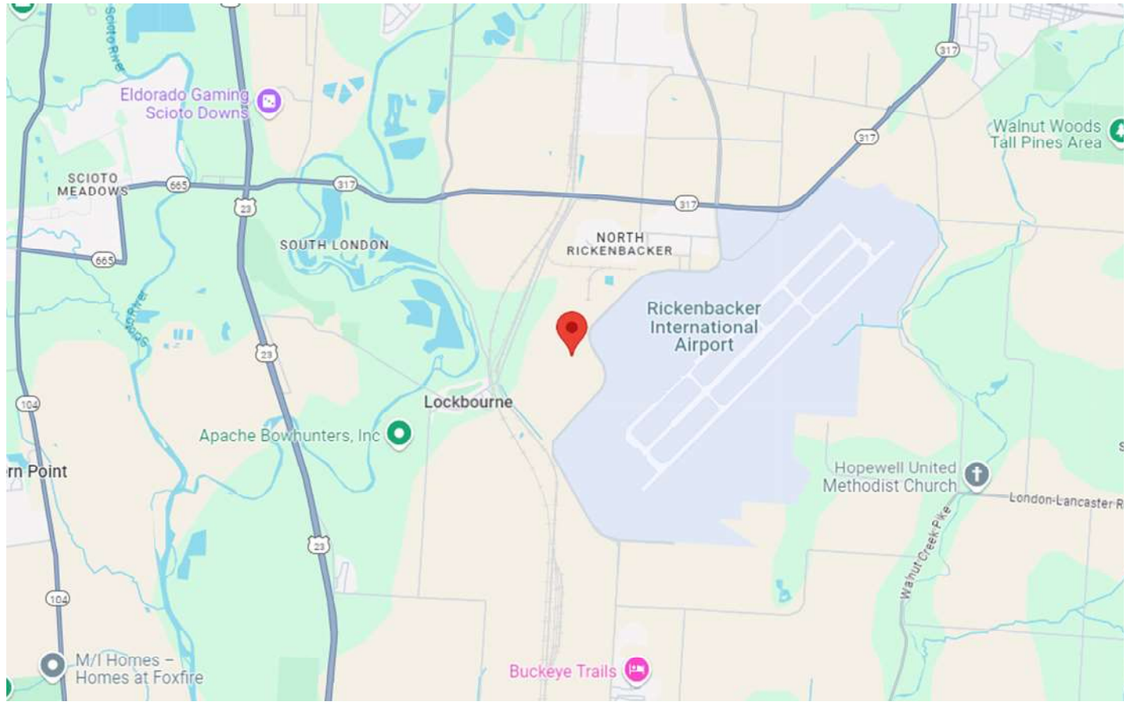
WARABEYA NORTH AMERICA

1575 RAIL SOUTHERN COURT, COLUMBUS, OH 43217



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							TITLE PAGE
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 1 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

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LEGENDS & SYMBOLS

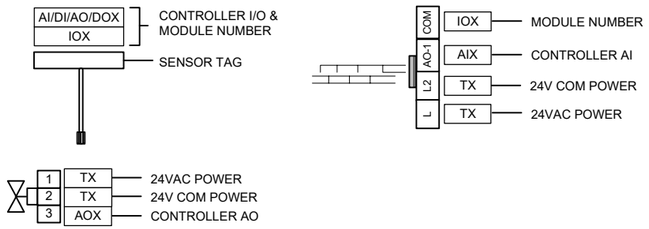
GENERAL NOTES

1. ALL POWER WIRING 120 VAC AND ABOVE BY ELECTRICAL CONTRACTOR.

TEMPERATURE CONTROL LEGEND (IF APPLICABLE) :

PNEUMATIC TUBING
WIRING
6 TERMINAL BLOCK #6
SV SOLENOID VALVE
CONTROL VALVE, 2-WAY
CONTROL VALVE, 3-WAY
T#/Z# SIGNAL LINE INSIDE PANEL

POINT NAMING CONVENTION



ABBREVIATIONS:

AFMS- AIR FLOW MEASURING STATION
C- COMMON PORT
CP- CONTROL PANEL
CS- CURRENT SWITCH
CX- CONTROLLER NUMBER
DMP-DAMPER ACTUATOR
DPS- DIFFERENTIAL PRESSURE SWITCH
DPT- DIFFERENTIAL PRESSURE TRANS
EA- EXHAUST AIR
ES- END SWITCH, POSITION SWITCH
FS- FLOW SWITCH
FSD- FIRE & SMOKE DAMPER
FRZ- FREEZESTAT
H- HUMIDISTAT
HC- MOTOR STARTER HOLDING COIL
HI- HUMIDITY INDICATOR
HL- HIGH LIMIT HUMIDISTAT
HS- HIGH SIGNAL SELECTOR
IO-X- EXPANSION IO MODULE NUMBER
LCP- LOCAL CONTROL PANEL
LS- LOW SIGNAL SELECTOR
MA- MIXED AIR
MOD-MOTOR OPERATED DAMPER
NC- NORMALLY CLOSED
NCP- NETWORK CONTROL PANEL
NO- NORMALLY OPEN
OA -OUTSIDE AIR
OL'S- MOTOR STARTER OVERLOADS
OAT/H- OUTSIDE AIR TEMPERATURE & HUMIDITY SENSOR
PE- PRESSURE TOGGLE SWITCH
PI- PRESSURE INDICATOR
PL- PILOT LIGHT
PT- PRESSURE TRANSMITTER
PR/FR- PANEL/FIELD CONTROL RELAY
RC- RECEIVER CONTROLLER
RR- REVERSING RELAY
RT- ROOM THERMOSTAT
S- SWITCH
SD- SMOKE DETECTOR
S/W- SUMMER/ WINTER SIGNAL
DAT/RAT/ZT- SUPPLY/RETURN AIR/ZONE TEMPERATURE SENSOR
SAH/RAH- SUPPLY/RETURN HUMIDITY TRANSMITTER
TS- IMMERSION TEMP SENSOR
TC- TIME CLOCK
TDR- TIME DELAY RELAY
THL- TEMPERATURE HIGH LIMIT THERMOSTAT
TI- TEMPERATURE INDICATOR
TLL- TEMPERATURE LOW LIMIT THERMOSTAT
TR- TRANSDUCER
TT- TEMPERATURE TRANSMITTER
TX- TRANSFORMER
V- VALVE
WB- WET BULB
WU- WARM-UP SIGNAL

HVAC SYSTEM LEGEND:

M MOTOR OPERATED DAMPER
PH C PREHEAT COIL
C C COOLING COIL
RH C REHEAT COIL
H C HEATING COIL
D X DIRECT EXPANSION COIL
ELECTRIC HEATING COIL
FAN
PUMP
ZONE CO2 SENSOR
FM WATER FLOW METER
MAT AVERAGING TYPE TEMPERATURE SENSOR
FILTER
FIRE & SMOKE DAMPER (BY OTHERS)
OUTSIDE AIR TEMPERATURE SENSOR
NO NC C LEAK DETECTOR
FRZ FREEZESTAT (D.P. CONTACT)
DAT DUCT MOUNTED TEMPERATURE SENSOR
T IMMERSION TYPE TEMPERATURE SENSOR
DSD DUCT MOUNTED SMOKE DETECTOR
DSP LO HI STATIC PRESSURE TRANSMITTER
DPT LO HI DIFFERENTIAL PRESSURE TRANSMITTER
SP PRESSURE SENSOR
SAH DUCT MOUNTED HUMIDITY SENSOR
SPACE TEMPERATURE
AIR FLOW MEASURING STATION
PANEL RELAY
CS CURRENT SENSOR / SWITCH
CO2 DUCT CO2 SENSOR

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
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PROJECT: WARABEYA NORTH AMERICA
LEGENDS & SYMBOLS
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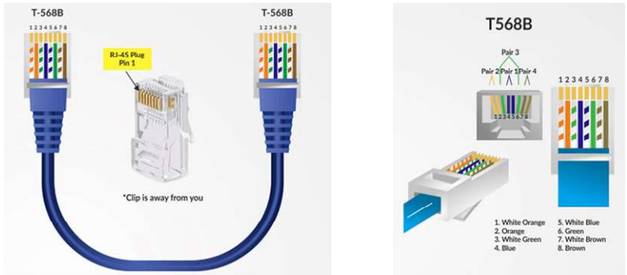
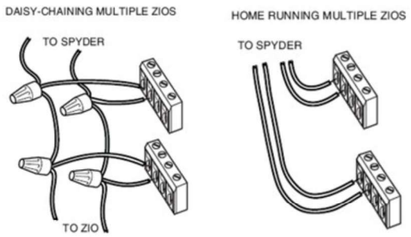
WIRING GUIDELINES

WIRE SPECIFICATIONS		
APPLICATION	DESCRIPTION	WIRE REPRESENTATION
ETHERNET	24 AWG CATEGORY 5E UNSHIELDED TWISTED PAIR. WINDY CITY WIRE 555619-S OR EQUIVALENT	
BACNET (2 WIRE)	UL LISTED LOW VOLTAGE COMMUNICATION WIRING, 1 TWISTED PAIR 22/2 AWG, SHIELDED COPPER WIRE, LOW CAPACITANCE PLENUM PVC CABLE, GENESIS P/N: 3251, WINDY CITY P/N: 043004AL OR EQUIVALENT	
MODBUS (2 WIRE)	UL LISTED LOW VOLTAGE COMMUNICATION WIRING, 1 TWISTED PAIR 22/2 AWG, SHIELDED COPPER WIRE, LOW CAPACITANCE PLENUM PVC CABLE, GENESIS P/N: 3251, WINDY CITY P/N: 043004AL OR EQUIVALENT	
BACNET (3 WIRE)	UL LISTED LOW VOLTAGE COMMUNICATION WIRING, 3 WIRE TWISTED 22/3 AWG, SHIELDED COPPER WIRE, LOW CAPACITANCE PLENUM PVC CABLE, WINDYCITY P/N: WCW-22/3BLU-WC OR EQUIVALENT	
LON	UL LISTED LOW VOLTAGE COMMUNICATION WIRING, 22 AWG 1 PAIR BARE COPPER, NON-SHIELDED PLENUM, GENESIS P/N: 32522106, BLUE, WINDY CITY P/N: 105500 OR EQUIVALENT	
SYLK BUS	UL LISTED LOW VOLTAGE COMMUNICATION WIRING, 18/22 AWG, UNSHIELDED, TWISTED PAIR, SOLID WIRE	
SA-BUS	UL LISTED LOW VOLTAGE COMMUNICATION WIRING, 22 AWG 2 PAIR BARE COPPER, SHIELDED PLENUM UL LISTED C(UL)US CMP, LOW VOLTAGE WIRING WINDYCITY P/N: WCW-22/2P-SA-PLN OR EQUIVALENT	
END DEVICES	18/2 AWG NO SHIEL, WINDY CITY WIRE 002360 OR EQUIVALENT 18/3 AWG NO SHIEL, WINDY CITY WIRE 002370 OR EQUIVALENT	
HIGH VOLTAGE	WIRING BY OTHERS	
FIBRE OPTIC	MULTIMODE OR SINGLE MODE, OCC-DZ004TALT9QP (MULTIMODE 50/125) OR OCC-DZ006TSLX9YP (SINGLEMODE 9/125) OR EQUIVALENT	

ETHERNET CABLE DETAILS

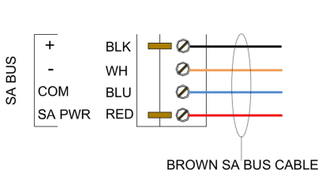


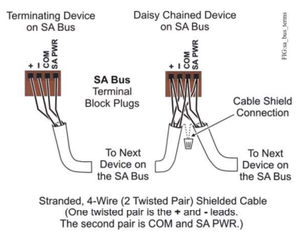
SYLK BUS DETAILS



200FT MAX ON SYLK BUS
TWISTED PAIR RECOMMONDED FOR WIRE RUNSLONGER THAN 100FT

SA BUS DETAILS

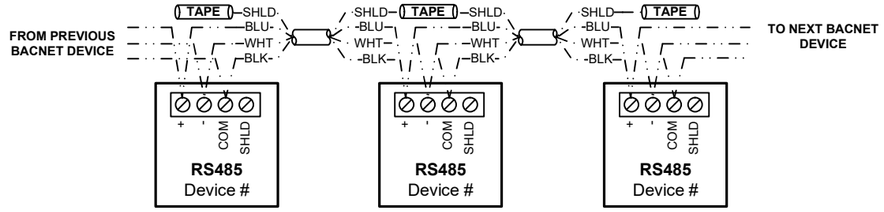




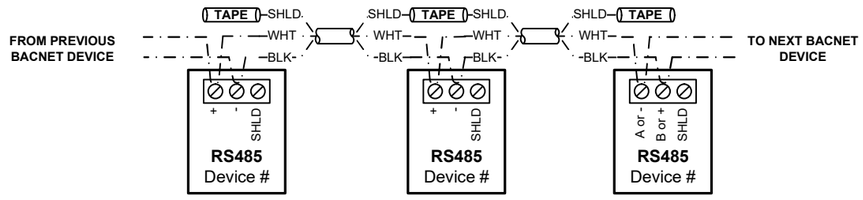
Stranded, 4-Wire (2 Twisted Pair) Shielded Cable
(One twisted pair is the + and - leads.
The second pair is COM and SA PWR.)

GROUND SHIELD ONLY ONCE

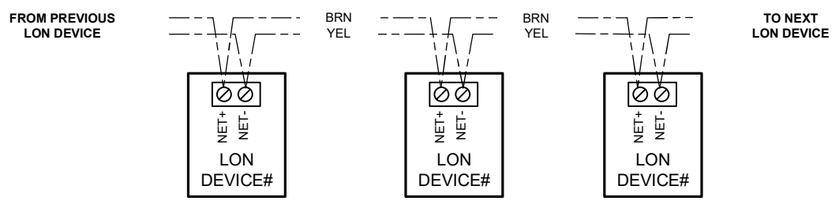
3-WIRE RS-485 WIRING DETAILS



2-WIRE RS-485 WIRING DETAILS



LON WIRING DETAILS

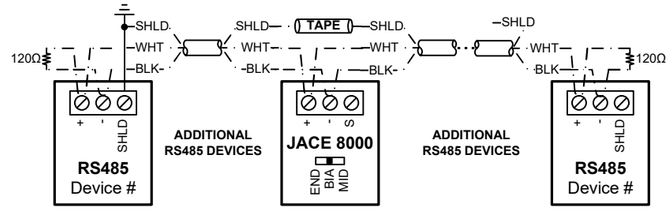


RS485 (BACNET/MODBUS/JACE REM-IO) SWITCH BIASING SETTINGS

EACH RS485 PORT HAS AN ADJACENT 3-POSITION BIASING SWITCH, WITH THESE SETTINGS:

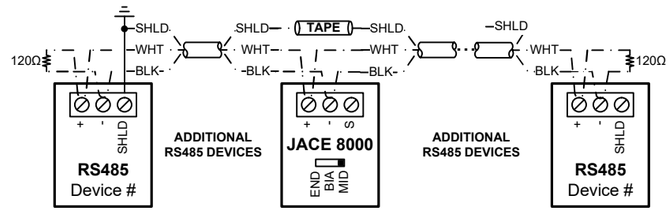
BIAS (DEFAULT)

BIA - (DEFAULT, MIDDLE) OFTEN BEST IF THE RS485 TRUNK NEEDS BIASING, BUT WHEN THE CONTROLLER IS NOT INSTALLED AT THE END OF THE TRUNK. USE 120Ω RESISTOR ON FINAL DEVICE AS SHOWN.
ENSURE NO OTHER RS485 DEVICES HAVE BIASING ENABLED. GROUND SHIELD TO "S" TERMINAL WITH GROUND WIRE.
TAPE SHIELDS BETWEEN DEVICES AS SHOWN. TAPE SHIELD ON FINAL DEVICE IN SIMILAR MANNER.



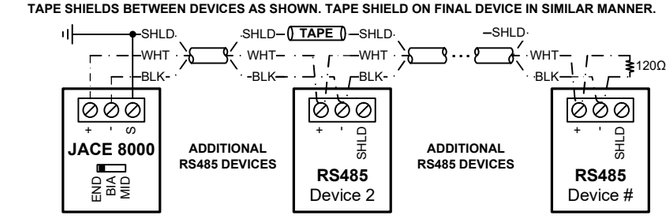
MIDDLE

MID - OFTEN BEST IF THE CONTROLLER IS PUT IN THE MIDDLE OF AN ALREADY-BIASED RS485 TRUNK. USE 120Ω RESISTOR ON FINAL DEVICE AS SHOWN. ENSURE NO OTHER RS485 DEVICES HAVE BIASING ENABLED. GROUND SHIELD TO "S" TERMINAL WITH GROUND WIRE.
TAPE SHIELDS BETWEEN DEVICES AS SHOWN. TAPE SHIELD ON FINAL DEVICE IN SIMILAR MANNER.



END

END - OFTEN BEST IF THE CONTROLLER IS INSTALLED AT THE END OF AN RS485 TRUNK OF DEVICES THAT IS NOT ALREADY BIASED. USE 120Ω RESISTOR ON FINAL DEVICE AS SHOWN. ENSURE NO OTHER RS485 DEVICES HAVE BIASING ENABLED. GROUND SHIELD TO "S" TERMINAL WITH GROUND WIRE.
TAPE SHIELDS BETWEEN DEVICES AS SHOWN. TAPE SHIELD ON FINAL DEVICE IN SIMILAR MANNER.



FIELD COORDINATE THE FINAL JACE POSITION AND SET THE SWITCH POSITION ACCORDINGLY.

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PRIME BUILDING CONTROLS

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

WIRING GUIDELINES

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NETWORK RISER DIAGRAM

ROOF

CP-3
ERU
TV-UCXP683T

CP-7
RE
TV-UCXP683T

CP-8
AIR COMPRESSOR
TV-UCXP683T

TV-VAVB3-E2
VAV-1-13

EOL
SF VFD — AHU-1
SF VFD — MAU-1
SF VFD — MAU-4
SF VFD — MAU-2
SF VFD — MAU-3
SF VFD — MAU-5

SECOND FLOOR

BACNET MS/TP TRUNK 2

EOL
TBPL-24-H
GUH-1-ZN-T

BACNET MS/TP TRUNK 1

CT-1 VFD — CT-1
CT-2 VFD — CT-2
CT-3 VFD — CT-3
P-11 VFD — P-11
P-12 VFD — P-12
P-13 VFD — P-13
CH-2 VFD — CH-2
CH-3 VFD — CH-3
CH-4 VFD — CH-4
P-17 VFD — P-17

EOL
P-23 VFD — P-23
P-22 VFD — P-22
P-21 VFD — P-21
P-20 VFD — P-20
P-19 VFD — P-19
P-15 VFD — P-15
P-16 VFD — P-16

OWS & SERVER

LOCATION TO BE FIELD VERIFY.

CP-1
CT & CH
TV-MPCXP

NS-1

ETHERNET FROM BUILDING IT NETWORK

TV-VAVB3-E2 — VAVR-1-2A
TV-VAVB3-E2 — VAVR-1-1
TV-VAVB3-E2 — VAVR-1-4
TV-VAVB3-E2 — VAVR-1-2B
TV-VAVB3-E2 — VAVR-1-5
TV-VAVB3-E2 — VAVR-1-6
TV-VAVB3-E2 — VAVR-1-7
TV-VAVB3-E2 — VAVR-1-8
TV-VAVB3-E2 — VAVR-1-3
TV-VAVB3-E2 — VAVR-1-12B
TV-VAVB3-E2 — VAVR-1-12A
TV-VAVB3-E2 — VAVR-1-11
TV-VAVB3-E2 — VAVR-1-10
TV-VAVB3-E2 — VAVR-1-9

CP-2
CT & CH
TV-MPCXP

CP-4
IF-4
TV-MPCXP
BACNET MS/TP TRUNK 3

NS-1

DCV-2-3-4 — HOOD
DCV-5-6-7 — HOOD
DCV-8 — HOOD
DCV-9 — HOOD

EF VFD — RE-26
EF VFD — RE-27
EF VFD — RE-28
EF VFD — RE-29
EF VFD — RE-30
EF VFD — RE-31

EOL
EF VFD — RE-41
EF VFD — RE-34
EF VFD — RE-33
EF VFD — RE-24
EF VFD — RE-32

CP-6
RE
TV-MPCXP

CP-5
IF-3 & 6
TV-MPCXP
BACNET MS/TP TRUNK 4

FIRST FLOOR

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
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PROJECT: WARABEYA NORTH AMERICA

NETWORK RISER DIAGRAM

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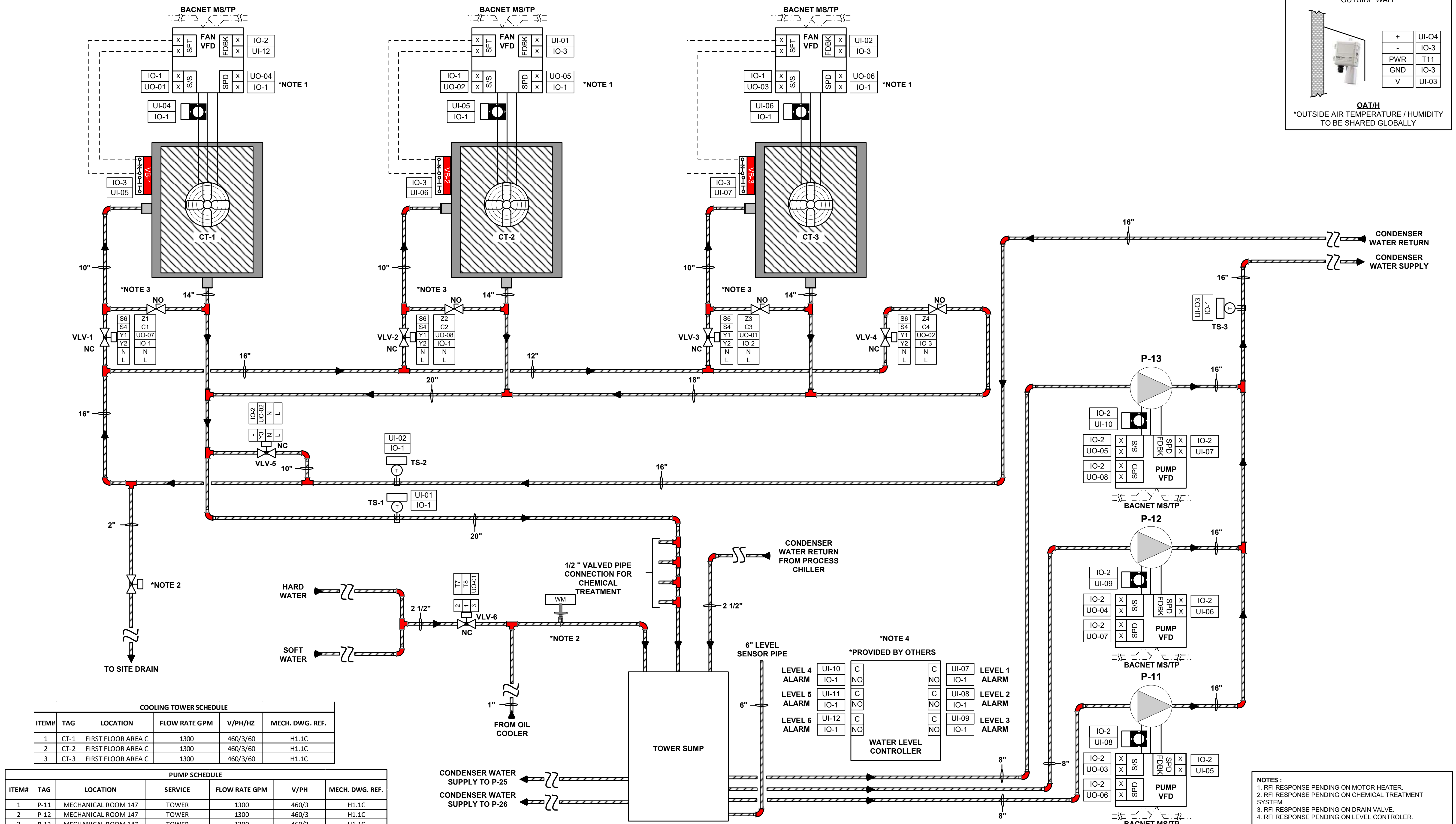
DEVICE INSTANCE DETAILS

DEVICE INSTANCE DETAILS						
DEVICE COUNT	UNIT TAG/ EQUIPMENT	CONTROLLER	LOCATION		DI	MAC ADDRESS
			FLOOR	ROOM		
1	CP-1	TV-MPCXP	FIRST FLOOR	MECHANICAL ROOM 147	110000	00
2	CP-3	TV-UCXP683T	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	120000	00
3	CP-7	TV-UCXP683T	SECOND FLOOR	SECOND FLOOR - AREA D	130000	00
4	CP-8	TV-UCXP683T	SECOND FLOOR	COMPRESSOR ROOM 201	140000	00
5	VAV-1-13	TV-VAVB3-E2	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	150000	00
6	CP-2	TV-MPCXP	FIRST FLOOR	MECHANICAL ROOM 147	160000	00
7	CP-4	TV-MPCXP	FIRST FLOOR	MAINTENANCE ROOM 140	170000	00
8	CP-6	TV-MPCXP	FIRST FLOOR	ELECTRICAL 150	180000	00
9	CP-5	TV-MPCXP	FIRST FLOOR	JC 154	190000	00
10	VAVR-1-2A	TV-VAVB3-E2	FIRST FLOOR	OPEN OFFICE 102	200000	00
11	VAVR-1-1	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	210000	00
12	VAVR-1-4	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	220000	00
13	VAVR-1-2B	TV-VAVB3-E2	FIRST FLOOR	OPEN OFFICE 102	230000	00
14	VAVR-1-5	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	240000	00
15	VAVR-1-6	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	250000	00
16	VAVR-1-7	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	260000	00
17	VAVR-1-8	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	270000	00
18	VAVR-1-3	TV-VAVB3-E2	FIRST FLOOR	OPEN OFFICE 102	280000	00
19	VAVR-1-9	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 125	290000	00
20	VAVR-1-10	TV-VAVB3-E2	FIRST FLOOR	CORRIDOR 126	300000	00
21	VAVR-1-11	TV-VAVB3-E2	FIRST FLOOR	BREAKROOM 120	310000	00
22	VAVR-1-12A	TV-VAVB3-E2	FIRST FLOOR	BREAKROOM 120	320000	00
23	VAVR-1-12B	TV-VAVB3-E2	FIRST FLOOR	BREAKROOM 120	330000	00
24	HOOD	DCV-2-3-4	FIRST FLOOR	KITCHEN 158	340000	00
25	HOOD	DCV-5-6-7	FIRST FLOOR	KITCHEN 158	350000	00
26	HOOD	DCV-8	FIRST FLOOR	KITCHEN 158	360000	00
27	HOOD	DCV-9	FIRST FLOOR	R&D TEST KITCHEN 104	370000	00
MS/TP TRUNK 1						
28	CT-1	CT-1 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110101	01
29	CT-2	CT-2 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110102	02
30	CT-3	CT-3 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110103	03
31	P-11	P-11 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110104	04
32	P-12	P-12 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110105	05
33	P-13	P-13 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110106	06
34	CH-2	CH-2 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110107	07
35	CH-3	CH-3 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110108	08
36	CH-4	CH-4 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110109	09
37	P-17	P-17 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110110	10
38	P-16	P-16 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110111	11
39	P-15	P-15 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110112	12
40	P-19	P-19 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110113	13
41	P-20	P-20 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110114	14
42	P-21	P-21 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110115	15
43	P-22	P-22 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110116	16
44	P-23	P-23 VFD	FIRST FLOOR	MECHANICAL ROOM 147	110117	17
MS/TP TRUNK 2						
45	GUH-1-ZN-T	TBPL-24-H	FIRST FLOOR	LOADING DOCK 134	110201	01
MS/TP TRUNK 3						
46	RE-26	EF VFD	FIRST FLOOR	KITCHEN HOOD-2	170101	01
47	RE-27	EF VFD	FIRST FLOOR	KITCHEN HOOD-3	170102	02
48	RE-28	EF VFD	FIRST FLOOR	KITCHEN HOOD-4	170103	03
49	RE-29	EF VFD	FIRST FLOOR	KITCHEN HOOD-5	170104	04
50	RE-30	EF VFD	FIRST FLOOR	KITCHEN HOOD-6	170105	05
51	RE-31	EF VFD	FIRST FLOOR	KITCHEN HOOD-7A	170106	06
52	RE-32	EF VFD	FIRST FLOOR	KITCHEN HOOD-7B	170107	07
53	RE-24	EF VFD	FIRST FLOOR	KITCHEN HOOD-8A	170108	08
54	RE-33	EF VFD	FIRST FLOOR	KITCHEN HOOD-8C	170109	09
55	RE-34	EF VFD	FIRST FLOOR	KITCHEN HOOD-8B	170110	10
56	RE-41	EF VFD	FIRST FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	170111	11
MS/TP TRUNK 4						
57	MAU-5	SF VFD	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	190101	01
58	MAU-3	SF VFD	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	190102	02
59	MAU-2	SF VFD	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	190103	03
60	MAU-4	SF VFD	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	190104	04
61	MAU-1	SF VFD	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	190105	05
62	AHU-1	SF VFD	SECOND FLOOR	UNOCCUPIED EQUIPMENT PLATFORM 200	190106	06

NETWORK RISER BILL OF MATERIAL

NETWORK RISER BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Operator Workstation & Server	OWS	-	1	To be procured locally	-
2	Supervisor license	CIV-OPNPR	CIV-OPNPR	1	The i-Vu Pro 9.0 user interface enables centralized control of the i-Vu building automation system (BAS) from any web-enabled device	Carrier
3	EOL Terminators	EOL	BT485	1	Biasing Terminators (16 pack)	Carrier

COOLING TOWER AND CONDENSER WATER PUMP SCHEMATIC DIAGRAM



BACNET MS/TP
FAN VFD
SFT
FDBK
S/S
SPD
IO-2
UI-12
IO-1
UO-01
UO-04
IO-1
*NOTE 1
UI-04
IO-1
IO-3
UI-05
VB-1
CT-1
10"
14"
*NOTE 3
NO
VLV-1
NC
S6 S4 Y1 Y2 N L
Z1 C1 UO-07 IO-1 N L
16"
UI-01
IO-3
UO-02
UO-05
UI-05
IO-3
UI-06
VB-2
CT-2
VLV-2
Z2 C2 UO-08 IO-1 N L
12"
20"
UI-02
IO-3
UO-03
UO-06
UI-06
IO-3
UI-07
VB-3
CT-3
VLV-3
Z3 C3 UO-01 IO-2 N L
18"
VLV-4
Z4 C4 UO-02 IO-3 N L
CONDENSER WATER RETURN
CONDENSER WATER SUPPLY
UI-03
IO-1
TS-3
P-13
P-12
P-11
IO-2
UI-10
UO-05
UI-07
UO-08
PUMP VFD
UI-09
UO-04
UI-06
UO-07
UI-08
UO-03
UI-05
UO-06
IO-2 UO-02 N L
- Y3 N L
VLV-5
UI-02
IO-1
TS-2
UI-01
IO-1
TS-1
2"
*NOTE 2
TO SITE DRAIN
HARD WATER
SOFT WATER
2 1/2"
T7 T8 UO-01
VLV-6
WM
1/2 " VALVED PIPE CONNECTION FOR CHEMICAL TREATMENT
1"
FROM OIL COOLER
CONDENSER WATER RETURN FROM PROCESS CHILLER
6" LEVEL SENSOR PIPE
6"
TOWER SUMP
*NOTE 4
*PROVIDED BY OTHERS
LEVEL 4 ALARM
UI-10
LEVEL 5 ALARM
UI-11
LEVEL 6 ALARM
UI-12
LEVEL 1 ALARM
UI-07
LEVEL 2 ALARM
UI-08
LEVEL 3 ALARM
UI-09
C
NO
WATER LEVEL CONTROLLER
CONDENSER WATER SUPPLY TO P-25
CONDENSER WATER SUPPLY TO P-26
8"
*INSTALL SENSOR TO THE NORTH SIDE OF OUTSIDE WALL
+ UI-O4
- IO-3
PWR T11
GND IO-3
V UI-03
OAT/H
*OUTSIDE AIR TEMPERATURE / HUMIDITY TO BE SHARED GLOBALLY

COOLING TOWER SCHEDULE

ITEM#	TAG	LOCATION	FLOW RATE GPM	V/PH/HZ	MECH. DWG. REF.
1	CT-1	FIRST FLOOR AREA C	1300	460/3/60	H1.1C
2	CT-2	FIRST FLOOR AREA C	1300	460/3/60	H1.1C
3	CT-3	FIRST FLOOR AREA C	1300	460/3/60	H1.1C

PUMP SCHEDULE

ITEM#	TAG	LOCATION	SERVICE	FLOW RATE GPM	V/PH	MECH. DWG. REF.
1	P-11	MECHANICAL ROOM 147	TOWER	1300	460/3	H1.1C
2	P-12	MECHANICAL ROOM 147	TOWER	1300	460/3	H1.1C
3	P-13	MECHANICAL ROOM 147	TOWER	1300	460/3	H1.1C

NOTES :
1. RFI RESPONSE PENDING ON MOTOR HEATER.
2. RFI RESPONSE PENDING ON CHEMICAL TREATMENT SYSTEM.
3. RFI RESPONSE PENDING ON DRAIN VALVE.
4. RFI RESPONSE PENDING ON LEVEL CONTROLER.

FACILITY	WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL
ENGINEER	EXCEL ENGINEERING, INC.
ARCHITECT	EXCEL ENGINEERING, INC.

#	DATE	REVISION DESCRIPTION	BY
0	11-19-2024	SUBMITTED FOR APPROVAL	SS

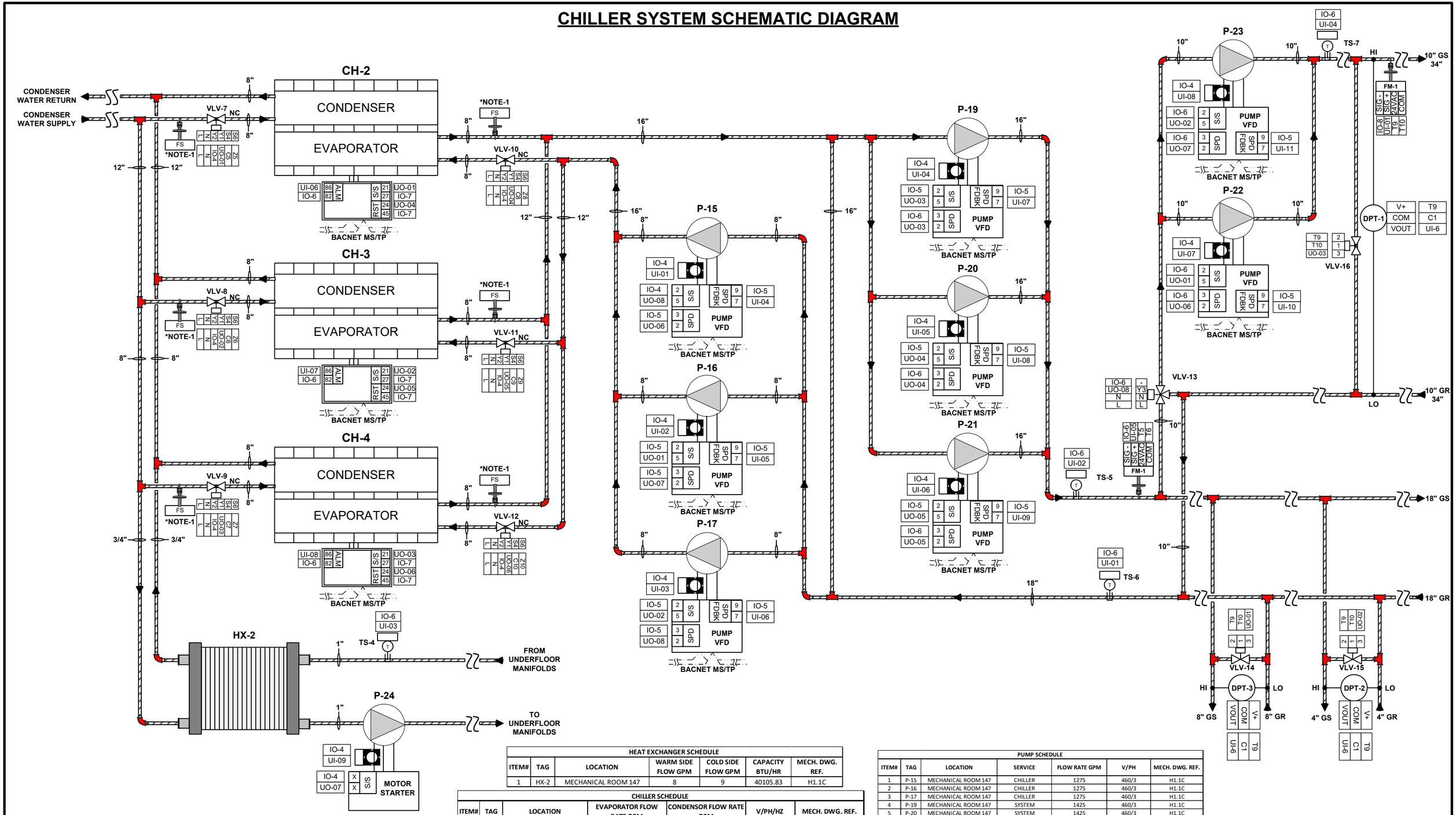
PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

COOLING TOWER AND CONDENSER WATER PUMP SCHEMATIC DIAGRAM

JOB #: 23-10265

CHILLER SYSTEM SCHEMATIC DIAGRAM



HEAT EXCHANGER SCHEDULE						
ITEM#	TAG	LOCATION	WARM SIDE FLOW GPM	COLD SIDE FLOW GPM	CAPACITY BTU/HR	MECH. DWG. REF.
1	HX-2	MECHANICAL ROOM 147	8	9	40105.83	H1.1C

CHILLER SCHEDULE						
ITEM#	TAG	LOCATION	EVAPORATOR FLOW RATE GPM	CONDENSOR FLOW RATE GPM	V/PH/HZ	MECH. DWG. REF.
1	CH-2	MECHANICAL ROOM 147	1274	1313	460/3/60	H1.1C
2	CH-3	MECHANICAL ROOM 147	1274	1313	460/3/60	H1.1C
3	CH-4	MECHANICAL ROOM 147	1274	1313	460/3/60	H1.1C

PUMP SCHEDULE						
ITEM#	TAG	LOCATION	SERVICE	FLOW RATE GPM	V/PH	MECH. DWG. REF.
1	P-15	MECHANICAL ROOM 147	CHILLER	1275	460/3	H1.1C
2	P-16	MECHANICAL ROOM 147	CHILLER	1275	460/3	H1.1C
3	P-17	MECHANICAL ROOM 147	CHILLER	1275	460/3	H1.1C
4	P-19	MECHANICAL ROOM 147	SYSTEM	1425	460/3	H1.1C
5	P-20	MECHANICAL ROOM 147	SYSTEM	1425	460/3	H1.1C
6	P-21	MECHANICAL ROOM 147	SYSTEM	1425	460/3	H1.1C
7	P-22	MECHANICAL ROOM 147	34" SYSTEM	1450	460/3	H1.1C
8	P-23	MECHANICAL ROOM 147	34" SYSTEM	1450	460/3	H1.1C
9	P-24	MECHANICAL ROOM 147	UNDERFLOOR	9	120/1	H1.1C

NOTES :
1. PROVIDED BY CHILLER MANUFACTURER.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						PROJECT: WARABEYA NORTH AMERICA
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		CHILLER SYSTEM SCHEMATIC DIAGRAM
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		JOB #: 23-10265 / PAGE: 9 of 124

CHILLER AND COOLING TOWER SEQUENCE OF OPERATION PAGE 1

CHILLER AND COOLING TOWERS:

1. SYSTEM CONSISTS OF:
    a. THREE (3) CHILLERS WITH ASSOCIATED PRIMARY PUMPS (P-15, 16, 17) EACH 50% CAPACITY (ONE STANDBY)
    b. THREE (3) CONDENSER PUMPS (P-11,12,13) EACH 50% CAPACITY (ONE STANDBY)
    c. THREE (3) SECONDARY CIRCULATING PUMPS (P-19,20,21) EACH 50% CAPACITY (ONE STANDBY)
    d. THREE (3) COOLING TOWER CELLS (CT-1,2,3) EACH 50% CAPACITY (ONE STANDBY)
2. SECONDARY PUMP CONTROL
    a. SEE SEQUENCE FOR PUMP 19, 20, 21 FOR PUMP CONTROL.
    b. PROVIDE THE FOLLOWING TEMPERATURE SENSORS:
        1) SECONDARY CHILLED WATER SUPPLY
        2) SECONDARY CHILLED WATER RETURN
3. CHILLER CONTROL
    a. INSTALL AND WIRE ASSOCIATED SENSORS AND FLOW SWITCHES FURNISHED BY THE CHILLER MANUFACTURER.
    b. CONNECT TO BACNET CARDS ON CHILLERS.
    c. TURN ON LEAD CHILLER BASED ON LEAD SECONDARY PUMP OPERATION.
    d. PROVIDE CHILLER LEAVING WATER SETPOINT TO CHILLERS OF 26°F.
    e. PROVIDE LEAD LAG LAG CONTROL FOR CHILLERS TO EQUALIZE RUN TIME.
    f. INTERLOCK ASSOCIATED PRIMARY CHILLER PUMP TO OPERATE WHEN RESPECTIVE CHILLER IS ON. CHILLER CONTROLS ALLOW CHILLER TO OPERATE AFTER EVAPORATOR AND CONDENSER FLOW IS ESTABLISHED BY THE CHILLER FLOW SWITCHES.
    g. SEE COOLING TOWER CONTROL FOR CONDENSER PUMP AND VALVE CONTROL.
4. COOLING TOWERS
    a. PROVIDE THE FOLLOWING VALVES AND FURNISH ACTUATORS:
        1) TWO POSITION COOLING TOWER ISOLATION VALVES TO PREVENT FLOW TO EACH COOLING TOWER CELL.
        2) TWO POSITION CONDENSER ISOLATION VALVE FOR EACH CHILLER.
        3) PROVIDE TWO POSITION NORMALLY OPEN DRAIN VALVES IN THE COOLING TOWER SUPPLY PIPING TO DRAIN THE OUTDOOR PIPING FOR EACH CELL.
        4) MODULATING NORMALLY CLOSED BYPASS VALVE TO TANK.
        5) MODULATING MAKEUP WATER VALVE TO MAINTAIN SUMP LEVEL.
    b. PROVIDE A FLOW LEVEL TRANSMITTER FOR THE COOLING TOWER SUMP TANK.
    c. PROVIDE THE FOLLOWING SENSORS:
        1) LEAVING COOLING TOWER WATER TEMPERATURE AT COMBINED CONDENSER PUMP DISCHARGE.
        2) COOLING TOWER WATER TEMPERATURE AT SUMP INLET.
        3) COOLING TOWER WATER TEMPERATURE TO COOLING TOWERS.
        4) OUTSIDE AIR WET BULB.
    d. WIRE VIBRATION SWITCH PROVIDED WITH TOWER TO FAN VFD TO TURN FAN OFF.
    e. PUMP/CONDENSER VALVE CONTROL
        1) WHEN FIRST CHILLER IS TURNED ON TURN ON LEAD CONDENSER PUMP AND OPEN ASSOCIATED CONDENSER ISOLATION VALVE.
        2) TURN ON LAG, AND LAG LAG CONDENSER WATER PUMPS AND OPEN ASSOCIATED CHILLER CONDENSER WATER VALVES WHEN ADDITIONAL CHILLERS ARE TURNED ON.
        3) OPEN THE COOLING TOWER SUPPLY PIPING DRAIN VALVE WHEN THE ASSOCIATED COOLING TOWER ISOLATION VALVE IS CLOSED AND OUTSIDE AIR TEMPERATURE IS BELOW 40 DEG. DRAIN CLOSE VALVE WHEN ISOLATION VALVE IS REOPENED.
        4) PROVIDE CURRENT SWITCH TRANSFORMER FOR EACH CONDENSER WATER PUMP. MONITOR FOR PUMP FAILURE. ENERGIZE THE LAG, OR LAG LAG PUMP ON 30 SECOND LEAD, OR LAG PUMP FAILURE. AUTOMATIC LEAD LAG SELECTION TO EQUALIZE RUN TIME.
    f. COOLING TOWER CONTROL
        1) RESET WATER TEMPERATURE SETPOINT TO 7°F ABOVE WET BULB. MINIMUM SETPOINT OF 55°F.
        2) TOWER CELL ISOLATION VALVE CONTROL
            a) OUTSIDE AIR TEMPERATURE ABOVE 45 DEG F: OPEN ALL VALVES.
            b) OUTSIDE AIR TEMPERATURE BELOW 45 DEG F: OPEN NUMBER OF VALVES TO MATCH NUMBER OF CHILLERS OPERATING. OPEN VALVES TO TOWERS BASED ON TOWER RUNTIME TO EQUALIZE RUNTIME.
        3) ENABLE COOLING TOWER FAN TO OPERATE IF ASSOCIATED ISOLATION VALVE IS OPEN.
        4) CONTROL LEAD COOLING TOWER FAN VFD TO MAINTAIN PUMP DISCHARGE COOLING WATER TEMPERATURE SETPOINT.
        5) WHEN FIRST COOLING TOWER FAN IS AT 60% SPEED, TURN ON SECOND COOLING TOWER FAN AND CONTROL BOTH FANS IN UNISON. REPEAT CONTROL FOR ADDITIONAL CELLS.
        6) COOLING TOWER MOTOR SPACE HEATER
            a) WIRE TO TOWER MOTOR SPACE HEATERS.
            b) OPERATE HEATERS IF ALL OF THE FOLLOWING ARE TRUE
                (i) OUTSIDE AIR TEMPERATURE IS BELOW 40 DEGREES
                (ii) TOWER ISOLATION VALVE IS OPEN
                (iii) TOWER FAN IS OFF
        7) COLD WEATHER TOWER OPERATION
            a) MINIMUM VFD SPEED WILL BE 50%.
            b) PROVIDE A DEFROST CYCLE THAT OPERATES THE FANS AT 50% REVERSE SPEED FOR 20 MINUTES EVERY HOUR IF OUTSIDE AIR TEMPERATURE IS BELOW 32 DEG F.
            c) DURATION AND FREQUENCY OF DEFROST CYCLE WILL BE ADJUSTABLE BY OWNER TO FINE TUNE BASED ON ACTUAL ICE FORMATION.
        8) SUMP WATER LEVEL CONTROL
            a) CONTROL MAKEUP WATER VALVE TO MAINTAIN SUMP LEVEL BASED ON HOW MANY TOWER ISOLATION VALVES ARE OPEN (SEE DETAIL ON PLAN).
            b) PROVIDE ALARM IF WATER LEVEL IS 6" OFF OF SET POINT FOR MORE THAN 5 MINUTES.
        9) OPEN DRAIN VALVE IN RESPECTIVE COOLING TOWER CELL SUPPLY WATER WHEN TOWER ISOLATION VALVE IS CLOSED AND OUTSIDE AIR TEMPERATURE IS BELOW 40 DEG F. CLOSE VALVE WHEN ISOLATION VALVE IS OPENED.
        10) MODULATE CONTROL TOWER BYPASS VALVE OPEN TO MAINTAIN MINIMUM SUMP INLET TEMPERATURE OF 55 DEG F.

PUMPS- 19, 20, & 21 (GLYCOL SYSTEM):

1. SYSTEM CONSISTS OF THREE (3) CIRCULATING PUMPS. PUMPS 50% CAPACITY EACH, ONE STANDBY.
2. PROVIDE TWO DIFFERENTIAL PRESSURE SENSORS IN SUPPLY AND RETURN PIPING WHERE SHOWN ON THE PLANS. (BOTH SECOND FLOOR - AREA 'D')
3. PROVIDE BYPASS VALVES WHERE SHOWN ON PLANS.
4. LEAD PUMP WILL OPERATE CONTINUOUSLY.
5. VARY PUMP VFD SPEED TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT. TURN ON LAG PUMP WHEN LEAD PUMP REACHES 55 HERTZ. TURN LAG PUMP OFF WHEN BOTH PUMPS DROP TO MINIMUM SPEED. MINIMUM 20 HERTZ FOR 1,750 RPM MOTORS.
6. WHEN LEAD PUMP IS AT MINIMUM SPEED, MODULATE BYPASS VALVES TO MAINTAIN MINIMUM FLOW.
7. MONITOR VFD FOR PUMP FAILURE. ENERGIZE THE LAG PUMP ON 30 SECOND LEAD PUMP FAILURE. AUTOMATIC LEAD LAG SELECTION BY BMS TO EQUALIZE RUN TIME.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

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800 E. 12TH AVENUE
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CHILLER AND COOLING TOWER SEQUENCE OF OPERATION PAGE 2

PUMP-22, 23 (34 DEG LOOP):

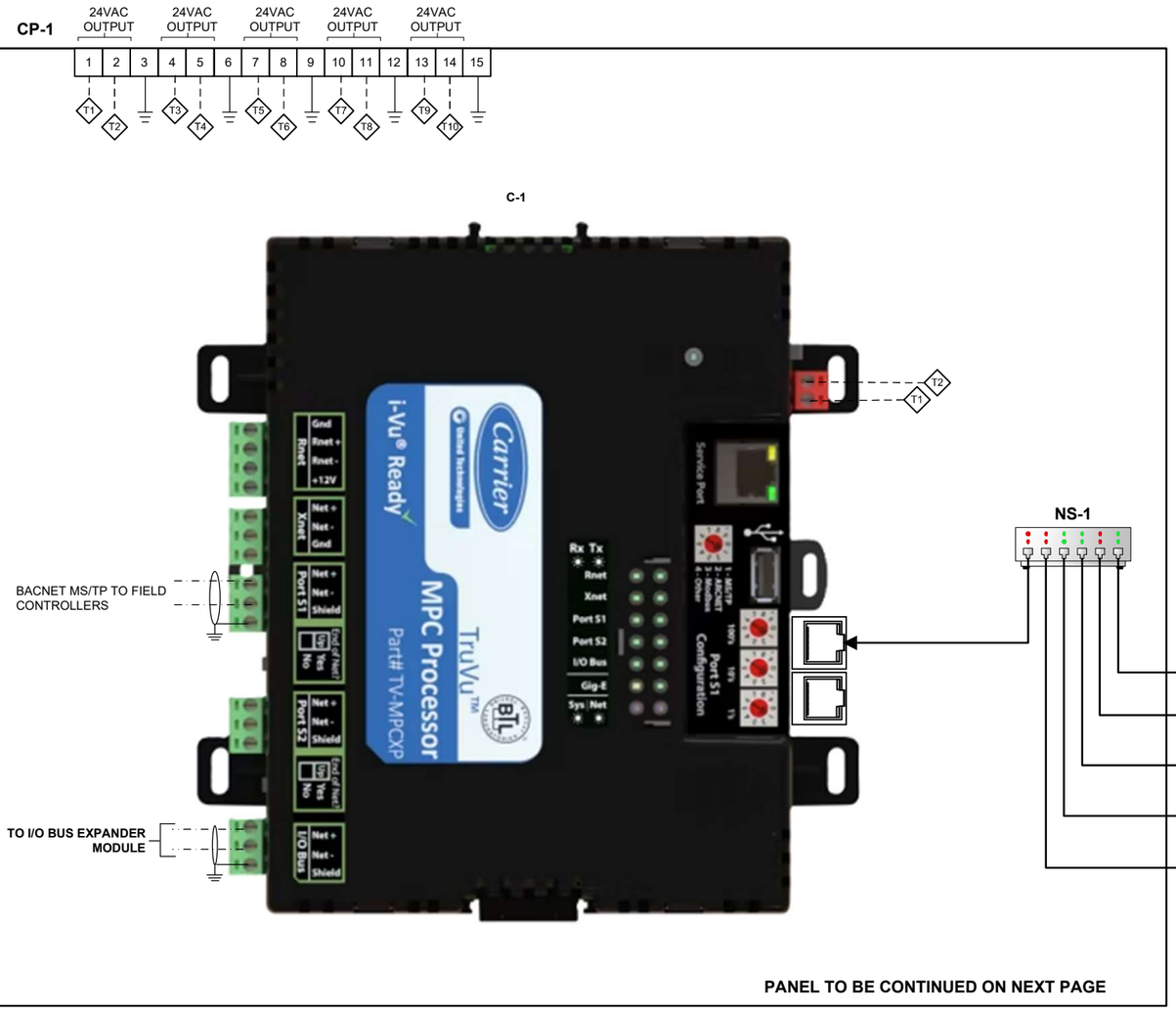
1. SYSTEM CONSISTS OF TWO (2) CIRCULATING PUMPS ONE 100% STANDBY.
2. PROVIDE DIFFERENTIAL PRESSURE SENSOR IN SUPPLY AND RETURN PIPING WHERE SHOWN ON PLANS. (SECOND FLOOR - AREA 'E')
3. PROVIDE BYPASS VALVE WHERE SHOWN ON PLANS.
4. PROVIDE 3-WAY MODULATING MIXING VALVE.
5. PROVIDE GLYCOL SUPPLY TEMPERATURE SENSOR DOWNSTREAM OF PUMPS.
6. LEAD PUMP WILL OPERATE CONTINUOUSLY.
7. VARY PUMP VFD SPEED TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT. TURN ON LAG PUMP WHEN LEAD PUMP REACHES 55 HERTZ. TURN LAG PUMP OFF WHEN BOTH PUMPS DROP TO MINIMUM SPEED. MINIMUM 20 HERTZ FOR 1,750 RPM MOTORS.
8. WHEN LEAD PUMP IS AT MINIMUM SPEED, MODULATE BYPASS VALVE TO MAINTAIN MINIMUM FLOW.
9. MODULATE 3-WAY VALVE TO MAINTAIN SUPPLY TEMPERATURE SETPOINT OF 34 DEG F.
10. MONITOR VFD FOR PUMP FAILURE. ENERGIZE THE LAG PUMP ON 30 SECOND LEAD PUMP FAILURE.
11. AUTOMATIC LEAD LAG SELECTION BY BMS TO EQUALIZE RUN TIME.

PUMP-24 (FREEZER FLOOR LOOP):

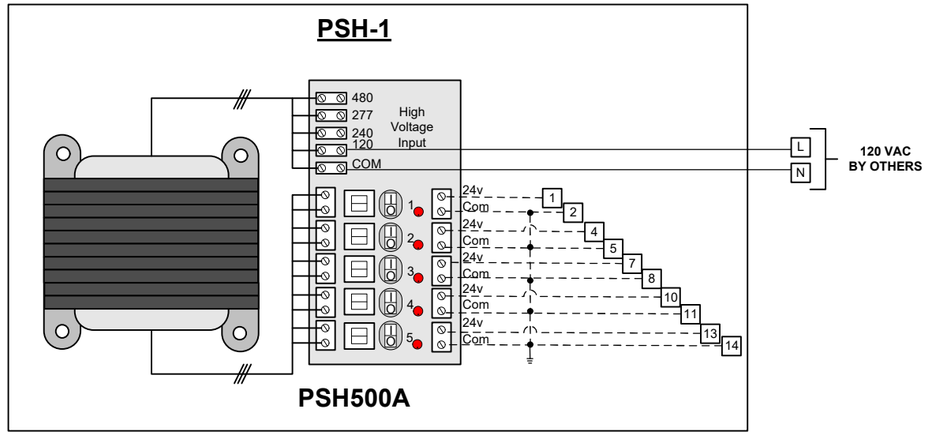
1. SYSTEM CONSISTS OF ONE (1) CIRCULATING PUMP, AND HEAT EXCHANGER.
2. PROVIDE TEMPERATURE SENSORS FOR UNDERFLOOR RETURN FOR MONITORING ONLY.
3. PROVIDE A CURRENT SWITCH.
4. PUMP WILL OPERATE CONTINUOUSLY.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							CHILLER AND COOLING TOWER SEQUENCE OF OPERATION PAGE 2
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 11 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

COOLING TOWER AND CONDENSER WATER PUMP WIRING DIAGRAM PAGE 1



LOCATION: MECHANICAL ROOM 147



LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

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PROJECT: WARABEYA NORTH AMERICA	
COOLING TOWER AND CONDENSER WATER PUMP WIRING DIAGRAM PAGE 1	
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COOLING TOWER AND CONDENSER WATER PUMP WIRING DIAGRAM PAGE 2

CP-1 CONTD.

IO-1

TS-1
COOLING TOWER CONDENSER WATER SUPPLY TEMPERATURE

TS-2
COOLING TOWER CONDENSER WATER RETURN TEMPERATURE

TS-3
CONDENSER WATER SUPPLY TEMPERATURE

CS-1
CT-1 FAN STATUS

CS-2
CT-2 FAN STATUS

CS-3
CT-3 FAN STATUS

TS-L-1-LL-ALM
TOWER SUMP LEVEL 1 LOW LEVEL ALARM

TS-L-2-LL-ALM
TOWER SUMP LEVEL 2 LOW LEVEL ALARM

TS-L-3-LL-ALM
TOWER SUMP LEVEL 3 LOW LEVEL ALARM

TS-L-4-LL-ALM
TOWER SUMP LEVEL 4 LOW LEVEL ALARM

TS-L-5-LL-ALM
TOWER SUMP LEVEL 5 LOW LEVEL ALARM

TS-LVL
TOWER SUMP LEVEL

TS-1
TS-2
TS-3
CS-1
CS-2
CS-3
TS-LVL-1
TS-LVL-2
TS-LVL-3
TS-LVL-4
TS-LVL-5
TS-LVL-6

I/O BUS FROM CONTROLLER C1

I/O BUS TO NEXT EXPANDER

CT-1-S/S
CT-2-S/S
CT-3-S/S
CT-1-SPD
CT-2-SPD
CT-3-SPD
CT-1 CWR VLV OPN STS
CT-2 CWR VLV OPN STS

CT-1-S/S
COOLING TOWER-1 START / STOP

CT-2-S/S
COOLING TOWER-2 START / STOP

CT-3-S/S
COOLING TOWER-3 START / STOP

CT-1-SPD
COOLING TOWER-1 SPEED CONTROL

CT-2-SPD
COOLING TOWER-2 SPEED CONTROL

CT-3-SPD
COOLING TOWER-3 SPEED CONTROL

CT-1 CWR VLV OPN STS
COOLING TOWER-1 CONDENSER RETURN VALVE OPEN STATUS

CT-2 CWR VLV OPN STS
COOLING TOWER-2 CONDENSER RETURN VALVE OPEN STATUS

120 VAC BY OTHERS

PANEL TO BE CONTINUED ON NEXT PAGE

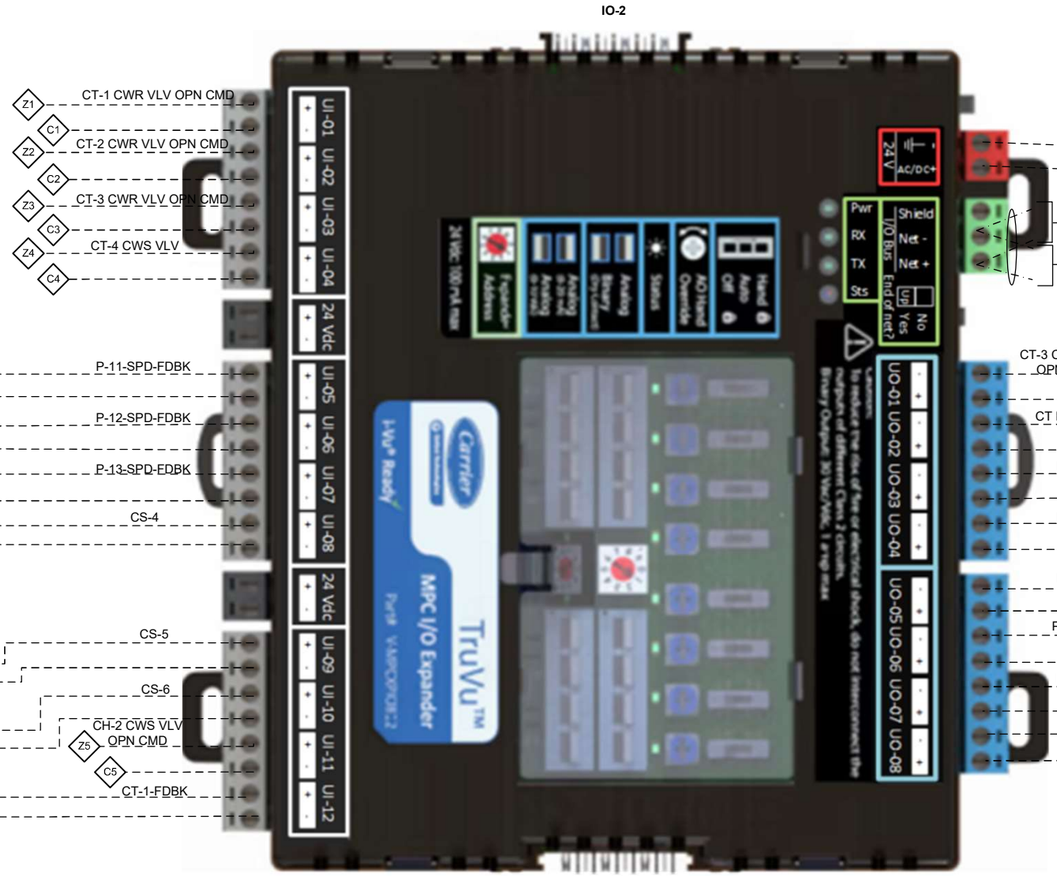
LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							COOLING TOWER AND CONDENSER WATER PUMP WIRING DIAGRAM PAGE 2
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 13 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

COOLING TOWER & CHILLER SYSTEM WIRING DIAGRAM PAGE 3

CP-1 CONTD.

