

ELECTRICAL SYMBOL LEGEND

SINGLE LINE

SCHEMATIC

	LOAD BREAK SWITCH
	UNFUSED DISCONNECT SWITCH
	FUSED CUTOUT SWITCH
	FUSED DISCONNECT SWITCH
	FUSE
	CIRCUIT BREAKER
	DRAW OUT CIRCUIT BREAKER
	CIRCUIT BREAKER C/W CURRENT LIMITERS
	POWER CIRCUIT BREAKER C/W FRAME SIZE INDICATION
	STAB TYPE DISCONNECT
	LIGHTNING ARRESTER
	SURGE ARRESTER
	THERMAL OVERLOAD DEVICE
	CONTACT
	CONTACT
	CAPACITOR C/W KVAR RATING
	POTENTIAL TRANSFORMER C/W VOLTAGE AND QUANTITY
	CURRENT TRANSFORMER C/W RATIO AND QUANTITY
	ZER0 SEQUENCE CURRENT TRANSFORMER
	DIGITAL METERING
	TRANSIENT VOLTAGE SURGE SUPPRESSOR
	VARIABLE FREQUENCY DRIVE
	METERING DEVICE
	ELECTRIC MOTOR
	HARMONIC FILTER kW RATED
	DISTRIBUTION TRANSFORMER
	ISOLATION TRANSFORMER
	SHIELDED ISOLATION TRANSFORMER
	TERMINAL
	CABLE TERMINATION
	WEATHERHEAD
	BUS BAR WITH CONNECTION

LINE SYMBOLS	
	CONDUCTOR
	UNDERGROUND CONDUCTOR
	OVERHEAD CONDUCTOR
	TRIPPING OR INTERLOCKING CIRCUIT
	EQUIPMENT OUTLINE
	KEY INTERLOCKING
	CAT 5E NETWORK CABLE IN MINIMUM 27mm CONDUIT
SWITCH GEAR DEVICE NUMBER AND FUNCTIONS	
(15)	SYNCHRONIZATION CHECK RELAY
(27)	AC UNDER VOLTAGE
(32)	DIRECTIONAL POWER RELAY
(40)	LOSS OF FIELD PROTECTION RELAY
(46)	PHASE BALANCE CURRENT RELAY
(47)	PHASE SEQUENCE RELAY
(48)	INCOMPLETE SEQUENCE RELAY
(49)	AC THERMAL OVERLOAD RELAY
(50)	AC INSTANTANEOUS OVERCURRENT RELAY
(51)	AC TIME DELAY OVERCURRENT RELAY
(52)	AC CIRCUIT BREAKER
(59)	AC OVER VOLTAGE RELAY
(63)	SUDDEN PRESSURE RELAY
(78)	PHASE ANGLE MEASURING RELAY
(81)	UNDER FREQUENCY RELAY
(86)	LOCKOUT RELAY
(87)	DIFFERENTIAL CURRENT RELAY
(92)	REVERSE POWER RELAY
SPECIALIZED RELAY FUNCTION ARE INDICATED BY A LETTER SU... S - STALL, G - GROUND, T - TEMPERATURE.	

	OHM RATING IDENTIFIER
	RESISTOR
	POTENTIOMETER
	THERMISTOR
3 PHASE TRANSFORMER CONNECTION SYMBOLS	
	DELTA
	WYE
	WYE OR STAR WITH SOLID GROUNDED NEUTRAL
	WYE OR STAR WITH RESISTANCE GROUNDED NEUTRAL AND MAXIMUM CURRENT INDICATED
	FEEDER IDENTIFICATION SYMBOL
	GROUND
	STARTER - FVNR FULL VOLTAGE NON-REVERSING
	REDUCED VOLTAGE SOLID STATE STARTER WITH BY-PASS CONTACTOR
	STARTER - 2 SPEED, 2 WINDING
	AUTOMATIC TRANSFER SWITCH
	STAND-BY GENERATOR

