

#### ADDENDUM NO. 1

Date: November 11, 2021

This Addendum applicable to work designated herein shall be understood to be and is an Addendum and as such shall be part of and included in the Contract.

To all bidders for furnishing all labor and materials necessary for:

#### Hobbs Middle School HVAC Replacement Shelley School District No. 60 Shelley, Idaho

Failure to acknowledge receipt of this Addendum on the bid proposal form may result in rejection of your bid.

#### **General Items:**

- 1. Contract shall be awarded in December, after which contractor can begin ordering materials and equipment. The school will be available nights, weekends and Fridays up to May 10, 2022. Any work done before May 10, 2022 cannot impede the ability for the school to function properly and safely. After May 10, 2022 the school will be fully available for work to proceed.
- 2. Contractor to protect all existing finishes that are not being removed during demolition and construction.
- 3. School district shall provide on site storage for materials and equipment.
- 4. Parking around the building may be used as laydown areas after May 10, 2022. Lawn areas shall not be used for laydown.

#### **Mechanical Items:**

- 1. Sheets MD1.11-MD1.20. Keynote M50 to be applied to every wall penetration of duct that is to be removed.
- 2. Sheet MD1.13. There is existing ductwork serving the library return grilles in the existing dropped soffit that will require removal. Assume removal of 20"x20" duct connecting the two return grilles and extending into the corridor.
- 3. See revised Sheet MD1.30
  - a. Refer to clouded changes in the attached sheet.
- 4. See revised Sheets M1.00-M1.30
  - a. Refer to clouded changes in the attached sheets.







- 5. See revised Sheets M2.11-M2.20
  - a. Refer to clouded changes in the attached sheets.
- 6. See revised Sheet M6.10
  - a. Refer to clouded changes in the attached sheet.

#### **Electrical Items:**

1. Sheets E1.10 and E1.11-E1.20. Plan note A revised to read:

All existing lighting is to be removed and replaced with New led lighting, UNO. For all rooms and spaces where the existing lay-in ceiling is being removed, the contractor is responsible to remove existing light fixtures. For all other spaces, light fixtures will be removed by owner (Shelley School District). Contractor to ensure branch circuiting to all removed light fixtures (by owner and contractor), and that is not to be re-used, is properly demolished and disconnected or capped. Refer to architectural drawings for ceiling demolition information

2. Sheet E6.10. Light Fixture Schedule General Notes: Note 13 added to read:
All fixtures included in this schedule are to be provided by Owner (Shelley School District). Contractor responsible for Installing owner provided fixtures.

#### **Attachments:**

The Addendum consists of: <u>02</u> page(s). The attached Documents consist of – Pre-bid Conference Agenda, Pre-bid Conference Signup Sheet, MD1.30, M1.00, M1.11, M1.12, M1.13, M1.20, M1.30, M2.11, M2.12, M2.13, M2.20, M6.10

END OF ADDENDUM NO. 1



### **Pre-bid Conference**

### November 04, 2021 HOBBS MIDDLE SCHOOL HVAC REPLACEMENT

Architect's Project Manager: James Wyatt ph - 208-522-8779 fax - 208-522-8785	Project description:  HVAC Replacement	
<b>Building square footage:</b>	Bid submission date and time:	Bid submission location:
67,260 s.f.	November 18, 2021, at 3:30 PM	Shelley School Board Room Dean Goodsell Elementary School
		185 West Center Street
		Shelley, ID 83274
Building permit issued by: DBS	Construction Time: Completed by August 1, 2022	Liquidated damages/ day: \$500.00
Unusual conditions:	1	<u>I</u>
Addendum items:		

#### 1. **Bidders List:**

a.

#### 2. **Bidding Information:**

- a. The successful bidder must supply:
  - 1) Workers Compensation Insurance\*
  - 2) Commercial Liability Insurance\*
  - 3) Automobile Liability Insurance\*
  - 4) Bid Bonds\* (5%)
  - 5) Performance and Payment Bonds \* (100%)
  - \* The cost of the above to be included in the contractor's bid.

