
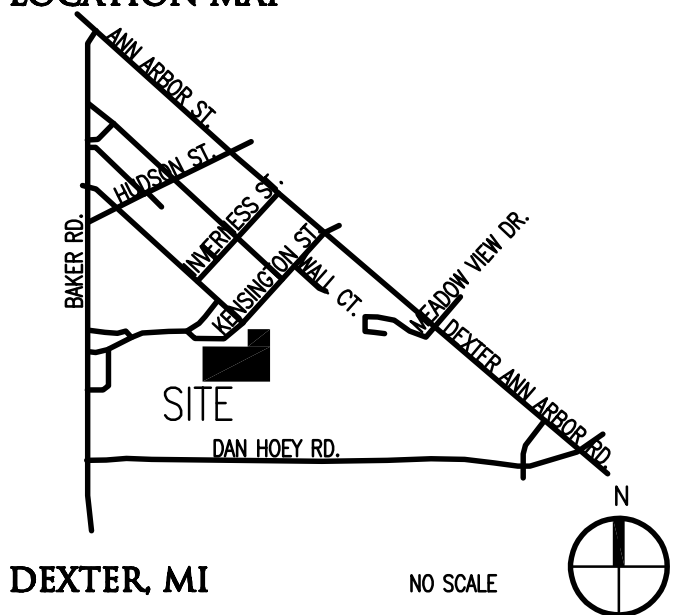


				<div><p>ARCHITECTURE</p><p>T M P ARCHITECTURE I N C</p><p>1191 WEST SQUARE LAKE ROAD · BLOOMFIELD HILLS · MICHIGAN · 48302</p><p>PH · 248.338.4561 FX · 248.338.0223 EM · INFO@TMP-ARCHITECTURE.COM</p></div>					
<div>CONSULTANTS:</div> <div>MECHANICAL ENGINEER</div> <div>PETER BASSO ASSOCIATES INC.</div> <div>ELECTRICAL ENGINEERS</div> <div>5145 LIVERNOIS ROAD, SUITE 100</div> <div>TROY, MICHIGAN 48068-3276</div> <div>PHONE: (248) 879-5666</div> <div>FAX: (248) 879-0007</div> <div>ELECTRICAL ENGINEER</div>	<div>CONSULTANT</div> <div>CONSULTANT</div>	<div>LIST OF DRAWINGS</div> <div>GENERAL INFORMATION</div> <div>TS.1 COVER SHEET</div> <div>TG.1 GENERAL INFORMATION</div> <div>CIVIL</div>	<div>STRUCTURAL</div>	<div>ARCHITECTURAL</div>	<div>MECHANICAL</div> <div>M0.1 TEMPERATURE CONTROL SYMBOLS, ABBREV, STANDARDS AND DRAWING INDEX</div> <div>M0.2 TEMPERATURE CONTROL STANDARD DETAILS AND GENERAL NOTES</div> <div>M0.3 EXISTING BACHet MSTP NETWORK - FOR REFERENCE ONLY</div> <div>M1.1 FIRST LEVEL TEMPERATURE CONTROL COMPOSITE PLAN</div> <div>M2.1 TEMPERATURE CONTROLS</div> <div>M2.2 TEMPERATURE CONTROLS</div> <div>M2.3 TEMPERATURE CONTROLS</div> <div>M2.4 TEMPERATURE CONTROLS</div> <div>M2.5 TEMPERATURE CONTROLS</div> <div>M2.6 TEMPERATURE CONTROLS</div> <div>M2.7 TEMPERATURE CONTROLS</div> <div>M2.8 TEMPERATURE CONTROLS</div>	<div>ELECTRICAL</div>	<div>TECHNOLOGY</div>	<div>PROJECT DATA:</div> <div>LOCATION MAP</div> <div></div> <div>DEXTER, MI</div> <div>NO SCALE</div> <div>ADDRESS: WYLIE ELEMENTARY SCHOOL</div> <div>3060 KENSINGTON ST.</div> <div>DEXTER, MICHIGAN 48130</div> <div>COPYRIGHT</div> <div>© The "architectural work" displayed on these documents is owned exclusively by TMP Architecture, Inc. and may not be used for any purpose without their involvement or express written consent.</div>	<div>BUILDING:</div> <div>EXISTING BUILDING AREA = 110,053 SQ. FT.</div> <div>CODE:</div> <div>GOVERNING CODES ;</div> <div>- 2016 SCHOOL FIRE SAFETY RULES</div> <div>- (2012 Life Safety Code, plus amendments)</div> <div>- 2015 MICHIGAN BUILDING CODE</div> <div>- 2015 MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS</div> <div>- 2015 MICHIGAN PLUMBING CODE</div> <div>- 2015 MICHIGAN MECHANICAL CODE</div> <div>- 2015 MICHIGAN UNIFORM ENERGY CODE</div> <div>(ANSI/ASHRAE/IES Standard 90.1-2013)</div> <div>- 2014 MICHIGAN ELECTRICAL RULES (2014 NEC, plus Part 8 Rules)</div> <div>- 2010 MICHIGAN ELEVATOR RULES</div> <div>(ASME A17.1-2010, ASME A18.1-2011)</div> <div>- MICHIGAN BARRIER FREE CODE</div> <div>(Michigan Building Code 2015 and ICC A117.1-2009)</div> <div>- 2013 MICHIGAN BOILER CODE RULES</div> <div>(ASME Boiler and Pressure Vessel Code, 2010 edition, plus 2011a addenda)</div> <div>(National Board Inspection Code [NBIC], 2011 edition)</div> <div>CONSTRUCTION CLASSIFICATION : TYPE II (000) (NFPA)</div> <div>TYPE II B (MBC)</div> <div>USE GROUP CLASSIFICATION : "E" EDUCATION</div> <div>DATE</div> <div>ISSUED FOR:</div> <div>PROJECT TITLE</div> <div>Wylie Elementary School Bldg. Sys.</div> <div>PROJECT NO.</div> <div>22072C</div> <div>DRAWING NO.</div> <div>TS.1</div>
<div>LICENSEE'S STATEMENT:</div> <div>This Document has been prepared under the supervision of the Architect, as the person in Responsible Charge with the firm of TMP ARCHITECTURE, INC.. An original embossed or rubber stamp seal and original signature of the Architect is required and shall be affixed to any copy of this Document submitted to a governmental agency for approval or record. This is in conformance with the State of Michigan's PA 299, Article 20 and the General Rules of the Board of Architects.</div> <div>The Architect's seal provided hereon does not take responsibility for certain portions of the Documentation or project requiring the services of a licensed Professional Engineer or other design professional. An original embossed or rubber stamp seal and original signature of the Professional Engineer is required and shall be affixed to any copy of this or other Document submitted to a governmental agency for approval or record. The engineering firms associated with this document are listed above as Consultants.</div>		<div>REGISTRATION SEALS</div>							

[illegible][illegible]

	STATION	STATIC PRESSURE
	STA.	STEAM
	STM	STEEL
	STL.	STEEL PLATE
	STL. PL.	STIFF.
	STOFF.	STOREFRONT
	STO. FR.	STOR.
	STR.	STRAIGHT
	ST.	STREET
	STRUCT.	STRUCTURAL
	S-	STRUCTURAL DRAWING-NO.
	S.G.F.T.	STRUCTURAL GLAZED FACING TILE
	S.TL.	STRUCTURAL STEEL
	S.D.	SUBSOIL DRAIN
	S.S.D.C.	SUBSOIL DRAIN CONNECTION
	SUB.	SUBSTATION
	S.A.G.	SUPPLY AIR GRILLE
	S.D.	SUPPLY DIFFUSER/ DUCT
	SUBST.	SUBSTITUTE
	S.A.R.	SUPPLY AIR REGISTER
	S.F.	SURVEY FA

	STATION	STATIC PRESSURE
	STA.	STEAM
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	S.A.R.	SUPPLY AIR REGISTER
	S.F.	SURVEY FA

N		N	
NAT.	NATURAL	STIFF.	STIFFENER
N.E.	NEAR SIDE	STO. FR.	STOREFRONT
NEUT.	NEUTRAL	STOR.	STORAGE
NOR.	NORMAL	STR.	STRAIGHT
NOR.	NORMAL	STREET	STREET
NOR.	NORMAL	STRUCT.	STRUCTURAL
NOR.	NORMAL	S	STRUCTURAL DRAWING-N.O.
NOR.	NORMAL	S.G.F.T.	STRUCTURAL GLAZED FACING TILE
NOR.	NORTH	S.T.L.	STRUCTURAL STEEL
NOR.	NORTH	S.S.D.	SUBSOIL DRAIN
NOR.	NORTH	S.S.C.	SUBSOIL DRAIN CONNECTION
N.I.C.	NOT-IN-CONTRACT	SUB.	SUBSTANT
N.I.S.	NOT-TO-SCALE	S.D.	SUPPLY DIFFUSER/ DUCT
NO. or #	NUMBER	SUBST.	SUBSTR.
		S.A.R.	SUPPLY AIR REGISTER
		S.E.	SUBST. FIN.

[illegible][illegible]

MATERIAL DESIGNATIONS

ELEVATION	SECTION	MATERIAL	ELEVATION	SECTION	MATERIAL	ELEVATION	SECTION	MATERIAL
-----------	---------	----------	-----------	---------	----------	-----------	---------	----------

	CONCRETE MASONRY UNITS (BLOCK)		WOOD BLOCKING/ NAILER (Continuous)		PLASTER OR VENEER PLASTER
	SOLID CONCRETE MASONRY UNITS		WOOD BLOCKING/ NAILER (Non-continuous)		CEMENT PLASTER AND METAL LATH
	PREFACED CONCRETE MASONRY UNITS		PARTICLE BOARD (Large Scale)		CERAMIC TILE (Large Scale)
	STRUCTURAL GLAZED FACING TILE		PLYWOOD (Large Scale)		TERRAZZO (Large Scale)
	CONCRETE		HARDWOOD VENEER PLYWOOD (Large Scale)		CARPET (Large Scale)
	STONE/ SLATE/ OR GRANITE		PLASTIC LAMINATE CLAD PLYWOOD OR PARTICLE BOARD (Large Scale)		VINYL COMPOSITION TILE (V.C.T.)
	EARTH		BATT OR BLANKET INSULATION		SEALANT AND BACKER ROD (Large Scale) (Depth Equal to Half Joint Width)
	POROUS FILL (GRAVEL OR STONE)		RIGID INSULATION		JOINT FILLER MATERIAL OR ISOLATION JOINT FILLER (Large Scale)
	COMPACTED DRAINAGE FILL (SAND)		ACOUSTICAL CEILING TILE OR PANEL		COLD FORMED METAL FRAMING
	MARBLE		GLASS (Large Scale)		STRUCTURAL STEEL SHAPES (Continuous Sections Hatched or Solid, Non-continuous Sections Open)
	STEEL AND FERROUS METAL (Large Scale)		GLASS (Small Scale)		
	ALUMINUM AND NON-FERROUS METAL (Large Scale)				

### DETAIL IDENTIFICATION

DETAIL IDENTIFICATION NUMBER  
(SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

1.

A1.1

**DETAIL TITLE**

SCALE: 1/8" = 1'-0"

SHEET IDENTIFICATION NUMBER  
(INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN OR  
SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE  
SHEET WHERE THE DETAIL IS DRAWN)

### DETAIL LOCATION INDICATION

The diagram illustrates the notation for detail location. On the left, a circular symbol contains the number '1' above the text 'A1.1'. A line from this symbol points to the label 'DETAIL IDENTIFICATION NUMBER'. Below this symbol, a horizontal line is labeled '(WALL SECTIONS)'. To the right, another circular symbol contains the number '1' above the text 'A1.1'. A line from this symbol points to the label 'SHEET IDENTIFICATION NUMBER'. Below this symbol, a horizontal line is labeled '(INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN)'. To the right of this second symbol, a dashed rectangular box is shown, with a line from the symbol pointing to it, labeled '(PLAN SECTIONS)'.

DETAIL LOCATION INDICATION FOR ENLARGED PLANS

DETAIL IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER

**SECTION IDENTIFICATION**

SECTION IDENTIFICATION NUMBER  
(SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

**SECTION TITLE**

SCALE: 1/8" = 1'-0"

**SHEET IDENTIFICATION NUMBER**  
(INDICATES SHEET NUMBER WHERE SECTION IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE SECTION IS DRAWN)

**SECTION LOCATION INDICATION**

**SHEET IDENTIFICATION NUMBER**

**ELEVATION IDENTIFICATION**

SHEET IDENTIFICATION NUMBER  
(INDICATES SHEET NUMBER WHERE SECTION IS DRAWN)

ELEVATION IDENTIFICATION NUMBER  
(SAME NUMBER ON SHEET WHERE DRAWN OR REFERENCED)

The diagram shows a circular symbol with a horizontal line through its center. The number '1.' is in the upper left quadrant, and 'A1.1' is in the lower left quadrant. A curved line connects 'A1.1' to the text 'SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN OR SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE SHEET WHERE THE ELEVATION IS DRAWN)'. To the right of the symbol, the text 'ELEVATION TITLE' is written in large, bold, capital letters, followed by a horizontal line. Below this line, the text 'SCALE: 1/8" = 1'-0"' is written.

**1.**

**ELEVATION TITLE**

SCALE: 1/8" = 1'-0"

A1.1

SHEET IDENTIFICATION NUMBER  
(INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN OR  
SHEET NUMBER(S) TO REFER TO WHEN REFERENCED ON THE  
SHEET WHERE THE ELEVATION IS DRAWN)

ELEVATION IDENTIFICATION NUMBER(S)  
(SAME LETTER ON SHEET WHERE DRAWING OR REFERENCED)

INDICATES DIRECTION OF VIEW OR MULTIPLE VIEWS

SHEET IDENTIFICATION NUMBER  
(INDICATES SHEET NUMBER WHERE ELEVATION IS DRAWN)

### MATCH LINE INDICATION

The diagram illustrates the match line indication for two sheets of a drawing. A horizontal line represents the match line, with a dashed line in the center. On the left side of the dashed line, the text 'ZONE 'A'' is written. On the right side, the text 'ZONE 'B'' is written. At the far left end of the horizontal line, there is a diamond-shaped symbol containing the text 'A1.1' and 'A1.2'. A curved line points from this symbol to the text 'SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER OF DRAWING)'. At the far right end of the horizontal line, there is another diamond-shaped symbol containing the text 'A1.1' and 'A1.2'. A curved line points from this symbol to the text 'SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DRAWING IS CONTINUED)'.

**DOOR INDICATION**

The diagrams show three scenarios for door swing indication on a floor plan:

- DOOR SWING INDICATION-EXISTING DOOR:** A solid line indicates the door swing.
- DOOR SWING INDICATION-EXISTING DOOR TO BE REMOVED:** A solid line indicates the existing door swing, and a dashed line indicates the swing of the door to be removed.
- DOOR SWING INDICATION-EXISTING DOOR TO BE REMOVED:** A dashed line indicates the door swing.

ROOM NAME AND NUMBER INDICATION	DOOR IDENTIFICATION
<p>SAMPLE ROOM NAME 101 ROOM IDENTIFICATION NUMBER</p>	<p>DOOR TO ROOM SHALL REPEAT ROOM NUMBER ASSIGNED TO ROOM. MULTIPLE DOORS TO ROOM SHALL REPEAT ROOM NUMBER WITH A POSTSCRIPT LETTER FOR EACH ADDITIONAL DOOR REQUIRED.</p>

ROOM IDENTIFICATION BY FLOOR AND/OR ZONE SHALL BE AS FOLLOWS:		DOOR IDENTIFICATION BY FLOOR AND/OR ZONE SHALL BE AS FOLLOWS:	
BASEMENT DOORS .....001	ZONE A --- A101	BASEMENT DOORS .....001	ZONE A ---A-
FIRST FLOOR DOORS .....001	ZONE B --- B101	FIRST FLOOR DOORS .....001	ZONE B ---B-
SECOND FLOOR DOORS .....201	ZONE C --- C101	SECOND FLOOR DOORS .....201	ZONE C ---C-
THIRD FLOOR DOORS .....301		THIRD FLOOR DOORS .....301	
⋮		⋮	
CONTINUES FOR AS MANY FLOORS REQUIRED.		CONTINUES FOR AS MANY FLOORS REQUIRED.	

<p><b>COLUMN INDICATION</b></p>	<p><b>NORTH INDICATION</b></p>
---------------------------------	--------------------------------

**WALL TYPE NOTATION**

WALL CONSTRUCTION TYPE NUMBER AS LISTED IN "WALL TYPE LEGEND"

1

DESCRIPTION ORIGINATES AT

**CASEWORK NOTATION**

CASEWORK IDENTIFICATION NUMBER BASED ON MANUFACTURERS CATALOG NUMBERS AS NOTED IN SPECIFICATIONS OR "CASEWORK LEGEND"

A1-100-36

NORTH

The diagram illustrates three types of callouts used in technical drawings:

- KEYED NOTE INDICATION:** A circle containing the number '1' is connected by a horizontal line to the text 'KEYED NOTE IDENTIFICATION NUMBER AS LISTED IN "NOTES" LEGEND.' Below this, '(PLAN NOTATION)' is written. A second circle containing '1' is connected by a horizontal line to the text 'KEYED NOTE IDENTIFICATION NUMBER'.
- ADDENDUM INDICATION:** A diamond shape containing the number '1' is connected by a horizontal line to the text 'ADDENDUM NUMBER (CURRENT REVISIONS SHALL BE SHOWN ENFORCED BY A FREEFORM LINE)'.
- BULLETIN INDICATION:** This section is labeled but contains no diagrammatic elements.

The diagram illustrates two drawing conventions:

- Stair Direction Notation:** A horizontal line with arrows at both ends. Above the left arrow is the text "10 T (11 R)". Above the right arrow is the text "UP (DN)". To the right of the line, the text "STAIR DIRECTION TO FLOOR ABOVE (UP) OR BELOW (DOWN)" is written.
- Drawing Dimension Line Indication:** A horizontal line with arrows at both ends. Above the left arrow is a triangle containing the number "1". To the right of the line, the text "BULLETIN NUMBER (CURRENT REVISIONS SHALL BE SHOWN ENFORCED BY A FREEFORM LINE)" is written.

**MATERIAL OR WORK DIVISION NOTATION**

Diagram illustrating Material or Work Division Notation. It shows two materials, 'A' and 'B', separated by a vertical line. Material 'A' is labeled '(NEW CONST.)' and Material 'B' is labeled '(EXIST. CONST.)'. The joint between them is labeled 'JOINT BETWEEN MATERIALS (OR CONSTRUCTION WORK DIVISION LINE)'. Above the diagram, a note states: 'NUMBER OF THREADS (OR RISERS) IN STAIR RUN' with a diagram of a staircase showing a vertical line with horizontal segments.

**DRAWING NOTATION INDICATION**

Diagram illustrating Drawing Notation Indication. It shows a vertical line with a horizontal line intersecting it. The horizontal line is labeled 'PROPORTIONS' and the vertical line is labeled 'THAN 1:1'. Below the diagram, a note states: 'MATERIAL NOTATION AND INFORMATION (REFER TO TECHNICAL SPECIFICATION FOR MATERIAL DESCRIPTIONS AND METHODS OF CONSTRUCTION)' with a diagram of a staircase showing a vertical line with horizontal segments.



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REGISTRATION SEAL

## CONSULTANT

## PROJECT TITLE

# Wylie Elementary School Bldg. Automation System

# Dexter Community Schools

**DRAWING TITLE**

## General Information

## ISSUE DATES

Blank handwriting practice paper with 10 sets of three horizontal lines (top, middle, bottom) for letter formation. Each set is preceded by a small number (1-10) in the left margin.

05-25-2023

DATE: 12/1/80

DRAWN

**CHECKED**

APPROVED \_\_\_\_\_

PROJECT NC

22072

DRAWING N

## TG 1



\\pba.local\projects\2022\0381-00\CAD\2022-0381-M0-IND.dwg, M0.1, 5/25/2023 7:30:54 AM, Suha A. Matti, None, 0.08536, Peter Basso Associates Inc.

TEMPERATURE CONTROL - SYMBOLS LIST

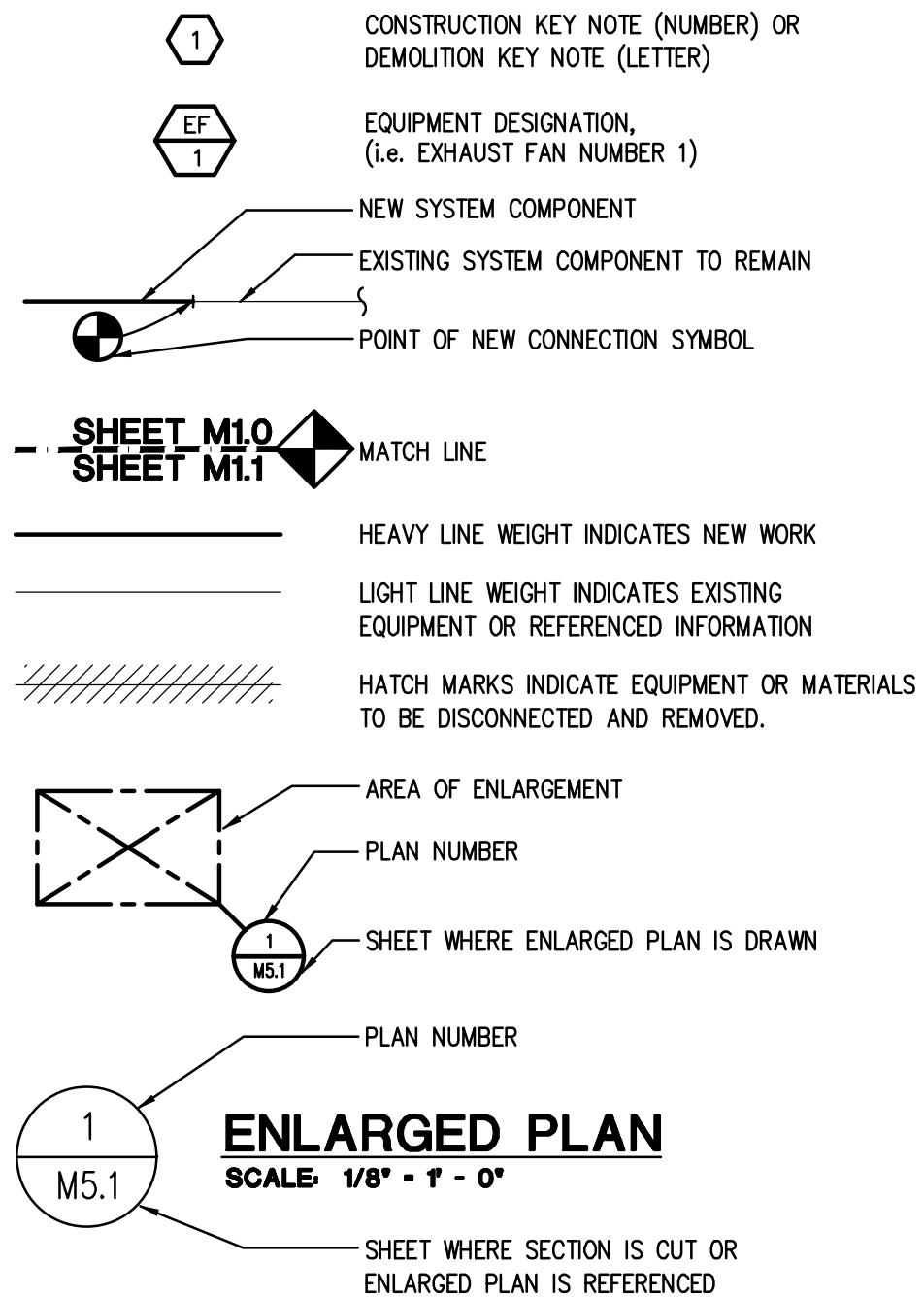
SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
	AQUASTAT, STRAP ON BULB
	CARBON DIOXIDE SENSOR - WALL MOUNTED
	CARBON DIOXIDE SENSOR - DUCT MOUNTED
	CURRENT SWITCH
	DAMPER - OPPOSED BLADE
	DAMPER - PARALLEL BLADE
	DAMPER MOTOR
	DIFFERENTIAL PRESSURE SWITCH
	DIFFERENTIAL PRESSURE TRANSMITTER
	FLOW METER
	FLOW SWITCH
	FREEZE/STAT
	GUARD FOR STAT OR SENSOR
	SPACE HUMIDITY SENSOR
	HUMIDITY SENSOR, DUCT MOUNTED
	LINE - ELECTRIC
	LINE - PNEUMATIC
	MAIN AIR
	MOTOR STARTER
	OCCUPANCY SENSOR
	PRESSURE TRANSMITTER
	RELAY, ELECTRIC
	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
	SIGNAL - DDC/BAS, ANALOG INPUT
	SIGNAL - DDC/BAS, ANALOG OUTPUT
	SIGNAL - DDC/BAS, DIGITAL INPUT
	SIGNAL - DDC/BAS, DIGITAL OUTPUT
	SIGNAL - PACKAGED EQUIPMENT, ANALOG INPUT
	SIGNAL - PACKAGED EQUIPMENT, ANALOG OUTPUT
	SIGNAL - PACKAGED EQUIPMENT, DIGITAL INPUT
	SIGNAL - PACKAGED EQUIPMENT, DIGITAL OUTPUT
	SMOKE DETECTOR - DUCT MOUNTED
	START/STOP RELAY
	STATIC PRESSURE SENSOR OR PROBE

NOTES:

- SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.
- REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.

