ADDENDUM NO. 1

May 25, 2022

THOMAS JEFFERSON MIDDLE SCHOOL CHILLER REPLACEMENT AND FLINT LAKE ELEMENTARY SCHOOL AIR HANDLING UNITS REPLACEMENT AND RELATED WORK
Valparaiso, IN 46385

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated May 5, 2022, by Gibraltar Design. Acknowledge receipt of the Addendum in the space provided on the Proposal Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 1-1 through ADD 1-2 and attached Addendum No. 1 from Gibraltar Design dated May 24, 2022 consisting of 2 pages, Specification Section 23 09 93 - Sequence of Operation, Specification Section 26 29 15 - Motor Starters, and 8 Drawings.

A. SPECIFICATION SECTION 00 00 20 - TABLE OF CONTENTS

1. **Add:**

   Specification Section 26 29 15 - Motor Starters

B. SPECIFICATION SECTION 01 12 00 - MULTIPLE CONTRACT SUMMARY

1. **BID CATEGORY NO. 1 - MECHANICAL**

   1. **Replace:**

      Specification Section 23 09 93 - Sequence of Operations with the attached revised section.

2. **Add:**

   Specification Section 26 29 15 - Motor Starters

ADDENDUM ONE

Addendum One (AD.01) to the drawings and specifications prepared by Gibraltar Design and The Skillman Corporation for **Thomas Jefferson MS Chiller Replacement and Flint Lake ES Air Handling Units Replacement** for Valparaiso School Corporation, Valparaiso, Indiana.

All Contractors bidding on this project shall read all of the items covered below and shall comply with all of the requirements as set forth, including any necessary refinements or additions generated by this Addendum and required by the intent of the original BID CATEGORY NO. Documents. All Contractors shall acknowledge on their bid form that they have received this Addendum and include the appropriate content of same within their bid proposal.

SPECIFICATIONS

1. **Specification Section 23 09 93 Sequence of Operation**
   A. Replace Specification Section 23 09 93, Sequence of Operation, with Specification Section 23 09 93 included in this Addendum.
2. **Specification Section 26 29 15 Motor Starters**
   A. Add Specification Section 26 29 15, Motor Starters, included in this Addendum, to the Project Manual.

DRAWINGS – Thomas Jefferson MS (None)

DRAWINGS – Flint Lake ES Drawings

3. **Sheet M-402**
   A. Refer to revised full size drawing sheet included in this Addendum for the following revisions:
      1. Removal of existing AHU-B5 and installation of new AHU-B5 kitchen makeup air to the cook hood.
4. **Sheet M-501**
   A. Refer to revised, full size drawing sheet included in this Addendum for added Multiple coil piping details for both cooling and heating.
5. **Sheet M-502**
   A. Refer to revised, full size drawing sheet included in this Addendum for AHU-B5 installation above ceiling of Kitchen Dry Storage room with access to both sides of Unit G.

6. Sheet M-601

A. Refer to revised, full size drawing sheet included in this Addendum for the following revisions

1. Addition of AHU-B5 performance and physical dimensions to AIR HANDLING UNIT SCHEDULE.
    a. Equipment schedule Note #16 added
    b. Revised Note #9.
    c. Add coil water pressure drops to heating and cooling coils.
    d. Relocated chilled water flow diagram from drawing M-801 to M-601 drawing
2. Add Schedule Note #4 to Control Valve Schedule and Heating 3-way control valve to AHU-B5.

7. Sheet M-801

A. Refer to revised, full size drawing sheet included in this Addendum for addition of AHU-M5 controls and interlock with Kitchen exhaust Fan.

8. Sheet E-202

A. Refer to revised, full size drawing sheet included in this Addendum for the following revisions:

1. Replacing existing motor starter and electrical connections to the air handling unit B-5 being replaced.
2. Adding power circuit for lights and receptacle(s) in new AHU-B5.

9. Sheet E-204

B. Refer to revised, full size drawing sheet included in this Addendum for the following revisions:

1. Add power circuits for lights and receptacles in the new air handling units.
2. Add power circuit for added temperature control panel for Air Handling Unit B-5.

10. Sheet E-701

A. Refer to revised, full size drawing sheet included in this Addendum for the following revisions:

1. Adding the Motor Starter Schedule and Panel Schedules for Panel "KL1" and Panel "KH1".
2. Modifying panelboard schedules.

Pages 1 through 2, inclusive, Specification Sections 23 09 93 and 26 29 15, and Eight (8) full-size Drawings constitute the total makeup of **Addendum One**.

GIBRALTAR DESIGN

Joseph P. Briggs

SECTION 23 09 93
SEQUENCE OF OPERATION

1 General

1.1 Section Includes

A. Building Pressure Control.

B. Chiller Control

C. Chilled water pump control

D. VAV Air Handling Unit Control

1.2 Related Sections

A. Section 23 05 00 - General HVAC Requirements.

B. Section 23 05 13 - Motors.

C. Section 23 05 14 - Variable Frequency Drives.

D. Section 23 05 93 - Testing, Adjusting and Balancing.

E. Section 23 09 13 - Automatic Temperature Control System.

F. Section 23 09 63 - Instrument Devices.

G. Section 23 81 26 - Split Air Conditioning Units.

1.3 System Description

A. This Specification Section defines the manner and method by which the building automation system functions. Requirements for each type of building system control are specified herein. Equipment, devices, and system components required for the building automation system are specified in other Specification Sections.

1.4 Submittals

A. Submit submittals under provisions of Specification Division 1.

B. Submit diagrams indicating each mechanical system controlled and the respective control system components required, including component setting(s), component adjustable range of control and component operating limits.

C. Submit with diagrams the mechanical system written sequence of operation description.

D. Include flow diagrams for each control system, graphically depicting control logic.

E. Include draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and values.

1.5 Project Record Documents

A. Submit documents under provisions of Specification Division 1.

B. Accurately record actual set points and settings of controls, including changes to sequences made after submission of shop drawings.

2 Products

Not Used.

3 Execution

3.1 Centralized Equipment Coordination:

A. Provide through the building automation system, control panels, control devices, graphic solutions, and software programs a master software program to coordinate equipment operation. The coordination program shall provide the following function:

1. Outdoor Air Temperature:

   a. Provide one (1) outdoor air temperature sensor, located on the exterior north side of this building, installed at representative outdoor temperature sensing location to calculate the outdoor air temperature. Provide software and error checking to exclude unreliable temperature readings.

   b. Provide an information block within each Air Handling Unit graphic that indicates the current outdoor air temperature reading.

2. Relative Humidity:

   a. Provide one (1) outdoor air relative humidity sensor, located on the exterior of this building, installed at representative outdoor humidity sensing location to calculate the outdoor air relative humidity. Provide software and error checking to exclude unreliable relative humidity readings.

   b. Provide an information block within each Air Handling Unit graphic that indicates the current outdoor air relative humidity reading.

3. Outdoor Air Dew-point Control:

a. Using the outdoor air humidity reading and the outdoor air temperature reading, calculate the outdoor air dew-point. Based upon this dew-point calculation, index the operating mode of the unit ventilator economizer controls as follows:

(1) If the outdoor air temperature is less than 65 degrees Fahrenheit (adjustable) and calculated dew-point is less than 50 degrees Fahrenheit (adjustable), then allow the unit economizer to control on mixed air dry bulb temperature.

(2) If the outdoor air temperature is greater than 65 degrees Fahrenheit (adjustable) or the calculated dew-point temperature is greater than 50 degrees Fahrenheit (adjustable) then disable the economizer control and enable the minimum unit outdoor air control.

b. Provide a continuous monitoring of the calculated dew-point. Provide an information block within each System graphic that indicates the current outdoor air dew-point.

c. If the calculation of the outdoor air dew-point fails or the building automation system communication link fails provide a default to disable the economizer control (revert to minimum unit outdoor air control).

3.2 Chilled Water System Control:

A. Chilled Water System consists of one (1) Packaged Air Cooled Chiller with constant volume chilled water primary pumping and chilled water variable volume secondary building system pumping. Chiller shall be disabled and exterior primary piping/chiller evaporator drained during the "cooling shutdown months"; exterior chilled water primary piping/chiller evaporator shall be refilled prior to start-up of the chilled water system.

B. Chiller Plant Control

1. The Temperature Control Contractor shall provide the Chilled Water Plant Control System (CPCS) outlined below and be responsible for the installation as outlined, including the building automation system controller, control wiring, programming, checkout and Valparaiso Community Schools personnel training on the system.

2. A BACnet interface from the chiller manufacturer management panel shall be provided that shall transmit the points from the chiller control panel to the CPCS as listed in this Specification Section.

3. Temperature Control Contractor shall provide all devices; including the chilled water circulating pump variable frequency drives (VFD). The sensor wells, flow meter, and differential pressure taps shall be provided by the Temperature Control Contractor and installed by the Mechanical Contractor. All control interlock wiring, conduit, supports, etc. required by chiller control panel, chiller plant control system, and all field mounted sensors/devices shall be installed and coordinated by the Temperature Control Contractor including the water flow sensor and remote water pressure transducer.

C. Manual/Automatic Pump Control:

1. The chiller and pump(s) shall function independently of the DDC controller when their individual Hand/Off/Automatic (HOA) switches are in the hand position. The chiller start/stop shall be controlled by their respective chiller control panel.

2. The chiller and pump(s) start/stop shall be controlled by the DDC controller when their individual Hand/Off/Automatic (HOA) switches are in the automatic position.

3. Building Power Failure (Cooling Mode): Temperature Control System shall automatically enable/restart circulating pumps upon restoration of building electrical power. Coordinate/interlock sequence with the chiller plant control system operation.

D. Chiller System Startup:

1. The chilled water system startup shall be initiated manually (local or remote) by Schools personnel at the beginning of each cooling season. Thereafter, the CPCS shall be initiated by an enable/disable command as transmitted from the BAS system.

2. The CPCS shall operate the chilled water system in the summer mode when the outdoor air temperature is equal to or greater than 55 degrees F. (adjustable). If the outdoor air temperature is less than 50 degrees F (adjustable) and a start command is received from the building automation system, it shall be ignored as an invalid command.

a. This command may be overridden by School's personnel with the proper password.

E. Chilled Water Set Point:

1. The chilled water supply temperature set point for the CPCS shall be transmitted via the building automation system. The chiller leaving water temperature shall be determined by the CPCS to meet the leaving chilled water temperature set point.

a. The chilled water supply temperature set point shall be 44 degrees F. (adjustable).

F. Chiller Plant Control System Operation:

1. Summer Operation:

a. Upon receiving an enable signal from the building automation system, the chilled water system shall be enabled when any building zone assigned to the system is in the occupied mode.

b. The primary chilled water and secondary chilled water circulating pump(s) shall be enabled. Primary chilled water pump shall operate in lead/lag to the corresponding chiller operation to maintain the primary chilled water loop temperature while the secondary pump(s) respond to the remote differential pressure sensor (reuse existing) to maintain the building system flow requirements.

c. On proof of continuous chilled water flow and a time lag of 2 minutes (adjustable), the chiller shall start and operate under control of the appropriate chiller control panel as described in Specification Section 23 64 25 - Air Cooled Water Chiller.

d. When the building automation system transmits a chilled water disable command, the chiller shall begin sequencing to the off position. The chilled water circulating pumps shall continue to operate for an additional 15 minutes (adjustable) or until the chiller controller indicates a safe shutdown condition, whichever is longer.

e. Failure Sequence: If the chiller fails, as indicated by the chiller plant control system, indicate a "chiller failed" alarm via the BAS. The chilled water pumps shall continue to operate for an additional 15 minutes (adjustable) or until the chiller controller indicates a safe shutdown condition, whichever is longer.

2. Winter Operation:

a. When the building automation system switches to winter operation, disable the CPCS, chiller control panel, and operate the chilled water circulating pump(s) for an additional 15 minutes (adjustable) prior to disabling pump operation or until the chiller control panel indicates a safe shutdown condition, whichever is longer.

b. The school shall manually shutdown/disable the chilled water system and perform exterior primary chilled water system piping/chiller evaporator drain down as required for safe freeze protection/control.

3. All safety controls to be furnished and adjusted by the Chiller Manufacturer. The Temperature Control Contractor shall provide all interlock and control wiring between the chiller control panel and all field-mounted sensors supplied by the Chiller Manufacturer. The conduit and wiring from the chilled water plant control system panel (within the building automation system) to chiller control panels shall be by the Temperature Control Contractor.

G. System Monitoring:

1. Provide the monitoring and control points as indicated on Contract Documents. All points and control settings shall be capable of being read and adjusted at a local/remote building automation system terminal.

2. Provide a color graphic for the chilled water system as indicated within Specification Section 23 09 13 - Automatic Temperature Control System.

H. Point List (Minimum):

1. The following points shall be transmitted/received by the HPCS through the BACnet interface to the BMS. The points listed shall be duplicated for each chilled water pump, refrigerant circuit, etc. (when applicable).

   a. Chiller Enable/Disable Command (each chiller)

   b. Chiller Status (each chiller)

   c. Chiller Failure Alarm (each chiller)

   d. Building Chilled Water Set Point

   e. Building Chilled Water Supply Temperature

   f. Building Chilled Water Return Temperature

   g. Building Chilled Water Flow (GPM) from Return Water Flow Meter

   h. Outdoor Air Temperature (Existing Global)

   i. Outdoor Air Humidity (Existing Global)

   j. Primary Chilled Water Pump Start/Stop

   k. Primary Chilled Water Pump Status

   l. Secondary Chilled Water Pump VFD Enable/Disable Command (each pump)

   m. Secondary Chilled Water Pump VFD Status (each pump)

   n. Secondary Chilled Water Pump VFD Operating Hertz (each pump)

   o. Secondary Chilled Water Pump VFD Failure Alarm (each pump)

   p. Chiller Flow Switch Status

   q. Chiller Chilled Water Set Point

   r. Chilled Water System Differential Pressure

3.3 Building Pressure Control:

A. Provide outdoor and indoor static pressure probes for system serving Air Handling Unit control shall integrate into new control system. Terminate indoor static pressure lines within an empty thermostat cover.

B. Through an electronic differential pressure transmitter, maintain the building zone static pressure to plus 0.05-inch WC (adjustable).

C. Provide proportional integral control to modulate the associated relief damper(s) through a continuously variable output.

D. ***The Testing, Adjusting and Balancing Contractor shall establish building air pressurization set point.***

E. The relief damper operation shall be coordinated with the hour/day/month scheduling program operation of the associated systems. When the systems are not in operation the relief damper(s) shall not be in operation (fully closed).

3.4 Variable Air Volume Units: AHU-A1 and AHU-C1

A. Mode of Operation:

1. Each air handler variable frequency speed drive (VFD) shall have a Hand/Off/Automatic switch. In the hand position, the fan shall run continuously and its speed shall be controlled by a manual speed control integral to the VFD. All temperature and fan system safeties shall remain functional as described below. In the automatic position, the DDC system shall control all system functions as described.

2. The air handler shall be in either the occupied or unoccupied mode as determined by the day/night control panel. The BAS system shall coordinate the operation of the air handler with the occupied /unoccupied operation of the air handler's associated terminal devices.

B. Safety Interlocks:

1. Freeze Protection: Through a minimum of two hardwired freezestat interlocks, stop the fan and close the outdoor air damper when the heating coil discharge air temperature drops below 40 degrees F. Also, fully open the unit valves to the coil, start heating coil circulating pump, , start the heating coil recirculating pump,**>** and signal an alarm.

2. Smoke Detection: Stop the fan system and close the outside air damper through a hardwired interlock, when smoke is detected by either duct air smoke detector.

C. Supply Air Pressure Control:

1. On any command to start, start the VFD and ramp its speed to maintain the static pressure setpoint without exceeding the system high static limit. The system pressure setpoint shall be slowly ramped from zero to the normal system pressure. The system supply pressure shall be measured at a point 80 percent down the length of each main duct run, as indicated on Drawings. If more than one duct pressure transmitter is indicated, the lowest end of run duct pressure shall be used to maintain system pressure.

2. Provide a pressure transmitter at the fan discharge to limit the VFD speed command so that the maximum discharge pressure is not exceeded. Maximum discharge static pressure requirements shall be determined during the system air balance at start-up.

3. The DDC controller shall monitor the inlet damper position of the associated terminal devices. The system duct pressure setpoint shall be slowly ramped up or down to allow the maximum inlet damper position to be 95 percent open. Provide independently adjustable increase and decrease ramp rates and high and low duct pressure setpoint limits.

D. Occupied Mode:

1. Morning Start-up:

a. Utilize an optimum start routine based on outside and inside air temperatures to adjust the air handler start time so that the space shall be at setpoint at its scheduled occupancy time.

b. Warm-up: When the outside temperature is below 50 degrees F and the air system is commanded to start, the outdoor air damper shall remain fully closed and the return air damper shall remain fully open. Disable the cooling control. Through the BAS, the associated terminal devices shall be commanded to their warm-up mode. Maintain a discharge temperature of 95 degrees F until the return air temperature is 70 degrees F. The BAS shall then command the terminal devices to their normal mode and the air handler shall index to normal operation.

2. Normal Operation:

a. Outdoor/Return Air Damper Control:

1) If the outdoor air temperature is below 20 degrees F or above 60 degrees F, use the minimum outdoor air duct, close the main outside air damper and modulate the minimum damper and return damper with the air flow station to obtain the minimum outdoor air volume scheduled on Drawings. Provide an adjustable minimum outdoor air volume setting.

2) If the outdoor air temperature is between 20 degrees F and 60 degrees F, modulate the supply air and return air dampers from their minimum positions to maintain the mixed air temperature setpoint.

3) The mixed air temperature setpoint shall be 55 degrees F.

4) During cooling operation, the mixed air temperature setpoint shall be set to 55 degrees F. During heating operation, the mixed air temperature setpoint shall be set to the supply air temperature setpoint.

5) The mixed air temperature setpoint shall be reset from 55 to 65 degrees F as the outdoor air temperature varies from 55 to 0 degrees F.

b. Temperature Control:

1) Maintain the supply air temperature at setpoint by modulating the heating valve and cooling valve in sequence.

2) Maintain the supply air temperature at setpoint by modulating the heating valve and cooling coil valve in sequence

3) The supply air temperature setpoint shall be reset from 55 to 65 degrees F as the outside air temperature varies from 65 to 0 degrees F.

4) The supply air temperature setpoint shall be 55 degrees F.

c. Humidity Control:

1) If the return air humidity becomes too high, the DDC system shall override the normal supply air control. The cooling coil discharge temperature shall then be maintained at 55 degrees F and the terminal unit supply air temperature maintained at setpoint by space temperature control modulating the hot water reheat coils on the VAV boxes.

E. Unoccupied Mode:

1. Upon command from the day/night schedule open the return air damper and, close the outside air dampers. When the outside air temperature is below 35 degrees F, open the unit valves to 10 percent open (adjustable).

2. The air handler's associated terminal unit devices shall maintain their individual unoccupied temperature setpoint as described in their sequence of operation.

3. The DDC system shall monitor the associated zone temperatures. When any zone temperature falls below the unoccupied temperature setpoint, start the air handler and maintain a 95 degrees F discharge air temperature. The outside air damper shall remain closed. The BAS shall command the associated terminal units to their warm-up mode. When the zone temperature reaches the unoccupied temperature setpoint stop the air handler and command the associated terminal units to their unoccupied mode.

4. The BAS shall monitor each zone temperature and provide high and low temperature alarm for both occupied and unoccupied modes of operation.

F. Outdoor Air Damper Override: Provide from the day/night panel through the DDC system a manual override of the outdoor air damper to allow the unit to operate in the cooling mode with the outdoor air damper fully closed and the return damper open.

G. Monitoring: Provide monitoring and control points as indicated on Drawings. Provide a graphic for each air handler on all system graphic stations.

3.5 Variable Air Volume Handling Units – AHU-B1

A. Mode of Operation:

1. The air handler variable frequency speed drive (VFD) shall have a Hand/Off/Automatic switch. In the hand position, the fan shall run continuously and its speed shall be controlled by a manual speed control integral to the VFD. All temperature and fan system safeties shall remain functional as described below. In the automatic position, the DDC system shall control all system functions as described.

2. The air handler shall be in either the occupied or unoccupied mode as determined by the day/night scheduling program provided from the BAS. The BAS system shall coordinate the operation of the air handler with the occupied /unoccupied operation of the air handler's associated terminal devices.

B. Safety Interlocks:

1. Freeze Protection: Through a minimum of two hardwired freezestat interlocks, stop the fan and close the outdoor air damper when the heating coil discharge air temperature drops below 40 degrees F. Also, fully open the unit valves to the coil, and signal an alarm.

2. Smoke Detection: Stop the fan system and close the outside air damper through a hardwired interlock, when smoke is detected by either duct air smoke detector.

C. Supply Air Pressure Control:

1. On any command to start, start the VFD and ramp its speed to maintain the static pressure setpoint without exceeding the system high static limit. The system pressure setpoint shall be slowly ramped from zero to the normal system pressure. The system supply pressure shall be measured at a point 80 percent down the length of each main duct run, as indicated on Drawings. If more than one duct pressure transmitter is indicated, the lowest end of run duct pressure shall be used to maintain system pressure.

2. Provide a pressure transmitter at the fan discharge to limit the VFD speed command so that the maximum discharge pressure is not exceeded. Maximum discharge static pressure requirements shall be determined during the system air balance at start-up.

3.

D. Occupied Mode:

1. Morning Start-up:

a. Utilize an optimum start routine based on outside and inside air temperatures to adjust the air handler start time so that the space shall be at setpoint at its scheduled occupancy time.

b. Warm-up: When the outside temperature is below 50 degrees F and the air system is commanded to start, the outdoor air damper shall remain fully closed and the return air damper shall remain fully open. Disable the DX cooling control. Through the BAS, the associated terminal devices shall be commanded to their warm-up mode. Maintain a discharge temperature of 95 degrees F until the return air temperature is 70 degrees F. The BAS shall then command the terminal devices to their normal mode and the air handler shall index to normal operation.

2. Normal Operation:

a. Outdoor/Return Air Damper Control:

1) Provide Room CO2 sensors where indicated on the drawings to maintain an average 700ppm (minimum) to 1000ppm (maximum) CO2 levels and establish the minimum outdoor air damper position. The minimum airflow scheduled on the drawings are adjustable minimum outdoor air volume setting.

2) If the outdoor air temperature is below 20 degrees F or above 60 degrees F, use the outdoor air measuring station and modulate the outdoor air damper to maintain the minimum outdoor air volume scheduled on Drawings. Provide an adjustable minimum outdoor air volume setting.

3) If the outdoor air temperature is between 30 degrees F and 60 degrees F, modulate the supply air and return air dampers from their minimum positions to maintain the mixed air temperature setpoint.

4) The mixed air temperature setpoint shall be 55 degrees F.

5) The mixed air temperature setpoint shall be reset from 55 to 65 degrees F as the outdoor air temperature varies from 55 to 0 degrees F.

6) During cooling operation, the mixed air temperature setpoint shall be set to 55 degrees F. During heating operation, the mixed air temperature setpoint shall be set to the supply air temperature setpoint.

b. Temperature Control:

1) Maintain the supply air temperature at setpoint by modulating the heating valve and staging the DX cooling coil in sequence. Disable the freezestat interlock when the DX coil is in operation.

a) The condensing unit shall have a hardwire interlock with the air handling unit supply fan to prove airflow. The condensing unit shall be locked out below 45 degrees F.

2) The supply air temperature setpoint shall be reset from 55 to 65 degrees F as the outside air temperature varies from 65 to -10 degrees F.

3) The supply air temperature setpoint shall be 55 degrees F.

c. Humidity Control:

1) If the return air humidity in the return air duct exceeds 60 percent RH, the DDC system shall override the normal cooling supply control. The cooling coil discharge temperature shall then be maintained at 55 degrees F and the room supply air temperature maintained at room setpoint by modulating the FPVAV box hot water reheat coil.

