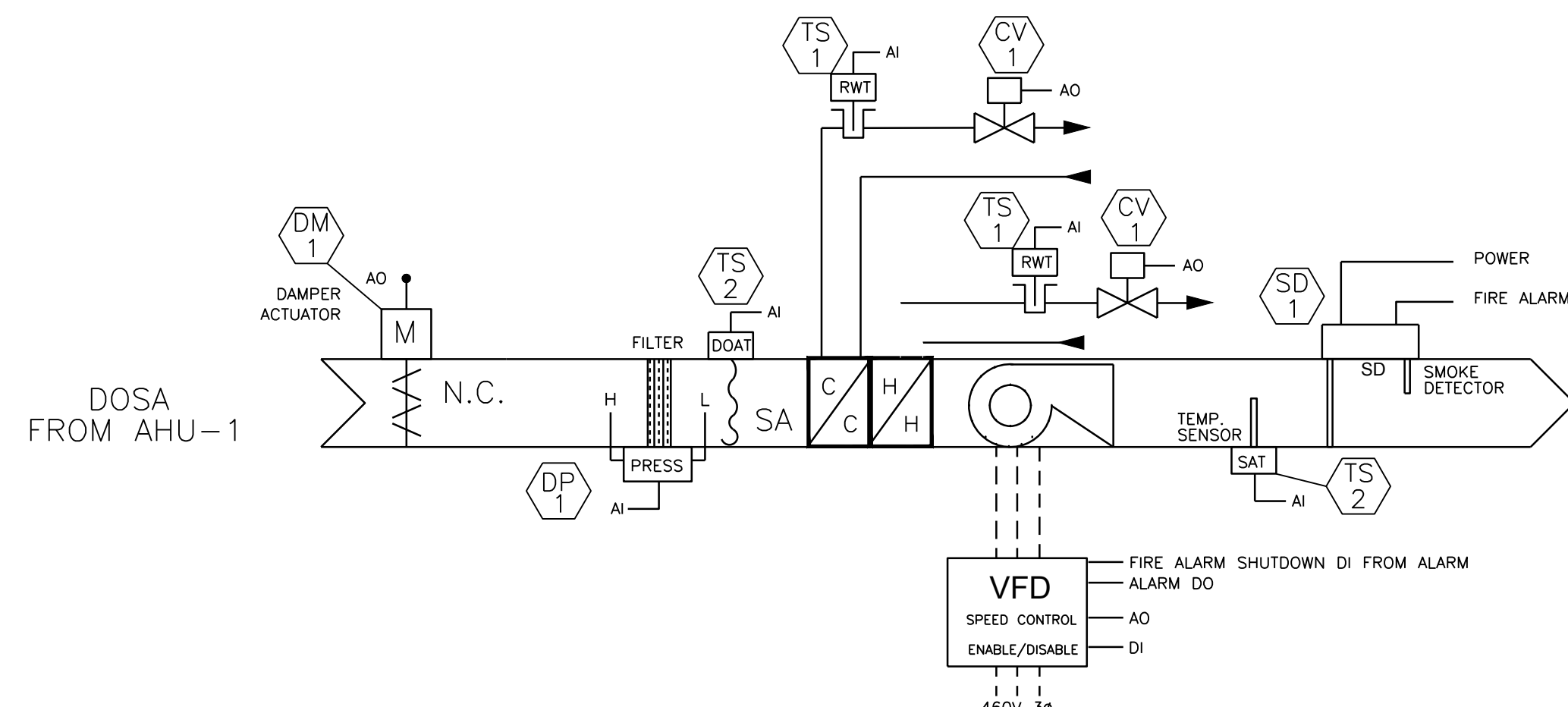