STANDARD METHODS OF NOTATION



ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AMP	AMPERE
APD	AIR PRESSURE DROP
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR-CONDITIONING ENGINEERS
AUX	AUXILIARY
BAS	BUILDING AUTOMATION SYSTEM
C	COMMON
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	COOLING
CLP	COMPUTER LOOP PUMP
CLR	COMPUTER LOOP RETURN
CLS	COMPUTER LOOP SUPPLY
CO2	CARBON DIOXIDE
COND	CONDENSATE
CONT	CONTINUATION OR CONTINUED
CONTR	CONTRACTOR
CONV	CONVECTOR
COS	CENTRAL OPERATOR STATION
CP	CIRCULATING PUMP
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CW	DOMESTIC COLD WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DA	DISCHARGE AIR
DAT	DISCHARGE AIR TEMPERATURE
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DMPR	DAMPER
D/N	DAY/NIGHT
DN	DOWN
DPR	DAMPER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
ECUH	ELECTRIC CABINET UNIT HEATER
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
ELEC	ELECTRICAL

ABBREVIATION	DESCRIPTION
EROP	ELECTRIC RADIANT CEILING PANEL
ERU	ENERGY RECOVERY UNIT
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
T	DEGREES FAHRENHEIT
FAB	FACE AND BYPASS DAMPER
FAS	FIRE ALARM SYSTEM
FCU	FAN COIL UNIT
FLR	FLOOR
FM	FLOW MEASURING DEVICE
FT	FEET
FTR	FINNED TUBE RADIATION
GPM	GALLONS PER MINUTE
GRH	GRAVITY RELIEF HOOD
HOA	HAND/OFF/AUTO
HP	HEAT PUMP
HP	HORSEPOWER
HP/LP	HEAT PUMP LOOP PUMP
HPLR	HEAT PUMP LOOP RETURN
HP/LS	HEAT PUMP LOOP SUPPLY
HOUR	HOUR
HTG	HEATING
HV	HEATING VENTILATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATING
HWHR	HOT WATER HEATING RETURN
HWS	HOT WATER HEATING SUPPLY
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
HX	HEAT EXCHANGER
IAQ	INDOOR AIR QUALITY
IN	INCHES
JC	JANITOR'S CLOSET
KW	KILOWATT
KWH	KILOWATT-HOUR
LBS/HR	POUNDS PER HOUR
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MBH	MILLION BRITISH THERMAL UNITS PER HOUR
M/S	MOTOR STARTER
MTD	MOUNTED
MTR	MOTOR
MV	MANUAL AIR VENT
MZ	MULTI-ZONE

ABBREVIATION	DESCRIPTION
NC	NORMALLY CLOSED
NCIC	NORMALLY CLOSED TIMED CLOSED
NCIO	NORMALLY CLOSED TIMED OPEN
NOT IN CONTRACT	NOT IN CONTRACT
NFPA	NATIONAL FIRE PROTECTION AGENCY
NO	NORMALLY OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NSB	NIGHT SETBACK
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
PAOU	PACKAGED AIR CONDITIONING UNIT
PD	PRESSURE DROP (FEET OF WATER)
PHR	PERIMETER HEAT RETURN
PHS	PERIMETER HEAT SUPPLY
PNL	PANEL
PPM	PARTS PER MILLION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
R	RETURN
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RCP	RADIANT CEILING PANEL
RELA	RELIEF AIR
REQD	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SF	SUPPLY FAN
S/S	STATIC PRESSURE
S/S	START/STOP
STD	STANDARD
STM	STEAM
SZ	SINGLE-ZONE
S/W	SUMMER/WINTER
SW	SWITCH
TC	TEMPERATURE CONTROL
TCP	TEMPERATURE CONTROL PANEL
TEMP	TEMPERATURE
THR	TERMINAL HEATING RETURN
THS	TERMINAL HEATING SUPPLY
TSP	TOTAL STATIC PRESSURE
TU	(AIR) TERMINAL UNIT
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME
VFC	VARIABLE FREQUENCY CONTROLLER
VUV	VERTICAL UNIT VENTILATOR
VS	VELOCITY SENSOR (AIRFLOW)
WC	WATER COLUMN
XTMR	TRANSFORMER

TEMPERATURE CONTROLS DRAWING INDEX

SHEET NO.	SHEET TITLE
M0.1	TEMPERATURE CONTROL SYMBOLS, ABBREV. STANDARDS AND DRAWING INDEX
M0.2	TEMPERATURE CONTROL STANDARDS DETAILS AND GENERAL NOTES
M0.3	EXISTING BACnet MSP NETWORK - FOR REFERENCE ONLY
M1.1	TEMPERATURE CONTROL COMPOSITE PLAN
M2.1	TEMPERATURE CONTROLS
M2.2	TEMPERATURE CONTROLS
M2.3	TEMPERATURE CONTROLS
M2.4	TEMPERATURE CONTROLS
M2.5	TEMPERATURE CONTROLS
M2.6	TEMPERATURE CONTROLS
M2.7	TEMPERATURE CONTROLS
M2.8	TEMPERATURE CONTROLS



TMP ARCHITECTURE INC

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REGISTRATION SEAL

CONSULTANT



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CONSULTING ENGINEERS

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PBA Project No: 2022.0381

PROJECT TITLE

Wylie Elementary  
School Bldg.  
Automation  
System

Dexter Community  
Schools

DRAWING TITLE

TEMPERATURE CONTROL  
SYMBOLS, ABBREV,  
STANDARDS AND  
DRAWING INDEX

ISSUE DATES

05-25-2023 CONSTRUCTION DOCUMENTS  
03-15-2023 OWNER REVIEW

DATE: ISSUED FOR:

DRAWN: WJU

CHECKED: JWC

APPROVED: SVM

PROJECT NO.

22072C

DRAWING NO.

M0.1

TC FLOOR PLAN EQUIPMENT TAG NOTATIONS

NOTE: ALL TAGS SHOWN MAY NOT APPLY TO THIS PROJECT.

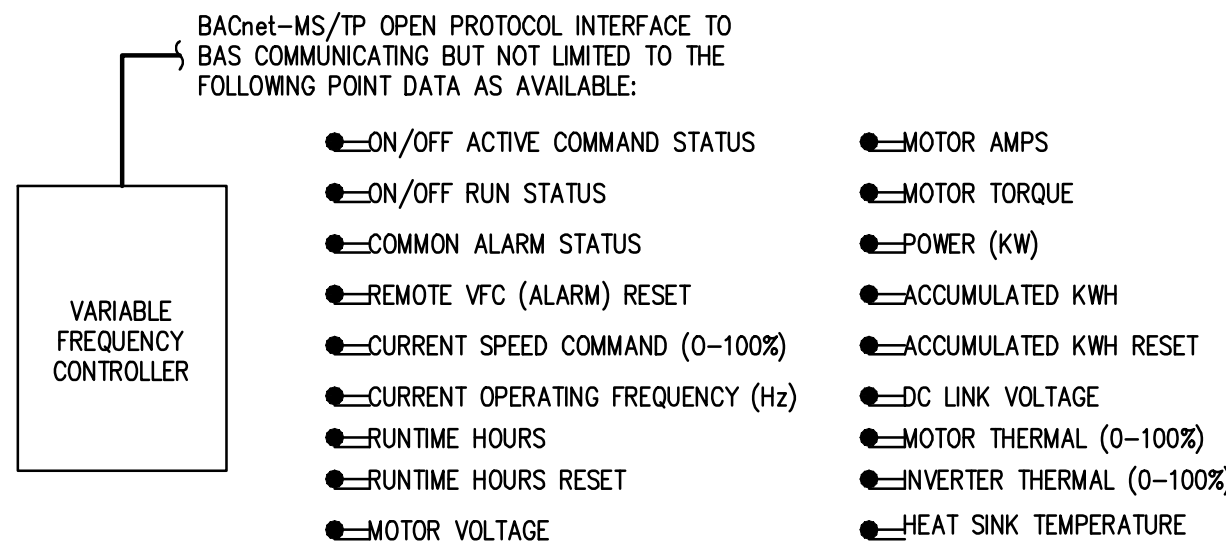
	AIR HANDLING UNIT		ENERGY RECOVERY UNIT		PUMP
	AIR COOLED CONDENSING UNIT		EXHAUST FAN		PACKAGED AIR CONDITIONING UNIT
	BOILER		REMOTE EVAPORATOR, DX		RELIEF DAMPER
	BOOSTER COIL (HWH)		FAN COIL UNIT		RETURN FAN
	CHILLER		FINNED TUBE RADIATION		RELIEF HOOD
	CONVECTOR (HWH)		HORIZONTAL UNIT VENTILATOR		REHEAT COIL (HWH)
	COOLING TOWER		HEATING VENTILATING UNIT		RADIANT PANEL (HWH)
	CABINET UNIT HEATER		INTAKE HOOD		UNIT HEATER (HWH)
	DOMESTIC WATER HEATER		MAKE-UP AIR UNIT		VARIABLE AIR VOLUME TERMINAL UNIT W/REHEAT COIL
			VERTICAL UNIT VENTILATOR		

VFC BACnet INTERFACE & MONITORING REQUIREMENTS

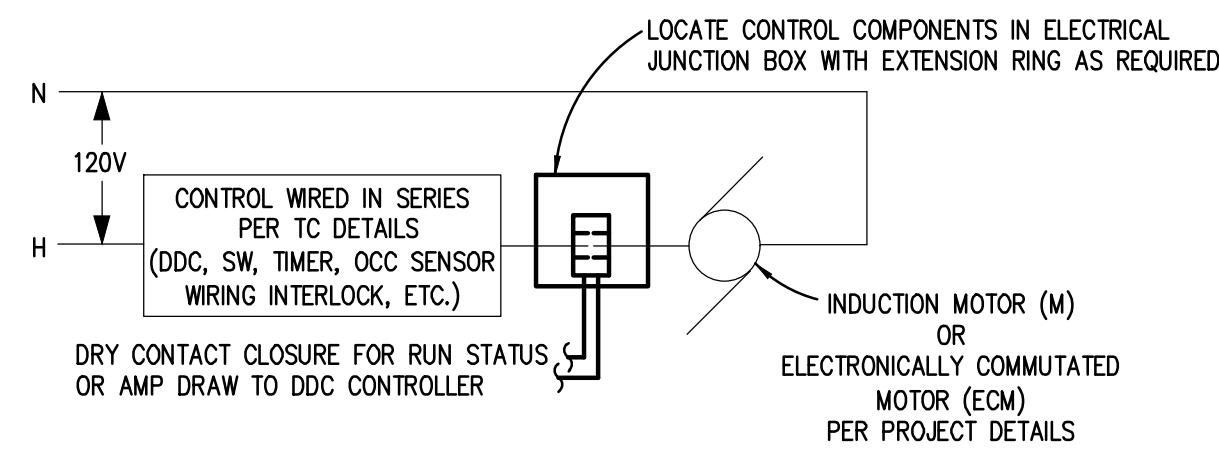
TYPICAL FOR NEW FAN & PUMP VFCs

NOTE:

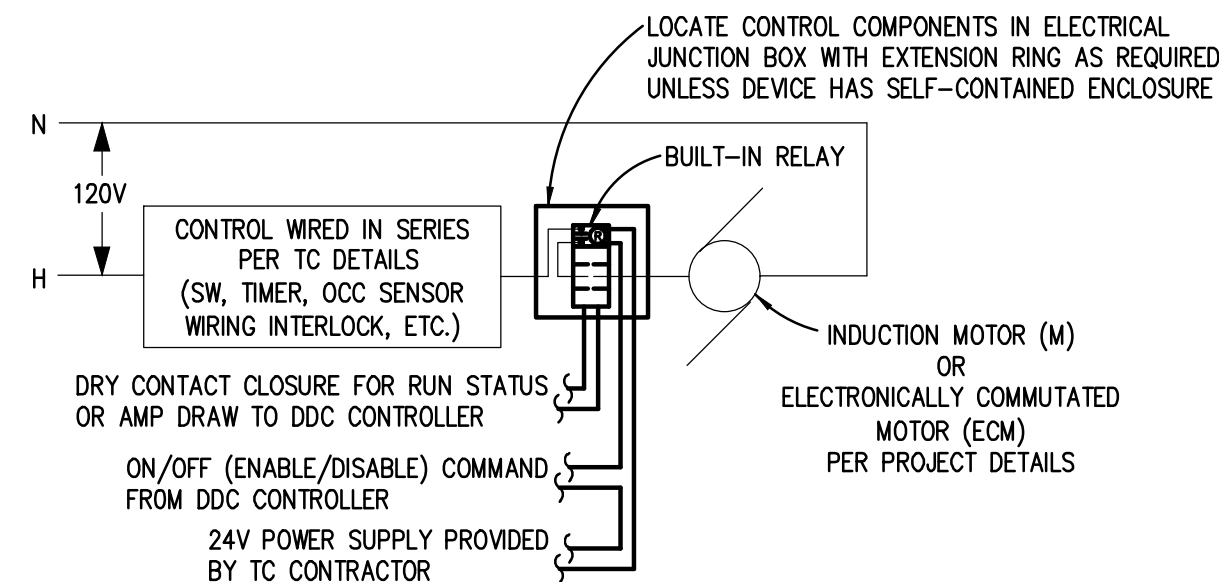
TC CONTRACTOR SHALL COORDINATE BACnet-MS/TP OPEN PROTOCOL WIRE TERMINATION REQUIREMENTS AND POINT INTEGRATION CAPABILITIES WITH VFC SUPPLIER/MANUFACTURER AND PROVIDE APPROPRIATE BAS COMPONENTS FOR COMMUNICATION INTERFACE TO BAS.



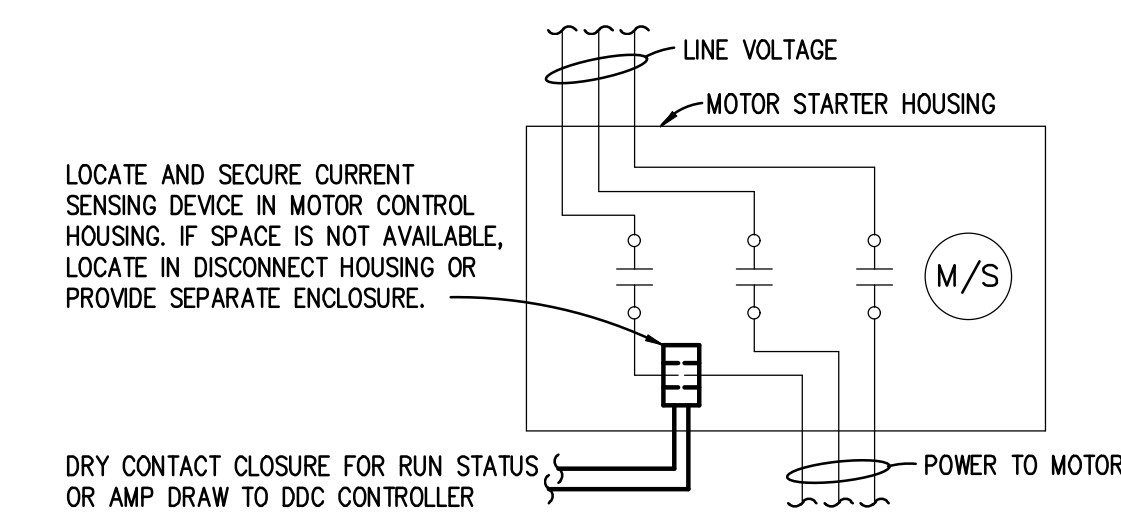




### **1-PHASE POWER APPLICATION - DDC MONITORING**



### 1-PHASE POWER APPLICATION - COMBO DDC MONITORING & CONTROL



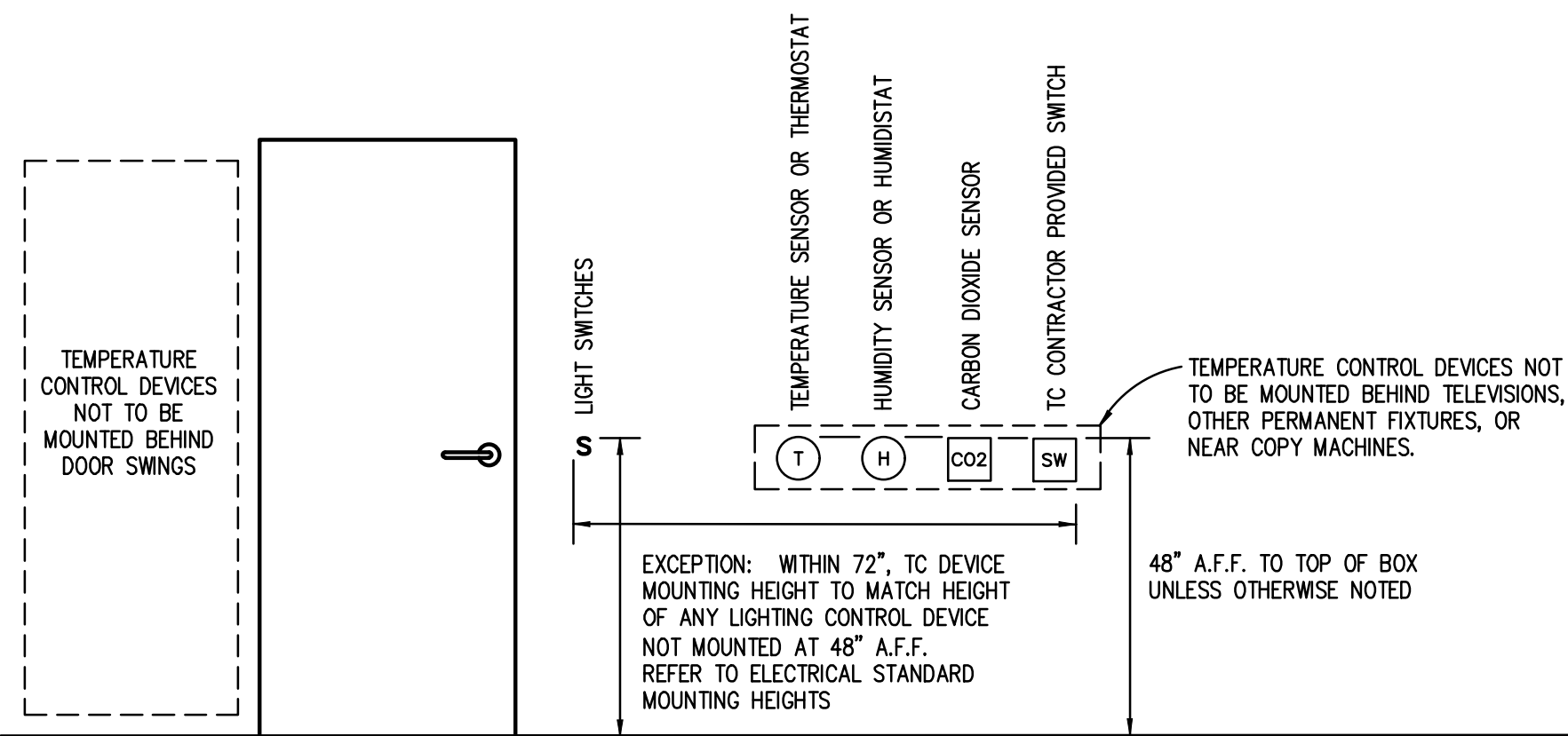
### **3-PHASE POWER APPLICATION - DDC MONITORING**

### CURRENT SWITCH INSTALLATION DETAILS

**TYPICAL**

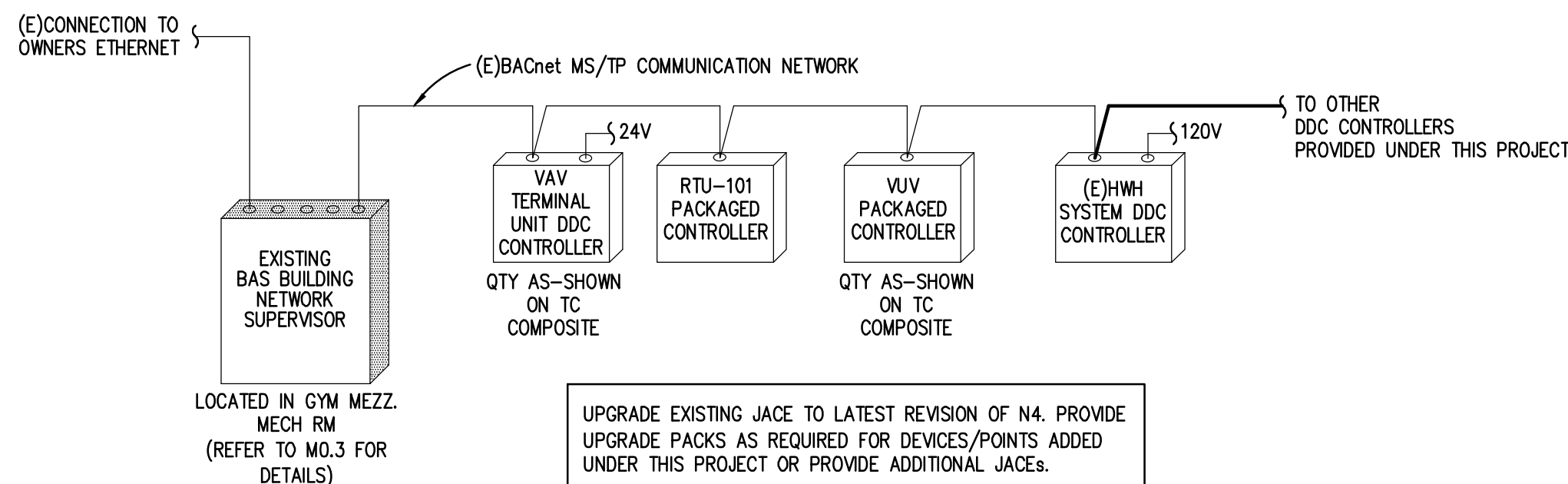
NOTES:

1. CURRENT SWITCH (CS) OR CURRENT TRANSDUCER (CT) AMP MONITORING AS APPLICABLE PER CONTROL DETAILS SHALL BE INSTALLED FOR DDC SYSTEM STATUS INDICATION OF FAULT OR PUMP OPERATION. APPROXIMATE TIME DELAY FOR STATUS FEEDBACK UPON DDC START AND STOP COMMANDS SHALL BE INCLUDED WITH THE DDC LOGIC TO AVOID NOISE OPERATIONAL ALARMS.
2. REVIEW EQUIPMENT SHOP DRAWINGS TO DETERMINE POTENTIAL AMPERAGE RANGE OF FAN OR PUMP OPERATION FOR AMPERAGE TRIP SETTING REQUIREMENTS PRIOR TO SELECTING APPROPRIATE CURRENT SWITCH (MINIMUM SPEED AMPERAGE FOR FTPTU WITH ECM CAN BE VERY LOW).
3. FOR ECM CURRENT SWITCH APPLICATIONS: PROVIDE CURRENT SWITCH RATED FOR ECM OPERATION WITH AMPERAGE TRIP SETTING HIGHER THAN TRICKLE/IDLE/STANDBY AMPERAGE ASSOCIATED WITH ECM WHEN OFF AND PUMP TRIP SETTING LOWER THAN THE MINIMUM SPEED OPERATION OF FAN OR PUMP AS SET BY THE TABLE CONTRACTOR.
4. FOR INDUCTION MOTOR CURRENT SWITCH APPLICATIONS (AS APPLICABLE), AMPERAGE TRIP SETTING SHALL BE ADJUSTABLE TO ACCOMMODATE VFC MINIMUM SPEED SETTING, TO DETECT FAN BELT LOSS, OR TO DETECT PUMP COUPLING DETACHMENT.
5. WHEN FAN OR PUMP IS ON AND NOT IN ALARM, DDC SYSTEM SHALL TOTALIZE RUN TIME PER HOUR FOR OPERATION INFORMATION FROM BUILDING AUTOMATION SYSTEM OPERATOR INTERFACE.



### TC DEVICE STANDARD MOUNTING HEIGHTS DETAIL

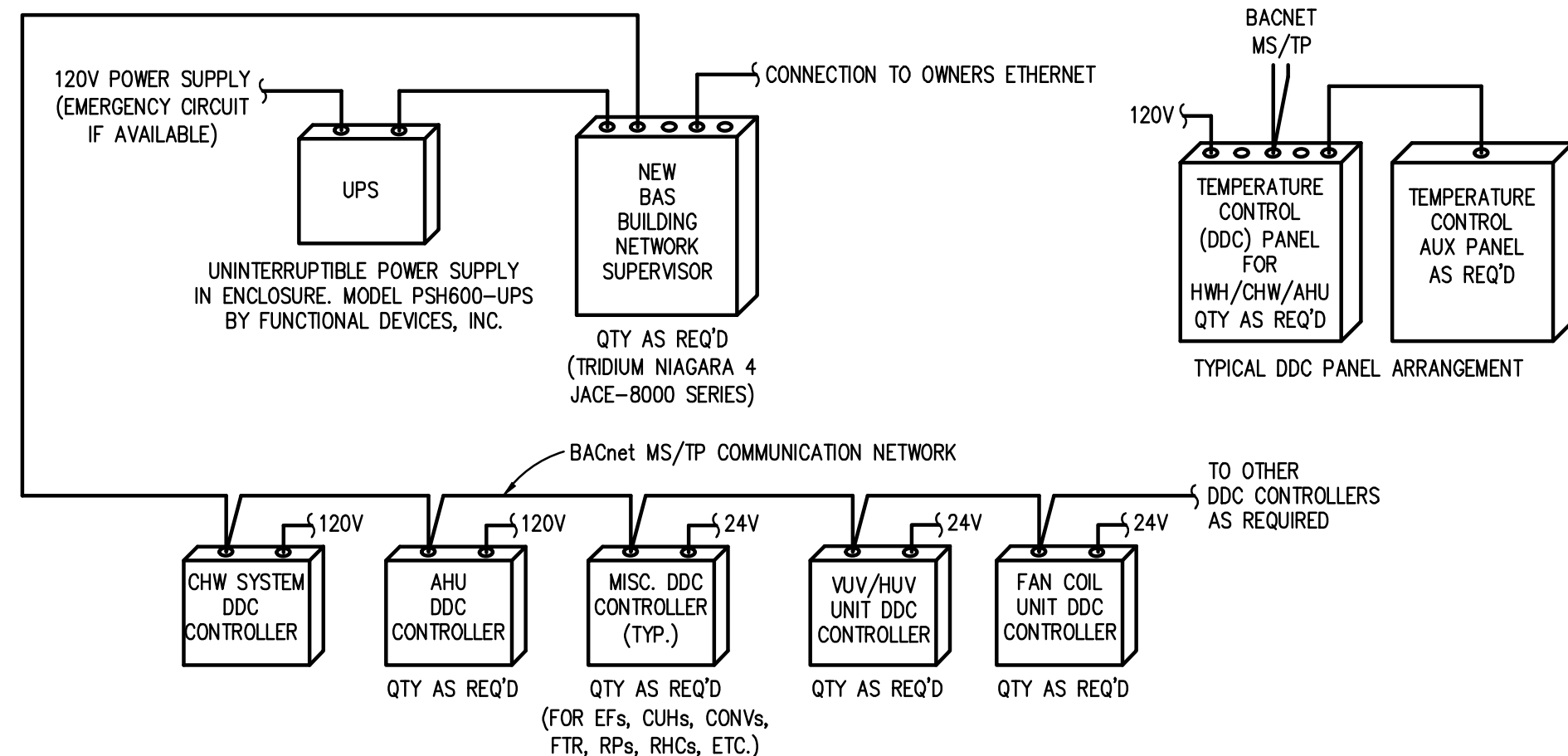
NO SCALE



## EXISTING TRIDIUM BUILDING AUTOMATION SYSTEM ARCHITECTURE

NOTES:

1. EXISTING BAS NETWORK SUPERVISOR (VYKON JACE 8000) SHALL REMAIN. REFER TO M0.3 FOR ADDITIONAL INFORMATION.



## NEW TRIDIUM BUILDING AUTOMATION SYSTEM ARCHITECTURE

NOTES:

1. REFER TO TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED POINTS ASSOCIATED FOR EACH SYSTEM.
2. TO CONTRACTOR SHALL DETERMINE DDC CONTROLLER QUANTITY BASED ON POINT DENSITIES AND LOCATIONS PER AVAILABLE/REQUIRED POINTS. UNLESS SPECIFICALLY NOTED IN DESIGN DRAWINGS, TO CONTRACTOR SHALL LOCATE BACNET DDC CONTROLLERS AND COORDINATE LOCATIONS WITH OWNER.
3. TO CONTRACTOR SHALL PROVIDE REQUIRED POWER SUPPLIES FROM EXISTING TEMPERATURE CONTROL POWER CIRCUITS OR FROM EXISTING ELECTRICAL PANELS WHERE AVAILABLE (SEE GENERAL NOTES).
4. TO CONTRACTOR SHALL PROVIDE 24V TRANSFORMERS REQUIRED FOR CONTROLLERS AS REQUIRED. TRANSFORMERS SHALL BE LOCATED WITHIN EQUIPMENT ENCLOSURES OR OTHER TO PROVIDED ENCLOSURES TO BE LOCATED IN MECHANICAL OR ELECTRICAL ROOMS - COORDINATE LOCATIONS. MAXIMUM TRANSFORMER SIZE SHALL BE 100VA.
5. BUILDING DDC NETWORK SHALL BE CONNECTED TO THE SCHOOL DISTRICT ETHERNET. TO CONTRACTOR SHALL FURNISH AND INSTALL WIRING FOR DATA OUTLET FROM THE BUILDING DDC NETWORK TO THE SCHOOL DISTRICT DATA OUTLET WIRING. REQUIRED WIRING TO BE PROVIDED BY THE OWNER'S INFORMATION TECHNOLOGY PERSONNEL.
6. EXISTING CONTROLLERS PROVIDED THROUGH EQUIPMENT SUPPLIERS WITH BACnet MS/TP INTERFACE CARDS SHALL BE INTERFACED TO NEW BAS. TO CONTRACTOR TO PROVIDE BACNET NETWORK WIRING TO CONTROLLERS AS REQUIRED.

