreviated the timer), the generator plant is passively synchronized to utility source A and 52BK-E100A is closed.
2. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for Emergency Tie 52BK-E104A.
3. Emergency Tie 52BK-E104A is opened.
4. The generator plant is passively synchronized to utility source B and 52BK-E100B is closed.
5. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for Emergency Tie 52BK-E104B.
6. Emergency Tie 52BK-E104B is opened.
7. The Generator Mains are opened.
8. The system is now stable in Normal Mode.

If **only one of the utilities is available** the system begins to re-transfer to Normal Mode as follows:

1. Following the expiration of an adjustable Utility Retransfer timer (or the operator has abbreviated the timer), the generator plant is passively synchronized to available utility source and its Utility Main (52BK) is closed.
2. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for the respective Emergency Tie Breaker (52BK-E104A or 52BK-E104B).
3. The respective Emergency Tie Breaker is opened.
4. The generator plant is passively synchronized to available utility source and the Utility Tie 52BK-E100C is closed.
5. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for the respective Emergency Tie Breaker (52BK-E104A or 52BK-E104B).
6. The respective Emergency Tie Breaker is opened.
7. The Generator Mains are opened.
8. The system is now stable in Single Utility Mode.

**D. CLOSED TRANSFER TO EMERGENCY (OWNER INITIATED)**

**Entry**

1. The Operator places the Utility Selector Switch in the N1, N2, or Both Position.
2. The operator places the Master Mode Selector Switch in the 'Closed Xfer To Emergency' position.
3. The generators are cranked. The first generator up to voltage and frequency is closed to the dead emergency bus.
4. Additional generators are synchronized and paralleled to the bus as they come up to voltage and frequency.

If **N1 is selected** the system begins to transfer to Emergency Mode as follows:

1. Following the expiration of the Warm Up Timer the generators synchronized to the bus A via the Emergency Tie 52BK-E104A.
2. The utility source is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for 52BK-E100A.
3. 52BK-E100A is opened.

If **N2 is selected** the system begins to transfer to Emergency Mode as follows:

1. Following the expiration of the Warm Up Timer the generators synchronized to the bus B via the Emergency Tie 52BK-E104B.
2. The utility source is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for 52BK-E100B.
3. 52BK-E100B is opened.

If **"Both" is selected** the system begins to transfer to Emergency Mode as follows:

1. Following the expiration of the Warm Up Timer the generators synchronized to the bus A via the Emergency Tie 52BK-E104A.
2. The utility source is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for 52BK-E100A.
3. 52BK-E100A is opened.
4. The generators synchronized to the bus B via the Emergency Tie 52BK-E104B.
5. The utility source is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for 52BK-E100B.
6. 52BK-E100B is opened.

**Utility Restoration and Exit from Emergency Mode**

When one or both utility sources are detected by the 47 device to be in tolerance an adjustable Mode Exit Timer is begun for each good utility source.

If **both of the utilities are available** the system begins to re-transfer to Normal Mode as follows:

1. Following the expiration of an adjustable Utility Retransfer timer (or the operator has abbreviated the timer), the generator plant is passively synchronized to utility source A and 52BK-E100A is closed.
2. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for Emergency Tie 52BK-E104A.
3. Emergency Tie 52BK-E104A is opened.
4. The generator plant is passively synchronized to utility source B and 52BK-E100B is closed.
5. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for Emergency Tie 52BK-E104B.
6. Emergency Tie 52BK-E104B is opened.
7. The Generator Mains are opened.
8. The system is now stable in Normal Mode.

If **only one of the utilities is available** the system begins to re-transfer to Normal Mode as follows:

1. Following the expiration of an adjustable Utility Retransfer timer (or the operator has abbreviated the timer), the generator plant is passively synchronized to available utility source and its Utility Main (52BK) is closed.
2. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for the respective Emergency Tie Breaker (52BK-E104A or 52BK-E104B).
3. The respective Emergency Tie Breaker is opened.
4. The generator plant is passively synchronized to available utility source and the Utility Tie 52BK-E100C is closed.
5. The generator plant is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for the respective Emergency Tie Breaker (52BK-E104A or 52BK-E104B).
6. The respective Emergency Tie Breaker is opened.
7. The Generator Mains are opened.
8. The system is now stable in Single Utility Mode.

**E. LOAD MANAGEMENT MODE**

**Entry**

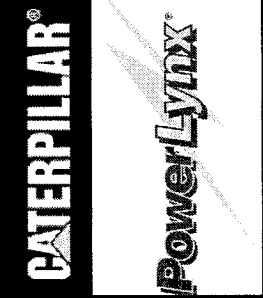
1. The operator sets the Base Load Set point value on the touch screen.
2. The operator places the Utility Selector Switch in the N1 or N2 position.
3. The operator places the Master Mode Selector Switch in the Load Management Switch position.
4. The generators are cranked. The first generator up to voltage and frequency is closed to the dead emergency bus.
5. Additional generators are synchronized and paralleled to the bus as they come up to voltage and frequency.

If **N1 is selected** the system begins to transfer to Load Management Mode as follows:

1. Following the expiration of the Warm Up Timer the generators synchronized to the bus A via the Emergency Tie 52BK-E104A.
2. The Generator remains in parallel with the utility while dynamically adjusting the generator output up and down as necessary (as the load changes) to hold the Base Load Set point.

If **N2 is selected** the system begins to transfer to Load Management Mode as follows:

1. Following the expiration of the Warm Up Timer the generators synchronized to the bus B via the Emergency Tie 52BK-E104B.
2. The Generator remains in parallel with the utility while dynamically adjusting the generator output up and down as necessary (as the load changes) to hold the Base Load Set point.



CITY OF WINNIPEG WTP		4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
SEQUENCE OF OPERATIONS		REV 0.4	
DRAWN BY EM		DATE CREATED 06-05-06	
MODIFIED BY		DATE MODIFIED	
SHEET NUMBER 12		of 13	
FILE NAME 35701-G12		APPROVED BY RAM	
DATE APPROVED 08-09-06		SCALE N.T.S.	
NO	REVISION	DATE	TITLE
A	ISSUED FOR LONG LEAD RELEASE	04-18-06	
B	REISSUED FOR LONG LEAD RELEASE	04-25-06	
C.0	ISSUED FOR SUBMITTAL	05-22-06	
C.1	REISSUED FOR SUBMITTAL	06-07-06	
C.2	REISSUED FOR SUBMITTAL	07-19-06	
C.3	REISSUED FOR SUBMITTAL	07-21-06	
C.4	REISSUED FOR SUBMITTAL	08-09-06	

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**Exit from Load Management**

1. The operator places the Master Mode Selector Switch in the Auto position.
2. The generator is soft (ramp) unloaded to the predetermined, yet adjustable disconnect set point for the respective 52G.
3. The system is now stable in Normal Mode.

**LOAD SHED CONTROL**

The System Controls shall include a Load Shed Control function to control the loads served by the generator plant. The Load Shed Control shall have one Essential Load Shed Priority Level for each generator in the system plus one Non-Essential Load Shed Priority Level (which is always shed in the Emergency Mode of operation). The Load Shed Control shall control each of the distribution circuit breakers, which are shown on the drawings to be electrically operated. Each electrically operated distribution circuit breaker shall be field selectable to be assigned to any of the available Load Shed Priority Levels. The following controls shall be provided for each Essential Load Shed Priority:

- One - Shed Delay Timer, adjustable from 0 to 1024 seconds
- One - Add Delay Timer, adjustable from 0 to 1024 seconds
- One - Load Shed Override Selector (SHED/AUTO/ADD)
- Two - Status indicators to show whether the Priority Level is Added or Shed

The following controls shall be provided for the Non-Essential Load Shed Priority:

- One - Load Shed Override Selector (SHED/AUTO/ADD)
- Two - Status indicators to show whether the Priority Level is Added or Shed

Additionally, the entire Load Shed Control system shall have:

- One - Load Shed Control Switch (On/Off)
- One - User-settable Load Shed % (as a function of on-line generator capacity)
- One - User-settable Load Shed Time Delay
- One - User-settable Load Add % (as a function of on-line generator capacity)
- One - User-settable Load Add Time Delay
- One - User-settable Bus Under frequency Set point
- One - User-settable Bus Under frequency Time Delay
- One - Bus Under frequency Reset Pushbutton
- One - Bus Under frequency indicator

**CONDITIONAL LOAD SHED** - Upon entrance into Emergency Mode of operation, the Load Shed Control shall shed all Essential and Non-Essential loads. As generators come to the bus, Essential Priority Level loads shall be added based on the number of generators on line. When the first generator comes to the bus, Priority 1 loads are added; Second generator, priority 2, etc. After a time delay that allows all operational generators to come to the bus, Load Shed Mode shall shift to Load Sensitive Mode.

**LOAD SENSITIVE LOAD SHED** - After all generators have been given sufficient time to come to the bus, load shed shall shift to "Load Sensitive" mode. The system shall compare current generator on-line capacity (in kW) to current load requirements. If surplus capacity is greater than the calculated Load Add set point, after the Load Add Time Delay the next Load Shed Priority will be added. This calculation will continue until all Sheddable Loads are added, or until surplus capacity is less than the calculated Load Add set point. If surplus capacity is less than the calculated Load Shed set point, after the Load Shed Time Delay the next Load Shed Priority will be shed. This calculation will continue until all Sheddable Loads are shed, or until surplus capacity is greater than the calculated Load Shed set point. The Load Shed Control, in its automatic shedding and adding of loads, shall not override any manual load shed/add operation.

Should the load bus frequency fall below the user selected bus under frequency set point for a period longer than the bus under frequency time delay, then all Priority Level loads shall be shed and load addition shall not resume until the operator has depressed the Bus Under frequency Reset button. The bus under frequency protection shall override any manual load add operation.

**GENERATOR DEMAND PRIORITY CONTROL**

The System Controls shall include a Generator Demand Priority Control function to automatically match the on-line generator capacity to the loads to avoid unnecessary operation of all the generators when the loads are low. The following controls shall be provided for each generator:

- One - User-settable Generator Priority Selector
- One - Status indicator for the Generator Priority Selected
- Two - Status indicator for generator On-line or Off-line

Additionally the Generator Demand Priority Control shall have:

- One - Generator Demand Priority Control Switch (On/Off)
- One - User-settable Generator Remove % (as a function of a single generator capacity)
- One - User-settable Generator Remove Delay
- One - User-settable Generator Add % (as a function of a single generator capacity)
- One - User-settable Generator Add Delay

Upon entrance into Emergency or Load Management modes, all generators shall be started and paralleled to the bus. After the Remove Time Delay, generators shall be removed from the bus as a function of the generator percentage loading by the user selected Generator Remove time delay and within the user selected Generator Remove limits. Generators shall be removed from the bus in descending priority order (e.g. Generator Priority # 5 removed first, Generator Priority # 4 removed second). Should the generator percentage loading increase to the user selected Generator Add limits for the user selected Add Delay, the next generator will be started, synchronized and paralleled to the bus. Generators shall be added to the bus in ascending priority order.

Should the generator plant ever reach 95% loading, the next priority generator shall be started and added to the bus with no time delay

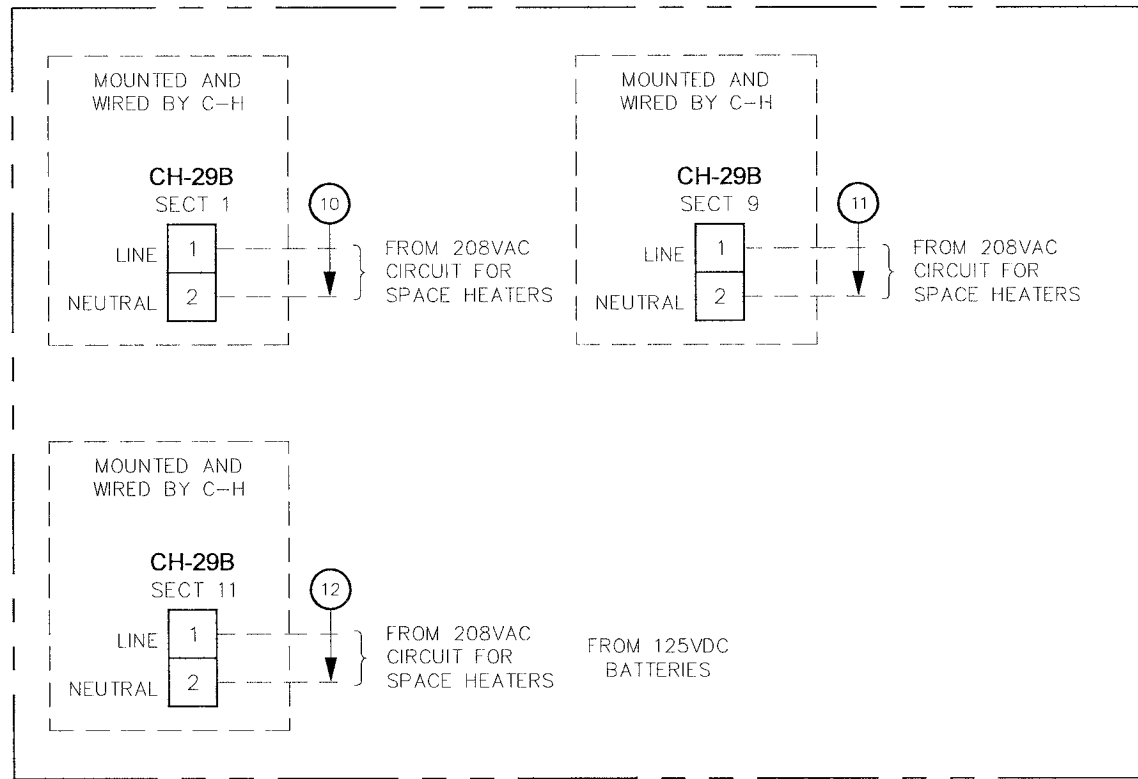


CITY OF WINNIPEG WTP		TITLE:	
SEQUENCE OF OPERATIONS		4.16kV GENERATOR / UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV.	REV.
RAM	N.T.S.	0.4	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	06-05-06		
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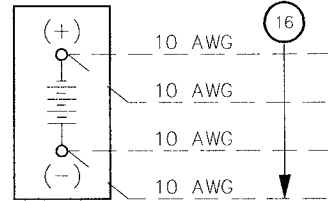
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0.2	REISSUED FOR SUBMITTAL	07-19-06
0.3	REISSUED FOR SUBMITTAL	07-21-06
0.4	REISSUED FOR SUBMITTAL	08-09-06

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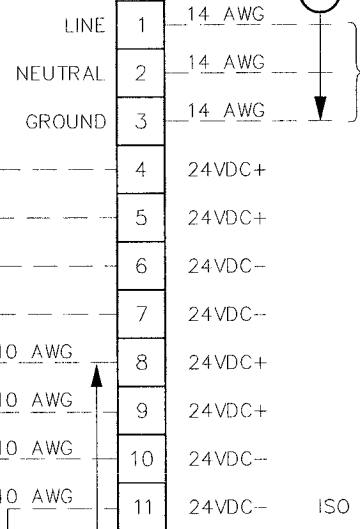
UTILITY BOARD



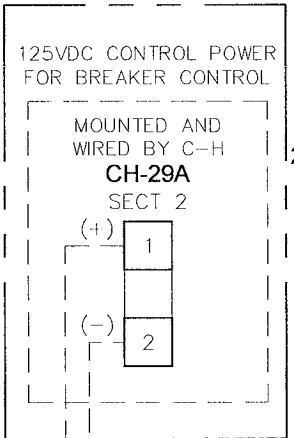
24VDC BATTERY 1 EXTERNAL



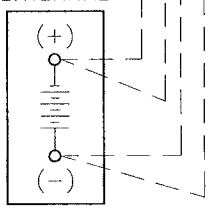
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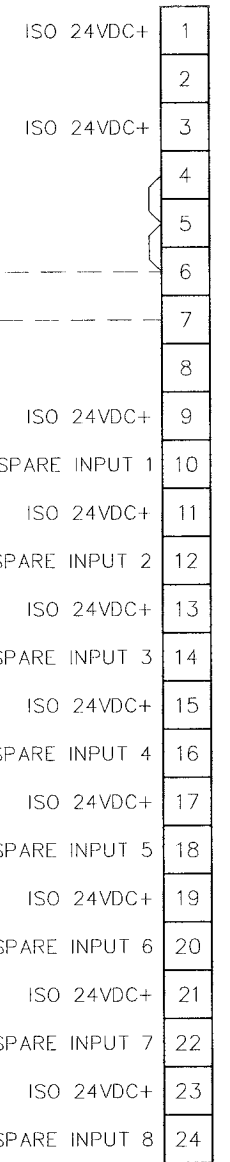
GEN BOARD



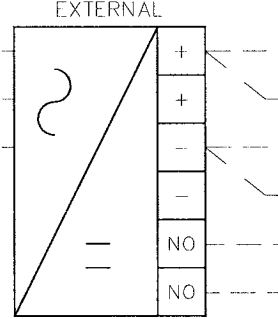
24VDC BATTERY 2 EXTERNAL



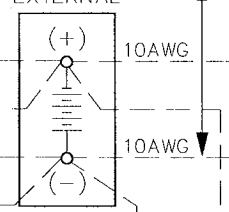
TB1 SECT 15A



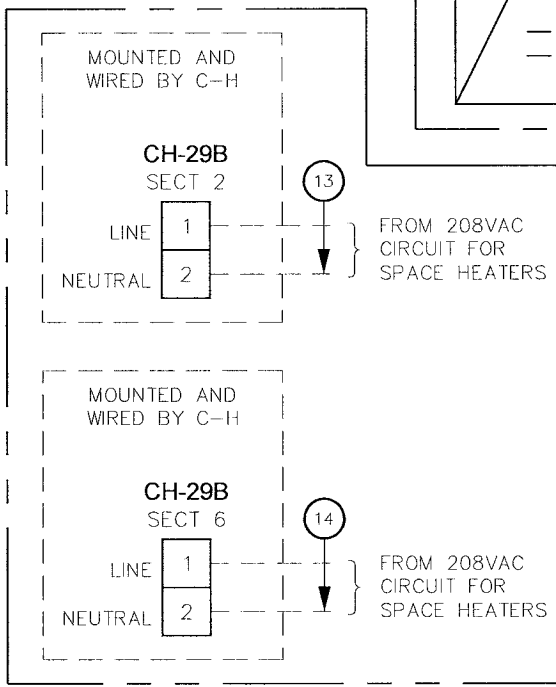
125VDC BATT CHGR EXTERNAL



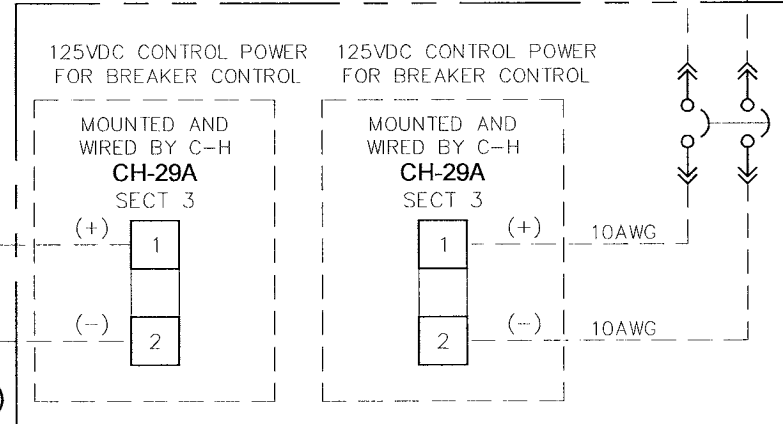
125VDC BATTERY EXTERNAL



GEN BOARD



UTILITY BOARD



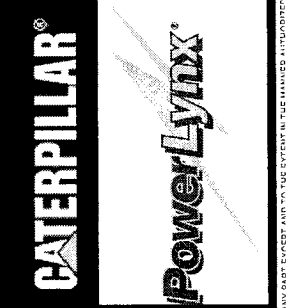
(X) CONDUIT NUMBER

\* SUPPLIED BY OTHERS

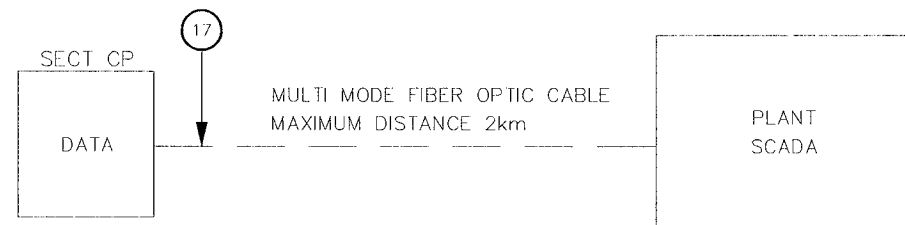
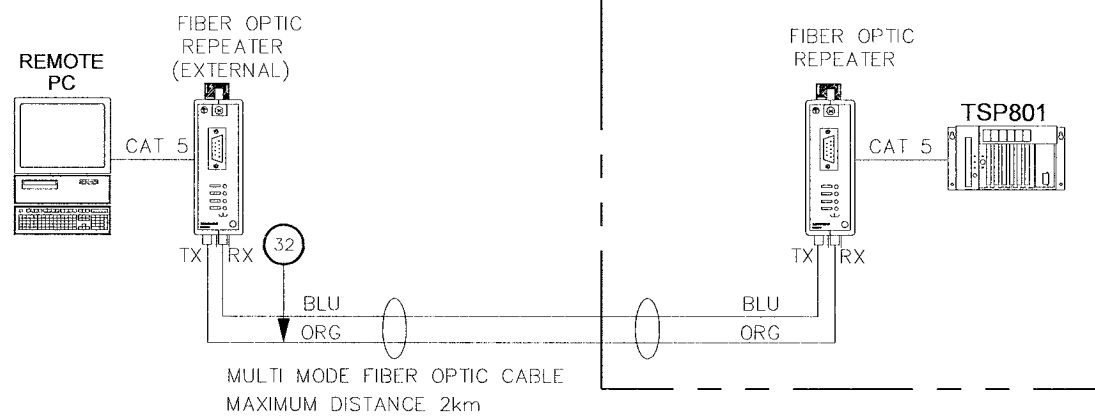
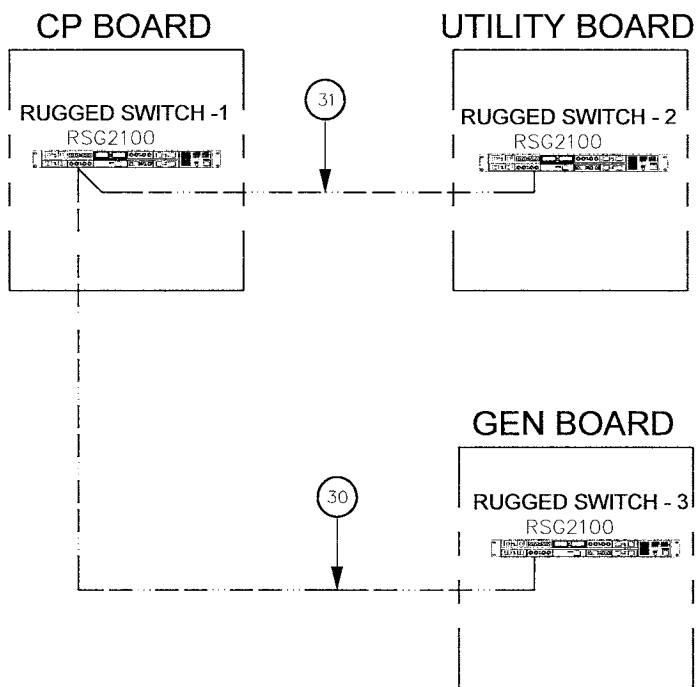
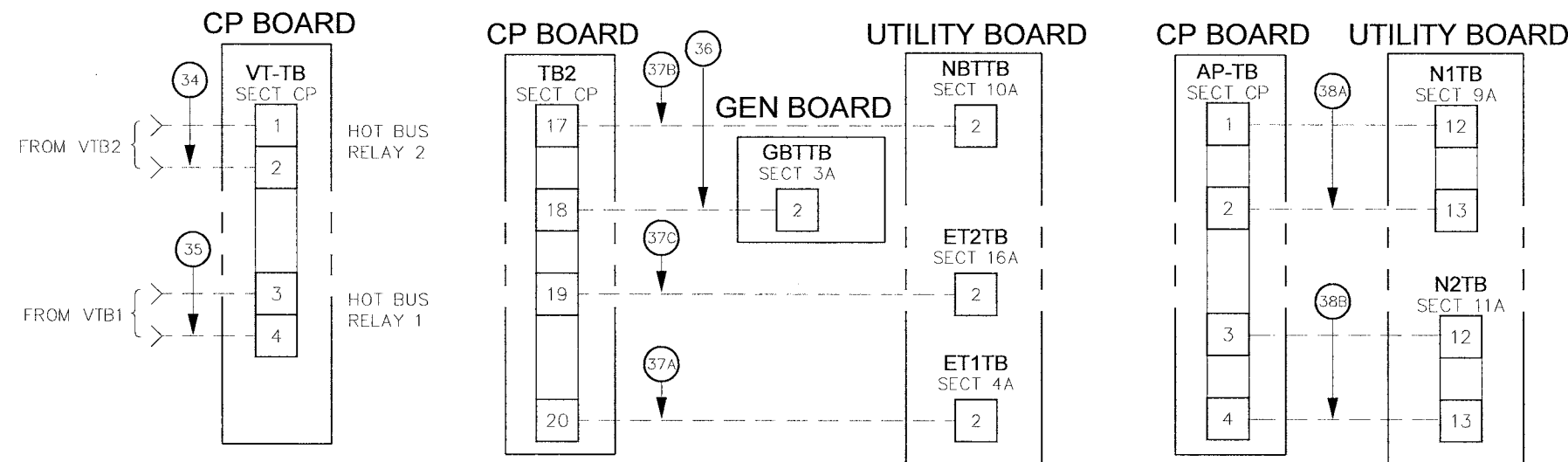
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1) SEE SHEET G10 & G11 FOR WIRING TYPES AND SIZING.

2) ALL CONTROL WIRING TO BE STRANDED COPPER WIRING UNLESS NOTED.



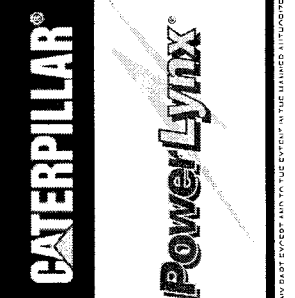
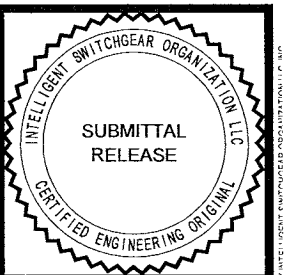
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DATE APPROVED	08-09-06	DATE CREATED	05-15-06
FILE NAME	35701-F01	SHEET NUMBER	1 of 6
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0.1	ISSUED FOR SUBMITTAL	06-07-06	
0.2	ISSUED FOR SUBMITTAL	08-09-06	



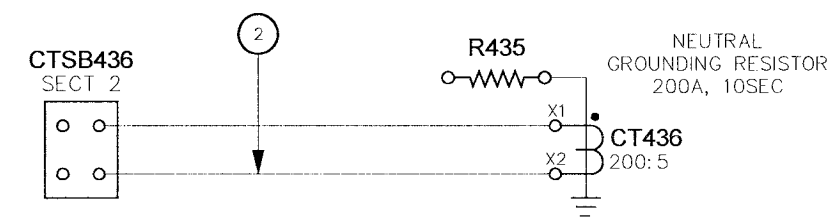
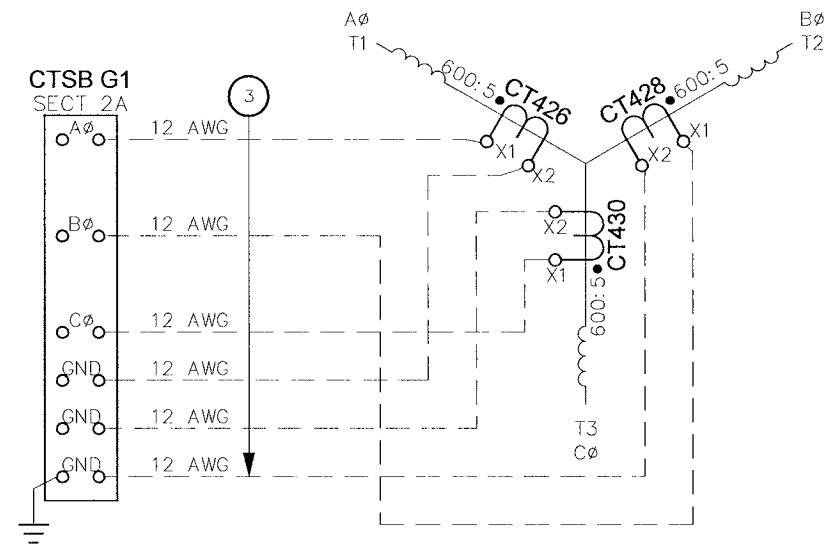
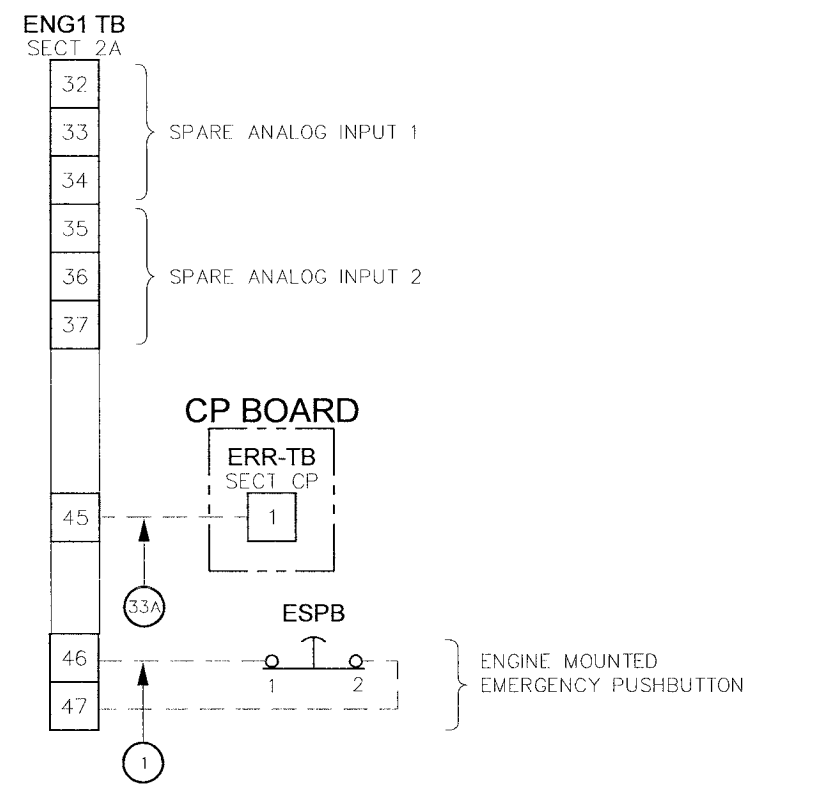
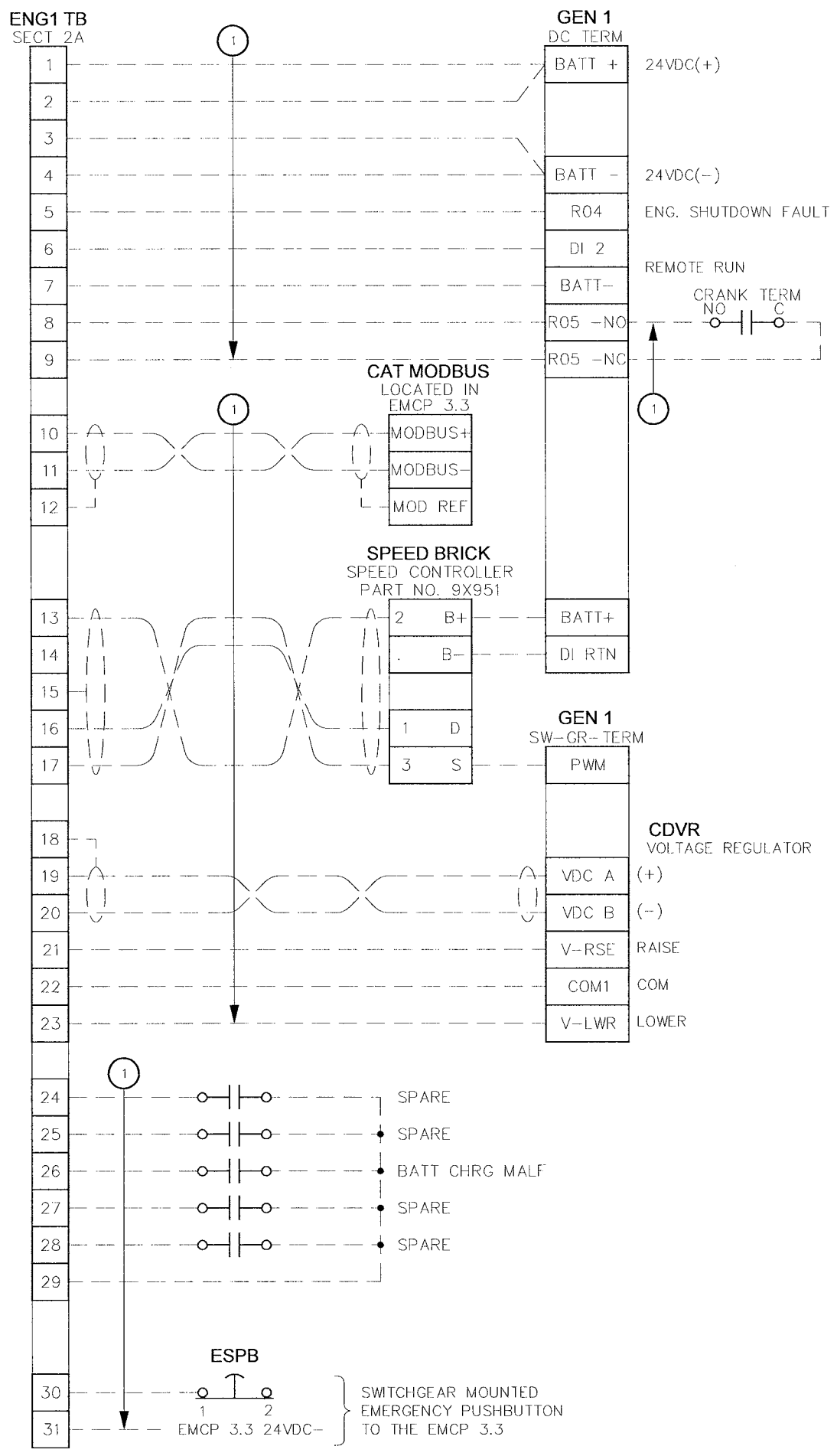
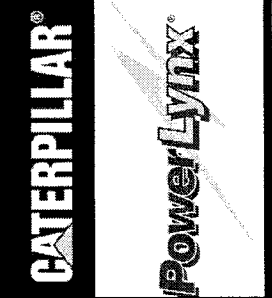
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9	10	11	12	CR512 LS1
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9	10	11	12	CR515 LS2
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9	10	11	12	CR518 LS3
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9	10	11	12	CR521 SPARE
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9	10	11	12	CR527 SPARE
1	2	3	4	

(X) CONDUIT NUMBER

NOTES:  
 1) SEE SHEET G10 & G11 FOR WIRING TYPES AND SIZING.  
 2) ALL CONTROL WIRING TO BE STRANDED COPPER WIRING UNLESS NOTED.



TITLE: CITY OF WINNEPEG WTP - UTILITY (E-100) FIELD INTERCONNECTS - SYSTEM		DRAWN BY: EM DATE CREATED: 05-15-06		MODIFIED BY: [blank] DATE MODIFIED: [blank]	
APPROVED BY: RAM		SCALE: N.T.S.	REV: 0.2	SHEET NUMBER: 2 of 6	
DATE APPROVED: 08-08-06		FILE NAME: 35701-F02		F02	
NO.	REVISION	DATE			
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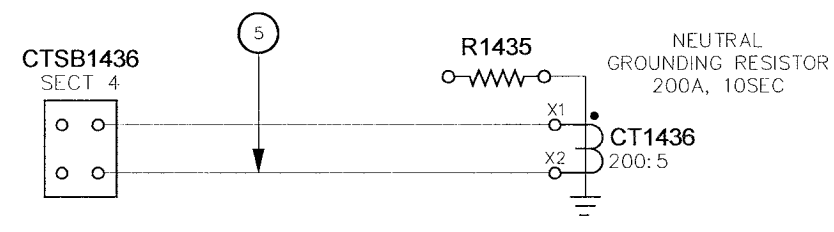
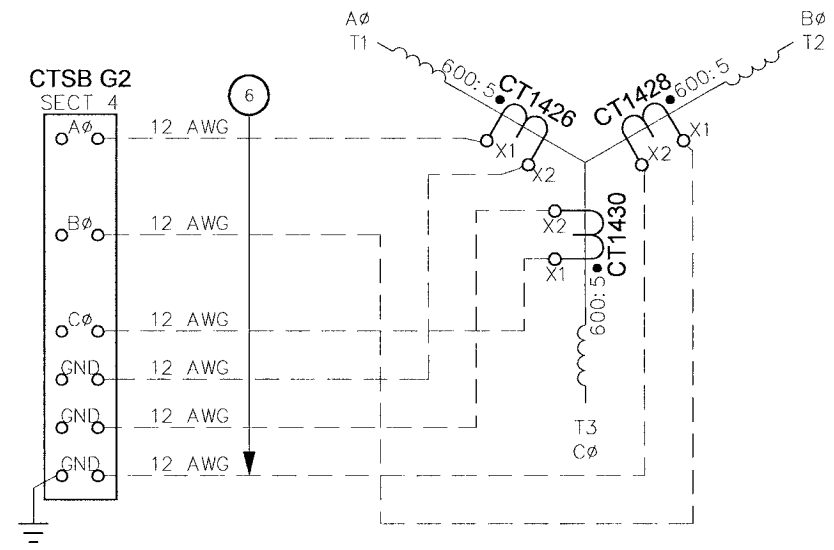
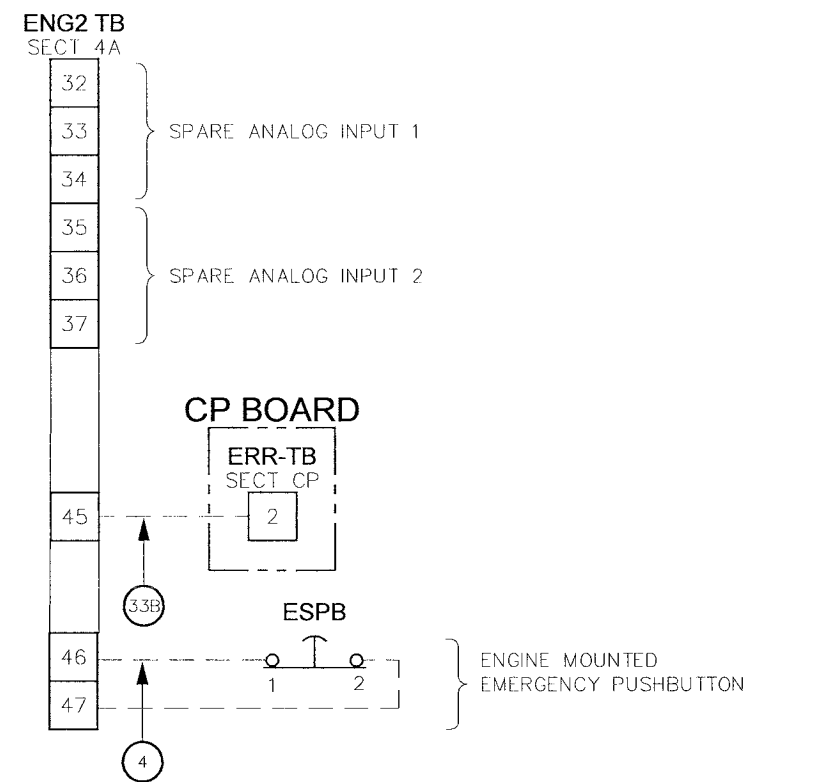
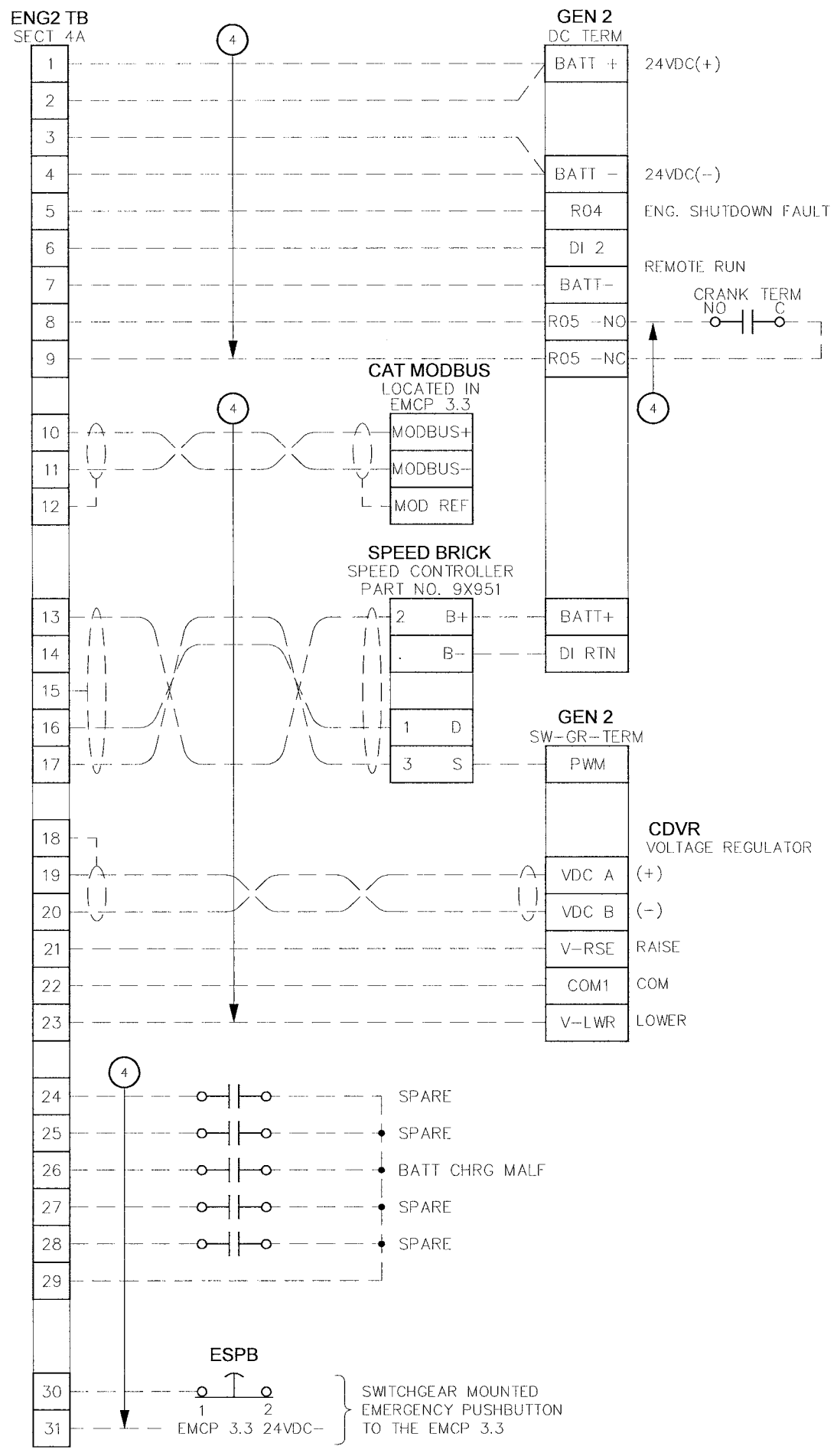
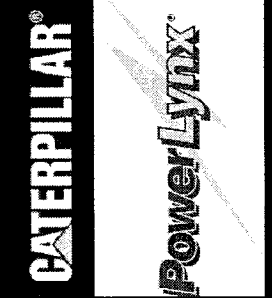


NOTES:  
 1) SEE SHEET G10 & G11 FOR WIRING TYPES AND SIZING.  
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TITLE:		CITY OF WINNEPEG WTP - UTILITY (E-100)	
REV		SCALE	
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0.2	REISSUED FOR SUBMITTAL	DATE APPROVED	08-09-06
DRAWN BY		REV	0.2
EM		DATE CREATED	05-15-06
DATE MODIFIED		FILE NAME	35701-F03
SHEET NUMBER		3 of 6	

NO	REVISION	DATE
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0.2	REISSUED FOR SUBMITTAL	08-09-06

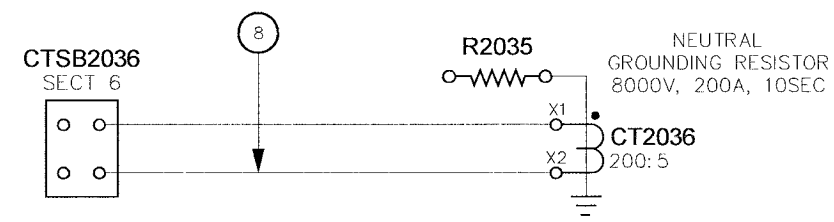
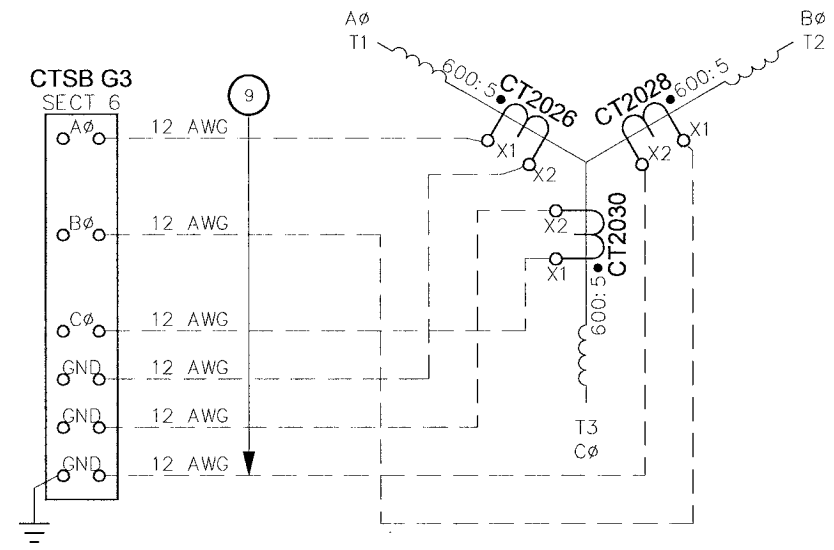
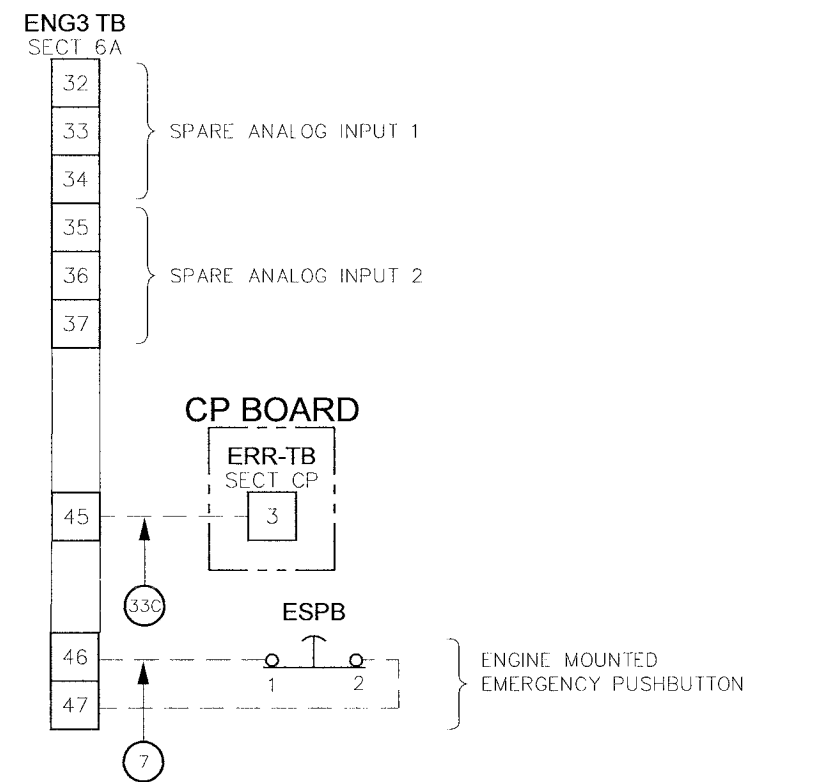
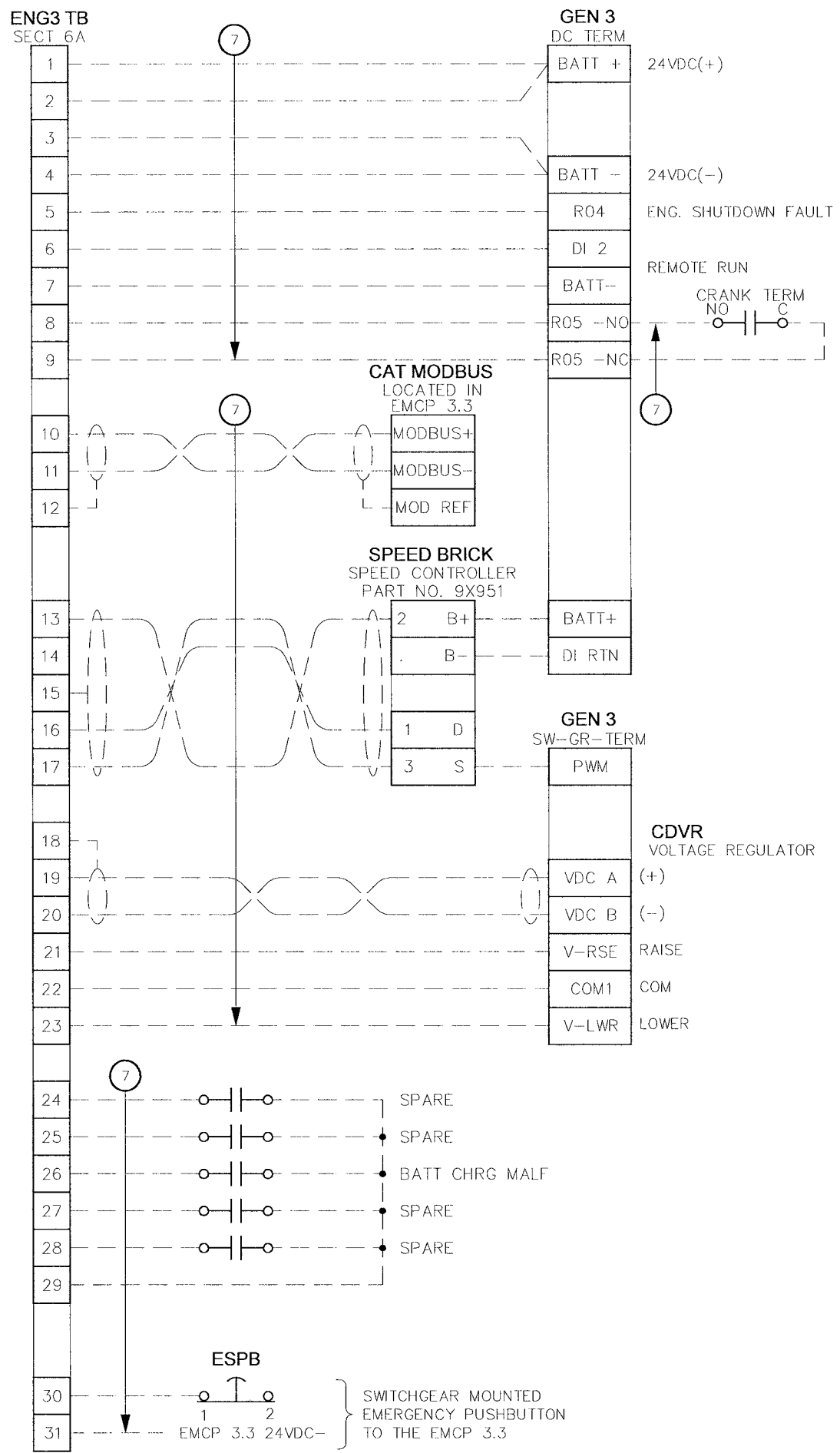
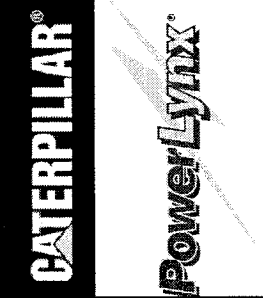
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TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100) FIELD INTERCONNECTS - GEN ^		APPROVED BY: <i>RAM</i>	SCALE: N.T.S.	REV: 0.2	DATE APPROVED: 08-09-06	FILE NAME: 35701-F04
DRAWN BY: EM		MODIFIED BY:		DATE CREATED: 05-15-06		SHEET NUMBER: 4
DATE: 05-22-06		DATE: 06-07-06		DATE: 08-09-06		of 6
NO.	REVISION					
0.0	ISSUED FOR SUBMITTAL					
0.1	REISSUED FOR SUBMITTAL					
0.2	REISSUED FOR SUBMITTAL					

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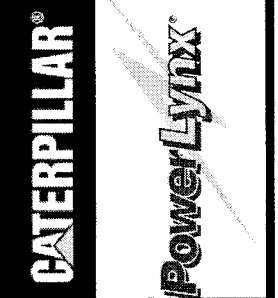
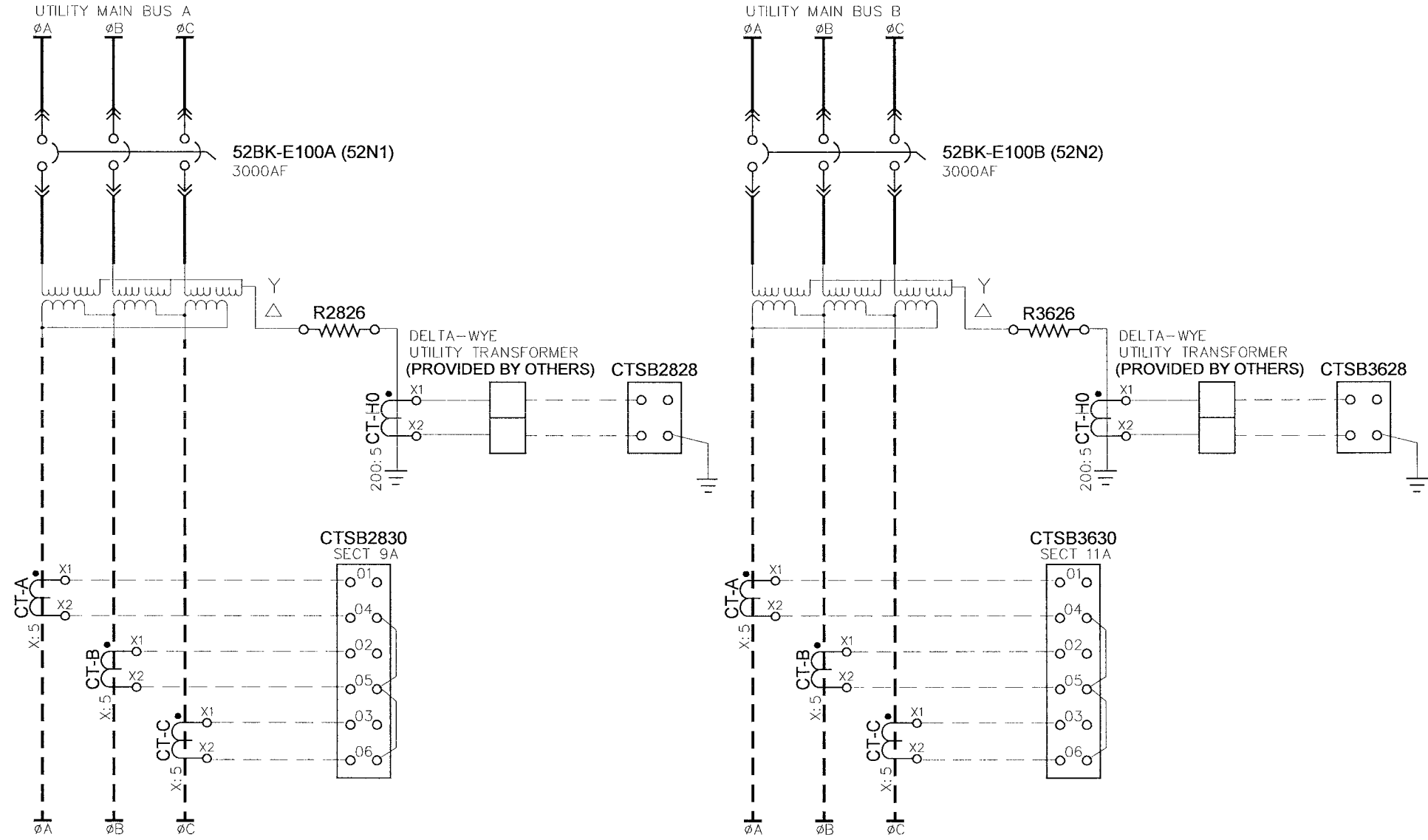
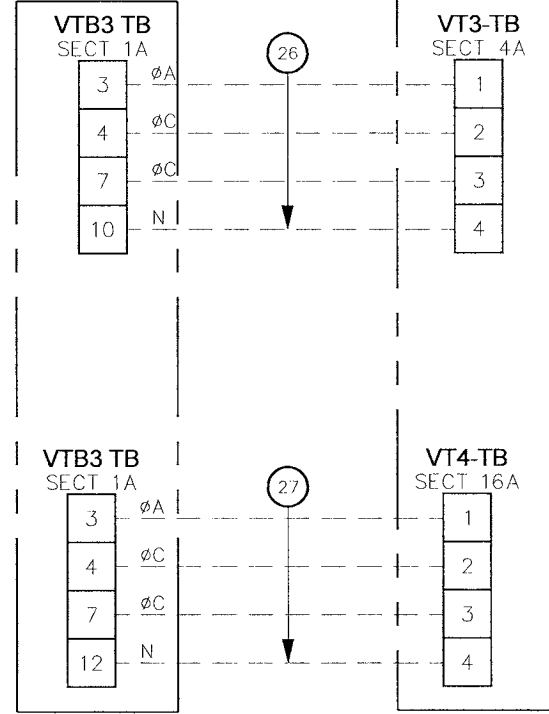
NOTES:  
 1) SEE SHEET G10 & G11 FOR WIRING TYPES AND SIZING.  
 2) ALL CONTROL WIRING TO BE STRANDED COPPER WIRING UNLESS NOTED.

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0.1	ISSUED FOR SUBMITTAL	06-07-06	
0.2	ISSUED FOR SUBMITTAL	08-09-06	
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RAM		N.T.S.	0.2
DATE APPROVED:		DRAWN BY:	MODIFIED BY:
08-09-06		EM	THC
FILE NAME:		DATE CREATED:	DATE MODIFIED:
35701-F05		05-15-06	08-01-06
		SHEET NUMBER:	SHEET NUMBER:
		5	6

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**GEN BOARD**

**UTILITY BOARD**



**TITLE:**  
CITY OF WINNEPEG WTP - UTILITY (E-100)  
FIELD INTERCONNECTS - EMERGENCY TIE 1 & 2  
4.16KV GENERATOR / UTILITY PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	EM
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-15-06	
FILE NAME			SHEET NUMBER	of
35701-F06			6	6

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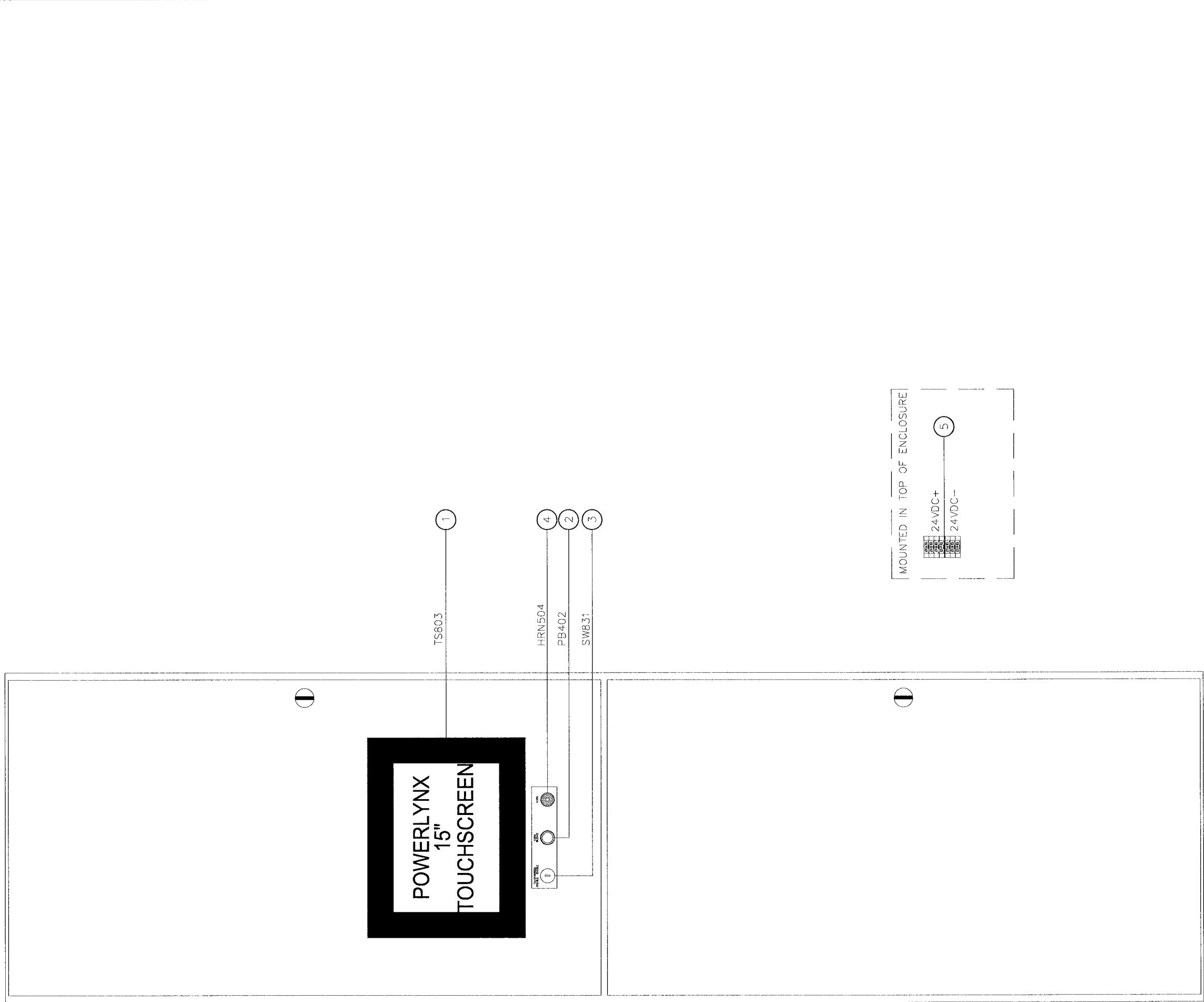
NOTES:  
1) SEE SHEET G10 & G11 FOR WIRING TYPES AND SIZING.  
2) ALL CONTROL WIRING TO BE STRANDED COPPER WIRING UNLESS NOTED.



BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	15" POWERLYNX TOUCHSCREEN	ELO	IS-898-326-000
2	1	SW PB BLK-FLUSH 2NO	IDEC	ABW120BRG
3	1	SWITCH 2 POS KEY	IDEC	ASW2K11
4	1	HORN 24VDC	MALORY	SC628P
5	7	UK10 N	PHOENIX	3005073

SECT CP



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.02	REISSUED FOR SUBMITTAL	08-11-06

TITLE:		CITY OF WINNIPEG WTP - UTILITY (E-100)	
		DOOR ASSEMBLY - SECT CP1	
		4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV.	DRAWN BY
<i>RAM</i>	1/10"=1"	0.2	GLG
DATE APPROVED	05-22-06		MODIFIED BY
FILE NAME	35701-U-A01		DATE MODIFIED
			05-22-06
			SHEET NUMBER
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			34

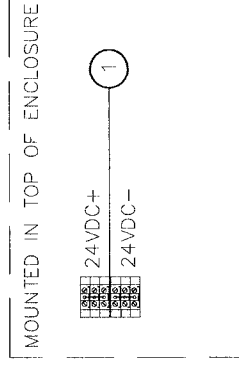
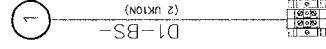
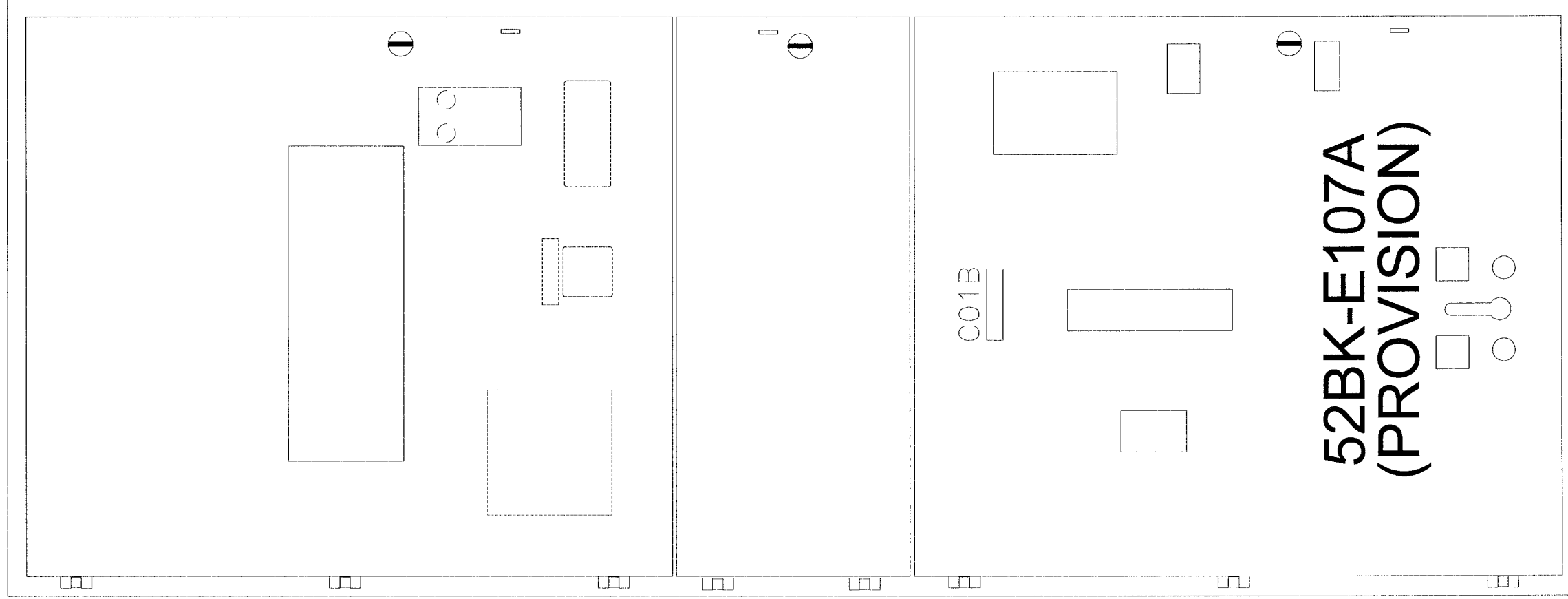


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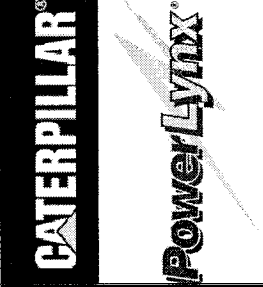
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1	8	UK10 N	PHOENIX	3005073

SECT 1



NO.	REVISION	DATE
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0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100) DOOR ASSEMBLY - SECT 1	
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DATE APPROVED: 05-22-06	REV. 0.2
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	DATE CREATED: 05-22-06
	DATE MODIFIED:
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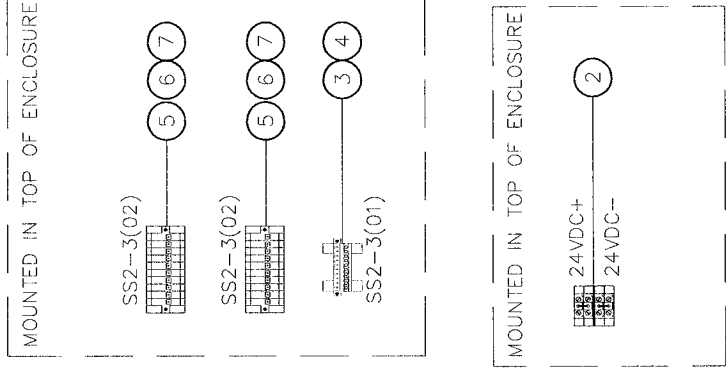
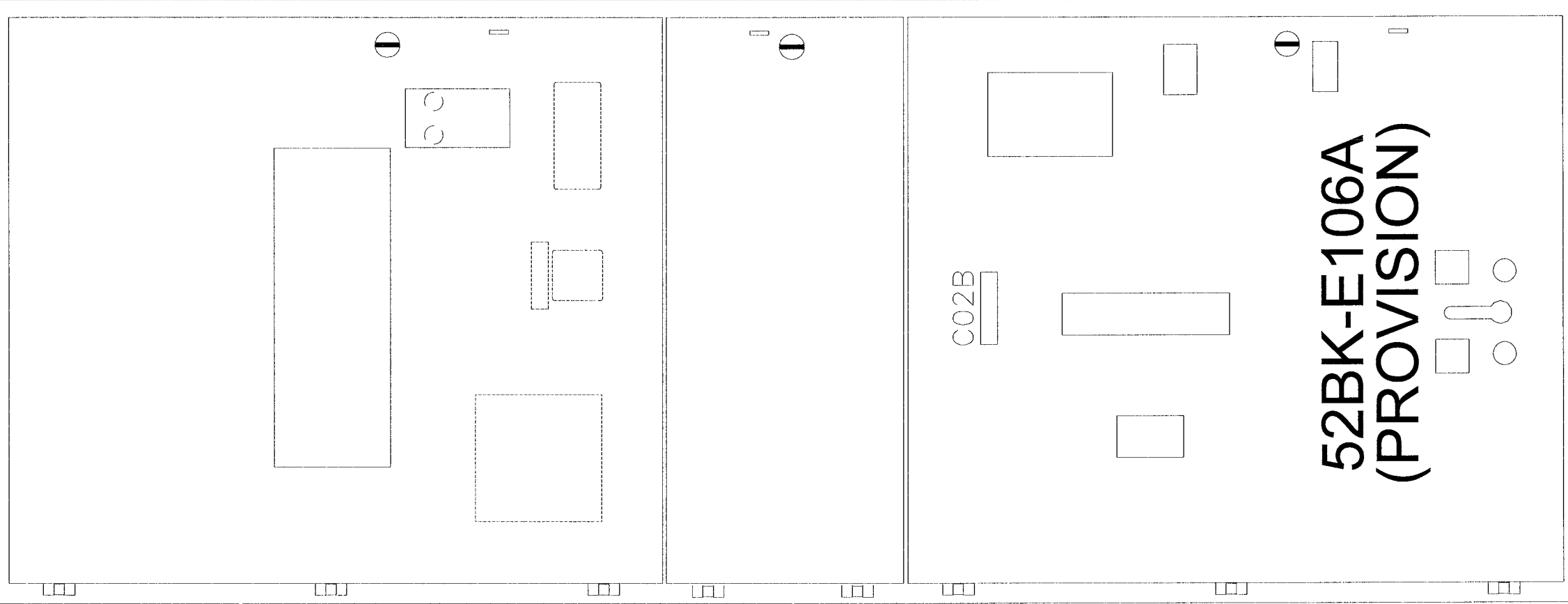


BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	2	FIBER OPTIC ETHERNET SWITCH	HIRSCHMAN	RD2-FX/FX
2	4	UK10 N	PHOENIX	3005073
3	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
4	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
5	2	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
6	20	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
7	2	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0

SHIPPING  
SPLIT

SECT 2



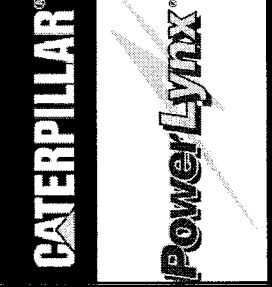
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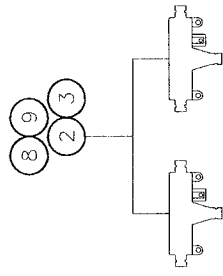
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DATE APPROVED 05-22-06	FILE NAME 35701-U-A04	DATE CREATED 05-22-06		DATE MODIFIED	
SHEET NUMBER 4			SHEET NUMBER 4		of 34

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)

DOOR ASSEMBLY - SECT 2

4.16KV UTILITY PARALLELING SWITCHGEAR

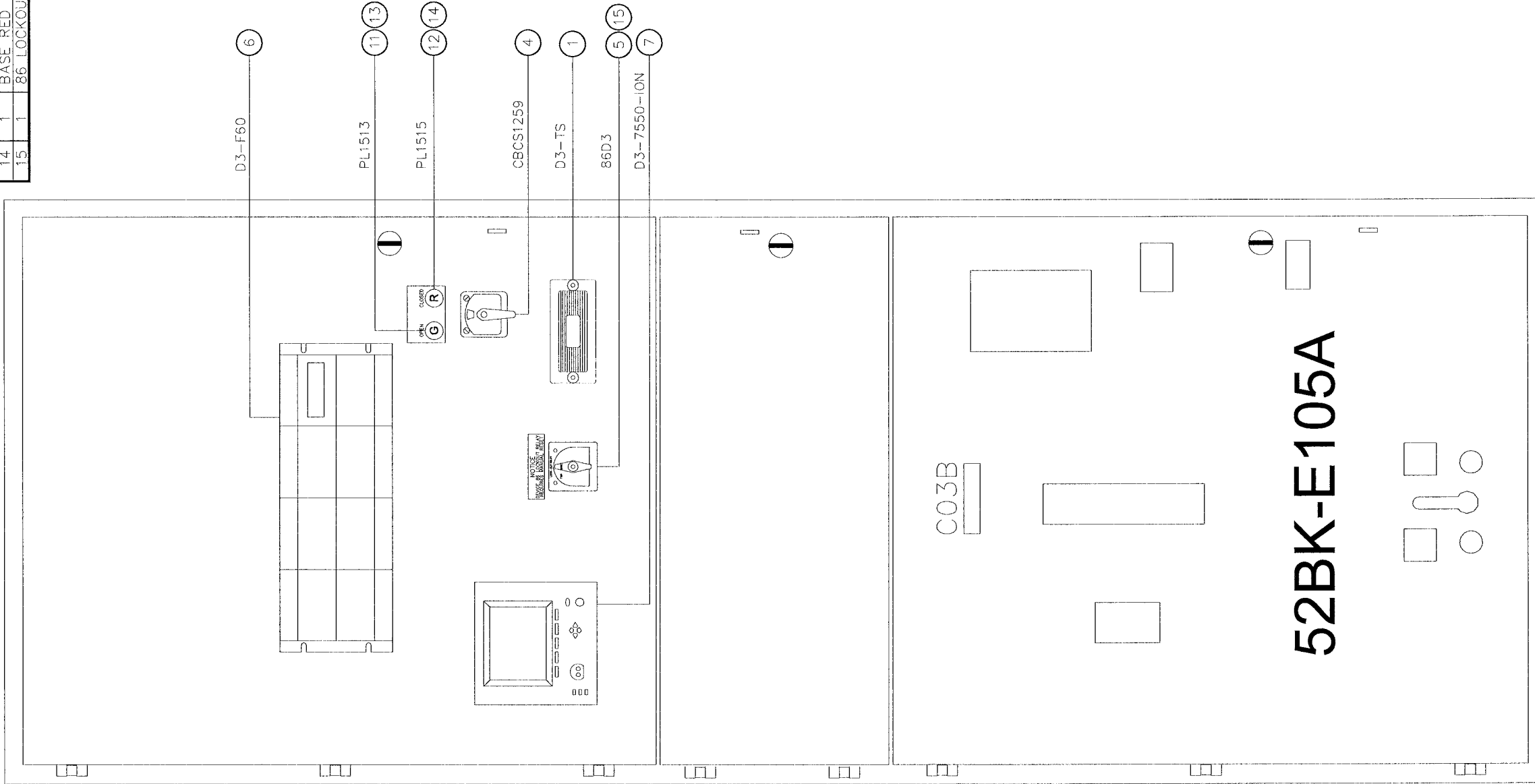




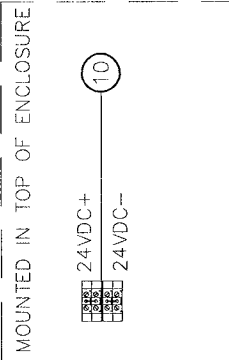
SECT 3

BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
5	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
6	1	RELAY F60	GE	F60-XXXX
7	1	POWER METER	ION	P7550B0N9C9D1A0A
8	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
9	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
10	4	UK10 N	PHOENIX	3005073
11	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
12	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
13	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV83
14	1	BASE RED PL	TELEMECANIQUE	ZB4BV84
15	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED



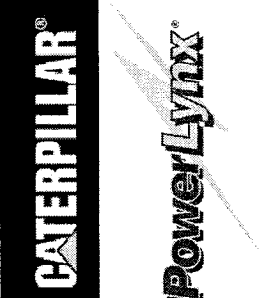
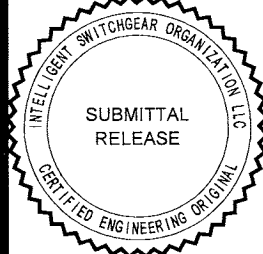
52BK-E105A



NO.	REVISION	DATE
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0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	RAM	DATE APPROVED	05-22-06
FILE NAME	35701-U-A05		

