

ONE LINE DIAGRAMS (CONTINUED)

	POTENTIAL TRANSFORMER
	FUSE
	CURRENT TRANSFORMER
	AMMETER SWITCH
	VOLTMETER SWITCH
	AMMETER
	VOLTMETER
	WATT TRANSDUCER
	LINE/LOAD REACTOR
	KILOWATT METER
	MOTOR BLOWER
	GENERATOR
	CONTACTOR
	THERMOSTAT

SCHEMATIC DIAGRAMS

	PLC RELAY OUTPUT
	PLC RELAY OUTPUT W/ MOV SUPPRESSOR
	PLC DISCRETE INPUT
	PLC ANALOG INPUT
	PLC ANALOG OUTPUT
	MOTOR STARTER
	MOTOR CONTROL CENTRE SOUTH TOWER
	MOTOR CONTROL CENTRE NORTH TOWER
	CONTROL PANEL 1 (CP-1, MAIN BRIDGE CONSOLE)
	CONTROL PANEL 2 (CP-2, CONTROL PANEL)
	CONTROL PANEL 3 (CP-3, SOUTH I/O PANEL)
	CONTROL PANEL 4 (CP-4, NORTH I/O PANEL)
	NAVIGATION, PEDESTRIAN SIGNAL AND TRAFFIC SYSTEM CONTROL CONSOLE (CP-5)
	NAVIGATION, PEDESTRIAN SIGNAL AND TRAFFIC SYSTEM CONTROL PANEL (CP-6)
	SOUTH TOWER NORTH LOCAL CONTROL PANEL (CP-7)
	SOUTH TOWER AUXILIARY DRIVE HEIGHT METER PANEL (CP-8)
	NORTH TOWER AUXILIARY DRIVE HEIGHT METER PANEL (CP-9)
	DRIVE SYSTEM PANEL
	AERIAL CABLE INCLUDING: FROM TERMINAL BOX TO CABLE TO TERMINAL BOX (SEE NOTE 1)
	CABLE REEL
	MOTOR 1E DRIVE CABINET (SOUTH TOWER)
	MOTOR 3E DRIVE CABINET (NORTH TOWER)
	MOTOR 2W DRIVE CABINET (SOUTH TOWER)

SCHEMATIC DIAGRAMS (CONTINUED)

	MOTOR 4W DRIVE CABINET (NORTH TOWER)
	GATE OPERATOR
	SPAN LOCK OPERATOR (LOCAL CONTROL)
	EMERGENCY GEN. PANEL
	AUTO TRANSFER SWITCH
	FIELD MOUNTED EQUIPMENT TERMINAL (LIMIT SWITCH, ETC.)
	ENCODER
	PANEL WIRING
	FIELD WIRING
	SHIELDED TWISTED PAIR
	CONDUIT TEE (MAIN RUN TO AND FROM VIEWER)
	CIRCUIT BREAKER # = AMP TRIP RATING 2P = TWO POLE 3 POLE UNLESS NOTED

POSITION (LIMIT) SWITCHES – ZS

	NORMALLY CLOSED
	NORMALLY CLOSED HELD OPEN
	NORMALLY OPEN
	NORMALLY OPEN HELD CLOSED
	LIMIT SWITCHES ARE SHOWN WITH BRIDGE DOWN, LOCKS DRIVEN AND TRAFFIC GATES UP

PRESSURE OR VACUUM SWITCH – PS

	NORMALLY OPEN CLOSED ON RISING PRESSURE
	NORMALLY CLOSED OPEN ON RISING PRESSURE

TEMPERATURE SWITH OR THERMOSTAT – TS

	NORMALLY OPEN CLOSED ON RISING TEMPERATURE
	NORMALLY CLOSED OPEN ON RISING TEMPERATURE

HEATER

LEVEL (FLOAT) SWITCH – LS

	NORMALLY OPEN CLOSED ON RISING LEVEL
	NORMALLY CLOSED OPEN ON RISING LEVEL

SCHEMATIC DIAGRAMS (CONTINUED)

HAND SWITCHES – HS

	TOGGLE SWITH
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SELECTOR SWITCH

	X CONDUCTING POSITION
	NORMAL DRIVE PULL
	SPRING RETURN TO CENTRE
	PUSH BUTTON
	NORMALLY OPEN
	NORMALLY CLOSED
	PUSH BUTTON, MAINTAINED NORMALLY CLOSED PUSH TO OPEN

KEY OPERATED

	MAINTAINED
	SPRING RETURN MOMENTARY CONTACTS

FOOT SWITCH

	INDICATING LIGHT R = RED G = GREEN A = AMBER B = BLUE W = WHITE Y = YELLOW
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	RELAY COIL DF = DEVICE FUNCTION 27 = UNDERVOLTAGE CR = CONTROL RELAY TR = TIME DELAY RELAY L = LATCHING U = UNLATCHING M = MOTOR CONTACTOR MF = MOTOR FORWARD CONTACTOR MR = MOTOR REVERSE CONTACTOR PE = PHOTOELECTRIC RELAY LR = LATCHING RELAY C = POWER CONTACTOR LC = LIGHTING CONTACTOR
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	SOLENOID OPERATOR VALVE
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RELAY CONTACTS

	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT

SCHEMATIC DIAGRAMS (CONTINUED)

TIME DELAY RELAY CONTACTS

	TIME DELAY CLOSED ON ENERGIZATION
	TIME DELAY OPEN ON ENERGIZATION
	TIME DELAY CLOSED ON DEENERGIZATION
	TIME DELAY OPEN ON DEENERGIZATION

INTERLOCKS (PLC CONTROLLED)

	EASTBOUND TRAFFIC GATES
	WESTBOUND TRAFFIC GATES
	SPANLOCKS
	SPAN OPERATION
	THERMAL MOTOR OVERLOAD
	ELECTRONIC MOTOR OVERLOAD

PLC LADDER LOGIC SYMBOLS

INPUT INSTRUCTIONS


	EXAMINE IF CLOSED
	EXAMINE IF OPEN
	ANALOG INPUT
	COUNTER * DN=COUNTS DOWN UP=COUNTS UP

OUTPUT INSTRUCTIONS

	OUTPUT ENERGIZED
	DISPLAYED ALARM MESSAGE

NOTE:

1. AERIAL CABLE SYMBOL FOR CONDUCTORS INCLUDES NORTH AND SOUTH TOWER'S CONTROL CABLE MANUAL TRANSFER SWITCH AND REDUNDANT CONDUCTORS. REFER TO CONTROL CABLE TRANSFER SCHEMATIC DIAGRAM 25 FOR CONNECTIONS.



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Expiry Date : July 31, 2013
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Do not scale drawings.
Verify all dimensions and conditions on site and
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of all discrepancies.

	A Detail No.
	B drawing no. — where detail required dessin no. — où détail exigé
	C drawing no. — where detailed dessin no. — où détaillé

project title
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HAMILTON BURLINGTON CANAL VERTICAL LIFT BRIDGE
ONTARIO
**REPLACEMENT OF CONTROLS,
DRIVES AND OVERHEAD CABLES**

drawing title
titre du dessin
ELECTRICAL SYMBOLS 2

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