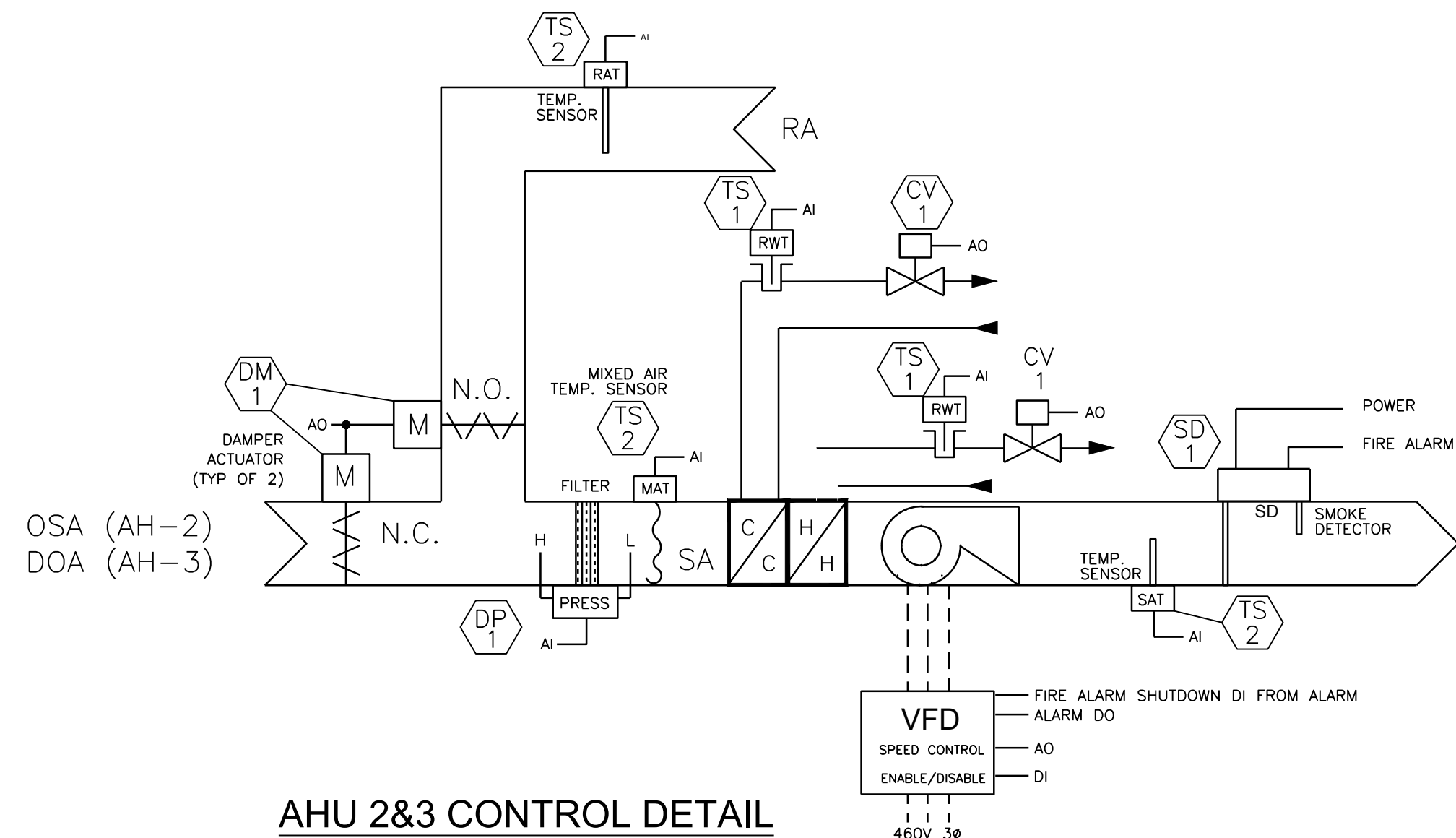