#### 3. Addenda:

- a. All addenda will be issued by the Architect, by email if possible, at least two (2) days prior to bid opening.
- b. All verbal agreements or instructions must be confirmed by written addenda.
- c. Contractors are to bid the contract documents. Review documents carefully. Additional payments to the Contractor will not be made for items shown or specified in documents.



d. Requests for clarification shall be in writing and received by the architect four (4) working days minimum prior to bid opening.

#### 4. Bid Opening:

- a. Sealed bids will be accepted up to the specified time. Bidding will be closed at the exact specified time. Any or all Bids may be rejected by the Owner without cause. Bids will be opened and reviewed in an open meeting following the time for receipt of bids.
- b. Bids are to be submitted as outlined in the Project Manual.
- c. The bid form used will be the form provided. Faxed bids are not acceptable.
- d. The Owner reserves the right to reject any or all bids and to waive any irregularity therein.
- e. If all addenda are not acknowledged by number (1,2,3, etc.), on the bid form or if the bid form is not signed, all blanks not filled in or otherwise improperly filled out, the bid will be considered non-responsive.
- f. The bid amount is to be listed in both written and numerical form. If there is a discrepancy between the two, the written amount will be used.

#### 5. Additional Items of Discussion:

- a. No substitutions of materials or products not authorized by addendum.
- b. Review drawings and specs.
- c. Additional sets of plans available.