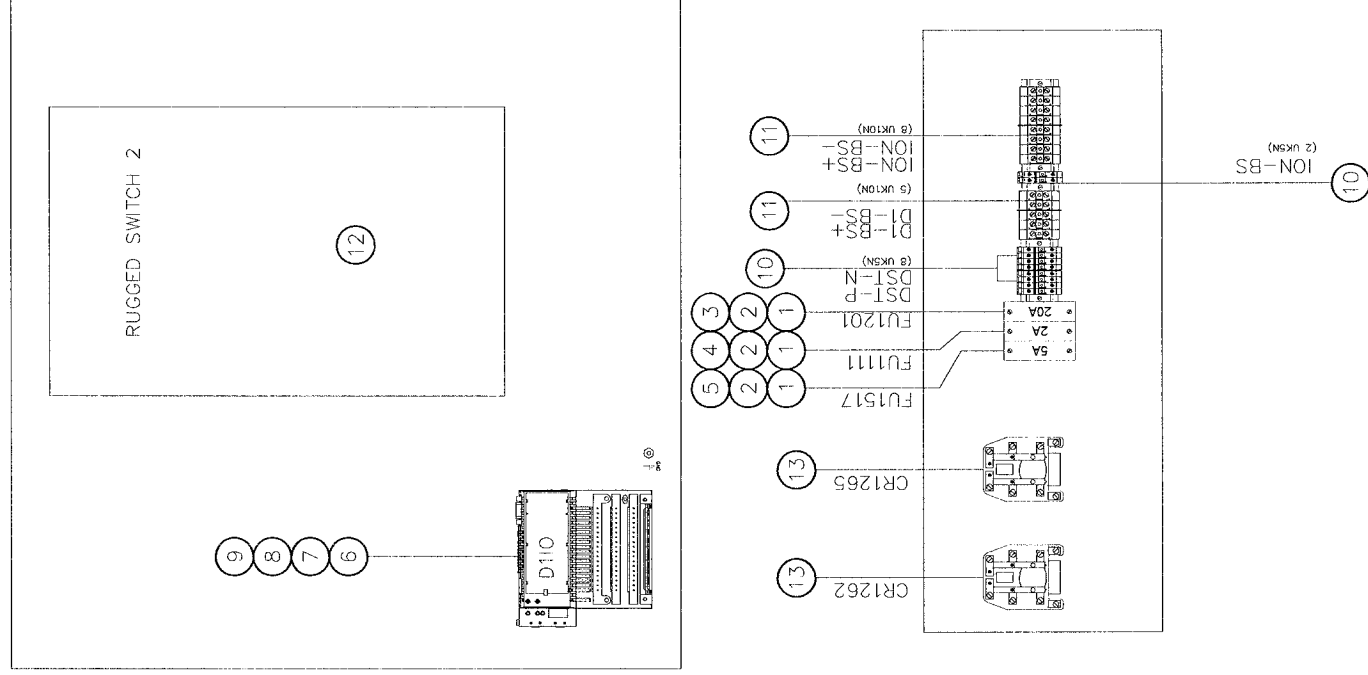
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	DOOR ASSEMBLY - SECT 3		
	4.16KV UTILITY PARALLELING SWITCHGEAR		
APPROVED BY	GLG	DATE CREATED	05-22-06
DATE APPROVED	05-22-06	REV.	0.2
FILE NAME	U-A05		
	DRAWN BY	MODIFIED BY	
	GLG		
	SHEET NUMBER	DATE MODIFIED	
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	of		34



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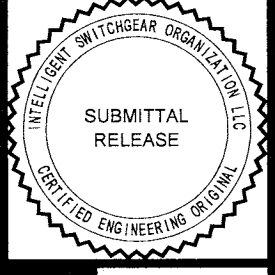
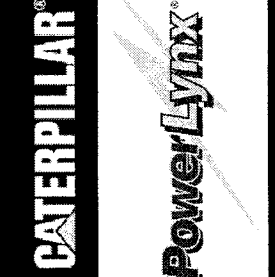
**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	3	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	3	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
4	1	FUSE 2A	BUSSMAN	KTK-R-2
5	1	FUSE 5A	BUSSMAN	KTK-R-5
6	1	MODULE 16 PT I/O 24VDC	MODICON	170 ADM 850 10
7	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
8	1	CP M1 256K RAM	MODICON	171 CCS 760 00
9	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
10	10	TB UK5N	PHOENIX	3004362
11	13	UK10 N	PHOENIX	3005073
12	1	19 PORT ETHERNET SWITCH	RUGGEDCOM	RSQ2100
13	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24



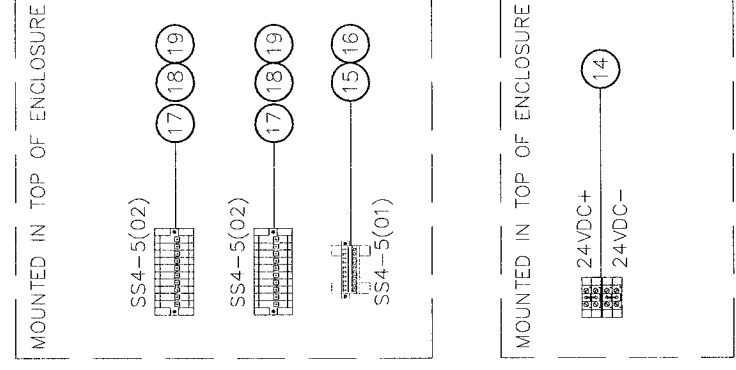
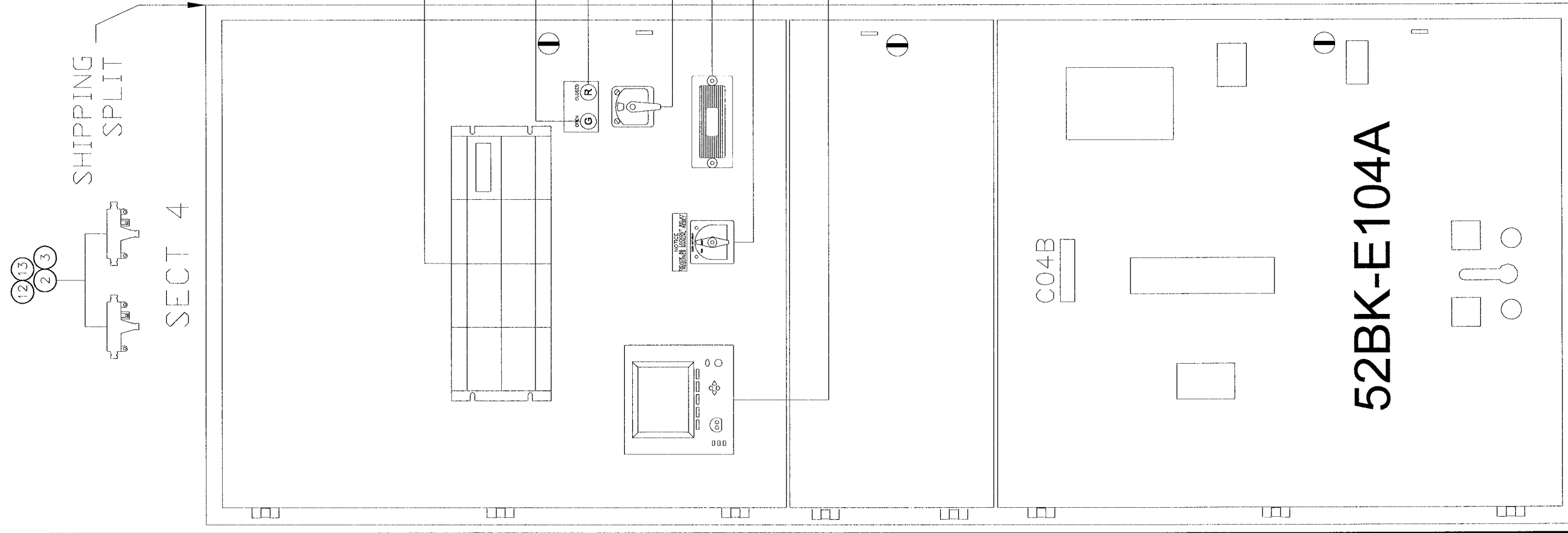
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.02	REISSUED FOR SUBMITTAL	08-11-06

<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) SUBPAN ASSEMBLY - SECT 3 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	SCALE 1/10"=1"
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-U-A06	DRAWN BY GLG
	DATE CREATED 05-22-06
	SHEET NUMBER 6 of 34



BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2830
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	PL GREEN LED INDICATOR (SPARE)	E22LED024GN	E22LED024GN
5	1	PL RED LED INDICATOR (SPARE)	E22LED024RN	E22LED024RN
6	1	BASE RED PL	CUTLER HAMMER	EM22H2X40
7	1	BASE GREEN PL	CUTLER HAMMER	EM22H3X41
8	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	74092QF
9	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
10	1	RELAY F35	GE	F35-000-HP-F8C-H8C-PA-UX-MX
11	1	POWER METER	ION	P7550B0N9C9D1A0A
12	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
13	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
14	4	UK10 N	PHOENIX	3005073
15	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
16	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
17	2	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
18	20	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
19	2	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0
20	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBI-86LOCKOUT-RED



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

APPROVED BY: **RAM**  
 DATE APPROVED: 05-22-06  
 FILE NAME: 35701-U-A07

TITLE: **U-A07**  
 SCALE: 1/10"=1"  
 REV: 0.2  
 DRAWN BY: GLG  
 DATE CREATED: 05-22-06  
 SHEET NUMBER: 7 of 34

CITY OF WINNIPEG WTP - UTILITY (E-100)  
 DOOR ASSEMBLY - SECT 4  
 4.16KV UTILITY PARALLELING SWITCHGEAR

**CATERPILLAR**  
**PowerLynx**

INTELLIGENT SWITCHGEAR ORGANIZATION LLC  
 SUBMITTAL RELEASE  
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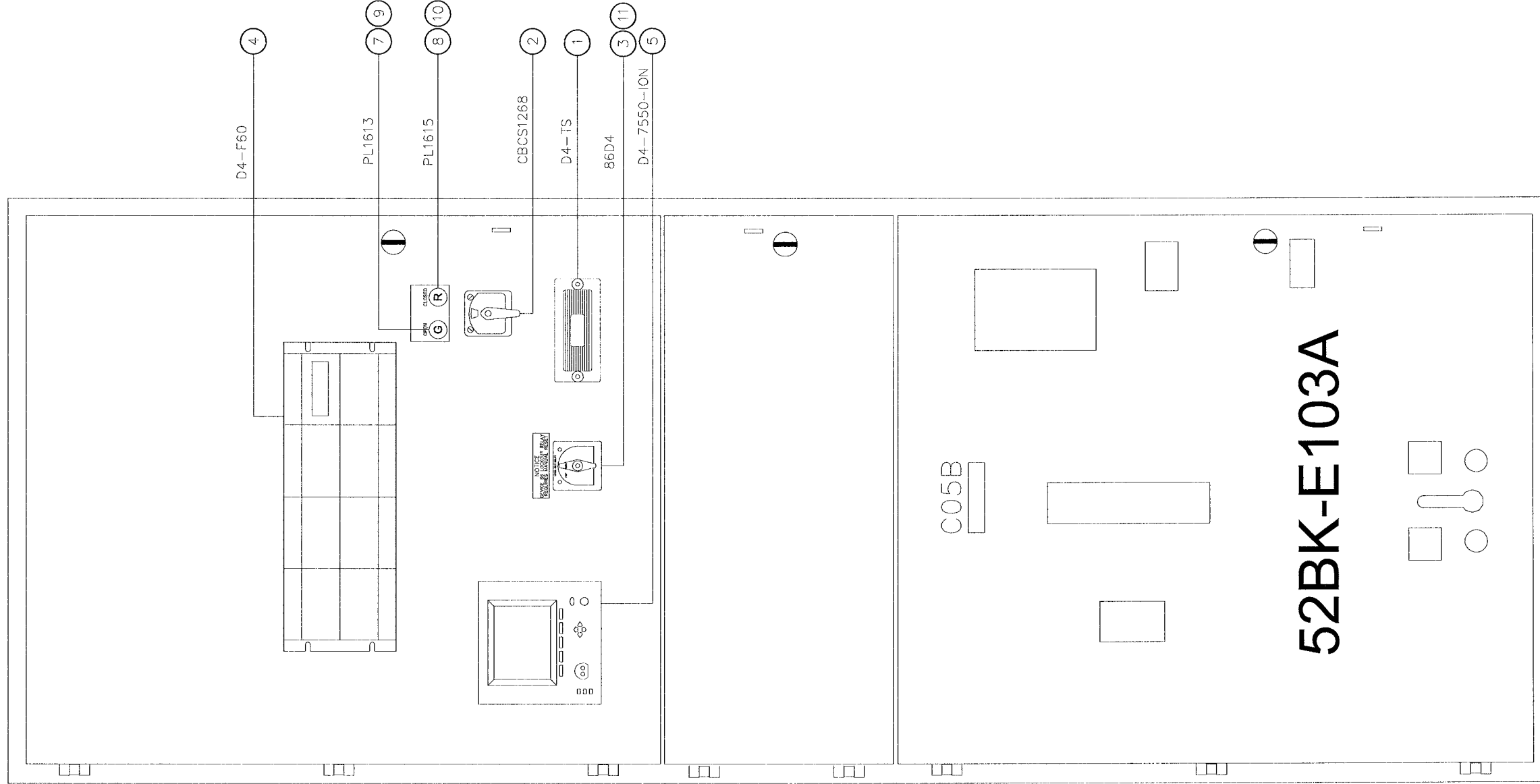




BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
3	1	PRLY .86-3 CONT 24VDC	ELECTROSWITCH	7803B
4	1	F60 FEEDER MANAGEMENT RELAY	GE	F60-
5	1	POWER METER	ION	P7550B0N9C9D1A0A
6	4	UK10 N	PHOENIX	3005073
7	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
8	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
9	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
10	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
11	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED

SECT 5



MOUNTED IN TOP OF ENCLOSURE

24VDC+  
24VDC-

6

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100) DOOR ASSEMBLY - SECT 5	
APPROVED BY: <i>RAM</i>	SCALE: 1/10"=1"
DATE APPROVED: 05-22-06	REV: 0.2
FILE NAME: 35701-U-A09	DRAWN BY: GLG
	DATE CREATED: 05-22-06
	DATE MODIFIED:
	SHEET NUMBER: 9 of 34

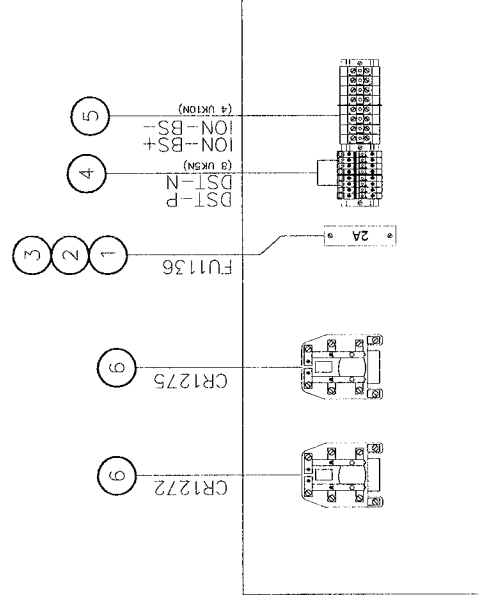
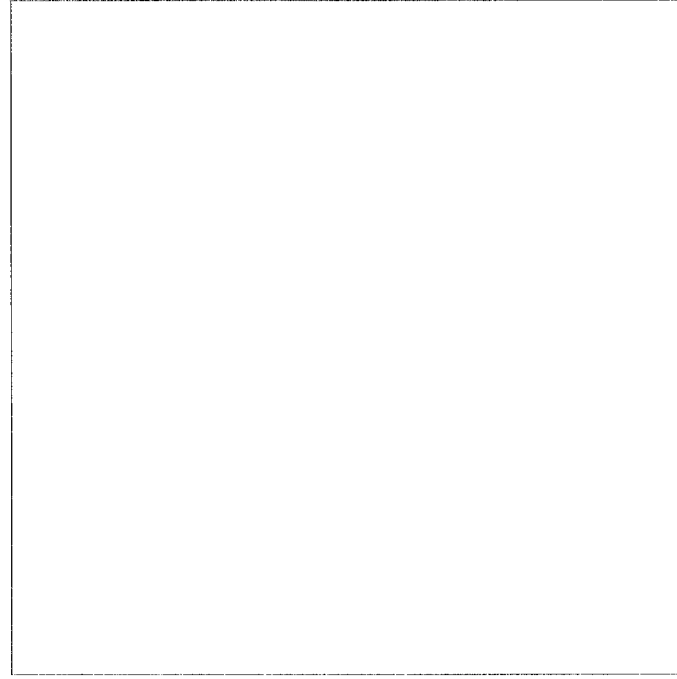
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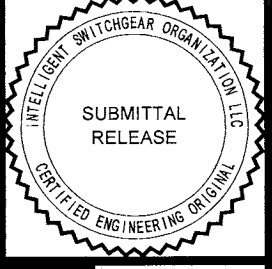
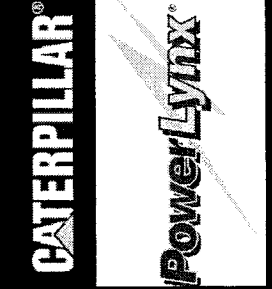
**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	1	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE 2A	BUSSMAN	KTK-R-2
4	8	TB UK5N	PHOENIX	3004362
5	8	UK10 N	PHOENIX	3005073
6	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>SUBPAN ASSEMBLY - SECT 5</b> 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <b>RAM</b>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-U-A10	DATE CREATED 05-22-06
	DATE MODIFIED 05-22-06
	SHEET NUMBER 10
	of 34

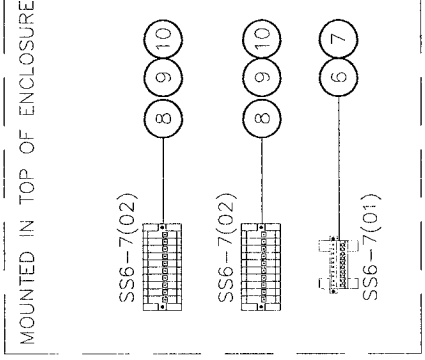
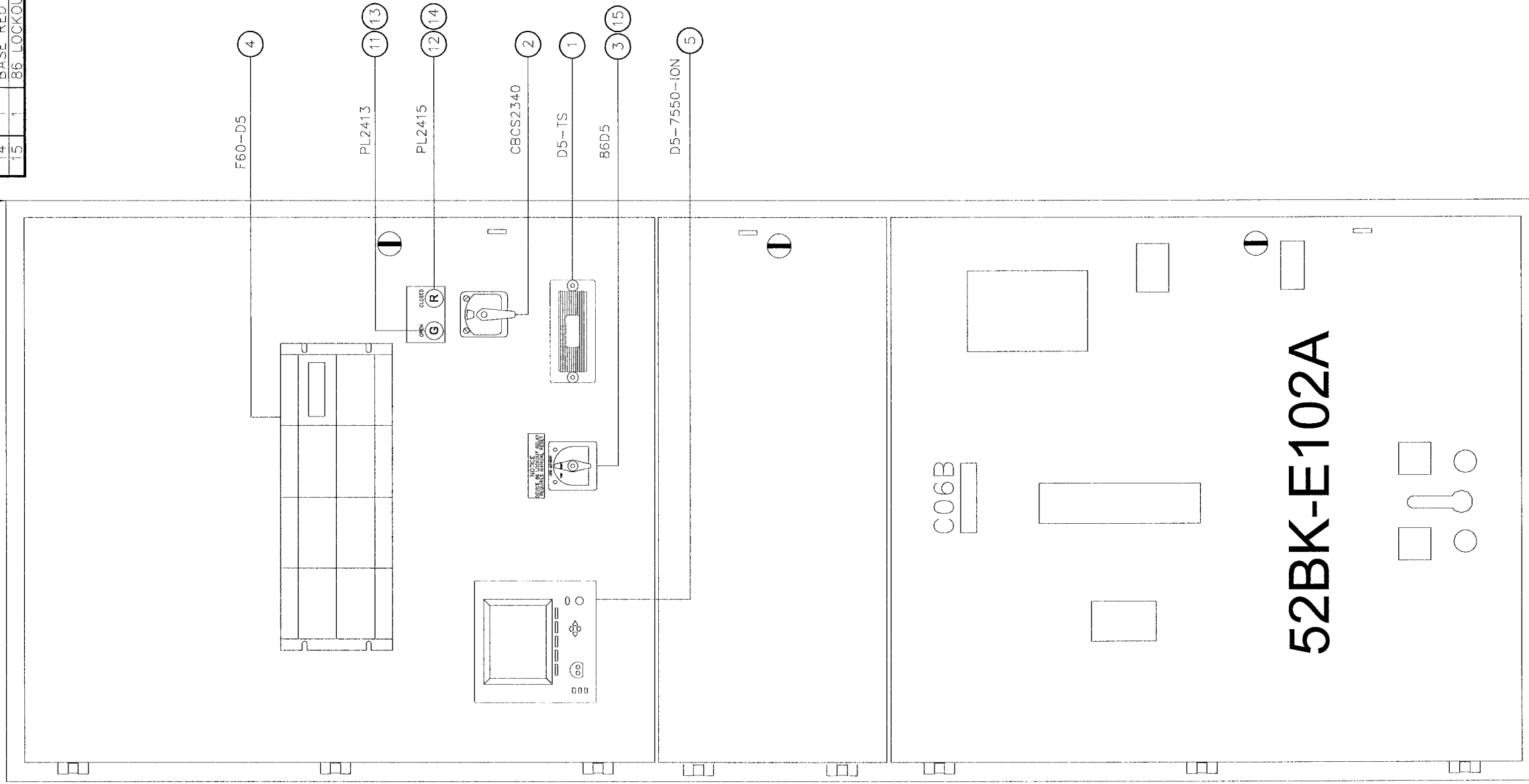


BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	J29A514G01
2	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
3	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
4	1	RELAY F60	GE	F60-XXXXX
5	1	POWER METER	ION	P7550B0N9C9D1A0A
6	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
7	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
8	2	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
9	20	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
10	2	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0
11	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
12	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
13	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV83
14	1	BASE RED PL	TELEMECANIQUE	ZB4BV84
15	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED

SHIPPING  
SPLIT

SECT 6



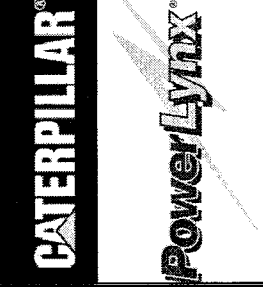
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	RAM
DATE APPROVED	05-22-06
FILE NAME	35701-U-A11

U-A11

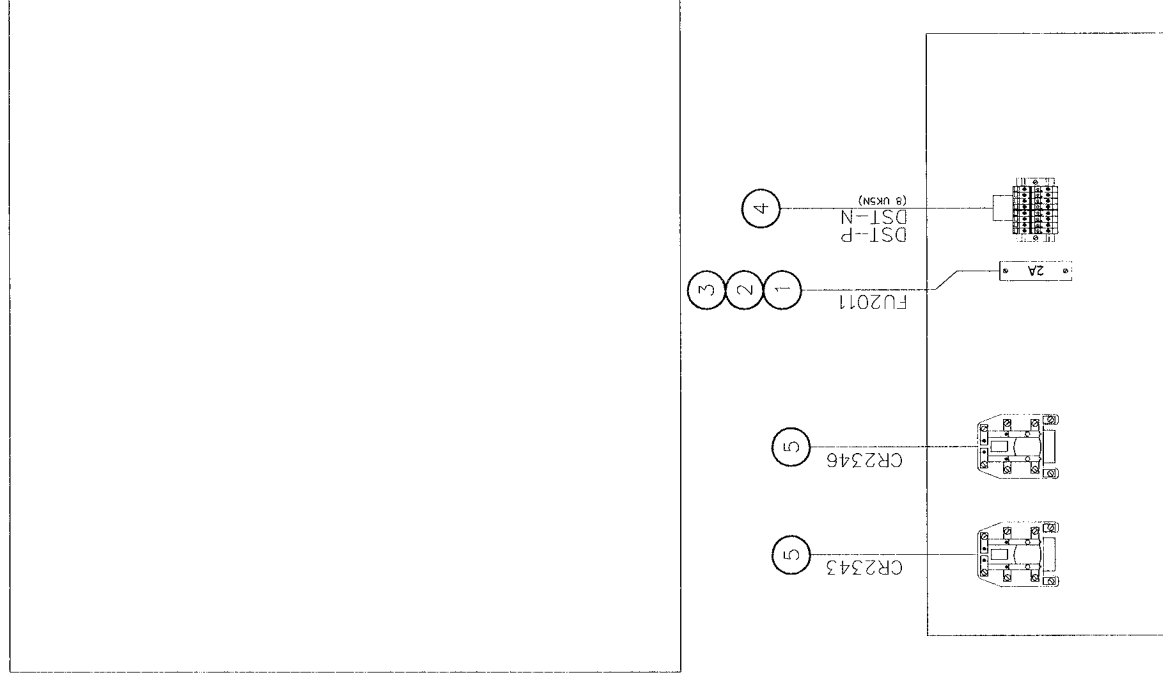
DRAWN BY	GLG
DATE CREATED	05-22-06
SHEET NUMBER	11
of	34

TITLE  
CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 6  
4.16KV UTILITY PARALLELING SWITCHGEAR



**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	1	ADAPTER FUSE_BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE 2A	BUSSMAN	KTK-R-2
4	8	TB UK5N	PHOENIX	3004362
5	2	D.PDT RELAY-24VDC_HD	TYCO/PB	PRD-11HDC-24



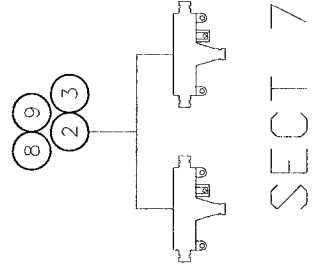
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.02	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>SUBPAN ASSEMBLY - SECT 6</b> 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <b>RAM</b>	DATE APPROVED 05-22-06
DRAWN BY GLG	REV. 0.2
DATE CREATED 05-22-06	MODIFIED BY GLG
DATE MODIFIED	DATE MODIFIED
SHEET NUMBER 12	of 34
FILE NAME 35701-U-A12	

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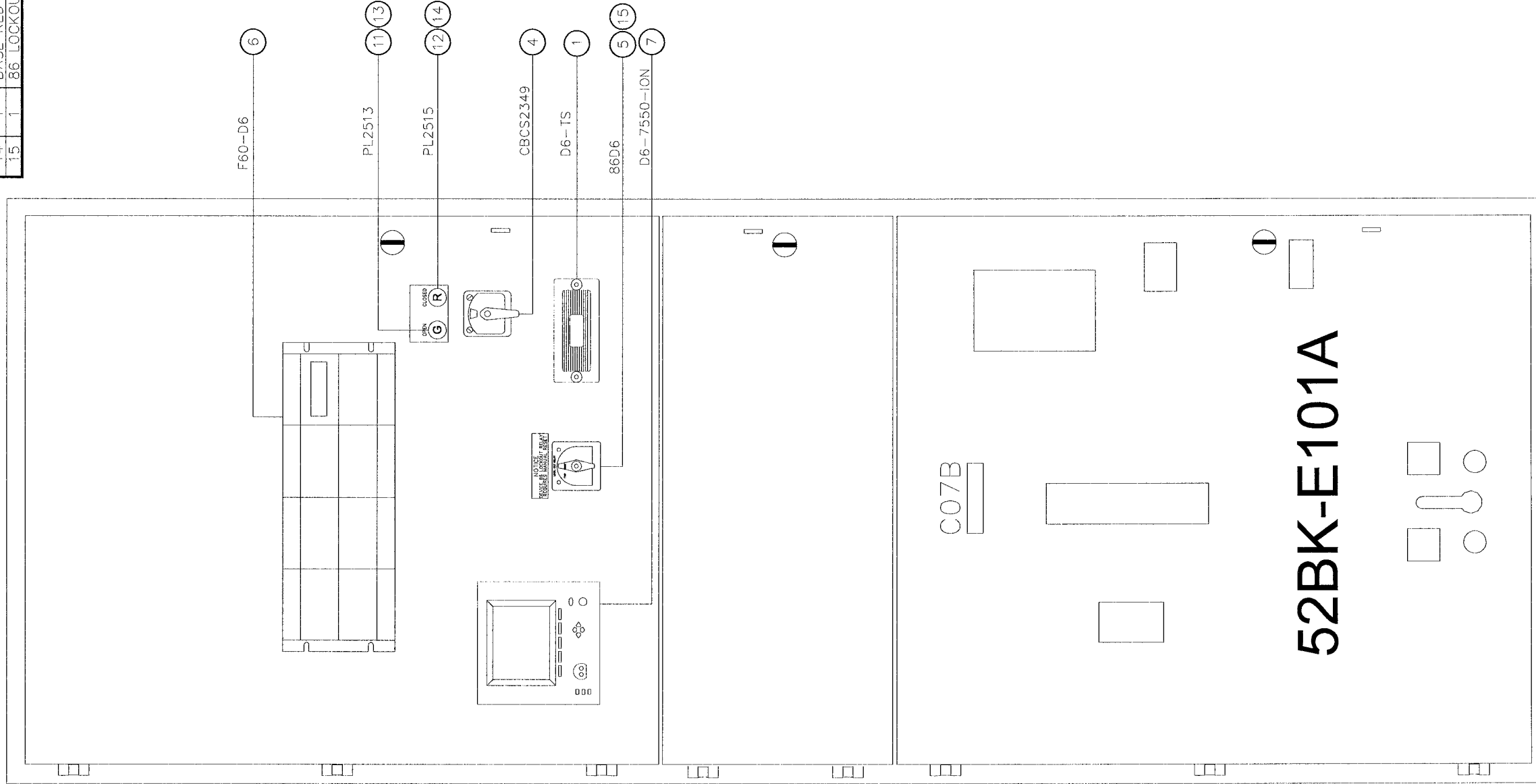
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BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
5	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
6	1	F60 FEEDER MANAGEMENT RELAY	GE	F60-
7	1	POWER METER	ION	P7550B0N9C9D1A0A
8	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
9	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
10	4	UK10 N	PHOENIX	3005073
11	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
12	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
13	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
14	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
15	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED



C07B

52BK-E101A

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	RAM	SCALE	1/10"=1"	REV.	0.2	DRAWN BY	GLG	MODIFIED BY
DATE APPROVED	05-22-06			DATE CREATED	05-22-06			DATE MODIFIED
FILE NAME	35701-U-A13			SHEET NUMBER	13			of 34

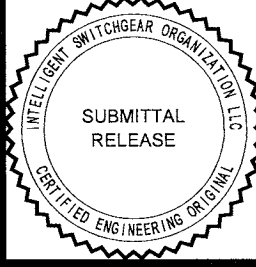
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TITLE:  
CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 7

4.16KV UTILITY PARALLELING SWITCHGEAR

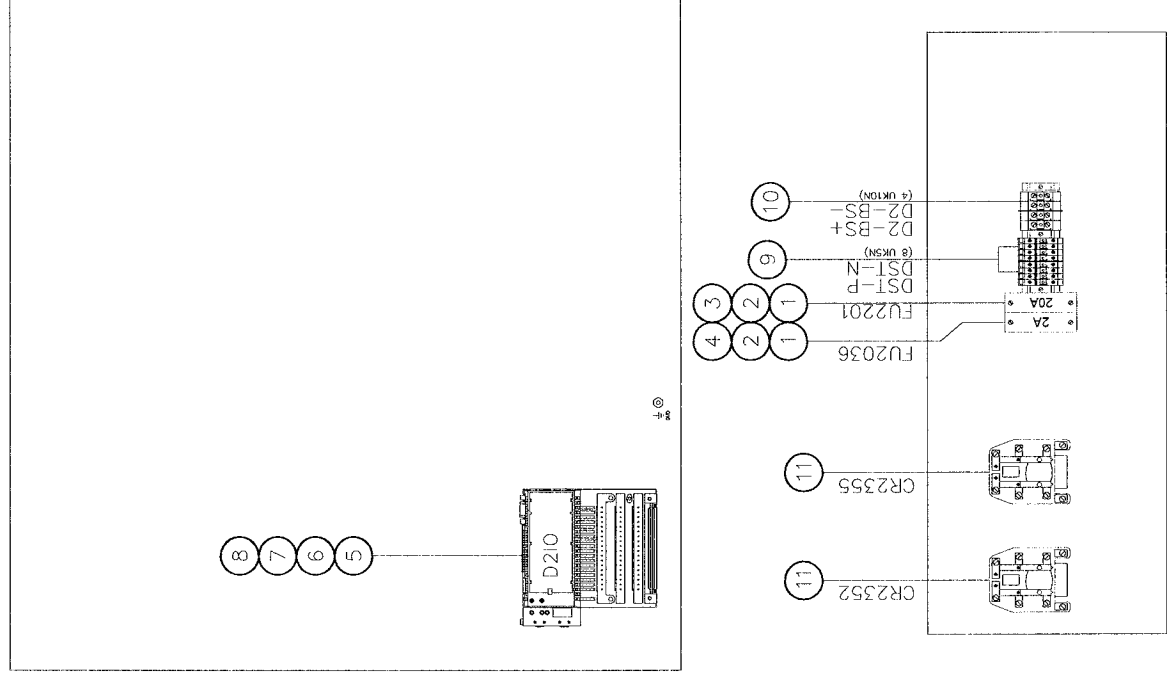
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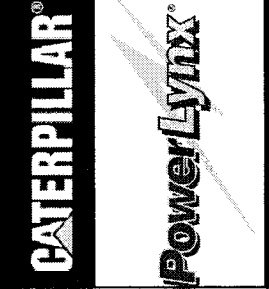
**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	2	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	2	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
4	1	FUSE 2A	BUSSMAN	KTK-R-2
5	1	MODULE 16 PT I/O 24VDC	MODICON	170-ADM-850-10
6	1	CONNECTOR SCREW-TYPE	MODICON	170-XTS-001-00
7	1	CP M1 256K RAM	MODICON	171-CCS-760-00
8	1	ADAPTER MB+ COM PORT OPT	MODICON	172-PN1-210-22
9	10	TB UK5N	PHOENIX	3004362
10	12	UK10 N	PHOENIX	3005073
11	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) SUBPAN ASSEMBLY - SECT 7 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	REV. 0.2 SCALE 1/10"=1"
DATE APPROVED 05-22-06 FILE NAME 35701-U-A14	DRAWN BY GLG DATE CREATED 05-22-06 SHEET NUMBER 14 of 34



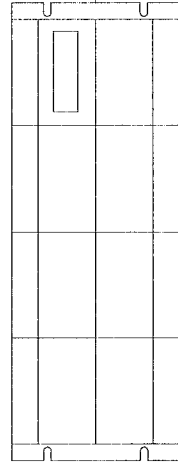
BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	RELAY T35	GE	T35
2	10	TB UK5N	PHOENIX	3004362
3	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
4	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
5	3	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
6	30	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
7	3	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0

SHIPPING  
SPLIT

SECT 8

VTB1



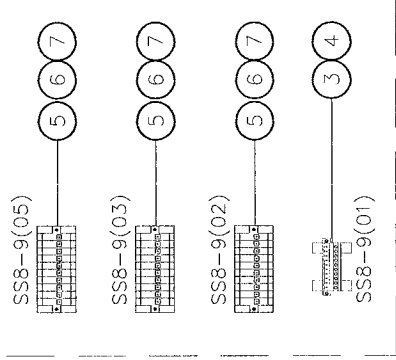
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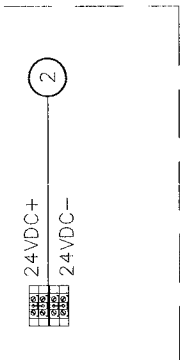
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VTN1

MOUNTED IN TOP OF ENCLOSURE



MOUNTED IN TOP OF ENCLOSURE



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100) DOOR ASSEMBLY - SECT 8	
APPROVED BY: <i>RAM</i>	SCALE: 1/10"=1"
DATE APPROVED: 05-22-06	REV: 0.2
FILE NAME: 35701-U-A15	DRAWN BY: GLG
	DATE CREATED: 05-22-06
	DATE MODIFIED:
	SHEET NUMBER: 15 of 34

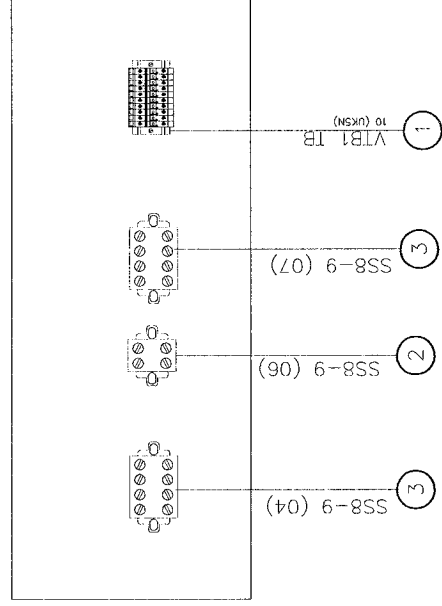
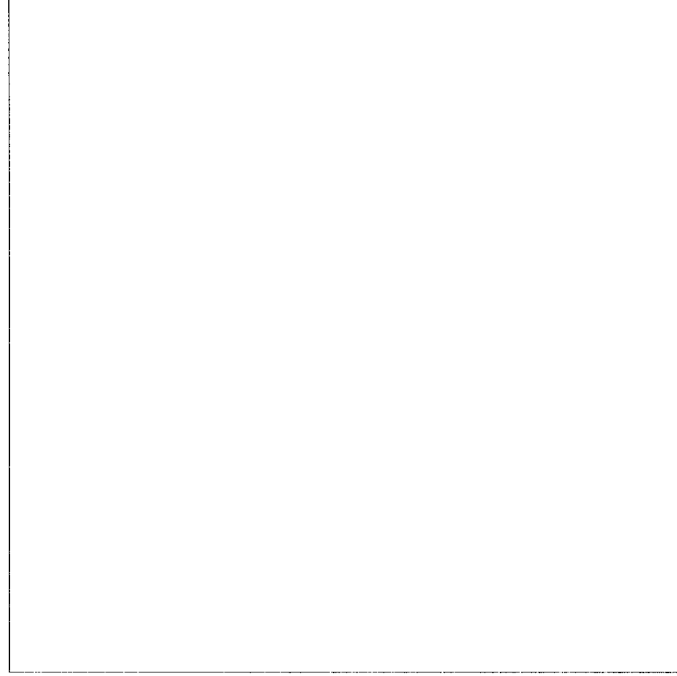


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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	10	1B UK5N	PHOENIX	3004362
2	1	SHORTING BLOCK 2 POLE +COVER	USD	KUSC2WC
3	2	SHORTING BLOCK 4 POLE +COVER	USD	KUSC4WC



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>SUBPAN ASSEMBLY - SECT 8</b> 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-U-A15	DATE CREATED 05-22-06
	DATE MODIFIED
	SHEET NUMBER 15A
	of 34

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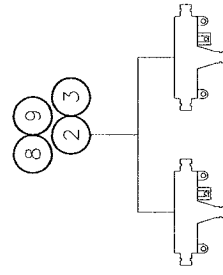
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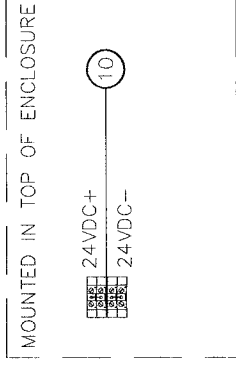
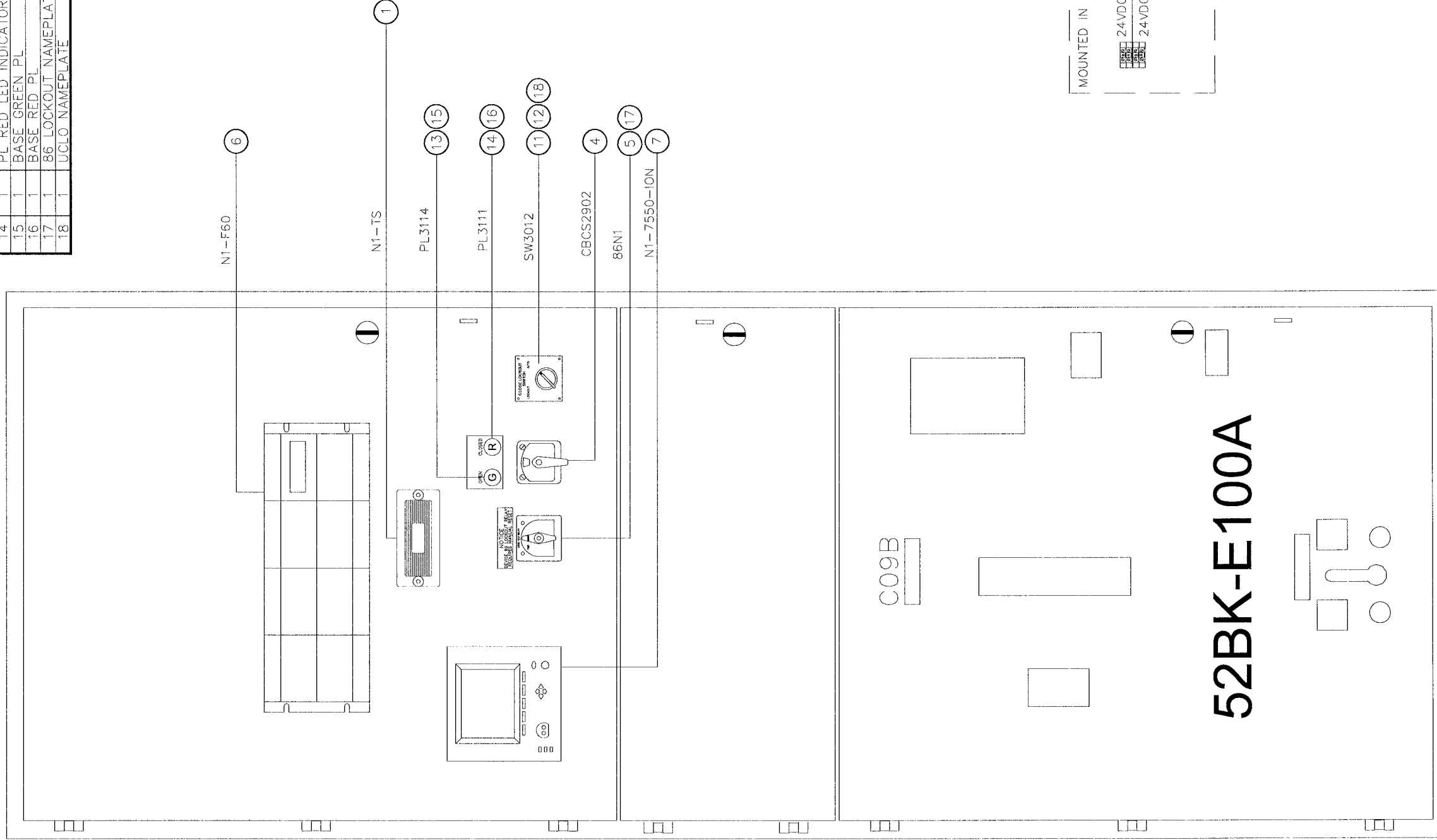


BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2442D
5	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
6	1	RELAY F60	GE	F60-XXXX
7	1	POWER METER	ION	P7550B0N9C9D1A0A
8	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
9	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
10	4	UK10 N	PHOENIX	3005073
11	1	UCLO LOCKING COVER	SQUARE D	9001K7
12	1	SWITCH 2 POS UCLO	SQUARE D	9001KS11BH2
13	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
14	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
15	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV03
16	1	BASE RED PL	TELEMECANIQUE	ZB4BV04
17	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED
18	1	UCLO NAMEPLATE	WD ENGRAVING	LBL-NP-UCLO-PZ4



SECT 9



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY <b>RAM</b>		SCALE 1/10"=1"	REV. 0.2	DRAWN BY GLG	MODIFIED BY
DATE APPROVED 05-22-06		DATE CREATED 05-22-06		DATE MODIFIED	
FILE NAME 35701-U-A16		SHEET NUMBER 16		of 34	

TITLE:  
CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 9

4.16kV UTILITY PARALLELING SWITCHGEAR

U-A16

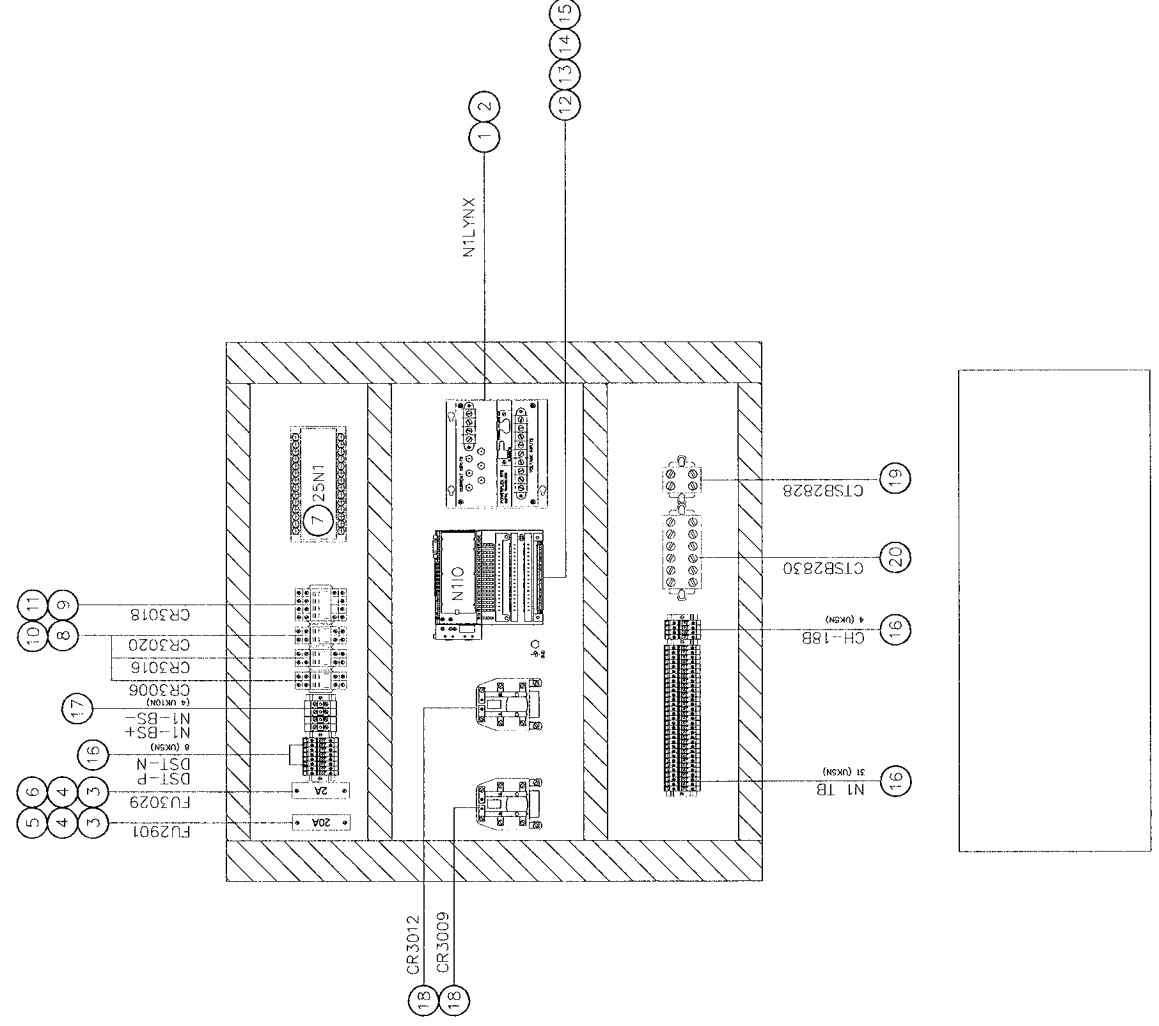


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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08MS-07
3	2	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	2	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
6	1	FUSE 2A	BUSSMAN	KTK-R-2
7	1	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-POBX-C6
8	3	DPDT RELAY-24VDC IND	IDEC	RH2B-ULDC24V
9	1	4PDT RELAY 24VDC IND	IDEC	RH4B-ULDC 24V
10	3	DPDT RELAY BASE	IDEC	SH2B-05
11	1	4PDT RELAY BASE	IDEC	SH4B-05
12	1	MODULE 16 PT I/O 24VDC	MODICON	170 ADM 850 10
13	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
14	1	CP M1 256K RAM	MODICON	171 CCS 760 00
15	1	ADAPTER MB+ COM_PORT_OPT	MODICON	172 PNN 210 22
16	43	TB UK5N	PHOENIX	3004362
17	4	UK10 N	PHOENIX	3005073
18	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24
19	1	SHORTING BLOCK 4 POLE +COVER	USD	KUSC4WC
20	1	SHORTING BLOCK 6 POLE +COVER	USD	KUSC6WC

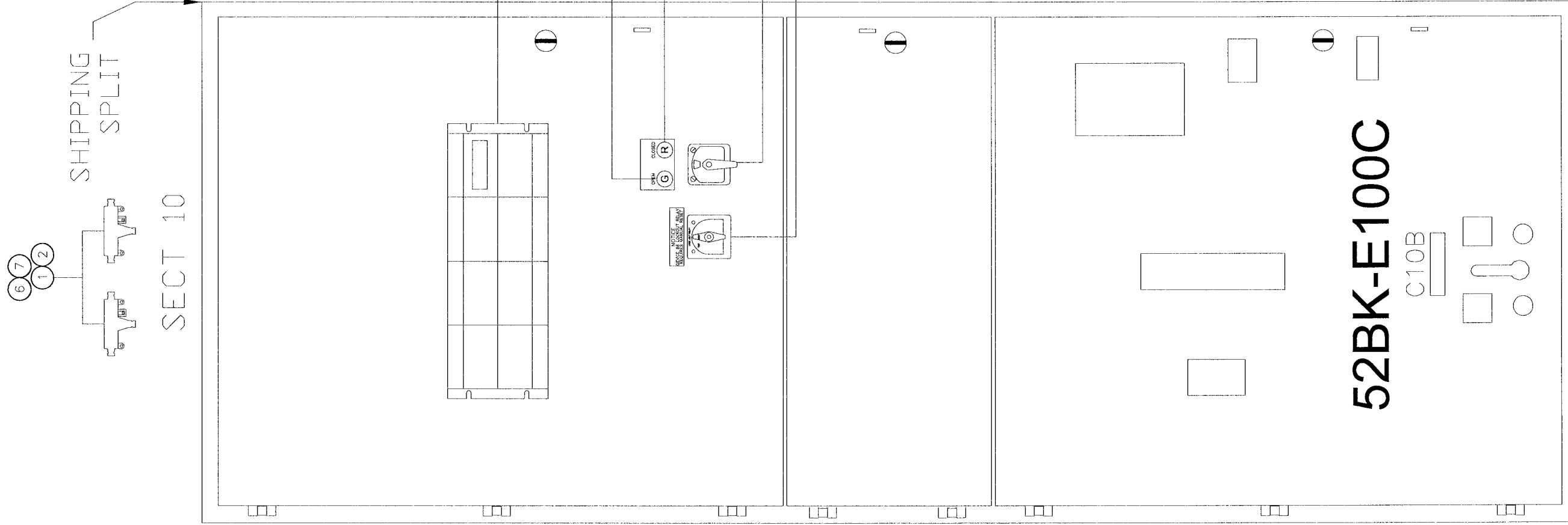


NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) SUBPAN ASSEMBLY - SECT 9 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-U-A17	DATE CREATED 05-22-06
	MODIFIED BY DATE MODIFIED
	SHEET NUMBER 17 of 34



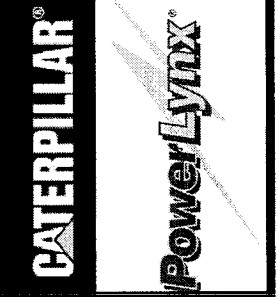
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NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
2	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
3	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2442D
4	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
5	1	RELAY F35	GE	F35-000-4PL-F3C-4RC-4RX-4PX-4JY-4W
6	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
7	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
8	4	UK10 N	PHOENIX	3005073
9	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
10	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
11	2	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
12	20	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
13	2	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0
14	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
15	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
16	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
17	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
18	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED

BILL OF MATERIALS

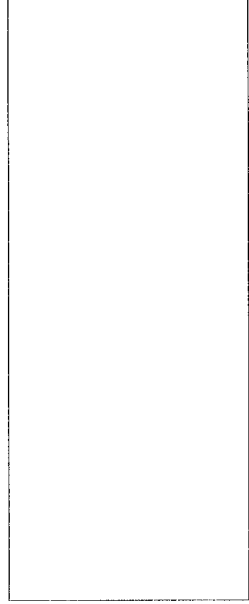
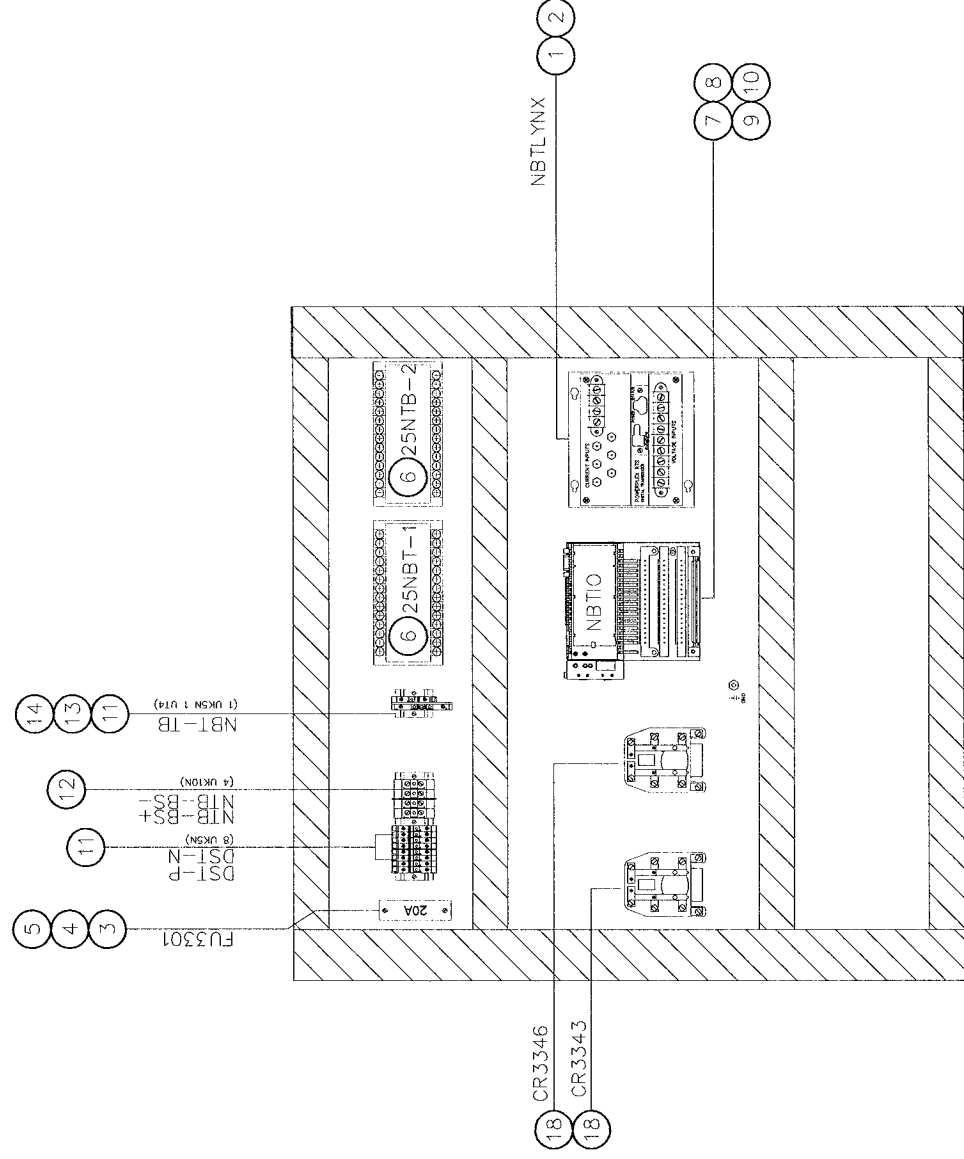
NO.	REVISION	DATE	TITLE:
0.0	ISSUED FOR SUBMITTAL	05-22-06	CITY OF WINNIPEG WTP - UTILITY (E-100) DOOR ASSEMBLY - SECT 10 4.16KV UTILITY PARALLELING SWITCHGEAR
0.1	ISSUED FOR SUBMITTAL	06-07-06	
0.2	ISSUED FOR SUBMITTAL	08-11-06	
APPROVED BY: <i>RAM</i>			REV. 0.2
DATE APPROVED: 05-22-06			DRAWN BY: GLG
FILE NAME: 35701-U-A18			DATE CREATED: 05-22-06
			DATE MODIFIED:
			SHEET NUMBER: 18
			of 34



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BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08MS-07
3	1	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	1	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-20A 200kAIC	BUSSMAN	FNQ-R-20
6	2	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBX-C6
7	1	MODULE 16 PT I/O 24VDC	MODICON	170 ADM 850 10
8	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
9	1	CP M1 256K RAM	MODICON	171 CCS 760 00
10	1	ADAPTER MB+ COM PORT OPT	MODICON	172 FNN 210 22
11	9	TB UK5N	PHOENIX	3004362
12	4	UK10 N	PHOENIX	3005073
13	1	TB UT4-MTD-DIO	PHOENIX	3046236
14	1	TB UT4-END	PHOENIX	3047141
15	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

APPROVED BY <b>RAM</b>		SCALE 1/10"=1"	REV. 0.2	DRAWN BY GLG	MODIFIED BY
DATE APPROVED 05-22-06		DATE CREATED 05-22-06		DATE MODIFIED	
FILE NAME 35701-U-A19		SHEET NUMBER 19		of 34	

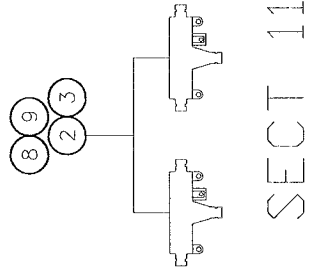
TITLE:  
CITY OF WINNIPEG WTP - UTILITY (E-100)  
SUBPAN ASSEMBLY - SECT 10

4.16KV UTILITY PARALLELING SWITCHGEAR

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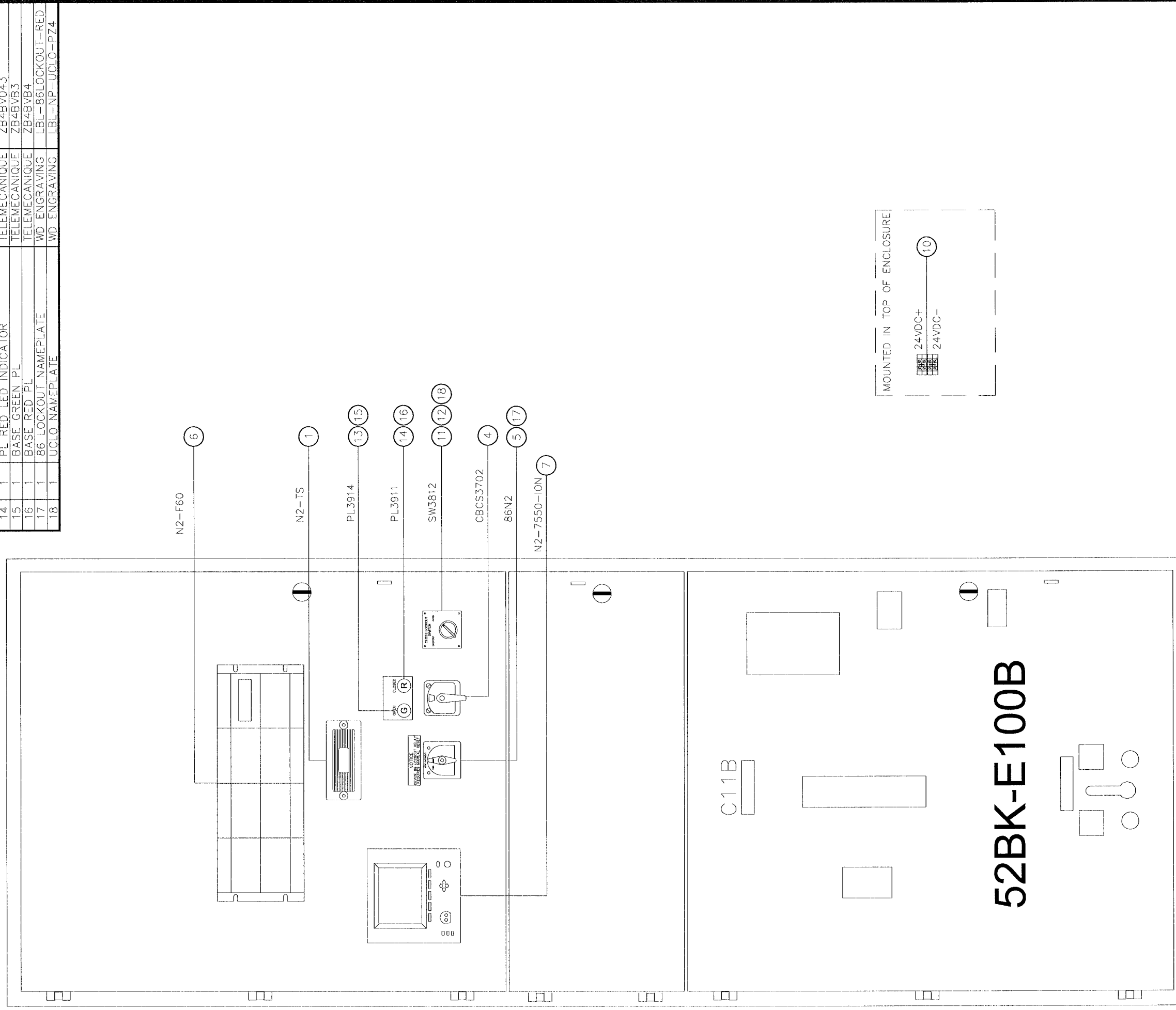




SECT 11

BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2442D
5	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
6	1	RELAY F60	GE	F60-XXXX
7	1	POWER METER	ION	P750B0N9C9D1A0A
8	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
9	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
10	4	UK10 N	PHOENIX	3005073
11	1	UCLO LOCKING COVER	SQUARE D	9001K7
12	1	SWITCH 2 POS UCLO	SQUARE D	9001KS11BH2
13	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
14	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
15	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
16	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
17	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED
18	1	UCLO NAMEPLATE	WD ENGRAVING	LBL-NP-UCLO-PZ4



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NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100) DOOR ASSEMBLY - SECT 11 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY: RAM	SCALE: 1/10"=1"
DATE APPROVED: 05-22-06	REV: 0.2
FILE NAME: 35701-U-A20	DRAWN BY: GLG
	DATE CREATED: 05-22-06
	DATE MODIFIED: 05-22-06
	SHEET NUMBER: 20
	of 34

**CATERPILLAR**

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INTELLIGENT SWITCHGEAR ORGANIZATION, INC.

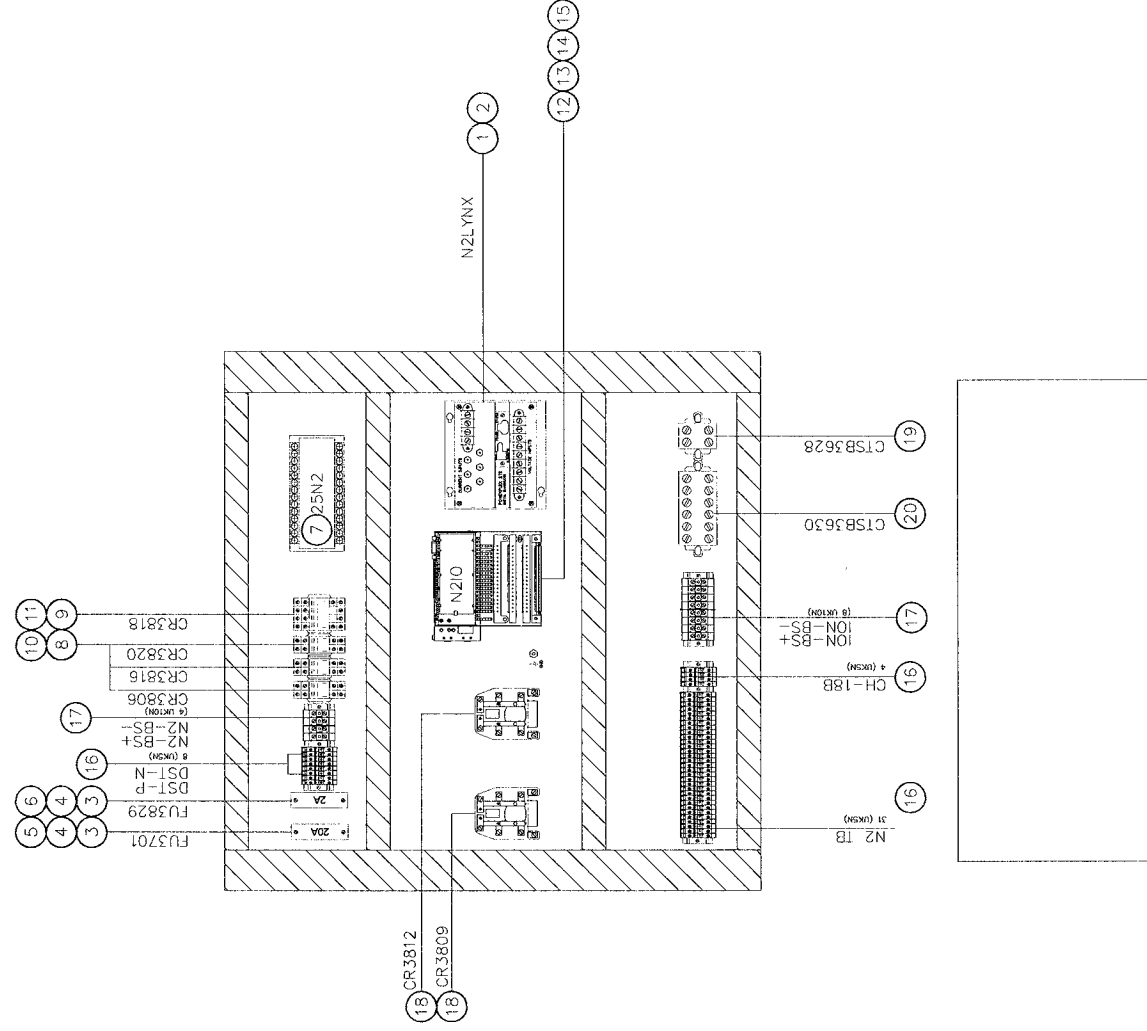
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**BILL OF MATERIALS**

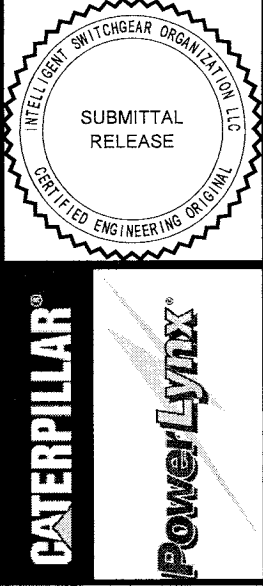
NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08M5-07
3	2	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	2	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
6	1	FUSE 2A	BUSSMAN	KTK-R-2
7	1	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBX-C6
8	3	DPDT RELAY-24VDC IND	IDEC	RH2B-ULDC24V
9	1	4PDT RELAY 24VDC IND	IDEC	RH4B-ULDC 24V
10	3	DPDT RELAY BASE	IDEC	SH2B-05
11	1	4PDT RELAY BASE	IDEC	SH4B-05
12	1	MODULE 16 PT I/O 24VDC	MODICON	170 ADM 850 10
13	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
14	1	CP M1 256K RAM	MODICON	171 CCS 760 00
15	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
16	43	TB UK5N	PHOENIX	3004362
17	12	UK10 N	PHOENIX	3005073
18	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24
19	1	SHORTING BLOCK 2 POLE +COVER	USD	KUSC2WC
20	1	SHORTING BLOCK 6 POLE +COVER	USD	KUSC6WC



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY <b>RAM</b>		SCALE 1/10"=1"	REV. 0.2	DRAWN BY GLG	MODIFIED BY
DATE APPROVED 05-22-06		DATE CREATED 05-22-06		DATE MODIFIED	
FILE NAME 35701-U-A21		SHEET NUMBER 21		of 34	

**TITLE:**  
CITY OF WINNEPEG WTP - UTILITY (E-100)  
SUBPAN ASSEMBLY - SECT 11  
4.16KV UTILITY PARALLELING SWITCHGEAR



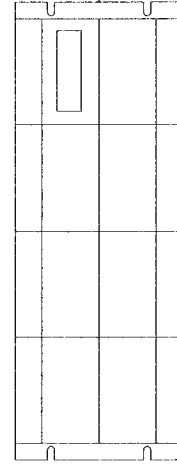
BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	RELAY T35	GE	T35
2	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
3	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
4	3	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
5	30	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
6	3	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0

SHIPPING  
SPLIT

SECT 12

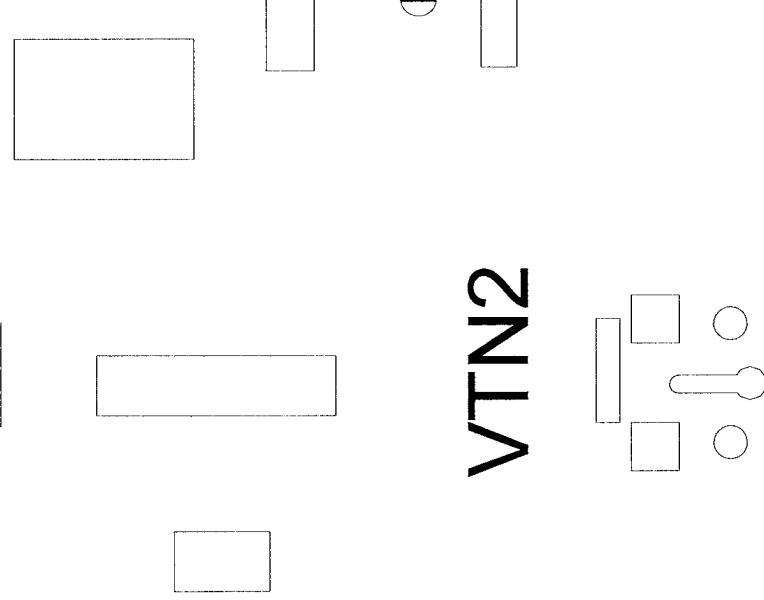
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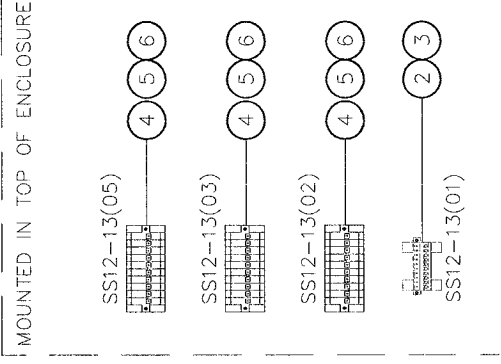
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C12B



VTN2



NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	RAM
DATE APPROVED	05-22-06
FILE NAME	35701-U-A22

U-A22

DRAWN BY	GLG
DATE CREATED	05-22-06
SHEET NUMBER	22

of 34

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 12

4.16KV UTILITY PARALLELING SWITCHGEAR

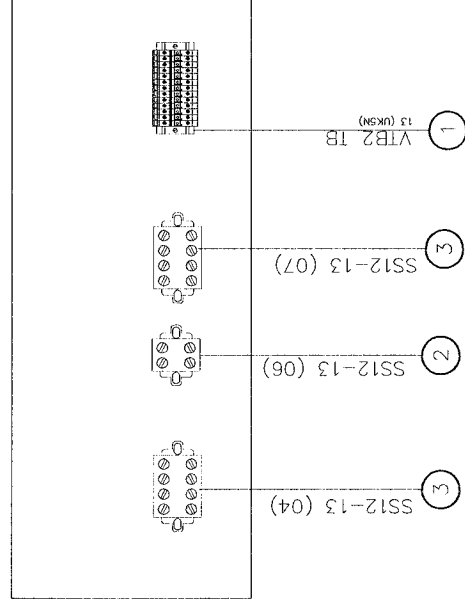
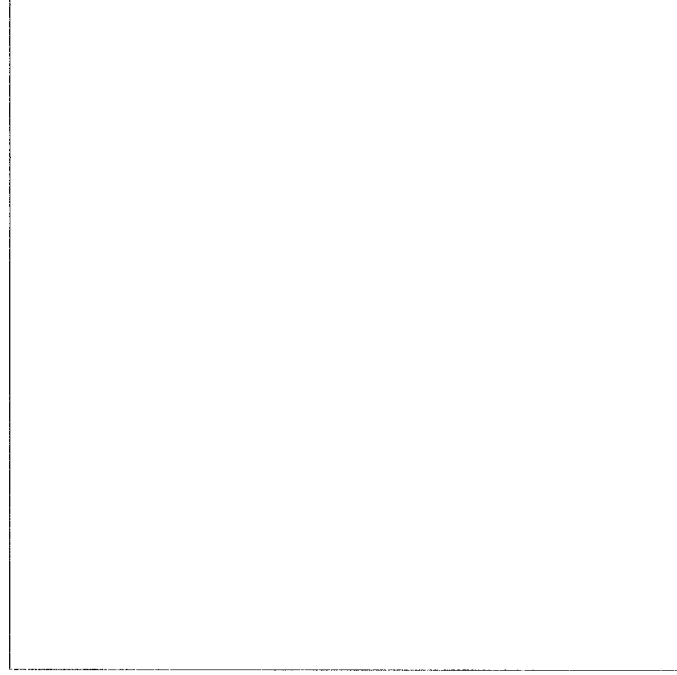


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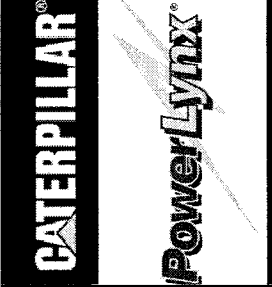
**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	13	.1B UK5N	PHOENIX	3004362
2	1	SHORTING BLOCK 2 POLE +COVER	USD	KUSC2WC
3	2	SHORTING BLOCK 4 POLE +COVER	USD	KUSC4WC



NO	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>SUBPAN ASSEMBLY - SECT 12</b>	
APPROVED BY <b>RAM</b>	DRAWN BY <b>GLG</b>
DATE APPROVED 05-22-06	DATE CREATED 05-22-06
FILE NAME 35701-U-A22	SHEET NUMBER 22A
SCALE 1/10"=1"	REV. 0.2
MODIFIED BY	DATE MODIFIED
of	34

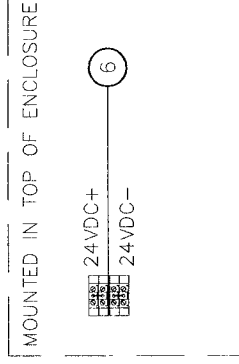
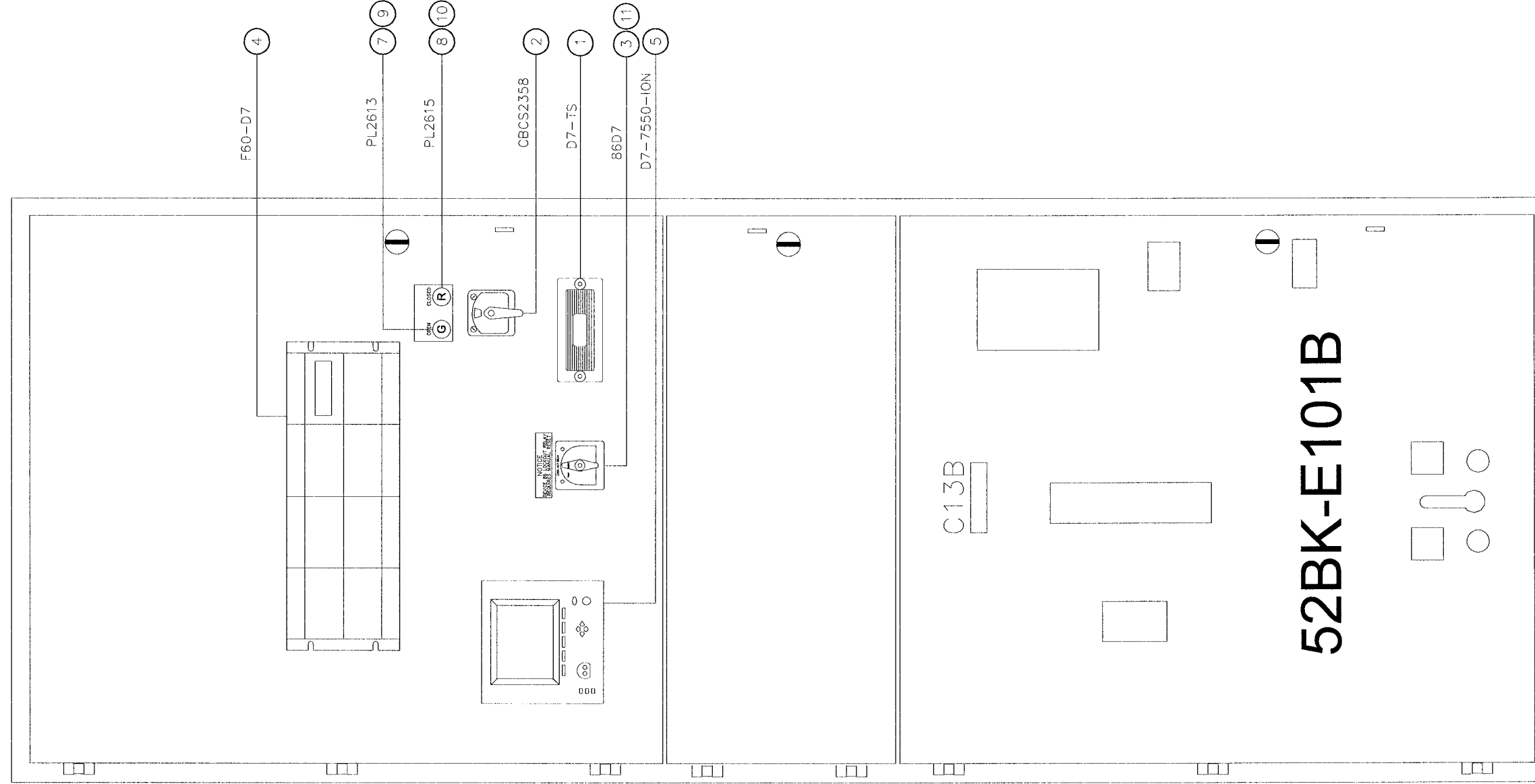




BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
3	1	PRLY .86-3 CONT 24VDC	ELECTROSWITCH	7803B
4	1	F60 FEEDER MANAGEMENT RELAY	GE	F60-
5	1	POWER METER	ION	P7550B0N9C9DTA0A
6	4	UK10 N	PHOENIX	3005073
7	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
8	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
9	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
10	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
11	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	L5L-86LOCKOUT-RED

SECT 13



MOUNTED IN TOP OF ENCLOSURE

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY <b>RAM</b>		SCALE 1/10"=1"	REV. 0.2	DRAWN BY GLG	MODIFIED BY
DATE APPROVED 05-22-06	FILE NAME 35701-U-A23	DATE CREATED 05-22-06		DATE MODIFIED	
		SHEET NUMBER 23		of 34	