## SCHOOL DISTRICT STANDARD SETPOINTS

**NOTE:**

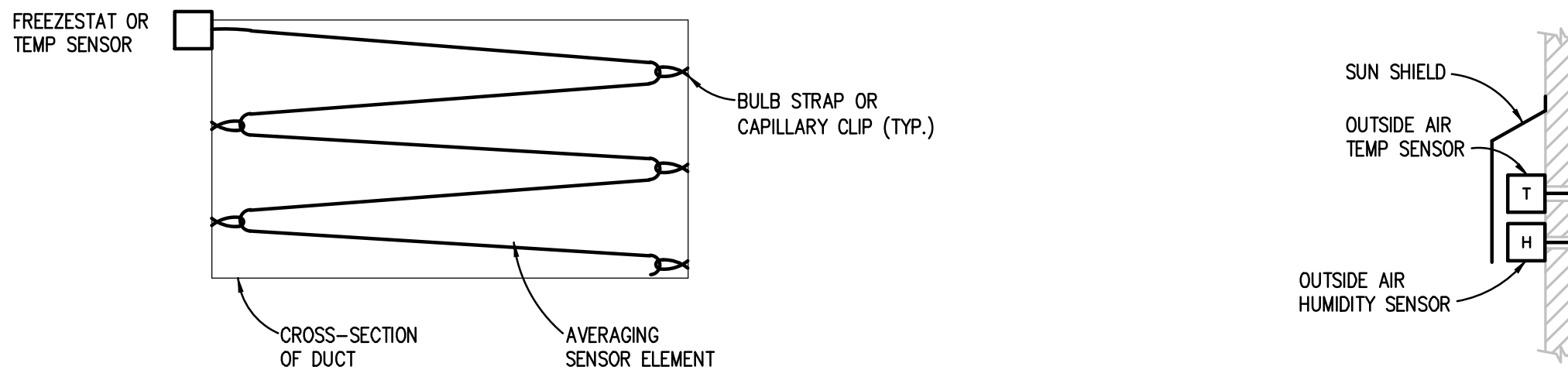
PROVIDE A BUILDING GLOBAL SETPOINT GRAPHICAL INTERFACE PAGE WITH THE FOLLOWING SCHOOL DISTRICT STANDARDS THAT SHALL BE APPLIED TO ALL EQUIPMENT AND ZONE CONTROL AS APPLICABLE PER SPECIFIC CONTROL DETAILS AND SEQUENCES OF OPERATION. INDIVIDUAL EQUIPMENT OR ZONES SETPOINTS SHALL THEN BE CAPABLE OF BEING OVERRIDDEN BY SCHOOL DISTRICT MAINTENANCE AS REQUIRED.

AIR HANDLING EQUIPMENT ZONES (VUVs, AHUs, RTUs, HVAC UNITS):

- OCCUPIED HEATING = 70°F
  - STANDBY HEATING = 68°F
  - UNOCCUPIED HEATING = 62°F
- 
- OCCUPIED COOLING = 74°F
  - STANDBY COOLING = 76°F
  - UNOCCUPIED COOLING = 80°F (UNLESS SET HIGH TO KEEP UNIT OFF)
- 
- LOCAL WARM/COOL ADJUSTMENT RANGE FOR OCCUPIED SETPOINTS (WHERE APPLICABLE) SHALL BE +/- 2°F
- 
- ECONOMIZER LOCKOUT SETPOINT (AS APPLICABLE), OA-DEWPOINT = 52°F OR OA-DRY BULB = 65°F.

PERIMETER HEATING ZONES (CUH. FTR)

- OCCUPIED HEATING = 68°F
- UNOCCUPIED HEATING = 55°F

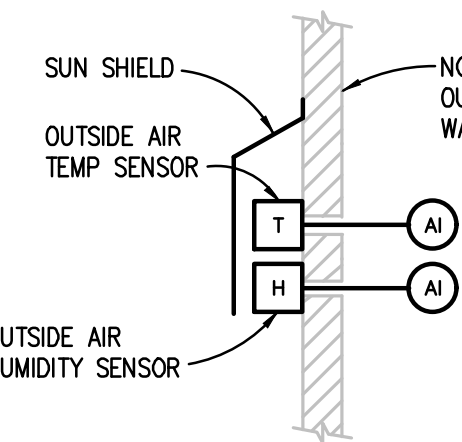


## AVERAGING ELEMENT INSTALLATION DETAIL

TYPICAL

NOTES:

1. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ. FT. OF CROSS-SECTIONAL AREA.
2. AVERAGING DDC SENSOR QUANTITY SHALL BE SUFFICIENT TO COVER AND SENSE THE CROSS-SECTIONAL AREA.
3. PROVIDE REQUIRED CAPILLARY STRAP OR CLIPS TO SUPPORT SENSOR TO PREVENT VIBRATION FROM AIR MOVEMENT.
4. PROVIDE PROTECTION AT EACH CAPILLARY STRAP OR CLIP TO PREVENT ABRASION TO CAPILLARY.



## OA SENSOR INSTALLATION DETAIL

NO SCALE

NOTES:

1. OA SENSOR SHALL BE LOCATED ON NORTH BUILDING EXPOSURE. COORDINATE LOCATION WITH OWNER.
2. DEW POINT TEMPERATURE SHALL BE CALCULATED AND USED FOR ECONOMIZER LOCKOUT LOGIC WHERE APPLICABLE AS DESCRIBED IN CONTROL SEQUENCES OF OPERATION.
3. INDICATE CALCULATED DEW POINT TEMP ON GRAPHICS ALONG WITH OA TEMP AND HUMIDITY VALUES.

### TC GENERAL NOTES

- THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL DRAWINGS.
2. PROJECT SHALL BE TURNKEY AS PROVIDED BY TEMPERATURE CONTROLS (TC) CONTRACTOR. TC CONTRACTOR SHALL BE RESPONSIBLE TO SUB CONTRACTOR ELECTRICAL CONTRACTOR FOR CONTROLS INSTALLATION AND EXISTING CONTROLS DEMOLITION AND ANY POWER RELATED ITEMS. MECHANICAL CONTRACTOR FOR EXISTING CHILF, CONTROL VALVES, CONTROL DAMPERS, CONTROL TRANSFORMERS, MISCELLANEOUS CONTROL COMPONENT INSTALLATIONS, AND TEST & BALANCING SERVICES AS REQUIRED FOR ALL WORK RELATED TO TEMPERATURE CONTROLS REPLACEMENT.
  3. EXISTING PNEUMATIC CONTROLS AND EXISTING TEND BUILDING AUTOMATION SYSTEM SHALL BE REMOVED AND REPLACED WITH NEW BAS OPEN PROTOCOL, OPEN DISTRIBUTION CONTROLLERS FOR CONNECTION TO NEW BUILDING SUPERVISORY CONTROLLERS BASED ON THE TROUD NAGARA V4 BAS PLATFORM. EXISTING END DEVICE CONTROL COMPONENTS SHALL BE REPLACED OR REUSED AS INDICATED ON DRAWINGS. WIRING FOR EXISTING SPACE TEMPERATURE SENSOR AND NEW NETWORK COMMUNICATION WIRING TO CONTROLLERS SHALL BE PROVIDED (WITH PURPLE JACKET PER SPECIFICATION REQUIREMENTS).
  4. TO CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF EXISTING PNEUMATIC CONTROLS AND EXISTING TEND BUILDING AUTOMATION SYSTEM. TO CONTRACTOR SHALL REMOVE ALL EXISTING CONTROL COMPONENTS THAT ARE NOT REQUIRED INCLUDING INSTRUMENTATION TUBING & WIRING, ABANDONED DUE TO INSTALLATION OF NEW SYSTEMS AND ASSOCIATED CONTROLS. ALL REMOVED COMPONENTS SHALL BE HAILED AWAY FROM THE SITE BY TO CONTRACTOR AT TO CONTRACTOR'S EXPENSE.
  5. THE MAJORITY OF ELECTRIC ACTUATED CONTROL VALVES AND ELECTRIC DAMPERS CONTROLS SHALL BE REPLACED UNLESS OTHERWISE TO BE REUSED AS INDICATED ON CONTROL DETAILS. TO CONTRACTOR SHALL FIELD VERIFY CONTROL SIGNAL REQUIREMENTS FOR EXISTING ACTUATORS TO BE REUSED.
  6. ANY CONTROL RELATED DEFICIENCIES AND ISSUES WITH EXISTING EQUIPMENT AND SYSTEMS DISCOVERED DURING CONSTRUCTION SHALL BE RECORDED AND SUMMARIZED FOR OWNER TO ADDRESS AS REQUIRED.
  7. "PROVIDE" AS USED THROUGHOUT DRAWINGS IS DEFINED AS "FURNISH AND INSTALL".
  8. TO CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
  9. ALL DETAIL INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE FURNISHED AND/OR INSTALLED BY TO CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT IS EXISTING, UNLESS OTHERWISE NOTED.
  10. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK. SHALL NOT BE WASTED AS SHOP DRAWINGS FOR ACTUAL INSTALLATION. FIELD VERIFY EXISTING CONDITIONS AS REQUIRED.
  11. TO CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS PER MEANT INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
  12. ALL TO PROVIDED COMPONENTS, AND ALL TO CONTRACTOR INSTALLED PANELS, COMPONENTS AND WIRING SHALL BE LABELED PER SPECIFICATIONS.
  13. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE SPECIFICATIONS.
  14. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TO CONTRACTOR. TO CONTRACTOR SHALL FIELD VERIFY EXISTING MOTOR STARTERS FOR INTERFACE WIRING REQUIREMENTS AND TERMINATION POINTS AS REQUIRED.
  15. ALL DDC SIGNAL WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
  16. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH LOCAL CODE. WHERE THE WIRING AND RACEWAY SYSTEMS ARE NOT AVAILABLE, THE FOLLOWING SYSTEMS SHALL BE PROVIDED: FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
  17. ALL 120V WIRING SHALL BE INSTALLED IN CONDUIT OR EMT. SIZE SHALL BE MINIMUM.
  18. ALL 24V CONTROL WIRING IN MECHANICAL ROOMS SHALL BE INSTALLED IN CONDUIT OR EMT. PLENUM RATED CABLE IS ACCEPTABLE ABOVE CEILINGS AND SHALL BE SECURED EVERY FIVE FT AND BE INSTALLED PERPENDICULAR OR PARALLEL TO WALLS, CEILINGS, OR SURFACE. EXISTING SPACE TEMPERATURE SENSOR AND EXPOSED PLENUM CABLE, CONDUIT SLEEVES OR ENDS ARE TO BE FITTED WITH PLASTIC BUSHINGS TO PREVENT DAMAGE TO CONDUCTORS.
  19. CONDUIT OR EMT SHALL BE EXPOSED ONLY IN MECHANICAL AND ELECTRICAL ROOMS. SIZE CONDUIT OR EMT SHALL BE FILLED AT 40% CAPACITY MAXIMUM.
  20. ALL 24V CONTROL WIRING SHALL BE CONCEALED IN WALLS AND ABOVE CEILINGS IN FINISHED AREA WHERE POSSIBLE. EXPOSED WORK IN NON-MECHANICAL ROOM AREAS SHALL BE INSTALLED PER SURFACE. MINIMUM RACEWAY PERPENDICULAR OR PARALLEL TO WALLS, CEILINGS, OR SURFACE MEMBERS.
  21. TO CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TO SYSTEM UNLESS OTHERWISE NOTED.
  22. POWER SUPPLIES (120VAC) REQUIRED FOR NEW TO COMPONENTS SHALL BE FROM ELECTRICAL CONTRACTOR. SPARE CABLE SHALL BE INSTALLED WHERE AVAILABLE IN PANELBOARDS THAT DO NOT HAVE SPARE CIRCUIT BREAKERS, NEW BREAKERS TO MATCH EXISTING SHALL BE INSTALLED IN BLANKED OUT SPACES WHERE AVAILABLE. CIRCUIT BREAKERS SHALL BE INSTALLED WITH PROPER INTERRUPTING RATING. PANEL AND CIRCUIT NUMBERS USED SHALL BE INDICATED WITHIN ENCLOSURE AT DEVICE WHERE POWER SUPPLY IS USED.
  23. TO CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
  24. NEW SPACE TEMPERATURE SENSORS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR. FOR EXISTING THERMOSTAT AND TEMPERATURE SENSOR REPLACEMENTS, TO CONTRACTOR SHALL MOUNT NEW SENSORS AT SAME LOCATION REGARDLESS OF HEIGHT OR PRECEDENT. EXISTING SPACE TEMPERATURE SENSOR AND THERMOSTAT GUARDS SHALL BE REMOVED AND ANY EXISTING MOUNTING HOLES SHALL BE FILLED WITH TOUCH-UP PAINTING PER SPECIFICATIONS.
  25. TO CONTRACTOR SHALL PROVIDE NEW GUARDS FOR SPACE TEMPERATURE SENSORS WHERE NOTED. STAINLESS-STEEL PLATE SENSORS ARE ACCEPTABLE ALTERNATIVE FOR SPACE TEMPERATURE MONITORING ONLY APPLICATIONS.
  26. TO CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, CONTROL TRANSFORMERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL.
  27. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSE IN AN ENCLOSURE PROVIDED BY THE TO CONTRACTOR.
  28. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
  29. NEW FREEZE-STATS, WHEN REQUIRED, SHALL BE MOUNTED WHERE INDICATED ON CONTROL DETAILS. FREEZE-STAT QUANTITY SHALL BE ONE PER 20 SQ FT OF CROSS SECTIONAL AREA.
  30. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT SLIP OR DRIVE FAILURE.
  31. ALL NEW CONTROL VALVES, CONTROL DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TO CONTRACTOR.
  32. TO CONTRACTOR MAY REUSE THERMOWELLS FOR EXISTING DDC SYSTEM COMPONENT REPLACEMENTS WHERE COMPATIBLE WITH NEW CONTROL COMPONENTS; OTHERWISE, TO CONTRACTOR SHALL PROVIDE NEW THERMOWELLS FOR CONNECTION. TO CONTRACTOR SHALL FIELD VERIFY EXISTING SIZES AND THREADED APPLICATIONS AS REQUIRED.

PROJECT NO. \_\_\_\_\_

22072C

DRAWING NO.

## M0.2



REGISTRATION SEAL

CONSULTANT



PROJECT TITLE

Wylie Elementary  
School Bldg.  
Automation  
System

Dexter Community  
Schools

DRAWING TITLE

EXISTING BACnet MSTP  
NETWORK - FOR  
REFERENCE ONLY

## ISSUE DATES

05-25-2023	CONSTRUCTION DOCUMENTS
03-15-2023	OWNER REVIEW

DATE: ISSUED FOR:

DRAWN WJU

CHECKED JWC

APPROVED SVM

PROJECT NO.

22072C

DRAWING NO.

M0.3



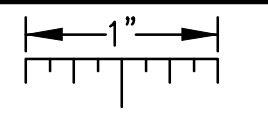
FOR REFERENCE ONLY  
NOTES:

1. TC CONTRACTOR SHALL PROVIDE LABOR & MATERIAL FOR 5YR RENEWAL SOFTWARE MAINTENANCE AGREEMENT (SMA). UPGRADE JACE FIRMWARE TO THE LATEST VERSION OF NIAGARA 4 UPON PROJECT COMPLETION.
2. TC CONTRACTOR SHALL PROVIDE LABOR TO MIGRATE EXISTING DEVICES AND GRAPHICS TO NEW N4 SERVER.

<b><u>BILL OF MATERIALS</u></b>			
<b><u>TAG</u></b>	<b><u>QTY</u></b>	<b><u>PART #</u></b>	<b><u>DESCRIPTION</u></b>
Field Devices:			
Panel	1	PA0000001EH0	EXP PANEL 6X24X24 W/5
UPS	1	PSH600-UPS	ENCLOSED 600VA UPS
Network Engine	1	JACE-8000	J-8000, 25 DEVICE CORE, 5YR MAINT



THE FOLLOWING DIMENSION EQUALS  
ONE INCH WHEN PRINTED TO SCALE.

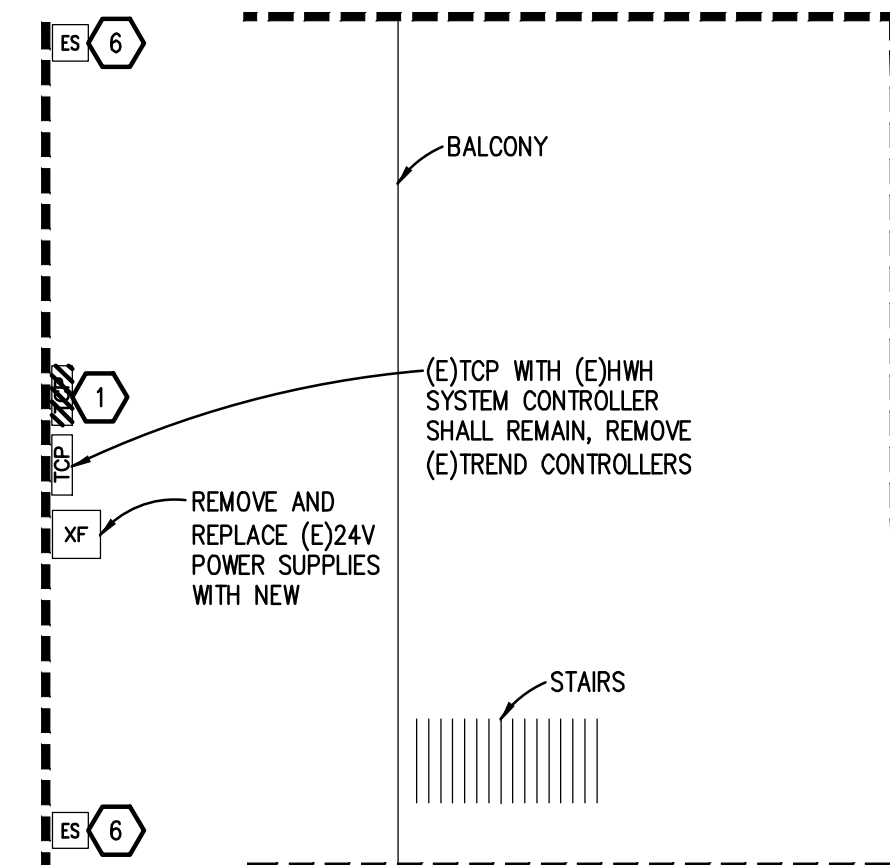


### GENERAL DRAWING NOTES:

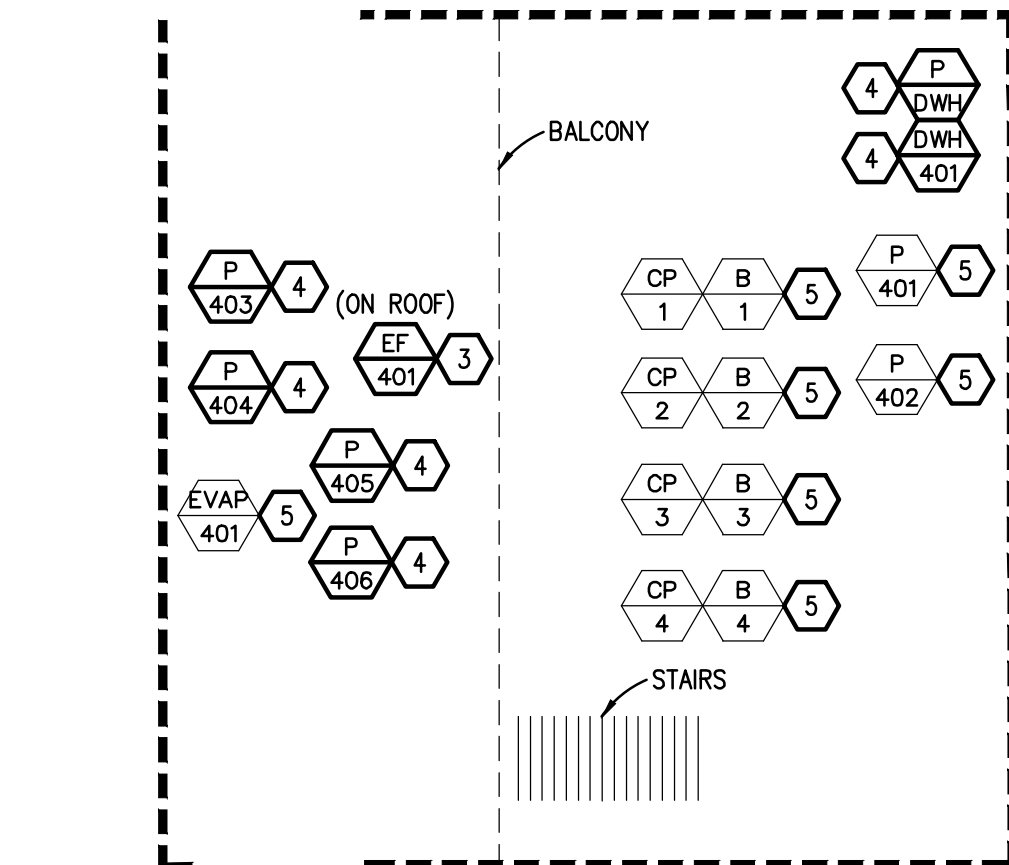
1. TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.
2. LIGHT LINE WEIGHT EQUIPMENT TAGS INDICATES EXISTING CONTROLS TO REMAIN AS-IS.
3. HEAVY LINE WEIGHT EQUIPMENT TAGS INDICATES NEW CONTROLS TO BE PROVIDED BY TC CONTRACTOR. REFER TO TEMPERATURE CONTROL DETAILS FOR ADDITIONAL INFORMATION.
4. PROVIDE FLAT COVER PLATES FOR WALL OPENINGS ON REMOVED THERMOSTATS, UNLESS OPENING TO BE USED FOR NEW THERMOSTAT.