IO-2



CT-1 CWR VLV OPN CMD (Z1 / C1)
CT-2 CWR VLV OPN CMD (Z2 / C2)
CT-3 CWR VLV OPN CMD (Z3 / C3)
CT-4 CWS VLV (Z4 / C4)
CH-2 CWS VLV OPN CMD (Z5 / C5)
CT-1-FDBK

T6 / T5

I/O BUS FROM CONTROLLER C1

I/O BUS TO NEXT EXPANDER

T4 / T3 / Z3 / C3

CT-3 CWR VLV OPN STS

CT BYP-VLV

P-11-S/S

P-12-S/S

P-13-S/S

P-11-SPD

P-12-SPD

P-13-SPD

P-11-SPD-FDBK

P-12-SPD-FDBK

P-13-SPD-FDBK

CS-4

CS-5

CS-6

P-11-SPD-FDBK
P-11 SPEED FEEDBACK — P-11 VFD FDBK X X

P-12-SPD-FDBK
P-12 SPEED FEEDBACK — P-12 VFD FDBK X X

P-13-SPD-FDBK
P-13 SPEED FEEDBACK — P-13 VFD FDBK X X

CS-4
P-11 STATUS — CS-4

CS-5
P-12 STATUS — CS-5

CS-6
P-13 STATUS — CS-6

CT-1-FDBK
COOLING TOWER-1 FEEDBACK COMMAND — CT-1 VFD FDBK X X

120 VAC BY OTHERS — L N

WHT/YEL / WHT/BLU — FR-6 — ORG / YEL / BLU — S6 S4 Y1 Y2 N L — VLV-3

CT-3-CWR-VLV-OPN-STS
COOLING TOWER-3 CONDENSER RETURN VALVE OPEN STATUS

- Y3 N L — VLV-5

CT BYP-VLV
COOLING TOWER BYPASS VALVE CONTROL

120 VAC BY OTHERS — N L

WHT/YEL / WHT/BLU — FR-8 — ORG / YEL — X X S/S — P-11 VFD

P-11-S/S
P-11 START / STOP

WHT/YEL / WHT/BLU — FR-9 — ORG / YEL — X X S/S — P-12 VFD

P-12-S/S
P-12 START / STOP

WHT/YEL / WHT/BLU — FR-10 — ORG / YEL — X X S/S — P-13 VFD

P-13-S/S
P-13 START / STOP

X X SPD — P-11 VFD

P-11-SPD
P-11 SPEED CONTROL

X X SPD — P-12 VFD

P-12-SPD
P-12 SPEED CONTROL

X X SPD — P-13 VFD

P-13-SPD
P-13 SPEED CONTROL

PANEL TO BE CONTINUED ON NEXT PAGE

LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
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PROJECT: WARABEYA NORTH AMERICA

COOLING TOWER & CHILLER SYSTEM WIRING DIAGRAM PAGE 3

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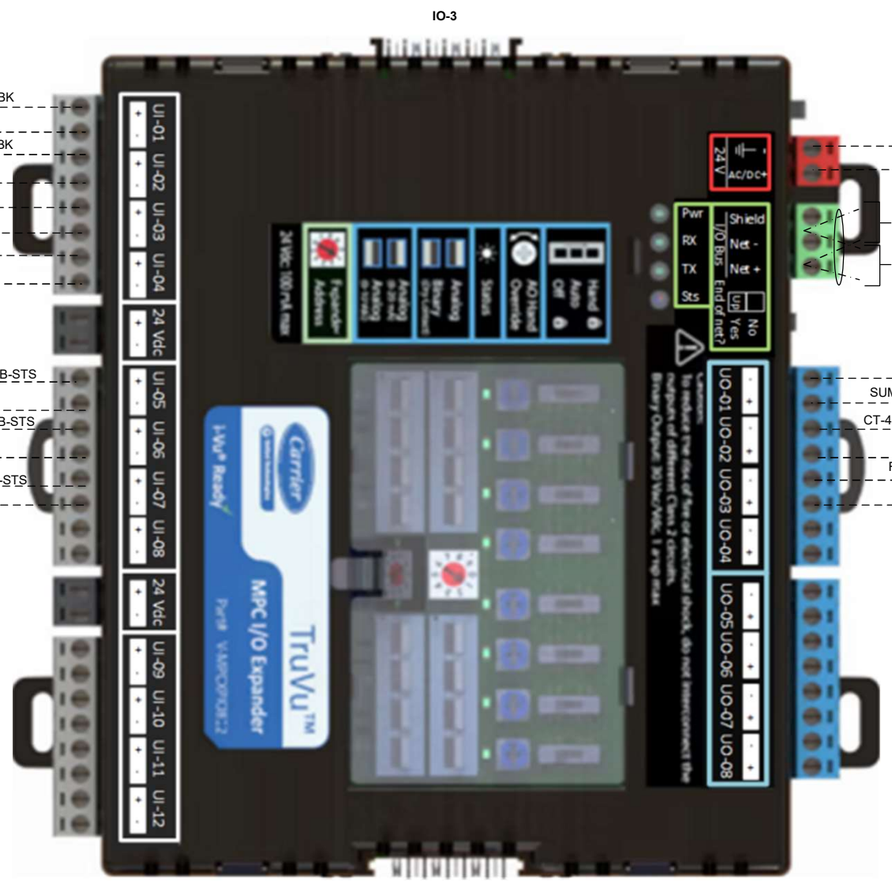
COOLING TOWER AND CONDENSER WATER PUMP WIRING DIAGRAM PAGE 4

CP-1.



CT-2-FDBK
COOLING TOWER-2
FEEDBACK COMMAND

CT-2 VFD — FDBK — X, X

CT-2-FDBK

CT-3-FDBK
COOLING TOWER-3
FEEDBACK COMMAND

CT-3 VFD — FDBK — X, X

CT-3-FDBK

OAH
OUTSIDE AIR HUMIDITY

OAT
OUTSIDE AIR
TEMPERATURE

PWR, GND, V, +, -

T11

OAH

OAT

CT-1-VIB-STS
COOLING TOWER-1
VIBRATION STATUS

VB-1

CT-1-VIB-STS

CT-2-VIB-STS
COOLING TOWER-2
VIBRATION STATUS

VB-2

CT-2-VIB-STS

CT-3-VIB-STS
COOLING TOWER-3
VIBRATION STATUS

VB-3

CT-3-VIB-STS

T8

T7

I/O BUS FROM CONTROLLER C1

I/O BUS TO NEXT EXPANDER

SUMP-MU-VLV-CNTRL

CT-4 CWS VLV OPN STS

RE-37-S/S

T7 T8

2 1 3 — VLV-6

SUMP-MU-VLV-CNTRL
SUMP MAKEUP VALVE
CONTROL

120 VAC BY OTHERS

L N

Z4 C4

WHT/YEL
WHT/BLU

FR-12 — ORG, YEL, BLU

S6 S4 Y1 Y2 N L — VLV-4

CT-4 CWS VLV OPN STS
COOLING TOWER-4
FUTURE CONDENSER
SUPPLY VALVE OPEN
STATUS

WHT/YEL
WHT/BLU

FR-13 — ORG, YEL

X X SS — RE VFD

RE-37-S/S
RE-37
START / STOP

PANEL TO BE CONTINUED ON NEXT PAGE

LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		

PROJECT: WARABEYA NORTH AMERICA

COOLING TOWER AND CONDENSER WATER PUMP WIRING DIAGRAM PAGE 4

JOB #: 23-10265 | PAGE: 15 of 124

CHILLER SYSTEM WIRING DIAGRAM PAGE 1

CP-2

24VAC OUTPUT		24VAC OUTPUT		24VAC OUTPUT		24VAC OUTPUT		24VAC OUTPUT						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T1	T2		T3	T4		T5	T6		T7	T8		T9	T10	

IO-4

CS-7 P-15 STATUS
CS-8 P-16 STATUS
CS-9 P-17 STATUS
CS-10 P-19 STATUS
CS-11 P-20 STATUS
CS-12 P-21 STATUS
CS-13 P-22 STATUS
CS-14 P-23 STATUS
CS-15 P-24 STATUS

CS-7
CS-8
CS-9
CS-10
CS-11
CS-12
CS-13
CS-14
CS-15
CH-3 CWS VLV OPN STS (Z6 / C6)
CH-4 CWS VLV OPN STS (Z7 / C7)
CH-2 GR VLV OPN STS (Z8 / C8)

UI-01 UI-02 UI-03 UI-04 | 24 Vdc | UI-05 UI-06 UI-07 UI-08 | 24 Vdc | UI-09 UI-10 UI-11 UI-12

24VAC/DC+ | Pwr RX TX Sts | Shield Net - Net + | I/O Bus End of net? Yes No

I/O BUS FROM CONTROLLER C1
I/O BUS TO NEXT EXPANDER

UO-01 UO-02 UO-03 UO-04 | UO-05 UO-06 UO-07 UO-08

CH-2 CWS VLV OPN STS
CH-3 CWS VLV OPN STS
CH-4 CWS VLV OPN STS
CH-2 GR VLV OPN STS
CH-3 GR VLV OPN STS
CH-4 GR VLV OPN STS
P-24-S/S
P-15-S/S

120 VAC BY OTHERS (L, N)

Z5 / C5	FR-14	WHT/YEL, WHT/BLU	ORG, YEL, BLU	VLV-7 (S6, S4, Y1, Y2, N, L)
Z6 / C6	FR-15	WHT/YEL, WHT/BLU	ORG, YEL, BLU	VLV-8 (S6, S4, Y1, Y2, N, L)
Z7 / C7	FR-16	WHT/YEL, WHT/BLU	ORG, YEL, BLU	VLV-9 (S6, S4, Y1, Y2, N, L)
Z8 / C8	FR-17	WHT/YEL, WHT/BLU	ORG, YEL, BLU	VLV-10 (S6, S4, Y1, Y2, N, L)
Z9 / C9	FR-18	WHT/YEL, WHT/BLU	ORG, YEL, BLU	VLV-11 (S6, S4, Y1, Y2, N, L)
Z10 / C10	FR-19	WHT/YEL, WHT/BLU	ORG, YEL, BLU	VLV-12 (S6, S4, Y1, Y2, N, L)
	FR-20	WHT/YEL, WHT/BLU	ORG, YEL	P-24 VFD (X, X, S/S)
	FR-21	WHT/YEL, WHT/BLU	ORG, YEL	P-15 VFD (X, X, S/S)

CH-2 CWS VLV OPN STS
CH-2 CONDENSER SUPPLY ISO VALVE OPEN STATUS

CH-3 CWS VLV OPN STS
CH-3 CONDENSER SUPPLY ISO VALVE OPEN STATUS

CH-4 CWS VLV OPN STS
CH-4 CONDENSER SUPPLY ISO VALVE OPEN STATUS

CH-2 GR VLV OPN STS
CH-2 GLYCOL RETURN ISO VALVE OPEN STATUS

CH-3 GR VLV OPN STS
CH-3 GLYCOL RETURN ISO VALVE OPEN STATUS

CH-4 GR VLV OPN STS
CH-4 GLYCOL RETURN ISO VALVE OPEN STATUS

P-24-S/S
P-24 START / STOP

P-15-S/S
P-15 START / STOP

PANEL TO BE CONTINUED ON NEXT PAGE

LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA
CHILLER SYSTEM WIRING DIAGRAM PAGE 1
JOB #: 23-10265 | PAGE: 16 of 124

CHILLER SYSTEM WIRING DIAGRAM PAGE 2

CP-2 CONTD.

IO-5

Z9 CH-3 GR VLV OPN STS
C9
Z10 CH-4 GR VLV OPN STS
C10
Z11 IN-2-OA-DMP
C11 P-15-SPD-FDBK
P-16-SPD-FDBK
P-17-SPD-FDBK
P-19-SPD-FDBK
P-20-SPD-FDBK
P-21-SPD-FDBK
P-22-SPD-FDBK
P-23-SPD-FDBK

UI-01 UI-02 UI-03 UI-04 24 Vdc UI-05 UI-06 UI-07 UI-08 24 Vdc UI-09 UI-10 UI-11 UI-12

UO-01 UO-02 UO-03 UO-04 UO-05 UO-06 UO-07 UO-08

24 V AC/DC+

Pwr RX TX Sts Shield Net - Net + I/O Bus End of net? On No Yes

I/O BUS FROM CONTROLLER C1

I/O BUS TO NEXT EXPANDER

T4 T3

P-16-S/S
P-17-S/S
P-19-S/S
P-20-S/S
P-21-S/S
P-15-SPD
P-16-SPD
P-17-SPD

P-15-FDBK
P-15 SPEED FEEDBACK
P-15 VFD FDBK X X

P-16-FDBK
P-16 SPEED FEEDBACK
P-16 VFD FDBK X X

P-17-FDBK
P-17 SPEED FEEDBACK
P-17 VFD FDBK X X

P-19-FDBK
P-19 SPEED FEEDBACK
P-19 VFD FDBK X X

P-20-FDBK
P-20 SPEED FEEDBACK
P-20 VFD FDBK X X

P-21-FDBK
P-21 SPEED FEEDBACK
P-21 VFD FDBK X X

P-22-FDBK
P-22 SPEED FEEDBACK
P-22 VFD FDBK X X

P-23-FDBK
P-23 SPEED FEEDBACK
P-23 VFD FDBK X X

WHT/YEL WHT/BLU FR-22 ORG YEL X X S/S P-16 VFD
P-16-S/S GLYCOL RETURN PUMP-16 START / STOP

WHT/YEL WHT/BLU FR-23 ORG YEL X X S/S P-17 VFD
P-17-S/S GLYCOL RETURN PUMP-17 START / STOP

WHT/YEL WHT/BLU FR-24 ORG YEL X X S/S P-19 VFD
P-19-S/S GLYCOL SUPPLY PUMP-19 START / STOP

WHT/YEL WHT/BLU FR-25 ORG YEL X X S/S P-20 VFD
P-20-S/S GLYCOL SUPPLY PUMP-20 START / STOP

WHT/YEL WHT/BLU FR-26 ORG YEL X X S/S P-21 VFD
P-21-S/S GLYCOL SUPPLY PUMP-21 START / STOP

X X SPD P-15 VFD
P-15-SPD GLYCOL RETURN PUMP-15 SPEED CONTROL

X X SPD P-16 VFD
P-16-SPD GLYCOL RETURN PUMP-16 SPEED CONTROL

X X SPD P-17 VFD
P-17-SPD GLYCOL RETURN PUMP-17 SPEED CONTROL

PANEL TO BE CONTINUED ON NEXT PAGE

LOCATION: MECHANICAL ROOM 147

120 VAC BY OTHERS
L N

PSH-2

48 47 24 12 0 CO M High Voltage Input

1 2 3 4 5

24v Com

1 2 4 5 7 8 10 11 13 14

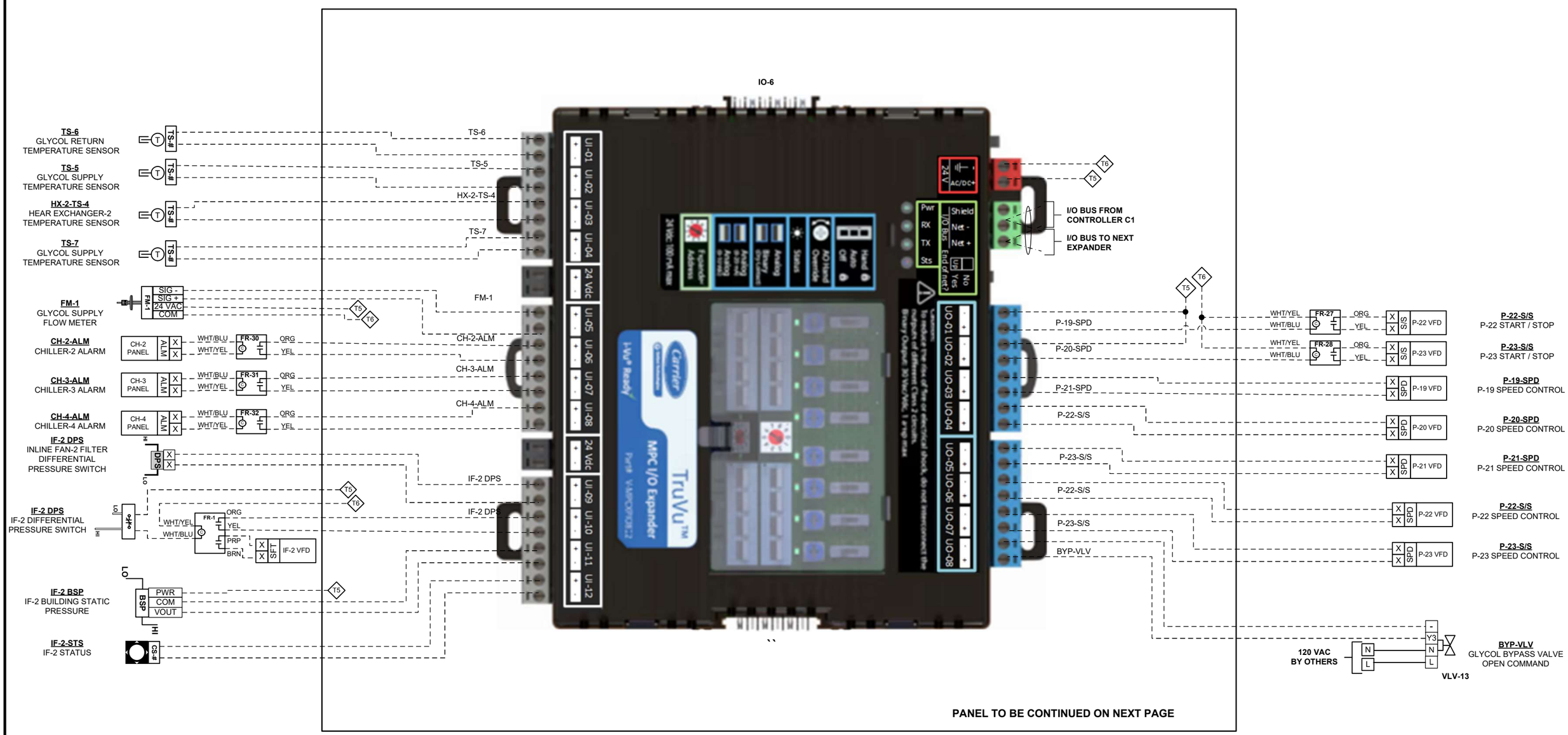
PSH500A

LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							CHILLER SYSTEM WIRING DIAGRAM PAGE 2
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 17 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

CHILLER SYSTEM WIRING DIAGRAM PAGE 3

CP-2 CONTD.



LOCATION: MECHANICAL ROOM 147

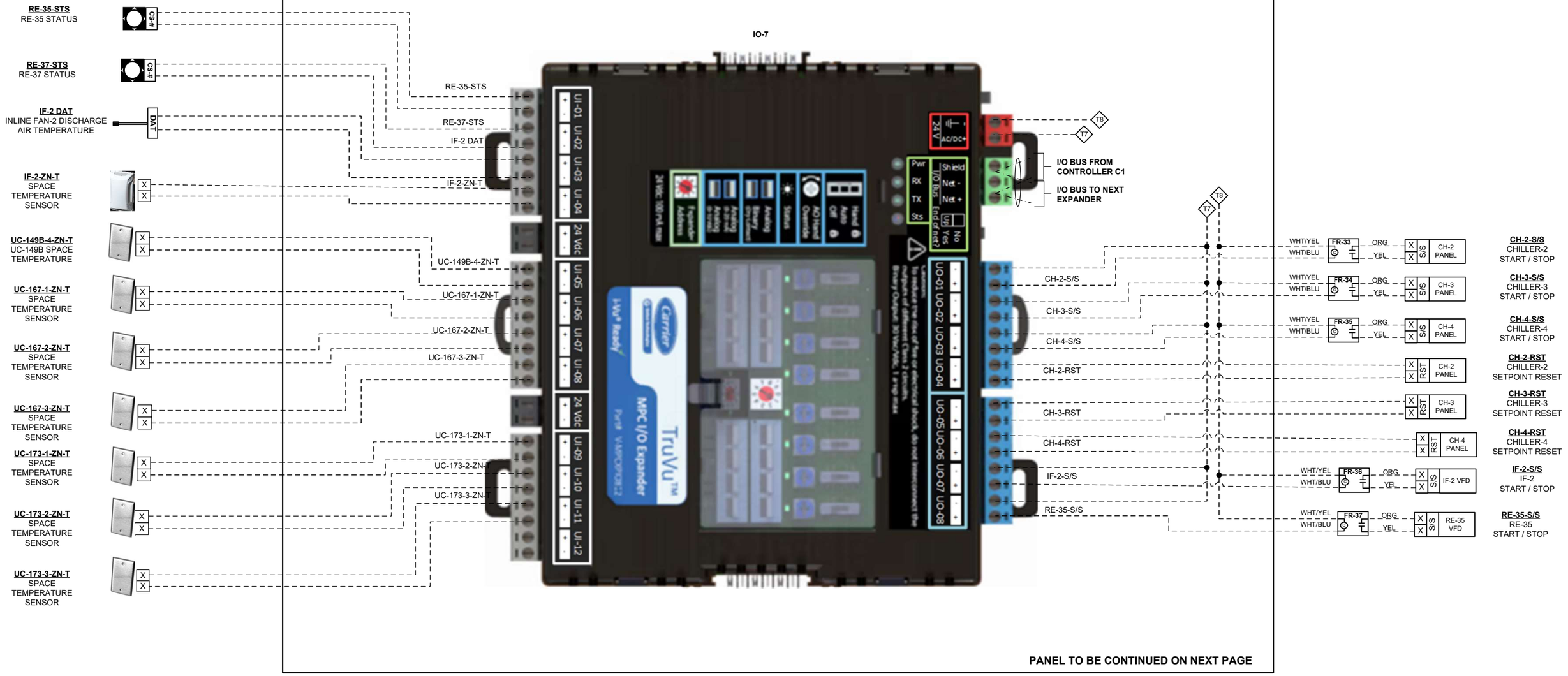
FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA	
CHILLER SYSTEM WIRING DIAGRAM PAGE 3	
JOB #: 23-10265	PAGE: 18 of 124

CHILLER SYSTEM WIRING DIAGRAM PAGE 4

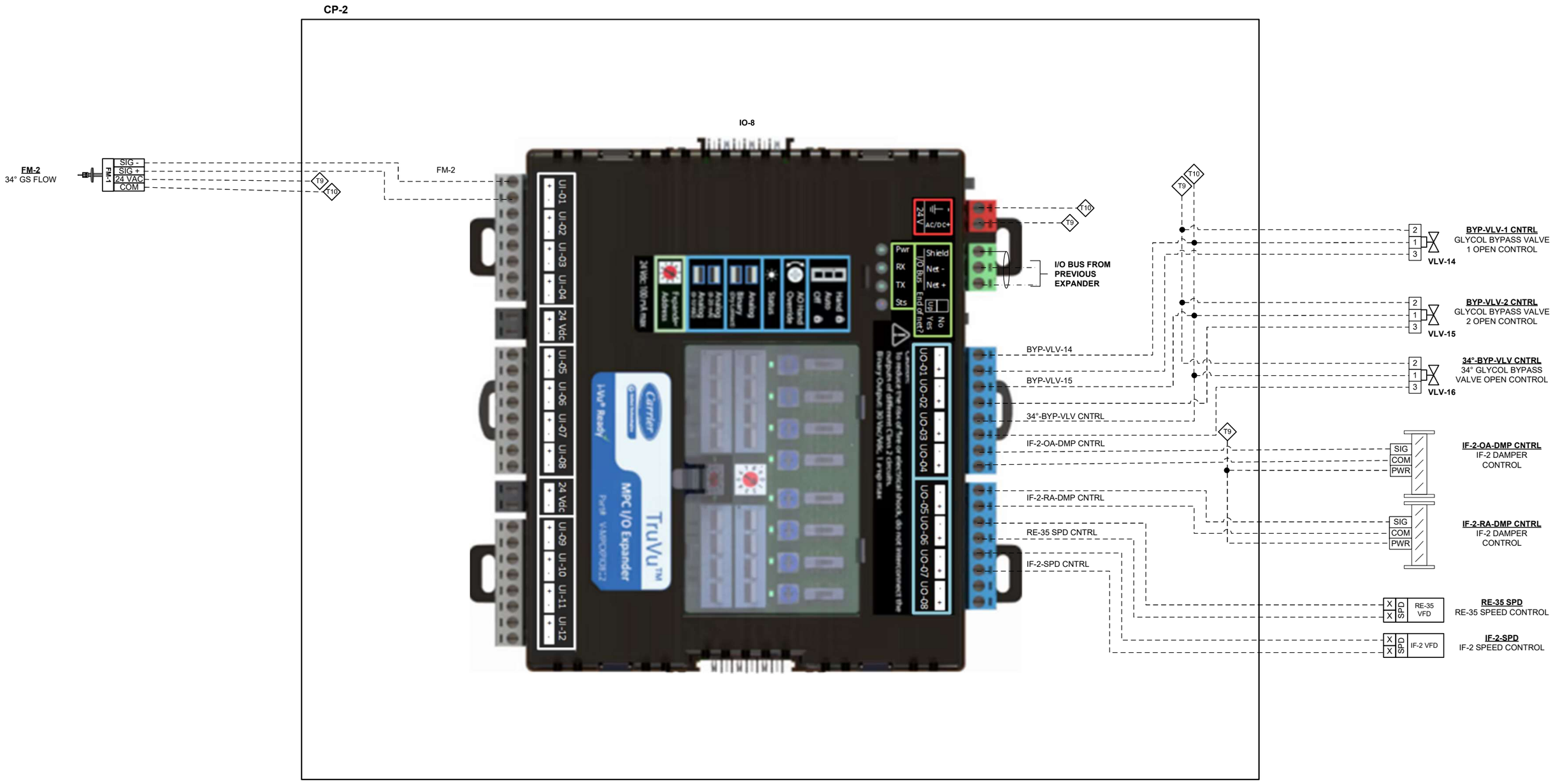
CP-2 CONTD.



LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							CHILLER SYSTEM WIRING DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 19 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

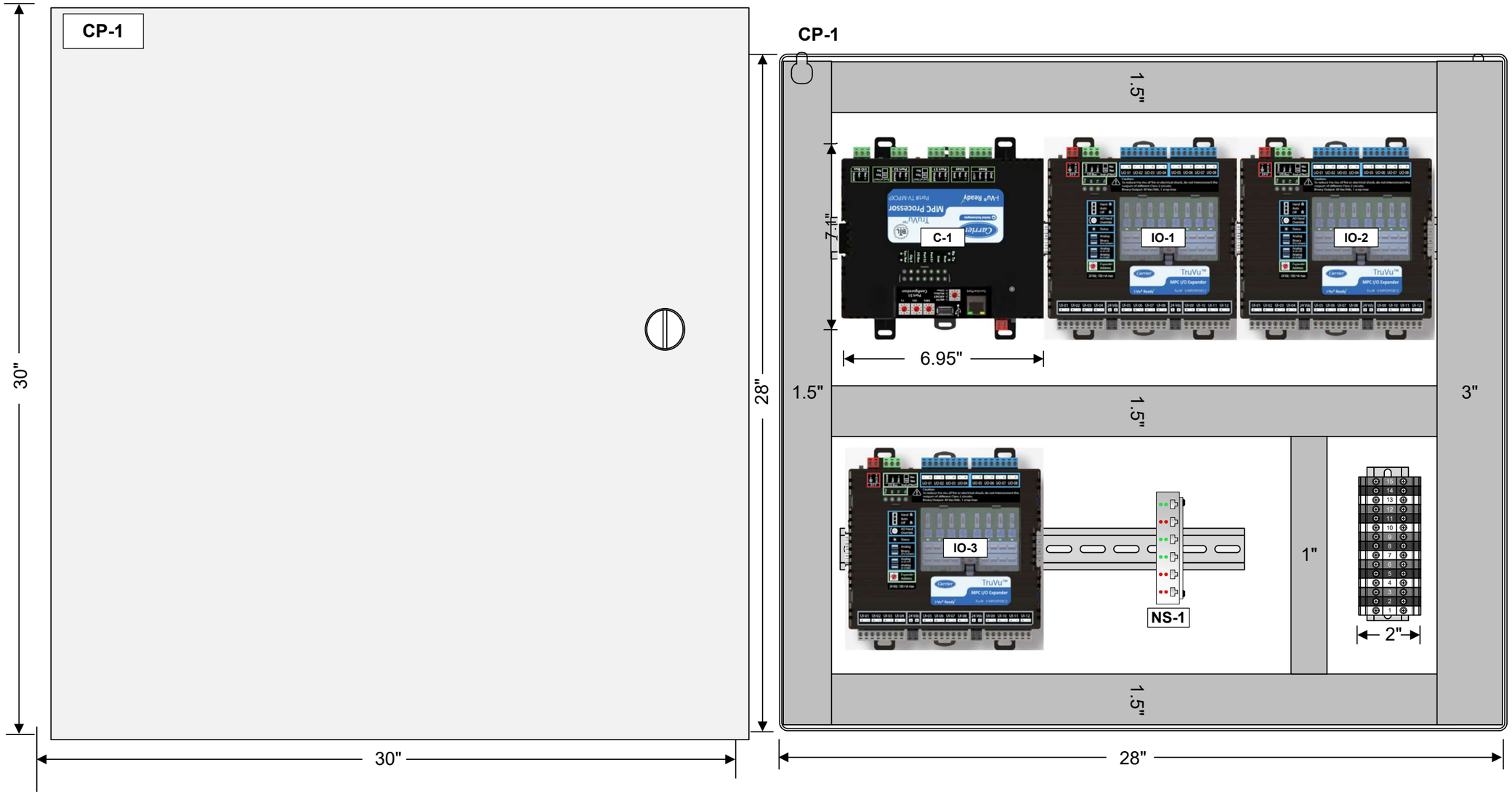
CHILLER SYSTEM WIRING DIAGRAM PAGE 5



LOCATION: MECHANICAL ROOM 147

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							CHILLER SYSTEM WIRING DIAGRAM PAGE 5
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 20 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

CHILLER AND COOLING TOWER PANEL LAYOUT

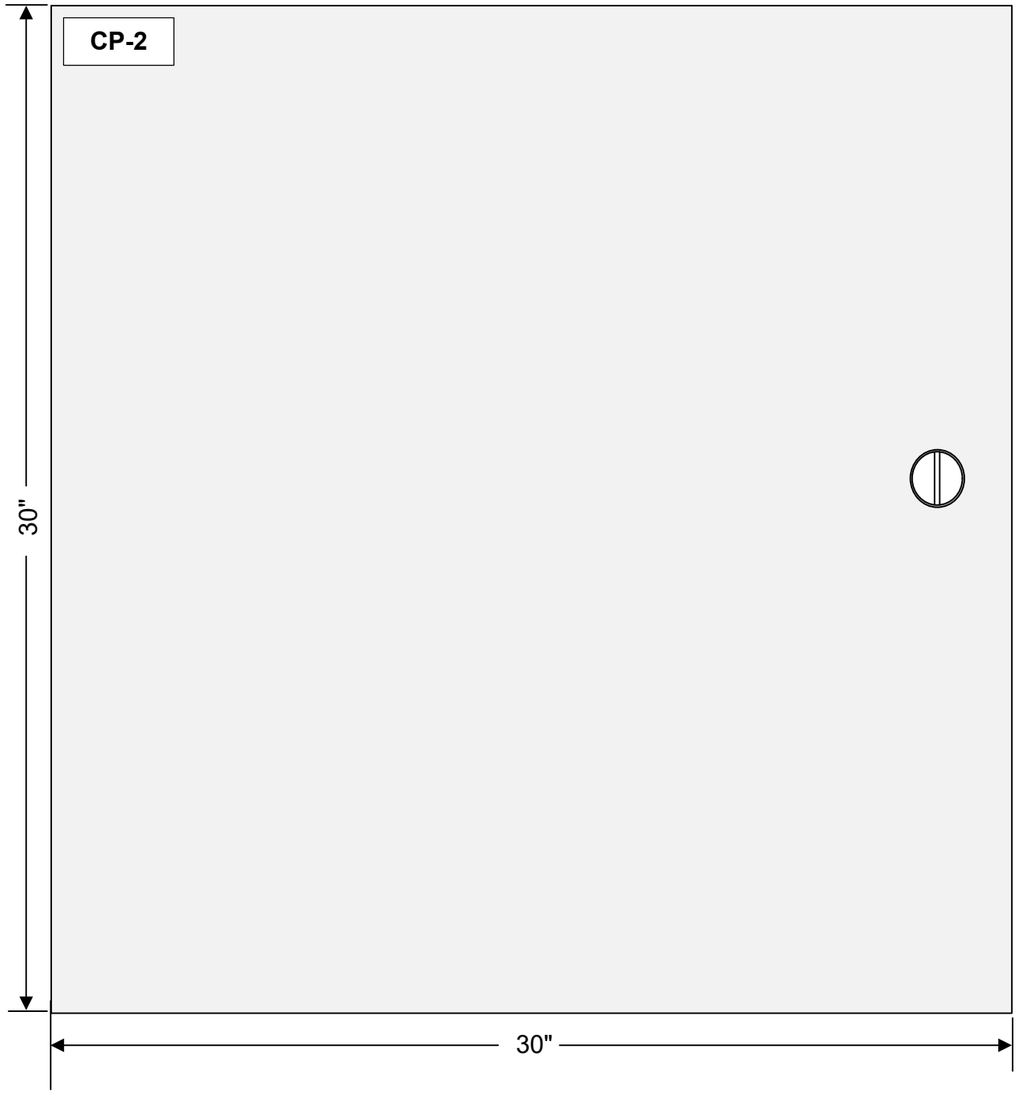


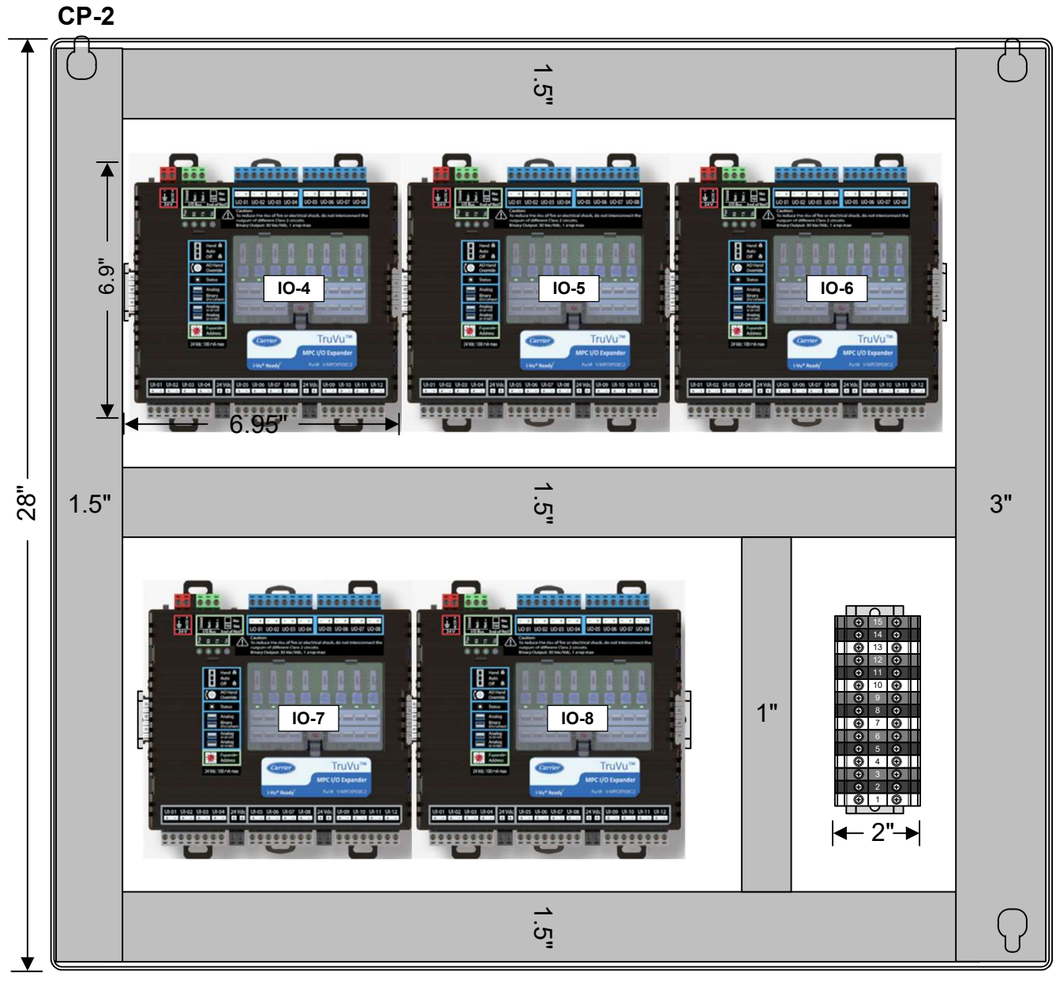
LOCATION: MECHANICAL ROOM 147

NOTES:
1. PANEL LAYOUTS ARE NOT TO THE SCALE.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							CHILLER AND COOLING TOWER PANEL LAYOUT
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 21 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

CHILLER SYSTEM PANEL LAYOUT





LOCATION: MECHANICAL ROOM 147

NOTES:
1. PANEL LAYOUTS ARE NOT TO THE SCALE.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

CHILLER SYSTEM PANEL LAYOUT

JOB #: 23-10265 | PAGE: 22 of 124

COOLING TOWER & CHILLER SYSTEM BILL OF MATERIAL

CT & CH SYSTEM BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-MPCXP	1	Support for up to nine TruVu MPC I/O expansion modules and a total of 180 input/output points.	Carrier
2	I/O Module	C1-#	TV-MPCXPIO812	8	12 inputs, 8 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	Network Switch	NS-1	EISK8-100T	1	8 Ports 10/100 Mbps Skorpion switch	Contemporary Controls
4	Immersion Temperature Sensor	TS-#	A/CP-INW-12"-GD	6	Immersion Sensor, 10K Type-II, 12" w/o well	ACI
5	Well	TS-#	A/M12"	6	12"(304.80mm) Insertion, 304 Stainless, Machinet, 1/2" NPT Thermowell	ACI
6	Immersion Temperature Sensor	TS-4	A/CP-IM-1"-GD	1	Immersion Sensor, 10K Type-II, 1" w/ well	ACI
7	Space Temperature Sensor	ZN-T	A/CP-R2	1	Room Temperature Sensor, Designer, 10K Type II Thermistor	Functional Devices
8	Outside Air Humidity/ Temperature Sensor	OAT/RH	HT1O-3EU	1	Outside Air (OSA) Humidity and Temperature Sensor, 3%, 10K Type-II Thermistor, Universal Output (2-wire and 3-wire 4-20 mA, 0-5 VDC, 0-10 VDC)	Senva
9	Flow Meter Sensor	FM-1, 2	F-1211	2	Dual turbine insertion flow meter with freq, analog and scaled pulse output, plated brass stem, NEMA 4 enclosure and 10' PVC cable. Suitable line size range : 10"	Onion
10	Current Switch	CS-#	RIBXGTA	15	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
11	Field Relay	R-#	RIBU1C	37	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
12	Power Supply	PSH-1, 2	PSH500A	2	Enclosed 100VAx5 multi-tap 120-480 to 24Vac UL Class 2 power supply	Functional Devices
13	Subpanel	CP-1, 2	SCE-30N30MP	2	Enclosure - 28 x 28 x 0.8 - Steel/Gray	Saginaw
14	Control Panel	CP-1, 2	SCE-30N3008LP	2	N1 Panel - 30 x 30 x 08 - Steel/Gray	Saginaw

STEAM BOILER SYSTEM SCHEMATIC DIAGRAM

OAT
OUTSIDE TEMPERATURE SENSOR

OAT

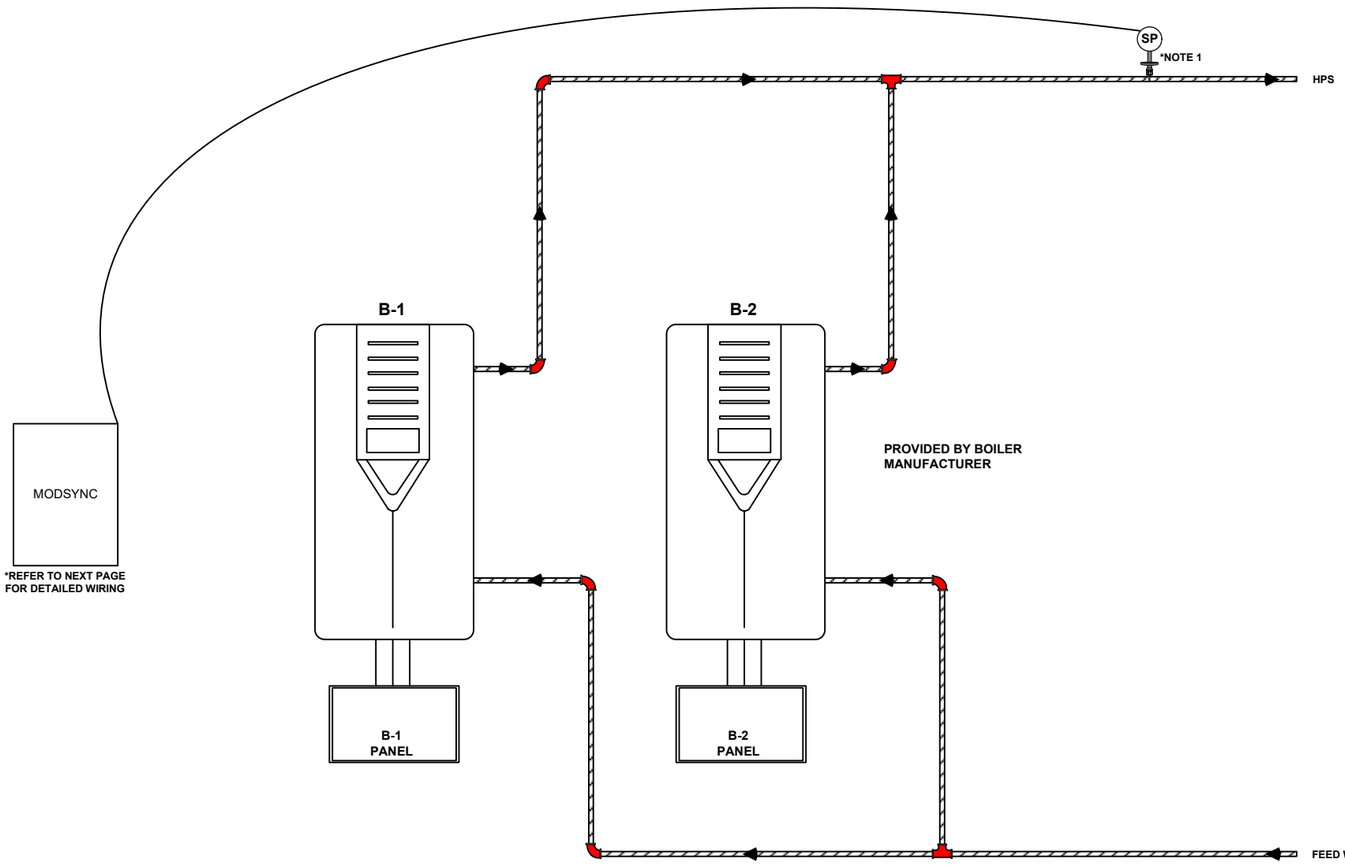
TO BE TEMRINATED ON UNIT MANUFACTURERS CONTROLLER

*NOTE – PROVIDED BY UNIT MANUFACTURER

ES-1 ES-2

BOILER SHUTDOWN BREAK GLASS SWITCH

*NOTE- REFER STEAM BOILER SYSTEM FIELD WIRING DIAGRAM FOR DETAILS



STEAM BOILER SCHEDULE						
ITEM#	TAG	LOCATION	CAPACITY LBS/HR	MIN. SF HEATING SURFACE	OPER. PRESSURE (PSIG)	MECH. DWG. REF.
1	B-1	BOILER 146	5175	303	100	H1.1C
2	B-2	BOILER 146	5175	303	100	H1.1C

NOTES:
1. PROVIDED BY BOILER MANUFACTURER.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

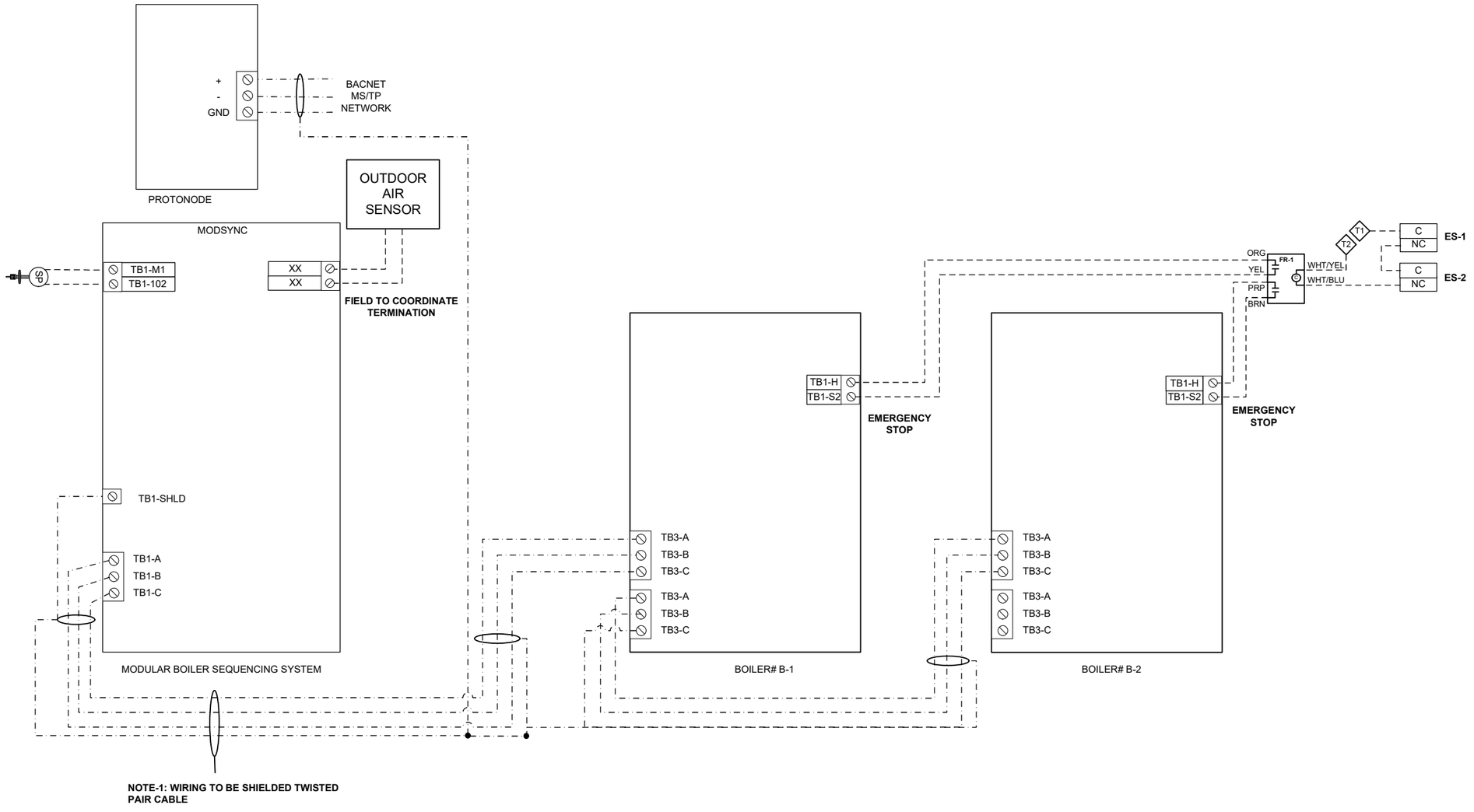
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

STEAM BOILER SYSTEM SCHEMATIC DIAGRAM

JOB #: 23-10265 PAGE: 24 of 124

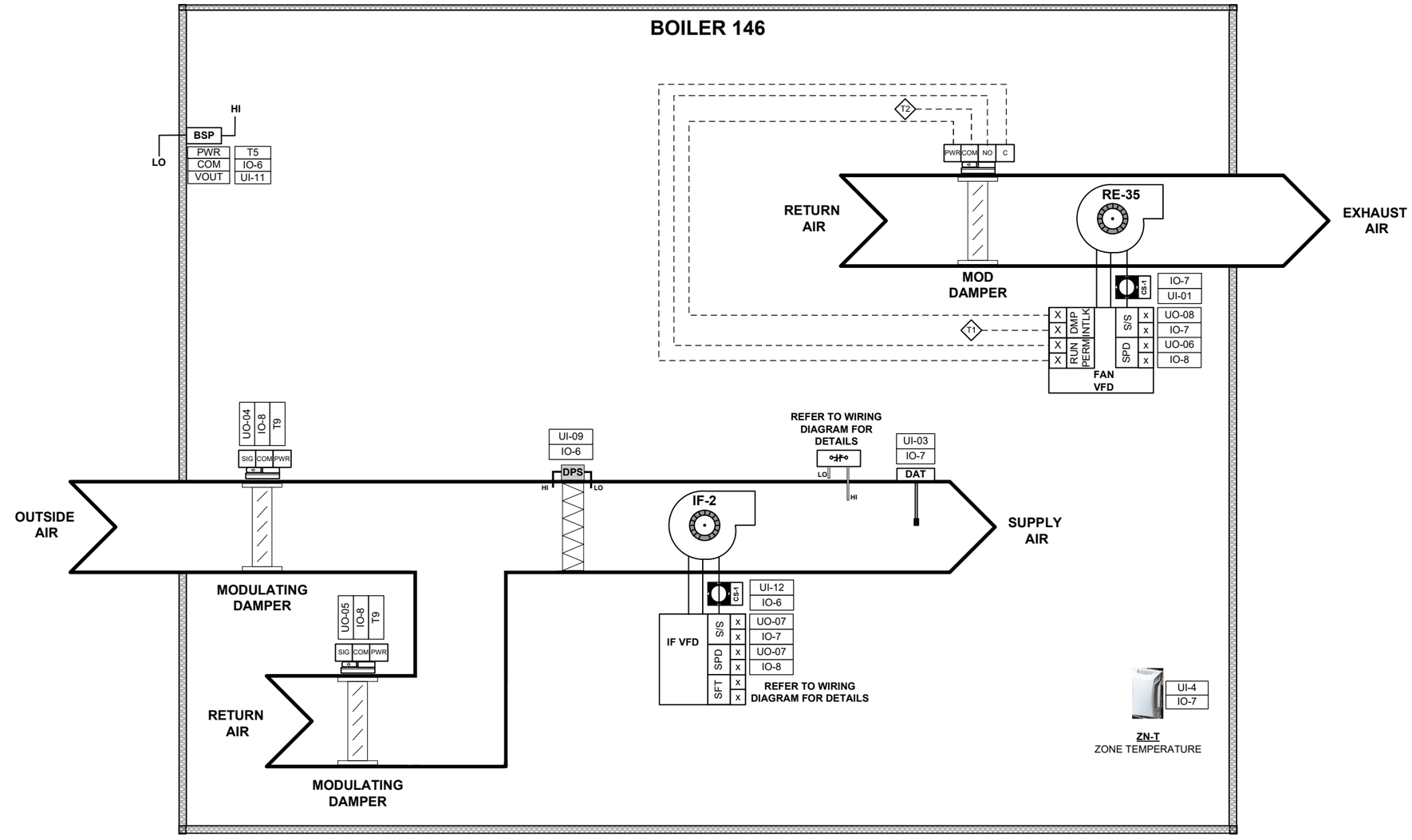
STEAM BOILER FIELD WIRING DIAGRAM



NOTE-1: WIRING TO BE SHIELDED TWISTED PAIR CABLE

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							STEAM BOILER FIELD WIRING DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 25 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

IF-2 & RE-35 SCHEMATIC DIAGRAM



INLINE FAN SCHEDULE							
ITEM#	TAG	LOCATION	AREA SERVED	CFM	RPM	VOLT/HZ/PH	MECH. DWG. REF.
1	IF-2	BOILER 146	BOILER	6000	844	460/60/3	H1.1C

ROOF EXHAUSTER SCHEDULE							
ITEM#	TAG	AREA SERVED	CFM	FAN RPM	MOTOR HP	VOLT/HZ/PH	MECH. DWG. REF
1	RE-35	BOILER ROOM 146	6000	1159	2	460/60/3	H1.3

NOTES :
1. IF-2 & RE-35 IS WIRED TO CP-2.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		

PROJECT: WARABEYA NORTH AMERICA

IF-2 & RE-35 SCHEMATIC DIAGRAM

JOB #: 23-10265 PAGE: 26 of 124

INLINE FAN-2 SEQUENCE OF OPERATION

INLINE FAN SEQUENCE OF OPERATION:

A. IF-2 AND RE-35 (STEAM BOILER ROOM SUPPLY AND EXHAUST)

1. PROVIDE TEMPERATURE SENSOR FOR:

    a. ROOM

    b. IN-LINE FAN DISCHARGE AIR

2. PROVIDE DIFFERENTIAL PRESSURE SENSOR FOR:

    a. ROOM COMPARED TO OUTSIDE

    b. PREFILTERS

3. IN-LINE FAN: FURNISH MOTOR OPERATED DAMPERS AND PROVIDE MODULATING DAMPER ACTUATORS FOR

    a. OUTSIDE AIR

    b. RETURN AIR.

4. IF-2 SHALL OPERATE CONTINUOUSLY.

    a. OPEN OUTSIDE AIR DAMPER WHENEVER BOILER IS OPERATING.

    b. MODULATE IF-2 OUTSIDE AND RETURN AIR DAMPERS TO MAINTAIN ROOM DIFFERENTIAL PRESSURE OF +0.02" W.C.

5. RE-35

    a. TURN ON RE VFD TO 25% SPEED AND OPEN RE MOTOR OPERATED DAMPER WHEN ROOM TEMPERATURE RISES ABOVE 80 DEG F.

    b. INCREASE RE VFD ON A RISE IN ROOM TEMPERATURE TO 100% SPEED AT 85 DEG F ROOM TEMPERATURE.

    c. TURN RE OFF ON A DROP IN ROOM TEMPERATURE BELOW 75 DEG F.

6. OVERRIDE RE-35 VFD SPEED TO MAINTAIN +0.01" W.C. IF IF-2 FAN SPEED IS AT 100%, OUTSIDE AIR DAMPER IS FULL OPEN AND ROOM DIFFERENTIAL PRESSURE IS NOT BEING MAINTAINED.

7. PROVIDE INTERLOCK TO BOILERS TO PREVENT BOILER FIRING IF IF-2 VFD OUTPUT INDICATES FAILURE OR DUCT DISCHARGE PRESSURE IS BELOW +0.05" W.C.

8. MONITOR ALL VFDS FOR FAULTS, AMP DRAW AND ON/OFF. INDEX RE-35 DAMPER CLOSED WHEN VFD IS TURNED OFF.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

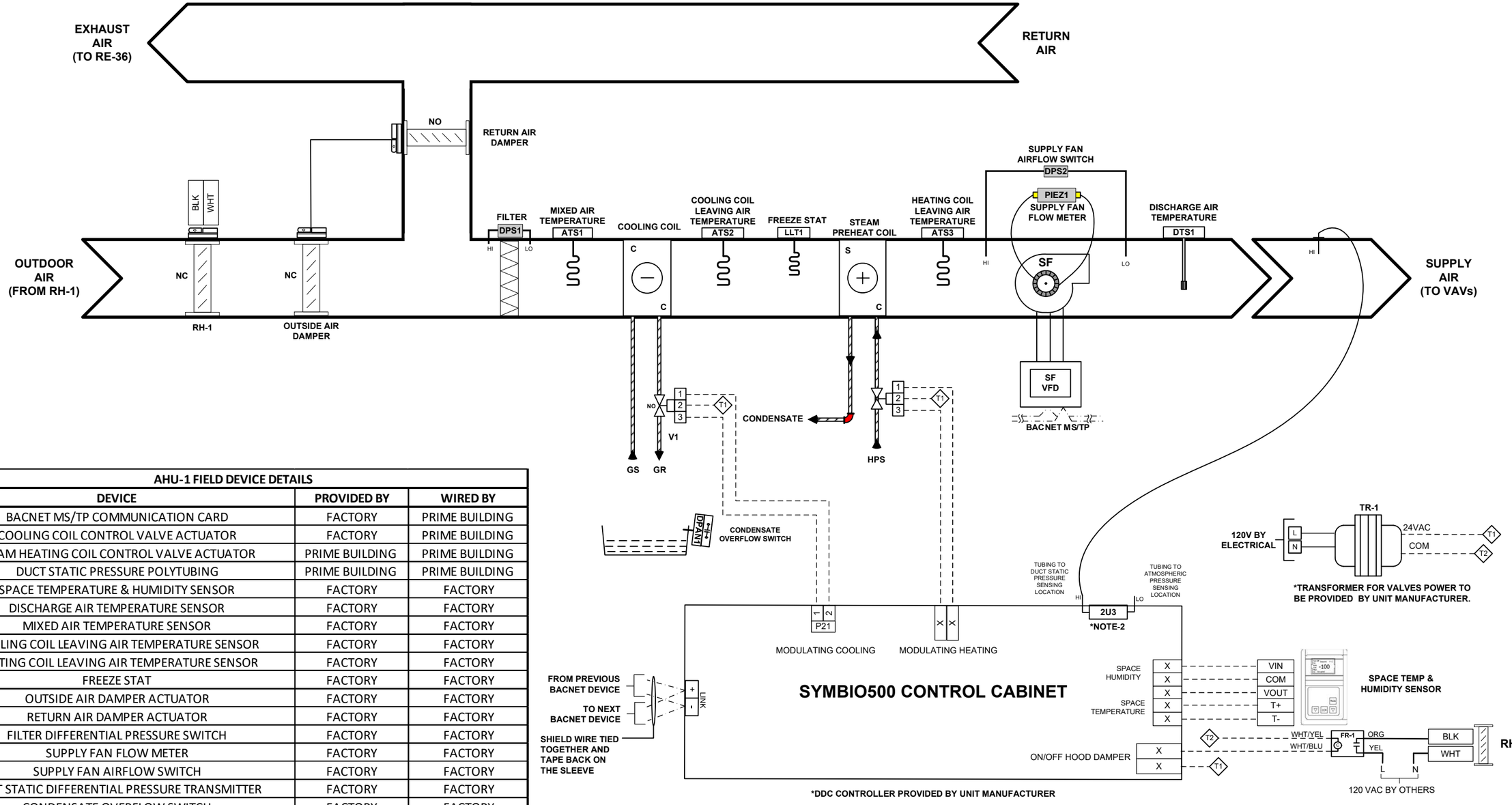
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA	
INLINE FAN-2 SEQUENCE OF OPERATION	
JOB #: 23-10265	PAGE: 27 of 124

INLINE FAN-2 & ROOF EXHAUSTER-35 BILL OF MATERIAL

INLINE FAN-2 & ROOF EXHAUSTER-35 BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Duct Temperature Sensor	DAT	A/CP-D-12"-PB	1	10K Type II Thermistor, Duct, 12", Plastic Enclosure	ACI
2	Space Temprature Sensor	ZN-T	A/CP-R2	1	Room Temperature Sensor, Designer, 10K Type II Thermistor	Functional Devices
3	Current Switch	CS-#	RIBXGTA	2	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
4	Emergency Shut-Down Push Button	ES-#	ST120SL-N1-BS	2	Push Pull STA N1 Surface Pull Reset Boiler Shut-down	Kele
5	Building Static Pressure	BSP	P5-0500-1LX	1	Building Diff Pressure Transmitter, +/-1.00%, 0-5.00" WC, field sel out, LCD	Senva
6	Zone Pressure Pickup Ports	-	ZPS-ACC01-86	1	2 x 4 Stainless Steel Wall Plate with Static Pickup	Bapi
7	Outside Pressure Pickup Port	-	ZPS-ACC10-V	1	Rooftop or Wall Mount Outside Air Pressure Pickup Port	Bapi
8	High Static Pressure Switch	HPS	1900-5-MR	1	Differential pressure switch, range 1.40-5.5" w.c., approx. deadband @ min. set point 0.30, approx. deadband @ max. set point 0.30, with manual reset option , SPDT.	DWYER
9	High Static Pressure Switch	HPS	A-301	1	Static Pressure Tips, 1/4" Metal Tubing, 12"	DWYER
10	Field Relay	FR-#	RIB2401D	1	Pilot Relay, 10 Amp DPDT, 24 Vac/dc/120 Vac Coil, NEMA 1 Housing	Functional Devices
11	Field Relay	FR-#	RIBU1C	3	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

AHU-1 SCHEMATIC & FIELD WIRING DIAGRAM



AHU-1 FIELD DEVICE DETAILS

DEVICE	PROVIDED BY	WIRED BY
BACNET MS/TP COMMUNICATION CARD	FACTORY	PRIME BUILDING
COOLING COIL CONTROL VALVE ACTUATOR	FACTORY	PRIME BUILDING
STEAM HEATING COIL CONTROL VALVE ACTUATOR	PRIME BUILDING	PRIME BUILDING
DUCT STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
SPACE TEMPERATURE & HUMIDITY SENSOR	FACTORY	FACTORY
DISCHARGE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
MIXED AIR TEMPERATURE SENSOR	FACTORY	FACTORY
COOLING COIL LEAVING AIR TEMPERATURE SENSOR	FACTORY	FACTORY
HEATING COIL LEAVING AIR TEMPERATURE SENSOR	FACTORY	FACTORY
FREEZE STAT	FACTORY	FACTORY
OUTSIDE AIR DAMPER ACTUATOR	FACTORY	FACTORY
RETURN AIR DAMPER ACTUATOR	FACTORY	FACTORY
FILTER DIFFERENTIAL PRESSURE SWITCH	FACTORY	FACTORY
SUPPLY FAN FLOW METER	FACTORY	FACTORY
SUPPLY FAN AIRFLOW SWITCH	FACTORY	FACTORY
DUCT STATIC DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
CONDENSATE OVERFLOW SWITCH	FACTORY	FACTORY

AHU SCHEDULE

ITEM#	TAG	LOCATION	SERVING	SUPPLY FAN TOTAL CFM	MIN OA CFM	COOLING COIL		STEAM HEATING		VOLT/PH/HZ	MECH. DWG. REF.
						COOLING CAPACITY (MBH)	FLUID FLOW (GPM)	HEATING CAPACITY (MBH)	COIL CONDENSATE (LB/HR)		
1	AHU-1	UNOCCUPIED EQUIPMENT PLATFORM 200	VAVs	8200	3200	412.76	59.61	400.18	425.76	460/3/60	H1.2A

NOTES :
1. FACTORY MOUNTED SENSOR, PNEUMATIC TUBING BY PRIME BUILDING CONTROLS.
2. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER PROVIDED SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

AHU-1 SCHEMATIC & FIELD WIRING DIAGRAM

AHU-1 SEQUENCE OF OPERATION

AHU HAS FACTORY INSTALLED AND WIRED CONTROLLER WITH BACNET INTERFACE CARD. PRIME BUILDING CONTROLS WILL FIELD INSTALL AND WIRE SENSORS SHIPPED LOOSE AND WILL MAP ALL THE AVAILABLE BACNET POINTS ONTO THE FRONT END. PRIME BUILDING CONTROLS IS NOT RESPONSIBLE FOR OPERATION OF MANUFACTURER PROVIDED PACKAGE UNIT CONTROLLER. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER PROVIDED SEQUENCE OF OPERATION.