E. Unoccupied Mode:

1. Upon command from the day/night schedule, stop the supply fan, close the outside air damper, open the return air damper, and fully close the unit valve and lockout the outdoor condensing unit. When the outside air temperature is below 35 degrees F, open the unit control valves to 10%.

2. The air handler's associated fan powered VAV terminal devices shall maintain their individual unoccupied temperature setpoint as described in their sequence of operation.

3. The DDC system shall monitor the associated zone temperatures. When any zone temperature falls below the unoccupied temperature setpoint, start the air handler and maintain a 95 degrees F discharge air temperature. The outside air damper shall remain closed. The existing BAS shall command the associated terminal units to their warm-up mode. When the zone temperature reaches the unoccupied temperature setpoint stop the air handler and command the associated terminal units to their unoccupied mode.

F. Outdoor Air Damper Override: Provide through the DDC system a manual override of the outdoor air damper to allow the unit to operate in the cooling mode with the outdoor air damper fully closed and the return damper open.

G. Monitoring: Provide monitoring and control points as indicated on Drawings. Provide a graphic for each air handler on all system graphic stations.

3.6 Variable Air Volume Air Handling Unit AHU-B2

A. Mode of Operation:

1. The air handler variable frequency speed drive (VFD) shall have a Hand/Off/Automatic switch. In the hand position, the fan shall run continuously and its speed shall be controlled by a manual speed control integral to the VFD. All temperature and fan system safeties shall remain functional as described below. In the automatic position, the DDC system shall control all system functions as described.

B. The air handler shall be in either the occupied or unoccupied mode as determined by the day/night control panel. The BAS system shall coordinate the operation of the air handler with the occupied /unoccupied operation of the air handler's associated terminal devices.

C. Provide, through the BAS communications network, control and monitoring points that are listed on the drawings see the M-800 series drawings.

D. Safety Interlocks:

1. Freeze Protection: Through a minimum of two hardwired freezestat interlocks, stop the fan and close the outdoor air damper when the heating coil discharge air temperature drops below 40 degrees F. Also, modulate open the unit valves to the coil, and signal an alarm.

2. Smoke Detection: Stop the fan system and close the outside air damper through a hardwired interlock, when smoke is detected by either duct air smoke detector.

E. Supply Air Pressure Control:

1. On any command to start, start the VFD and ramp its speed to maintain the static pressure setpoint without exceeding the system high static limit. The system pressure setpoint shall be slowly ramped from zero to the normal system pressure. The system supply pressure shall be measured at a point 80 percent down the length of each main duct run, or as indicated on Drawings.

2. Provide a pressure transmitter at the fan discharge to limit the VFD speed command so that the maximum discharge pressure is not exceeded. Maximum discharge static pressure requirements shall be determined during the system air balance at start-up.

F. Occupied Mode:

1. Morning Start-up:

a. Utilize an optimum start routine based on outside and inside air temperatures to adjust the air handler start time so that the space shall be at setpoint at its scheduled occupancy time.

b. Warm-up: When the outside temperature is below 50 degrees F and the air system is commanded to start, the outdoor economizer / ventilation air dampers shall remain fully closed and the return air damper shall remain fully open. Disable the cooling control. Through the BAS, the associated terminal devices shall be commanded to their warm-up mode. Maintain a discharge temperature of 95 degrees F until the return air temperature is 70 degrees F. The BAS shall then command the terminal devices to their normal mode and the air handler shall index to normal operation.

2. Normal Operation:

a. Outdoor/Return/Relief Air Damper Control:

1) If the outdoor air temperature is below 20 degrees F or above 60 degrees F, use the minimum ventilation air duct, close the main outside air damper and modulate the minimum damper and return damper with the air flow station to obtain the minimum outdoor air volume scheduled on Drawings.

2) Provide Room CO2 sensors where indicated on the drawings to maintain an average 700ppm (minimum) to 1000ppm (maximum) CO2 levels and establish the minimum outdoor air damper position. The minimum airflow scheduled on the drawings are adjustable minimum outdoor air volume setting.

3) Provide a differential air pressure control with proportion output to control existing relief exhaust fan EF-B11 VFD variable speed drive and gymnasium/dining room to 0.05" w.c. positive air pressure to the kitchen.

   a) Provide an outdoor and indoor static pressure probes for system serving each existing Classroom Pods, ancillary spaces building pressure control shall integrate into new control system. Terminate indoor static pressure lines within an empty thermostat cover.

   b) Through a DDC differential pressure transmitter, maintain the building zone static pressure to plus 0.05-inch WC (adjustable).

4) If the outdoor air temperature is between 35 degrees F and 60 degrees F, modulate the economizer / ventilation air dampers and return air dampers from their minimum positions to maintain the mixed air temperature setpoint.

5) The mixed air temperature setpoint shall be 55 degrees F.

6) During cooling operation, the mixed air temperature setpoint shall be set to 55 degrees F. During heating operation, the mixed air temperature setpoint shall be set to the supply air temperature setpoint.

7) The mixed air temperature setpoint shall be reset from 55 to 65 degrees F as the outdoor air temperature varies from 55 to 0 degrees F.

b. Temperature Control:

1) Maintain the supply air temperature at setpoint by modulating the heating valve and cooling valve .in sequence.

2) The supply air temperature setpoint shall be reset from 55 to 100 degrees F as the outside air temperature varies from 65 to -10 degrees F

3) The supply air temperature setpoint shall be 55 degrees F.

c. Humidity Control:

1) If the return air humidity becomes too high, the DDC system shall override the normal cooling control. The cooling coil discharge temperature shall then be maintained at 55 degrees F and the supply air temperature maintained at setpoint by space temperature control modulating the terminal unit hot water reheat coils on the fan powered VAV boxes.

G. Unoccupied Mode:

1. Upon command from the day/night schedule, stop the supply fan, close the economizer/ventilation air dampers, open the return air damper, and fully close the unit valves. When the outside air temperature is below 35 degrees F, open the unit valves to 10 percent of fully open.

2. The fan will start upon any one of the vav terminal units calling for heat or cooling from the respective room sensors unoccupied setback temperature setting.

3. The air handler's associated terminal devices shall maintain their individual unoccupied temperature setpoint as described in their sequence of operation.

4. The DDC system shall monitor the associated zone temperatures. When any zone temperature falls below the unoccupied temperature setpoint, start the air handler and maintain a 95 degrees F discharge air temperature. The outside air damper shall remain closed. The BAS shall command the associated terminal units to their warm-up mode. When the zone temperature reaches the unoccupied temperature setpoint stop the air handler and command the associated terminal units to their unoccupied mode.

5. The BAS shall monitor each zone temperature and provide high and low temperature alarm for both occupied and unoccupied modes of operation.

H. Ventilation Air Damper Override: Provide from the day/night panel through the DDC system a manual override of the ventilation air damper to allow the unit to operate in the cooling mode with the economizer / ventilation air dampers fully closed and the return damper open.

I. Monitoring: Provide monitoring and control points as indicated on Drawings. Provide a graphic for each air handler on all system graphic stations.

3.7 Constant Volume: AHU-B3 (Gymnasium)

A. Mode of Operation:

1. All equipment described is to operate in the automatic position of the motor starter Hand/Off/Automatic switch under normal conditions. When in the hand position, the fan shall operate continuously. All temperature and fan system safeties shall remain functional as described below. In the automatic position, the temperature control panel shall control all system functions as described.

2. The air handler shall have an occupied and an unoccupied heating space temperature setpoint. The air handler shall be in either the occupied or unoccupied mode as determined by the day/night scheduling program within the BAS. The space temperature setpoint shall be adjustable through the air handler DDC controller and through the Building Automation System (BAS) remote terminal.

B. Safety Interlocks:

1. Freeze Protection: Through a minimum of two hardwired freezestat interlocks, stop the fan and close the outdoor air damper when the heating coil discharge air temperature drops below 45 degrees F. Also, fully open the heating valves to the coils and signal an alarm.

2. Smoke Detection: Stop the supply fan and relief fan system and close the outside air dampers through a hardwired interlock, when smoke is detected by either duct smoke detector.

C. Occupied Mode:

1. Morning Start-up:

a. Utilize an optimum start routine based on outside and inside air temperatures to adjust the air handler start time so that the space shall be at setpoint at its scheduled occupancy time.

b. Warm-up: When the outside temperature is below 50 degrees F and the air system is commanded to start, the outdoor air damper shall remain fully closed and the return air damper shall remain fully open. Enable the heating control until the return air temperature is 70 degrees F. The system shall then index to normal operation.

2. Normal Operation:

a. Outdoor/Return Air Damper Control:

1) Provide Room CO2 sensors where indicated on the drawings to maintain an average 700ppm (minimum) to 1100ppm (maximum) CO2 levels and establish the minimum outdoor air damper position. The minimum airflow scheduled on the drawings are adjustable minimum outdoor air volume setting.

2) If the outdoor air temperature is below 30 degrees F, set the outdoor air damper to its minimum position. Provide an adjustable minimum outdoor air damper position to maintain average CO2.

3) If the outdoor air temperature is above 30 degrees F, modulate the supply air and return air dampers from their minimum positions to maintain the mixed air temperature setpoint.

4) The mixed air temperature setpoint shall be 55 degrees F.

5) During ventilation operation the mixed air temperature setpoint shall be set to 55 degrees F. During heating operation, the mixed air temperature setpoint shall be set to the supply air temperature setpoint.

6) The mixed air temperature setpoint shall be reset from 55 to 65 degrees F as the outdoor air temperature varies from 55 to 30 degrees F.

b. Temperature Control:

1) Maintain the supply air temperature at setpoint by modulating the heating valve in sequence.

2) The supply air temperature setpoint shall be reset from 55 to 100 degrees F as the outside air temperature varies from 65 to -10 degrees F

D. Unoccupied Mode:

1. Upon command from the day/night schedule, stop the supply fan, close the outside air damper, open the return air damper, and fully close the heating valve to the coil. When the outside air temperature is below 35 degrees F, fully open the heating water control valve to the coil.

2. Upon command from the day/night schedule open the return air damper and, close the outside air damper. When the outside air temperature is below 30 degrees F, open the heating water valve to 10 percent open.

3. When the space temperature falls below the unoccupied space temperature setpoint, start the air handler and enable the heating control. The outside air damper shall remain closed. When the space temperature reaches the unoccupied temperature setpoint stop the air handler. Provide an adjustable dead band for on/off operation.

E. Monitoring: Provide the monitoring and control points as indicated on Drawings. Provide a graphic for each air handler on all system graphic stations.

3.8 Variable Air Volume Units: AHU-B4 (w/F&B DAMPER)

A. Mode of Operation:

1. The air handler variable frequency speed drive (VFD) shall have a Hand/Off/Automatic switch. In the hand position, the fan shall run continuously and its speed shall be controlled by a manual speed control integral to the VFD. All temperature and fan system safeties shall remain functional as described below. In the automatic position, the DDC system shall control all system functions as described.

2. The air handler shall be in either in the occupied or unoccupied mode as determined by the existing day/night BAS system control panel. Coordinate the operation of the air handling unit with the occupied /unoccupied operation of the air handler's associated terminal devices.

B. Safety Interlocks:

1. Freeze Protection: Through a minimum of two hardwired freezestat interlocks, stop the fan and close the outdoor air damper when the heating coil discharge air temperature drops below 40 degrees F. Also, fully open the unit valves to the coil, and signal an alarm.

2. Smoke Detection: Stop the fan system and close the outside air damper through a hardwired interlock, when smoke is detected by either duct air smoke detector.

C. Supply Air Pressure Control:

1. On any command to start, start the VFD and ramp its speed to maintain the static pressure setpoint without exceeding the system high static limit. The system pressure setpoint shall be slowly ramped from zero to the normal system pressure. The system supply pressure shall be measured at a point 80 percent down the length of each main duct run, as indicated on Drawings. If more than one duct pressure transmitter is indicated, the lowest end of run duct pressure shall be used to maintain system pressure.

2. Provide a pressure transmitter at the fan discharge to limit the VFD speed command so that the maximum discharge pressure is not exceeded. Maximum discharge static pressure requirements shall be determined during the system air balance at start-up.

D. Occupied Mode:

1. Morning Start-up:

a. Utilize an optimum start routine based on outside and inside air temperatures to adjust the air handler start time so that the space shall be at setpoint at its scheduled occupancy time.

b. Warm-up: When the outside temperature is below 50 degrees F and the air system is commanded to start, the outdoor air damper shall remain fully closed and the return air damper shall remain fully open. Disable the cooling control. Through the BAS, the associated terminal devices shall be commanded to their warm-up mode. Maintain a discharge temperature of 95 degrees F until the return air temperature is 70 degrees F. The BAS shall then command the terminal devices to their normal mode and the air handler shall index to normal operation.

2. Normal Operation:

a. Outdoor/Return Air Damper Control:

1) If the outdoor air temperature is between 20 degrees F and 60 degrees F, modulate the supply air and return air dampers from their minimum positions to maintain the mixed air temperature setpoint.

2) The mixed air temperature setpoint shall be 55 degrees F.

3) During cooling operation, the mixed air temperature setpoint shall be set to 55 degrees F. During heating operation, the mixed air temperature setpoint shall be set to the supply air temperature setpoint.

4) The mixed air temperature setpoint shall be reset from 55 to 65 degrees F as the outdoor air temperature varies from 55 to -10 degrees F.

b. Temperature Control:

1) Maintain the supply air temperature at setpoint by modulating the heating valve and cooling valve in sequence.

2) When the mixed air temperature is above 45 degrees F, fully open the face and bypass dampers to the coil and modulate the heating and cooling coil valves in sequence to maintain supply temperature. When the mixed air temperature is below 45 degrees F, fully open the heating coil valve and modulate the face and bypass dampers to maintain supply temperature. Disable the cooling coil operation.

3) The supply air temperature setpoint shall be 55 degrees F.

4) The supply air temperature setpoint shall be reset from 55 to 100 degrees F as the outside air temperature varies from 65 to -10 degrees F.

c. Humidity Control:

1) If the return air humidity rises above 60% RH, the DDC system shall override outdoor air economizer and the normal cold deck control. The cold deck discharge temperature shall then be maintained at 55 degrees F and the room supply air temperature maintained at setpoint by space temperature control modulating the hot water reheat coils on the fan powered fan powered VAV terminal boxes.

E. Unoccupied Mode:

1. Upon command from the day/night schedule, stop the supply fan, close the outside air damper, open the return air damper, and fully close the unit valves. When the outside air temperature is below 35 degrees F, fully open the unit valves.

2. Upon command from the day/night schedule open the return air damper and, close the outside air damper. When the outside air temperature is below 35 degrees F, open the unit valves to 10 percent open.

3. The air handler's associated terminal devices shall maintain their individual unoccupied temperature setpoint as described in their sequence of operation.

4. The DDC system shall monitor the associated zone temperatures. When any zone temperature falls below the unoccupied temperature setpoint, start the air handler and maintain a 95 degrees F discharge air temperature. The outside air damper shall remain closed. The BAS shall command the associated fan powered VAV units to their warm-up mode. When the zone temperature reaches the unoccupied temperature setpoint stop the air handler and command the associated terminal units to their unoccupied mode.

5. The BAS shall monitor each zone temperature and provide high and low temperature alarm for both occupied and unoccupied modes of operation.

F. Outdoor Air Damper Override: Provide from the day/night panel through the DDC system a manual override of the outdoor air damper to allow the unit to operate in the cooling mode with the outdoor air damper fully closed and the return damper open.

G. Monitoring: Provide monitoring and control points as indicated on Drawings. Provide a graphic for each air handler on all system graphic stations.

3.9 Kitchen Hood Constant Volume Make-Up Air Unit: AHU-B5

A. Mode of Operation:

1. All equipment described is to operate in the automatic position of the motor starter Hand/Off/Automatic switch under normal conditions. When in the hand position, the fan shall operate continuously. All temperature and fan system safeties shall remain functional as described below. In the automatic position, the DDC controller shall control all system functions as described.

B. Safety Interlocks:

1. Freeze Protection: Through a minimum of two hardwired freezestat interlocks, stop the fan and close the outdoor air damper when the heating coil discharge air temperature drops below 50 degrees F. Fully open the heating water valves to the coil. Signal an alarm.

2. Smoke Detection: Stop the fan system and close the outside air damper through a hardwired interlock, when smoke is detected by the supply air smoke detector or on an alarm from the kitchen hood.

C. Unit Operation:

1. Interlock the makeup air unit to start any time the existing kitchen hood is started. Fan shall run continuously and at constant volume airflow.

2. On a start command, fully open the outdoor air damper and start the unit fan through a damper end switch. Interlock with the existing hood exhaust fan to start when the outdoor air damper end switch is made.

3. BELOW 40 DEG F AMBIENT:

a. Maintain the supply air temperature at 65 degrees F (adjustable) by modulating the three-way heating water valve and open the face dampers/close the bypass dampers.

4. ABOVE 40 DEGREES F AMBEINT:

a. The coil valve shall fully open and the face and bypass dampers shall modulate to maintain a constant discharge temperature of 65 degrees F (adjustable).

5. Unit shall stop and the outside air damper close when the kitchen hood is shut off and the three-way valve shall bypass the coil

D. Provide monitoring and control points as indicated on Drawings.

3.10 Occupied/Unoccupied Zone Control:

A. The Existing building automation system shall index the individual zones between occupied and unoccupied cycles through the hour/day/month scheduling program.

1. Starting and stopping of the existing terminal units, and specific exhaust fans are coordinated between the Occupied/Unoccupied cycle routine and the optimum start routine.

2. This contractor is to provide the integration of the air handing units, for the desired building temperatures during occupancy.

3. This contractor is to coordinate the existing optimum start (morning warm-up) routine of the new air handling units and the existing gymnasium exhaust fan shall remain indexed as in the original control sequence.

B. Existing Manual override of the occupied/unoccupied control of manual schedule shall remain unchanged. Verify final location with School to coordinate AHU existing override occupancy schedule. That when manually activated, the override shall index the zone to the occupied mode for a two-hour period (adjustable). The zone shall then revert to its scheduled mode.

C. Provide a manual outdoor air damper override control sequence through the building automation system. Override control shall be manually activated by School personnel to allow heating/cooling equipment provided with outdoor air dampers to be operated in the occupied mode with the outdoor air dampers fully closed. **Provide lock-out of any manual operation that could leave outdoor air dampers in the “open position”.**

APPENDIX A

This Appendix identifies the function of the control system points list for the building management system and DDC control systems shown on Drawings.

Column Descriptions:

1.	Tag Number	The identifying number of the device to be monitored. The roughly follows industry standard ISA S5.1. These tag numbers are used on the control drawings and in the sequence of operation description.
2.	Description	An identifying description of the points function.
3.	Device Spec.	The hard ware specification for the device monitored or controlled as listed in section 23 09 63.
4.	Signal Type	The general type of device input or output.
5.	Notes	Special notations to clarify device application.

The following columns indicate which DDC application features should be used with the individual devices. Their usage is indicated by an "X" in the appropriate column. Final applications should be reviewed with the Owner and Architect/Engineer as specified.

6.	High Alarm	When the measured condition goes above set limits an alarm condition should be indicated.
7.	Low Alarm	When the measured condition goes above set limits an alarm condition should be indicated.
8.	Fail Alarm	When a point fails to give a proper indication of status after a command or an unacceptable condition indication. Examples are pump not indicating its status after being commanded to start, freezestats or pressure switches tripping.
9.	Time Tot.	The time the point is in the on conditions should be accumulated.
10.	Analog Tot.	The analog value of the point which is monitored should be accumulated in the appropriate engineering units.
11.	Trend	The point monitored should be sampled and stored at 15-minute intervals (adjustable) and be made available for realtime trend plotting and/or historical trend plotting on a graphic, soft copy and/or hard copy device. A minimum of 12 hours shall be stored in the DDC controller not the BAS front end.

END OF SECTION

SECTION 26 29 15
MOTOR STARTERS

1 General

1.1 Summary

A. Section Includes:

1. Motor starters and all power and control wiring complete for all electric motor driven equipment.

2. All necessary pushbuttons, selector switches and similar control devices not specifically furnished by others. Provide these devices of the same manufacturer as the starters.

1.2 Related Sections:

1. Division 23 – Heating Ventilating and Air Conditioning.

2. Section 26 05 00 - Basic Electrical Requirements.

3. Section 26 05 53 - Electrical Identification.

4. Section 26 28 13 - Low Voltage Cartridge Fuses - 600 Volts and Less.

1.3 References

A. ANSI/NECA 1-2006 – Good Workmanship in Electrical Contracting.

B. NFPA 70, Latest Edition (NEC) National Electrcal Code with amendments as applied by adopting agency or authority.

C. UL - Underwriters Laboratories, Inc.

1.4 System Descriptions

A. Manual motor starters.

B. Automatic motor starters.

1.5 Submittals

A. Submit shop drawings and product data under provisions of Division 01 and Section 26 05 00.

B. For each starter, submit all electrical characteristics, including voltage, NEMA size, control wiring diagram, and motor starter label (e.g., MSA-1).

1.6 Quality Assurance

A. Provide motor protection switches of the appropriate NEMA size. For units not using NEMA rating, use equivalent NEMA size.

B. Conform to requirements of NFPA 70.

C. Furnish products listed and classified by UL as suitable for purposes specified and shown.

D. Perform work in accordance with NECA Standard of Installation.

1.7 Delivery, Storage and Handling

A. Deliver, store and handle materials in accordance with Division 01 and Section 26 05 00.

1.8 Sequencing and Scheduling

A. Sequence and schedule work in accordance with Division 01 and Section 26 05 00.

1.9 Warranty

A. Provide warranty in accordance with requirements of Division 01 and Section 26 05 00.

2 Products

2.1 Manufacturers

A. Allen-Bradley.

B. Eaton Cutler-Hammer, Inc.

C. ABB (General Electric Co.)

D. Siemens Energy & Automation, Inc.

E. Square D Company.

2.2 Materials

A. Manual Motor Starters:

1. In new walls and finished areas, provide flush mounted toggle switch with thermal overload protection, pilot light and stainless steel coverplate, similar to Square D Model 2510 FS1P or approved equal.

2. In non-fishable existing walls and mechanical spaces, provide surface mounted toggle switch with thermal overload protection, pilot light and general-purpose enclosure, similar to Square D Model 2510 FG1P or approved equal.

3. Provide NEMA Type 1 starter unless otherwise noted.

B. Magnetic and Combination Motor Starters:

1. Provide surface mounted starters in NEMA Type 1 enclosures unless otherwise noted.

2. For combination type starters, provide non-fusible disconnect switch type with provisions for locking the operating lever in either the "ON" or "OFF" position.

3. Provide an electronic overload device for each phase of the motor. Overloads to be adjusted to motor horsepower.

4. Provide with fused control circuit with the fuse properly sized by the starter manufacturer to protect the electronic overload. Refer to Section 26 28 13 for spare control circuit fuse requirements.

5. Provide one extra normally open auxiliary contact in addition to those necessary for the particular control circuit involved.

C. Magnetic and Combination Motor Starter Phase Failure Relays:

1. Provide each multi-phase motor starter with a phase failure relay. This relay shall shut down the controller upon:

a. Phase failure.

b. Undervoltage.

c. Phase reversal.

d. Phase unbalance of 10 percent or greater.

D. Magnetic and Combination Motor Starter Accessories:

1. Provide all pilot lights, pushbuttons, selector switches and similar control devices indicated on the Contract Documents. These devices shall be of the same manufacturer as the motor starters.

2. Energy Management System (EMS)/Building Automation System (BAS) Wiring Terminals:

a. With each starter, provide wiring terminals as part of the starter for the connection of a control contact of an energy management system (EMS)/building automation system (BAS).

b. These terminals shall be part of the “automatic” control portion of the HOA selector switch control of the starter coil circuit.

c. Provide a jumper wire between these terminals to allow operation of the starter without EMS/BAS controls.

d. Provide clear, specific labeling of these terminals identifying their intended usage.

