

NORMAL CONDITION

1. MAIN BREAKERS (52-1, 52-2) ARE CLOSED
2. TIE BREAKER (52-T) IS OPEN

INTERLOCKING

1. MAIN AND TIE BREAKERS ARE ELECTRICALLY INTERLOCKED TO PREVENT PARALLELING OF SOURCES AT ALL TIMES.
2. CLOSING OF MAIN AND TIE BREAKERS VIA SELECTOR SWITCH IS PERMITTED ONLY WHEN THE AUTO/OFF/MANUAL SELECTOR SWITCH (43-1) IS IN THE MANUAL OR OFF POSITION.
3. TRIPPING OF MAIN AND TIE BREAKERS VIA SELECTOR SWITCH IS PERMITTED UNDER ALL CIRCUMSTANCES.

LOCKOUT

1. OVERCURRENT TRIP SWITCHES (OTS) ON MAIN AND TIE BREAKERS ARE INCORPORATED IN THE CONTROL SCHEME TO PREVENT CLOSURE OF TIE & FAULTED MAIN BREAKER AFTER A FAULT. THE FAULT MUST BE CLEARED AND THE CORRESPONDING BREAKER MANUALLY RESET TO RETURN TO NORMAL OPERATION.

4. ONLY TWO BREAKERS CAN BE CLOSED AT ONE TIME WHEN SELECTOR SWITCH (43-1) IS EITHER IN AUTO, OFF OR MANUAL POSITION AND BKRS ARE IN FULLY CONNECTED POSITION. **INTERLOCKING IS DEFEATED WHEN BREAKERS ARE IN TEST POSITION. SELECTOR SWITCH (43-1) MUST BE IN OFF POSITION WHEN TESTING THE BREAKERS.**

INITIAL START-UP

1. VERIFY SELECTOR SWITCH (43-1) IS IN "MANUAL" POSITION.
2. VERIFY ALL 3 BREAKERS ARE IN THE FULLY CONNECTED POSITION IN THEIR RESPECTIVE CELLS.
3. TURN SELECTOR SWITCH (43-M1/2) TO CLOSE POSITION.
4. PLACE SELECTOR SWITCH (43-1) IN THE "AUTO" POSITION.

SEQUENCE OF AUTOMATIC OPERATION

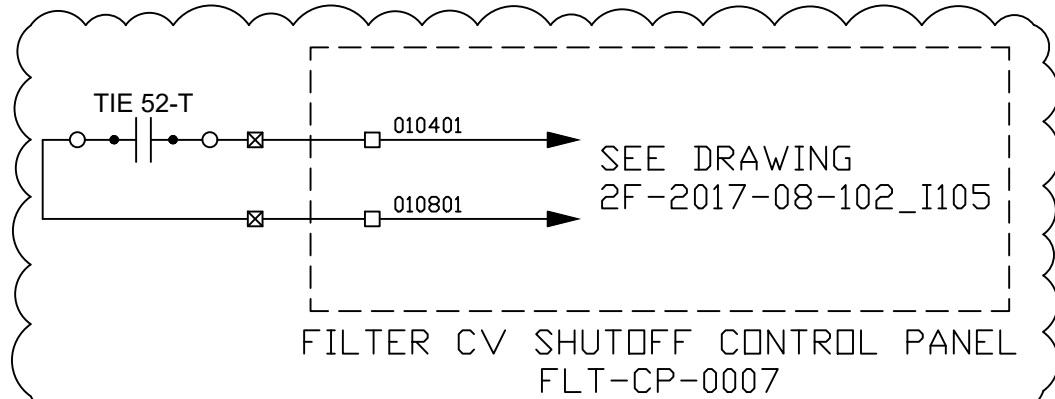
- A. LOSS OF UTILITY POWER AT EITHER MAIN
1. DEVICE 47 DETECTS LOSS OF NORMAL VOLTAGE (BUILT IN TIME DELAY SET TO MINIMUM).
2. DEVICE 62-1/2 TIMES OUT FOR 5s(ADJUSTABLE 0.0s - 10sec.)
3. MAIN BREAKER OPENS
4. DEVICE 62-3/4 TIMES OUT FOR 1s(ADJUSTABLE 0.5s - 10s)
5. TIE BREAKER CLOSES
- B. POWER RESTORED AT EITHER MAIN
1. DEVICE 47 DETECTS NORMAL VOLTAGE (AUTOMATICALLY RESETS CONTACT)
2. DEVICE 62-5/6 TIMES OUT FOR 5min. (ADJUSTABLE 0min - 10min)
3. TIE BREAKER OPENS
4. DEVICE 62-3/4 TIMES OUT FOR 1s(ADJUSTABLE 0.5s - 10s)
5. MAIN BREAKER CLOSES
- C. LOSS OF UTILITY POWER AT BOTH MAINS.
1. NO ACTIVITY UNTIL AT LEAST ONE SOURCE IS AVAILABLE.