SEQUENCE OF OPERATION

AHU-1, ERU-1, AND RE-36

1. PROVIDE TEMPERATURE SENSOR FOR:
    a. DISCHARGE AIR
    b. RETURN AIR
    c. COOLING COIL LEAVING AIR
    d. HEATING COIL LEAVING AIR
2. PROVIDE RETURN AIR HUMIDITY SENSOR
3. PROVIDE DUCT STATIC PRESSURE SENSOR FOR:
    a. SUPPLY AIR DUCT WHERE SHOWN ON PLANS.
    b. DUCT HIGH LIMIT
4. PROVIDE DAMPER ACTUATOR FOR
    a. MIXING BOX OUTSIDE AIR DAMPER: MODULATING NORMALLY CLOSED
    b. MIXING BOX RETURN AIR DAMPER: MODULATING
5. FURNISH CONTROL VALVE AND PROVIDE ACTUATOR FOR THE FOLLOWING:
    a. COOLING COIL: 2-WAY MODULATING, NORMALLY CLOSED.
    b. HEATING COIL: MODULATING, NORMALLY OPEN.
6. LOCKOUT MECHANICAL COOLING AT OUTSIDE AIR TEMPERATURES BELOW 60 DEG F.
7. LOCKOUT HEATING AT OUTSIDE AIR TEMPERATURES ABOVE 70 DEG F
8. LOCKOUT HEATING AND COOLING WHEN SUPPLY FAN IS OFF.
9. PROVIDE OCCUPIED / UNOCCUPIED SCHEDULE FOR UNIT.
10. UNOCCUPIED CYCLE:
    a. SUPPLY FAN OFF, OUTSIDE AIR DAMPERS CLOSED, RETURN AIR DAMPER OPEN
    b. RE-36 FAN OFF
    c. ENERGY RECOVERY UNIT OFF AND ASSOCIATED DAMPERS CLOSED
    d. COOLING COIL CONTROL VALVE CLOSED
    e. HEATING COIL CONTROL VALVE CONTROLLED TO MAINTAIN 65 DEG F AT THE HEATING COIL LEAVING AIR TEMPERATURE SENSOR.
11. NIGHT CYCLE
    a. TURN ON FAN AND CONTROL HEATING TO MAINTAIN 105 DEG F DISCHARGE AIR TEMPERATURE WHEN THE ROOM AIR TEMPERATURE IN ROOM 123 (VAVR-12A THERMOSTAT) DROPS BELOW UNOCCUPIED SETPOINT. 3 DEG F DEADBAND.
    b. TURN ON FAN AND CONTROL COOLING COIL VALVE TO MAINTAIN 55 DEG F DISCHARGE AIR TEMPERATURE WHEN THE ROOM AIR TEMPERATURE IN ROOM 123 (VAVR-12A THERMOSTAT) RISES ABOVE UNOCCUPIED SETPOINT. 2 DEG F DEADBAND.
    c. OUTSIDE AIR DAMPER CLOSED AND RETURN AIR DAMPER OPEN
    d. LOCKOUT ELECTRIC HEAT ON VAV BOXES SERVED BY THE UNIT. CONTROL BOX AIRFLOW TO MAINTAIN SETBACK TEMPERATURE.
    e. FAN CONTROL SPEED PER OCCUPIED CYCLE
    f. ENERGY RECOVERY UNIT OFF AND ASSOCIATED DAMPERS CLOSED.
    g. INTERLOCKED EXHAUST FANS/ROOF EXHAUSTERS OFF.
12. PREOCCUPIED CYCLE
    a. PROVIDE OPTIMUM START. CONTROL START TIME SO THE AREA WILL ARRIVE AT OCCUPIED TEMPERATURE AT OCCUPIED SCHEDULE TIME.
    b. CONTROL FAN, HEATING, COOLING, DAMPERS AND INTERLOCKS PER NIGHT CYCLE
    c. PREOCCUPIED CYCLE UNTIL RETURN AIR TEMPERATURE SETPOINT IS REACHED.
13. OCCUPIED CYCLE
    a. SUPPLY FAN OPERATE CONTINUOUSLY
    b. SUPPLY FAN VFD UNDER CONTROL
    c. RE-36 VFD UNDER CONTROL
    d. OPEN OUTSIDE AIR DAMPER TO MINIMUM OPEN POSITION AND RETURN AIR DAMPER TO MAXIMUM RETURN AIR POSITION.
    e. ENERGY RECOVERY UNIT ON AND ASSOCIATED DAMPERS OPEN.
    f. INTERLOCKED RE-36 ON.
    g. DISCHARGE AIR TEMPERATURE SETPOINT.
        1) CUMULATE ALL TEMPERATURE SENSORS SERVED BY THE UNIT. AVERAGE THE TWO TEMPERATURE SENSORS CALLING FOR THE MOST COOLING AND RESET THEDISCHARGE AIR TEMPERATURE SETPOINT BASED ON THE AVERAGE.
    h. MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT OF 55 DEG F.
14. DEHUMIDIFICATION CYCLE
    a. ON A RISE IN RETURN AIR RELATIVE HUMIDITY ABOVE SETPOINT, MODULATE COOLING COIL VALVE TO MAINTAIN COOLING COIL LEAVING AIR TEMPERATURE AT 55 DEG F.
    b. MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE.
15. MAINTAIN UNIT DISCHARGE AIR TEMPERATURE SETPOINT BY:
    a. MODULATING THE HEATING COIL CONTROL VALVE.
    b. MODULATING THE OUTSIDE AND RETURN AIR MOTOR OPERATED DAMPERS.
    c. MODULATING THE COOLING COIL CONTROL VALVE.
16. ECONOMIZER
    a. AN ENTHALPY ECONOMIZER WILL POSITION THE OUTSIDE AND RETURN AIR DAMPERS TO THEIR MINIMUM AND MAXIMUM POSITIONS WHENEVER THE OUTSIDE AIR EXCEEDS THE RETURN AIR ECONOMIZER SWITCHOVER SETPOINT.
    b. TURN OFF ENERGY RECOVERY UNIT OUTSIDE AIR FAN AND CLOSE ASSOCIATED OUTSIDE AIR MOTOR OPERATED DAMPER WHEN OUTSIDE AIR IS BEING USED FOR COOLING.
17. VARY SUPPLY FAN VFD TO MAINTAIN A 1.25” W.C. SUPPLY DUCT STATIC PRESSURE SETPOINT.
    a. CONTINUOUSLY RESET STATIC PRESSURE SETPOINT BASED ON THE ZONE REQUIRING THE MOST PRESSURE (LOWER UNTIL ONE VAV BOX DAMPER IS NEARLY WIDE OPEN).
18. MONITOR ALL VFDS FOR FAULTS AND AMP DRAW.
19. INDEX UNIT TO UNOCCUPIED IF DUCT STATIC HIGH LIMIT EXCEEDS 2.5” W.C.
20. LOW TEMPERATURE THERMOSTAT(S) AT THE HEATING COIL DISCHARGE WILL SHUT DOWN THE SYSTEM UPON SENSING A COIL DISCHARGE TEMPERATURE OF LESS THAN 40 DEG F.
21. INSTALL CONDENSATE OVERFLOW SWITCH FURNISHED WITH AIR HANDLING UNIT. INDEX UNIT TO UNOCCUPIED CYCLE ON CONDENSATE ALARM .
22. TURN RE-36 ON AND OPEN ASSOCIATED DAMPER WHEN OUTSIDE AIR DAMPER IS OPENED 20%. CONTROL RE-36 VFD TO MAINTAIN AN OPEN OFFICE PRESSURE OF +0.02" W.C. WHEN RE IS ON.
23. RETURN DUCT SMOKE DETECTOR FURNISHED BY ELECTRICAL CONTRACTOR. WIRING TO SUPPLY FAN VFD TO SHUTDOWN FANS ON DETECTION BY EC. CONTROL CONTRACTOR TO WIRE TO SMOKE DETECTOR TO MONITOR CONDITION AND INDEX ALL COMPONENTS TO UNOCCUPIED POSITIONS ON ALARM.
24. MOUNT AND WIRE ALL CONTROL WIRING ASSOCIATED WITH THE UNIT AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

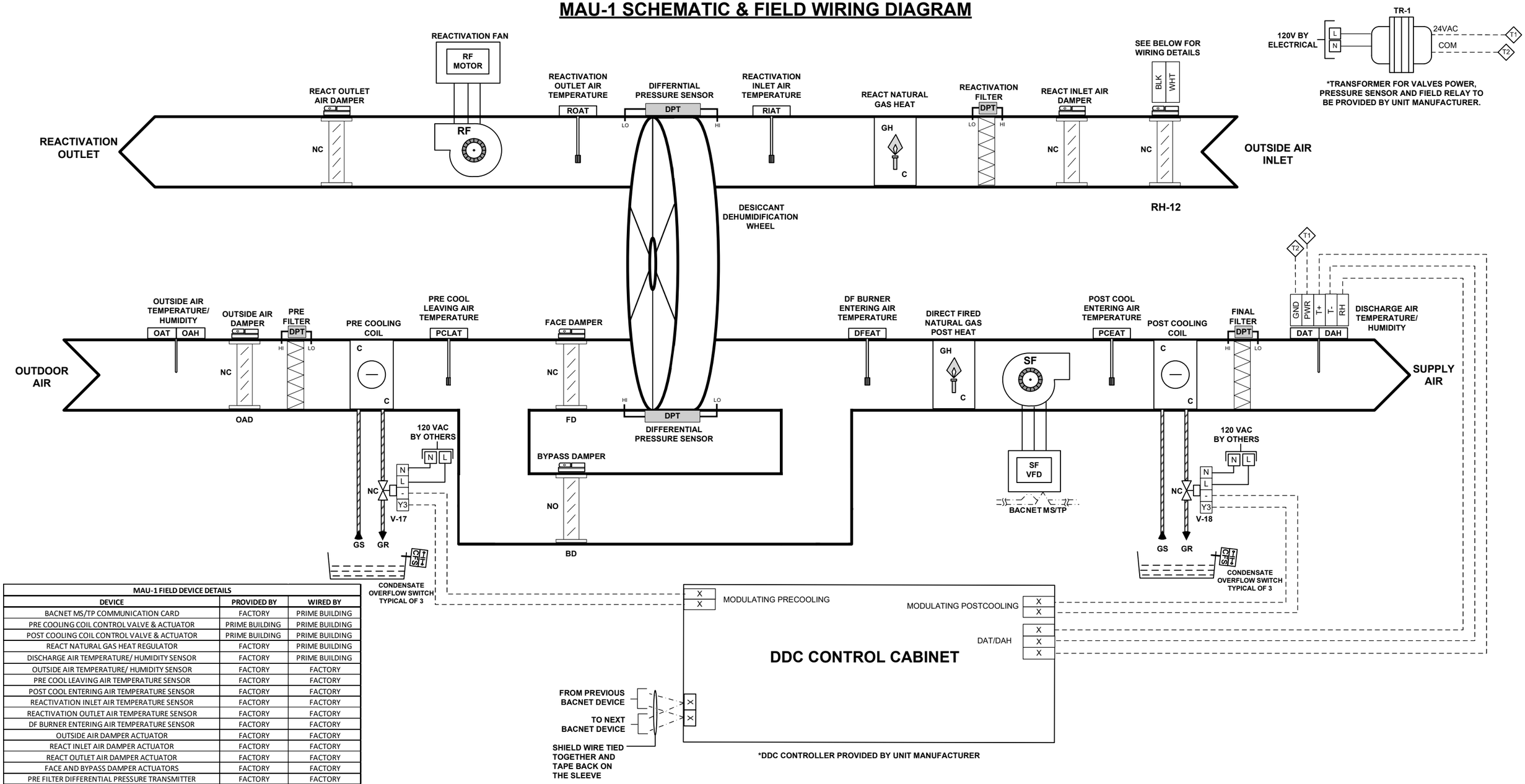
PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

AHU-1 BILL OF MATERIAL

AHU-1 BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Field Relay	FR-#	RIBU1C	1	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

FACILITY	**WARABEYA NORTH AMERICA**					PRIME BUILDING CONTROLS	**PRIME BUILDING CONTROLS**	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	**PROJECT: WARABEYA NORTH AMERICA**	
MECH. CONTRACTOR	**MULLINS MECHANICAL**								**AHU-1 BILL OF MATERIAL**	
ENGINEER	**EXCEL ENGINEERING, INC.**	**0**	**11-19-2024**	**SUBMITTED FOR APPROVAL**	**SS**				**JOB #: 23-10265**	**PAGE: 31 of 124**
ARCHITECT	**EXCEL ENGINEERING, INC.**	**#**	**DATE**	**REVISION DESCRIPTION**	**BY**					

MAU-1 SCHEMATIC & FIELD WIRING DIAGRAM



MAU-1 FIELD DEVICE DETAILS		
DEVICE	PROVIDED BY	WIRED BY
BACNET MS/TP COMMUNICATION CARD	FACTORY	PRIME BUILDING
PRE COOLING COIL CONTROL VALVE & ACTUATOR	PRIME BUILDING	PRIME BUILDING
POST COOLING COIL CONTROL VALVE & ACTUATOR	PRIME BUILDING	PRIME BUILDING
REACT NATURAL GAS HEAT REGULATOR	FACTORY	PRIME BUILDING
DISCHARGE AIR TEMPERATURE/ HUMIDITY SENSOR	FACTORY	PRIME BUILDING
OUTSIDE AIR TEMPERATURE/ HUMIDITY SENSOR	FACTORY	FACTORY
PRE COOL LEAVING AIR TEMPERATURE SENSOR	FACTORY	FACTORY
POST COOL ENTERING AIR TEMPERATURE SENSOR	FACTORY	FACTORY
REACTIVATION INLET AIR TEMPERATURE SENSOR	FACTORY	FACTORY
REACTIVATION OUTLET AIR TEMPERATURE SENSOR	FACTORY	FACTORY
DF BURNER ENTERING AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR DAMPER ACTUATOR	FACTORY	FACTORY
REACT INLET AIR DAMPER ACTUATOR	FACTORY	FACTORY
REACT OUTLET AIR DAMPER ACTUATOR	FACTORY	FACTORY
FACE AND BYPASS DAMPER ACTUATORS	FACTORY	FACTORY
PRE FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
FINAL FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
REACTIVATION FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
DESICCANT WHEEL DIFFERENTIAL PRESSURE TRANSMITTERS	FACTORY	FACTORY
CONDENSATE OVERFLOW SWITCHES	FACTORY	FACTORY
REACTIVATION FAN PIEZOMETER RING	FACTORY	FACTORY

MAU-1 SCHEDULE															
ITEM#	TAG	LOCATION	SERVING	SUPPLY FAN TOTAL CFM	REACTIVATION FAN TOTAL CFM	PRE COOLING COIL		POST COOLING COIL		DIRECT FIRED POST HEAT		GAS REACTIVATION		VOLT/PH/HZ	MECH. DWG. REF.
						TOTAL COOLING CAPACITY (MBH)	FLUID FLOW (GPM)	TOTAL COOLING CAPACITY (MBH)	FLUID FLOW (GPM)	MBTUH INPUT MAX	MBTUH INPUT MIN	MBTUH INPUT MAX	MBTUH INPUT MIN		
1	MAU-1	UNOCCUPIED EQUIPMENT PLATFORM 200	PRESSURIZATION	35000	11050	3062	541.3	1943	412.8	2370	112	2316.8	132	460/3/60	H1.2D

NOTE :
1. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER PROVIDED SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

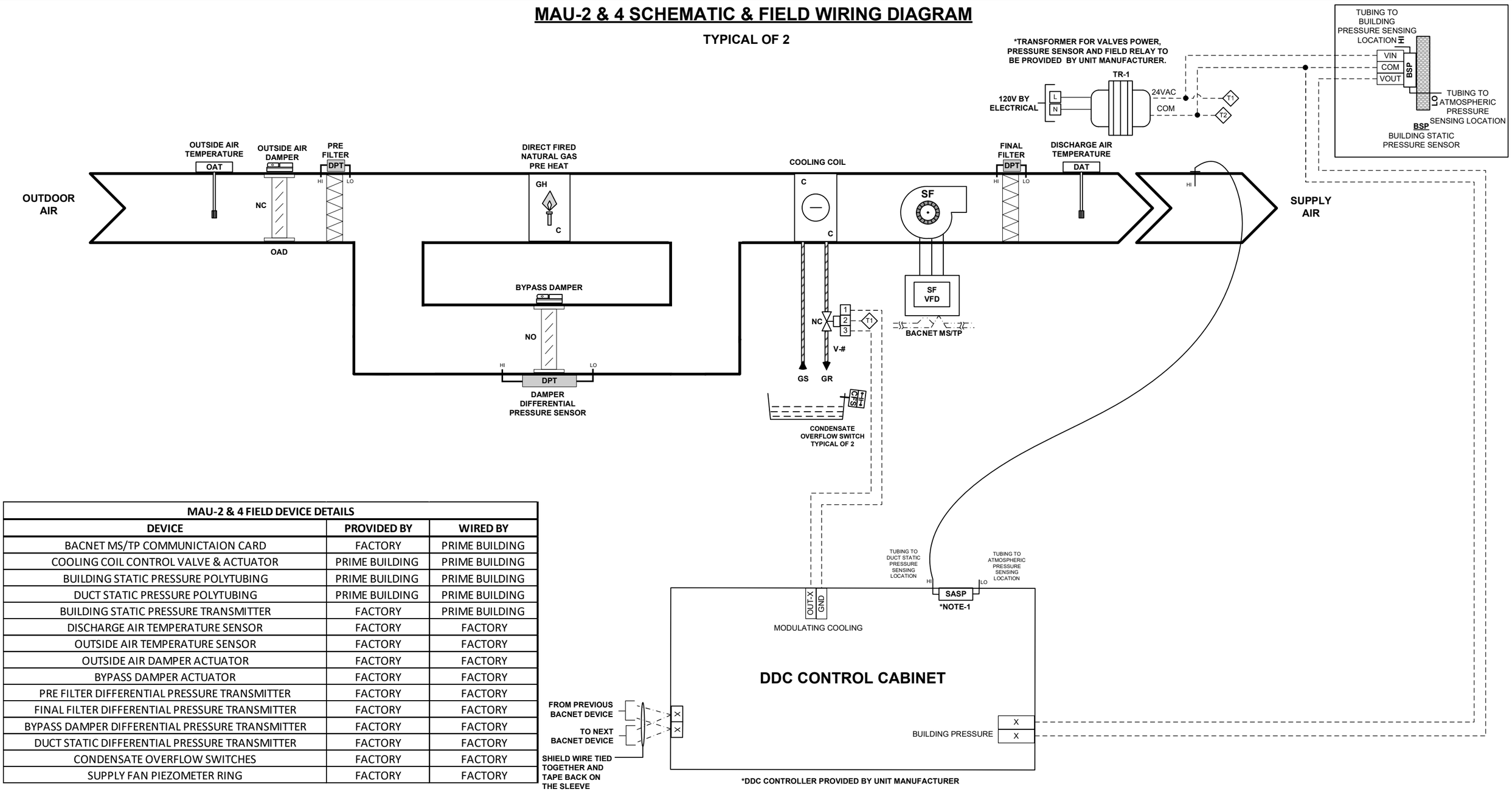
PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

MAU-1 SCHEMATIC & FIELD WIRING DIAGRAM

MAU-2 & 4 SCHEMATIC & FIELD WIRING DIAGRAM

TYPICAL OF 2



MAU-2 & 4 FIELD DEVICE DETAILS		
DEVICE	**PROVIDED BY**	**WIRED BY**
BACNET MS/TP COMMUNICTAION CARD	FACTORY	PRIME BUILDING
COOLING COIL CONTROL VALVE & ACTUATOR	PRIME BUILDING	PRIME BUILDING
BUILDING STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
DUCT STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
BUILDING STATIC PRESSURE TRANSMITTER	FACTORY	PRIME BUILDING
DISCHARGE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR DAMPER ACTUATOR	FACTORY	FACTORY
BYPASS DAMPER ACTUATOR	FACTORY	FACTORY
PRE FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
FINAL FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
BYPASS DAMPER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
DUCT STATIC DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
CONDENSATE OVERFLOW SWITCHES	FACTORY	FACTORY
SUPPLY FAN PIEZOMETER RING	FACTORY	FACTORY

MAU SCHEDULE									
ITEM#	**TAG**	**LOCATION**	**SERVING**	**SUPPLY FAN CFM**	**COOLING COIL**		**HEATING**		**VOLT/PH/HZ**	**MECH. DWG. REF.**
					TOTAL COOLING CAPACITY (MBH)	**FLUID FLOW (GPM)**	**MBTUH INPUT MAX**	**MBTUH INPUT MIN**		
1	MAU-2	UNOCCUPIED EQUIPMENT PLATFORM 200	KITCHEN DUCTWORK	22000	1333	280.9	1425.6	72	460/3/60	H1.2D
2	MAU-4	UNOCCUPIED EQUIPMENT PLATFORM 200	UNOCCUPIE EQUIPMENT PLATFORM 200	7000	429.3	90.47	450	32	460/3/60	H1.2D

NOTES :
1. FACTORY MOUNTED SENSOR, PNEUMATIC TUBING BY PRIME BUILDING CONTROLS.
2. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER PROVIDED SEQUENCE OF OPERATION.

FACILITY	**WARABEYA NORTH AMERICA**				
MECH. CONTRACTOR	**MULLINS MECHANICAL**				
ENGINEER	**EXCEL ENGINEERING, INC.**	**0**	**11-19-2024**	**SUBMITTED FOR APPROVAL**	**SS**
ARCHITECT	**EXCEL ENGINEERING, INC.**	**#**	**DATE**	**REVISION DESCRIPTION**	**BY**

PRIME BUILDING CONTROLS

PRIME BUILDING CONTROLS

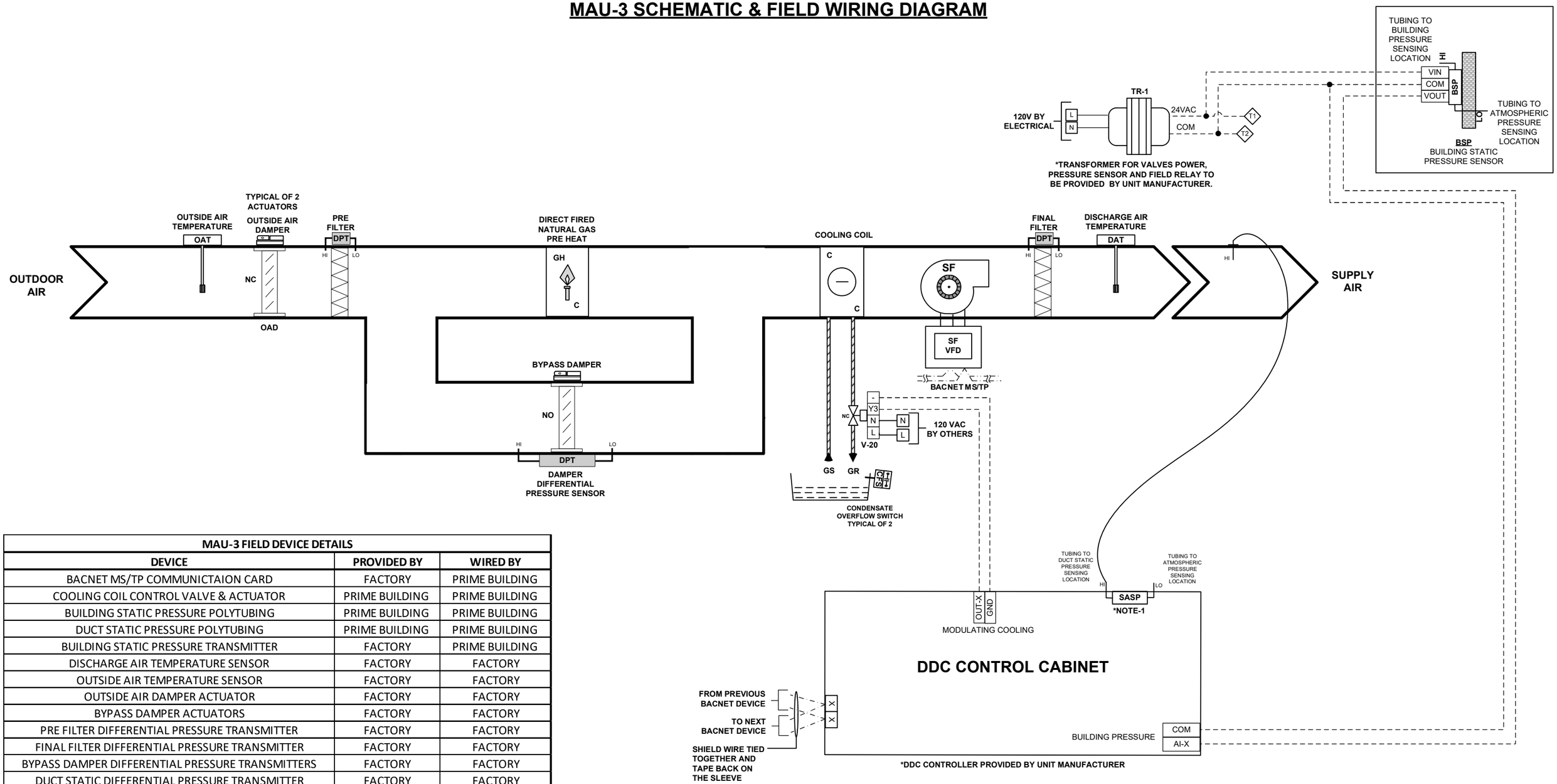
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

MAU-2 & 4 SCHEMATIC & FIELD WIRING DIAGRAM

JOB #: 23-10265 | **PAGE: 33 of 124**

MAU-3 SCHEMATIC & FIELD WIRING DIAGRAM



MAU-3 FIELD DEVICE DETAILS		
DEVICE	PROVIDED BY	WIRED BY
BACNET MS/TP COMMUNICTAION CARD	FACTORY	PRIME BUILDING
COOLING COIL CONTROL VALVE & ACTUATOR	PRIME BUILDING	PRIME BUILDING
BUILDING STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
DUCT STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
BUILDING STATIC PRESSURE TRANSMITTER	FACTORY	PRIME BUILDING
DISCHARGE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR DAMPER ACTUATOR	FACTORY	FACTORY
BYPASS DAMPER ACTUATORS	FACTORY	FACTORY
PRE FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
FINAL FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
BYPASS DAMPER DIFFERENTIAL PRESSURE TRANSMITTERS	FACTORY	FACTORY
DUCT STATIC DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
CONDENSATE OVERFLOW SWITCHES	FACTORY	FACTORY
SUPPLY FAN PIEZOMETER RING	FACTORY	FACTORY

MAU SCHEDULE									
ITEM#	TAG	LOCATION	SERVING	SUPPLY FAN CFM	COOLING COIL		HEATING		VOLT/PH/HZ	MECH. DWG. REF.
					TOTAL COOLING CAPACITY (MBH)	FLUID FLOW (GPM)	MBTUH INPUT MAX	MBTUH INPUT MIN		
1	MAU-3	UNOCCUPIED EQUIPMENT PLATFORM 200	KITCHEN DUCTWORK	44000	2812	593.8	2827.44	132	460/3/60	H1.2D

NOTES :
1. FACTORY MOUNTED SENSOR, PNEUMATIC TUBING BY PRIME BUILDING CONTROLS.
2. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER PROVIDED SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

MAU-3 SCHEMATIC & FIELD WIRING DIAGRAM

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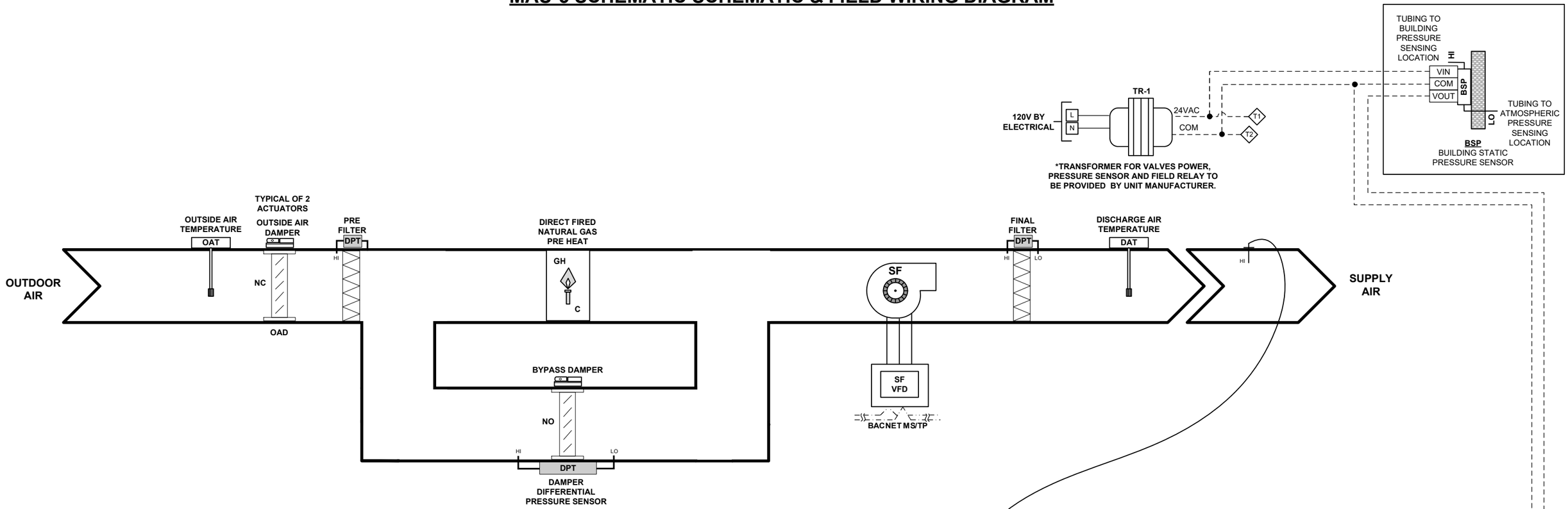
MAU-5 SCHEMATIC SCHEMATIC & FIELD WIRING DIAGRAM



MAU-5 FIELD DEVICE DETAILS		
DEVICE	PROVIDED BY	WIRED BY
BACNET MS/TP COMMUNICATION CARD	FACTORY	PRIME BUILDING
BUILDING STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
DUCT STATIC PRESSURE POLYTUBING	PRIME BUILDING	PRIME BUILDING
BUILDING STATIC PRESSURE TRANSMITTER	FACTORY	PRIME BUILDING
DISCHARGE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR TEMPERATURE SENSOR	FACTORY	FACTORY
OUTSIDE AIR DAMPER ACTUATOR	FACTORY	FACTORY
BYPASS DAMPER ACTUATORS	FACTORY	FACTORY
PRE FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
FINAL FILTER DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
BYPASS DAMPER DIFFERENTIAL PRESSURE TRANSMITTERS	FACTORY	FACTORY
DUCT STATIC DIFFERENTIAL PRESSURE TRANSMITTER	FACTORY	FACTORY
CONDENSATE OVERFLOW SWITCHES	FACTORY	FACTORY
SUPPLY FAN PIEZOMETER RING	FACTORY	FACTORY

MAU SCHEDULE								
ITEM#	TAG	LOCATION	SERVING	SUPPLY FAN CFM	HEATING		VOLT/PH/HZ	MECH. DWG. REF.
					MBTUH INPUT MAX	MBTUH INPUT MIN		
1	MAU-5	UNOCCUPIED EQUIPMENT PLATFORM 200	SECOND FLOOR-AREA D	35000	2259.5	112	460/3/60	H1.2D

NOTES :
1. FACTORY MOUNTED SENSOR, PNEUMATIC TUBING BY PRIME BUILDING CONTROLS.
2. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER PROVIDED SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

MAU-5 SCHEMATIC SCHEMATIC & FIELD WIRING DIAGRAM

JOB #: 23-10265 | PAGE: 35 of 124

MAU SEQUENCE OF OPERATION

MAUs HAVE FACTORY INSTALLED AND WIRED CONTROLLER WITH BACNET INTERFACE CARD. PRIME BUILDING CONTROLS WILL FIELD INSTALL AND WIRE SENSORS SHIPPED LOOSE AND WILL MAP ALL THE AVAILABLE BACNET POINTS ONTO THE FRONT END. PRIME BUILDING CONTROLS IS NOT RESPONSIBLE FOR OPERATION OF MANUFACTURER PROVIDED PACKAGE UNIT CONTROLLER. UNIT MANUFACTURER TO PROVIDE ALL NECESSARY INSTRUMENTATION REQUIRED TO OPERATE UNIT AS PER UNIT MANUFACTURERS RECOMMENDED SEQUENCE OF OPERATION.

SEQUENCE OF OPERATION

PACKAGED MAKE-UP AIR UNIT (MAU-1)

1. CONTROLS ARE PROVIDED WITH UNIT.
2. PROVIDE OCCUPIED/UNOCCUPIED SIGNAL TO START AND STOP UNIT.
3. PROVIDE DISCHARGE AIR TEMPERATURE AND DEWPOINT SETPOINT TO UNIT CONTROLS FIXED AT 36°F.
4. PROVIDE INTERFACE TO UNIT BACNET CARD FOR START/STOP AND MONITORING OF UNIT OPERATING CONDITIONS. COORDINATE POINTS TO BE MONITORED AND DISPLAYED ON GRAPHICS WITH OWNER.

PACKAGED MAKE-UP AIR UNIT (MAU-2)

1. CONTROLS ARE PROVIDED WITH UNIT.
2. PROVIDE OCCUPIED/UNOCCUPIED SIGNAL TO START AND STOP UNIT.
3. PROVIDE DISCHARGE AIR TEMPERATURE SETPOINT TO UNIT CONTROLS FIXED AT 60°F.
4. PROVIDE ROOM DIFFERENTIAL PRESSURE SENSOR TO COMPARE KITCHEN TO OUTSIDE.
5. MONITOR KITCHEN ROOM PRESSURE.
6. VARY MAU SPEED BASED ON KITCHEN ROOM PRESSURE.
7. PROVIDE INTERFACE TO UNIT BACNET CARD FOR START/STOP AND MONITORING OF UNIT OPERATING CONDITIONS. COORDINATE POINTS TO BE MONITORED AND DISPLAYED ON GRAPHICS WITH OWNER.

PACKAGED MAKE-UP AIR UNIT (MAU-3)

1. CONTROLS ARE PROVIDED WITH UNIT.
2. PROVIDE OCCUPIED/UNOCCUPIED SIGNAL TO START AND STOP UNIT.
3. PROVIDE DISCHARGE AIR TEMPERATURE SETPOINT TO UNIT CONTROLS FIXED AT 75°F.
4. MONITOR KITCHEN HOOD OPERATION.
5. VARY MAU SPEED BASED ON KITCHEN HOOD FAN SPEEDS.
6. PROVIDE INTERFACE TO UNIT BACNET CARD FOR START/STOP AND MONITORING OF UNIT OPERATING CONDITIONS. COORDINATE POINTS TO BE MONITORED AND DISPLAYED ON GRAPHICS WITH OWNER.

PACKAGED MAKE-UP AIR UNIT (MAU-4)

1. CONTROLS ARE PROVIDED WITH UNIT.
2. PROVIDE OCCUPIED/UNOCCUPIED SIGNAL TO START AND STOP UNIT.
3. PROVIDE DISCHARGE AIR TEMPERATURE SETPOINT TO UNIT CONTROLS FIXED AT 60°F.
4. PROVIDE MODULATING MOTOR OPERATED DAMPER AND ACTUATOR FOR SUPPLY TO EACH WASH ROOM.
5. MONITOR WASHER OPERATION IN EACH ROOM.
    a. ROOM 160
        1) WHEN ALL WASHERS ARE OFF SET SUPPLY AIRFLOW TO 2,175 CFM.
        2) WHEN CABINET WASHER IS OPERATING, INCREASE AIRFLOW BY 500 CFM PER CABINET WASHER (VERIFY WITH EQUIPMENT PROVIDED).
    b. ROOM 180
        1) WHEN ALL WASHERS ARE OFF SET SUPPLY AIRFLOW TO 1,325 CFM.
        2) WHEN TUNNEL WASHER(S) IS OPERATING, INCREASE AIRFLOW BY 1,125 CFM PER WASHER (VERIFY WITH EQUIPMENT PROVIDED).
        3) WHEN CABINET WASHER IS OPERATING, INCREASE AIRFLOW BY 500 CFM PER CABINET WASHER (VERIFY WITH EQUIPMENT PROVIDED).
6. PROVIDE INTERFACE TO UNIT BACNET CARD FOR START/STOP AND MONITORING OF UNIT OPERATING CONDITIONS. COORDINATE POINTS TO BE MONITORED AND DISPLAYED ON GRAPHICS WITH OWNER.

PACKAGED MAKE-UP AIR UNIT (MAU-5), RE-3,4,5; RE-19,20,21,22; RE-50; RE-7,8; RE-6,48; RE-16,17:

1. FURNISH (6) TOTAL MOTOR OPERATED DAMPERS WHERE SHOWN ON PLANS WITH END SWITCH AND EXTERNAL ACTUATORS WITH FEEDBACK FOR:
    a. ASSEMBLY ROOM 177
    b. DECANTING 151/PREP ROOM 152A/RTE MEAT SLICING ROOM 152B/MIXING PREP 152C
    c. CHILLED HOLDING 152
    d. PIZZA TOPPING ROOM 173
    e. PIZZA PACKAGING 174
    f. NON-RTE MEAT PREP 159A/MARINATION ROOM 159B
2. DAMPER AND ACTUATOR FOR RE-3,4,5; RE-19,20,21,22; RE-50; RE-7,8; RE-6,48; RE-16,17 FURNISHED BY ROOF EXHAUSTER MANUFACTURER.
3. PROVIDE DISCHARGE AIR TEMPERATURE SENSOR.
4. PROVIDE ROOM DIFFERENTIAL PRESSURE SENSOR IN EACH ROOM TO COMPARE ROOM TO OUTSIDE.
5. PROVIDE A "WASHING" MODE PANEL WITH LOCKING COVER FOR REMOTE MOUNTING WHERE SHOWN ON THE PLANS. PROVIDE A MOMENTARY CONTACT PUSHBUTTON FOR EACH ZONE, LABELED "WASHING 'ROOM NAME'". PROVIDE A GREEN LED INDICATOR LIGHT FOR EACH ZONE TO INDICATE OPERATION.
6. WASHING MODE:
    a. INITIATED:
        1) BY PUSHBUTTON WHICH WILL BEGIN A 3 HOUR CLEANUP CYCLE (OWNER ADJUSTABLE).
    b. EXPIRES:
        1) AT END OF 3 HOUR CLEANUP CYCLE OR START OF NEW ZONE (OWNER ADJUSTABLE).
7. "WASHING" MODE:
    a. WHEN INITIALLY INDEXED TO "WASHING" MODE:
        1) TURN OFF UNIT COOLERS AND CLOSE CONTROL VALVES IN ROOM(S) BEING WASHED.
        2) OPEN ASSOCIATED SUPPLY AIR MOTOR OPERATED DAMPER.
        3) INDEX INTERLOCKED ROOF EXHAUSTERS ON TO MINIMUM SPEED.
        4) SUPPLY FAN VFD CONTROL:
            a) ASSEMBLY ROOM 177:
                (i) INDEX FAN TO 35,000 CFM.
            b) DECANTING 151/PREP ROOM 152A/RTE MEAT SLICING ROOM 152B/MIXING PREP 152C:
                (i) INDEX FAN TO 12,400 CFM.
            c) CHILLED HOLDING 152:
                (i) INDEX FAN TO 10,500 CFM.
            d) PIZZA TOPPING ROOM 173:
                (i) INDEX FAN TO 16,750 CFM.
            e) PIZZA PACKAGING 174:
                (i) INDEX FAN TO 22,000 CFM.
            f) NON-RTE MEAT PREP 159A/MARINATION ROOM 159B:
                (i) INDEX FAN TO 10,500 CFM.
        5) EXHAUST FAN CONTROL:
            a) CONTROL ROOF EXHAUSTER VFD SPEED TO MAINTAIN ROOM PRESSURE SET POINT OF -0.01" W.C. COMPARED TO OUTSIDE.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							MAU SEQUENCE OF OPERATION
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 36 of 124
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MAU BILL OF MATERIAL

MAU BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Static Probe	-	ZPS-ACC07	3	Static Probe Assembly, Aluminum 6” long	Bapi
2	Zone Pressure Pickup Ports	-	ZPS-ACC01-86	3	2 x 4 Stainless Steel Wall Plate with Static Pickup	Bapi
3	Outside Pressure Pickup Port	-	ZPS-ACC10-V	3	Rooftop or Wall Mount Outside Air Pressure Pickup Port	Bapi

FACILITY	**WARABEYA NORTH AMERICA**				
MECH. CONTRACTOR	**MULLINS MECHANICAL**				
ENGINEER	**EXCEL ENGINEERING, INC.**	**0**	**11-19-2024**	**SUBMITTED FOR APPROVAL**	**SS**
ARCHITECT	**EXCEL ENGINEERING, INC.**	**#**	**DATE**	**REVISION DESCRIPTION**	**BY**

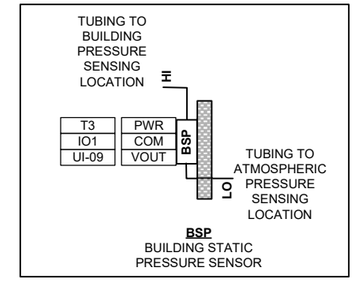
PRIME BUILDING CONTROLS

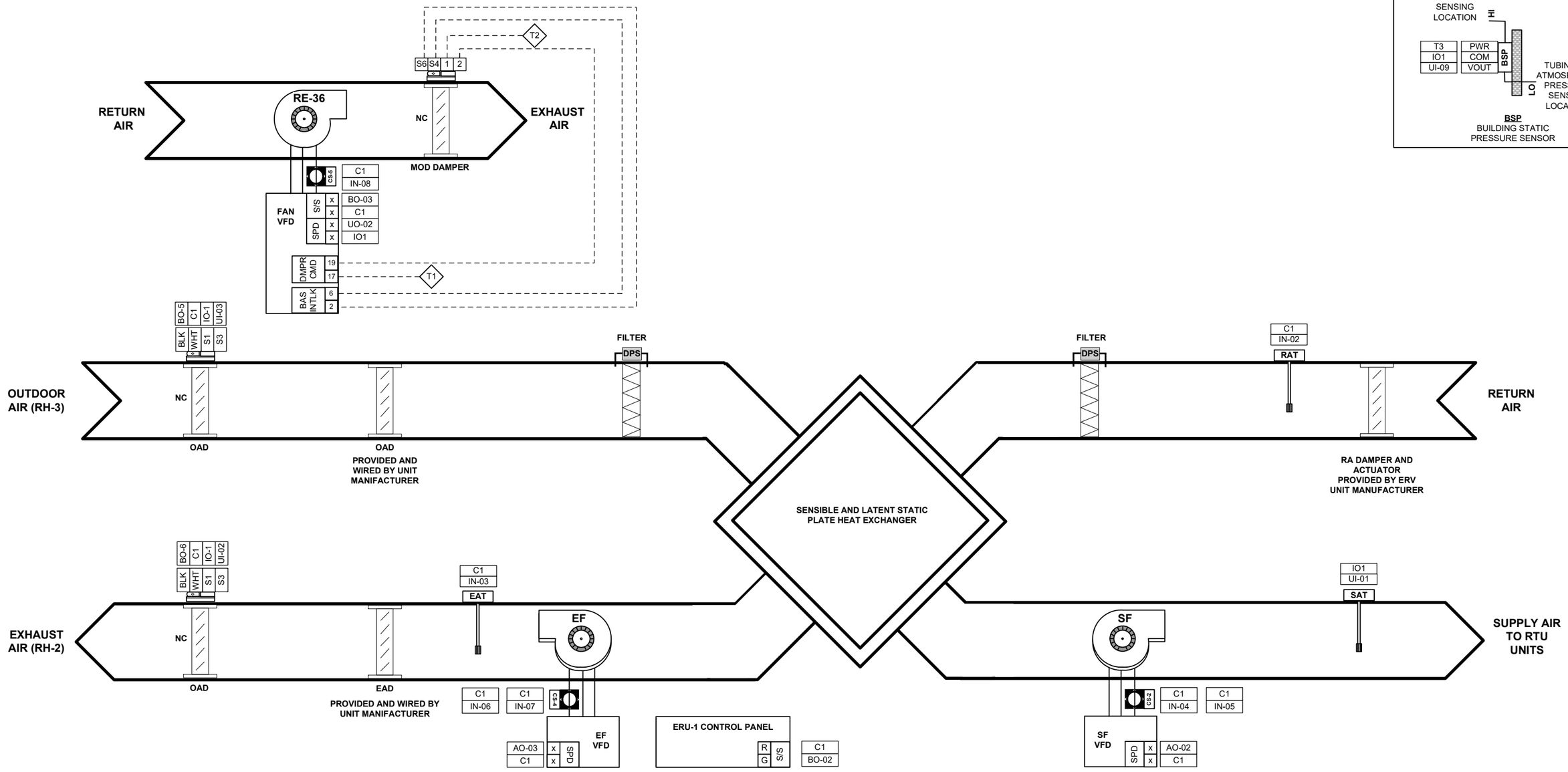
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

MAU BILL OF MATERIAL

ENERGY RECOVERY UNIT SCHEMATIC DIAGRAM





ERU SCHEDULE							
ITEM#	TAG	LOCATION	TOTAL CFM	VOLT/PH	MODEL NUMBER	MODEL	MECH. DWG. REF
1	ERU-1	SECOND FLOOR AREA A/D	3200	460/3	CW8000E	ECV-30-F-H	H1.2A/D

ROOF EXHAUSTER SCHEDULE							
ITEM#	TAG	AREA SERVED	CFM	FAN RPM	MOTOR HP	VOLT/HZ/PH	MECH. DWG. REF
1	RE-36	OFFICE RETURN	4150	1231	1 1/2	460/60/3	H1.3

NOTES :
1. UNIT MANUFACTURER IS RESPONSIBLE TO PROVIDE ALL THE DEVICES TO COMPLY WITH THE SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA	
MECH. CONTRACTOR	MULLINS MECHANICAL								ENERGY RECOVERY UNIT SCHEMATIC DIAGRAM	
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ENERGY RECOVERY UNIT SEQUENCE OF OPERATION PAGE 1

SEQUENCE OF OPERATION

AHU-1, ERU-1, AND RE-36

1. PROVIDE TEMPERATURE SENSOR FOR:
    a. DISCHARGE AIR
    b. RETURN AIR
    c. COOLING COIL LEAVING AIR
    d. HEATING COIL LEAVING AIR
2. PROVIDE RETURN AIR HUMIDITY SENSOR
3. PROVIDE DUCT STATIC PRESSURE SENSOR FOR:
    a. SUPPLY AIR DUCT WERE SHOWN ON PLANS.
    b. DUCT HIGH LIMIT
4. PROVIDE DAMPER ACTUATOR FOR
    a. MIXING BOX OUTSIDE AIR DAMPER: MODULATING NORMALLY CLOSED
    b. MIXING BOX RETURN AIR DAMPER: MODULATING
5. FURNISH CONTROL VALVE AND PROVIDE ACTUATOR FOR THE FOLLOWING:
    a. COOLING COIL: 2-WAY MODULATING, NORMALLY CLOSED.
    b. HEATING COIL: MODULATING, NORMALLY OPEN.
6. LOCKOUT MECHANICAL COOLING AT OUTSIDE AIR TEMPERATURES BELOW 60 DEG F.
7. LOCKOUT HEATING AT OUTSIDE AIR TEMPERATURES ABOVE 70 DEG F
8. LOCKOUT HEATING AND COOLING WHEN SUPPLY FAN IS OFF.
9. PROVIDE OCCUPIED / UNOCCUPIED SCHEDULE FOR UNIT.
10. UNOCCUPIED CYCLE:
    a. SUPPLY FAN OFF, OUTSIDE AIR DAMPERS CLOSED, RETURN AIR DAMPER OPEN
    b. RE-36 FAN OFF
    c. ENERGY RECOVERY UNIT OFF AND ASSOCIATED DAMPERS CLOSED
    d. COOLING COIL CONTROL VALVE CLOSED
    e. HEATING COIL CONTROL VALVE CONTROLLED TO MAINTAIN 65 DEG F AT THE HEATING COIL LEAVING AIR TEMPERATURE SENSOR.
11. NIGHT CYCLE
    a. TURN ON FAN AND CONTROL HEATING TO MAINTAIN 105 DEG F DISCHARGE AIR TEMPERATURE WHEN THE ROOM AIR TEMPERATURE IN ROOM 123 (VAVR-12A THERMOSTAT) DROPS BELOW UNOCCUPIED SETPOINT. 3 DEG F DEADBAND.

b. TURN ON FAN AND CONTROL COOLING COIL VALVE TO MAINTAIN 55 DEG F DISCHARGE AIR TEMPERATURE WHEN THE ROOM AIR TEMPERATURE IN ROOM 123 (VAVR-12A THERMOSTAT) RISES ABOVE UNOCCUPIED SETPOINT. 2 DEG F DEADBAND.

c. OUTSIDE AIR DAMPER CLOSED AND RETURN AIR DAMPER OPEN

d. LOCKOUT ELECTRIC HEAT ON VAV BOXES SERVED BY THE UNIT. CONTROL BOX AIRFLOW TO MAINTAIN SETBACK TEMPERATURE.

e. FAN CONTROL SPEED PER OCCUPIED CYCLE

f. ENERGY RECOVERY UNIT OFF AND ASSOCIATED DAMPERS CLOSED.

g. INTERLOCKED EXHAUST FANS/ROOF EXHAUSTERS OFF.

12. PREOCCUPIED CYCLE
    a. PROVIDE OPTIMUM START. CONTROL START TIME SO THE AREA SHALL ARRIVE AT OCCUPIED TEMPERATURE AT OCCUPIED SCHEDULE TIME.
    b. CONTROL FAN, HEATING, COOLING, DAMPERS AND INTERLOCKS PER NIGHT CYCLE
    c. PREOCCUPIED CYCLE UNTIL RETURN AIR TEMPERATURE SETPOINT IS REACHED.
13. OCCUPIED CYCLE
    a. SUPPLY FAN OPERATE CONTINUOUSLY
    b. SUPPLY FAN VFD UNDER CONTROL
    c. RE-36 VFD UNDER CONTROL
    d. OPEN OUTSIDE AIR DAMPER TO MINIMUM OPEN POSITION AND RETURN AIR DAMPER TO MAXIMUM RETURN AIR POSITION.
    e. ENERGY RECOVERY UNIT ON AND ASSOCIATED DAMPERS OPEN.
    f. INTERLOCKED RE-36 ON.
    g. DISCHARGE AIR TEMPERATURE SETPOINT.
    1). CUMULATE ALL TEMPERATURE SENSORS SERVED BY THE UNIT. AVERAGE THE TWO TEMPERATURE SENSORS CALLING FOR THE MOST COOLING AND RESET THE DISCHARGE AIR TEMPERATURE SETPOINT BASED ON THE AVERAGE.
    h. MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT OF 55 DEG F.
14. DEHUMIDIFICATION CYCLE
    a. ON A RISE IN RETURN AIR RELATIVE HUMIDITY ABOVE SETPOINT, MODULATE COOLING COIL VALVE TO MAINTAIN COOLING COIL LEAVING AIR TEMPERATURE AT 55 DEG F
    b. MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE.
15. MAINTAIN UNIT DISCHARGE AIR TEMPERATURE SETPOINT BY:
    a. MODULATING THE HEATING COIL CONTROL VALVE.
    b. MODULATING THE OUTSIDE AND RETURN AIR MOTOR OPERATED DAMPERS.
    c. MODULATING THE COOLING COIL CONTROL VALVE

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
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ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 39 of 124
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ENERGY RECOVERY UNIT SEQUENCE OF OPERATION PAGE 2

16. ECONOMIZER

    a. AN ENTHALPY ECONOMIZER SHALL POSITION THE OUTSIDE AND RETURN AIR DAMPERS TO THEIR MINIMUM AND MAXIMUM POSITIONS WHENEVER THE OUTSIDE AIR EXCEEDS THE RETURN AIR ECONOMIZER SWITCHOVER SETPOINT.

    b. TURN OFF ENERGY RECOVERY UNIT OUTSIDE AIR FAN AND CLOSE ASSOCIATED OUTSIDE AIR MOTOR OPERATED DAMPER WHEN OUTSIDE AIR IS BEING USED FOR COOLING.

17. VARY SUPPLY FAN VFD TO MAINTAIN A 1.25” W.C. SUPPLY DUCT STATIC PRESSURE SETPOINT.

    a. CONTINUOUSLY RESET STATIC PRESSURE SETPOINT BASED ON THE ZONE REQUIRING THE MOST PRESSURE (LOWER UNTIL ONE VAV BOX DAMPER IS NEARLY WIDE OPEN)

18. MONITOR ALL VFDS FOR FAULTS AND AMP DRAW.

19. INDEX UNIT TO UNOCCUPIED IF DUCT STATIC HIGH LIMIT EXCEEDS 2.5” W.C.

20. LOW TEMPERATURE THERMOSTAT(S) AT THE HEATING COIL DISCHARGE SHALL SHUT DOWN THE SYSTEM UPON SENSING A COIL DISCHARGE TEMPERATURE OF LESS THAN 40 DEG F.

21. INSTALL CONDENSATE OVERFLOW SWITCH FURNISHED WITH AIR HANDLING UNIT. INDEX UNIT TO UNOCCUPIED CYCLE ON CONDENSATE ALARM.

22. TURN RE-36 ON AND OPEN ASSOCIATED DAMPER WHEN OUTSIDE AIR DAMPER IS OPENED 20%. CONTROL RE-36 VFD TO MAINTAIN AN OPEN OFFICE PRESSURE OF +0.02" W.C. WHEN RE IS ON.

23. RETURN DUCT SMOKE DETECTOR FURNISHED BY ELECTRICAL CONTRACTOR. WIRING TO SUPPLY FAN VFD TO SHUTDOWN FANS ON DETECTION BY EC. CONTROL CONTRACTOR TO WIRE TO SMOKE DETECTOR TO MONITOR CONDITION AND INDEX ALL COMPONENTS TO UNOCCUPIED POSITIONS ON ALARM.

24. MOUNT AND WIRE ALL CONTROL WIRING ASSOCIATED WITH THE UNIT AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA	
ENERGY RECOVERY UNIT SEQUENCE OF OPERATION PAGE 2	
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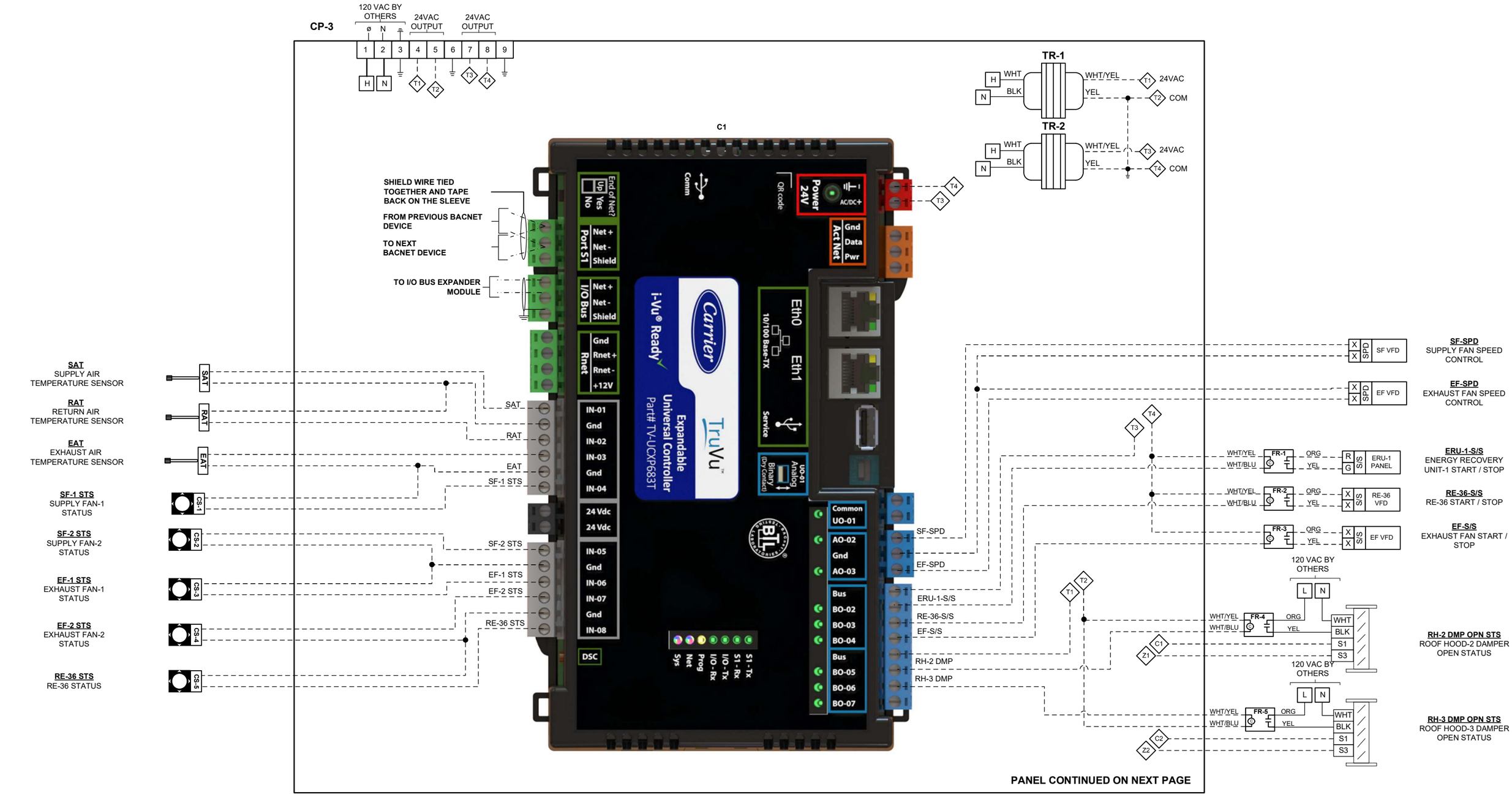
ENERGY RECOVERY UNIT WIRING DIAGRAM PAGE 1



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							ENERGY RECOVERY UNIT WIRING DIAGRAM PAGE 1
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 41 of 124
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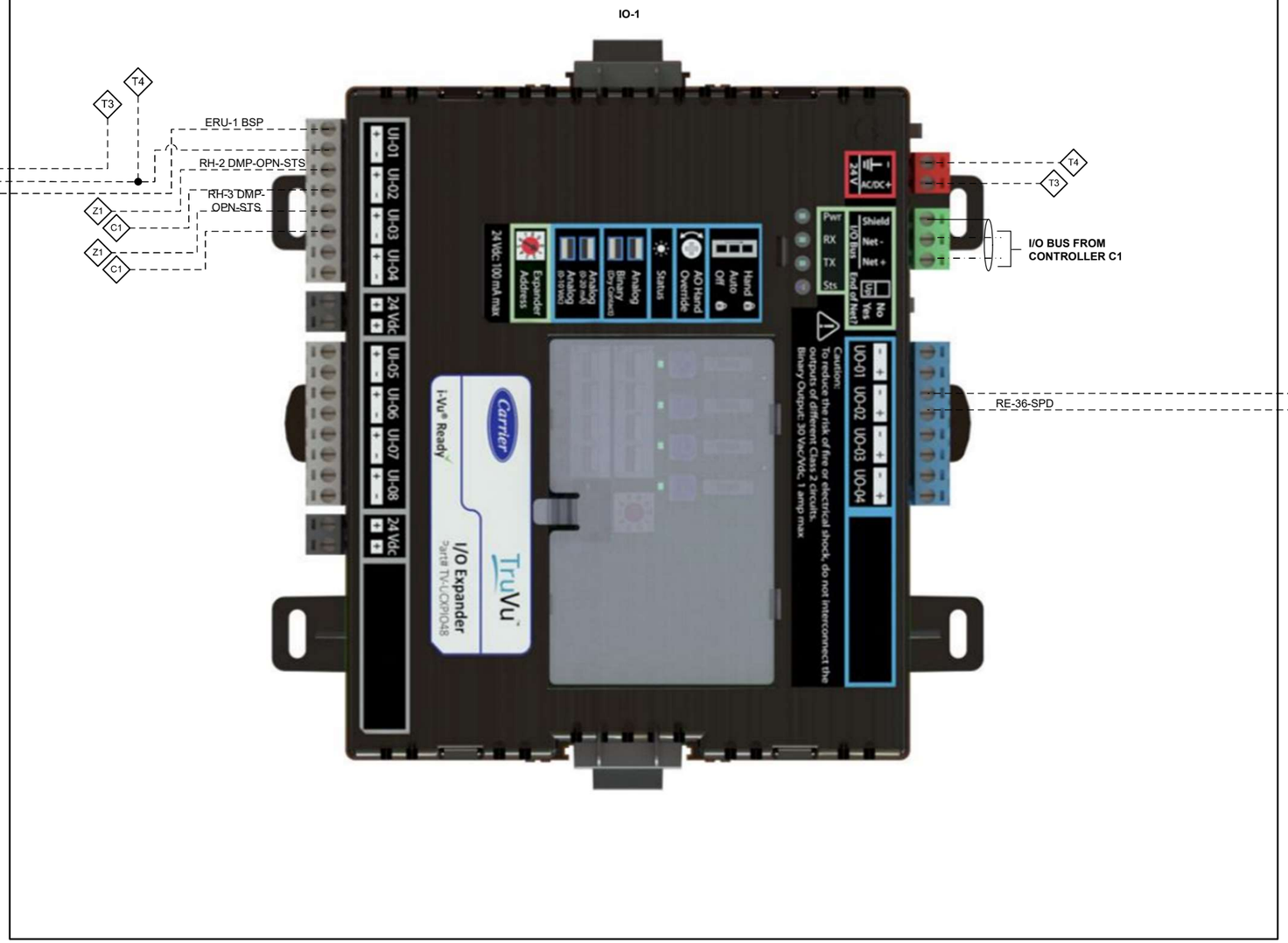
ENERGY RECOVERY UNIT WIRING DIAGRAM PAGE 2

CP-3 CONTD.