	DRAW-OUT DEVICE
	BREAKER
	FUSE
	THERMAL OVERLOAD
	CONTROL TRANSFORMER
	GROUND
	BATTERY
	N.O. CONTACT
	N.C. CONTACT
	TIME DELAY CLOSE ON ENERGIZE
	TIME DELAY OPEN ON DE-ENERGIZE
	TIME DELAY CLOSE ON DE-ENERGIZE
	TIME DELAY OPEN ON ENERGIZE
	SINGLE POLE SINGLE THROW SWITCH
	SINGLE POLE DOUBLE THROW SWITCH
	LEVEL SWITCH (N.C.) OPENS ON RISING LEVEL
	LEVEL SWITCH (N.O.) CLOSES ON RISING LEVEL
	FLOW SWITCH (N.C.) OPENS ON FLOW
	FLOW SWITCH (N.O.) CLOSES ON FLOW
	PRESSURE SWITCH (N.C.) OPENS ON RISING PRESSURE
	PRESSURE SWITCH (N.O.) CLOSES ON RISING PRESSURE
	TEMPERATURE SWITCH (N.C.) OPENS ON RISING TEMPERATURE
	TEMPERATURE SWITCH (N.O.) CLOSES ON RISING TEMPERATURE
	VIBRATION SWITCH (N.C.)
	VIBRATION SWITCH (N.O.)
	LIMIT SWITCH (N.C.)
	LIMIT SWITCH (N.C. HELD OPEN)
	LIMIT SWITCH (N.O.)
	LIMIT SWITCH (N.O. HELD CLOSED)
	MOMENTARY PUSHBUTTON (N.C.)
	MOMENTARY PUSHBUTTON (N.O.)
	MUSHROOM HEAD

	NO CONNECTION
	CONNECTION
	CONTROL PANEL TERMINAL
	MCC TERMINAL
	FIELD TERMINAL
	SWITCH GEAR
	EQUIPMENT CONTROL PANEL
	FIELD JUNCTION BOX TERMINAL
	PANEL WIRING
	FIELD WIRING
	CONTROL RELAY 284 (TYP.) COIL
	MOTOR CONTROL RELAY (TYP.) COIL
	TIME - DELAY RELAY (TYP.) COIL
	PILOT LIGHT
	INDICATING LIGHT: A - AMBER, B - BLUE, C - CLEAR, G - GREEN, R - RED, W - WHITE
	PUSH-TO-TEST PILOT LIGHT
	SOLENOID
	2 POSITION MAINTAINED SELECTOR SWITCH
	3 POSITION MAINTAINED SELECTOR SWITCH

NOT IN CONTRACT - FOR INFORMATION ONLY

 <b>Certificate of Authorization</b> Earth Tech Canada Inc. No. 730 Expiry: April 30, 2007	B.M. ELEV.	 Frederickson Cooper ARCHITECTS	 A Tyco International Ltd. Company	ENGINEER'S SEAL  ORIGINAL SIGNED BY B.L. MOORE  2006/03/29	 <b>THE CITY OF WINNIPEG</b> WATER AND WASTE DEPARTMENT ENGINEERING DIVISION			
	DESIGNED BY PS					CHECKED BY BM	WATER TREATMENT PLANT GENERAL PLANT SERVICES MECHANICAL AND ELECTRICAL	CITY FILE NUMBER SHEET OF
	DRAWN BY CPG					APPROVED BY AHL		
	02 792-2006 ISSUED FOR TENDER 07/02/15 LAE 01 ISSUED FOR CONSTRUCTION 06/07/28 JBC 00 ISSUED FOR TENDER 06/03/29 ERC NO. REVISIONS DATE BY					SCALE: NONE  RELEASED FOR CONSTRUCTION BY: R. SOROKOWSKI  DATE 2005/07/28 DATE 2006/03/29	CONSULTANT DRAWING NO. WM-E0010	ELECTRICAL SYMBOLS LEGEND  CITY DRAWING NUMBER 1-0601M-D-E0010-001-02D