MANUAL MODE SEQUENCE

1. PLACE SELECTOR SWITCH (43-1) IN "MANUAL" POSITION.
2. USING SELECTOR SWITCH(43-M1/M2/T) IN EACH MAIN BREAKERS WILL ALLOW MANUAL TRANSFER CONTROL OF THE ASSOCIATED BREAKER. OPERATION OF THE BREAKER SELECTOR SWITCH IN TRIP POSITION WILL TRIP THE ASSOCIATED BREAKER.
3. OPERATION OF MAIN BREAKERS SELECTOR SWITCH (43-M1/M2) IN CLOSE POSITION WILL TRIP THE TIE BREAKER. TIE BREAKER CANNOT BE CLOSED UNLESS ONE OF THE MAIN BREAKERS IS OPEN. ONLY TWO BREAKERS CAN BE CLOSED AT ANY GIVEN TIME.
4. MAIN BREAKER WILL CLOSE ONLY IF SOURCE POWER IS AVAILABLE.
5. SELECTOR SWITCH (43-1) MAY BE RETURNED TO "AUTO" TO REACT TO NEXT POWER FAILURE.

- LEGEND:
- OTC OVERCURRENT TRIP SWITCH (BELL ALARM)
- TOC TRUCK OPERATED CELL SWITCH
- 120V AC COIL
- 120V AC PILOT LIGHT
- FUSE
- MOT SPRING CHARGE OPERATOR
- SR SPRING RELEASE (CLOSE)
- 27/47 VOLTAGE MONITORING RELAY-D65VMS600-B1
- TC TRIP COIL
- VENDOR WIRING
- FIELD WIRING
- TERMINAL BLOCK

DEVICE LEGEND		
DEVICE	DESCRIPTION	PART NUMBER
43-1	AUTO/OFF/MANUAL SELECTOR SWITCH - 3 POS. SELECTOR SWITCH	LVDAJ8404
43-M1/T/M2	CLOSE/OFF/OPEN SELECTOR SWITCH - 3 POS. MOMENTARY	1025013043
62-1,62-2	OMRON OFF-DELAY (3s-10min) 120V AC RELAY - 8 PIN (H3CR)	3A16882H01
62-1,62-2	RELAY SOCKET - 8 PIN	D3PA2-A2
62-3,62-4	OMRON ON-DELAY (0.5-60s) 120V AC RELAY - 8 PIN (H3CR)	LVDAJ7617
62-3,62-4	RELAY SOCKET - 11 PIN	D3PA3-A2
62-5,62-6	OMRON ON-DELAY (2min-120min) 120V AC RELAY - 8 PIN (H3CR)	LVDAJ7617
62-5,62-6	RELAY SOCKET - 11 PIN	D3PA3-A2
62-1,62-2	RELAY SOCKET - 8 PIN	D3PA2-A2
LIGHTS	120V AC PUSH-TO-TEST TRANSFORMER TYPE PILOT LIGHTS	102501221N
G	GREEN PILOT LIGHT LENS	102501C22
R	RED PILOT LIGHT LENS	102501C21
CR-1,CR-2,CR-7	CONTROL RELAY 120VAC / 8 PIN SOCKET	D3PR2A / D3PA2-A2
CR-4,CR-5,CR-6	CONTROL RELAY 120VAC / 11 PIN SOCKET	D3PR3A / D3PA3-A2