AHU 1 CONTROL DETAIL



AHU 4 CONTROL DETAIL



AHU 2&3 CONTROL DETAIL

CONTROL POINTS (show on graphics)

**AH-1**  
**INPUTS**  
 DEDICATED OUTSIDE AIR TEMP AFTER HEAT EXCHANGER  
 DEDICATED OUTSIDE AIR TEMP BEFORE HEAT EXCHANGER  
 EXHAUST AIR TEMP FROM BUILDING  
 EXHAUST AIR TEMP TO EXTERIOR  
 VFD ALARM (EXHAUST)  
 VFD ALARM (OUTSIDE AIR)  
 FIRE ALARM SHUTDOWN (EMERGENCY STOP CONTACTS AT VFD 1)  
 FIRE ALARM SHUTDOWN (EMERGENCY STOP CONTACTS AT VFD 2)  
 PRESSURE SENSOR #1 LOCATE AT AH-3  
 AIR FLOW MONITORING STATION - EXHAUST AIR  
 AIR FLOW MONITORING STATION - OUTSIDE AIR  
**OUTPUTS**  
 VFD 1 ENABLE  
 VFD 1 SPEED  
 VFD 2 ENABLE  
 VFD 2 SPEED

CONTROL POINTS (show on graphics)

**AH 4**  
**INPUTS**  
 SUPPLY AIR TEMP  
 OUTSIDE AIR TEMP FROM AH-1  
 CHILLED WATER RETURN TEMP  
 HOT WATER RETURN TEMP  
 VFD ALARM - FAN  
 SUPPLY DUCT PRESSURE SENSOR  
 SPACE PRESSURE SENSOR - LOCATE AT FC-6  
 SPACE PRESSURE SENSOR - LOCATE ON DUCT ABOVE ROOM 112  
**OUTPUTS**  
 THERMOSTAT - MEN'S LOCKER RM  
 THERMOSTAT - WOMEN'S LOCKER RM  
 AVERAGE  
 VFD ENABLE  
 VFD SPEED  
 CHILLED WATER VALVE CONTROL  
 HOT WATER VALVE

CONTROL POINTS (show on graphics)

**AH 2&3 - CONSTANT VOLUME**  
**INPUTS**  
 SUPPLY AIR TEMP  
 RETURN AIR TEMP  
 MIXED AIR TEMP  
 CHILLED WATER RETURN TEMP  
 HOT WATER RETURN TEMP  
 VFD ALARM - FAN  
 SUPPLY DUCT PRESSURE SENSOR  
 SUPPLY DAMPER FEEDBACK  
 RETURN DAMPER FEEDBACK  
 FILTER DIFF. PRESSURE  
 CO2 SENSOR/TEMP IN GYM  
 CO2 SENSOR/TEMP IN GYM  
**OUTPUTS**  
 VFD 1 ENABLE  
 VFD 1 SPEED  
 CHILLED WATER VALVE  
 HOT WATER VALVE  
 OUTSIDE AIR DAMPER (AH-3) DOA (AH-2)  
 RETURN AIR DAMPER  
 SUPPLY DAMPER

**CHILLER**  
**INPUTS**  
 BACNET MODULE FROM CHILLER  
 KILOWATTS  
 HEAD PRESSURE  
 PERCENTAGE OF FULL LOAD  
 CHILLER ALARM  
**OUTPUTS**  
 SUPPLY H2O TEMP  
 RETURN H2O TEMP  
 PUMP 1A ALARM  
 PUMP 1B ALARM  
 PUMP 1A SPEED  
 PUMP 1B SPEED  
 CHILLER TEMP RESET THROUGH BACNET

**BOILER**  
**INPUTS**  
 BACNET INTERFACE WITH BOILER CONTROLLER  
 SUPPLY WATER TEMP  
 RETURN WATER TEMP  
 PUMP P2A STATUS  
 PUMP P2B STATUS  
**OUTPUTS**  
 BACNET INTERFACE WITH BOILER CONTROLLER  
 SYSTEM ENABLE  
 SUPPLY WATER TEMP RESET  
 PUMP 2A ENABLE  
 PUMP 2A SPEED  
 PUMP 2B ENABLE  
 PUMP 2B SPEED