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							ENERGY RECOVERY UNIT WIRING DIAGRAM PAGE 2
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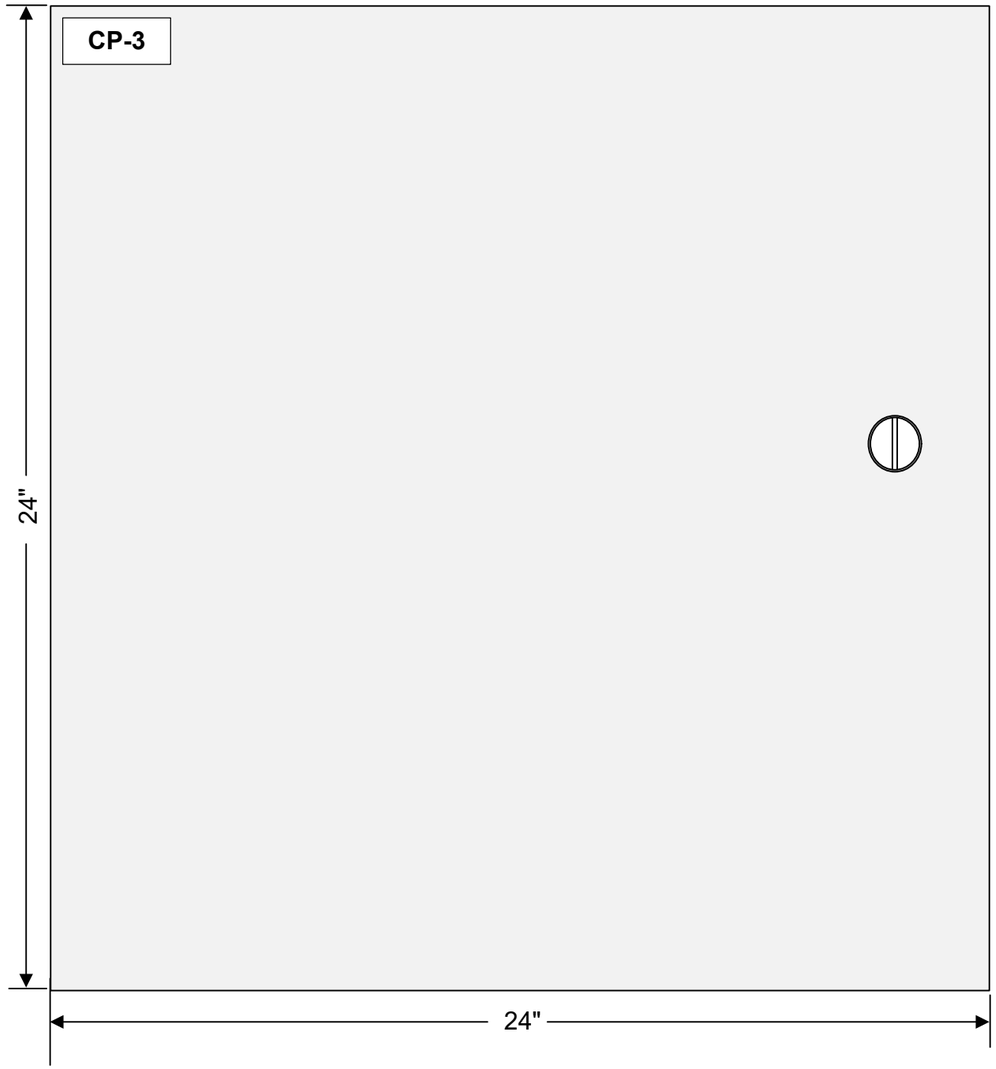
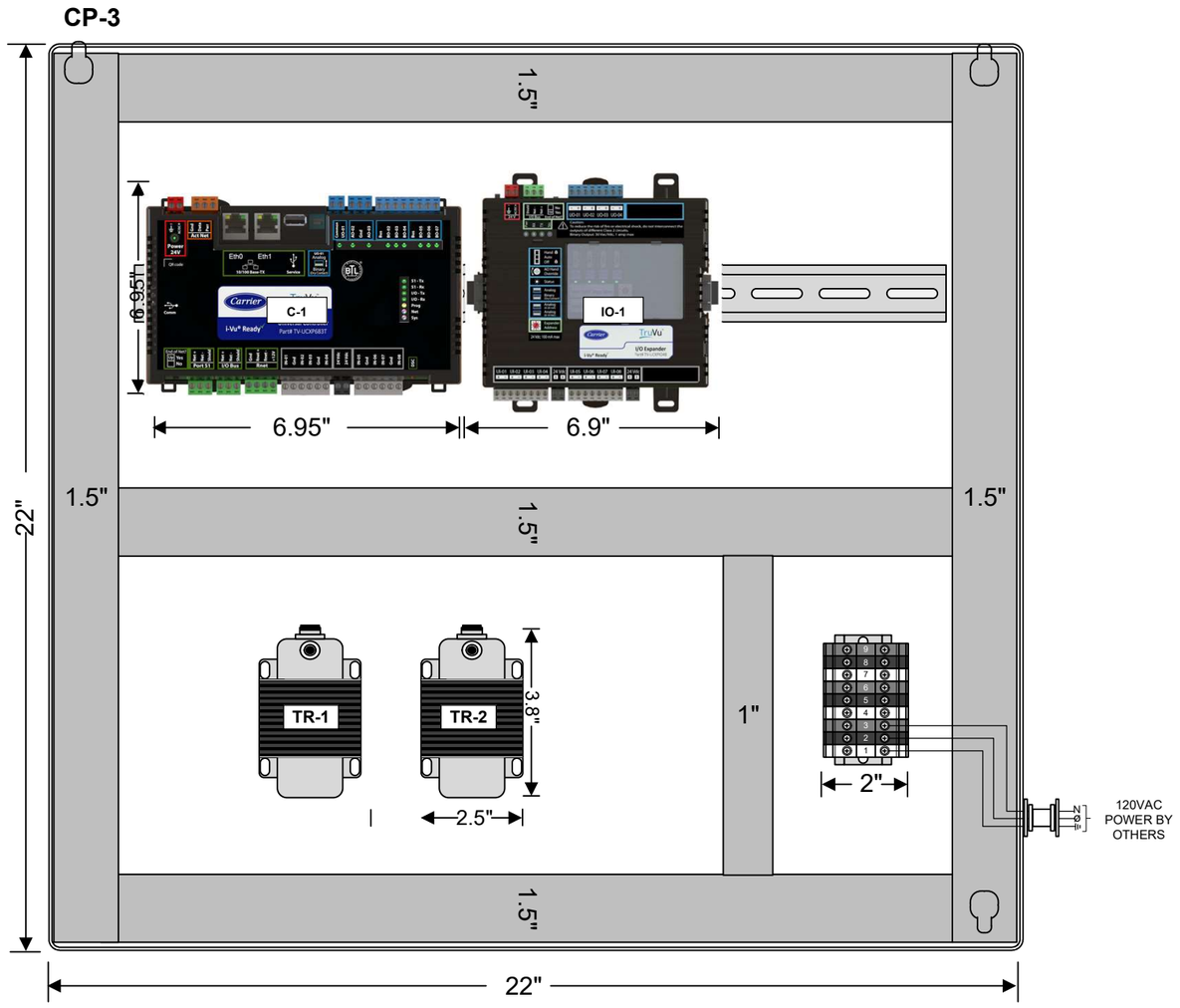
ENERGY RECOVERY UNIT PANEL LAYOUT





LOCATION: UNOCCUPIED EQUIPMENT PLATFORM 200

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							ENERGY RECOVERY UNIT PANEL LAYOUT
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 43 of 124
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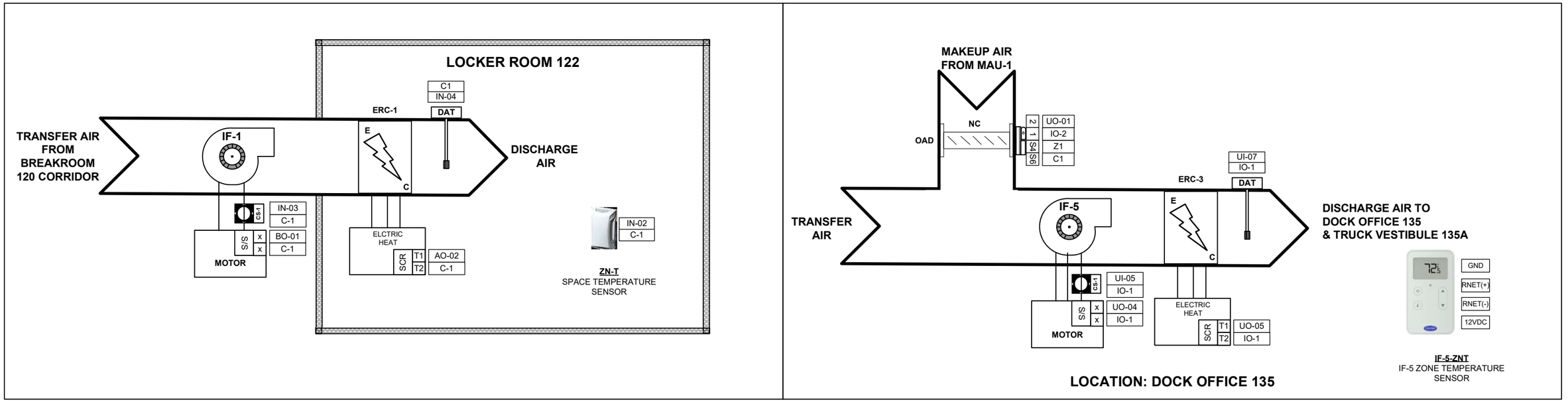
ENERGY RECOVERY UNIT BILL OF MATERIAL

ERU BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-UCXP683T	1	supports direct connection or daisy chain topologies using BACnet/IP and 17 points of onboard control	Carrier
2	I/O Module	IO-1	TV-UCXPIO48	1	8 inputs, 4 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	Duct Temperature Sensor	SAT	A/CP-D-12"-PB	1	10K Type II Thermistor, Duct, 12", Plastic Enclosure	ACI
4	Duct Temperature Sensor	RAT, EAT	A/CP-D-18"-PB	2	10K Type II Thermistor, Duct, 18", Plastic Enclosure	ACI
5	Current Switch	CS-#	RIBXGTA	5	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
6	Building Static Pressure	BSP	P5-0500-1LX	1	AIR DIFF PRESS XMTR, +/-1.00%, 0-5.00" WC, FLD SEL OUT, LCD, DIN RAIL	Senva
7			ZPS-ACC01-86	1	2 x 4 Stainless Steel Wall Plate with Static Pickup	Bapi
8			ZPS-ACC10-V	1	Rooftop or Wall Mount Outside Air Pressure Pickup Port	Bapi
9	Field Relay	R-#	RIBU1C	5	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
10	Transformer	TR-1, 2	TR100VA001	2	Transformer 96 VA, 120 to 24 Vac, Circuit Breaker, Foot and Single Threaded Hub Mount	Functional Devices
11	Subpanel	CP-3	SCE-24N24MP	1	Enclosure - 22 x 22 x 0.88 - Steel/Gray	Saginaw
12	Control Panel	CP-3	SCE-24N2408LP	1	N1 Panel - 24 x 24 x 8 - Steel/Gray	Saginaw

IF-1 & 5 SCHEMATIC DIAGRAM



ELECTRIC REHEAT COIL SCHEDULE							
ITEM#	TAG	LOCATION	CFM	MBH	KW	VOLT/PH	MECH. DWG. REF
1	ERC-1	LOCKER ROOM 122	550	4.3	1.5	480/3	H1.1A
2	ERC-3	DOCK OFFICE 135	400	10.4	3.5	480/3	H1.1B

INLINE FAN SCHEDULE								
ITEM#	TAG	LOCATION	AREA SERVED	CFM	RPM	VOLT/C/PH	TERMINATED TO	MECH. DWG. REF.
1	IF-1	NEAR LOCKER ROOM 122	LOCKERS	550	1651	115/60/1	VAVR-10	H1.1A
2	IF-5	DOCK OFFICE 135	DOCK OFFICE	400	1585	460/60/3	IF-4	H1.1B

INLINE FAN-1 & 5 BILL OF MATERIAL						
Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Space Temprature Sensor	ZN-T	A/CP-R2	1	Room Temperature Sensor, Designer, 10K Type II Thermistor	Functional Devices
2	Zone Temperature	ZN-T	ZS2P-CAR	1	ZS pro Rnet communication sensor with display	Carrier
3	Duct Temperature Sensor	DAT-#	A/CP-D-8-PB	2	Thermistor, Duct, 10K Ω (Type II), 8, Plastic Box	ACI
4	Current Switch	CS-#	RIBXGTA	2	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
5	Field Relay	FR-#	RIBU1C	3	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

NOTES:
1. IF-1 IS WIRED TO VAVR-10 CONTROLLER.
2. IF-5 IS WIRED TO CP-4.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							IF-1 & 5 SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 45 of 124
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IF-1 & 5 SEQUENCE OF OPERATION

INLINE FAN SEQUENCE OF OPERATION:

A. IF-1: PROVIDE SIGNAL TO TURN ON FAN DURING OCCUPIED CYCLE OF AHU-1.

B. IF-5: PROVIDE OCCUPIED/UNOCCUPIED SIGNAL TO START AND STOP UNIT.

ELECTRIC REHEAT COILS SEQUENCE OF OPERATION:

1. PROVIDE ROOM TEMPERATURE SENSOR WITH SETPOINT ADJUSTMENT, TEMPERATURE READOUT, SETPOINT INDICATION. SENSOR ONLY WITH NO READOUT IN LOCKER ROOMS.
2. PROVIDE SEPARATE UNOCCUPIED / OCCUPIED SETPOINTS AS DETERMINED BY THE CONTROL OF THE UNIT SUPPLYING THE REHEAT COILS.
3. PROVIDE MODULATING CONTROL OF ELECTRIC REHEAT COIL.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
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PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
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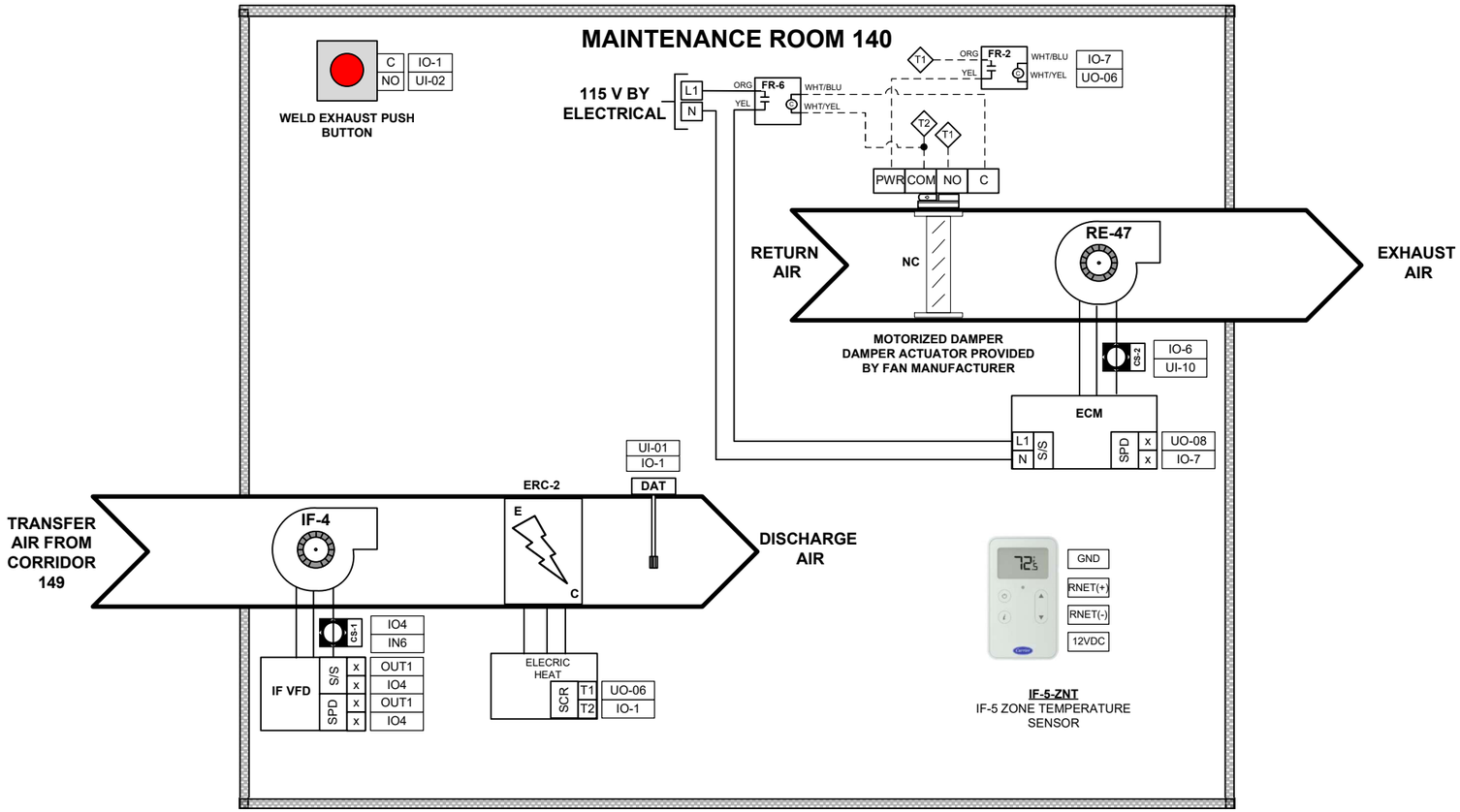
PROJECT: WARABEYA NORTH AMERICA

IF-1 & 5 SEQUENCE OF OPERATION

IF-4 & RE-47 SCHEMATIC DIAGRAM



ELECTRIC REHEAT COIL SCHEDULE							
ITEM#	TAG	LOCATION	CFM	MBH	KW	VOLT/PH	MECH. DWG. REF
1	ERC-2	MAINTENANCE ROOM 140	2000	54.3	16	480/3	H1.1B

INLINE FAN SCHEDULE							
ITEM#	TAG	LOCATION	AREA SERVED	CFM	RPM	VOLT/HZ/PH	MECH. DWG. REF.
1	IF-4	MAINTAINANCE ROOM 140	MAINTENANCE	2000	1131	460/60/3	H1.1B

ROOF EXHAUSTER SCHEDULE							
ITEM#	TAG	AREA SERVED	CFM	FAN RPM	MOTOR HP	VOLT/HZ/PH	MECH. DWG. REF
1	RE-47	MAINTENANCE ROOM 140	2000	943	1/2	115/60/1	H1.3

NOTES:
1. RE-47 IS SINGLE PHASE FAN AND DO NOT COME WITH VFD/ ECM. ENGINEER TO CONFIRM THE SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

IF-4 & RE-47 SCHEMATIC DIAGRAM

JOB #: 23-10265 | PAGE: 47 of 124

IF-4 & RE-47 SEQUENCE OF OPERATION

INLINE FAN SEQUENCE OF OPERATION:

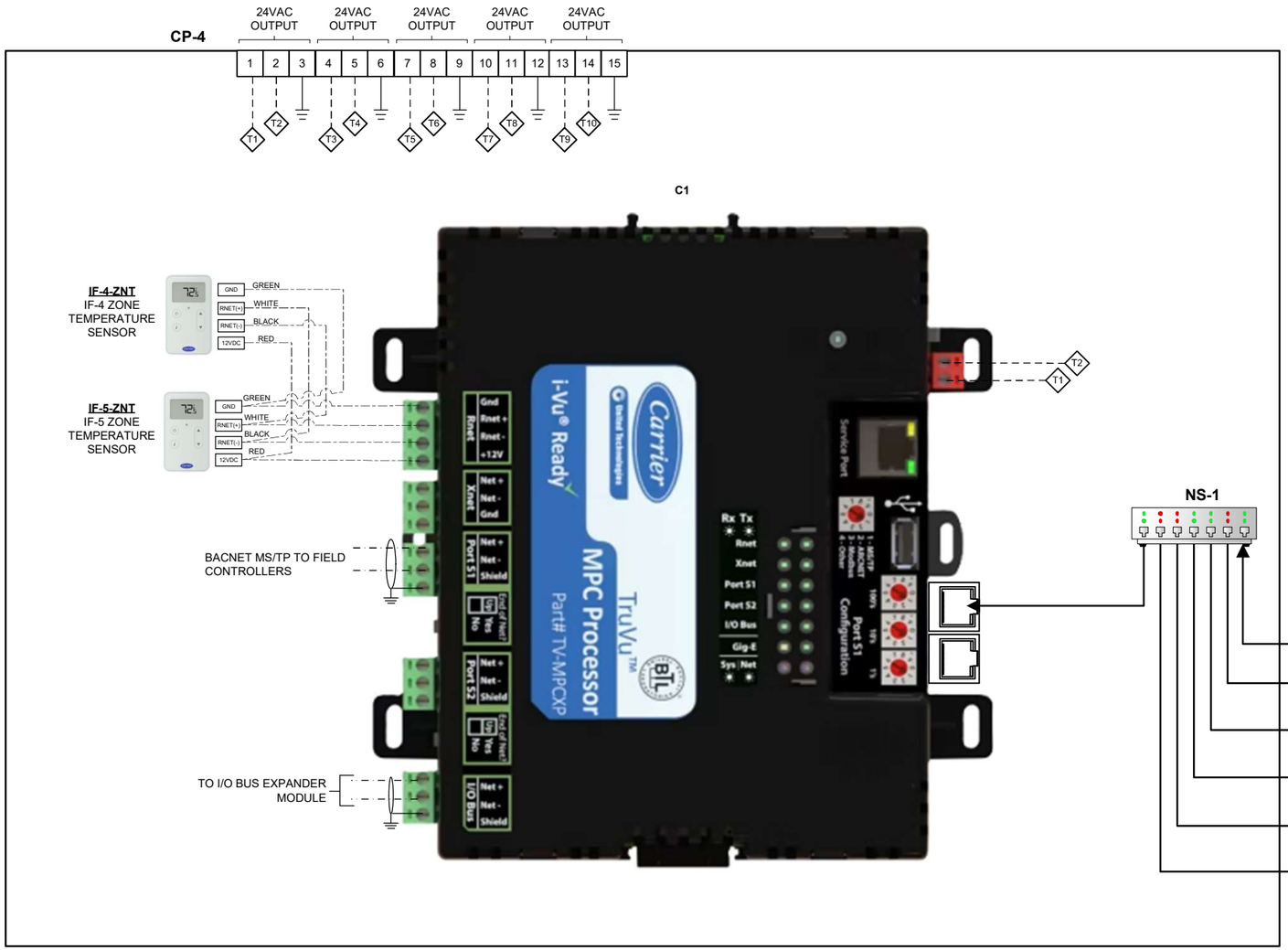
A. IF-4 AND RE-47 (MAINTENANCE ROOM)

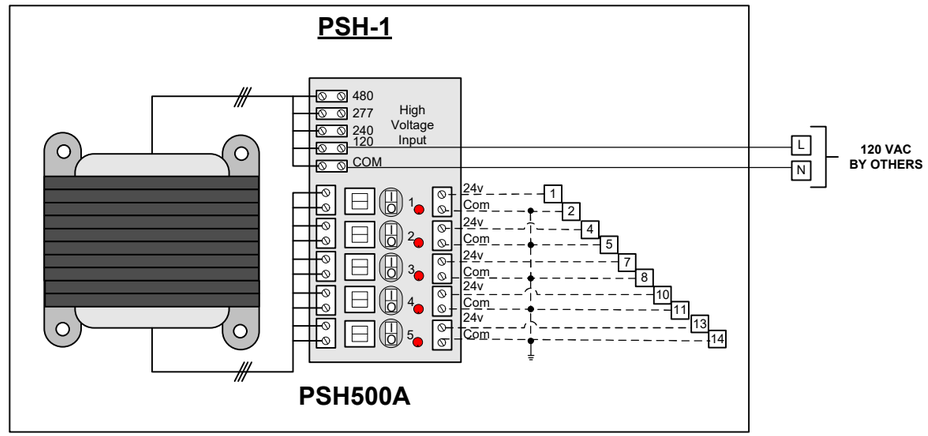
1. PROVIDE TEMPERATURE SENSOR FOR:
    a. ROOM
2. PROVIDE A MOMENTARY CONTACT PUSHBUTTON LABELED “WELD EXHAUST”
3. IF-4 AND RE-47 TO RUN AT MINIMUM SPEED. VARY IF-4 AND RE-47 VFD’S TO MAINTAIN ROOM TEMPERATURE.
4. OVERRIDE FAN SPEED TO 100% FOR (1) HOUR WHEN WELD EXHAUST BUTTON IS PUSHED.

ELECTRIC REHEAT COILS SEQUENCE OF OPERATION:

1. PROVIDE ROOM TEMPERATURE SENSOR WITH SETPOINT ADJUSTMENT, TEMPERATURE READOUT, SETPOINT INDICATION. SENSOR ONLY WITH NO READOUT IN LOCKER ROOMS.
2. PROVIDE SEPARATE UNOCCUPIED / OCCUPIED SETPOINTS AS DETERMINED BY THE CONTROL OF THE UNIT SUPPLYING THE REHEAT COILS.
3. PROVIDE MODULATING CONTROL OF ELECTRIC REHEAT COIL.

IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 1





LOCATION: FIELD TO VERIFY

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						PROJECT: WARABEYA NORTH AMERICA
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 1
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		JOB #: 23-10265 / PAGE: 49 of 124

IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 2

CP-4 CONTD.

IO-1

IF-4-DAT
IF-4 DISCHARGE AIR TEMPERATURE

WELD EXHAUST
WELD EXHAUST PUSH BUTTON

IF-4-STS
IF-4 STATUS

RE-47-STS
RE-47 STATUS

CEF-2-STS
CABINET EXHAUST FAN-2 STATUS

IF-5-STS
IF-5 STATUS

IF-5-DAT
IF-5 DISCHARGE AIR TEMPERATURE

UC-132-3-ZN-T
UC-132 SPACE TEMPERATURE

UC-149B-1-ZN-T
UC-149B SPACE TEMPERATURE

UC-139-1-ZN-T
UC-139 SPACE TEMPERATURE

UC-156-1-ZN-T
UC-156 SPACE TEMPERATURE

UC-134-1-ZN-T
UC-134 SPACE TEMPERATURE

IF-4-DAT
WELD EXHAUST
IF-4-STS
RE-47-STS
CEF-2-STS
IF-5-STS
IF-5-DAT
UC-132-3-ZN-T
UC-149B-1-ZN-T
UC-139-1-ZN-T
UC-156-1-ZN-T
UC-134-1-ZN-T

UI-01 UI-02 UI-03 UI-04 24 Vdc UI-05 UI-06 UI-07 UI-08 24 Vdc UI-09 UI-10 UI-11 UI-12

TruVu™ MPC I/O Expander

UO-01 UO-02 UO-03 UO-04 UO-05 UO-06 UO-07 UO-08

FROM PREVIOUS EXPANDER

TO NEXT EXPANDER

IF-4-S/S
RE-47-S/S
CEF-2-S/S
IF-5-S/S
ERC-3-HEAT-CNTRL
ERC-2-HEAT-CNTRL
IF-4-SPD
RE-47-SPD

WHT/YEL
WHT/BLU
FR-1
ORG
YEL
IF-4 VFD

IF-4-S/S
IF-4
START / STOP

WHT/YEL
WHT/BLU
FR-2
ORG
YEL

REFER SCHEMATIC DIAGRAM FOR WIRING DETAILS

RE-47-S/S
RE-47
START / STOP

115 VAC BY OTHERS

COM
10-30VAC/DC
FR-3
ORG
CEF-2 MOTOR

CEF-2-S/S
CEF-2 START / STOP

WHT/YEL
WHT/BLU
FR-4
ORG
YEL
IF-5 MOTOR

IF-5-S/S
IF-5
START / STOP

***FIELD TO COORDINATE WIRING**

ELECTRIC HEAT

ERC-3-HEAT-CNTRL
ERC-3 HEAT
CONTROL

ELECTRIC HEAT

ERC-2-HEAT-CNTRL
ERC-2 HEAT
CONTROL

IF-4 VFD

IF-4-SPD
IF-4
SPEED CONTROL

RE-47 ECM

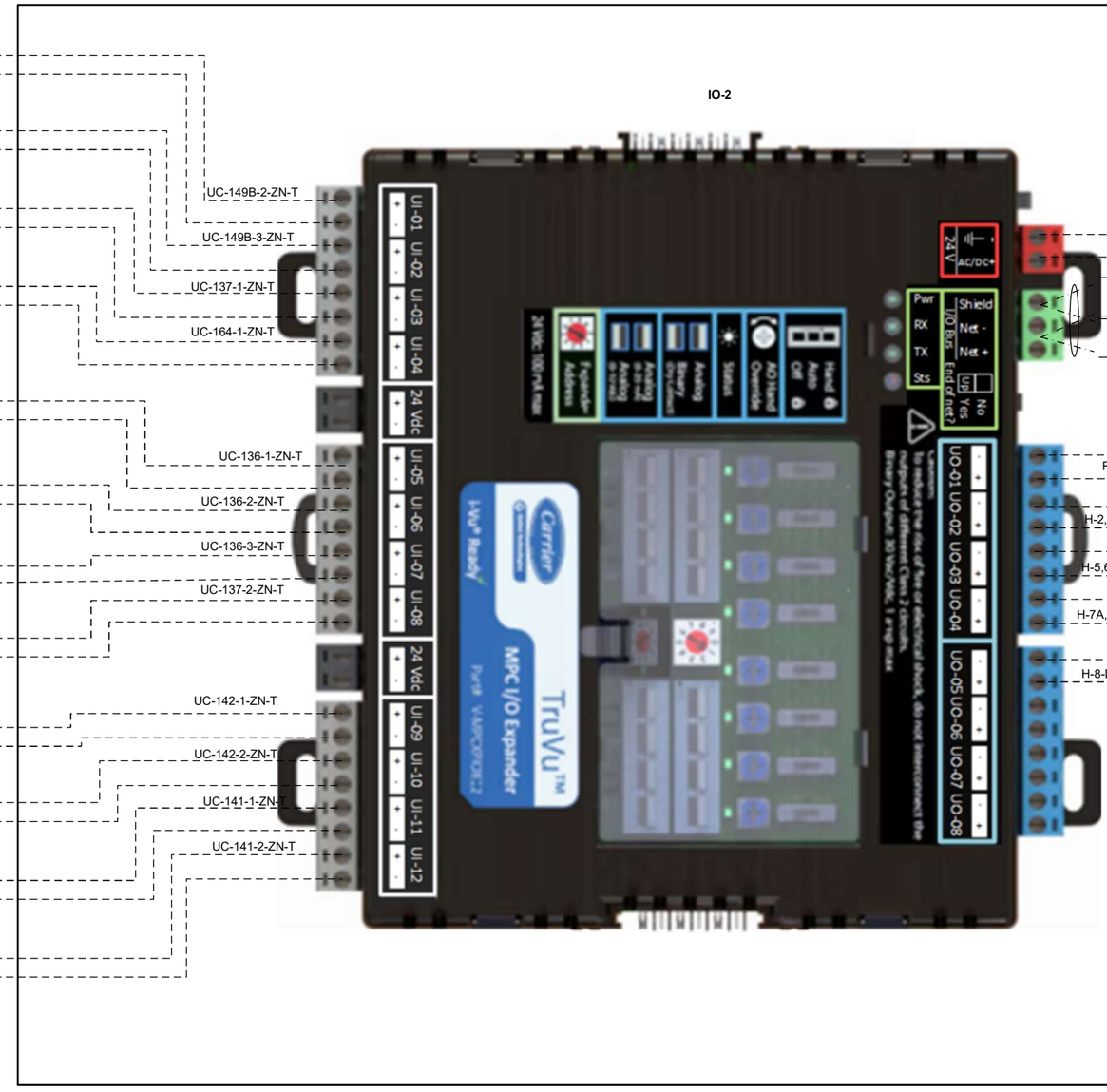
RE-47-SPD
RE-47
SPEED CONTROL

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						PROJECT: WARABEYA NORTH AMERICA
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 2
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		JOB #: 23-10265 / PAGE: 50 of 124

IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 3

CP-4 CONTD.

IO-2



UC-149B-2-ZN-T
UC-149B SPACE TEMPERATURE

UC-149B-3-ZN-T
UC-149B SPACE TEMPERATURE

UC-137-1-ZN-T
UC-137 SPACE TEMPERATURE

UC-164-1-ZN-T
UC-164 SPACE TEMPERATURE

UC-136-1-ZN-T
UC-136 SPACE TEMPERATURE

UC-136-2-ZN-T
UC-136 SPACE TEMPERATURE

UC-136-3-ZN-T
UC-136 SPACE TEMPERATURE

UC-137-2-ZN-T
UC-137 SPACE TEMPERATURE

UC-142-1-ZN-T
UC-142 SPACE TEMPERATURE

UC-142-2-ZN-T
UC-142 SPACE TEMPERATURE

UC-141-1-ZN-T
UC-141 SPACE TEMPERATURE

UC-141-2-ZN-T
UC-141 SPACE TEMPERATURE

UC-149B-2-ZN-T
UC-149B-3-ZN-T
UC-137-1-ZN-T
UC-164-1-ZN-T
UC-136-1-ZN-T
UC-136-2-ZN-T
UC-136-3-ZN-T
UC-137-2-ZN-T
UC-142-1-ZN-T
UC-142-2-ZN-T
UC-141-1-ZN-T
UC-141-2-ZN-T

T5 T6

FROM PREVIOUS EXPANDER

TO NEXT EXPANDER

RH-2 DMP
H-2,3,4-DMP-CNTRL
H-5,6-DMP-CNTRL
H-7A,7B-DMP-CNTRL
H-8-DMP-CNTRL

120 VAC BY OTHERS

L N

C1 Z1

WHT/YEL
WHT/BLU
ORG
YEL

FR-5 1 2 S4 S6

IF-5-OAD-DMP-CMD
IF-5 OUTDOOR AIR DAMPER OPEN COMMAND

FR-6 COM SIG

H-2,3,4-DMP-CNTRL
H-2,3,4 RETURN AIR DAMPER CONTROL

FR-7 COM SIG

H-5,6-DMP-CNTRL
H-5,6 RETURN AIR DAMPER CONTROL

FR-8 COM SIG

H-7A,7B-DMP-CNTRL
H-7A,7B RETURN AIR DAMPER CONTROL

FR-9 COM SIG

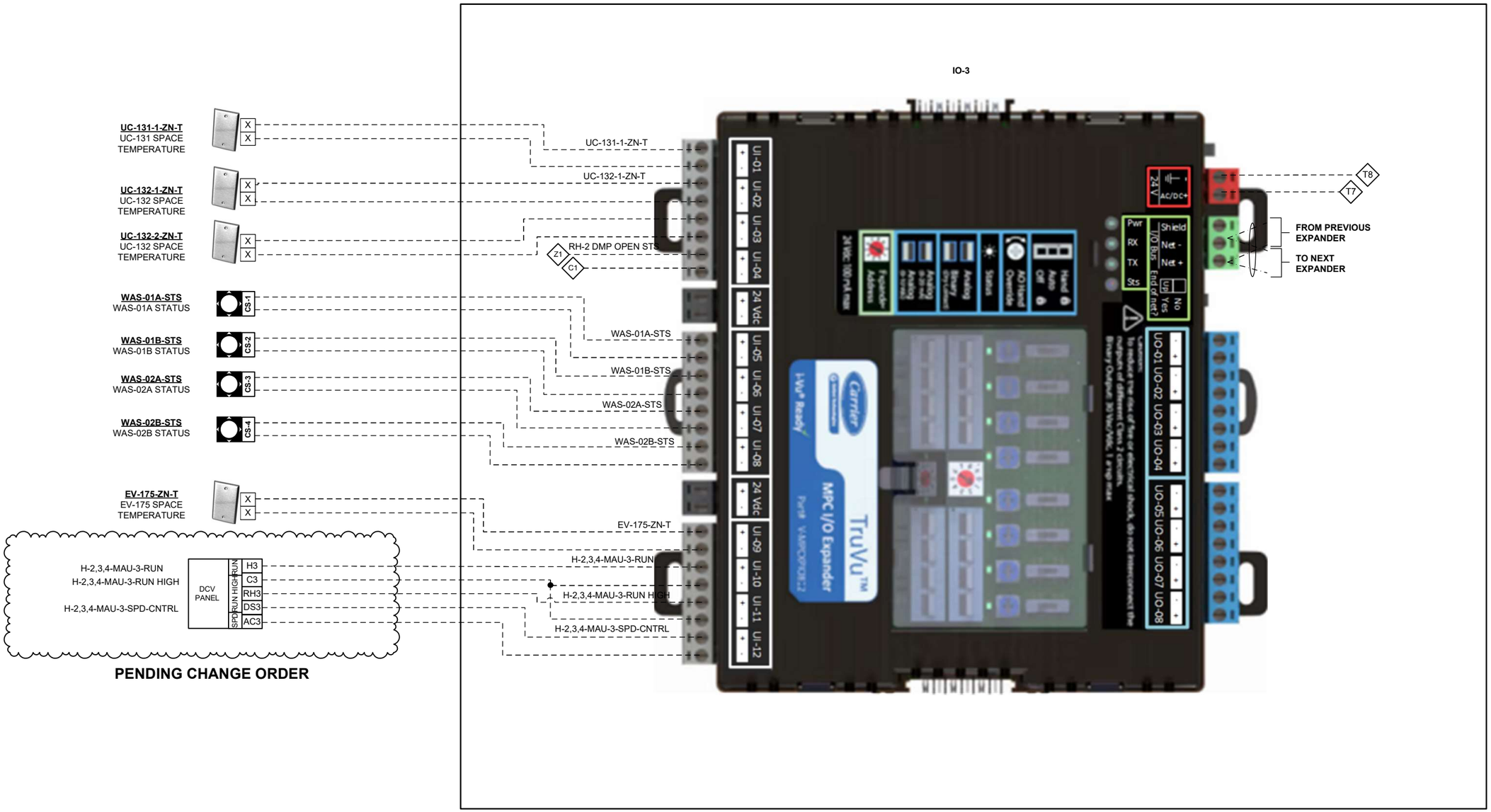
H-8-DMP-CNTRL
H-8 RETURN AIR DAMPER CONTROL

PENDING CHANGE ORDER

FACILITY	**WARABEYA NORTH AMERICA**					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	**PROJECT: WARABEYA NORTH AMERICA**
MECH. CONTRACTOR	**MULLINS MECHANICAL**							**IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 3**
ENGINEER	**EXCEL ENGINEERING, INC.**	**0**	**11-19-2024**	**SUBMITTED FOR APPROVAL**	**SS**			**JOB #: 23-10265** / **PAGE: 51 of 124**
ARCHITECT	**EXCEL ENGINEERING, INC.**	**#**	**DATE**	**REVISION DESCRIPTION**	**BY**			

IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 4

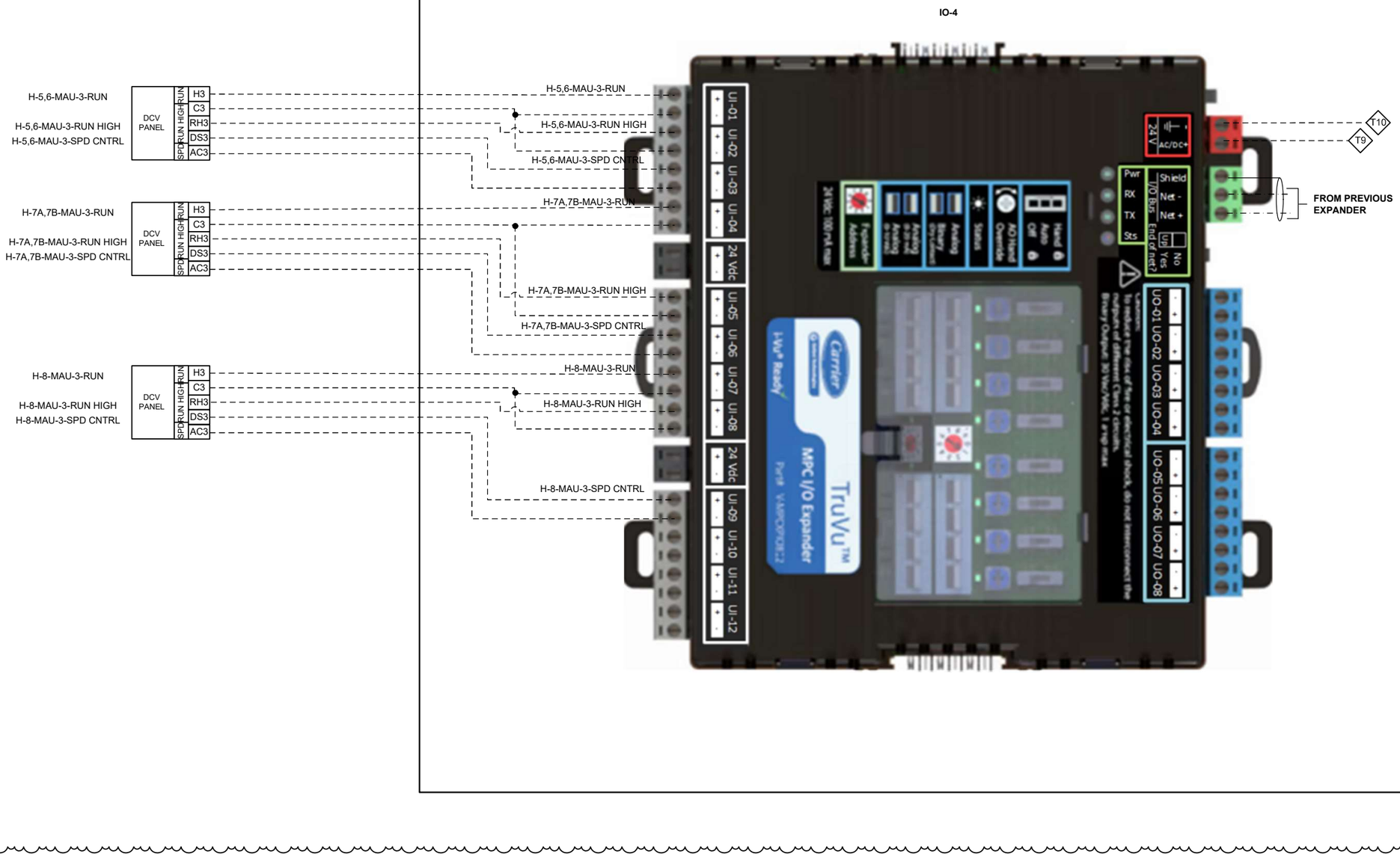
CP-4 CONTD.



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 52 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 5

CP-4.



PENDING CHANGE ORDER

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA	
IF-4, RE-47 & MISC SYSTEM WIRING DIAGRAM PAGE 5	
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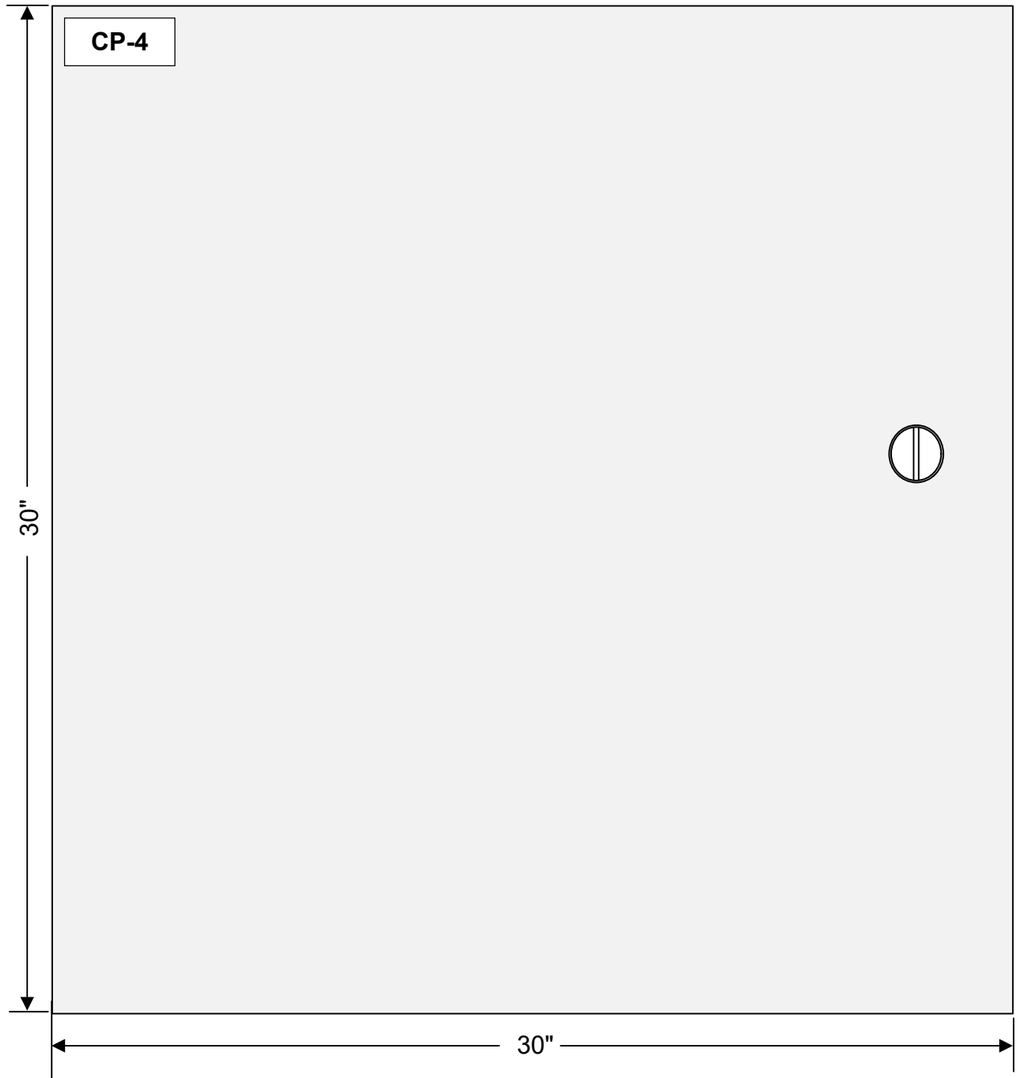
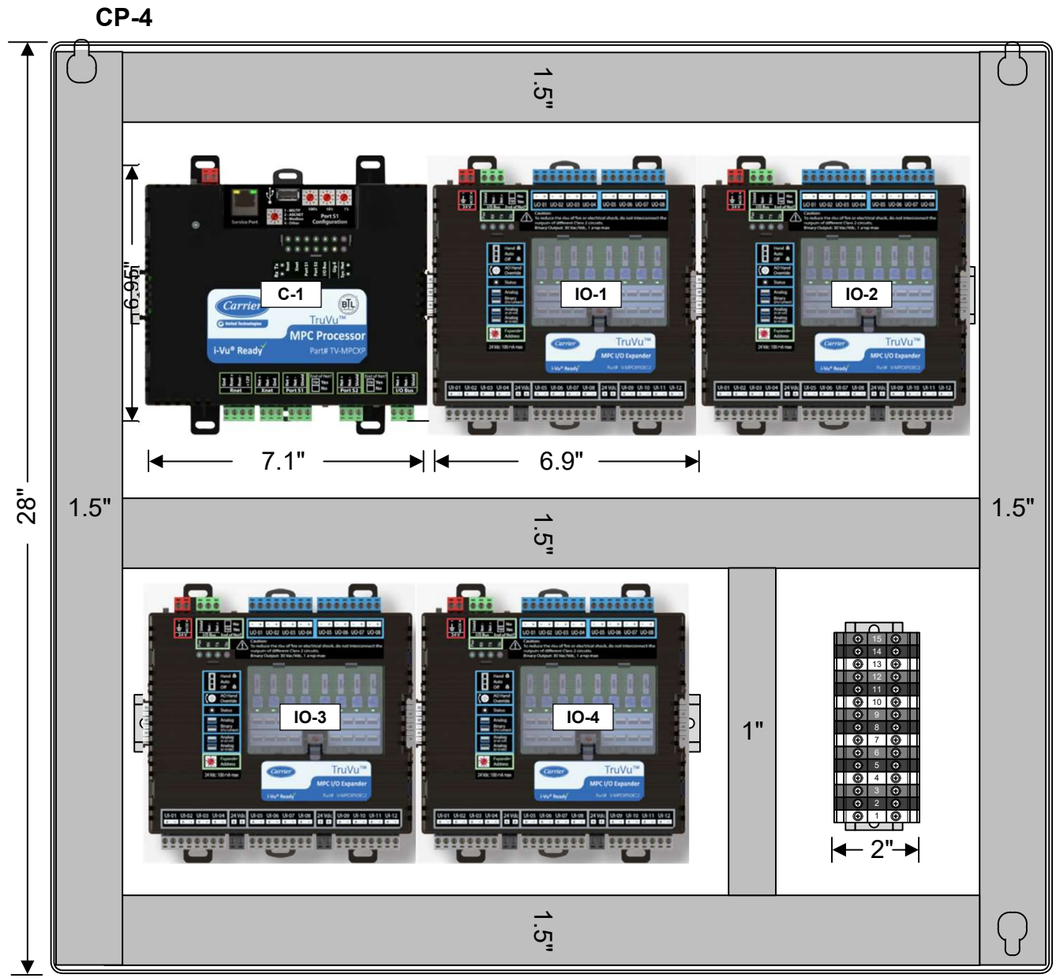
IF-4, RE-47 & MISC SYSTEM WIRING PANEL LAYOUT





LOCATION: MAINTENANCE ROOM 140

NOTES:
1. PANEL LAYOUTS ARE NOT TO THE SCALE.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

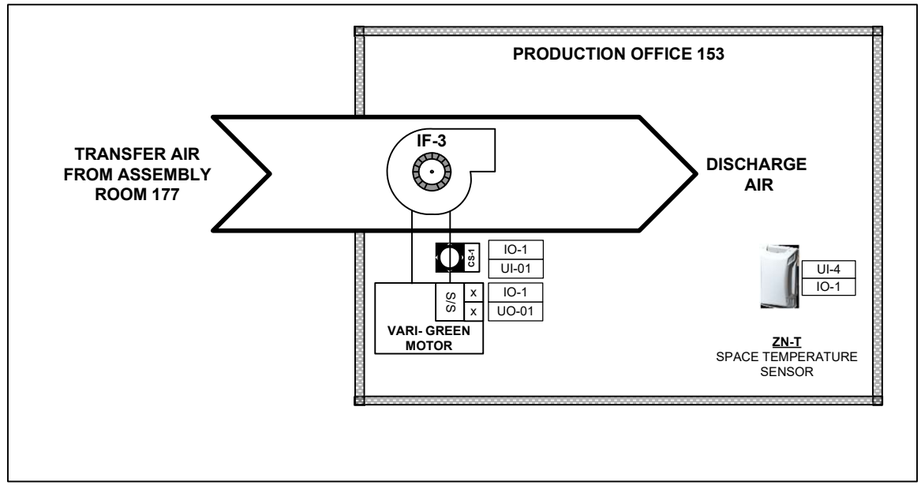
PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

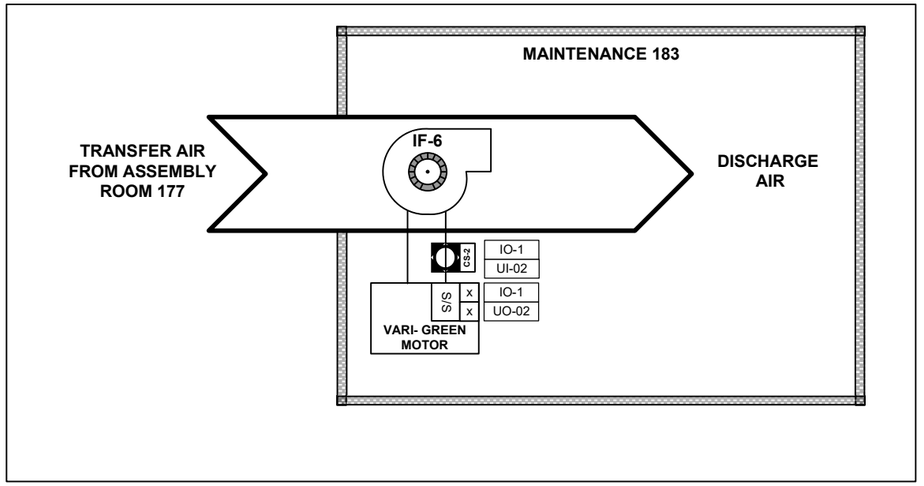
PROJECT: WARABEYA NORTH AMERICA	
IF-4, RE-47 & MISC SYSTEM WIRING PANEL LAYOUT	
JOB #: 23-10265	PAGE: 54 of 124

IF-4, RE-47 & MISC SYSTEM BILL OF MATERIAL

INLINE FAN-4 & ROOF EXHAUSTER-47 BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-MPCXP	1	Support for up to nine TruVu MPC I/O expansion modules and a total of 180 input/output points.	Carrier
2	I/O Module	IO-#	TV-MPCXPIO812	4	12 inputs, 8 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	Network Switch	NS-1	EISK8-100T	1	8 Ports 10/100 Mbps Skorpion switch	Contemporary Controls
4	Zone Temperature	ZN-T	ZS2P-CAR	1	ZS pro Rnet communication sensor with display	Carrier
5	Current Switch	CS-#	RIBXGTA	1	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
6	Current Switch	CS-#	RIBXGTA-ECM	1	Current Switches, Split Core, Fixed, Adjustable, or Self-Calibrated, Up to 150 Amps Sensing Range	Functional Devices
7	Field Relay	R-#	RIBU1C	2	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
8	Field Relay	FR-#	RIBTU1S	1	Pilot Relay, 10 Amp SPST + Override, 10-30 Vac/dc/120 Vac Coil, Hi/Lo Voltage Separation, NEMA 1 Housing	Functional Devices
9	Power Supply	PSH-1	PSH500A	1	Enclosed 100VAx5 multi-tap 120-480 to 24Vac UL Class 2 power supply	Functional Devices
10	Subpanel	CP-#	SCE-30N30MP	1	Enclosure - 28 x 28 x 0.8 - Steel/Gray	Saginaw
11	Control Panel	CP-#	SCE-30N3008LP	1	N1 Panel - 30 x 30 x 08 - Steel/Gray	Saginaw

IF-3 & 6 SCHEMATIC DIAGRAM





INLINE FAN SEQUENCE OF OPERATION:

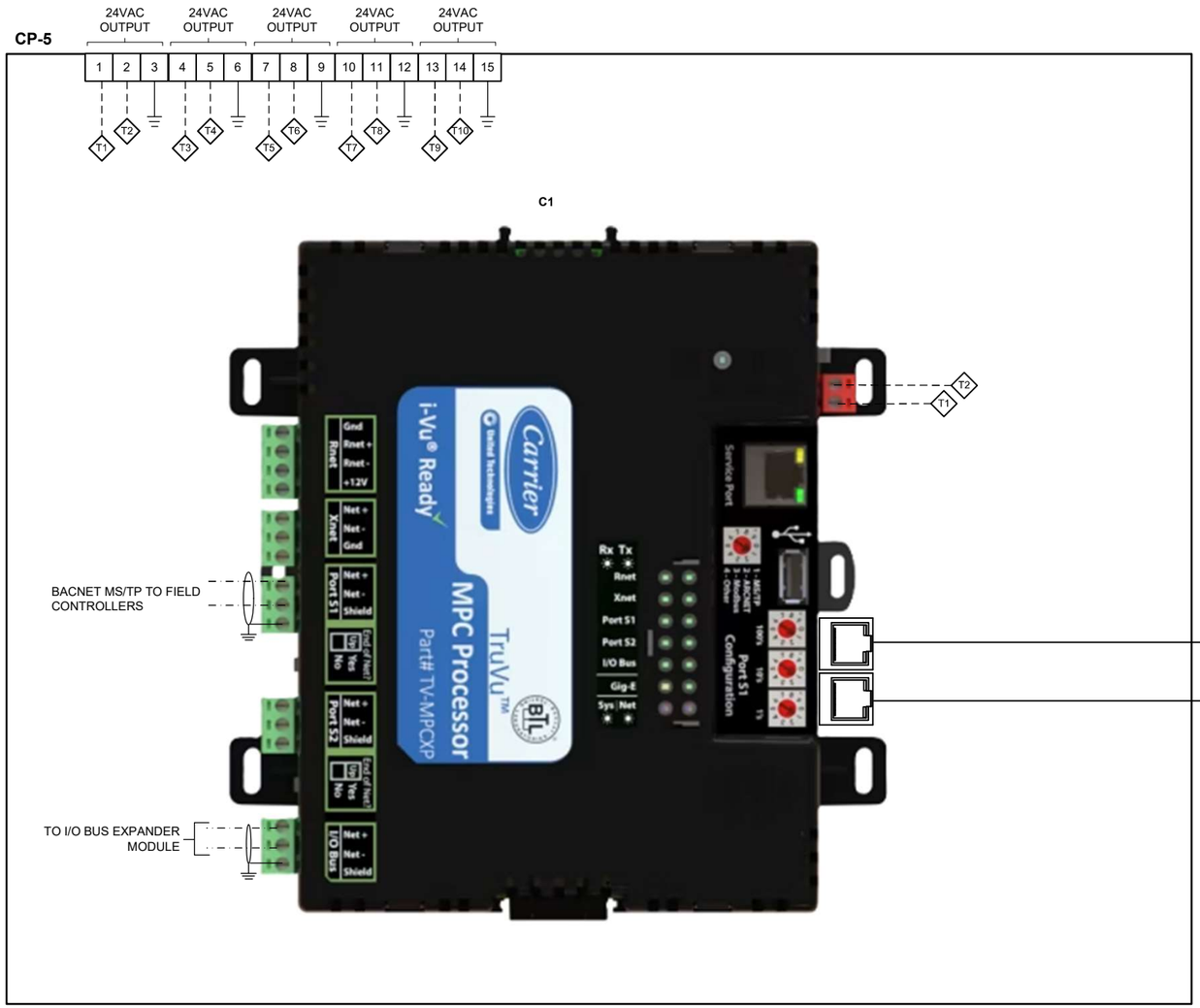
A. INTERLOCK IF-3 & 6 WITH MAU-1 OPERATION.

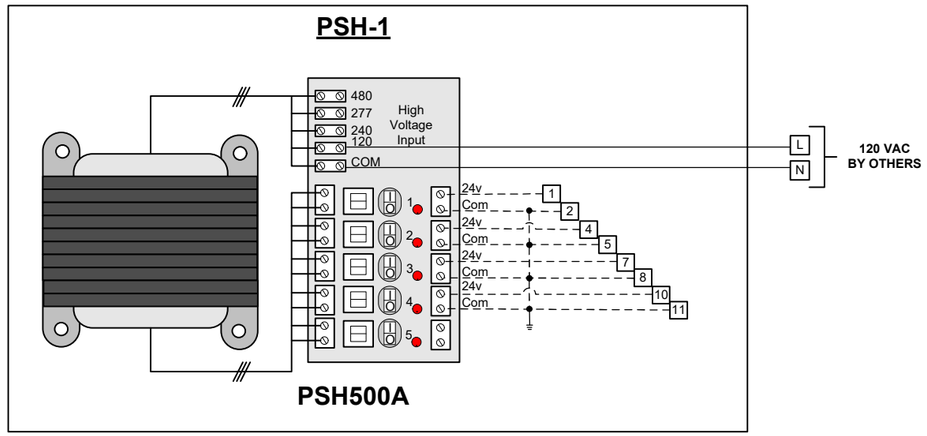
a. TURN OFF IF-3 & 6 WHEN ASSEMBLY ROOM 177 IS IN WASHDOWN.

INLINE FAN SCHEDULE							
ITEM#	TAG	LOCATION	AREA SERVED	CFM	RPM	VOLT/HZ/PH	MECH. DWG. REF.
1	IF-3	PRODUCTION OFFICE 156	PRODUCTION OFFICE	500	854	115/60/1	H1.1D
2	IF-6	MAINT. 183	MAINT.	500	854	115/60/1	H1.1D

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	PRIME BUILDING CONTROLS	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL						800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	IF-3 & 6 SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 56 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 1





LOCATION: FIELD TO VERIFY

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

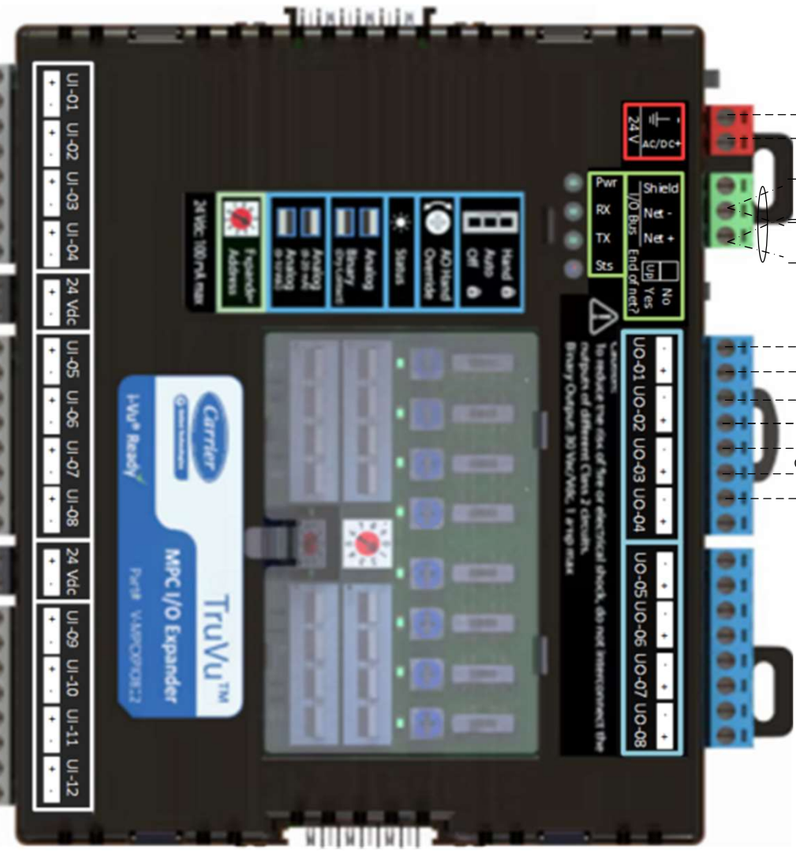
IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 1

JOB #: 23-10265 | PAGE: 57 of 124

IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 2

CP-5 CONTD.

IO-1



IF-3-STS
IF-3
STATUS

IF-6-STS
IF-6
STATUS

CEF-1-STS
CABINET EXHAUST
FAN-1 STATUS

IF-3-ZN-T
SPACE TEMPERATURE
SENSOR

DEL-WAS-01A-STS
WAS-01A STATUS

DEL-WAS-01B-STS
WAS-01B STATUS

DEL-BWM-01A-STS
BWM-01A STATUS

DEL-BWM-01B-STS
BWM-01B STATUS

UC-152A-2-ZN-T
UC-152A SPACE
TEMPERATURE

UC-152B-1-ZN-T
UC-152B SPACE
TEMPERATURE

UC-152B-2-ZN-T
UC-152B SPACE
TEMPERATURE

UC-152C-1-ZN-T
UC-152C SPACE
TEMPERATURE

IF-3-STS
IF-6-STS
CEF-1-STS
IF-3-ZN-T
DEL-WAS-01A-STS
DEL-WAS-01B-STS
DEL-BWM-01A-STS
DEL-BWM-01B-STS
UC-152A-2-ZN-T
UC-152B-1-ZN-T
UC-152B-2-ZN-T
UC-152C-1-ZN-T

T3 T4

FROM PREVIOUS EXPANDER

TO NEXT EXPANDER

IF-3-S/S
IF-6-S/S
CEF-1-S/S

T3 T4

115 VAC BY OTHERS

WHT/YEL
WHT/BLU
FR-1 ORG YEL
IF-3 VARI-GREEN MOTOR

IF-3-S/S
IF-3
START / STOP

115 VAC BY OTHERS

WHT/YEL
WHT/BLU
FR-2 ORG YEL
IF-6 VARI-GREEN MOTOR

IF-6-S/S
IF-6
START / STOP

115 VAC BY OTHERS

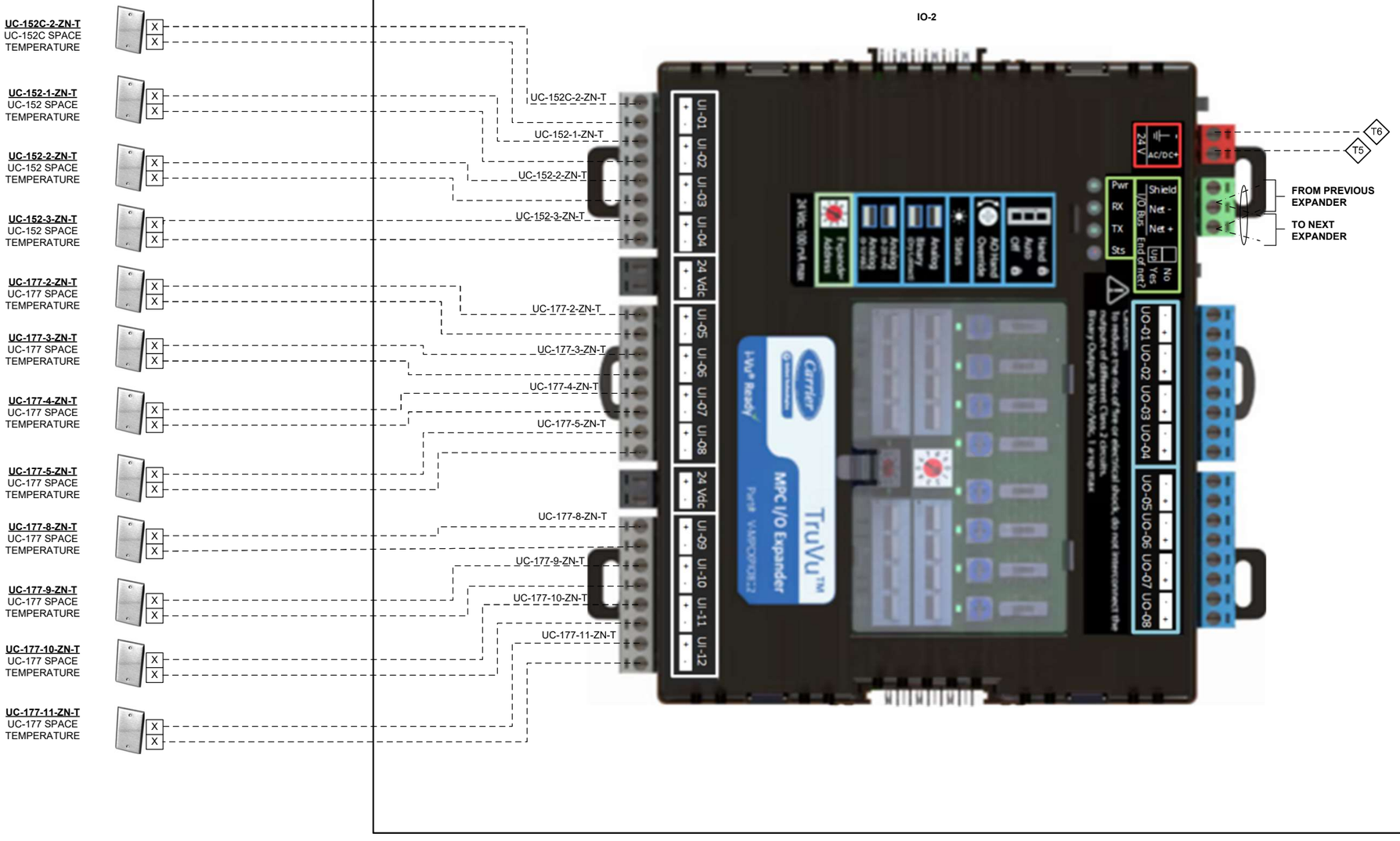
COM
10-30VAC/DC
FR-3 ORG ORG
CEF-1 MOTOR

CEF-1-S/S
CABINET EXHAUST FAN-1
START / STOP

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA	
MECH. CONTRACTOR	MULLINS MECHANICAL							IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 2	
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265	PAGE: 58 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY				

IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 3

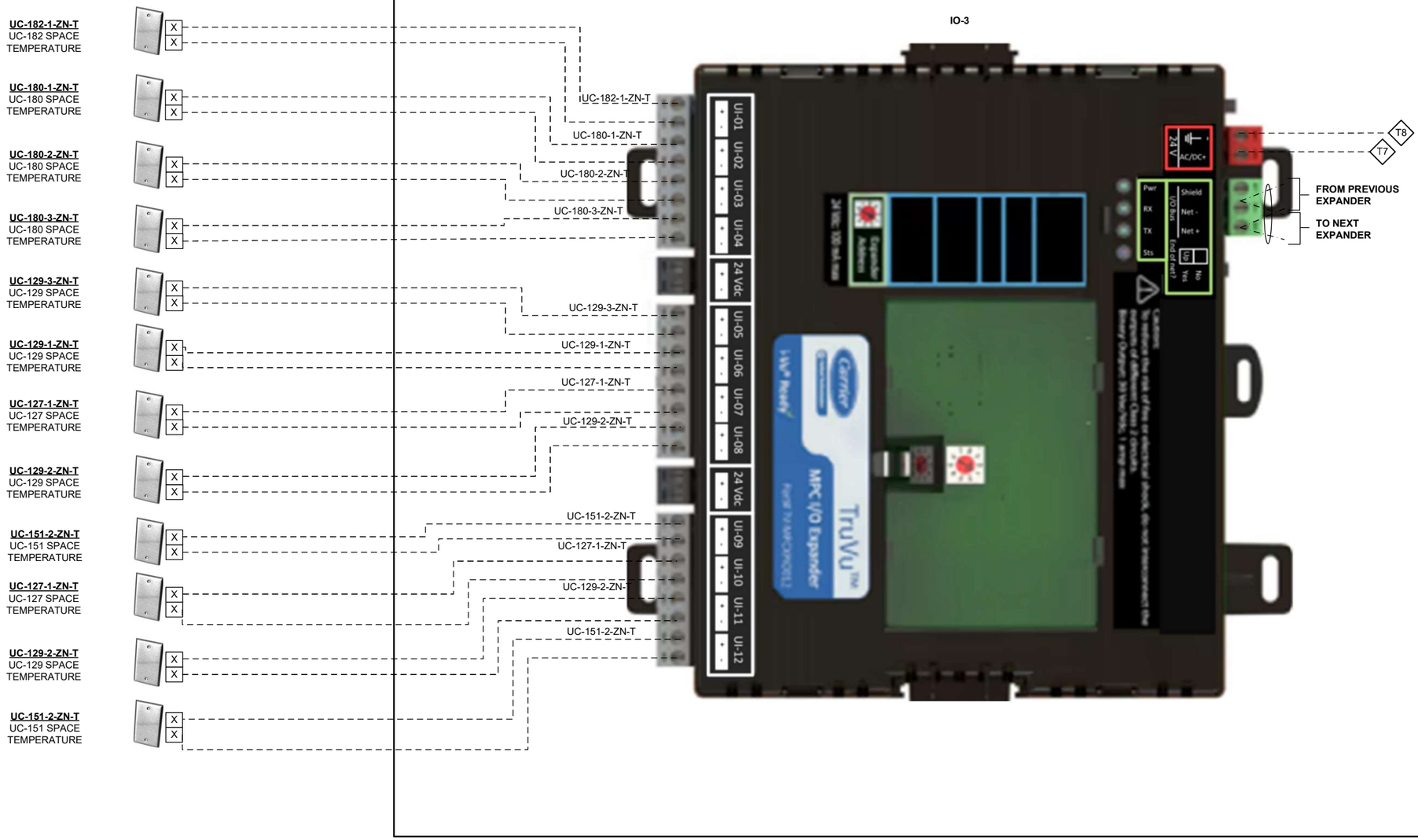
CP-5 CONTD.