3 Execution

3.1 Examination

A. Verify the location and size of each motor, and properly connect all motors required on the project.

3.2 Preparation

A. Do not install magnetic and combination motor starters directly to concrete walls, masonry walls or exterior walls. Provide structural channels such as Unistrut to install starters at least 3/4 inch away from concrete or masonry walls.

B. Where starters are to be installed in open area without wall for support, provide structural steel channel (Unistrut or equal) to support starters.

3.3 Installation

A. Install manual motor starters flush at 48 inches above the floor.

B. Install magnetic and combination motor starters near the motors served at a height of 72 inches above the floor to the top of the starter. Provide structural channel supports as required.

C. Labeling: Provide equipment and circuit identification labeling as specified in Section 26 05 53.

D. Manual Moto Starters for Automatic Exhaust Fans: Provide a manual motor starter with thermal overloads and pilot light for each automatic exhaust fan controlled by a contactor. Install these starters beneath or adjacent to the associated contactor, unless otherwise noted.

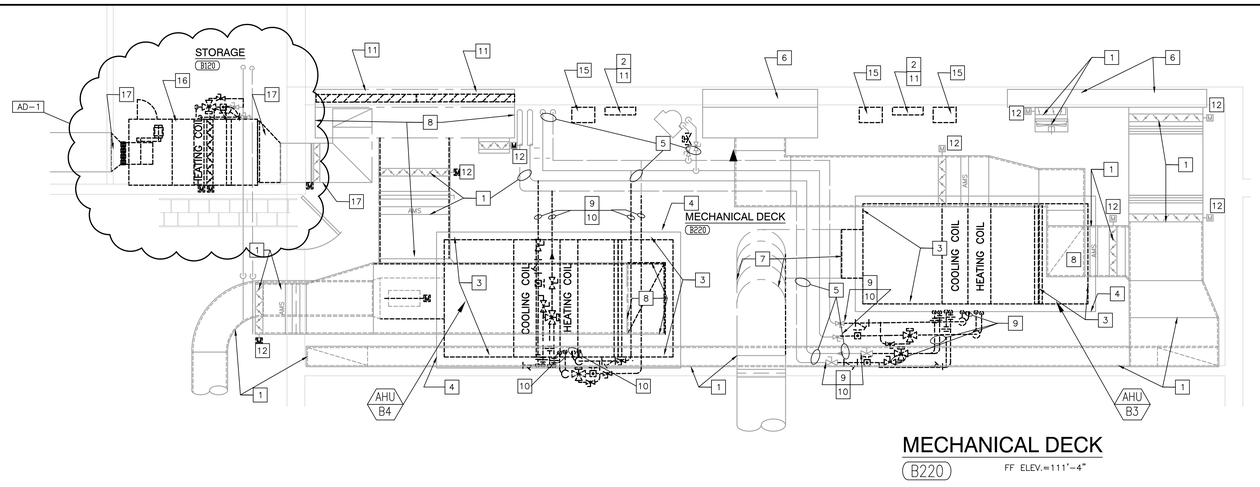
3.4 Construction

A. Provide heater elements sized based upon the nameplate full load current of motor provided.

3.5 Adjusting

A. Set overload devices to protect motors provided.

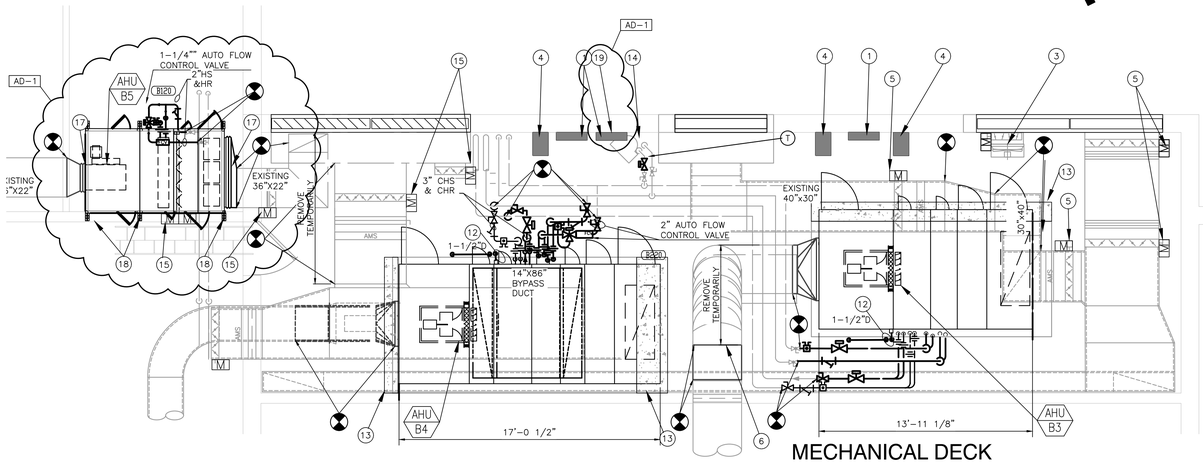
END OF SECTION



MECHANICAL DECK
B220 FF ELEV.=111'-4"

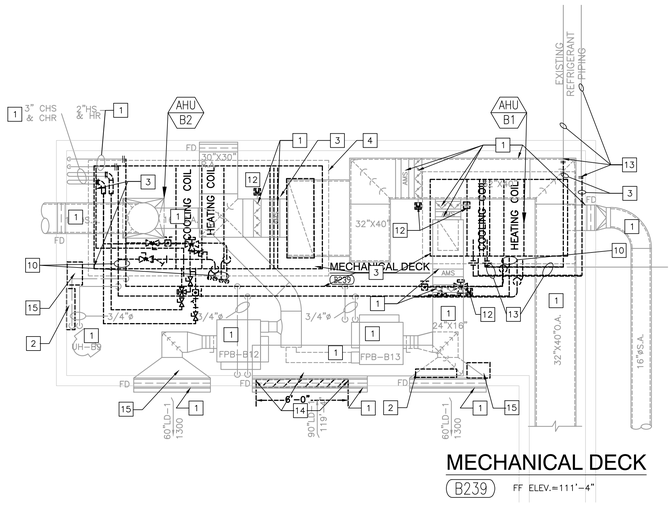
UNIT "B" MEZZANINE MECHANICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

NORTH



UNIT "B" MEZZANINE MECHANICAL PLAN
SCALE: 1/4" = 1'-0"

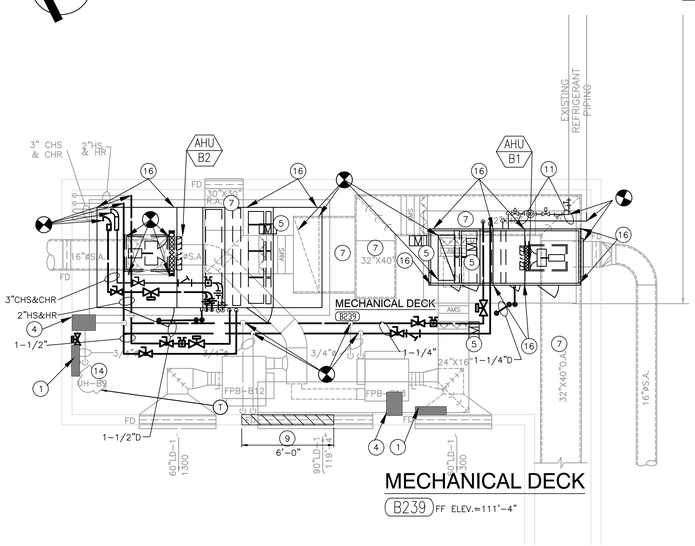
NORTH



MECHANICAL DECK
B239 FF ELEV.=111'-4"

UNIT "B" MEZZANINE MECHANICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

NORTH



MECHANICAL DECK
B239 FF ELEV.=111'-4"

UNIT "B" MEZZANINE MECHANICAL PLAN
SCALE: 1/4" = 1'-0"

NORTH

DEMOLITION PLAN NOTES:

1. EXISTING TO REMAIN
2. REMOVE EXISTING PNEUMATIC CONTROL PANEL.
3. REMOVE EXISTING AIR CONDITIONING UNITS AS INDICATED.
4. EXISTING CONCRETE PADS TO BE SAWCUT AND REMOVED IF NOT MODIFIED TO SUPPORT NEW EQUIPMENT FOOTPRINT +6".
5. EXISTING HEATING WATER PIPING TO REMAIN TO APPROXIMATE LOCATION SHOWN.
6. EXISTING OUTDOOR AIR INTAKE LOUVER TO REMAIN, SEE CONSTRUCTION DRAWINGS FOR ANY MODIFICATION NEEDS.
7. TEMPORARILY REMOVE EXISTING K-27 DOUBLE WALL SUPPLY DISHCHARGE AIR DUCTWORK TO ALLOW NEW EQUIPMENT INSTALLATION THEN ADJUST LOCATION TO MATCH DISCHARGE OPENING ON NEW UNIT .
8. TEMPORARILY REMOVE OUTDOOR AIR INTAKE PLENUM, OUTDOOR AIR INTAKE DUCT, AND SUPPORT FRAME FOR CONSTRUCTION ACCESS TO EQUIPMENT ROOM.
9. REMOVE BRANCH PIPING TO DEMOLISHED EQUIPMENT AND CAP/PLUG TEE CONNECTION IF NOT USED FOR NEW SERVICE. REPLACE EXISTING CHILLED WATER ISOLATION VALVES.
10. REMOVE EXISTING VERTICAL PIPE DROPS, PIPING APPURTENANCES, AND HORIZONTAL PIPE TO EXTENT INDICATED ON THE DRAWING. THE BRANCH ISOLATION VALVES ARE TO REMAIN UNLESS DRIP TIGHT DEAD END SERVICE CANNOT BE MAINTAINED.
11. TEMPORARILY REMOVE WALL LOUVERS TO ALLOW AHU DEMOLITION REMOVAL AND NEW MODULAR AIR HANDLER COMPONENT RIGGING AND INSTALLATION.
12. EXISTING CONTROL DAMPER TO REMAIN BUT REPLACE THE DAMPER OPERATORS WITH DDC BELIMO DAMPER OPERATORS.
13. DISCONNECT EXISTING CONDENSING UNIT PIPING AT THE OUTDOOR UNIT AND INDOOR UNITDRAW A VACUUM DOWN AND TEMPORARILY ADD NITROGEN CHARGE TO THE EXISTING REFRIGERANT LINES.
14. REMOVE PORTION OF EXISTING MASONRY MECHANICAL ROOM WALL MOUNTED SERVICES, BRANCH CONDUIT EMERGENCY WALL PACK LIGHT CAN BE RETURNED TO ORIGINAL LOCATION. PATCH ATRIUM WALL TO MATCH EXISTING AFTER NEW EQUIPMENT IS INSTALLED.
15. REMOVE THE EXISTING VARIABLE SPEED DRIVE, ANY CONTROL WIRING AND ABANDONED ELECTRICAL CONDUIT HOUSING CONTROL WIRING.

AD-1

16. REMOVE EXISTING SUSPENDED AIR HANDLING UNIT. PNEUMATIC CONTROLS, OPERATORS, SENSORS, CONTROLLERS, AND 2" HW PIPING BACK TO EXISTING AHU ISOLATION VALVES. PIPING HANGERS AND AHU HANGER RODS TO REMAIN.
17. REMOVE SUPPLY AND OUTDOOR AIR DUCT TRANSITIONS AND FLEX CONNECTORS. TEMPORARILY REMOVE OUTDOOR AIR INTAKE DUCT IN MECHANICAL DECK B220 TO ALLOW EQUIPMENT ACCESS REMOVAL AND NEW EQUIPMENT INSTALLATION.

GENERAL NOTES:

1. SEE SHEET M-001 FOR GENERAL MECHANICAL NOTES, LEGEND,
   SEE SHEET M-501 MECHANICAL DETAILS,
   SEE SHEET M-601 FOR MECHANICAL EQUIPMENT SCHEDULES AND AHU ELEVATIONS.
   SEE SHEET M-101 FOR FIRST FLOOR MECHANICAL FLOOR PLAN CHILLED AND HOT WATER PIPING MAINS ROUTE TO MEZZANINE MECHANICAL ROOMS
   SEE SHEET M-801 FOR TEMPERATURE CONTROL DIAGRAM.
2. MECHANICAL CONTRACTOR TO PROVIDE SENSOR WELD-O-LETS AND INSTALL SENSOR WELLS AS REQUIRED FOR CONTROL CONTRACTOR TO WIRE AND TERMINATE CONTROL SENSORS.
3. MECHANICAL ITEMS SHOWN AND NOT NOTED ARE EXISTING TO REMAIN IN PLACE. LOCATIONS SHOWN ARE APPROXIMATE.

PLAN NOTES:

1. PROVIDE NEW BUILDING AUTOMATION SYSTEM CONTROLS TO INTERFACE THE AIR HANDLING UNITS, THROUGH THE RECENT UPDATED BUILDING AUTOMATION SYSTEM. REPLACE AIR HANDLING EXISTING PNEUMATIC/ELECTRIC CONTROLS DEVICES AIR HANDLING UNIT DEVICES WITH NEW BELIMO ACTUATORS, JOHNSON CONTROLS; TE-6300 SENSORS, 'CSD SERIES' BACnet MSTP TRUNK AND JCI-NAE55 CONTROLLER WITH LOCAL ETHERNET ROUTER. SYSTEM SHALL INTERFACE SEAMLESSLY WITH THE UPDATED JCI METASYS BUILDING AUTOMATION SYSTEM. UPDATE ZONE DIFFERENTIAL AIR PRESSURE CONTROL SENSOR TO DDC IN RETURN AIR PLENUM AND MAINTAIN +0.05"WG BUILDING PRESSURE PER SPECIFICATION.
2. PROVIDE NEW BELIMO ACTUATORS TO MODULATE EXISTING RELIEF(FAIL SAFE)/RETURN (PRECISE LINEAR MOTION)/OUTDOOR AIR(FAIL SAFE) DAMPERS.
3. PROVIDE EXISTING EXHAUST FAN WITH NEW DDC INTERFACE CONTROLLER TO ALLOW EXHAUST FANS TO RUN ON THE OWNERS PREDETERMINED OCCUPIED/UNOCCUPIED SCHEDULE. LOCAL DEDICATED EXHAUST FANS MAY BE ENABLED TO RUN ON EXISTING MANUAL ON/OFF CONTROL.
4. VARIABLE FREQUENCY DRIVE PROVIDED BY TEMPERATURE CONTROL, INSTALL TO CONTROL SEQUENCE OF OPERATION FROM THE RESPECTIVE AIR HANDLER DDC PANEL AND INTEGRATED WITH BAS.
5. AIR HANDLING SYSTEMS SHALL HAVE AIR ECONOMIZER AND CONTROLLER TO ALLOW CONTROLLING BUILDING PRESSURE SERVED BY RESPECTIVE AIR HANDLING UNIT. REPLACE RELIEF/R.A./O.A. INTAKE DAMPER OPERATORS.
6. PROVIDE NEW 38"ø DOUBLE WALL ACOUSTICAL K-27 PERF. DOUBLE WALL INTERNALLY INSULATED DUCT EXTENSION AND CONNECTOR TO RELOCATED SPIRAL 90° ELBOWS AND NEW TRANSITION FROM AHU-B3 TO SUPPLY DUCT MAIN.
7. EXISTING RETURN AIR DUCTS INTO RETURN AIR PLENUM TO REMAIN.
8. REPLACE CHILLED AND HOT WATER PIPING, CONTROL VALVES, BALANCE VALVES AND ACCESSORIES BACK TO RECENTLY REPLACED ISOLATION BRANCH VALVES.
9. AHU-B1 AND AHU-B2 REPLACEMENT WILL REQUIRE CLOSE COORDINATION WITH OWNERS CONTINUOUSLY OCCUPIED USE OF PROGRAM BUILDING SPACES. THE UNITS WILL BE MODULAR WITH SHIPPING SPLITS FOR RE-ASSEMBLY ON THE MECHANICAL MEZZANINE USING CONTINUOUS RAIL SUPPORT BEAMS. COMPONENT RIGGING DURING CONSTRUCTION WILL REQUIRE MINIMALIZED OPENING IN THE ATRIUM ELEVATED WALL, RELOCATION OF BRANCH PIPING, MINOR ELECTRICAL CONDUIT/WIRE, AND LOOSE DATA CABLE USING CONTAINMENT TO PREVENT INTERRUPTION OF DATA SERVICES.
10. AHU-B3 AND AHU-B4 REPLACEMENT WILL REQUIRE COORDINATION WITH OWNERS CONTINUOUSLY OCCUPIED USE OF PROGRAM OCCUPIED SPACES. THE UNITS WILL BE MODULAR WITH SHIPPING SPLITS FOR RE-ASSEMBLY ON THE MECHANICAL MEZZANINE USING CONTINUOUS RAIL SUPPORT BEAMS. COMPONENT RIGGING DURING CONSTRUCTION WILL REQUIRE TEMPORARY REMOVAL OF THE OUTDOOR AIR INTAKE LOUVER AND DUCTWORK ELEVATED ABOVE THE MEZZANINE FLOOR. SOME RELOCATION OF BRANCH PIPING, MINOR ELECTRICAL CONDUIT/WIRE, AND LOOSE DATA CABLE USING CONTAINMENT TO WILL BE NECESSARY TO PREVENT INTERRUPTION OF DATA SERVICES.
11. SUPPORT REFRIGERANT PIPING ON GALVANIZED UNI-STRUT SECURED TO THE STEEL SUPPORT FRAMING. PROVIDE SAME GALVANIZED STRUT TO SUPPORT DISCONNECT SWITCHES PROVIDED BY DIVISION 260000 CONTRACTOR.
12. PROVIDE 1 1-2" CONDENSATE DRAIN WITH P-TRAP ABOVE FLOOR TO NEAREST FLOOR DRAIN, CUT 1 / 4 OF THE FLOOR DRAIN STRAINER TO ALLOW DOWN TURNED ELBOW OVER THE FLOOR DRAIN.
13. EXTEND EXISTING CONCRETE HOUSEKEEPING PAD TO SIX (6") INCHES BEYOND THE FOOT PRINT OF THE NEW UNIT AND LEVEL THE EXISTING PAD WITH ADHESIVE CONCRETE FILLER. PROVIDE NEOPRENE VIBRATION PAD BENEATH THE SUPPORT OEM SUPPORT FRAME AND BENEATH TRANSVERSE CROSS MEMBERS.
14. PROVIDE NEW LOW VOLT CONTROLLER AND THERMOSTAT FOR UNIT HEATER AND MODULATING DIGITAL CONTROL VALVE.
15. PROVIDE NEW LOW VOLT DAMPER OPERATOR INTERLOCKED WITH HVAC EQUIPMENT OPERATING SEQUENCE.
16. PROVIDE NEOPRENE VIBRATION ISOLATOR PADS AT EACH BEARING POINT. 6" WIDE PADS TO EXTEND +/- 12" BOTH DIRECTIONS FROM BEARING POINT.

AD-1

17. PROVIDE NEW DUCT TRANSITION AND FLEXIBLE DUCT CONNECTIONS TO AHU-B5 CONNECTION POINTS.
18. INSTALL AHU-B5 LEVEL ON SPRING ISOLATORS AND TRANSVERSE BACK TO BACK 2X3 GALVANIZED ANGLE IRON SUPPORT RAILS ADJUST UNIT TO BE LEVEL AND SQUARE TO THE DUCT CONNECTIONS. PROVIDE ALL-THREAD HANGER RODS AND BJ CLAMPS TO STRUCTURE.
19. PROVIDE DDC CONTROLS IN ADJOINING MECHANICAL MEZZANINE FAN ROOM FOR AHU-B5 CONTROLLER, USER INTERFACE AND BAS CONNECTION.

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DESIGN
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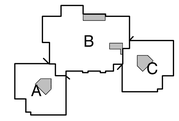
PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

VALPARAISO COMMUNITY SCHOOLS
VALPARAISO, INDIANA

FLINT LAKE ES
4106 CALUMET AVENUE
VALPARAISO, INDIANA

THOMAS JEFFERSON MS
1600 ROOSEVELT ROAD
VALPARAISO, INDIANA



FIRST FLOOR KEYPLAN

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PROJECT 22-116/22-117
DATE 05/06/22
COORDINATED BY TWC
DRAWN BY TWC
CHECKED BY UPB

JOSEPH P. BRIGGS REGISTERED NO. 11600109 STATE OF INDIANA ARCHITECT

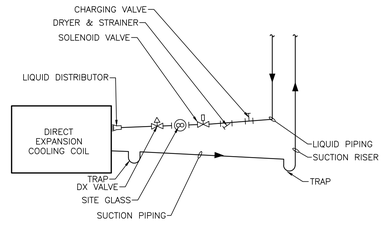
REVISIONS

MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
UNIT "B" MEZZANINE MECHANICAL PLANS

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

SHEET
FL M-402

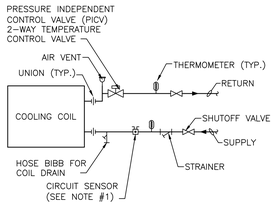


NOTE:

1. SLOPE ALL PIPING 1" IN TEN FEET IN DIRECTION OF FLOW.
2. EQUIPMENT MANUFACTURER TO PROVIDE PIPING AND ACCESSORIES SIZES, TRAP LOCATIONS AND CONTRACTOR TO PROVIDE ACCURATE REFRIGERANT PIPING LAYOUT WITH SUBMISSION PRIOR TO INSTALLATION.