### CONSTRUCTION KEY NOTES:

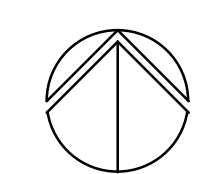
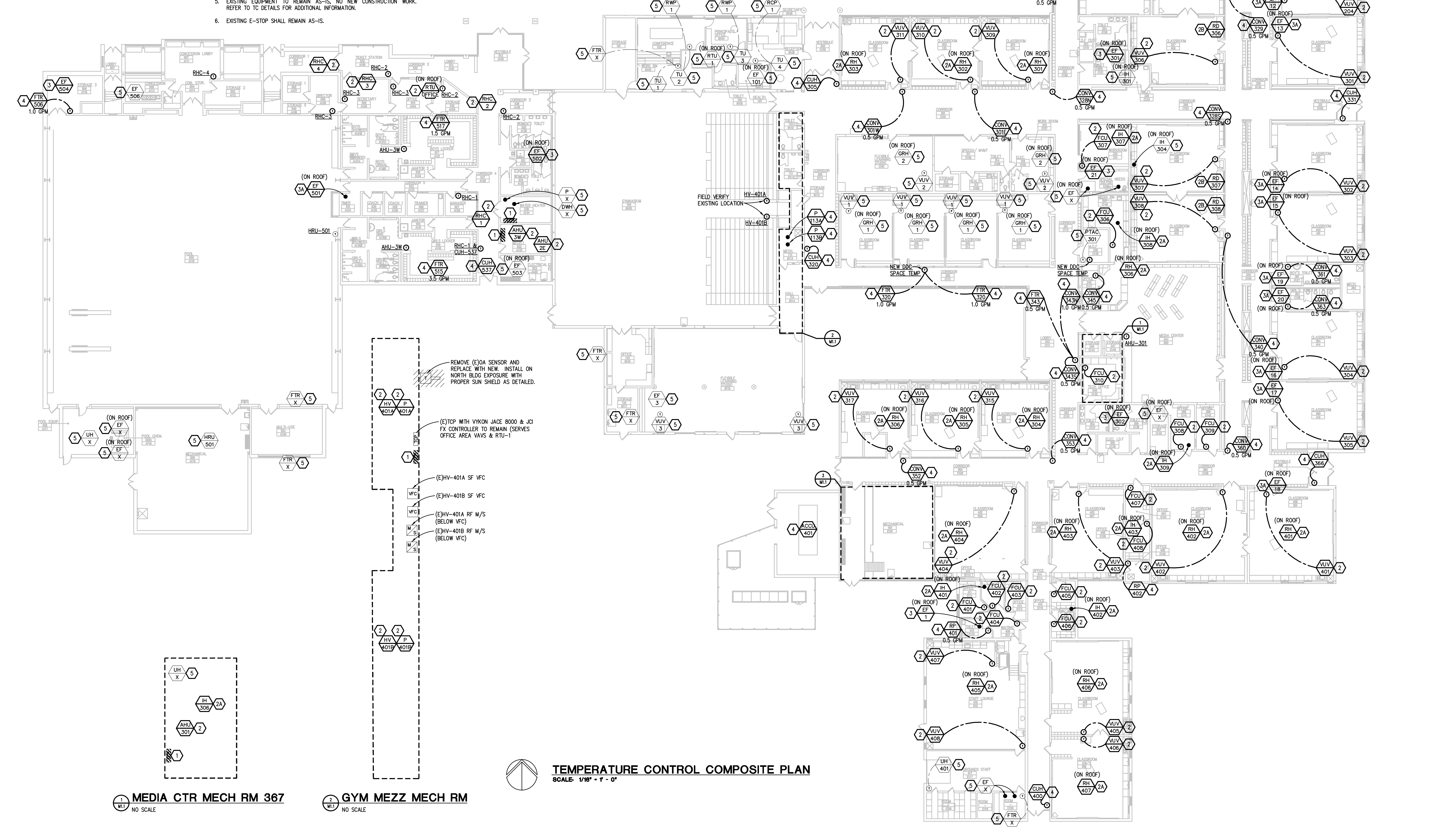
1. TC CONTRACTOR SHALL REMOVE LEGACY TEND CONTROLS. EXISTING TEMPERATURE CONTROL PANEL ENCLOSURES (TCP), RACEWAYS AND CONTROL WIRING MAYBE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. EXCEPT FOR EXISTING TEND COMMUNICATION NETWORK WIRING WHICH SHALL BE REMOVED AND REPLACED WITH NEW FOR BACnet MS/TP PROTOCOL. REUSE EXISTING OWNER EXISTING ETHERNET CONNECTION(S) TO OWNERS' LAN AS REQUIRED.
2. EXISTING UNIT SHALL REMAIN. TC CONTRACTOR SHALL REMOVE LEGACY TEND CONTROLS AND ASSOCIATED CONTROL DEVICES. TO INCLUDE SPACE TEMPERATURE SENSORS. TC CONTRACTOR SHALL PROVIDE NEW DDC CONTROLS AND NEW CONTROL DEVICES FOR UNIT THAT SHALL COMMUNICATE BACnet PROTOCOL. REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
- 2A. EXISTING RELIEF AIR HOOD (RH)/INTAKE AIR HOOD (IH) WITH MOTORIZED DAMPER(S) (HOOD MAY SERVE MORE THAN ONE UNIT) SHALL REMAIN. TC CONTRACTOR SHALL REMOVE AND REPLACE DAMPER ACTUATOR(S). REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
- 2B. EXISTING MOTORIZED RELIEF AIR DAMPER (RD) LOCATED IN TUNNEL SHALL REMAIN. TC CONTRACTOR SHALL REMOVE AND REPLACE DAMPER ACTUATOR. REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
3. EXISTING EF WITH MOTORIZED BACK DRAFT DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING CONTROLS AND REPLACED WITH NEW DDC THAT SHALL COMMUNICATE BACnet PROTOCOL. REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
- 3A. EXISTING EF WITH GRAVITY BACK DRAFT DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING CONTROLS AND REPLACED WITH NEW DDC THAT SHALL COMMUNICATE BACnet PROTOCOL. REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
4. EXISTING UNIT SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING CONTROLS AND REPLACE WITH NEW DDC THAT SHALL COMMUNICATE BACnet PROTOCOL. REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
5. EXISTING EQUIPMENT TO REMAIN AS-IS. NO NEW CONSTRUCTION WORK. REFER TO TC DETAILS FOR ADDITIONAL INFORMATION.
6. EXISTING E-STOP SHALL REMAIN AS-IS.



MECHANICAL RM 401 - BALCONY  
NO SCALE



MECHANICAL RM 401 - FLOOR LEVEL  
NO SCALE



TEMPERATURE CONTROL COMPOSITE PLAN  
SCALE: 1/16" = 1' - 0"

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PBA Project No: 2022.0361

PROJECT TITLE  
Wylie Elementary  
School Bldg.  
Automation  
System

Dexter Community  
Schools

DRAWING TITLE  
TEMPERATURE CONTROL  
COMPOSITE PLAN

ISSUE DATES

05-25-2023	CONSTRUCTION DOCUMENTS
03-15-2023	OWNER REVIEW

DATE:	ISSUED FOR:
DRAWN:	JWJ
CHECKED:	JWC
APPROVED:	SYM

PROJECT NO.  
22072C

DRAWING NO.  
M1.1

\\pba.local\projects\2022\0361-00\CAD\2022-0361-M1-1.dwg, M1.1, 5/25/2023 7:31:21 AM, Suha A. Matti, None 0.08536, Peter Basso Associates Inc.









T M P ARCHITECTURE INC  
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PBA Project No: 2022-0381

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DRAWING TITLE  
TEMPERATURE CONTROLS

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03-15-2023 OWNER REVIEW

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DRAWN: WJU

CHECKED: JWC

APPROVED: SVM

PROJECT NO.

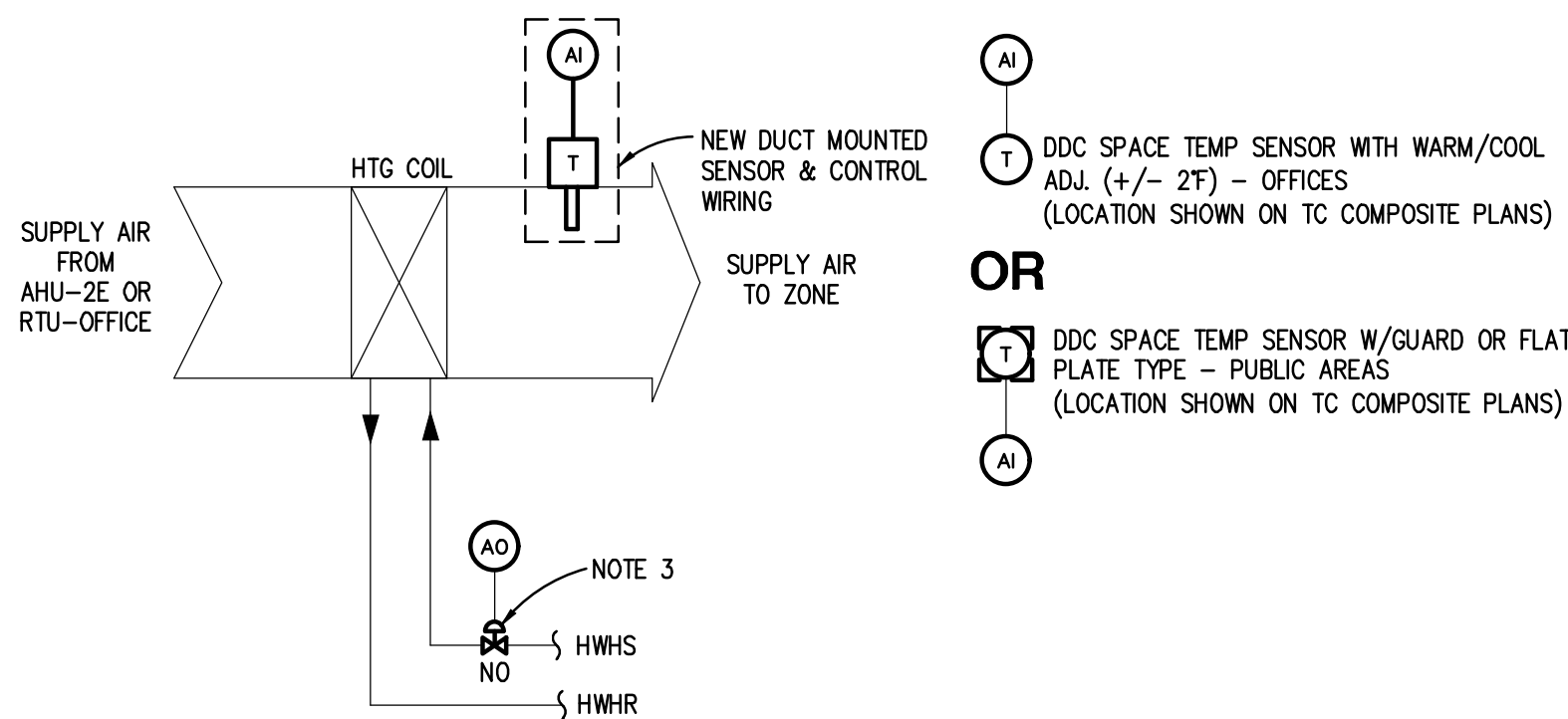
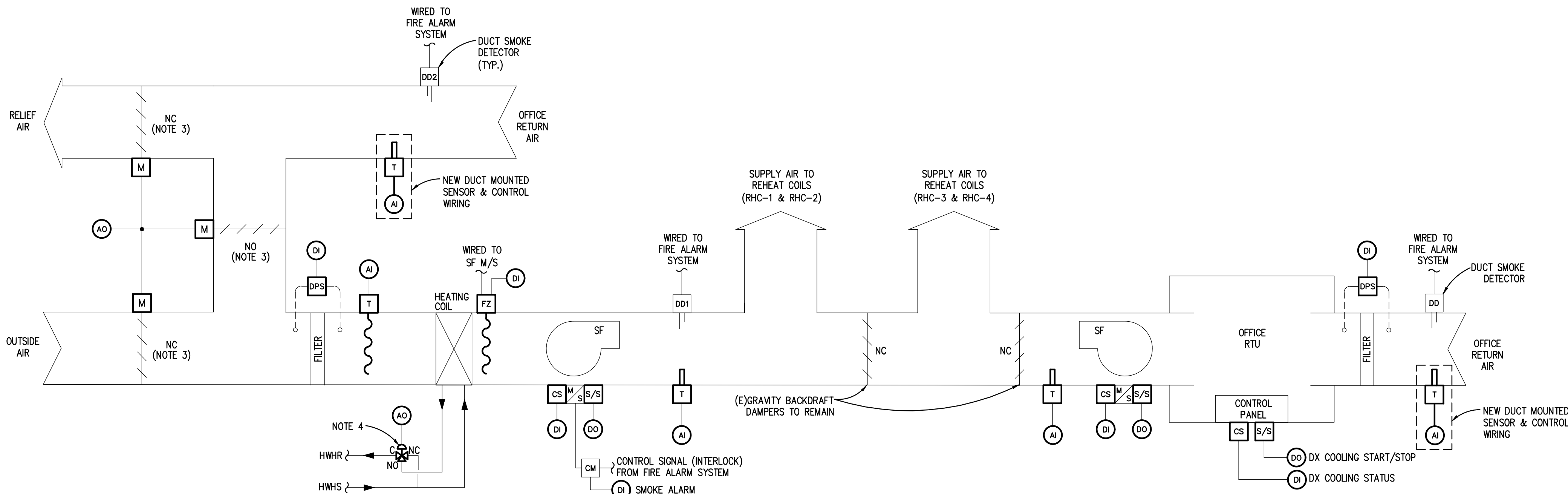
22072C

DRAWING NO.

M2.2

## TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



## (E) AIR HANDLING UNIT (AHU-2E) CONTROL RETROFIT

SERVES POOL AREA OFFICES

### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPlicing OF SENSOR CABLING/WIRING NOT PERMITTED.
- EXISTING CONTROL DAMPERS SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATORS AND REPLACE WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL RECORD/MARK EXISTING OUTSIDE AIR DAMPER MINIMUM POSITION AND SET NEW CONTROL OF MINIMUM OUTSIDE AIR DAMPER POSITION TO MATCH EXISTING.
- EXISTING HEATING COIL CONTROL VALVE SHALL BE REMOVED AND REPLACED WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL VALVE REPLACEMENT. REFER TO AHU CONTROL SCHEDULE FOR CONTROL VALVE SIZING PARAMETERS.
- TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

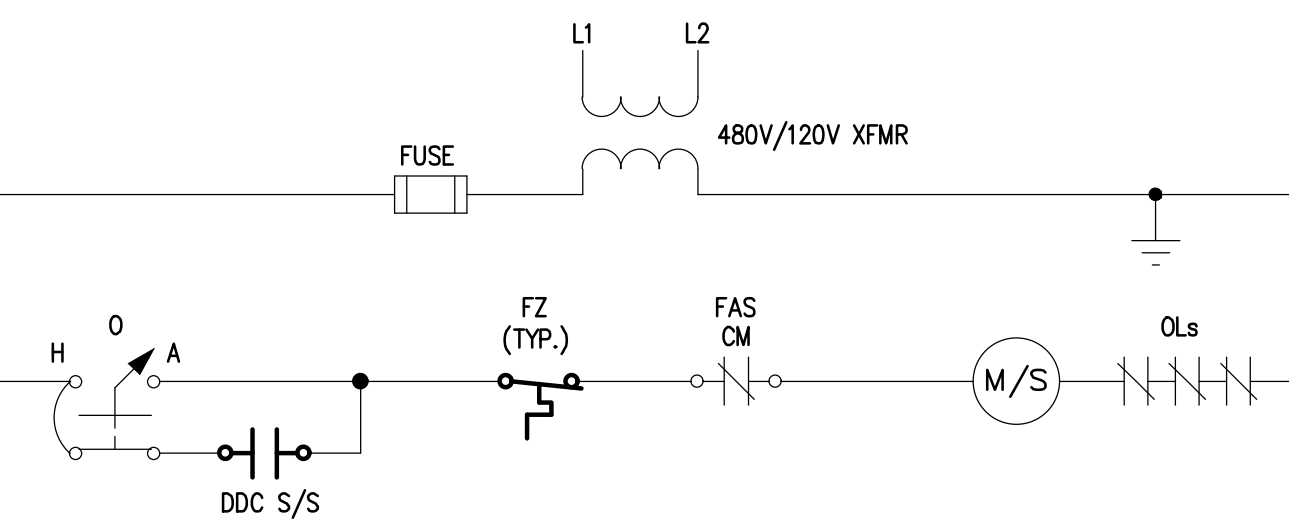
### SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

- SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. AHU SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (COMPENSATED BY OPTIMUM START PROGRAM). TEMPORARY OCCUPIED MODE (SET FOR 2 HRS ENABLED FROM OVERRIDE SWITCH (SPACE TEMP SENSORS) AND UNOCCUPIED CYCLE MODE.
- FOR HEATING OCCUPIED MODE, AHU SHALL RUN CONTINUOUSLY TO MAINTAIN DISCHARGE AIR TEMP SETPOINT. ZONE REHEAT COILS SHALL BE CONTROLLED BY DDC TO MAINTAIN RESPECTIVE SPACE TEMP SETPOINTS (REFER TO REHEAT COIL CONTROL DETAILS AND SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION).
- FOR HEATING UNOCCUPIED MODE, AHU SHALL CYCLE ON & OFF TO MAINTAIN SETBACK SPACE TEMP OF 62°F. DDC SHALL REFERENCE ALL REHEAT COILS SPACE TEMP SENSORS ASSOCIATED WITH AHU AND CYCLE AHU BASED ON LOWEST SPACE TEMP READING.
- FOR COOLING OCCUPIED AND UNOCCUPIED MODES, AHU SHALL REMAIN OFF.
- SUPPLY FAN STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
- WHEN AHU IS ACTIVATED DURING OCCUPIED MODE, OUTSIDE, RETURN & RELIEF AIR DAMPERS (REFERRED TO AS MIXED AIR DAMPERS HEREIN) SHALL BE ALLOWED TO MODULATE AS DESCRIBED. WHEN AHU IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE MODE OR MORNING WARM-UP MODE, MIXED AIR DAMPERS SHALL REMAIN IN NORMAL POSITIONS (OUTSIDE AIR DAMPER IN FULL CLOSED POSITION).
- OA ECONOMIZER MODE NOT AVAILABLE FOR THIS UNIT.
- WHEN DA TEMP IS BELOW SETPOINT, DDC SHALL MODULATE MIXED AIR DAMPERS TO MAINTAIN MINIMUM OA POSITION AND MODULATE HEATING COIL CONTROL VALVE TO MAINTAIN DA TEMP SETPOINT.
- A MIXED AIR TEMP LOW LIMIT SETPOINT 45°F SHALL PROVIDE OVERRIDE CONTROL OF MIXED AIR DAMPERS AND ALLOW MODULATION BELOW MINIMUM OA DAMPER POSITION SETPOINT.
- DISCHARGE AIR TEMP SETPOINT SHALL BE BASED ON THE FOLLOWING OUTDOOR AIR TEMP RESET SCHEDULE:

OAT	DAI
≤ 50°F	60°F
≥ 55°F	55°F

- DURING MORNING WARM-UP OR UNOCCUPIED CYCLE MODE, DA TEMP SETPOINT SHALL BE 90°F UNTIL BUILDING OCCUPANCY TIME OR WHEN OCCUPIED MODE SPACE TEMPERATURE IS REACHED IN ONE OF THE ASSOCIATED ZONES.
- FREEZESTAT(S) SHALL DEACTIVATE SUPPLY FAN WHEN TEMPERATURE IS 35°F OR BELOW. DDC SHALL MONITOR FREEZESTAT STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
- DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SUPPLY FAN WHEN PRODUCTS OF COMBUSTION ARE DETECTED. DDC SHALL MONITOR SMOKE DETECTOR STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
- FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE SWITCH. WHEN DP REACHES SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER ALARM.
- WHEN AHU IS DEACTIVATED, DAMPERS SHALL RETURN TO NORMAL POSITIONS (CLOSED TO OA).
- WHEN OA TEMP IS BELOW 45°F AND AHU IS DEACTIVATED, HEATING COIL CONTROL VALVE SHALL BE MODULATED BY DDC BASED ON MIXED AIR TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.



AHU-2E SF M/S WIRING

## (E) ROOFTOP UNIT (RTU-OFFICE) CONTROL RETROFIT

SERVES POOL AREA OFFICES

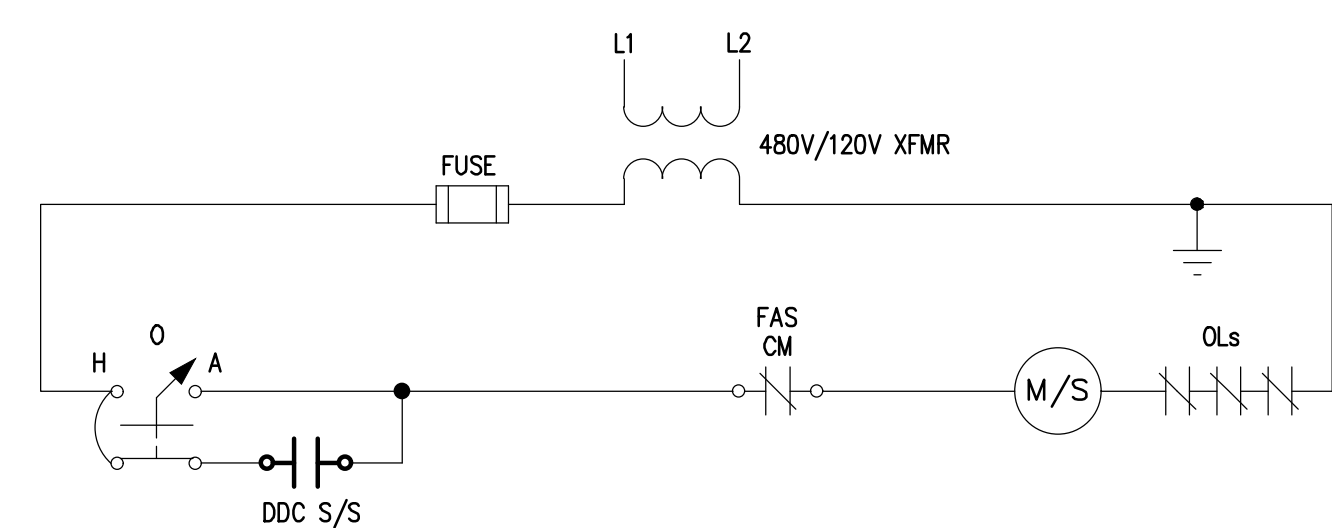
### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPlicing OF SENSOR CABLING/WIRING NOT PERMITTED.
- TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

### SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

- SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. RTU SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (COMPENSATED BY OPTIMUM START PROGRAM). TEMPORARY OCCUPIED MODE (SET FOR 2 HRS ENABLED FROM OVERRIDE SWITCH (SPACE TEMP SENSORS).
- FOR COOLING OCCUPIED MODE, RTU SHALL RUN CONTINUOUSLY TO MAINTAIN DISCHARGE AIR TEMP SETPOINT AND ZONE REHEAT COILS SHALL BE CONTROLLED BY DDC CONTROLLERS TO MAINTAIN RESPECTIVE SPACE TEMP SETPOINTS WHERE INDICATED (REFER TO REHEAT COIL CONTROL DETAILS AND SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION).
- FOR AHU-2E HEATING MODES AND COOLING UNOCCUPIED MODE, RTU SHALL REMAIN OFF.
- SUPPLY FAN STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
- DDC SHALL CYCLE DX COOLING TO MAINTAIN DA TEMP SETPOINT OF 55°F.
- DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SUPPLY FAN WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
- FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE SWITCH. WHEN DP REACHES SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER ALARM.

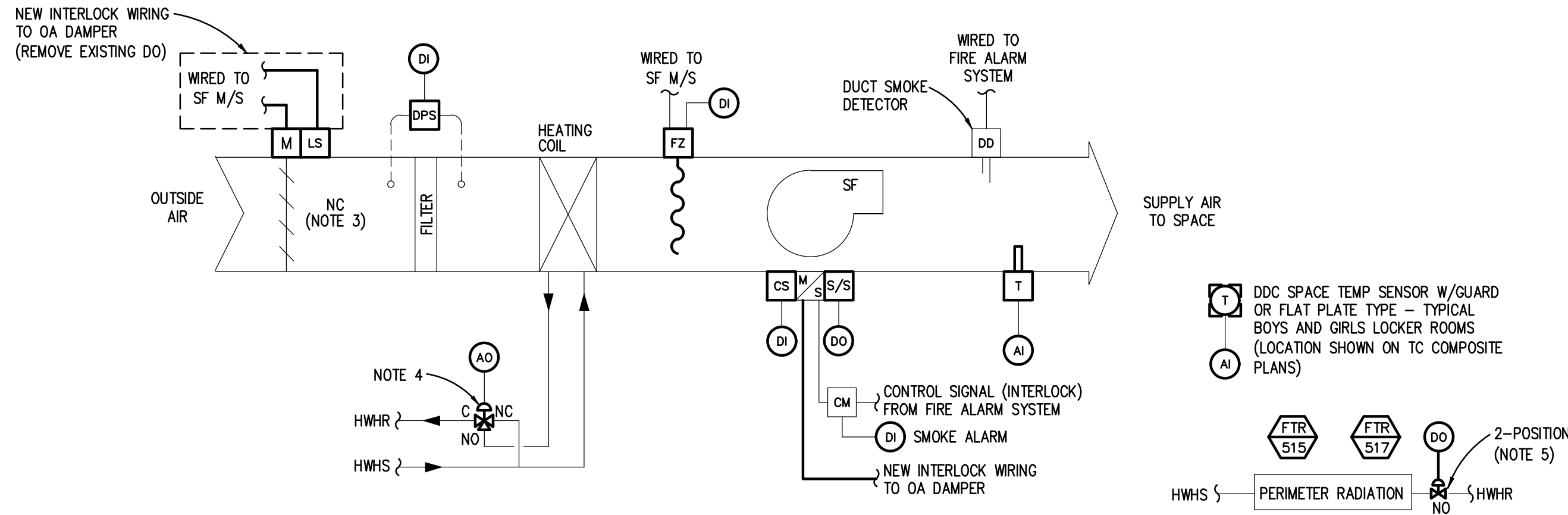


RTU-OFFICE SF M/S WIRING



\\pba.local\projects\2022\0381-00\CAD\2022-0381-M2-CP.dwg, M2\_3, 5/25/2023 7:31:48 AM, Suna A. Matti, None, 0.08536, Peter Basso Associates Inc.