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 3
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 59 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 4

CP-5.

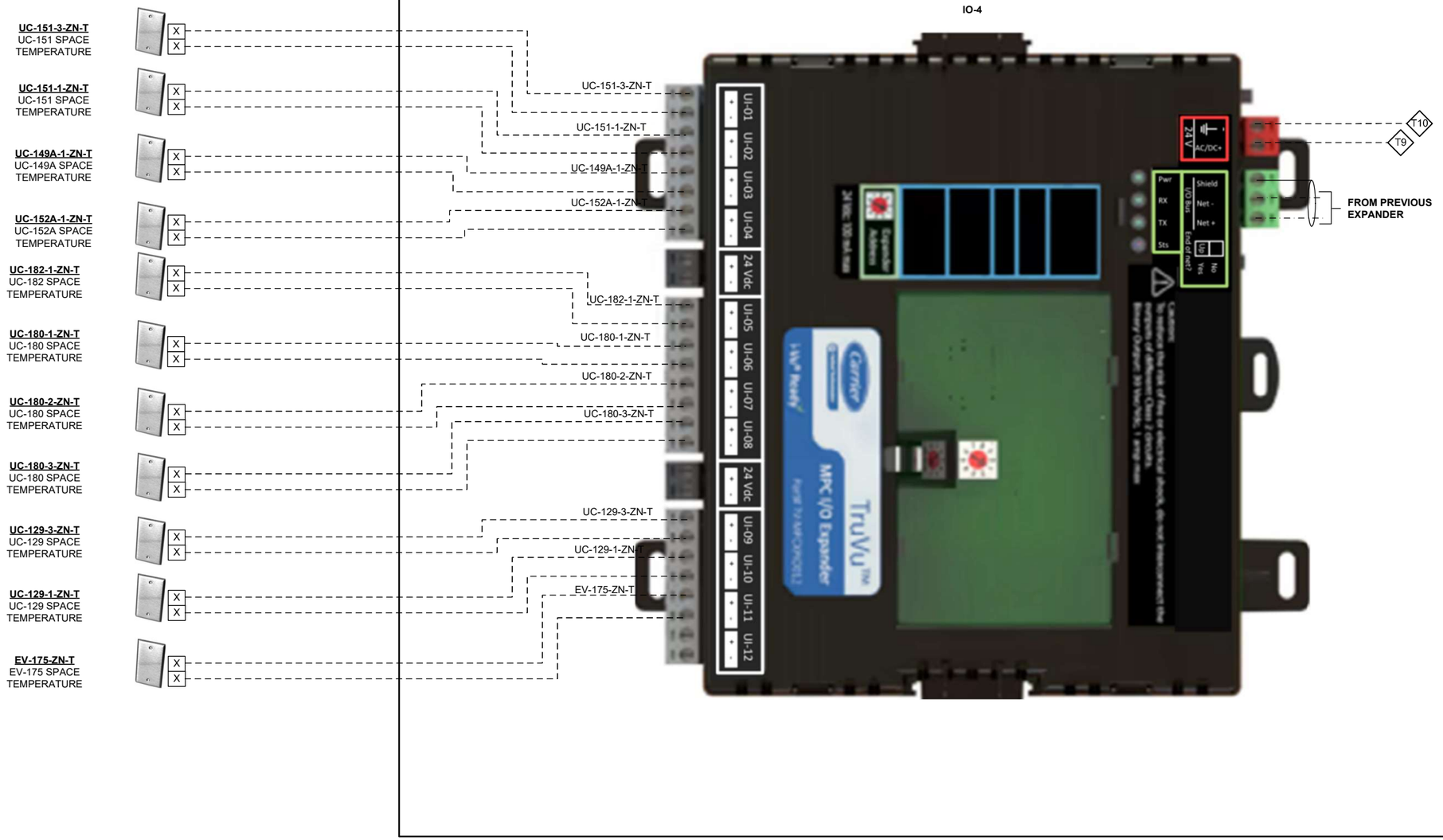


FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 60 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 5

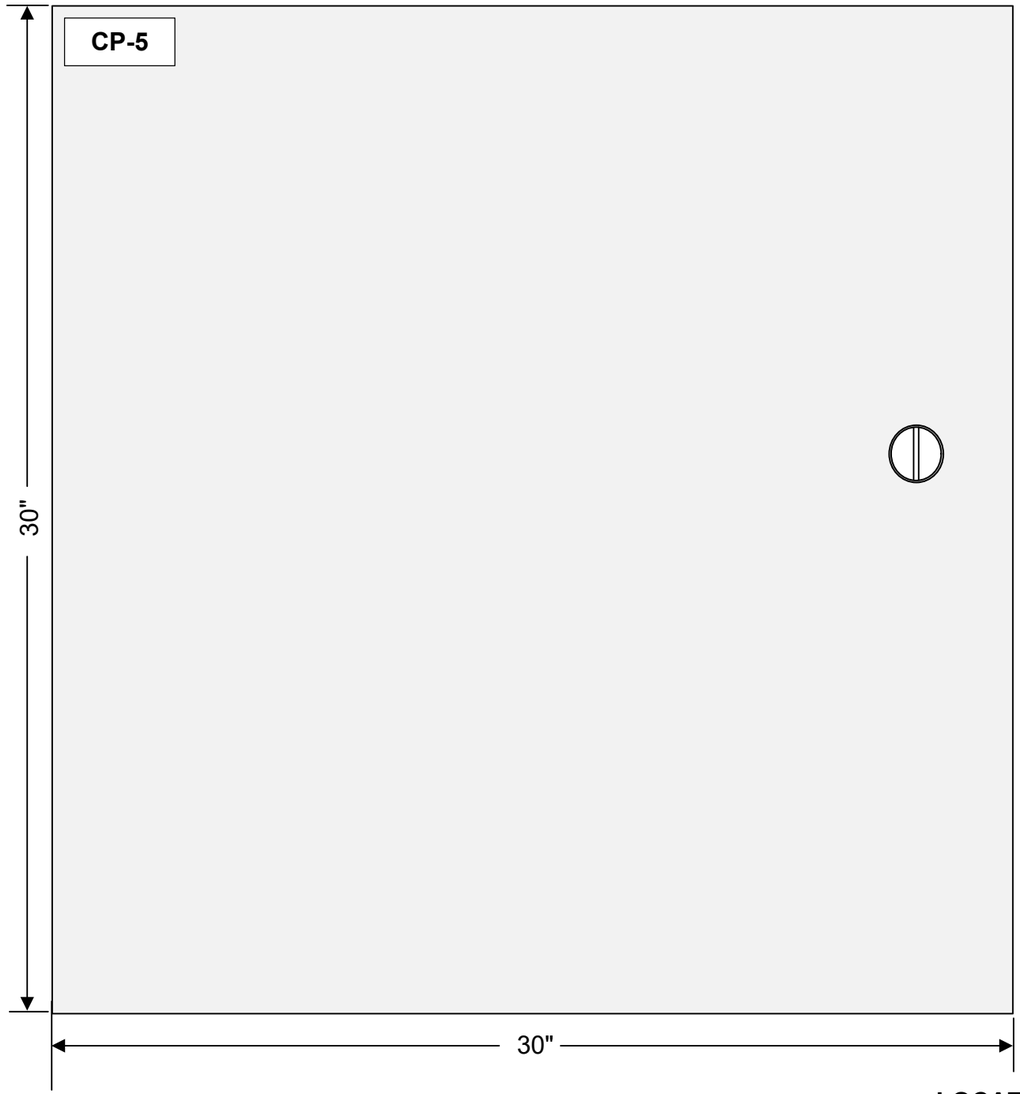
CP-5.

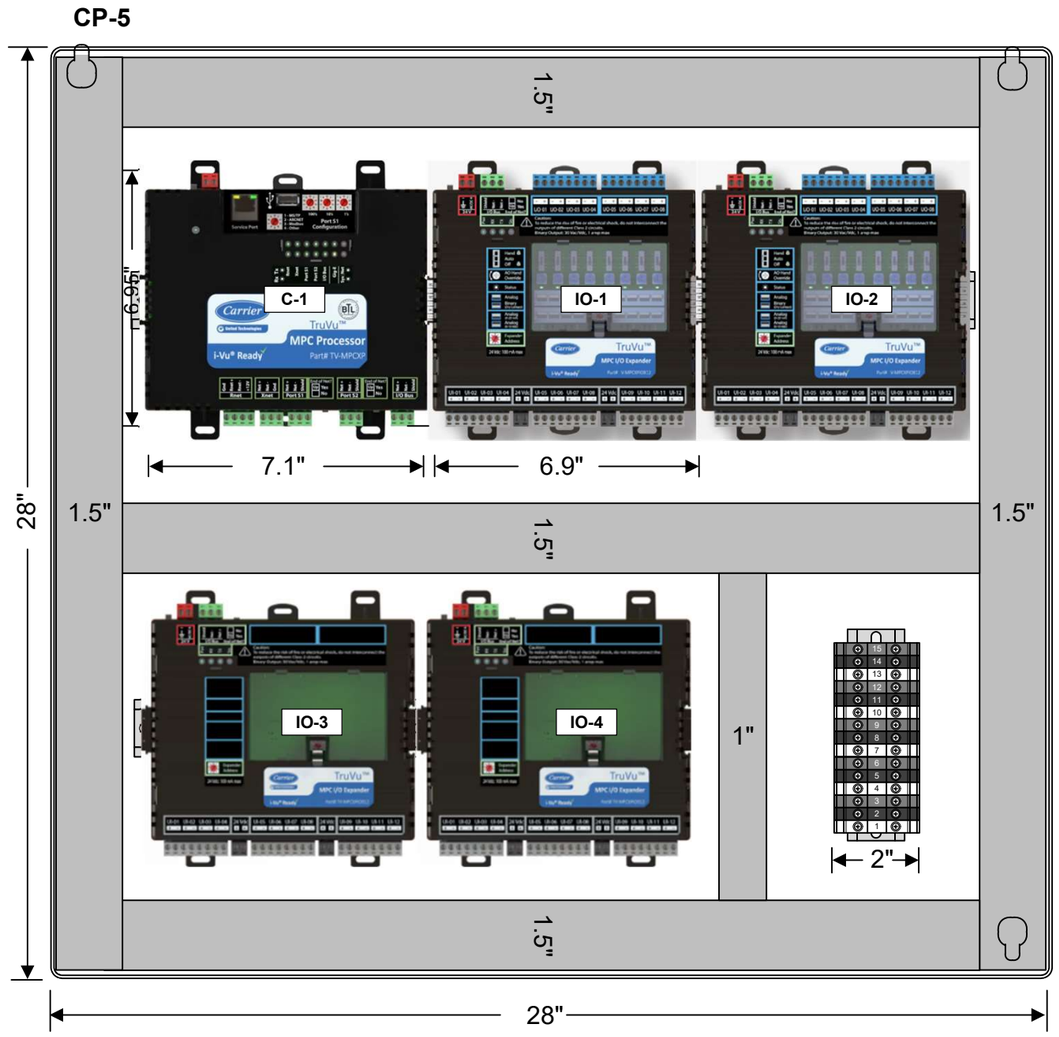
IO-4



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							IF-3, 6 & MISC SYSTEM WIRING DIAGRAM PAGE 5
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 61 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

IF-3,6 & MISC SYSTEM PANEL LAYOUT





LOCATION: JC154

NOTES:
1. PANEL LAYOUTS ARE NOT TO THE SCALE.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

IF-3,6 & MISC SYSTEM PANEL LAYOUT

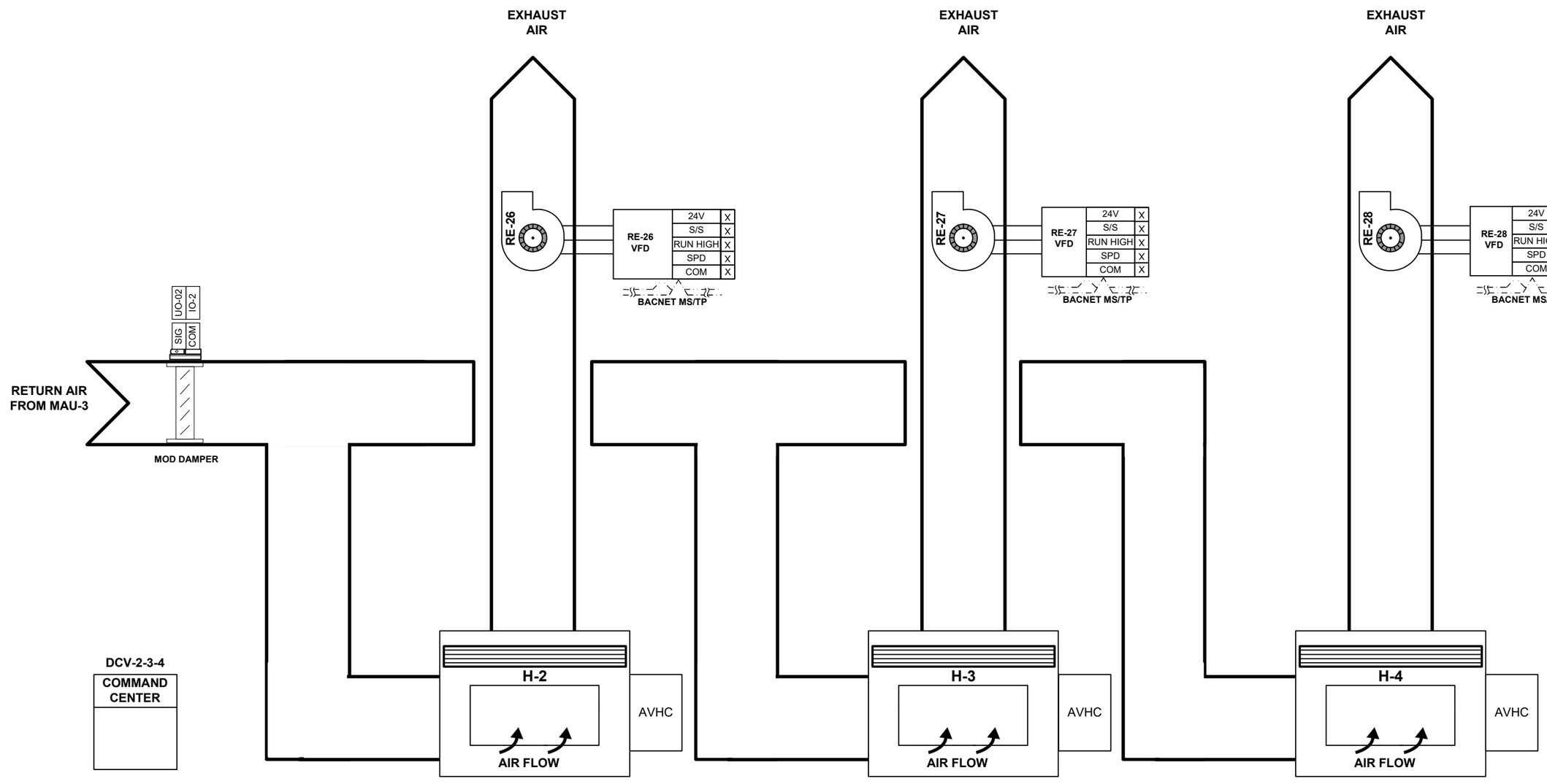
JOB #: 23-10265 | PAGE: 62 of 124

IF-3,6 & MISC SYSTEM BILL OF MATERIAL

INLINE FAN-3 & 6 BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-MPCXP	1	Support for up to nine TruVu MPC I/O expansion modules and a total of 180 input/output points.	Carrier
2	I/O Module	IO-#	TV-MPCXPIO812	2	12 inputs, 8 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	I/O Module	IO-#	TV-MPCXPIO012	2	12 inputs 6.9 X 6.95 X 2.09 in.	Carrier
4	Space Temperature Sensor	ZN-T	A/CP-R2	1	Room Temperature Sensor, Designer, 10K Type II Thermistor	Functional Devices
5	Current Switch	CS-#	RIBXGTA	2	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
6	Field Relay	FR-#	RIBU1C	2	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
7	Power Supply	PSH-1	PSH500A	1	Enclosed 100VAx5 multi-tap 120-480 to 24Vac UL Class 2 power supply	Functional Devices
8	Subpanel	CP-5	SCE-30N30MP	1	Enclosure - 28 x 28 x 0.8 - Steel/Gray	Saginaw
9	Control Panel	CP-5	SCE-30N3008LP	1	N1 Panel - 30 x 30 x 08 - Steel/Gray	Saginaw

KITCHEN HOOD H-2, H-3 & H-4 SCHEMATIC DIAGRAM

***NOTE: REFER TO NEXT PAGE FOR FIELD WIRING DETAILS**



KITCHEN HOOD SCHEDULE									
ITEM#	TAG	LOCATION	SERVICE	EXHAUST FAN	SUPPLY CFM	EXHAUST CFM	SIZE IN INCH	MODEL	MECH. DWG. REF.
1	H-2	KITCHEN 158	KITCHEN 158	RE-26	2880	4800	216X93	ELX	H1.1E
2	H-3	KITCHEN 158	KITCHEN 158	RE-27	2880	4800	216X93	ELX	H1.1E
3	H-4	KITCHEN 158	KITCHEN 158	RE-28	2880	4800	216X93	ELX	H1.1E

KITCHEN HOOD-2,3,4 BILL OF MATERIAL						
Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Field Relay	FR-#	RIBU1C	1	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

***NOTE: DAMPER IS WIRED IN CP-4.**

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		

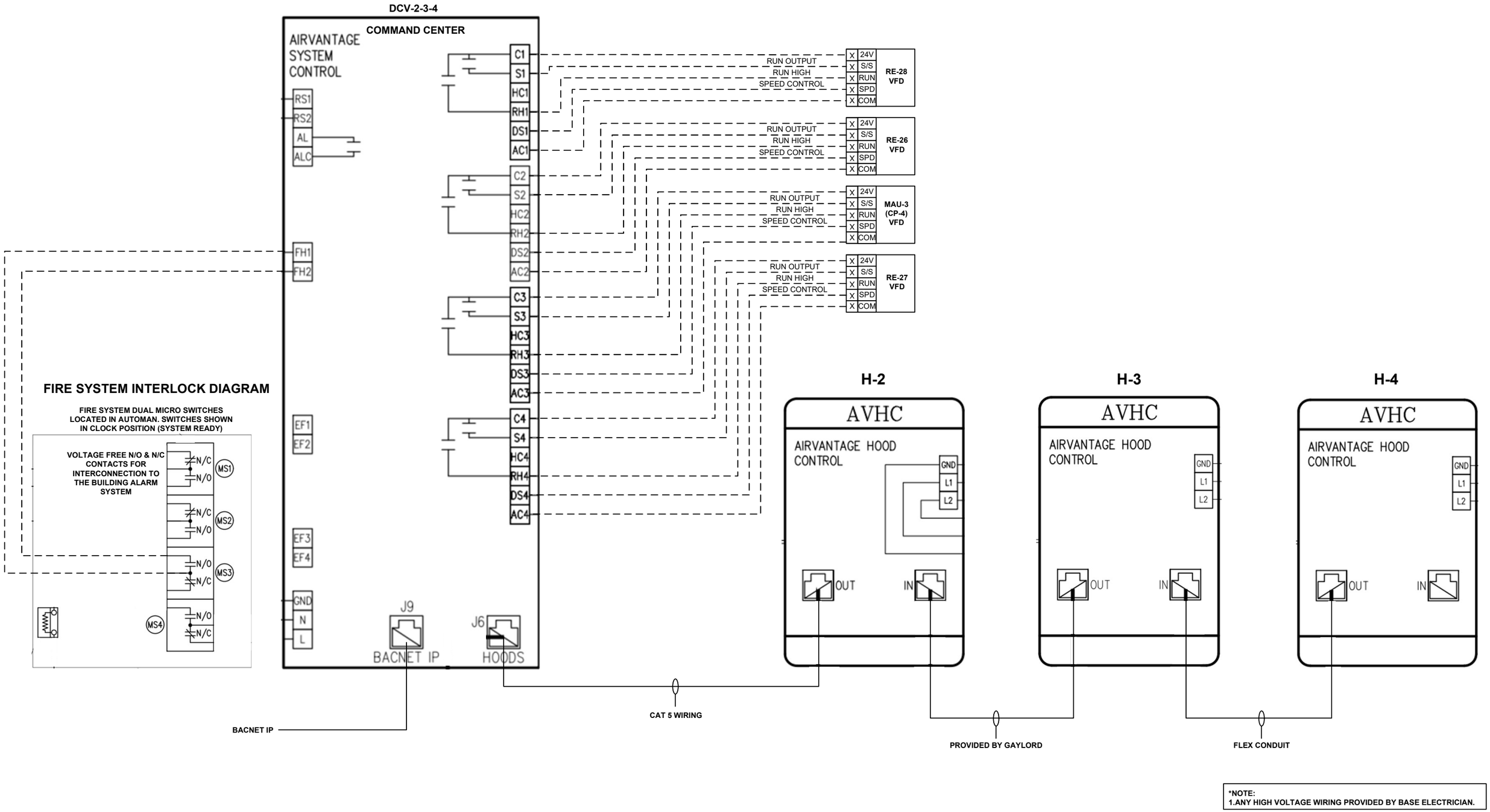
PROJECT: WARABEYA NORTH AMERICA

KITCHEN HOOD H-2, H-3 & H-4 SCHEMATIC DIAGRAM

JOB #: 23-10265 | PAGE: 64 of 124

KITCHEN HOOD H-2, H-3 & H-4 WIRING DIAGRAM

PENDING CHANGE ORDER



*NOTE:
1.ANY HIGH VOLTAGE WIRING PROVIDED BY BASE ELECTRICIAN.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

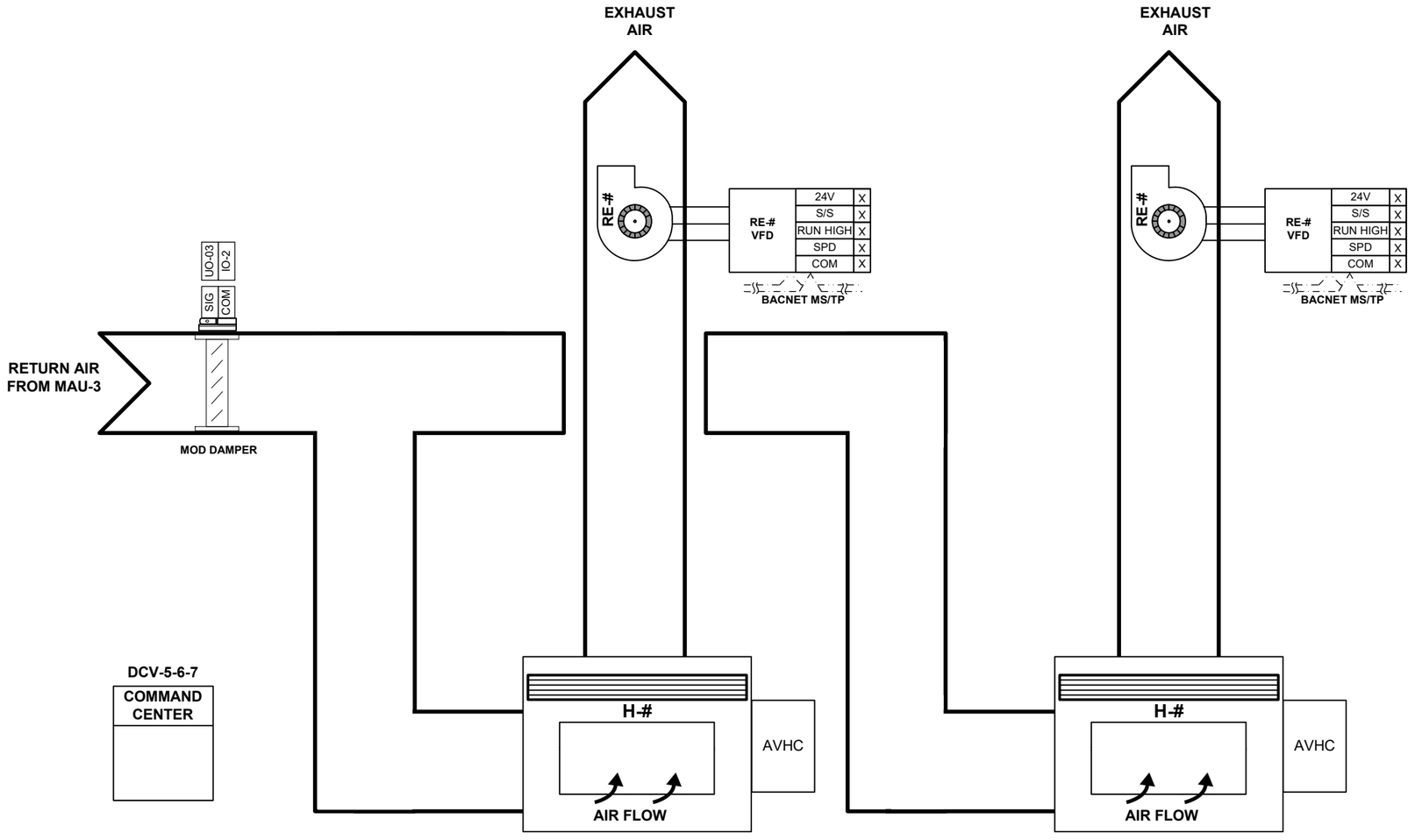
KITCHEN HOOD H-2, H-3 & H-4 WIRING DIAGRAM

JOB #: 23-10265 | PAGE: 65 of 124

KITCHEN HOOD H-5, H-6, H-7A & H-7B SCHEMATIC DIAGRAM

TYPICAL OF 2

***NOTE: REFER TO NEXT PAGE FOR FIELD WIRING DETAILS**



KITCHEN HOOD SCHEDULE									
ITEM#	TAG	LOCATION	SERVICE	EXHAUST FAN	SUPPLY CFM	EXHAUST CFM	SIZE IN INCH	MODEL	MECH. DWG. REF.
1	H-5	KITCEHN 158	KITCEHN 158	RE-29	2640	4400	156X108	EL	H1.1E
2	H-6	KITCEHN 158	KITCEHN 158	RE-30	2640	4400	156X108	EL	H1.1E
3	H-7A	KITCEHN 158	KITCEHN 158	RE-31	3840	6400	228X84	EL	H1.1E
4	H-7B	KITCEHN 158	KITCEHN 158	RE-32	3840	6400	228X84	EL	H1.1E

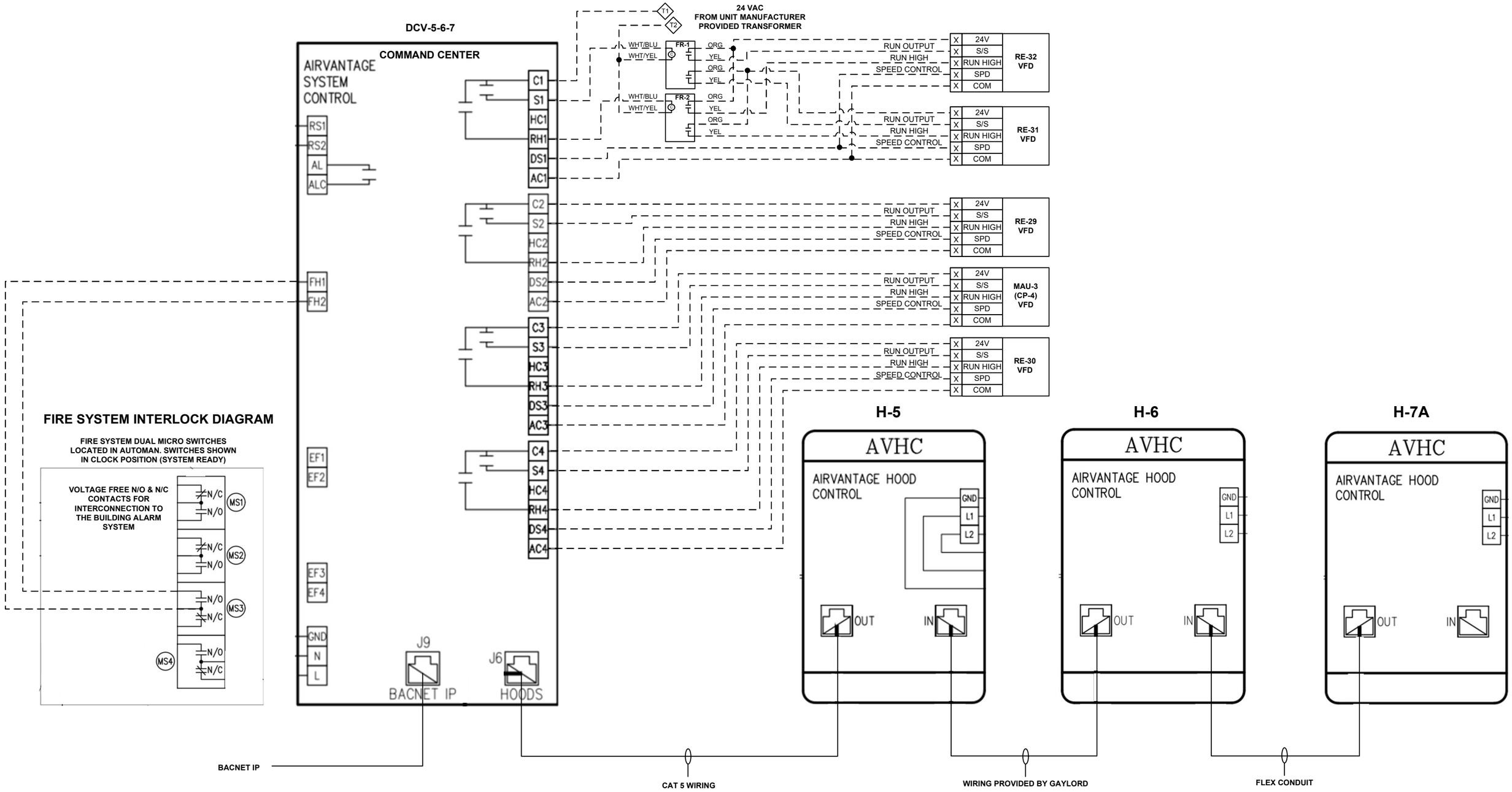
KITCHEN HOOD-5,6,7 BILL OF MATERIAL						
Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Field Relay	FR-#	RIB2401D	2	Pilot Relay, 10 Amp DPDT, 24 Vac/dc/120 Vac Coil, NEMA 1 Housing	Functional Devices
2	Field Relay	FR-#	RIBU1C	2	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

***NOTE: DAMPER IS WIRED IN CP-4.**

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							KITCHEN HOOD H-5, H-6, H-7A & H-7B SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 66 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

KITCHEN HOOD H-5, H-6, H-7A & H-7B WIRING DIAGRAM

PENDING CHANGE ORDER



*NOTE: ANY HIGH VOLTAGE WIRING PROVIDED BY BASE ELECTRICIAN

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

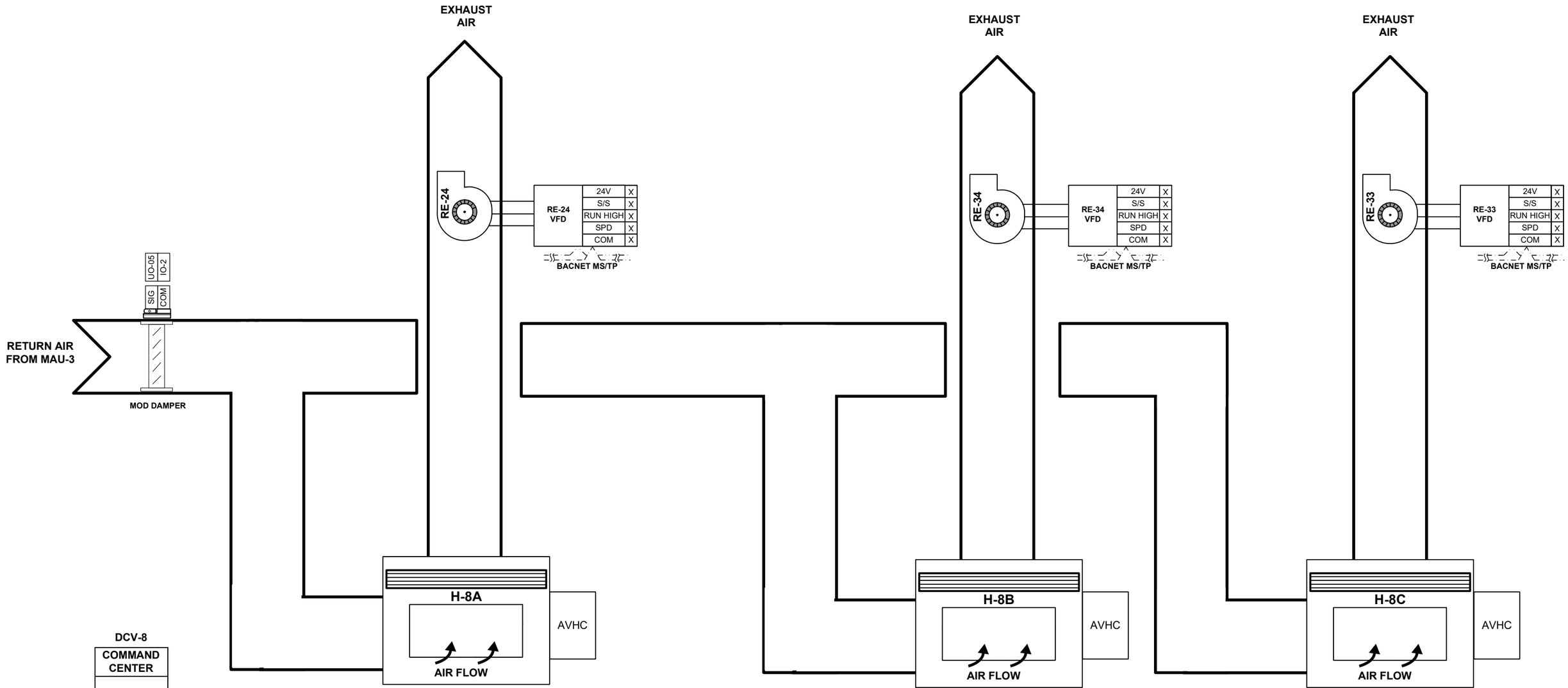
PROJECT: WARABEYA NORTH AMERICA

KITCHEN HOOD H-5, H-6, H-7A & H-7B WIRING DIAGRAM

JOB #: 23-10265

KITCHEN HOOD H-8A, H-8B & H-8C SCHEMATIC DIAGRAM

***NOTE: REFER TO NEXT PAGE FOR FIELD WIRING DETAILS**



KITCHEN HOOD SCHEDULE

ITEM#	TAG	LOCATION	SERVICE	EXHAUST FAN	SUPPLY CFM	EXHAUST CFM	SIZE IN INCH	MODEL	MECH. DWG. REF.
1	H-8A	KITCEHN 158	KITCEHN 158	RE-24	6620	11040	300X138	EL	H1.1E
2	H-8B	KITCEHN 158	KITCEHN 158	RE-34	3036	6450	185X138	EL	H1.1E
3	H-8C	KITCEHN 158	KITCEHN 158	RE-33	5868	8450	259X138	EL	H1.1E

KITCHEN HOOD-8 BILL OF MATERIAL

Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Field Relay	FR-#	RIBU1C	1	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

***NOTE: DAMPER IS WIRED IN CP-4.**

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

KITCHEN HOOD H-8A, H-8B & H-8C SCHEMATIC DIAGRAM

JOB #: 23-10265 | **PAGE: 68 of 124**

KITCHEN HOOD H-8A, H-8B & H-8C WIRING DIAGRAM

PENDING CHANGE ORDER

FIRE SYSTEM INTERLOCK DIAGRAM

FIRE SYSTEM DUAL MICRO SWITCHES LOCATED IN AUTOMAN. SWITCHES SHOWN IN CLOCK POSITION (SYSTEM READY)

VOLTAGE FREE N/O & N/C CONTACTS FOR INTERCONNECTION TO THE BUILDING ALARM SYSTEM

MS1 N/C N/O
MS2 N/C N/O
MS3 N/O N/C
MS4 N/O N/C

DCV-8

COMMAND CENTER

AIRVANTAGE SYSTEM CONTROL

RS1
RS2
AL
ALC
FH1
FH2
EF1
EF2
EF3
EF4
GND
N
L

J9 BACNET IP

J6 HOODS

C1 S1 HC1 RH1 DS1 AC1
C2 S2 HC2 RH2 DS2 AC2
C3 S3 HC3 RH3 DS3 AC3
C4 S4 HC4 RH4 DS4 AC4

RE-34 VFD	RUN OUTPUT	X	24V
	RUN HIGH	X	S/S
	SPEED CONTROL	X	RUN HIGH
		X	SPD
		X	COM
RE-24 VFD	RUN OUTPUT	X	24V
	RUN HIGH	X	S/S
	SPEED CONTROL	X	RUN HIGH
		X	SPD
		X	COM
MAU-3 (CP-4) VFD	RUN OUTPUT	X	24V
	RUN HIGH	X	S/S
	SPEED CONTROL	X	RUN HIGH
		X	SPD
		X	COM
RE-33 VFD	RUN OUTPUT	X	24V
	RUN HIGH	X	S/S
	SPEED CONTROL	X	RUN HIGH
		X	SPD
		X	COM

H-8C

AVHC
AIRVANTAGE HOOD CONTROL
GND L1 L2
OUT IN

H-8B

AVHC
AIRVANTAGE HOOD CONTROL
GND L1 L2
OUT IN

H-8A

AVHC
AIRVANTAGE HOOD CONTROL
GND L1 L2
OUT IN

BACNET IP

CAT 5 WIRING

WIRING PROVIDED BY GAYLORD

FLEX CONDUIT

*NOTE:
1.ANY HIGH VOLTAGE WIRING PROVIDED BY BASE ELECTRICIAN.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

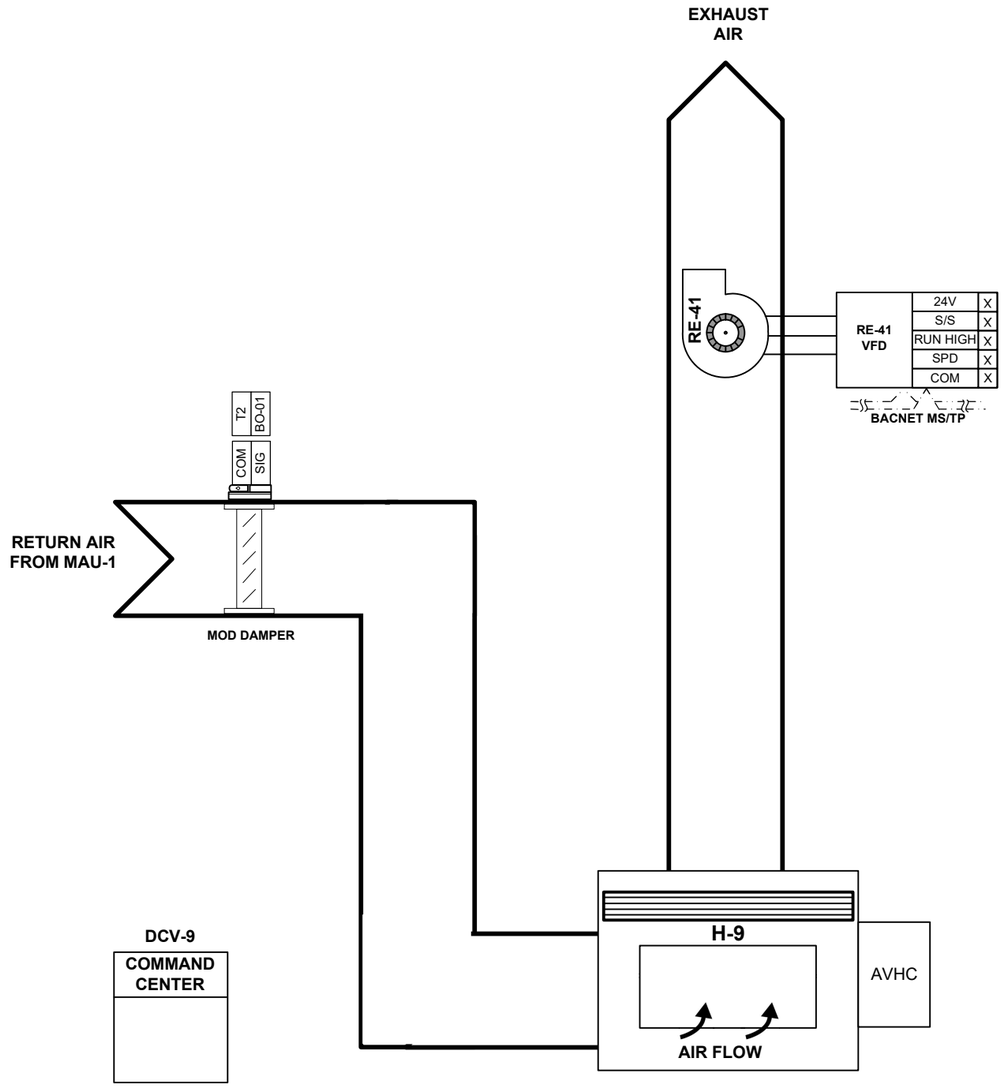
PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

KITCHEN HOOD H-8A, H-8B & H-8C WIRING DIAGRAM

KITCHEN HOOD H-9 SCHEMATIC DIAGRAM

*NOTE: REFER TO NEXT PAGE FOR FIELD WIRING DETAILS



KITCHEN HOOD SCHEDULE								
ITEM#	TAG	LOCATION	SERVICE	EXHAUST FAN	SUPPLY CFM	EXHAUST CFM	SIZE IN INCH	MODEL	MECH. DWG. REF.
1	H-9	R&D TEST KITCHEN 104	R&D TEST KITCHEN 104	RE-41	-	1970	111X60	EL	H1.1A

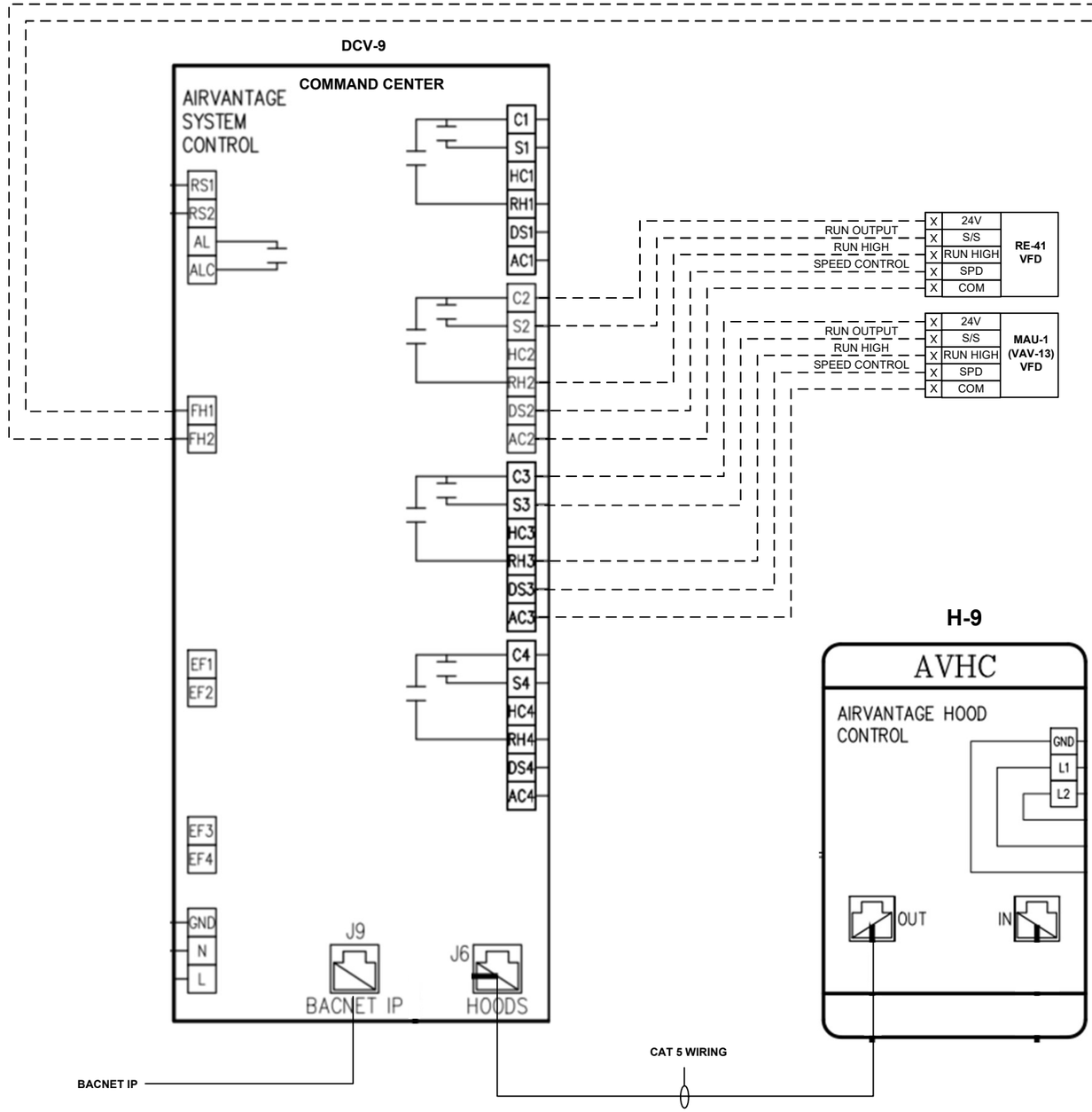
KITCHEN HOOD-9 BILL OF MATERIAL						
Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Field Relay	FR-#	RIBU1C	1	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

NOTES :
1. H-9 IS WIRED WITH VAV-13.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							KITCHEN HOOD H-9 SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 70 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

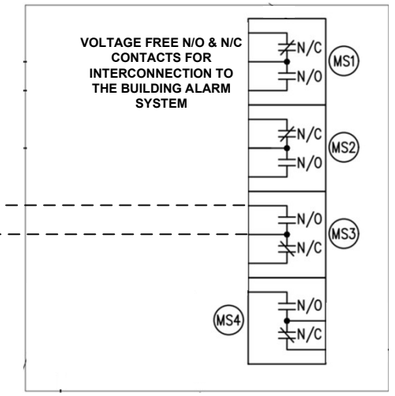
KITCHEN HOOD H-9 WIRING DIAGRAM

PENDING CHANGE ORDER



FIRE SYSTEM INTERLOCK DIAGRAM

FIRE SYSTEM DUAL MICRO SWITCHES LOCATED IN AUTOMAN. SWITCHES SHOWN IN CLOCK POSITION (SYSTEM READY)



***NOTE:**
1.ANY HIGH VOLTAGE WIRING PROVIDED BY BASE ELECTRICIAN.

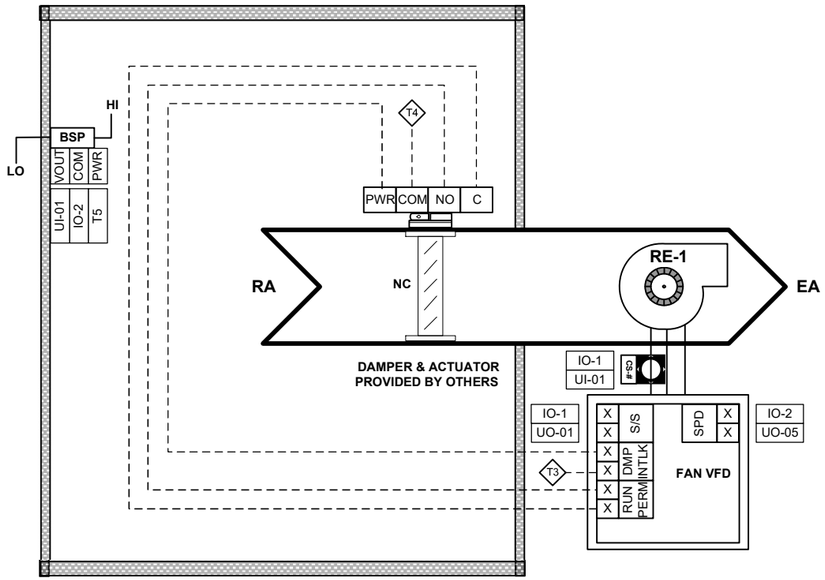
FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

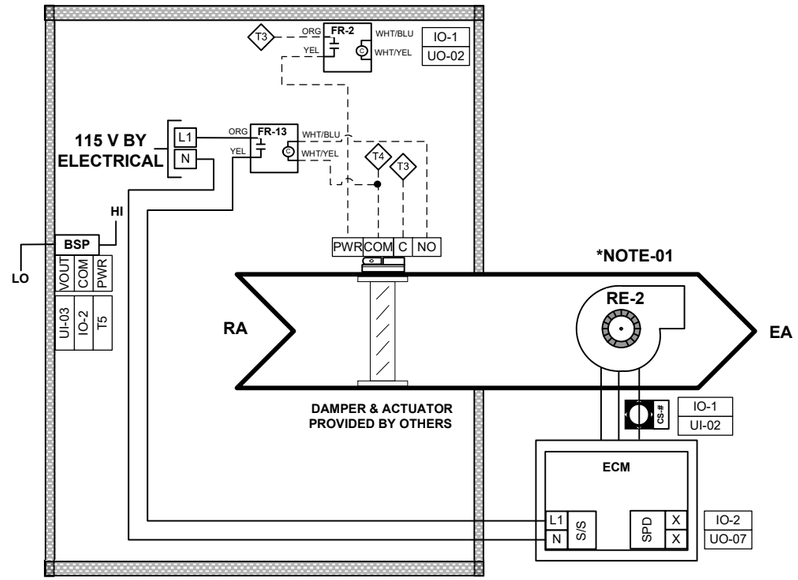
PRIME BUILDING CONTROLS

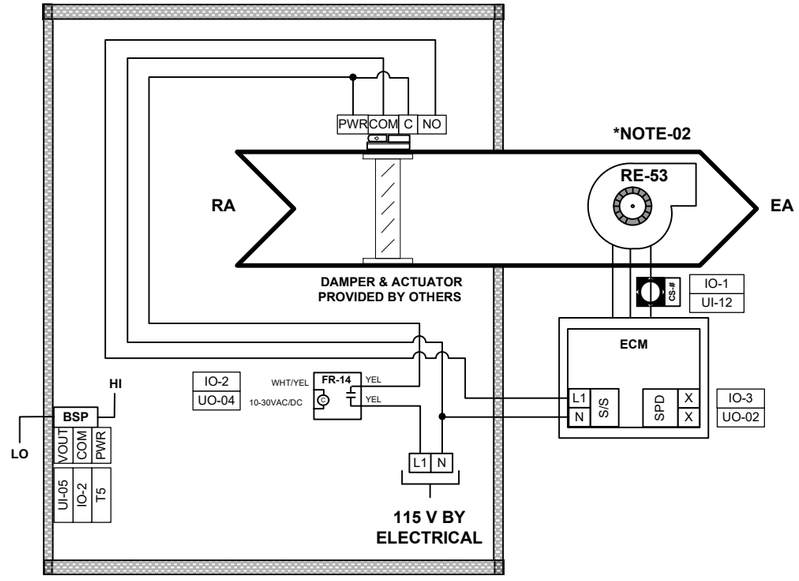
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA	
KITCHEN HOOD H-9 WIRING DIAGRAM	
JOB #: 23-10265	PAGE: 71 of 124

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 1







NOTES :
1. FANS ARE NOT COMING WITH THE VFDS. ENGINEER TO CONFIRM WHETHER RE OPERATES TO MAINTAIN ROOM PRESSURE OR ARE SINGLE SPEED FANS AND OPEARATES WHEN MAU-1 IS OPERATING.
2. FAN IS NOT COMING WITH THE ECM. ENGINEER TO CONFIRM WHETHER RE-53 OPERATES TO MAINTAIN ROOM PRESSURE OR IS SINGLE SPEED FAN AND OPEARATES WHEN MAU-1 IS OPERATING.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

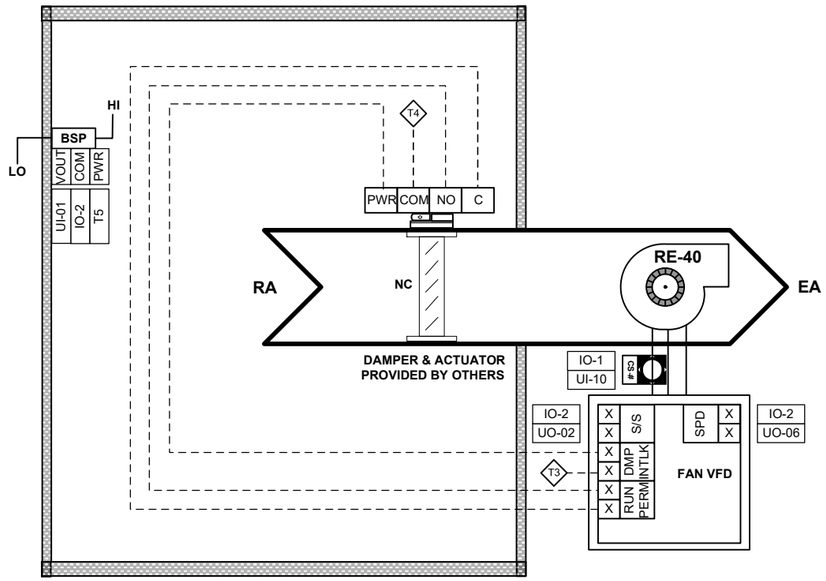
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

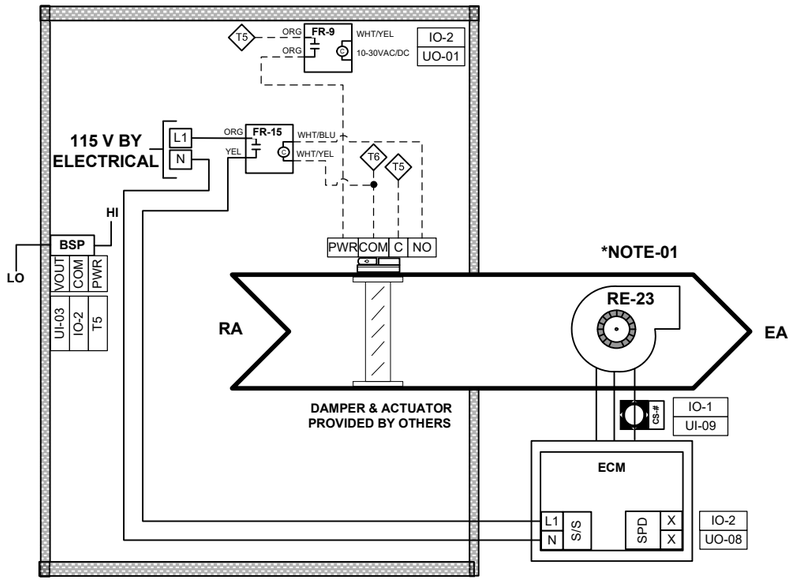
PROJECT: WARABEYA NORTH AMERICA

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 1

JOB #: 23-10265 | PAGE: 72 of 124

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 2





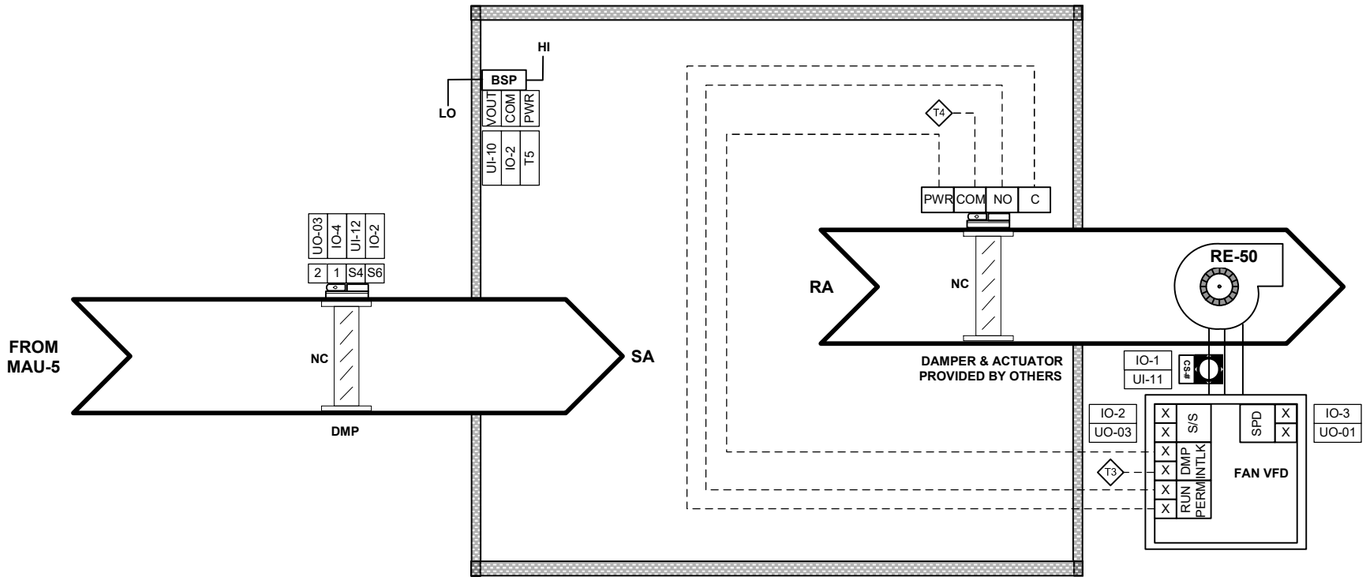
NOTES :
1. FAN IS NOT COMING WITH THE ECM. ENGINEER TO CONFIRM WHETHER RE-23 OPERATES TO MAINTAIN ROOM PRESSURE OR IS SINGLE SPEED FAN AND OPEARATES WHEN MAU-1 IS OPERATING.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

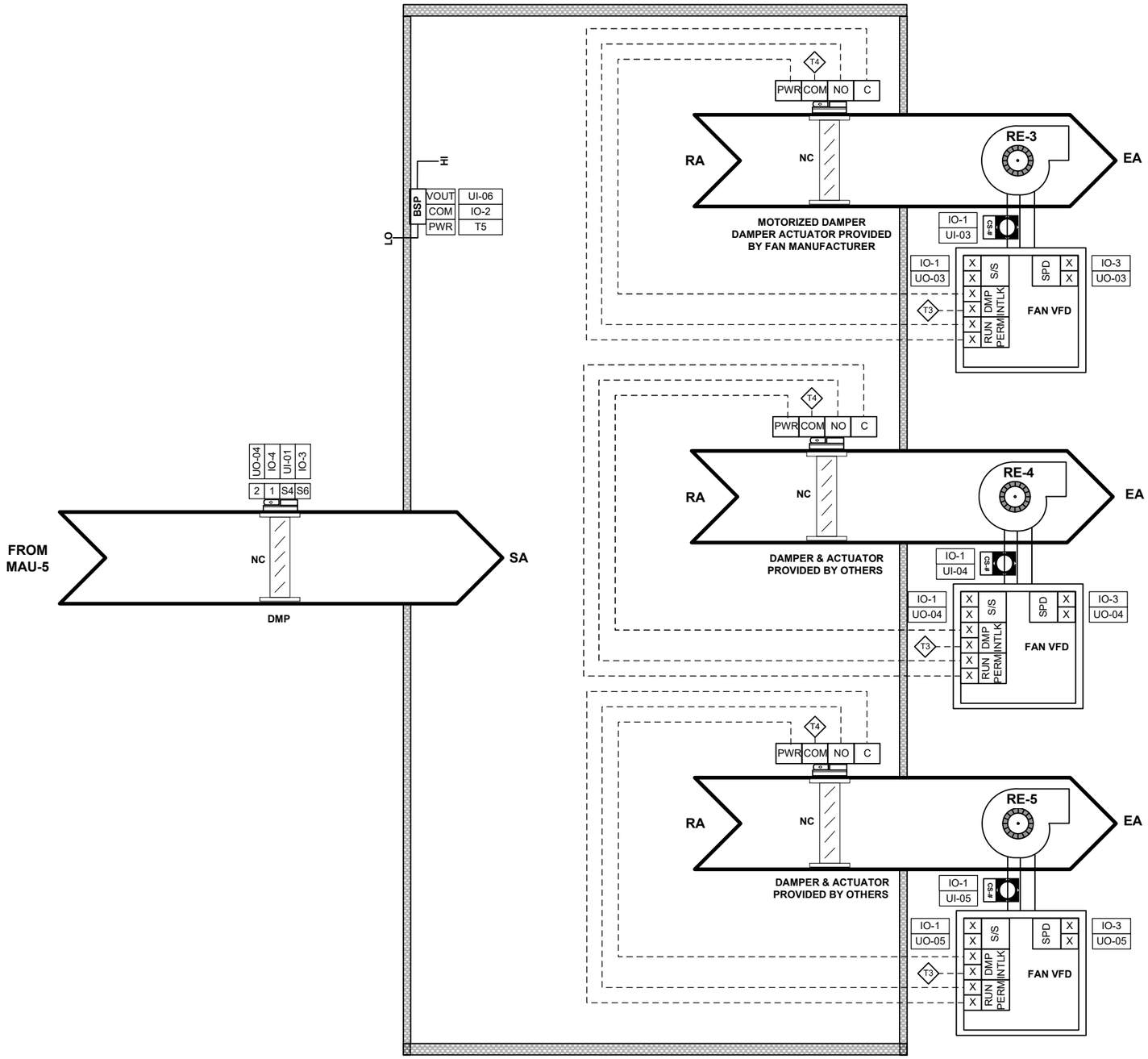
PROJECT: WARABEYA NORTH AMERICA	
WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 2	
JOB #: 23-10265	PAGE: 73 of 124