**EXTERIOR LIGHTS**  
**OUTPUTS**  
 4 ZONES (6 DISCRETE OUTPUTS)  
 COORDINATE W/ ELECTRICAL

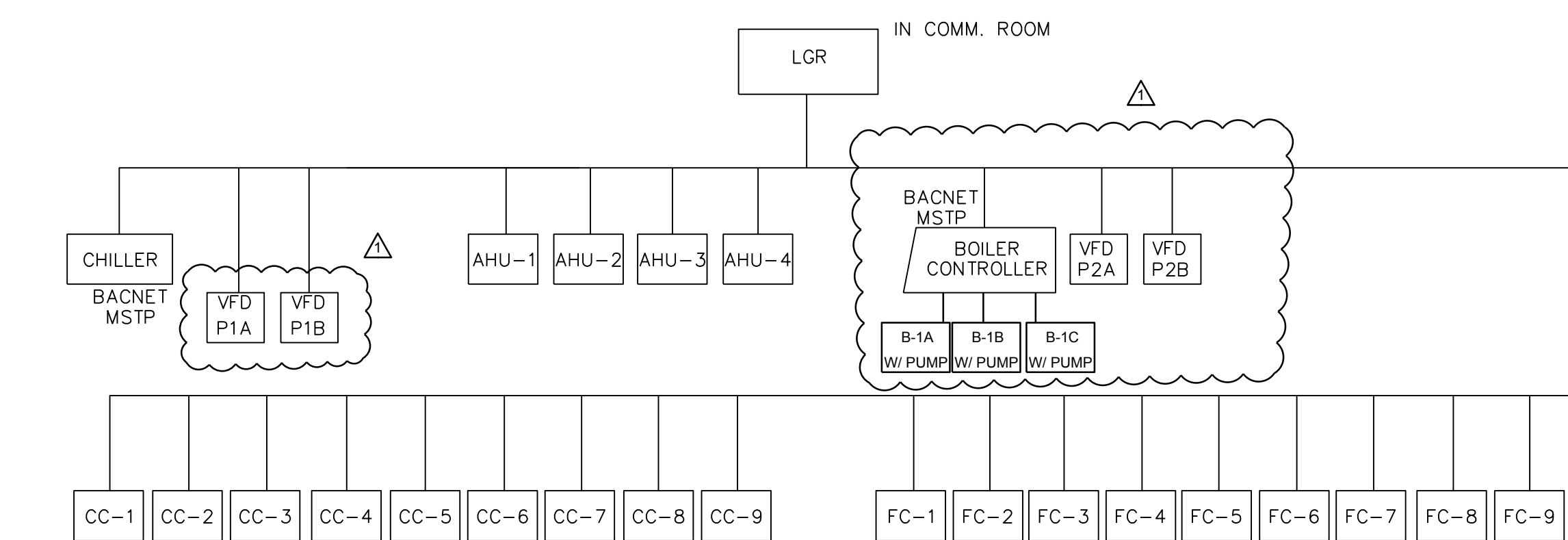
**FAN COILS**  
**INPUTS**  
 THERMOSTAT  
 SUPPLY AIR TEMP  
 FIRE ALARM SHUTDOWN  
**OUTPUTS**  
 FAN ENABLE  
 CHILLED WATER VALVE CONTROL  
 HOT WATER VALVE CONTROL

**CEILING CASSETTE UNITS**  
**INPUTS**  
 THERMOSTAT  
**OUTPUTS**  
 FAN ENABLE  
 CHILLED WATER VALVE CONTROL  
 HOT WATER VALVE CONTROL

**DOMESTIC WATER BOILER**  
**INPUTS**  
 SUPPLY WATER TEMP  
 TANK WATER TEMP  
 RECIRC RETURN TEMP  
 BACNET CONNECTION TO TEMPTRACKER  
**OUTPUTS**  
 BOILER CONTROLLER ENABLE  
 RECIRCULATION PUMP