TC GENERAL NOTES  
TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



**(E) AIR HANDLING UNIT (AHU-3W) CONTROL RETROFIT**  
SERVES BOYS & GIRLS POOL LOCKER ROOMS

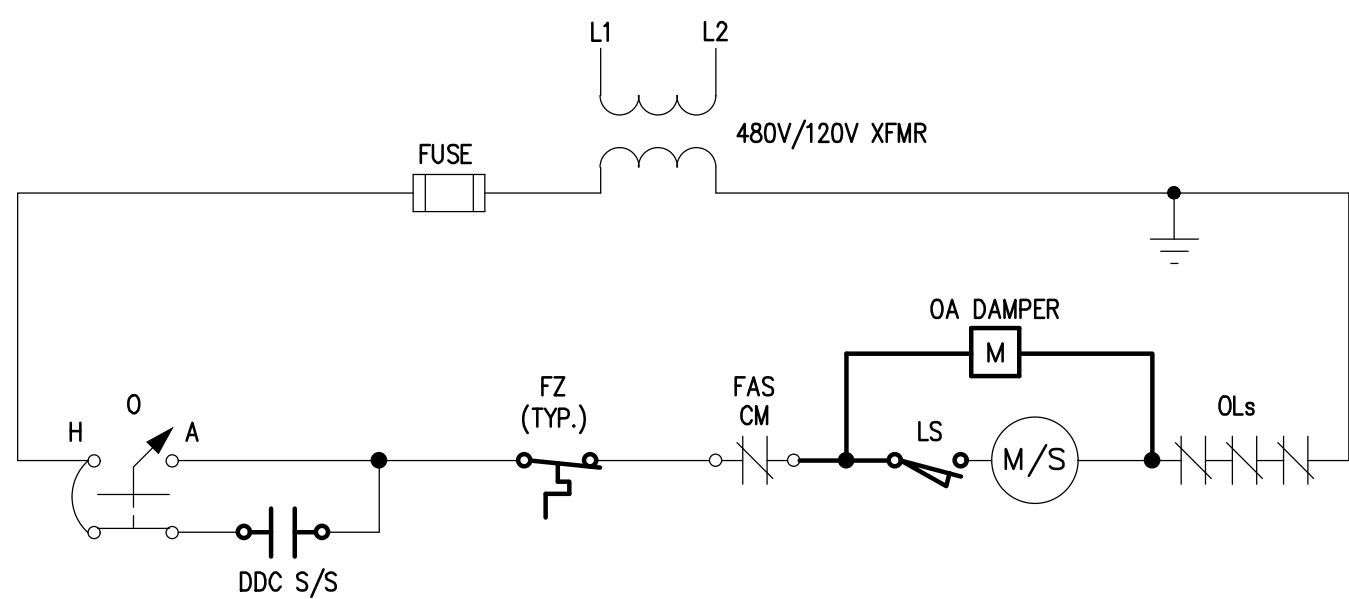
NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPLICING OF SENSOR CABLING/WIRING NOT PERMITTED.
- EXISTING CONTROL DAMPERS SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATORS AND REPLACE WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL RECORD/MARK EXISTING OUTSIDE AIR DAMPER MINIMUM POSITION AND SET NEW CONTROL OF MINIMUM OUTSIDE AIR DAMPER POSITION TO MATCH EXISTING.
- EXISTING HEATING COIL CONTROL VALVE SHALL BE REMOVED AND REPLACED WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL VALVE REPLACEMENT. REFER TO AHU CONTROL SCHEDULE FOR CONTROL VALVE SIZING PARAMETERS.
- EXISTING FTR CONTROL VALVE SHALL BE REMOVED AND REPLACED WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL VALVE REPLACEMENT. REFER TO TC COMPOSITE PLAN FOR CONTROL VALVE SIZING PARAMETERS.
- TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

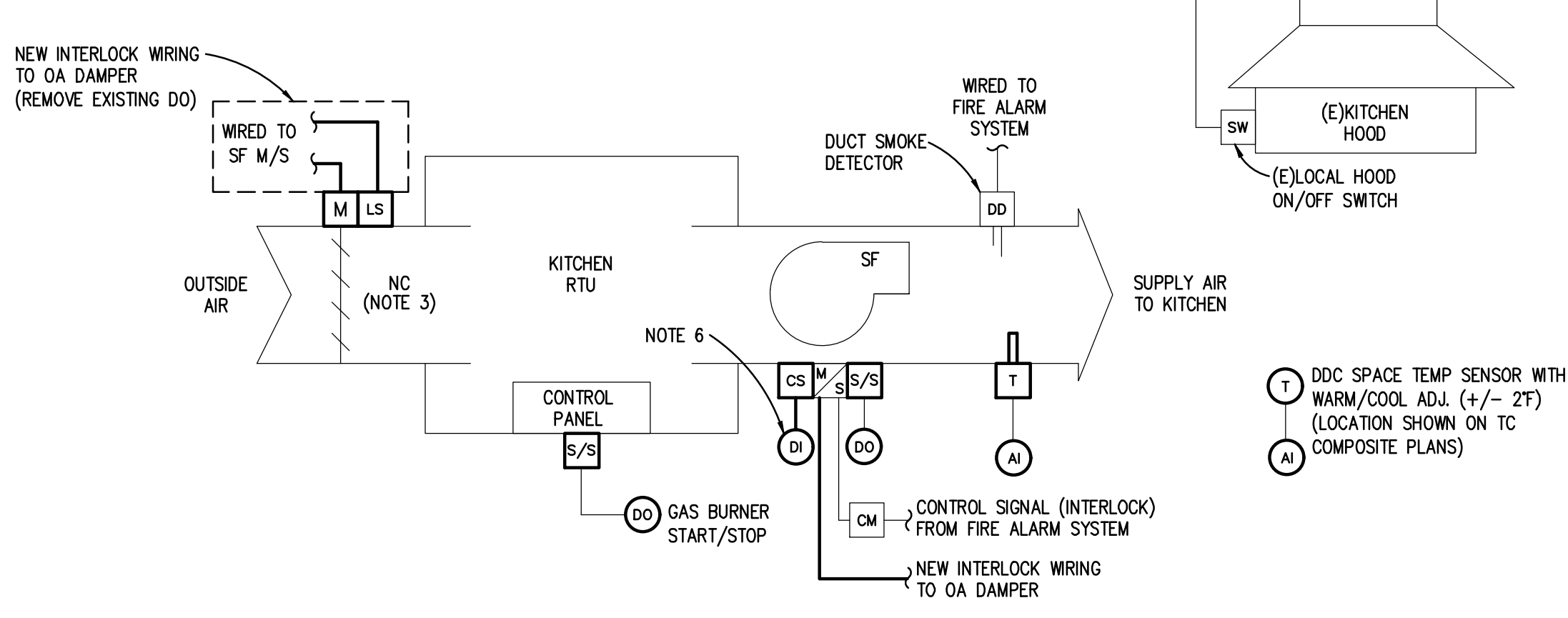
SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

- SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. AHU SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (COMPENSATED BY OPTIMUM START PROGRAM), TEMPORARY OCCUPIED MODE (SET FOR 2 HRS ENABLED FROM OVERRIDE SWITCH (SPACE TEMP SENSORS) AND UNOCCUPIED CYCLE MODE.
- WIRING INTERLOCK SHALL OPEN AHU OA DAMPER. SF SHALL BE ACTIVATED UPON OPEN PROOF BY DAMPER LIMIT SWITCH.
- FOR OCCUPIED MODE, AHU SHALL RUN CONTINUOUSLY TO MAINTAIN SPACE TEMP OF 70°F (AS SENSED BY THE AVERAGE OF BOTH BOYS & GIRLS LOCKER ROOMS SPACE TEMP SENSORS).
- FOR UNOCCUPIED MODE, AHU SHALL REMAIN OFF. DDC SHALL OPEN/CLOSE PERIMETER RADIATION CONTROL VALVES TO MAINTAIN SETBACK SPACE TEMP SETPOINT OF 62°F. PERIMETER RADIATION CONTROL VALVES SHALL CYCLE BASED ON LOWEST SPACE TEMP READING.
- SUPPLY FAN STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
- WHEN SPACE TEMP IS BELOW SETPOINT (AS SENSED BY THE AVERAGE OF BOTH BOYS & GIRLS LOCKER ROOMS SPACE TEMP SENSORS), DDC SHALL OPEN PERIMETER RADIATION CONTROLS VALVES AND MODULATE AHU HEATING COIL CONTROL VALVE TO MAINTAIN SPACE TEMP SETPOINT.
- DISCHARGE AIR TEMP LIMIT SETPOINT 55°F SHALL PROVIDE OVERRIDE CONTROL OF HEATING COIL CONTROL VALVE SHALL FULLY OPEN AND ISSUE CRITICAL ALARM TO BAS "LOW DISCHARGE AIR TEMP".
- DURING MORNING WARM-UP OR UNOCCUPIED CYCLE MODE, DA TEMP SETPOINT SHALL BE 90°F UNTIL BUILDING OCCUPANCY TIME OR WHEN OCCUPIED MODE SPACE TEMPERATURE IS REACHED IN ONE OF THE ASSOCIATED ZONES.
- FREEZE/STAT(S) SHALL DEACTIVATE SUPPLY FAN WHEN TEMPERATURE IS 35°F OR BELOW. DDC SHALL MONITOR FREEZE/STAT STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
- DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SUPPLY FAN WHEN PRODUCTS OF COMBUSTION ARE DETECTED. DDC SHALL MONITOR SMOKE DETECTOR STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
- FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE SWITCH. WHEN DP REACHES SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER ALARM.
- WHEN AHU IS DEACTIVATED, DAMPERS SHALL RETURN TO NORMAL POSITIONS (CLOSED TO OA).
- DURING AHU OCCUPIED MODE, EXHAUST FANS EF-501 SHALL BE ACTIVATED THRU SOFTWARE INTERLOCKED TO OPERATE CONTINUOUSLY. DURING AHU MORNING WARM-UP OR UNOCCUPIED CYCLE MODE, ALL EF SHALL REMAIN DEACTIVATED.



**AHU-3W SF M/S WIRING**



**(E) ROOFTOP UNIT (RTU-201) CONTROL RETROFIT**  
SERVES KITCHEN

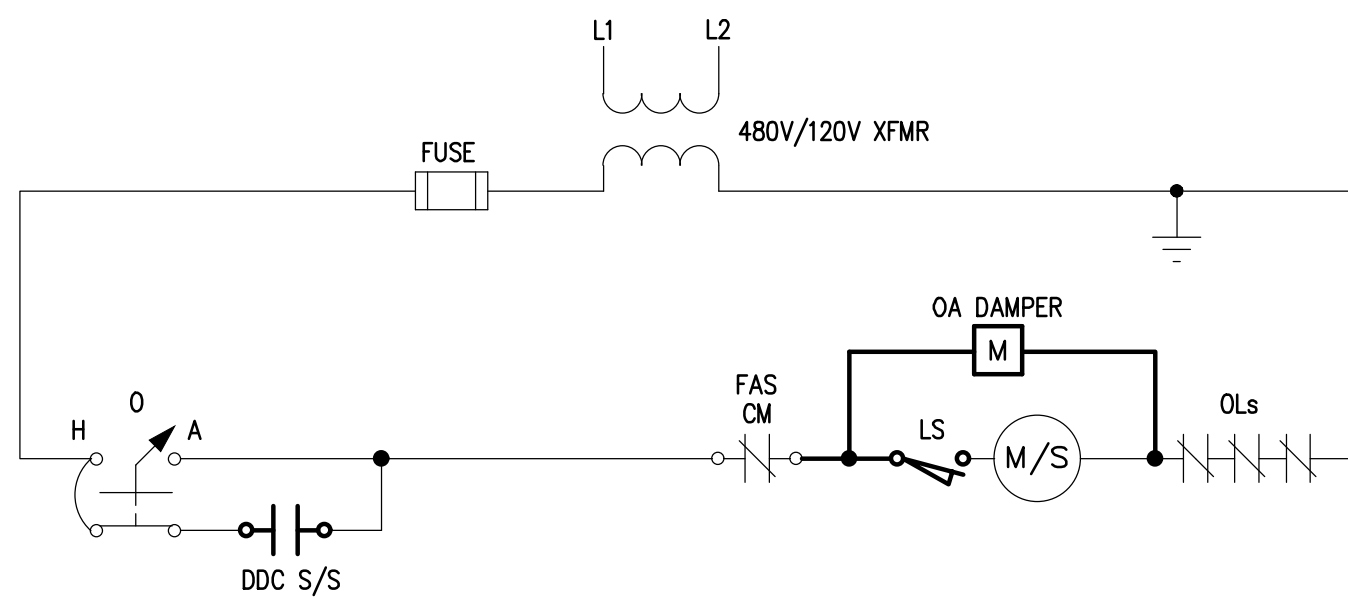
NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPLICING OF SENSOR CABLING/WIRING NOT PERMITTED.
- EXISTING CONTROL DAMPERS SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATORS AND REPLACE WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL RECORD/MARK EXISTING OUTSIDE AIR DAMPER MINIMUM POSITION AND SET NEW CONTROL OF MINIMUM OUTSIDE AIR DAMPER POSITION TO MATCH EXISTING.
- TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.
- EXISTING TC DRAWINGS INDICATES EF-201 STATUS POINT IS WIRED TO AHU-201 CONTROLLER. RE-ROUTE EF-201 STATUS POINT CONTROL WIRING TO NEW DDC CONTROLLER FOR RTU-201.

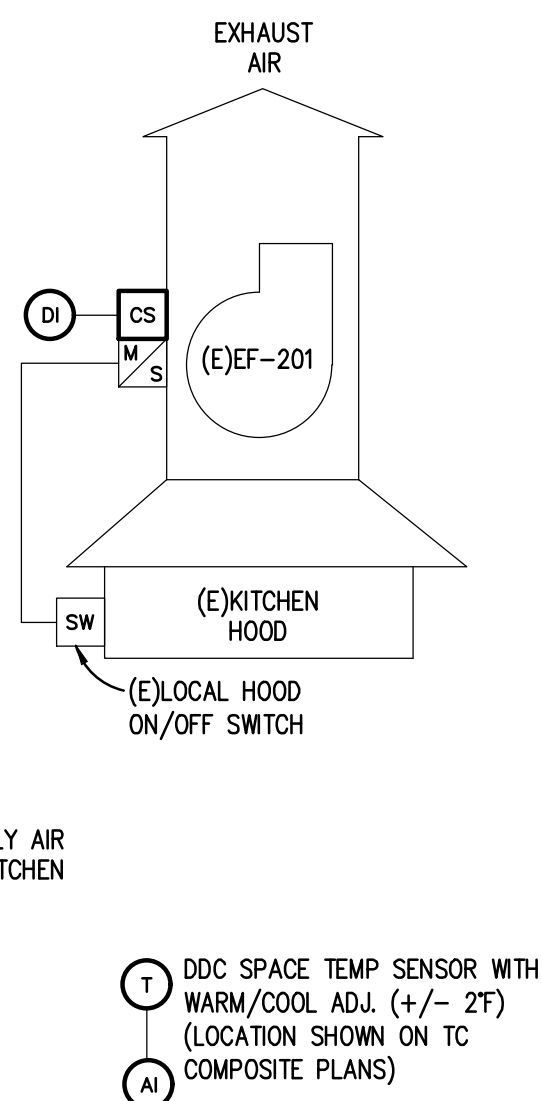
SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

- SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. RTU SHALL OPERATE BASED ON KITCHEN HOOD OPERATION AND UNOCCUPIED CYCLE MODE.
- WIRING INTERLOCK SHALL OPEN RTU OA DAMPER. SF SHALL BE ACTIVATED UPON OPEN PROOF BY DAMPER LIMIT SWITCH.
- WHEN KITCHEN HOOD IS ACTIVATED BY LOCAL SWITCH (AS SENSED BY EF MOTOR CURRENT SWITCH), DDC SHALL ACTIVATE RTU FOR CONTINUOUS OPERATION TO MAINTAIN SPACE TEMP SETPOINT OF 68°F.
- FOR UNOCCUPIED MODE, DDC SHALL CYCLE RTU SF & GAS BURNER ON & OFF TO MAINTAIN SETBACK SPACE TEMP SETPOINT OF 62°F. LOCAL RTU CONTROLS SHALL PREVENT GAS BURNER OPERATION UNTIL PROOF OF AIRFLOW.
- SUPPLY FAN STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
- WHEN SPACE TEMP IS BELOW SETPOINT DDC SHALL ACTIVATE GAS BURNER TO MAINTAIN SPACE TEMP SETPOINT. LOCAL RTU CONTROLS SHALL PREVENT GAS BURNER OPERATION UNTIL PROOF OF AIRFLOW.
- DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SUPPLY FAN WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
- FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE SWITCH. WHEN DP REACHES SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER ALARM.
- WHEN RTU IS DEACTIVATED, DAMPERS SHALL RETURN TO NORMAL POSITIONS (CLOSED TO OA).



**RTU-201 SF M/S WIRING**



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PBA Project No: 2022.0381

PROJECT TITLE

Wylie Elementary  
School Bldg.  
Automation  
System

Dexter Community  
Schools

DRAWING TITLE

TEMPERATURE CONTROLS

ISSUE DATES

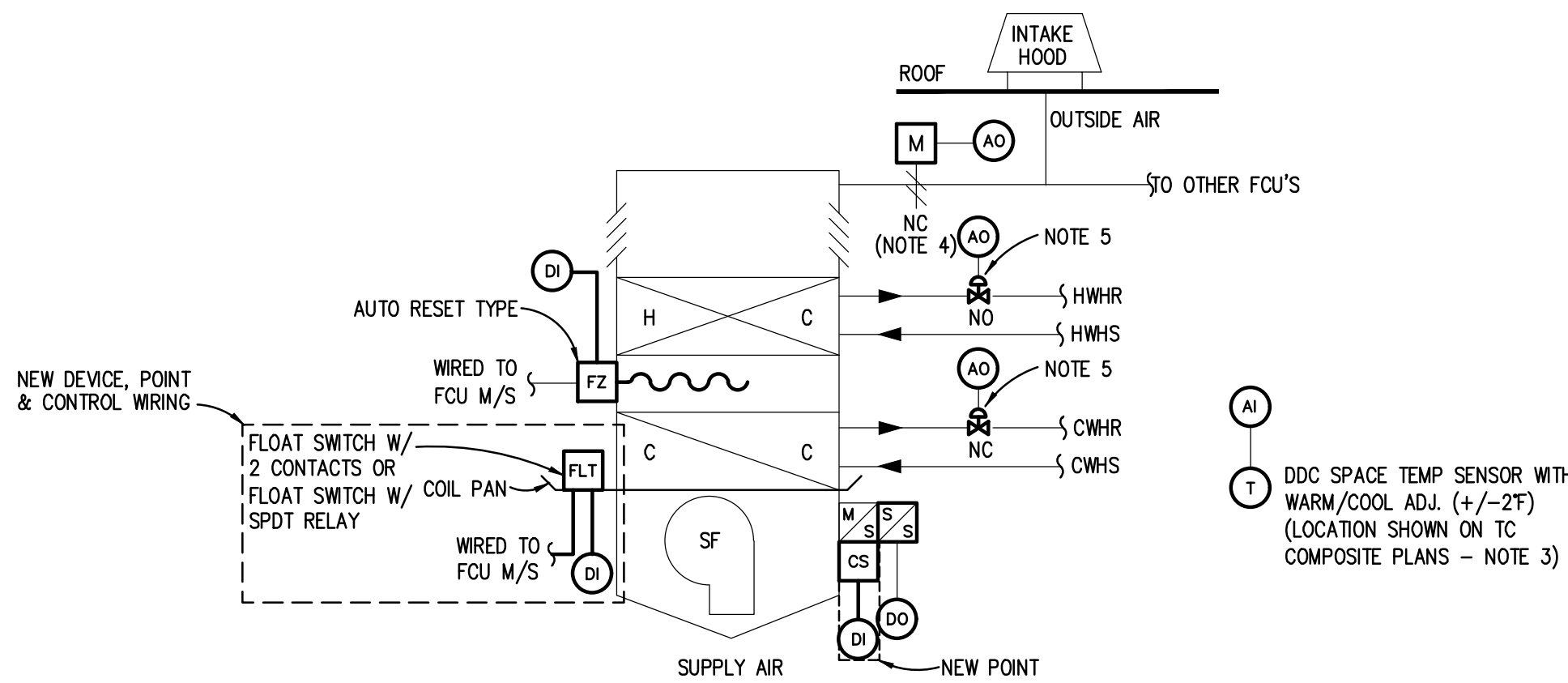
05-25-2023	CONSTRUCTION DOCUMENTS
03-15-2023	OWNER REVIEW

DATE: 05-25-2023  
ISSUED FOR: OWNER REVIEW

DRAWN: WJU  
CHECKED: JWC  
APPROVED: SVM

PROJECT NO.  
22072C  
DRAWING NO.  
M2.3





#### (E)CEILING CASSETTE FCU CONTROL RETROFIT

TYPICAL

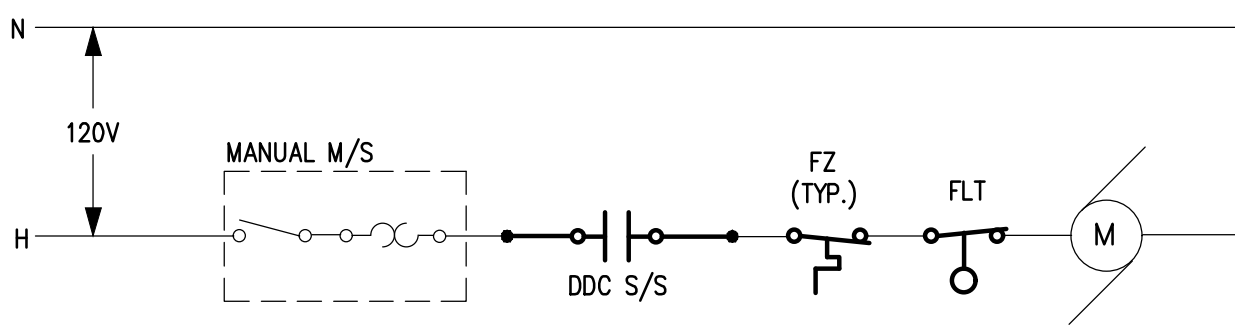
##### NOTES:

1. REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
2. REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED.
3. WHERE INDICATED ON TC COMPOSITE PLANS, SPACE TEMP SHALL BE REFERENCED TO MULTIPLE FCU CONTROLLERS VIA DDC NETWORK.
4. EXISTING CONTROL DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATOR AND REPLACE WITH NEW AS SPECIFIED.
5. EXISTING HEATING & COOLING COIL CONTROL VALVES SHALL BE REMOVED AND REPLACED WITH NEW AS SPECIFIED. TC CONTRACTOR IS RESPONSIBLE FOR CONTROL VALVES REPLACEMENT. REFER TO FCU CONTROL SCHEDULE FOR CONTROL VALVE SIZING PARAMETERS.
6. TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
7. TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

##### SEQUENCE OF OPERATION:

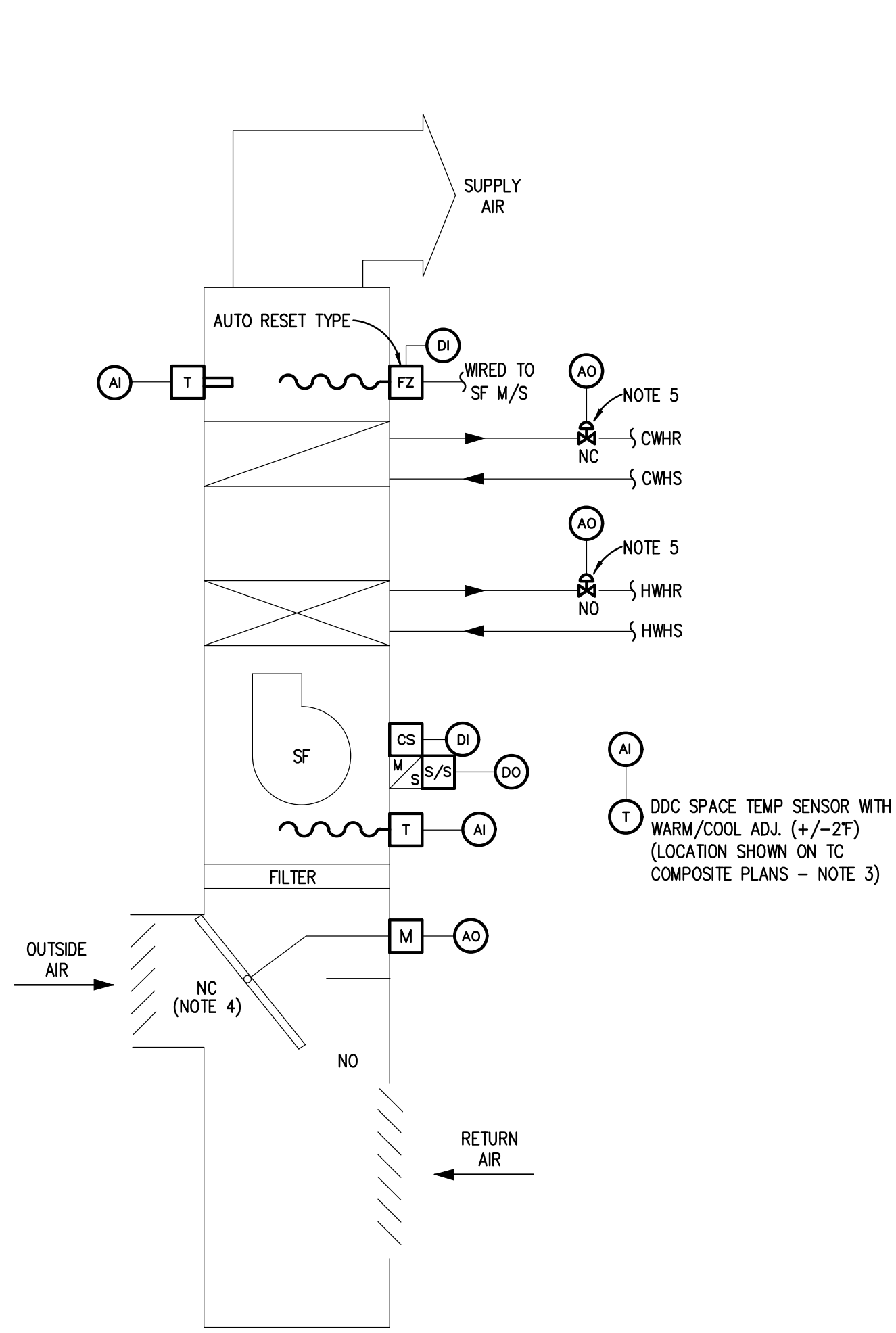
NOTE: ALL SETPOINTS, OCCUPIED/UNOCCUPIED MODE SCHEDULING, MONITORED TEMPERATURES AND VARIOUS ALARMS AS DESCRIBED IN SEQUENCE SHALL BE ACCESSIBLE BY SYSTEM OPERATORS THRU BAS. APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

1. SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. UNIT SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (WITH MORNING WARM-UP), TEMPORARY OCCUPIED MODE (SET FOR 2 HRS ENABLED FROM OVERRIDE SWITCH ON TEMPERATURE SENSOR) AND UNOCCUPIED CYCLE MODE.
2. FOR HEATING OCCUPIED MODE, FCU SHALL BE CONTROLLED TO MAINTAIN SPACE TEMP SETPOINT OF 70°F.
3. FOR COOLING OCCUPIED MODE, FCU SHALL BE CONTROLLED TO MAINTAIN SPACE TEMP SETPOINT OF 74°F.
4. FOR HEATING UNOCCUPIED MODE, FCU SHALL CYCLE ON & OFF TO MAINTAIN A SETBACK SPACE TEMP SETPOINT OF 62°F.
5. FOR COOLING UNOCCUPIED MODE, FCU SHALL REMAIN OFF.
6. SUPPLY FAN STATUS SHALL BE MONITORED BY DDC THRU CURRENT SWITCH. ABNORMAL STATUS CONDITION FOR SF SHALL ACTIVATE ALARM.
7. WHEN FCU IS ACTIVATED DURING OCCUPIED MODE, OUTSIDE AIR DAMPER SHALL OPEN TO ALLOW VENTILATION TO SPACE (AS SET BY AIR BALANCE CONTRACTOR - REFER TO FAN COIL UNIT SCHEDULE FOR OA FLOW REQUIREMENTS) FOR OCCUPIED MODE. WHEN FCU IS DEACTIVATED OR OPERATING IN UNOCCUPIED OR MORNING WARM-UP MODE, OUTSIDE AIR DAMPER SHALL REMAIN CLOSED.
8. WHEN SPACE TEMP IS BELOW HEATING SETPOINT, DDC SHALL MODULATE HHW COIL CONTROL VALVE TO MAINTAIN A SPACE TEMP SETPOINT.
9. WHEN SPACE TEMP IS ABOVE COOLING SETPOINT, DDC SHALL MODULATE CHW COIL CONTROL VALVE TO MAINTAIN SPACE TEMP SETPOINT.
10. AUTO-RESET FREEZESTAT CUTOFF SHALL BE WIRED TO DEACTIVATE SF, FULLY CLOSE OA DAMPER AND FULLY OPEN HHW COIL VALVE WHEN OA TEMP IS 35°F OR BELOW. BAS LOW-LIMIT FREEZESTAT ALARM SHALL BE ACTIVATED AND DDC SOFTWARE LOCKOUT SHALL HOLD UNIT OFF UNTIL IT IS RESET BY OPERATOR FROM GRAPHICAL INTERFACE FOR UNIT.
11. FLOAT SWITCH MOUNTED IN COOLING COIL DRAIN PAN IS TO BE HARDWIRED INTERLOCKED TO SF MOTOR STARTER AND MONITORED BY DDC. SHOULD WATER LEVEL REACH SETPOINT, FCU SF SHALL BE DEACTIVATED AND DDC SHALL CLOSE COOLING COIL VALVE AND GENERATE ALARM AT BAS.