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 3



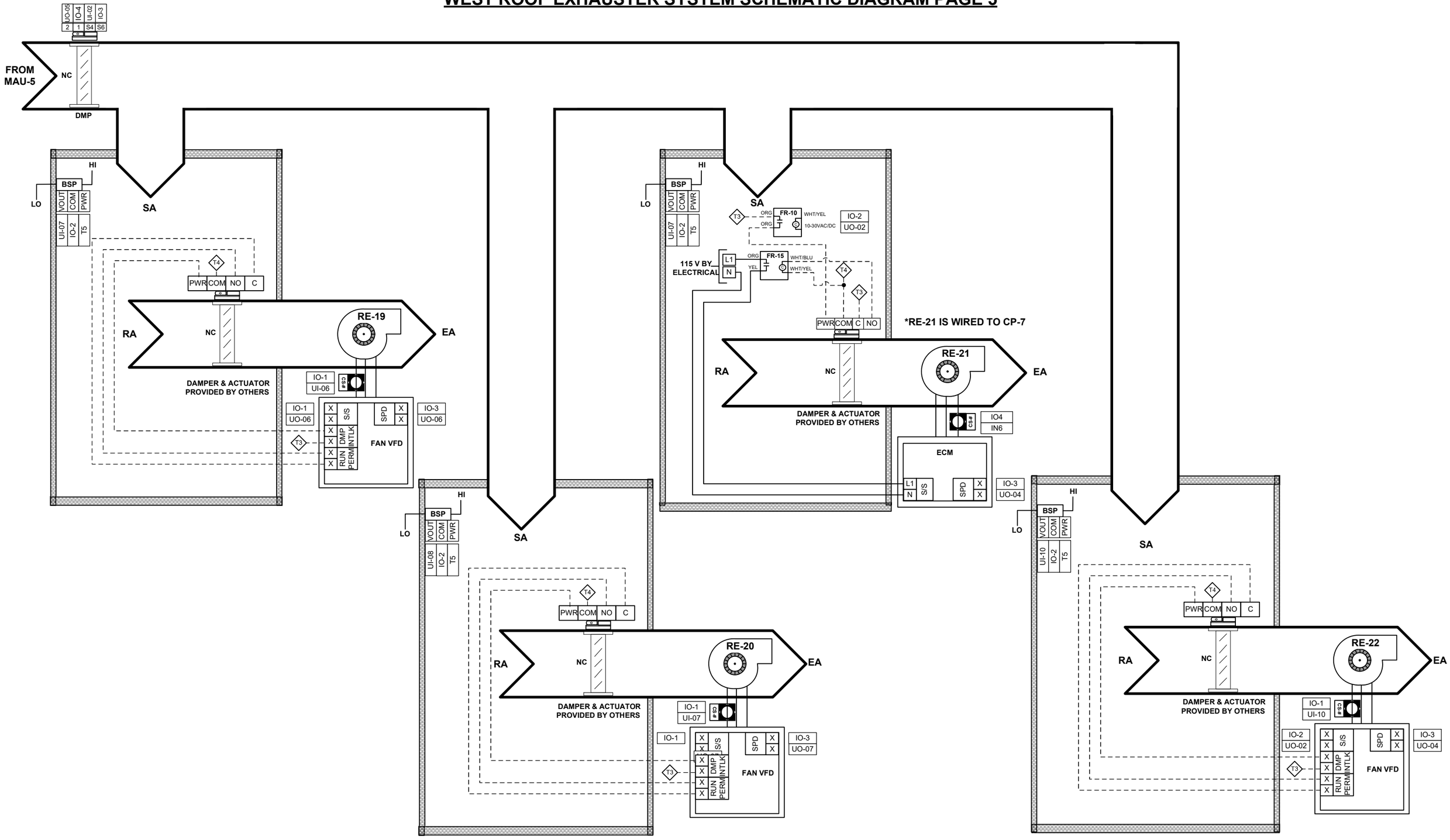
FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 3
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 74 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 4



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 75 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 5



FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

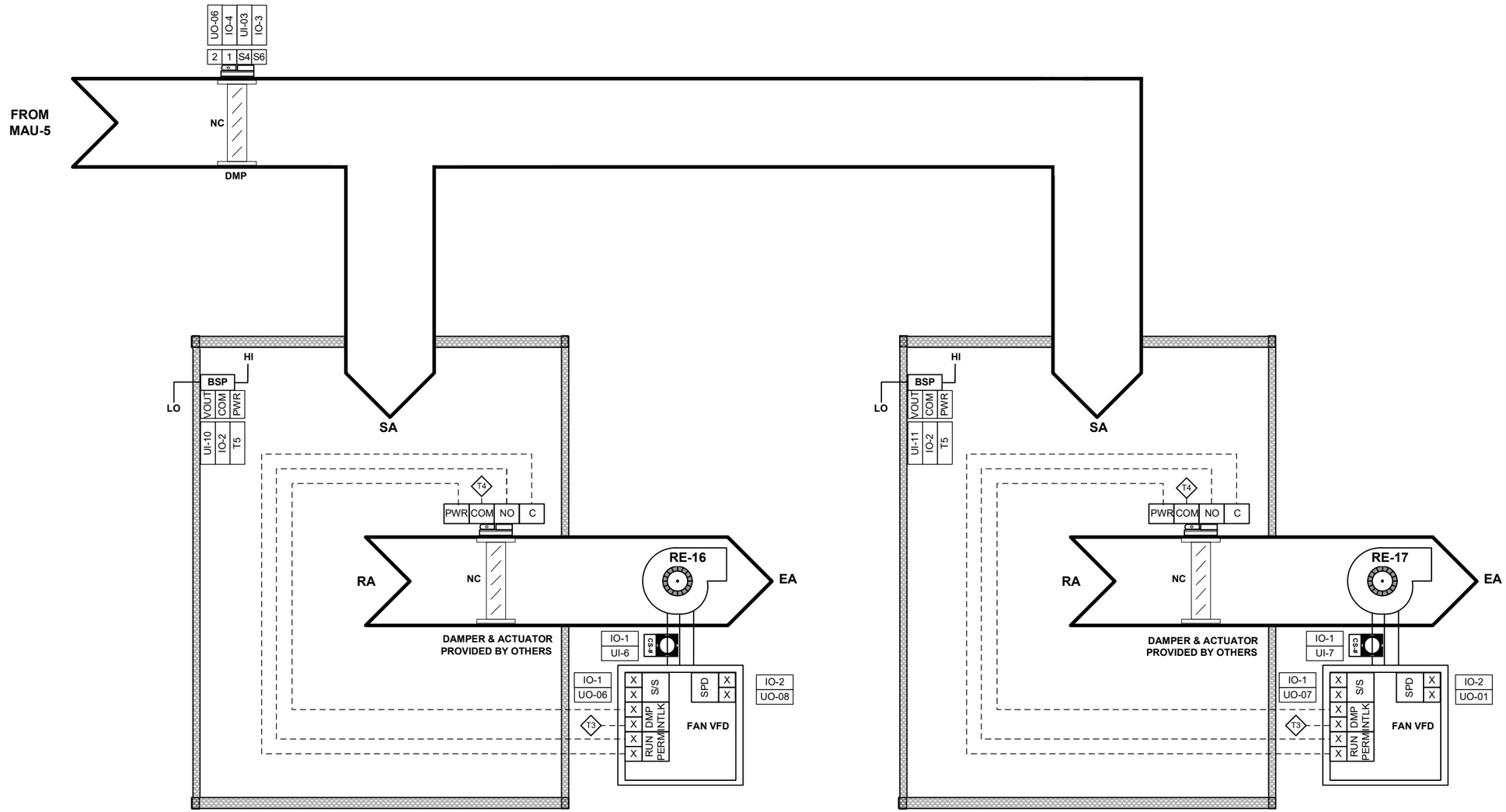
PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 5

JOB #: 23-10265

WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 6



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							WEST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 6
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 77 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

WEST ROOF EXHAUSTER SCHEDULE

ROOF EXHAUSTER SCHEDULE							
ITEM#	TAG	LOCATION	CFM	FAN RPM	MOTOR HP	VOLT/HZ/PH	MECH. DWG. REF
1	RE-1	BASKET WASHING 180	6000	847	1 1/2	460/60/3	H1.3
2	RE-2	CLEAN ROOM 182	1500	1530	1/2	115/60/1	H1.3
3	RE-3	ASSEMBLY ROOM 177	15700	644	5	460/60/3	H1.3
4	RE-4	ASSEMBLY ROOM 177	15700	644	5	460/60/3	H1.3
5	RE-5	ASSEMBLY ROOM 177	15700	644	5	460/60/3	H1.3
6	RE-19	PREP ROOM 152A	2500	1584	1	460/60/3	H1.3
7	RE-20	RTE MEAT SLICING ROOM 152B	3600	1089	1	460/60/3	H1.3
8	RE-22	DECANTING 151	4500	1310	1 1/2	460/60/3	H1.3
9	RE-23	RTE HYGIENE	400	1353	1/15	115/60/1	H1.3
10	RE-40	R&D TEST KITCHEN 104	3200	1310	1	460/60/3	H1.3
11	RE-50	CHILLED HOLDING 152	10500	725	3	460/60/3	H1.3
12	RE-53	BAKERY HYGIENE 128	150	1414	1/30	115/60/1	H1.3

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

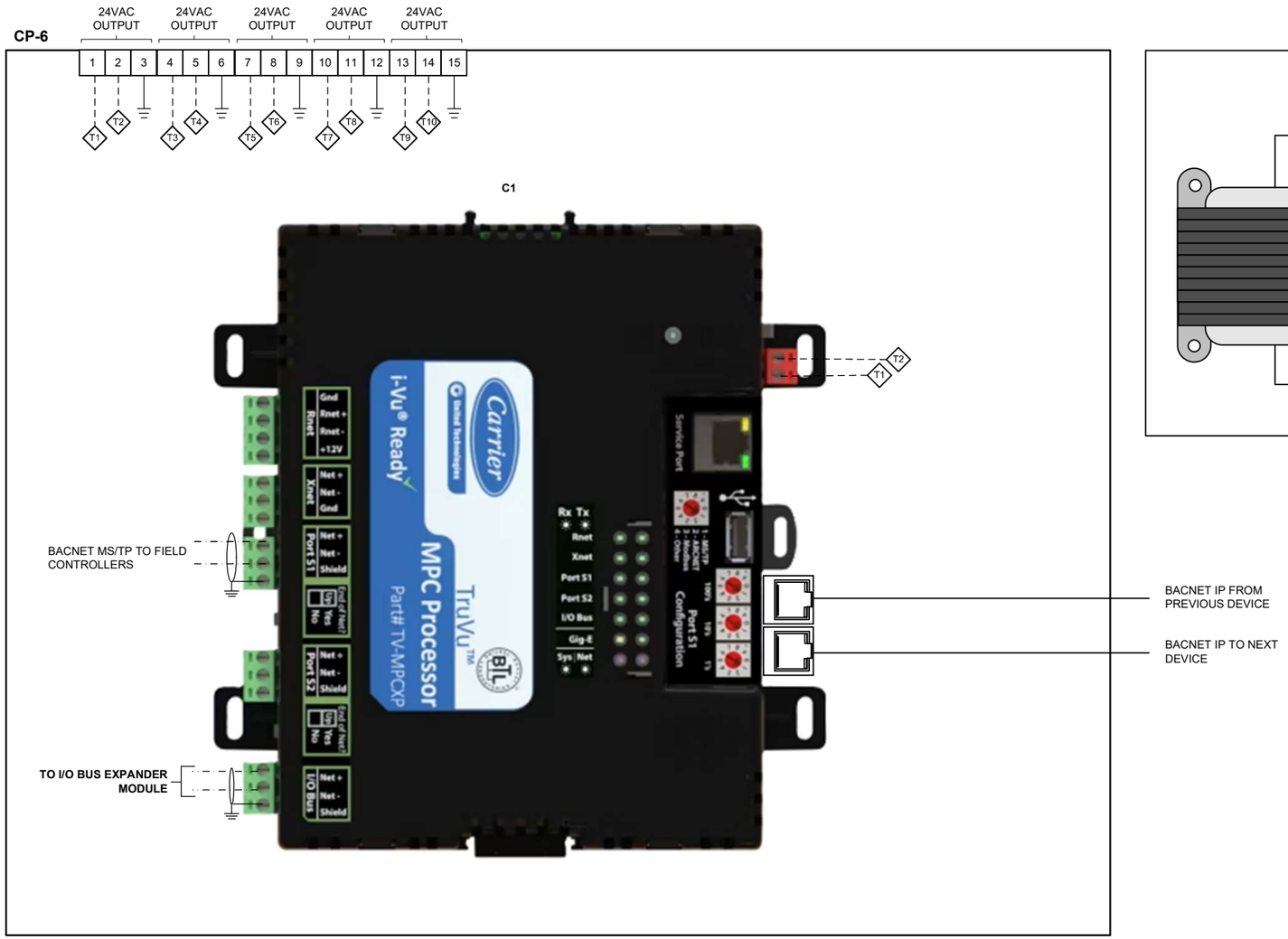
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

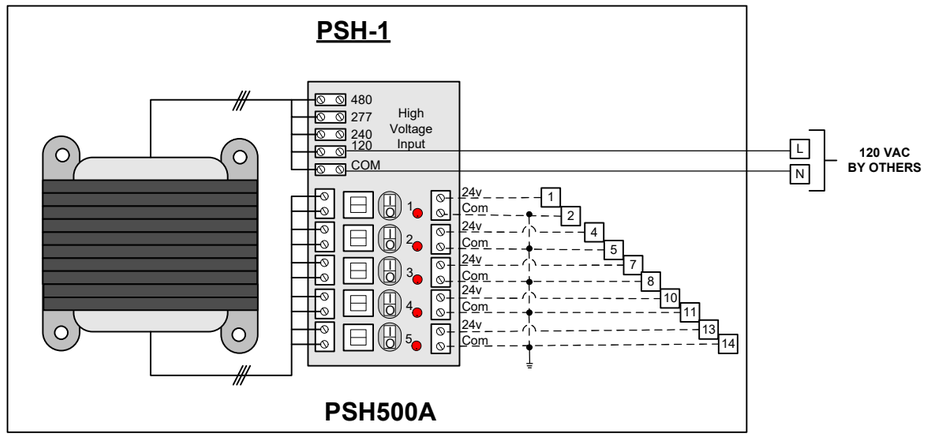
PROJECT: WARABEYA NORTH AMERICA

WEST ROOF EXHAUSTER SCHEDULE

JOB #: 23-10265

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 1





LOCATION: FIELD TO VERIFY

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

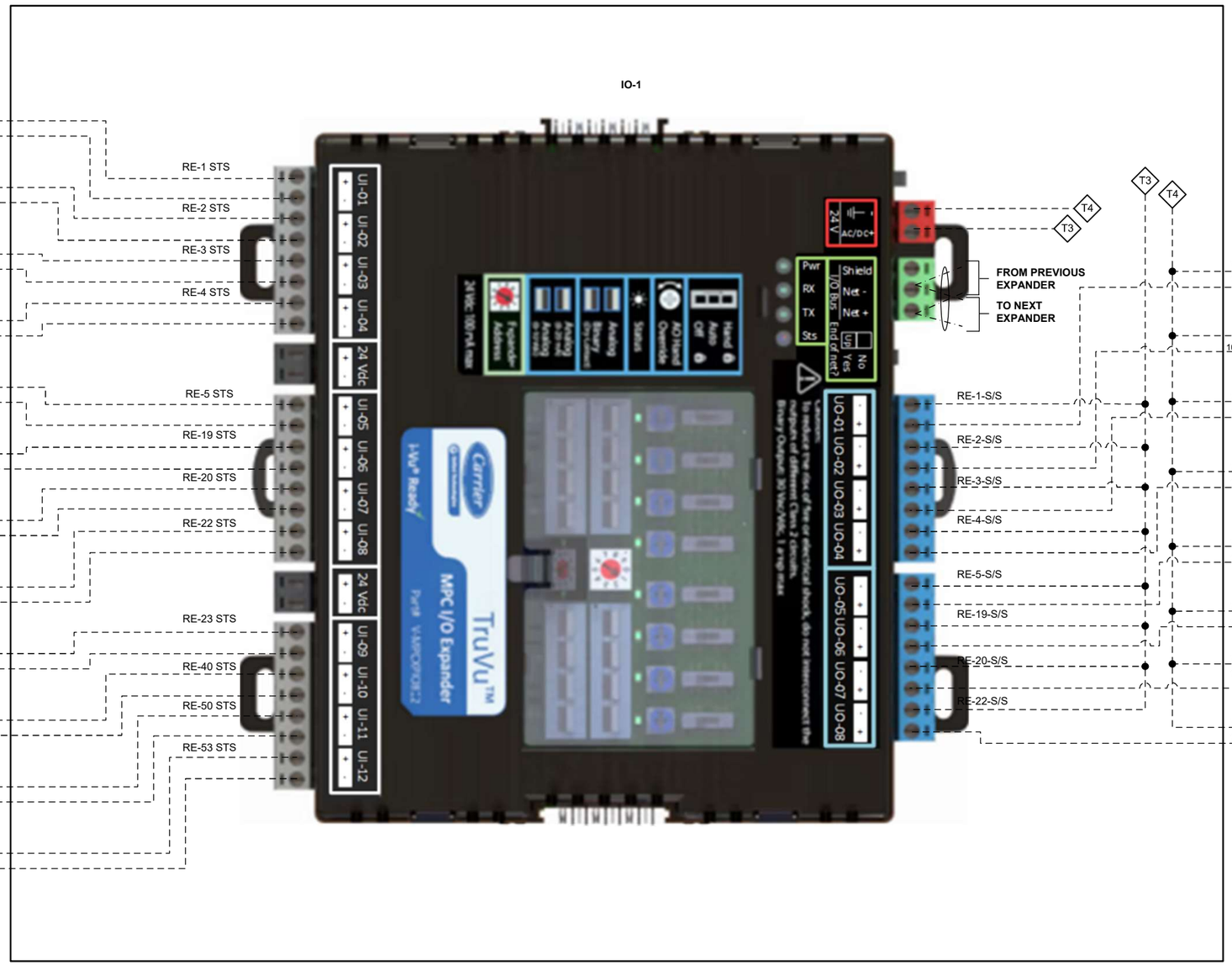
WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 1

JOB #: 23-10265 | PAGE: 79 of 124

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 2

CP-6 CONTD.

IO-1



RE-1 STS
RE-1 STATUS

RE-2 STS
RE-2 STATUS

RE-3 STS
RE-3 STATUS

RE-4 STS
RE-4 STATUS

RE-5 STS
RE-5 STATUS

RE-19 STS
RE-19 STATUS

RE-20 STS
RE-20 STATUS

RE-22 STS
RE-22 STATUS

RE-23 STS
RE-23 STATUS

RE-40 STS
RE-40 STATUS

RE-50 STS
RE-50 STATUS

RE-53 STS
RE-53 STATUS

RE-1-S/S
RE-1
START / STOP

RE-2-S/S
RE-2
START / STOP

RE-3-S/S
RE-3
START / STOP

RE-4-S/S
RE-4
START / STOP

RE-5-S/S
RE-5
START / STOP

RE-19-S/S
RE-19
START / STOP

RE-20-S/S
RE-20
START / STOP

RE-22-S/S
RE-22
START / STOP

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 2

JOB #: 23-10265 | PAGE: 80 of 124

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 3

CP-6 CONTD.

IO-2

RE-1 BSP
RE-1 BUILDING
STATIC PRESSURE

RE-40 BSP
RE-40 BUILDING
STATIC PRESSURE

RE-2 BSP
RE-2 BUILDING
STATIC PRESSURE

RE-23 BSP
RE-23 BUILDING
STATIC PRESSURE

RE-53 BSP
RE-53 BUILDING
STATIC PRESSURE

RE-3,4,5 BSP
RE-3,4,5 BUILDING
STATIC PRESSURE

RE-19 BSP
RE-19 BUILDING
STATIC PRESSURE

RE-20 BSP
RE-20 BUILDING
STATIC PRESSURE

RE-22 BSP
RE-22 BUILDING
STATIC PRESSURE

RE-50 BSP
RE-50 BUILDING
STATIC PRESSURE

VOUT / PWR / COM — BSP — LO / HI

RE-1 BSP
RE-40 BSP
RE-2 BSP
RE-23 BSP
RE-53 BSP
RE-3,4,5 BSP
RE-19 BSP
RE-20 BSP
RE-22 BSP
RE-50 BSP
MAU-5-RE-50 DMP STS

T5 T6 Z1 C1

UI-01 UI-02 UI-03 UI-04 24 Vdc UI-05 UI-06 UI-07 UI-08 24 Vdc UI-09 UI-10 UI-11 UI-12

24V AC/DC+ T T

FROM PREVIOUS EXPANDER
TO NEXT EXPANDER

Pwr RX TX Sts Shield Net - Net + I/O Bus End of net? Up Yes No

UO-01 UO-02 UO-03 UO-04 UO-05 UO-06 UO-07 UO-08

RE-23-S/S
RE-40-S/S
RE-50-S/S
RE-53-S/S
RE-1-SPD
RE-40-SPD
RE-2-SPD
RE-23-SPD

COM 10-30VAC/DC — FR-9 — ORG ORG — REFER SCHEMATIC DIAGRAM FOR WIRING DETAILS

WHT/YEL WHT/BLU — FR-10 — ORG YEL — X X SS — RE-40 VFD

WHT/YEL WHT/BLU — FR-11 — ORG YEL — X X SS — RE-50 VFD

COM 10-30VAC/DC — FR-12 — ORG ORG — REFER SCHEMATIC DIAGRAM FOR WIRING DETAILS

X X SPD — RE-1 VFD

X X SPD — RE-40 VFD

X X SPD — RE-2 ECM

X X SPD — RE-23 ECM

RE-23-S/S
RE-23
START / STOP

RE-40-S/S
RE-40
START / STOP

RE-50-S/S
RE-50
START / STOP

RE-53-S/S
RE-53
START / STOP

RE-1-SPD
RE-1
SPEED CONTROL

RE-40-SPD
RE-40
SPEED CONTROL

RE-2-SPD
RE-2
SPEED CONTROL

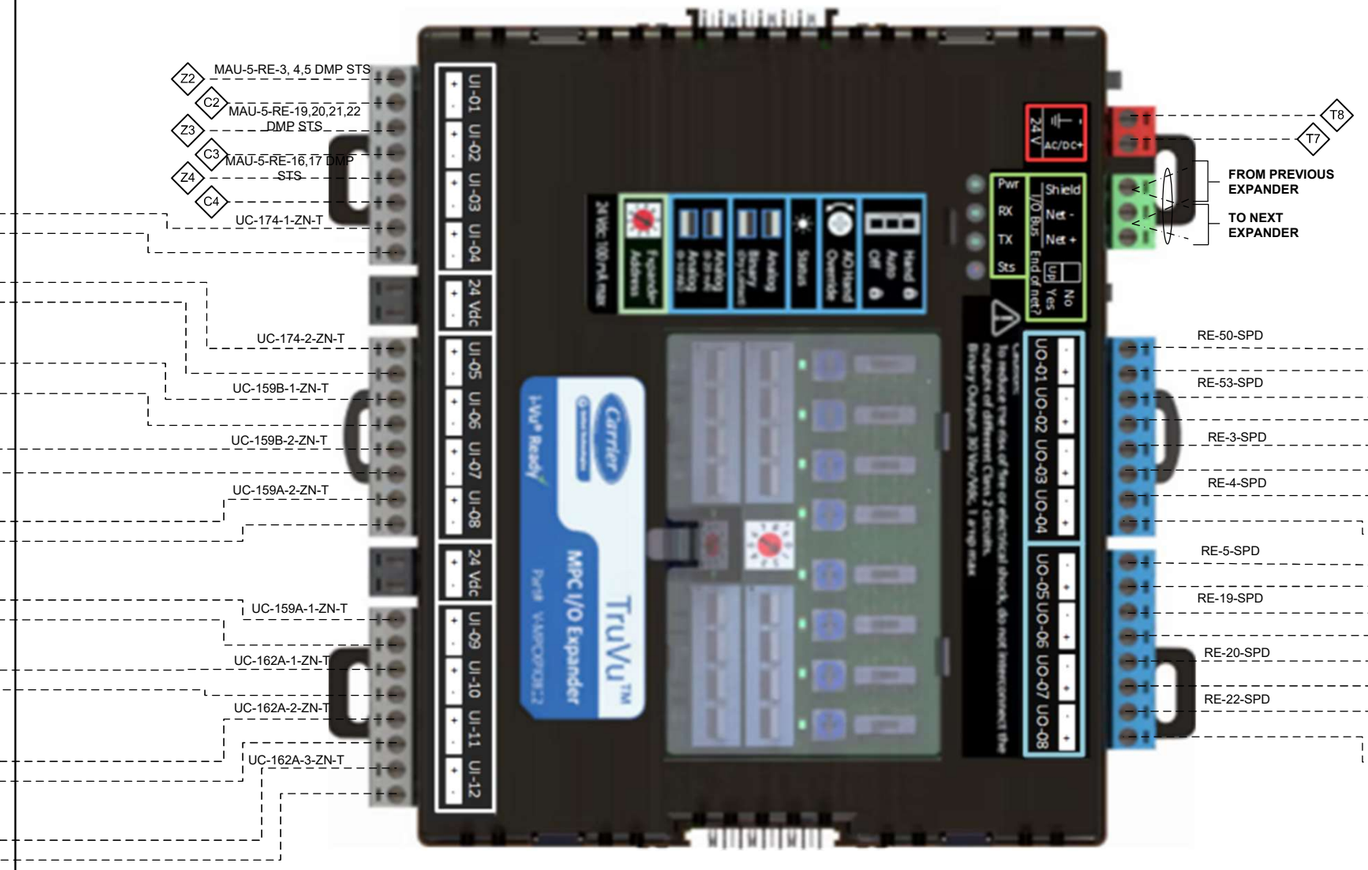
RE-23-SPD
RE-23
SPEED CONTROL

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 3
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 81 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 4

CP-6 CONTD.

IO-3



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL					800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		JOB #: 23-10265 / PAGE: 82 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 5

CP-6.

IO-4

UC-160-1-ZN-T
UC-160 SPACE TEMPERATURE

UC-160A-1-ZN-T
UC-160A SPACE TEMPERATURE

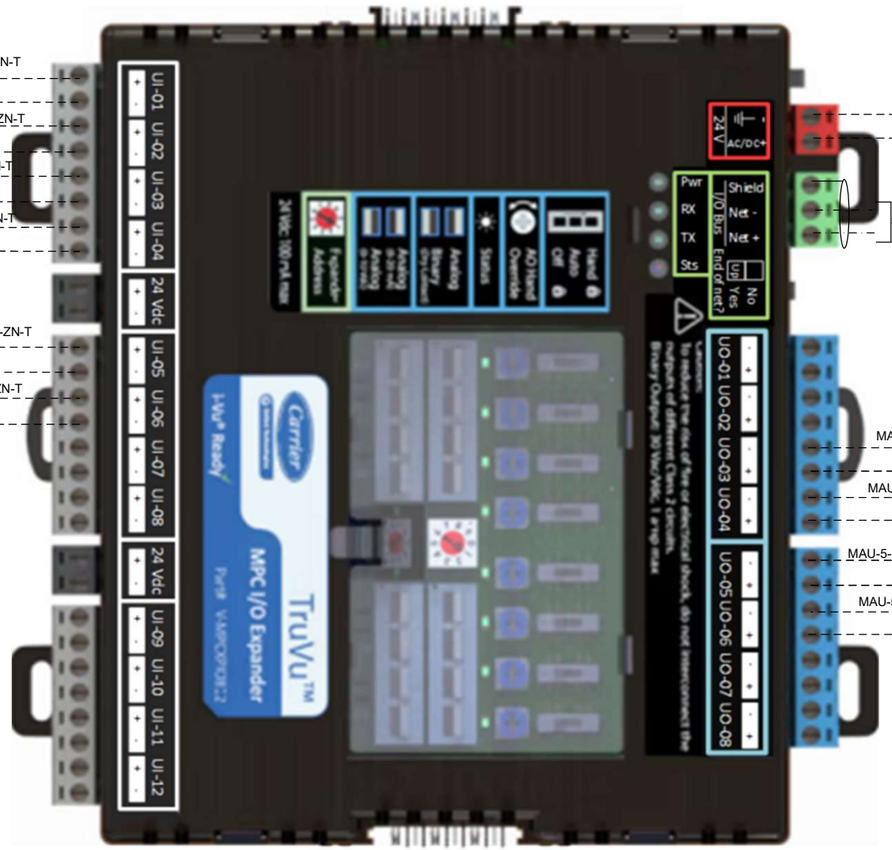
UC-161B-1-ZN-T
UC-161B SPACE TEMPERATURE

UC-161B-2-ZN-T
UC-161B SPACE TEMPERATURE

UC-162B-1-ZN-T
UC-162B SPACE TEMPERATURE

UC-162B-2-ZN-T
UC-162B SPACE TEMPERATURE

UC-160-1-ZN-T
UC-160A-1-ZN-T
UC-161B-1-ZN-T
UC-161B-2-ZN-T
UC-162B-1-ZN-T
UC-162B-2-ZN-T



FROM PREVIOUS EXPANDER

T10
T9
T8
T7

MAU-5-RE-50 DMP
MAU-5-RE-3, 4,5 DMP
MAU-5-RE-19,20,21,22 DMP
MAU-5-RE-16,17 DMP

Z1 C1
Z2 C2
Z3 C3
Z4 C4

FR-13 WHT/YEL WHT/BLU ORG YEL
FR-14 WHT/YEL WHT/BLU ORG YEL
FR-15 WHT/YEL WHT/BLU ORG YEL
FR-16 WHT/YEL WHT/BLU ORG YEL

1 2 S4 S6

MAU-5-RE-50 DMP
MAU-5-RE-50 DAMPER OPEN STATUS

MAU-5-RE-3, 4,5 DMP
MAU-5-RE-3,4,5 DAMPER OPEN STATUS

MAU-5-RE-19,20,21,22 DMP
MAU-5-RE-19,20,21,22 DAMPER OPEN STATUS

MAU-5-RE-16,17 DMP
MAU-5-RE-16,17 DAMPER OPEN STATUS

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

WEST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 5

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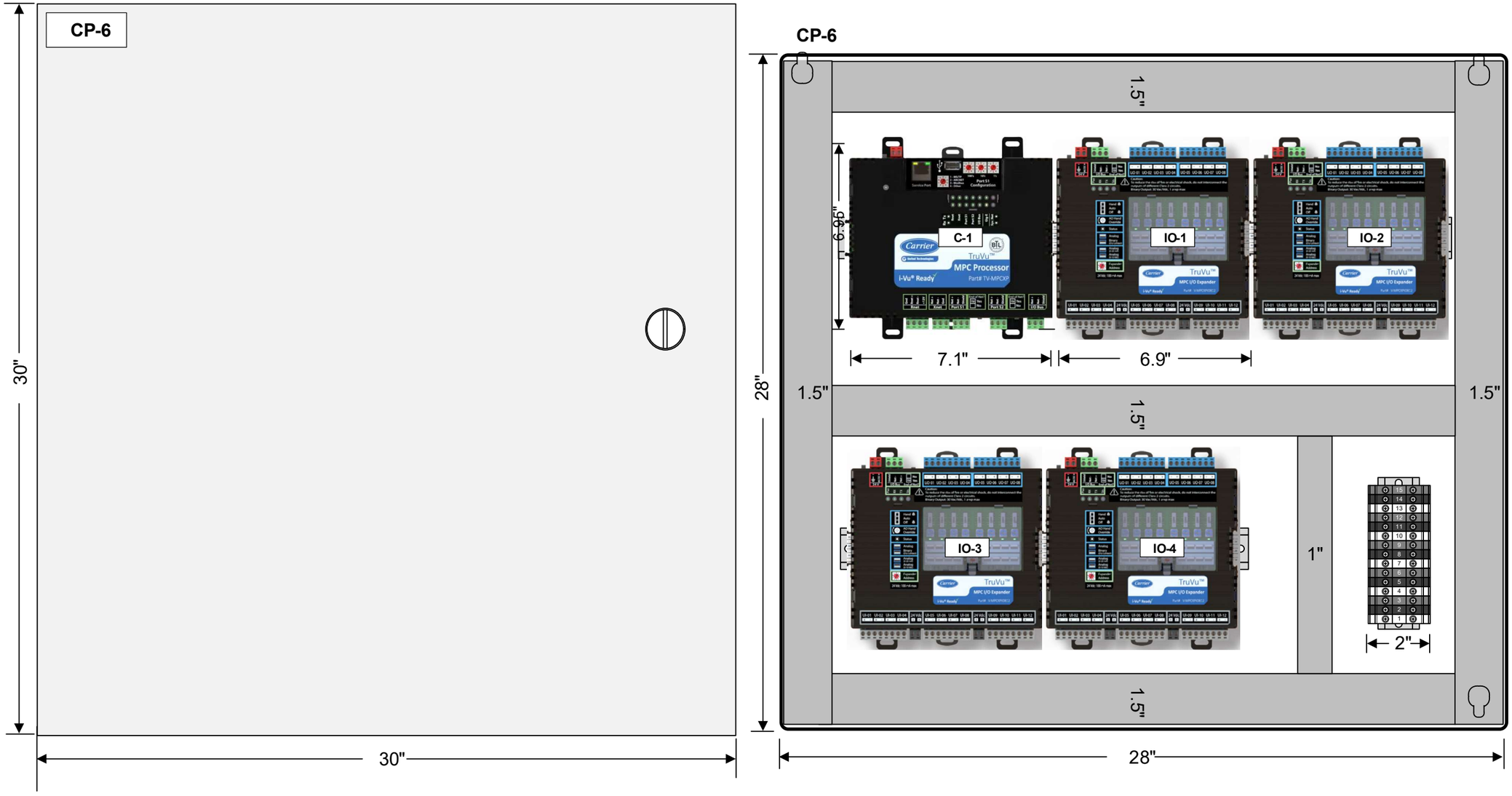
WEST ROOF EXHAUSTER SYSTEM PANEL LAYOUT



LOCATION: ELECTRICAL 150

NOTES:
1. PANEL LAYOUTS ARE NOT TO THE SCALE.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

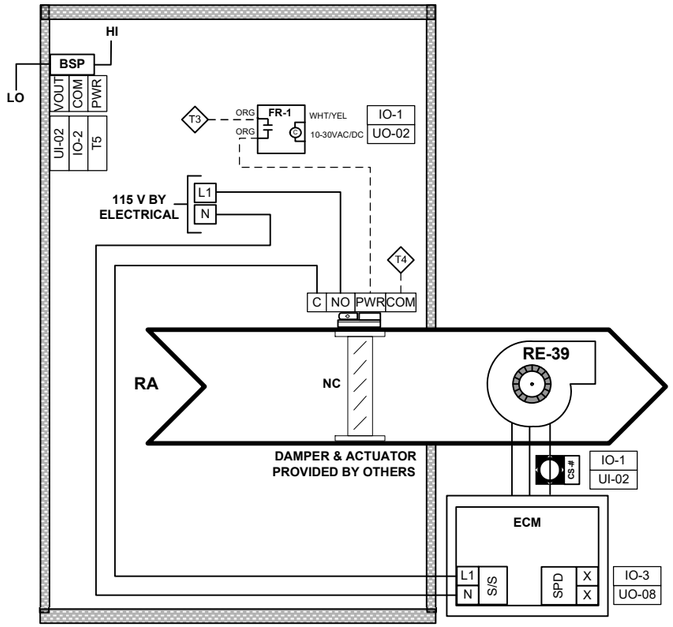
WEST ROOF EXHAUSTER SYSTEM PANEL LAYOUT

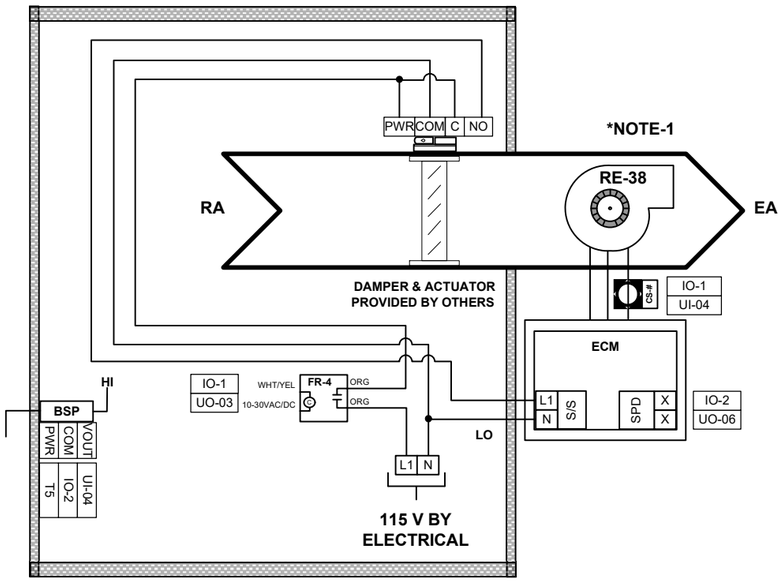
JOB #: 23-10265 | PAGE: 84 of 124

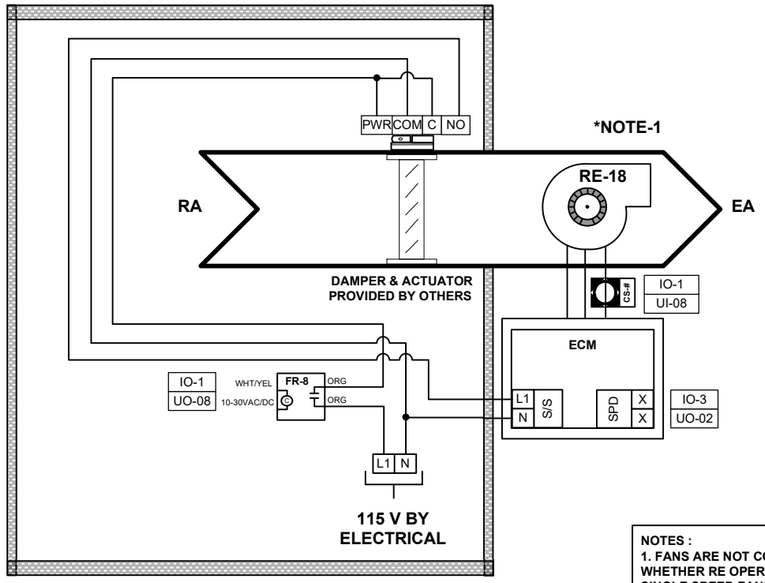
WEST ROOF EXHAUSTER SYSTEM BILL OF MATERIAL

WEST ROOF EXHAUSTER BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-MPCXP	1	Support for up to nine TruVu MPC I/O expansion modules and a total of 180 input/output points.	Carrier
2	I/O Module	IO-#	TV-MPCXPIO812	4	12 inputs, 8 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	Building Static Pressure	BSP	P5-0500-1LX	10	AIR DIFF PRESS XMTR, +/-1.00%, 0-5.00" WC, FLD SEL OUT, LCD, DIN RAIL	Senva
4	Zone Pressure Pickup Ports	-	ZPS-ACC01-86	10	2 x 4 Stainless Steel Wall Plate with Static Pickup	Bapi
5	Outside Pressure Pickup Port	-	ZPS-ACC10-V	10	Rooftop or Wall Mount Outside Air Pressure Pickup Port	Bapi
6	Field Relay	FR-#	RIBU1C	12	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
7	Field Relay	FR-#	RIBTU1S	3	Pilot Relay, 10 Amp SPST + Override, 10-30 Vac/dc/120 Vac Coil, Hi/Lo Voltage Separation, NEMA 1 Housing	Functional Devices
8	Power Supply	PSH-1	PSH500A	1	Enclosed 100VAx5 multi-tap 120-480 to 24Vac UL Class 2 power supply	Functional Devices
9	Current Switch	CS-#	RIBXGTA	9	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
10	Current Switch	CS-#	RIBXGTA-ECM	3	Current Switches, Split Core, Fixed, Adjustable, or Self-Calibrated, Up to 150 Amps Sensing Range	Functional Devices
11	Panel	CP-6	SCE-30N30MP	1	Enclosure - 28 x 28 x 0.8 - Steel/Gray	Saginaw
12	Sub-Panel	CP-6	SCE-30N3008LP	1	N1 Panel - 30 x 30 x 08 - Steel/Gray	Saginaw

EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 1







NOTES :
1. FANS ARE NOT COMING WITH THE VFDS. ENGINEER TO CONFIRM WHETHER RE OPERATES TO MAINTAIN ROOM PRESSURE OR ARE SINGLE SPEED FANS AND OPEARATES WHEN MAU-1 IS OPERATING.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

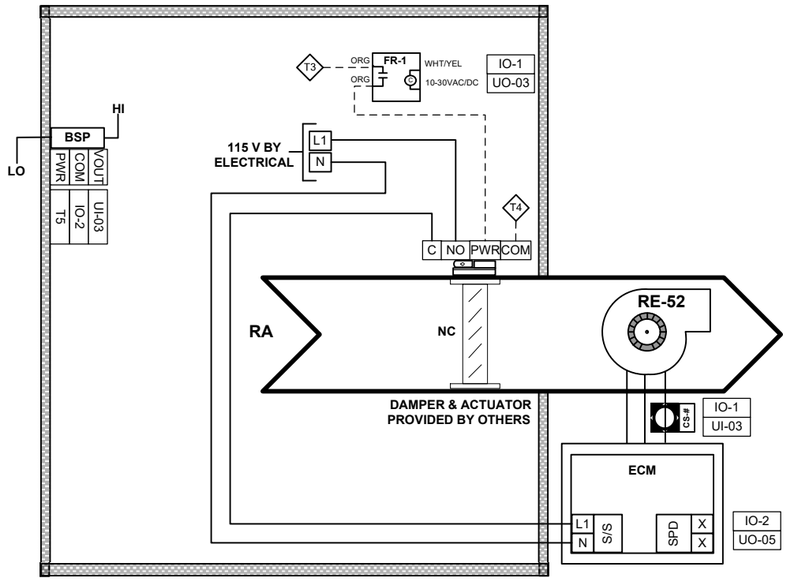
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

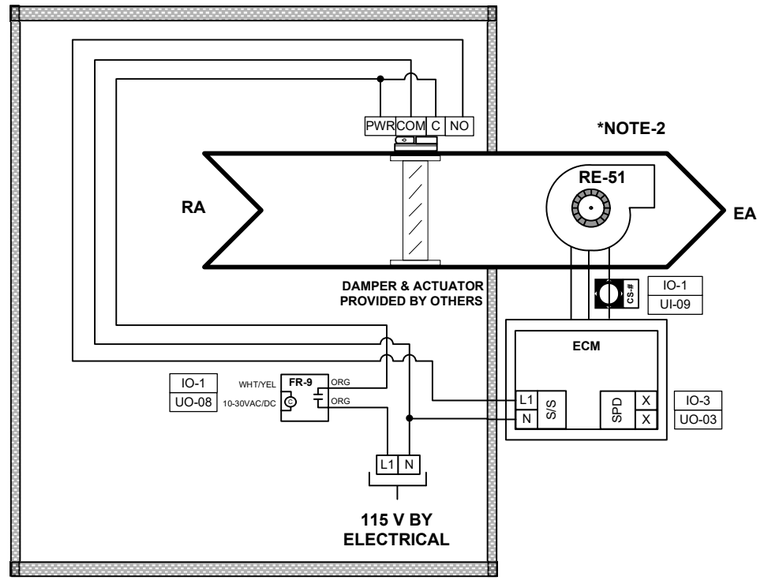
PROJECT: WARABEYA NORTH AMERICA

EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 1

JOB #: 23-10265 | PAGE: 86 of 124

EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 2





NOTES :
1. FANS ARE NOT COMING WITH THE VFDS. ENGINEER TO CONFIRM WHETHER RE OPERATES TO MAINTAIN ROOM PRESSURE OR ARE SINGLE SPEED FANS AND OPEARATES WHEN MAU-1 IS OPERATING.
2. FAN IS NOT COMING WITH THE ECM. ENGINEER TO CONFIRM WHETHER RE OPERATES TO MAINTAIN ROOM PRESSURE OR IS SINGLE SPEED FAN AND OPEARATES WHEN MAU-1 IS OPERATING.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
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PROJECT: WARABEYA NORTH AMERICA

EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 2

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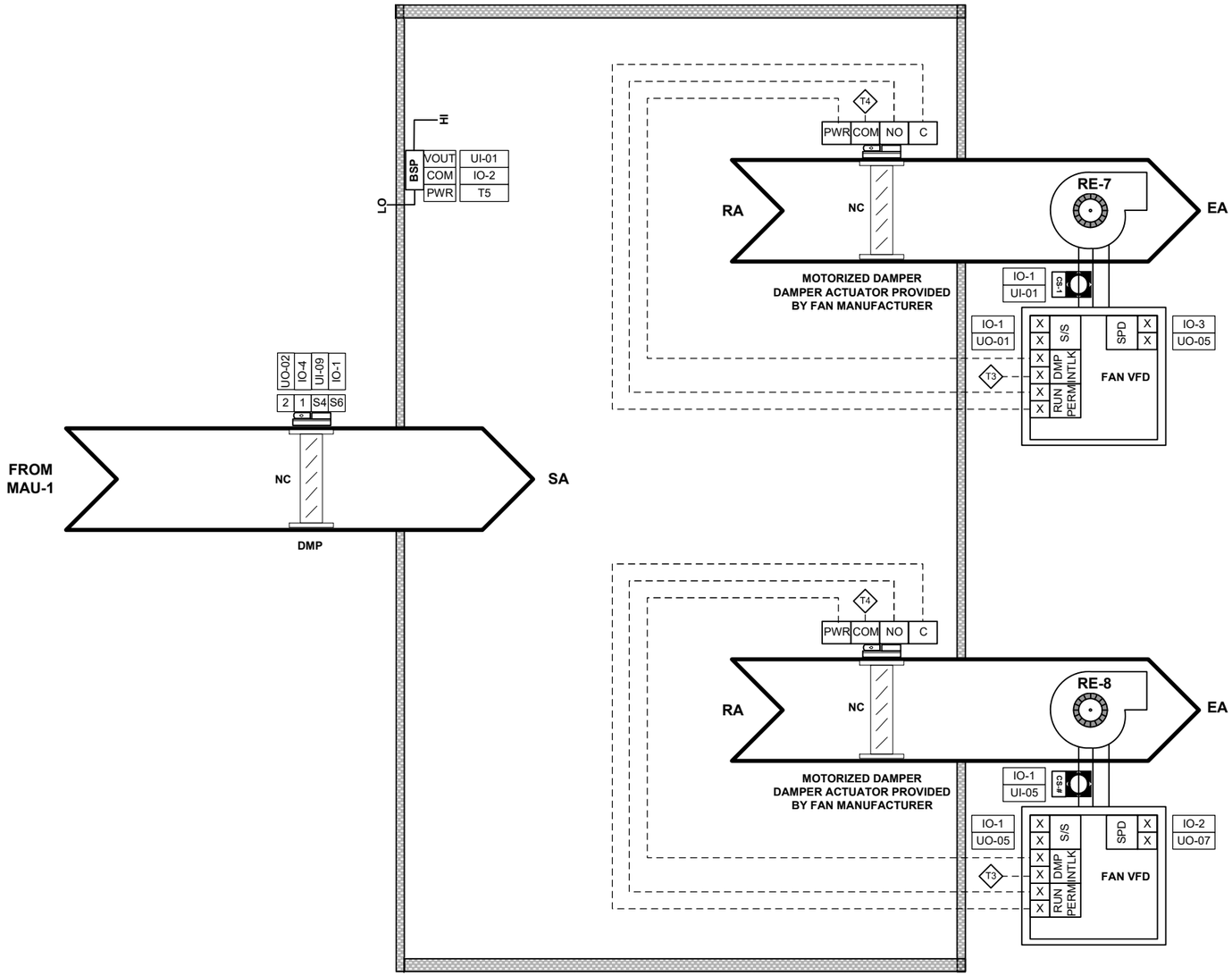
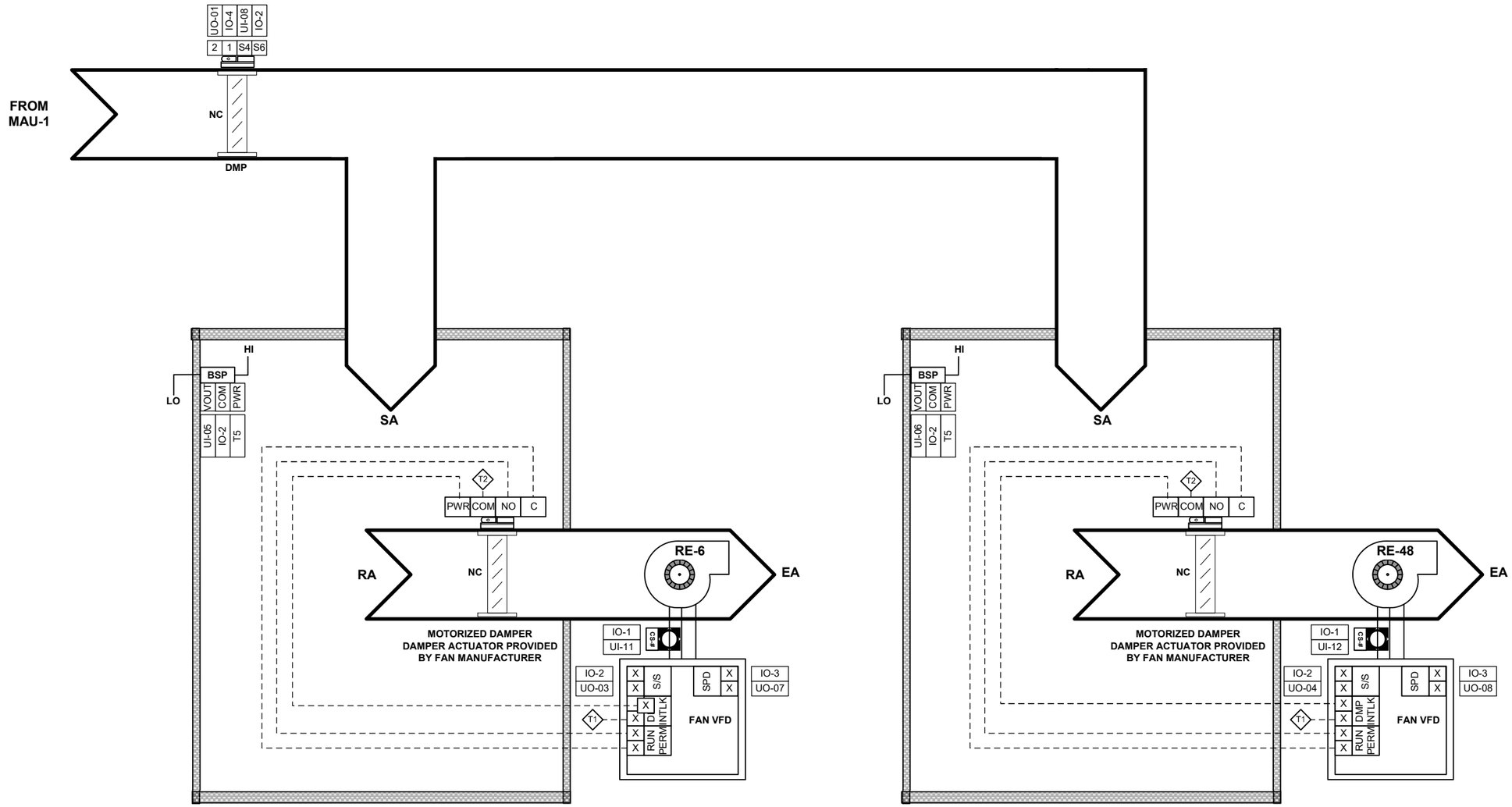
EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 3



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		

PROJECT: WARABEYA NORTH AMERICA	
EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 3	
JOB #: 23-10265	PAGE: 88 of 124

EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 4



NOTES:
1. FANS ARE NOT COMING WITH THE VFDs. ENGINEER TO CONFIRM WHETHER RE-21 OPERATES TO MAINTAIN ROOM PRESSURE OR ARE SINGLE SPEED FANS AND OPEARATES WHEN MAU-1 IS OPERATING.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
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PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
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PROJECT: WARABEYA NORTH AMERICA

EAST ROOF EXHAUSTER SYSTEM SCHEMATIC DIAGRAM PAGE 4

JOB #: 23-10265

EAST ROOF EXHAUSTER SYSTEM SCHEDULE

ROOF EXHAUSTER SCHEDULE							
ITEM#	TAG	LOCATION	CFM	FAN RPM	MOTOR HP	VOLT/HZ/PH	MECH. DWG. REF
1	RE-6	PIZZA TOPPING ROOM 173	13100	882	5	460/60/3	H1.3
2	RE-7	BASKET WASHING 180	10000	682	3	460/60/3	H1.3
3	RE-8	PIZZA TOPPING ROOM 173	10000	682	3	460/60/3	H1.3
4	RE-16	KITCHEN PLAN	5250	1458	2	460/60/3	H1.3
5	RE-17	KITCHEN PLAN	5250	1478	2	460/60/3	H1.3
6	RE-18	WASHING ROOM 160	2000	943	1/2	115/60/1	H1.3
7	RE-21	MIXING PREP 152C	1800	1717	1/2	115/60/1	H1.3
8	RE-38	TRASH ROOM 131	1500	1530	1/2	115/60/1	H1.3
9	RE-39	NRTE PIZZA HYGIENE 166	400	1353	1/15	115/60/1	H1.3
10	RE-48	PIZZA PACKAGING 174	8900	622	2	460/60/3	H1.3
11	RE-51	BATTERY EXHAUST	105	1350	1/30	115/60/1	H1.3
12	RE-52	NRTE HYGIENE 157	400	1353	1/15	115/60/1	H1.3

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
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PROJECT: WARABEYA NORTH AMERICA

EAST ROOF EXHAUSTER SYSTEM SCHEDULE

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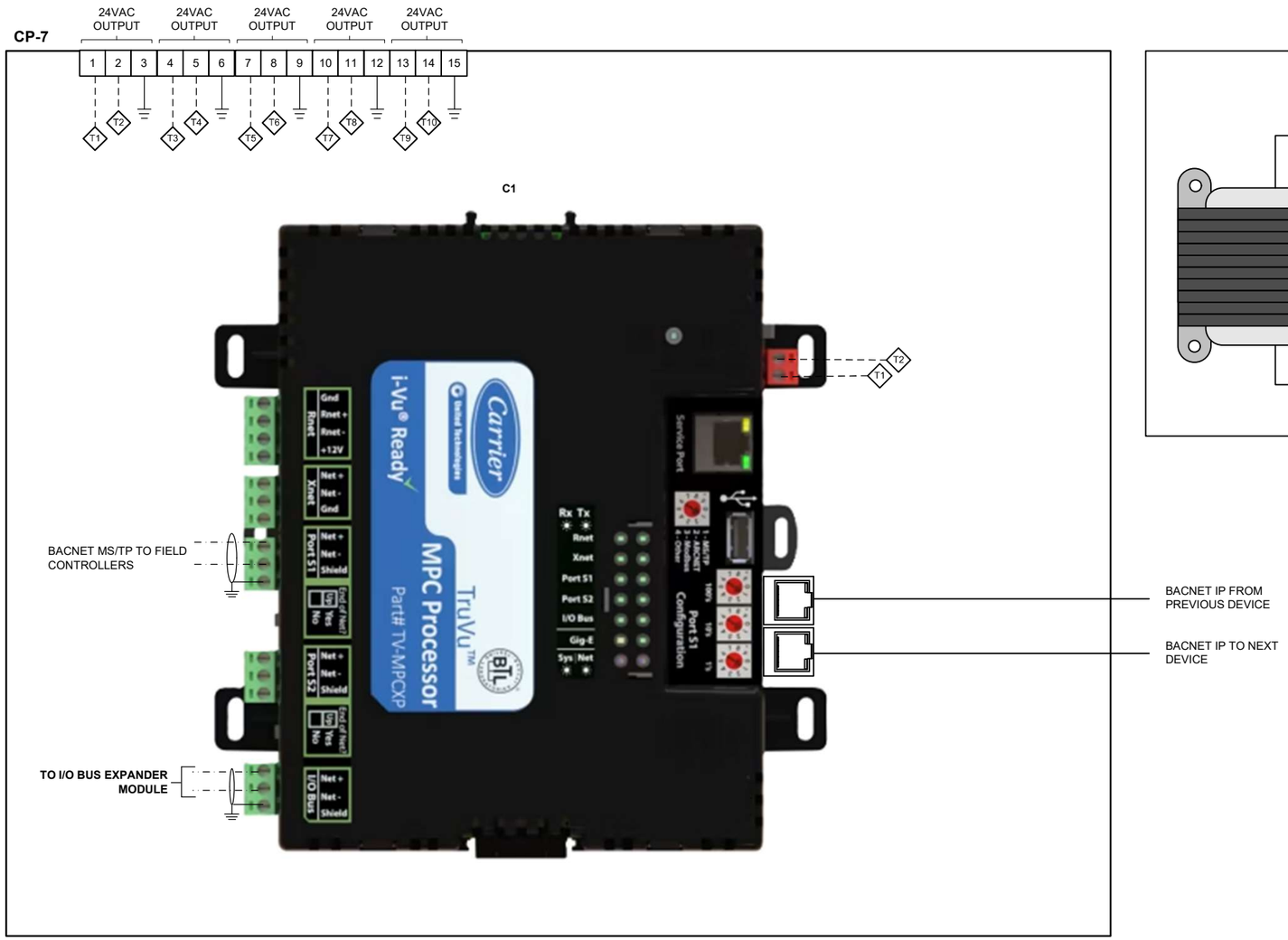
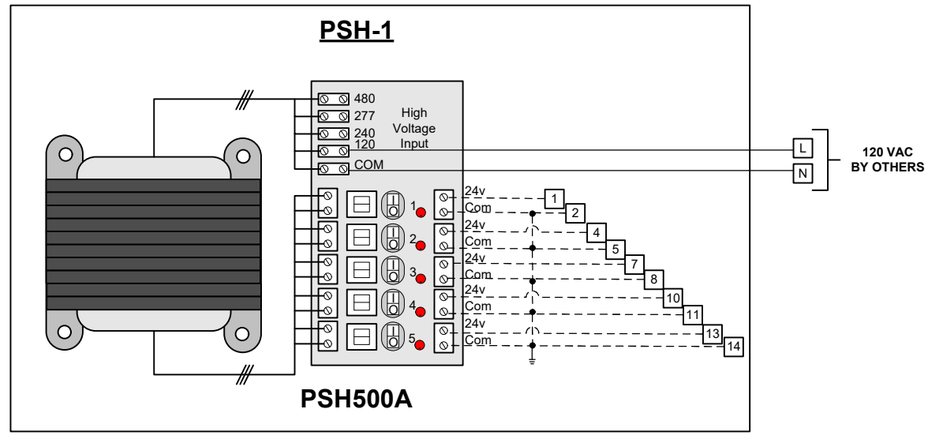
EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 1





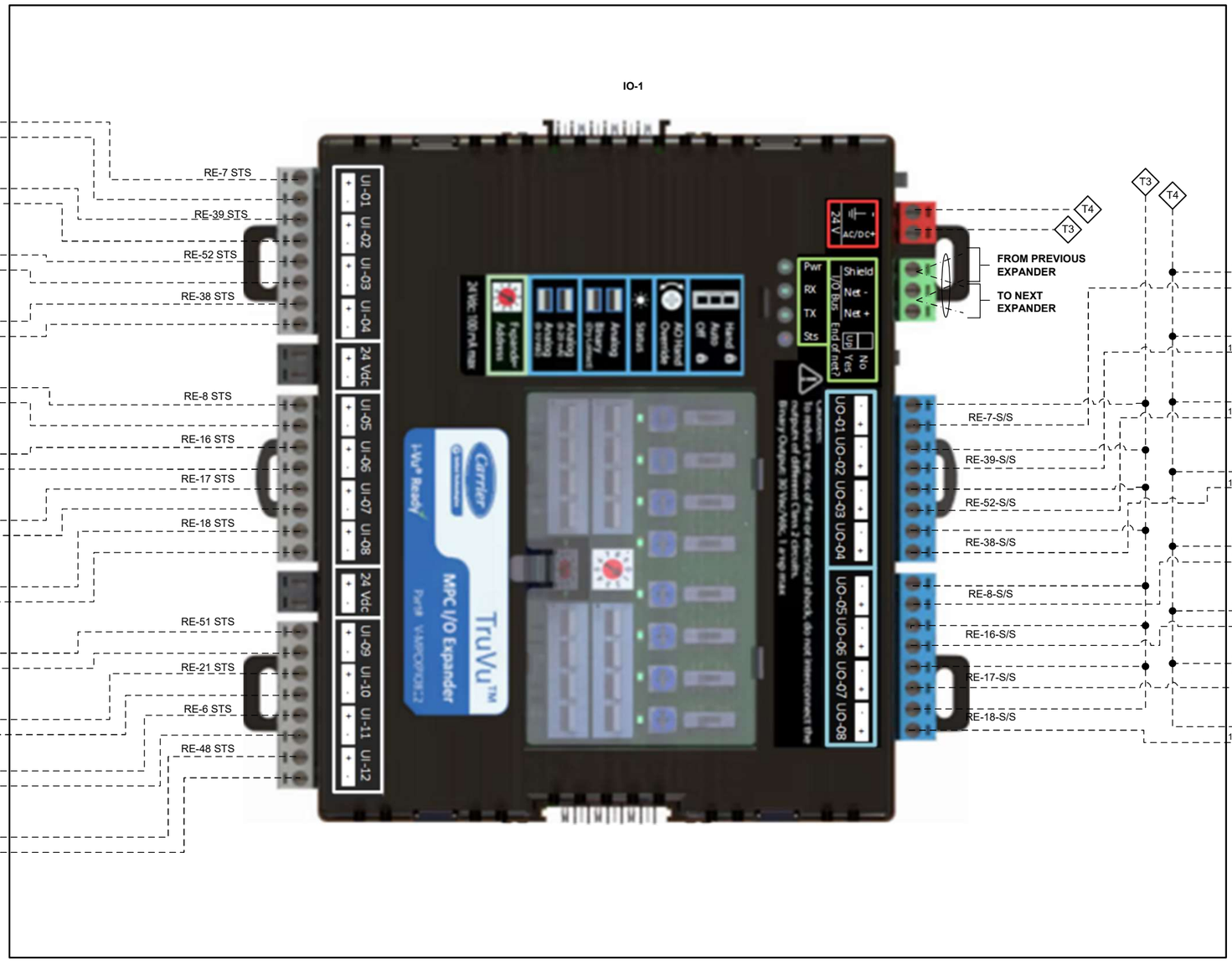
LOCATION: FIELD TO VERIFY

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 1
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 91 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 2

CP-7 CONTD.

IO-1



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 2
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 92 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 3

CP-7 CONTD.