DIRECT EXPANSION COIL & HOT GAS BYPASS REFRIGERATION PIPING DIAGRAM

NOT TO SCALE

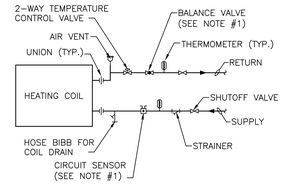


NOTE:

1. REPLACE BALANCE VALVE WITH CIRCUIT SETTER AND DELETE CIRCUIT SENSOR FOR PIPE SIZES 2" AND SMALLER.

AHU CHILLED WATER COIL PIPING DIAGRAM

NOT TO SCALE (2-WAY CONTROL VALVE)

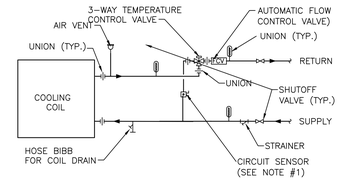


NOTE:

1. REPLACE BALANCE VALVE WITH CIRCUIT SETTER AND DELETE CIRCUIT SENSOR FOR PIPE SIZES 2" AND SMALLER.

AHU HOT WATER HEATING COIL PIPING DIAGRAM

NOT TO SCALE (2-WAY CONTROL VALVE)

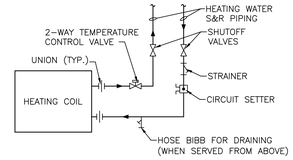


NOTE:

1. REPLACE BALANCE VALVE WITH CIRCUIT SETTER AND DELETE CIRCUIT SENSOR FOR PIPE SIZES 2" AND SMALLER.

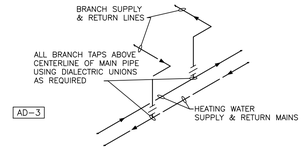
AHU CHILLED WATER COIL PIPING DIAGRAM

NOT TO SCALE (3-WAY CONTROL VALVE)



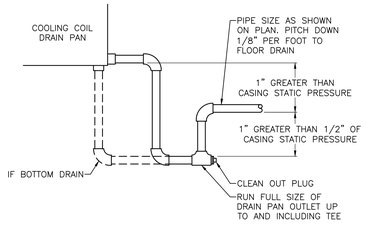
UNIT HEATER PIPING DIAGRAM

NOT TO SCALE



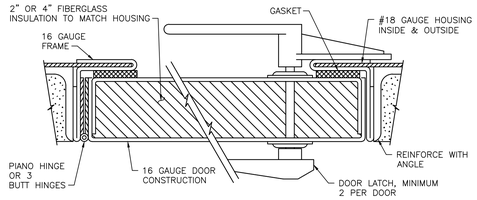
TYPICAL SWING JOINT AT BRANCH TAKE - OFF FROM HEATING MAIN

NOT TO SCALE



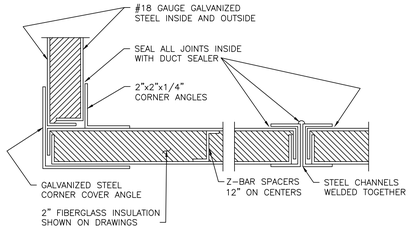
DRAW THRU COOLING COIL CONDENSATE DRAIN DETAIL

NOT TO SCALE



TYPICAL ACCESS DOOR CONSTRUCTION DETAIL

NOT TO SCALE

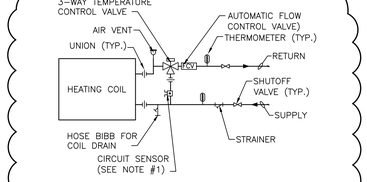


NOTE:

1. PROVIDE 2"x2"x1\4" ANGLE AT FLOOR, AROUND DOORS, AND AT OTHER LOCATIONS AS REQUIRED TO BRACE HOUSING.

TYPICAL DOUBLE WALL HOUSING SECTION

NOT TO SCALE



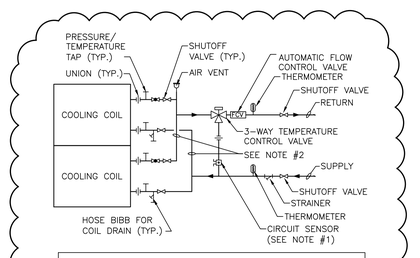
NOTE:

1. REPLACE BALANCE VALVE WITH CIRCUIT SETTER AND DELETE CIRCUIT SENSOR FOR PIPE SIZES 2" AND SMALLER.

AHU HOT WATER HEATING COIL PIPING DIAGRAM

NOT TO SCALE (3-WAY CONTROL VALVE)

AD-1



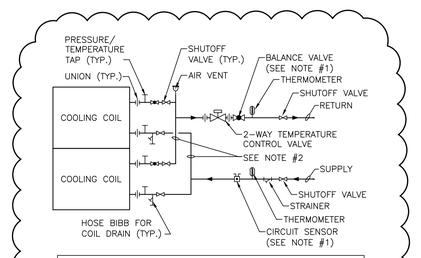
NOTES:

1. REPLACE BALANCE VALVE WITH CIRCUIT SETTER AND DELETE CIRCUIT SENSOR FOR PIPE SIZES 2" AND SMALLER.
2. BRANCH PIPING TO INDIVIDUAL COIL(S) SHALL BE SAME SIZE AS COIL CONNECTION.

AHU MULTIPLE CHILLED WATER COOLING COIL PIPING DIAGRAM

NOT TO SCALE (3-WAY CONTROL VALVE)

AD-1



NOTES:

1. REPLACE BALANCE VALVE WITH CIRCUIT SETTER AND DELETE CIRCUIT SENSOR FOR PIPE SIZES 2" AND SMALLER.
2. BRANCH PIPING TO INDIVIDUAL COIL(S) SHALL BE SAME SIZE AS COIL CONNECTION.

AHU MULTIPLE HOT WATER HEATING COIL PIPING DIAGRAM

NOT TO SCALE (2-WAY CONTROL VALVE)

AD-1

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PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

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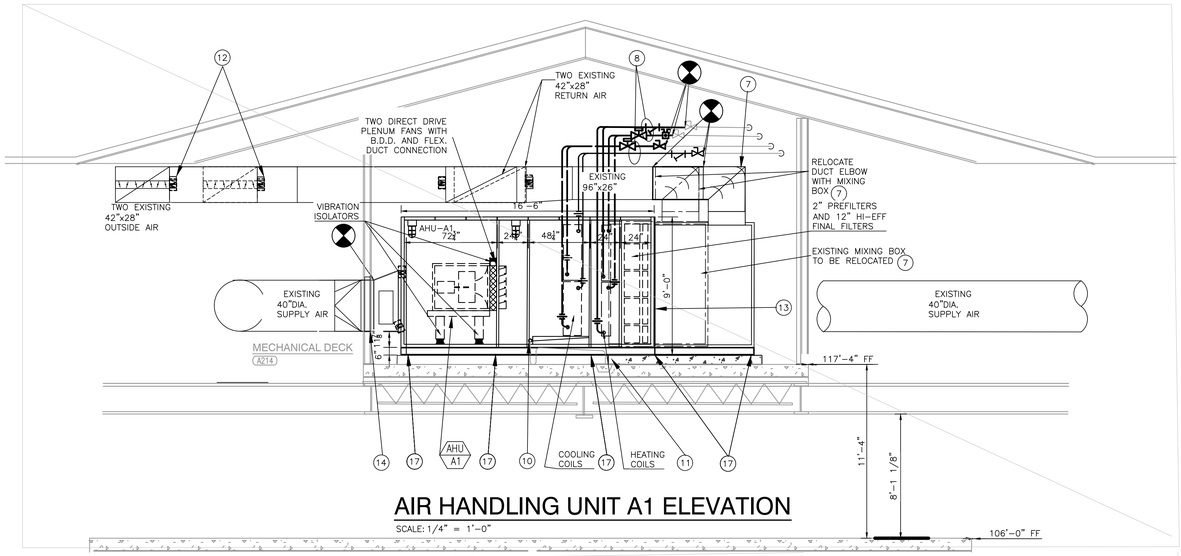
DRAWING
MECHANICAL DETAILS

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

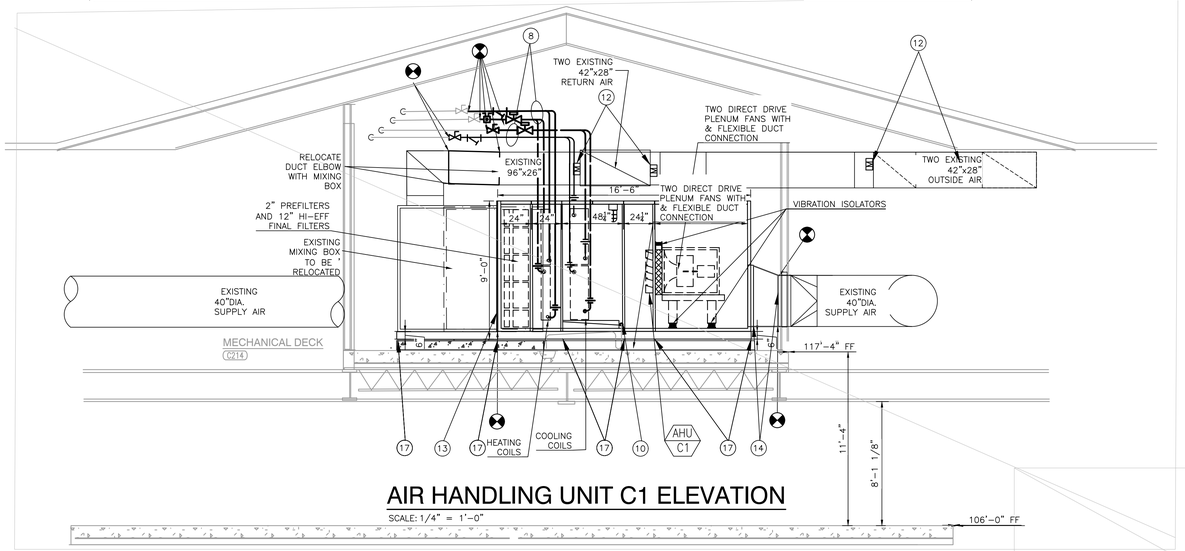
SHEET
FL M-501

Monday, 5/23/2022 - 5:08 PM - LAST SAVED BY:JCHAMBERS
Y:\22-117 VALPARASO CS - FLINT LAKE ES AHU REPLACEMENT AND RELATED WORK\22-117 DRAWINGS\07 MECH\M-501_AHU.DWG



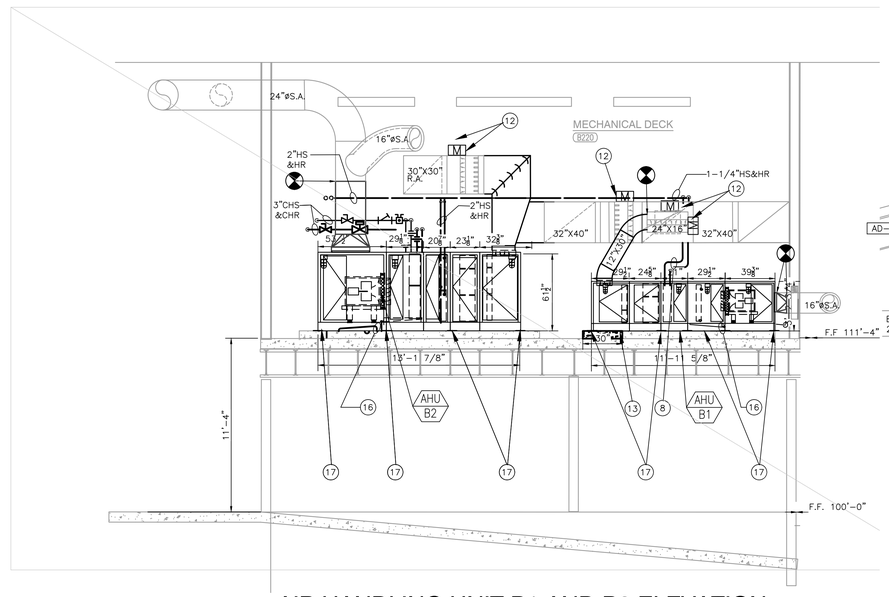
AIR HANDLING UNIT A1 ELEVATION

SCALE: 1/4" = 1'-0"



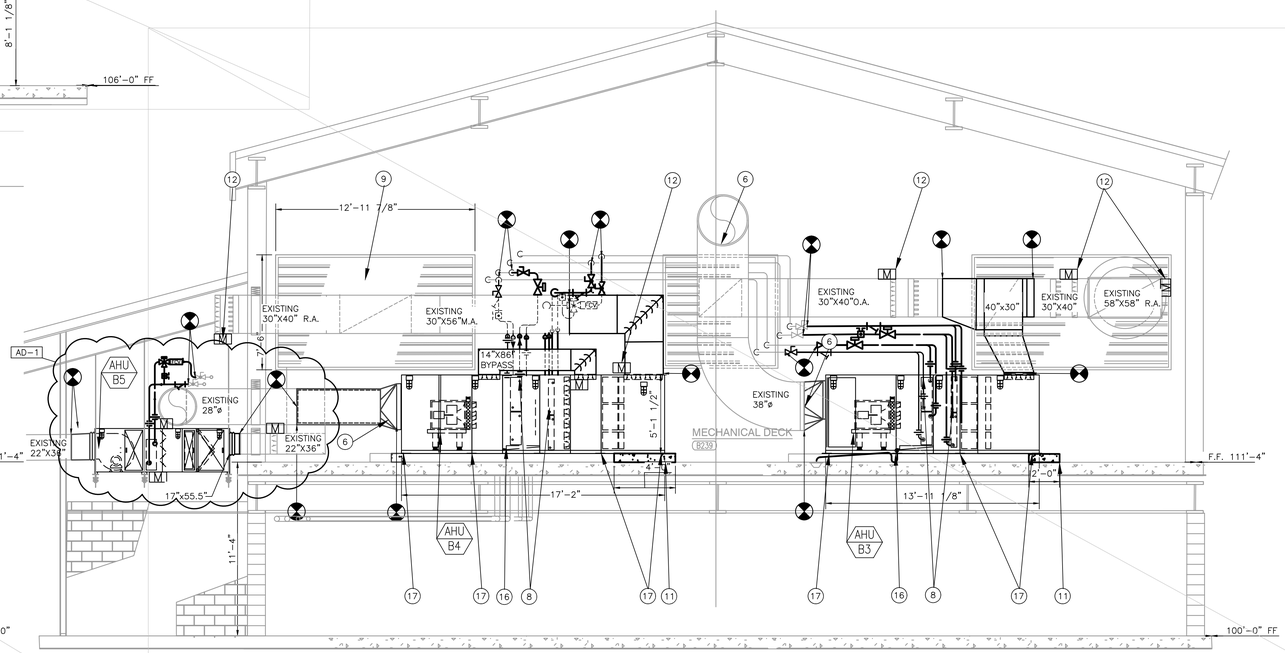
AIR HANDLING UNIT C1 ELEVATION

SCALE: 1/4" = 1'-0"



AIR HANDLING UNIT B1 AND B2 ELEVATION

SCALE: 1/4" = 1'-0"



AIR HANDLING UNIT B3 AND B4 ELEVATION

SCALE: 1/4" = 1'-0"

PLAN NOTES:

1. PROVIDE NEW BUILDING AUTOMATION SYSTEM CONTROLS INTERFACE CARD FOR EACH AIR HANDLING UNIT, TO COMMUNICATE THROUGH THE EXISTING BUILDING AUTOMATION SYSTEM. REPLACE AIR HANDLING EXISTING PNEUMATIC/ELECTRIC ACTUATORS ON AIR HANDLING UNIT DEVICES WITH NEW ACTUATORS, USING JOHNSON CONTROLS; TE-6300 SENSORS, 'CSD SERIES' BACnet MSTP TRUNK AND JCI-NAE55 CONTROLLER WITH LOCAL ETHERNET ROUTER. SYSTEM SHALL INTERFACE SEAMLESSLY WITH THE JCI METASYS BUILDING AUTOMATION SYSTEM.
2. PROVIDE ZONAL DIFFERENTIAL AIR PRESSURE CONTROL SENSOR IN CEILING AIR PLENUM AND NEW DDC ACTUATORS TO MODULATE EXISTING RELIEF AIR DAMPERS AT REMOTE RELIEF WALL LOUVER AND TO MAINTAIN +0.05"WG ZONE PRESSURE PER SPECIFICATION.
3. PROVIDE EXISTING EXHAUST FAN WITH NEW DDC INTERFACE CONTROLLER TO ALLOW EXHAUST FANS TO RUN ON VIA THE OWNERS EXISTING BAS PREDETERMINED OCCUPIED/UNOCCUPIED SCHEDULE. DEDICATED EXHAUST FANS WITH INTAKE DAMPERS MAY BE ENABLED TO RUN ON EXISTING MANUAL ON/OFF CONTROL.
4. VARIABLE FREQUENCY DRIVE PROVIDED BY TEMPERATURE CONTROL, INSTALL TO CONTROL SEQUENCE OF OPERATION FROM THE RESPECTIVE AIR HANDLER DDC PANEL AND INTEGRATED WITH BAS.
5. AIR HANDLING SYSTEMS SHALL HAVE AIR ECONOMIZER CONTROLS. ZONE PRESSURE CONTROLS SERVE RESPECTIVE AIR HANDLING UNIT EXISTING RELIEF/INTAKE DAMPERS WITH NEW DDC OPERATORS.

AIR CONDITIONING SYSTEM:

6. PROVIDE NEW ROUND DOUBLE WALL ACOUSTICAL K-27 INTERNALLY INSULATED DUCT EXTENSION AND TRANSITION CONNECTOR TO RELOCATED SPIRAL 90° ELBOWS AND NEW TRANSITION FROM AHU TO EXISTING SUPPLY DUCT MAIN.
7. EXISTING RETURN AIR DUCTS INTO RETURN AIR PLENUM TO REMAIN. RELOCATE RETURN AIR PLENUMS ON AHU-A1 AND AHU-C1 AS REQUIRED.
8. REPLACE CHILLED AND HOT WATER PIPING, CONTROL VALVES, BALANCE VALVES AND ACCESSORIES BACK TO RECENTLY REPLACED HEATING ISOLATION BRANCH VALVES. PROVIDE NEW CHILLED WATER ISOLATION VALVES.
9. EXISTING WALL LOUVERS TEMPORARILY REMOVED DURING DEMOLITION/CONSTRUCTION
10. PROVIDE 2" CONDENSATE DRAIN WITH P-TRAP ABOVE FLOOR TO NEAREST FLOOR DRAIN, CUT 1/4 OF THE FLOOR DRAIN STRAINER TO ALLOW DOWN TURNED ELBOW OVER THE FLOOR DRAIN.
11. EXTEND EXISTING CONCRETE HOUSEKEEPING PAD TO SIX (6") INCHES BEYOND THE FOOT PRINT OF THE NEW UNIT AND LEVEL THE EXISTING PAD WITH ADHESIVE CONCRETE FILLER. PROVIDE NEOPRENE VIBRATION PAD BENEATH THE SUPPORT OEM SUPPORT FRAME AND BENEATH TRANSVERSE CROSS MEMBERS.
12. PROVIDE NEW DDC DAMPER OPERATOR INTERLOCKED WITH HVAC EQUIPMENT CONTROL PANEL.
13. PROVIDE INSULATED SHEETMETAL CLOSURE STRIPS WHERE EXISTING MIXED AIR PLENUM IS ATTACHED TO THE FILTER BOX OF AHU-A1 AND C1. SEAL AIRTIGHT TO CUSTOM PANEL CONSTRUCTION PER MANUFACTURERS RECOMMENDATION AND PRESSURE TEST FOR AIR LEAKAGE TO MEET SPECIFICATION OF CUSTOM AIR HANDLING UNITS.
14. PROVIDE RIGID INSULATED DISCHARGE AIR TRANSITION TO EXISTING WALL PENETRATION SLEEVE WITH ACCESS PANEL FOR FIRE DAMPER RESETL
15. SUPPORT REFRIGERANT PIPING ON GALVANIZED UNI-STRUT SECURED TO THE STEEL SUPPORT FRAMING. PROVIDE SAME GALVANIZED STRUT TO SUPPORT DISCONNECT SWITCHES PROVIDED BY DIVISION 260000 CONTRACTOR.
16. PROVIDE 1 1-2" CONDENSATE DRAIN WITH P-TRAP ABOVE FLOOR TO NEAREST FLOOR DRAIN, CUT 1 / 4 OF THE FLOOR DRAIN STRAINER TO ALLOW DOWN TURNED ELBOW OVER THE FLOOR DRAIN.
17. PROVIDE NEOPRENE VIBRATION ISOLATOR PADS AT EACH BEARING POINT. 6" WIDE PADS TO EXTEND +/- 12" BOTH DIRECTIONS FROM BEARING POINT.

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PROJECT

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MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
MECHANICAL AIR HANDLER ELEVATIONS

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

SHEET
FL M-502

AIR HANDLING UNIT SCHEDULE

TAG	SERVES ROOM NUMBER	MANUFACTURER MODEL #	VENTILATION: MINUM *O.A CFM @ 10CFM / PPL	SUPPLY AIR: CFM @ (6) A.C.'S / HR	SUPPLY FAN: SONES	WHEEL / DRIVE TYPE	EXTERNAL STATIC PRESS. IN. WC	TOTAL STATIC PRESS IN. WC	FAN RPM	BHP	MOTOR HP	FAN FLA	VOLT/PH/ WIRE
AHU-A1	CLASSROOM UNIT A	AIR ENTERPRISES	7551	**32220**	31	(2) PLENUM BI DIRECT DRIVE	1.5	4.8	1484	17.0 (x2)	(2EA)18.1	27	460/3PH/4W
AHU-C1	CLASSROOM UNIT C	AIR ENTERPRISES	6779	**28926**	34	(2) PLENUM BI DIRECT DRIVE	1.5	4.8	1730	15.43 (x2)	(2EA)17.8	27	460/3PH/4W
AHU-B1	ADMINISTRATION UNIT B	TRANE #CSSA-06	419	**2443**	NA	PLENUM BI DIRECT DRIVE	2.0	5.9	3171	4.08	5	9.8	460/3PH/4W
AHU-B2	MEDIA CENTER CLASSRMS & LOBBY UNIT B	TRANE CSSA-025	2773	**11066**	NA	PLENUM BI DIRECT DRIVE	1.5	4.3	2078	12.10	15	18.1	460/3PH/4W
AHU-B3	GYMNASIUM UNIT B	TRANE CSSA-025	3103	**12285**	NA	PLENUM BI DIRECT DRIVE	1.5	4.0	1350	8.97	10	21	460/3PH/4W
AHU-B4	KITCHEN CAFETERIA UNIT B	TRANE CSSA-030	4343	**13635**	NA	PLENUM BI DIRECT DRIVE	1.5	3.8	1845	12.76	15	18.1	460/3PH/4W
AHU-B5	KITCHEN COOKHOOD UNIT B	TRANE CSSA-012	6883	**6883**	NA	CENTRIFUGAL FC BELT DRIVE	1.5	3.8	1721.0	6.28	10	12.5	460/3PH/4W
			24967	**100575**									

TAG	COOLING PERFORMANCE AT PEAK: GPM	WPD FEET	ROWS/FPI	(EXISTING) TOTAL MBH	(EXISTING) SENS MBH	EAT DB	EAT WB	LAT DB	LAT WB	COIL INCH HEIGHT	COIL INCH WIDTH	APD IN. WG.
AHU-A1	294.3	4.77'	8 \ 9	1471.7	942.80	79.7	67.5	52.9	52.56	(2)36	(2) 126	0.85"
AHU-C1	256.4	4.77'	6 \ 10	1282.0	825.20	79.7	67	55.0	53.8	(2)36	(2) 126	0.63"
AHU-B1	DX	NA	4 \ 8	143.7	87.34	82.8	69.3	50.9	50.51	23.0	36.0	0.45"
AHU-B2	98.3	5.75'	6 \ 10	491.4	491.40	80.0	67	55.0	54.4	18 / 24	68.0	0.62"
AHU-B3	108.9	6.81'	6 \ 9	544.7	350.40	80.0	67	55.0	53.8	18 / 24	68.0	0.74"
AHU-B4	142.4	3.04'	8 \ 7	711.9	452.80	81.4	67	55.0	53.8	18 / 24	84.0	0.83"
AHU-B5	0.0	N.A.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA	N/A
	900			**4645**	**3150**							

TAG	PRE- HEATING COIL: GPM	WPD FEET	ROWS/FPI	EAT	LAT	COIL INCH HEIGHT	COIL INCH WIDTH	APD IN. WG.	MBH	WGT. LBS	DIMDNSIONS WxHxL	NOTES
AHU-A1	106.2	6.76'	2 / 7	53.8	99.2	(2) 40.5"	(2) 115"	0.13"	1592.8	10249	132"X108"X201"	1, 2, 3, 4, 5,7, 8,10,11 12,14,15
AHU-C1	99.8	6.76'	2 / 7	51.3	98.7	(2) 40.5"	(2) 103"	0.12"	1497.0	10115	132"X108"X201"	1, 2, 3, 4, 5,7, 8,10,11 12,14,15
AHU-B1	9.8	0.41'	2 / 8	56.3	93.0	17.0	36.0	0.12"	97.9	1538	44"X35"X143"	1, 2, 3, 4, 5, 6, 7, 8,10,11 12,14
AHU-B2	27.3	5.97'	2 / 7	49.9	95.2	18 / 24	68.0	0.14"	545.5	3590	80"X61.5"X159"	1, 2, 3, 4, 5,7, 8,10,11 12,14
AHU-B3	28.9	7.6'	2 / 7	49.8	93.0	18 / 24	68.0	0.14"	578.3	4238	93.5"X61.5"X167"	1, 2, 3, 4, 5,7, 8, 10,11 12,14
AHU-B4	48.8	3.1'	2 / 7	44.5	110.2	18 / 24	84.0	0.15"	975.6	4817	93.5"X61.5"X204"	1, 2, 3, 4, 5,7, 8,9, 10,11 12,14
AHU-B5	39.8	3.63'	2/ 9	-20.0	60.1	24.0	54.0	0.317"	597.2	1687	66.5"X45.0"X108.7"	1, 2, 3, 4, 5,7, 8,10,11 12,14,16
	361								**5287**			

AD-1

NOTES:

1. UNIT MANUFACTURER TO PROVIDE VFD COMPATABLE FAN MOTOR WITH AEGIS GROUNDING RING, INTERNAL FAN RESTRAINED SPRING VIBRATION ISOLATIOS, FLEX CONNECTIONS, BACKDRAFT DAMPERS, ON 6" HIGH CONTINUOUS SUPPORT RAILS WITH INTERMEDIATE TRANSVERSE SUPPORTS. AND CONTRACTOR TO PROVIDE INSTALLATION OF CONTROLS DEVICES PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR.