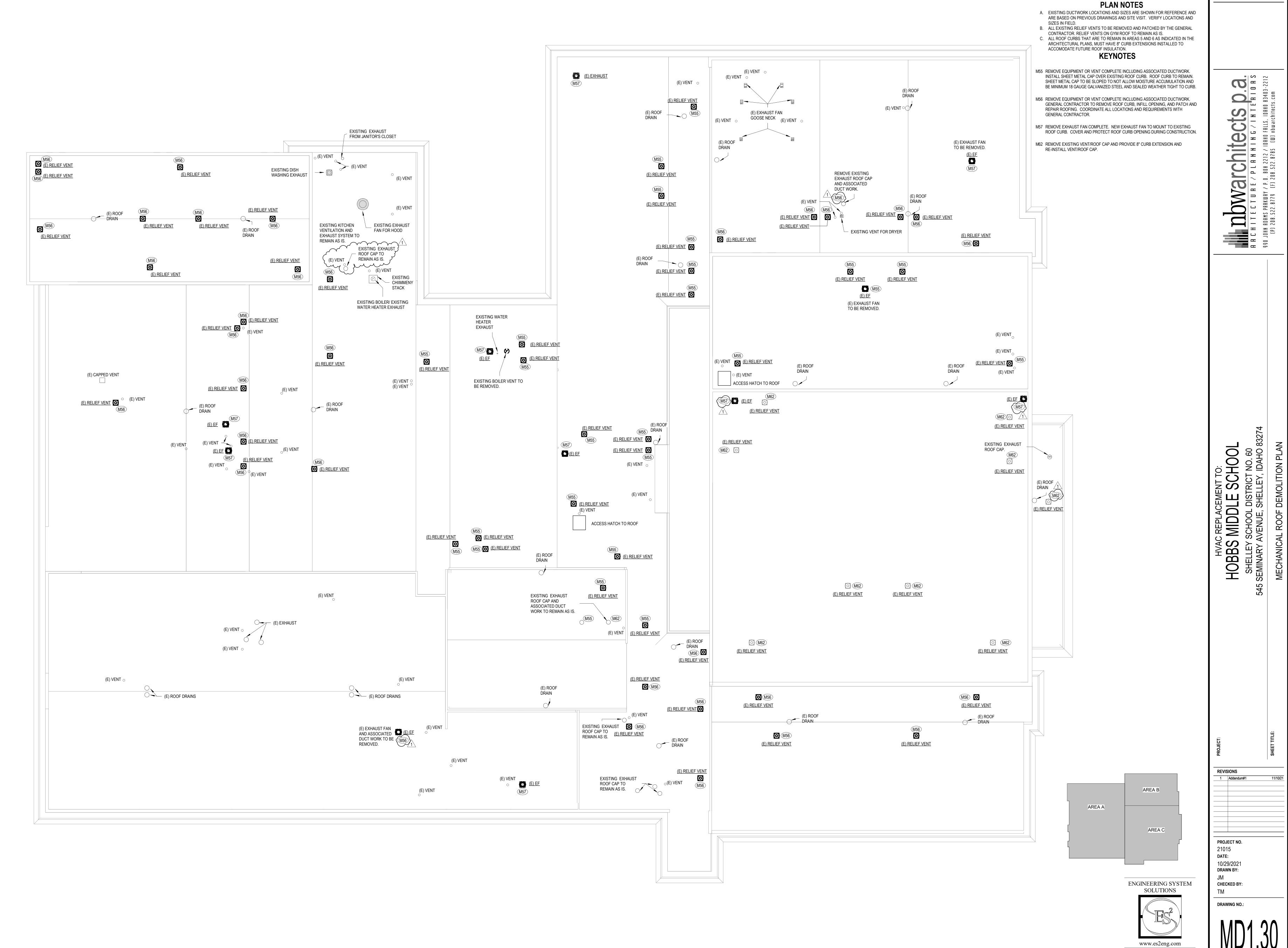
#### 6. Questions



### **Pre-Bid Conference Sign-in Sheet**

### Project Name: Shelley School District #60 - Hobbs Middle School, Shelley, ID

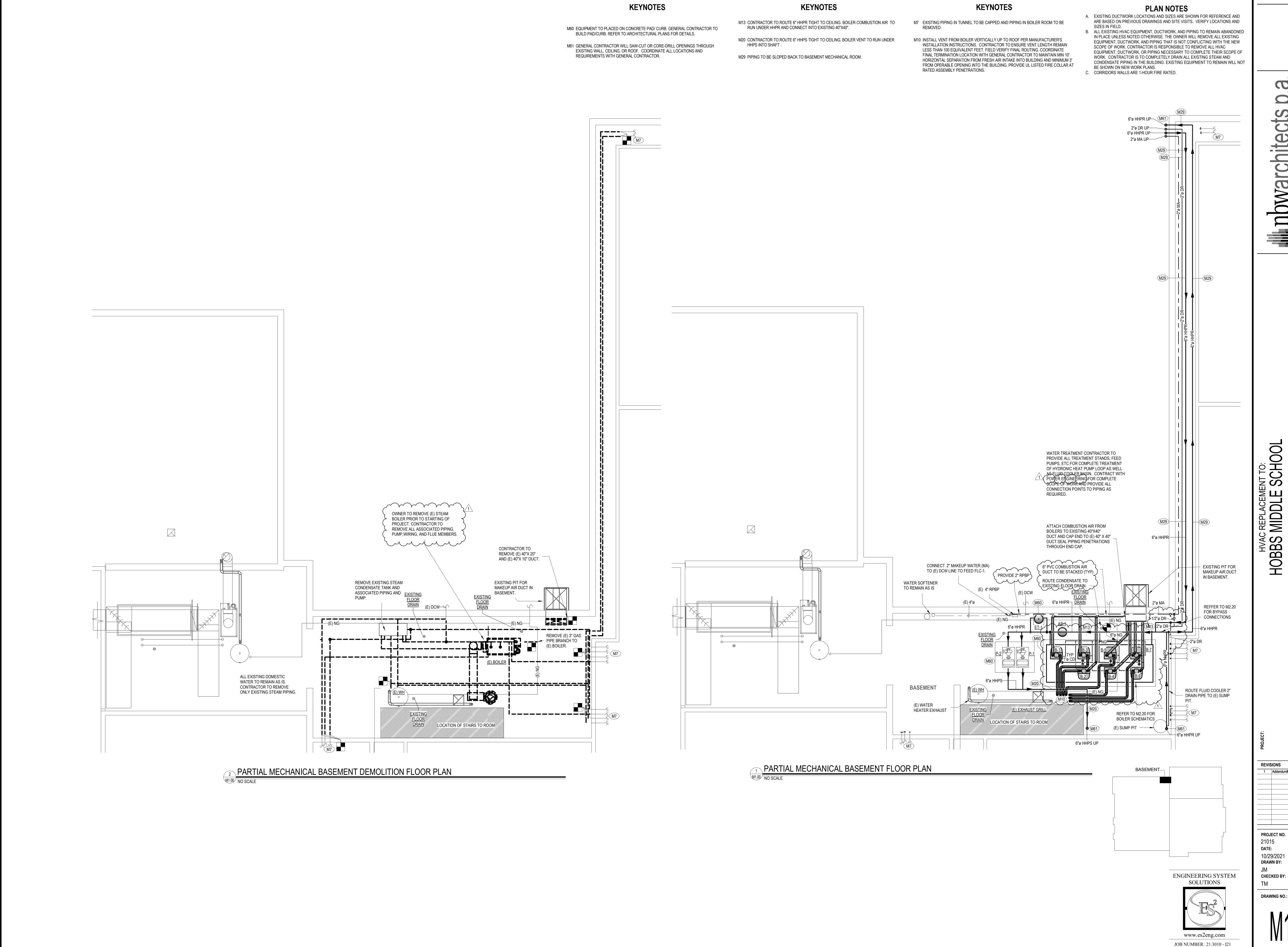
In Attendance:	Company:
1. JAY JONESS	BAFEMAN-HALL INC
2.	MBW
3. TUSTEN JUDY	ESZ
4. Parp Valdage	NBW
5.	Snally School
6.	
7.	
8.	
9.	
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11.	
12.	
13.	
14.	
15.	
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MECHANICAL DEMOLITION ROOF PLAN