IO-2

RE-7 BSP
RE-7 BUILDING
STATIC PRESSURE

RE-39 BSP
RE-39 BUILDING
STATIC PRESSURE

RE-52 BSP
RE-52 BUILDING
STATIC PRESSURE

RE-38 BSP
RE-38 BUILDING
STATIC PRESSURE

RE-6 BSP
RE-6 BUILDING
STATIC PRESSURE

RE-48 BSP
RE-48 BUILDING
STATIC PRESSURE

RE-21 BSP
RE-21 BUILDING
STATIC PRESSURE

RE-16 BSP
RE-16 BUILDING
STATIC PRESSURE

RE-17 BSP
RE-17 BUILDING
STATIC PRESSURE

BSP: PWR, COM, VOUT (LO / HI)

RE-7 BSP
RE-39 BSP
RE-52 BSP
RE-38 BSP
RE-6 BSP
RE-48 BSP
RE-21 BSP
MAU-5-RE-6,48 DMP
MAU-5-RE-7,8 DMP
Z1 / C1
Z2 / C2

T5 / T6

FROM PREVIOUS EXPANDER
TO NEXT EXPANDER

RE-51-S/S
RE-21-S/S
RE-6-S/S
RE-48-S/S
RE-52-S/S
RE-38-S/S
RE-8-S/S
RE-16-S/S

FR-9	REFER SCHEMATIC DIAGRAM FOR WIRING DETAILS		**RE-51-S/S** RE-51 START / STOP
FR-10	REFER SCHEMATIC DIAGRAM FOR WIRING DETAILS		**RE-21-S/S** RE-21 START / STOP
FR-11		RE-6 VFD	**RE-6-S/S** RE-6 START / STOP
FR-12		RE-48 VFD	**RE-48-S/S** RE-48 START / STOP
		RE-52 ECM	**RE-52-SPD** RE-52 SPEED CONTROL
		RE-38 ECM	**RE-38-SPD** RE-38 SPEED CONTROL
		RE-8 VFD	**RE-8-SPD** RE-8 SPEED CONTROL
		RE-16 VFD	**RE-16-SPD** RE-16 SPEED CONTROL

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

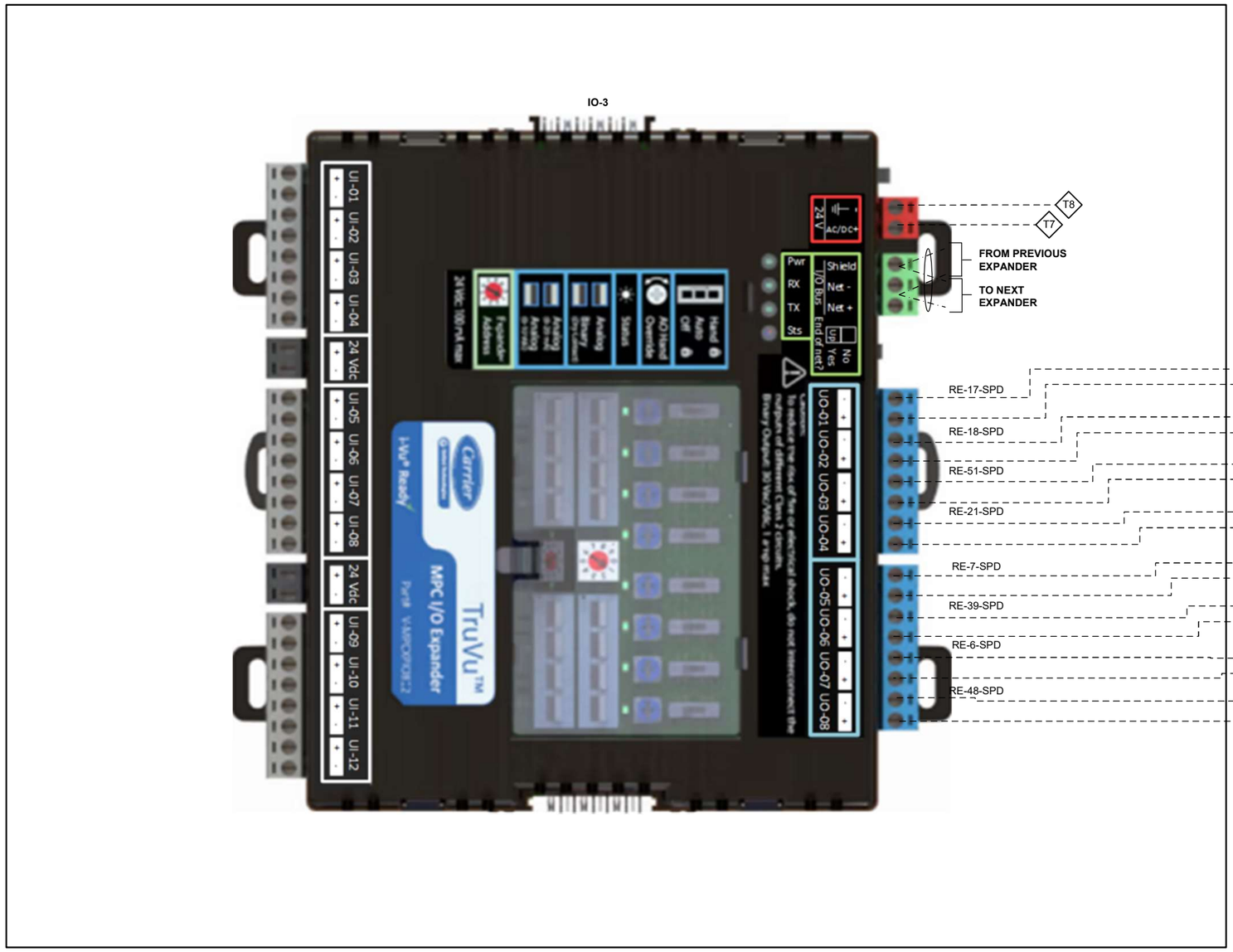
PROJECT: WARABEYA NORTH AMERICA

EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 3

JOB #: 23-10265 | PAGE: 93 of 124

EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 4

CP-7 CONTD.

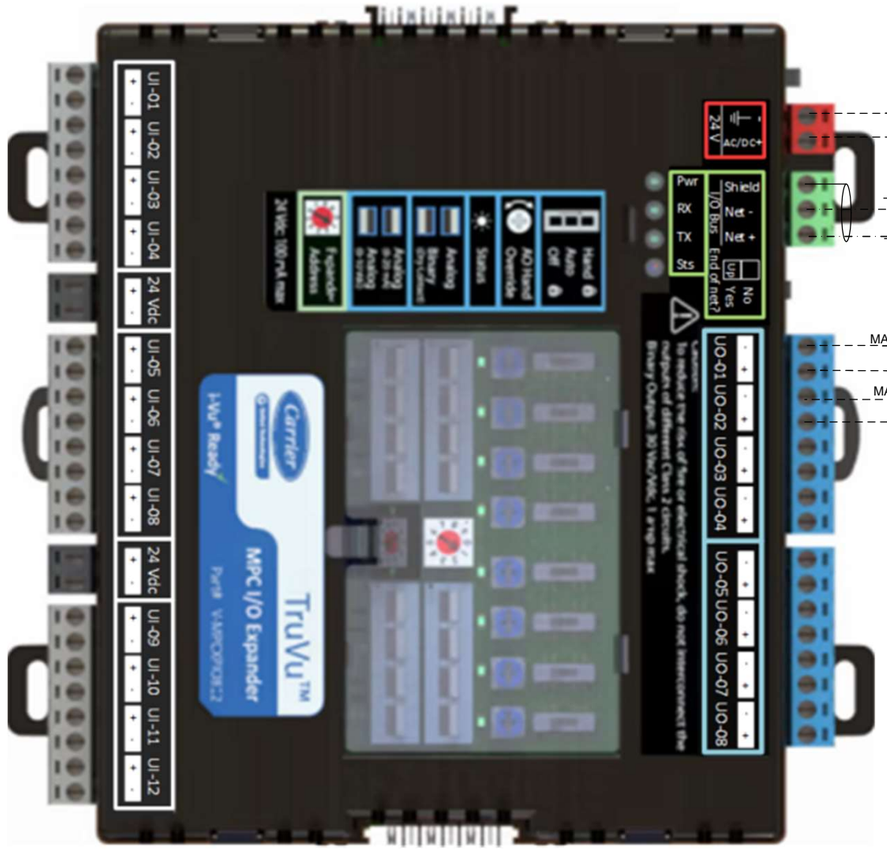


FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 94 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 5

CP-7.

IO-4



T10
T9

FROM PREVIOUS EXPANDER

T9
T10

MAU-5-RE-6,48 DMP

MAU-5-RE-7,8 DMP

WHT/YEL
WHT/BLU
FR-13
ORG
YEL

Z1
C1

1
2
S4
S6

MAU-5-RE-6,48 DMP
MAU-5-RE-6,48 DAMPER OPEN STATUS

WHT/YEL
WHT/BLU
FR-14
ORG
YEL

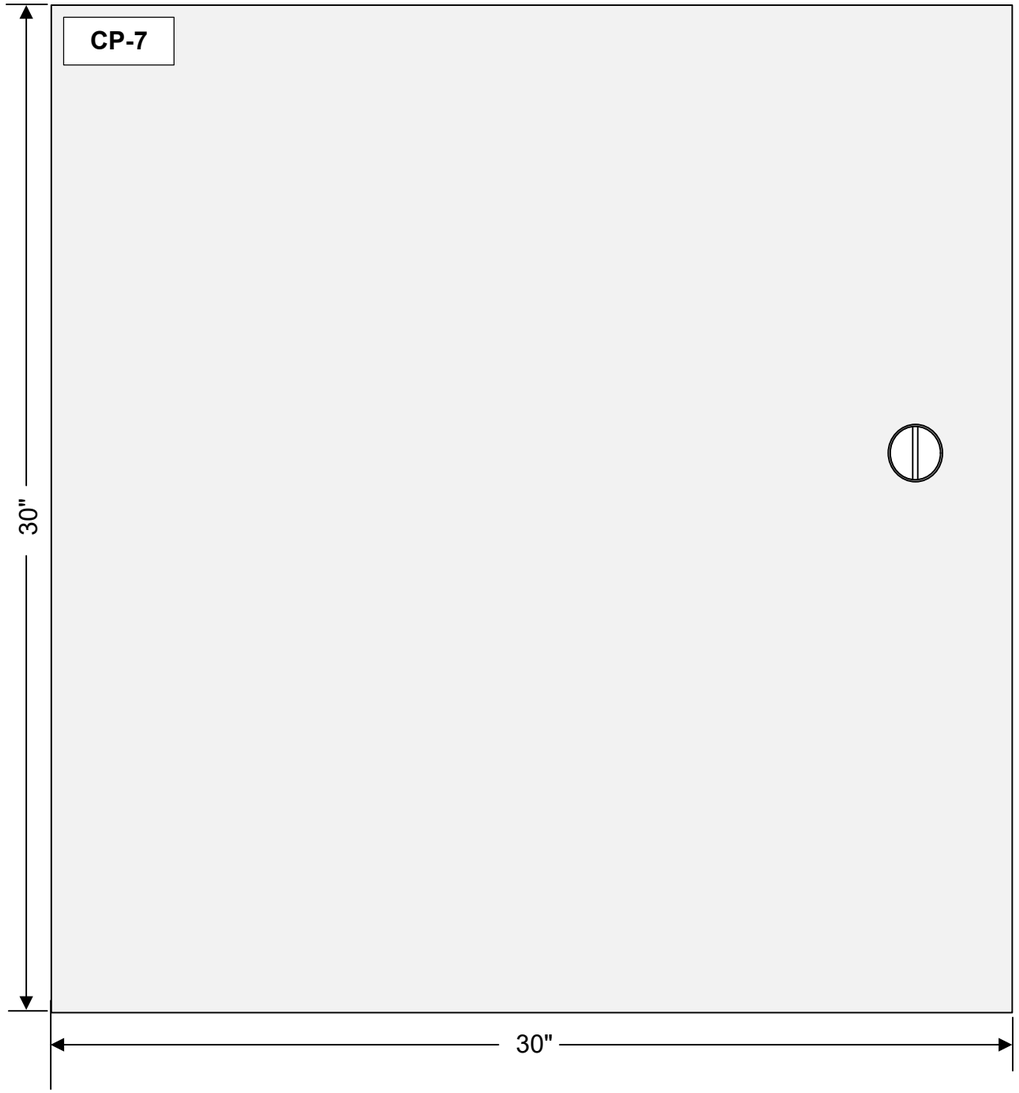
Z2
C2

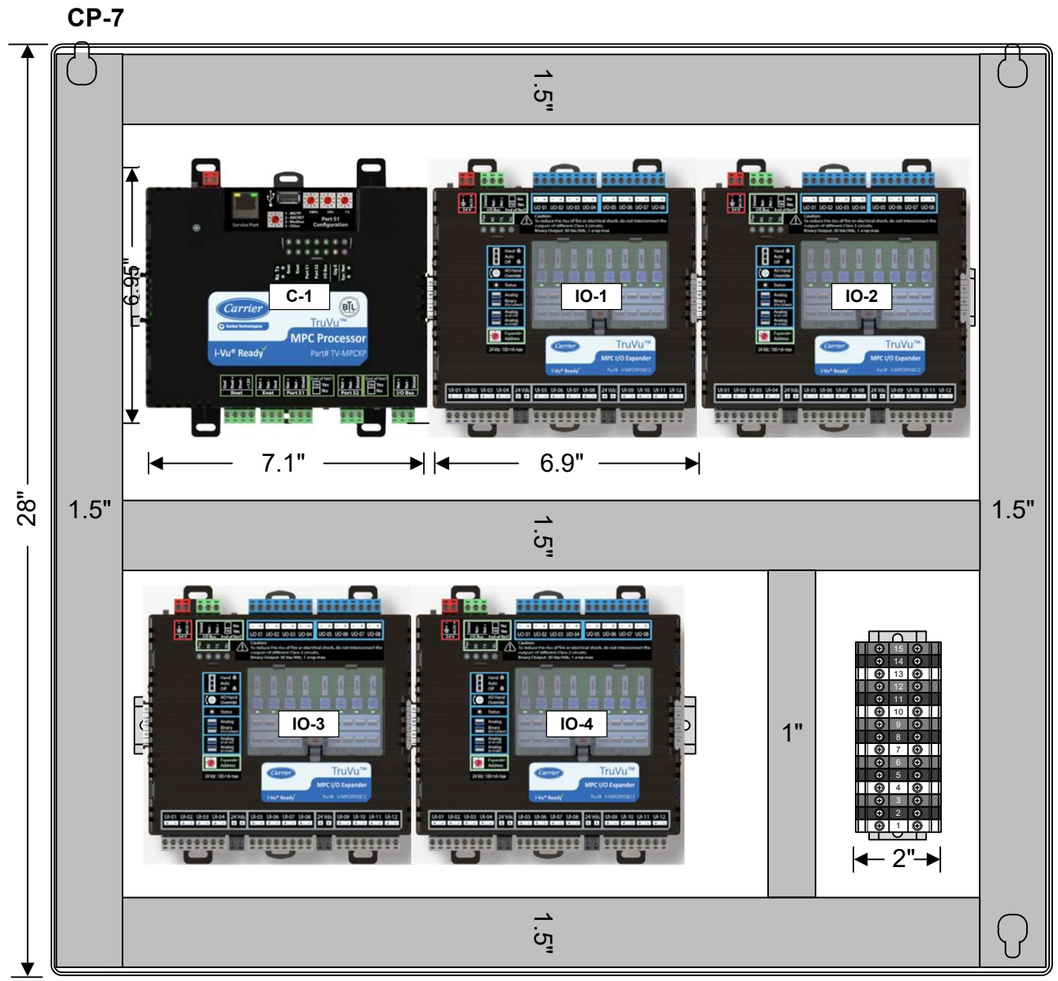
1
2
S4
S6

MAU-5-RE-7,8 DMP
MAU-5-RE-7,8 DAMPER OPEN STATUS

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							EAST ROOF EXHAUSTER SYSTEM WIRING DIAGRAM PAGE 5
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 95 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

EAST ROOF EXHAUSTER SYSTEM PANEL LAYOUT





LOCATION: SECOND FLOOR - AREA D

NOTES:
1. PANEL LAYOUTS ARE NOT TO THE SCALE.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

EAST ROOF EXHAUSTER SYSTEM PANEL LAYOUT

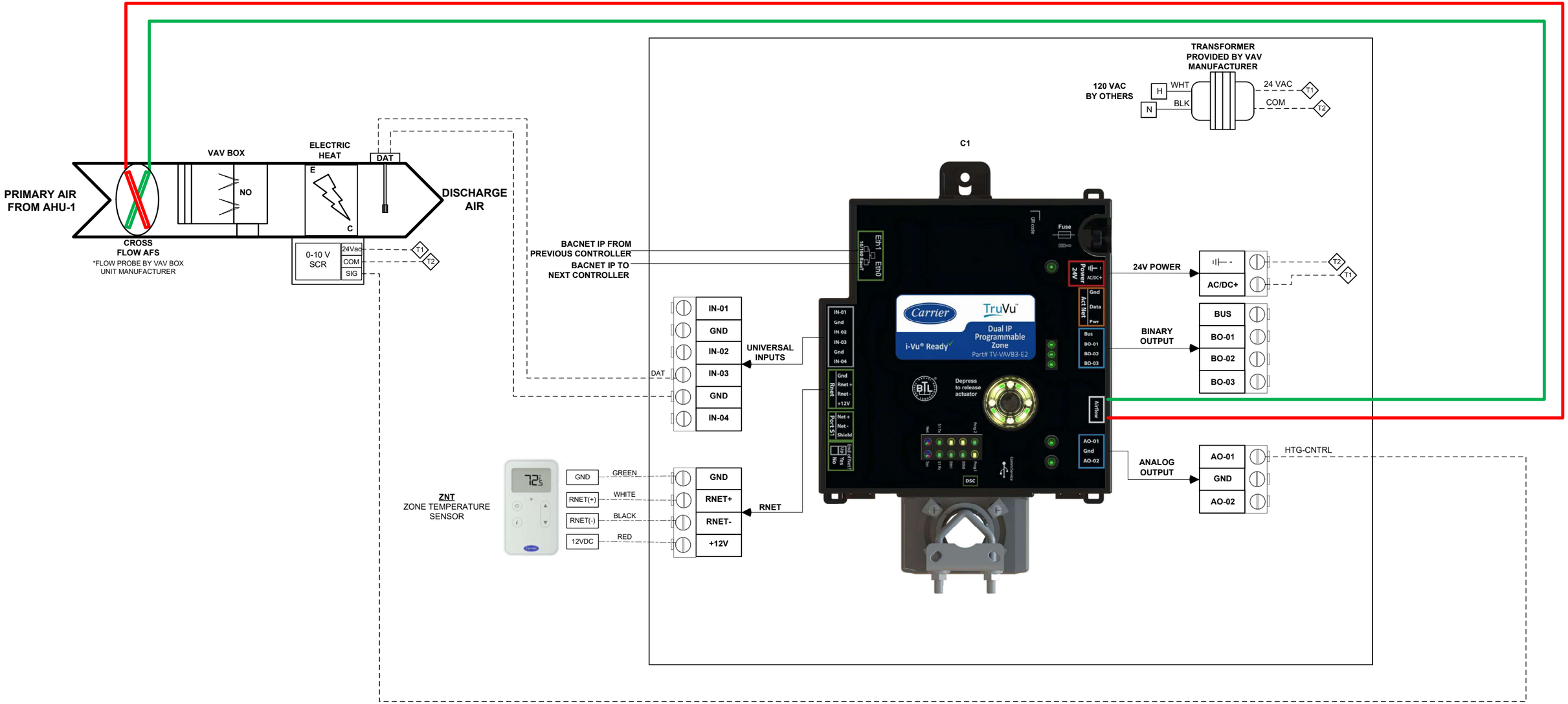
JOB #: 23-10265 | PAGE: 96 of 124

EAST ROOF EXHAUSTER SYSTEM BILL OF MATERIAL

EAST ROOF EXHAUSTER BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-MPCXP	1	Support for up to nine TruVu MPC I/O expansion modules and a total of 180 input/output points.	Carrier
2	I/O Module	IO-#	TV-MPCXPIO812	4	12 inputs, 8 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	Building Static Pressure	BSP	P5-0500-1LX	9	AIR DIFF PRESS XMTR, +/-1.00%, 0-5.00" WC, FLD SEL OUT, LCD, DIN RAIL	Senva
4	Zone Pressure Pickup Ports	-	ZPS-ACC01-86	9	2 x 4 Stainless Steel Wall Plate with Static Pickup	Bapi
5	Outside Pressure Pickup Port	-	ZPS-ACC10-V	9	Rooftop or Wall Mount Outside Air Pressure Pickup Port	Bapi
6	Field Relay	FR-#	RIBU1C	7	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
7	Field Relay	FR-#	RIBTU1S	6	Pilot Relay, 10 Amp SPST + Override, 10-30 Vac/dc/120 Vac Coil, Hi/Lo Voltage Separation, NEMA 1 Housing	Functional Devices
8	Power Supply	PSH-1	PSH500A	1	Enclosed 100VAx5 multi-tap 120-480 to 24Vac UL Class 2 power supply	Functional Devices
9	Current Switch	CS-#	RIBXGTA	6	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
10	Current Switch	CS-#	RIBXGTA-ECM	6	Current Switches, Split Core, Fixed, Adjustable, or Self-Calibrated, Up to 150 Amps Sensing Range	Functional Devices
11	Panel	CP-7	SCE-30N30MP	1	Enclosure - 28 x 28 x 0.8 - Steel/Gray	Saginaw
12	Sub-Panel	CP-7	SCE-30N3008LP	1	N1 Panel - 30 x 30 x 08 - Steel/Gray	Saginaw

VAV WITH ELECTRIC SCR HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 1

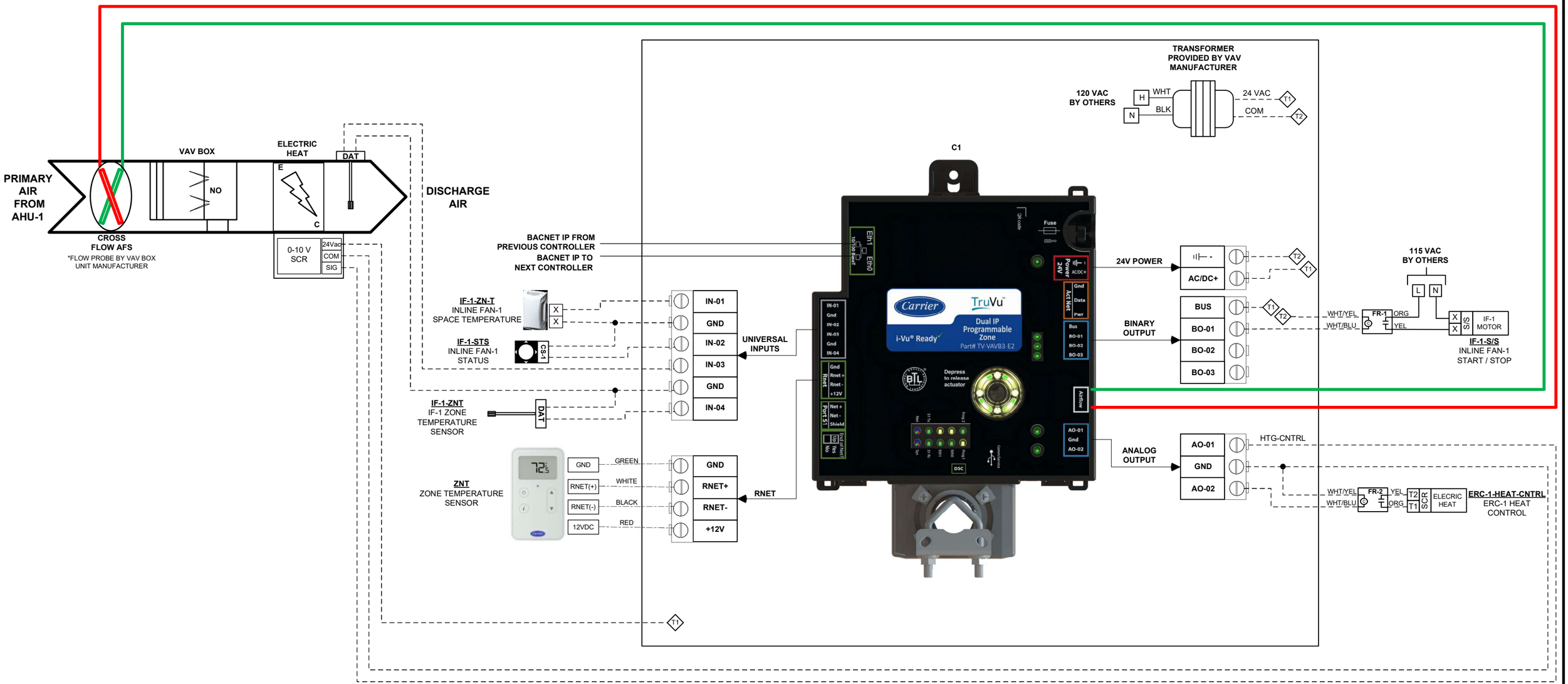
TYPICAL OF 12



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							VAV WITH ELECTRIC SCR HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 1
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 98 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

VAV WITH ELECTRIC SCR HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 2

VAVR-1-10



FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

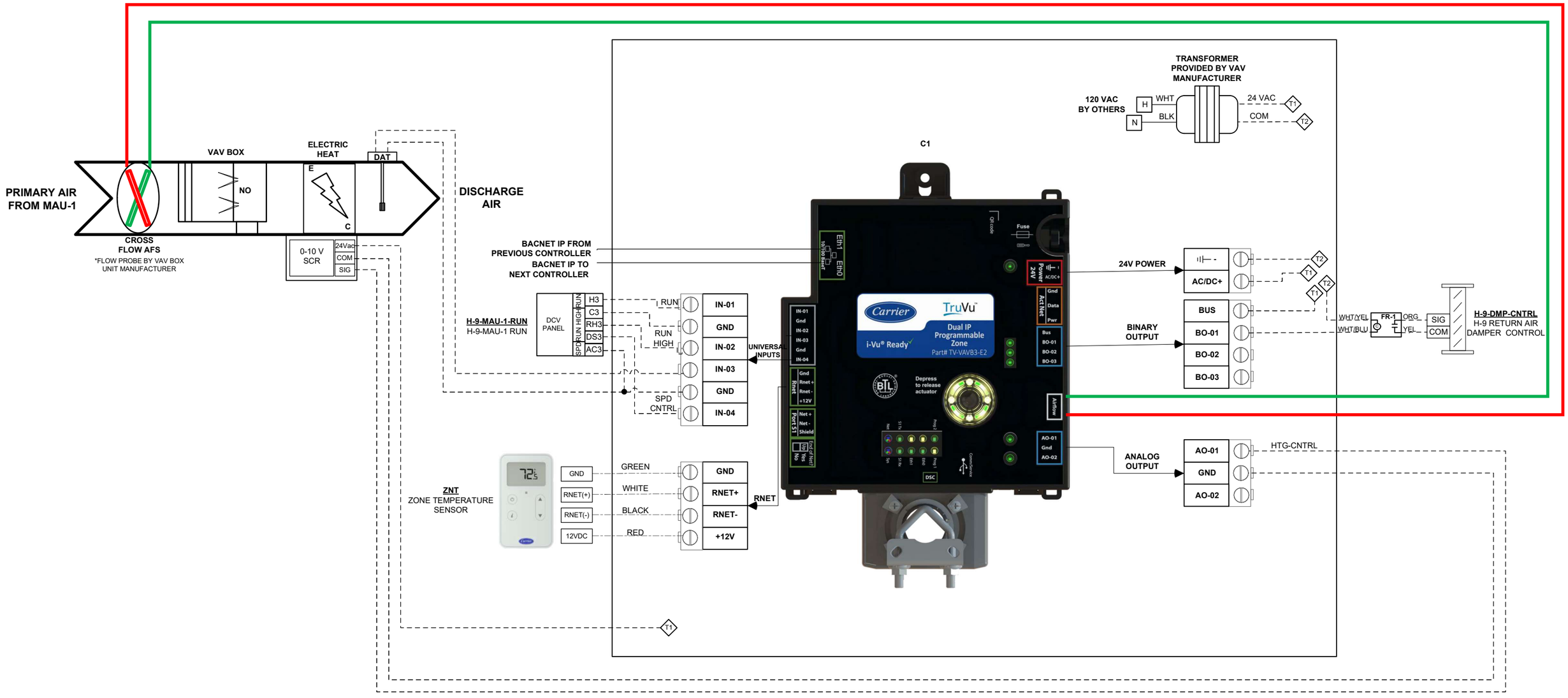
PROJECT: WARABEYA NORTH AMERICA

VAV WITH ELECTRIC SCR HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 2

JOB #: 23-10265 | **PAGE: 99 of 124**

VAV WITH ELECTRIC SCR HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 3

VAV-13

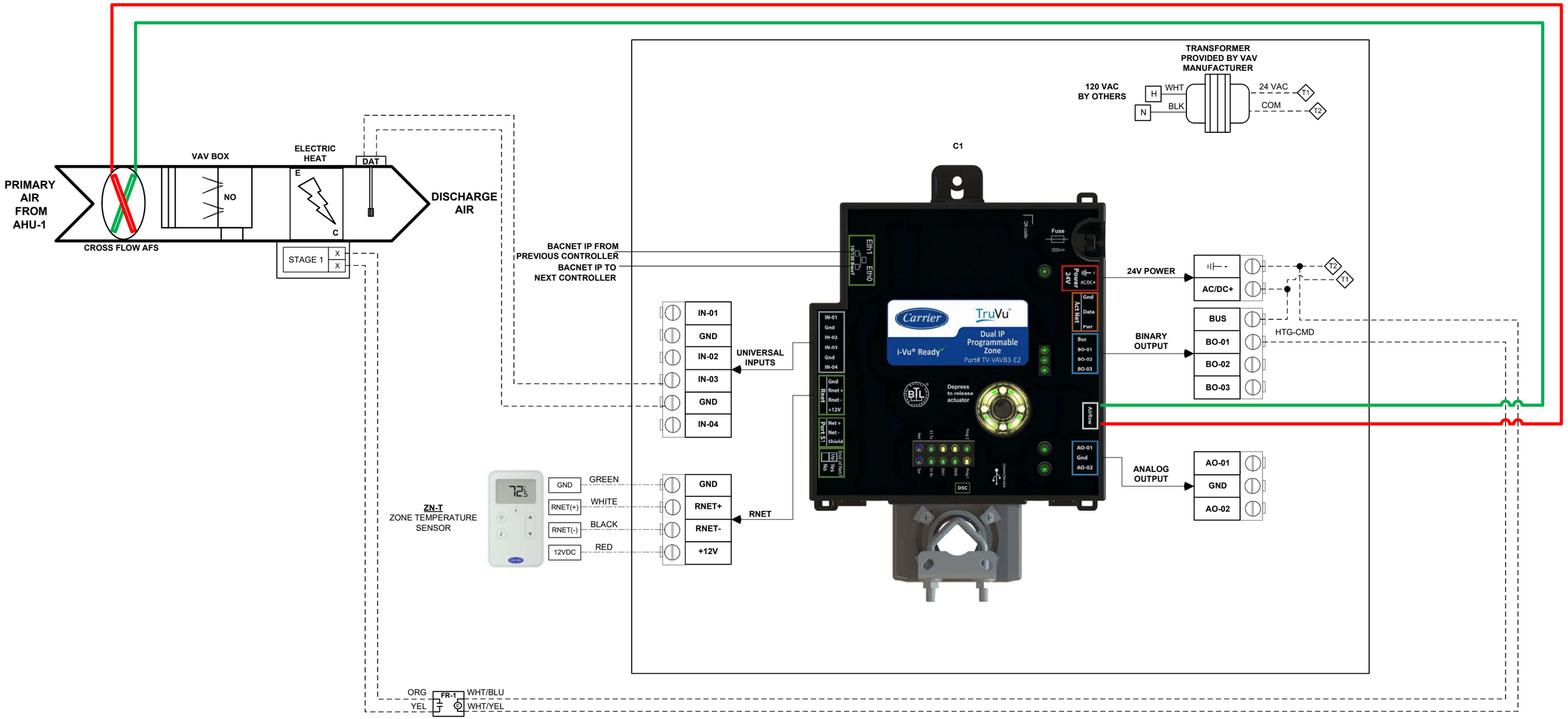


NOTES :
1. ENGINEER TO CONFIRM THE VAV-13 SEQUENCE OF OPERATION. IS VAV-13 MAINTAINING SPACE TEMPERATURE IN NORMAL OPEARTION AND ALSO PROVIDING THE MAKEUP AIR WHEN KITCHEN HOOD H-9 IS IN OPERATION? WHAT WILL BE ON PRIORITY.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050
MECH. CONTRACTOR	MULLINS MECHANICAL						PROJECT: WARABEYA NORTH AMERICA
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS		VAV WITH ELECTRIC SCR HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 3
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY		JOB #: 23-10265 / PAGE: 100 of 124

VAV WITH SINGLE STAGE ELECTRIC HEAT HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 4

VAVR-1-5



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							VAV WITH SINGLE STAGE ELECTRIC HEAT HEAT SCHEMATIC AND WIRING DIAGRAM PAGE 4
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 101 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

VAV WITH ELECTRIC SCR HEAT SCHEDULE

VAV SCHEDULE														
ITEM#	TAG	LOCATION		SERVING AREA	INLET SIZE	PRIMARY AIR FLOW		HEATING			NIGHT CFM	V/PH/HZ	ASSOCIATED AHU	MECH. DWG. REF.
		FLOOR	ROOM			MAX (CFM)	MIN (CFM)	AIRFLOW CFM	COIL kW	STEPS				
1	VAVR-1-1	FIRST	CORRIDOR 125	SMALL CONFERENCE 101	8	500	150	350	4.40	SCR	500	480/3/60	AHU-1	H1.1A
2	VAVR-1-2A	FIRST	OPEN OFFICE 102	OPEN OFFICE 102	12	980	425	950	12.00	SCR	980	480/3/60	AHU-1	H1.1A
3	VAVR-1-2B	FIRST	OPEN OFFICE 102	OPEN OFFICE 102, STORAGE 105	10	600	330	504	3.20	SCR	0	480/3/60	AHU-1	H1.1A
4	VAVR-1-3	FIRST	OPEN OFFICE 102	CONFERENCE 115	12	945	425	644	4.10	SCR	0	480/3/60	AHU-1	H1.1A
5	VAVR-1-4	FIRST	CORRIDOR 125	RECEPTION 114, VESTIBULE 100	6	300	100	260	3.30	SCR	300	480/3/60	AHU-1	H1.1A
6	VAVR-1-5	FIRST	CORRIDOR 125	HR OFFICE 113, HR STOR. 113A	6	260	90	260	3.20	1 STAGE	260	480/3/60	AHU-1	H1.1A
7	VAVR-1-6	FIRST	CORRIDOR 125	QA OFFICE 111, FINANCE OFFICE 112	6	375	115	280	3.50	SCR	375	480/3/60	AHU-1	H1.1A
8	VAVR-1-7	FIRST	CORRIDOR 125	GM OFFICE 110	6	300	90	260	3.30	SCR	300	480/3/60	AHU-1	H1.1A
9	VAVR-1-8	FIRST	CORRIDOR 125	VISITOR OFFICE 108, VISITOR OFFICE 109, CORRIDOR 125	6	350	110	110	0.70	SCR	0	277/1/60	AHU-1	H1.1A
10	VAVR-1-9	FIRST	CORRIDOR 125	R&D MEETING ROOM 103	6	315	95	95	0.60	SCR	0	277/1/60	AHU-1	H1.1A
11	VAVR-1-10	FIRST	CORRIDOR 126	EMPLOYEE ENTRANCE VESTIBULE 123, USDA OFFICE 124, CORRIDOR 126	6	375	115	120	0.90	SCR	0	277/1/60	AHU-1	H1.1A
12	VAVR-1-11	FIRST	BREAKROOM 120	STAFFING OFFICE 121	6	240	100	100	0.70	SCR	115	277/1/60	AHU-1	H1.1A
13	VAVR-1-12A	FIRST	BREAKROOM 120	BREAKROOM 120	12	960	540	920	11.60	SCR	960	480/3/60	AHU-1	H1.1A
14	VAVR-1-12B	FIRST	BREAKROOM 120	BREAKROOM 120	14	1825	600	600	4.00	SCR	0	480/3/60	AHU-1	H1.1A
15	VAV-13	SECOND	UNOCCUPIED EQUIPMENT PLATFORM 200	R&D TEST KITCHEN 104	16	3200	960	960	6.40	SCR	0	480/3/60	MAU-1	H1.2A

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

VAV WITH ELECTRIC SCR HEAT SCHEDULE

VAV WITH ELECTRIC SCR HEAT SEQUENCE OF OPERATION

VAV REHEAT BOXES SEQUENCE OF OPERATION:

1. PROVIDE TEMPERATURE SENSOR FOR:

    a. ROOM WITH SETPOINT ADJUSTMENT, MANUAL "OCCUPIED" OVERRIDE SWITCH, TEMPERATURE READOUT, SETPOINT INDICATION.

    b. DISCHARGE AIR

2. PROVIDE SEPARATE UNOCCUPIED / OCCUPIED SETPOINTS FOR HEATING AND COOLING AS DETERMINED BY THE CONTROL OF THE UNIT SUPPLYING THE VAV BOX.

3. HEATING AND COOLING SETPOINTS CAN BE SET NO CLOSER THAN 3°F.

4. BOX DAMPER WILL BE AT MINIMUM OPEN POSITION WHEN ROOM TEMPERATURE IS BETWEEN HEATING AND COOLING SETPOINT.

5. MODULATE BOX TO MAXIMUM OPEN POSITION ON A RISE IN ROOM TEMPERATURE ABOVE COOLING SETPOINT TO MAINTAIN COOLING SETPOINT.

6. ELECTRIC REHEAT BOXES

    a. PROVIDE PID CONTROL.

    b. LOCKOUT ELECTRIC HEAT IF UNIT SUPPLYING VAV BOX IS OFF.

    c. OCCUPIED CYCLE

    1). ON A DROP IN ROOM TEMPERATURE BELOW HEATING SETPOINT, CONTROL ELECTRIC HEAT BASED ON DISCHARGE AIR TEMPERATURE. RESET DISCHARGE AIR TEMPERATURE FROM 75°F AT SETPOINT TO 100°F AT 1°F BELOW SETPOINT.

    2). ON A FURTHER DROP IN ROOM TEMPERATURE BELOW SETPOINT, MODULATE BOX DAMPER FROM MINIMUM SCHEDULED AIRFLOW TO SCHEDULED HEATING AIRFLOW.

    d. UNOCCUPIED CYCLE: IF UNIT SUPPLYING BOXES IS ON, CONTROL TO MAINTAIN UNOCCUPIED ROOM SETPOINTS.

    1). CONTROL DAMPER TO SCHEDULED "NIGHT CFM".

    2). HEATING:

        a). LOCKOUT ELECTRIC HEAT.

    3). COOLING

        a). LOCKOUT ELECTRIC HEAT.

    e. PREOCCUPIED CYCLE: CONTROL DAMPER AND REHEAT COIL PER UNOCCUPIED CYCLE TO ACHIEVE OCCUPIED SETPOINT.

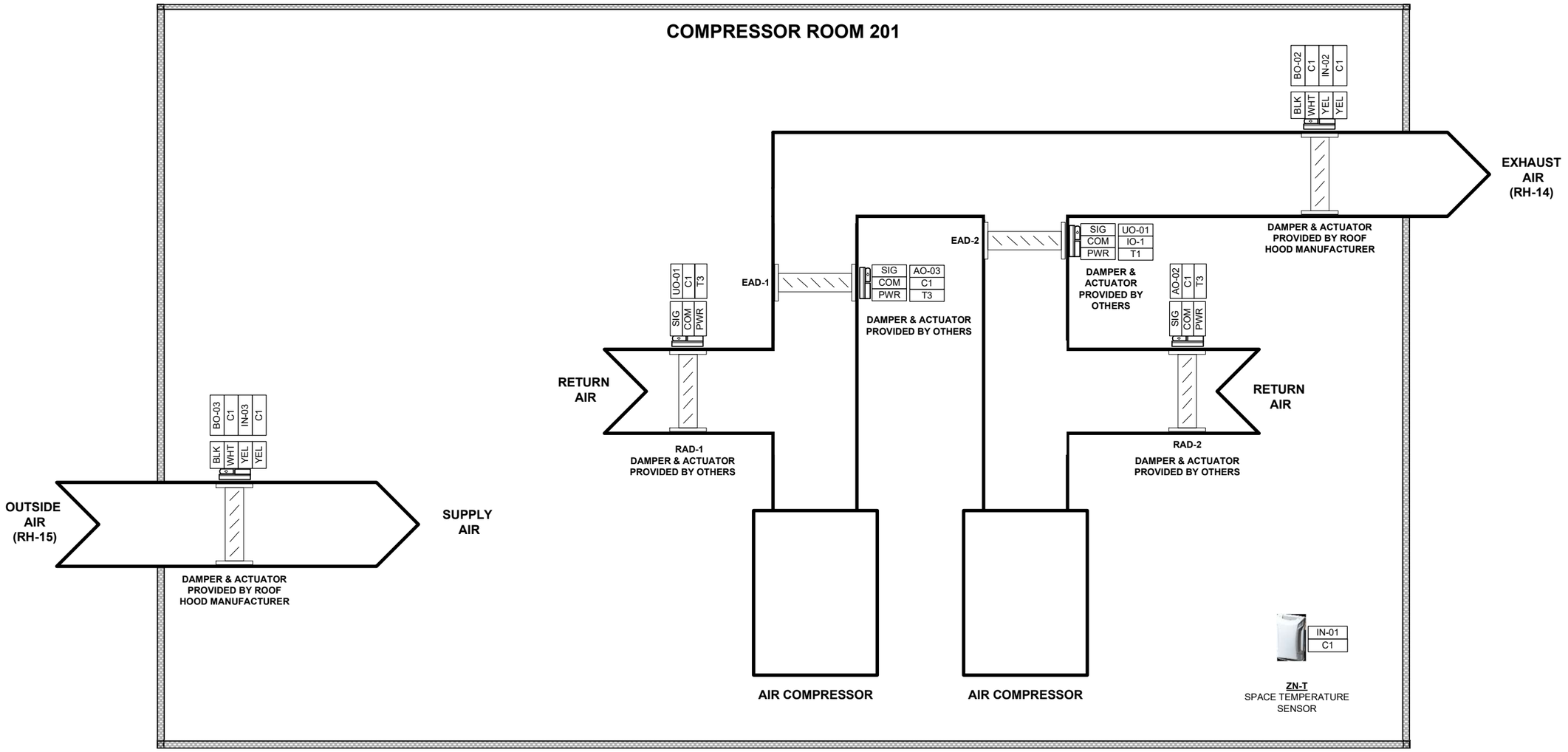
NOTES :
1. ENGINEER TO CONFIRM THER SEQUENCE OF OPERATION.
ELECTRIC HEAT WILL NOT OPERATE IN PREOCCUPIED MODE AS PER UNOCCUPIED CYCLE ELECTRIC HEAT IS LOCKED OUT.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							VAV WITH ELECTRIC SCR HEAT SEQUENCE OF OPERATION
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 103 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

VAV BILL OF MATERIAL

VAV WITH ELECTRIC HEAT BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-VAVB3-E2	15	General Purpose VAV Controller W/4 universal inputs, 2 anlog output & 3 digital output	Carrier
2	Zone Temperature	ZN-T	ZS2P-CAR	15	ZS pro Rnet communication sensor with display	Carrier
3	Duct Temperature Sensor	DAT	BA/10K-2-D-4"-NB-15'	15	Duct Temperature Sensor, 10K Type II Thermistor, 4 Probe, No Box, 15' Leads	Bapi

AIR COMPRESSOR SCHEMATIC DIAGRAM



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							AIR COMPRESSOR SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 105 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

AIR COMPRESSOR SEQUENCE OF OPERATION

AIR COMPRESSOR SEQUENCE OF OPERATION:

1. PROVIDE TEMPERATURE SENSOR FOR:

    a. ROOM

2. FURNISH MOTOR OPERATED DAMPERS AND PROVIDE MODULATING ACTUATORS FOR EACH COMRESSOR FOR:

    a. EXHAUST AIR DISCHARGE TO OUTDOORS.

    b. RETURN AIR DISCHARGE TO ROOM.

3. FURNISH MOTOR OPERATED DAMPERS AND PROVIDE TWO POSITION ACTUATOR FOR

    a. INTAKE FROM OUTDOORS

4. MODULATE COMPRESSOR EXHAUST, AND RETURN DAMPERS TO MAINTAIN 70 DEG F ROOM TEMPERATURE SETPOINT.

    a. EXHAUST AND OUTDOOR INTAKE DAMPER FULL CLOSED, RETURN DAMPER FULL OPEN AT 10 DEG F BELOW SETPOINT.

    b. EXHAUST AND OUTDOOR INTAKE DAMPER FULL OPEN, RETURN DAMPER FULL CLOSED AT 10 DEG F ABOVE SETPOINT.

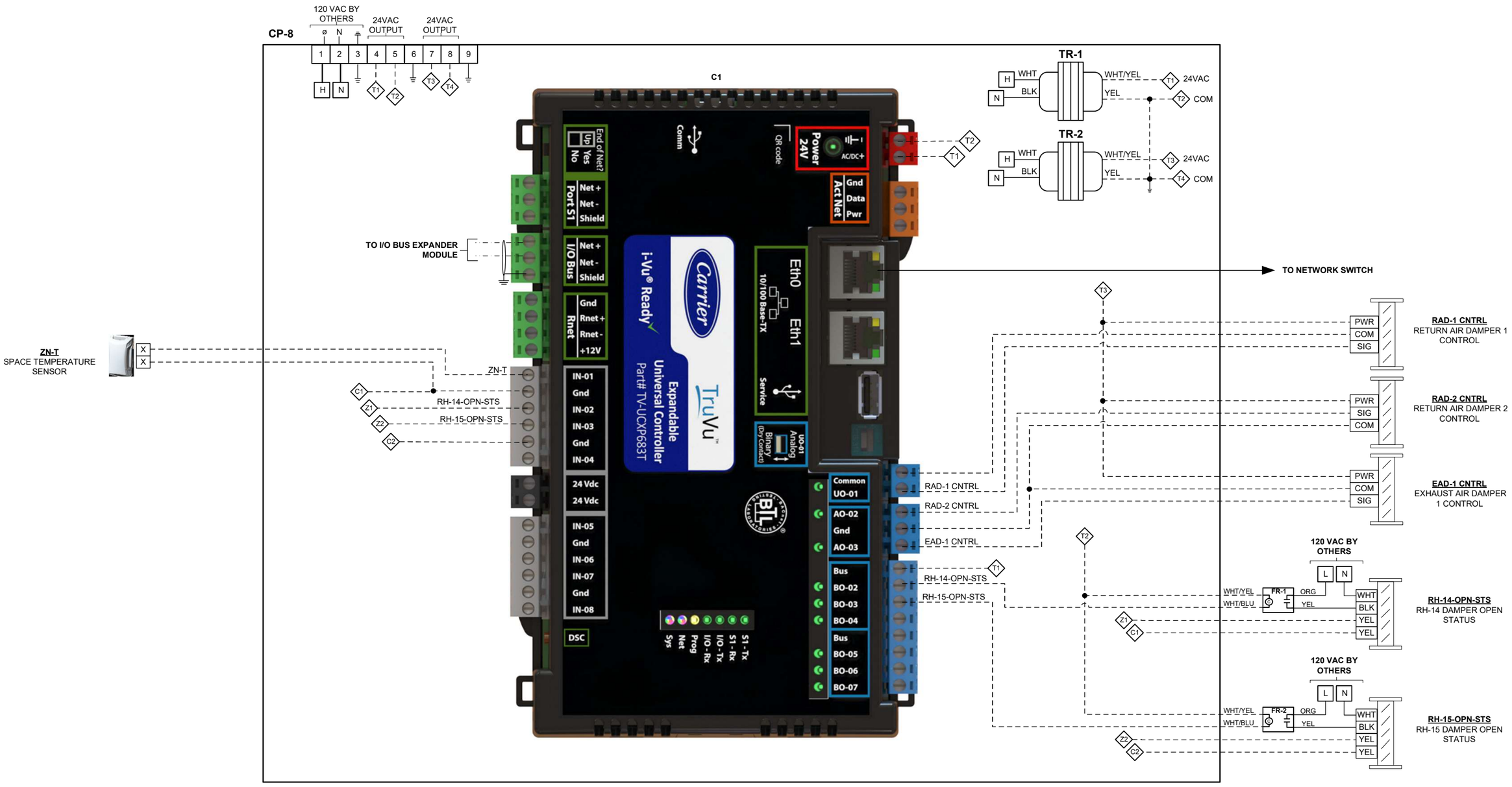
5. OPEN OUTSIDE AIR INTAKE DAMPER IF ANY COMPRESSOR EXHAUST DAMPER IS PARTIALLY OPEN.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

AIR COMPRESSOR SYSTEM WIRING DIAGRAM PAGE 1



FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

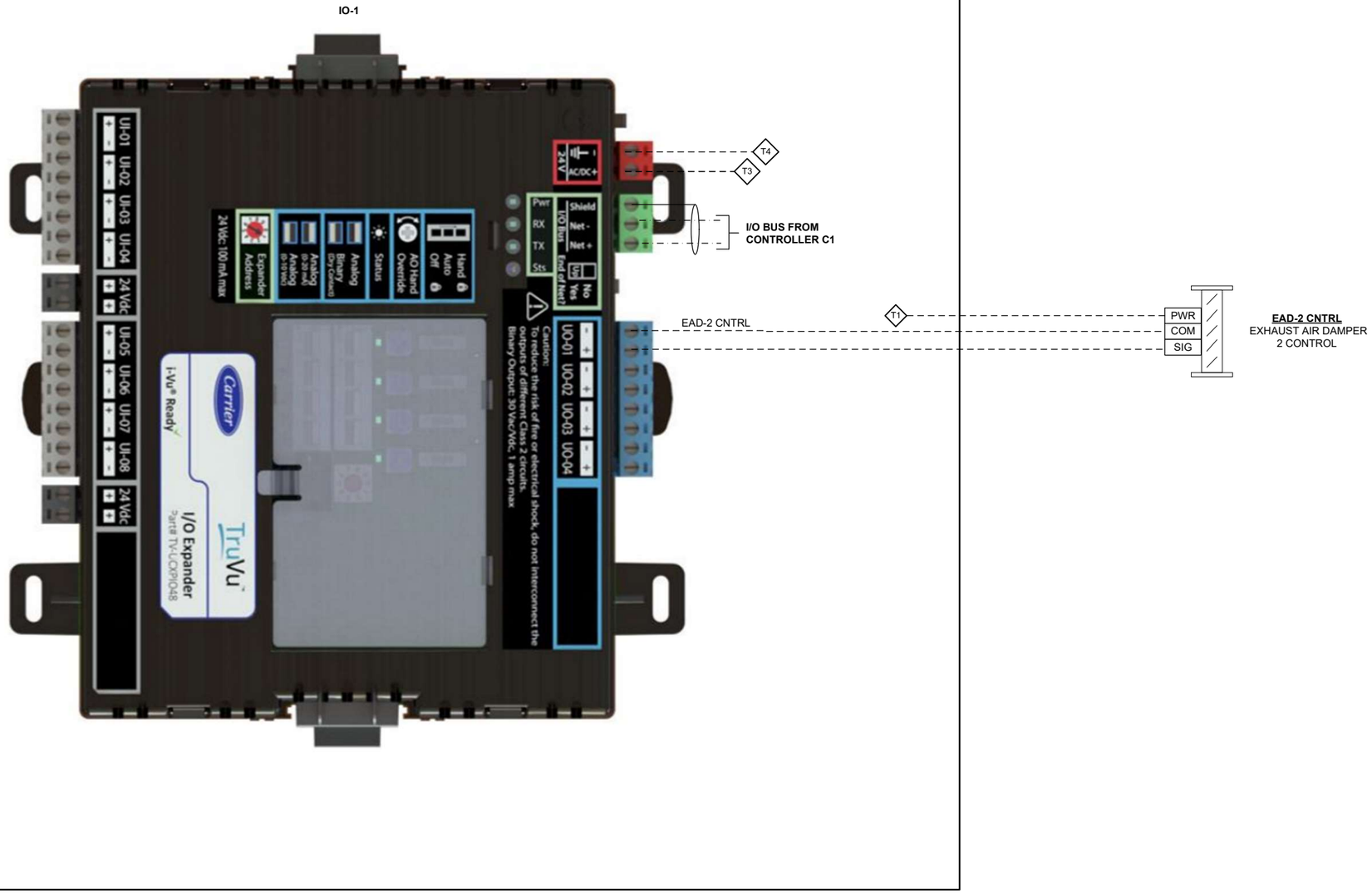
PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA	
AIR COMPRESSOR SYSTEM WIRING DIAGRAM PAGE 1	
JOB #: 23-10265	PAGE: 107 of 124

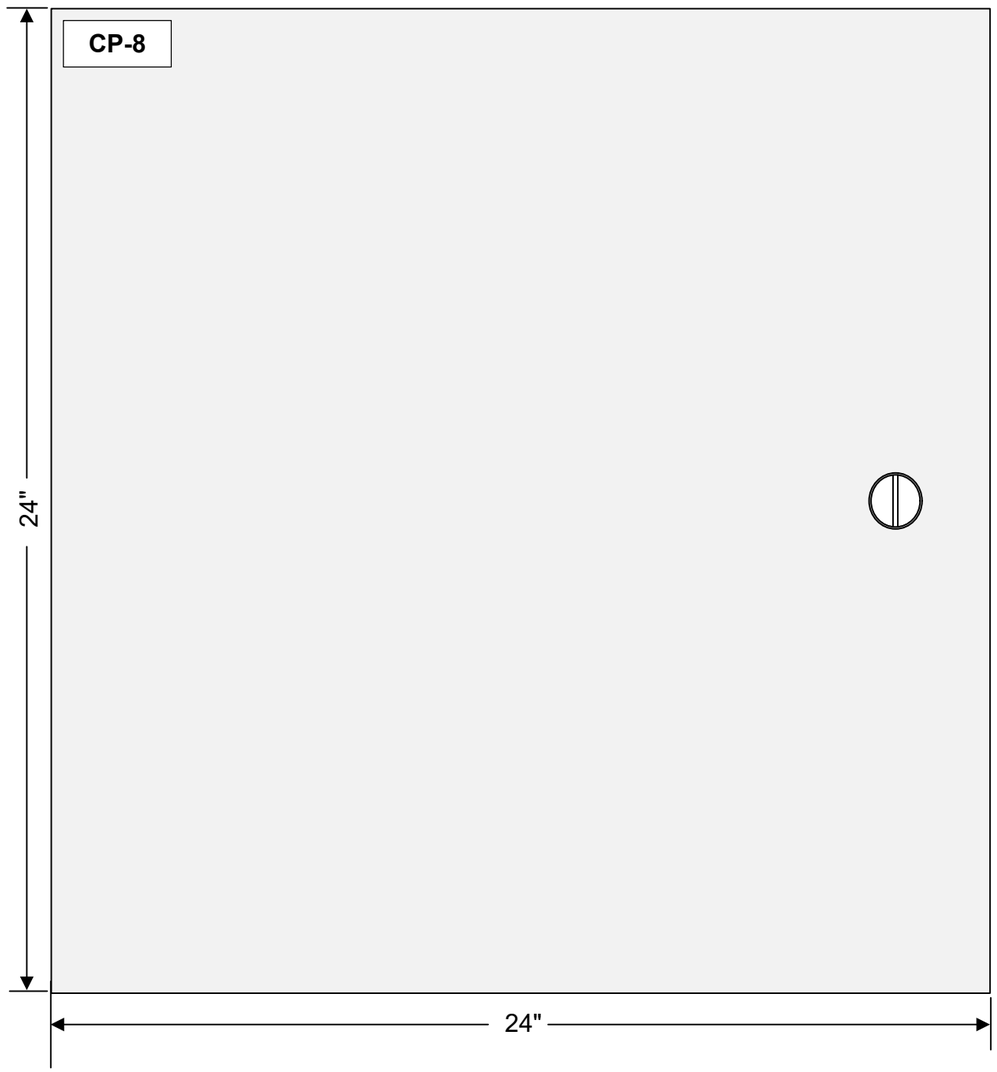
AIR COMPRESSOR SYSTEM WIRING DIAGRAM PAGE 2

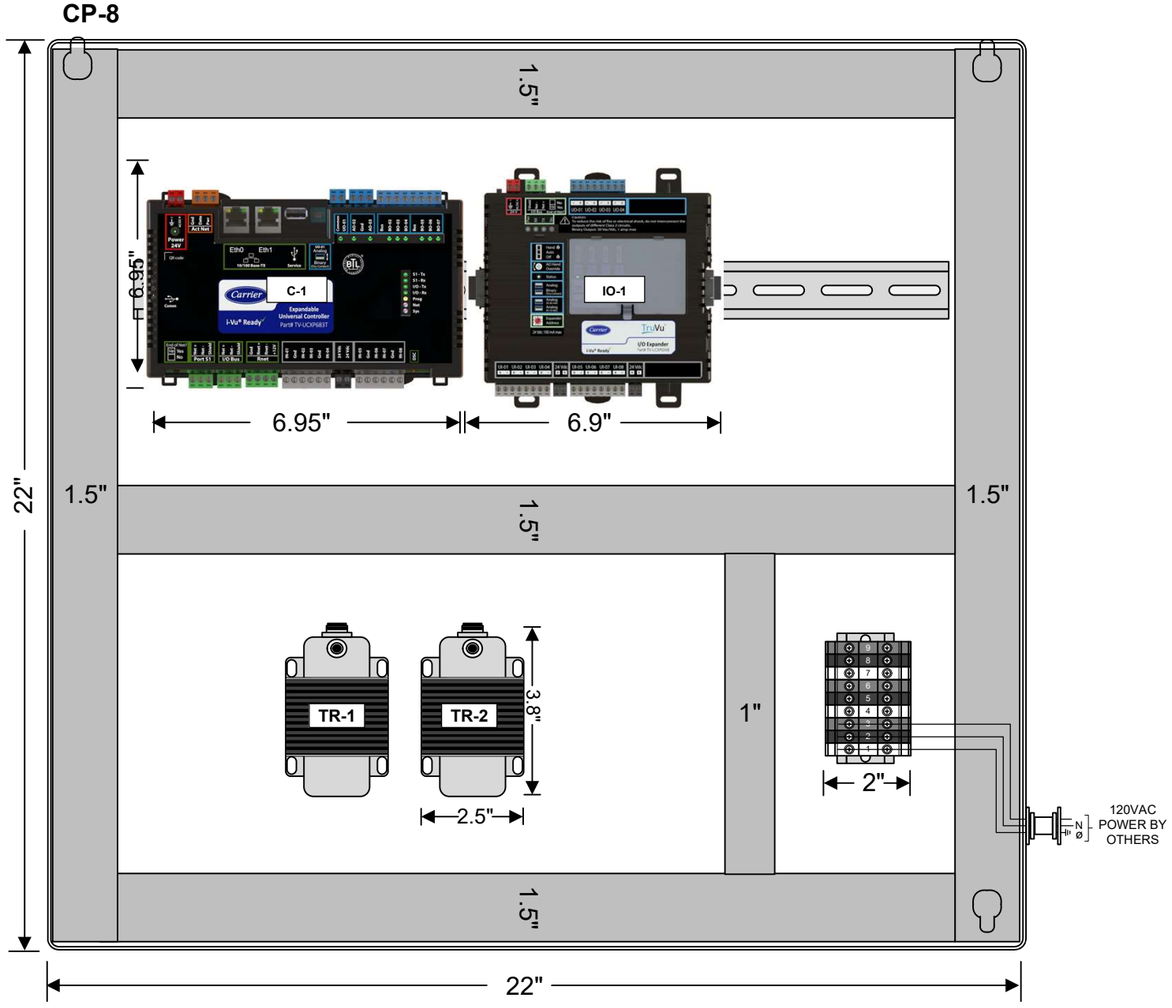
CP-8.



FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							AIR COMPRESSOR SYSTEM WIRING DIAGRAM PAGE 2
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 108 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

AIR COMPRESSOR SYSTEM PANEL LAYOUT





LOCATION: COMPRESSOR ROOM 201

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

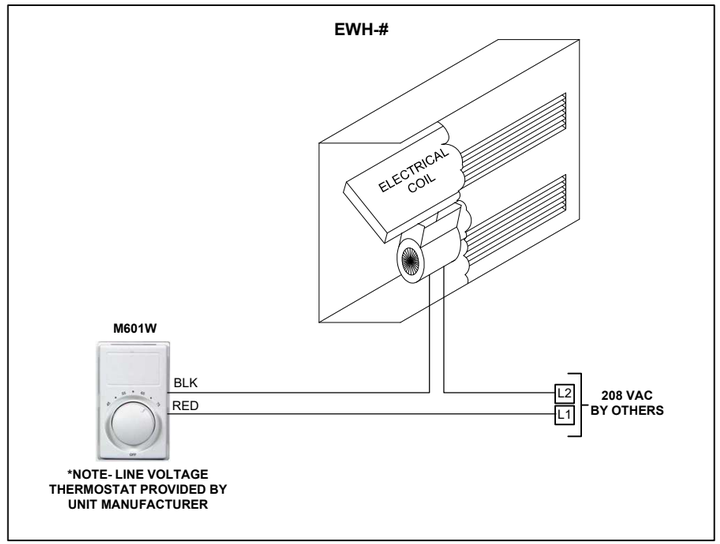
PROJECT: WARABEYA NORTH AMERICA	
AIR COMPRESSOR SYSTEM PANEL LAYOUT	
JOB #: 23-10265	PAGE: 109 of 124

AIR COMPRESSOR SYSTEM BILL OF MATERIAL

AIR COMPRESSOR BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Programmable Controller	C1	TV-UCXP683T	1	supports direct connection or daisy chain topologies using BACnet/IP and 17 points of onboard control	Carrier
2	I/O Module	IO-1	TV-UCXPIO48	1	8 inputs, 4 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
3	Zone Temprature Sensor	ZN-T	A/CP-R2	1	Room Temperature Sensor, Designer, 10K Type II Thermistor	Functional Devices
4	Field Relay	FR-#	RIBU1C	2	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
5	Transformer	TR-1, 2	TR100VA001	2	Transformer 96 VA, 120 to 24 Vac, Circuit Breaker, Foot and Single Threaded Hub Mount	Functional Devices
6	Subpanel	CP-8	SCE-24N24MP	1	Enclosure - 22 x 22 x 0.88 - Steel/Gray	Saginaw
7	Control Panel	CP-8	SCE-24N2408LP	1	N1 Panel - 24 x 24 x 8 - Steel/Gray	Saginaw

ELECTRIC WALL HEATER SCHEMATIC & FIELD WIRING DIAGRAM

TYPICAL OF 3



ELECTRIC WALL HEATER SCHEDULE										
ITEM#	TAG	AREA SERVED	CFM	MBH	KW	AIR TEMPRATURE (°F)		TERMINATED TO	VOLT/PH	MECH. DWG. REF
						ENTERING	LEAVING			
1	EWH-1	TRUCKER TOILET 133	100	6.8	2	60	122	UC-134-1	208/1	H1.1B
2	EWH-3	EXIT PASSAGEWAY 130	100	6.8	2	60	122	UC-131-1	208/1	H1.1A
3	EWH-4	EXIT PASSAGEWAY 143	100	6.8	2	60	122	RACU-3	208/1	H1.1C

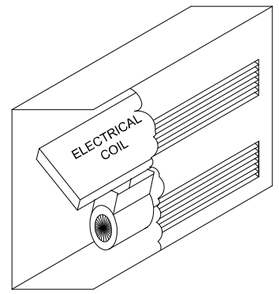
NOTES :
1. ANY HIGH VOLTAGE WIRING BY BASE ELECTRICIAN.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							ELECTRIC WALL HEATER SCHEMATIC & FIELD WIRING DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 111 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

ELECTRIC UNIT HEATER SCHEMATIC DIAGRAM

TYPICAL OF 5

EUH-#



***NOTE- INTEGRAL LINE VOLTAGE THERMOSTAT FURNISHED BY UNIT MANUFACTURER WILL CYCLE UNIT HEATER.**

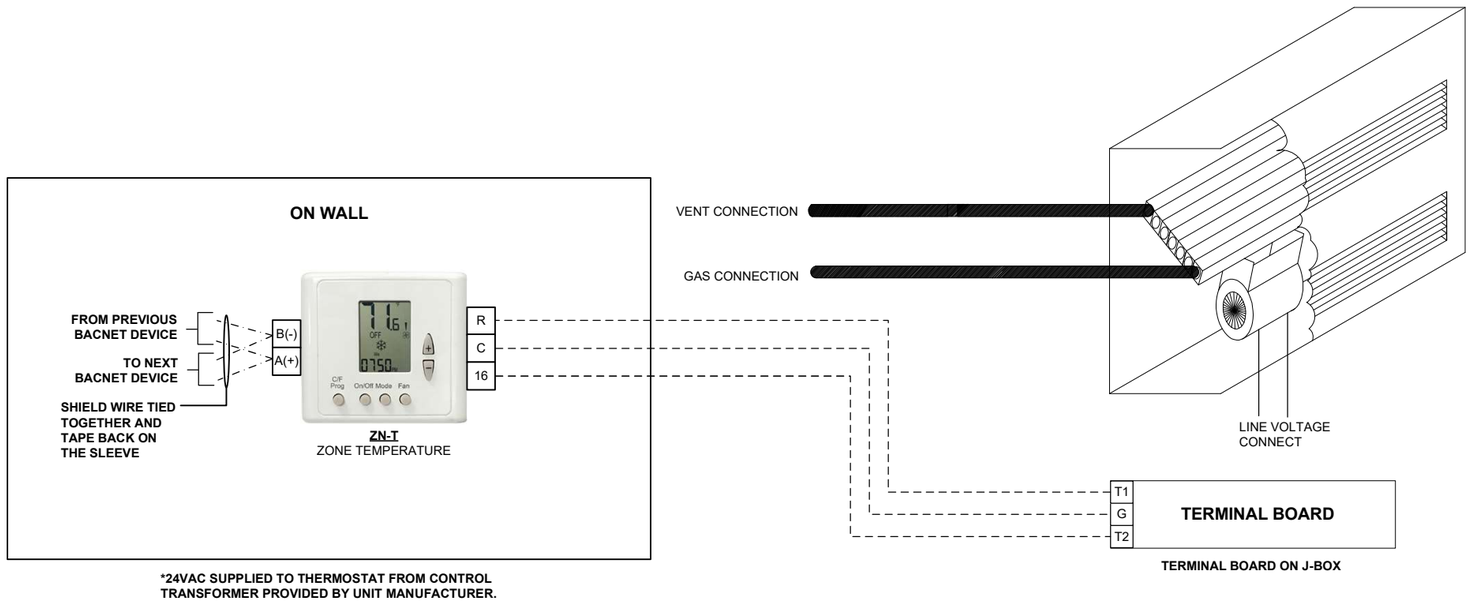
ELECTRIC UNIT HEATER SCHEDULE							
ITEM#	TAG	AREA SERVED	CFM	KW	RPM	VOLT/PH/A	MECH. DWG. REF
1	EUH-1	BREAD TEMPERING ROOM 139	1800	20	1550	480/3/25	H1.1B
2	EUH-2	BAKERY 129	270	5	1400	480/3/6	H1.1A
3	EUH-3	LOADING DOCK (COLD) 136	270	5	1400	480/3/6	H1.1B
4	EUH-4	LOADING DOCK (COLD) 136	270	5	1400	480/3/6	H1.1B
5	EUH-5	LOADING DOCK (RAW) 141	270	5	1400	480/3/6	H1.1B

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

GAS UNIT HEATER SCHEMATIC DIAGRAM



*24VAC SUPPLIED TO THERMOSTAT FROM CONTROL TRANSFORMER PROVIDED BY UNIT MANUFACTURER.