2. UNIT MANUFACTURER TO PROVIDE 2-1/2" DOUBLE WALL CONSTRUCTION CABINET WITH THERMAL BREAKS AT FRAMING MEMBERS. PROVIDE 20"X20" FILTERS, 18" DEEP MULTITRACK 13 AIR FILTER FRAMES/ 2" MERV PRE AND 11.5" DEEP MERV 13 FINAL FILTER LOW LEAK 1% @3"W.C. ASSEMBLY HOUSING, SIDE MOUNTED MAGNAHELIC FILTER GUAGE, HEATING COIL WITH 0.025" TUBEWALLS, LED LIGHT ACCESS SECTION, COOLING COIL, AND PERFORATED ACOUSTIC PLENUM FAN SECTIONS.

3. UNIT MANUFACTURER TO PROVIDE TWO LOW TEMPERATURE FREEZE SAFETIES W/ ALARM, HYDRAULIC SERPENTINE SENSOR TUBING FREEZE STAT SAFETY CONTROL ON LEAVING FACE OF HEATING COIL FOR SERPENTINE PNEUMATIC SENSING TUBBING INTERLACED AND INSTALLED AT FACTORY.

4. UNIT MANUFACTURER TO PROVIDE 2" THICK MERV 8 PLEATED THROWAWAY PRE FILTERS, WITH A SECOND SET OF PRE- FILTERS FOR AIR BALANCE AT TAB COMMENCEMENT, AND A SPARE SET OF FILTERS FOR OWNERS INVENTORY, FILTER REMOVAL SHALL BE THROUGH THE HINGED NEOPRENE BUBBLE GASKETED ACCESS DOORS WITH LOCKING TOGGLE HANDLES ON THE UNIT. PROVIDE A SPARE SET OF FARR 30/30 AND RIGA-FLO 100 MERV 13 FINAL FILTERS FOR OWNERS INVENTORY.

5. UNIT MANUFACTURER TO PROVIDE 304 STAINLESS STEEL IAQ COOLING COIL DRAIN PAN WITH EXTENSION WALL TO WALL AND INTERMEDIATE EXTENDED DRAIN PAN WITH DOWNCOMMMER TO APPROPRIATE SIZED DRAIN LINE EXTENDED OUTSIDE OF UNIT FOOTPRING. CONTRACTOR TO INSTALL MANUFACGTURERS RECOMMENDED DEPTH AND SIZE P-TRAP WITH INSULATION AND CLEANOUT .

6. INSTALLING CONTRACTOR TO PROVIDE FULL REFRIGERANT CHARGE, PIPING SPECIALTIES, THERMAL EXPANSION AND SOLENOID VALVES WITH ALL INTERLOCKING CONTROL WIRING AS INDICATED FROM REMOTE CONDENSING UNIT AND AHU CONTROLLER. TEMPERATURE CONTROL CONTRACTOR TO TEST AND MAKE CONNECTIONS PER EQUIPMENT MANUFACTURERS INSTALLATION REQUIREMENTS.

7. TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE MINIMUM AIRFLOW MEASURING STATION VENTILATION CONTROL DAMPERS & INSTALL RETURN AND AIR ECONOMIZER DAMPER OPERATORS FOR VENTILATION AIR. CONTROL CONTRACTOR TO PROVIDE ROOM RETURN AIR IAQ SENSOR (CO2) TO MINIMIZE VENTILATION AIR TO KEEP CO2 BELOW 800PPM TO 1100PPM (ADJUSABLE) .

8. ** TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE COMMUNICATION CARD COMPATABLE WITH THE OWNERS EXISTING FACILITY MANAGEMENT SYSTEM, USING A NETWORK PROTOCOL FULLY INTEGRATED WITH THE OWNERS FACILITY MANAGEMENT SYSTEM (FMS).

9. UNIT MANUFACTURER TO PROVIDE FACE AND EXTERNAL BYPASS DUCT WITH OPPOSED BLADE DAMPERS, THE CONTROL CONTRACTOR TO PROVIDE DAMPER OPERATORS AND TEMPERTATURE CONTROLS.

10. TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE HARD WIRING TO REMOTE ROOM SENSOR THAT WILL COMMUNICATE WITH UNIT DDC UNIT CONTROLLER. CONTROLLER SHALL HAVE COMMUNICATION CARD USING THE SAME PROTOCOL TO INTERFACE WITH BUILDING AUTOMATION SYSTEM (COORDINATE WITH THE OWNERS INFORMATION TECHNOLGY DESIGNEE FOR FACILITY MANAGEMENT PROTOCOL CONFIRMATION).

11. TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE DDC UNIT CONTROLLER IN EXTERNAL MOUNTED NEMA 1 PANEL AND ALL REMOTE SPECIFIED SENSORS, EXTERNALLY MOUNTED HOT WATER VALVES, DAMPER OPERATORS, SENSORS, RELAYS, VARIABLE SPEED DRIVE WITH ELECTRICAL SERVICE CODE COMPLIANT DISCONNECT SWITCH, AND INSTALL PER SEQUENCE OF CONTROL SPECIFICATION.

12 PROVIDE ACOUSTIC ENHANCMENT.DOUBLE WALL PERFORATED LINER FOR FAN AND ACCESS SECTION, SUPPORT RAILS, AND SHIPPING SPLITS TO FACILITATE INSTALLATION.

13. PROVIDE MARINE GRADE LED LIGHT IN EACH ACCESSIBLE SECTION, A 110 VOLT WITH EXTERNAL SWITCHED 15AMP CIRCUIT FOR POWER TRANSFORMER AHEAD OF MAIN DISCONNECT SWITCH.

14. PROVIDE AUXILIARY CIRCUTS FACTORY WIRED WITH SWITCHED INTERIOR LEXAN COVER PROTECTED LED LIGHTS IN EACH ACCESSIBLE SECTION 110 VOLT 15 MOCP, AND GFCI OUTLET AHEAD OF LIGHT SWITCH.

15. PROVIDE PLENUM FAN CLASS II, GREENHECK MODEL 30" -APH-30-100-II-200 FOR AHUA-1 AND GREENHECK MODEL 27"-APH-27-100-II-200 FOR AHU-C1. .

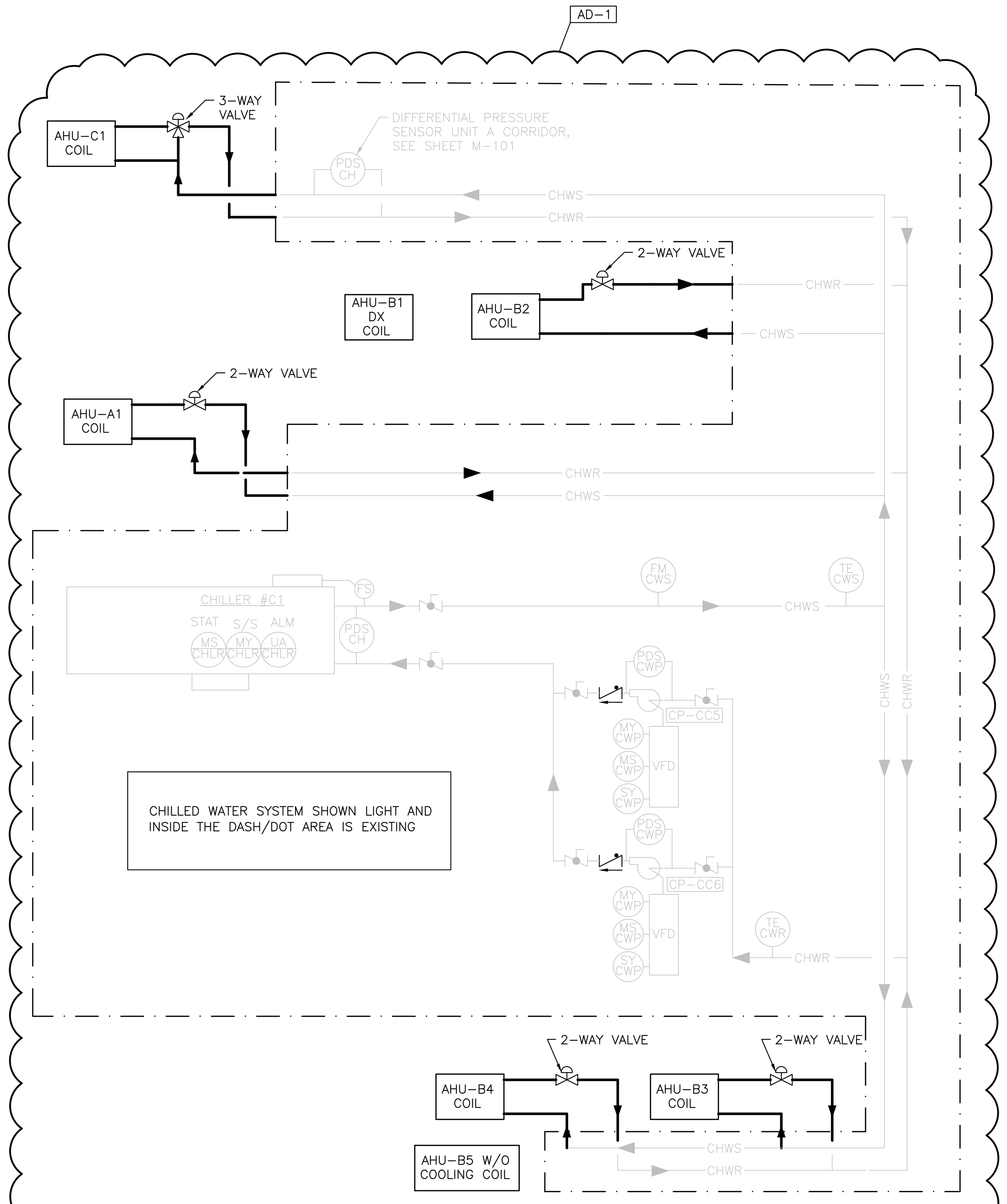
AD-1
16. UNIT MANUFACTURER TO PROVIDE INTERNAL FACE AND BYPASS DAMPERS AND CENTRIFUGAL DRAWTHRU SUPPLY FAN WITH HORIZONTAL DISCHARGE, ACCESS DOORS BOTH SIDES OF UNIT, SPRING VIBRATION ISOLATORS, SUSPENDED ROD HANGERS, THE CONTROL CONTRACTOR TO PROVIDE DAMPER OPERATORS AND TEMPERTATURE CONTROLS W/ 3-WAY FAIL OPEN CONTROL VALVE.

** = CONTRACTOR TO CONFIRM EXISTING BUILDING AUTOMATION SYSTEM PROTOCOL COMPATIBILITY WITH THAT IN USE AT THE SITE.

*** = DEHUMIDIFICATION OPERATION REDUCES THE EVAPORATOR FAN TO 50% AND THE REHEAT COIL VALVE OPENS AND MODULATES TO MAINTAIN ROOM TEMPERATURE SET POINT.

**** = UNIT SHALL BE FACTORY ASSEMBLED PRESSURE TESTED, DISSASSEMBLED AND SHIPPPED FOR REASSEMBLY IN THE FIELD UNDER FACTORY SUPERVISION AND TESTED TO MEET MANUFACTURERS RECOMMENDED FACTOPRY LEAK TEST. PANELS SHALL BE DOUBLE WALL CONSTRUCTED WITH THERMAL BREAKS, SEALED USING MANUFACTURERS RECOMMENDED SEALANT OPENING TO THE ROOM SHALL BE NO LARGER THAN 8' HIGH BY 6' WIDE.

AD-1



CHILLED WATER FLOW DIAGRAM

NOT TO SCALE

CONTROL VALVE SCHEDULE

TAG NO.	QTY	SERVICE	CONFIGURATION	FAIL POISITION	INLETPIPE SIZE (IN)	VALV E SIZE	MEDIUM	FLOW GPM	DESIGN DELTA P. (PSI)	VALVE DELTA P. (PSI)	DESIGN COEFFICIENT (CV)	VALVE COEFFICIENT (CV)	TRIM MATERIAL	CONNECTION NPT	JCI MODEL #	ACTUATOR CONTROL	NOTES
AHU-A1	1	HEATING	2-WAY	OPEN	3"	2- 1 /2"	WATER	**106**	5	3.5	47	53.4	SS	FLANGED	VG12A5GS	0-10 VDC PROP	2,3
AHU-C1	1	HEATING	2-WAY	OPEN	3"	2- 1 /2"	WATER	**100**	5	3.2	47	55.9	SS	FLANGED	VG12A5GS	0-10 VDC PROP	2,3
AHU-B1	1	HEATING	2-WAY	OPEN	1-1/4"	1"	WATER	**6.5**	5	5	4.7	2.9	BRASS	THREADED	VG1841AG	0-10 VDC PROP	2,3
AHU-B2	1	HEATING	2-WAY	OPEN	2"	1-1/2"	WATER	**27.3**	5	5	29.2	27.3	BRASS	THREADED	VG1841FR	0-10 VDC PROP	2,3
AHU-B3	1	HEATING	2-WAY	OPEN	2"	1-1/2"	WATER	**28.9**	5	5	29.2	12.9	BRASS	THREADED	VG1841FR	0-10 VDC PROP	2,3
AHU-B4	1	HEATING	3-WAY	NORMAL POSITION	2"	2"	WATER	**48.8**	5	5	47	35.24	SS	THREADED	VG12A5GS	0-10 VDC PROP	2,3
AHU-B5	1	HEATING	3-WAY	NORMAL POSITION	2"	1-1/2"	WATER	**39.8**	5	5	47	35.24	SS	THREADED	VG12A5GS	0-10 VDC PROP	1,2,3
AHU-A1	1	COOLING	2-WAY	OPEN	4"	3"	WATER	**294.3**	5	5	176	131.5	SS	FLANGED	VG18A5JV	0-10 VDC PROP	1,2,3
AHU-C1	1	COOLING	3-WAY	NORMAL POSITION	4"	3"	WATER	**256.4**	5	5	117	114.6	SS	FLANGED	VG18A5JU	0-10 VDC PROP	1,2,3
AHU-B1	1	COOLING	-	-	-		DX	-	-	-	-	-	-	-	-		4
AHU-B2	1	COOLING	2-WAY	OPEN	2- 1 /2"	2"	WATER	**98.3**	5	5	47	43.9	SS	FLANGED	VG12A5GS	0-10 VDC PROP	1,2,3
AHU-B3	1	COOLING	2-WAY	OPEN	3"	2"	WATER	**108.9**	5	5	74	48.7	SS	FLANGED	VG18A5HT	0-10 VDC PROP	1,2,3
AHU-B4	1	COOLING	2-WAY	CLOSED	4"	3"	WATER	**142.4**	5	5	74	63.7	SS	FLANGED	VG12A5HT	0-10 VDC PROP	1,2,3
UH-xx	4	HEATIING	2-WAY	CLOSED	1"	1/2"	WATER	**4.17**	5	5	4.7	1.9	BRASS	THREADED	VP140LCA	0-10 VDC PROP	1,2,3

AD-1

AD-1

NOTES:

1. ALL PRESSURE INDEPENDENT CONTROL VALVES TO HAVE 40 MESH STAINLES STEEL STRAINER UPSTREAM OF ALL CONTROL VALVES, CONTROL VALVES TO HAVE PRESSURE PORTS, COORDINATE PIPING LOCATIONS WITH CONTROL CONTRACTOR.

2. DDC OPERATORS TO BE PROVIDED BY CONTROLS CONTRACTOR AND FIELD INSTALLED. ALL FAIL OPEN VALVES TO RETURN TO NORMALLY OPEN UPON POWER FAILURE.

3. COORDINATE WITH ALL TRADES TO PROVIDE AND MAINTAIN LOW VOLTAGE CIRCUIT FOR TEMPERATURE CONTROL TRANSFORMER IN EACH MECHANICAL ROOM.

AD-1
4. PROVIDE HOT GAS BYPASS VALVE AS REQUIRED WITH A REFRIGERANT SOLENOID VALVE SIZES AS RECOMMENDED BY CONDENSING UNIT MANUFACTURER, AND MAINTAIN LOW VOLTAGE CIRCUIT WITH CONTROL TRANSFORMER.

AIR COOLED CONDENSING UNITS

TAG NO.	LOCATION	EQUIPMENT SERVED	NOMINAL TONS	SUCTION TEMP.	MBH COOLING CAPACITY AT ARI	* MIN. EER	NO. OF COMPRESSORS	MIN. UNLOADING STEPS	ELECTRICAL DATA: RLA	MCA	FAN FLA	MOCP	DISC. SW. BY	VOLT/PH	CONTROL	MFR.	MODEL NO.	WGT.	REMARKS
ACCU-B1	ON GRADE	AHU-B1	10	**45**	116.0	12.8	2	0-50-100%	9.4 / 9.4	23.9	2.7	30	DIV.26	460 /3	DDC,IL	TRANE	TTA120B4D AA**AS01010	440LBS	NOTE 1,3,4,7,8

* DIV. 23 or Div. 26

CONTROL TYPE:
DDC = DIRECT DIGITAL CONTROLS RC = RUN CONTINUOUSLY
HOA = HAND OFF AUTO TC = TIME CLOCK
IL = INTERLOCK WITH OTHER EQUIP PS = PRESSURE SWITCH
PB = PUSH BUTTON FS = FLOAT SWITCH

NOTES:
* AHRI 210/240 SECTION 12 TEST PROCEEDURE < 65.5 TONS AND AHRI 340/360 LARGER TONNAGE
1. UNIT SUPPLIER SHALL SUBMIT A REFIGERATION PIPING DIAGRAM FOR APPROVAL, SHOWING ALL VALVES, TRAPS, HOT GAS BYPASS WHERE INDICATED, FILTER DRIERS, R410a PRECHARGED UNIT AND OTHER SPECIFIED ACCESSORIES
2. UNIT SHALL HAVE; ANTI-SHORT CYCLE TIMER, HOT GAS BYPASS FOR LOW LOAD OPERATION, AND NEOPRENE VIBRATION ISOLATON KIT.
3.PROVIDE ECM CONDENSER FAN MOTOR, AND HEAD PRESSURE CONTROL KIT, AS SPECIFIED, .
4. PROVIDE HAIL GUARDS, FAN INLET SCREENS, 18 GAUGE ALUMINUM METAL JACKET ON ALL OUTDOOR REFRIGERANT PIPING INSULATION, AND ACR SOLDERED TUBING AND FITTINGS WITH UV STABILIZED PIPE SUPPORT PIERS.
5. PROVIDE MISCELLENOUS STEEL CHANNELS WELDED CROSSMEMBERS FOR RESPECTIVE UNIT SUPPORT FRAME ATTACHEMENT USING OIL RESISTANT PNEOPREN VIBRATION ISLOTORS.
6. PROVIDE POWER FACTOR CORRECTION CAPACITORS TO IMPROVE PF- 95% OR BETTER.
7. OUTDOOR CONDENSING UNIT CAPACITY BASED UPON 95 DEGREE F AMBIENT TEMPERATURE, AND MATCHED INDOOR COILS. PROVIDE LONG LINE REFRIGERANT SETS, SIZES PER MANUFACTURERS RECOMMENDATION AND SUBMIT PIPING DIAGRAM FOR REVIEW.
8. UNIT SHALL HAVE; ANTI-SHORT CYCLE TIMER, EVAPORATOR DEFROST CONTROL, RUBBER ISOLATON KIT, HARD START KIT. CRANKACASE HEATER KIT 30 DEGREE F LOW AMBIENT KIT CONTROLS PACKAGE AND WIND BAFFLES.

Tuesday, 5/24/2022 – 9:31 AM – LAST SAVED BY:TCLAYCOMB
Y:\22-117 VALPARAISO CS – FLINT LAKE ES AHU REPLACEMENT AND RELATED WORK\22-117 DRAWINGS\07 MECH\M-601_AHU.DWG

GIBRALTAR DESIGN
ARCHITECTURE • ENGINEERING • INTERIOR DESIGN

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

VALPARAISO COMMUNITY SCHOOLS
VALPARAISO, INDIANA

FLINT LAKE ES
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VALPARAISO, INDIANA

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PROJECT 22-116/22-117
DATE 05/06/22
COORDINATED BY TWC
DRAWN BY TWC
CHECKED BY JPB

JOSEPH P. BRIGGS REGISTERED NO. 11600109 STATE OF INDIANA ARCHITECT

REVISIONS

MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
MECHANICAL SCHEDULES

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

FL

SHEET M-601

BUILDING AUTOMATION SYSTEM INTERFACE NOTES:

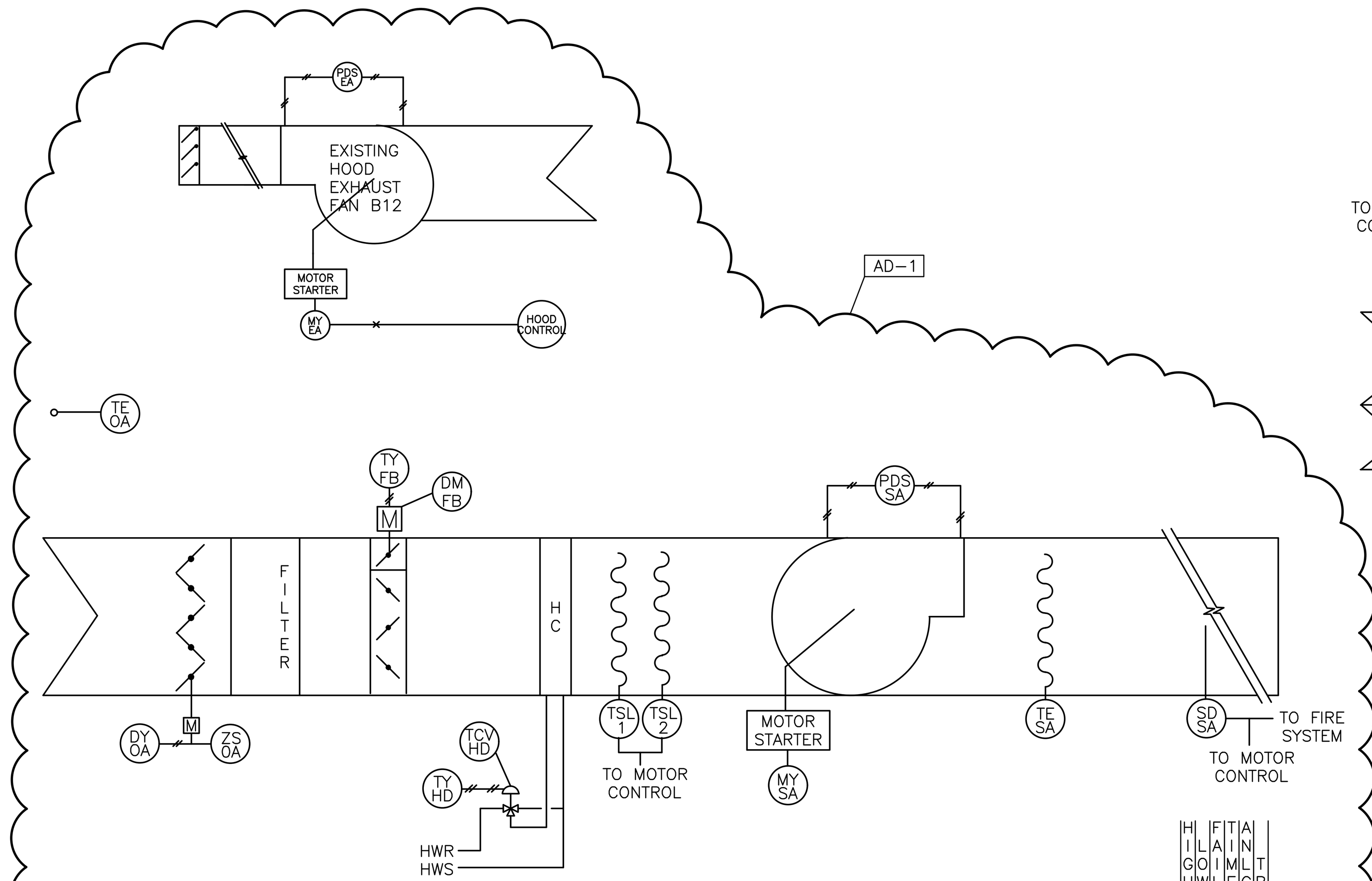
PROVIDE NEW BUILDING DDC AUTOMATION SYSTEM CONTROLS, DEVICES, AND INTERFACE THE AIR HANDLING UNITS, CONDENSING UNITS, THROUGH THE EXISTING UPGRADED JCI BUILDING AUTOMATION SYSTEM. REPLACE PNEUMATIC/ELECTRIC CONTROL DEVICES IN EACH AIR HANDLING SYSTEM. SYSTEMS SHALL INTERFACE SEAMLESSLY WITH THE EXISTING UPGRADED BUILDING AUTOMATION SYSTEM.