#### FCU SF M/S WIRING

TYPICAL



#### (E)VERTICAL UNIT VENTILATOR CONTROL RETROFIT

TYPICAL, UNLESS OTHERWISE NOTED

##### NOTES:

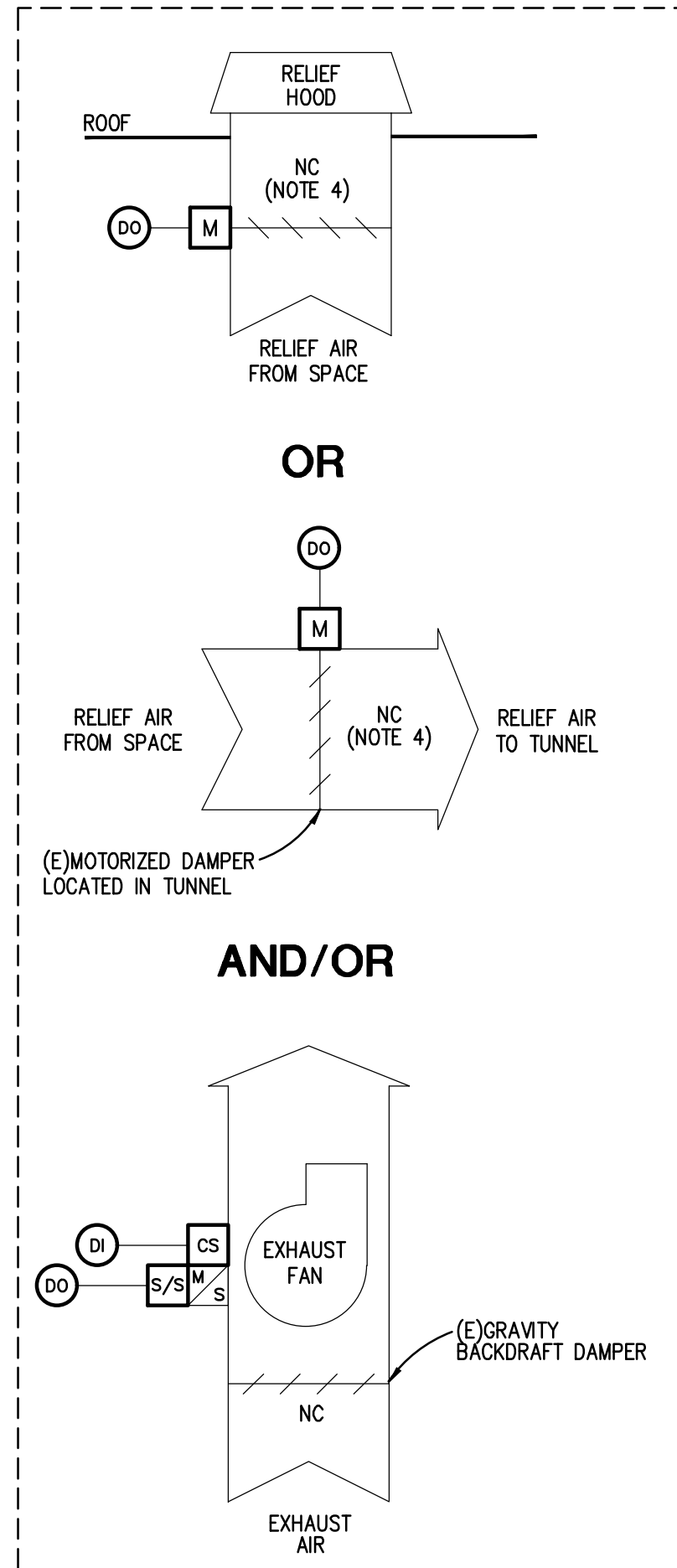
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3. WHERE INDICATED ON TC COMPOSITE PLANS, SPACE TEMP SHALL BE REFERENCED TO MULTIPLE VUV CONTROLLERS VIA DDC NETWORK.
4. EXISTING CONTROL DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATORS AND REPLACE WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL RECORD/MARK EXISTING OUTSIDE AIR DAMPER MINIMUM POSITION AND SET NEW CONTROL OF MINIMUM OUTSIDE AIR DAMPER POSITION TO MATCH EXISTING.
5. EXISTING HEATING & COOLING COIL CONTROL VALVES SHALL BE REMOVED AND REPLACED WITH NEW AS SPECIFIED. TC CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL VALVES REPLACEMENT. REFER TO VUV CONTROL SCHEDULE FOR CONTROL VALVE SIZING PARAMETERS.
6. TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
7. TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

##### SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

1. SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. FAN SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (COMPENSATED BY OPTIMUM START PROGRAM), TEMPORARY OCCUPIED MODE (SET FOR 2 HRS ENABLED FROM OVERRIDE SWITCH ON TEMPERATURE SENSOR) AND UNOCCUPIED CYCLE MODE.
2. FOR HEATING OCCUPIED MODE, VUV SHALL BE CONTROLLED TO MAINTAIN SPACE TEMP SETPOINT OF 70°F.
3. FOR COOLING OCCUPIED MODE, VUV SHALL BE CONTROLLED TO MAINTAIN SPACE TEMP SETPOINT OF 74°F.
4. FOR HEATING UNOCCUPIED MODE, VUV SHALL CYCLE ON & OFF TO MAINTAIN A SETBACK SPACE TEMP SETPOINT OF 62°F.
5. FOR COOLING UNOCCUPIED MODE, VUV SHALL REMAIN OFF.
6. SUPPLY FAN SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. ABNORMAL STATUS CONDITION FOR SF SHALL ACTIVATE ALARM.
7. WHEN VUV IS ACTIVATED DURING OCCUPIED MODE, MIXED AIR DAMPER SHALL BE ALLOWED TO MODULATE AS DESCRIBED. WHEN VUV IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE OR MORNING WARM-UP MODE, MIXED AIR DAMPER SHALL REMAIN IN NORMAL POSITION (CLOSED TO OA).
8. WHERE APPLICABLE, RELIEF AIR DAMPER SHALL HAVE OPEN/CLOSE CAPABILITY FROM THE DDC SYSTEM AND SHALL BE SOFTWARE INTERLOCKED WITH SF TO BE ACTIVATED DURING THE OCCUPIED MODE. WHENEVER MIXED AIR DAMPER IS OPERATING IN ECONOMIZER MODE AND EXCEEDS 50% OPEN, WHEN VUV IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE OR MORNING WARM-UP MODE, RELIEF AIR DAMPER SHALL REMAIN CLOSED.
9. WHERE APPLICABLE, CLASSROOM EXHAUST FAN SHALL HAVE START/STOP CAPABILITY FROM DDC SYSTEM AND SHALL BE SOFTWARE INTERLOCKED WITH SF TO BE ACTIVATED DURING OCCUPIED MODE. WHENEVER MIXED AIR DAMPER IS OPERATING IN ECONOMIZER MODE AND EXCEEDS 50% OPEN, WHEN VUV IS DEACTIVATED OR OPERATING IN UNOCCUPIED OR MORNING WARM-UP MODE, EF SHALL REMAIN OFF.
10. MIXED AIR LOW LIMIT OF 45°F SHALL PROVIDE OVERRIDE CONTROL OF MIXED AIR DAMPER AND ALLOW TO MODULATE BELOW MINIMUM OA POSITION SETPOINT.
11. WHEN SPACE TEMP IS BELOW HEATING SETPOINT, DDC SHALL KEEP MIXED AIR DAMPER AT MINIMUM OA POSITION AND MODULATE HEATING COIL CONTROL VALVE TO MAINTAIN A DISCHARGE AIR TEMPERATURE SETPOINT THAT SHALL BE RESET BASED ON DEVIATION FROM SPACE TEMP SETPOINT (CASCADE CONTROL LOGIC). HEATING MODE DISCHARGE AIR TEMP SETPOINT RANGE SHALL BE 65°F TO 80°F.
12. WHEN SPACE TEMP IS ABOVE COOLING SETPOINT AND OA TEMP IS LESS THAN SPACE TEMP AND OUTSIDE AIR DEWPOINT IS LESS THAN ECONOMIZER LOCKOUT SETPOINT OF 52°F, DDC SHALL MODULATE THE COOLING COIL VALVE IN SEQUENCE WITH MIXED AIR DAMPER OA ECONOMIZER TO MAINTAIN SPACE TEMP SETPOINT.
13. WHEN SPACE TEMP IS ABOVE COOLING SETPOINT AND OA TEMP IS GREATER THAN SPACE TEMP AND OUTSIDE AIR DEWPOINT IS ABOVE ECONOMIZER LOCKOUT SETPOINT OF 52°F, MIXED AIR DAMPER SHALL REMAIN AT MINIMUM OA POSITION AND DDC SHALL MODULATE THE COOLING COIL VALVE TO MAINTAIN SPACE TEMP SETPOINT.
14. DURING MORNING WARM-UP, DAT SETPOINT SHALL BE 90°F UNTIL ZONE OCCUPANCY TIME IS REACHED OR WHEN OCCUPIED MODE SPACE TEMPERATURE IS REACHED.
15. AUTO-RESET FREEZESTAT CUTOFF SHALL BE WIRED TO DEACTIVATE SF, FULLY CLOSE OA DAMPER AND FULLY OPEN HHW COIL VALVE WHEN OA TEMP IS 35°F OR BELOW. BAS LOW-LIMIT FREEZESTAT ALARM SHALL BE ACTIVATED AND DDC SOFTWARE LOCKOUT SHALL HOLD UNIT OFF UNTIL IT IS RESET BY OPERATOR FROM GRAPHICAL INTERFACE FOR UNIT.
16. WHEN VUV IS DEACTIVATED, MIXED AIR DAMPER SHALL RETURN TO NORMAL POSITION (CLOSED TO OA) AND COOLING COIL VALVE SHALL REMAIN CLOSED.
17. WHEN OA TEMP IS BELOW 40°F AND VUV IS DEACTIVATED, HEATING COIL VALVE SHALL BE MODULATED BY DDC BASED ON MIXED AIR TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.

REFER TO VUV SCHEDULE FOR SPACE RELIEF TYPE



#### TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



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PBA Project No: 2022.0381

PROJECT TITLE

Wylie Elementary  
School Bldg.  
Automation  
System

Dexter Community  
Schools

DRAWING TITLE

TEMPERATURE CONTROLS

ISSUE DATES

05-25-2023 CONSTRUCTION DOCUMENTS  
03-15-2023 OWNER REVIEW

DATE: ISSUED FOR:

DRAWN: WJU

CHECKED: JWC

APPROVED: SVM

PROJECT NO.

22072C

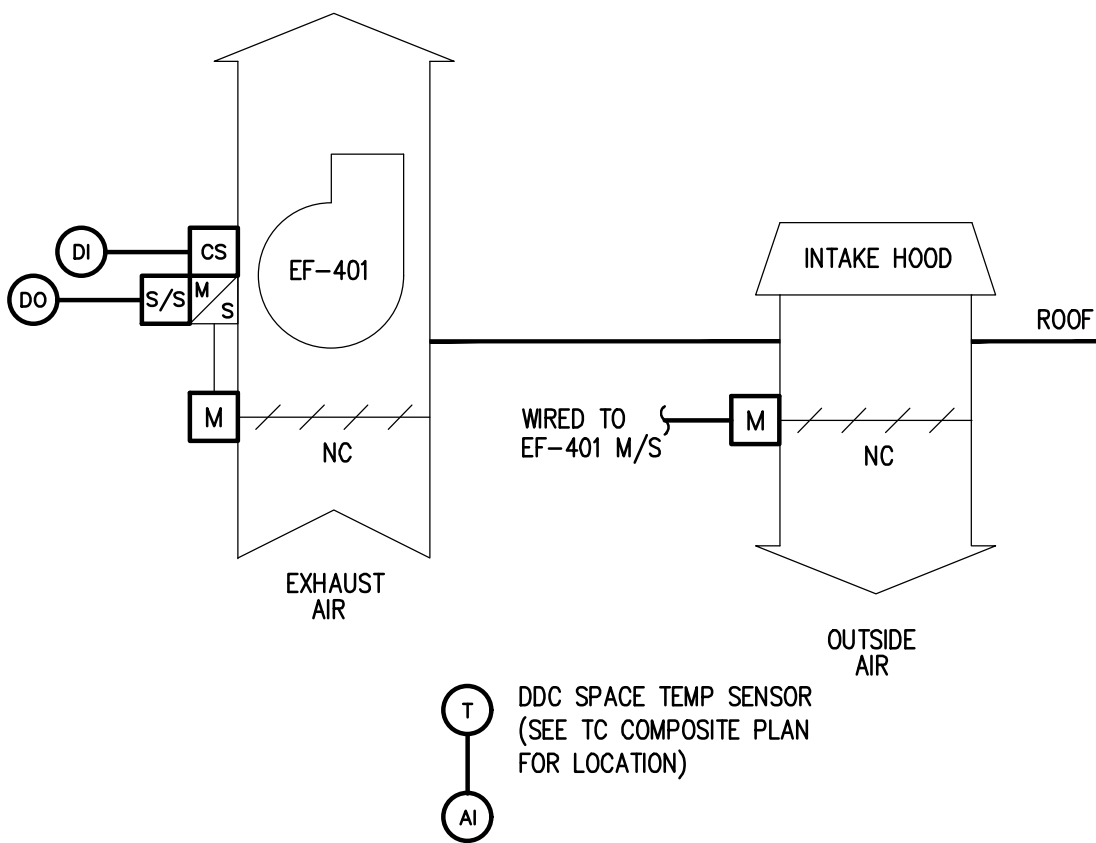
DRAWING NO.

M2.4



\\pba.local\projects\2022\0381-00\CAD\2022-0381-M2-CP.dwg, M2-5, 5/25/2023 7:31:55 AM, Suna A. Matti, None, 0.086336, Peter Basso Associates Inc.

TC GENERAL NOTES  
TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



### (E)MECH ROOM 401 VENT/PURGE CONTROL

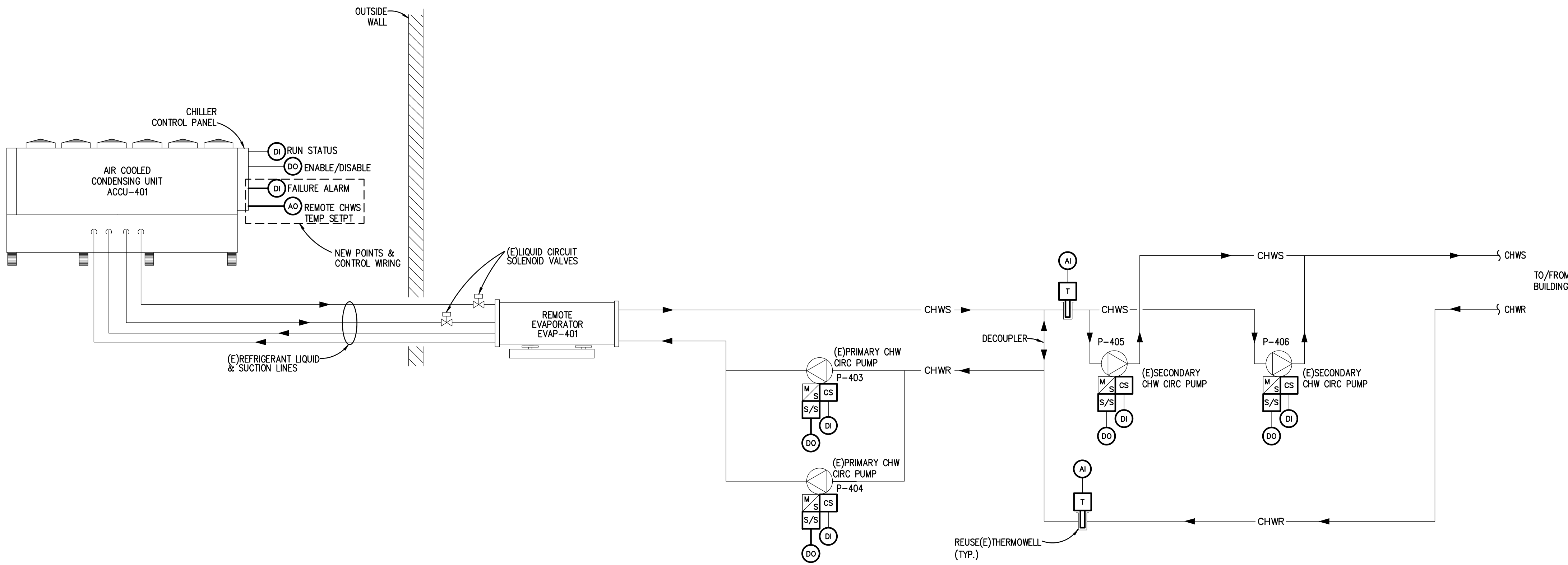
#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNIT.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACED WITH NEW AS SPECIFIED.
- EXISTING CONTROL DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATOR AND REPLACE WITH NEW AS SPECIFIED.

#### SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS INCLUDING RESET SCHEDULE SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

- EF SHALL BE STARTED AND STOPPED BY DDC. WIRING INTERLOCK SHALL OPEN DAMPERS.
- FOR VENTILATION MODE, DDC SHALL ACTIVATE EF WHEN SPACE TEMP RISES ABOVE 80°F AND DEACTIVATES EF WHEN SPACE TEMP FALLS BELOW 76°F.
- DDC SHALL MONITOR EF RUN STATUS THRU CURRENT SWITCH. ABNORMAL OPERATING STATUS SHALL ACTIVATE AN ALARM.
- WHEN REFRIGERANT LEAK ALARM IS DETECTED BY REFRIGERANT MONITORING PANEL, THE RED ALARM BEACON AND HORN SHALL BE ACTIVATED THROUGH HARDWIRED INTERLOCK AND ALARM SHALL BE ACTIVATED AT DDC. DDC ACTIVATE EF. REFRIGERANT PURGE MODE REMAINS ACTIVE UNTIL THE REFRIGERANT MONITOR IS RESET AND THE ALARM IS DEACTIVATED. MANUAL PUSHBUTTON ALARM SILENCE BUTTON SHALL SILENCE ALARM DURING ALARM CONDITIONS, BUT RED BEACON WILL REMAIN ACTIVATED UNTIL ALARM IS CLEARED.
- WHEN REFRIGERANT MONITOR SYSTEM MALFUNCTION ALARM IS ACTIVATED, DDC SHALL INDICATE ALARM CONDITION AT BAS.



### (E)CHILLED WATER SYSTEM CONTROL RETROFIT

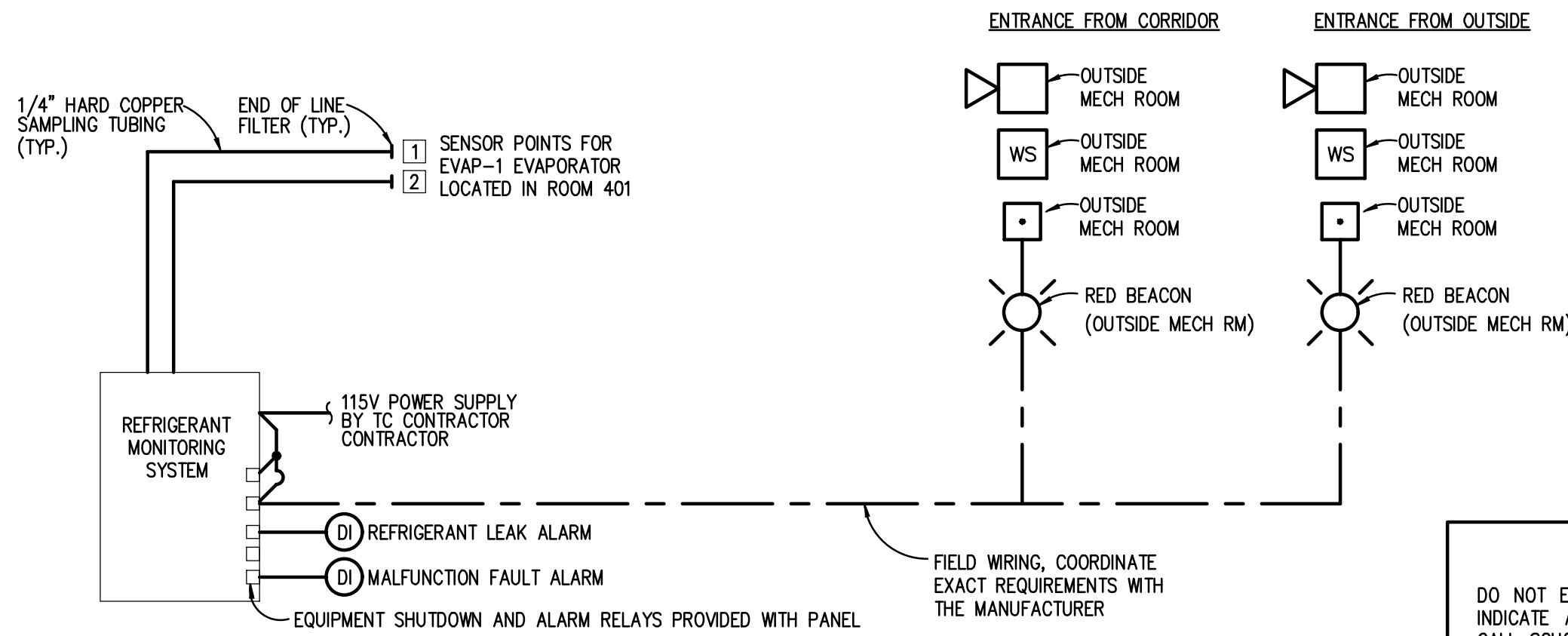
#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPlicing OF SENSOR CABLING/WIRING NOT PERMITTED.
- ALL EXISTING CHILLER HARDWIRED SAFETY DEVICES SHALL REMAIN AS-IS.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

#### SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS INCLUDING RESET SCHEDULE SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

- CHILLED WATER SYSTEM OPERATION SHALL BE ENABLED BY OPERATORS THRU DDC SYSTEM. PACKAGED CHILLER CONTROLS SHALL BE SET TO REMOTE OPERATION AT THE BEGINNING OF COOLING SEASON.
- WHEN ENABLED FOR OPERATION, CHW SYSTEM SHALL OPERATE BASED ON BUILDING OCCUPANCY AND WHEN OA TEMP IS ABOVE 55°F (ADJ. THRU GRAPHICS).
- PRIMARY CHILLED WATER CIRC PUMPS P-403 & P-404 AND SECONDARY CHILLED WATER CIRC PUMPS P-405 & P-406 SHALL HAVE START/STOP CAPABILITY FOR THE DDC SYSTEM. ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY DDC WHEN CHW SYSTEM IS ACTIVATED. THE OTHER WILL SERVE AS STANDBY.
- DDC SHALL ALTERNATE PUMP OPERATION BASED ON RUNTIME HOURS OR AT THE BEGINNING OF EACH MONTH - OPERATOR SELECTABLE. ALTERNATION SHALL OCCUR AT BEGINNING OF NEXT CHILLER START CYCLE.
- DDC SHALL MONITOR OPERATING STATUS OF THE PUMP. UPON PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM.
- WITH LEAD PRIMARY & SECONDARY CHW PUMPS ACTIVATED, DDC SHALL ACTIVATE CHILLER.
- WHEN CHW FLOW IS PROVEN AND ALL INTERNAL CHILLER SAFETIES AND INTERLOCKS ARE COMPLETE, CHILLER PACKAGED CONTROL PANEL WITH INTEGRAL TEMPERATURE SENSORS SHALL SEQUENCE CHILLER OPERATION TO MAINTAIN THE CHILLER'S CHW SUPPLY SETPOINT OF 42°F (ADJUSTABLE AT CHILLER PANEL OR FROM REMOTE SETPOINT ADJUSTMENT THRU DDC).
- DDC SHALL SHUTDOWN CHILLER WHEN THERE IS NO LONGER A DEMAND FOR COOLING FROM AHU'S AND/OR UVS. DDC SHALL KEEP LEAD PRIMARY AND SECONDARY PUMPS ACTIVATED FOR 5 MINUTES AFTER CHILLER SHUTDOWN CYCLE IS ACTIVATED.
- DDC SHALL PREVENT SHORT CYCLING OF CHILLER WITH A 20 MINUTE INTERVAL BETWEEN CHILLER SHUTDOWN AND CHILLER RESTART.
- DDC SHALL EMERGENCY OVERRIDE OFF CHILLER DURING REFRIGERANT LEAK EVENT.
- DDC SHALL MONITOR CHILLER STATUS AND FAILURE ALARM FOR DISPLAY THRU SYSTEM GRAPHIC.
- DDC SHALL MONITOR CHW SUPPLY & RETURN WATER TEMPS FOR DISPLAY THRU SYSTEM GRAPHIC.