CABINET HEATER / UNIT HEATER - NG SEQUENCE OF OPERATION :

A. OPERATION:

1. THE SPACE TEMPERATURE (ZN-T) SENSOR WILL CYCLE THE UNIT'S FAN AND NG HEATING COIL TO MAINTAIN THE LOCAL HEATING SETPOINT (LHSP). WHEN SPACE TEMPERATURE (ZN-T) IS LESS THAN THE LOCAL SPACE TEMPERATURE (LHSP) HEATING SETPOINT, THE UNIT'S FAN AND NG HEATING COIL WILL CYCLE "ON". WHEN THE SPACE TEMPERATURE (TS) IS GREATER THAN THE LOCAL HEATING SETPOINT (LHSP) THE UNIT'S FAN AND NG HEATING COIL WILL CYCLE "OFF".

B. OPERATOR & GRAPHICAL USER INTERFACE REQUIREMENTS

1. LOCAL MANUAL ADJUSTMENT AND SETTINGS ONLY.

GAS UNIT HEATER SCHEDULE

ITEM#	TAG	AREA SERVED	CFM	MOTOR HP	MBH		VOLT/PH/HZ	MECH. DWG. REF.
					IN	OUT		
1	GUH-1	LOADING DOCK 134	2870	1/6	150	120	120/1/60	H1.1B

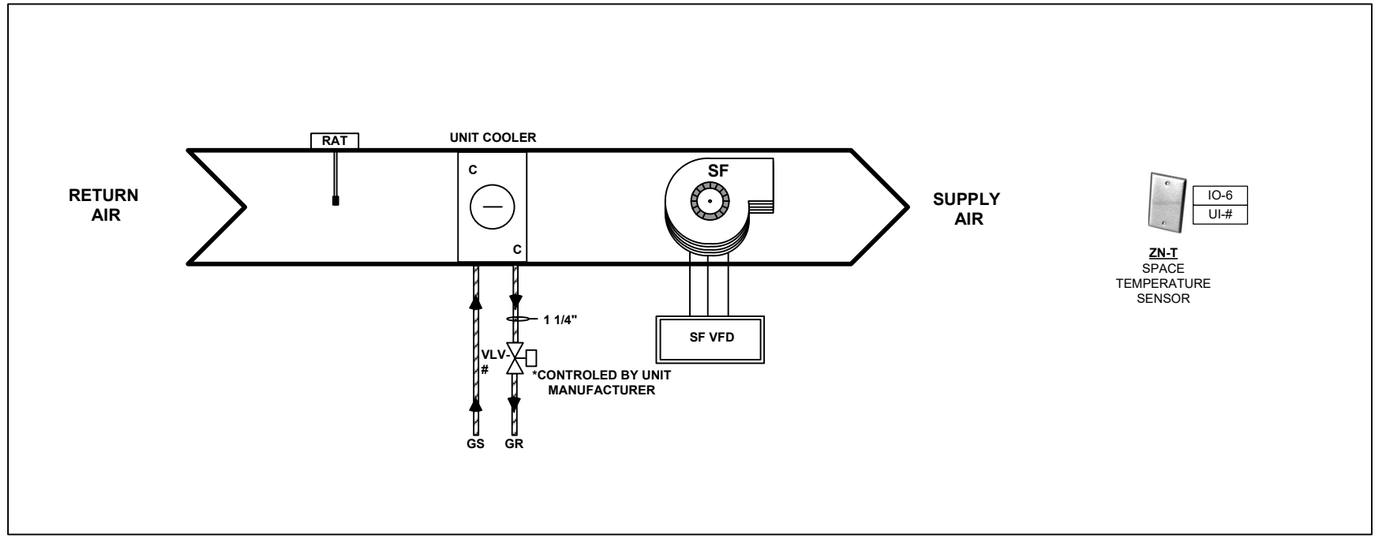
GAS UNIT HEATER BILL OF MATERIAL

Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Zone Temperature Sensor	ZN-T	TB-24-C	1	BACnet thermostat, Range 41° F to 95° F	Carrier

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							GAS UNIT HEATER SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 113 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

UNIT COOLER SCHEMATIC DIAGRAM

TYPICAL OF 71



UNIT COOLERS SEQUENCE OF OPERATION:

1. PROVIDE RETURN AIR TEMPERATURE SENSOR MOUNTED TO THE INLET OF THE UNIT COOLER.
2. PROVIDE TWO WAY COOLING COIL VALVE.
3. MODULATE COOLING COIL TO MAINTAIN RETURN AIR TEMPERATURE SETPOINT

UNIT COOLER BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Space Temperature Sensor	ZN-T	A/CP-SP	71	CP 10K (Type II) Stainless Wall Plate, 14” Leads, 1/8” Foam Pad	Functional Devices

NOTES:
1. REFER UNIT COOLER SCHEDULE FOR FAN QUANTITY & MOTOR SPEED TYPE DETAILS.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA	
MECH. CONTRACTOR	MULLINS MECHANICAL								UNIT COOLER SCHEMATIC DIAGRAM	
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS				JOB #: 23-10265	PAGE: 114 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY					

UNIT COOLER SCHEDULED PAGE 1

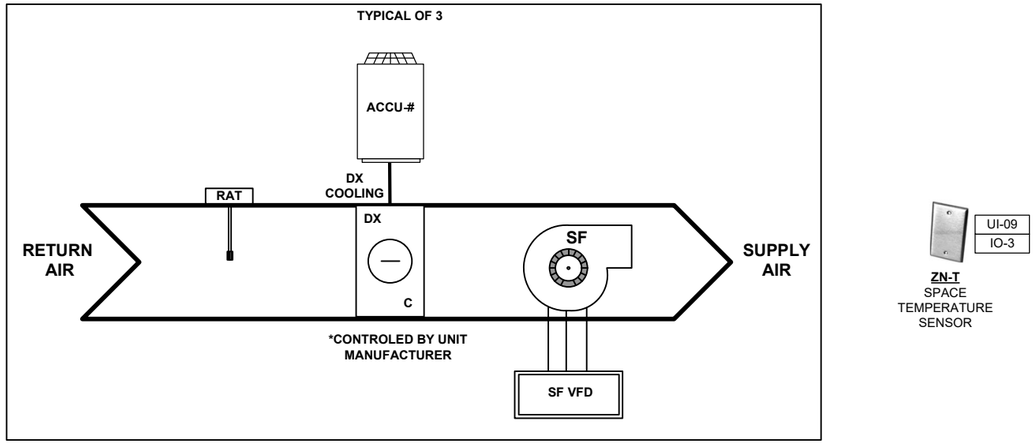
UNIT COOLER SCHEDULE										
ITEM#	TAG	LOCATION	RPM	FAN QTY.	COOLING MBH	GPM	CONTROL PANEL	TERMINATED TO	MOTOR SPEED TYPE	MECH. DRG. REF
1	UC-127-1	BREAD HOLDING 127	1500	1	19	5.3	CP-5	UI-07, IO-3	SINGLE	H1.1A
2	UC-129-1	BAKERY 129	950	1	124	46	CP-5	UI-06, IO-3	DOUBLE	H1.1A
3	UC-129-2	BAKERY 129	950	1	124	46	CP-5	UI-08, IO-3	DOUBLE	H1.1A
4	UC-129-3	BAKERY 129	950	1	124	46	CP-5	UI-05, IO-3	DOUBLE	H1.1A
5	UC-131-1	TRASH ROOM 131	1500	2	53	11	CP-4	UI-01, IO-3	SINGLE (ECM)	H1.1B
6	UC-132-1	DRY WAREHOUSE 132	1090	1	141	61	CP-4	UI-02, IO-3	DOUBLE	H1.1B
7	UC-132-2	DRY WAREHOUSE 132	1090	1	141	61	CP-4	UI-03, IO-3	DOUBLE	H1.1B
8	UC-132-3	LOADING DOCK 134	1090	1	141	61	CP-4	UI-08, IO-1	DOUBLE	H1.1B
9	UC-134-1	LOADING DOCK 134	1090	1	141	61	CP-4	UI-12, IO-1	DOUBLE	H1.1B
10	UC-136-1	LOADING DOCK 136	730	5	144	48	CP-4	UI-05, IO-2	DOUBLE	H1.1B
11	UC-136-2	LOADING DOCK 136	730	5	144	48	CP-4	UI-06, IO-2	DOUBLE	H1.1B
12	UC-136-3	LOADING DOCK 136	730	5	144	48	CP-4	UI-07, IO-2	DOUBLE	H1.1B
13	UC-137-1	COOLER HOLDING 137	730	4	123	45	CP-4	UI-03, IO-2	DOUBLE	H1.1B
14	UC-137-2	COOLER HOLDING 137	730	4	123	45	CP-4	UI-08, IO-2	DOUBLE	H1.1B
15	UC-139-1	BRAD TEMPERING ROOM 139	1500	1	17	3	CP-4	UI-10, IO-1	SINGLE (ECM)	H1.1B
16	UC-141-1	LOADING DOCK 141	850	2	63	22	CP-4	UI-11, IO-2	SINGLE	H1.1B
17	UC-141-2	LOADING DOCK 141	850	2	63	22	CP-4	UI-12, IO-2	SINGLE	H1.1B
18	UC-142-1	RAW STORAGE 142	850	3	59	23	CP-4	UI-09, IO-2	SINGLE	H1.1B
19	UC-142-2	RAW STORAGE 142	850	3	59	23	CP-4	UI-10, IO-2	SINGLE	H1.1B
20	UC-149A-1	NEAR ELECTRICAL 150	1090	1	38	16	CP-5	UI-07, IO-1	DOUBLE	H1.1A
21	UC-149B-1	CORRIDOR 149	1090	1	37	13.4	CP-4	UI-09, IO-1	DOUBLE	H1.1B
22	UC-149B-2	CORRIDOR 149	1090	1	37	13.4	CP-4	UI-01, IO-2	DOUBLE	H1.1B
23	UC-149B-3	CORRIDOR 149	1090	1	37	13.4	CP-4	UI-02, IO-2	DOUBLE	H1.1B
24	UC-149B-4	CORRIDOR 149	1090	1	37	13.4	CP-2	UI-05, IO-7	DOUBLE	H1.1B
25	UC-151-1	DECANTING 151	510	4	129	54	CP-5	UI-06, IO-1	DOUBLE	H1.1D
26	UC-151-2	DECANTING 151	510	4	129	54	CP-5	UI-04, IO-1	DOUBLE	H1.1D
27	UC-151-3	DECANTING 151	510	4	129	54	CP-5	UI-05, IO-1	DOUBLE	H1.1D
28	UC-152-1	CHILLED HOLDING 152	850	2	63	22	CP-5	UI-02, IO-2	SINGLE	H1.1D
29	UC-152-2	CHILLED HOLDING 152	850	2	63	22	CP-5	UI-03, IO-2	SINGLE	H1.1D
30	UC-152-3	CHILLED HOLDING 152	850	2	63	22	CP-5	UI-04, IO-2	SINGLE	H1.1D
31	UC-152A-1	PREP ROOM 152A	1140	4	47	16	CP-5	UI-08, IO-1	SINGLE	H1.1D
32	UC-152A-2	PREP ROOM 152A	1140	4	47	16	CP-5	UI-09, IO-1	SINGLE	H1.1D
33	UC-152B-1	RTE MEAT SLICING ROOM 152B	510	4	129	54	CP-5	UI-10, IO-1	DOUBLE	H1.1D
34	UC-152B-2	RTE MEAT SLICING ROOM 152B	510	4	129	54	CP-5	UI-11, IO-1	DOUBLE	H1.1D
35	UC-152C-1	MIXING PREP 152C	1140	4	61	22	CP-5	UI-12, IO-1	SINGLE	H1.1D
36	UC-152C-2	MIXING PREP 152C	1140	4	61	22	CP-5	UI-01, IO-2	SINGLE	H1.1D
37	UC-156-1	CORRIDOR 156	1090	1	37	13.4	CP-4	UI-11, IO-1	DOUBLE	H1.1D
38	UC-159A-1	NON-RTE MEAT PREP 159A	510	2	88	38	CP-6	UI-06, IO-3	DOUBLE	H1.1E
39	UC-159A-2	NON-RTE MEAT PREP 159A	510	2	88	38	CP-6	UI-05, IO-3	DOUBLE	H1.1E
40	UC-159B-1	MARINATION ROOM 159B	1090	2	25	11	CP-6	UI-03, IO-3	DOUBLE	H1.1E

UNIT COOLER SCHEDULED PAGE 2

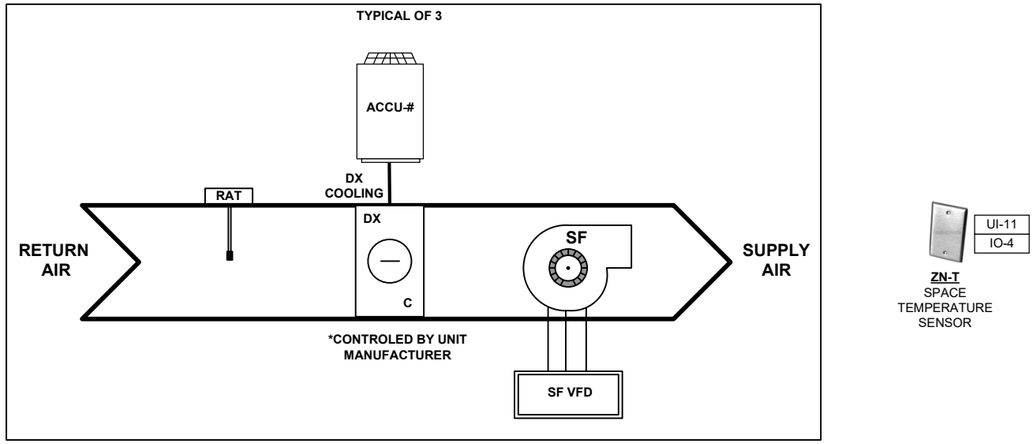
UNIT COOLER SCHEDULE										
ITEM#	TAG	LOCATION	RPM	FAN QTY.	COOLING MBH	GPM	CONTROL PANEL	TERMINATED TO	MOTOR SPEED TYPE	MECH. DRG. REF
41	UC-159B-2	MARINATION ROOM 159B	1090	2	25	11	CP-6	UI-04, IO-3	DOUBLE	H1.1E
42	UC-160-1	WASHING ROOM 160	1090	2	169	76	CP-6	UI-04, IO-2	DOUBLE	H1.1E
43	UC-160A-1	WASHING ROOM 160A	1090	1	93	37.1	CP-6	UI-05, IO-2	DOUBLE	H1.1E
44	UC-161B-1	DESSERT CHILLER 161B	1090	2	25	11	CP-6	UI-06, IO-2	DOUBLE	H1.1E
45	UC-161B-2	DESSERT CHILLER 161B	1090	2	25	11	CP-6	UI-07, IO-2	DOUBLE	H1.1E
46	UC-162A-1	BLAST CHILLER 162A	730	5	165	70	CP-6	UI-10, IO-2	SINGLE	H1.1E
47	UC-162A-2	BLAST CHILLER 162A	730	5	165	70	CP-6	UI-11, IO-2	SINGLE	H1.1E
48	UC-162A-3	BLAST CHILLER 162A	730	5	165	70	CP-6	UI-12, IO-2	SINGLE	H1.1E
49	UC-162B-1	CHILL MATERIAL HOLDING 162B	1090	2	38	16	CP-6	UI-08, IO-2	DOUBLE	H1.1E
50	UC-162B-2	CHILL MATERIAL HOLDING 162B	1090	2	38	16	CP-6	UI-09, IO-2	DOUBLE	H1.1E
51	UC-164-1	CORRIDOR 149	1090	1	37	13.4	CP-4	UI-04, IO-2	DOUBLE	H1.1B
52	UC-167-1	TOPPING CHILL HOLDING 167	850	2	63	22	CP-2	UI-06, IO-7	SINGLE	H1.1C
53	UC-167-2	TOPPING CHILL HOLDING 167	850	2	63	22	CP-2	UI-07, IO-7	SINGLE	H1.1C
54	UC-167-3	TOPPING CHILL HOLDING 167	850	2	63	22	CP-2	UI-08, IO-7	SINGLE	H1.1C
55	UC-173-1	PIZZA TOPPING ROOM 173	730	5	165	70	CP-2	UI-09, IO-7	SINGLE	H1.1F
56	UC-173-2	PIZZA TOPPING ROOM 173	730	5	165	70	CP-2	UI-10, IO-7	SINGLE	H1.1F
57	UC-173-3	PIZZA TOPPING ROOM 173	730	5	165	70	CP-2	UI-11, IO-7	SINGLE	H1.1F
58	UC-174-1	PIZZA PACKING 174	950	3	86	38	CP-6	UI-01, IO-3	DOUBLE	H1.1E
59	UC-174-2	PIZZA PACKING 175	950	3	86	38	CP-6	UI-02, IO-3	DOUBLE	H1.1E
60	UC-177-2	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-05, IO-2	SINGLE	H1.1D
61	UC-177-3	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-06, IO-2	SINGLE	H1.1D
62	UC-177-4	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-07, IO-2	SINGLE	H1.1D
63	UC-177-5	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-08, IO-2	SINGLE	H1.1D
64	UC-177-8	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-09, IO-2	SINGLE	H1.1D
65	UC-177-9	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-10, IO-2	SINGLE	H1.1D
66	UC-177-10	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-11, IO-2	SINGLE	H1.1D
67	UC-177-11	ASSEMBLY ROOM 177	950	3	102	43	CP-5	UI-12, IO-2	SINGLE	H1.1D
68	UC-180-1	BASKET WASHING 180	1090	1	116	49	CP-5	UI-02, IO-3	DOUBLE	H1.1D
69	UC-180-2	BASKET WASHING 180	1090	1	116	49	CP-5	UI-03, IO-3	DOUBLE	H1.1D
70	UC-180-3	BASKET WASHING 180	1090	1	116	49	CP-5	UI-04, IO-3	DOUBLE	H1.1D
71	UC-182-1	CLEAN ROOM 182	950	3	86	38	CP-5	UI-01, IO-3	DOUBLE	H1.1D

EVAPORATOR SYSTEM SCHEMATIC DIAGRAM

FREEZER HOLDING 138



FREEZER 175



EVAPORATOR SEQUENCE OF OPERATION:

1. STAGE THE CONDENSING UNIT TO MAINTAIN RETURN AIR TEMPERATURE SETPOINT AT EVAPORATOR.

2. PROVIDE SETPOINT TO UNIT CONTROLS.

EVAPORATOR SCHEDULE

ITEM#	TAG	LOCATION	COOLING MBH	RPM	CFM	VOLT/PH	MECH. DWG. REF
1	EV-138-1	FREEZER HOLDING 138	60	1140	12300	460/3	H1.1B
2	EV-138-2	FREEZER HOLDING 138	60	1140	12300	460/3	H1.1B
3	EV-138-3	FREEZER HOLDING 138	60	1140	12300	460/3	H1.1B
4	EV-175-1	FREEZER 175	60	1140	12300	460/3	H1.1E
5	EV-175-2	FREEZER 175	60	1140	12300	460/3	H1.1E
6	EV-175-3	FREEZER 175	60	1140	12300	460/3	H1.1E

EVAPORATOR BILL OF MATERIAL

Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Space Temperature Sensor	ZN-T	A/CP-SP	2	CP 10K (Type II) Stainless Wall Plate, 14” Leads, 1/8” Foam Pad	Functional Devices

NOTES:
1. FREEZER HOLDING 138 SPACE SENSOR IS WIRED TO THE CP-4.
2. FREEZER 175 SPACE SENSOR IS WIRED TO THE CP-5.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

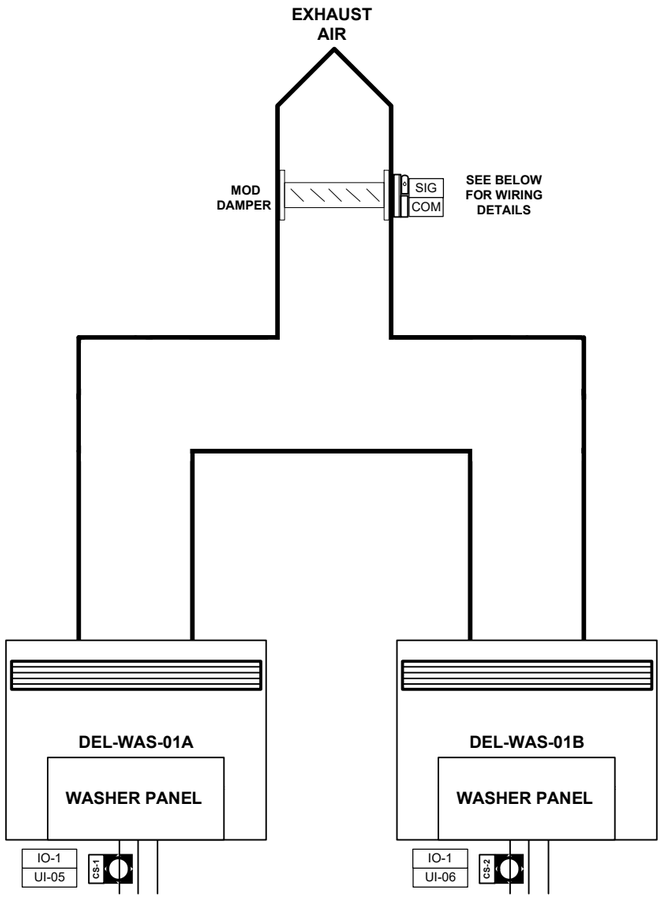
800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

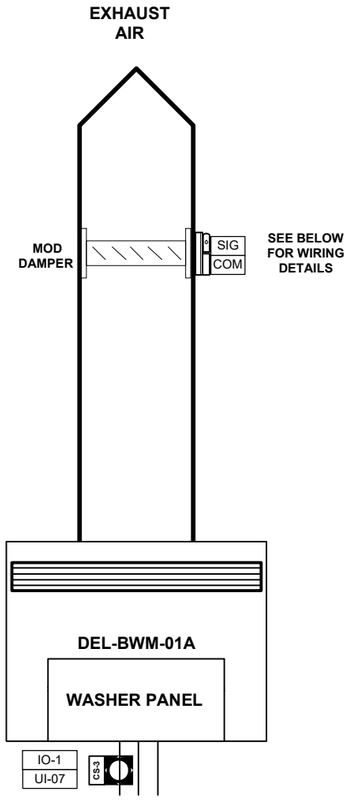
PROJECT: WARABEYA NORTH AMERICA

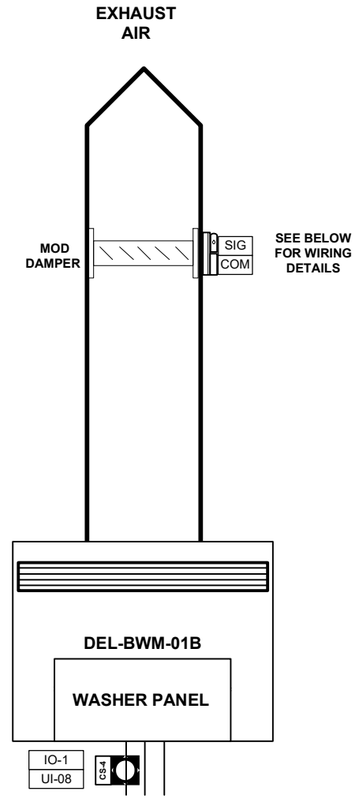
EVAPORATOR SYSTEM SCHEMATIC DIAGRAM

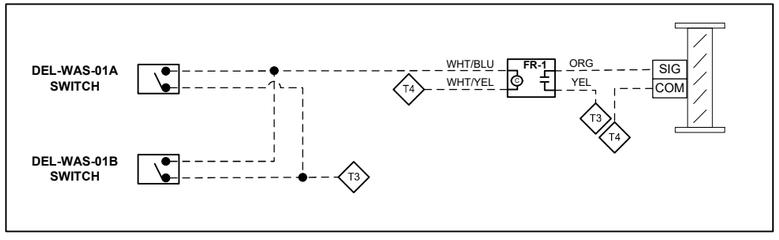
JOB #: 23-10265 | PAGE: 117 of 124

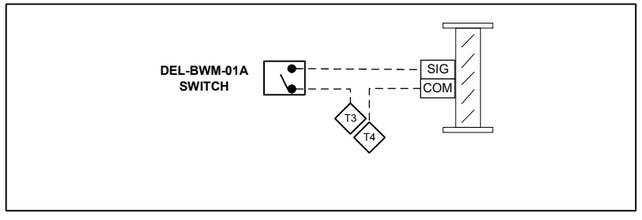
WASHER SYSTEM SCHEMATIC DIAGRAM PAGE 1

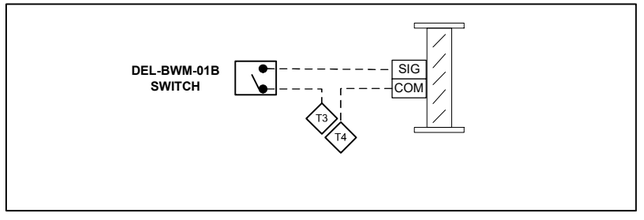










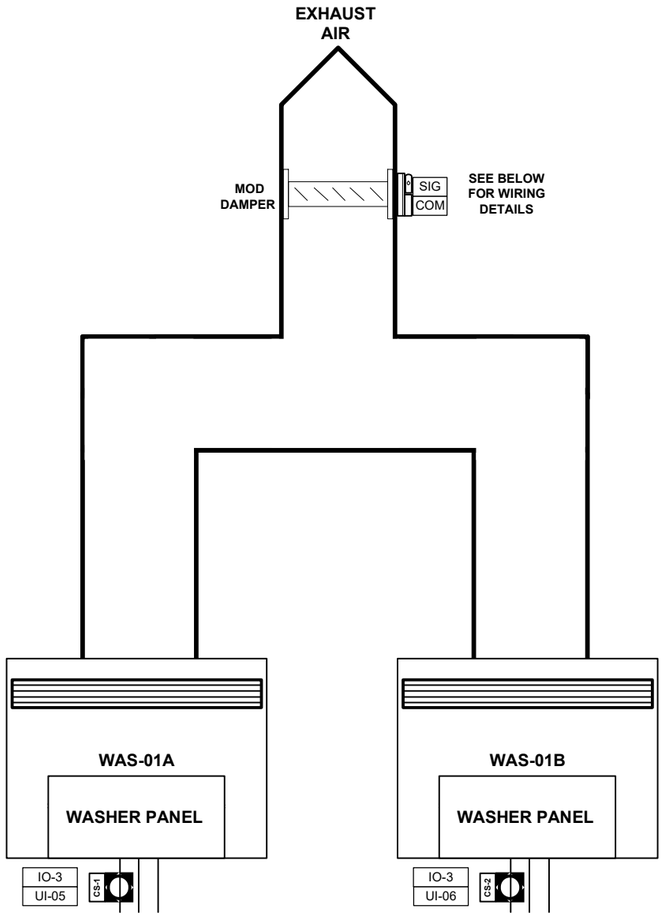


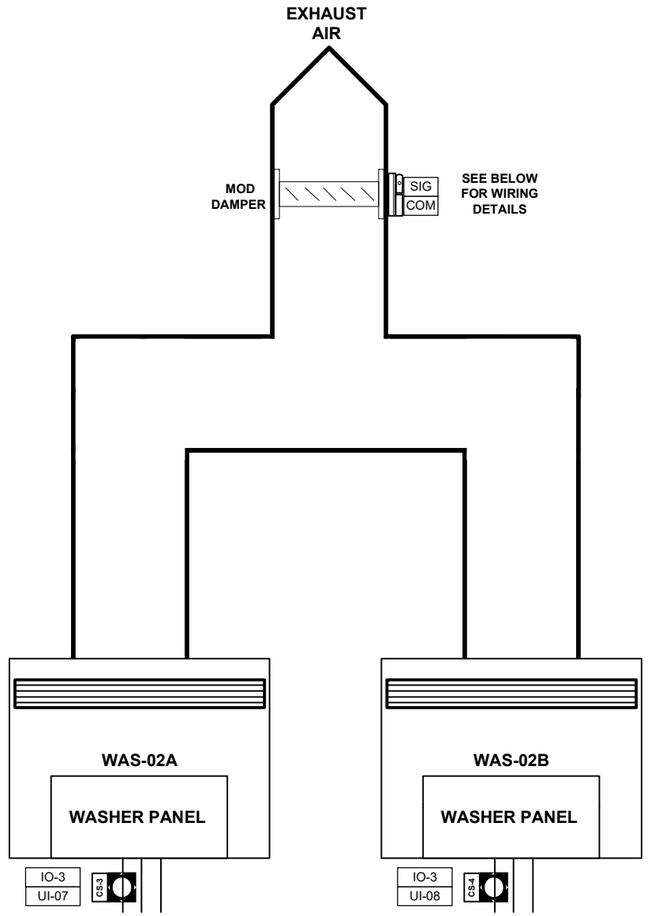
LOCATION: BASKET WASHING 180

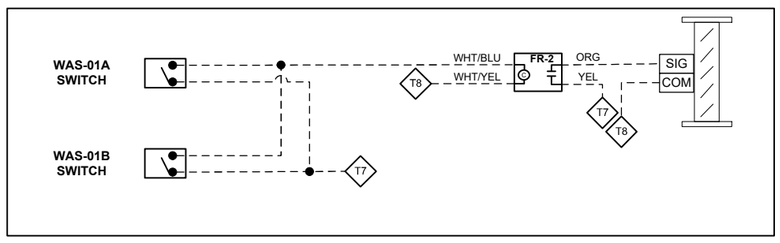
NOTES:
1. WASHERS ARE WIRED TO CP-5.
2. REFER TO MAU SEQUENCE OF OPERATION PAGE FOR WASHER SEQUENCE OF OPERATION.

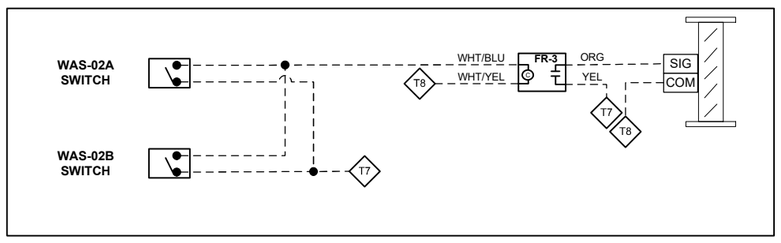
FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							WASHER SYSTEM SCHEMATIC DIAGRAM PAGE 1
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 118 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

WASHER SYSTEM SCHEMATIC DIAGRAM PAGE 2









LOCATION: WASHING ROOM 160

NOTES:
1. WASHERS ARE WIRED TO CP-4.
2. REFER TO MAU SEQUENCE OF OPERATION PAGE FOR WASHER SEQUENCE OF OPERATION.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

WASHER SYSTEM SCHEMATIC DIAGRAM PAGE 2

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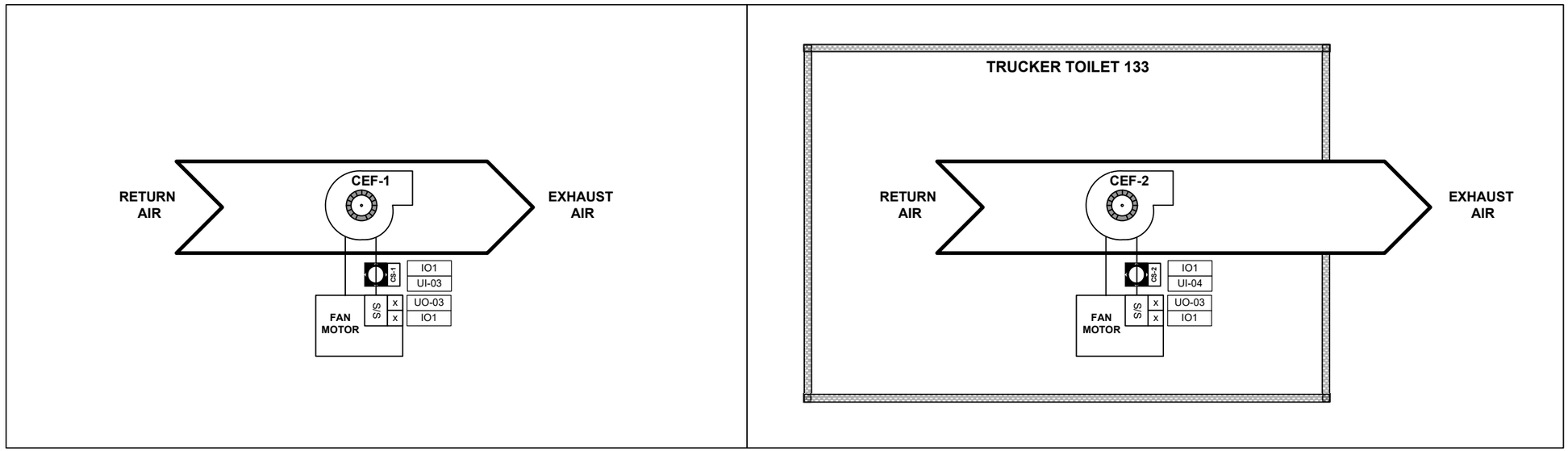
WASHER BILL OF MATERIAL

WASHER BILL OF MATERIAL						
Item#	**Application**	**Tag**	**Part No.**	**Quantity**	**Description**	**Manufacturer**
1	Current Switch	CS-#	RIBXGTA	8	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
2	Field Relay	FR-#	RIBU1C	3	Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices

FACILITY	**WARABEYA NORTH AMERICA**					**PRIME BUILDING CONTROLS**	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	**PROJECT: WARABEYA NORTH AMERICA**
MECH. CONTRACTOR	**MULLINS MECHANICAL**							**WASHER BILL OF MATERIAL**
ENGINEER	**EXCEL ENGINEERING, INC.**	**0**	**11-19-2024**	**SUBMITTED FOR APPROVAL**	**SS**			**JOB #: 23-10265** / **PAGE: 120 of 124**
ARCHITECT	**EXCEL ENGINEERING, INC.**	**#**	**DATE**	**REVISION DESCRIPTION**	**BY**			

CABINET EXHAUST FAN SCHEMATIC DIAGRAM



CABINET EXHAUST FANS SEQUENCE OF OPERATION:

1. CEF-1,2 SHALL RUN CONTINUOUSLY.

CABINET EXHAUST FAN SCHEDULE							
ITEM#	TAG	AREA SERVED	CFM	W	RPM	VOLT/HZ/PH	MECH. DWG. REF
1	CEF-1	JC 154	75	80	770	115/60/1	H1.1D
2	CEF-2	TRUCKER TOILET 133	75	80	770	115/60/1	H1.1B

CABINET EXHAUST FAN BILL OF MATERIAL						
Item#	Application	Tag	Part No.	Quantity	Description	Manufacturer
1	Current Switch	CS-#	RIBXGTA	2	Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
2	Field Relay	FR-#	RIBTU1S	2	Pilot Relay, 10 Amp SPST + Override, 10-30 Vac/dc/120 Vac Coil, Hi/Lo Voltage Separation, NEMA 1 Housing	Functional Devices

NOTES :
1. CEF-1 IS WIRED IN CP-5.
2. CEF-2 IS WIRED IN CP-4.

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							CABINET EXHAUST FAN SCHEMATIC DIAGRAM
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 121 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

VALVE SCHEDULE

VALVE SCHEDULE

ITEM#	EQUIPMENT NAME	VALVE TAG	QTY	SYSTEM DATA		WATER DATA		VALVE BODY DATA									ACTUATOR DATA			COMBINED PART NUMBER	DESCRIPTION
				EQUIPMENT LOCATION	SERVICE OR APPLICATION	LINE SIZE (INCH)	DESIGN FLOW (GPM)	DESIGN PRESSURE DROP (PSI)	SIZE (IN)	PRESSURE DROP	CALCULATED CV	VALVE CV	PATTERN	TYPE	CONN.	PART NUMBER	TRIM/DISC	MANUFACTURER	PART NUMBER	CLOSE-OFF PRESSURE (PSI)	MANUFACTURER		
1	CT-1	VLV-1	1	OUTDOOR NEAR MECHANICAL ROOM 147	CONDENSER WATER RETURN ISOLATION VALVE	10	1300	5	10	0.06	581.38	5340.00	2-WAY	ON/OFF	LUGGED	F6250L	STAINLESS STEEL	BELIMO	PRBUP-3-T-250	200	BELIMO	F6250L+PRBUP-3-T-250	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
2	CT-2	VLV-2	1	OUTDOOR NEAR MECHANICAL ROOM 147	CONDENSER WATER RETURN ISOLATION VALVE	10	1300	5	10	0.06	581.38	5340.00	2-WAY	ON/OFF	LUGGED	F6250L	STAINLESS STEEL	BELIMO	PRBUP-3-T-250	200	BELIMO	F6250L+PRBUP-3-T-250	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
3	CT-3	VLV-3	1	OUTDOOR NEAR MECHANICAL ROOM 147	CONDENSER WATER RETURN ISOLATION VALVE	10	1300	5	10	0.06	581.38	5340.00	2-WAY	ON/OFF	LUGGED	F6250L	STAINLESS STEEL	BELIMO	PRBUP-3-T-250	200	BELIMO	F6250L+PRBUP-3-T-250	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
4	CT-4	VLV-4	1	OUTDOOR NEAR MECHANICAL ROOM 147	CONDENSER WATER RETURN ISOLATION VALVE	10	1300	5	10	0.06	581.38	5340.00	2-WAY	ON/OFF	LUGGED	F6250L	STAINLESS STEEL	BELIMO	PRBUP-3-T-250	200	BELIMO	F6250L+PRBUP-3-T-250	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
5	CONDENSER WATER SYSTEM	VLV-5	1	NEAR MECHANICAL ROOM 147	TOWER SUMP BYPASS VALVE	10	1300	5	6	0.68	581.38	1579.00	2-WAY	MODULATING	LUGGED	F6150HD	STAINLESS STEEL	BELIMO	PRBUP-MFT-T	200	BELIMO	F6150HD+PRBUP-MFT-T	120VAC, MODULATING, FAIL-IN-PLACE, NEMA 4X ENCLOSURE
6	CONDENSER WATER SYSTEM	VLV-6	1	NEAR MECHANICAL ROOM 147	TOWER SUMP MAKEUP VALVE	2.5		5	2	0.00	0.00	46.00	2-WAY	MODULATING	NPT	B249	STAINLESS STEEL	BELIMO	ARB24-SR	200	BELIMO	B249+ARB24-SR	AC/DC 24 V, CCV, MODULATING, FAIL-IN-PLACE VALVE & ACTUATOR, 5 VA
7	CHILLER-2	VLV-7	1	MECHANICAL ROOM 147	CONDENSER WATER SUPPLY ISOLATION VALVE	8	1313	5	8	0.18	587.19	3136.00	2-WAY	ON/OFF	LUGGED	F6200L	STAINLESS STEEL	BELIMO	PRBUP-3-T-200	200	BELIMO	F6200L+PRBUP-3-T-200	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
8	CHILLER-3	VLV-8	1	MECHANICAL ROOM 147	CONDENSER WATER SUPPLY ISOLATION VALVE	8	1313	5	8	0.18	587.19	3136.00	2-WAY	ON/OFF	LUGGED	F6200L	STAINLESS STEEL	BELIMO	PRBUP-3-T-200	200	BELIMO	F6200L+PRBUP-3-T-200	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
9	CHILLER-4	VLV-9	1	MECHANICAL ROOM 147	CONDENSER WATER SUPPLY ISOLATION VALVE	8	1313	5	8	0.18	587.19	3136.00	2-WAY	ON/OFF	LUGGED	F6200L	STAINLESS STEEL	BELIMO	PRBUP-3-T-200	200	BELIMO	F6200L+PRBUP-3-T-200	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
10	CHILLER-2	VLV-10	1	MECHANICAL ROOM 147	GLYCOL RETURN ISOLATION VALVE	8	1274	5	8	0.17	569.75	3136.00	2-WAY	ON/OFF	LUGGED	F6200L	STAINLESS STEEL	BELIMO	PRBUP-3-T-200	200	BELIMO	F6200L+PRBUP-3-T-200	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
11	CHILLER-3	VLV-11	1	MECHANICAL ROOM 147	GLYCOL RETURN ISOLATION VALVE	8	1274	5	8	0.17	569.75	3136.00	2-WAY	ON/OFF	LUGGED	F6200L	STAINLESS STEEL	BELIMO	PRBUP-3-T-200	200	BELIMO	F6200L+PRBUP-3-T-200	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
12	CHILLER-4	VLV-12	1	MECHANICAL ROOM 147	GLYCOL RETURN ISOLATION VALVE	8	1274	5	8	0.17	569.75	3136.00	2-WAY	ON/OFF	LUGGED	F6200L	STAINLESS STEEL	BELIMO	PRBUP-3-T-200	200	BELIMO	F6200L+PRBUP-3-T-200	120VAC, ON/OFF, FAIL-IN-PLACE, NEMA 4X ENCLOSURE, 2 X SPDT CONTACTS
13	CHILLER SYSTEM	VLV-13	1	MECHANICAL ROOM 147	GLYCOL RETURN/SUPPLY 3-WAY VALVE	10	1450	5	6	0.84	648.46	1579.00	3-WAY	MODULATING	LUGGED	F7150HD	STAINLESS STEEL	BELIMO	PRBUP-MFT-T	200	BELIMO	F7150HD+PRBUP-MFT-T	120VAC, MODULATING, FAIL-IN-PLACE, NEMA 4X ENCLOSURE
14	CHILLED WATER SYSTEM	VLV-14	1	SECOND FLOOR AREA-B	GLYCOL DIFFERENTIAL PRESSURE BYPASS VALVE AREA B		376	5	4	4.09	168.15	186.00	2-WAY	MODULATING	FLANGE	B6400S-186	STAINLESS STEEL	BELIMO	GRX24-MFT-T N4	310	BELIMO	B6400S-186+GRX24-MFT-T N4	AC/DC 24 V, CCV, MODULATING, FAIL-IN-PLACE VALVE & ACTUATOR, 11 VA
15	CHILLED WATER SYSTEM	VLV-15	1	SECOND FLOOR AREA-D	GLYCOL DIFFERENTIAL PRESSURE BYPASS VALVE AREA D		376	5	4	4.09	168.15	186.00	2-WAY	MODULATING	FLANGE	B6400S-186	STAINLESS STEEL	BELIMO	GRX24-MFT-T N4	310	BELIMO	B6400S-186+GRX24-MFT-T N4	AC/DC 24 V, CCV, MODULATING, FAIL-IN-PLACE VALVE & ACTUATOR, 11 VA
16	34°F LOOP CHILLED WATER SYSTEM	VLV-16	1	SECOND FLOOR AREA-B	34°F DIFFERENTIAL PRESSURE BYPASS VALVE		720	5	6	3.24	321.99	400.00	2-WAY	MODULATING	FLANGE	B6600S-400-250	STAINLESS STEEL	BELIMO	GRX24-MFT-T N4	310	BELIMO	B6600S-400-250+GRX24-MFT-T N4	AC/DC 24 V, CCV, MODULATING, FAIL-IN-PLACE VALVE & ACTUATOR, 11 VA
17	MAU-1	VLV-17	1	SECOND FLOOR AREA-A	PRE COOLING COIL GLYCOL RETURN	6	541.3	5	5	2.39	242.08	350.00	2-WAY	MODULATING	FLANGE	B6400VB-350	STAINLESS STEEL	BELIMO	PKRXUP-MFT-T	250	BELIMO	B6400VB-350+PKRXUP-MFT-T	120VAC, BALL VALVE, MODULATING, ELECTRONIC FAIL-SAFE VALVE & ACTUATOR
18	MAU-1	VLV-18	1	SECOND FLOOR AREA-A	POST COOLING COIL GLYCOL RETURN	6	412.8	5	5	1.39	184.61	350.00	2-WAY	MODULATING	FLANGE	B6400VB-350	STAINLESS STEEL	BELIMO	PKRXUP-MFT-T	250	BELIMO	B6400VB-350+PKRXUP-MFT-T	120VAC, BALL VALVE, MODULATING, ELECTRONIC FAIL-SAFE VALVE & ACTUATOR
19	MAU-2	VLV-19	1	SECOND FLOOR AREA-D	COOLING COIL GLYCOL RETURN	4	280.9	5	2 1/2	3.51	125.62	150.00	2-WAY	MODULATING	FLANGE	B264	STAINLESS STEEL	BELIMO	AFRX24-MFT-S	100	BELIMO	B264+AFRX24-MFT-S	AC/DC 24 V, CCV, MODULATING, SPRING RETURN VALVE & ACTUATOR, 10 VA
20	MAU-3	VLV-20	1	SECOND FLOOR AREA-D	COOLING COIL GLYCOL RETURN	6	593.8	5	4	2.88	265.56	350.00	2-WAY	MODULATING	FLANGE	B6400VB-350	STAINLESS STEEL	BELIMO	PKRXUP-MFT-T	250	BELIMO	B6400VB-350+PKRXUP-MFT-T	120VAC, BALL VALVE, MODULATING, ELECTRONIC FAIL-SAFE VALVE & ACTUATOR
21	MAU-4	VLV-21	1	SECOND FLOOR AREA-D	COOLING COIL GLYCOL RETURN	2.5	90.47	5	2	3.87	40.46	46.00	2-WAY	MODULATING	NPT	B249	STAINLESS STEEL	BELIMO	AFRB24-SR	200	BELIMO	B249+AFRB24-SR	AC/DC 24 V, CCV, MODULATING, SPRING RETURN VALVE & ACTUATOR, 5 VA
22	UC-127-1	VLV-22	1	BREAD HOLDING 127	COOLING COIL GLYCOL RETURN	1 1/4	5.3	5		0.00	2.37												
23	UC-129-1	VLV-23	1	BAKERY 129	COOLING COIL GLYCOL RETURN	1 1/4	46	5		0.00	20.57												
24	UC-129-2	VLV-24	1	BAKERY 129	COOLING COIL GLYCOL RETURN	1 1/4	46	5		0.00	20.57												
25	UC-129-3	VLV-25	1	BAKERY 129	COOLING COIL GLYCOL RETURN	1 1/4	46	5		0.00	20.57												
26	UC-131-1	VLV-26	1	TRASH ROOM 131	COOLING COIL GLYCOL RETURN	1 1/4	11	5		0.00	4.92												
27	UC-132-1	VLV-27	1	DRY WAREHOUSE 132	COOLING COIL GLYCOL RETURN	1 1/4	61	5		0.00	27.28												
28	UC-132-2	VLV-28	1	DRY WAREHOUSE 132	COOLING COIL GLYCOL RETURN	1 1/4	61	5		0.00	27.28												
29	UC-132-3	VLV-29	1	LOADING DOCK 134	COOLING COIL GLYCOL RETURN	1 1/4	61	5		0.00	27.28												
30	UC-134-1	VLV-30	1	LOADING DOCK 134	COOLING COIL GLYCOL RETURN	1 1/4	61	5		0.00	27.28												
31	UC-136-1	VLV-31	1	LOADING DOCK 136	COOLING COIL GLYCOL RETURN	1 1/4	48	5		0.00	21.47												
32	UC-136-2	VLV-32	1	LOADING DOCK 136	COOLING COIL GLYCOL RETURN	1 1/4	48	5		0.00	21.47												
33	UC-136-3	VLV-33	1	LOADING DOCK 136	COOLING COIL GLYCOL RETURN	1 1/4	48	5		0.00	21.47												
34	UC-137-1	VLV-34	1	COOLER HOLDING 137	COOLING COIL GLYCOL RETURN	1 1/4	45	5		0.00	20.12												
35	UC-137-2	VLV-35	1	COOLER HOLDING 137	COOLING COIL GLYCOL RETURN	1 1/4	45	5		0.00	20.12												
36	UC-139-1	VLV-36	1	BRAD TEMPERING ROOM 139	COOLING COIL GLYCOL RETURN	1 1/4	3	5		0.00	1.34												
37	UC-141-1	VLV-37	1	LOADING DOCK 141	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
38	UC-141-2	VLV-38	1	LOADING DOCK 141	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
39	UC-142-1	VLV-39	1	RAW STORAGE 142	COOLING COIL GLYCOL RETURN	1 1/4	23	5		0.00	10.29												
40	UC-142-2	VLV-40	1	RAW STORAGE 142	COOLING COIL GLYCOL RETURN	1 1/4	23	5		0.00	10.29												
41	UC-149A-1	VLV-41	1	NEAR ELECTRICAL 150	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
42	UC-149B-1	VLV-42	1	CORRIDOR 149	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
43	UC-149B-2	VLV-43	1	CORRIDOR 149	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
44	UC-149B-3	VLV-44	1	CORRIDOR 149	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
45	UC-149B-4	VLV-45	1	CORRIDOR 149	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
46	UC-151-1	VLV-46	1	DECANTING 151	COOLING COIL GLYCOL RETURN	1 1/4	54	5		0.00	24.15												
47	UC-151-2	VLV-47	1	DECANTING 151	COOLING COIL GLYCOL RETURN	1 1/4	54	5		0.00	24.15												
48	UC-151-3	VLV-48	1	DECANTING 151	COOLING COIL GLYCOL RETURN	1 1/4	54	5		0.00	24.15												
49	UC-152-1	VLV-49	1	CHILLED HOLDING 152	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
50	UC-152-2	VLV-50	1	CHILLED HOLDING 152	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
51	UC-152-3	VLV-51	1	CHILLED HOLDING 152	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
52	UC-152A-1	VLV-52	1	PREP ROOM 152A	COOLING COIL GLYCOL RETURN	1 1/4	16	5		0.00	7.16												
53	UC-152A-2	VLV-53	1	PREP ROOM 152A	COOLING COIL GLYCOL RETURN	1 1/4	16	5		0.00	7.16												
54	UC-152B-1	VLV-54	1	RTE MEAT SLICING ROOM 152B	COOLING COIL GLYCOL RETURN	1 1/4	54	5		0.00	24.15												
55	UC-152B-2	VLV-55	1	RTE MEAT SLICING ROOM 152B	COOLING COIL GLYCOL RETURN	1 1/4	54	5		0.00	24.15												
56	UC-152C-1	VLV-56	1	MIXING PREP 152C	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
57	UC-152C-2	VLV-57	1	MIXING PREP 152C	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
58	UC-156-1	VLV-58	1	CORRIDOR 156	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
59	UC-159A-1	VLV-59	1	NON-RTE MEAT PREP 159A	COOLING COIL GLYCOL RETURN	1 1/4	38	5		0.00	16.99												
60	UC-159A-2	VLV-60	1	NON-RTE MEAT PREP 159A	COOLING COIL GLYCOL RETURN	1 1/4	38	5		0.00	16.99												
61	UC-159B-1	VLV-61	1	MARINATION ROOM 159B	COOLING COIL GLYCOL RETURN	1 1/4	11	5		0.00	4.92												
62	UC-159B-2	VLV-62	1	MARINATION ROOM 159B	COOLING COIL GLYCOL RETURN	1 1/4	11	5		0.00	4.92												
63	UC-160-1	VLV-63	1	WASHING ROOM 160	COOLING COIL GLYCOL RETURN	1 1/4	76	5		0.00	33.99												
64	UC-160A-1	VLV-64	1	WASHING ROOM 160A	COOLING COIL GLYCOL RETURN	1 1/4	37.1	5		0.00	16.59												
65	UC-161B-1	VLV-65	1	DESSERT CHILLER 161B	COOLING COIL GLYCOL RETURN	1 1/4	11	5		0.00	4.92												
66	UC-161B-2	VLV-66	1	DESSERT CHILLER 161B	COOLING COIL GLYCOL RETURN	1 1/4	11	5		0.00	4.92												
67	UC-162A-1	VLV-67	1	BLAST CHILLER 162A	COOLING COIL GLYCOL RETURN	1 1/4	70	5		0.00	31.30												
68	UC-162A-2	VLV-68	1	BLAST CHILLER 162A	COOLING COIL GLYCOL RETURN	1 1/4	70	5		0.00	31.30												
69	UC-162A-3	VLV-69	1	BLAST CHILLER 162A	COOLING COIL GLYCOL RETURN	1 1/4	70	5		0.00	31.30												
70	UC-162B-1	VLV-70	1	CHILL MATERIAL HOLDING 162B	COOLING COIL GLYCOL RETURN	1 1/4	16	5		0.00	7.16												
71	UC-162B-2	VLV-71	1	CHILL MATERIAL HOLDING 162B	COOLING COIL GLYCOL RETURN	1 1/4	16	5		0.00	7.16												
72	UC-164-1	VLV-72	1	CORRIDOR 149	COOLING COIL GLYCOL RETURN	1 1/4	13.4	5		0.00	5.99												
73	UC-167-1	VLV-73	1	TOPPING CHILL HOLDING 167	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
74	UC-167-2	VLV-74	1	TOPPING CHILL HOLDING 167	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
75	UC-167-3	VLV-75	1	TOPPING CHILL HOLDING 167	COOLING COIL GLYCOL RETURN	1 1/4	22	5		0.00	9.84												
76	UC-173-1	VLV-76	1	PIZZA TOPPING ROOM 173	COOLING COIL GLYCOL RETURN	1 1/4	70	5		0.00	31.30												
77	UC-173-2	VLV-77	1	PIZZA TOPPING ROOM 173	COOLING COIL GLYCOL RETURN	1 1/4	70	5		0.00	31.30												
78	UC-173-3	VLV-78	1	PIZZA TOPPING ROOM 173	COOLING COIL GLYCOL RETURN	1 1/4	70	5		0.00	31.30												
79	UC-174-1	VLV-79	1	PIZZA PACKING 174	COOLING COIL GLYCOL RETURN	1 1/4	38	5		0.00	16.99												
80	UC-174-2	VLV-80	1	PIZZA PACKING 175	COOLING COIL GLYCOL RETURN	1 1/4	38	5		0.00	16.99												
81	UC-177-2	VLV-81	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
82	UC-177-3	VLV-82	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
83	UC-177-4	VLV-83	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
84	UC-177-5	VLV-84	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
85	UC-177-8	VLV-85	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
86	UC-177-9	VLV-86	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
87	UC-177-10	VLV-87	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
88	UC-177-11	VLV-88	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
89	UC-180-1	VLV-89	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
90	UC-180-2	VLV-90	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
91	UC-180-3	VLV-91	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												
92	UC-182-1	VLV-92	1	ASSEMBLY ROOM 177	COOLING COIL GLYCOL RETURN	1 1/4	43	5		0.00	19.23												

NOTES: UNIT COOLER VALVES WILL SELECTED ONCE PRIME BUILDING CONTROLS RECEIVE CONTROL SIGNAL CONFIRMATION FROM THE VENDOR.

FACILITY	WARABEYA NORTH AMERICA				
MECH. CONTRACTOR	MULLINS MECHANICAL				
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY

PRIME BUILDING CONTROLS

800 E. 12TH AVENUE
COLUMBUS, OH 43211
(614) 897-0050

PROJECT: WARABEYA NORTH AMERICA

VALVE SCHEDULE

STEAM VALVE SCHEDULE

STEAM VALVE SCHEDULE																							
				SYSTEM DATA			STEAM DATA		VALVE BODY DATA										ACTUATOR DATA			
ITEM	EQUIPMENT NAME	VALVE TAG	Qty	EQUIPMENT LOCATION	SERVICE OR APPLICATION	LINE SIZE (INCH)	STEAM FLOW (LB/HR)	INLET PRESSURE (PSIG)	SIZE (INCH)	PRESSURE DROP	CALCULATED CV	VALVE CV	PATTERN	TYPE	CONN.	PART NUMBER	TRIM	MANUFACTURER	PART NUMBER	COMBINED PART NUMBER	MANUFACTURER	DESCRIPTION
1	AHU-1	V-92	1	SECOND FLOOR AREA-A	STEAM COIL VALVE	1	425.76	20.00	1		8.29	10.00	2-WAY	MODULATING	NPT	G225S-K	STAINLESS STEEL	BELIMO	LF24-SR US	G225S-K+LF24-SR US	BELIMO	24VAC/DC, MODULATING BALL VALVE, NC, FAIL OPEN VALVE & ACTUATOR, SVA

FACILITY	WARABEYA NORTH AMERICA					PRIME BUILDING CONTROLS	800 E. 12TH AVENUE COLUMBUS, OH 43211 (614) 897-0050	PROJECT: WARABEYA NORTH AMERICA
MECH. CONTRACTOR	MULLINS MECHANICAL							STEAM VALVE SCHEDULE
ENGINEER	EXCEL ENGINEERING, INC.	0	11-19-2024	SUBMITTED FOR APPROVAL	SS			JOB #: 23-10265 / PAGE: 123 of 124
ARCHITECT	EXCEL ENGINEERING, INC.	#	DATE	REVISION DESCRIPTION	BY			

MASTER BILL OF MATERIAL

MASTER BILL OF MATERIAL

Item#	Application	Tag	Part No.	Quantity	Shipped	Description	Manufacturer
1	Operator Workstation & Server	OWS & Server	-	1		To be procured locally	-
2	Supervisor Software	OWS & Server	CIV-OPNPR	1		The i-Vu Pro 9.0 user interface enables centralized control of the i-Vu building automation system (BAS) from any web-enabled device	Carrier
3	EOL Terminators	EOL	BT485	1		Biasing Terminators (16 pack)	Carrier
4	Programmable Controller	C#	TV-MPCXP	5		Support for up to nine TruVu MPC I/O expansion modules and a total of 180 input/output points.	Carrier
5	Programmable Controller	C#	TV-UCXP683T	2		supports direct connection or daisy chain topologies using BACnet/IP and 17 points of onboard control	Carrier
6	Programmable Controller	C#	TV-VAVB3-E2	15		General Purpose VAV Controller W/4 universal inputs, 2 anlog output & 3 digital output	Carrier
7	I/O Module	IO-#	TV-MPCXPIO012	2		12 inputs 6.9 X 6.95 X 2.09 in.	Carrier
8	I/O Module	IO-#	TV-MPCXPIO812	22		12 inputs, 8 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
9	I/O Module	IO-#	TV-UCXPIO48	2		8 inputs, 4 outputs, 6.9 X 6.95 X 2.09 in.	Carrier
10	Network Switch	NS-1	EISK8-100T	2		8 Ports 10/100 Mbps Skorpion switch	Contemporary Controls
11	Space Temprature Sensor	ZN-T	A/CP-SP	73		CP 10K (Type II) Stainless Wall Plate, 14" Leads, 1/8" Foam Pad	Functional Devices
12	Space Temprature Sensor	ZN-T	A/CP-R2	5		Room Temperature Sensor, Designer, 10K Type II Thermistor	Functional Devices
13	Zone Temprature Sensor	ZN-T	TB-24-C	1		BACnet thermostat, Range 41° F to 95° F	Carrier
14	Zone Temperature	ZN-T	ZS2P-CAR	17		ZS pro Rnet communication sensor with display	Carrier
15	Duct Temperature Sensor	DAT	BA/10K-2-D-4"-NB-15'	15		Duct Temperature Sensor, 10K Type II Thermistor, 4 Probe, No Box, 15' Leads	Bapi
16	Duct Temperature Sensor	SAT	A/CP-D-12"-PB	2		10K Type II Thermistor, Duct, 12", Plastic Enclosure	ACI
17	Duct Temperature Sensor	DAT-#	A/CP-D-8-PB	2		Thermistor, Duct, 10K Ω (Type II), 8, Plastic Box	ACI
18	Duct Temperature Sensor	RAT, EAT	A/CP-D-18"-PB	2		10K Type II Thermistor, Duct, 18", Plastic Enclosure	ACI
19	Immersion Temperature Sensor	TS-#	A/CP-INW-12"-GD	6		Immersion Sensor, 10K Type-II, 12" w/o well	ACI
20	Immersion Temperature Sensor	TS-#	A/CP-IM-1"-GD	1		Immersion Sensor, 10K Type-II, 1" w/ well	ACI
21	Outside Air Humidity/ Temprature Sensor	OAT/RH	HT1O-3EU	1		Outside Air (OSA) Humidity and Temperature Sensor, 3%, 10K Type-II Thermistor, Universal Output (2-wire and 3-wire 4-20 mA, 0-5 VDC, 0-10 VDC)	Senva
22	Well	TS-#	A/M12"	6		12"(304.80mm) Insertion, 304 Stainless, Machinet, 1/2" NPT Thermowell	ACI
23	Emergency Shut-Down Push Buttor	ES-#	ST120SL-N1-BS	2		Push Pull STA N1 Surface Pull Reset Boiler Shut-down	Kele
24	High Static Pressure Switch	HPS	1900-5-MR	1		Differential pressure switch, range 1.40-5.5" w.c., approx. deadband @ min. set point 0.30, approx. deadband @ max. set point 0.30, with manual reset option , SPDT.	DWYER
25	High Static Pressure Switch	HPS	A-301	1		Static Pressure Tips, 1/4" Metal Tubing, 12"	DWYER
26	Static Probe	-	ZPS-ACC07	3		Static Probe Assembly, Aluminum 6" long	Bapi
27	Building Static Pressure	BSP	P5-0500-1LX	21		AIR DIFF PRESS XMTR, +/-1.00%, 0-5.00" WC, FLD SEL OUT, LCD, DIN RAIL	Senva
28			ZPS-ACC01-86	24		2 x 4 Stainless Steel Wall Plate with Static Pickup	Bapi
29			ZPS-ACC10-V	24		Rooftop or Wall Mount Outside Air Pressure Pickup Port	Bapi
30	Flow Meter Sensor	FM-1, 2	F-1211	2		Dual turbine insertion flow meter with freq, analog and scaled pulse output, plated brass stem, NEMA 4 enclosure and 10' PVC cable. Suitable line size range : 10"	Onion
31	Current Switch	CS-#	RIBXGTA	52		Current Switch, Split Core, Adjustable, 0.75-150 Amp, Terminal	Functional Devices
32	Current Switch	CS-#	RIBXGTA-ECM	10		Current Switches, Split Core, Fixed, Adjustable, or Self-Calibrated, Up to 150 Amps Sensing Range	Functional Devices
33	Field Relay	FR-#	RIBTU1S	11		Pilot Relay, 10 Amp SPST + Override, 10-30 Vac/dc/120 Vac Coil, Hi/Lo Voltage Separation, NEMA 1 Housing	Functional Devices
34	Field Relay	FR-#	RIB2401D	3		Pilot Relay, 10 Amp DPDT, 24 Vac/dc/120 Vac Coil, NEMA 1 Housing	Functional Devices
35	Field Relay	FR-#	RIBU1C	83		Enclosed Relay 10Amp SPDT 10-30Vac/dc/120Vac	Functional Devices
36	Transformer	TR-#	TR100VA001	4		Transformer 96 VA, 120 to 24 Vac, Circuit Breaker, Foot and Single Threaded Hub Mount	Functional Devices
37	Power Supply	PSH-#	PSH500A	6		Enclosed 100VAx5 multi-tap 120-480 to 24Vac UL Class 2 power supply	Functional Devices
38	Subpanel	CP-#	SCE-24N24MP	2		Enclosure - 22 x 22 x 0.88 - Steel/Gray	Saginaw
39	Control Panel	CP-#	SCE-24N2408LP	2		N1 Panel - 24 x 24 x 8 - Steel/Gray	Saginaw
40	Subpanel	CP-#	SCE-30N30MP	6		Enclosure - 28 x 28 x 0.8 - Steel/Gray	Saginaw
41	Control Panel	CP-#	SCE-30N3008LP	6		N1 Panel - 30 x 30 x 08 - Steel/Gray	Saginaw