PROVIDE ZONE AIR PRESSURE CONTROL DDC SENSOR IN; EXTENDED LEARNING A104, EXTENDED LEARNING C104, CORRIDOR B141, MEDIA B133, GYMNASIUM B121, AND CAFETERIA B119 TO MODULATE RELIEF DAMPERS AT ROOF VENT AND RELIEF WALL LOUVER TO MAINTAIN +0.05"WG ZONE PRESSURE.

PROVIDE DDC EXHAUST FAN CONTROL OF ALL MECHANICAL ROOM EXHAUST FANS TO RUN ON THE OWNERS PREDETERMINED OCCUPIED/UNOCCUPIED SCHEDULE AND TO RUN ON SPACE TEMPERATURE SENSOR CONTROL.

PROVIDE SPECIFIED VARIABLE FREQUENCY DRIVES TO MATCH THE SAME MANUFACTURER USED IN THE RECENT HYDRONIC SYSTEMS, INSTALL TO CONTROL PER SEQUENCE OF OPERATION FROM THE RESPECTIVE AIR HANDLER DDC PANEL AND INTEGRATE WITH UPGRADED JCI BAS.

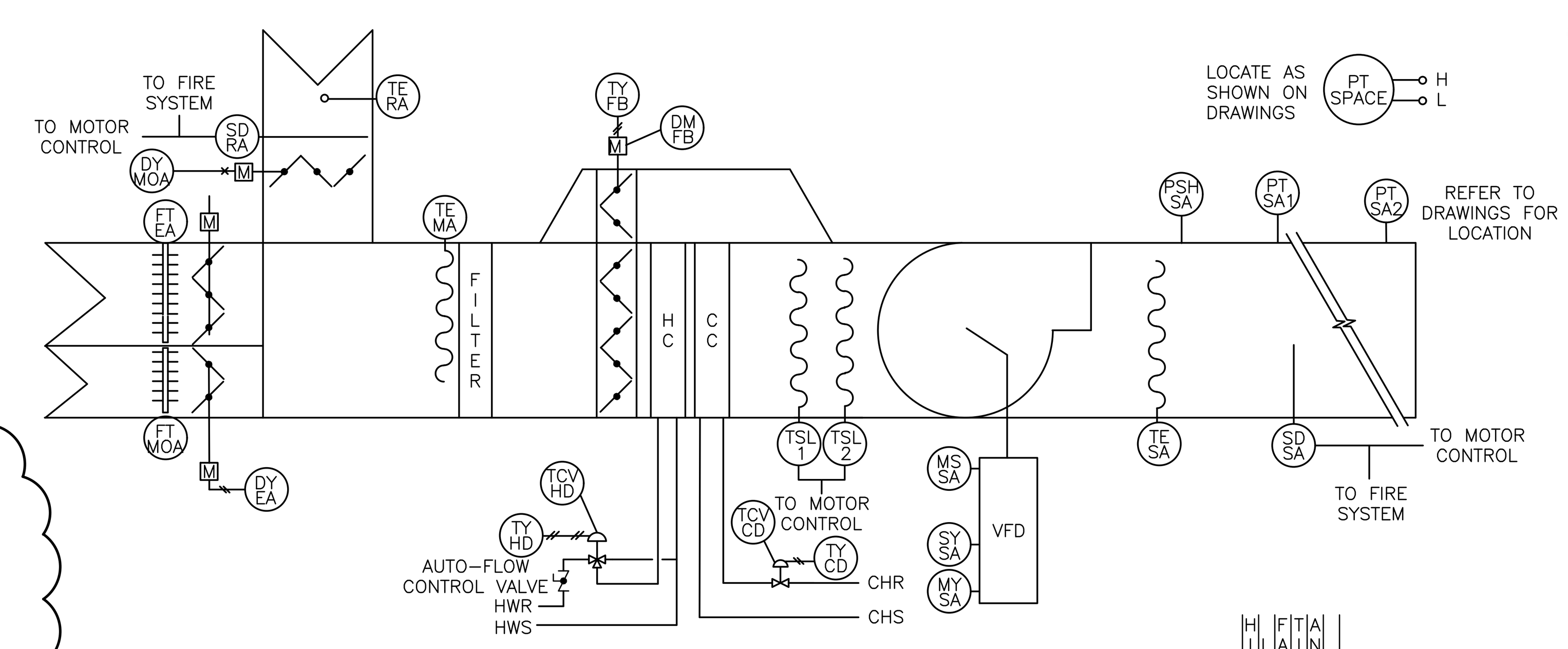
AIR HANDLING SYSTEMS SHALL HAVE AIR ECONOMIZER AND MINIMUM 4 PEAK CO2 REPRESENTATIVE ZONE AIR SENSORS TO MAINTAIN CO2 LEVELS BELOW 900 TO 1000 PPM.



TAG NUMBER	DEVICE DESCRIPTION	DEVICE SPEC.	TYPE	NOTES	HIGH ALM	LOW ALM	FAIL ALM	TIME TOT	ANLG TOT	TREND
TSL 1	LOW TEMPERATURE FREEZSTAT #1	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TSL 2	LOW TEMPERATURE FREEZSTAT #2	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
MY SA	SUPPLY FAN START/STOP CONTROL	C-1		INTERLOCK TO DAMPER END SWITCH						
TY HD	HEATING COIL VALVE CONTROL	C-3	AO							
ZS OA	OUTSIDE AIR DAMPER END SWITCH			INTERLOCK TO STARTER						
DY OA	OUTSIDE AIR DAMPER CONTROL	C-4		INTERLOCK TO HOOD FAN STARTER						
TE OA	OUTDOOR AIR TEMPERATURE	T-4	AI							X
MY FB	INTERNAL FACE AND BYPASS DAMPER	C-3	AO				X	X		
TE SA	SUPPLY AIR TEMPERATURE SENSOR	T-2	AI		X	X				X
SD SA	SUPPLY AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
PDS SA	SUPPLY FAN ON/OFF STATUS	PS-2	DI				X	X		
MY	EXHAUST FAN START STOP CONTROL			INTERLOCK WITH COOK HOOD SWITCH						
PDS	EXHAUS FAN ON/OFF STATUS						X	X		

100% OA KITCHEN HOOD MAKE-UP AHU-B5

NOT TO SCALE



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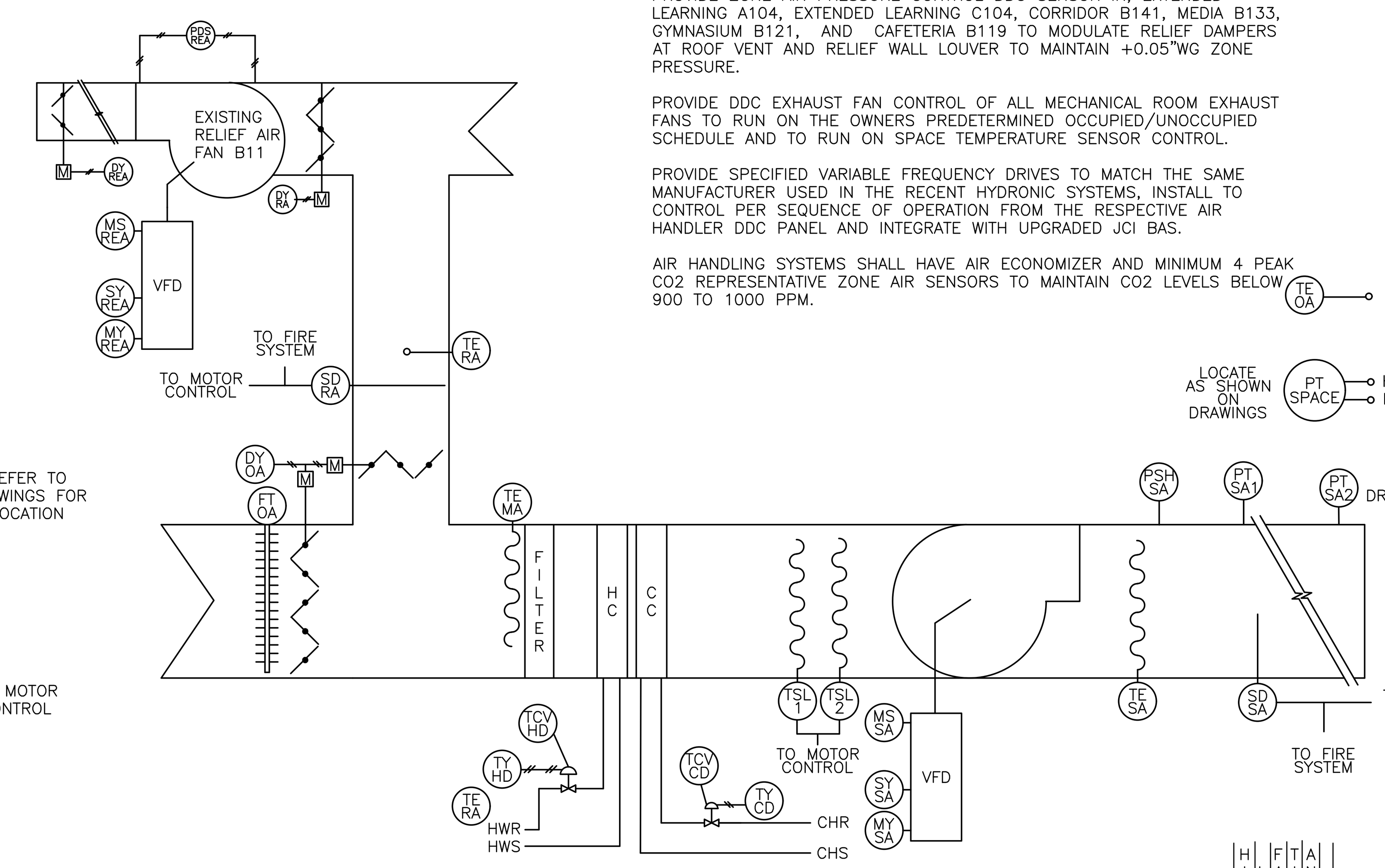
TSL 1	LOW TEMPERATURE FREEZSTAT #1	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TSL 2	LOW TEMPERATURE FREEZSTAT #2	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TY CD	COOLING COIL VALVE CONTROL	C-3	AO							
TY HD	HEATING COIL VALVE CONTROL	C-3	AO							
TY FB	FACE & BYPASS DAMPER CONTROL	C-3	AO							
TE MA	MIXED AIR TEMPERATURE SENSOR	T-2	AI			X				X
DY MOA	MINIMUM OUTSIDE AIR DAMPER CONTROL	C-3	AO							
DY EA	ECONOMIZER AIR DAMPER CONTROL	C-3	AO							
FT EA	ECONOMIZER AIRFLOW MEASURING STATION	FT-2	AI			X				X
FT MOA	OUTDOOR AIR FLOW MEASURING STATION	FT-2	AI			X				X
TE OA	OUTDOOR AIR TEMPERATURE	T-4	AI	INTERLOCK TO STOP FAN						X
TE RA	RETURN AIR TEMPERATURE	T-1	AI							X
SD RA	RETURN AIR SMOKE DETECTOR	SD-1								
TE SA	SUPPLY AIR TEMPERATURE SENSOR	T-2	AI	FROM VFD	X	X				X
MY SA	SUPPLY FAN VFD START/STOP CONTROL	C-1	DO	TO VFD						
MS SA	SUPPLY FAN VFD ON/OFF STATUS	C-2	DI	INTERLOCK TO STOP FAN			X	X		
SY SA	SUPPLY FAN VFD SPEED CONTROL	I-1	AO	REFER TO DRAWINGS FOR LOCATION						
SD SA	SUPPLY AIR SMOKE DETECTOR	SD-1		REFER TO DRAWINGS FOR LOCATION						
PT SA1	DISCHARGE PRESSURE SENSOR	P-2	AI	INTERLOCK TO STOP FAN & DAMPER	X					X
PT SA2	END OF DUCT PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS	X					X
PSH SA	DISCHARGE PRESSURE LIMIT	PS-1	DI		X		X			
PT SPACE	SPACE STATIC PRESSURE SENSOR	P-2	AI							

VARIABLE AIR VOLUME FACED & BYPASS HEATING COIL AND, COOLING COIL AHU-B4

NOT TO SCALE



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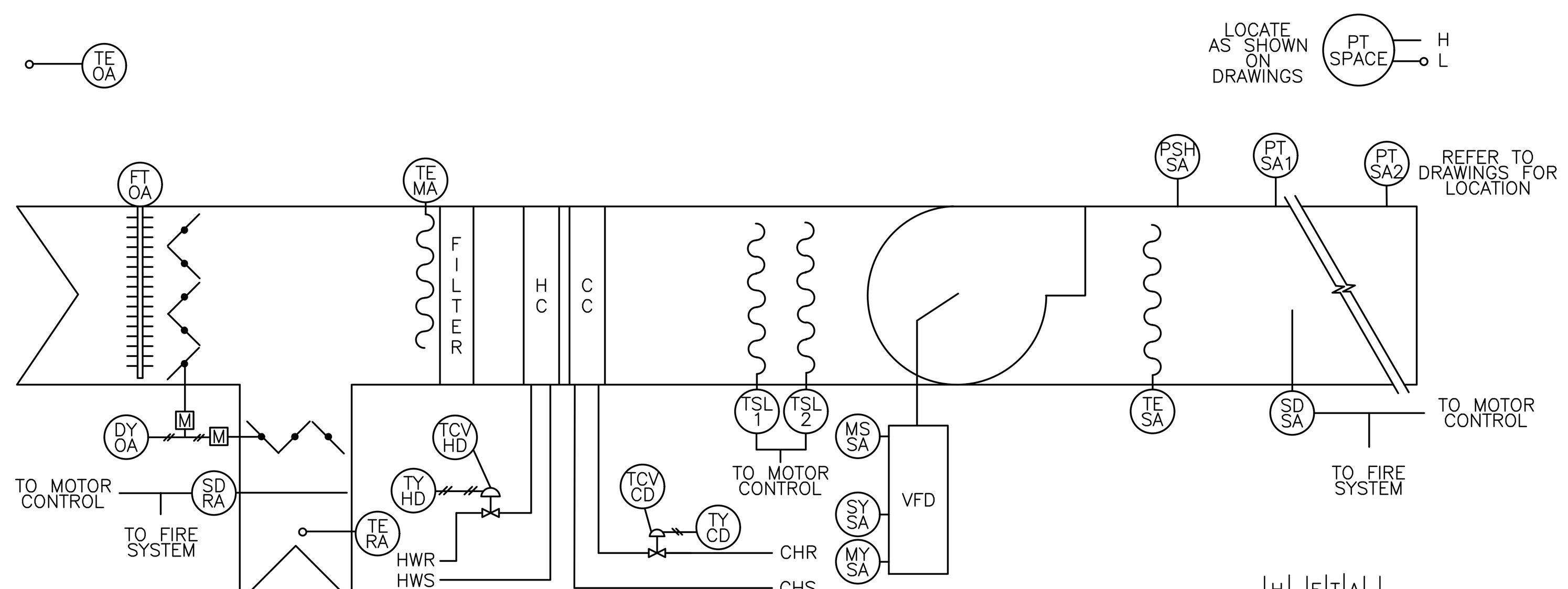
TSL 2	LOW TEMPERATURE FREEZSTAT #2	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TY CD	COOLING COIL VALVE CONTROL	C-3	AO	PRESSURE INDEPENDENT CONTROL VALVE						
TY HD	HEATING COIL VALVE CONTROL	C-3	AO							
TE MA	MIXED AIR TEMPERATURE SENSOR	T-2	AI			X				X
DY OA	OUTSIDE AIR DAMPER CONTROL	C-3	AO							
FT OA	OUTDOOR AIR FLOW MEASURING STATION	FT-2	AI			X				X
TE OA	OUTDOOR AIR TEMPERATURE	T-4	AI							X
TE RA	RETURN AIR TEMPERATURE	T-1	AI							X
SD RA	RETURN AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
TE SA	SUPPLY AIR TEMPERATURE SENSOR	T-2	AI							
MY SA	SUPPLY FAN VFD START/STOP CONTROL	C-1	DO							X
MS SA	SUPPLY FAN VFD ON/OFF STATUS	C-2	DI	FROM VFD			X	X		
SY SA	SUPPLY FAN VFD SPEED CONTROL	I-1	AO	TO VFD						X
SD SA	SUPPLY AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
PT SA1	DISCHARGE PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS FOR LOCATION	X					X
PT SA2	END OF DUCT PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS FOR LOCATION	X					X
PSH SA	DISCHARGE PRESSURE LIMIT	PS-1	DI	INTERLOCK TO STOP FAN & DAMPER	X		X			
PT SPACE	SPACE STATIC PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS						
DY REA	RELIEF AIR DAMPER CONTROL									
DY RA	RETURN AIR DAMPER									
MS REA	RELIEF FAN VFD START /STOP CONTROL									
PDS REA	RELIEF FAN ON/OFF STATUS						X	X		
MY REA	RELIEF FAN VFD SPEED CONTROL									

VARIABLE AIR VOLUME HEATING COIL & CHILLED WATER COIL AHU-B3

NOT TO SCALE



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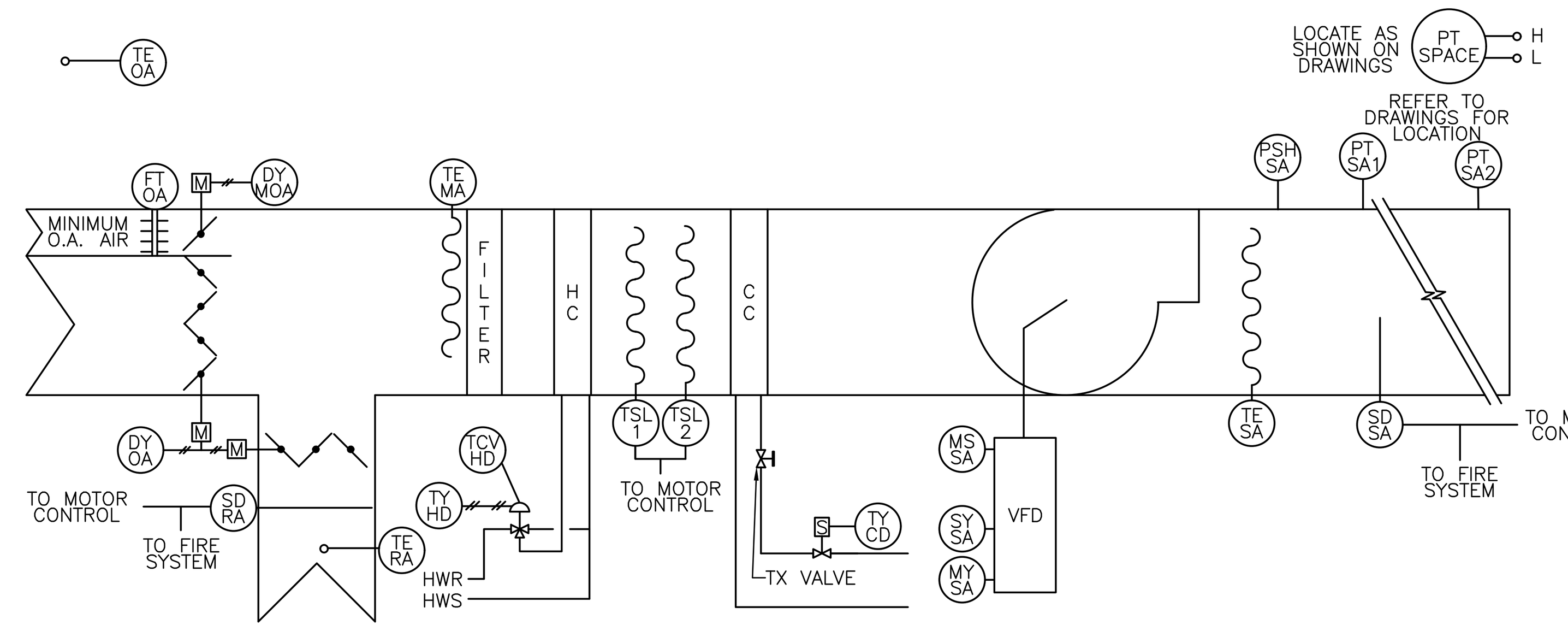
TY HD	HEATING COIL VALVE CONTROL	C-3	AO							
TE MA	MIXED AIR TEMPERATURE SENSOR	T-2	AI			X				X
DY OA	OUTSIDE AIR DAMPER CONTROL	C-3	AO							
FT OA	OUTDOOR AIR FLOW MEASURING STATION	FT-2	AI			X				X
TE OA	OUTDOOR AIR TEMPERATURE	T-4	AI							X
TE RA	RETURN AIR TEMPERATURE	T-1	AI							X
SD RA	RETURN AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
TE SA	SUPPLY AIR TEMPERATURE SENSOR	T-2	AI							
MY SA	SUPPLY FAN VFD START/STOP CONTROL	C-1	DO							X
MS SA	SUPPLY FAN VFD ON/OFF STATUS	C-2	DI	FROM VFD			X	X		
SY SA	SUPPLY FAN VFD SPEED CONTROL	I-1	AO	TO VFD						X
SD SA	SUPPLY AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
PT SA1	DISCHARGE PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS FOR LOCATION	X					X
PT SA2	END OF DUCT PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS FOR LOCATION	X					X
PSH SA	DISCHARGE PRESSURE LIMIT	PS-1	DI	INTERLOCK TO STOP FAN & DAMPER	X		X			
PT SPACE	SPACE STATIC PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS						