### REFRIGERANT MONITORING SYSTEM

NO SCALE - LOCATED IN MECHANICAL ROOM 401

#### NOTES:

- TC CONTRACTOR SHALL PROVIDE REFRIGERANT MONITORING SYSTEM FOR REFRIGERANT TYPE AS SPECIFIED AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- TC CONTRACTOR SHALL PROVIDE BEACONS AND HORNS AND PROVIDE ALL WIRING TO DEVICES.

#### SYMBOLS:

- ALARM HORN
- ALARM BEACON
- WS WARNING SIGN
- ALARM HORN SILENCE SWITCH

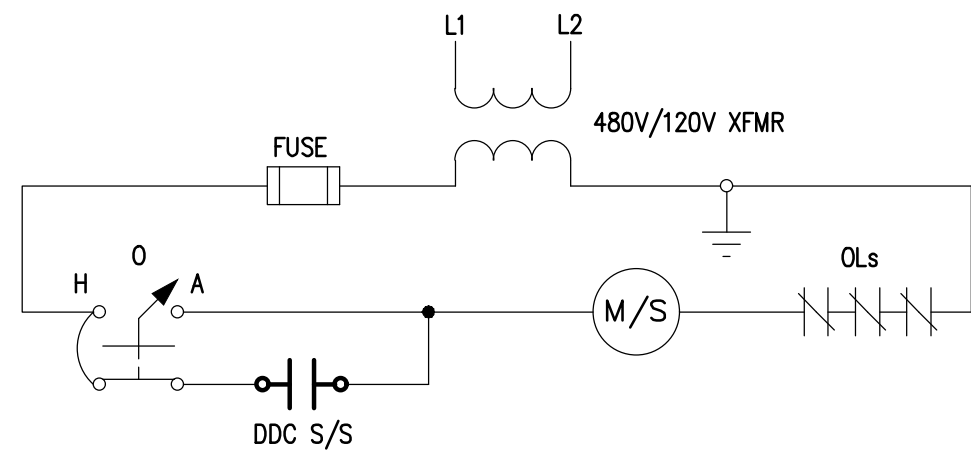


### REFRIGERANT LEAK SIGN DETAIL

NO SCALE

#### NOTES:

- PROVIDE SIGN WITH WHITE LETTERING ON RED BACKGROUND, POLYVINYL PLASTIC, 11" WIDE X 8-1/2" HIGH. ENGRAVED LETTERS SHALL BE MINIMUM 1/2" LETTER HEIGHT. SECURE TO WALL OR DOOR APPROPRIATELY.
- ONE SIGN REQUIRED AT EACH DOOR INTO/OUT OF THE MECHANICAL ROOM 401.



### CHW PUMPS M/S WIRING

TYPICAL



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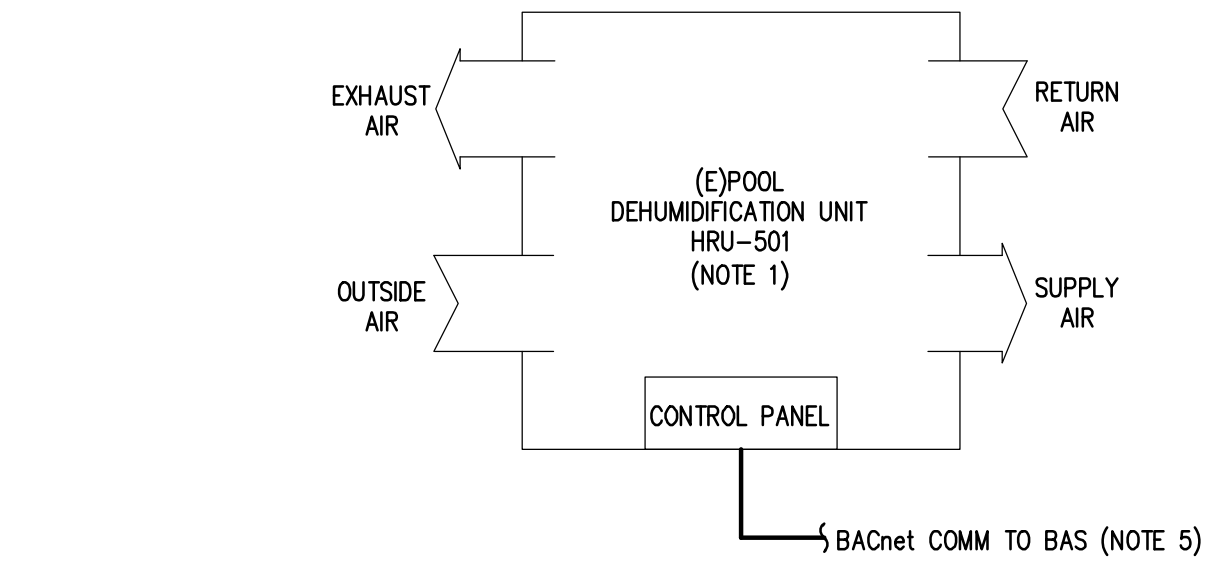
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DRAWING NO.

M2.5



\\pba.local\projects\2022\2022-0381-M2-CP.dwg, M2-6, 5/25/2023 7:32:00 AM, Suna A. Matti, None, 0.086536, Peter Basso Associates Inc.



(HRU-501)

### (E)PACKAGED POOL DEHUM UNIT (HRU-501) CONTROL RETROFIT

SERVES POOL

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- ALL EXISTING PACKAGED CONTROLS FOR HRU-501 SHALL REMAIN AS-IS.
- TC CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL HARDWIRED SAFETIES ARE PROPERLY WIRED AND OPERATIONAL INTO SF MOTOR SAFETY SHUTDOWN.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.
- TC CONTRACTOR SHALL RE-CONNECT BACNET COMMUNICATION INTERFACE WIRING FROM DEHUMIDIFICATION UNIT CONTROL PANEL TO NEW BAS NETWORK SUPERVISOR, COMMUNICATING BUT NOT LIMITED TO THE FOLLOWING POINTS AS AVAILABLE:
  - SPACE TEMPERATURE (TO BAS)
  - SPACE HUMIDITY (TO BAS)
  - OUTSIDE AIR TEMPERATURE (TO BAS)
  - COOLING COIL LEAVING AIR TEMPERATURE (TO BAS)
  - SUPPLY AIR TEMPERATURE (TO BAS)
  - EXHAUST AIR TEMPERATURE (TO BAS)
  - SUPPLY FAN RUN STATUS (TO BAS)
  - EXHAUST FAN RUN STATUS (TO BAS)
  - SPACE AIR TEMP SETPOINT (FROM BAS)
  - SPACE AIR HUMIDITY SETPOINT (FROM BAS)
  - DISCHARGE AIR TEMP (TO BAS)
  - HEATING/COOLING MODE STATUS (TO BAS)
  - HEATING OUTPUT STATUS (TO BAS)
  - COMPRESSOR ENABLE STATUS, EACH STAGE (TO BAS)
  - DIRTY FILTER STATUS (TO BAS)
  - MISC UNIT TEMPERATURE MONITORING (TO BAS)
  - TEMP SENSOR FAILURE ALARMS (TO BAS)
  - UNIT SAFETY CUTOFF ALARMS (TO BAS)

#### SEQUENCE OF OPERATION (EXISTING FOR REFERENCE):

HRU is controlled by the factory provided and programmed controller, the BMS system will monitor the factory controller thru BACnet.

The HRU operates in 3 modes; Heating, Cooling, and Dehumidification. In all modes the EF VFD shall modulate to maintain the differential pressure setpoint.

#### Heating Mode: Outside air dewpoint is less than the change over setpoint

- The outside air damper and recirculation air damper shall modulate proportionately as follows: the outside air damper shall move from minimum to maximum, the recirculation air damper from maximum to minimum. The min and max values shall be determined by the air balancer. If the space humidity deviation is above the setpoint, the outside air damper shall modulate open. If the space humidity deviation is below the setpoint, the outside air damper shall modulate closed down towards the minimum.
  - The heat exchanger face and bypass dampers shall be fully open to the face position to provide maximum energy recovery.
  - The hot water valve shall modulate to satisfy the space temperature and supply air setpoints.
- Cooling Mode: Outside air dewpoint is less than the change over setpoint and the outside air temperature is greater than the cooling enable OA setpoint.**
- The outside air damper shall be commanded to its maximum position.
  - The recirculation damper shall be commanded to its minimum position.
  - The heat exchanger face and bypass dampers shall be fully open to the bypass position.
  - The DX cooling shall be staged as required to maintain the space temp set point.
  - The hot water valve shall be closed

EXHAUST FAN CONTROL SCHEDULE				
UNIT IDENTIFICATION	SERVICE	CONTROL		REMARKS
		DDC	LOCAL SWITCH	
EF-8	ART ROOM 225	Y		SOFTWARE INTERLOCK WITH VUV-201
EF-9	MUSIC ROOM 229	Y		SOFTWARE INTERLOCK WITH VUV-202
EF-10	TOILET ROOMS 207 & 208	Y		SCHEDULED
EF-11	CLASSROOM 237	Y		SOFTWARE INTERLOCK WITH VUV-203
EF-12	CLASSROOM 338	Y		SOFTWARE INTERLOCK WITH VUV-204
EF-13	CLASSROOM 330	Y		SOFTWARE INTERLOCK WITH VUV-301
EF-14	CLASSROOM 341	Y		SOFTWARE INTERLOCK WITH VUV-302
EF-15	CLASSROOM 342	Y		SOFTWARE INTERLOCK WITH VUV-303
EF-16	CLASSROOM 364	Y		SOFTWARE INTERLOCK WITH VUV-304
EF-17	CLASSROOM 365	Y		SOFTWARE INTERLOCK WITH VUV-305
EF-18	CLASSROOM 408	Y		SOFTWARE INTERLOCK WITH VUV-401
EF-19	BOYS TOILET 361	Y		SCHEDULED
EF-20	GIRLS TOILET 363	Y		SCHEDULED
EF-21	SPECIAL NEEDS	Y		SCHEDULED
EF-101	NEW OFFICE AREA	Y		EXISTING DDC NO NEW WORK
EF-201	KILN		Y	EXISTING SWITCH
EF-202	KITCHEN HOOD		Y	EXISTING SWITCH
EF-232	CLASSROOM 232	Y		SOFTWARE INTERLOCK WITH VUV-208
EF-233	CLASSROOM 233	Y		SOFTWARE INTERLOCK WITH VUV-207
EF-234	CLASSROOM 234	Y		SOFTWARE INTERLOCK WITH VUV-205
EF-235	CLASSROOM 235	Y		SOFTWARE INTERLOCK WITH VUV-206
EF-301	TOILET ROOMS 325 & 325	Y		SCHEDULED
EF-302	TOILETS ROOMS 354 & 356	Y		SCHEDULED
EF-501	POOL LOCKER ROOMS	Y		SOFTWARE INTERLOCK WITH AHU-3W
EF-502	POOL TOILETS	Y		SCHEDULED
EF-504	POOL CONCESSIONS	Y		SCHEDULED

(DWH-401)

(P-DWH)

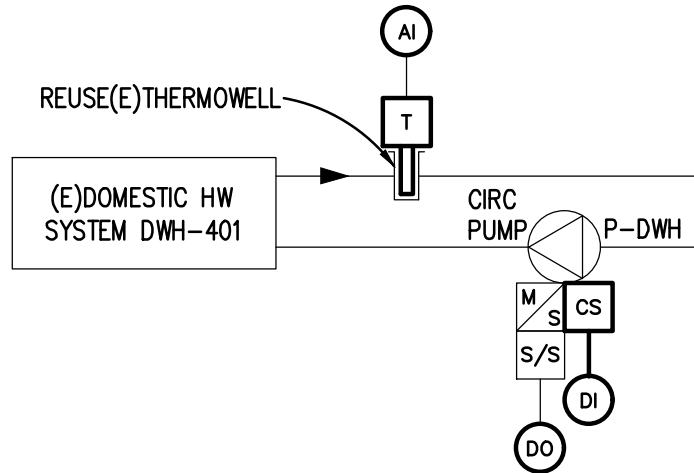
### (E)DOM HW SYSTEM MONITORING & CONTROL

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPLICING OF SENSOR CABLING/WIRING NOT PERMITTED.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

#### SEQUENCE OF OPERATION:

- DDC SHALL ACTIVATE DOMESTIC HW CIRC PUMP BASED ON TIME SCHEDULE. ABNORMAL OPERATING STATUS SHALL ACTIVATE AN ALARM.
- DDC SYSTEM SHALL MONITOR DOMESTIC HW SYSTEM SUPPLY TEMP FOR REMOTE SYSTEM DIAGNOSTIC CAPABILITY BY OWNER.



(P-113A)

(P-113B)

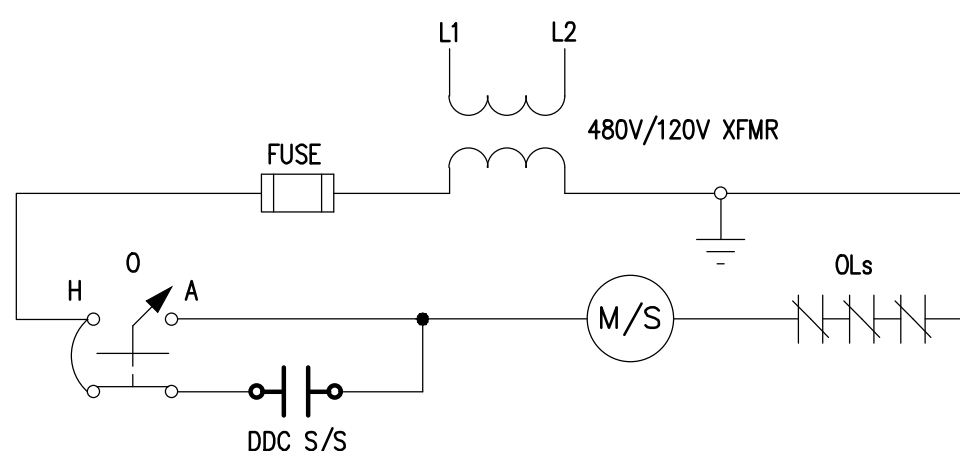
### (E)HOTWATER HEATING PUMPS CONTROL RETROFIT

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACE WITH NEW AS SPECIFIED. EXISTING WIRING MAY BE REUSED IF COMPATIBLE WITH NEW DDC SYSTEM. SPLICING OF SENSOR CABLING/WIRING NOT PERMITTED.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

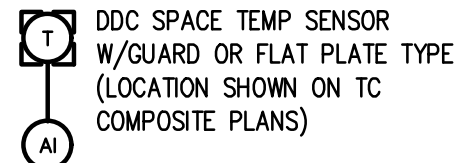
#### SEQUENCE OF OPERATION:

- NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.
- HOT WATER HEATING SYSTEM CIRC PUMPS P-113A & P-113B SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY DDC TO OPERATE CONTINUOUSLY WHEN HWHS SYSTEM IS ENABLED.
  - DDC SHALL ALTERNATE PUMP OPERATION BASED ON RUNTIME HOURS OR AT THE BEGINNING OF EACH MONTH - OPERATOR SELECTABLE.
  - DDC SHALL MONITOR OPERATING STATUS OF EACH PUMP. UPON PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE STANDBY PUMP.



### HWH PUMPS M/S WIRING

TYPICAL



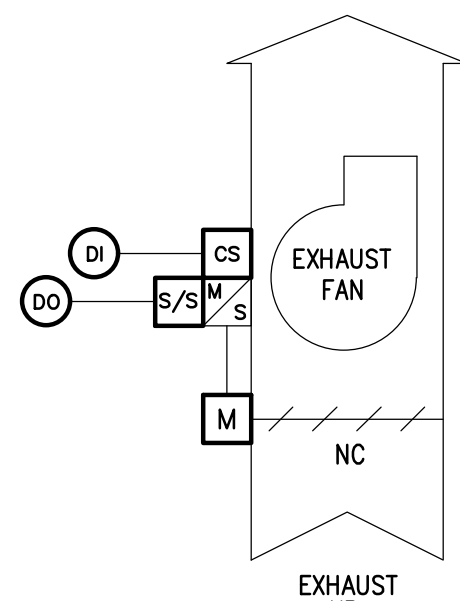
### MDF 338 SPACE TEMP MONITORING

#### NOTES:

- TC CONTRACTOR SHALL PROVIDE SPACE TEMP SENSOR AND CONTROL WIRING TO NEAREST DDC CONTROLLER.
- EXISTING PTAC PACKAGED CONTROLS SHALL REMAIN AS-IS.

#### SEQUENCE OF OPERATION:

- DDC SHALL MONITOR SPACE TEMP AND ACTIVATE ALARM IF HIGH OR LOW LIMIT SETPOINTS ARE REACHED.



(EF-X)

### (E)EXHAUST FAN CONTROL - DDC

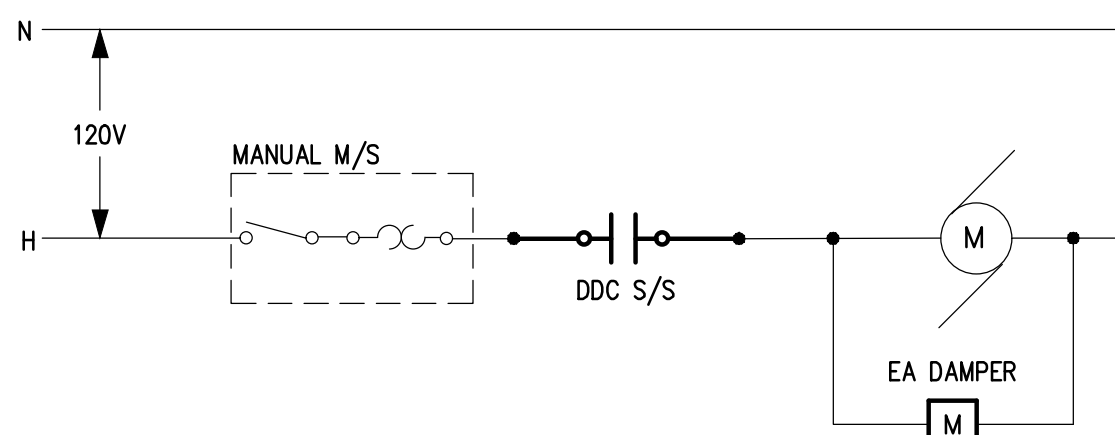
TYPICAL - REFER TO EXHAUST FAN CONTROL SCHEDULE

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNIT.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACED WITH NEW AS SPECIFIED.
- EXISTING CONTROL DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATOR AND REPLACE WITH NEW AS SPECIFIED.

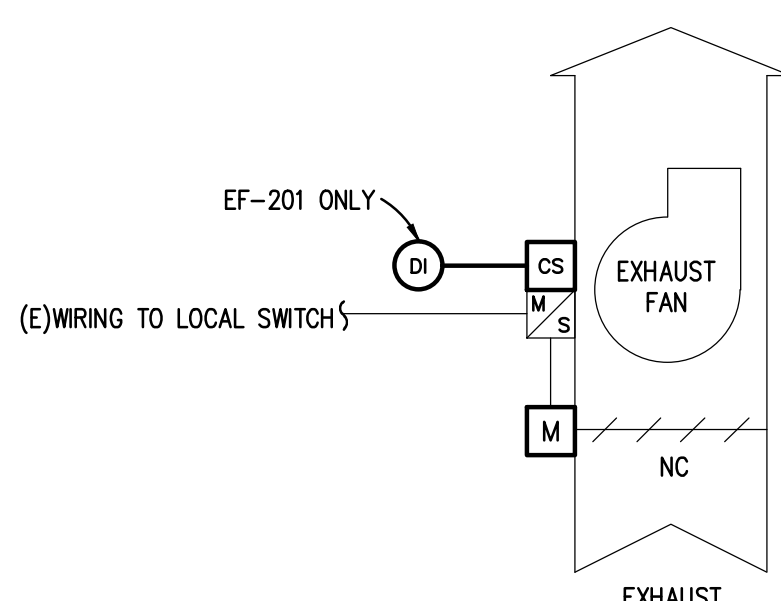
#### SEQUENCE OF OPERATION:

- EF SHALL BE STARTED AND STOPPED BASED ON TIME SCHEDULE. WIRING INTERLOCK SHALL OPEN EXHAUST AIR DAMPER.
- DDC SYSTEM SHALL MONITOR EF RUN STATUS THRU CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM TO BAS.



### EXHAUST FAN M/S WIRING

TYPICAL



(EF-X)

### (E)EXHAUST FAN CONTROL - LOCAL SWITCH

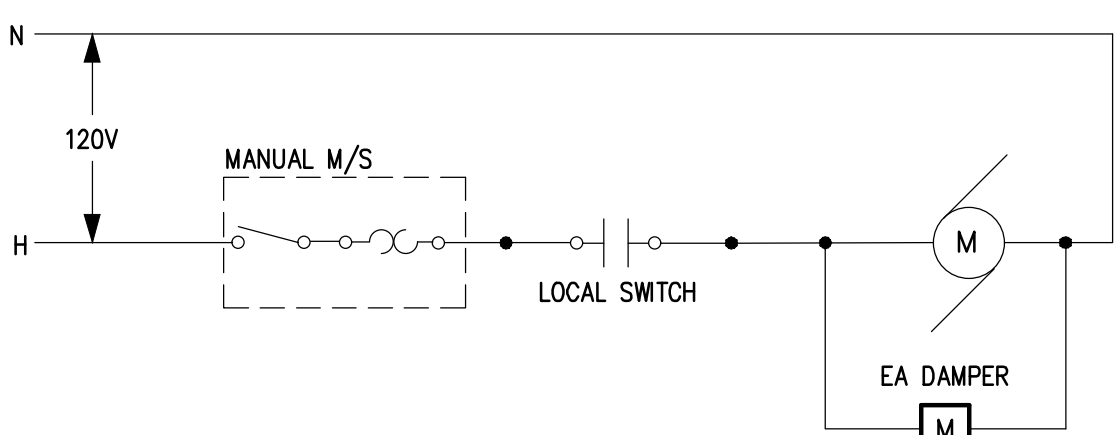
TYPICAL - REFER TO EXHAUST FAN CONTROL SCHEDULE

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNIT.
- REMOVE ALL EXISTING DDC CONTROLS AND REPLACED WITH NEW AS SPECIFIED.
- EXISTING CONTROL DAMPER SHALL REMAIN. TC CONTRACTOR SHALL REMOVE EXISTING DAMPER ACTUATOR AND REPLACE WITH NEW AS SPECIFIED.

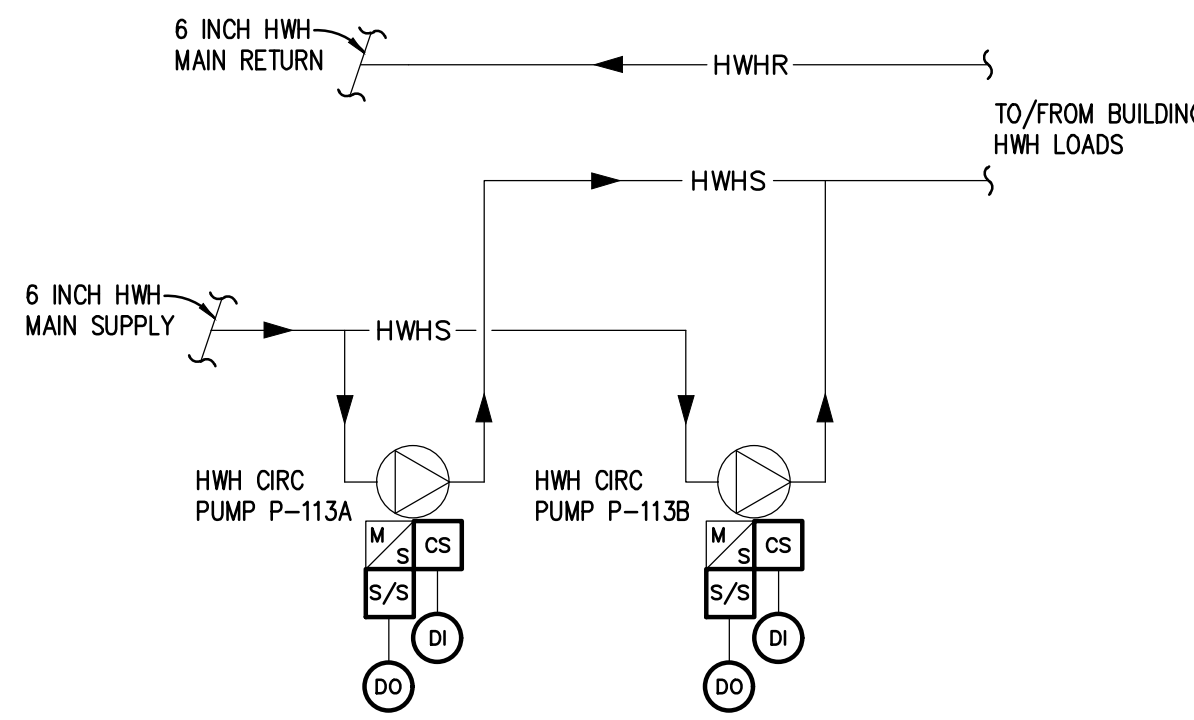
#### SEQUENCE OF OPERATION:

- EXHAUST FAN SHALL BE STARTED AND STOPPED BY LOCAL CONTROL SWITCH. WIRING INTERLOCK SHALL OPEN EXHAUST AIR DAMPER.
- DDC SYSTEM SHALL MONITOR EF RUN STATUS THRU CURRENT SWITCH.