TITLE:  
CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 13

4.16KV UTILITY PARALLELING SWITCHGEAR

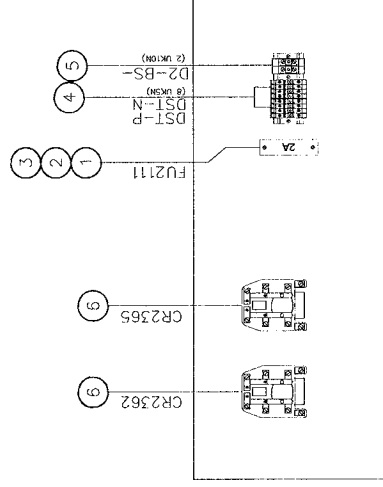
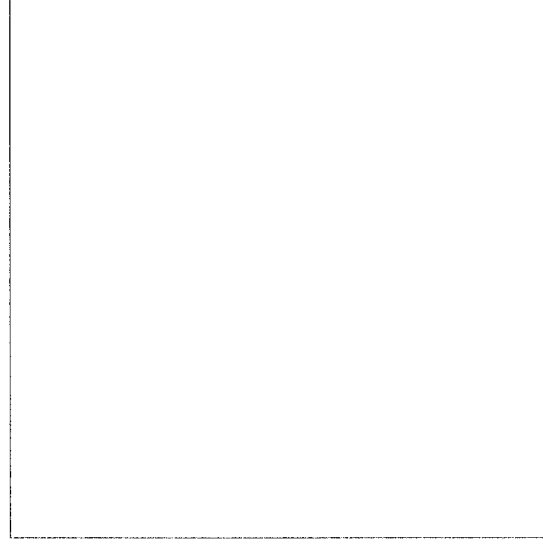
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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	1	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE 2A	BUSSMAN	KT-R-2
4	8	TB UK5N	PHOENIX	3004362
5	2	UK10 N	PHOENIX	3005073
6	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>SUBPAN ASSEMBLY - SECT 13</b> 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY GLG
DATE APPROVED 05-22-06	DATE CREATED 05-22-06
FILE NAME 35701-U-A24	REV. 0.2
	MODIFIED BY
	DATE MODIFIED
	SHEET NUMBER 24
	of 34

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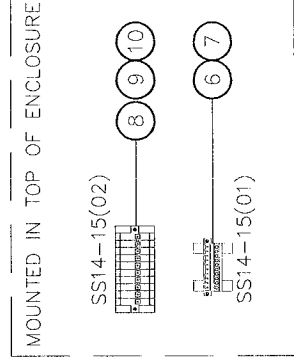
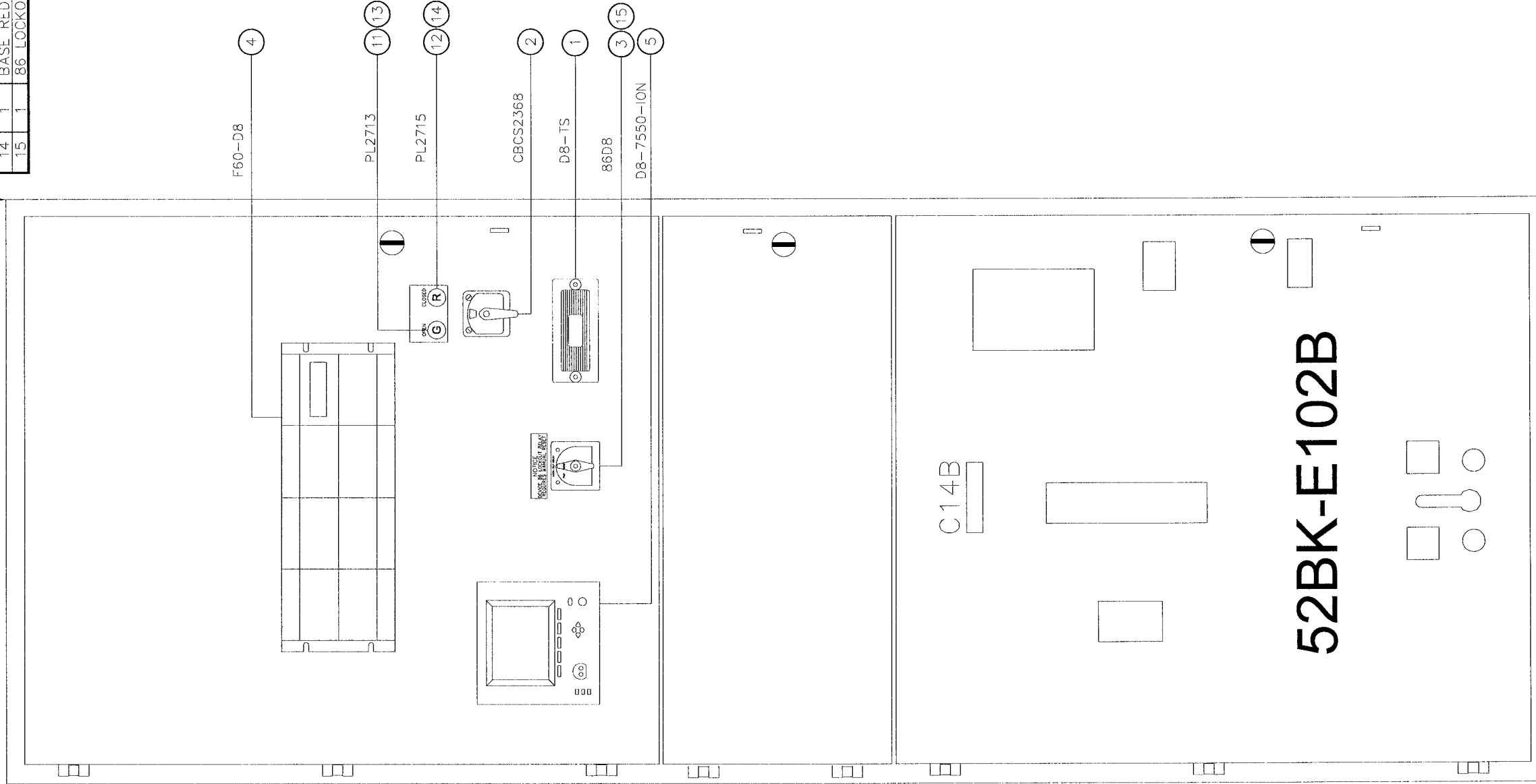


BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	.129A514G01
2	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
3	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
4	1	F60 FEEDER MANAGEMENT RELAY	GE	F60-
5	1	POWER METER	ION	P7550B0N9C9D1A0A
6	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
7	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
8	1	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
9	10	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
10	1	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0
11	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
12	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
13	1	BASE GREEN PL	TELEMECANIQUE	ZB4BYB3
14	1	BASE RED PL	TELEMECANIQUE	ZB4BYB4
15	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBI-86LOCKOUT-RED

SHIPPING  
SPLIT

SECT 14



52BK-E102B

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

APPROVED BY  
*RAM*  
DATE APPROVED 05-22-06  
FILE NAME 35701-U-A25

SCALE 1/10"=1"  
REV. 0.2  
DRAWN BY GLG  
DATE CREATED 05-22-06  
SHEET NUMBER 25 of 34

U-A25

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 14  
4.16KV UTILITY PARALLELING SWITCHGEAR

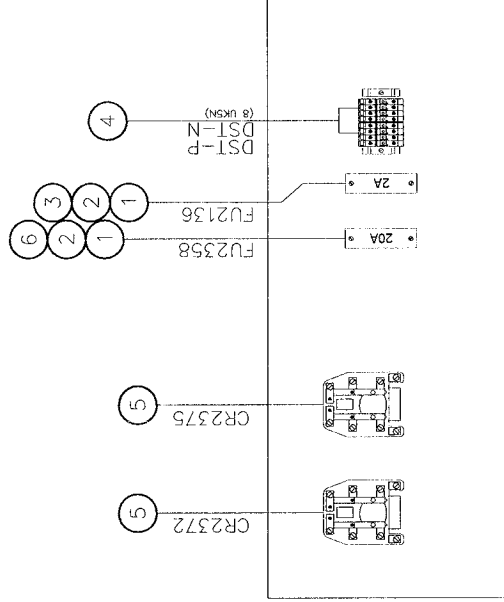
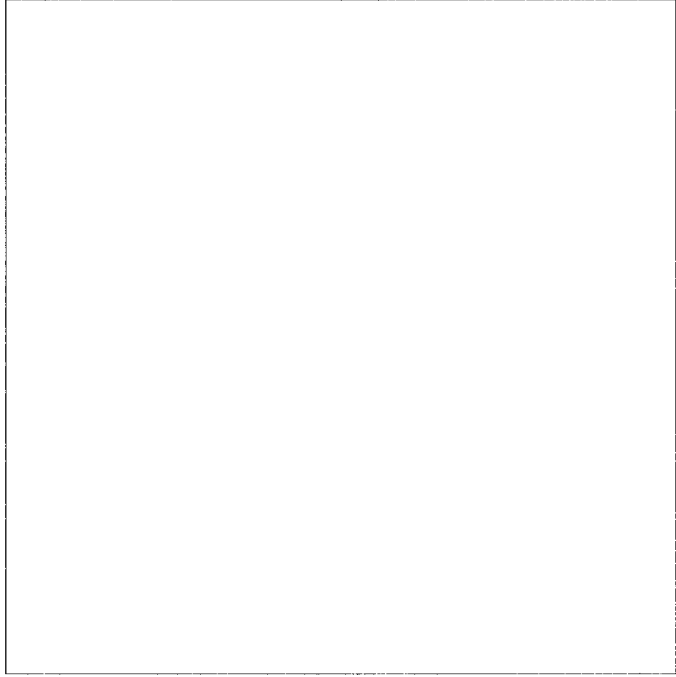
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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	2	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	2	ADAPTER FUSE_BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE 2A	BUSSMAN	KTK-R-2
4	8	TB UK5N	PHOENIX	3004362
5	2	DPDT RELAY-24VDC_HD	TYCO/PB	PRD-11HD0-24
6	1	FUSE 20A	BUSSMAN	FNQ-R-20



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>SUBPAN ASSEMBLY - SECT 14</b> 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <b>RAM</b>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-U-A26	MODIFIED BY GLG
	DATE CREATED 05-22-06
	DATE MODIFIED 05-22-06
	SHEET NUMBER 26
	of 34

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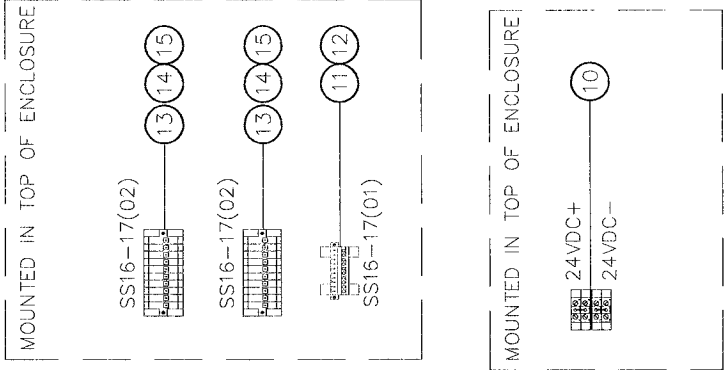
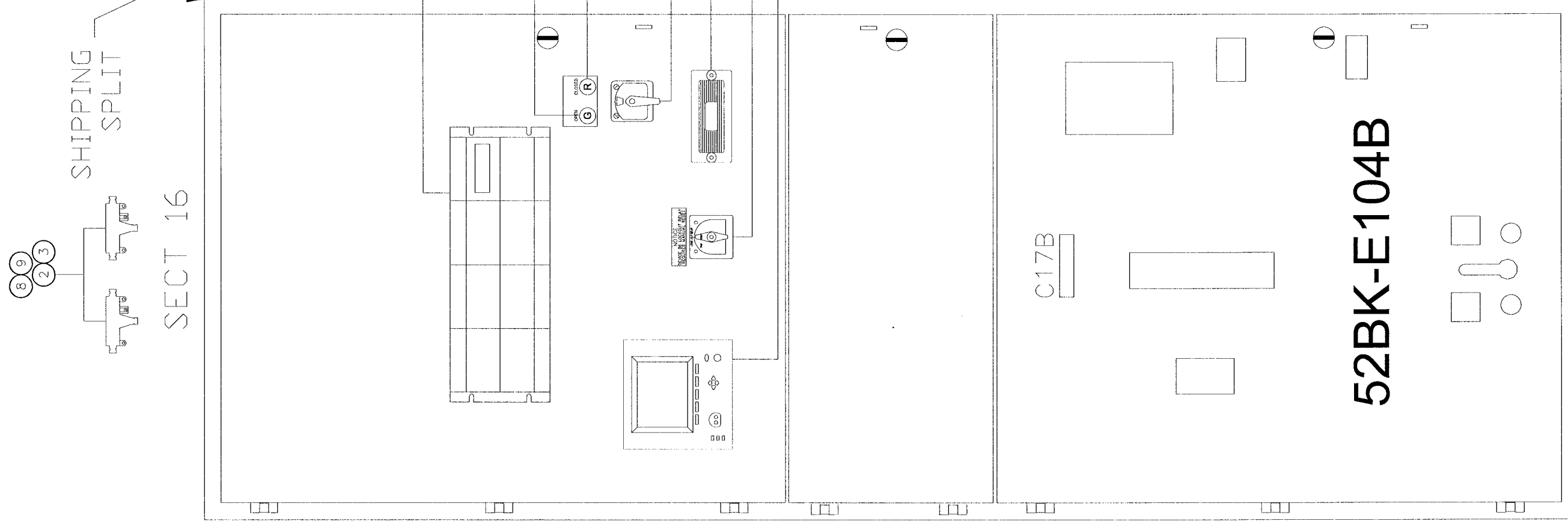






BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
5	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
6	1	RELAY F35	GE	F35-000-HPL-F8C-H8C-PK-LHX-WX
7	1	POWER METER	ION	P7550BON9C9D1A0A
8	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
9	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
10	4	UK10 N	PHOENIX	3005073
11	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
12	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
13	2	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
14	20	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
15	2	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0
16	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
17	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
18	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV03
19	1	BASE RED PL	TELEMECANIQUE	ZB4BV04
20	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	SCALE	REV.	REV.	MODIFIED BY
RAM	1/10"=1"	0.2	GLG	
DATE APPROVED			DATE CREATED	DATE MODIFIED
05-22-06			05-22-06	
FILE NAME			SHEET NUMBER	of
35701-U-A29			29	34

TITLE	
CITY OF WINNIPEG WTP - UTILITY (E-100)	
DOOR ASSEMBLY - SECT 16	
4.16KV UTILITY PARALLELING SWITCHGEAR	
U-A29	

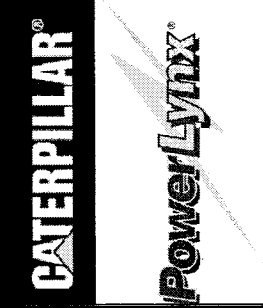
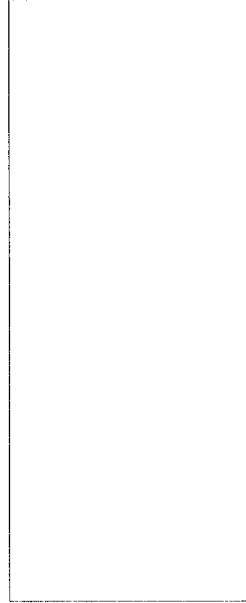
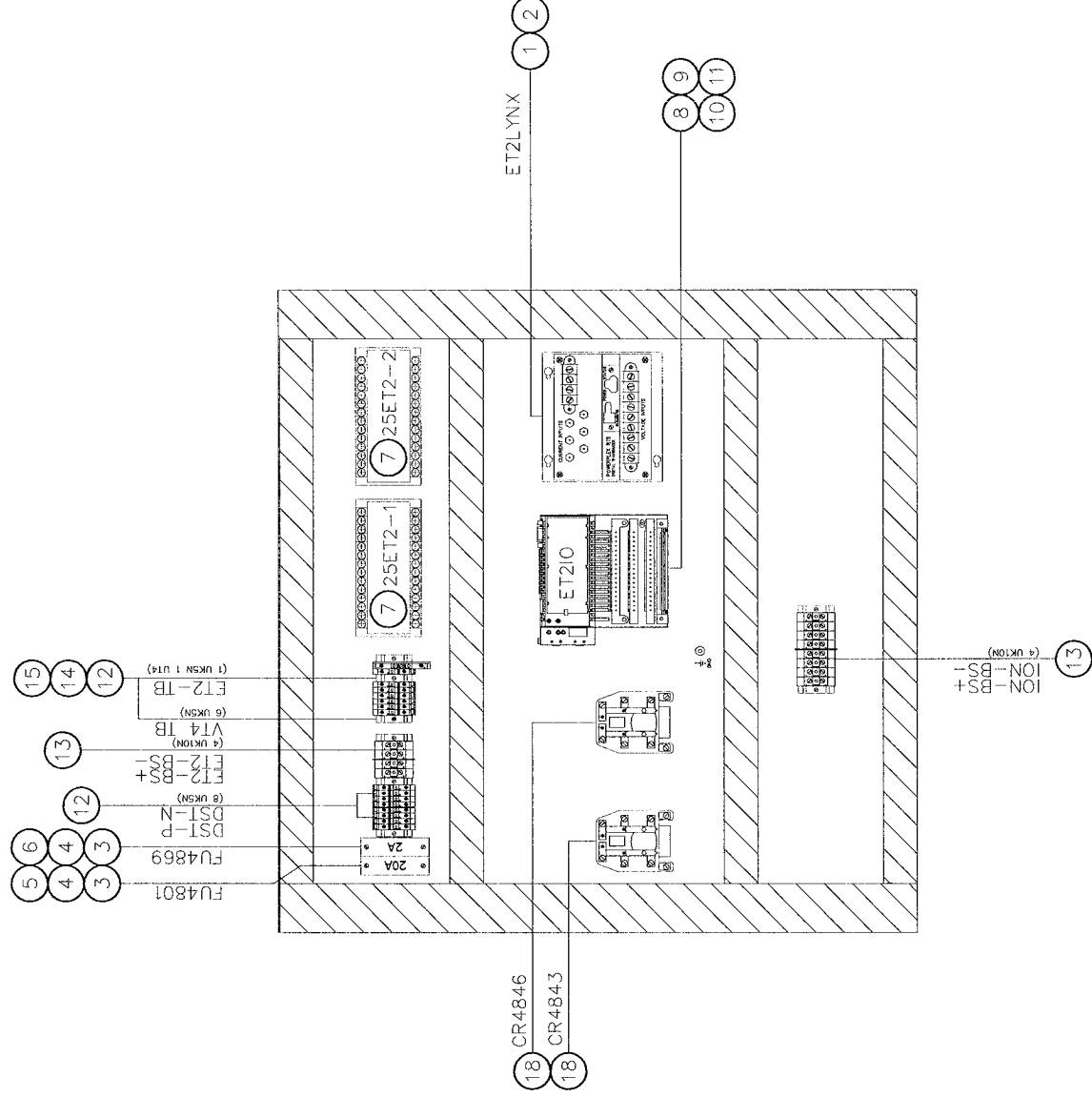
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CERTIFIED ENGINEERING ORGANIZATION  
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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08MS-07
3	2	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	2	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
6	1	FUSE 2A	BUSSMAN	KTK-R-2
7	2	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBX-C6
8	1	MODULE 16 PT I/O 24VDC	MODICON	170 ADM 850 10
9	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
10	1	CP M1 256K RAM	MODICON	171 CCS 760 00
11	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
12	15	TB UK5N	PHOENIX	3004362
13	12	UK10 N	PHOENIX	3005073
14	1	TB UT4-MTD-DIO	PHOENIX	3046236
15	1	TB UT4-END	PHOENIX	3047141
16	2	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24



NO.		REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06	
0.1	REISSUED FOR SUBMITTAL	06-07-06	
0.2	REISSUED FOR SUBMITTAL	08-11-06	
APPROVED BY		RAM	REV. 0.2
DATE APPROVED		05-22-06	SCALE 1/10"=1"
FILE NAME		35701-U-A30	MODIFIED BY
			DATE MODIFIED
			SHEET NUMBER
			30
			of
			34

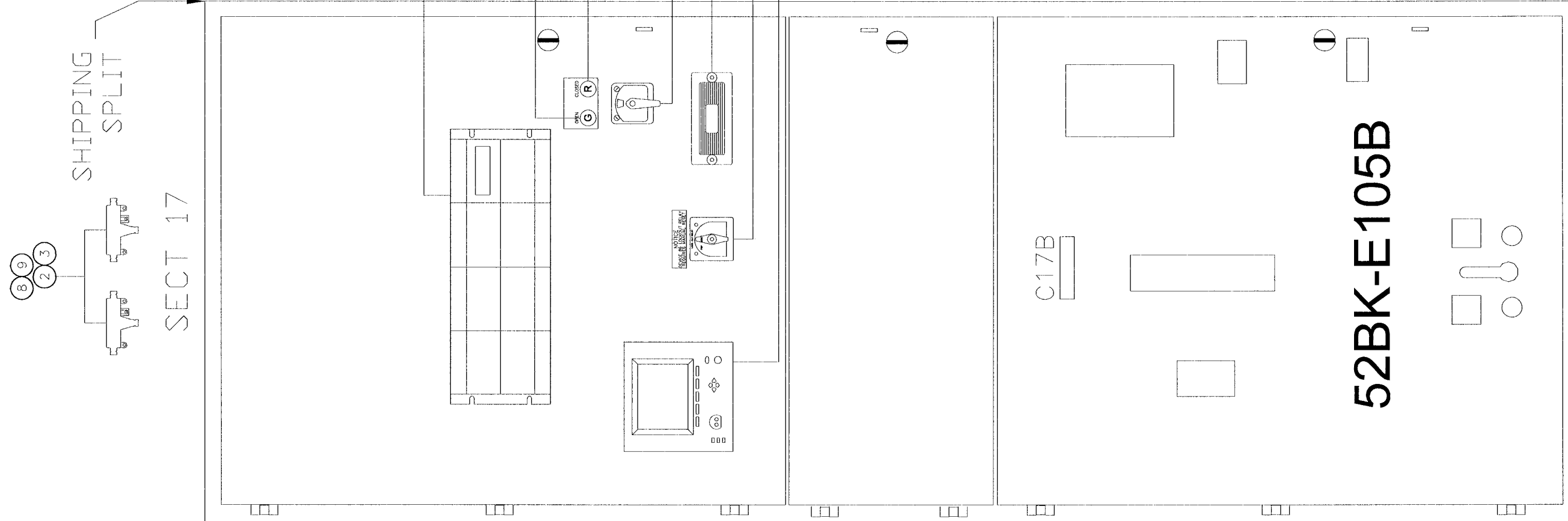
**TITLE:**  
**CITY OF WINNIPEG WTP - UTILITY (E-100)**  
**SUBPAN ASSEMBLY - SECT 16**  
**4.16KV UTILITY PARALLELING SWITCHGEAR**

**U-A30**

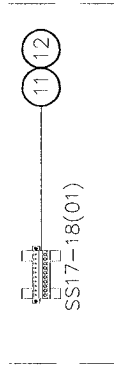


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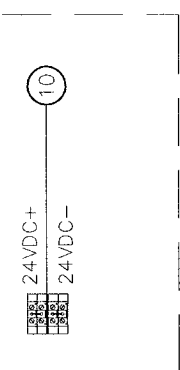
NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
3	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
4	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	2438D
5	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
6	1	F60 FEEDER MANAGEMENT RELAY	GE	F60-
7	1	POWER METER	ION	P7550B0N9C9D1A0A
8	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
9	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
10	4	UK10 N	PHOENIX	3005073
11	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
12	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
13	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
14	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
15	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV03
16	1	BASE RED PL	TELEMECANIQUE	ZB4BV04
17	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBI-86LOCKOUT-RED



MOUNTED IN TOP OF ENCLOSURE



MOUNTED IN TOP OF ENCLOSURE



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	SCALE	REV.	MODIFIED BY
RAM	1/10"=1"	0.2	GLG
DATE APPROVED	DATE CREATED		DATE MODIFIED
05-22-06	05-22-06		05-22-06
FILE NAME	SHEET NUMBER		of
35701-U-A31	31		34

TITLE:			
CITY OF WINNIPEG WTP - UTILITY (E-100)			
DOOR ASSEMBLY - SECT 17			
4.16KV UTILITY PARALLELING SWITCHGEAR			

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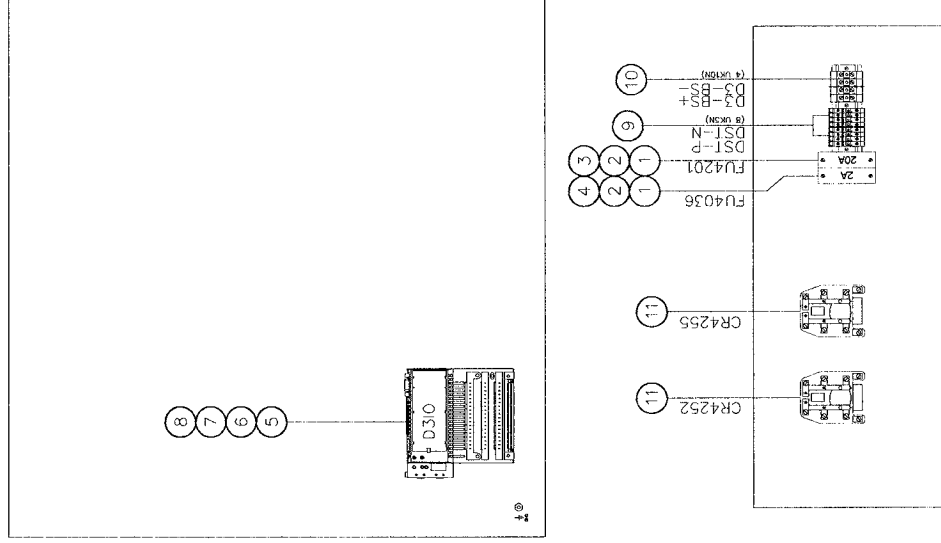
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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	2	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
2	2	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
3	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
4	1	FUSE 2A	BUSSMAN	KTK-R-2
5	1	MODULE 16 PT 1/0 24VDC	MODICON	170 ADM 850 10
6	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
7	1	CP M1 256K RAM	MODICON	171 CCS 760 00
8	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
9	10	TB UK5N	PHOENIX	3004362
10	12	UK10_N	PHOENIX	3005073
11	2	DPDT RELAY-24VDC_HD	TYCO/PB	PRD-11HD0-24

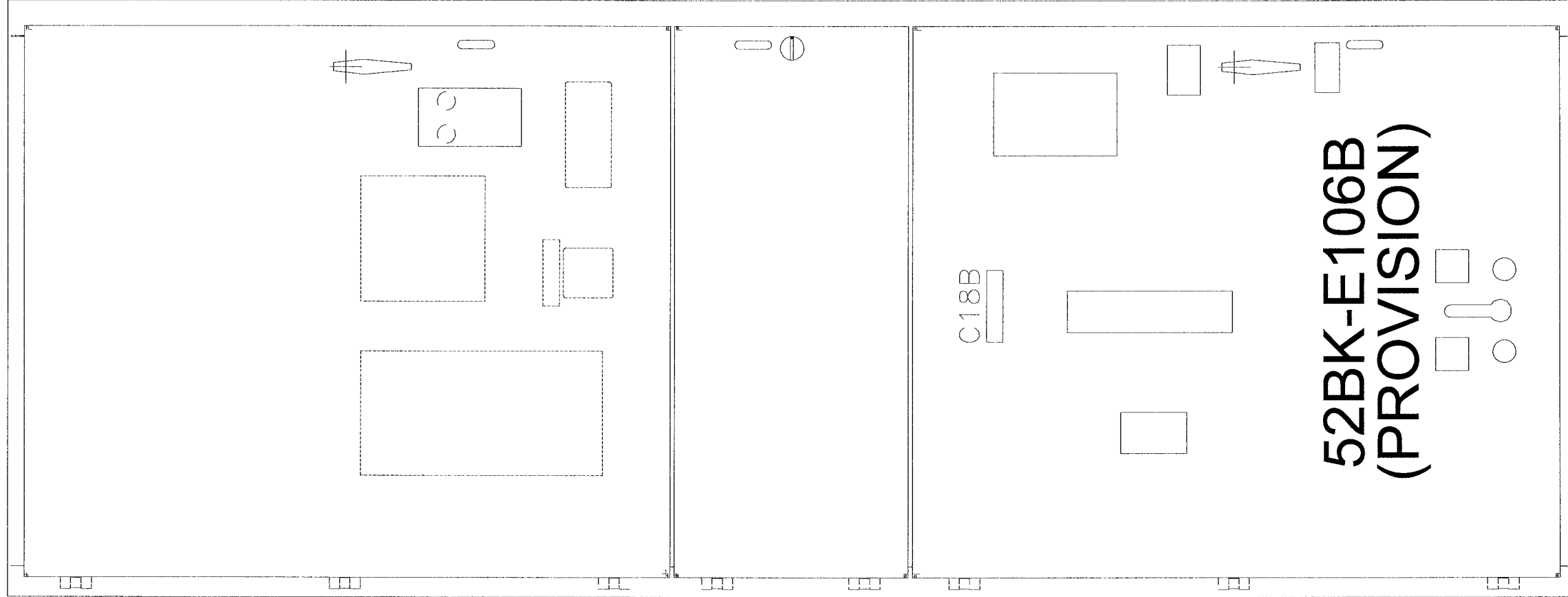


NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-11-06

<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) SUBPAN ASSEMBLY - SECT 17 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-U-A32	MODIFIED BY GLG
	DATE CREATED 05-22-06
	DATE MODIFIED 05-22-06
	SHEET NUMBER 32
	of 34



SECT 18

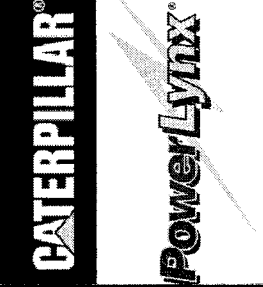


52BK-E106B  
(PROVISION)

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

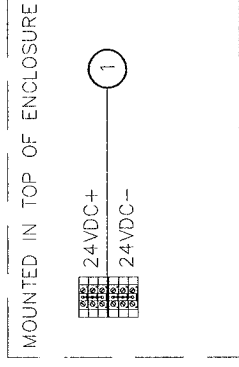
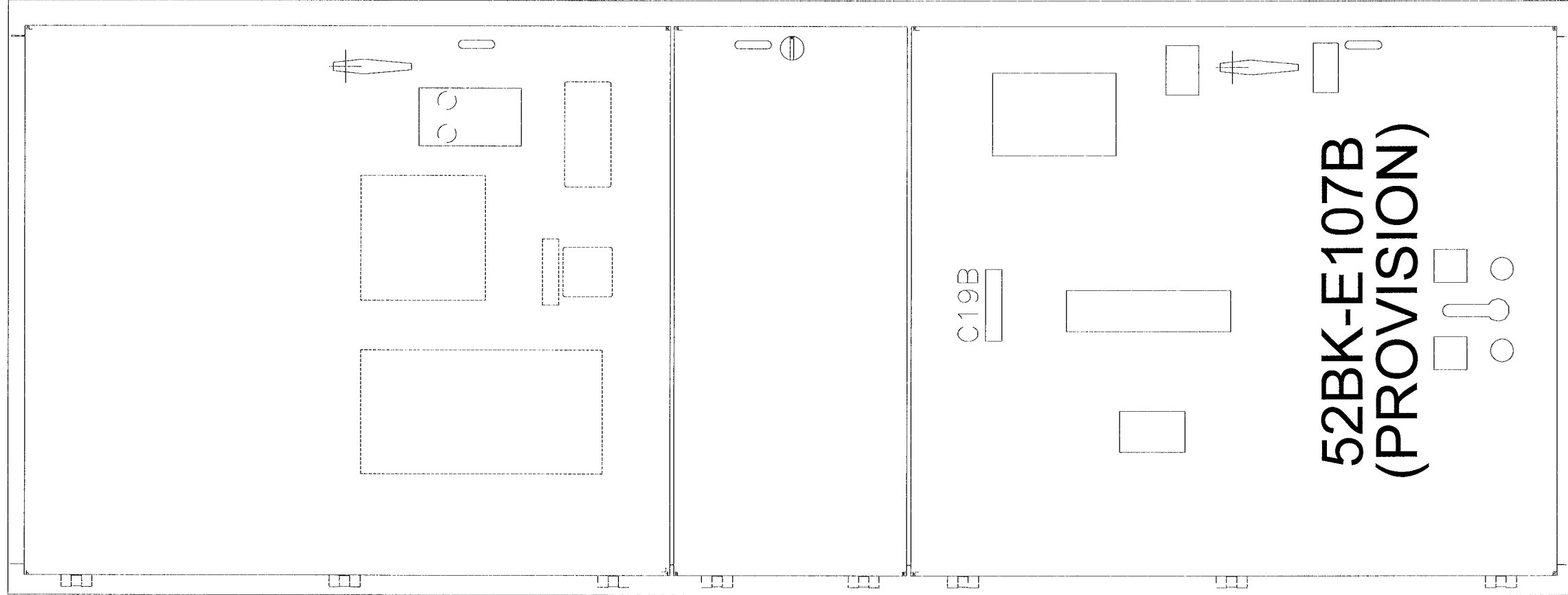
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DATE APPROVED 05-22-06	FILE NAME 35701-U-A33	DATE CREATED 05-22-06		DATE MODIFIED	
			SHEET NUMBER 33	of	34

TITLE:  
CITY OF WINNIPEG WTP - UTILITY (E-100)  
DOOR ASSEMBLY - SECT 18  
4.16KV UTILITY PARALLELING SWITCHGEAR



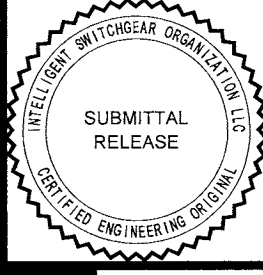
BILL OF MATERIALS				
NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	6	UK10 N	PHOENIX	3005073

SECT 19



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) DOOR ASSEMBLY - SECT 19	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> 1/10"=1"
<b>DATE APPROVED:</b> 05-22-06	<b>REV.:</b> 0.2
<b>FILE NAME:</b> 35701-U-A34	<b>DRAWN BY:</b> GLG
	<b>DATE CREATED:</b> 05-22-06
	<b>DATE MODIFIED:</b> 05-22-06
	<b>SHEET NUMBER:</b> 34
	<b>of</b> 34

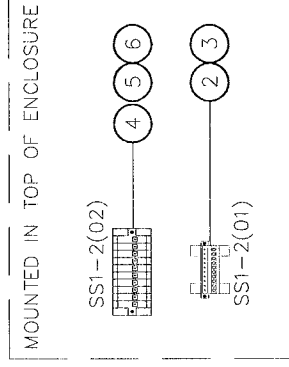
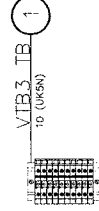
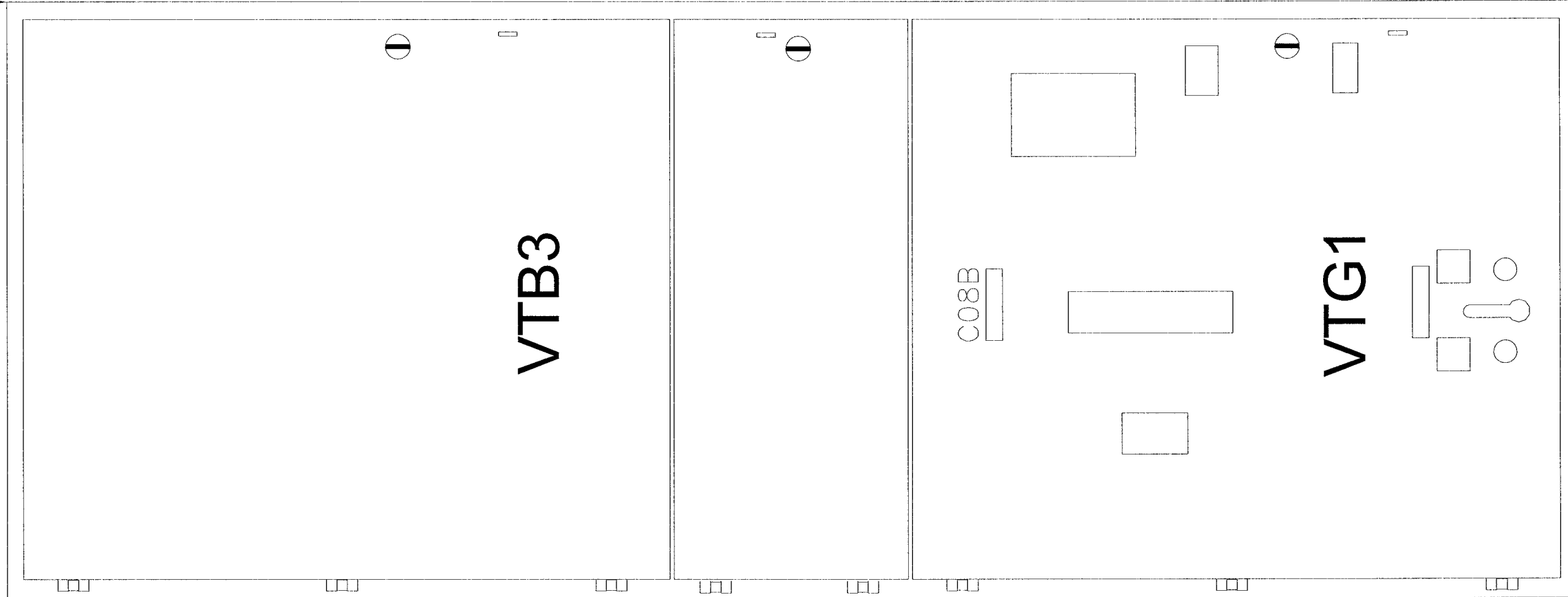


BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	10	TB UK5N	PHOENIX	3004362
2	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
3	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
4	1	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
5	10	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
6	1	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0

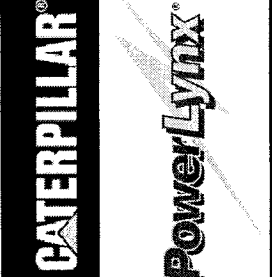
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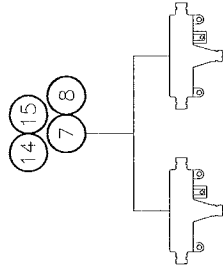
SECT 1



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY <i>RAM</i>		SCALE 1/8"=1"	REV. 0.2	DRAWN BY GLG	MODIFIED BY
DATE APPROVED 05-22-06	FILE NAME 35701-G-A01	DATE CREATED 05-18-06		DATE MODIFIED	
TITLE: CITY OF WINNIPEG WTP GEN BOARD (E-200) DOOR ASSEMBLY - SECT 1		4.16KV GENERATOR PARALLELING SWITCHGEAR		SHEET NUMBER 1 of 11	

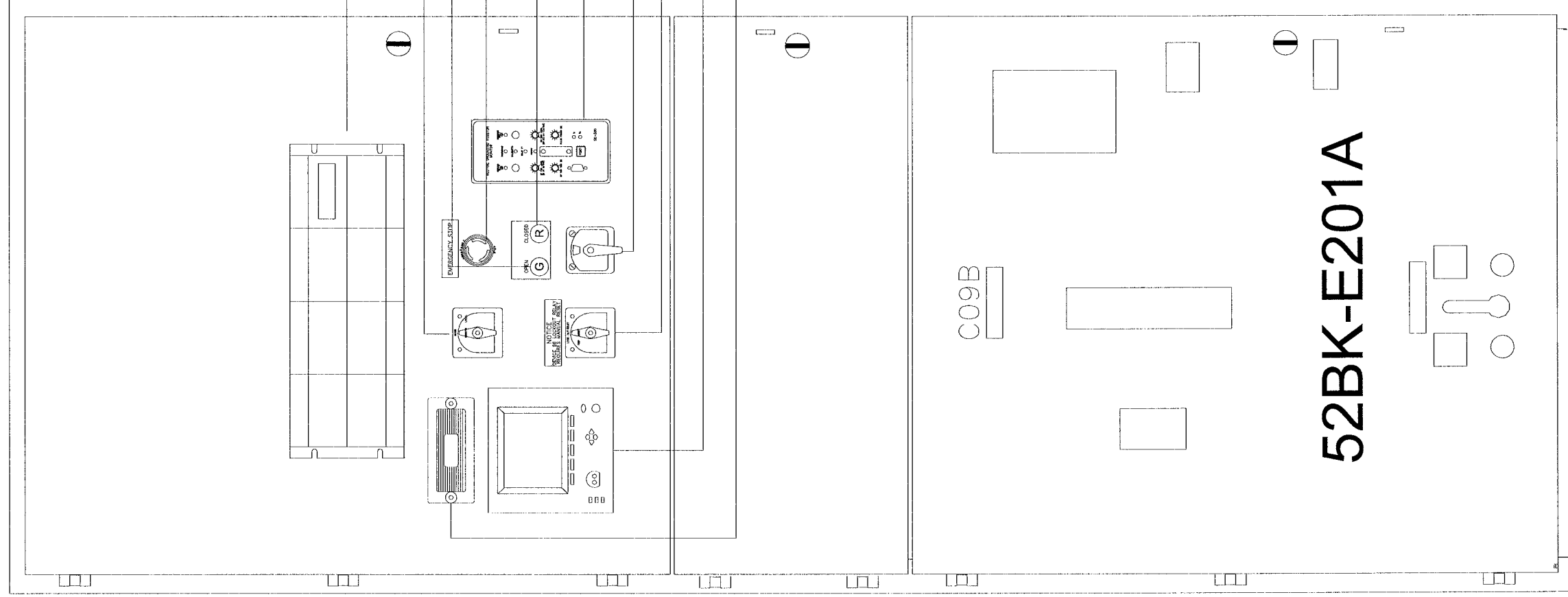




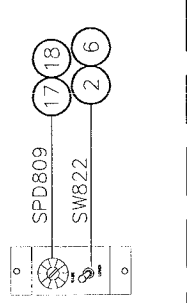
SECT 2

BILL OF MATERIALS

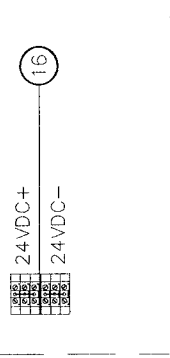
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1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	1	POT MOUNTING BRACKET	ACCUFAB	30000-M36
3	1	2 N.O. CONTACT W/BASE	ALLEN BRADLEY	800E-2LX20
4	1	SHROUD	ALLEN BRADLEY	800E-AMRG
5	1	SWITCH ESTOP PB	ALLEN BRADLEY	800EM-MT4
6	1	SWITCH 2 POS SEL	ALLIED	757-7910
7	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
8	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
9	1	MODE 2-POSITION	ELECTROSWITCH	24202B
10	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	74092QF
11	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
12	1	G60 GEN MANAGEMENT RELAY	GE	G60-
13	1	POWER METER	ION	P7550B0N9C9D1A0A
14	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
15	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
16	6	UK10 N	PHOENIX	3005073
17	1	POT MULTIDIAL SPEED	SPECTROL	11.1.11
18	1	POT 2KOHM SPEED	SPECTROL	534-1-1-202
19	1	NGR MONITOR	STARTCO	SE330-00-00
20	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
21	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
22	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
23	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
24	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED



MOUNTED ON THE DOOR INSIDE



MOUNTED IN TOP OF ENCLOSURE



52BK-E201A

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

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FILE NAME	35701-G-A02				

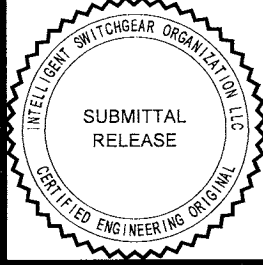
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DATE CREATED		05-18-06	DATE MODIFIED	
SHEET NUMBER		2	of 11	

TITLE  
CITY OF WINNIPEG WTP GEN BOARD (E-200)

DOOR ASSEMBLY - SECT 2

4.16KV GENERATOR PARALLELING SWITCHGEAR

G-A02

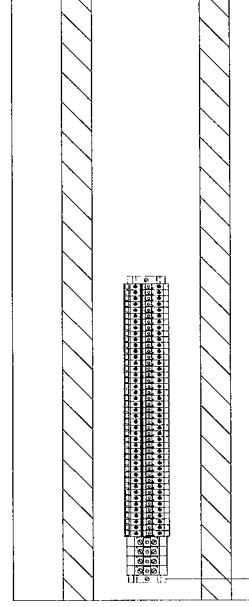
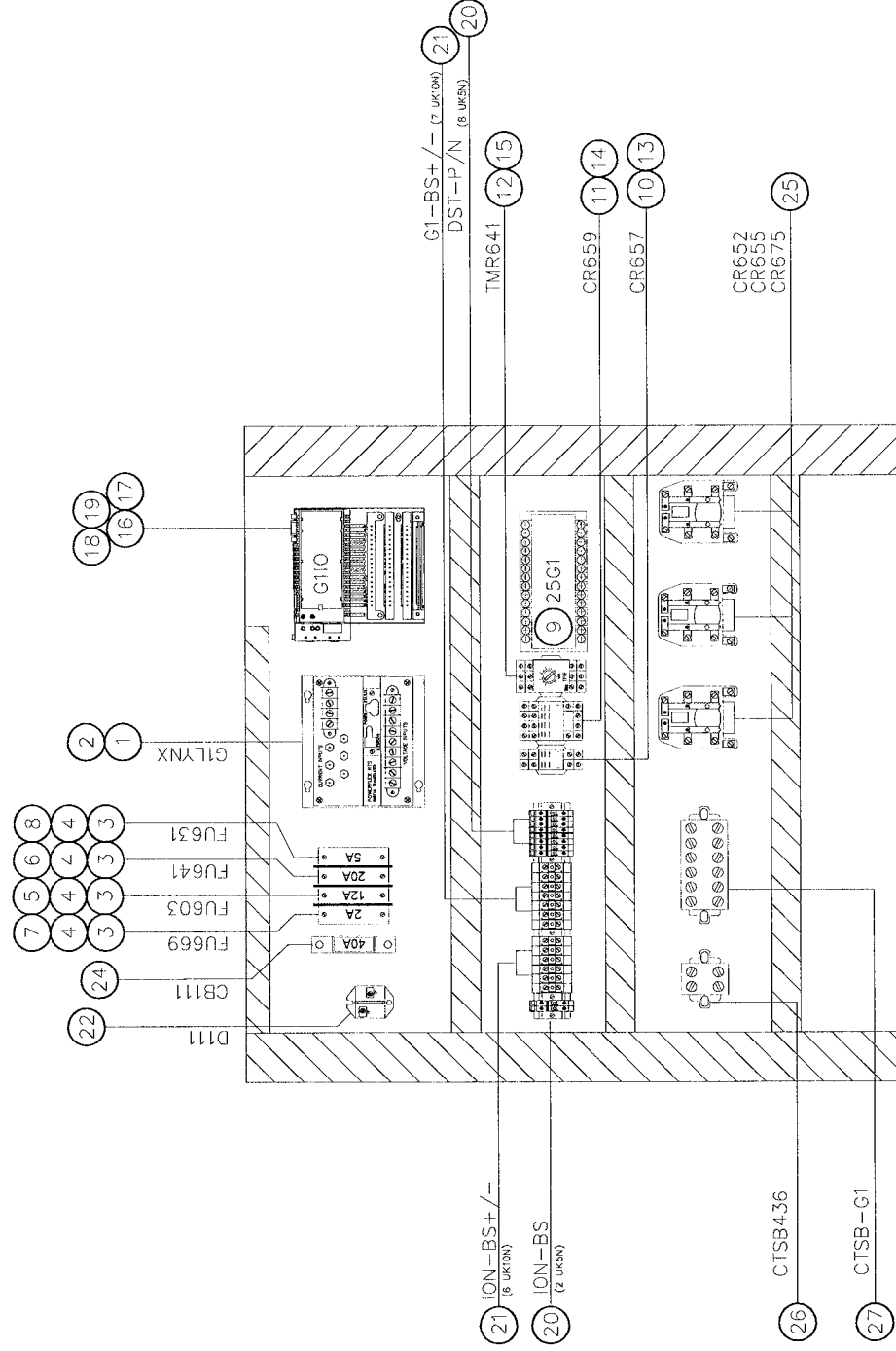


**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08MS-07
3	4	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	4	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-12A 200KAIC	BUSSMAN	FNQ-R-12
6	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
7	1	FUSE 2A	BUSSMAN	KTK-R-2
8	1	FUSE 5A	BUSSMAN	KTK-R-5
9	1	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBXC6
10	1	DPDT RELAY-24VDC IND	IDEC	RH2B-ULDC24V
11	1	4PDT RELAY 24VDC IND	IDEC	RH4B-ULDC 24V
12	1	RELAY INTERVAL TIMER 24V	IDEC	RTE-B1AD24
13	1	DPDT RELAY BASE	IDEC	SH2B-05
14	1	4PDT RELAY BASE	IDEC	SH4B-05
15	1	BASE TIMER RELAY	IDEC	SR3B-05
16	1	ANALOG/DIGITAL 16 PT I/O 24VDC	MODICON	170 AMM 110 30
17	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
18	1	CP M1 512K RAM	MODICON	171 CCC 780 10
19	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
20	53	TB UK5N	PHOENIX	3004362
21	17	UK10 N	PHOENIX	3005073
22	1	DIODE 100A	POWEREX	CS241210
23	1	19 PORT ETHERNET SWITCH	RUGGEDCOM	RS62100
24	1	CB 1P 40A	SIEMENS	5SX2140-8
25	3	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24
26	1	SHORTING BLOCK 2 POLE +COVER	USD	KUSC2WC
27	1	SHORTING BLOCK 6 POLE +COVER	USD	KUSC6WC



23



ENCL 1B  
43 (UK5N)  
4 (UK10N)

20  
21

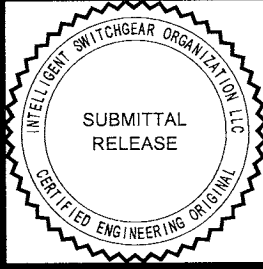
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

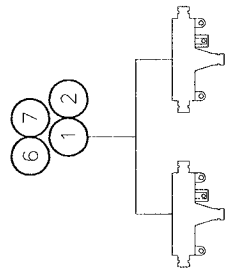
**TITLE**  
CITY OF WINNIPEG WTP GEN BOARD (E-200)  
SUBPAN ASSEMBLY - SECT 2A

4.16KV GENERATOR PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
RAM	1/8"=1"	0.2	GLG	
DATE APPROVED			DATE CREATED	DATE MODIFIED
05-22-06			05-18-06	
FILE NAME			SHEET NUMBER	of
35701-G-A03			3	11

**G-A03**

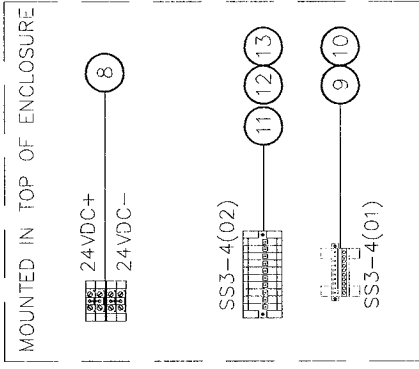
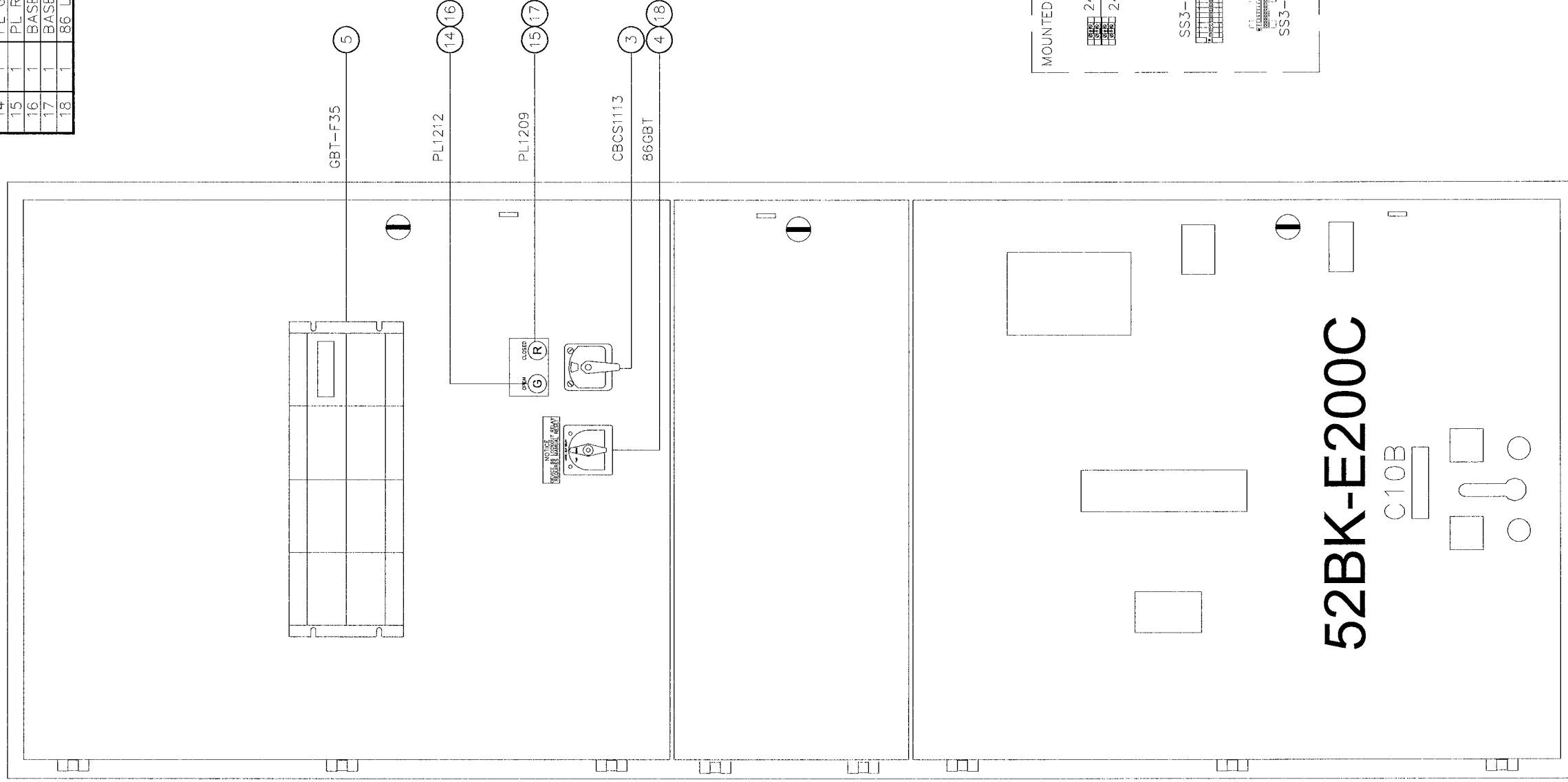




SECT 3

BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
2	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
3	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	74092QF
4	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
5	1	F35 FEEDER MANAGEMENT RELAY	GE	F35--
6	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
7	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
8	4	UK10 N	PHOENIX	3005073
9	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
10	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
11	1	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
12	1	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
13	1	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0
14	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
15	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
16	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV83
17	1	BASE RED PL	TELEMECANIQUE	ZB4BV84
18	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL--86LOCKOUT--RED



MOUNTED IN TOP OF ENCLOSURE

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	RAM	SCALE	1/8"=1"	REV.	0.2
DATE APPROVED	05-22-06				
FILE NAME	35701-G-A04				

CITY OF WINNIPEG WTP GEN BOARD (E-200)					
DOOR ASSEMBLY - SECT 3					
4.16KV GENERATOR PARALLELING SWITCHGEAR					
DRAWN BY	GLG	MODIFIED BY			
DATE CREATED	05-18-06	DATE MODIFIED			
SHEET NUMBER	4	of	11		

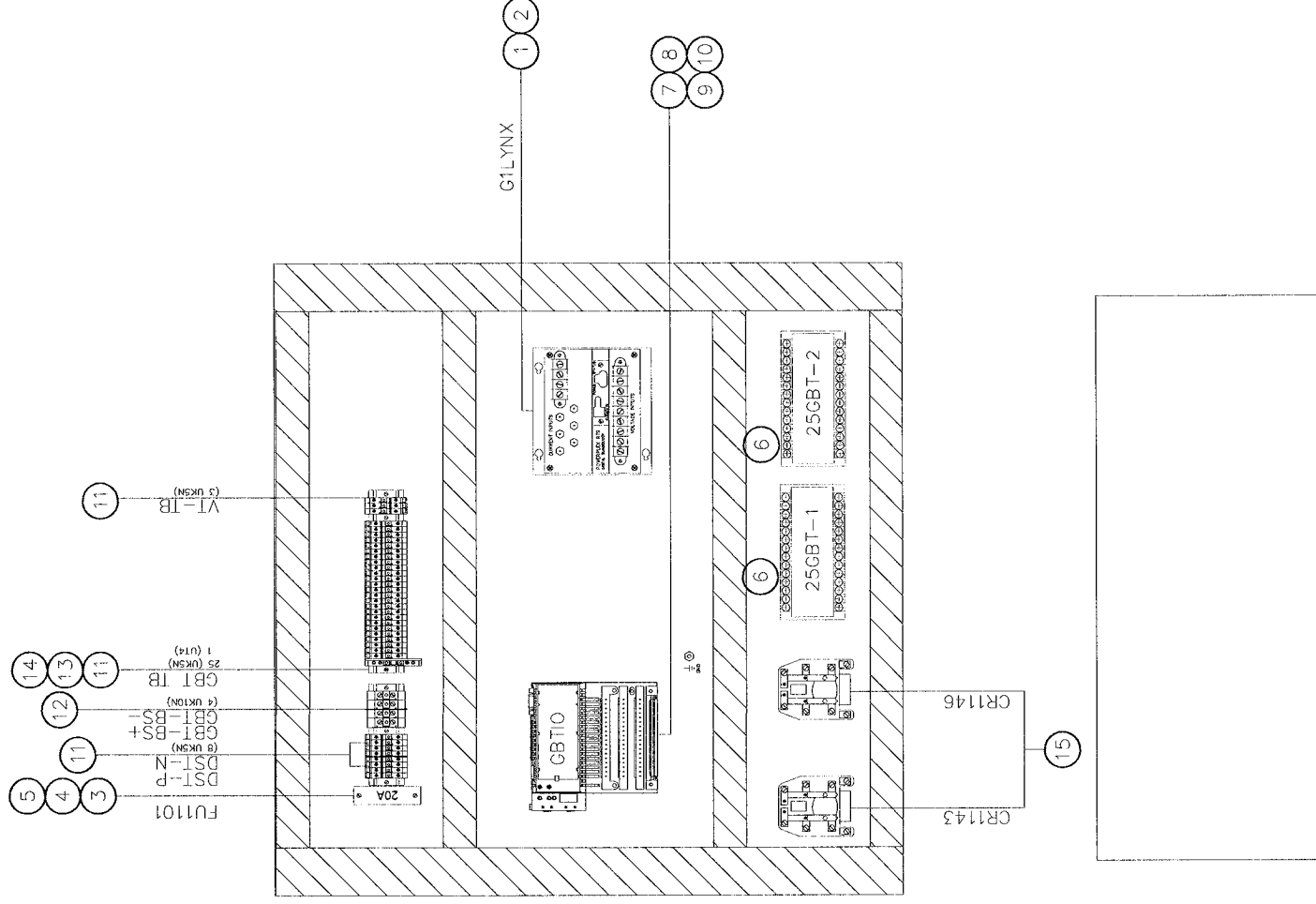
G-A04





BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08MS-07
3	1	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	1	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE 5A	BUSSMAN	KTK-R-5
6	2	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBX-C6
7	1	MODULE 16 PT I/O 24VDC	MODICON	170 ADM 850 10
8	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
9	1	CP M1 256K RAM	MODICON	171 CCS 760 00
10	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
11	36	TB UK5N	PHOENIX	3004362
12	4	UK10 N	PHOENIX	3005073
13	1	TB UT4-MTD	PHOENIX	3046184
14	1	TB UT4-END	PHOENIX	3047141
15	2	DPDT RELAY-24VDC-HD	TYCO/PB	PRD-11HD0-24

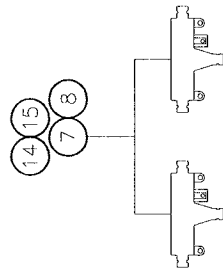


NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP GEN BOARD (E-200)</b> <b>SUBPAN ASSEMBLY - SECT 3A</b>	
4.16KV GENERATOR PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-G-A05	SCALE 1/8"=1"
DATE CREATED 05-18-06	
DATE MODIFIED 06-06-06	
SHEET NUMBER 5 of 11	
<b>G-A05</b>	



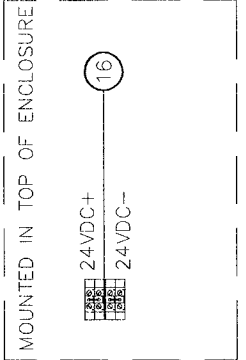
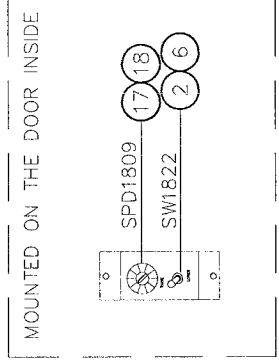
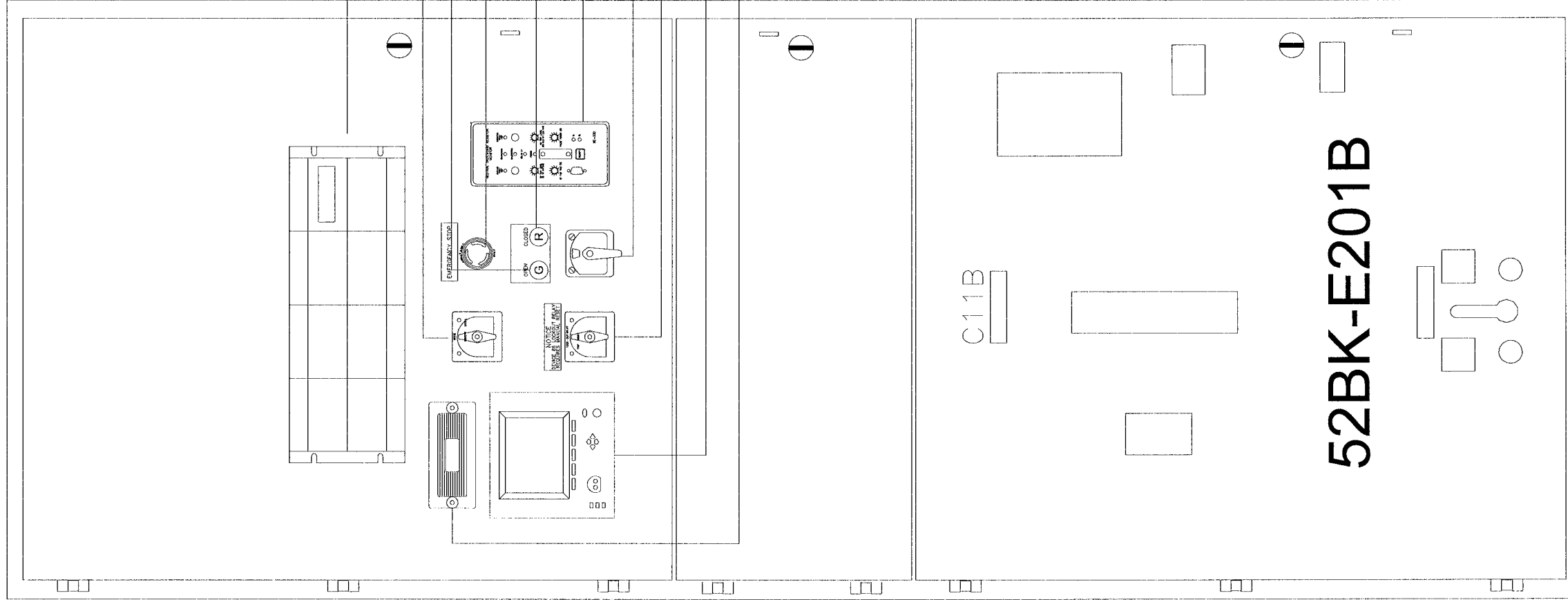
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SECT 4

BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	129A514G01
2	1	POT MOUNTING BRACKET	ACCUFAB	30000-M36
3	1	2 N.O. CONTACT W/BASE	ALLEN BRADLEY	800E-2LX20
4	1	SHROUD	ALLEN BRADLEY	800E-AMRG
5	1	SWITCH ESTOP_PB	ALLEN BRADLEY	800EM-MT4
6	1	SWITCH 2 POS SEL	ALLIED	757-79i0
7	4	SUPPRESSOR SPLIT FERRITE	API DELEVAN	BF2930
8	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CFT-14.2*6.35X28.5
9	1	MODE 2-POSITION	ELECTROSWITCH	242028
10	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	74092QF
11	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
12	1	G60 GEN MANAGEMENT RELAY	GE	G60-
13	1	POWER METER	ION	P7550B0N90D1ADA
14	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
15	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
16	6	UK10 N	PHOENIX	3005073
17	1	POT MULTIDIAL SPEED	SPECTROL	11 1 11
18	1	POT 2KOHM SPEED	SPECTROL	534-1-1-202
19	1	NGR MONITOR	STARTCO	SE330-00-00
20	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
21	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
22	1	BASE GREEN PL	TELEMECANIQUE	ZB4BV83
23	1	BASE RED PL	TELEMECANIQUE	ZB4BV84
24	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LBL-86LOCKOUT-RED

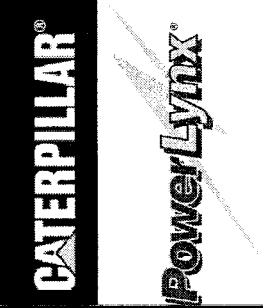


NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY	SCALE	REV.	REV.
RAM	1/8"=1"	0.2	
DATE APPROVED	05-22-06		
FILE NAME	35701-G-A06		

TITLE	DRAWN BY	MODIFIED BY
CITY OF WINNIPEG WTP GEN BOARD (E-200)	GLG	
DOOR ASSEMBLY - SECT 4	DATE CREATED	DATE MODIFIED
4.16KV GENERATOR PARALLELING SWITCHGEAR	05-18-06	
	SHEET NUMBER	of
	6	11

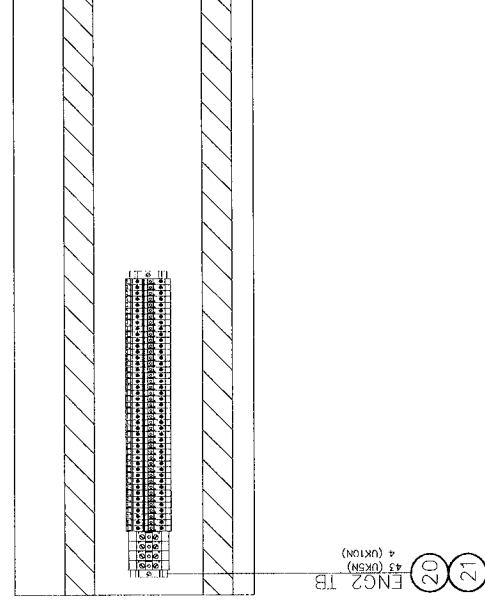
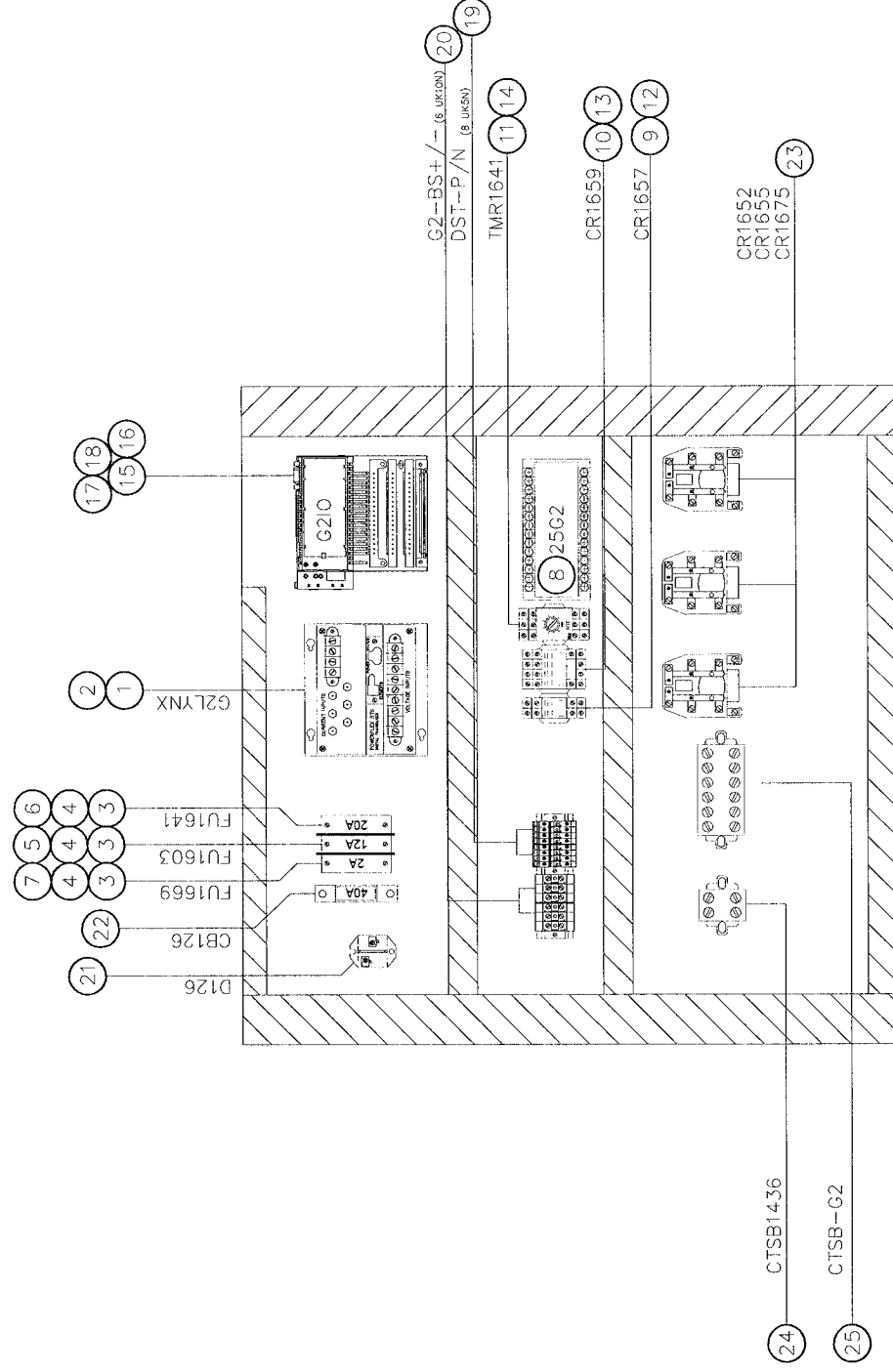
G-A06



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**BILL OF MATERIALS**

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VDI0-S500-MB
2	1	RJ45 4 RIBBON CABLE	BLACK BOX	EL08MS-07
3	3	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	3	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-12A 200KAIC	BUSSMAN	FNQ-R-12
6	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
7	1	FUSE 2A	BUSSMAN	KTK-R-2
8	1	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBX-C6
9	1	DPDT RELAY-24VDC IND	IDEC	RH2B-ULDC24V
10	1	4PDT RELAY 24VDC IND	IDEC	RH4B-ULDC 24V
11	1	RELAY INTERVAL TIMER 24V	IDEC	RTE-BTAD24
12	1	DPDT RELAY BASE	IDEC	SH2B-05
13	1	4PDT RELAY BASE	IDEC	SH4B-05
14	1	BASE TIMER RELAY	IDEC	SR3B-05
15	1	ANALOG/DIGITAL 16 PT I/O 24VDC	MODICON	170 AMM 110 30
16	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
17	1	CP M1 512K RAM	MODICON	171 CCC 780 10
18	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
19	51	TB UK5N	PHOENIX	3004362
20	10	UK10 N	PHOENIX	3005073
21	1	DIODE 100A	PHOENIX	3005073
22	1	CB 1P 40A	POWEREX	CS241210
23	3	DPDT RELAY-24VDC HD	SIEMENS	5SX2140-8
24	1	SHORTING BLOCK 2 POLE +COVER	TYCO/PB	PRD-11HD0-24
25	1	SHORTING BLOCK 6 POLE +COVER	USD	KUSC2WC
			USD	KUSC6WC



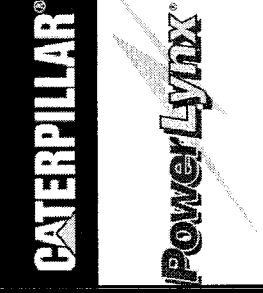
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

**TITLE:**  
**CITY OF WINNIPEG WTP GEN BOARD (E-200)**  
**SUBPAN ASSEMBLY - SECT 4A**

**4.16KV GENERATOR PARALLELING SWITCHGEAR**

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
RAM	1/8"=1"	0.2	GLG	
DATE APPROVED	DATE CREATED	DATE MODIFIED	SHEET NUMBER	of
05-22-06	05-18-06		7	11
FILE NAME				
35701-G-A07				

**G-A07**

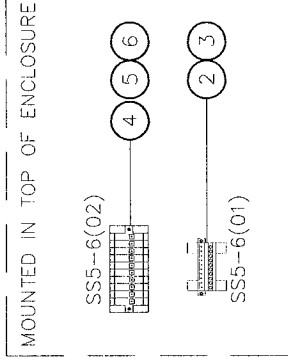
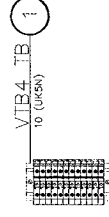
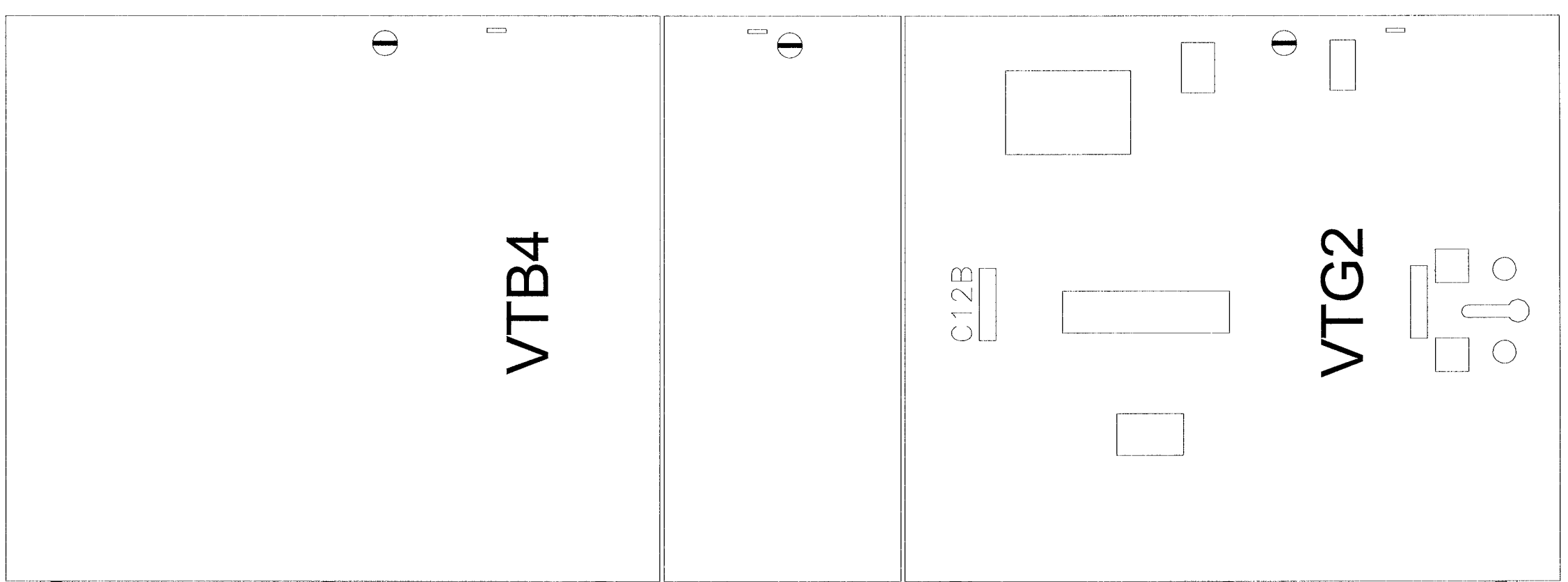


BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	10	TB UK5N	PHOENIX	3004362
2	1	PLUG SHIPPING SPLIT	PHOENIX	17 78 06 9
3	1	BASE SHIPPING SPLIT	PHOENIX	17 88 00 4
4	1	PLUG SHIPPING SPLIT 10 POSITION	PHOENIX	18 28 32 0
5	10	TB SHIPPING SPLIT SINGLE	PHOENIX	18 49 99 8
6	1	TB SHIPPING SPLIT SINGLE FLANGE	PHOENIX	18 50 00 0

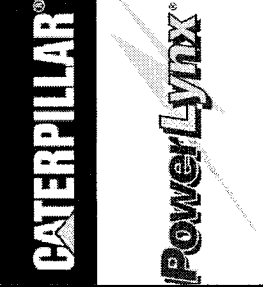
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SPLIT

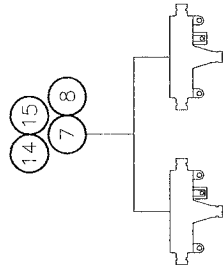
SECT 5



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP GEN BOARD (E-200)</b> <b>DOOR ASSEMBLY - SECT 5</b>	
APPROVED BY <b>RAM</b>	REV. 0.2
DATE APPROVED 05-22-06	SCALE 1/8"=1"
FILE NAME 35701-G-A08	DRAWN BY GLG
	DATE CREATED 05-18-06
	DATE MODIFIED
	SHEET NUMBER 8 of 11

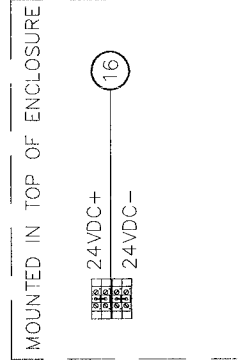
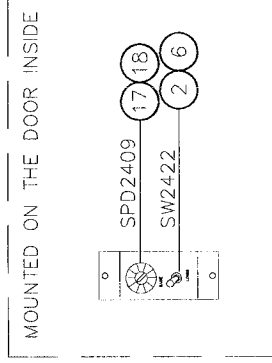
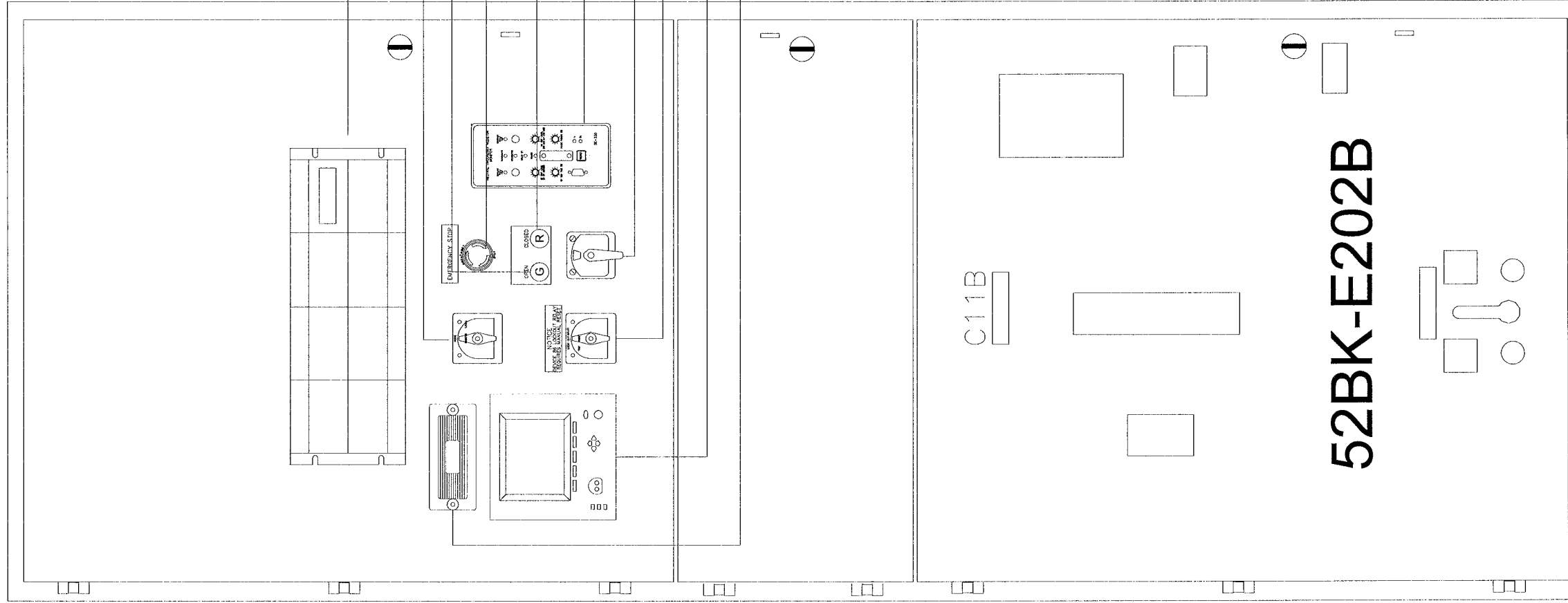