CONTROL SCHEDULE

CM 1	CONTROL MODULE, ALC S SERIES SEE EACH AIR HANDLER FOR INPUTS AND OUTPUTS
CM 2	CONTROL MODULE, ALC M SERIES W/ BACNET CONNECTION SEE BOILER AND CHILLER POINTS LIST FOR INPUTS AND OUTPUTS
CM 3	CONTROL MODULE, ALC Z SERIES SEE FAN COIL & CEILING CASSETTE POINTS LIST
CM 4	CONTROL MODULE, ALC Z SERIES FOR EXTERIOR LIGHTING CONTROL. HARDWIRED POINTS TO POWERLINK PANEL AT ELECTRICAL ROOM
CM 5	CONTROL MODULE, ALC Z SERIES SEE DOMESTIC BOILER INTERFACE TO CONTROLLER
R 1	ROUTER ALC I GR. CONNECT TO (E) CAMPUS NETWORK PROVIDE PATCH CABLE
T 1	THERMOSTAT, ALC MODEL ZS PRO W/ SETPOINT ADJUSTMENT & TIMED LOCAL OVERRIDE
T 2	THERMOSTAT, ALC MODEL ZS PLUS, WALL SENSOR ONLY WITH CO2 W/ PROTECTIVE CAGE
T 3	THERMOSTAT, ALC MODEL ZS ALC, WALL SENSOR ONLY W/ PROTECTIVE CAGE
DT 1	DUCT TEMP SENSOR - 10K-2-D-XX, DUCT MOUNTED TEMPERATURE SENSOR WITH INTEGRATED HANDY BOX, USED FOR SUPPLY AND RETURN AIR TEMP. BAPI
DT 2	AVERAGING TEMP SENSOR - 10K-2-A-XX, OUTSIDE AIR AVERAGING TEMP SENSOR WITH INTEGRATED EXTERIOR BOX. BAPI.
AT 1	AVERAGING TEMP SENSOR - 10K-2-A-XX, MIXED AIR AVERAGING TEMP SENSOR WITH INTEGRATED HANDY BOX. BAPI.
PX 1	PRESSURE TRANSMITTER - 0-5VDC OUTPUT, TO BE USED ACROSS FILTER TO DETERMINE FILTER STATUS & SUPPLY DUCT PRESSURE. DWYER 604A OR VERIS IND.
CS 1	CURRENT SENSOR - 0-5VDC OR 4-20mA OUTPUT CURRENT SENSOR, TO DETERMINE MOTOR AMPERAGE AND STATUS. VERIS INDUSTRIES OR NIELSEN KULJIAN
CV 1	CONTROL VALVE - 2 WAY VALVE (SEE M1.3) WITH AN ELECTRONIC ACTUATOR WITH EITHER 0-5VDC OR 4-20mA COMMAND SIGNAL. VALVE AND ACTUATOR SHALL BE BELIMO.
DM 1	DAMPER ACTUATOR - SIZE 125% OF DAMPER AREA. WITH 0-10VDC OR 4-20mA CONTROL SIGNAL. ACTUATOR SHALL BE BELIMO.
LP 1	LIQUID PRESSURE SENSOR - DWYER SERIES 634A, 4-20mA SIGNAL 0-100 PSI RANGE. PROVIDED BY CONTROLS CONTRACTOR, WELD-O-LET INSTALLED BY PLUMBING CONTRACTOR.
LT 1	IMMERSION SENSOR - 10K-2-I-XX, WP IMMERSION TEMP SENSOR WITH STAINLESS STEEL THERMAL WELL AND WEATHER PROOF ENCLOSURE. PROVIDED BY CONTROLS CONTRACTOR, THERMAL WELL INSTALLED BY MECHANICAL PIPING CONTRACTOR.
PS 1	H2O DIFF. PRESSURE TRANSMITTER - 4-20mA OUTPUT, FOR SYSTEM PRESSURE CONTROL. PROVIDE ISOLATION VALVE AT CONNECTION TO PIPING. DWYER INSTRUMENTS 634-E-1
FM 1	FLOW METER, SIGMET MODEL 5924-551 FIELD MOUNT 4-20 MA OUTPUT TO EMS. CHILLED WATER INSERTION FITTING 6" PIPE W/ PADLEWHEEL. HOT WATER INSERTION FITTING 6" PIPE W/ METAL PADLEWHEEL.
FA 1	FIRE ALARM SHUTDOWN, COORDINATE WITH FIRE ALARM CONTRACTOR FOR UNIT SHUTDOWN UPON FIRE ALARM. PROVIDE ANY NEEDED INPUT POINTS OR RELAYS. USE EMERGENCY STOP CONTACTS AT VFD
AF 1	AIR FLOW MONITORING STATION, PARAGON MODEL FE1500 FOR EXHAUST AIR & OFFE1500 AT OUTSIDE AIR. INSTALL AT AH-4 EXHAUST AIR AND INTAKE AIR AT LOCATION PER MANUFACTURER'S REQUIREMENTS.



CONTROL TOPOGRAPHY  
NO SCALE

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<p><b>AMADOR WHITTLE ARCHITECTS, INC.</b></p>	<p>28328 AGOURA ROAD, SUITE 203          AGOURA HILLS, CA 91301          (818) 530-3659 (415) 974-0071</p>
<p><b>MOORPARK COLLEGE GYMNASIUM RENOVATION</b></p> <p>7075 CAMPUS RD,          MOORPARK, CA          93021  <b>BACKCHECK SUBMITTAL</b></p>	
<p>NOTE: THIS SHEET IS ONE OF A SET OF DOCUMENTS WHICH INCLUDES, BUT IS NOT LIMITED TO, DRAWINGS AND SPECIFICATIONS ADDRESSING ALL TRADES. GENERAL CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL BIDDERS WITH A FULL SET OF CONSTRUCTION DOCUMENTS. ALL BIDDERS SHALL REVIEW THE ENTIRE SET OF DOCUMENTS. IF THERE IS A CONFLICT BETWEEN DISCIPLINES, THE MOST EXPENSIVE OPTION SHALL BE BID.</p>	
REVISIONS 07-25-2018, ADDENDUM #2	DATE: 03/26/18 DRAWN: HMJS CHECK: HMPW JOB NO:
<p><b>MECHANICAL CONTROLS</b></p>	
<p><b>M7.00</b></p>	