AHU-B2

VARIABLE AIR VOLUME HEATING COIL & CHILLED WATER COIL

NOT TO SCALE



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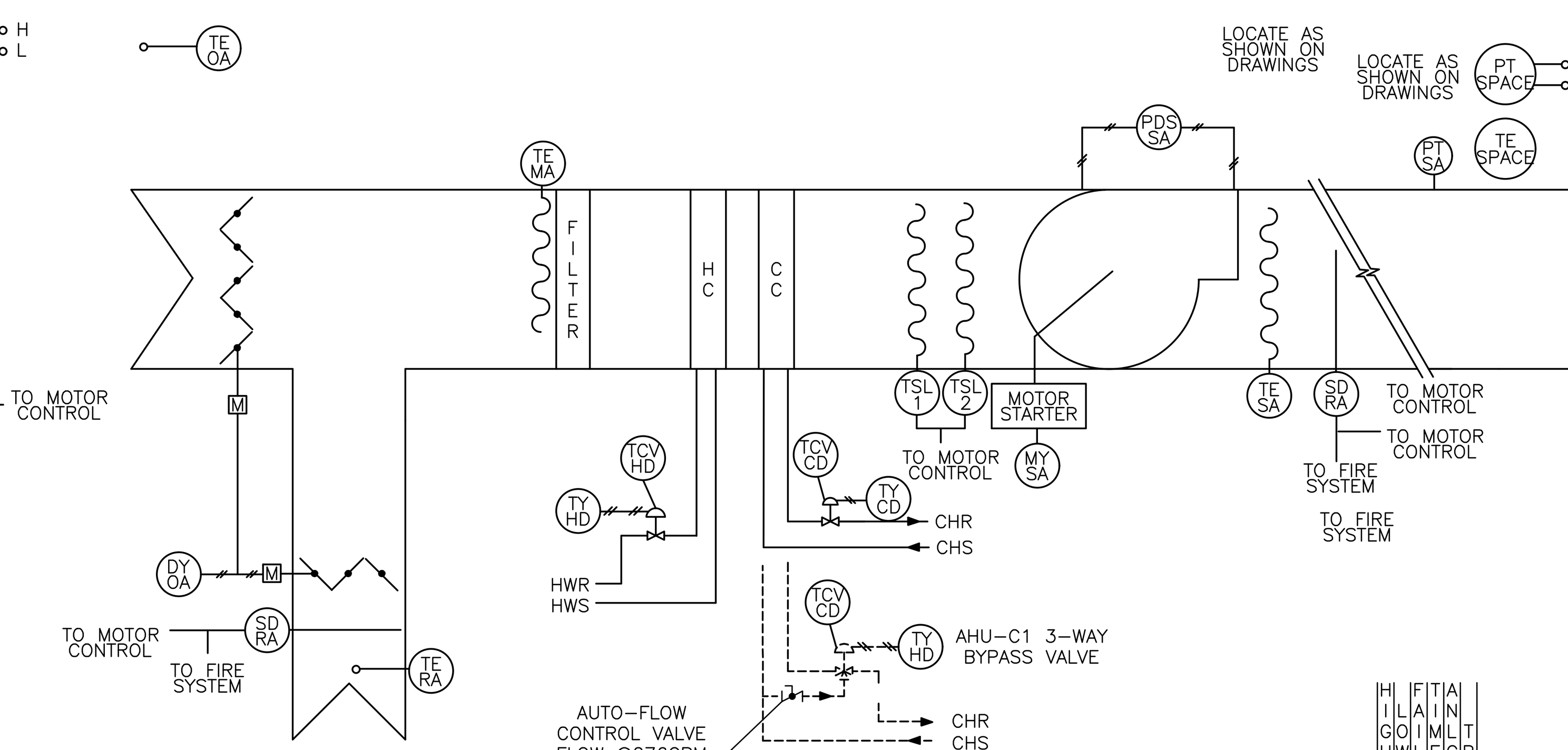
TSL 1	LOW TEMPERATURE FREEZSTAT #1	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TSL 2	LOW TEMPERATURE FREEZSTAT #2	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TY CD	DX COIL STAGE CONTROL	C-1	DO	PROVIDE ONE FOR EACH STAGE						
TY HD	HEATING COIL VALVE CONTROL	C-3	AO							
TE MA	MIXED AIR TEMPERATURE SENSOR	T-2	AI			X				X
DY OA	OUTSIDE AIR DAMPER CONTROL	C-3	AO							
FT MOA	MINIMIM OUTDOOR AIR MEASURING STATION	FT-2	AI			X				X
TE OA	OUTDOOR AIR TEMPERATURE	T-4	AI							X
TE RA	RETURN AIR TEMPERATURE	T-1	AI							X
SD RA	RETURN AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
TE SA	SUPPLY AIR TEMPERATURE SENSOR	T-2	AI		X	X				X
MY SA	SUPPLY FAN VFD START/STOP CONTROL	C-1	DO							
MS SA	SUPPLY FAN VFD ON/OFF STATUS	C-2	DI	FROM VFD			X	X		
SY SA	SUPPLY FAN VFD SPEED CONTROL	I-1	AO	TO VFD						
SD SA	SUPPLY AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
PT SA1	DISCHARGE PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS FOR LOCATION	X					X
PT SA2	END OF DUCT PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS FOR LOCATION	X					X
PSH SA	DISCHARGE PRESSURE LIMIT	PS-1	DI	INTERLOCK TO STOP FAN & DAMPER	X		X			
PT SPACE	SPACE STATIC PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS						
DY MOA	MINIMUM OUTSIDE AIR DAMPER CONTROL	C-3	OA							

VAV HEATING COIL & DX COOLING COIL AHU-B1

NOT TO SCALE



TAG NUMBER	DEVICE DESCRIPTION	DEVICE SPEC.	TYPE	NOTES	HIGH ALM	LOW ALM	FAIL ALM	TIME TOT	ANLG TOT	TREND
TSL 1	LOW TEMPERATURE FREZSTAT #1	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TSL 2	LOW TEMPERATURE FREZSTAT #2	TS-1	DI	INTERLOCK TO MOTOR CONTROL		X				
TY CD	COOLING COIL VALVE CONTROL	C-3	AO	PRESSURE INDEPENDENT CONTROL VALVE						
TY HD	HEATING COIL VALVE CONTROL	C-1	DO							
TE MA	MIXED AIR TEMPERATURE SENSOR	T-2	AI			X				
DY OA	OUTSIDE AIR DAMPER CONTROL	C-3	AO							
TE OA	OUTDOOR AIR TEMPERATURE	T-4	AI							X
TE RA	RETURN AIR TEMPERATURE	T-1	AI							
SD RA	RETURN AIR SMOKE DETECTOR	SD-1		INTERLOCK TO STOP FAN						
MY SA	SUPPLY FAN START/STOP CONTROL	C-1	DO							
TE SA	SUPPLY AIR TEMPERATURE SENSOR	T-2	AI		X	X				X
PDS SA	SUPPLY FAN ON/OFF STATUS	PS-2	DI				X	X		
SD SA	SUPPLY AIR SMOKE DETE	SD-1		INTERLOCK TO STOP FAN						
PT SA	SUPPLY DUCT PRESSURE	P-1	AI		X					X
TE SPACE	SPACE ZONE TEMPERATURE SENSOR	T-3	AI	LOCATE AS SHOWN PROVIDE 1 PER ZONE	X	X				X
DY SPACE	SPACE ZONE DAMPER CONTROL	P-2	DO	LOCATE AS SHOWN PROVIDE 1 PER ZONE						
PT SPACE	SPACE STATIC PRESSURE SENSOR	P-2	AI	REFER TO DRAWINGS						

VAV HEATING/COOLING COIL 2-WAY CONTROL VALVE

AHU-A1 AND AHU-C1

NOT TO SCALE

GIBRALTAR DESIGN
ARCHITECTURE • ENGINEERING • INTERIOR DESIGN

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

VALPARAISO COMMUNITY SCHOOLS
VALPARAISO, INDIANA

FLINT LAKE ES
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THOMAS JEFFERSON MS
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PROJECT 22-116/22-117
DATE 05/06/22
COORDINATED BY TWC
DRAWN BY TWC
CHECKED BY JPB

JOSEPH P. BRIGGS REGISTERED NO. 11600109 STATE OF INDIANA ARCHITECT

REVISIONS

MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
MECHANICAL CONTROL DIAGRAMS

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

FL
SHEET M-801

Tuesday, 5/24/2022 - 9:05 AM - LAST SAVED BY:TCLAYCOMB
Y:\22-117 VALPARAISO CS - FLINT LAKE ES AHU REPLACEMENT AND RELATED WORK\22-117 DRAWINGS\07 MECH\M-801_AHU.DWG

GENERAL NOTES:

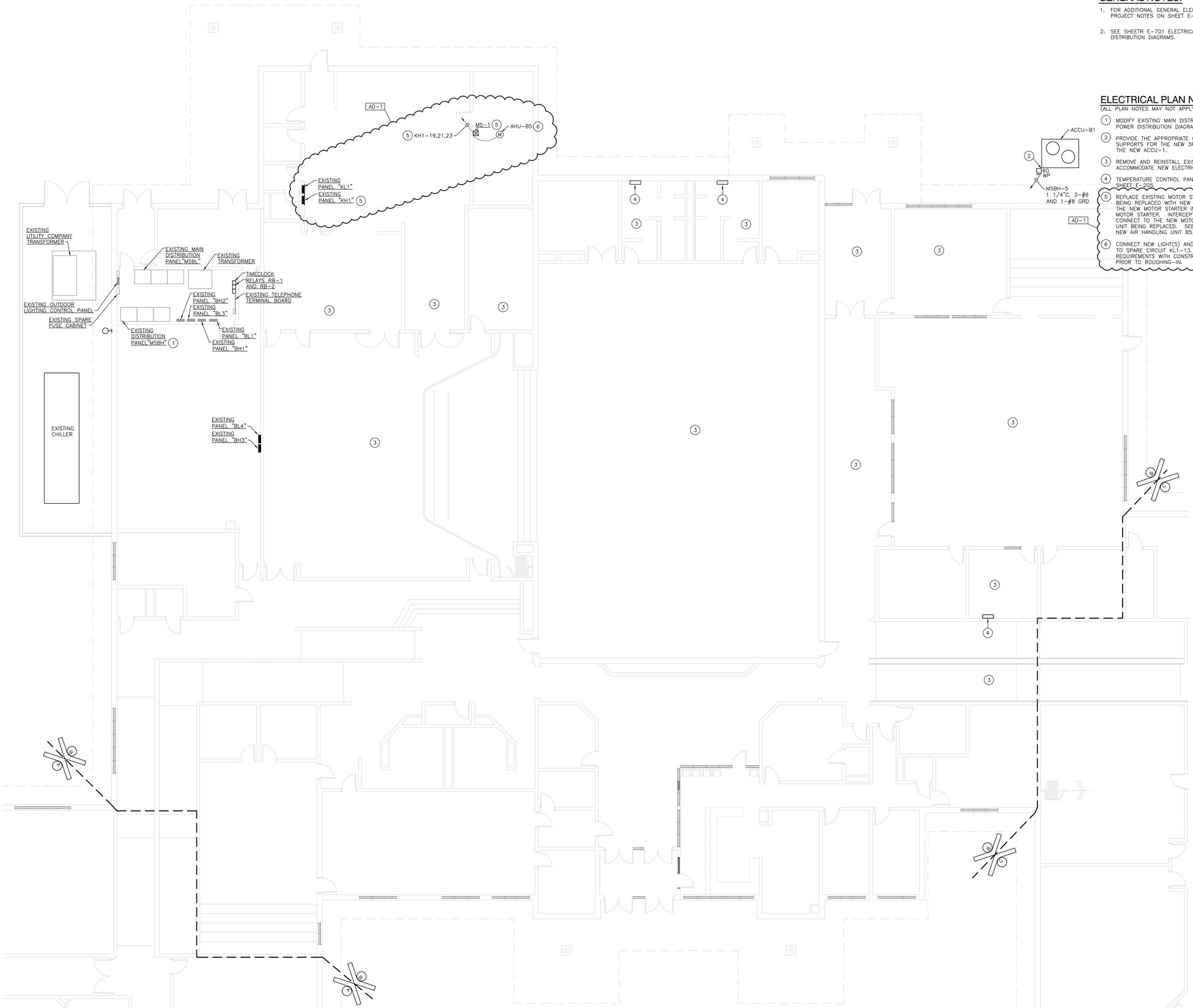
1. FOR ADDITIONAL GENERAL ELECTRICAL NOTES, SEE GENERAL ELECTRICAL PROJECT NOTES ON SHEET E-001.

2. SEE SHEETR E-701 ELECTRICAL PANEL SCHEDULE AND ELECTRICAL DISTRIBUTION DIAGRAMS.

ELECTRICAL PLAN NOTES:

(ALL PLAN NOTES MAY NOT APPLY TO THIS SHEET.)

1. MODIFY EXISTING MAIN DISTRIBUTION PANEL "MSBH" AS SHOWN ON THE POWER DISTRIBUTION DIAGRAM ON SHEET E-701.
2. PROVIDE THE APPROPRIATE GALVANIZED STRUCTURAL STEEL CHANNEL SUPPORTS FOR THE NEW 3P-60 WEATHERPROOF DISCONNECT TO SERVE THE NEW ACCU-1.
3. REMOVE AND REINSTALL EXISTING CEILINGS AS NECESSARY TO ACCOMMODATE NEW ELECTRICAL WORK.
4. TEMPERATURE CONTROL PANEL IN MECHANICAL MEZZANINE ABOVE. SEE SHEET E-205.
5. REPLACE EXISTING MOTOR STARTER SERVING EXISTING AIR HANDLING UNIT BEING REPLACED WITH NEW MOTOR STARTER. FIELD VERIFY AND PROVIDE THE NEW MOTOR STARTER IN THE SAME LOCATION AS THE EXISTING MOTOR STARTER. INTERCEPT EXISTING CIRCUIT, CONDUIT AND WIRE AND CONNECT TO THE NEW MOTOR STARTER TO THE EXISTING AIR HANDLING UNIT BEING REPLACED. SEE MECHANICAL PLANS FOR LOCATION OF THE NEW AIR HANDLING UNIT B5.
6. CONNECT NEW LIGHT(S) AND RECEPTACLE(S) IN AIR HANDLING UNIT B5 TO SPARE CIRCUIT KL1-13. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH CONSTRUCTION MANAGER AND DIVISION 23 INSTALLER PRIOR TO ROUGHING-IN.



UNIT "B" ELECTRICAL FIRST FLOOR POWER PLAN

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

NORTH

GIBRALTAR DESIGN
ARCHITECTURE • ENGINEERING • INTERIOR DESIGN

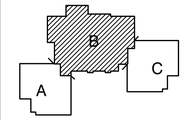
PROJECT

THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

VALPARAISO COMMUNITY SCHOOLS
VALPARAISO, INDIANA

FLINT LAKE ES
4106 CALUMET AVENUE
VALPARAISO, INDIANA

THOMAS JEFFERSON MS
1600 ROOSEVELT ROAD
VALPARAISO, INDIANA



FIRST FLOOR KEYPLAN

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PROJECT 22-116/22-117
DATE 05/06/22
COORDINATED BY PCB
DRAWN BY PCB/JVC
CHECKED BY JPB

JOSEPH P. BRIGGS REGISTERED NO. 11600109 STATE OF INDIANA ARCHITECT

REVISIONS

MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
UNIT "B" ELECTRICAL FIRST FLOOR POWER PLAN

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

SHEET
FL E-202

Friday, 5/20/2022 - 10:50 AM - LAST SAVED BY:PBROWN
Y:\22-117 VALPARAISO CS - FLINT LAKE ES AHU REPLACEMENT AND RELATED WORK\22-117 DRAWINGS\09 ELEC\E-202_AHU.DWG

DEMOLITION PLAN NOTES:

(THESE NOTES APPLY TO THIS SHEET ONLY)

1. DISCONNECT ELECTRICAL SERVICE FROM EXISTING AIR HANDLING UNIT BEING REMOVED. REMOVE EXISTING CONTROLLER/DISCONNECT AND REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO THE SOURCE, UNLESS OTHERWISE NOTED.
2. DISCONNECT ELECTRICAL SERVICE TO EXISTING TEMPERATURE CONTROL PANEL. REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO THE SOURCE IN SUCH A MANNER AS TO KEEP ALL OTHER DEVICES/EQUIPMENT, THAT REMAIN AND ARE ON THAT CIRCUIT, IN SERVICE.
3. REMOVE, STORE AND PREPARE EXISTING DUCT DETECTORS FOR INSTALLATION INTO NEW AIR HANDLING UNIT DUCTS.
4. MODIFY EXISTING PANEL "DPH" AS SHOWN ON THE PANELS SCHEDULE ON SHEET E-701.
5. DISCONNECT ELECTRICAL SERVICE FROM EXISTING VARIABLE FREQUENCY DRIVE CONTROLLER SERVING THE EXISTING EXHAUST FAN. PREPARE WIRING FOR CONNECTION TO NEW VARIABLE FREQUENCY DRIVE CONTROLLER AND EXISTING EXHAUST FAN, UNLESS OTHERWISE NOTED.
6. SEE SHEET E-202 FOR DEMOLITION INFORMATION FOR EXISTING AIR HANDLING UNIT B5 BEING REPLACED.

ELECTRICAL PLAN NOTES:

(ALL PLAN NOTES MAY NOT APPLY TO THIS SHEET.)

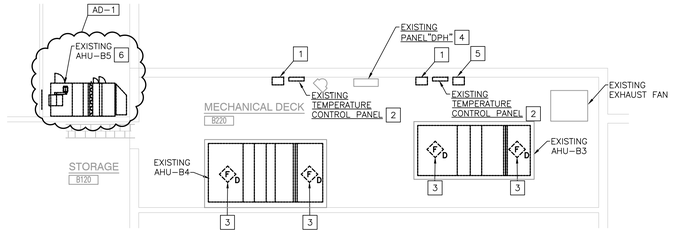
1. VARIABLE FREQUENCY DRIVE CONTROLLER BY DIVISION 23.
2. CONNECT NEW TEMPERATURE CONTROL PANEL TO CIRCUIT INDICATED.
3. INSTALL EXISTING FIRE ALARM SYSTEM DUCT DETECTORS INTO DUCTWORK OF NEW AIR HANDLING UNITS.
4. MODIFY EXISTING PANEL "DPH" AS SHOWN ON THE PANELS SCHEDULE ON SHEET E-701.
5. WIREWAY AND TWO (2) 3P-60 AMP FUSIBLE DISCONNECTS TO SERVE THE NEW AIR HANDLING UNIT A-1 VFD'S AND MOTORS. SEE POWER DISTRIBUTION DIAGRAM ON SHEET E-701 FOR ADDITIONAL INFORMATION.
6. WIREWAY AND TWO (2) 3P-60 AMP FUSIBLE DISCONNECTS TO SERVE THE NEW AIR HANDLING UNIT C-1 VFD'S AND MOTORS. SEE POWER DISTRIBUTION DIAGRAM ON SHEET E-701 FOR ADDITIONAL INFORMATION.
7. CONNECT NEW VARIABLE FREQUENCY DRIVE CONTROLLER TO THE EXISTING CIRCUIT SERVING THE EXISTING EXHAUST FAN AND CONNECT THE NEW VARIABLE FREQUENCY DRIVE CONTROLLER TO THE EXISTING EXHAUST FAN.
8. CONNECT NEW LIGHT(S) AND RECEPTACLE(S) IN AIR HANDLING UNIT TO CIRCUIT AL2-21 IN EXISTING PANEL "AL2". COORDINATE EXACT LOCATION AND REQUIREMENTS WITH CONSTRUCTION MANAGER AND DIVISION 23 INSTALLER PRIOR TO ROUGHING-IN.
9. CONNECT NEW LIGHT(S) AND RECEPTACLE(S) IN AIR HANDLING UNIT TO CIRCUIT CL2-24, 3/4", 2-#10 AND 1-#10 GRD IN EXISTING PANEL "CL2". COORDINATE EXACT LOCATION AND REQUIREMENTS WITH CONSTRUCTION MANAGER AND DIVISION 23 INSTALLER PRIOR TO ROUGHING-IN.
10. CONNECT NEW LIGHT(S) AND RECEPTACLE(S) IN AIR HANDLING UNIT TO CIRCUIT BL4-6, 3/4"C, 2-#10 AND 1-#10 GRD IN EXISTING PANEL "BL4". COORDINATE EXACT LOCATION AND REQUIREMENTS WITH CONSTRUCTION MANAGER AND DIVISION 23 INSTALLER PRIOR TO ROUGHING-IN.
11. CONNECT NEW LIGHT(S) AND RECEPTACLE(S) IN AIR HANDLING UNIT TO CIRCUIT CL2-26. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH CONSTRUCTION MANAGER AND DIVISION 23 INSTALLER PRIOR TO ROUGHING-IN.
12. SEE SHEET E-202 FOR NEW WORK ASSOCIATED WITH NEW AIR HANDLING UNIT B5.

GENERAL NOTES:

1. FOR ADDITIONAL GENERAL ELECTRICAL NOTES, SEE GENERAL ELECTRICAL PROJECT NOTES ON SHEET E-001.
2. SEE E-E-701 FOR ELECTRICAL DETAILS AND SCHEDULES AND ELECTRICAL DISTRIBUTION DIAGRAMS.