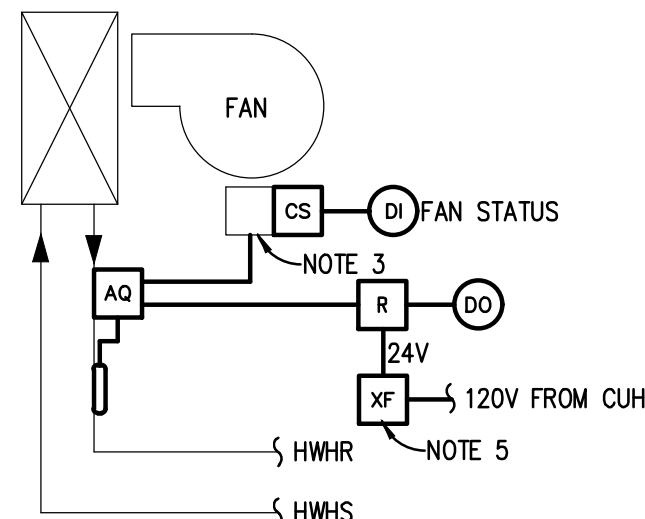
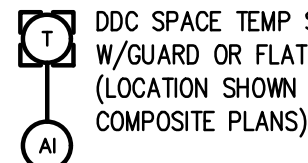
### EXHAUST FAN M/S WIRING

TYPICAL



### TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



(CUH-X)

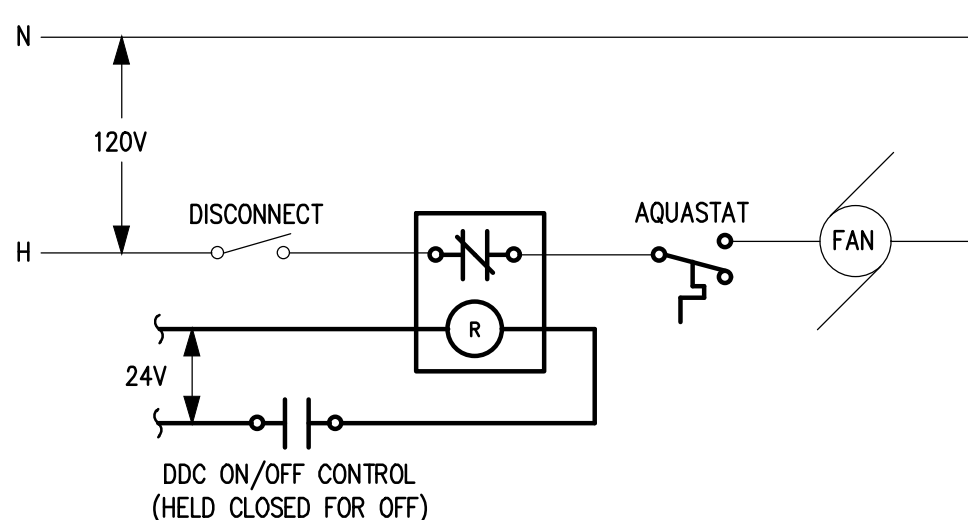
### (E)HWH CUH CONTROL RETROFIT

#### NOTES:

- REFER TO TC COMPOSITE PLAN FOR QUANTITY AND LOCATION OF UNITS.
- TC CONTRACTOR SHALL REMOVE EXISTING CONTROLS AND REPLACE WITH NEW AS SPECIFIED.
- AQUASTAT SHALL BE WIRING IN SERIES WITH FAN CONTROL WIRING CIRCUIT.
- DDC SPACE TEMP SENSORS SHALL REPLACE EXISTING THERMOSTATS.
- TC CONTRACTOR SHALL PROVIDE 24V POWER SUPPLY AS REQUIRED.

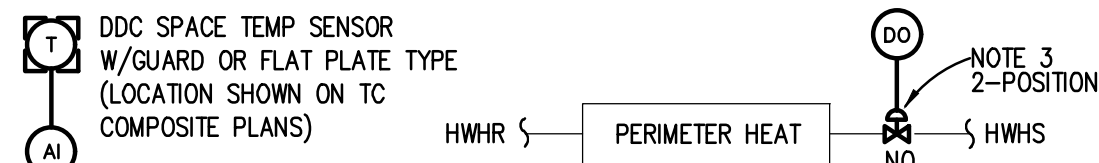
#### SEQUENCE OF OPERATION:

- ALL SETPOINTS AND DEADBANDS SHALL BE ADJUSTABLE THROUGH DDC.
- DDC SHALL ENABLE/DISABLE FAN CIRCUIT AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY. FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQ.
- DDC SHALL MONITOR FAN OPERATION. ABNORMAL OPERATING STATUS SHALL ACTIVATE AN ALARM.



### HWH CUH WIRING

TYPICAL



(CON-X)

(FTR-X)

(RF-X)

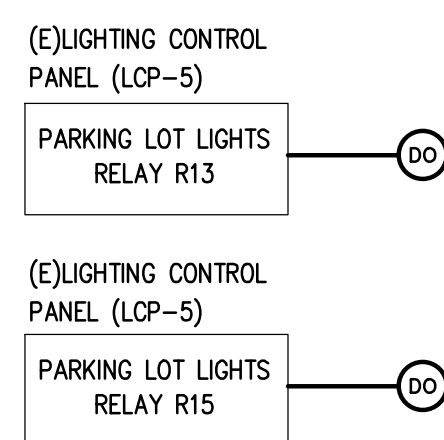
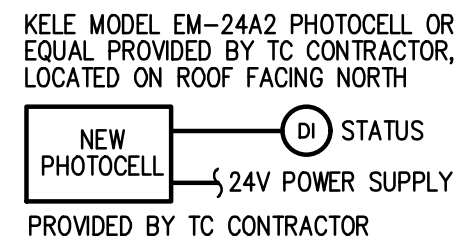
### (E)PERIMETER HEATING CONTROL RETROFIT

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- REMOVE ALL EXISTING CONTROLS AND REPLACE WITH NEW AS SPECIFIED.
- EXISTING HEATING COIL CONTROL VALVE SHALL BE REMOVED AND REPLACED WITH NEW AS SPECIFIED. TC CONTRACTOR IS RESPONSIBLE FOR CONTROL VALVES REPLACEMENT. REFER TO TC COMPOSITE DRAWING FOR CONTROL VALVE SIZING PARAMETERS. EXISTING HWHSR PIPING TO UNIT IS LOCATED IN TUNNEL. EXISTING CONTROL VALVE MAY BE LOCATED IN TUNNEL.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

#### SEQUENCE OF OPERATION:

- ALL SETPOINTS AND DEADBANDS SHALL BE ADJUSTABLE THROUGH DDC.
- DDC SHALL OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 70°F DURING BLDG OCCUPANCY AND 62°F DURING BLDG UNOCCUPANCY.
- DDC SHALL PROVIDE A 2°F DEADBAND AROUND SETPOINTS FOR CONTROL.



(LTS-S)

### (E)PARKING LOT POLE LIGHTING CONTROL RETROFIT

#### NOTES:

- REFER TO TC COMPOSITE PLANS FOR LOCATION OF UNITS.
- EXISTING LIGHTING CONTROL PANEL (LCP-5) SHALL REMAIN. TC CONTRACTOR SHALL REWORK RELAY CONTROL WIRING SO PARKING LOT LIGHTING SHALL BYPASS LCP-5 FOR CONTROL UNDER NEW BAS.
- TC CONTRACTOR SHALL NOTIFY OWNER IF ANY EXISTING COMPONENTS ARE NOT FUNCTIONING PROPERLY FOR OWNER TO ADDRESS.

#### SEQUENCE OF OPERATION:

- DDC SHALL CONTROL PARKING LOT POLE LIGHTS BASED PHOTOCELL ACTIVATION. DDC SHALL MONITOR PHOTOCELL AND ACTIVATE LIGHTS "ON" AT 5 FOOT-CANDELES OR LESS (SUNSET) AND "OFF" (SUNRISE) WHEN PHOTOCELL DEADBAND IS REACHED.
- BAS MAY PROVIDE OVERRIDE "OFF" DURING NIGHT TIME OPERATION (E.G. MIDNIGHT) BASED ON OWNER SCHEDULE IN LIEU OF PHOTOCELL.
- BAS SHALL CONTAIN A SNOW PLOWING SCHEDULE TO ACTIVATE PARKING LOT LIGHTING MANUALLY BY SYSTEM OPERATOR WHEN SNOW PLOWING IS TO OCCUR AT NIGHT.
- DDC MONITORED PHOTOCELL SHALL BE USED FOR "OFF" OVERRIDE CONTROL OF SCHEDULED OPERATION IF DURING DAYLIGHT.



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PBA Project No: 2022.0381

PROJECT TITLE

Wylie Elementary  
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Automation  
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Dexter Community  
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DRAWING TITLE

TEMPERATURE CONTROLS

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AIR HANDLING UNIT SCHEDULE (FOR REFERENCE ONLY)										
UNIT IDENTIFICATION	AREA SERVED	SUPPLY AIRFLOW (CFM)	OA FRESH AIR (PCT)	RETURN AIRFLOW (CFM)	HEATING COIL (GPM)	COOLING COIL (GPM)	CONTROL VALVE TYPE	HWH SUPPLY & RETURN PIPE SIZE TO UNIT	CHW SUPPLY & RETURN PIPE SIZE TO UNIT	REMARKS
AHU-201	CAFETERIA	6,990	23	—	21.0	60.5	3-WAY	1-1/4 INCH	1-1/2 INCH	
AHU-301	MEDIA CENTER	4,240	14.5	—	8.0	32.0	3-WAY	1-1/4 INCH	2 INCH	
AHU-2E	POOL AREA OFFICES	8,480			12.4	—	3-WAY		—	
AHU-3W	POOL LOCKER ROOMS	2,300	100	—	20.0	—	3-WAY		—	

HEATING & VENTILATING UNIT SCHEDULE (FOR REFERENCE ONLY)								
UNIT IDENTIFICATION	AREA SERVED	SUPPLY AIRFLOW (CFM)	OA FRESH AIR (CFM)	RETURN AIRFLOW (CFM)	HEATING COIL (GPM)	CONTROL VALVE TYPE	HWH SUPPLY & RETURN PIPE SIZE TO UNIT	REMARKS
HV-401A	GYM NORTH	10,000	2,000	10,000	69.0	3-WAY	2 INCH	
HV-401B	GYM SOUTH	10,000	2,000	10,000	69.0	3-WAY	2 INCH	

REHEAT COIL SCHEDULE (FOR REFERENCE ONLY)							
UNIT IDENTIFICATION	AREA SERVED	SUPPLY AIRFLOW (CFM)	HEATING COIL (GPM)	CONTROL VALVE TYPE	HWH SUPPLY & RETURN PIPE SIZE TO UNIT	REMARKS	
RHC-1	CORRIDOR 537, OFFICE 527, TRAINER 528, COACH 1 529 & COACH 2 530	1,460	2.2	2-WAY	3/4 INCH		
RHC-2	LOBBY 514, VESTIBULE 515, CORRIDORS 535 & 536, TICKET STATION 532	3,110	7.3	2-WAY	1 INCH		
RHC-3	DIRECTOR 508, SECRETARY 590 & OFFICE 510	760	1.0	2-WAY	3/4 INCH		
RHC-4	CONCESSION LOBBY/SEATING 507 & CORRIDOR 534	3,150	8.0	2-WAY	1 INCH		

FAN COIL UNIT SCHEDULE (FOR REFERENCE ONLY)									
UNIT IDENTIFICATION	AREA SERVED	SUPPLY AIRFLOW (CFM)	OA FRESH AIR (PCT)	HEATING COIL (GPM)	COOLING COIL (GPM)	CONTROL VALVE TYPE	HWH'S SUPPLY & RETURN PIPE SIZE TO UNIT	CHW SUPPLY & RETURN PIPE SIZE TO UNIT	REMARKS
FCU-202	OFFICE 228	95	33	0.5	1.0	2-WAY	3/4 INCH	3/4 INCH	
FCU-306	MEDIA WORKROOM 337	310	24	1.0	2.5	2-WAY	3/4 INCH	3/4 INCH	
FCU-307	WORKROOM 332	310	12	0.5	2.0	2-WAY	3/4 INCH	3/4 INCH	
FCU-308	OFFICE 358	135	12	0.5	1.0	2-WAY	3/4 INCH	3/4 INCH	
FCU-309	OFFICE 359	125	12	0.5	1.0	2-WAY	3/4 INCH	3/4 INCH	
FCU-310	TECH OFFICE 348	265	6	0.5	1.5	2-WAY	3/4 INCH	3/4 INCH	
FCU-401	OFFICE 411	120	25	0.5	1.0	2-WAY	3/4 INCH	3/4 INCH	
FCU-402	OFFICE 412	80	19	0.5	0.75	2-WAY	3/4 INCH	3/4 INCH	
FCU-403	OFFICE 413	95	17	0.5	0.75	3-WAY	3/4 INCH	3/4 INCH	
FCU-404	WAITING 409	70	46	0.75	1.5	2-WAY	3/4 INCH	3/4 INCH	
FCU-405	OFFICE 414	100	16	0.5	0.75	2-WAY	3/4 INCH	3/4 INCH	
FCU-406	OFFICE 415	100	16	0.5	0.75	2-WAY	3/4 INCH	3/4 INCH	
FCU-407	OFFICE 404	100	16	0.5	0.75	2-WAY	3/4 INCH	3/4 INCH	
FCU-408	OFFICE 405	100	13	0.5	1.0	2-WAY	3/4 INCH	3/4 INCH	

VERTICAL UNIT VENTILATOR SCHEDULE (FOR REFERENCE ONLY)									
UNIT IDENTIFICATION	AREA SERVED	SUPPLY AIRFLOW (CFM)	OA FRESH AIR (CFM)	HEATING COIL (GPM)	COOLING COIL (GPM)	CONTROL VALVE TYPE	HWH SUPPLY & RETURN PIPE SIZE TO UNIT	CHW SUPPLY & RETURN PIPE SIZE TO UNIT	REMARKS
VUV-201	ART 225	1,500	375	5.0	12.0	2-WAY	1 INCH	1-1/2 INCH	EXHAUST FAN
VUV-202	MUSIC 229	1,500	375	5.0	12.0	2-WAY	1 INCH	1-1/2 INCH	EXHAUST FAN
VUV-203	CLASSROOM 237	1,250	375	4.0	9.0	2-WAY	1 INCH	1-1/2 INCH	RELIEF DAMPER & EXHAUST FAN
VUV-204	CLASSROOM 338	1,250	375	4.0	9.0	2-WAY	1 INCH	1-1/2 INCH	RELIEF DAMPER & EXHAUST FAN
VUV-205	CLASSROOM 234	750	375	3.0	7.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER & EXHAUST FAN
VUV-206	CLASSROOM 235	750	375	3.0	7.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER & EXHAUST FAN
VUV-207	CLASSROOM 233	750	375	3.0	7.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER & EXHAUST FAN
VUV-208	CLASSROOM 232	750	375	3.0	7.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER & EXHAUST FAN
VUV-301	CLASSROOM 330	1,250	375	4.5	9.0	2-WAY	1 INCH	1-1/4 INCH	EXHAUST FAN
VUV-302	CLASSROOM 341	1,250	375	4.5	9.0	2-WAY	1 INCH	1-1/4 INCH	EXHAUST FAN
VUV-303	CLASSROOM 342	1,250	375	4.5	9.0	2-WAY	1 INCH	1-1/4 INCH	EXHAUST FAN
VUV-304	CLASSROOM 364	1,250	375	4.5	9.0	2-WAY	1 INCH	1-1/4 INCH	EXHAUST FAN
VUV-305	CLASSROOM 365	1,250	375	4.5	9.0	2-WAY	1 INCH	1-1/4 INCH	EXHAUST FAN
VUV-306	CLASSROOM 327	1,000	375	3.5	8.0	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN TUNNEL
VUV-307	CLASSROOM 336	1,000	375	3.0	8.0	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN TUNNEL
VUV-308	CLASSROOM 337	1,000	375	3.0	8.0	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN TUNNEL
VUV-309	CLASSROOM 304	750	375	3.5	8.0	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-310	CLASSROOM 303	750	375	3.5	7.5	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-311	CLASSROOM 302	750	375	3.5	7.5	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-315	CLASSROOM 351	1,000	375	3.5	8.0	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-316	CLASSROOM 350	1,000	375	3.5	8.0	2-WAY	3/4 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-317	CLASSROOM 349	1,000	375	4.0	9.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-401	CLASSROOM 408	1,500	375	5.0	10.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-402	CLASSROOM 407	1,500	375	4.5	10.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-403	CLASSROOM 403	1,250	375	4.0	9.5	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-404	CLASSROOM 402	1,250	375	4.0	9.5	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-405	CLASSROOM 418	1,000	375	4.0	9.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-406	CLASSROOM 419	1,000	375	4.0	9.0	2-WAY	1 INCH	1-1/4 INCH	RELIEF DAMPER IN HOOD
VUV-407	STAFF LOUNGE 416	750	375	2.5	6.5	2-WAY	3/4 INCH	1 INCH	RELIEF DAMPER IN HOOD
VUV-408	STAFF LOUNGE 416	750	375	2.5	6.5	2-WAY	3/4 INCH	1 INCH	RELIEF DAMPER IN HOOD FOR VUV-407

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



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Wylie Elementary  
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Dexter Community  
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DRAWING TITLE

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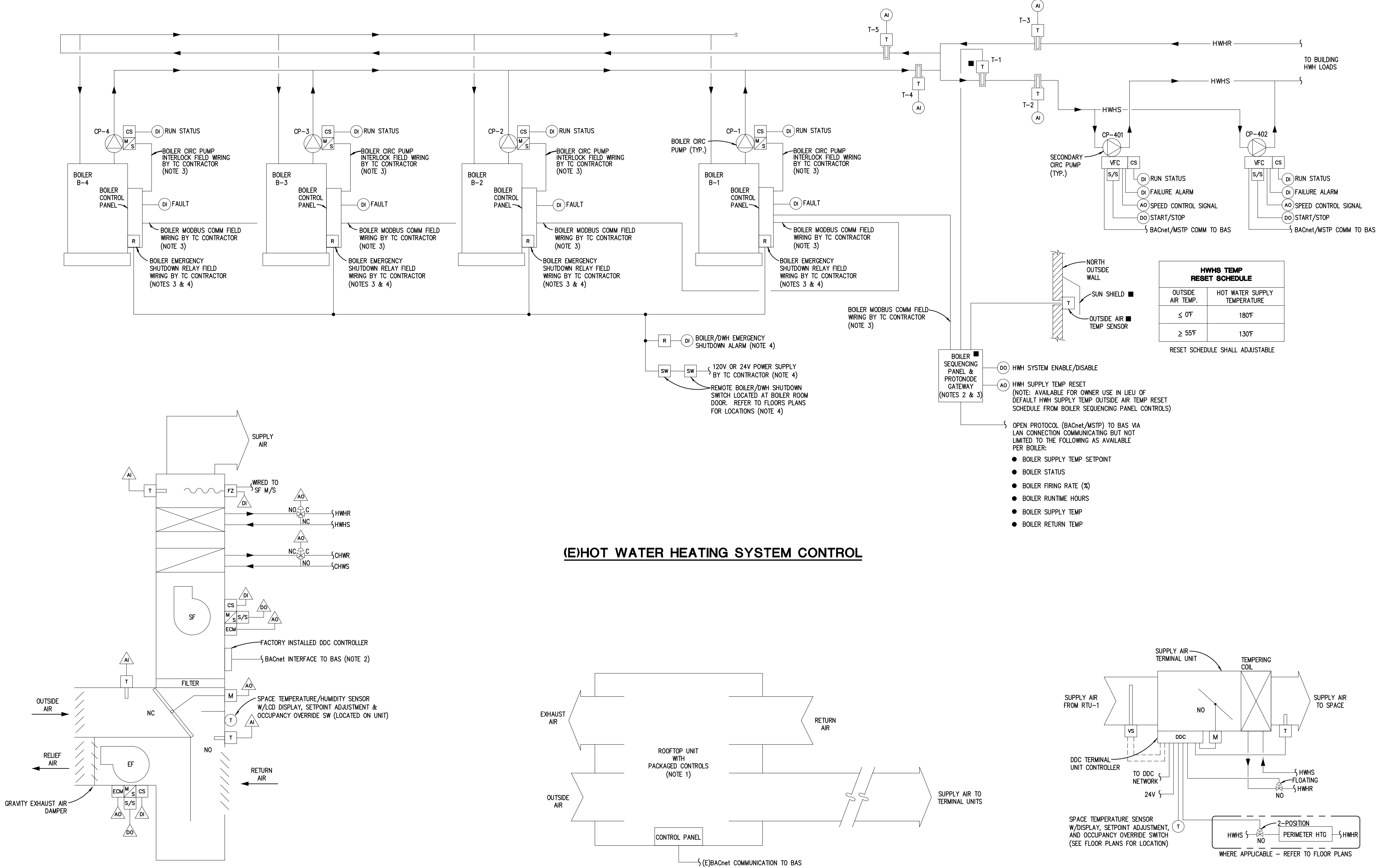
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TC WORK SHOWN WAS COMPLETED UNDER PREVIOUS PROJECT  
FOR REFERENCE ONLY - USE FOR GRAPHIC DISPLAY GENERATION

TC GENERAL NOTES  
TC GENERAL NOTES ON DRAWING M0.2 APPLY TO THIS DRAWING.



(E)HOT WATER HEATING SYSTEM CONTROL

(E)VERTICAL UNIT VENTILATOR CONTROL

- NOTES:
1. TC CONTRACTOR SHALL VERIFY BACnet COMMUNICATION INTERFACE WIRING FROM RTU UNIT CONTROL PANEL TO BAS NETWORK SUPERVISORY CONTROLLER. TC CONTRACTOR SHALL VERIFY THE FOLLOWING READ/WRITE POINTS ARE OPERATING PROPERLY FROM BAS. UPDATE GRAPHICS TO N4 SERVER AS REQUIRED.
- OCCUPANCY MODE SCHEDULER (FROM BAS)
  - EFFECTIVE OCCUPANCY MODE (TO BAS)
  - SUPPLY FAN RUN STATUS (TO BAS)
  - EXHAUST FAN RUN STATUS (TO BAS)
  - OCCUPIED SPACE HEATING TEMP SETPOINT (FROM BAS)
  - UNOCCUPIED SPACE HEATING TEMP SETPOINT (FROM BAS)
  - OCCUPIED SPACE COOLING TEMP SETPOINT (FROM BAS)
  - UNOCCUPIED SPACE COOLING TEMP SETPOINT (FROM BAS)
  - SPACE HUMIDITY SETPOINT (FROM BAS)
  - DISCHARGE AIR TEMP (TO BAS)
  - HEATING/COOLING MODE STATUS (TO BAS)
  - HOT WATER VALVE POSITION (TO BAS)
  - CHILLED WATER VALVE POSITION (TO BAS)
  - ECONOMIZER DAMPER POSITION (TO BAS)
  - DIRTY FILTER STATUS (TO BAS)
  - MISC UNIT TEMPERATURE MONITORING (TO BAS)
  - TEMP SENSOR FAILURE ALARMS (TO BAS)
  - HOT WATER COIL FREEZE PROTECTION ALARM (TO BAS)
  - UNIT SAFETY OUTOUT ALARMS (TO BAS)
  - OTHER MISC ALARMS (TO BAS)

(E)RTU-1 CONTROL

- NOTES:
1. TC CONTRACTOR SHALL VERIFY BACnet COMMUNICATION INTERFACE WIRING FROM RTU UNIT CONTROL PANEL TO BAS NETWORK SUPERVISORY CONTROLLER. TC CONTRACTOR SHALL VERIFY THE FOLLOWING READ/WRITE POINTS ARE OPERATING PROPERLY FROM BAS. UPDATE GRAPHICS TO N4 SERVER AS REQUIRED.
- OCCUPANCY MODE SCHEDULER (FROM BAS)
  - EFFECTIVE OCCUPANCY MODE (TO BAS)
  - SUPPLY FAN COMMAND STATUS (TO BAS)
  - SUPPLY FAN RUN STATUS (TO BAS)
  - SUPPLY FAN SPEED COMMAND STATUS (TO BAS)
  - RELIEF (EXHAUST) FAN COMMAND STATUS (TO BAS)
  - RELIEF (EXHAUST) FAN RUN STATUS (TO BAS)
  - DISCHARGE AIR TEMP SETPOINT (FROM BAS)
  - EFFECTIVE DISCHARGE AIR TEMP SETPOINT (TO BAS)
  - DISCHARGE AIR TEMP (TO BAS)
  - RETURN AIR TEMP (TO BAS)
  - OUTDOOR AIR TEMP (TO BAS)
  - RETURN AIR HUMIDITY (TO BAS)
  - COOLING MODE STATUS (TO BAS)
  - ON DAMPER MINIMUM CM SETPOINT (FROM BAS)
  - DAMPER OUTPUT STATUS (TO BAS)
  - DAMPER ECONOMIZER ENABLE STATUS (TO BAS)
  - COMPRESSOR ENABLE STATUS, EACH STAGE (TO BAS)
  - DIRTY FILTER STATUS (TO BAS)
  - DUCT STATIC PRESSURE SETPOINT (FROM BAS)
  - DUCT STATIC PRESSURE (TO BAS)
  - BUILDING STATIC PRESSURE SETPOINT (FROM BAS)
  - BUILDING STATIC PRESSURE (TO BAS)
  - MISC UNIT TEMPERATURE MONITORING (TO BAS)
  - TEMP SENSOR FAILURE ALARMS (TO BAS)
  - UNIT SAFETY OUTOUT ALARMS (TO BAS)
  - OTHER MISC ALARMS (TO BAS)

(E)VAV AIR TERMINAL UNIT CONTROL



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