SECT 6

BILL OF MATERIALS

NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	TEST SWITCH 10-POLE	ABB	J29A514G01
2	1	POT MOUNTING BRACKET	ACCUFAB	30000-M36
3	1	2 N.O. CONTACT W/BASE	ALLEN BRADLEY	800E-2LX20
4	1	SHROUD	ALLEN BRADLEY	800E-AMRG
5	1	SWITCH ESTOP PB	ALLEN BRADLEY	800EM-MT4
6	1	SWITCH 2 POS SEL	ALLIED	757-7910
7	4	SUPPRESSOR SPLIT-FERRITE	API DELEVAN	BF2930
8	2	SUPPRESSOR CYLINDRICAL FERRITE	API DELEVAN	CF1-14.2*6.35X28.5
9	1	MODE 2-POSITION	ELECTROSWITCH	24202B
10	1	CIRCUIT BREAKER CONTROL SWITCH	ELECTROSWITCH	74092QF
11	1	PRLY 86-3 CONT 24VDC	ELECTROSWITCH	7803B
12	1	G60 GEN MANAGEMENT RELAY	GE	G60-
13	1	POWER METER	ION	P7550B0N9C9D1A0A
14	2	CABLE DROP MODBUS	MODICON	990 NAD 211 10
15	2	TAP MODBUS PLUS	MODICON	990 NAD 230 00
16	6	UK10 N	PHOENIX	3005073
17	1	POT MULTIDIAL SPEED	SPECTROL	11 1 11
18	1	POT 2KOHM SPEED	SPECTROL	534-1-1-202
19	1	NGR MONITOR	STARTCO	SE330-00-00
20	1	PL GREEN LED INDICATOR	TELEMECANIQUE	ZB4BV033
21	1	PL RED LED INDICATOR	TELEMECANIQUE	ZB4BV043
22	1	BASE GREEN PL	TELEMECANIQUE	ZB4BVB3
23	1	BASE RED PL	TELEMECANIQUE	ZB4BVB4
24	1	86 LOCKOUT NAMEPLATE	WD ENGRAVING	LB1-86LOCKOUT-RED



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

APPROVED BY <i>RAM</i>		SCALE 1/8"=1"	REV. 0.2	DRAWN BY GLG	MODIFIED BY
DATE APPROVED 05-22-06	FILE NAME 35701-G-A09	DATE CREATED 05-18-06		DATE MODIFIED	
SHEET NUMBER 9		of		11	

TITLE:  
CITY OF WINNIPEG WTP GEN BOARD (E-200)

DOOR ASSEMBLY - SECT 6

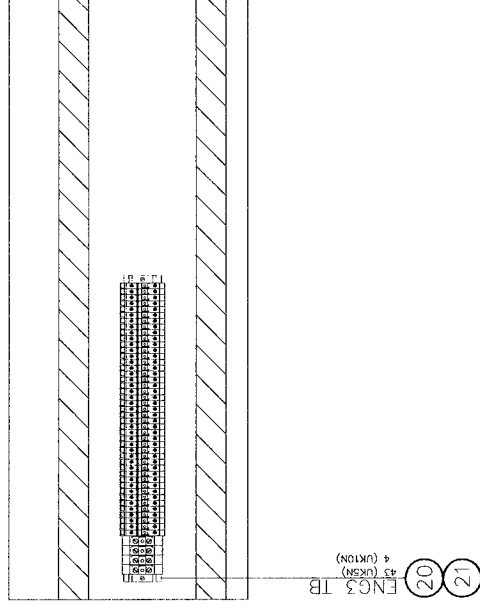
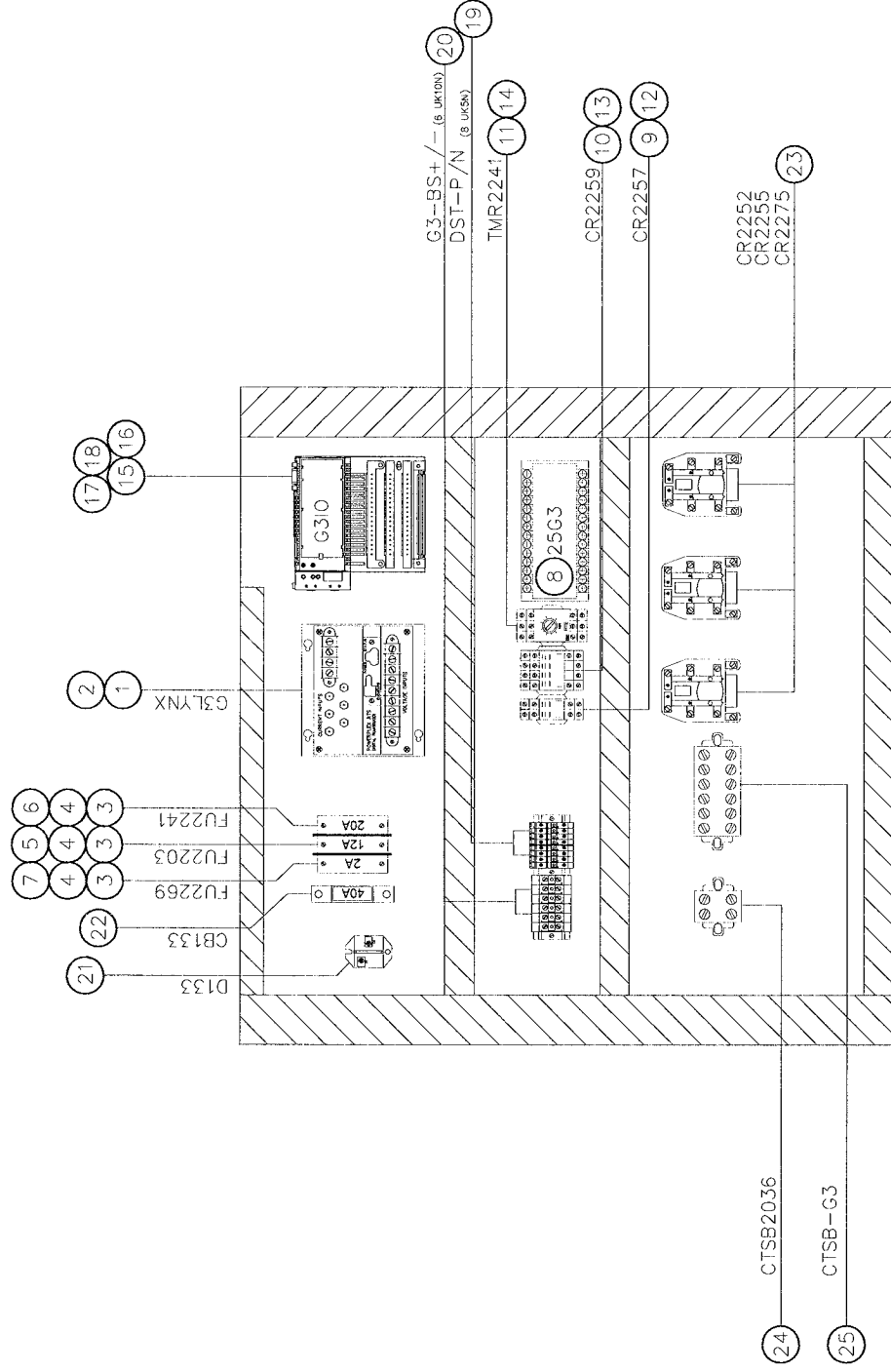
4.16KV GENERATOR PARALLELING SWITCHGEAR



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**BILL OF MATERIALS**

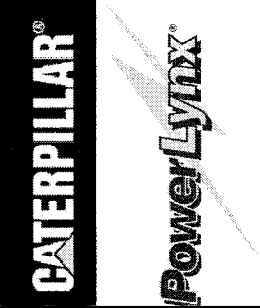
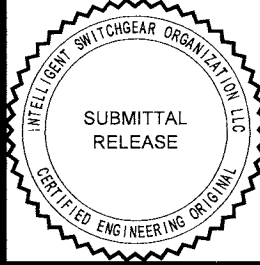
NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	1	POWERLYNX SYNCHRONIZING BLOCK MB	BITRONICS	MTWIN4B-VD10-S500-MB
2	1	RJ45 4' RIBBON CABLE	BLACK BOX	EL08MS-07
3	3	FUSE BLOCK 1 POLE	BUSSMAN	BC6031PQ
4	3	ADAPTER FUSE BLOCK DIN RAIL	BUSSMAN	DRA1
5	1	FUSE FNQ-R-12A 200KAIC	BUSSMAN	FNQ-R-12
6	1	FUSE FNQ-R-20A 200KAIC	BUSSMAN	FNQ-R-20
7	1	FUSE 2A	BUSSMAN	KTK-R-2
8	1	25-120VAC WITH DEAD BUS	CROMPTON	256-PLDU-PQBX-C6
9	1	DPDT RELAY-24VDC IND	IDEC	RH2B-ULDC24V
10	1	4PDT RELAY 24VDC IND	IDEC	RH4B-ULDC 24V
11	1	RELAY INTERVAL TIMER 24V	IDEC	RTE-B1AD24
12	1	DPDT RELAY BASE	IDEC	SH2B-05
13	1	4PDT RELAY BASE	IDEC	SH4B-05
14	1	BASE TIMER RELAY	IDEC	SR3B-05
15	1	ANALOG/DIGITAL 16 PT I/O 24VDC	MODICON	170 AMM 110 30
16	1	CONNECTOR SCREW-TYPE	MODICON	170 XTS 001 00
17	1	CP M1 512K RAM	MODICON	171 CCC 780 10
18	1	ADAPTER MB+ COM PORT OPT	MODICON	172 PNN 210 22
19	51	TB UK5N	PHOENIX	3004362
20	10	UK10 N	PHOENIX	3005073
21	1	DIODE 100A	POWEREX	CS241210
22	1	CB 1P 40A	SIEMENS	5SX2140-8
23	3	DPDT RELAY-24VDC HD	TYCO/PB	PRD-11HD0-24
24	1	SHORTING BLOCK 2 POLE +COVER	USD	KUSC2WC
25	1	SHORTING BLOCK 6 POLE +COVER	USD	KUSC6WC



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: **CITY OF WINNIPEG WTP GEN BOARD (E-200)**  
**SUBPAN ASSEMBLY - SECT 6A**  
 4.16KV GENERATOR PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
<i>RAM</i>	1/8"=1"	0.2	GLG	
DATE APPROVED	FILE NAME		DATE CREATED	DATE MODIFIED
05-22-06	35701-G-A10		05-16-06	
			SHEET NUMBER	
			10	11

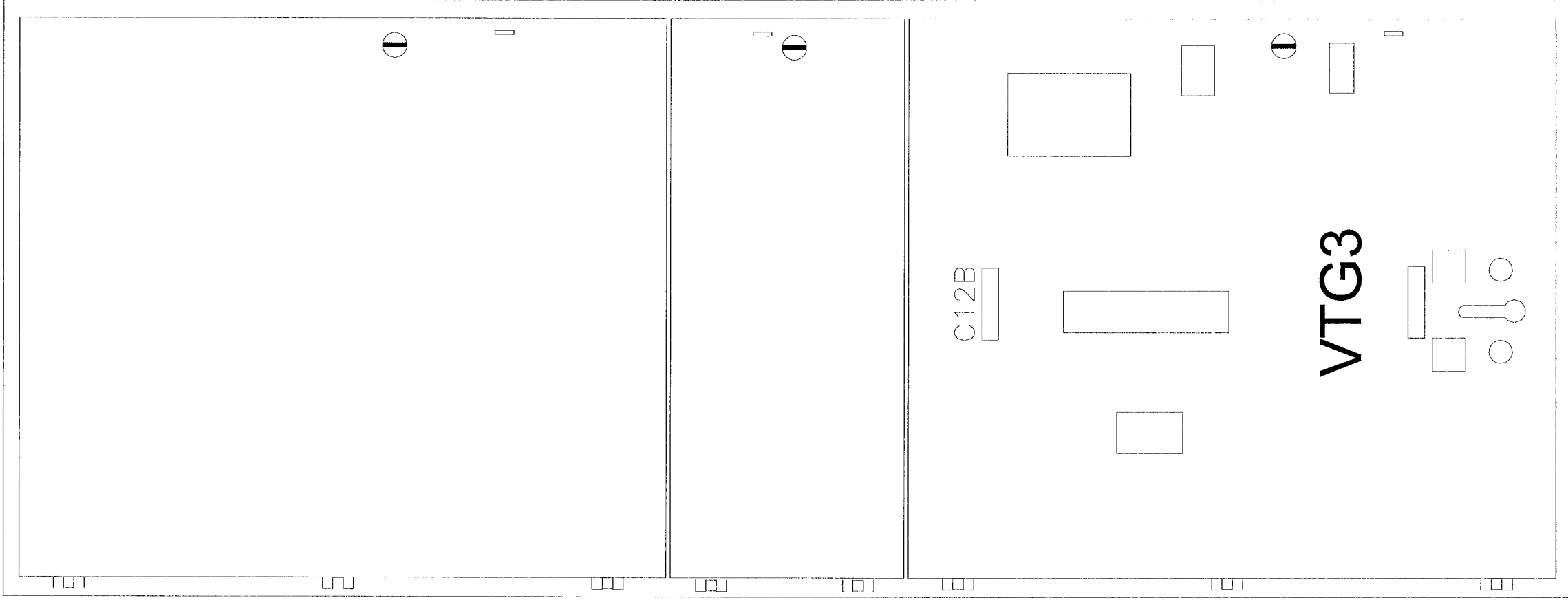


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BILL OF MATERIALS

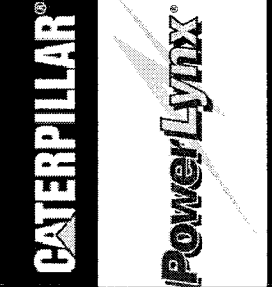
NO	QTY	DESCRIPTION	MFG	PART NUMBER
1	12	1B UK5N	PHOENIX	3004362

SECT 7



NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-11-06

TITLE: <b>CITY OF WINNIPEG WTP GEN BOARD (E-200)</b> <b>DOOR ASSEMBLY - SECT 7</b>	
APPROVED BY <i>RAM</i>	DRAWN BY GLG
DATE APPROVED 05-22-06	REV. 0.2
FILE NAME 35701-G-A11	MODIFIED BY GLG
G-A11	DATE CREATED 05-18-06
11	DATE MODIFIED 05-18-06
11	SHEET NUMBER 11
of	11



# SUBMITTAL DRAWING SET

## CITY OF WINNIPEG WTP

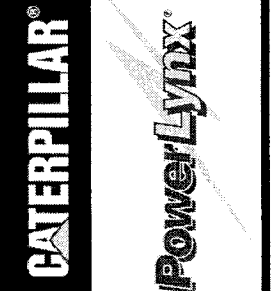
DUGALD, MB

GEN BOARD (E-200)

### 4.16kV GENERATOR / UTILITY PARALLELING SWITCHGEAR

TOROMONT POWER SYSTEMS  
ISO PROJECT No. 35701

TABLE OF CONTENTS			
DESCRIPTION	SHEET	DESCRIPTION	SHEET
DC BEST SOURCE -- 1	G-W01	DOOR ASSEMBLY -- SECT 1	G-A01
AUTOMATION COMMUNICATIONS PLAN	G-W02	DOOR ASSEMBLY -- SECT 2	G-A02
BUS VOLTAGE -- 3	G-W03	SUBPAN ASSEMBLY -- SECT 2	G-A03
GENERATOR 1 (52BK-E201A) -- AC INSTRUMENTATION 1	G-W04	DOOR ASSEMBLY -- SECT 3	G-A04
GENERATOR 1 (52BK-E201A) -- AC INSTRUMENTATION 2	G-W05	SUBPAN ASSEMBLY -- SECT 3	G-A05
GENERATOR 1 (52BK-E201A) -- CONTROLS	G-W06	DOOR ASSEMBLY -- SECT 4	G-A06
GENERATOR 1 (52BK-E201A) -- CB INTERFACE	G-W07	SUBPAN ASSEMBLY -- SECT 4	G-A07
GENERATOR 1 (52BK-E201A) -- ANALOG I/O	G-W08	DOOR ASSEMBLY -- SECT 5	G-A08
GENERATOR 1 (52BK-E201A) -- PROTECTIVE CONTROLS	G-W09	DOOR ASSEMBLY -- SECT 6	G-A09
GBT (52BK-E200C) -- AC INSTRUMENTATION	G-W10	SUBPAN ASSEMBLY -- SECT 6	G-A10
GBT (52BK-E200C) -- CONTROLS	G-W11	DOOR ASSEMBLY -- SECT 7	G-A11
GBT (52BK-E200C) -- CB INTERFACE	G-W12		
BUS VOLTAGE -- 4	G-W13		
GENERATOR 2 (52BK-E201B) -- AC INSTRUMENTATION 1	G-W14		
GENERATOR 2 (52BK-E201B) -- AC INSTRUMENTATION 2	G-W15		
GENERATOR 2 (52BK-E201B) -- CONTROLS	G-W16		
GENERATOR 2 (52BK-E201B) -- CB INTERFACE	G-W17		
GENERATOR 2 (52BK-E201B) -- ANALOG I/O	G-W18		
GENERATOR 2 (52BK-E201B) -- PROTECTIVE CONTROLS	G-W19		
GENERATOR 3 (52BK-E202B) -- AC INSTRUMENTATION 1	G-W20		
GENERATOR 3 (52BK-E202B) -- AC INSTRUMENTATION 2	G-W21		
GENERATOR 3 (52BK-E202B) -- CONTROLS	G-W22		
GENERATOR 3 (52BK-E202B) -- CB INTERFACE	G-W23		
GENERATOR 3 (52BK-E202B) -- ANALOG I/O	G-W24		
GENERATOR 3 (52BK-E202B) -- PROTECTIVE CONTROLS	G-W25		
FIBER OPTIC INTERCONNECT	G-W26		
SHIPPING SPLIT DETAIL	G-W27		



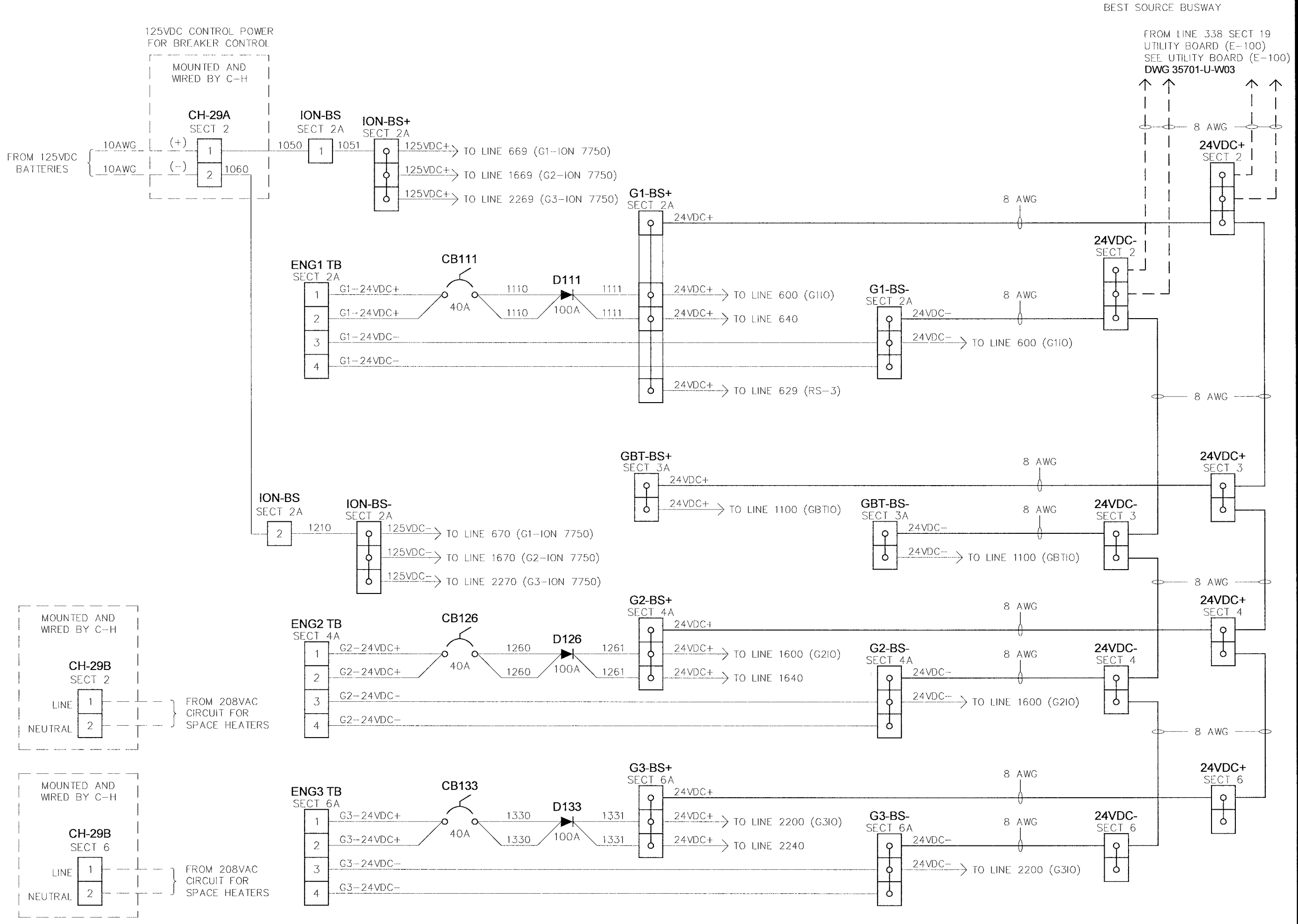
CITY OF WINNIPEG WTP GEN BOARD (E-200)		REV 0.2		DRAWN BY EM		MODIFIED BY	
TITLE SHEET		SCALE N.T.S.		DATE CREATED 05-01-06		DATE MODIFIED	
4.16KV GENERATOR PARALLELING SWITCHGEAR		REV 0.2		DATE MODIFIED		SHEET NUMBER	
APPROVED BY RAM		REV 0.2		DATE MODIFIED		SHEET NUMBER	
DATE APPROVED 08-09-06		REV 0.2		DATE MODIFIED		SHEET NUMBER	
FILE NAME 35701-G-TS		REV 0.2		DATE MODIFIED		SHEET NUMBER	
G-TS		REV 0.2		DATE MODIFIED		SHEET NUMBER	

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

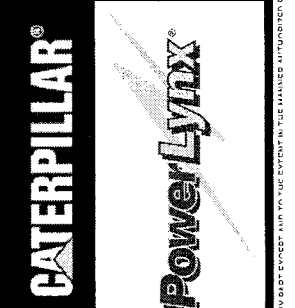
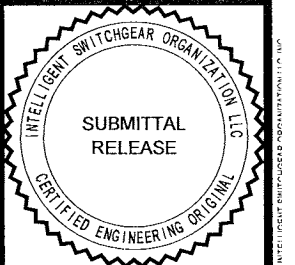
TOROMONT POWER SYSTEMS INC. 10000 15th Avenue S.W. Edmonton, Alberta T6C 0A8. TEL: 780-443-1111. FAX: 780-443-1112. WWW.TPS.COM



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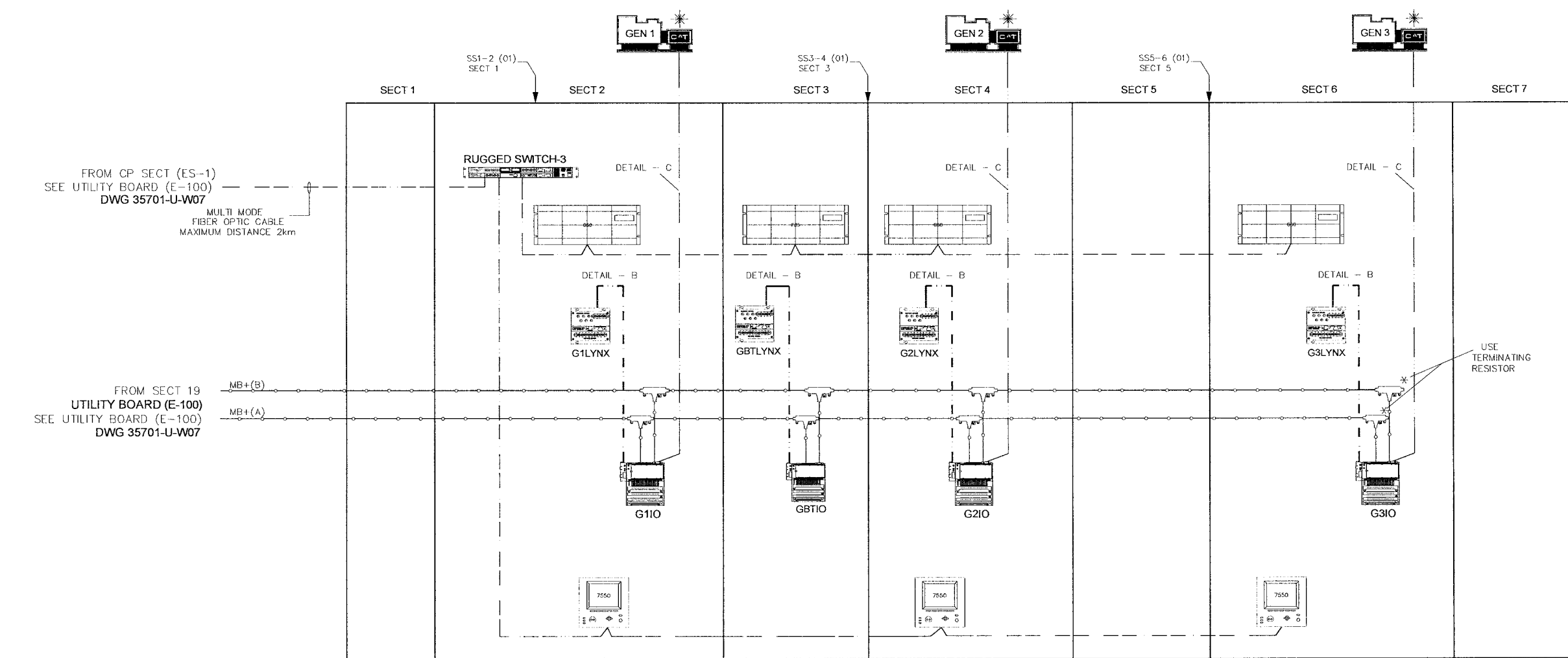


NOTE:  
ALL WIRING 10 AWG UNLESS OTHERWISE NOTED



CITY OF WINNIPEG WTP GEN BOARD (E-200)		TITLE	
24VDC BEST SOURCE - 1		SCALE N.T.S.	
4.16kV GENERATOR PARALLELING SWITCHGEAR		REV 0.2	REV 0.2
APPROVED BY	DATE APPROVED	DRAWN BY	DATE CREATED
RAM	08-09-06	EM	05-01-06
FILE NAME	35701-G-W01	MODIFIED BY	DATE MODIFIED
SHEET NUMBER	1	SHEET NUMBER	1
of	27	of	27
NO	REVISION	DATE	
0.0	ISSUED FOR SUBMITTAL	05-24-06	
0.1	REISSUED FOR SUBMITTAL	06-07-06	
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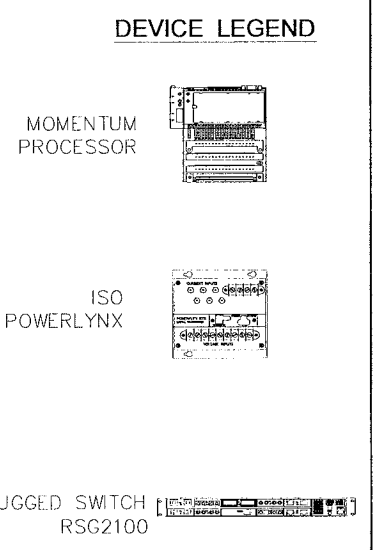
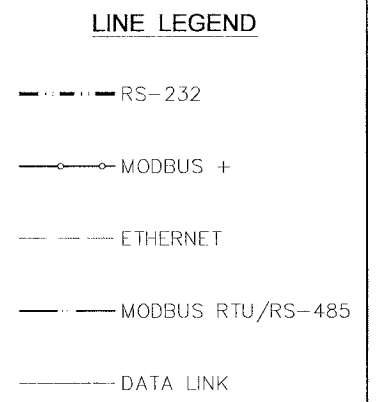
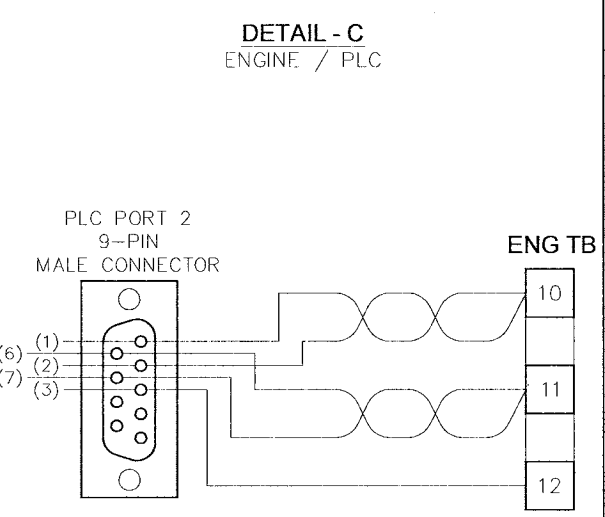
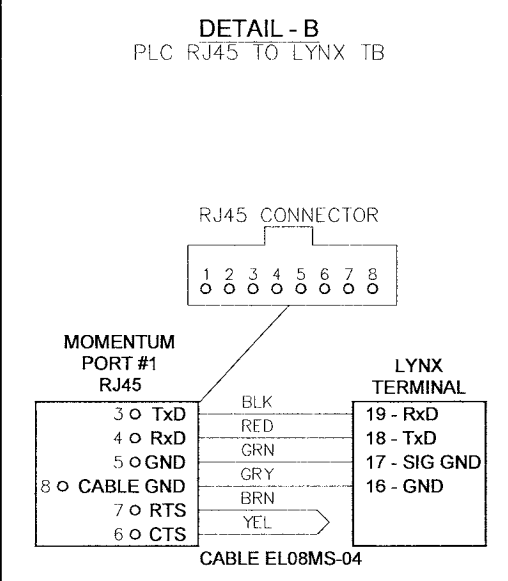
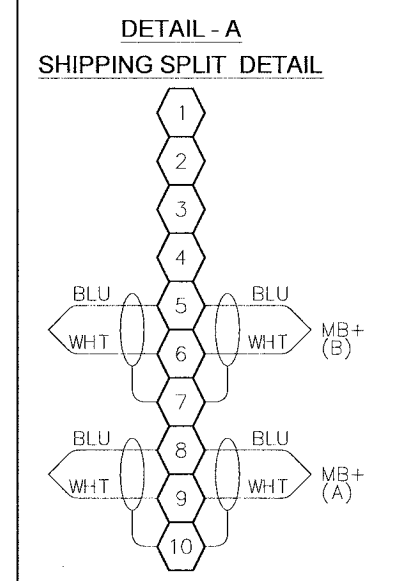


FROM CP SECT (ES-1)  
SEE UTILITY BOARD (E-100)  
DWG 35701-U-W07

MULTI MODE  
FIBER OPTIC CABLE  
MAXIMUM DISTANCE 2km

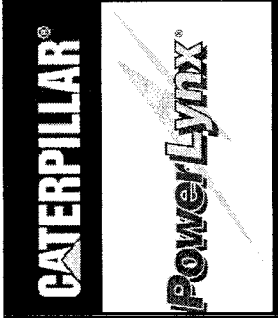
FROM SECT 19  
UTILITY BOARD (E-100)  
SEE UTILITY BOARD (E-100)  
DWG 35701-U-W07

★ SUPPLIED BY OTHERS



**NETWORK NODE ASSIGNMENTS**

MODBUS +	
DEVICE	NODE
G1IO	1
G1LYNX	00
G2IO	3
G2LYNX	00
G3IO	5
G3LYNX	00
GBTIO	21
GBTLYNX	00



**TITLE**  
CITY OF WINNIPEG WTP GEN BOARD (E-200)  
AUTOMATION COMMUNICATION PLAN - 1  
4.16KV GENERATOR PARALLELING SWITCHGEAR

**APPROVED BY** RAM  
**DATE APPROVED** 08-09-06  
**FILE NAME** 35701-G-W02

**SCALE** N.T.S.  
**REV** 0.2

**DRAWN BY** EM  
**DATE CREATED** 05-01-06  
**SHEET NUMBER** 2 of 27

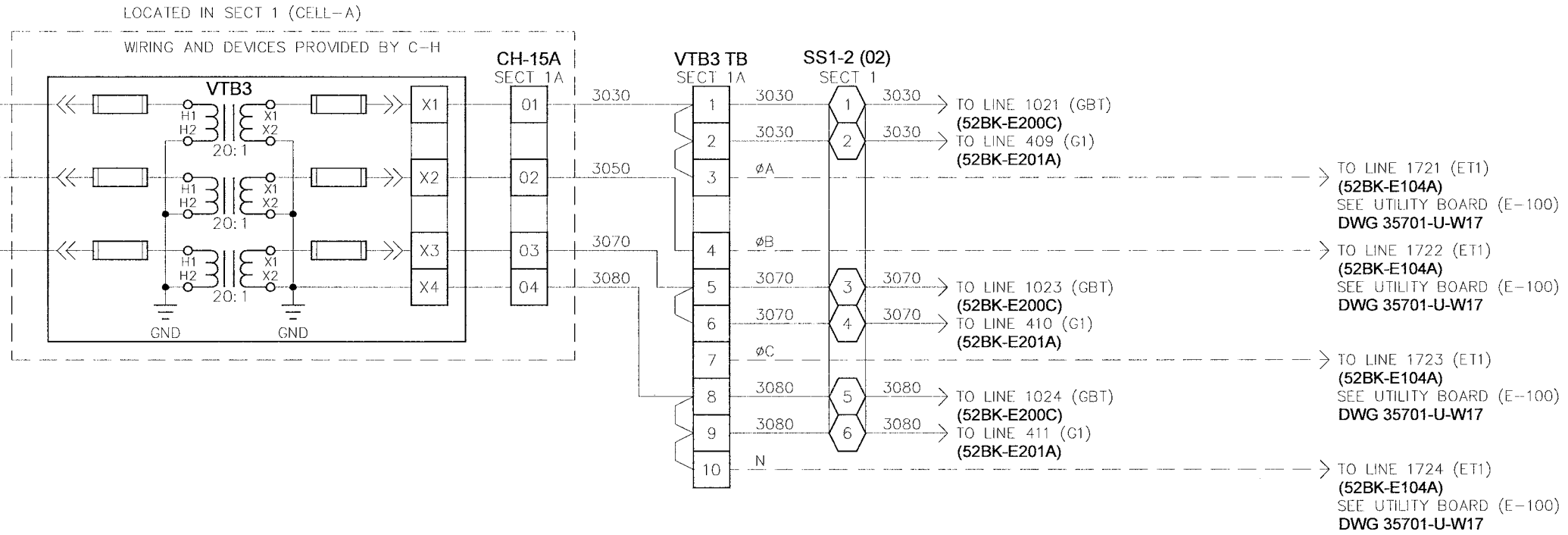
**MODIFIED BY**  
**DATE MODIFIED**

**REVISION**

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
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GEN MAIN BUS "A"



TITLE: CITY OF WINNIPEG WTP GEN BOARD (E-200)  
BUS VOLTAGE - 3  
4.16KV GENERATOR PARALLELING SWITCHGEAR

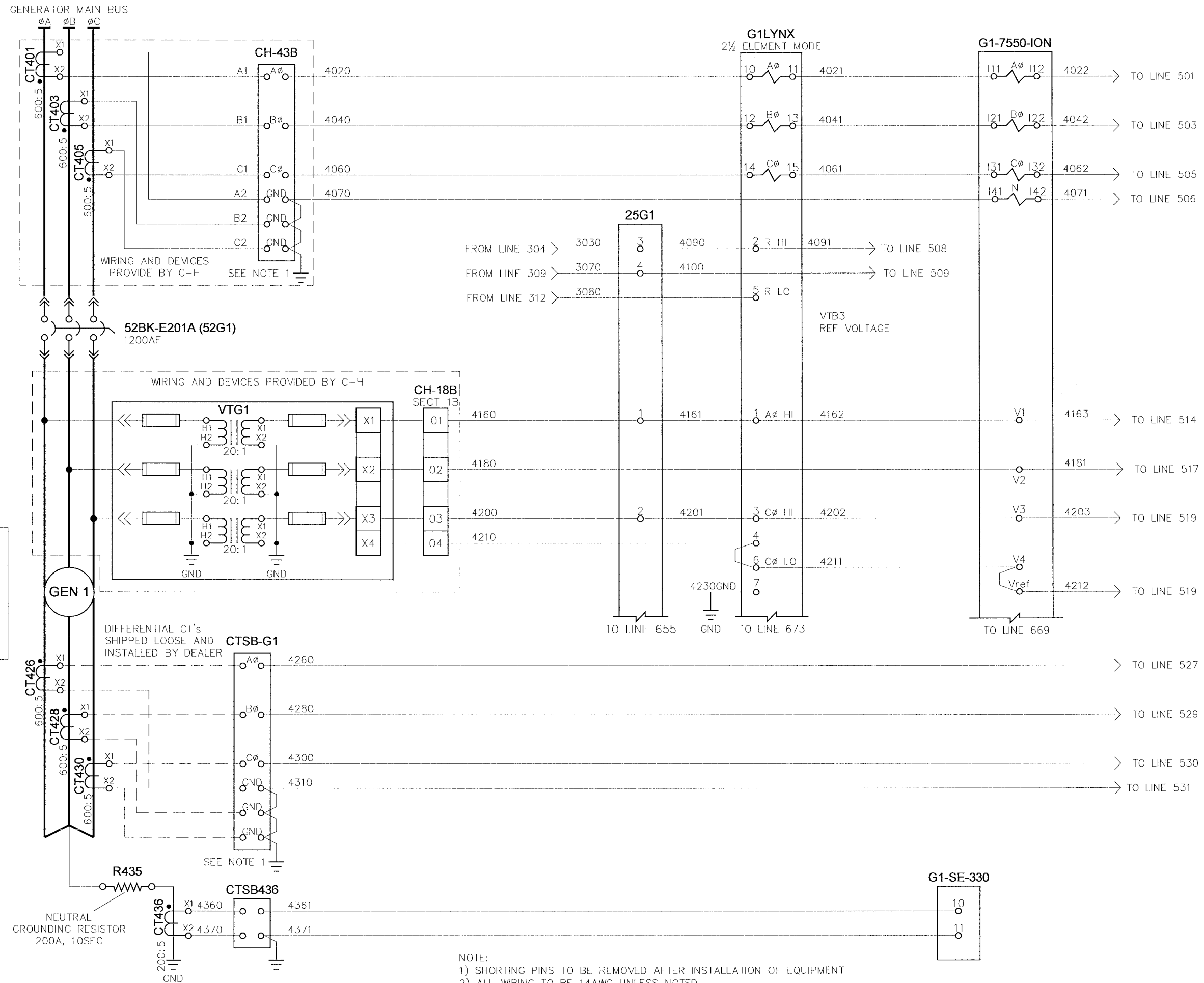
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RAM	N.T.S.	0.2	EM	
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-G-W03			3	27

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

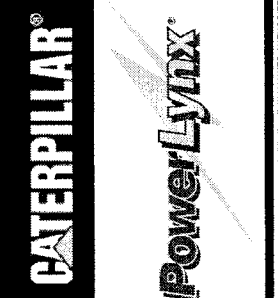
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GENERATOR STANDBY RATINGS	
ENG TYPE	4.16kV
	3φ 3W
	2000kW
	2500kVA
	347FLA
	0.8PF

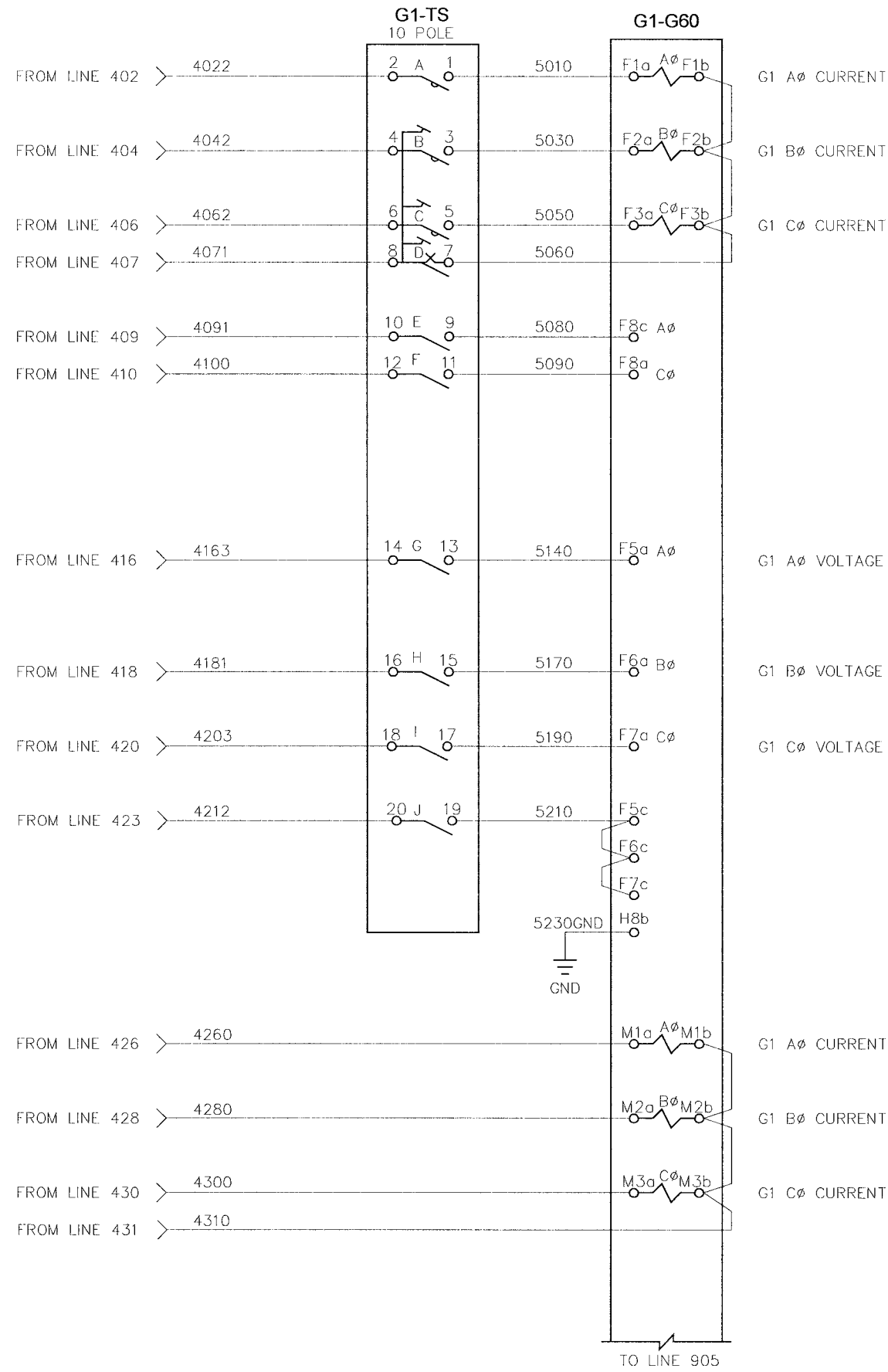
NOTE:  
1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
2) ALL WIRING TO BE 14AWG UNLESS NOTED.



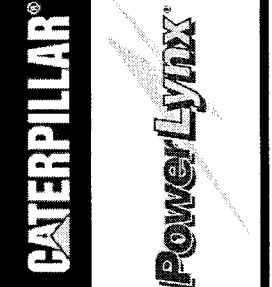
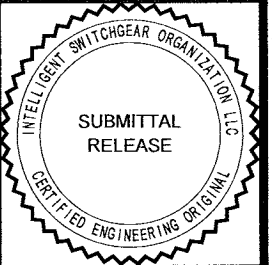
TITLE			
CITY OF WINNEPEG WTP GEN BOARD (E-200)			
GENERATOR 52G1 (52BK-E201A) - AC INSTRUMENTATION - 1			
4.16KV GENERATOR PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV	MODIFIED BY
RAM	N.T.S.	02	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	05-01-06	05-01-06	05-01-06
FILE NAME	SHEET NUMBER	of	
35701-G-W04	4	27	

NO	REVISION	DATE
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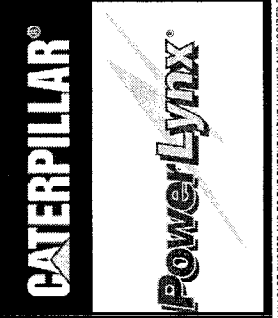
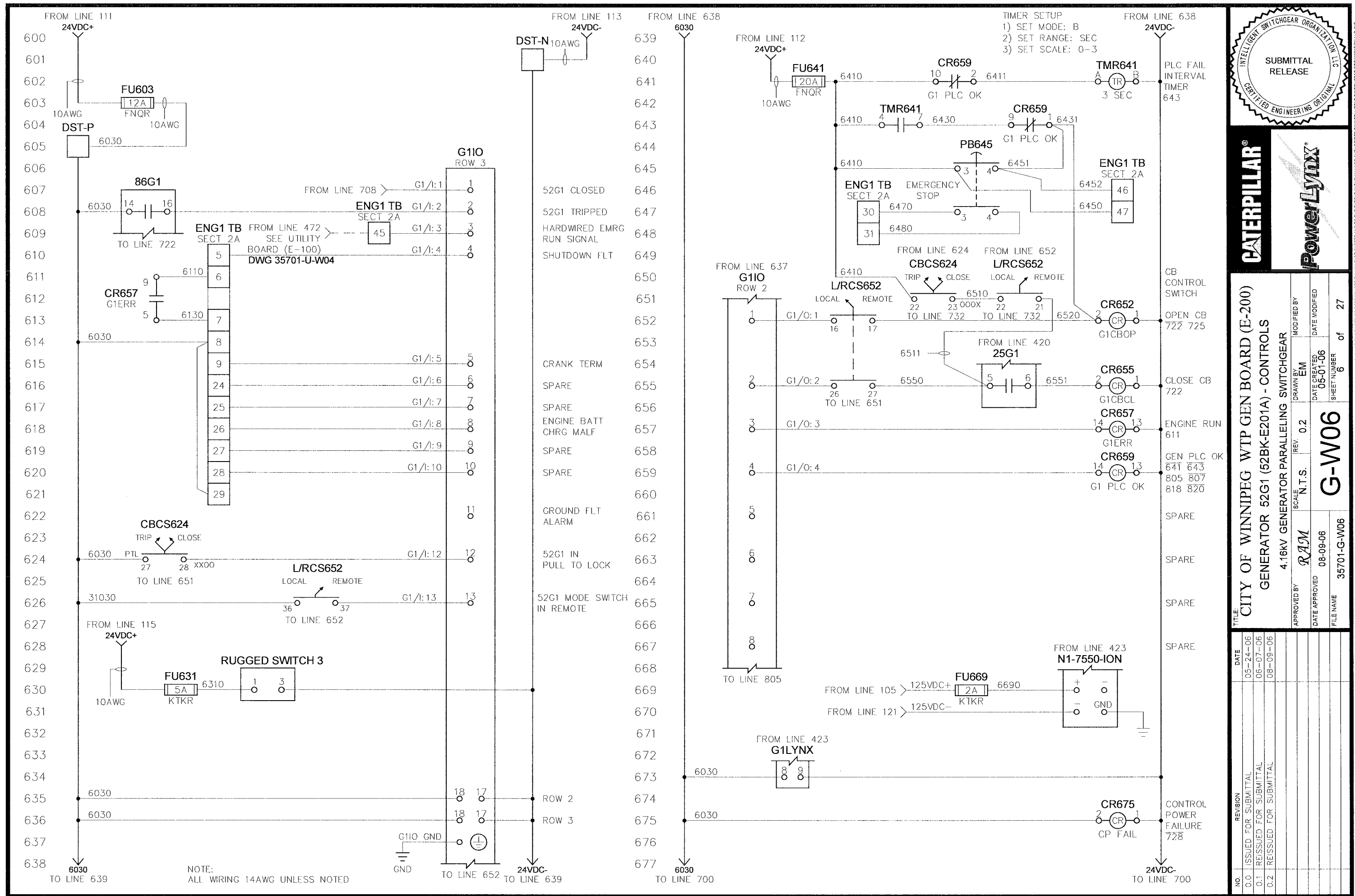


NOTE:  
1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
2) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) GENERATOR 52G1 (52BK-E201A) - AC INSTRUMENTATION - 2		<b>SCALE:</b> N.T.S.		<b>REV.:</b> 0.2	
<b>APPROVED BY:</b> RAM		<b>DATE APPROVED:</b> 08-09-06		<b>FILE NAME:</b> 35701-G-W05	
<b>APPROVED BY:</b> EM		<b>DATE APPROVED:</b> 05-01-06		<b>SHEET NUMBER:</b> 5 of 27	

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

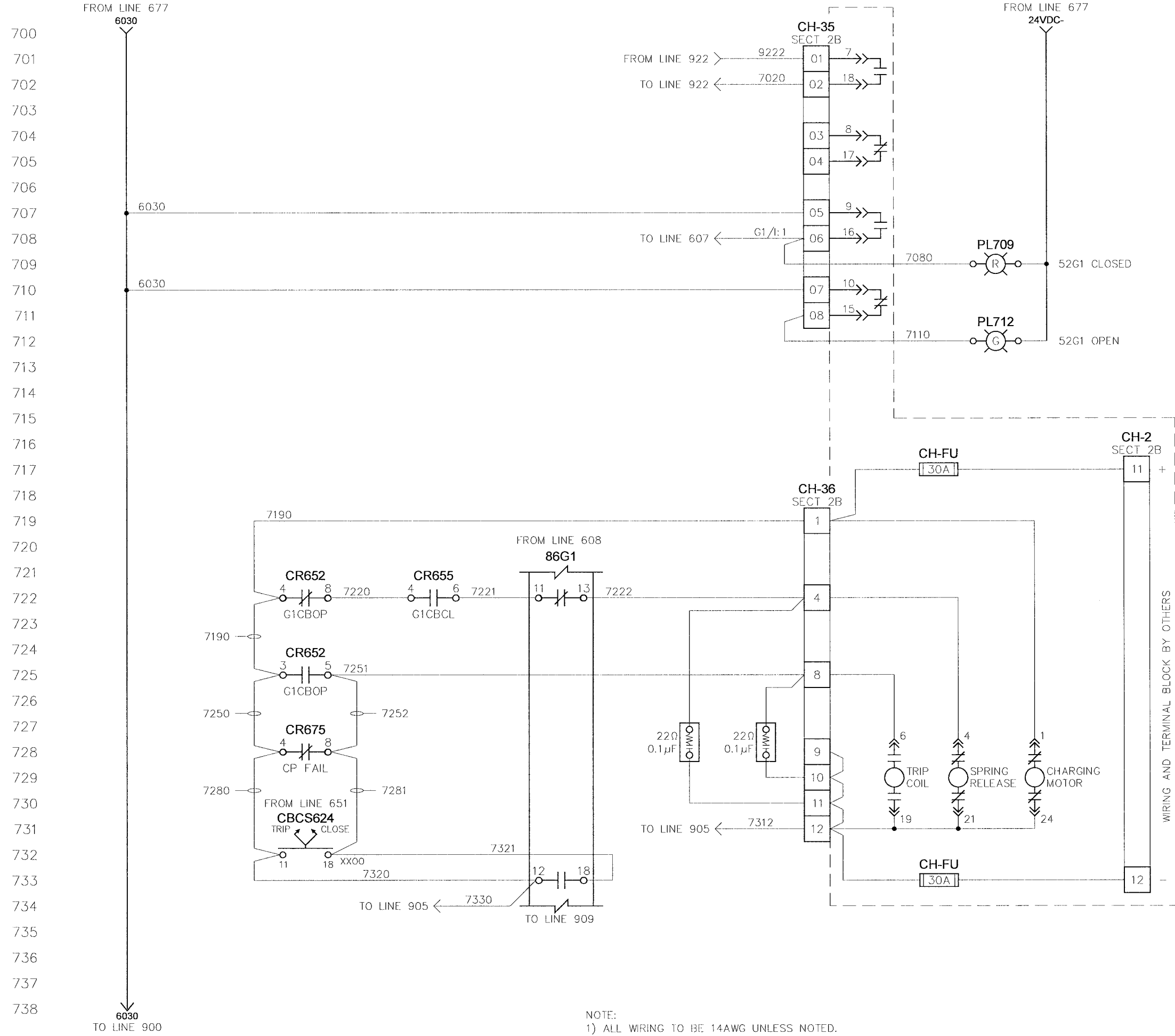


**TITLE:** CITY OF WINNIPEG WTP GEN BOARD (E-200)  
**GENERATOR 52G1 (52BK-E201A) - CONTROLS**  
**4.16KV GENERATOR PARALLELING SWITCHGEAR**

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	
DATE APPROVED	DATE CREATED	DATE MODIFIED	SHEET NUMBER	of
08-09-06	05-01-06		6	27
FILE NAME	35701-G-W06			

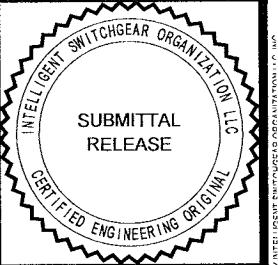
NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

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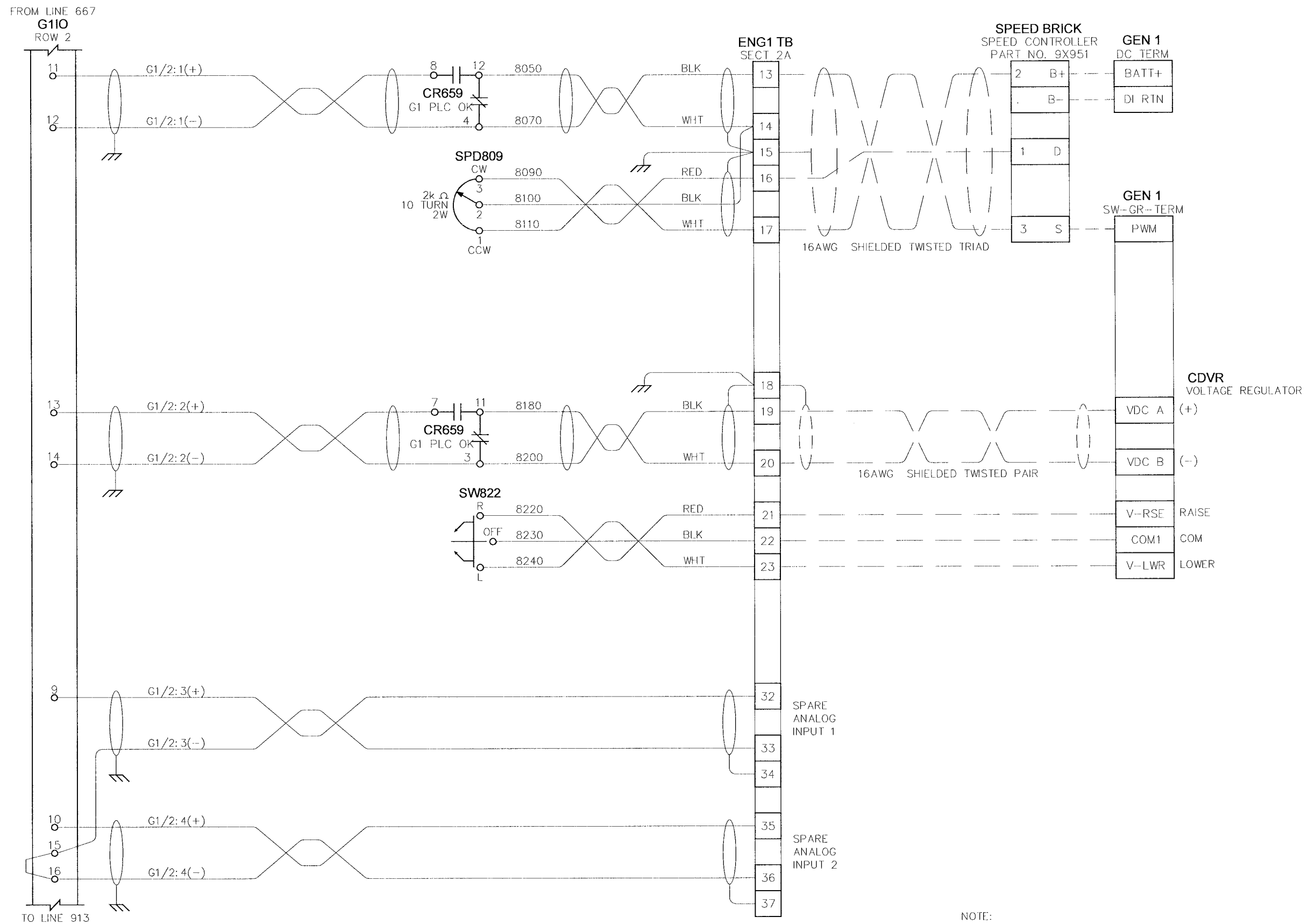
TITLE:  
CITY OF WINNIPEG WTP GEN BOARD (E-200)  
GENERATOR 52G1 (52BK-E201A) - CB INTERFACE  
4.16KV GENERATOR PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-G-W07			7	27

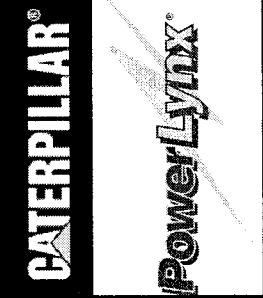
NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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NOTE:  
1) ALL WIRING TO BE 16AWG UNLESS NOTED.



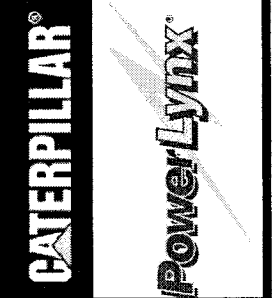
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APPROVED BY <b>RAM</b>	SCALE <b>N.T.S.</b>	DATE CREATED <b>06-01-06</b>	DATE MODIFIED  
DATE APPROVED <b>08-09-06</b>	SHEET NUMBER <b>8</b>	FILE NAME <b>35701-G-W08</b>	of <b>27</b>

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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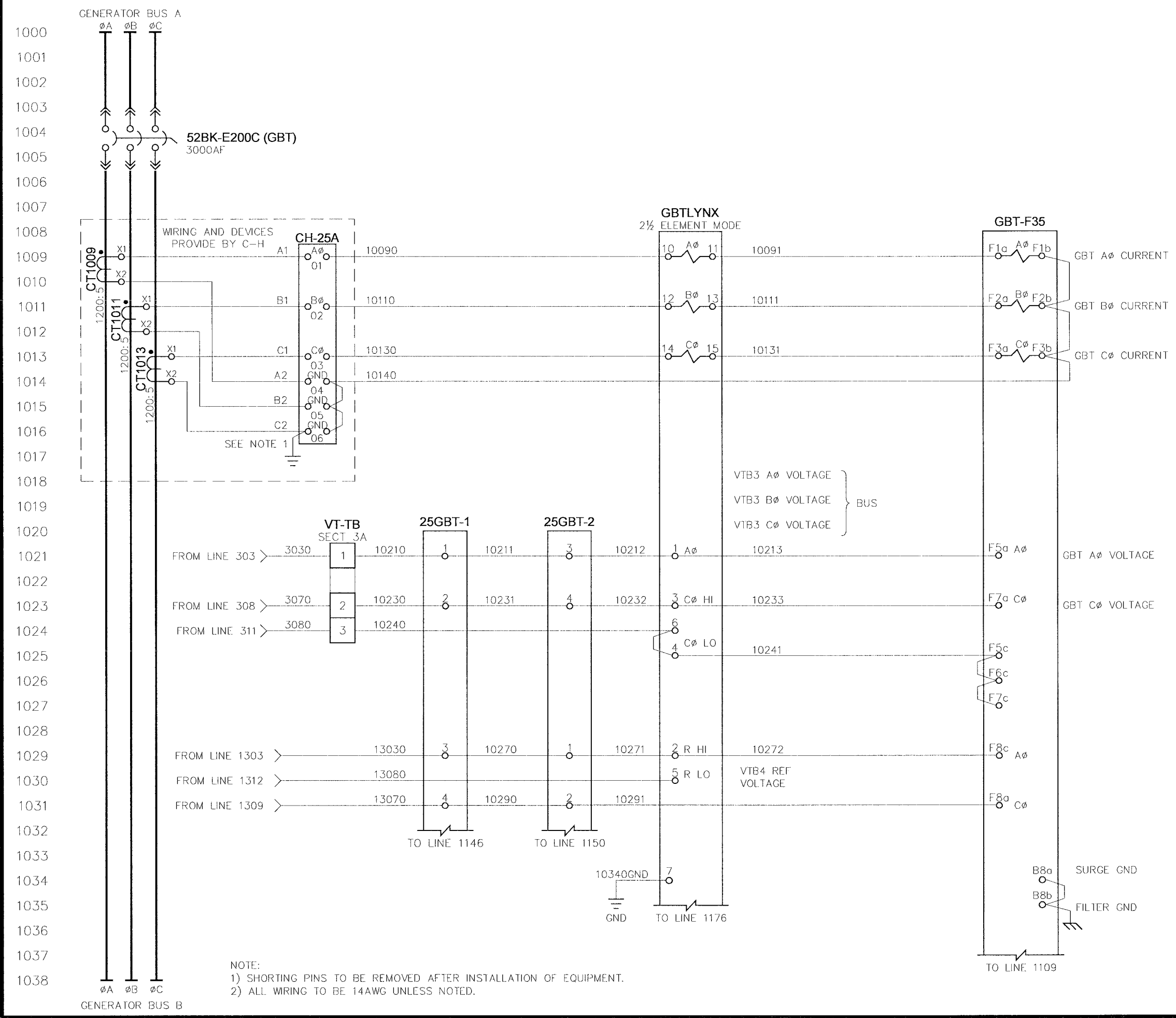






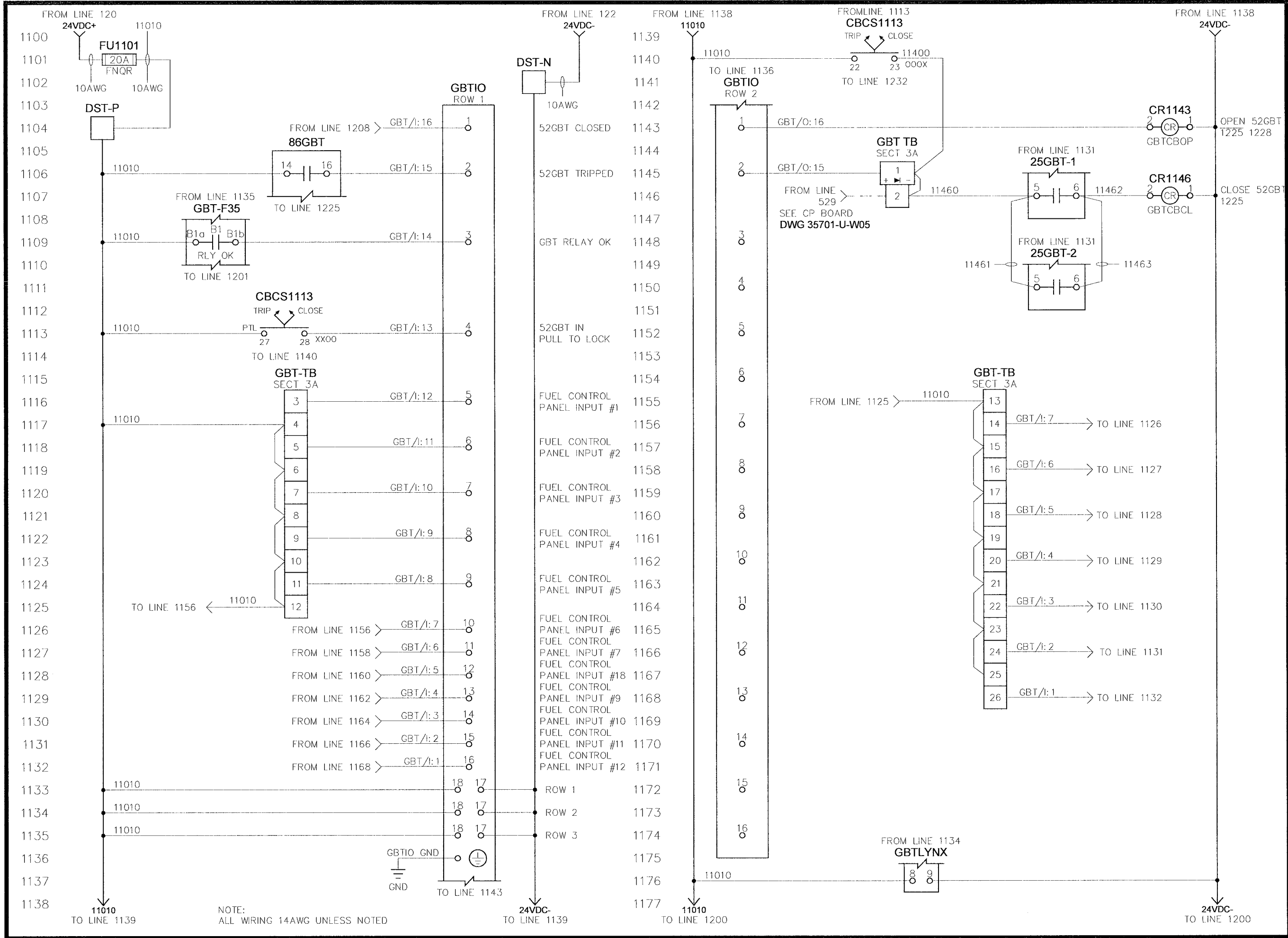
<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) GEN BUS TIE 52GBT (52BK-E200C) - AC INSTRUMENTAION		<b>SCALE:</b> N.T.S.		<b>REV:</b> 0.2		<b>MODIFIED BY:</b> EM	
<b>APPROVED BY:</b> <i>RAM</i>		<b>DATE APPROVED:</b> 08-09-06		<b>DATE CREATED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06	
<b>FILE NAME:</b> 35701-G-W10		<b>SHEET NUMBER:</b> 10		<b>of</b> 27		<b>REVISED BY:</b> EM	

NO	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

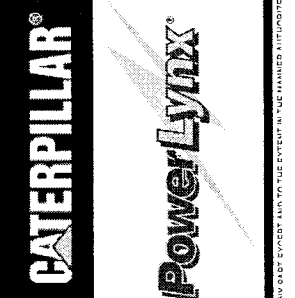
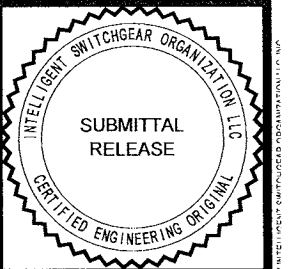


NOTE:  
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 2) ALL WIRING TO BE 14AWG UNLESS NOTED.

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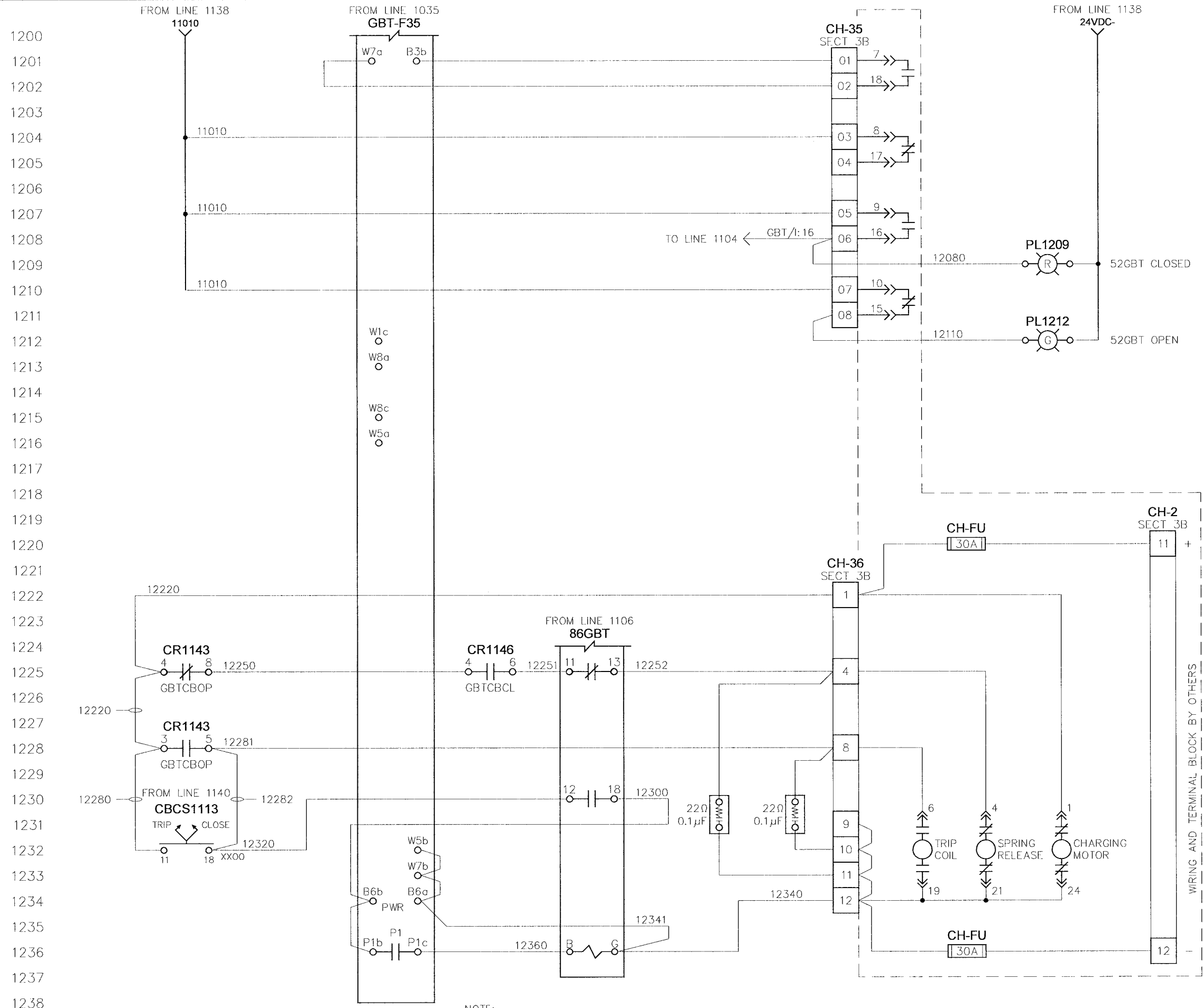
NOTE:  
ALL WIRING 14AWG UNLESS NOTED



TITLE		CITY OF WINNIPEG WTP GEN BOARD (E-200)	
REV		GEN BUS TIE 52GBT (52BK-E200C) - CONTROLS	
SCALE		4.16KV GENERATOR PARALLELING SWITCHGEAR	
APPROVED BY	REV	DRAWN BY	MODIFIED BY
RAM	0.2	EM	
DATE APPROVED	SCALE	DATE CREATED	DATE MODIFIED
08-09-06	N.T.S.	05-01-06	
FILE NAME		SHEET NUMBER	of
35701-G-W11		11	27

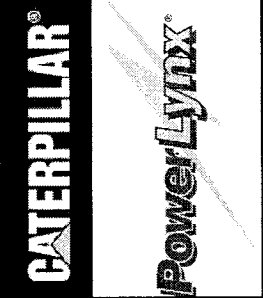
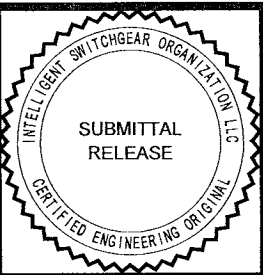
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



TITLE: CITY OF WINNIPEG WTP GEN BOARD (E-200)  
GEN BUS TIE 52GBT (52BK-E200C) - CB INTERFACE  
4.16KV GENERATOR PARALLELING SWITCHGEAR

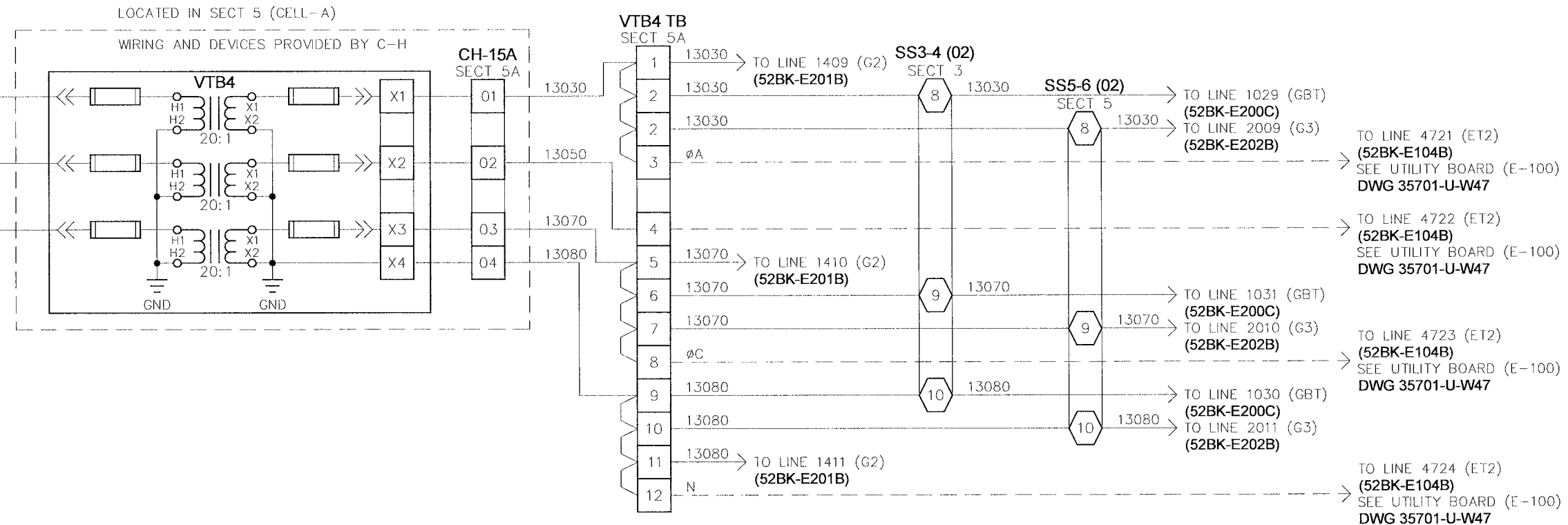
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RAM	N.T.S.	0.2	EM	EM
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-G-W12			12	27

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

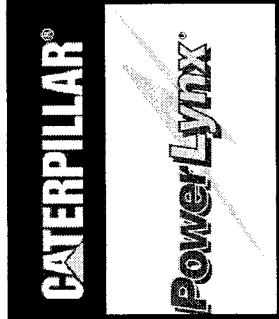
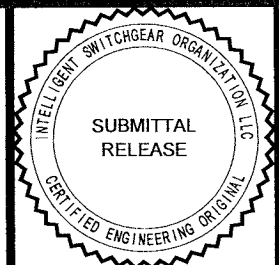
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GEN MAIN BUS "B"



NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



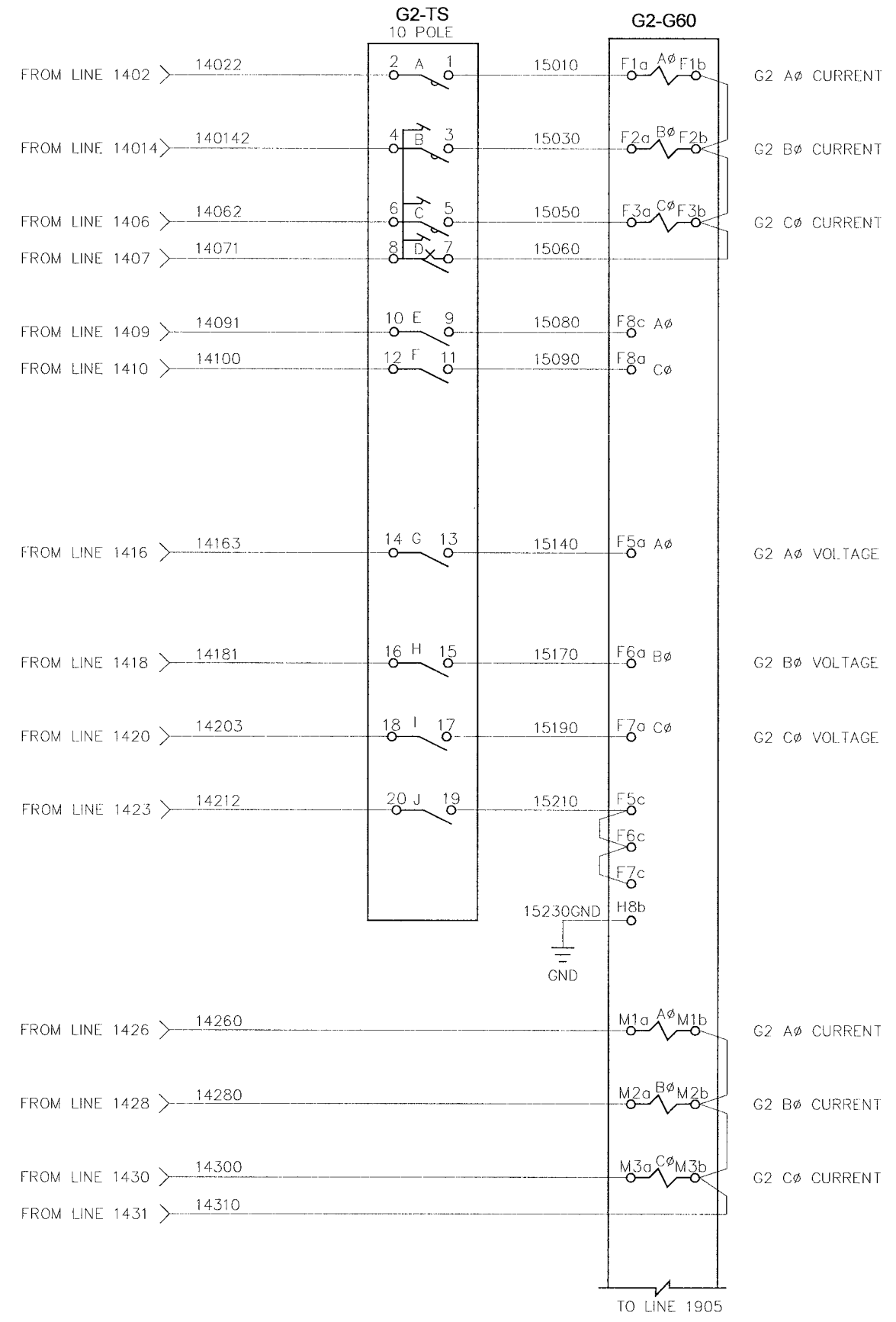
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4.16KV GENERATOR PARALLELING SWITCHGEAR BUS VOLTAGE - 4		DATE APPROVED 08-09-06	DATE CREATED 06-01-06		DATE MODIFIED	
FILE NAME 35701-G-W13		SHEET NUMBER 13		of 27		

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
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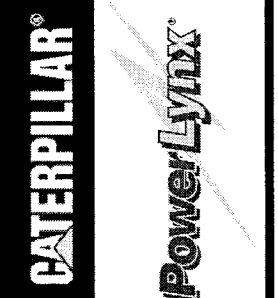
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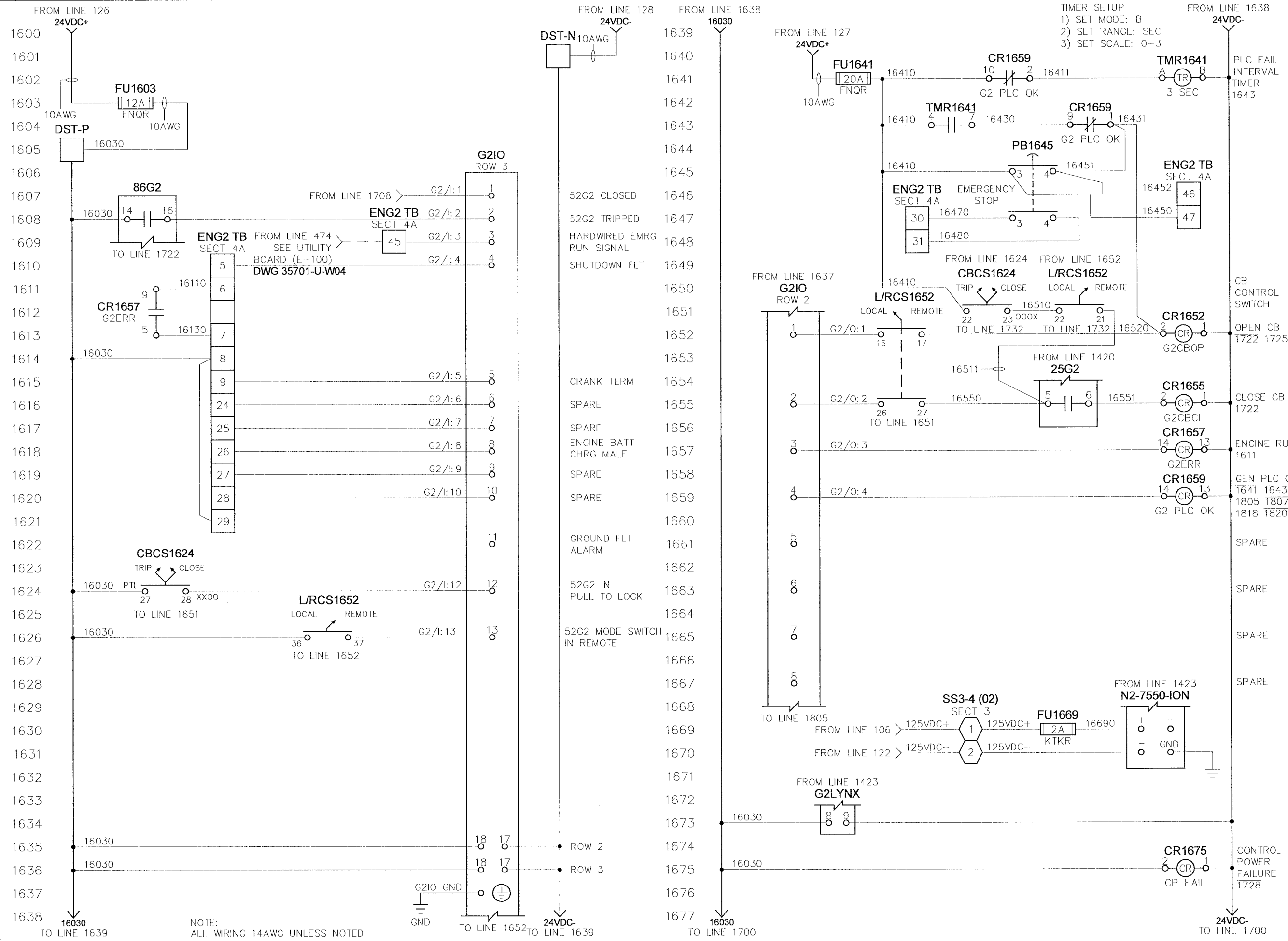


NOTE:  
1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
2) ALL WIRING TO BE 14AWG UNLESS NOTED.