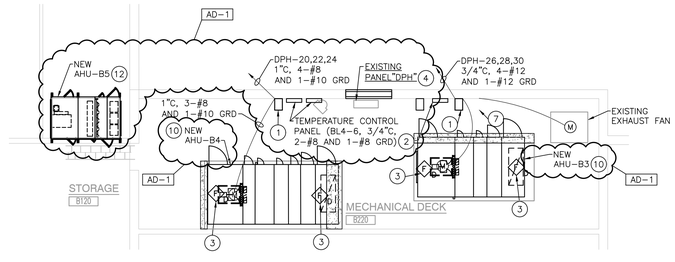
UNIT "B" MEZZANINE ELECTRICAL DEMOLITION PLAN

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



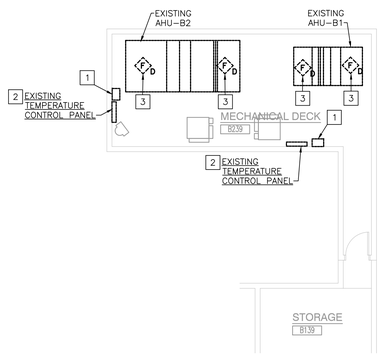
UNIT "B" MEZZANINE ELECTRICAL POWER PLAN

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



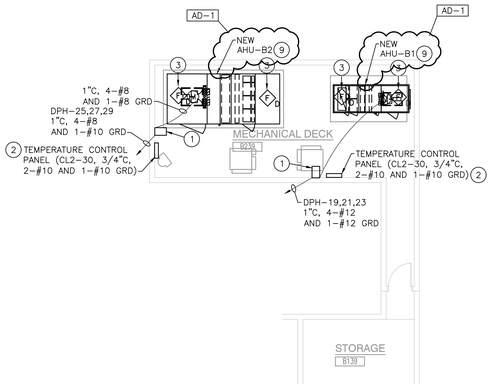
UNIT "B" MEZZANINE ELECTRICAL DEMOLITION PLAN

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



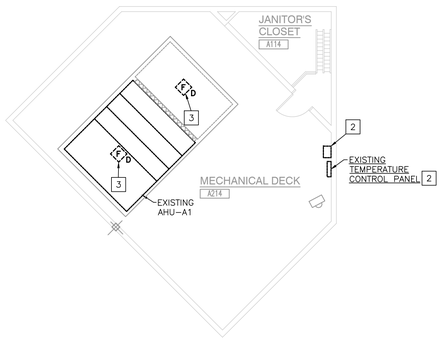
UNIT "B" MEZZANINE ELECTRICAL POWER PLAN

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



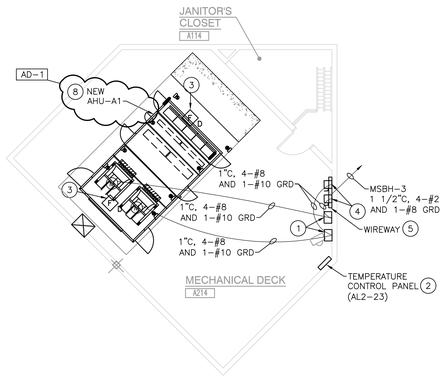
UNIT "A" MEZZANINE ELECTRICAL DEMOLITION PLAN

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



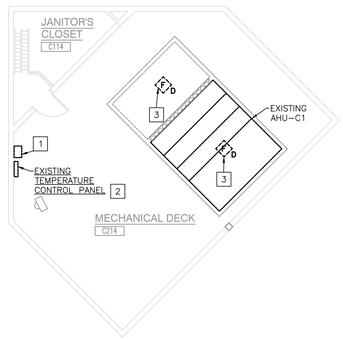
UNIT "A" MEZZANINE ELECTRICAL POWER PLAN

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



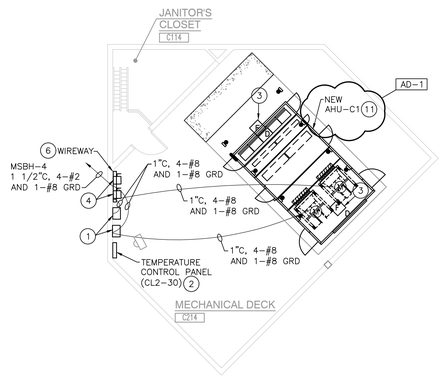
UNIT "C" MEZZANINE ELECTRICAL DEMOLITION PLAN

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



UNIT "C" MEZZANINE ELECTRICAL POWER PLAN

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



Tuesday, 5/24/2022 - 2:31 PM - LAST SAVED BY:JCHAMBERS
Y:\22-117 VALPARAISO CS - FLINT LAKE ES AHU REPLACEMENT AND RELATED WORK\22-117 DRAWINGS\09 ELEC\E-204_AHU.DWG

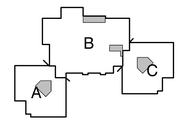
GIBRALTAR DESIGN
ARCHITECTURE • ENGINEERING • INTERIOR DESIGN

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

VALPARAISO COMMUNITY SCHOOLS
VALPARAISO, INDIANA

FLINT LAKE ES
4106 CALUMET AVENUE
VALPARAISO, INDIANA

THOMAS JEFFERSON MS
1600 ROOSEVELT ROAD
VALPARAISO, INDIANA



FIRST FLOOR KEYPLAN

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PROJECT 22-116/22-117
DATE 05/06/22
COORDINATED BY PCB
DRAWN BY PCB/JVC
CHECKED BY JPB

JOSEPH P. BRIGGS REGISTERED NO. 11600109 STATE OF INDIANA ARCHITECT

REVISIONS

MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
ELECTRICAL MEZZANINE FLOOR POWER PLANS

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

SHEET
FL E-204

FLINT LAKE ELEMENTARY SCHOOL PANELBOARD SCHEDULE

MARK & TYPE
"BL4"
TYPE: EXISTING SQ D NQ
120/208V, 3 PH, 4W
100 AMP MAIN LUGS
NEMA 1
SURFACE MOUNTED

REMARKS
EXISTING SQUARE NQ PANELBOARD
CIRCUIT BREAKERS SHALL HAVE MINIMUM 22,000 AMP INTERRUPTING CAPACITY - TYPE QOB-BH.

DESCRIPTION	CIR	POLE	TRIP	LTS	REC	EQUIP	A	B	C	HEAT	A/C	FUTR	POLE	TRIP	CIR	DESCRIPTION
HWB-3	1	1	20			1.00	1.00									
						1.00		1.00					1	20	2	TEMPERATUE CONTROL PANEL AND BOILER CONTROL PANEL
HWB-2	3	1	20			1.00		1.00								
													1	20	4	**AHU TEMPERATURE CONTROL PANELS**
HWB-1	5	1	20			1.00			1.00							
													1	20	6	**AHU TEMPERATURE CONTROL PANELS**
SPARE	7	1	20													
				0.20	0.36		0.56						1	20	8	**AHU-B3 AND AHU- B4 LIGHTS AND RECPS**
SPARE	9	1	20													
													1	20	10	SPARE
SPARE	11	1	20													
													1	20	12	SPARE
SPARE	13	1	20													
													1	20	14	SPARE
SPARE	15	1	20													
													1	20	16	SPARE
SPARE	17	1	20													
													1	20	18	SPARE
SPARE	19	1	20													
													1	20	20	SPARE
SPARE	21	1	20													
													1	20	22	SPARE
SPARE	23	1	20													
													1	20	24	SPARE
SPACE	25	1														
													1		26	SPACE
SPACE	27	1														
													1		28	SPACE
SPACE	29	1														
													1		30	SPACE
TOTAL CONNECTED LOAD (kVA)				0.20	0.36	4.00	2.56	1.00	1.00							
TOTAL DEMAND LOAD (kVA)				0.20	0.36	4.00										

FLINT LAKE ELEMENTARY SCHOOL PANELBOARD SCHEDULE

MARK & TYPE
"AL2"
TYPE: EXISTING SQ D NQOD
120/208V, 3 PH, 4W
225 AMP MAIN LUGS
NEMA 1
SURFACE MOUNTED

REMARKS
EXISTING SQUARE D NQOD PANELBOARD
PROVIDE THREE (3) A 1P-20 AMP CIRCUIT BREAKERS (CIRCUITS 19,21 AND 23) IN THREE EXISTING 1P-SPACES (CIRCUITS 19,21 AND 23).
AD-1

DESCRIPTION	CIR	POLE	TRIP	LTS	REC	EQUIP	A	B	C	HEAT	A/C	FUTR	POLE	TRIP	CIR	DESCRIPTION
SPACE	1	1											1		2	SPACE
SPACE	3	1											1		4	SPACE
SPACE	5	1											1		6	SPACE
SPACE	7	1											1		8	SPACE
SPACE	9	1											1		10	SPACE
SPACE	11	1											1		12	SPACE
SPACE	13	1											1		14	SPACE
SPACE	15	1											1		16	SPACE
SPACE	17	1											1		18	SPACE
SPARE	**19**	**1**	**20**													
AHU-A1 LIGHTS AND RECPS	**21**	**1**	**20**										3	60	20	PANEL "1L1"
															22	
NEW TEMPERATURE CONTROL PANEL	**23**	**1**	**20**													
															24	
100,101 FLOOR BOXES	25	1	20										1	20	26	FLOOR BOXES
102 FLOOR BOXES	27	1	20										1	20	28	FLOOR BOXES
103 FLOOR BOXES	29	1	20										1		30	SPACE
FIRE PANEL	31	1	20										1	20	32	STORAGE 103,105 EXHAUST FANS
RESTROOM EXHAUST FANS	33	1	20										1	20	34	MEZZANINE A UNIT HEATERS
RESTROOM EXHAUST FANS	35	1	20										1	20	36	MEZZANINE A DDC
MEZZANINE A RECPS	37	1	20										1	20	38	218 FLOOR BOXES
202 FLOOR BOXES	39	1	20										1	20	40	219 FLOOR BOXES
201 FLOOR BOXES	41	1	20										1		42	SPACE
TOTAL CONNECTED LOAD (kVA)																
TOTAL DEMAND LOAD (kVA)																

FLINT LAKE ELEMENTARY SCHOOL PANELBOARD SCHEDULE

MARK & TYPE
"CL2"
TYPE: EXISTING SQ D NQOD
120/208V, 3 PH, 4W
225 AMP MAIN LUGS
NEMA 1
SURFACE MOUNTED

REMARKS
EXISTING SQUARE D NQOD PANELBOARD
PROVIDE THREE (3) A 1P-20 AMP CIRCUIT BREAKERS (CIRCUITS 22,24 AND 26) IN THREE EXISTING 1P-SPACES (CIRCUITS 22,24 AND 26).
AD-1

DESCRIPTION	CIR	POLE	TRIP	LTS	REC	EQUIP	A	B	C	HEAT	A/C	FUTR	POLE	TRIP	CIR	DESCRIPTION
SPACE	1	1											1		2	SPACE
SPACE	3	1											1		4	SPACE
SPACE	5	1											1		6	SPACE
SPACE	7	1											1		8	SPACE
SPACE	9	1											1		10	SPACE
SPACE	11	1											1		12	SPACE
SPACE	13	1											1		14	SPACE
SPACE	15	1											1		16	SPACE
SPACE	17	1											1		18	SPACE
SPACE	19	1											1		20	SPACE
SPACE	21	1											1	20	22	SPARE
SPACE	23	1											1	20	24	**AHU-B1 AND AHU- B2 LIGHTS AND RECPS**
SPACE	25	1											1	20	26	**AHU-C1 LIGHTS AND RECPS**
	27	1	20										1	20	28	501 FLOOR BOXES
MEZZANINE C DDC	29	1	20										1	20	30	**TEMPERATURE CONTROL PANEL**
MEZZANINE EXHAUST FAN	31	1	20										1	20	32	500 FLOOR BOXES
MEZZANINE C RECPS	33	1	20										1	20	34	428 EXHAUST FAN
MEZZANINE C UNIT HEATER	35	1	20										1	20	36	C RAMP CABINET HEATER
504 FLOOR BOXES	37	1	20										1	20	38	C RAMP UNIT HEATER
503 FLOOR BOXES	39	1	20										1	20	40	NORTHWEST WINDOW SHADE
502 FLOOR BOXES	41	1	20										1	20	42	SOUTHEAST WINDOW SHADE
TOTAL CONNECTED LOAD (kVA)																
TOTAL DEMAND LOAD (kVA)																

FLINT LAKE ELEMENTARY SCHOOL PANELBOARD SCHEDULE

MARK & TYPE
"DPH"
TYPE: EXISTING SQUARE D
277/480V, 3 PH, 4W
225 AMP MAIN LUGS
NEMA 1
SURFACE MOUNTED

REMARKS
EXISTING SQUARE D PANELBOARD
REPLACE EXISTING 3P-40 AMP CIRCUIT BREAKER (CIRCUIT 26,28,30) WITH A NEW 3P-25 AMP CIRCUIT BREAKER (CIRCUIT 26,28,30). NEW CIRCUIT BREAKER SHALL MATCH EXISTING IN STYLE AND INTERRUPTING CAPACITY.

DESCRIPTION	CIR	POLE	TRIP	LTS	REC	EQUIP	A	B	C	HEAT	A/C	FUTR	POLE	TRIP	CIR	DESCRIPTION
SPACE	1	1	20													
													1	20	2	SPACE
SPACE	3	1	20													
													1	20	4	SPACE
SPACE	5	1	20													
													1	20	6	SPACE
SPACE	7	1	20													
													1	20	8	SPACE
SPACE	9	1	20													
													1	20	10	SPACE
SPACE	11	1	20													
													1	20	12	SPACE
EF-B11 (3 HP)	13	3	15				1.32	1.32								
							0.58	0.58					3	15	14	EF B-18 (1 HP)
	15						1.32		1.32							
							0.58		0.58						16	
	17						1.32		1.32							
AHU-B1 (5 HP)							0.58		0.58						18	
	19	3	20				1.32	1.32								
							5.82	5.82					3	40	20	AHU-B4A (15 HP)
	21						1.32		1.32							
							5.82		5.82						22	
	23						1.32		1.32							
AHU-B2 (15 HP)							5.82		5.82						24	
	25	3	40				5.82	5.82								
							3.88	3.88					3	25	26	AHU-3 (10 HP)
	27						5.82		5.82							
							3.88		3.88						28	
	29						5.82		5.82							
							3.88		3.88						30	
TOTAL CONNECTED LOAD (kVA)							56.22	18.74	18.74	18.74						
TOTAL DEMAND LOAD (kVA)							56.22									

AD-1

FLINT LAKE ELEMENTARY SCHOOL PANELBOARD SCHEDULE

MARK & TYPE
"KH1"
TYPE: EXISTING SQUARE D NEHB
277/480V, 3 PH, 4W
225 AMP MAIN LUGS
NEMA 1
FLUSH MOUNTED

REMARKS
EXISTING SQUARE D PANELBOARD

DESCRIPTION	CIR	POLE	TRIP	LTS	REC	EQUIP	A	B	C	HEAT	A/C	FUTR	POLE	TRIP	CIR	DESCRIPTION
SPACE	1	1														
													1		2	SPACE
SPACE	3	1														
													1		4	SPACE
SPACE	5	1														
													1		6	SPACE
SPACE	7	1														
													1		8	SPACE
SPACE	9	1														
													1		10	SPACE
SPACE	11	1														
													1		12	SPACE
BOOSTER HEATER	13	3														
													1		14	SPACE
	15															
													1		16	SPACE
	17															
													1		18	SPACE
NEW AHU-B5 (10 HP)	19	3	30													
													3	30	20	DISHWASHER
	21															
															22	
	23															
HOOD EXHAUST FAN															24	
	25	3	30													
													3	20	26	DISPOSAL
	27														28	
	29															
DISPOSAL															30	
	31	3	30													
													3	20	32	DISPOSAL
	33														34	
	35															
SPARE															36	
	37	1	20													
													1	20	38	SPARE
SPARE	39	1	20													
													1	20	40	SPARE
SPARE	41	1	20													
													1	20	42	SPARE
TOTAL CONNECTED LOAD (kVA)																
TOTAL DEMAND LOAD (kVA)																

ELECTRICAL PLAN NOTES:

(THESE NOTES APPLY TO THIS SHEET ONLY)

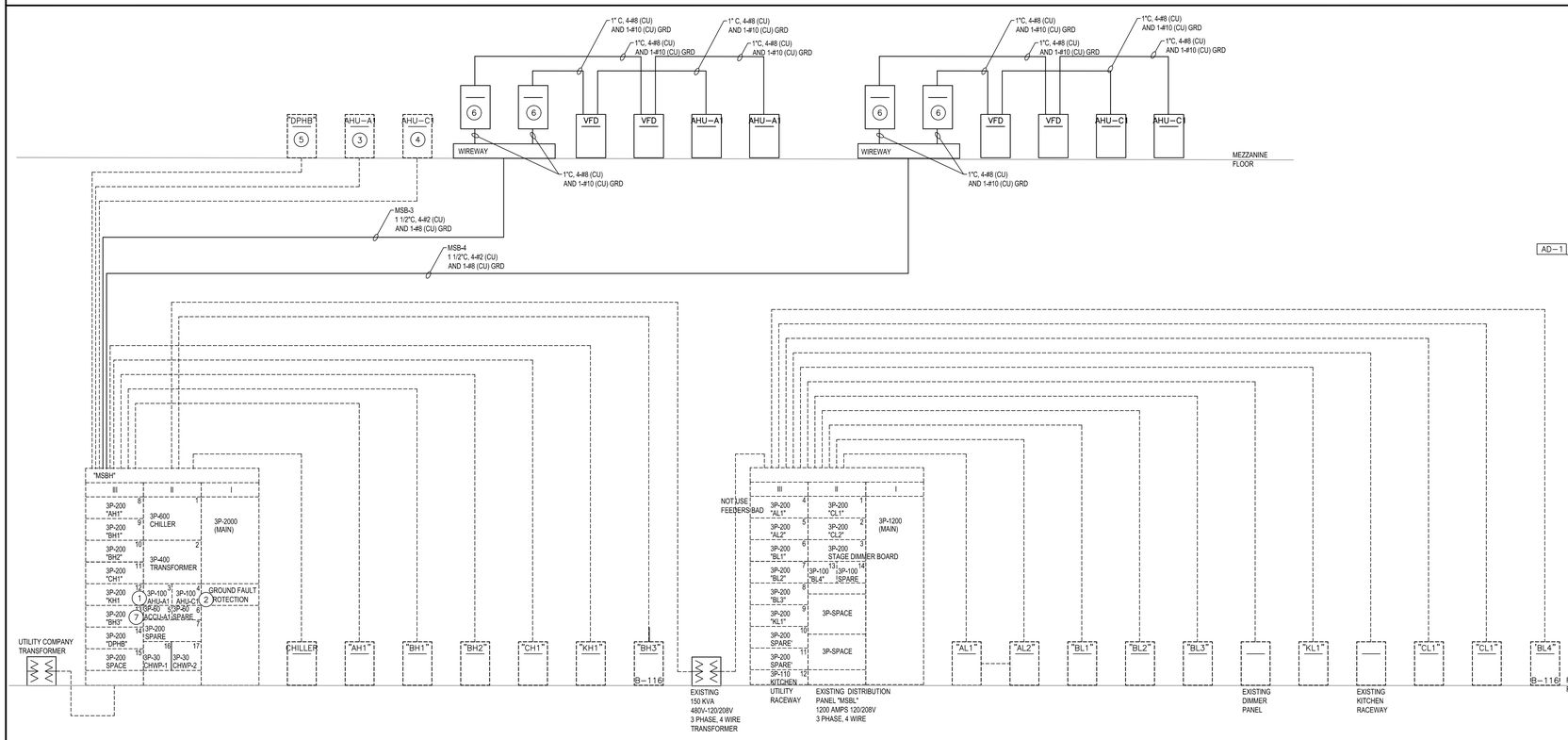
1. REPLACE EXISTING FUSES IN EXISTING 3P-100 AMP FUSIBLE SWITCH SERVING AIR HANDLING UNIT A1 BEING REMOVED WITH NEW 100 AMP FUSES.
2. REPLACE EXISTING FUSES IN EXISTING 3P-100 AMP FUSIBLE SWITCH SERVING AIR HANDLING UNIT C1 BEING REMOVED WITH NEW 100 AMP FUSES.
3. DISCONNECT ELECTRICAL SERVICE TO EXISTING AIR HANDLING UNIT A1 BEING REMOVED. REMOVE ASSOCIATED CONDUIT AND WIRE AND REMOVE EXISTING FEEDER CONDUIT AND WIRE SERVING EXISTING AIR HANDLING UNIT A1 BEING REMOVED BACK TO THE SOURCE.
4. DISCONNECT ELECTRICAL SERVICE TO EXISTING AIR HANDLING UNIT A1 BEING REMOVED. REMOVE ASSOCIATED CONDUIT AND WIRE AND REMOVE EXISTING FEEDER CONDUIT AND WIRE SERVING EXISTING AIR HANDLING UNIT A1 BEING REMOVED BACK TO THE SOURCE.
5. MODIFY EXISTING PANEL "DPHB" AS SHOWN ON PANEL SCHEDULE.
6. 3P-60 AMP FUSIBLE DISCONNECT FUSED AT 60 AMPS TO SERVE THE NEW AIR HANDLING UNIT.
7. REPLACE EXISTING FUSES IN THE EXISTING 3P-60 AMP FUSIBLE SWITCH SERVING THE EXISTING ACCU WITH NEW 35 AMP FUSES TO SERVE THE NEW ACCU-B1.

MOTOR STARTER SCHEDULE

AD-1

MARK	ITEM	NEMA SIZE	HP	ROOM NO.	CONTROL		SEE NOTES
					ENCL.	REMOTE	
MS-1	AIR HANDLING UNIT B5	1	10	----	SA	---	1,2,3,5,7,8

NOTES:
1. MOTOR STARTERS SHALL BE 3-POLE COMBINATION TYPE WITH NEMA 1 ENCLOSURE.
2. MOTOR STARTERS SHALL HAVE 480/120 VOLT CONTROL CIRCUIT TRANSFORMER WITH CONTROL CIRCUIT FUSES.
3. MOTOR STARTERS SHALL HAVE 120 VOLT COIL AND 600 VOLT CONTACTS.
4. 120 VOLT MOMENTARY CONTACT PUSH BUTTON: P=ON-OFF; T=TEST BUTTON; T2=HI-LO TEST PUSH BUTTON, P02=HI-LO-OFF.
5. 120 VOLT MAINTAINED CONTACT SELECTOR SWITCH: S=ON-OFF; S2=HI-LOW; S02=HI-LO-OFF; SA=HAND-OFF-AUTOMATIC.
6. PILOT LIGHTS SHALL BE FURNISHED WITH ALL REMOTE CONTROL UNITS.
7. MOTOR STARTERS SHALL BE SINGLE SPEED.
8. MOTOR STARTER SHALL HAVE ONE NORMALLY OPEN CONTACT.



ELECTRICAL NEW PARTIAL POWER DISTRIBUTION DIAGRAM

SCALE: NONE

---------- EXISTING TO REMAIN
———— NEW

FLINT LAKE ELEMENTARY SCHOOL PANELBOARD SCHEDULE

AD-1

MARK & TYPE
"KL1"
TYPE: EXISTING SQ D NQOD
120/208V, 3 PH, 4W
225 AMP MAIN LUGS
NEMA 1
FLUSH MOUNTED

REMARKS
EXISTING SQUARE D NQOD PANELBOARD

DESCRIPTION	CIR	POLE	TRIP	LTS	REC	EQUIP	A	B	C	HEAT	A/C	FUTR	POLE	TRIP	CIR	DESCRIPTION
????	1	3	20													
	3												1	20	2	????
	5												1	20	4	WASHER
COOLER LIGHTS	7	1	20										1	20	6	MICROWAVE
FREEZER LIGHTS	9	1	20										2	20	8	COOLER COMPRESSOR
COOLER EVAPORATOR	11	1	20												10	
AHU-B5 LIGHTS-RECPS	13	1	20										1	20	12	SPARE
	15	1	20										3	20	14	FREEZER COMPRESSOR
SLICER	17	1	20												16	
CAN OPENER	19	1	20												18	
FOOD PROCESSOR	21	1	20										1	20	20	SPARE
PASS THRU REFRIGERATOR	23	2	20										2	30	22	HOT WATER DISPENSER
PASS THRU HOT FOOD CABINET	25														24	
ICE MACHINE	27	1	20										2	50	26	HOT FOOD TABLE EAST
MILK COOLER	29	1	20												28	
													2	60	30	HOT FOOD TABLE WEST
COLD FOOD TABLE	31	1	20												32	
HOOD LIGHTS	33	1	20										2	30	34	DRYER
WORK TABLE	35	1	20												36	
CASH REGISTER	37	1	20										1	20	38	
CASH REGISTER	39	1	20										1	20	40	RECPS
FIRE ALARM SHUT DOWN	41	1	20										1	20	42	RECPS
TOTAL CONNECTED LOAD (kVA)																
TOTAL DEMAND LOAD (kVA)																

GIBRALTAR DESIGN
ARCHITECTURE • ENGINEERING • INTERIOR DESIGN

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PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

VALPARAISO COMMUNITY SCHOOLS
VALPARAISO, INDIANA

FLINT LAKE ES
4106 CALUMET AVENUE
VALPARAISO, INDIANA

THOMAS JEFFERSON MS
1600 ROOSEVELT ROAD
VALPARAISO, INDIANA

PROJECT 22-116/22-117
DATE 05/06/22
COORDINATED BY PCB
DRAWN BY PCB/JVC
CHECKED BY JPB

JOSEPH P. BRIGGS REGISTERED ND. 11600109 STATE OF INDIANA ARCHITECT

REVISIONS

MARK	DATE	ISSUED FOR
AD-1	05/24/22	ADDENDUM NO. 1

DRAWING
ELECTRICAL PARTIAL POWER DISTRIBUTION DIAGRAM AND PANEL SCHEDULES

PROJECT
THOMAS JEFFERSON MS CHILLER REPLACEMENT AND FLINT LAKE ES AIR HANDLING UNITS REPLACEMENT AND RELATED WORK

GIBRALTAR DESIGN | SHEET
FL | E-701

Friday, 5/20/2022 - 10:40 AM - LAST SAVED BY:JCHAMBERS
Y:\22-117 VALPARAISO CS - FLINT LAKE ES AHU REPLACEMENT AND RELATED WORK\22-117 DRAWINGS\09 ELEC\E-701 AIR HANDLING UNIT PROJECT.DWG