DEVICE 43-1 AUTO/MANUAL SELECTOR SWITCH

CONTACT	AUTO	OFF	MAN
1-1-2	X		
3-1-2			X
5-1-6	X		
7-1-8			X
9-1-10	X		
11-1-10			X
13-1-14	X		
15-1-14			X

X* = CONTACT CLOSED

DEVICE (43-M1) MOMENTARY CLOSE/OFF/TRIP SELECTOR SWITCH

CONTACT	CLOSE	OFF	TRIP
1-1-2	X		
3-1-4			X
5-1-6	X		
7-1-8			X
9-1-10	X		
11-1-12			X

X* = CONTACT CLOSED

DEVICE (43-M2) MOMENTARY CLOSE/OFF/TRIP SELECTOR SWITCH

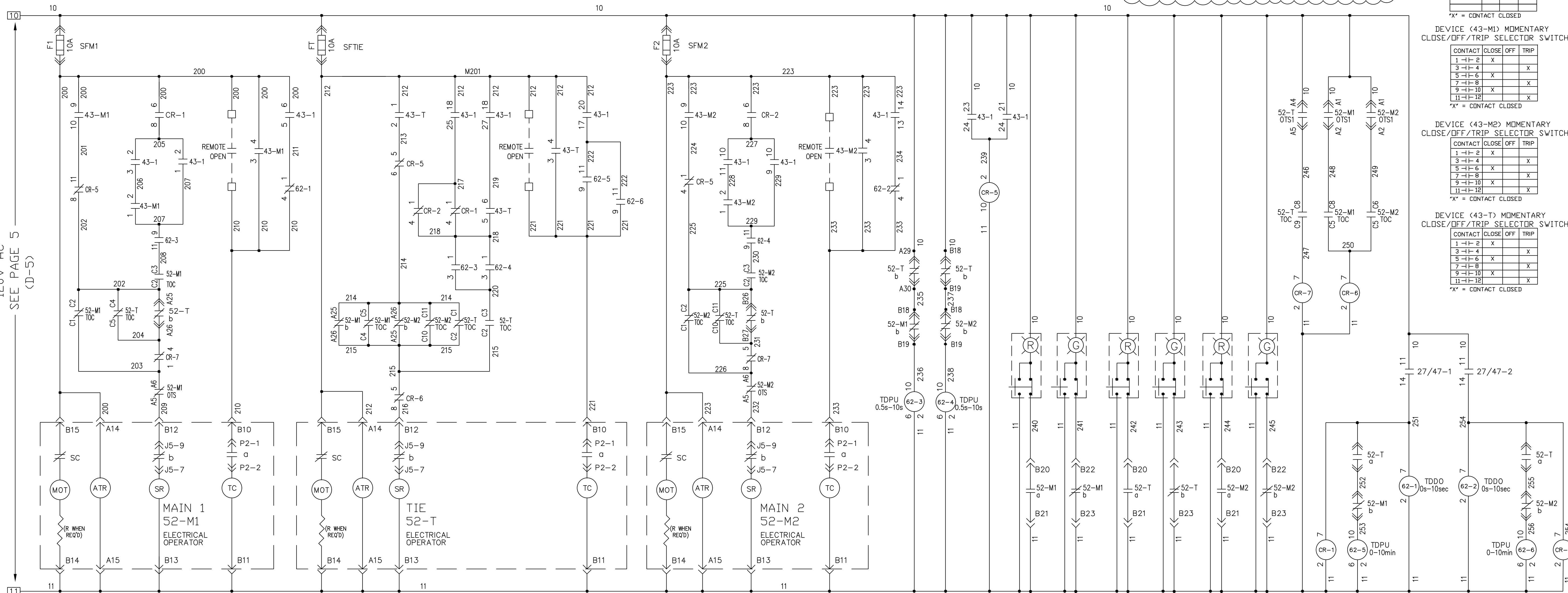
CONTACT	CLOSE	OFF	TRIP
1-1-2	X		
3-1-4			X
5-1-6	X		
7-1-8			X
9-1-10	X		
11-1-12			X

X* = CONTACT CLOSED

DEVICE (43-T) MOMENTARY CLOSE/OFF/TRIP SELECTOR SWITCH

CONTACT	CLOSE	OFF	TRIP
1-1-2	X		
3-1-4			X
5-1-6	X		
7-1-8			X
9-1-10	X		
11-1-12			X

X* = CONTACT CLOSED



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ARCADIS Professional Services (Canada) Inc.

B 2025-06-10
A 2025-03-18

ISSUED FOR ADDENDUM #1
ISSUED FOR TENDER

C.H.
C.H.

NO. DATE

REVISIONS

INITIAL SIGNED

TORONTO WATER

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R.C. HARRIS WATER TREATMENT PLANT

INSTALLATION OF A STANDBY GENERATOR FOR CRITICAL LOADS

MCC-0400 TIE BREAKER WIRING DETAIL

INSTRUMENTATION

DESIGN: M.D. DRAFTING: M.D. CHECK: J.G.C. CONTRACT No. 25ECS-MI-03HA
SCALE: N.T.S. DRAWING NUMBER: 2F-2017-08-99
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