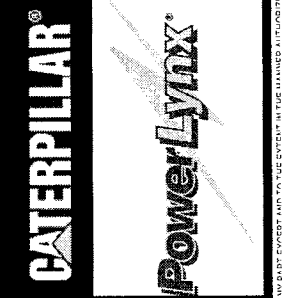
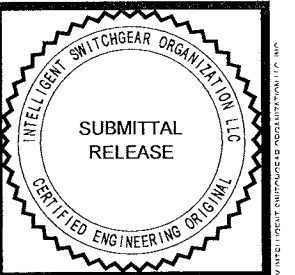


NO.		REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL		06-07-06
0.2	REISSUED FOR SUBMITTAL		08-09-06
TITLE: <b>CITY OF WINNIPEG WTP GEN BOARD (E-200)</b> <b>GENERATOR 52G2 (52BK-E201B) - AC INSTRUMENTATION - 2</b> 4.16KV GENERATOR PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV.	MODIFIED BY
<i>RAM</i>	N.T.S.	0.2	EM
DATE APPROVED	08-09-06	DATE CREATED	05-01-06
FILE NAME	35701-G-W15	SHEET NUMBER	15
			of 27

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NOTE:  
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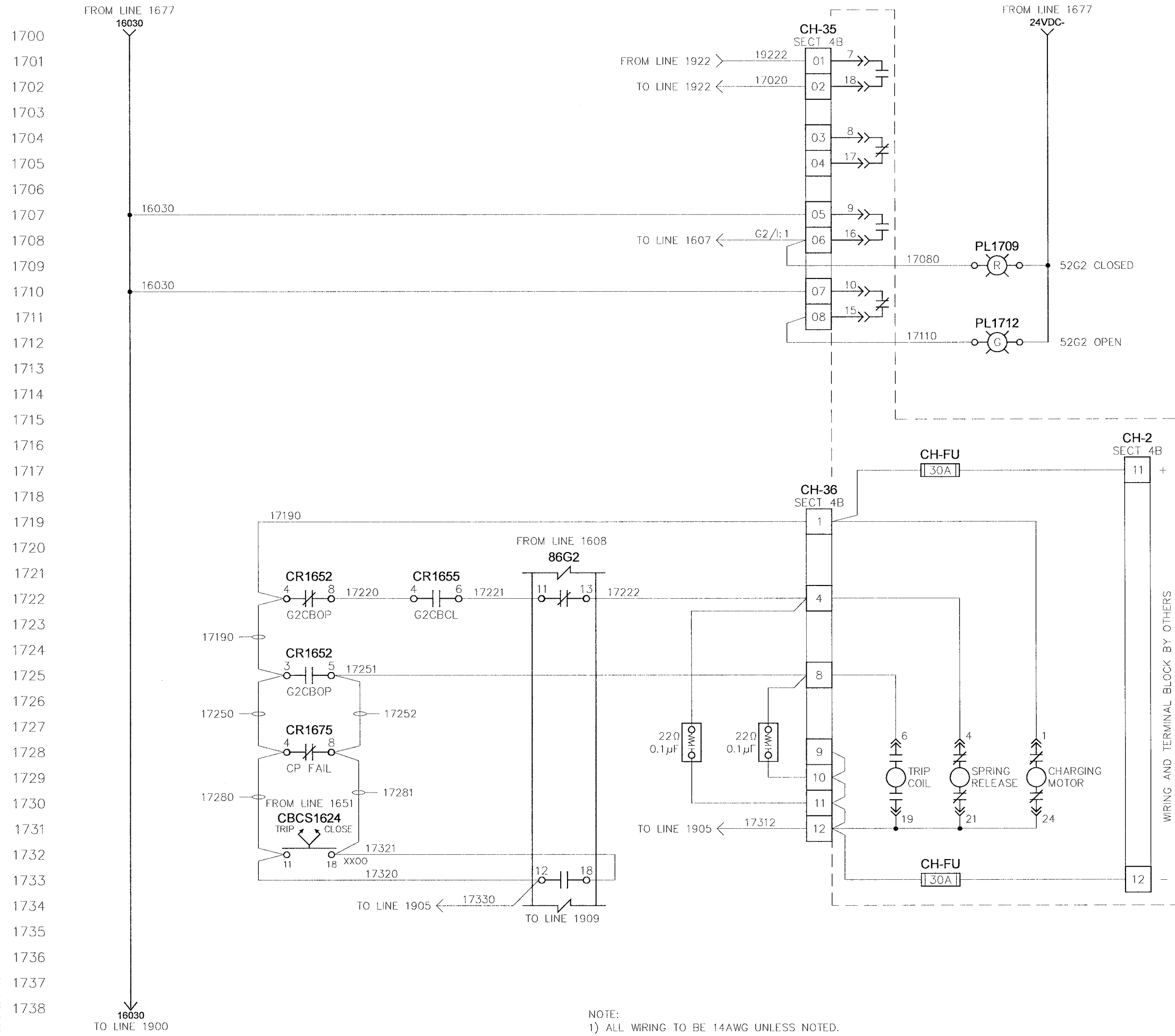
TITLE: CITY OF WINNIPEG WTP GEN BOARD (E-200)  
GENERATOR 52G2 (52BK-E201B) - CONTROLS  
4.16kV GENERATOR PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV	MODIFIED BY
RAM	N.T.S.	0.2	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	05-01-06	05-01-06	05-01-06
FILE NAME	SHEET NUMBER	of	
35701-G-W16	16	27	

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-09-06

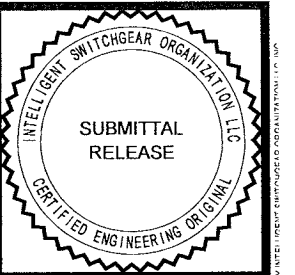
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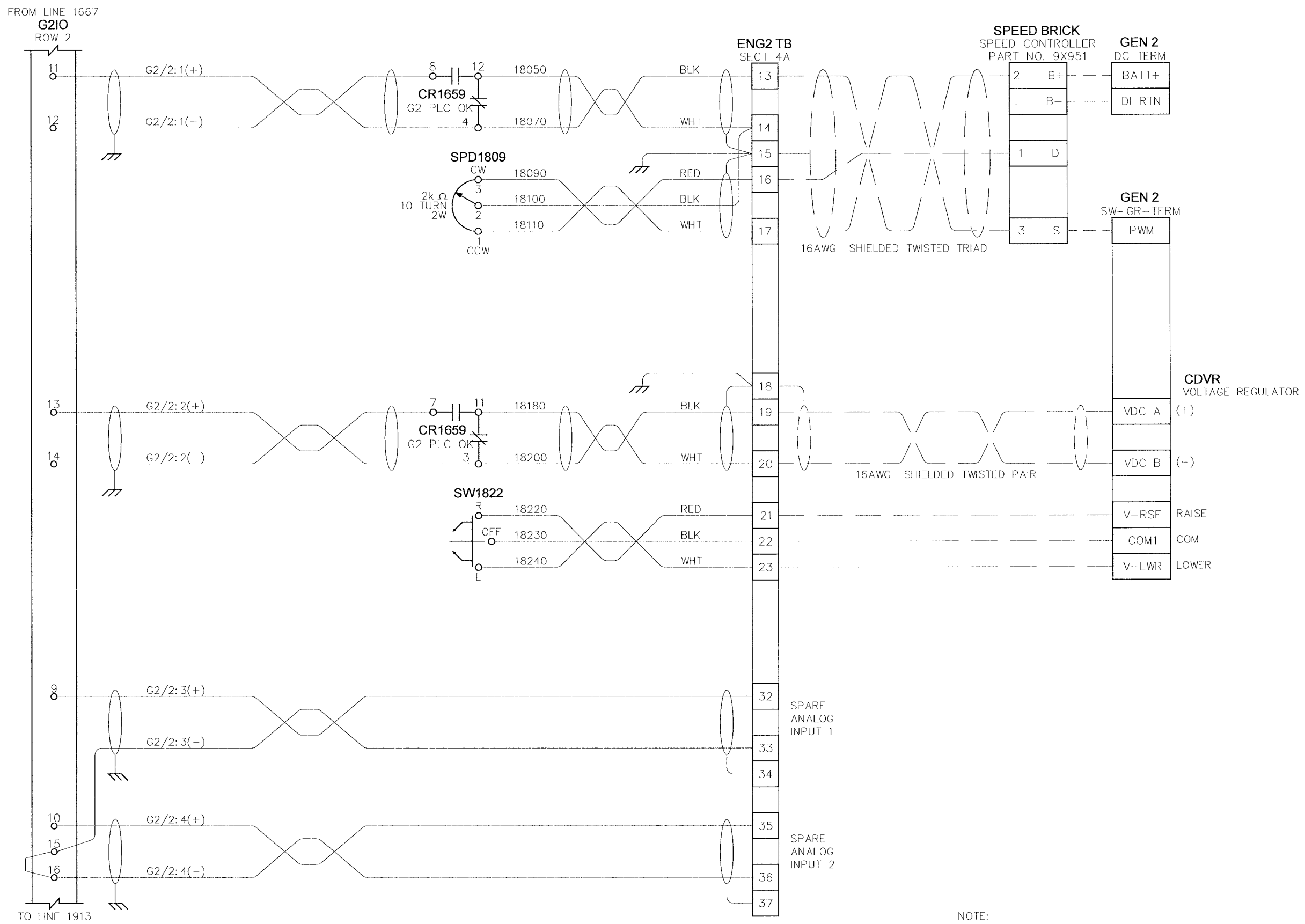
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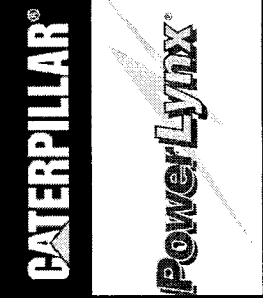
<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) GENERATOR 52G2 (52BK-E201B) - CB INTERFACE 4.16kV GENERATOR PARALLELING SWITCHGEAR		<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.	<b>REV:</b> 0.2	<b>MODIFIED BY:</b> EM
<b>DATE APPROVED:</b> 08-09-06	<b>DATE CREATED:</b> 05-01-06	<b>DATE MODIFIED:</b> 05-01-06	<b>SHEET NUMBER:</b> 17	<b>OF:</b> 27	<b>FILE NAME:</b> 35701-G-W17
<b>NO.</b> 0.0 0.1 0.2	<b>REVISION</b> ISSUED FOR SUBMITTAL REISSUED FOR SUBMITTAL REISSUED FOR SUBMITTAL	<b>DATE</b> 05-24-06 06-07-06 08-09-06			

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NOTE:  
1) ALL WIRING TO BE 16AWG UNLESS NOTED.

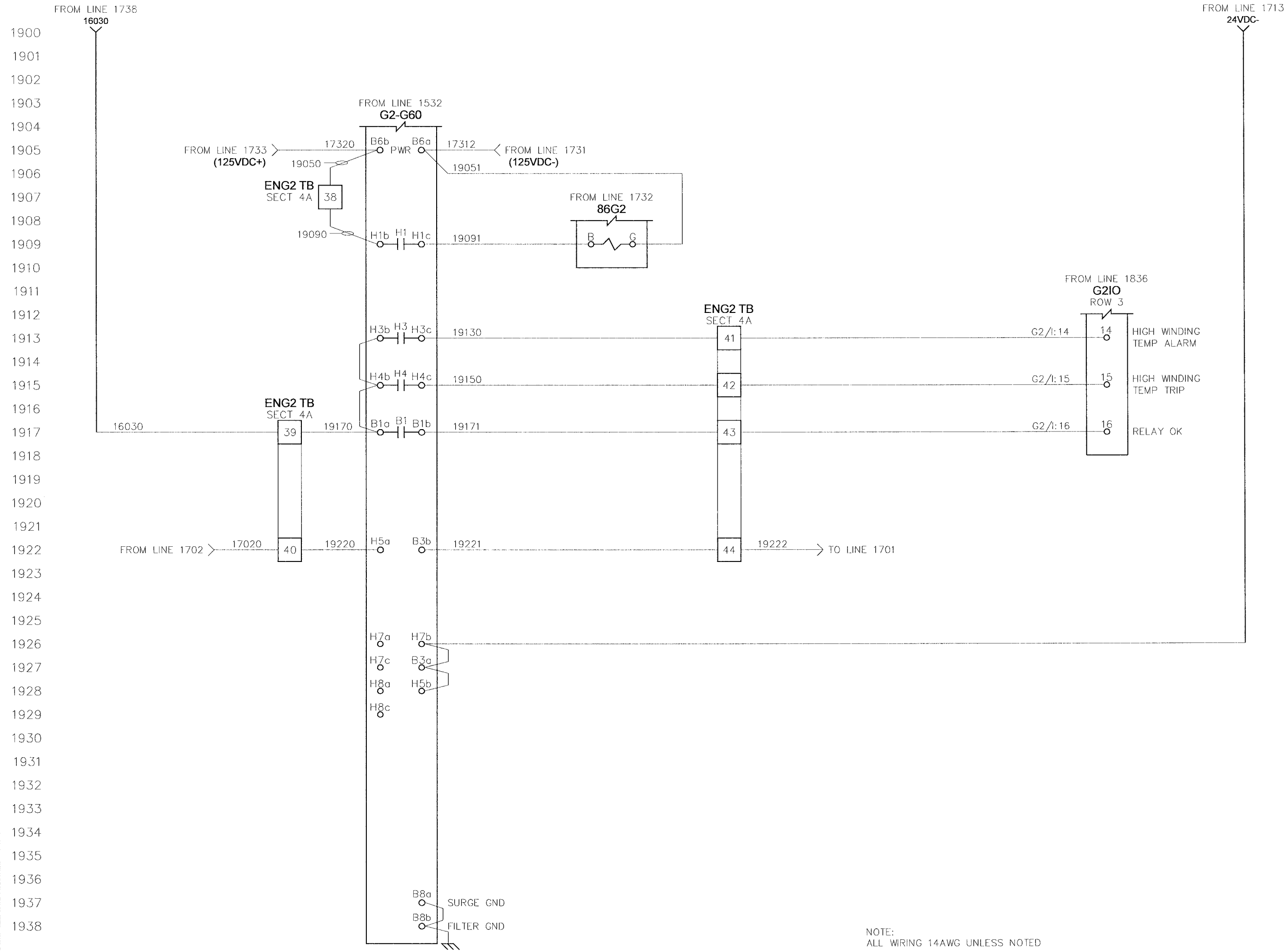


TITLE: CITY OF WINNIPEG WTP GEN BOARD (E-200)  
GENERATOR 52G2 (52BK-E201B) - ANALOG I/O  
4.16KV GENERATOR PARALLELING SWITCHGEAR

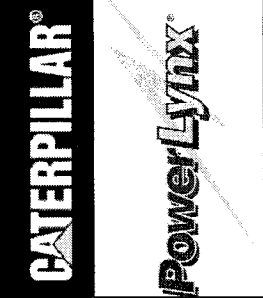
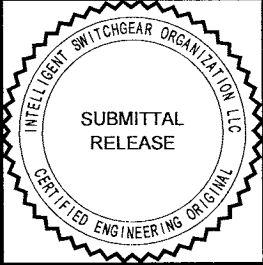
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08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-G-W18			18	27

NO.	REVISION	DATE
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NOTE:  
ALL WIRING 14AWG UNLESS NOTED

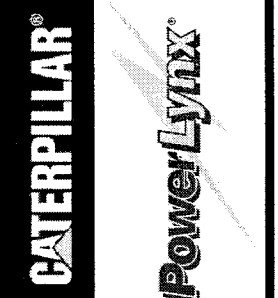
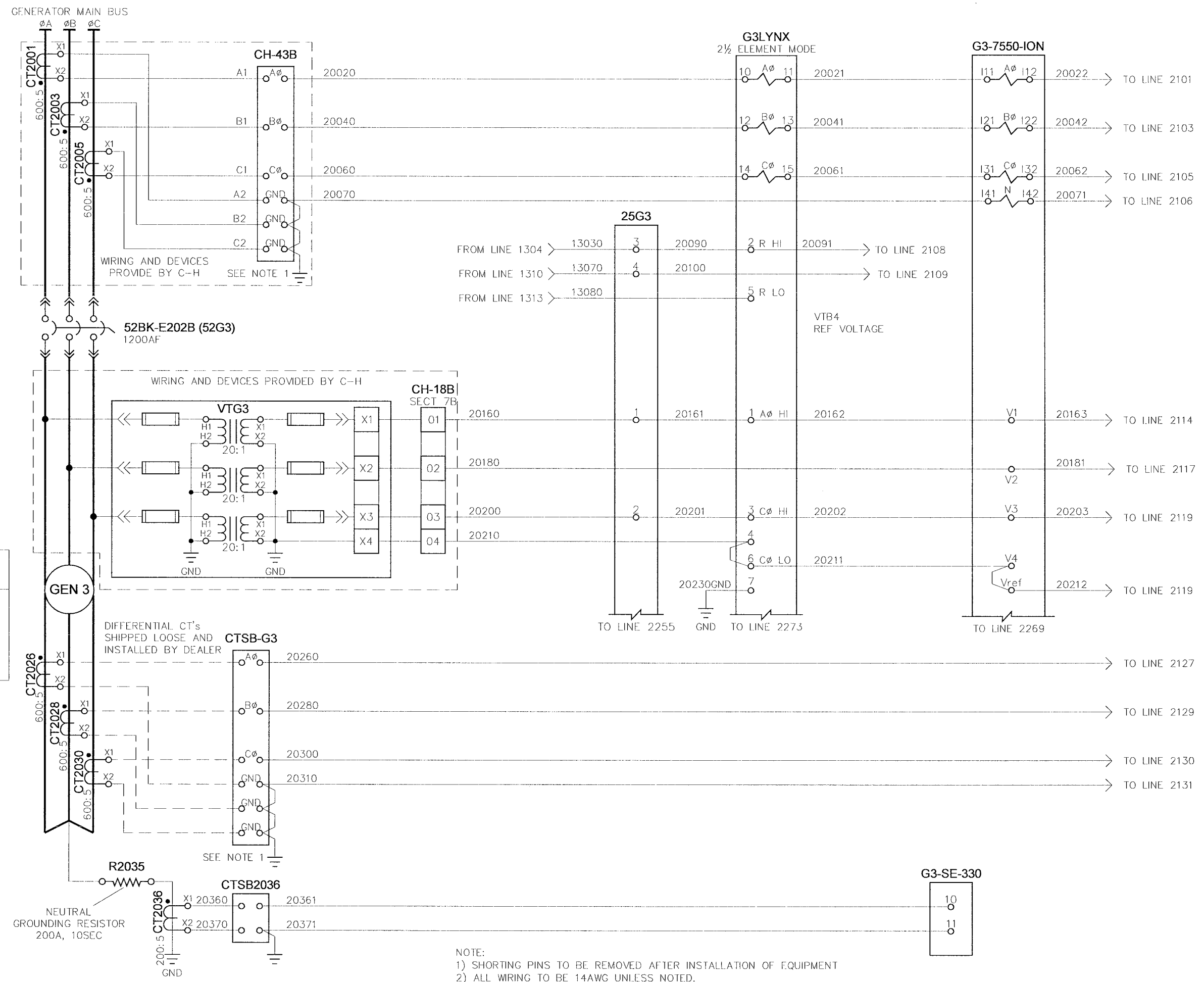


<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) GENERATOR 52G2 (52BK-E201B) - PROTECTIVE CONTROLS 4.16kV GENERATOR PARALLELING SWITCHGEAR	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV:</b> 0.2
<b>FILE NAME:</b> 35701-G-W19	<b>MODIFIED BY:</b> EM
<b>DATE CREATED:</b> 05-01-06	<b>DATE MODIFIED:</b> 05-01-06
<b>SHEET NUMBER:</b> 19	<b>of</b> 27

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
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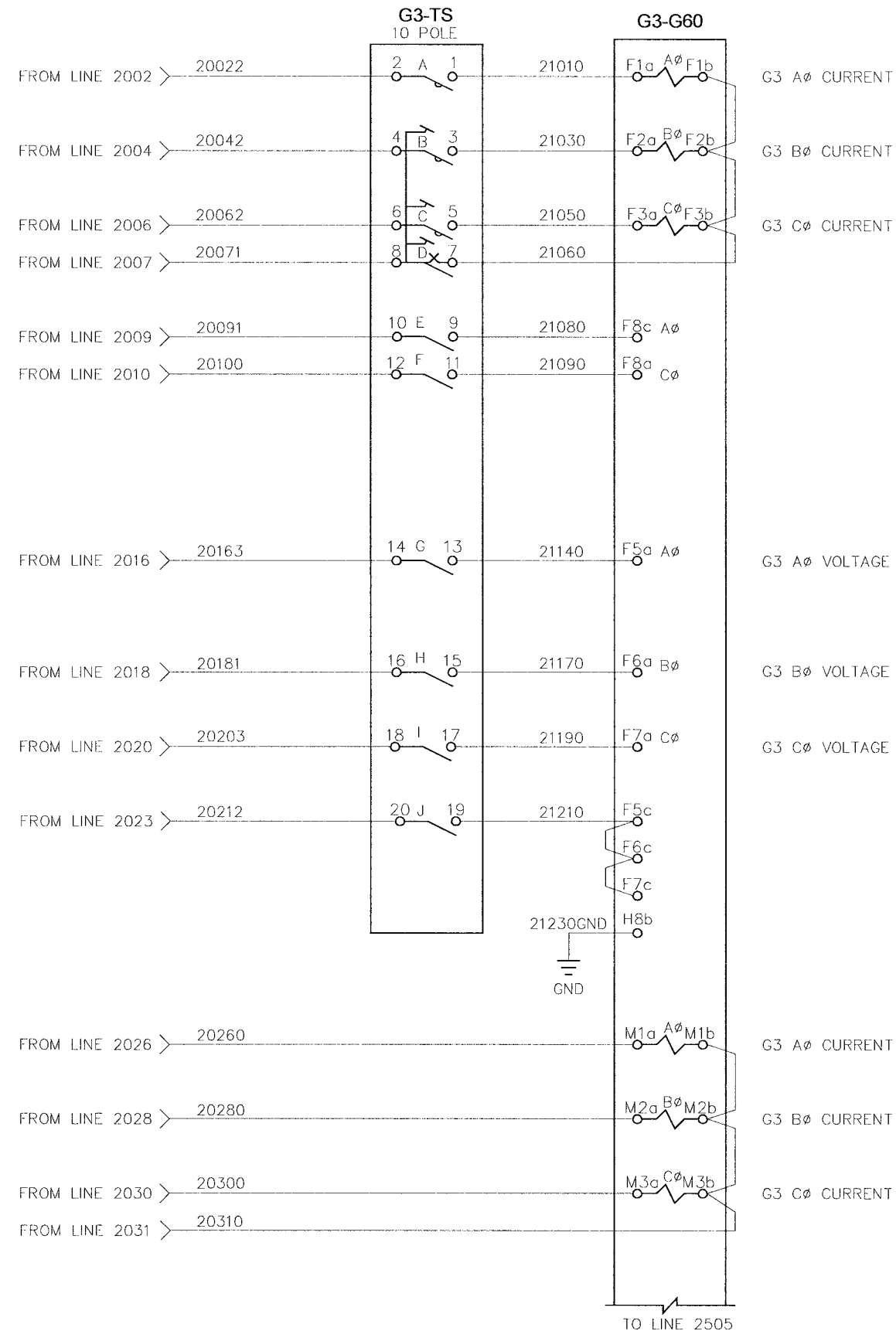
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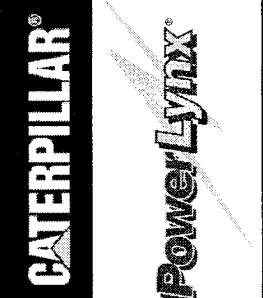
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<b>APPROVED BY:</b> RAM		<b>DATE APPROVED:</b> 08-09-06		<b>FILE NAME:</b> 35701-G-W20		
<b>DRAWN BY:</b> EM		<b>DATE CREATED:</b> 05-01-06		<b>SHEET NUMBER:</b> 20 of 27		
<b>MODIFIED BY:</b> EM		<b>DATE MODIFIED:</b> 05-01-06		<b>REV.:</b> 0.2		
NO.	REVISION	DATE				
0.0	ISSUED FOR SUBMITTAL	05-24-06				
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0.2	REISSUED FOR SUBMITTAL	08-09-06				

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 PLOT BY: J. B. BROWN  
 PLOT SCALE: 1:1  
 PLOT SIZE: 11x17  
 PLOT ORIGIN: 0,0  
 PLOT RESOLUTION: 300 DPI  
 PLOT DEVICE: HP DesignJet 5000 Series

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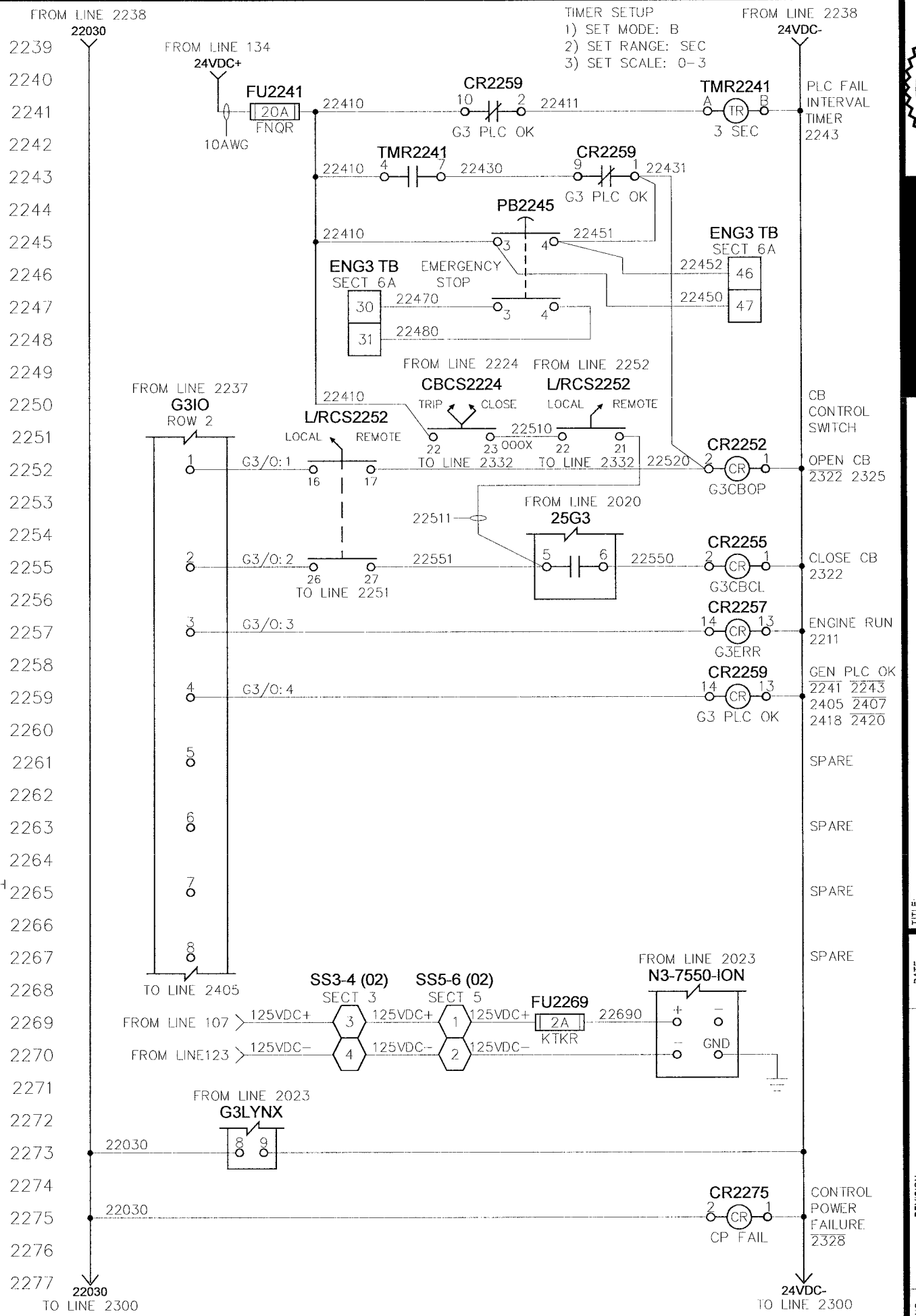
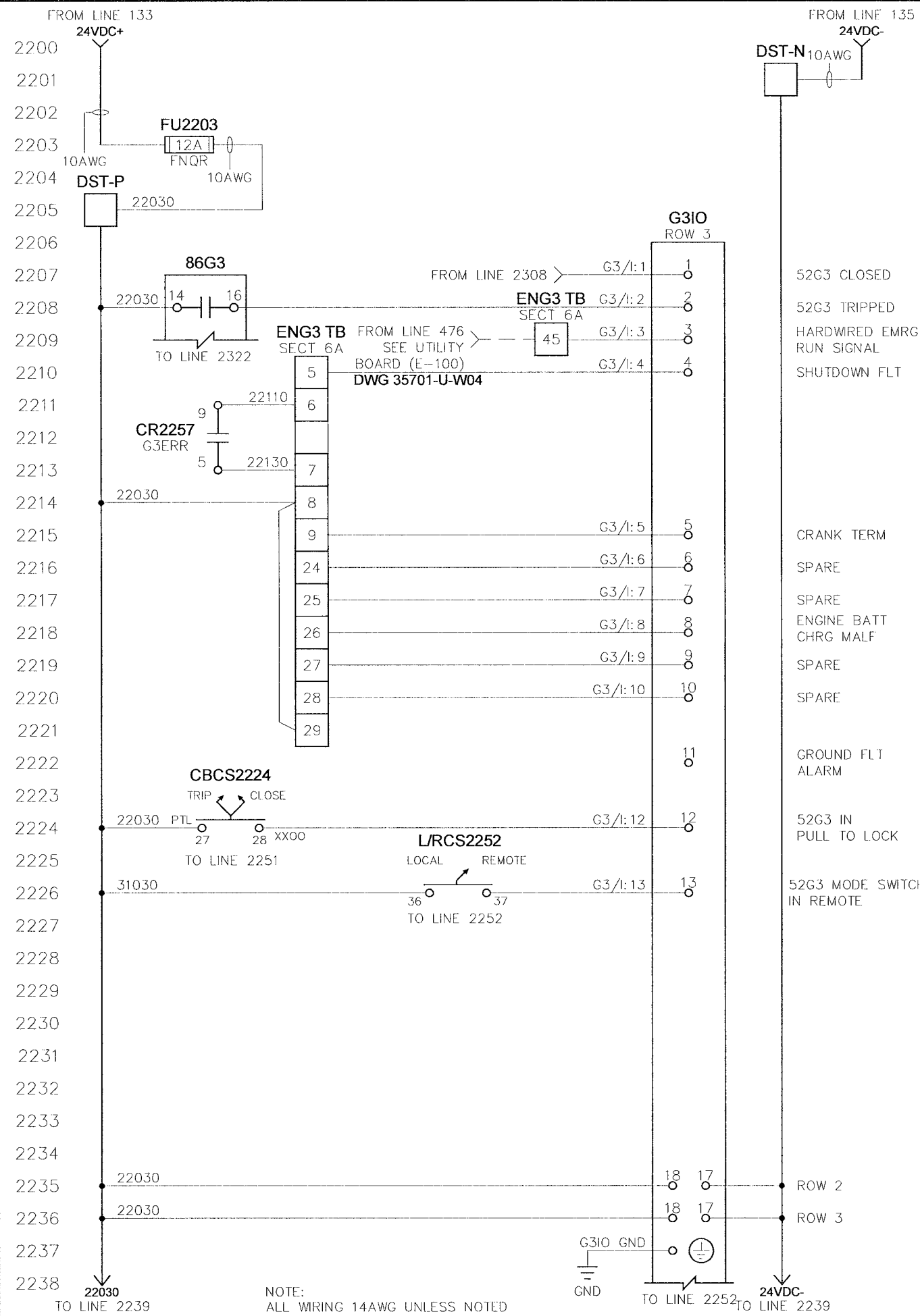
NOTE:  
1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
2) ALL WIRING TO BE 14AWG UNLESS NOTED.



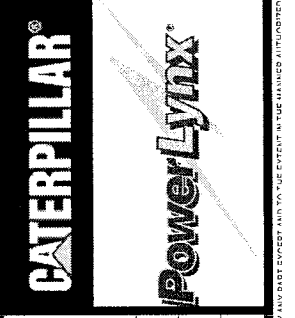
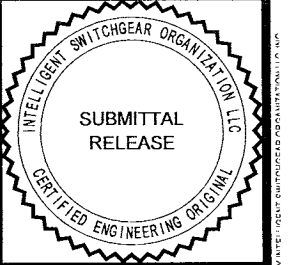
<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) GENERATOR 52G3 (52BK-E202B) - AC INSTRUMENTATION - 2 4.16KV GENERATOR PARALLELING SWITCHGEAR	
<b>APPROVED BY:</b> RAM	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV:</b> 0.2
<b>FILE NAME:</b> 35701-G-W21	<b>MODIFIED BY:</b> EM
<b>SHEET NUMBER:</b> 21	<b>DATE MODIFIED:</b> 05-01-06
<b>of</b> 27	<b>SHEET NUMBER:</b> 27

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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TIMER SETUP  
 1) SET MODE: B  
 2) SET RANGE: SEC  
 3) SET SCALE: 0-3



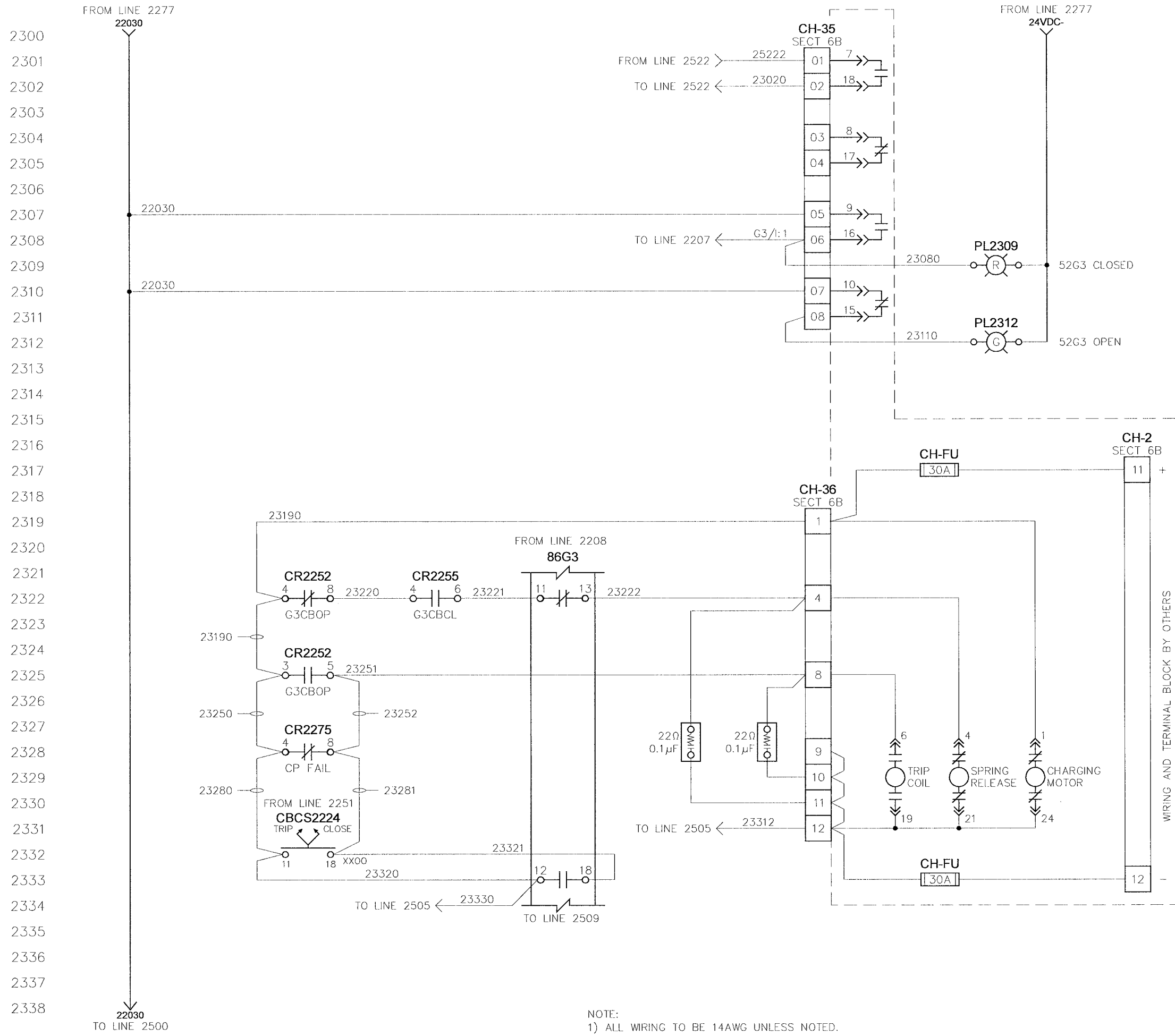
**TITLE:**  
 CITY OF WINNIPEG WTP GEN BOARD (E-200)  
 GENERATOR 52G3 (52BK-E202B) - CONTROLS  
 4.16KV GENERATOR PARALLELING SWITCHGEAR

NO.	REVISION	DATE	ISSUED FOR SUBMITTAL
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0.1	REISSUED FOR SUBMITTAL	06-07-06	
0.2	REISSUED FOR SUBMITTAL	08-09-06	

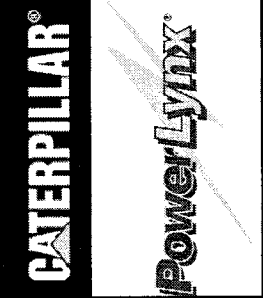
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RAM	N.T.S.	0.2	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	
08-09-06	05-01-06		
FILE NAME	SHEET NUMBER		
35701-G-W22	22		27

**G-W22**

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NOTE:  
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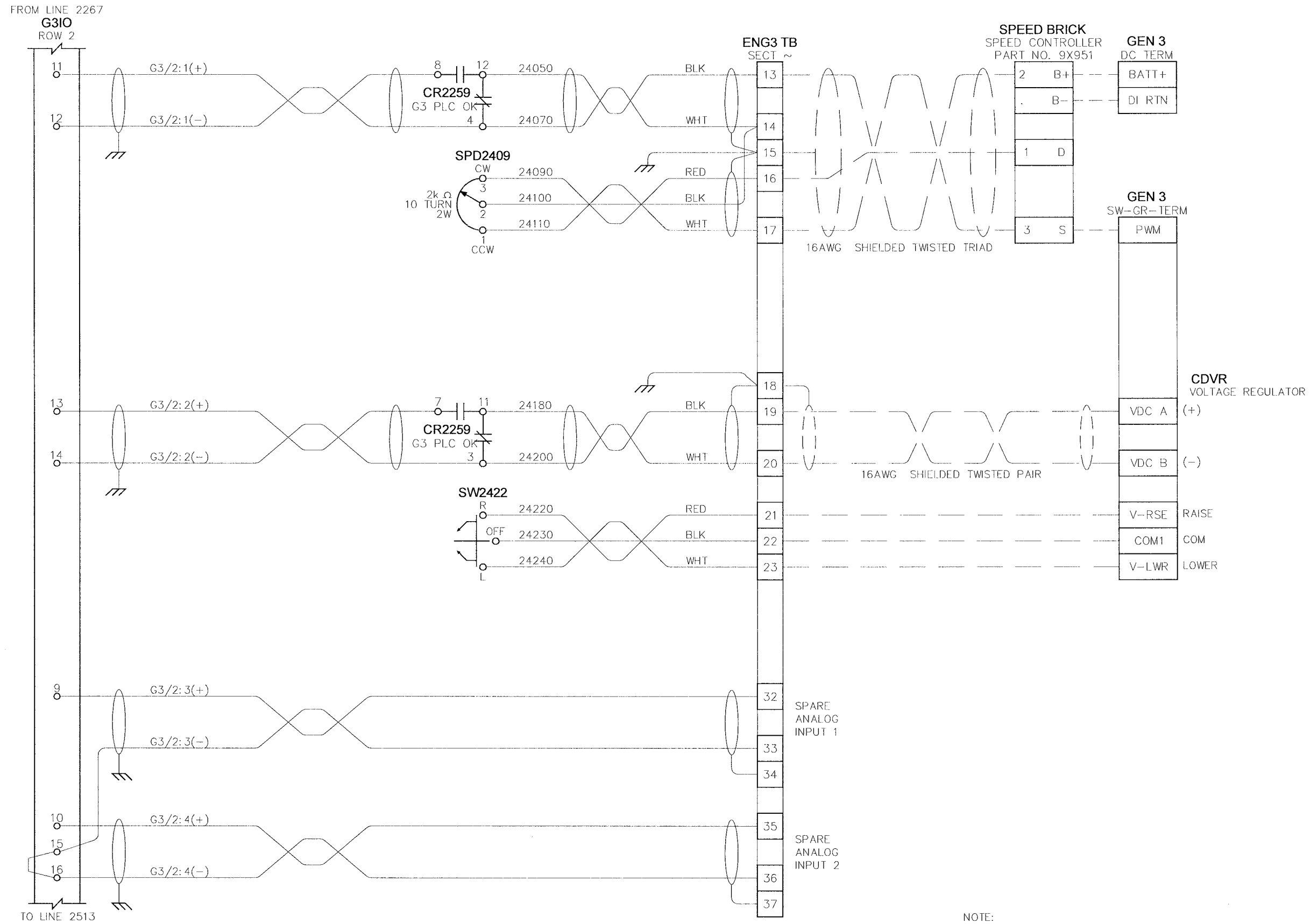
TITLE:  
**CITY OF WINNIPEG WTP GEN BOARD (E-200)**  
**GENERATOR 52G3 (52BK-E202B) - CB INTERFACE**  
 4.16KV GENERATOR PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-G-W23			23	27

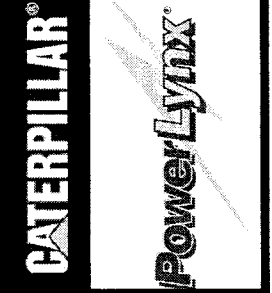
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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NOTE:  
1) ALL WIRING TO BE 16AWG UNLESS NOTED.



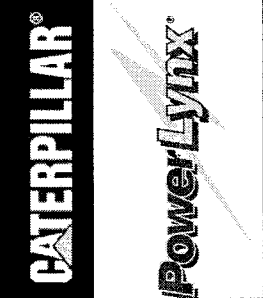
<b>TITLE:</b> CITY OF WINNEPEG WTP GEN BOARD (E-200) GENERATOR 52G3 (52BK-E202B) - ANALOG I/O 4.16KV GENERATOR PARALLELING SWITCHGEAR		APPROVED BY <i>RAM</i>	DATE APPROVED 08-09-06	FILE NAME 35701-G-W24	DRAWN BY EM	DATE CREATED 05-01-06	SHEET NUMBER 24	OF 27
SCALE N.T.S.		REV 0.2	MODIFIED BY	DATE MODIFIED	G-W24			

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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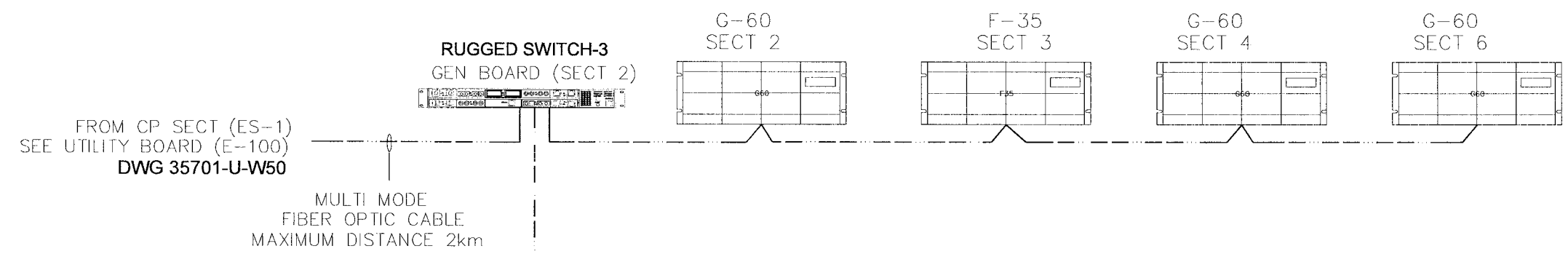




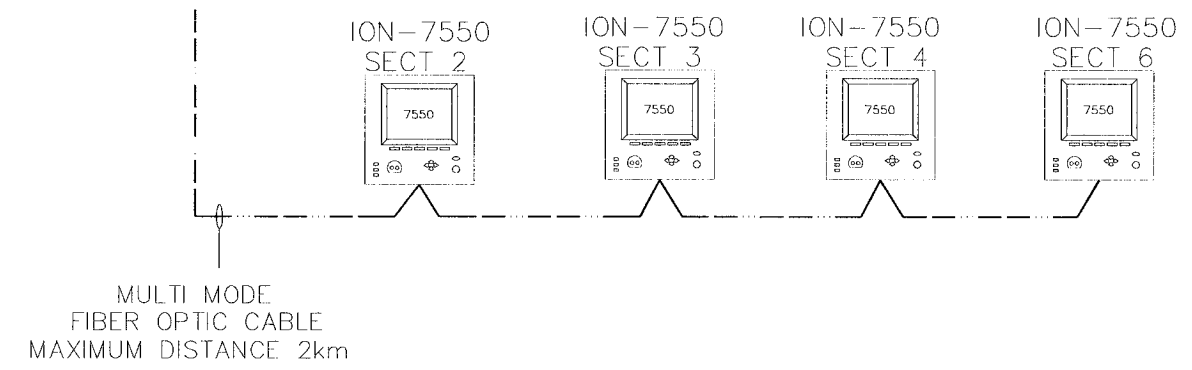
<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) FIBER OPTIC INTERCONNECT 4.16KV GENERATOR PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY EM
DATE APPROVED 08-09-06	DATE CREATED 05-01-06
FILE NAME 35701-G-W26	SHEET NUMBER 26 of 27
SCALE N.T.S.	REV 0.2
MODIFIED BY DATE MODIFIED	

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

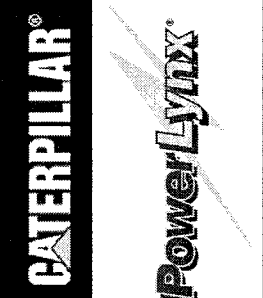
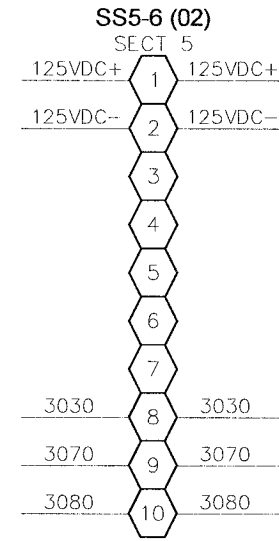
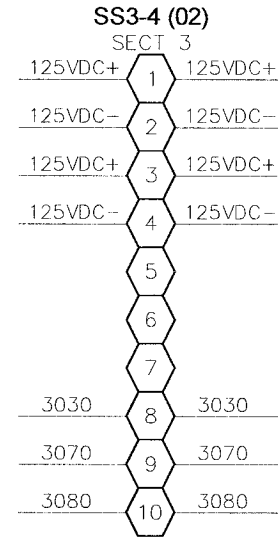
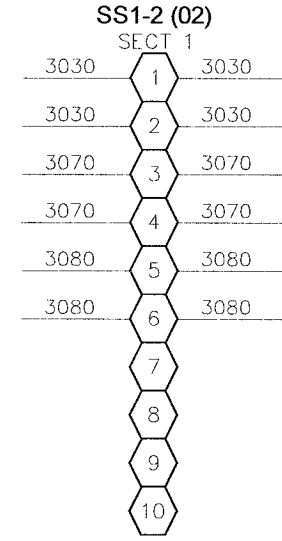
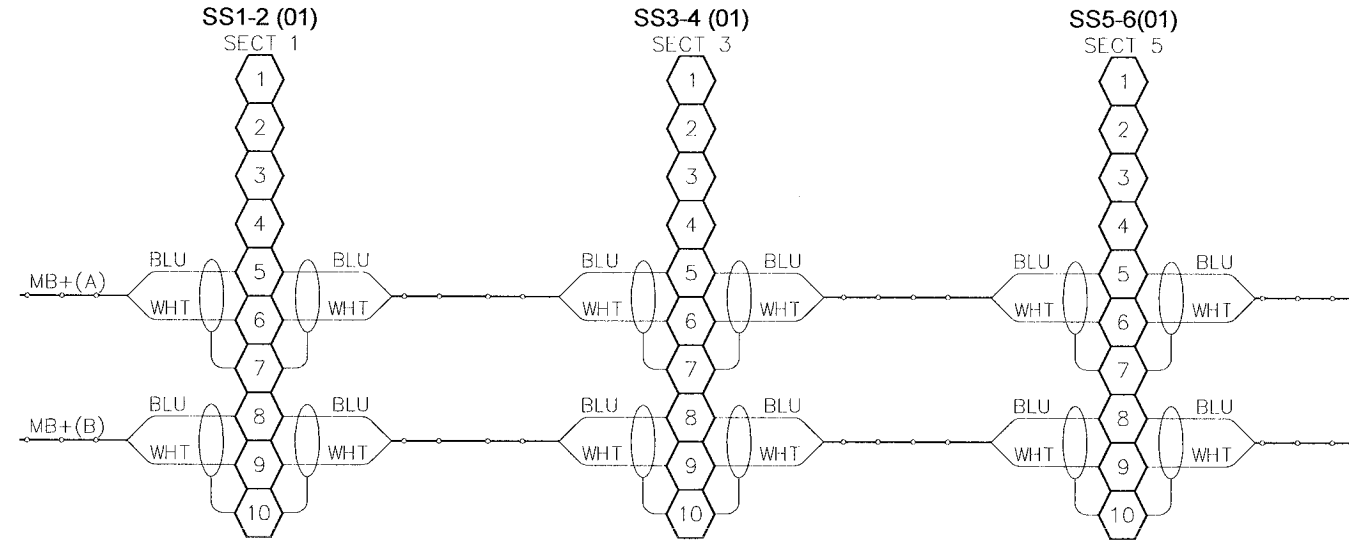
FIBER OPTIC INTERCONNECT (PROTECTIVES)



FIBER OPTIC INTERCONNECT (ION-POWER METERS)



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<b>TITLE:</b> CITY OF WINNIPEG WTP GEN BOARD (E-200) SHIPPING SPLIT DETAIL	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV.:</b> 0.2
<b>FILE NAME:</b> 35701-G-W27	<b>DATE CREATED:</b> 05-01-06
	<b>DATE MODIFIED:</b> 05-01-06
	<b>SHEET NUMBER:</b> 27 of 27

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-24-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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# SUBMITTAL DRAWING SET

## CITY OF WINNIPEG WTP

DUGALD, MB

UTILITY BOARD (E-100)

### 4.16kV GENERATOR / UTILITY PARALLELING SWITCHGEAR

TOROMONT POWER SYSTEMS  
ISO PROJECT No. 35701



**CATERPILLAR®**

**PowerLynx®**

CITY OF WINNIPEG WTP - UTILITY (E-100)  
TITLE SHEET

4.16KV UTILITY PARALLELING SWITCHGEAR  
SCALE N.T.S. REV. 0.2

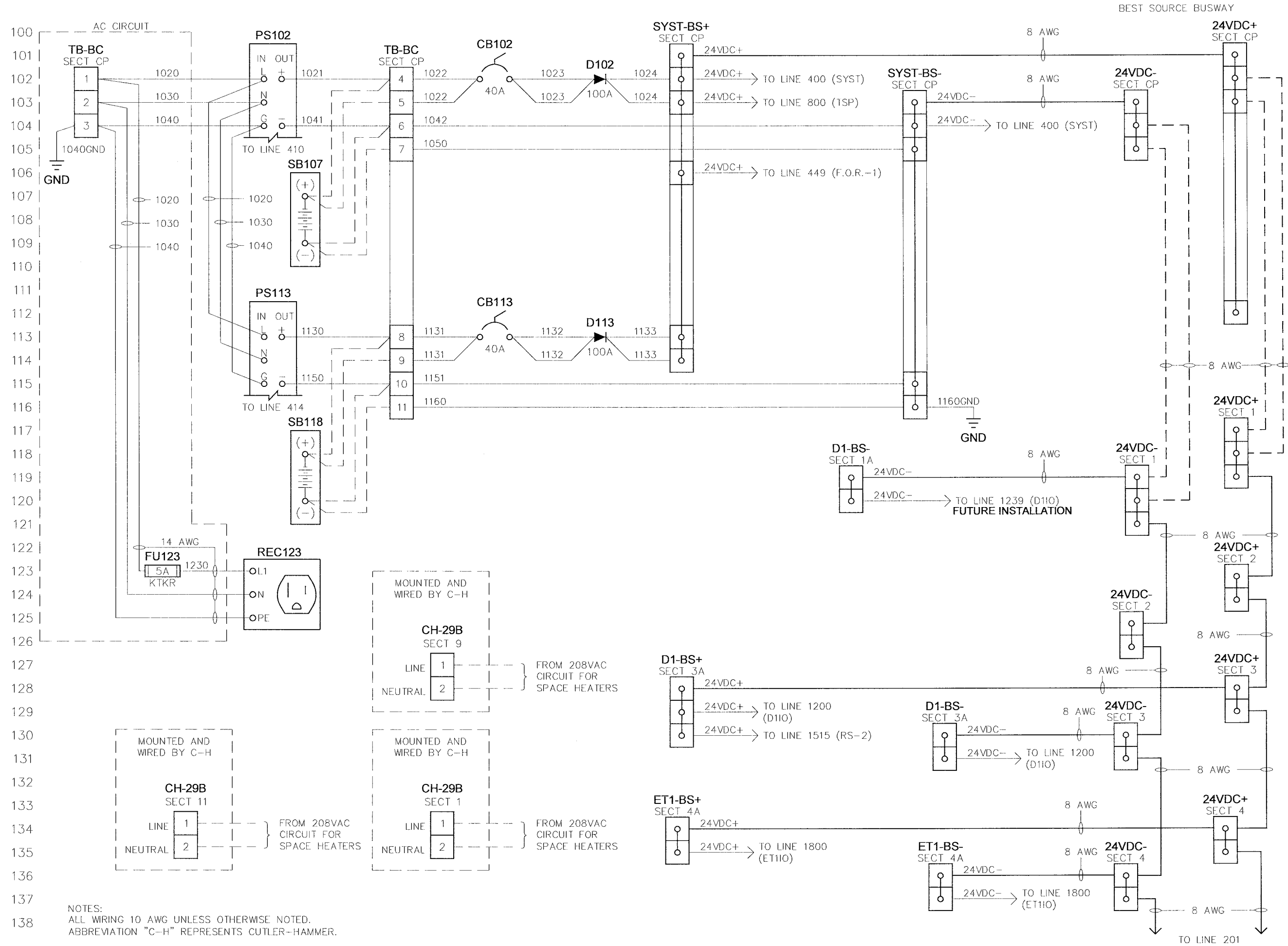
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FILE NAME  
35701-TS

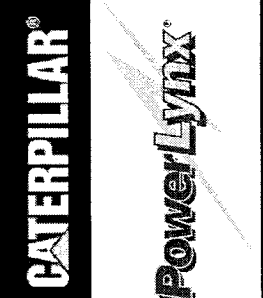
TABLE OF CONTENTS

DESCRIPTION	SHEET	DESCRIPTION	SHEET	DESCRIPTION	SHEET
DC BEST SOURCE - 1	U-W01	NBT (52BK-E100C) - AC INSTRUMENTATION	U-W32	DOOR ASSEMBLY - SECT 1	U-A03
DC BEST SOURCE - 2	U-W02	NBT (52BK-E100C) - CONTROLS	U-W33	DOOR ASSEMBLY - SECT 2	U-A04
DC BEST SOURCE - 3	U-W03	NBT (52BK-E100C) - CB INTERFACE	U-W34	DOOR ASSEMBLY - SECT 3	U-A05
SYSTEM CONTROLS - 1	U-W04	BUS VOLTAGE - 2	U-W35	SUBPAN ASSEMBLY - SECT 3	U-A06
SYSTEM CONTROLS - 2	U-W05	UTILITY 2 (52BK-E100B) - AC INSTRUMENTATION - 1	U-W36	DOOR ASSEMBLY - SECT 4	U-A07
INTENTIONALLY LEFT BLANK	U-W06	UTILITY 2 (52BK-E100B) - AC INSTRUMENTATION - 2	U-W36A	SUBPAN ASSEMBLY - SECT 4	U-A08
AUTOMATION COMMUNICATIONS PLAN - 1	U-W07	UTILITY 2 (52BK-E100B) - PROTECTIVE CONTROLS	U-W37	DOOR ASSEMBLY - SECT 5	U-A09
AUTOMATION COMMUNICATIONS PLAN - 2	U-W08	UTILITY 2 (52BK-E100B) - CONTROLS	U-W38	SUBPAN ASSEMBLY - SECT 5	U-A10
BUS VOLTAGE - 1	U-W09	UTILITY 2 (52BK-E100B) - CB INTERFACE	U-W39	DOOR ASSEMBLY - SECT 6	U-A11
DISTRIBUTION 1 - AC INSTRUMENT (52BK-E107A & E106A)	U-W10	DISTRIBUTION 3 - AC INSTRUMENT (52BK-E103B & E105B)	U-W40	SUBPAN ASSEMBLY - SECT 6	U-A12
DISTRIBUTION 1 - AC INSTRUMENT (52BK-E105A & E103A)	U-W11	DISTRIBUTION 3 - AC INSTRUMENT (52BK-E106B & E107B)	U-W41	DOOR ASSEMBLY - SECT 7	U-A13
DISTRIBUTION 1 - CONTROLS	U-W12	DISTRIBUTION 3 - CONTROLS	U-W42	SUBPAN ASSEMBLY - SECT 7	U-A14
DISTRIBUTION 1 - CB INTERFACE (52BK-E107A) - FUTURE	U-W13	DISTRIBUTION 3 - CB INTERFACE (52BK-E103B)	U-W43	DOOR ASSEMBLY - SECT 8	U-A15
DISTRIBUTION 1 - CB INTERFACE (52BK-E106A) - FUTURE	U-W14	DISTRIBUTION 3 - CB INTERFACE (52BK-E105B)	U-W44	DOOR ASSEMBLY - SECT 9	U-A16
DISTRIBUTION 1 - CB INTERFACE (52BK-E105A)	U-W15	DISTRIBUTION 3 - CB INTERFACE (52BK-E106B) - FUTURE	U-W45	SUBPAN ASSEMBLY - SECT 9	U-A17
DISTRIBUTION 1 - CB INTERFACE (52BK-E103A)	U-W16	DISTRIBUTION 3 - CB INTERFACE (52BK-E107B) - FUTURE	U-W46	DOOR ASSEMBLY - SECT 10	U-A18
ET1 (52BK-E104A) - AC INSTRUMENTATION	U-W17	ET2 (52BK-E104B) - AC INSTRUMENTATION	U-W47	SUBPAN ASSEMBLY - SECT 10	U-A19
ET1 (52BK-E104A) - CONTROLS	U-W18	ET2 (52BK-E104B) - CONTROLS	U-W48	DOOR ASSEMBLY - SECT 11	U-A20
ET1 (52BK-E104A) - CB INTERFACE	U-W19	ET2 (52BK-E104B) - CB INTERFACE	U-W49	SUBPAN ASSEMBLY - SECT 11	U-A21
DISTRIBUTION 2 - AC INSTRUMENT (52BK-E101A & E102A)	U-W20	FIBER OPTIC INTERCONNECT	U-W50	DOOR ASSEMBLY - SECT 12	U-A22
DISTRIBUTION 2 - AC INSTRUMENT (52BK-E101B & E102B)	U-W21	SHIPPING SPLIT DETAIL - 1	U-W51	DOOR ASSEMBLY - SECT 13	U-A23
DISTRIBUTION 2 - CONTROLS 1	U-W22	SHIPPING SPLIT DETAIL - 2	U-W52	SUBPAN ASSEMBLY - SECT 13	U-A24
DISTRIBUTION 2 - CONTROLS 2	U-W23			DOOR ASSEMBLY - SECT 14	U-A25
DISTRIBUTION 2 - CB INTERFACE (52BK-E101A)	U-W24			SUBPAN ASSEMBLY - SECT 14	U-A26
DISTRIBUTION 2 - CB INTERFACE (52BK-E102A)	U-W25			DOOR ASSEMBLY - SECT 15	U-A27
DISTRIBUTION 2 - CB INTERFACE (52BK-E101B)	U-W26			SUBPAN ASSEMBLY - SECT 15	U-A28
DISTRIBUTION 2 - CB INTERFACE (52BK-E102B)	U-W27			DOOR ASSEMBLY - SECT 16	U-A29
UTILITY 1 (52BK-E100A) - AC INSTRUMENTATION - 1	U-W28			SUBPAN ASSEMBLY - SECT 16	U-A30
UTILITY 1 (52BK-E100A) - AC INSTRUMENTATION - 2	U-W28A			DOOR ASSEMBLY - SECT 17	U-A31
UTILITY 1 (52BK-E100A) - PROTECTIVE CONTROLS	U-W29	DOOR ASSEMBLY - SECT CP	U-A01	SUBPAN ASSEMBLY - SECT 17	U-A32
UTILITY 1 (52BK-E100A) - CONTROLS	U-W30	SUBPAN ASSEMBLY - SECT CP	U-A02	DOOR ASSEMBLY - SECT 18	U-A33
UTILITY 1 (52BK-E100A) - CB INTERFACE	U-W31			DOOR ASSEMBLY - SECT 19	U-A34

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
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NOTES:  
 ALL WIRING 10 AWG UNLESS OTHERWISE NOTED.  
 ABBREVIATION "C-H" REPRESENTS CUTLER-HAMMER.



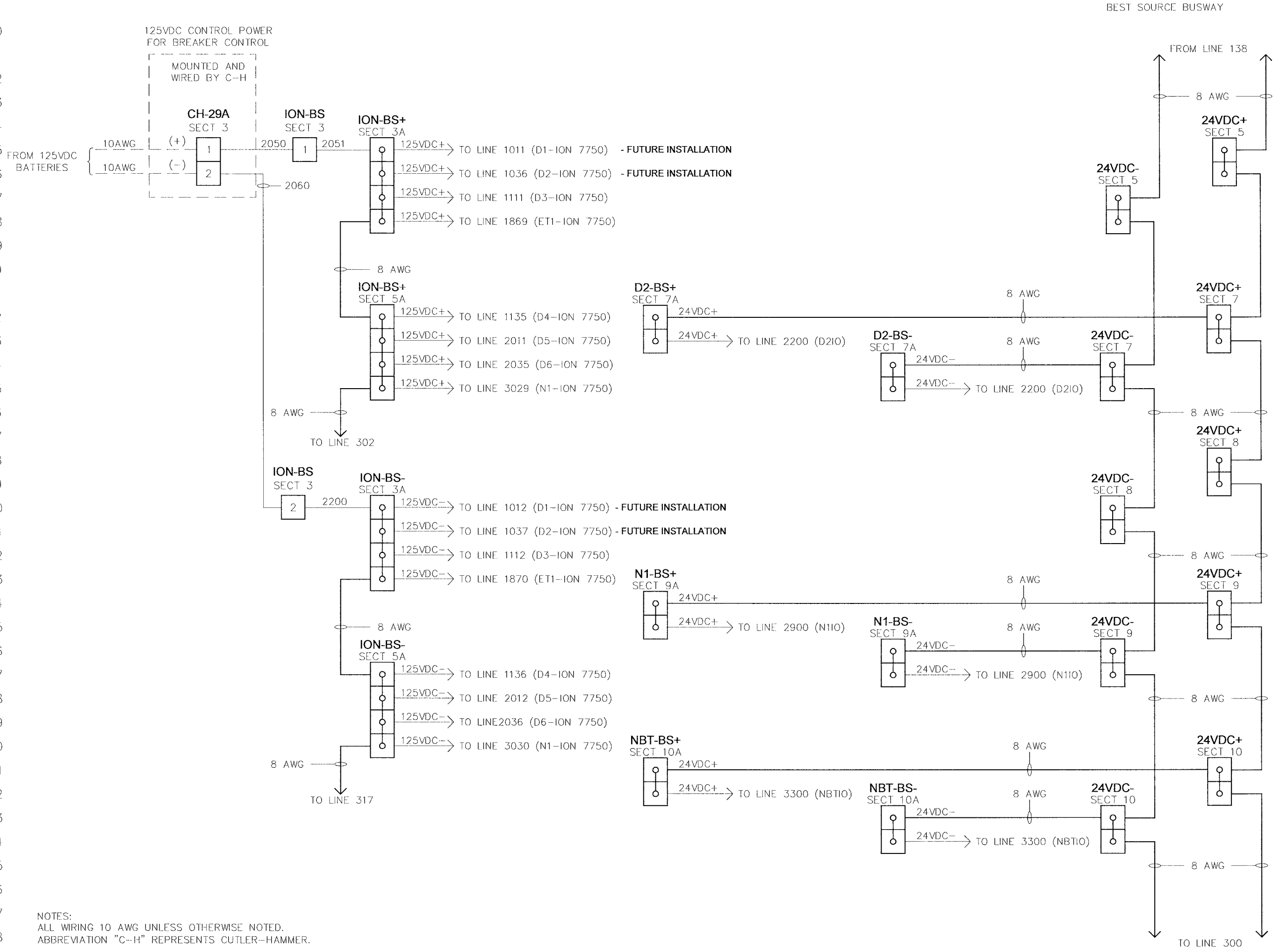
TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)  
 24VDC BEST SOURCE - 1  
 4.16KV UTILITY PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	THC
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE	DATE
08-09-06	05-01-06	08-01-06		08-01-06
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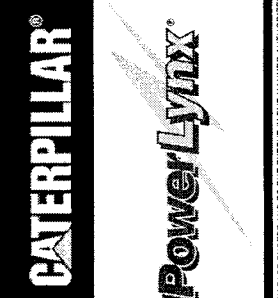
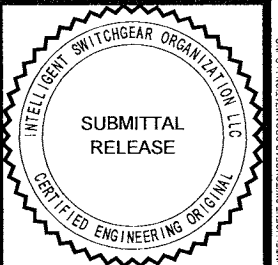
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0.2	REISSUED FOR SUBMITTAL	08-09-06

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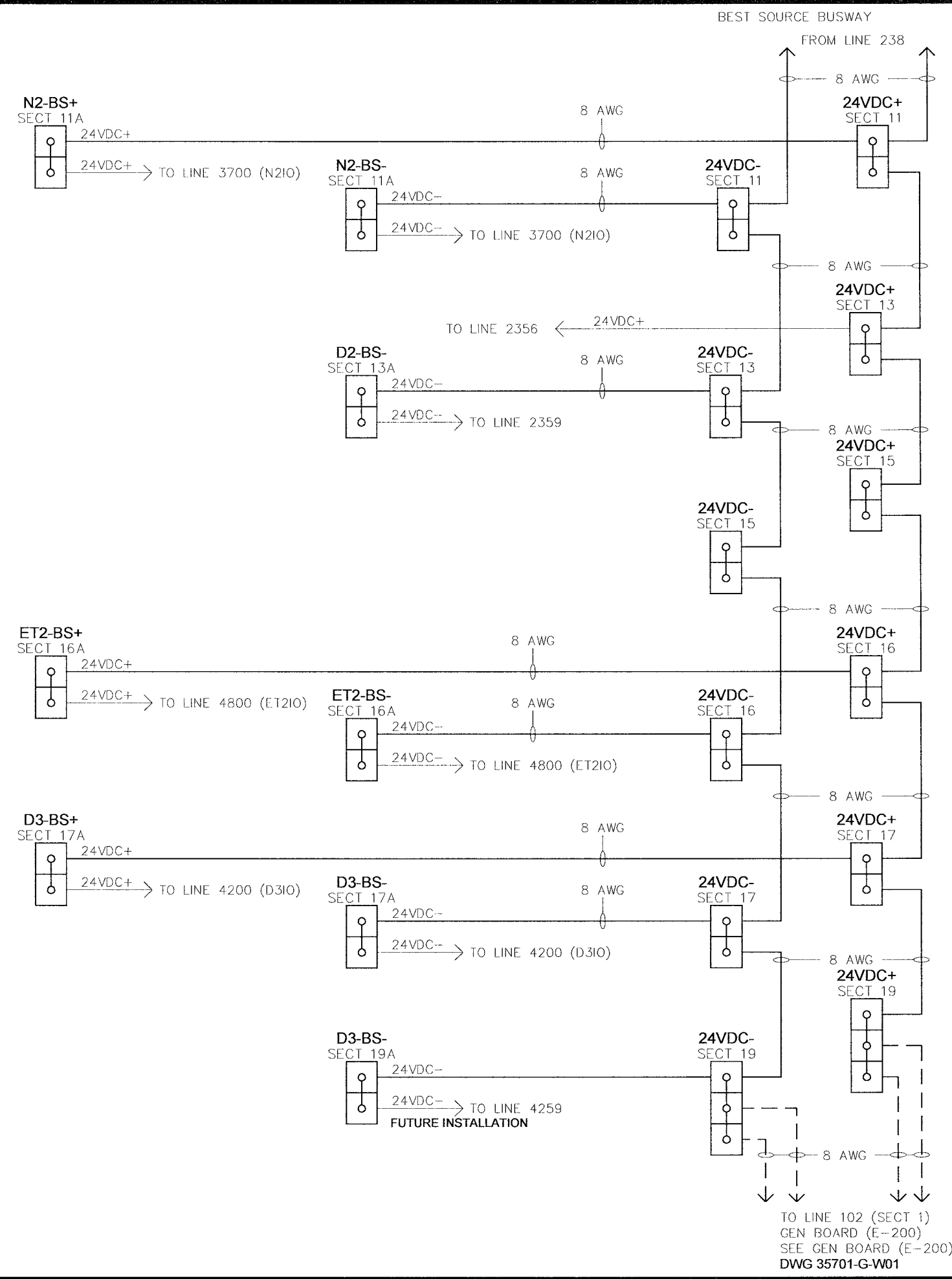
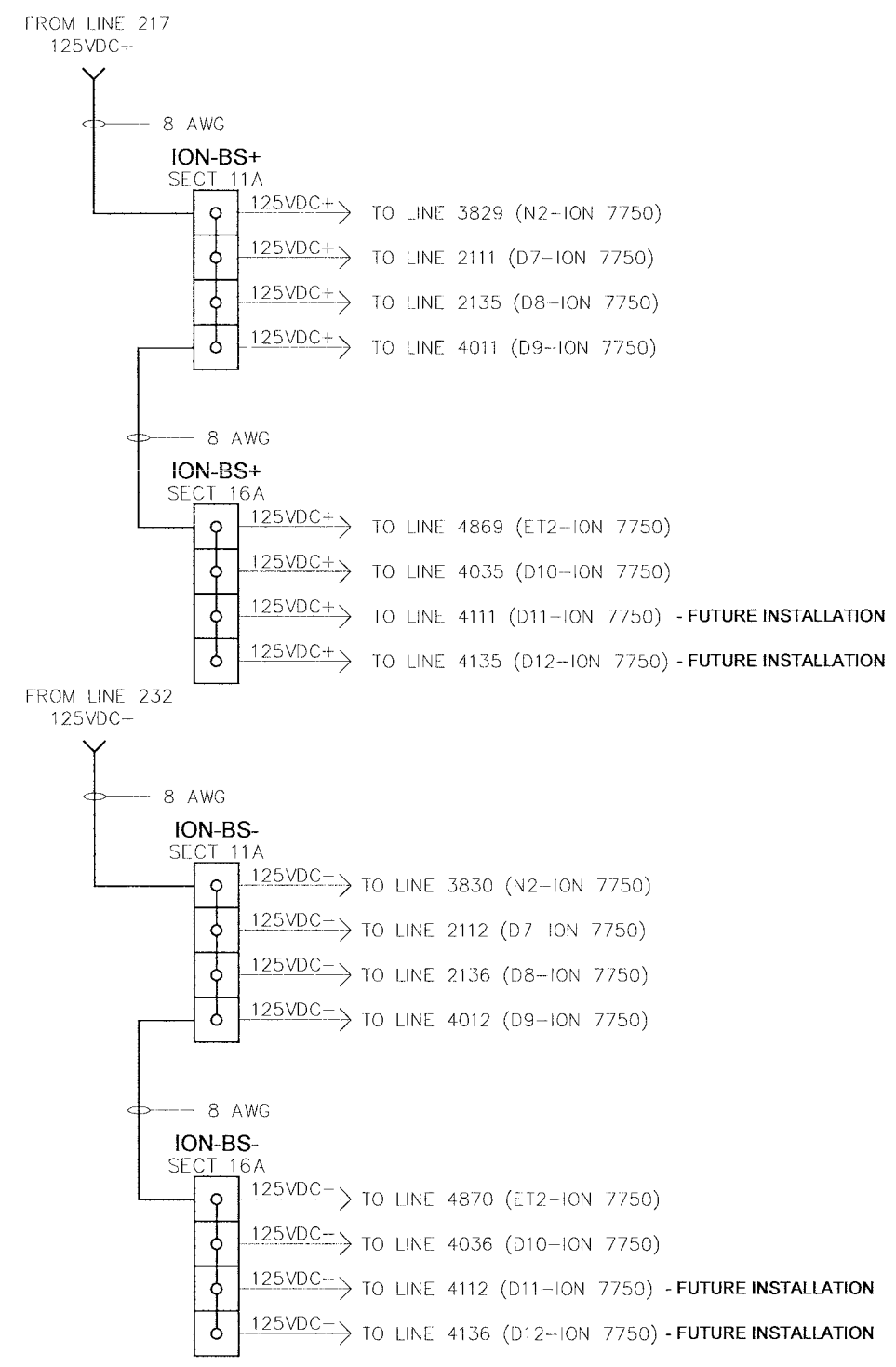
NOTES:  
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ABBREVIATION "C-H" REPRESENTS CUTLER-HAMMER.



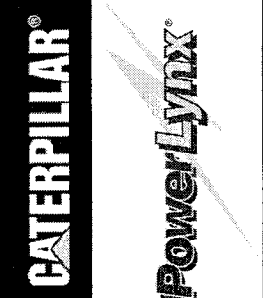
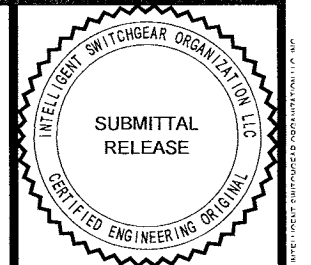
CITY OF WINNIPEG WTP - UTILITY (E-100)		4.16KV UTILITY PARALLELING SWITCHGEAR	
24VDC BEST SOURCE - 2		SCALE: N.T.S.	
APPROVED BY	REV	DRAWN BY	MODIFIED BY
RAM	0.2	EM	THC
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	05-01-06	08-01-06	08-01-06
FILE NAME	SHEET NUMBER	of	
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NO.	REVISION	DATE	
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0.2	REISSUED FOR SUBMITTAL	08-09-06	

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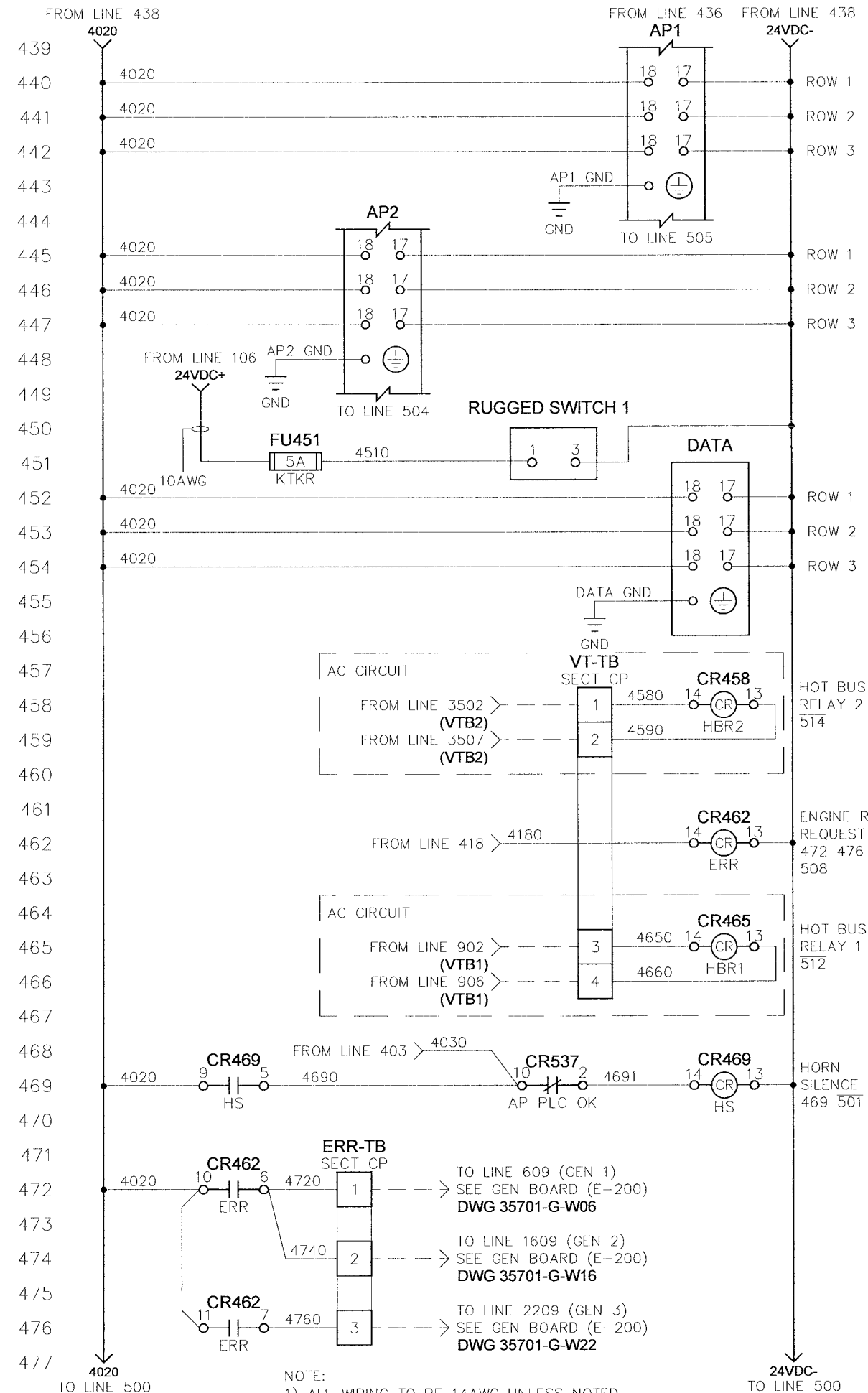
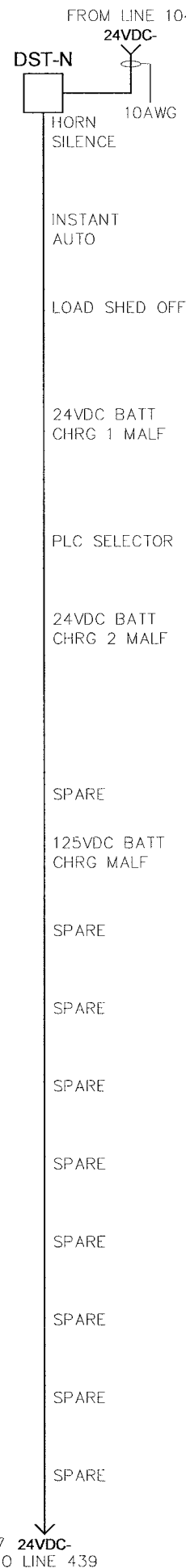
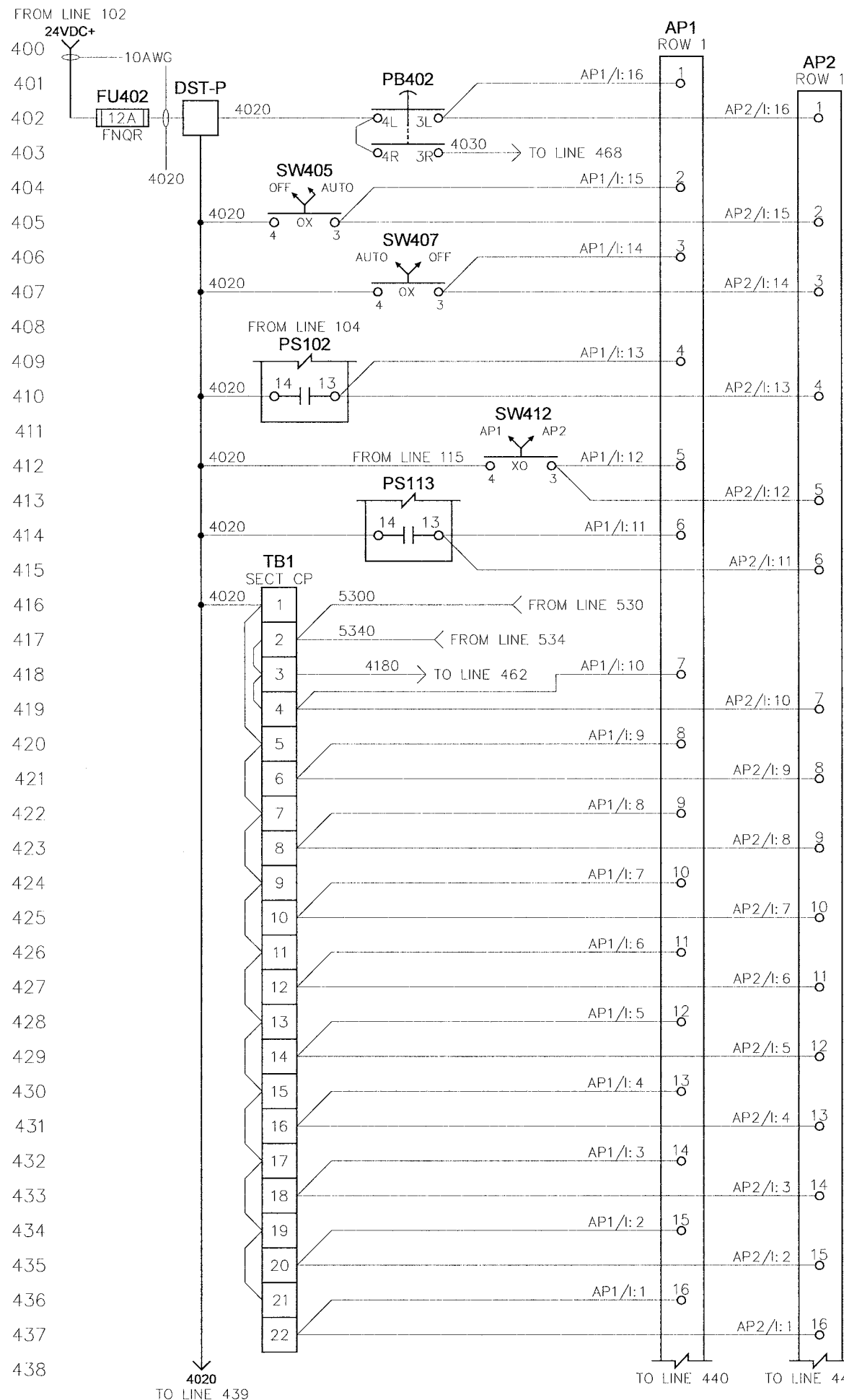
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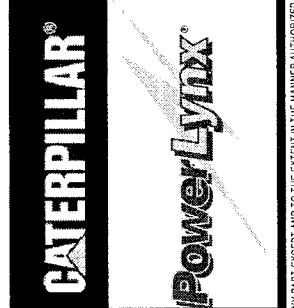
NOTE:  
ALL WIRING 10 AWG UNLESS OTHERWISE NOTED



CITY OF WINNIPEG WTP - UTILITY (E-100)		4.16kV UTILITY PARALLELING SWITCHGEAR	
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APPROVED BY	SCALE	REV	0.2
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08-09-06		DATE CREATED	05-01-06
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		SHEET NUMBER	3 of 52
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0.2	REISSUED FOR SUBMITTAL	08-09-06	



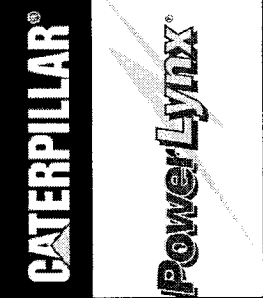
NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



CITY OF WINNIPEG WTP - UTILITY (E-100)			
SYSTEM CONTROLS - 1			
4.16KV UTILITY PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV	MODIFIED BY
RAM	N.T.S.	0.2	EM
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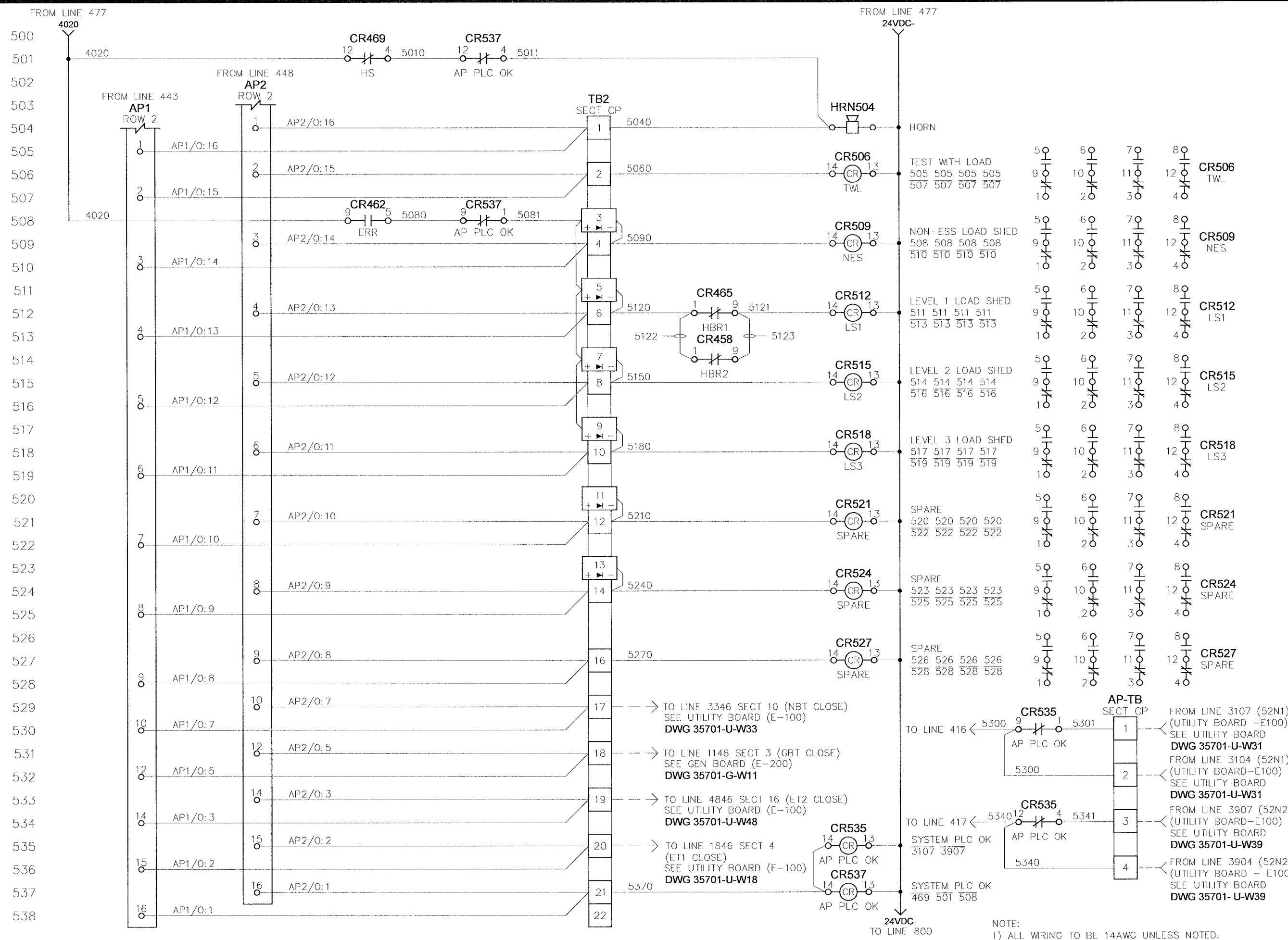
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06





CITY OF WINNEPEG WTP - UTILITY (E-100)		TITLE:	
SYSTEM CONTROLS - 2		4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV	0.2
DATE APPROVED	N.T.S.	DATE CREATED	05-01-06
FILE NAME	RAM	DATE MODIFIED	05-01-06
		SHEET NUMBER	5 of 52
		U-W05	

NO.	REVISION	DATE
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13 5240

14 5240

16 5270

17 TO LINE 3346 SECT 10 (NBT CLOSE) SEE UTILITY BOARD (E-100) DWG 35701-U-W33

18 TO LINE 1146 SECT 3 (GBT CLOSE) SEE GEN BOARD (E-200) DWG 35701-G-W11

19 TO LINE 4846 SECT 16 (ET2 CLOSE) SEE UTILITY BOARD (E-100) DWG 35701-U-W48

20 TO LINE 1846 SECT 4 (ET1 CLOSE) SEE UTILITY BOARD (E-100) DWG 35701-U-W18

21 5370

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AP1 ROW 2

1 AP1/O:16

2 AP1/O:15

3 AP1/O:14

4 AP1/O:13

5 AP1/O:12

6 AP1/O:11

7 AP1/O:10

8 AP1/O:9

9 AP1/O:8

10 AP1/O:7

12 AP1/O:5

14 AP1/O:3

15 AP1/O:2

16 AP1/O:1

AP2 ROW 2

1 AP2/O:16

2 AP2/O:15

3 AP2/O:14

4 AP2/O:13

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12 AP2/O:5

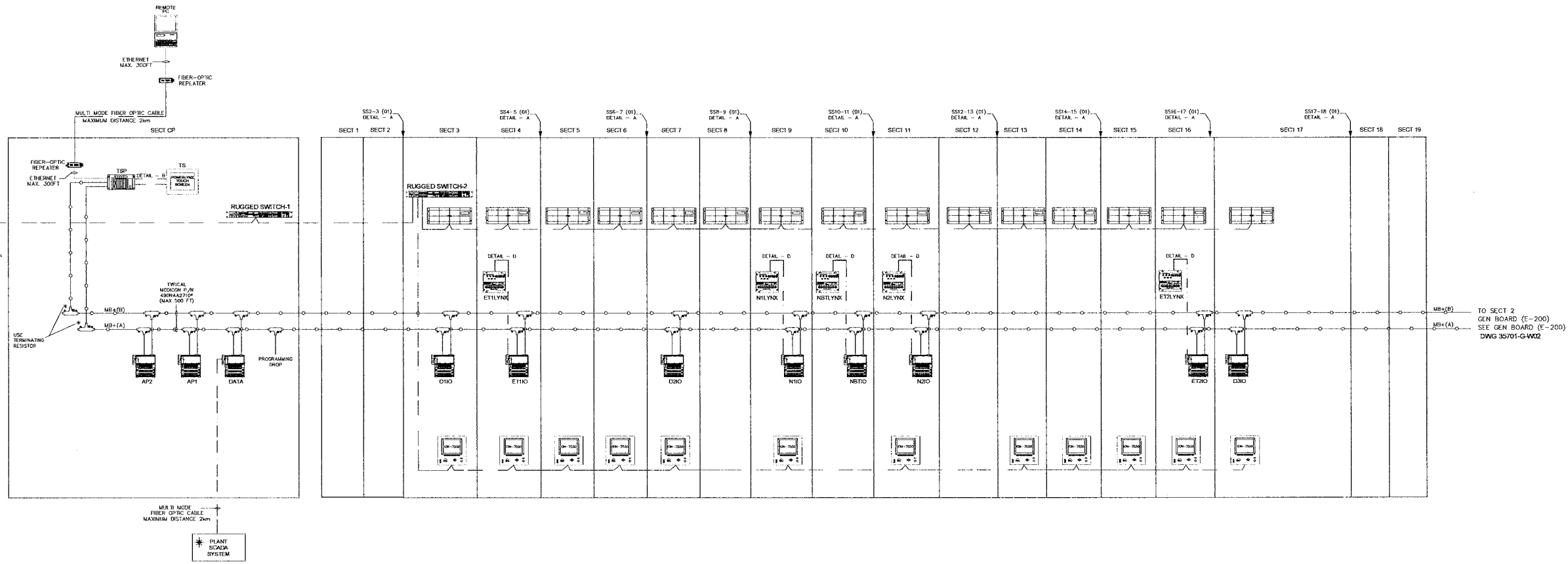
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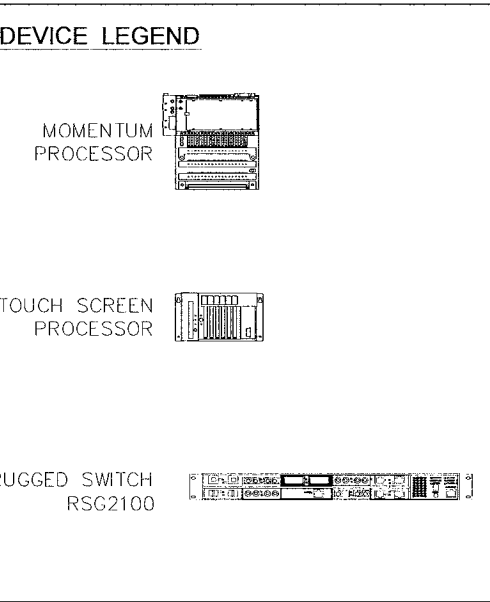
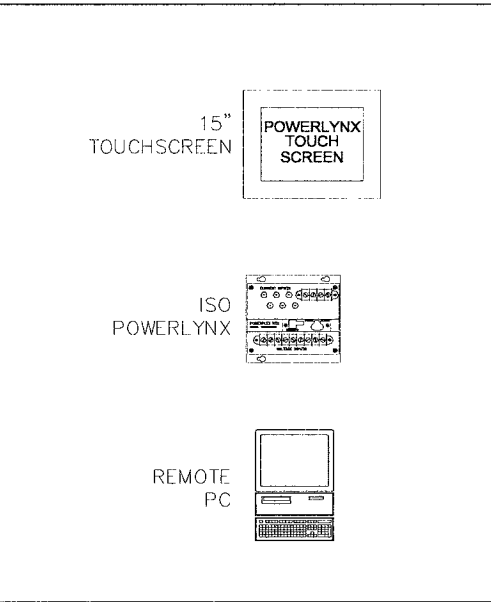


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**LINE LEGEND**

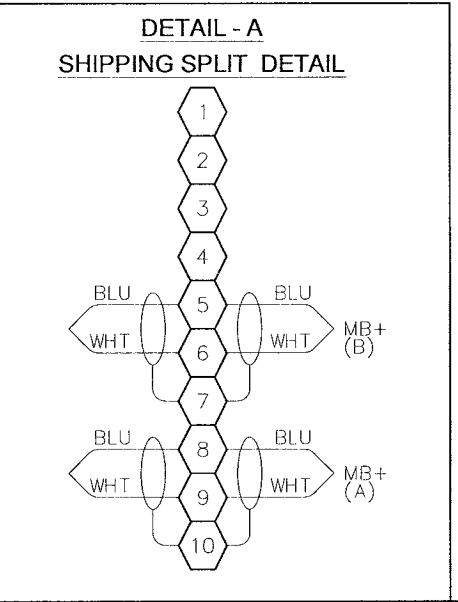
- RS-232
- MODBUS +
- VIDEO CABLE
- ETHERNET
- MODBUS RTU/RS-485
- DATA LINK
- FIBER OPTIC CABLE



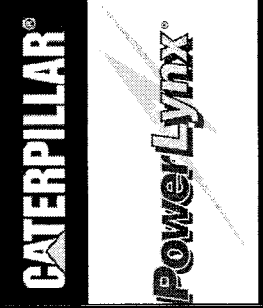
**NETWORK NODE ASSIGNMENTS**

MODBUS +

DEVICE	NODE
ET110	25
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ET210	27
ET1LYNX	00
N110	32
N1LYNX	00
N210	34
N2LYNX	00
NB110	40
NB1LYNX	00
AP1	44
AP2	45
D110	48
D210	49
D310	50
DATA	55
TSP801	58
PRG	64



★ SUPPLIED BY OTHERS



**TITLE:** CITY OF WINNEPEG WTP - UTILITY (E-100)  
AUTOMATION COMMUNICATION PLAN - 1  
4.16KV UTILITY PARALLELING SWITCHGEAR

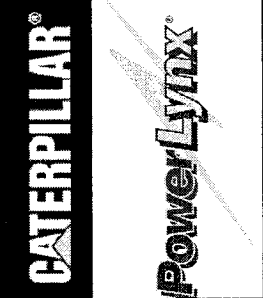
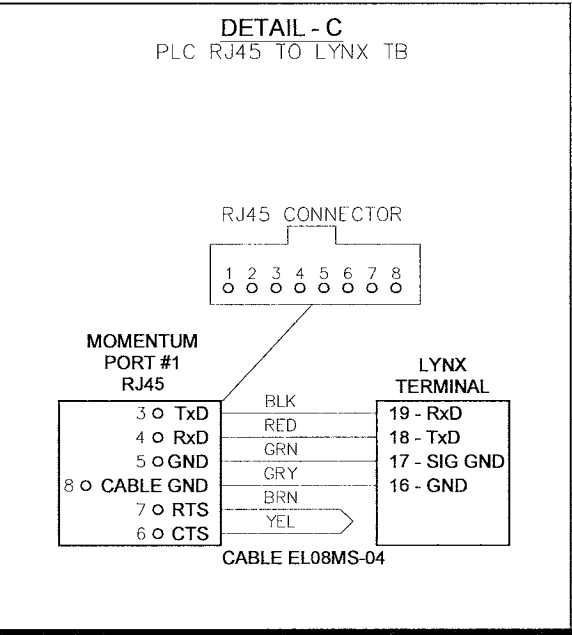
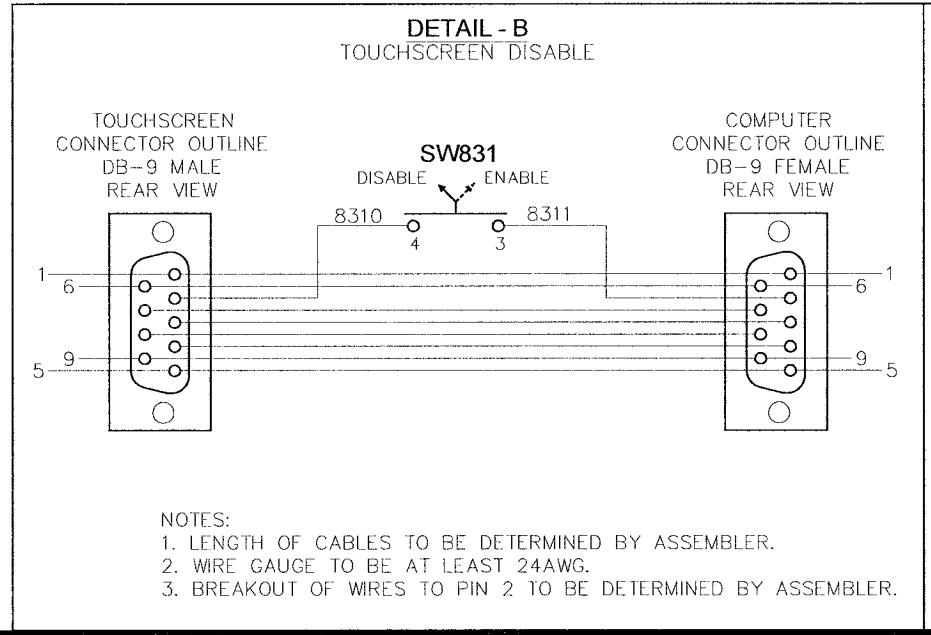
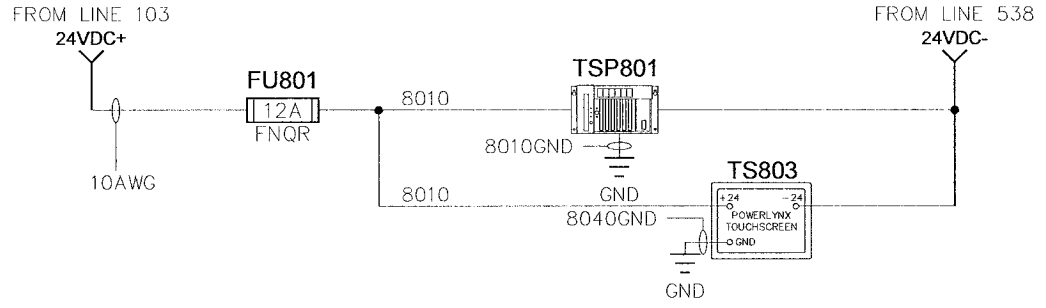
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DATE APPROVED: 08-09-06  
FILE NAME: 35701-U-W07

DRAWN BY: EM  
DATE CREATED: 05-01-06  
SHEET NUMBER: 7 of 52

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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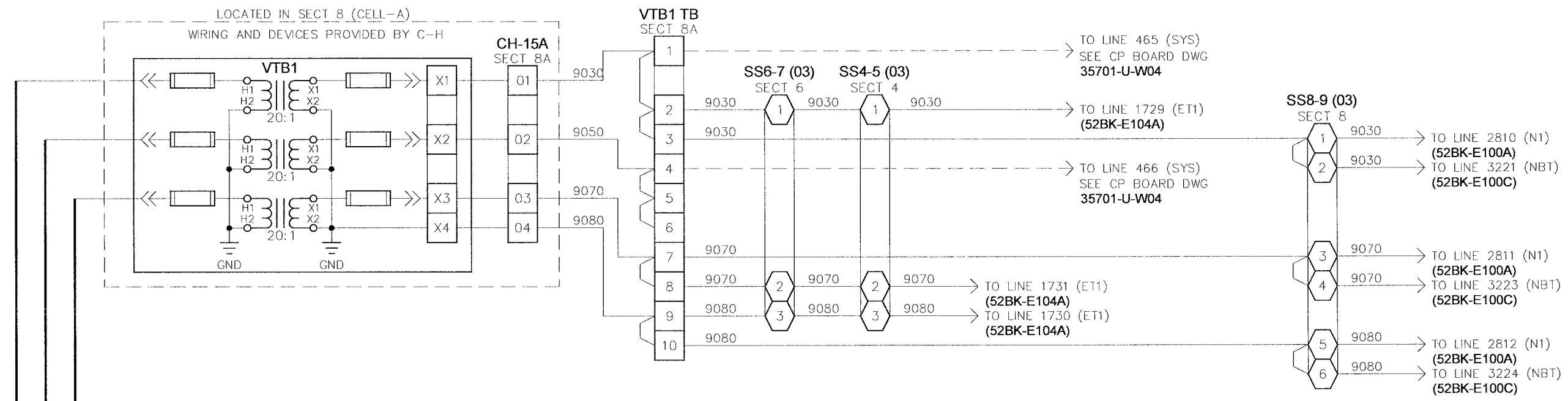
**CITY OF WINNIPEG WTP - UTILITY (E-100)**  
**AUTOMATION COMMUNICATION PLAN - 2**  
4.16KV UTILITY PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV	DRAWN BY	MODIFIED BY
<i>RAM</i>	N.T.S.	0.2	EM	
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-U-W08			8	52

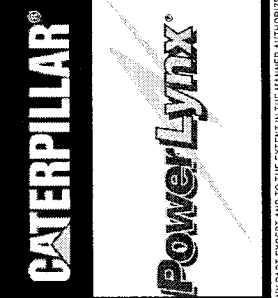
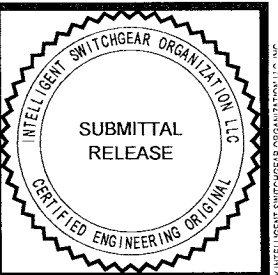
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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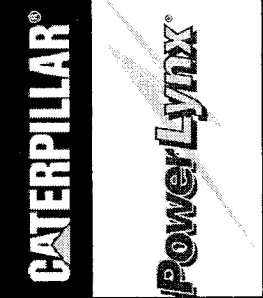


NOTES:  
 ALL WIRING 14 AWG UNLESS OTHERWISE NOTED.  
 ABBREVIATION "C-H" REPRESENTS CUTLER-HAMMER.



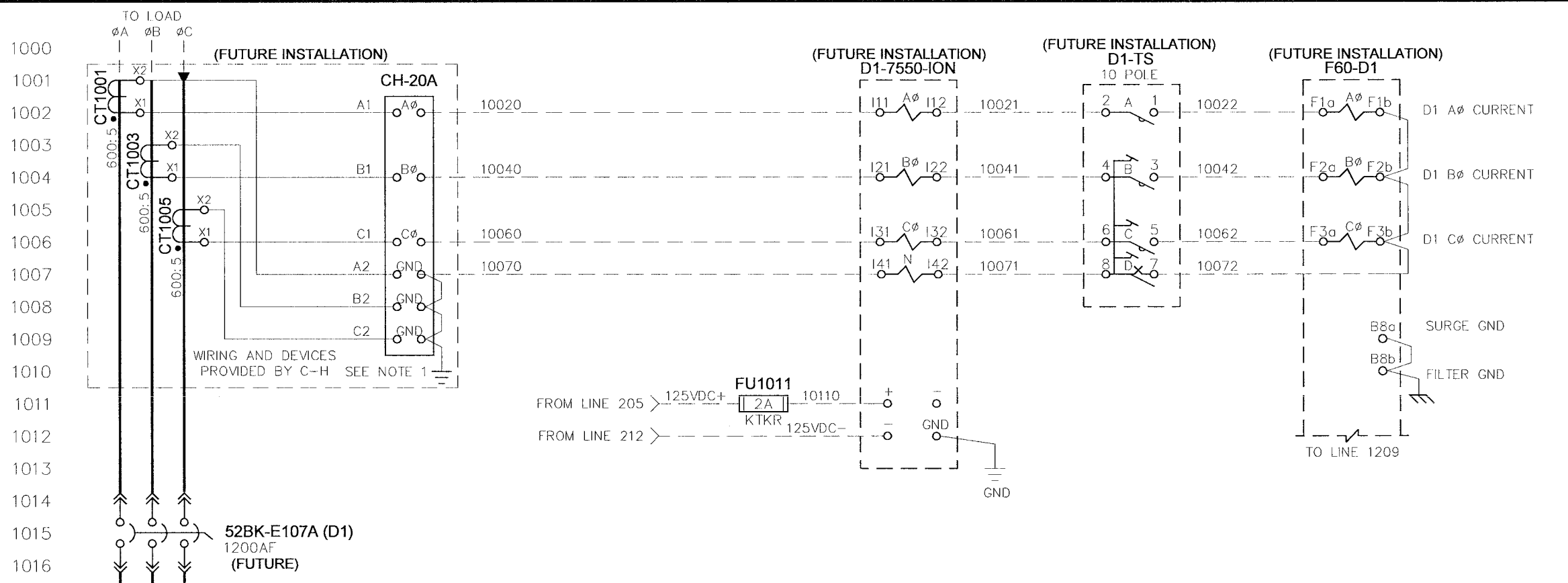
CITY OF WINNIPEG WTP - UTILITY (E-100)		TITLE:	
BUS VOLTAGE - 1		4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV.	0.2
DATE APPROVED	N.T.S.	DRAWN BY	EM
FILE NAME	08-09-06	DATE CREATED	05-01-06
35701-U-W9		SHEET NUMBER	9 of 52
NO.	REVISION	DATE	
0.0	ISSUED FOR SUBMITTAL	05-22-06	
0.1	REISSUED FOR SUBMITTAL	06-07-06	
0.2	REISSUED FOR SUBMITTAL	08-09-06	

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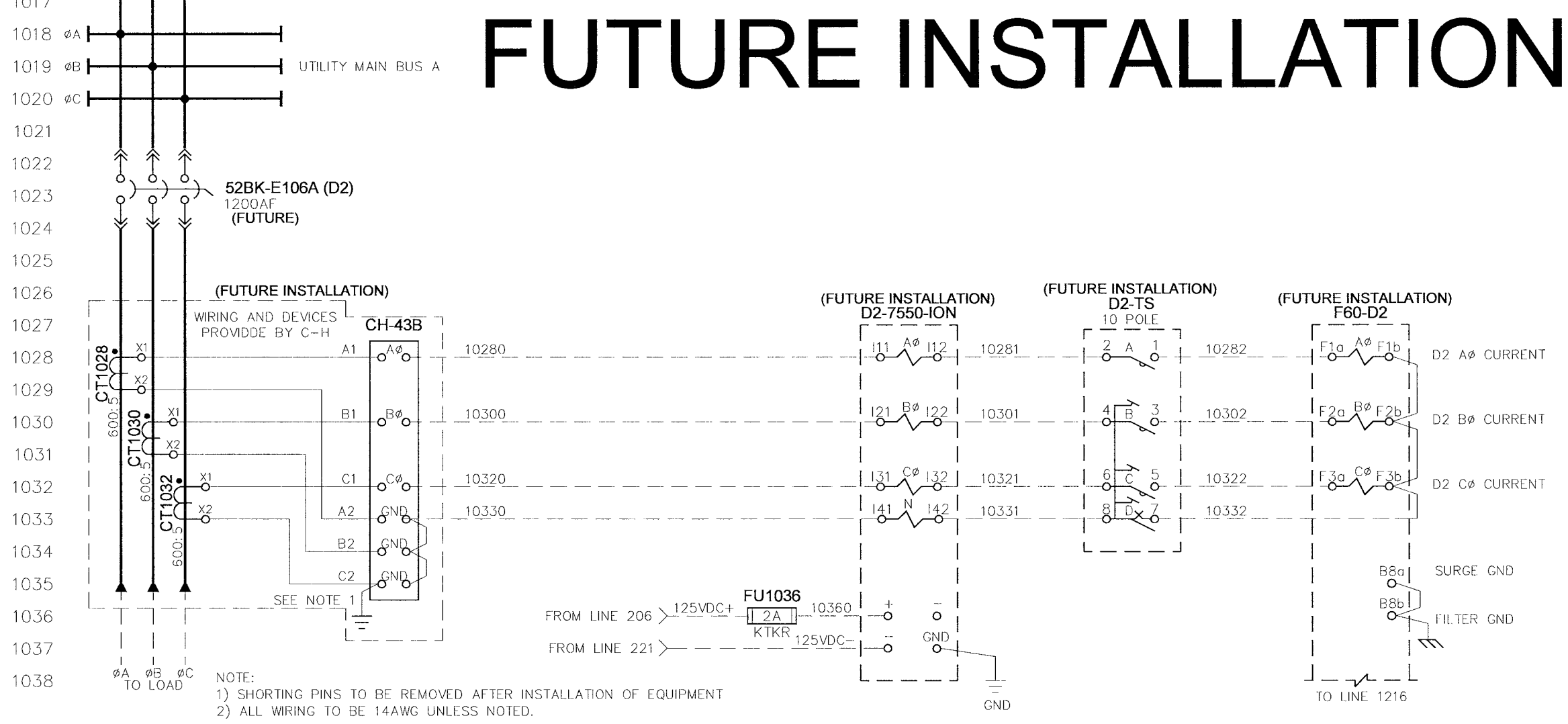


CITY OF WINNIPEG WTP - UTILITY (E-100)		DISTRIBUTION 1 (D1 & D2) - AC INSTRUMENTATION	
4.16KV UTILITY PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV	MODIFIED BY
RAM	N.T.S.	0.2	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	03-14-06		
FILE NAME	SHEET NUMBER	of	
35701-U-W10	10	52	

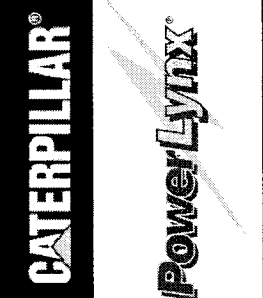
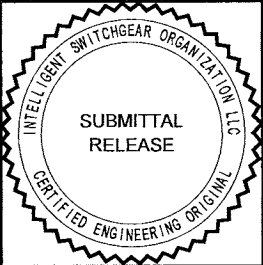
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
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# FUTURE INSTALLATION

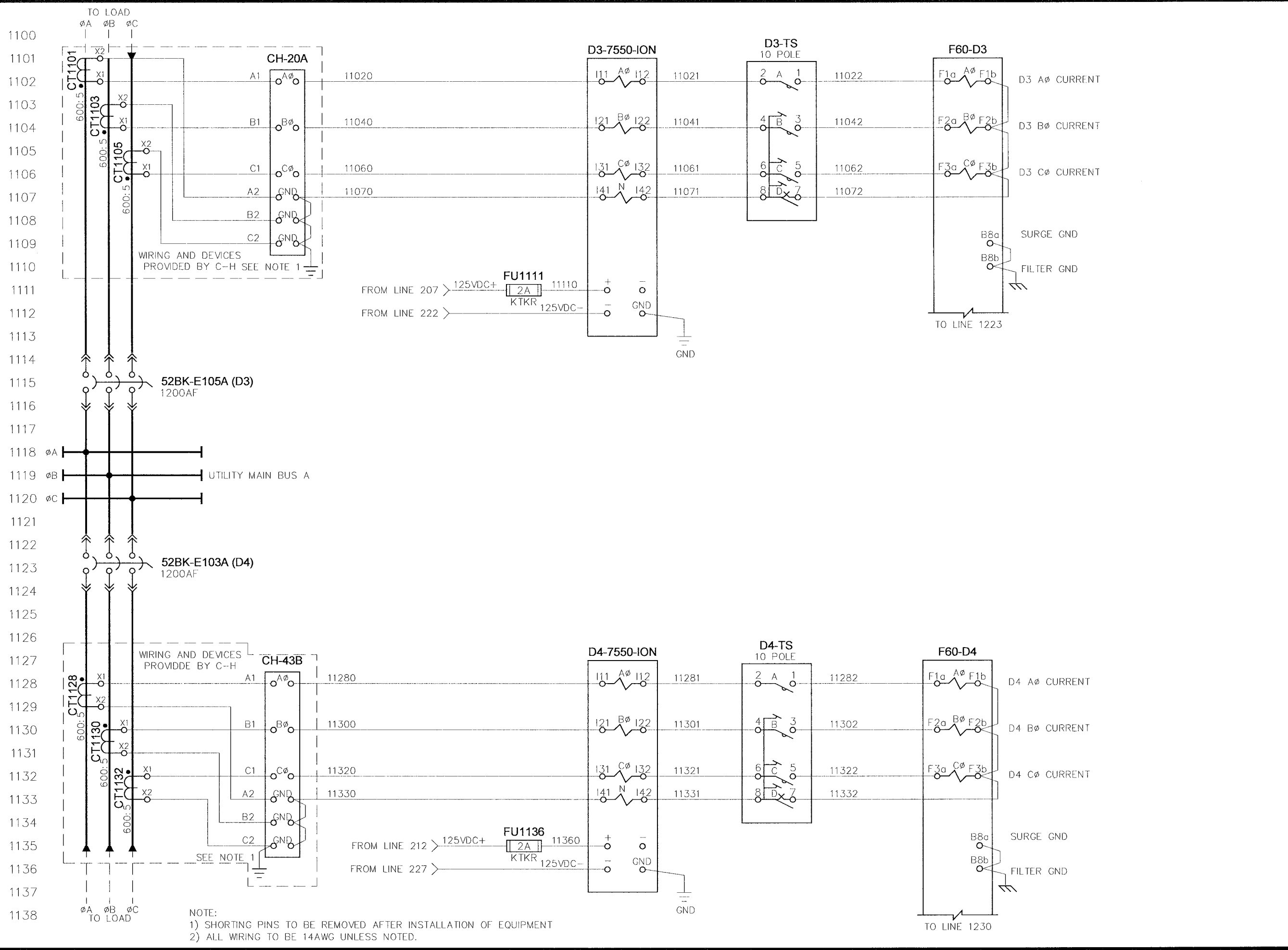


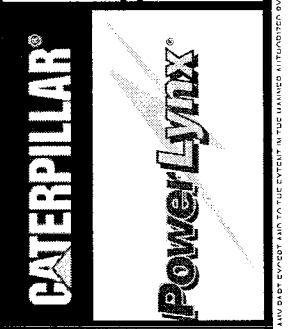
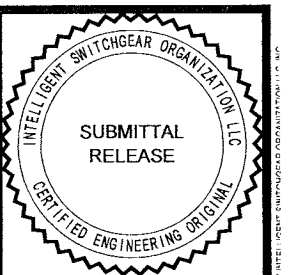
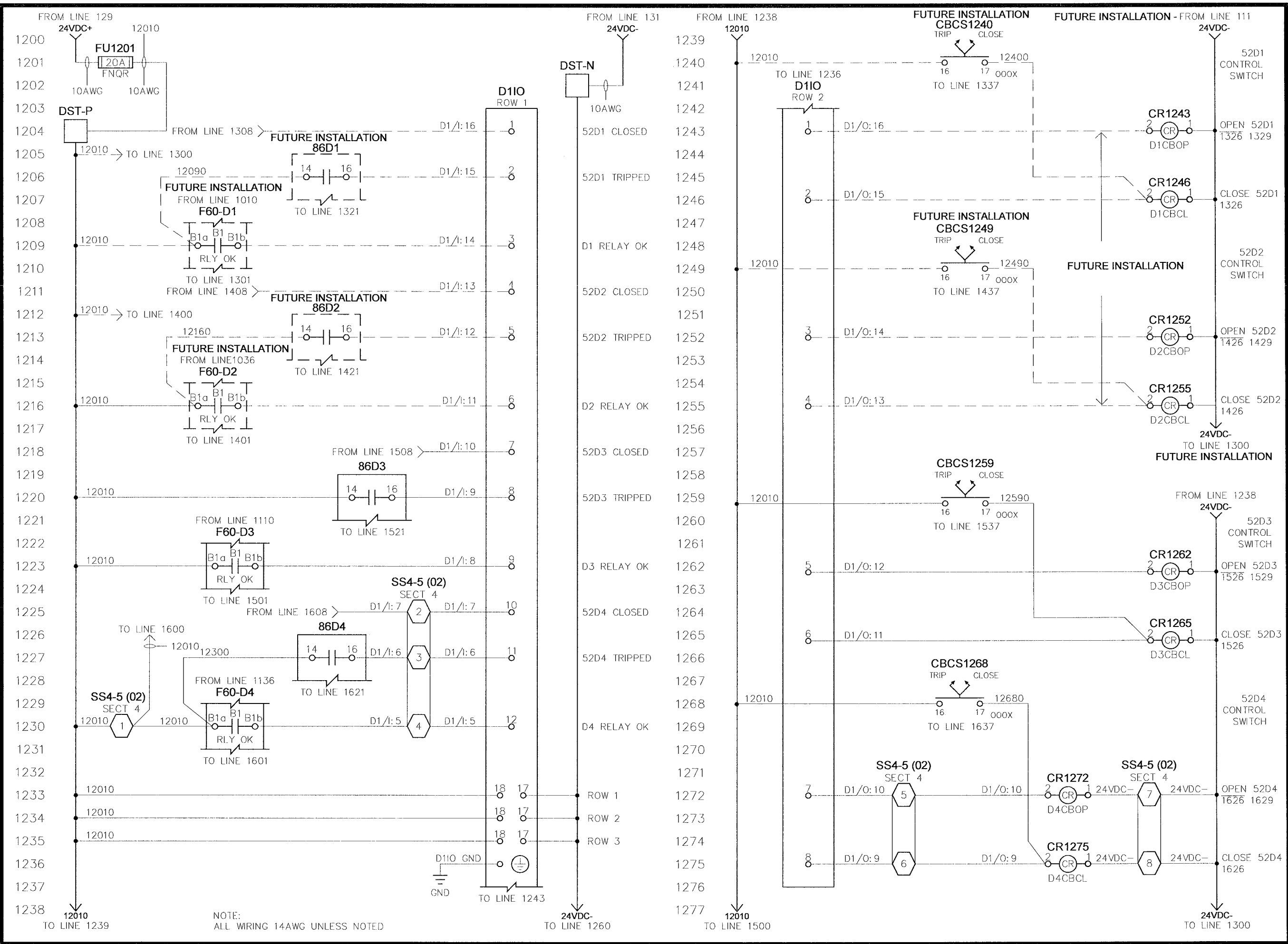
NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>DISTRIBUTION 1 (D3 &amp; D4) - AC INSTRUMENTATION</b>			
4.16KV UTILITY PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV.	MODIFIED BY
RAM	N.T.S.	0.2	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	03-14-06		
FILE NAME	SHEET NUMBER	of	
35701-U-W11	11	52	

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06



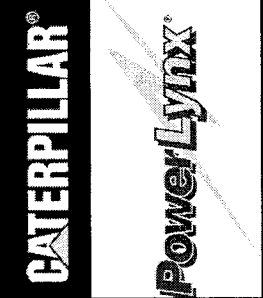


<b>CITY OF WINNEPEG WTP - UTILITY (E-100)</b> <b>DISTRIBUTION 1 (52D1, 52D2, 52D3 &amp; 52D4) - CONTROLS</b>		TITLE: 4.16KV UTILITY PARALLELING SWITCHGEAR SCALE: N.T.S. REV: 02	DRAWN BY: EM DATE CREATED: 05-01-06 SHEET NUMBER: 12 of 52
APPROVED BY: RAM DATE APPROVED: 08-09-06 FILE NAME: 35701-U-W12	MODIFIED BY: THC DATE MODIFIED: 08-01-06	<b>U-W12</b>	
NO. 0.0 REVISION: ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL	DATE: 05-22-06 06-07-06 08-09-06		

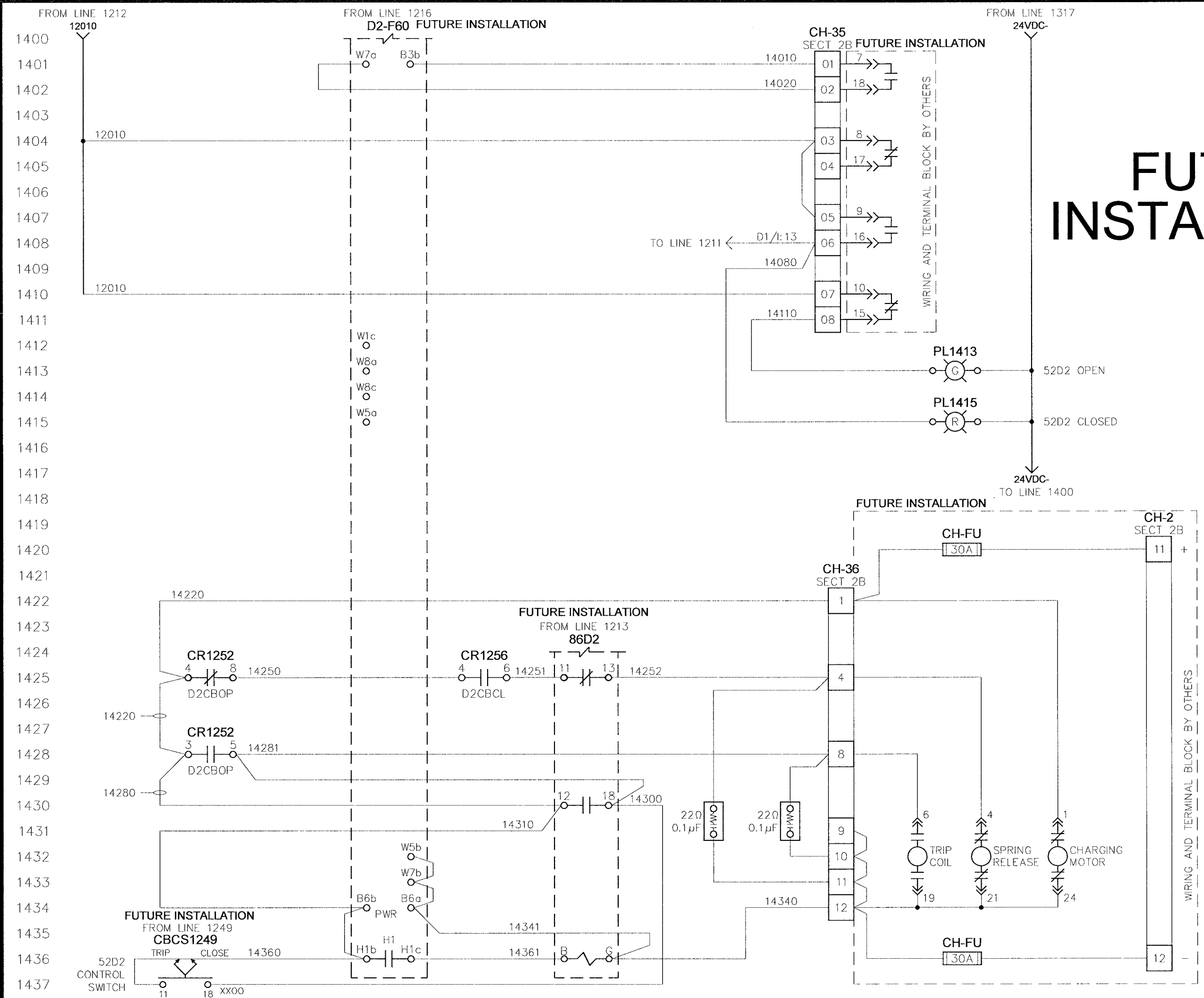
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# FUTURE INSTALLATION

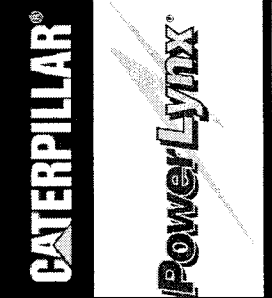


TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)  
DISTRIBUTION 1 52D2 (52BK-E106A) - CB INTERFACE (FUTURE)

4.16KV UTILITY PARALLELING SWITCHGEAR

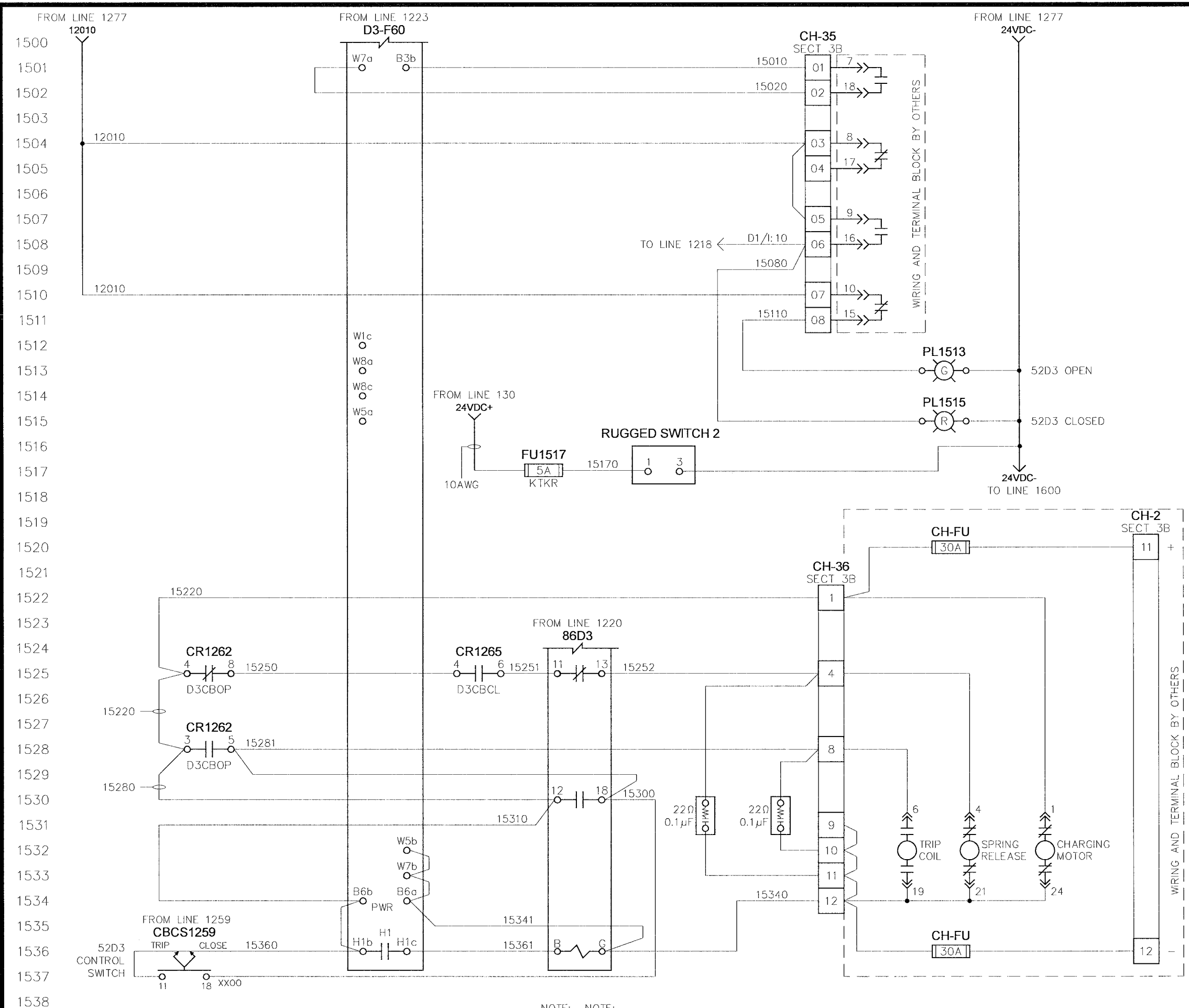
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35701-U-W14			ZZ	52

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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06



CITY OF WINNEPEG WTP - UTILITY (E-100)		DISTRIBUTION 1 52D3 (52BK-E105A) - CB INTERFACE		4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV	REV	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2		EM	
DATE APPROVED	DATE CREATED	DATE MODIFIED		DATE MODIFIED	
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FILE NAME	SHEET NUMBER				
35701-U-W15	22				of 52

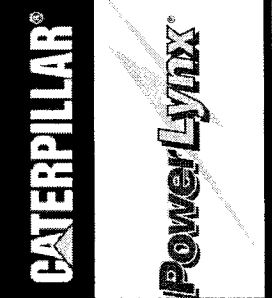
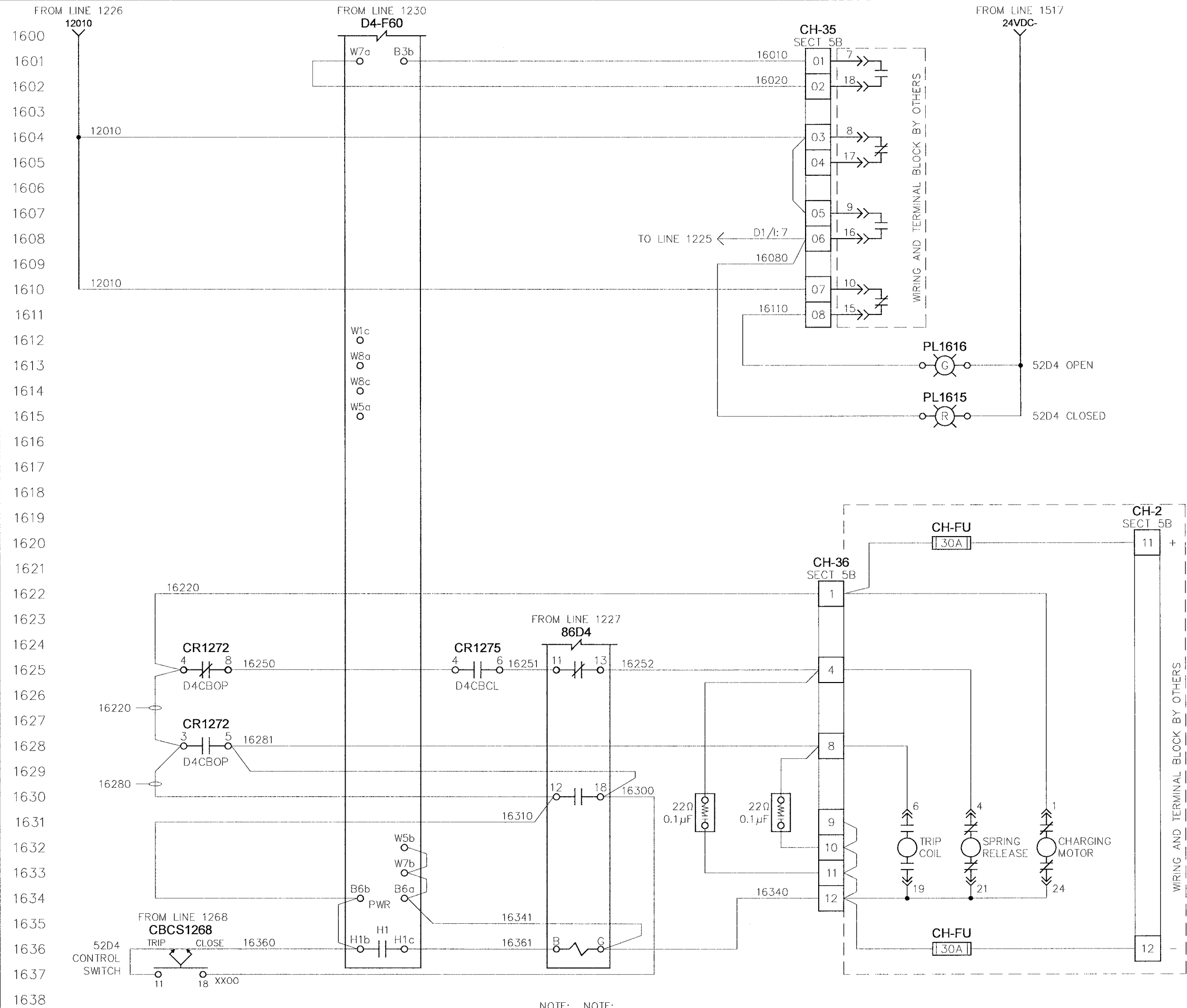
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NOTE: NOTE:  
1) ALL WIRING TO BE 14 AWG UNLESS NOTED.

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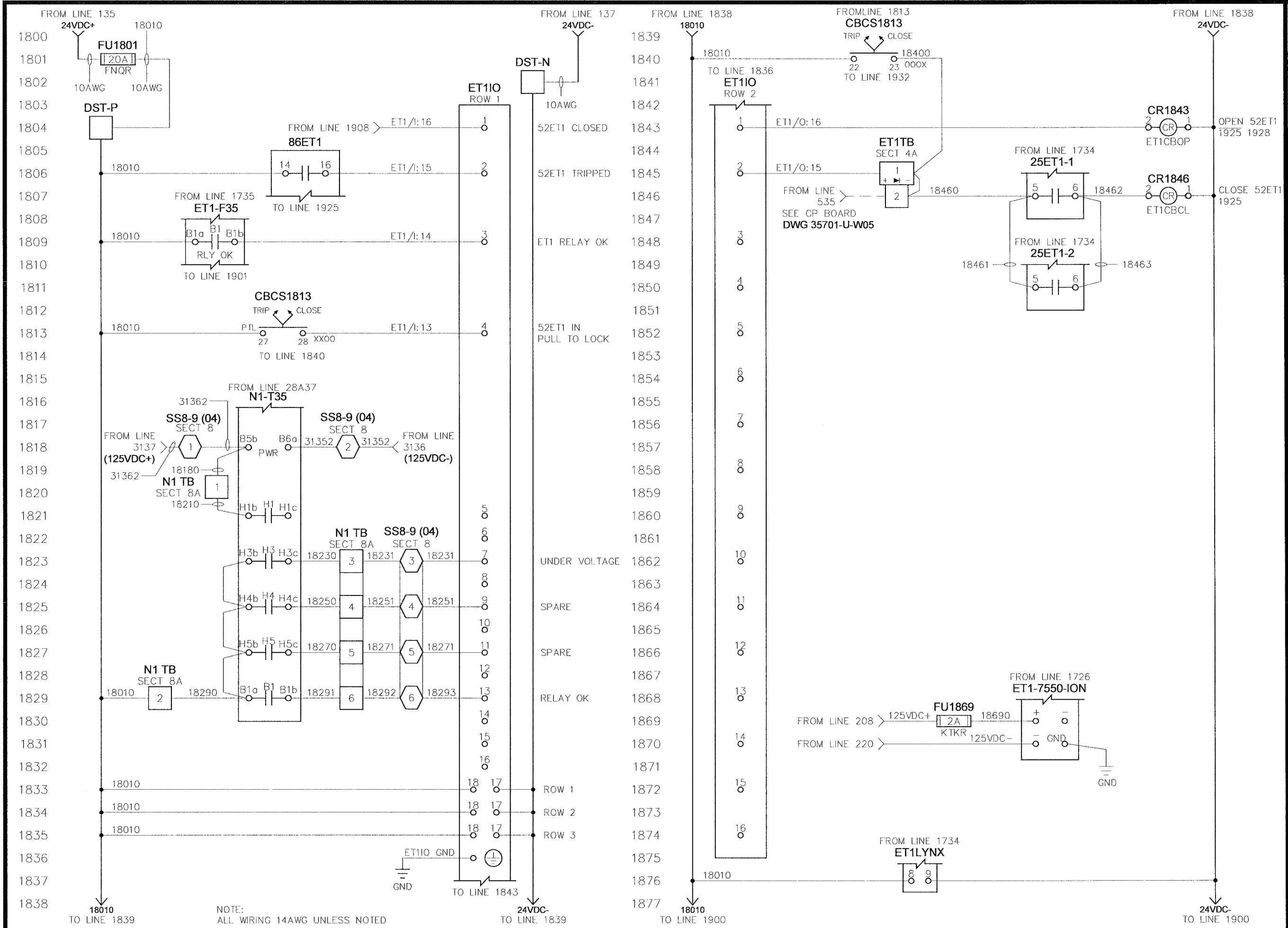


<b>TITLE:</b> CITY OF WINNEPEG WTP - UTILITY (E-100) DISTRIBUTION 1 52D4 (52BK-E103A) - CB INTERFACE		<b>APPROVED BY:</b> <i>RAM</i>		<b>SCALE:</b> N.T.S.		<b>REV:</b> 0.2		<b>MODIFIED BY:</b> EM	
<b>DATE APPROVED:</b> 08-09-06		<b>DATE CREATED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>SHEET NUMBER:</b> 22		<b>of 52</b>	
<b>FILE NAME:</b> 35701-U-W16		<b>U-W16</b>							

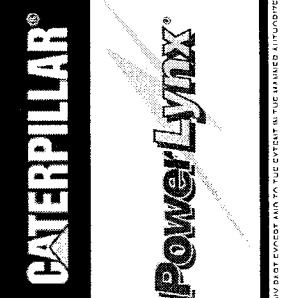
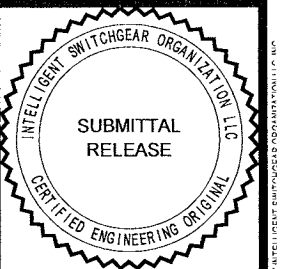
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NOTE:  
ALL WIRING 14AWG UNLESS NOTED



TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)  
EMERGENCY TIE 52ET1 (52BK-E104A) - CONTROLS

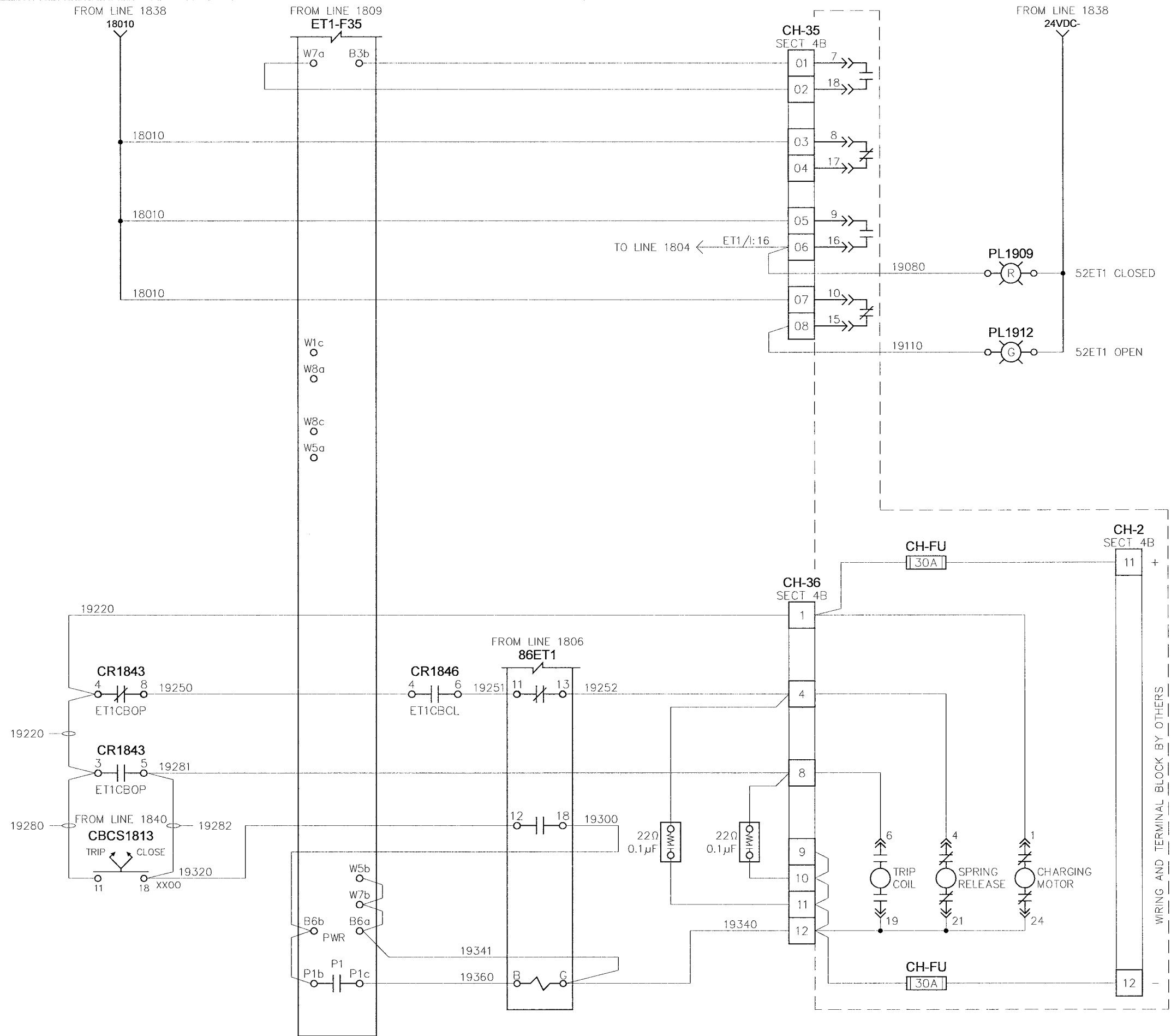
4.16KV UTILITY PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV.	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	THC
DATE APPROVED			DATE CREATED	DATE MODIFIED
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FILE NAME			SHEET NUMBER	of
35701-U-W18			18	52

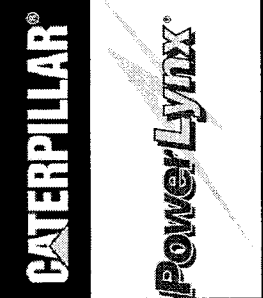
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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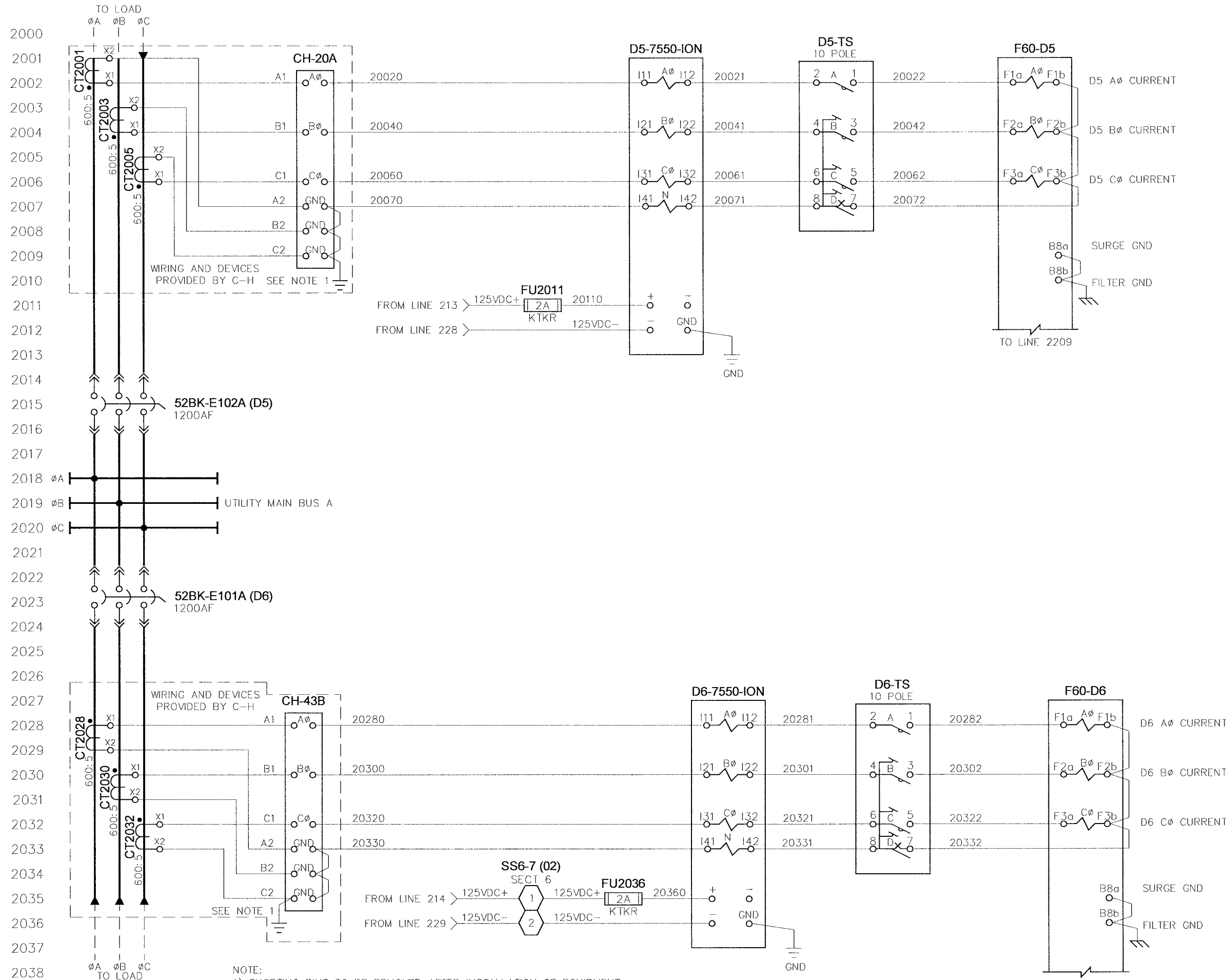
NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) EMERGENCY TIE 52ET1 (52BK-E104A) - CB INTERFACE 4.16KV UTILITY PARALLELING SWITCHGEAR	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV:</b> 0.2
<b>FILE NAME:</b> 35701-U-W19	<b>DATE CREATED:</b> 05-01-06
<b>DATE MODIFIED:</b> 05-01-06	<b>MODIFIED BY:</b> EM
<b>SHEET NUMBER:</b> 19	<b>DATE MODIFIED:</b> 05-01-06
<b>of</b> 52	<b>SHEET NUMBER:</b> 19

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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NOTE:  
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 2) ALL WIRING TO BE 14AWG UNLESS NOTED.

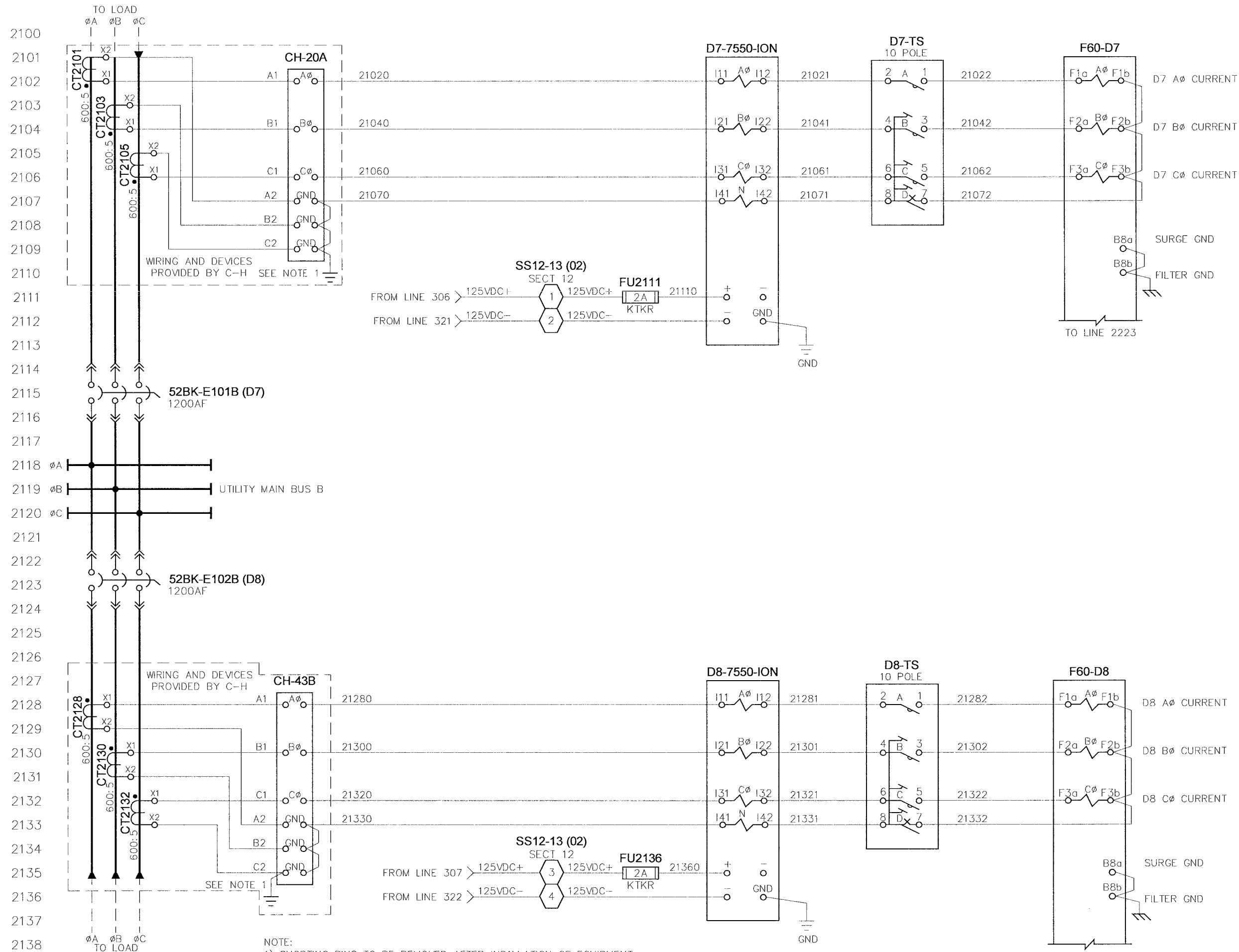


TITLE:  
 CITY OF WINNEPEG WTP - UTILITY (E-100)  
 DISTRIBUTION 2 (D5 & D6) - AC INSTRUMENTATION  
 4.16KV UTILITY PARALLELING SWITCHGEAR

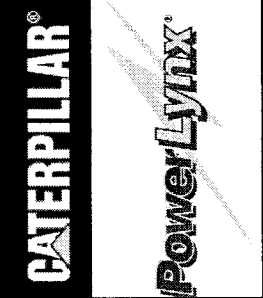
NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

APPROVED BY	SCALE	REV	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	EM
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			03-14-06	
FILE NAME			SHEET NUMBER	of
35637-U-W20			20	52





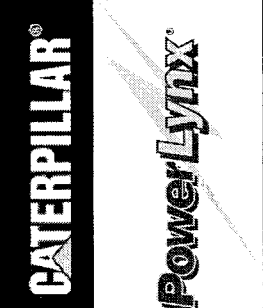
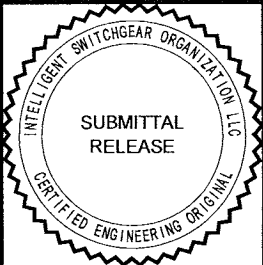
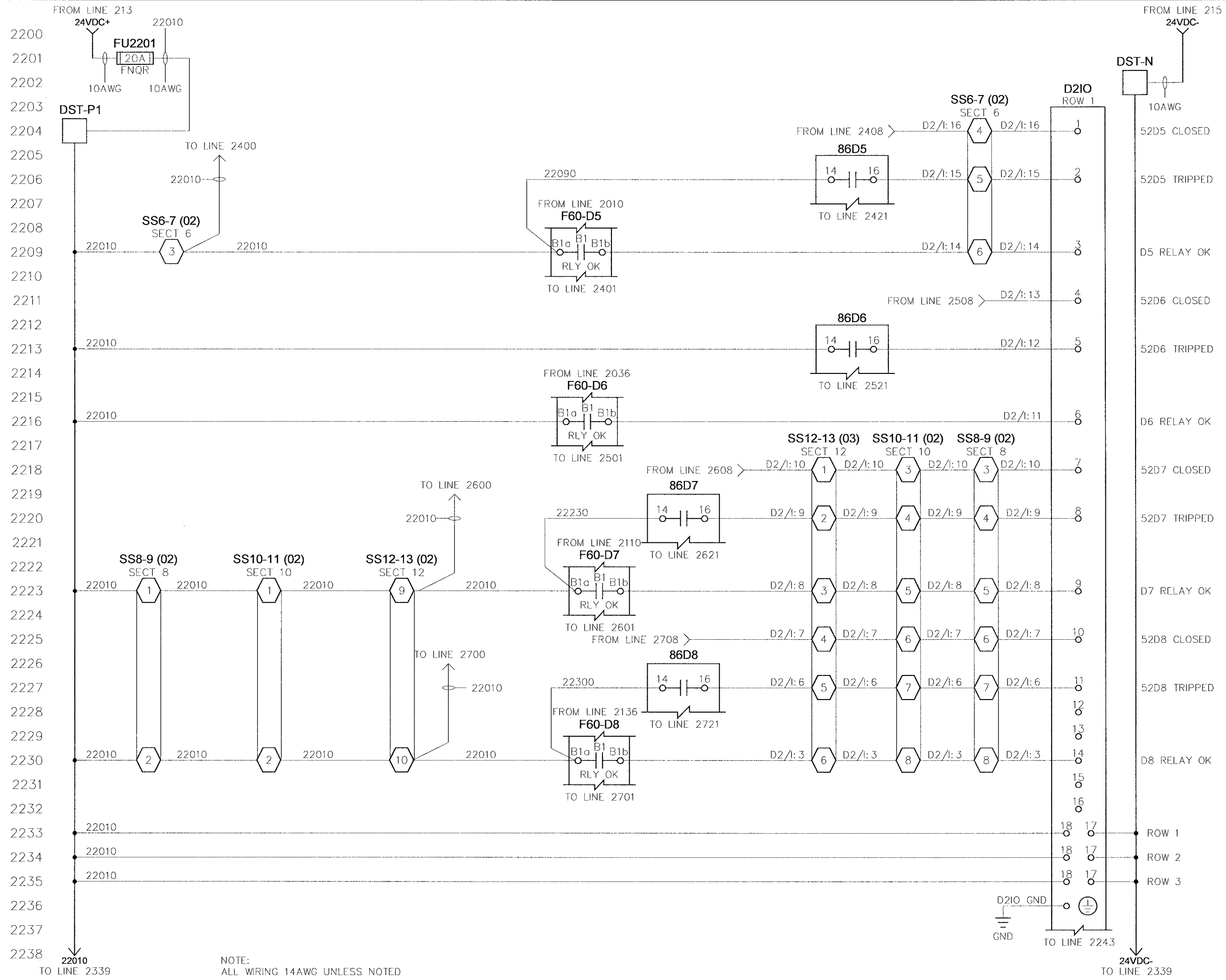
NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INDILLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) DISTRIBUTION 2 (D7 & D8) - AC INSTRUMENTATION 4.16KV UTILITY PARALLELING SWITCHGEAR		<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.	<b>REV:</b> 0.2	<b>MODIFIED BY:</b> EM
<b>DATE:</b> 05-22-06	<b>DATE:</b> 06-07-06	<b>DATE APPROVED:</b> 08-09-06	<b>DATE CREATED:</b> 03-14-06	<b>DATE MODIFIED:</b> 03-14-06	<b>DATE:</b> 03-14-06
<b>NO.</b> 0.0 ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL	<b>REVISION</b>	<b>FILE NAME:</b> 35637-U-W21	<b>SHEET NUMBER:</b> 21	<b>of</b> 52	<b>U-W21</b>

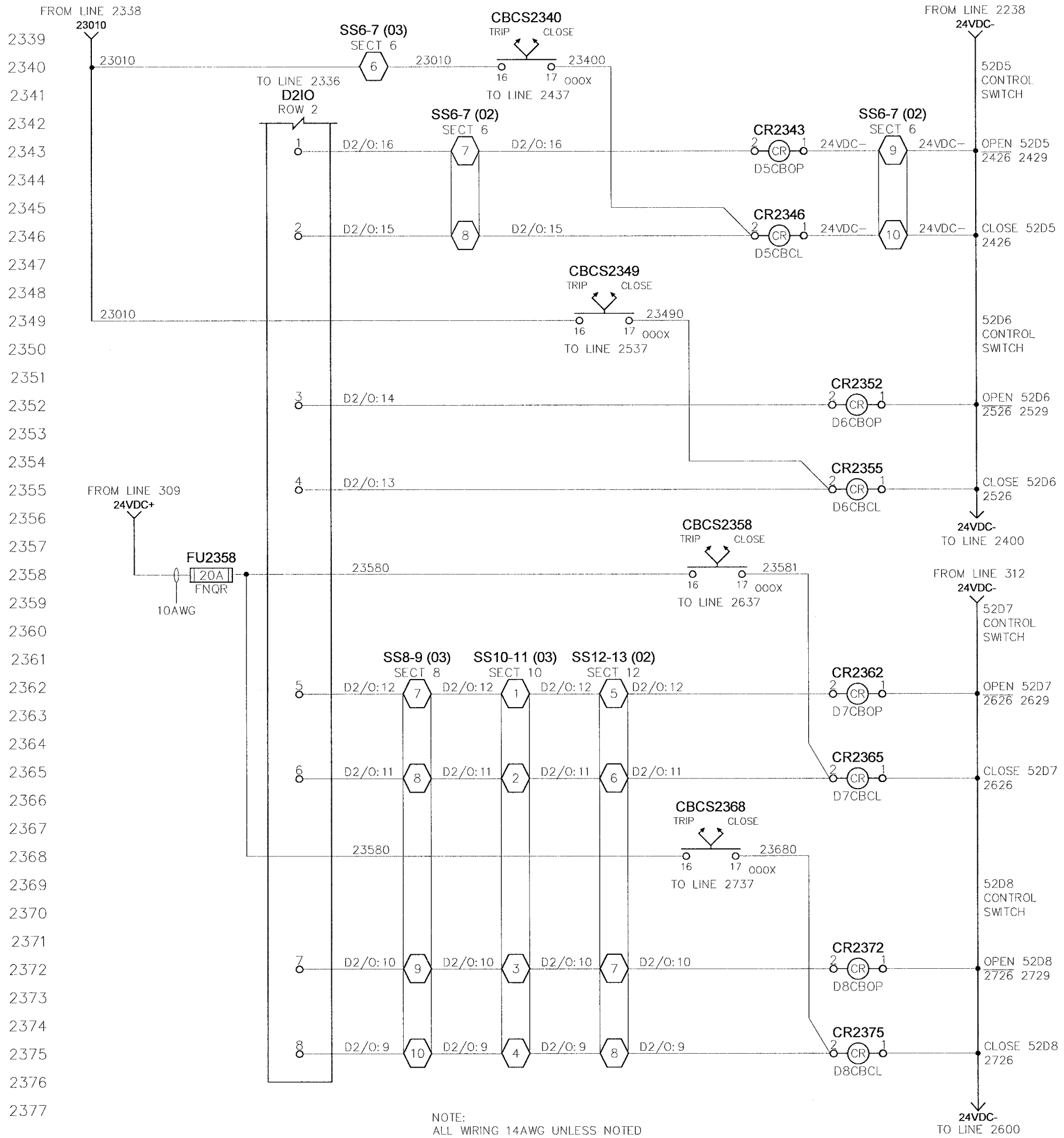
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0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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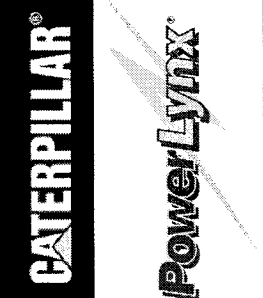
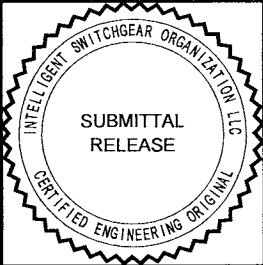
<b>CITY OF WINNEPEG WTP - UTILITY (E-100)</b> <b>DISTRIBUTION 2 (52D5, 52D6, 52D7 &amp; 52D8) - CONTROLS</b>		<b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>	
APPROVED BY <i>RAM</i>	SCALE N.T.S.	REV. 0.2	MODIFIED BY EM
DATE APPROVED 08-09-06	DATE CREATED 05-01-06	DATE MODIFIED	DATE MODIFIED
FILE NAME 35701-U-W22	SHEET NUMBER 22	of	52
NO. REVISION 0.0 ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL	DATE 05-22-06 06-07-06 08-09-06		

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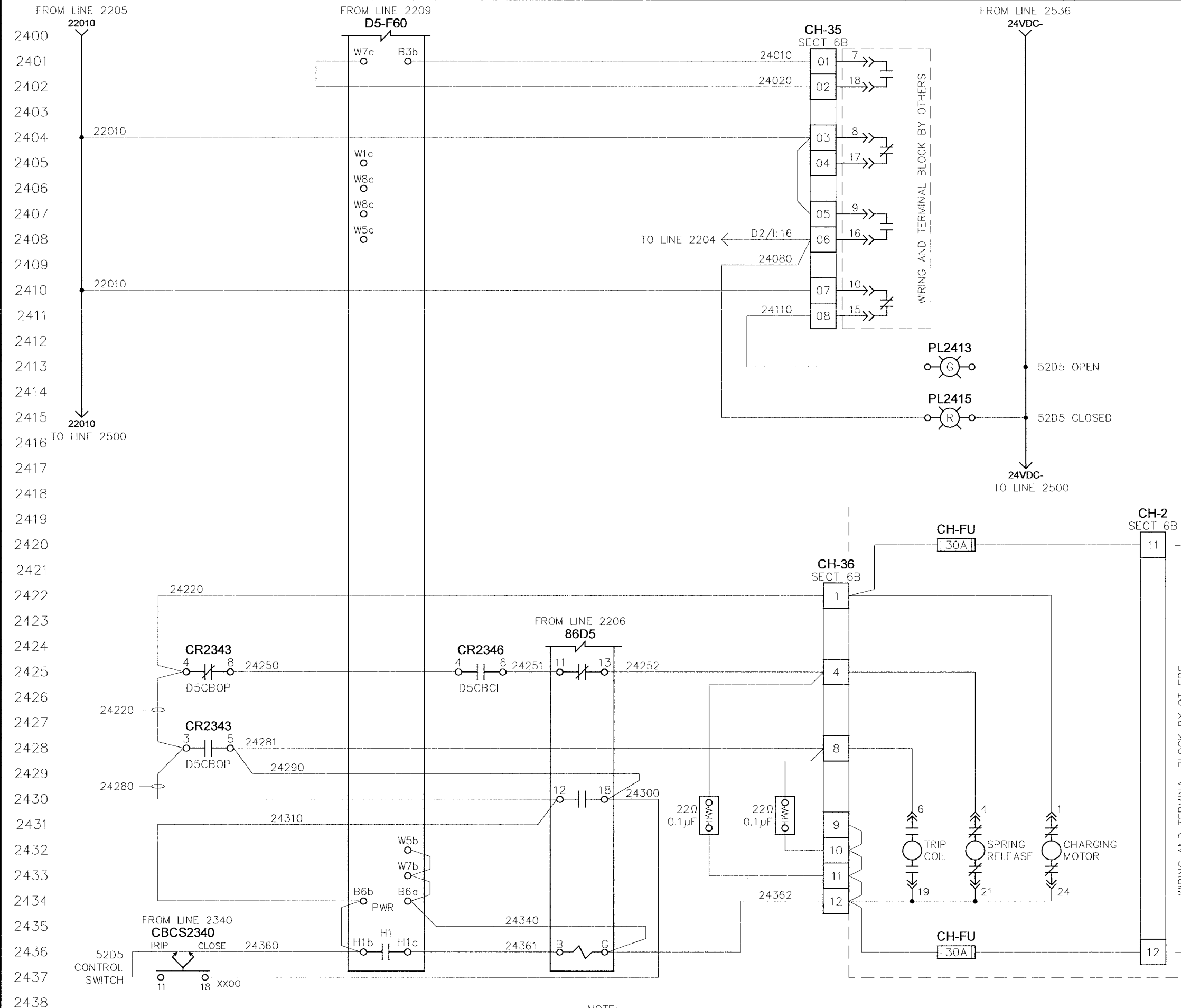
NOTE:  
ALL WIRING 14AWG UNLESS NOTED



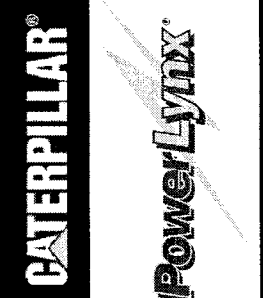
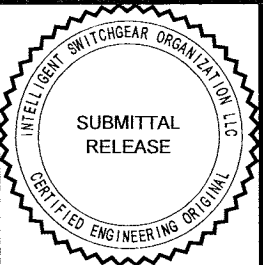
<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) DISTRIBUTION 2 (52D5, 52D6, 52D7 & 52D8) - CONTROLS 2	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV:</b> 0.2
<b>FILE NAME:</b> 35701-U-W23	<b>DATE CREATED:</b> 05-01-06
<b>SHEET NUMBER:</b> 23	<b>DATE MODIFIED:</b> 05-01-06
<b>MODIFIED BY:</b> EM	<b>SHEET NUMBER:</b> 23
<b>OF:</b> 52	

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-09-06

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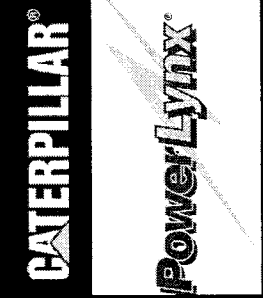
NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) DISTRIBUTION 2 52D5 (52BK-E102A) - CB INTERFACE	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV.:</b> 0.2
<b>FILE NAME:</b> 35701-U-W24	<b>MODIFIED BY:</b> EM
<b>DATE CREATED:</b> 05-01-06	<b>DATE MODIFIED:</b> 05-01-06
<b>SHEET NUMBER:</b> 22	<b>of</b> 52

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-09-06

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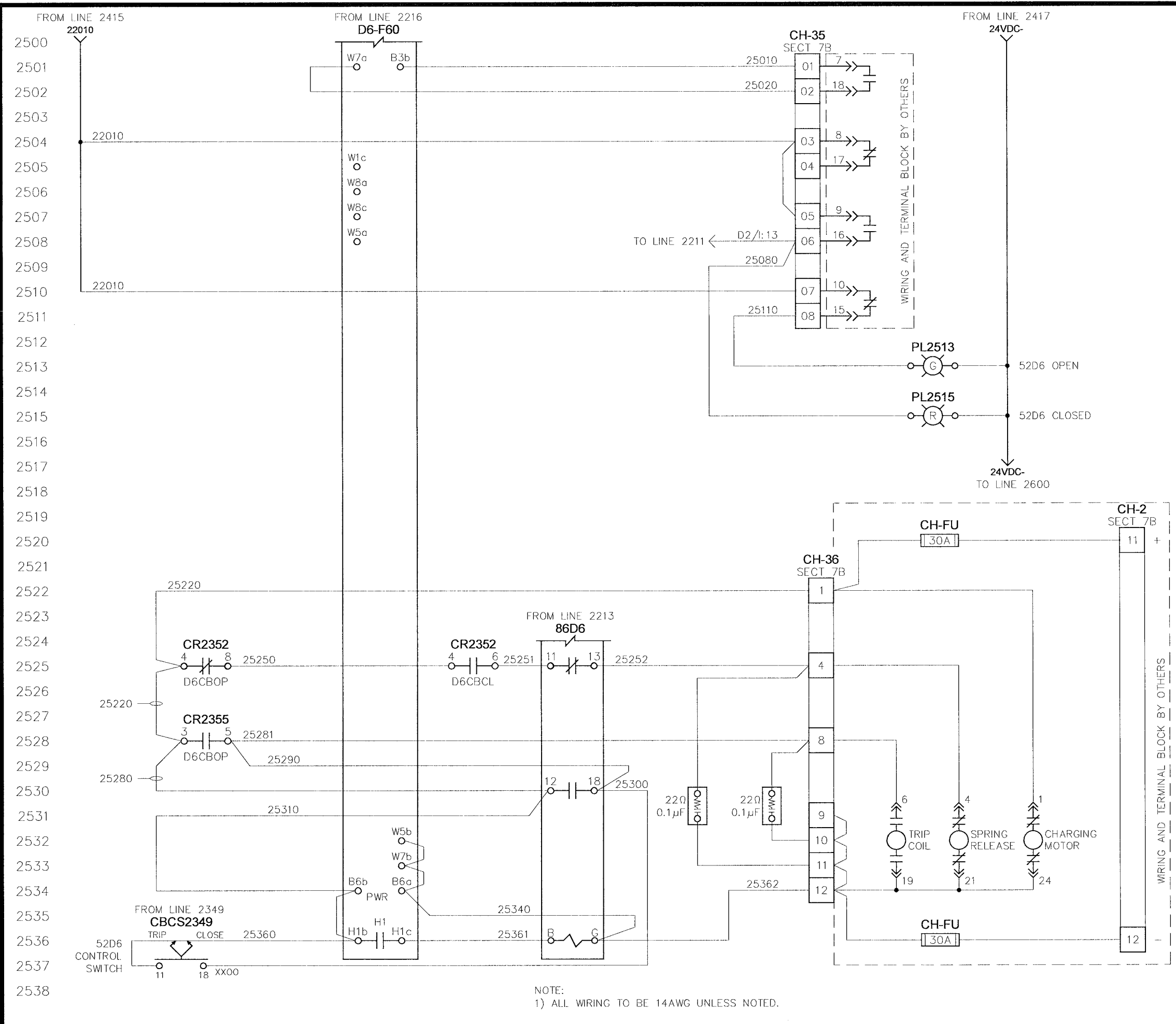


**CITY OF WINNIPEG WTP - UTILITY (E-100)**  
**DISTRIBUTION 2 52D6 (52BK-E101A) - CB INTERFACE**

4.16KV UTILITY PARALLELING SWITCHGEAR

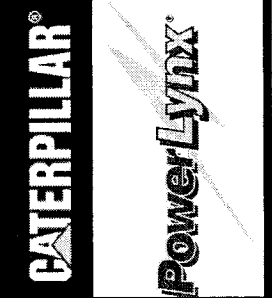
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 FILE NAME: 35701-U-W25 SHEET NUMBER: 22 of 52

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0.2	REISSUED FOR SUBMITTAL	08-09-06



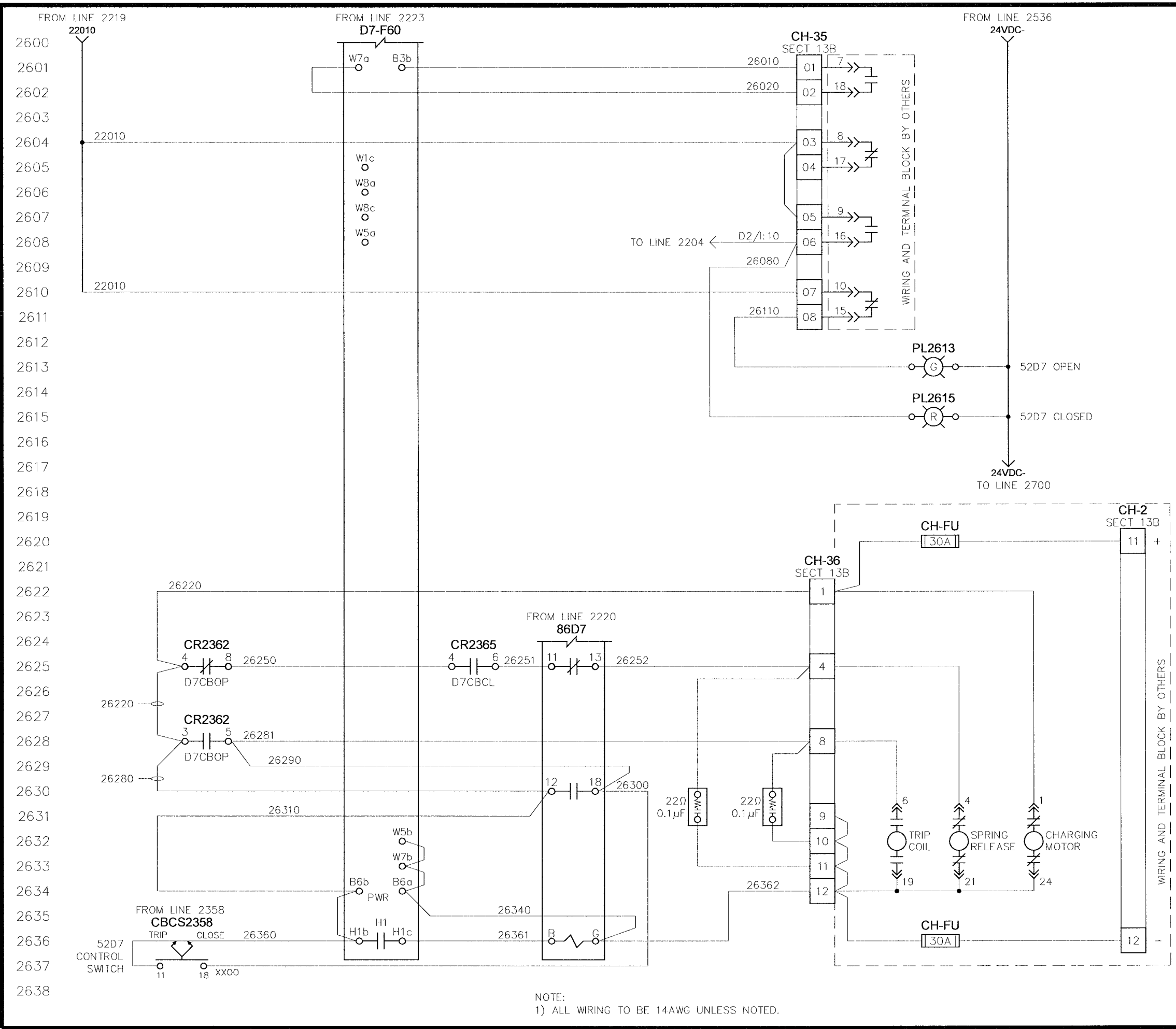
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NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

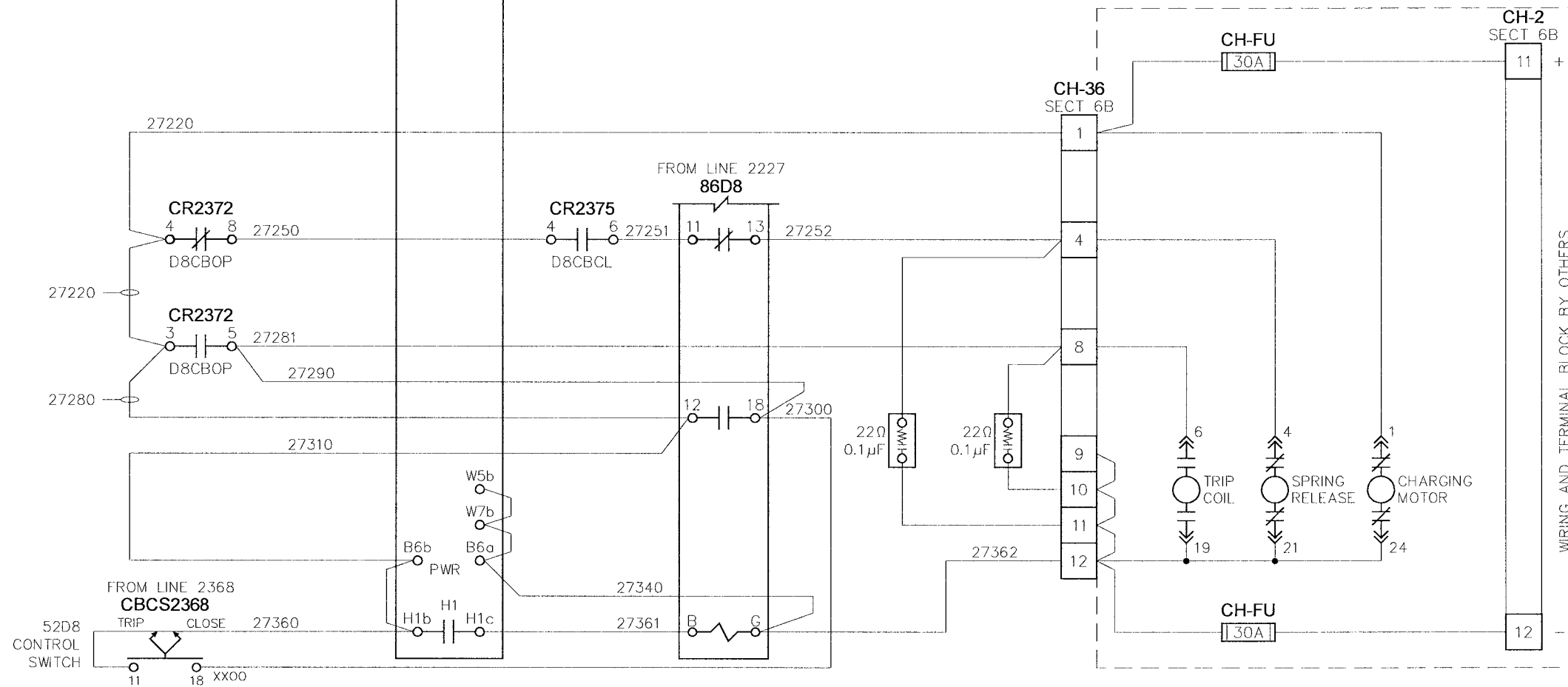
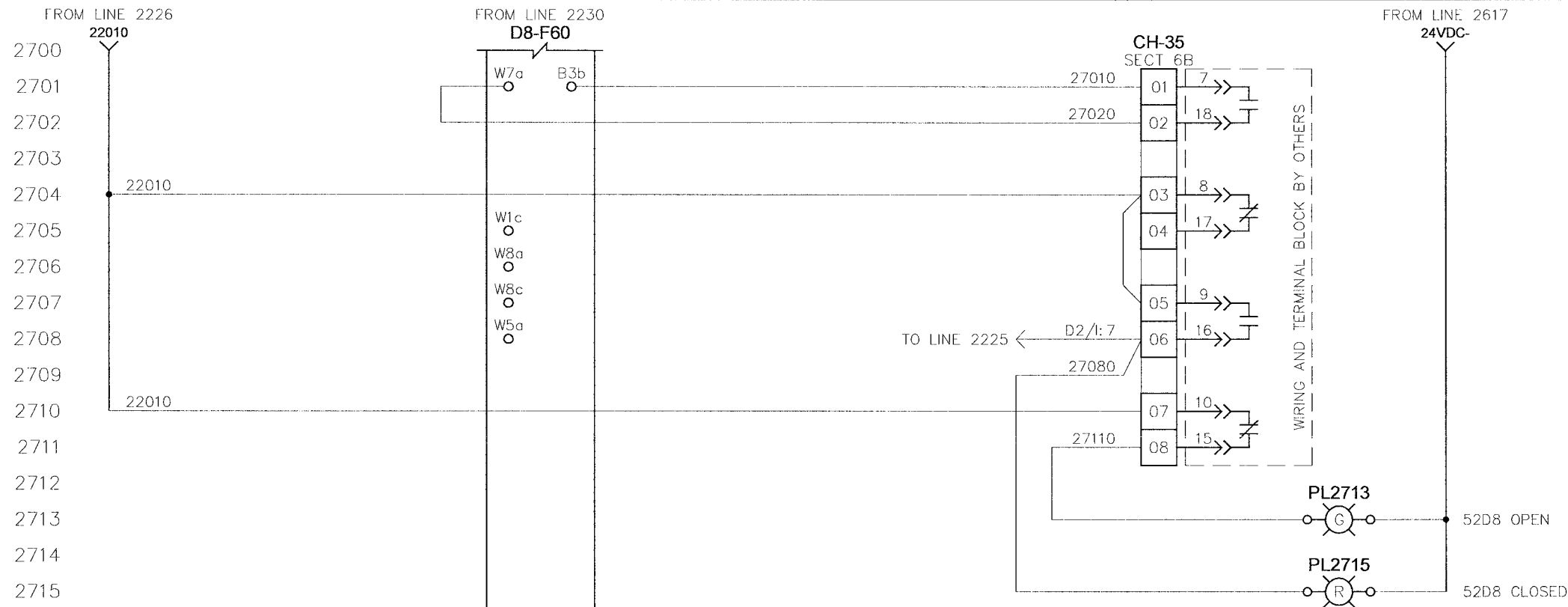


CITY OF WINNIPEG WTP - UTILITY (E-100)		APPROVED BY	SCALE	REV	MODIFIED BY
DISTRIBUTION 2 (52BK-E101B) 52D7 - CB INTERFACE		RAM	N.T.S.	0.2	EM
4.16KV UTILITY PARALLELING SWITCHGEAR		DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
		08-09-06	05-01-06		
FILE NAME		SHEET NUMBER	of		
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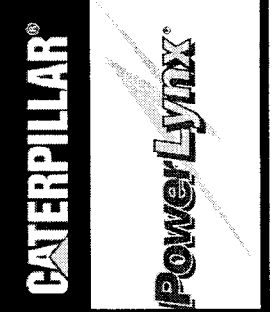
NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06



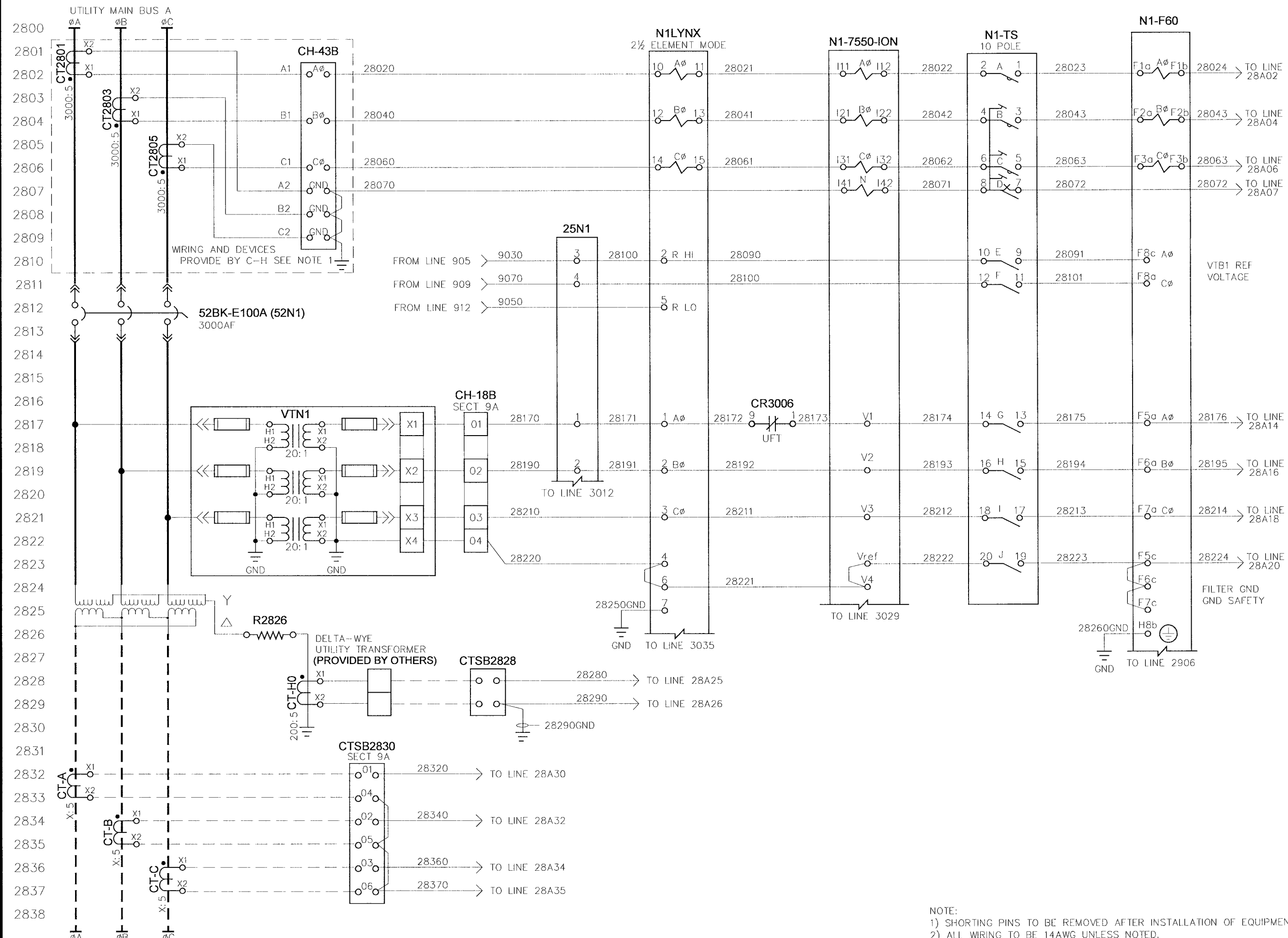
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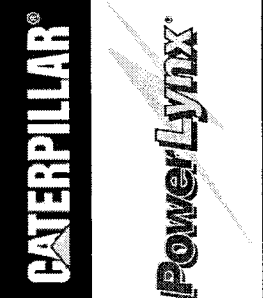
NOTE: NOTE:  
 1) ALL WIRING TO BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE UNLESS NOTED.



CITY OF WINNIPEG WTP - UTILITY (E-100) DISTRIBUTION 2 (52BK-E102B) 52D8 - CB INTERFACE		4.16KV UTILITY PARALLELING SWITCHGEAR	
NO.	REVISION	DATE	TITLE
0.0	ISSUED FOR SUBMITTAL	05-22-06	
0.1	REISSUED FOR SUBMITTAL	06-07-06	
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APPROVED BY <b>RAM</b>		SCALE N.T.S.	REV. 0.2
DATE APPROVED 08-09-06		MODIFIED BY EM	
FILE NAME 35701-U-W27		DATE MODIFIED 05-01-06	
		SHEET NUMBER 22	
		of 52	



NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.



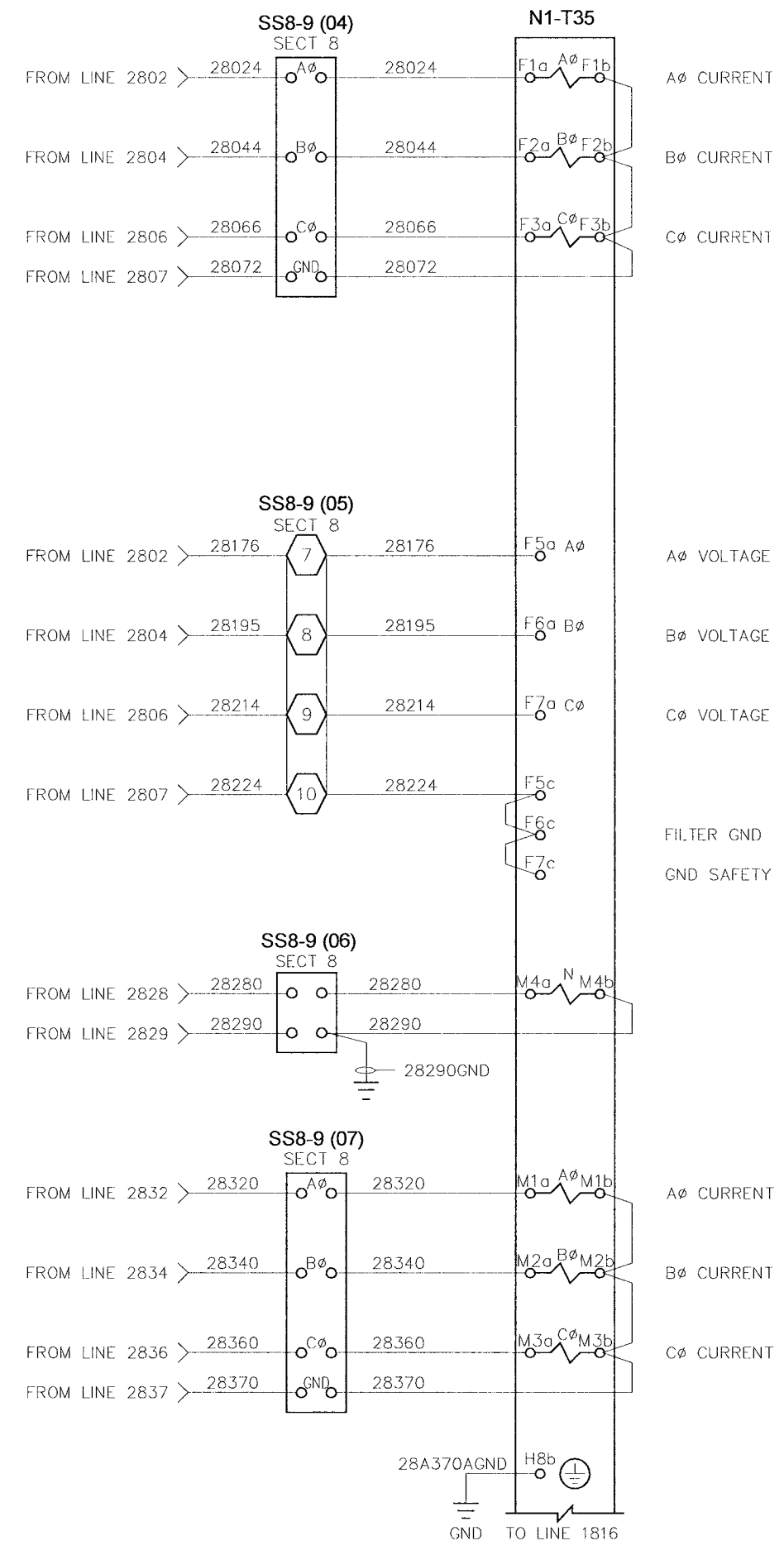
<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) UTILITY 52N1 (52BK-E100A) - AC INSTRUMENTATION - 1		<b>APPROVED BY:</b> RAM		<b>SCALE:</b> N.T.S.		<b>REV:</b> 0.2		<b>DATE APPROVED:</b> 08-09-06		<b>FILE NAME:</b> 35701-U-W28	
<b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>		<b>DRAWN BY:</b> EM		<b>MODIFIED BY:</b> THC		<b>DATE CREATED:</b> 05-01-06		<b>DATE MODIFIED:</b> 08-01-06		<b>SHEET NUMBER:</b> 28 of 52	

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

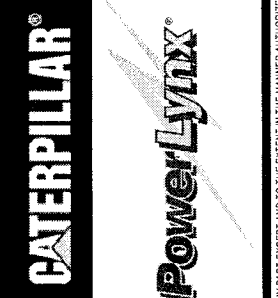
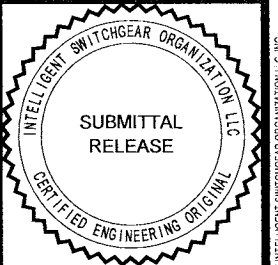
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NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.

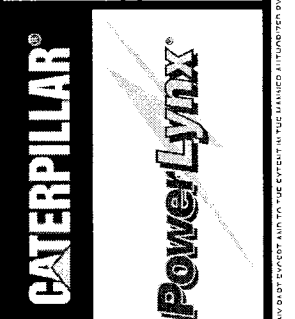
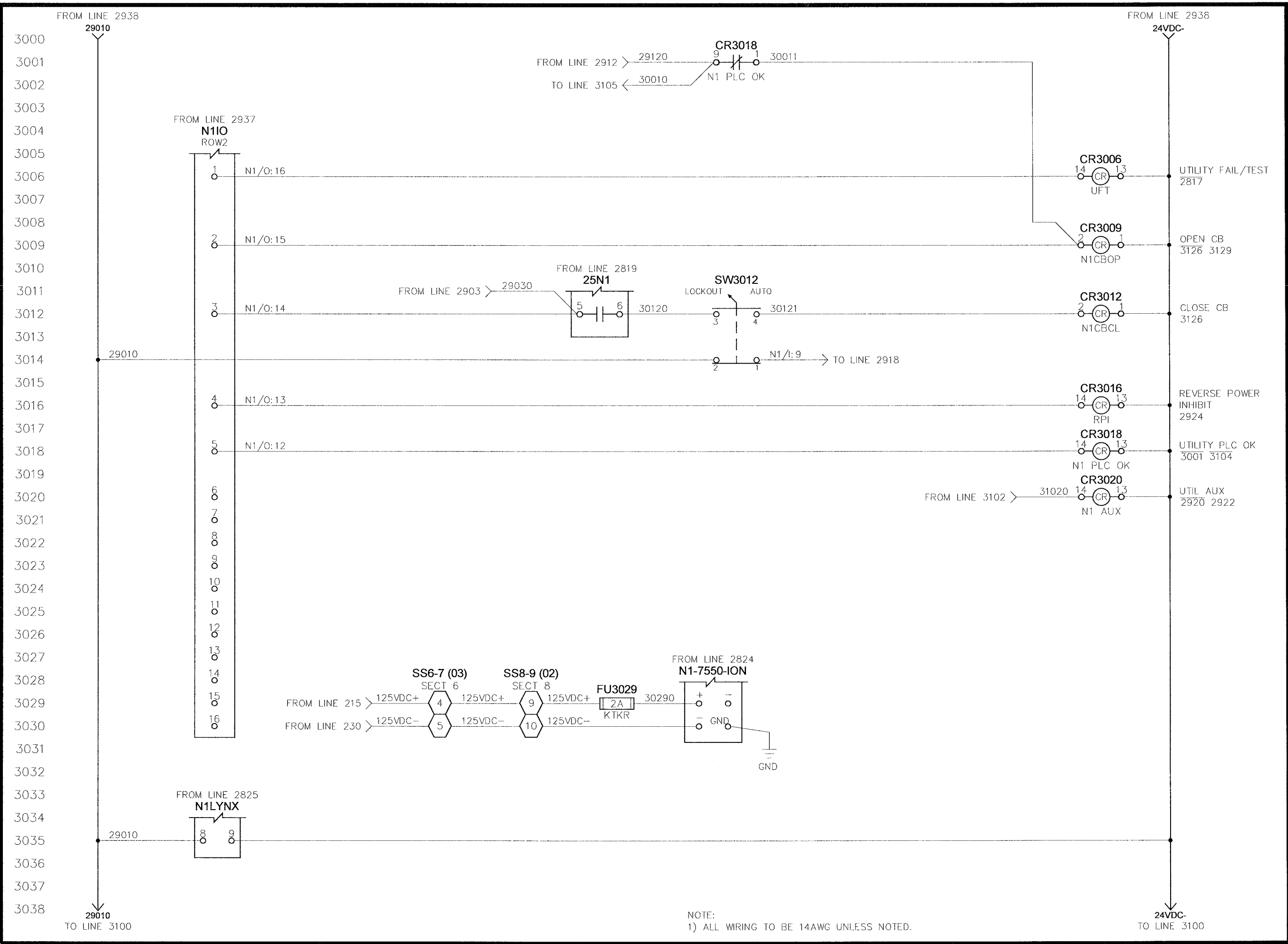


<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) UTILITY 52N1 (52BK-E100A) - AC INSTRUMENTATION - 2	
<b>APPROVED BY:</b> RAM	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV.:</b> 0.2
<b>FILE NAME:</b> 35701-U-W28A	<b>DATE CREATED:</b> 08-01-06
	<b>DATE MODIFIED:</b> 08-01-06
	<b>SHEET NUMBER:</b> 28A
	<b>of</b> 52

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
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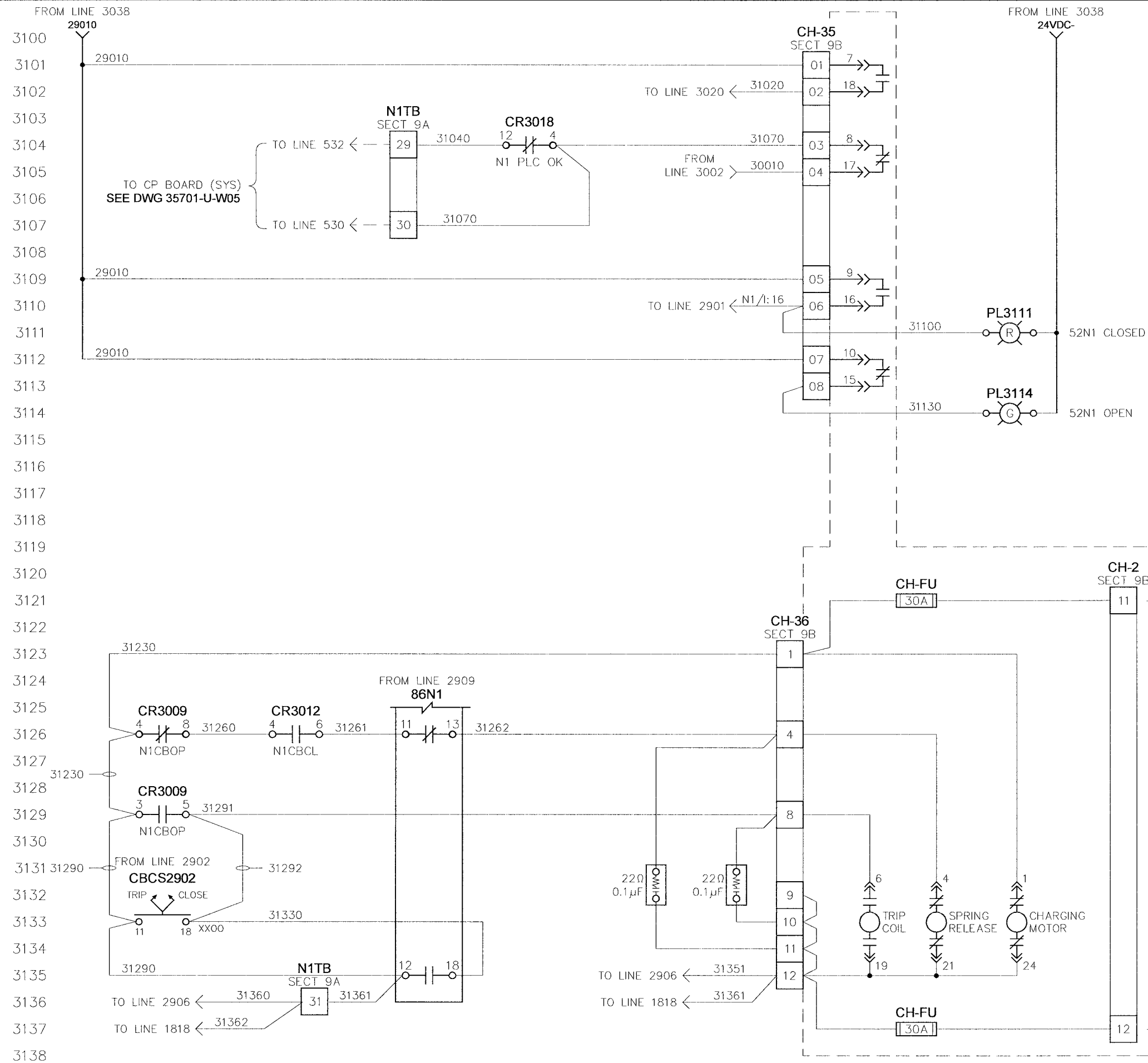
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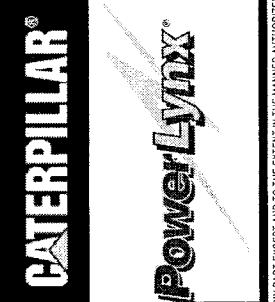
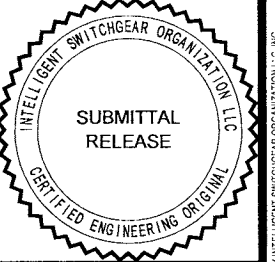


<b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>UTILITY 52N1 (52BK-E100A) - CONTROLS</b> 4.16KV UTILITY PARALLELING SWITCHGEAR		APPROVED BY <i>RAM</i>	SCALE N.T.S.	REV. 0.2	DRAWN BY EM	MODIFIED BY	
DATE APPROVED 08-09-06	DATE CREATED 05-01-06	DATE MODIFIED	SHEET NUMBER 30	OF 52	<b>U-W30</b>		
FILE NAME 35701-U-W30							
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NOTE:  
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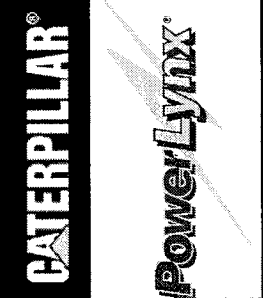
NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



CITY OF WINNIPEG WTP - UTILITY (E-100)		DRAWN BY EM		MODIFIED BY THC	
UTILITY 52N1 (52BK-E100A) - CB INTERFACE		DATE CREATED 05-01-06		DATE MODIFIED 08-02-06	
4.16KV UTILITY PARALLELING SWITCHGEAR		REV. 0.2		SHEET NUMBER 31 of 52	
APPROVED BY RAM	SCALE N.T.S.	U-W31			
DATE APPROVED 08-09-06	FILE NAME 35701-U-W31				

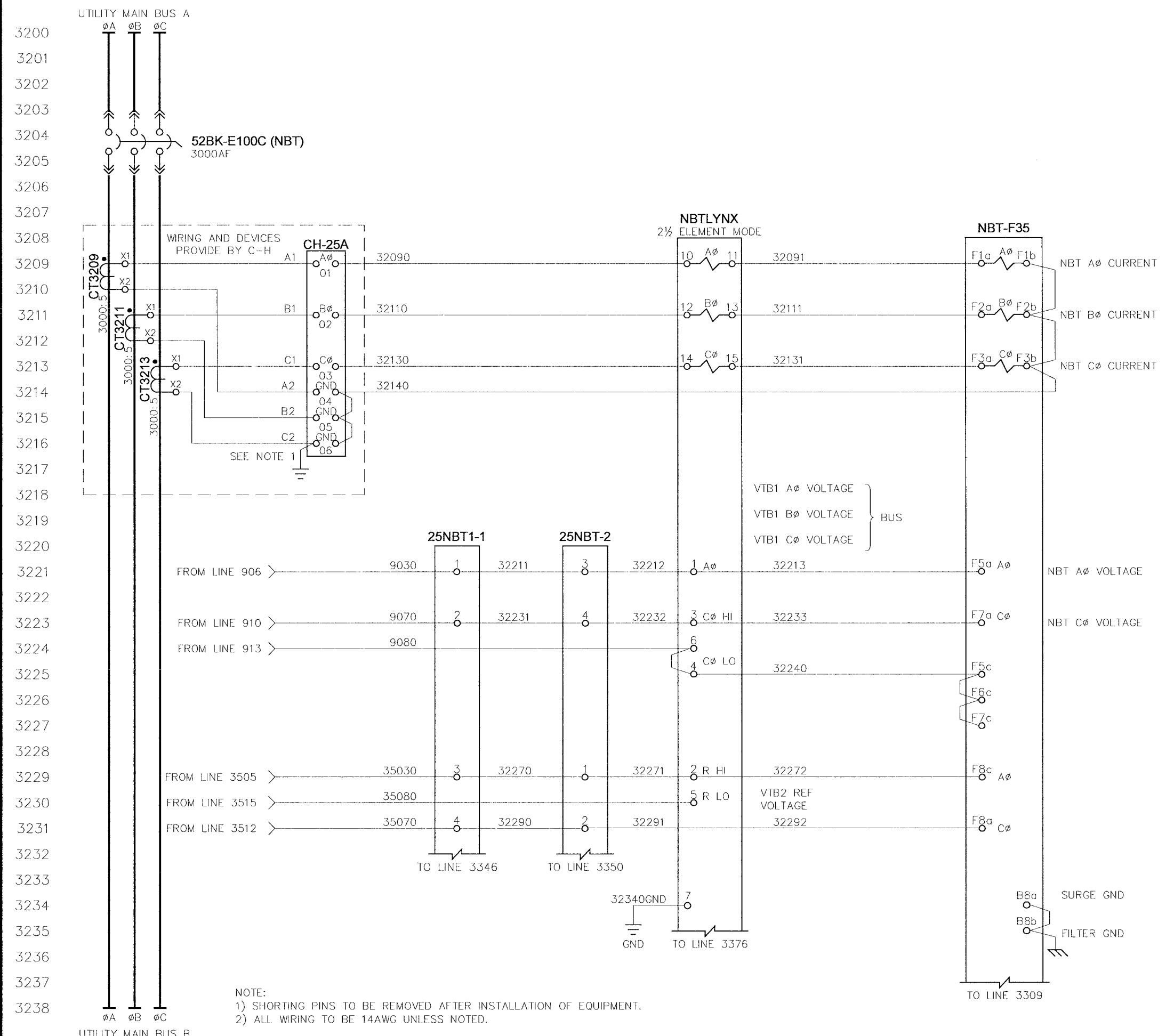
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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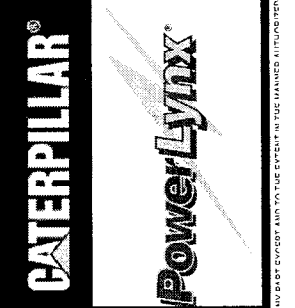
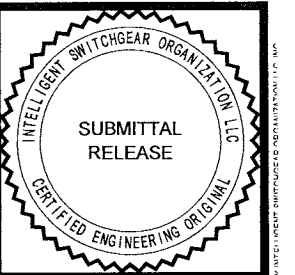
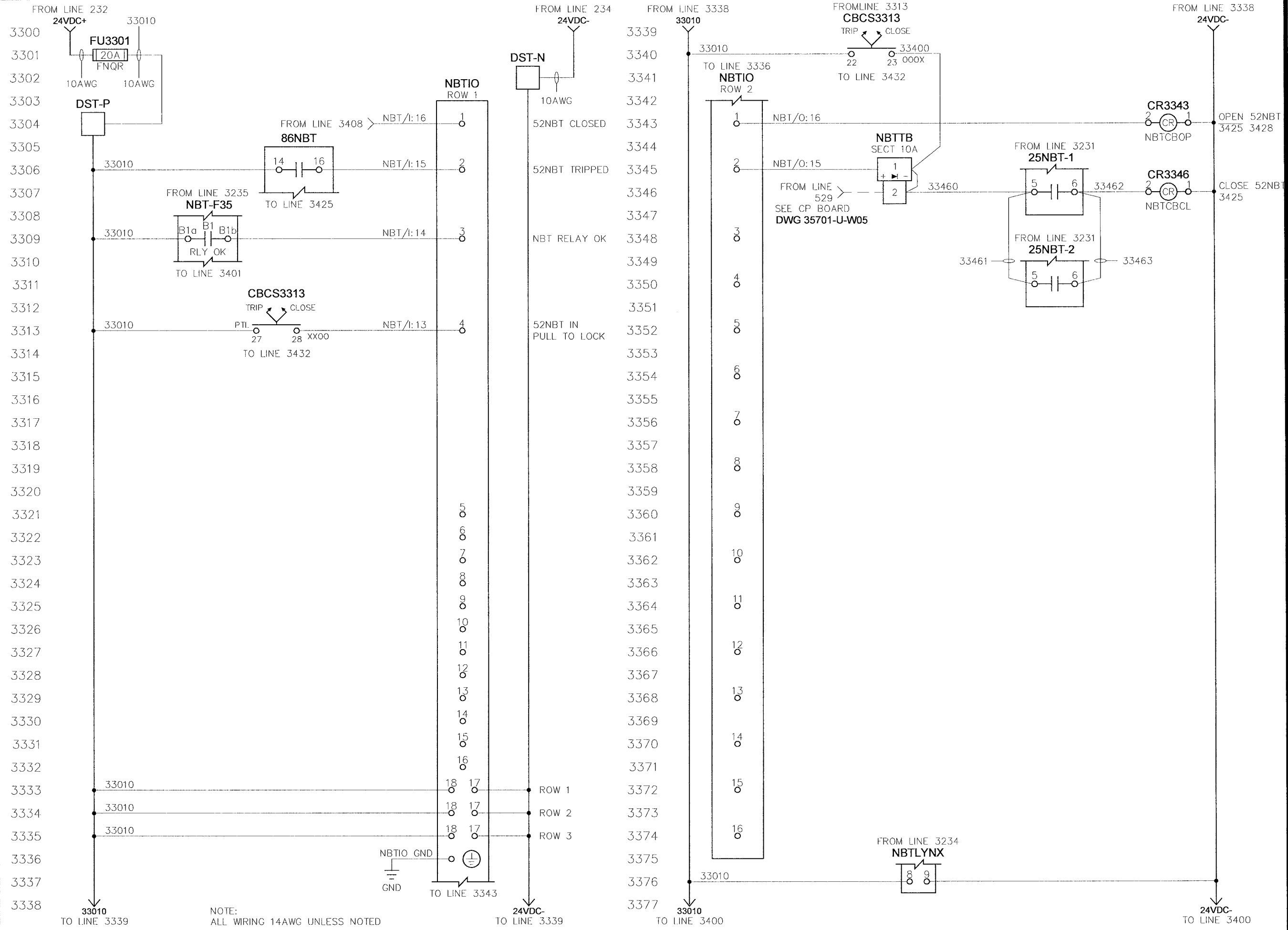
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<b>FILE NAME:</b> 35701-U-W32	<b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>
<b>DATE CREATED:</b> 05-01-06	<b>DATE MODIFIED:</b> 05-01-06
<b>SHEET NUMBER:</b> 32	<b>of</b> 52

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0.2	ISSUED FOR SUBMITTAL	08-09-06



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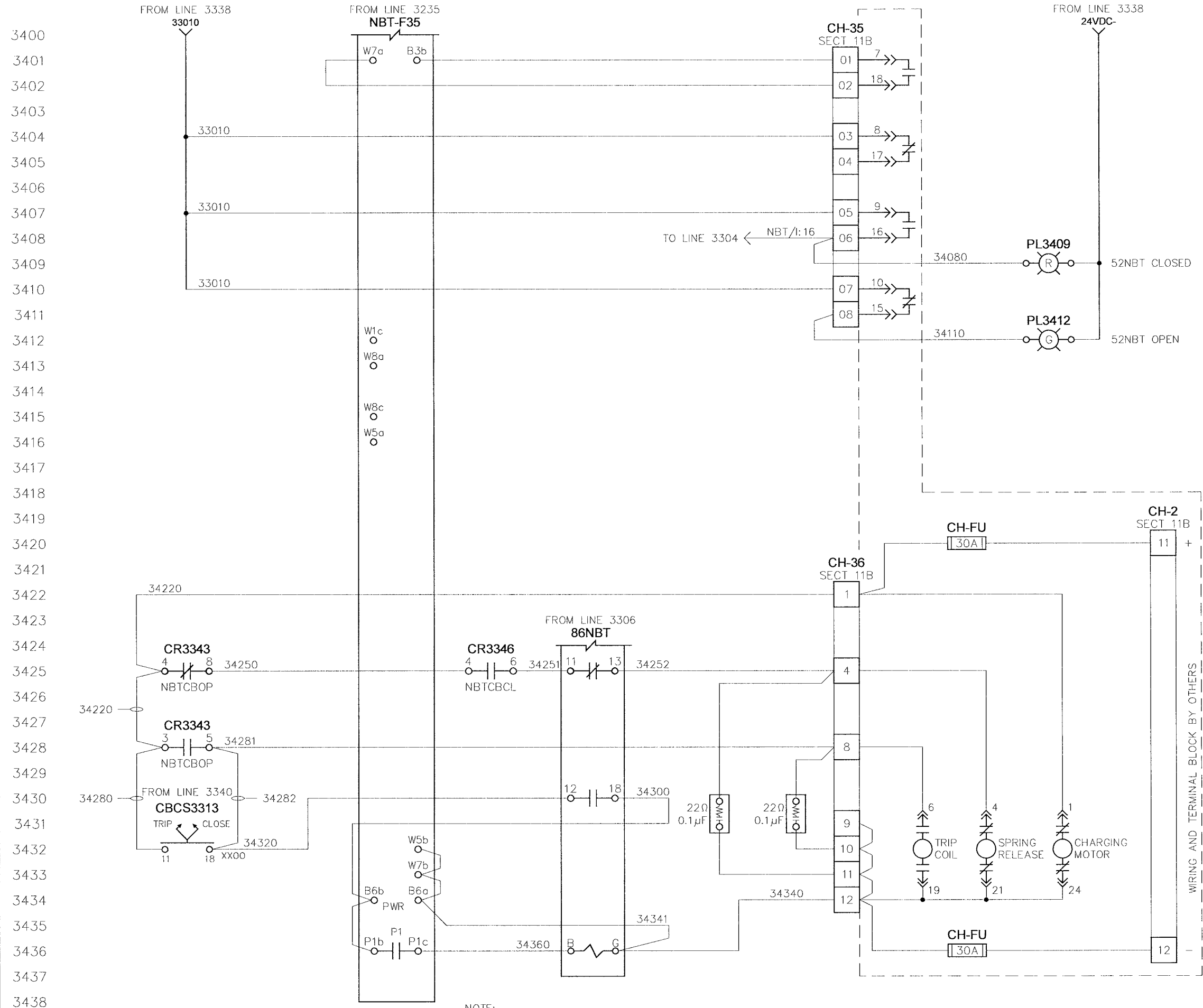
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<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) UTILITY BUS TIE 52NBT (52BK-E100C) - CONTROLS	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV:</b> 0.2
<b>FILE NAME:</b> 35701-U-W33	<b>MODIFIED BY:</b> EM
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<b>SHEET NUMBER:</b> 33	<b>of</b> 52

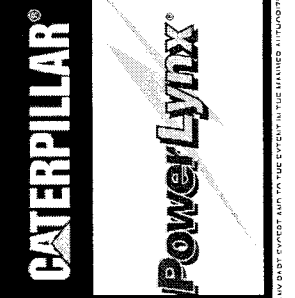
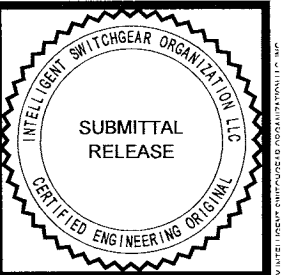
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0.2	REISSUED FOR SUBMITTAL	08-09-06

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NOTE:  
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WIRING AND TERMINAL BLOCK BY OTHERS

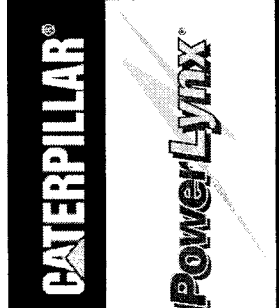
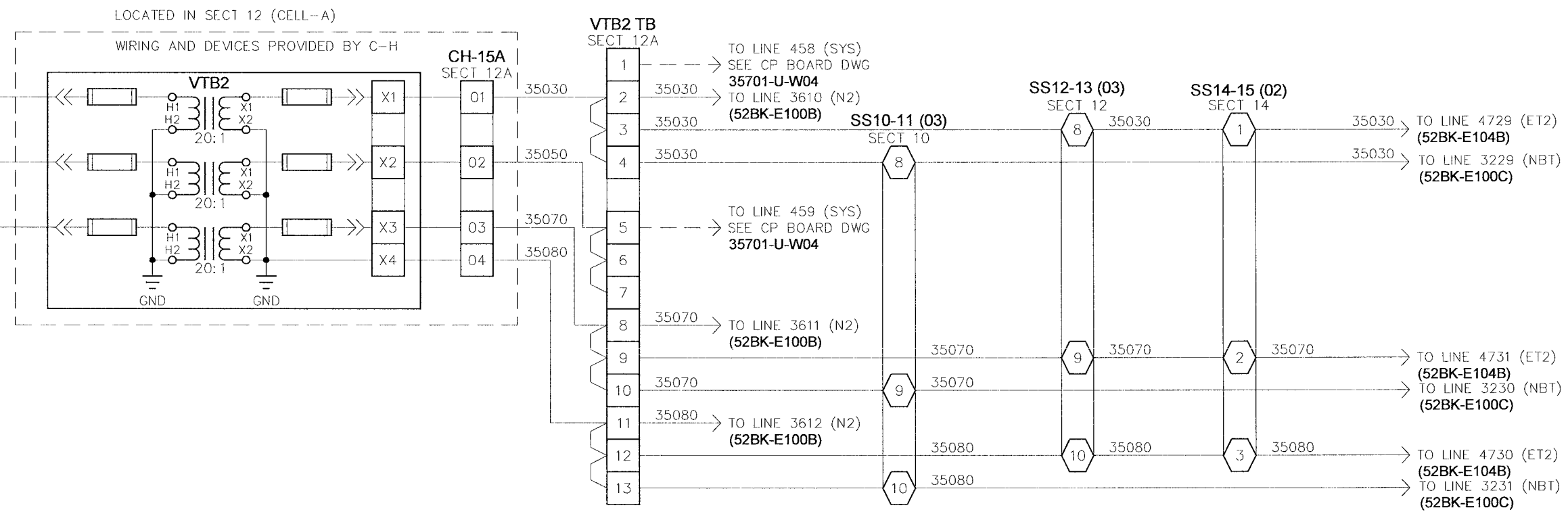


<b>TITLE:</b> CITY OF WINNEPEG WTP - UTILITY (E-100) UTILITY BUS TIE 52NBT (52BK-E100C) - CB INTERFACE		<b>APPROVED BY:</b> <i>RAM</i>		<b>SCALE:</b> N.T.S.		<b>REV:</b> 0.2		<b>MODIFIED BY:</b> EM	
<b>DATE:</b> 05-22-06 06-07-06 08-09-06		<b>DATE APPROVED:</b> 08-09-06		<b>DATE CREATED:</b> 06-01-06		<b>DATE MODIFIED:</b> 06-01-06		<b>SHEET NUMBER:</b> 34 of 52	
<b>NO. REVISION:</b> 0.0 ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL		<b>FILE NAME:</b> 35701-U-W34		<b>U-W34</b>		<b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>		<b>34</b> of <b>52</b>	

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 UTILITY MAIN BUS "B"



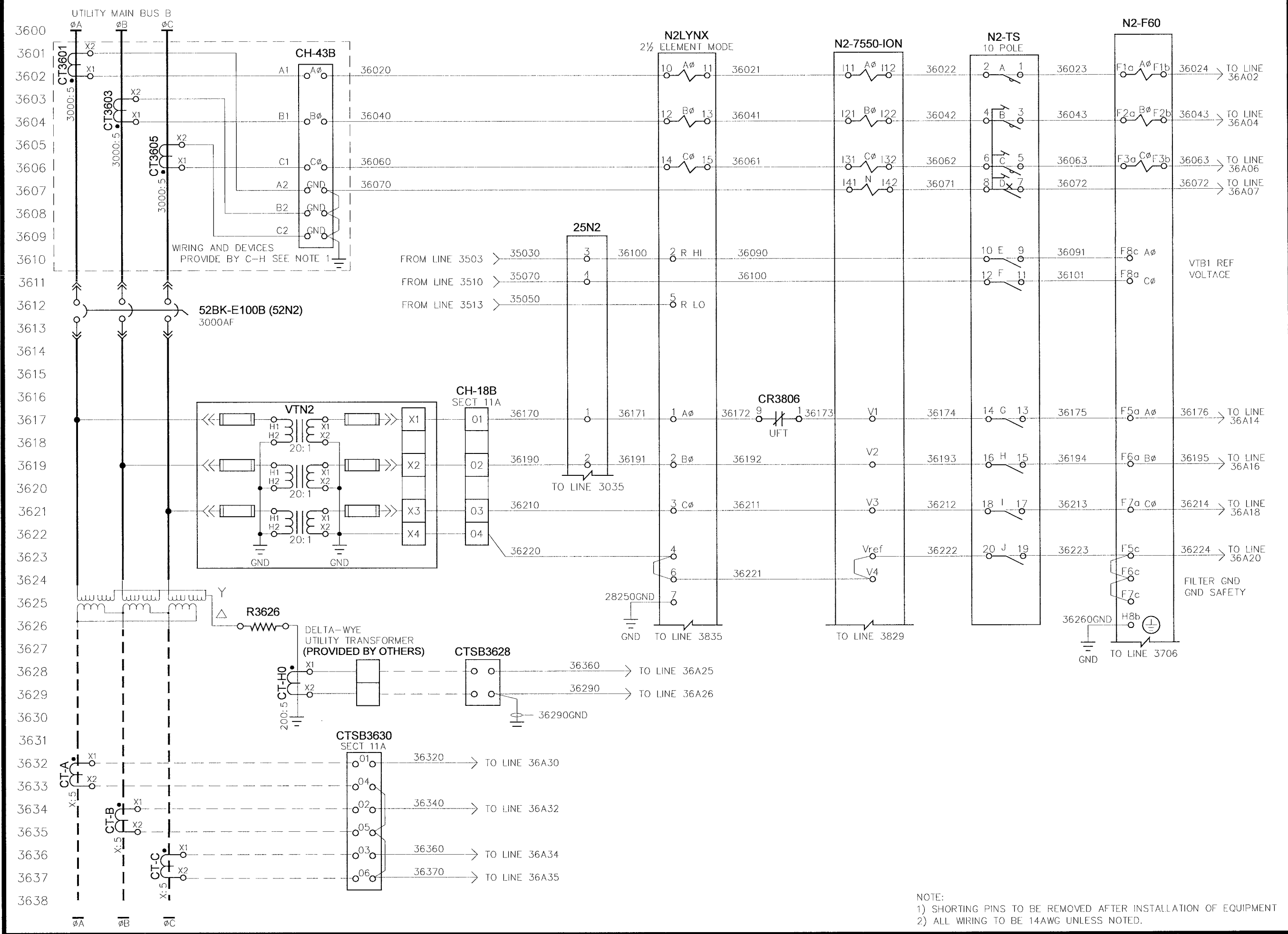
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APPROVED BY <b>RAM</b>	SCALE <b>N.T.S.</b>
DATE APPROVED <b>08-09-06</b>	REV <b>0.2</b>
FILE NAME <b>35701-U-W35</b>	DRAWN BY <b>EM</b>
	DATE CREATED <b>05-01-06</b>
	DATE MODIFIED
	SHEET NUMBER <b>35</b>
	of <b>52</b>

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

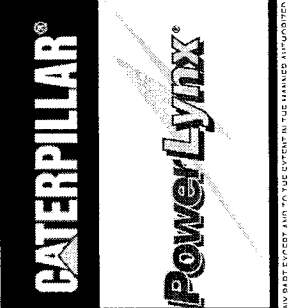
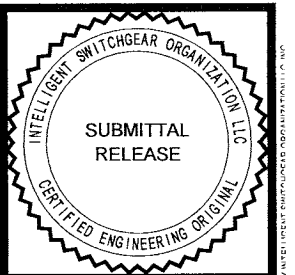
NOTE:  
 1) ALL WIRING TO BE 14AWG UNLESS NOTED.

FILE NO. 35701-U-W35  
 DATE 08-09-06  
 DRAWN BY EM  
 CHECKED BY  
 APPROVED BY RAM  
 SCALE N.T.S.  
 REV 0.2  
 DATE APPROVED 08-09-06  
 FILE NAME 35701-U-W35  
 SHEET NUMBER 35 of 52  
 DATE MODIFIED  
 DATE CREATED 05-01-06  
 TITLE CITY OF WINNIPEG WTP - UTILITY (E-100) BUS VOLTAGE - 2 4.16KV UTILITY PARALLELING SWITCHGEAR  
 DRAWN BY EM  
 SCALE N.T.S.  
 REV 0.2  
 DATE APPROVED 08-09-06  
 FILE NAME 35701-U-W35  
 SHEET NUMBER 35 of 52





NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) UTILITY 52N2 (52BK-E100B) - AC INSTRUMENTATION - 2		<b>APPROVED BY:</b> RAM		<b>SCALE:</b> N.T.S.		<b>REV.:</b> 0.2		<b>DATE APPROVED:</b> 08-09-06		<b>FILE NAME:</b> 35701-U-W36	
<b>DATE:</b> 05-22-06		<b>DATE CREATED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06	
<b>REVISION:</b> 0.0 ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL		<b>APPROVED BY:</b> RAM		<b>SCALE:</b> N.T.S.		<b>REV.:</b> 0.2		<b>DATE APPROVED:</b> 08-09-06		<b>FILE NAME:</b> 35701-U-W36	
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<b>DATE:</b> 05-22-06 06-07-06 08-09-06		<b>DATE CREATED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06		<b>DATE MODIFIED:</b> 05-01-06	

4.16KV UTILITY PARALLELING SWITCHGEAR

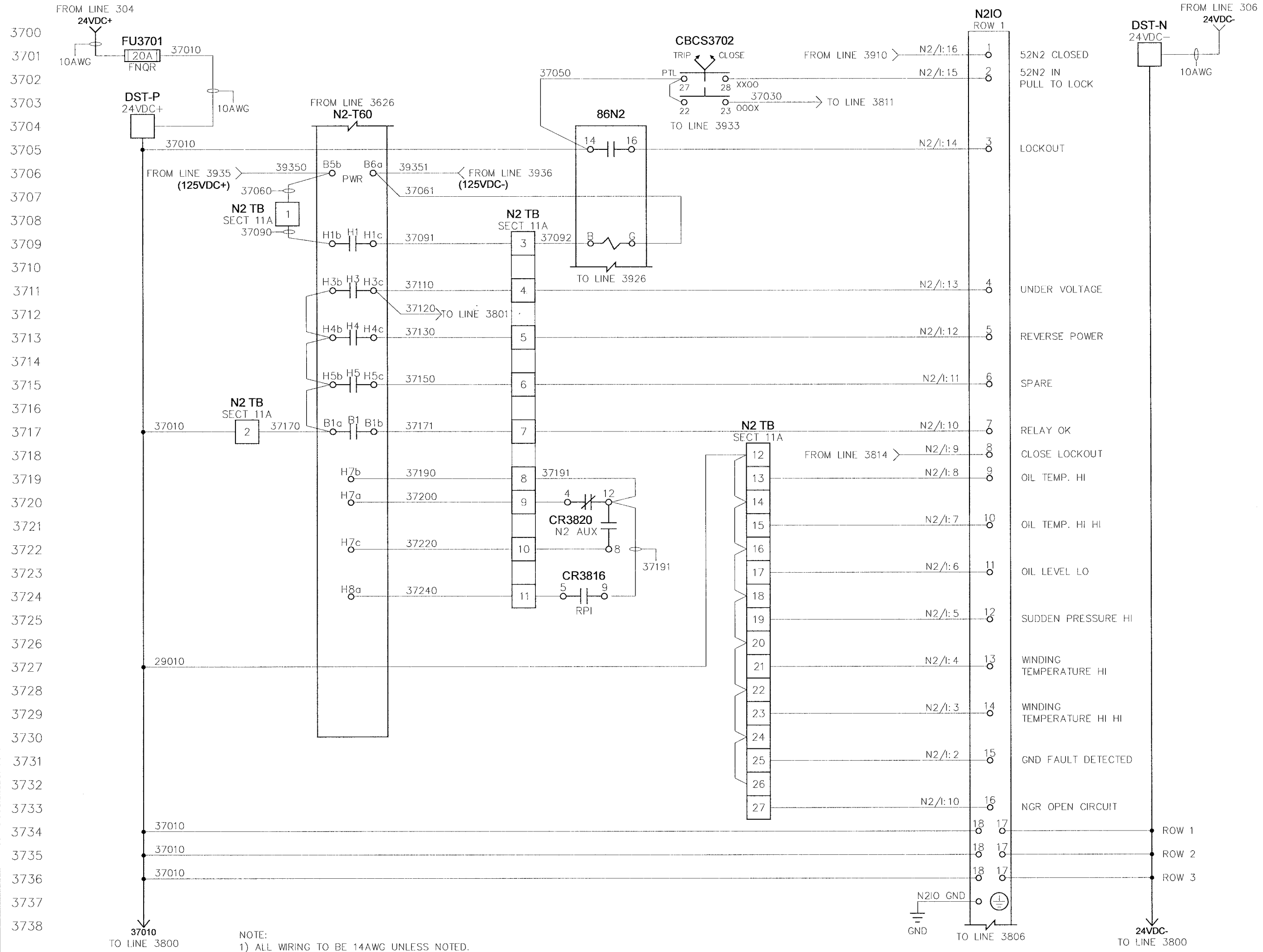
**U-W36**

of 52

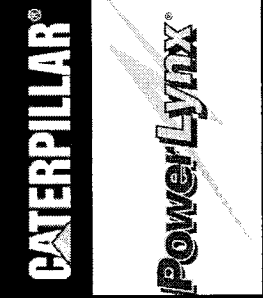
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35701-U-W36



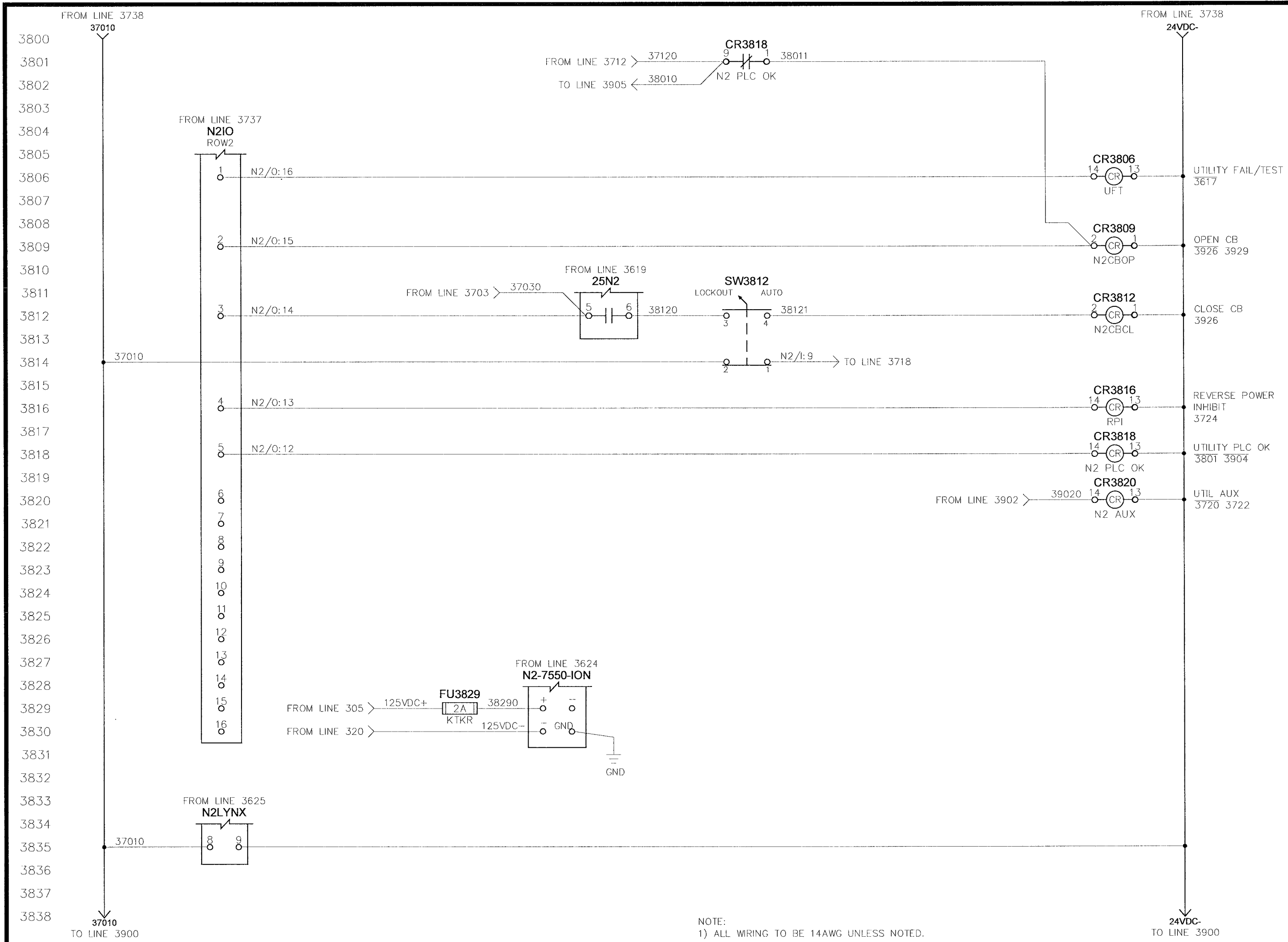


NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

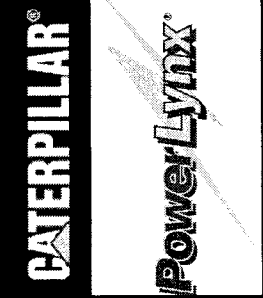


<b>CITY OF WINNEPEG WTP - UTILITY (E-100)</b> <b>UTILITY 52N2 (52BK-E100B) - PROTECTIVE CONTROLS</b> 4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	DRAWN BY EM
DATE APPROVED 08-09-06	DATE CREATED 05-01-06
FILE NAME 35701-U-W37	SHEET NUMBER 37
SCALE N.T.S.	REV 0.2
MODIFIED BY EM	DATE MODIFIED 05-01-06
NO. OF REVISIONS 0.0 ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL	DATE 05-22-06 06-07-06 08-09-06
of 52	

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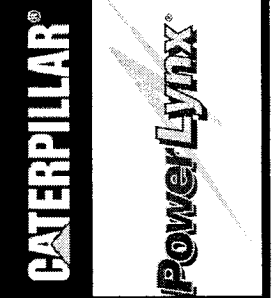


NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.



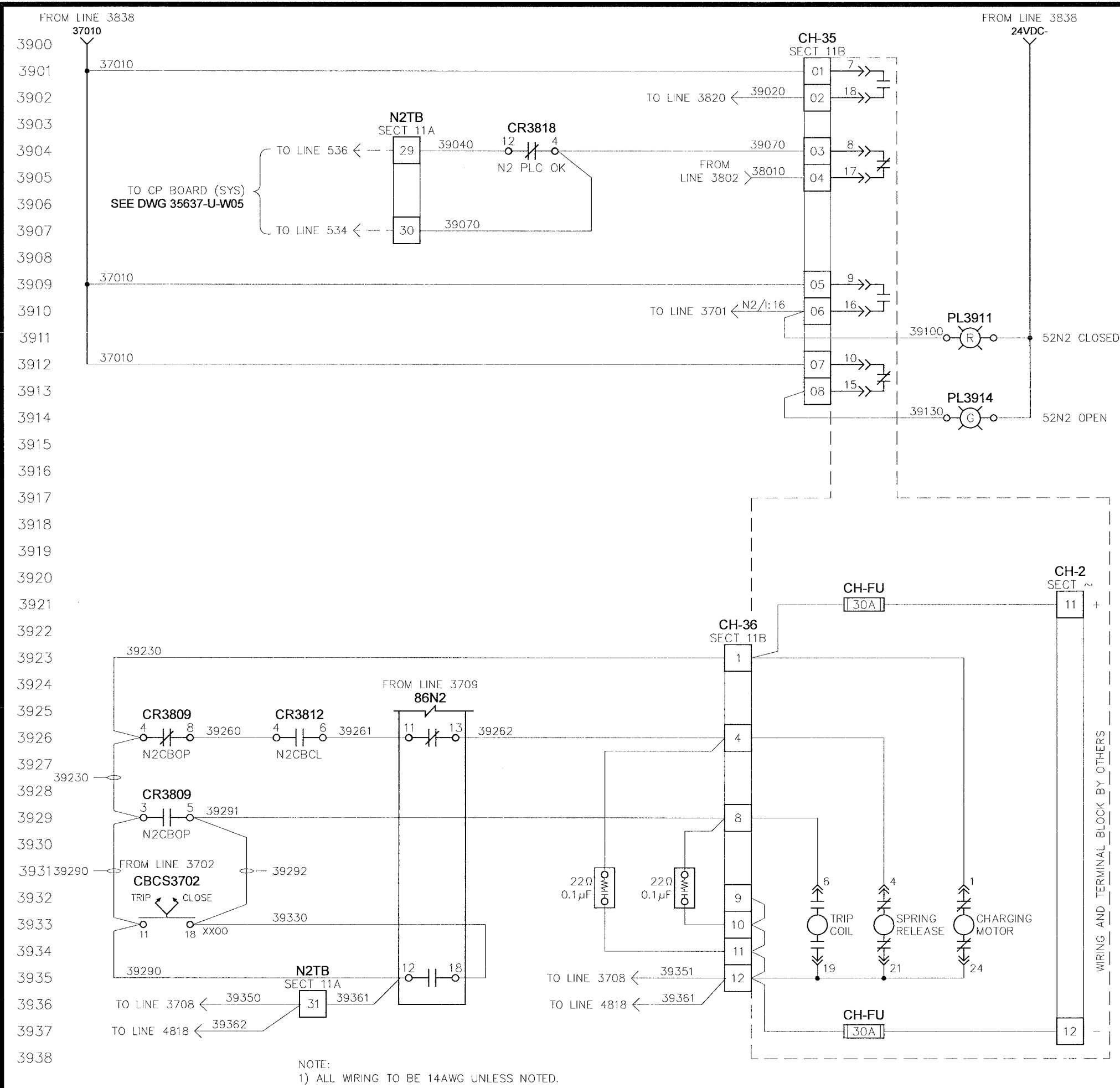
TITLE: <b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>UTILITY 52N2 (52BK-E100B) - CONTROLS</b> 4.16KV UTILITY PARALLELING SWITCHGEAR		SCALE: N.T.S. REV: 0.2	DRAWN BY: EM DATE CREATED: 05-01-06 SHEET NUMBER: 38 of 52
APPROVED BY: RAM DATE APPROVED: 08-09-06 FILE NAME: 35701-U-W38	<b>U-W38</b>		
NO. REVISION 0.0 ISSUED FOR SUBMITTAL 0.1 REISSUED FOR SUBMITTAL 0.2 REISSUED FOR SUBMITTAL	DATE 05-22-06 06-07-06 08-09-06		

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CITY OF WINNIPEG WTP - UTILITY (E-100)		DRAWN BY		MODIFIED BY	
UTILITY 52N2 (52BK-E100B) - CB INTERFACE		EM		DATE MODIFIED	
4.16KV UTILITY PARALLELING SWITCHGEAR		SCALE		SHEET NUMBER	
APPROVED BY		REV		of	
RAM		N.T.S.		39	
DATE APPROVED		REV		of	
08-09-06		0.2		52	
FILE NAME		U-W39		SHEET NUMBER	
35701-U-W39		4.16KV UTILITY PARALLELING SWITCHGEAR		39	

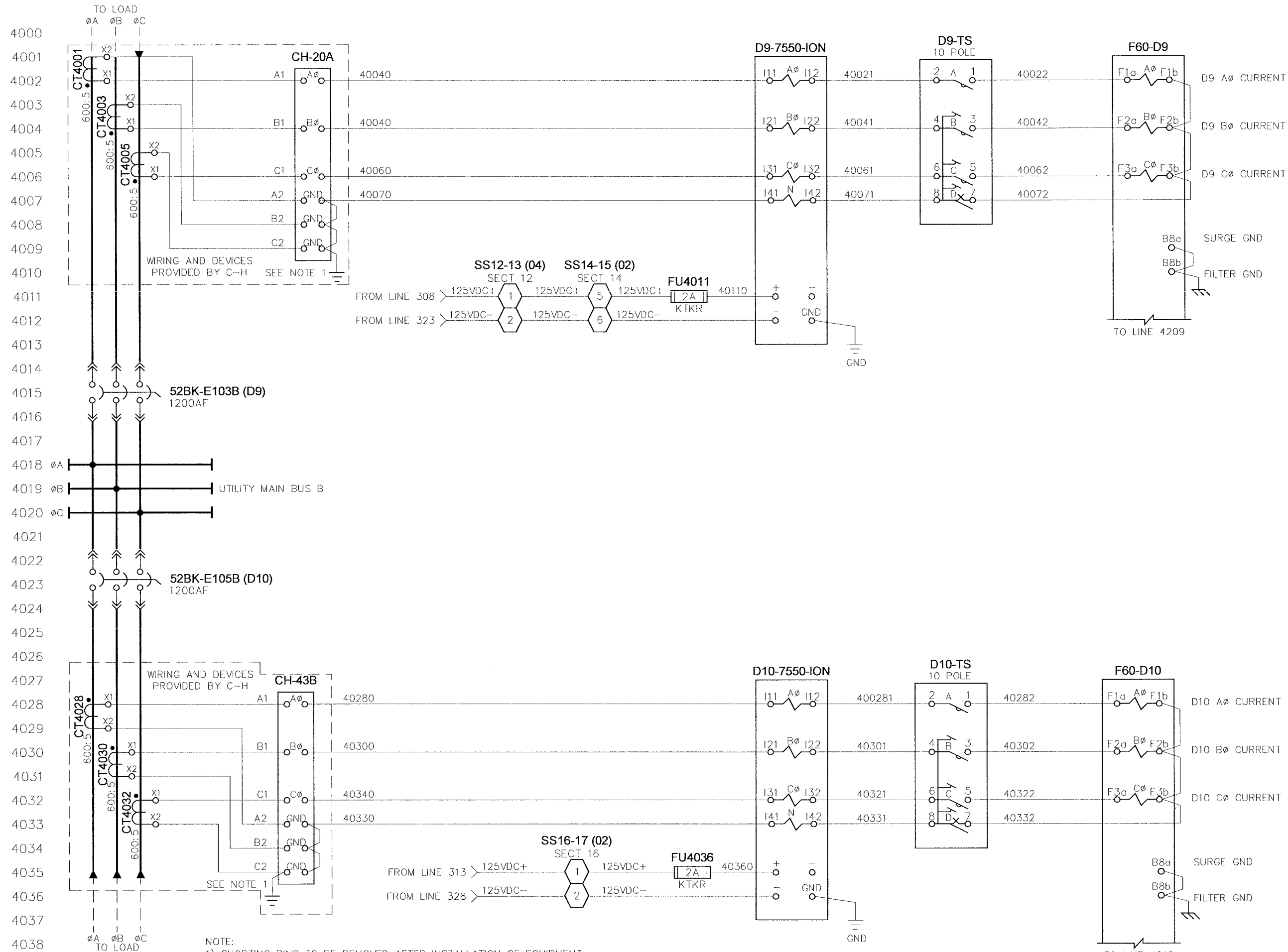
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06



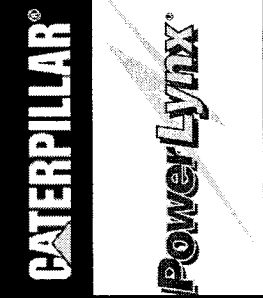
NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

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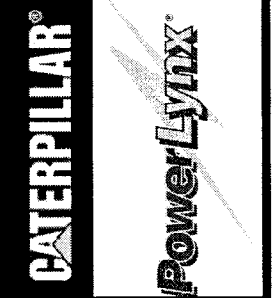
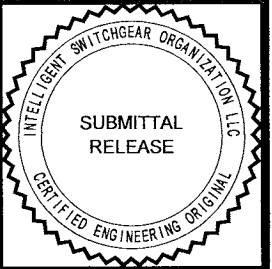
NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.



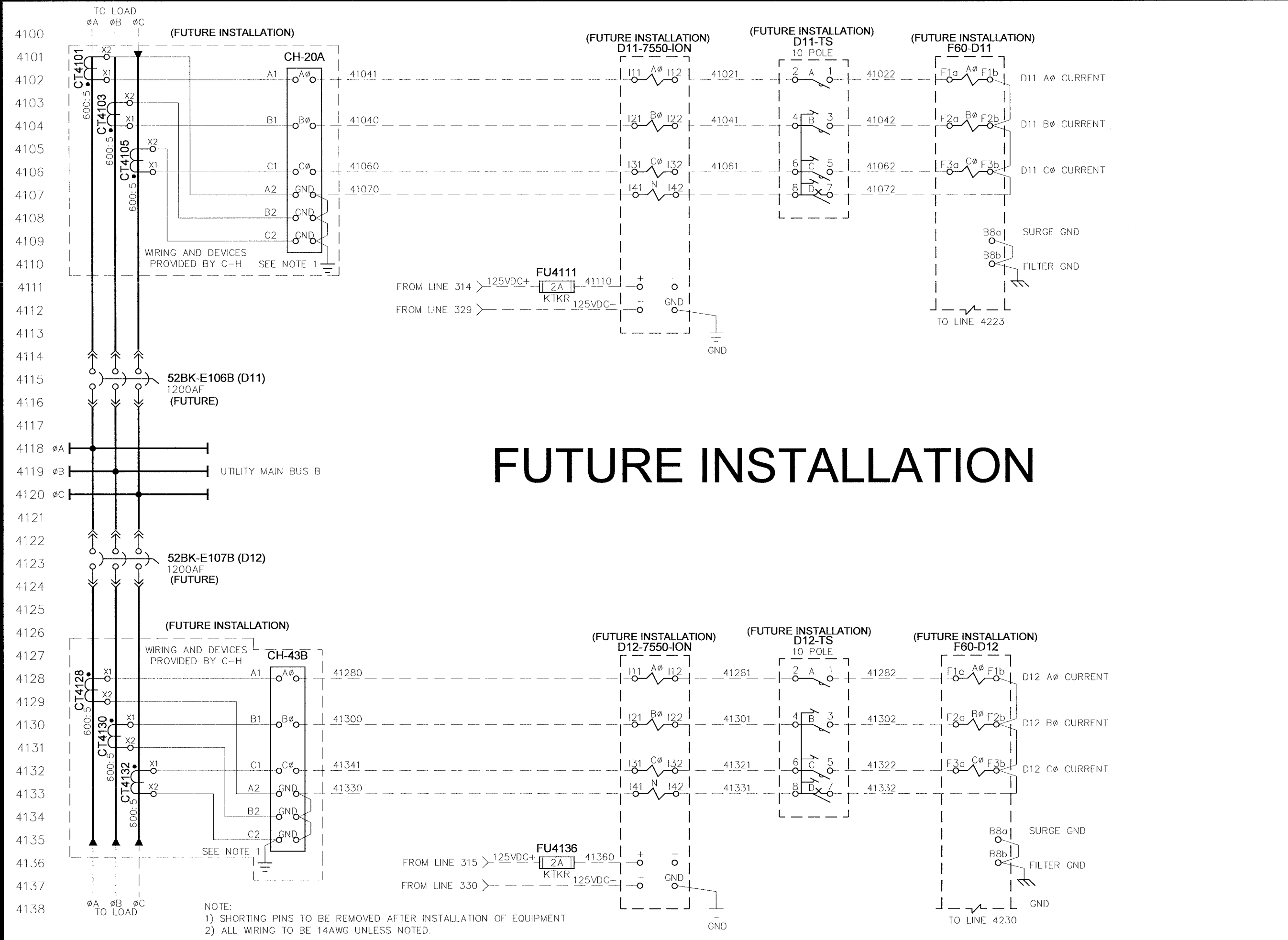
<b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>DISTRIBUTION 3 (D9 &amp; D10) - AC INSTRUMENTATION</b>	
4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY <i>RAM</i>	SCALE N.T.S.
DATE APPROVED 08-09-06	REV 0.2
DRAWN BY EM	MODIFIED BY
DATE CREATED 03-14-06	DATE MODIFIED
FILE NAME 35637-U-W40	SHEET NUMBER 40 of 52
<h1>U-W40</h1>	

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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# FUTURE INSTALLATION

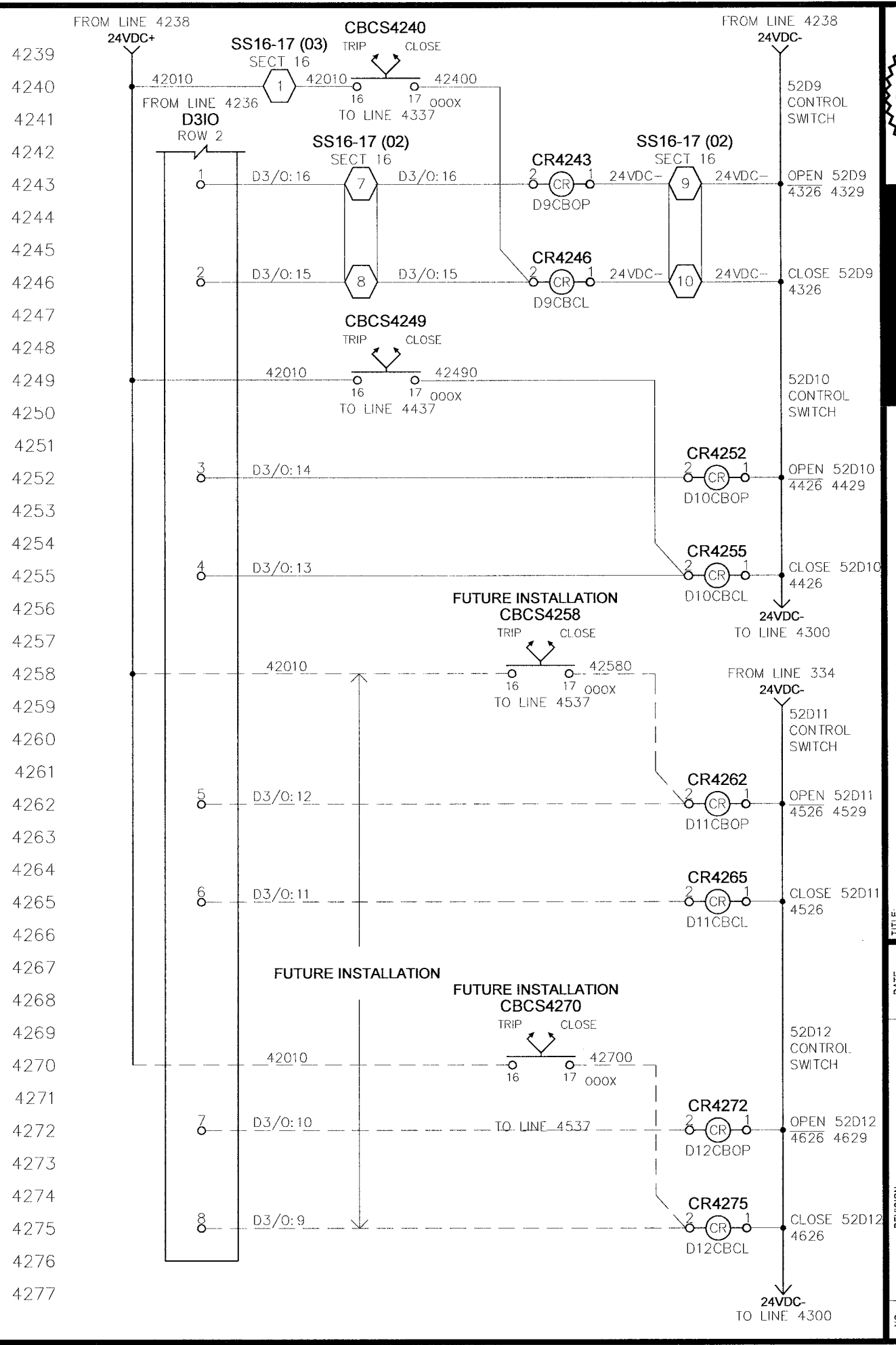
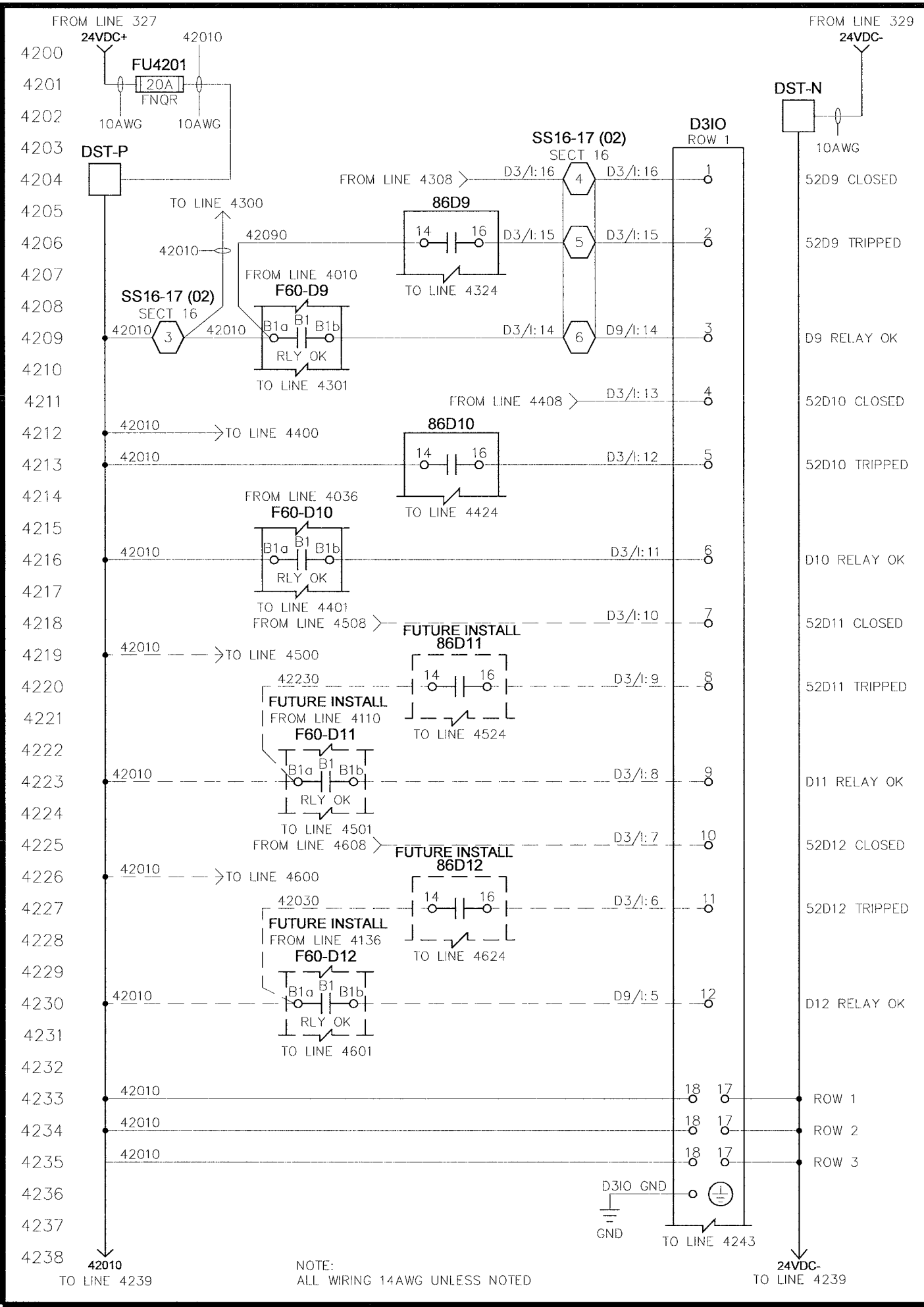
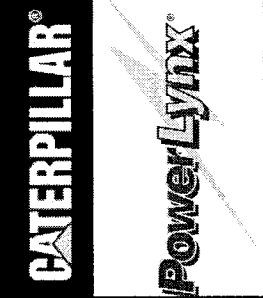


NOTE:  
 1) SHORTING PINS TO BE REMOVED AFTER INSTALLATION OF EQUIPMENT  
 2) ALL WIRING TO BE 14AWG UNLESS NOTED.

CITY OF WINNIPEG WTP - UTILITY (E-100) DISTRIBUTION 3 (D11 & D12) - AC INSTRUMENTATION		4.16KV UTILITY PARALLELING SWITCHGEAR	
APPROVED BY	SCALE	REV	0.2
DATE APPROVED	N.T.S.	DRAWN BY	EM
FILE NAME	RAM	DATE CREATED	03-14-06
35637-U-W41		SHEET NUMBER	41
		of	52

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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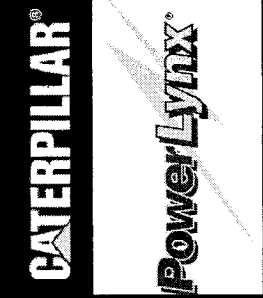


NOTE:  
 ALL WIRING 14AWG UNLESS NOTED

CITY OF WINNIPEG WTP - UTILITY (E-100)		DISTRIBUTION 3 (52D9, 52D10, 52D11 & 52D12) - CONTROLS	
4.16KV UTILITY PARALLELING SWITCHGEAR		SCALE: N.T.S.	REV: 0.2
APPROVED BY: RAM	DATE APPROVED: 08-09-06	DRAWN BY: EM	DATE MODIFIED: 05-01-06
FILE NAME: 35701-U-W42	SHEET NUMBER: 42	OF: 52	
NO.	REVISION	DATE	
0.0	ISSUED FOR SUBMITTAL	05-22-06	
0.1	REISSUED FOR SUBMITTAL	06-07-06	
0.2	REISSUED FOR SUBMITTAL	08-09-06	

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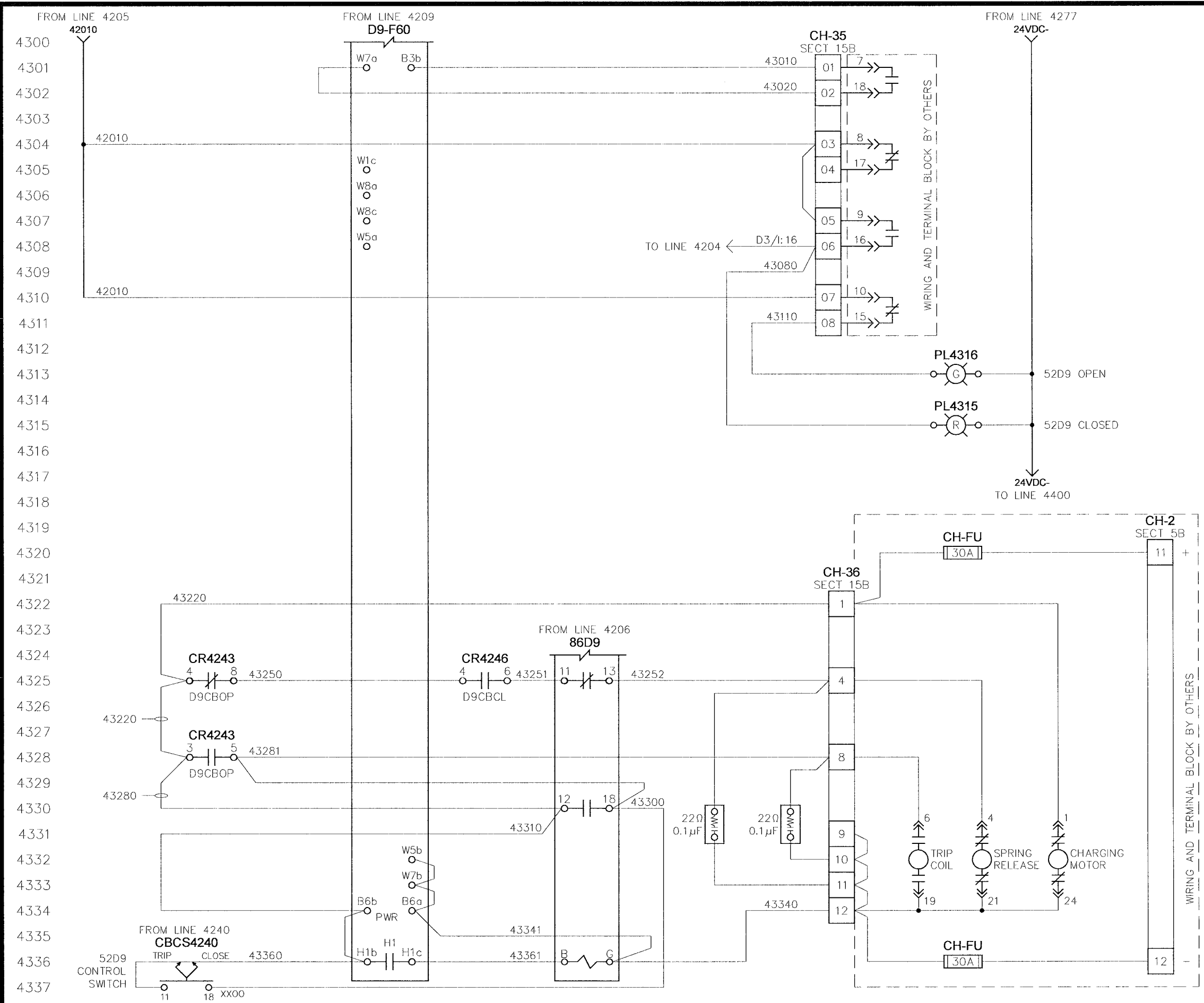


**CITY OF WINNIPEG WTP - UTILITY (E-100)**  
**DISTRIBUTION 3 52D9 (52BK-E103B) - CB INTERFACE**  
 4.16KV UTILITY PARALLELING SWITCHGEAR

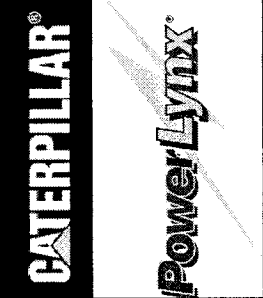
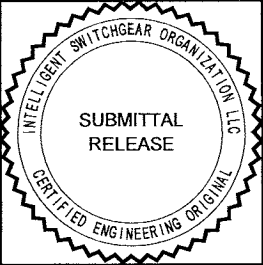
APPROVED BY: **RAM** SCALE: N.T.S. REV: 0.2  
 DATE APPROVED: 08-09-06  
 FILE NAME: 35701-U-W43

DRAWN BY: EM  
 DATE CREATED: 05-01-06  
 SHEET NUMBER: 43 of 52

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

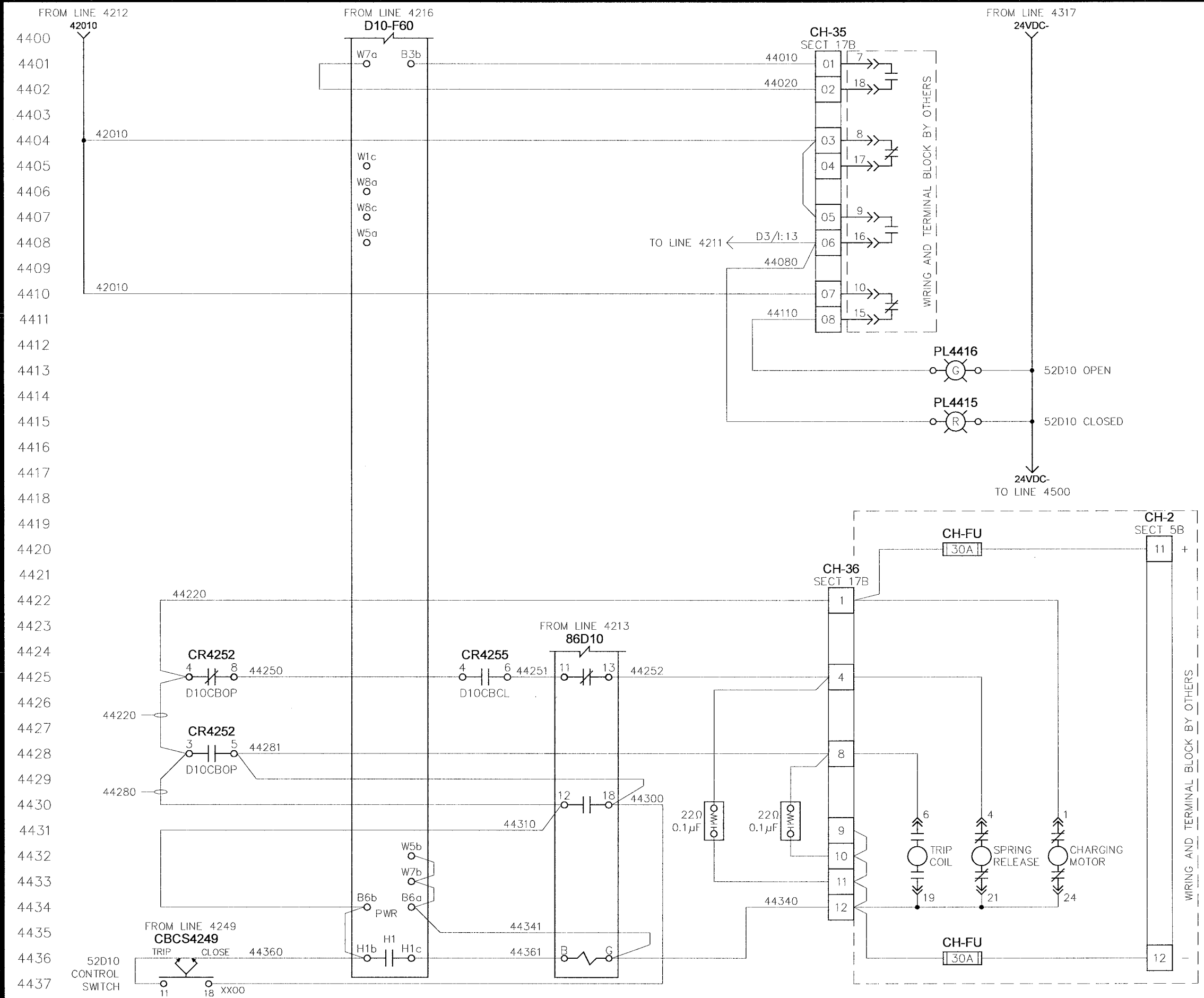


NOTE:  
 1) ALL WIRING TO BE 14AWG UNLESS NOTED.



<b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>DISTRIBUTION 3 52D10 (52BK-E105B) - CB INTERFACE</b>		TITLE: <b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>
APPROVED BY: <i>RAM</i>	SCALE: N.T.S.	REV: 0.2
DATE APPROVED: 08-09-06	DRAWN BY: EM	MODIFIED BY: DATE MODIFIED:
FILE NAME: 35701-U-W44	SHEET NUMBER: 44	OF: 52

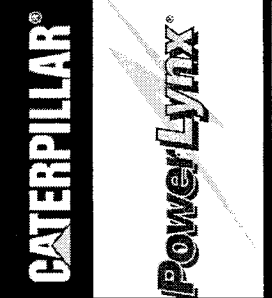
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06



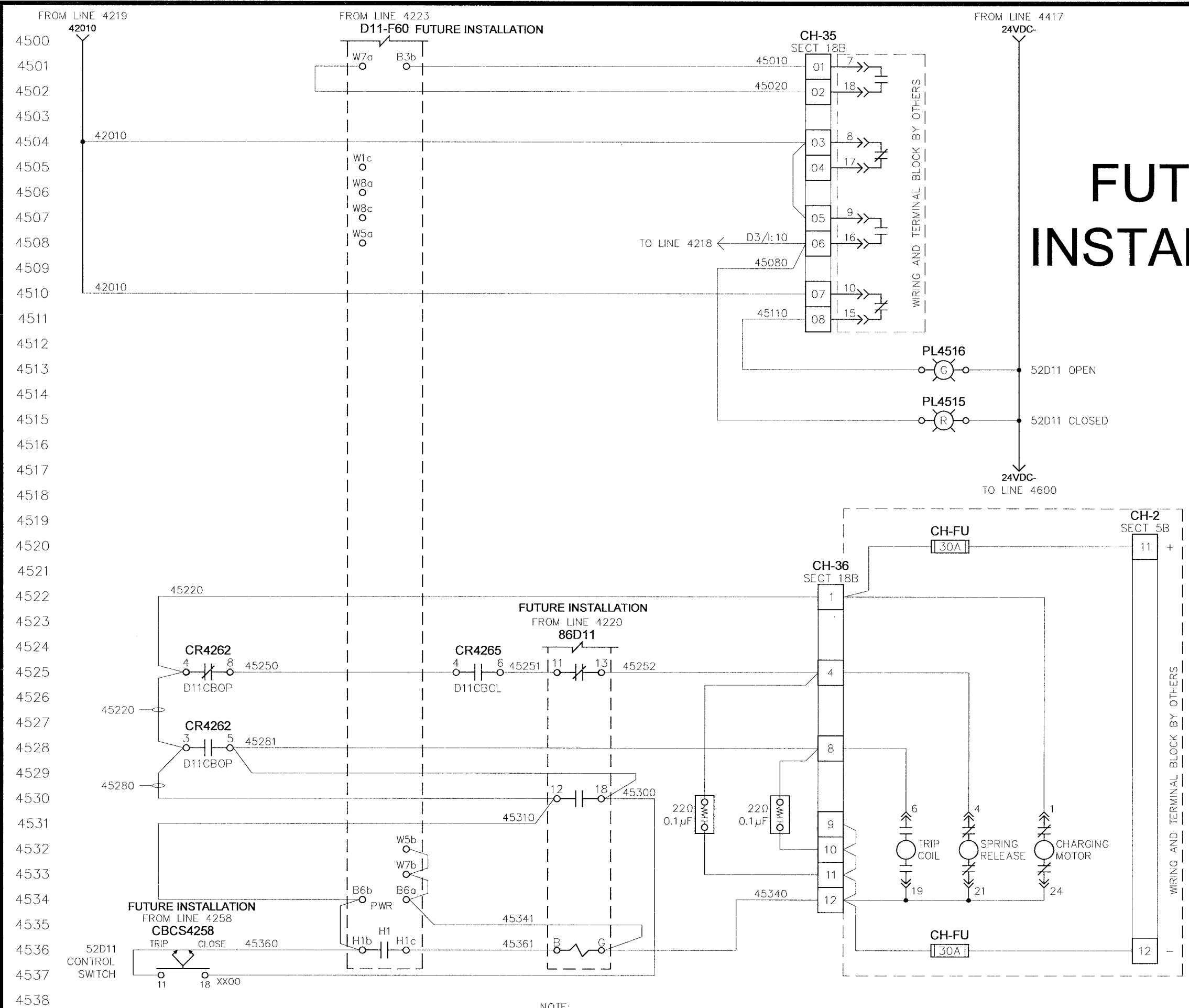
NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

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# FUTURE INSTALLATION



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NOTE:  
1) ALL WIRING TO BE 14AWG UNLESS NOTED.

TITLE: CITY OF WINNIPEG WTP - UTILITY (E-100)  
DISTRIBUTION 3 52D11 (52BK-E106B) - CB INTERFACE (FUTURE)

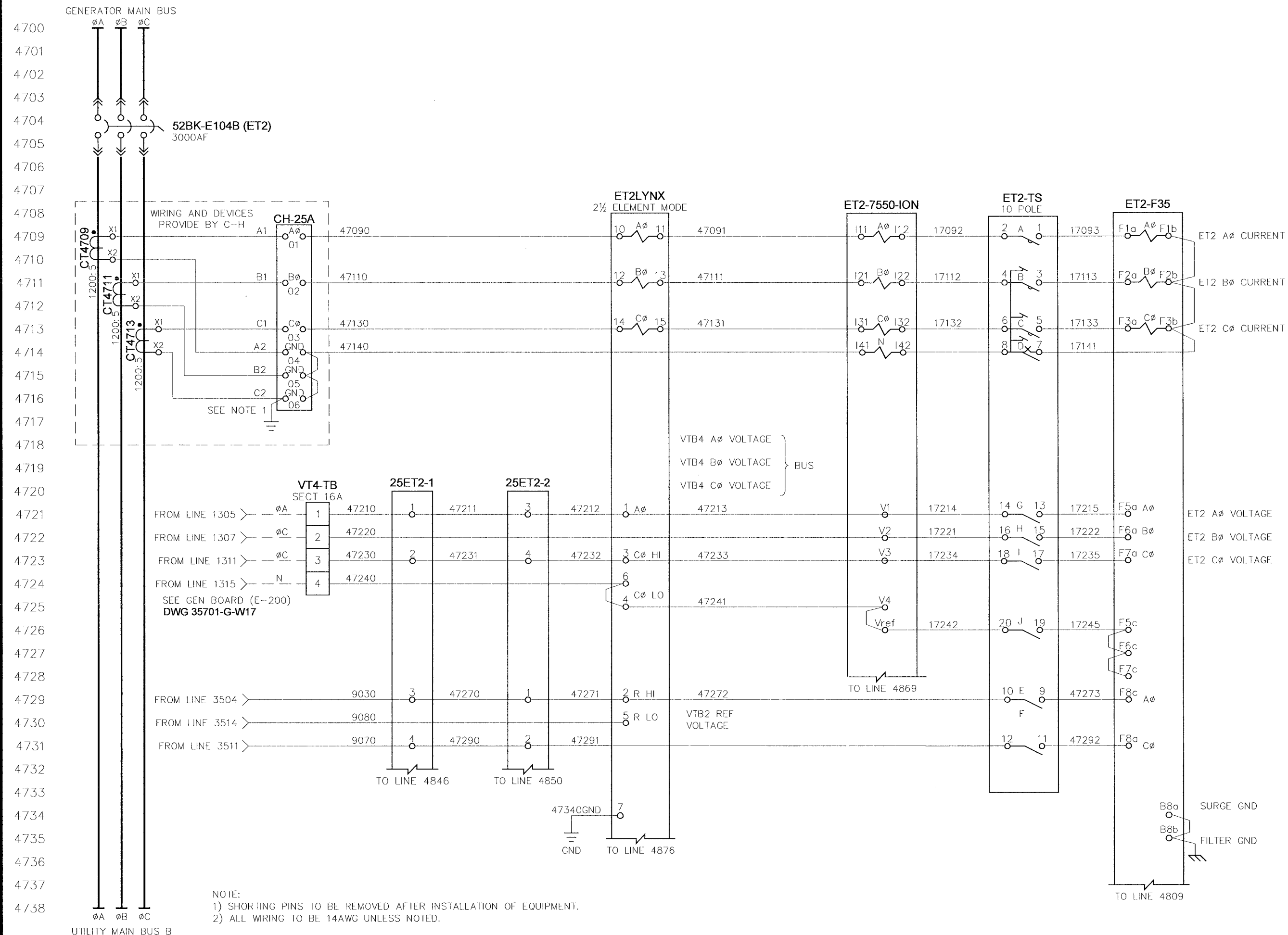
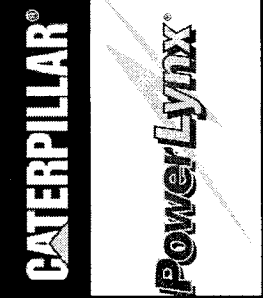
4.16KV UTILITY PARALLELING SWITCHGEAR

APPROVED BY	SCALE	REV	DRAWN BY	MODIFIED BY
RAM	N.T.S.	0.2	EM	
DATE APPROVED			DATE CREATED	DATE MODIFIED
08-09-06			05-01-06	
FILE NAME			SHEET NUMBER	of
35701-U-W45			45	52

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
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TITLE: CITY OF WINNEPEG WTP - UTILITY (E-100)  
 EMERGENCY TIE 52ET2 (52BK-E104B) - AC INSTRUMENTAION

4.16KV UTILITY PARALLELING SWITCHGEAR

APPROVED BY: RAM  
 DATE APPROVED: 08-09-06  
 FILE NAME: 35701-U-W47

SCALE: N.T.S.  
 REV: 0.2

DRAWN BY: EM  
 DATE CREATED: 05-01-06

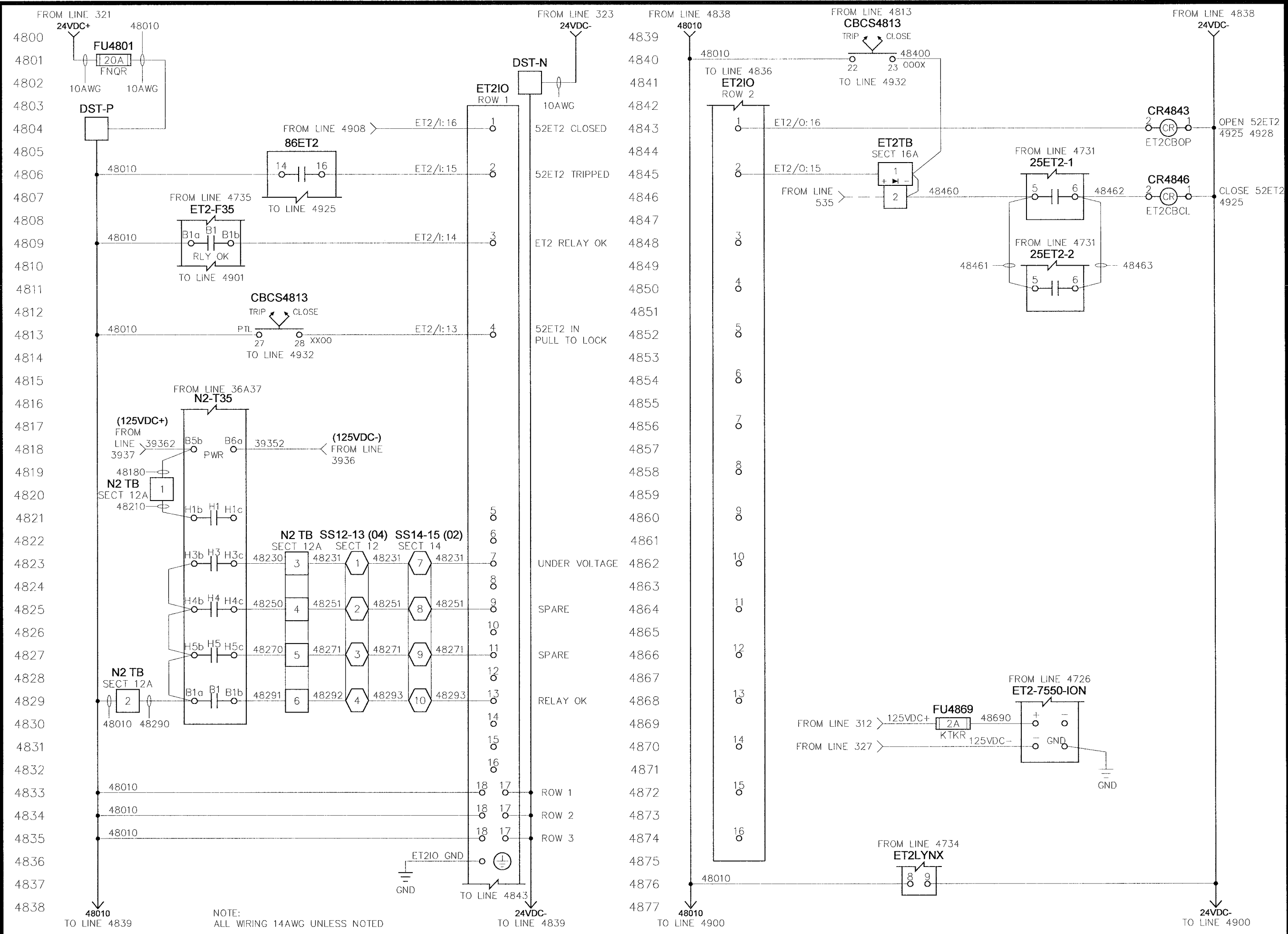
MODIFIED BY:  
 DATE MODIFIED:

SHEET NUMBER: 47 of 52

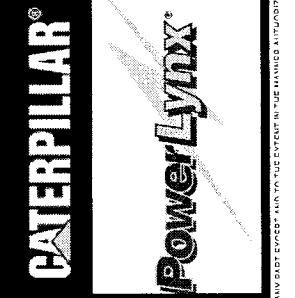
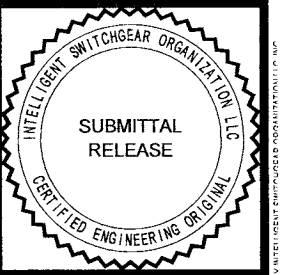
U-W47

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	ISSUED FOR SUBMITTAL	06-07-06
0.2	ISSUED FOR SUBMITTAL	08-09-06

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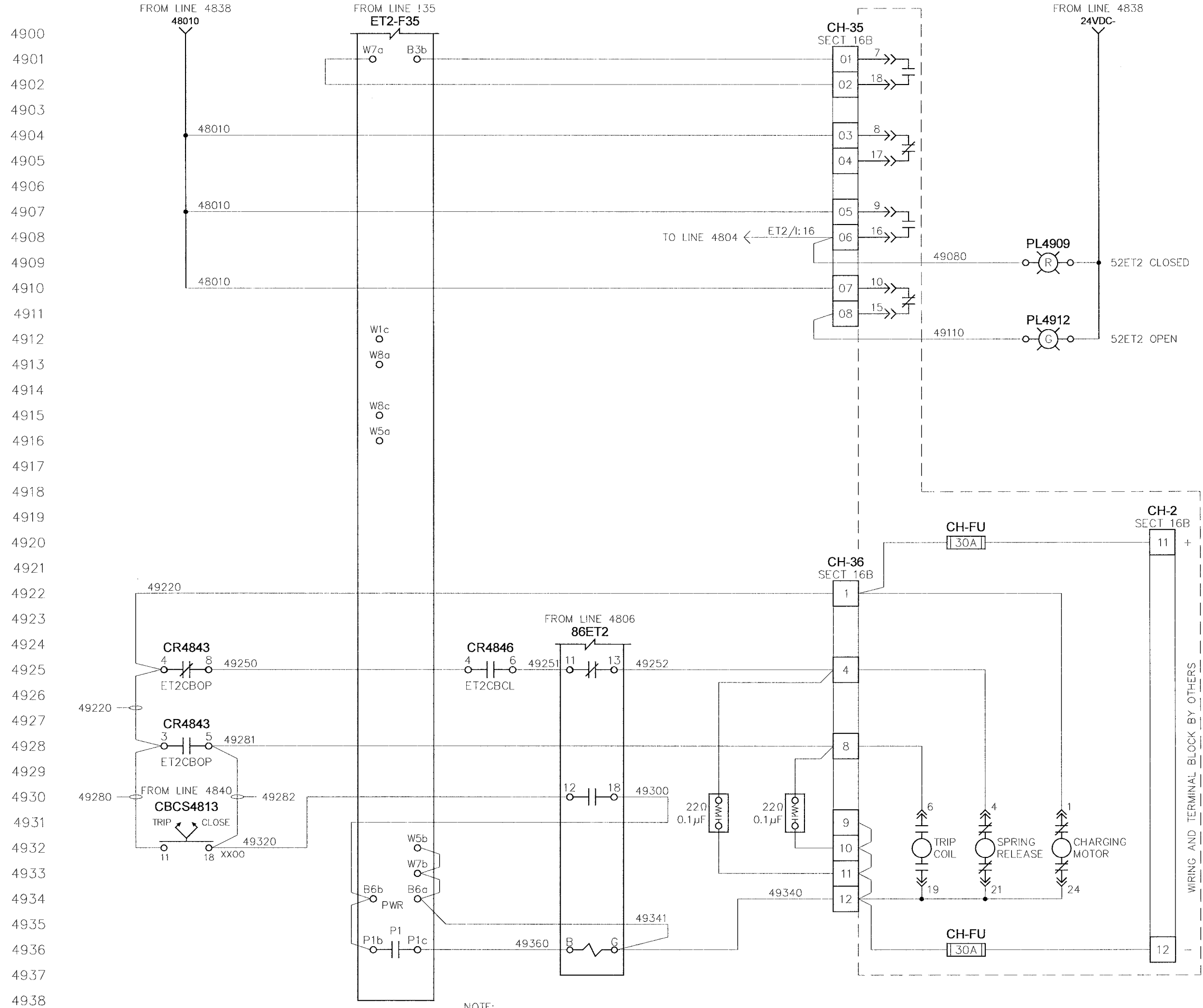
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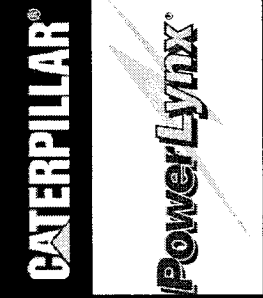
<b>TITLE:</b> CITY OF WINNIPEG WTP - UTILITY (E-100) EMERGENCY TIE 52ET2 (52BK-E104B) - CONTROLS	
<b>APPROVED BY:</b> <i>RAM</i>	<b>SCALE:</b> N.T.S.
<b>DATE APPROVED:</b> 08-09-06	<b>REV:</b> 0.2
<b>FILE NAME:</b> 35701-U-W48	<b>SHEET NUMBER:</b> 48 of 52
<b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>	<b>MODIFIED BY:</b> THC
<b>DATE CREATED:</b> 05-01-06	<b>DATE MODIFIED:</b> 08-02-06

NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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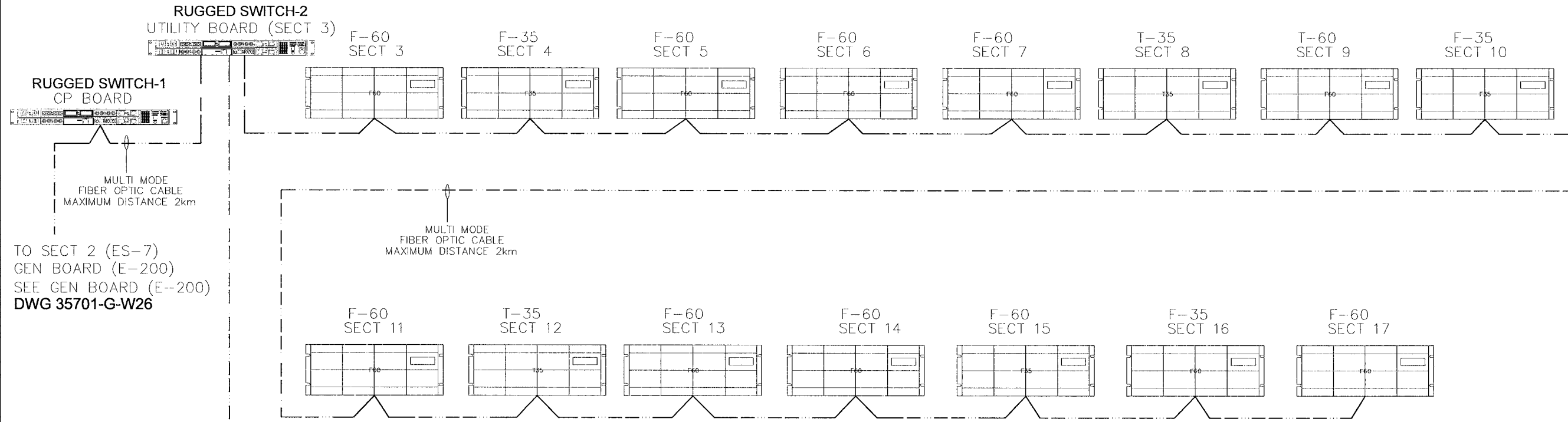


<b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>EMERGENCY TIE 52ET2 (52BK-E104B) - CB INTERFACE</b>	
4.16KV UTILITY PARALLELING SWITCHGEAR	DRAWN BY: EM DATE CREATED: 05-01-06 SHEET NUMBER: 49 of 52
APPROVED BY: RAM	SCALE: N.T.S. REV: 0.2
DATE APPROVED: 08-09-06 FILE NAME: 35701-U-W49	<b>U-W49</b>

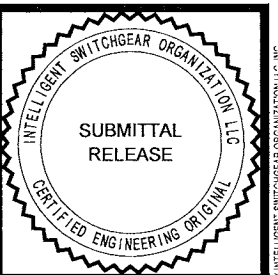
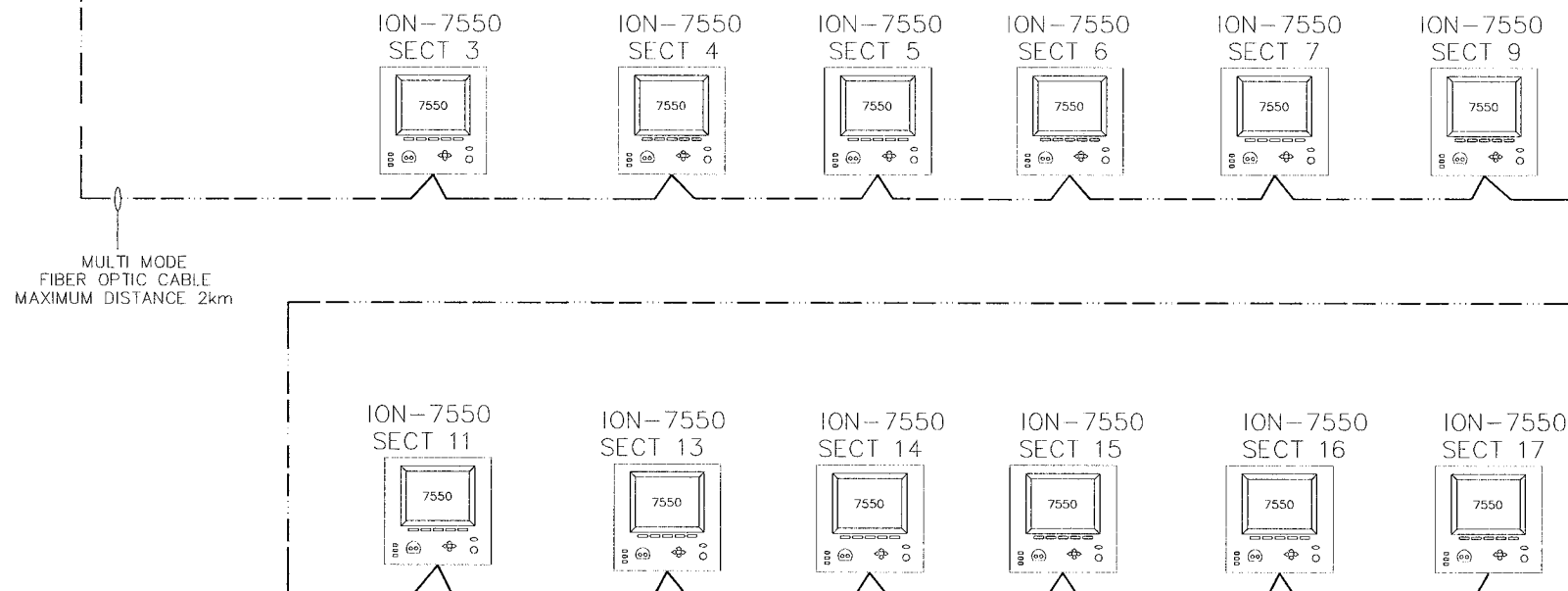
NO.	REVISION	DATE
0.0	ISSUED FOR SUBMITTAL	05-22-06
0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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### FIBER OPTIC INTERCONNECT (PROTECTIVES)



### FIBER INTERCONNECT (ION-POWER METERS)

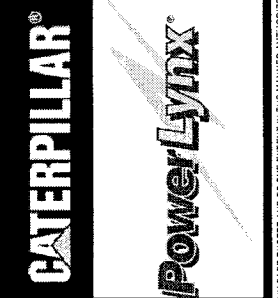
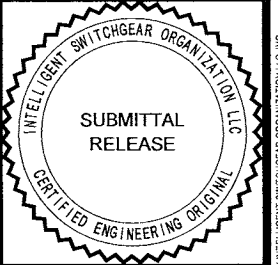
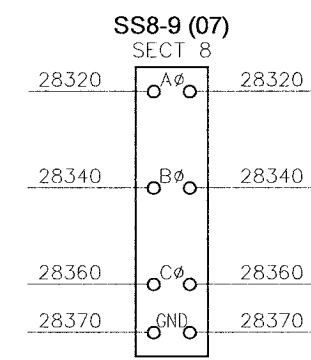
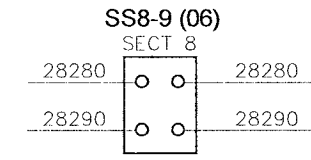
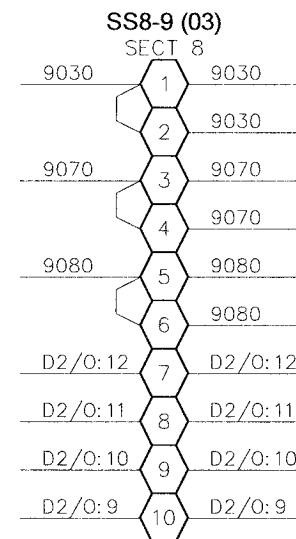
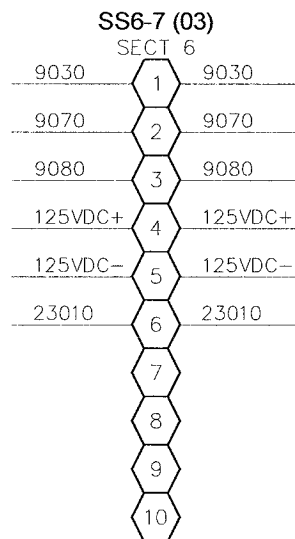
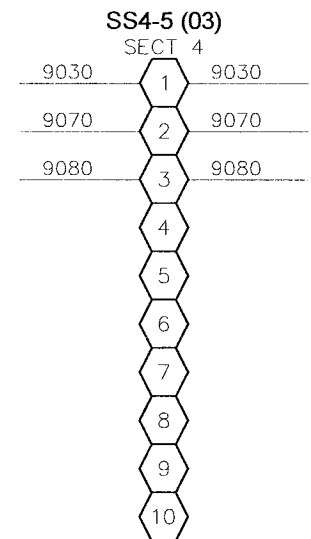
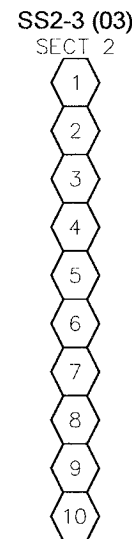
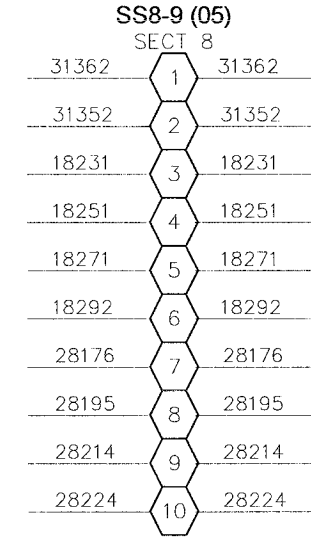
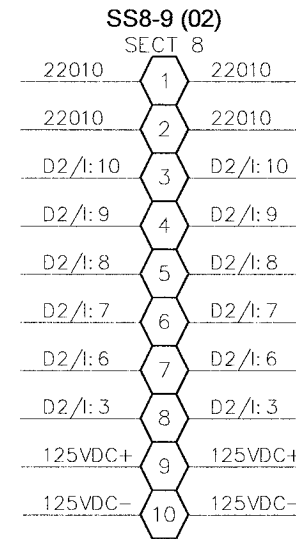
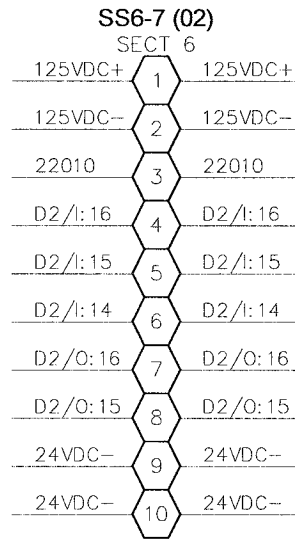
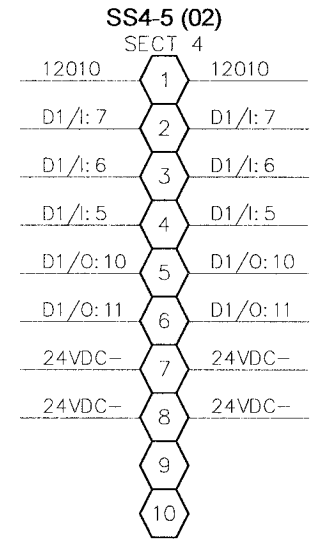
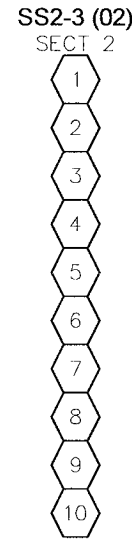
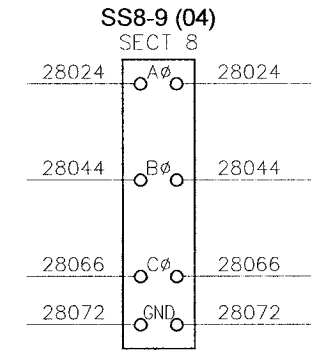
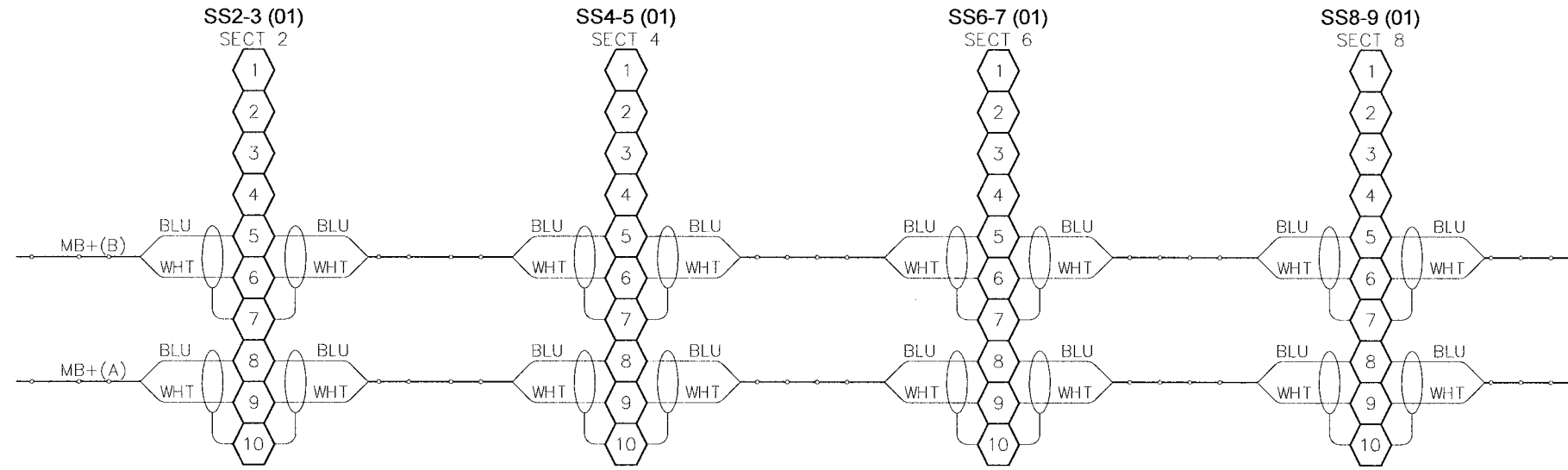


<b>CITY OF WINNIPEG WTP - UTILITY (E-100)</b> <b>FIBER OPTIC INTERCONNECT</b> <b>4.16KV UTILITY PARALLELING SWITCHGEAR</b>	
APPROVED BY <b>RAM</b>	SCALE N.T.S.
DATE APPROVED 08-09-06	REV. 0.2
FILE NAME 35701-U-W50	DATE CREATED 05-01-06
	DATE MODIFIED
	MODIFIED BY
	EM
	05-01-06
	DATE MODIFIED
	50
	SHEET NUMBER
	of 52

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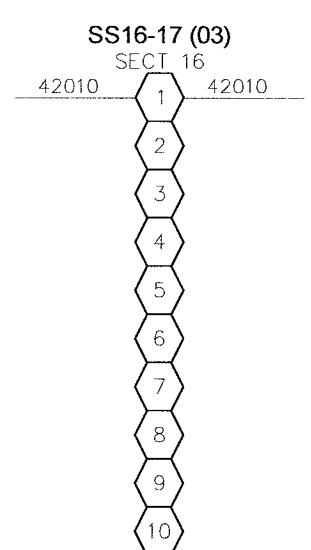
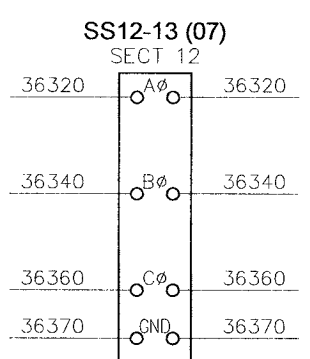
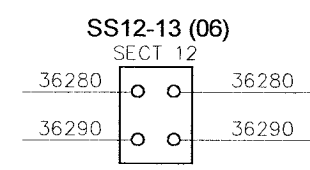
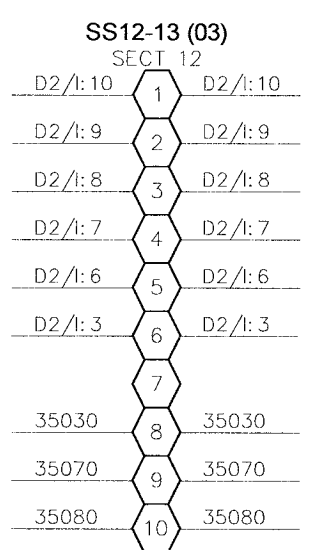
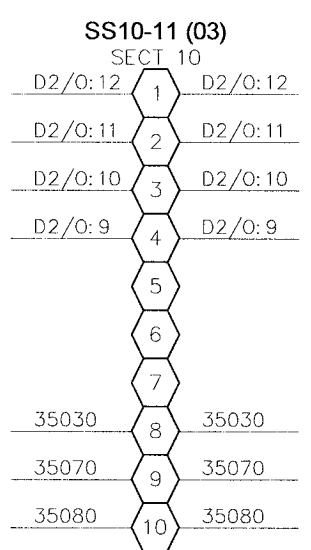
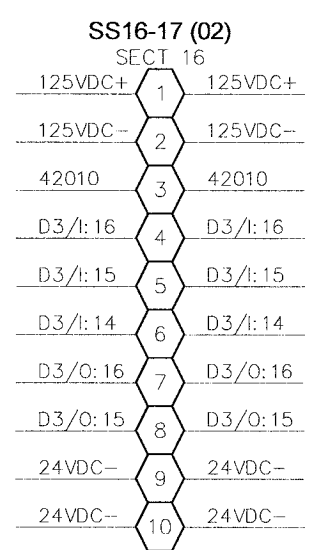
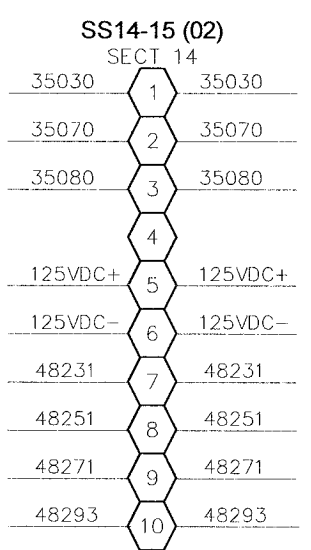
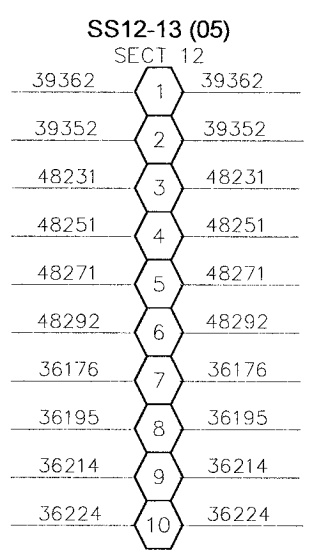
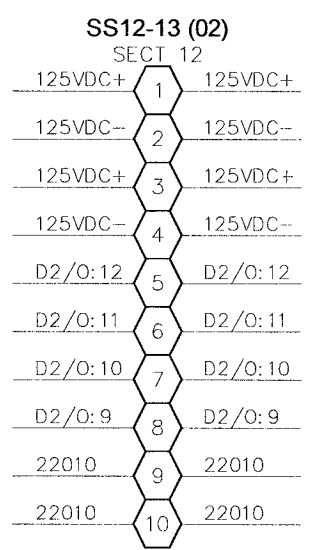
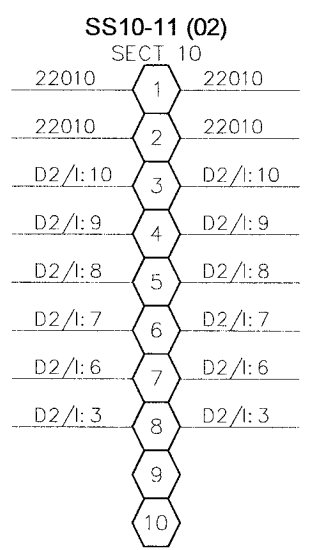
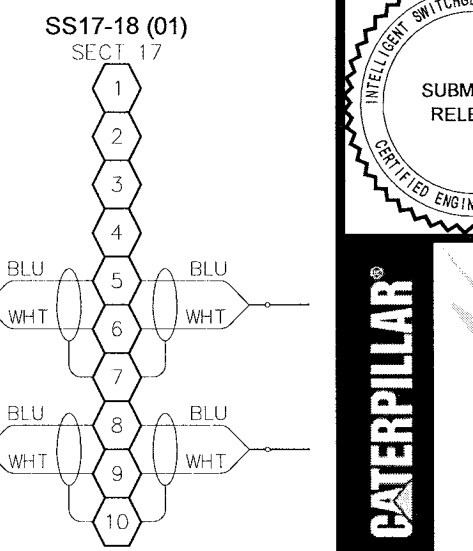
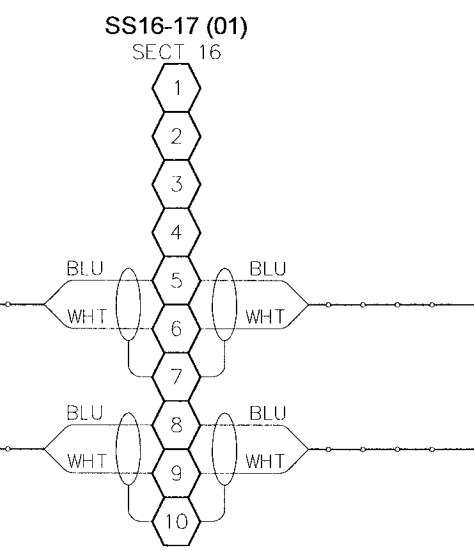
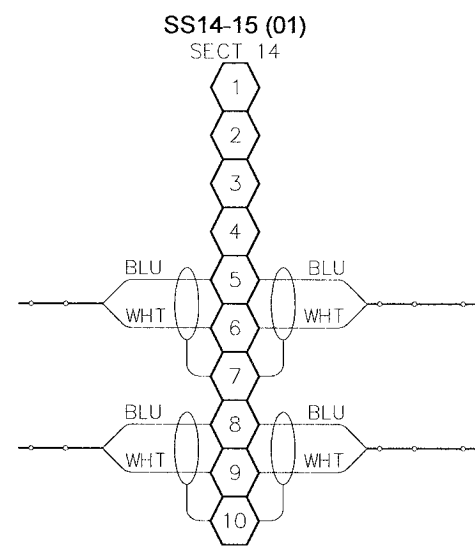
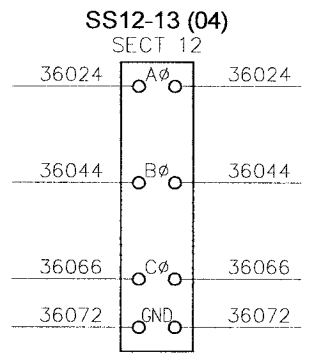
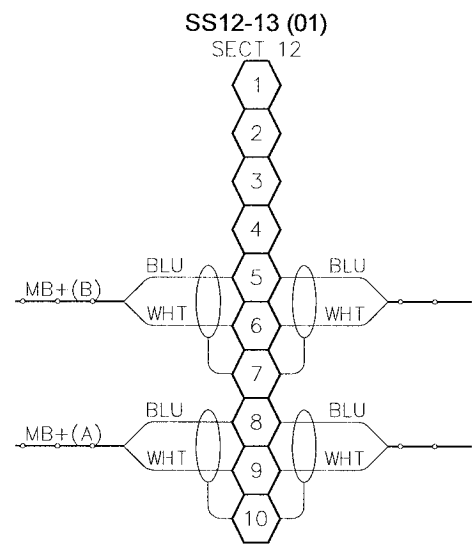
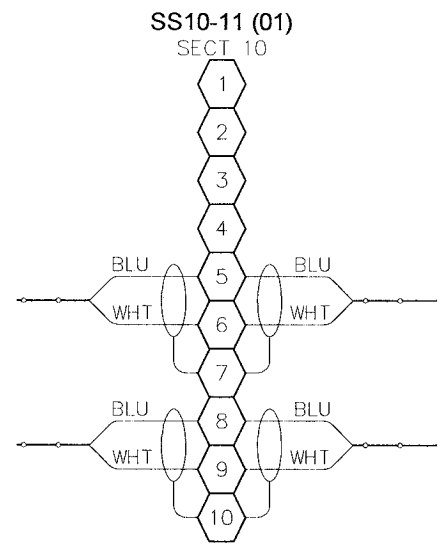
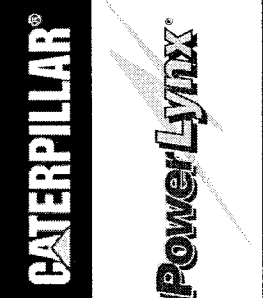
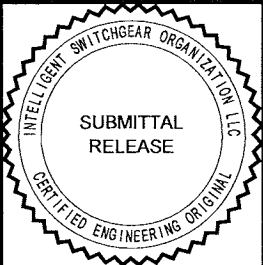




CITY OF WINNIPEG WTP - UTILITY (E-100)		SHIPPING SPLIT DETAIL - 1	
4.16KV UTILITY PARALLELING SWITCHGEAR			
APPROVED BY	SCALE	REV	MODIFIED BY
RAM	N.T.S.	0.2	EM
DATE APPROVED	DATE CREATED	DATE MODIFIED	DATE MODIFIED
08-09-06	05-01-06		
FILE NAME	SHEET NUMBER	of	
35701-U-W51	51	52	

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**CITY OF WINNIPEG WTP - UTILITY (E-100)**  
**SHIPPING SPLIT DETAIL - 2**  
4.16KV UTILITY PARALLELING SWITCHGEAR

APPROVED BY: *RAM* | SCALE: N.T.S. | REV: 0.2 | DRAWN BY: EM | MODIFIED BY: |  
DATE APPROVED: 08-09-06 | DATE CREATED: 05-01-06 | DATE MODIFIED: |  
FILE NAME: 35701-U-W52 | SHEET NUMBER: 52 of 52

NO.	REVISION	DATE
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0.1	REISSUED FOR SUBMITTAL	06-07-06
0.2	REISSUED FOR SUBMITTAL	08-09-06

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