www.es2eng.com

JOB NUMBER: 21.3010 - I21



HOBBS SHELLEY S

CHECKED BY:

- A. DO NOT FABRICATE OR PURCHASE DUCTWORK OR EQUIPMENT PRIOR TO CONFIRMING ALL ROUTING, SIZING, AND INSTALLATION REQUIREMENTS WITH
- EXISTING CONDINTIONS AND ALL TRADES.

  B. PROVIDE A SEPARATE DUCT RUNOUT FROM EACH AIR DEVICE TO THE NEAREST
- DUCT MAIN. DUCT RUNOUTS TO MATCH AIR DEVICE NECK SIZE UNLESS NOTED OTHERWISE
- C. COORDINATE ALLL CUTTING, REPAIRING, AND PATCHING OF WALLS, CEILINGS, AND ROOFS WITH GENERAL CONTRACTOR.
- ROOFS WITH GENERAL CONTRACTOR.

  D. CORRIDORS WALLS ARE 1-HOUR FIRE RATED.

### **KEYNOTES**

- M5 PROVIDE PLENUM BOX ABOVE DIFFUSERS. ROUTE SUPPLY DUCTWORK TO PLENUM BOX
- M17 ALL WORK IN CORRIDORS WILL BE ABOVE EXISTING LAY-IN GRID CEILINGS. SCOPE OF ACCESS AND INSTALLATION IS MEANS AND METHODS AND MUST BE ACCOUNTED FOR IN SCOPE OF WORK. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO CEILING TILE, FRAME, OR WALLS. REPAIR, PATCH, AND PAINT TO MATCH EXISTING.
- M23 CONNECT NEW EXHAUST GRILL TO EXISTING DUCT WORK AND CONNECT BOTH NEW EXHAUST GRILL AND EXISTING DUCT WORK TO NEW ROOF EXHAUST FAN. REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.
- M27 MAIN DUCT TO BE RAN IN SOFFIT. BRANCH RUN OUTS TO BE RAN ABOVE NEW DROP CEILING. REFER TO ARCHITECTURAL PLANS FOR SOFFIT LOCATIONS AND HEIGHTS.
- M32 TRANSITION (E) DUCT TO NEW ROOF EXHAUST FAN. REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.
- M33 BALANCE DIFFUSER TO CFM NOTED ON DRAWINGS.
- M44 CMU WALL WITH 1 HOUR FIRE RATING.
- M61 GENERAL CONTRACTOR WILL SAW-CUT OR CORE-DRILL OPENINGS THROUGH EXISTING WALL, CEILING, OR ROOF. COORDINATE ALL LOCATIONS AND REQUIREMENTS WITH GENERAL CONTRACTOR.

AREA A

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JOB NUMBER: 21.3010 - I21

PARTIAL MECHANICAL 1ST FLOOR- A

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

HVAC REPLACEMENT TO:
HOBBS MIDDLE SCHOOL
SHELLEY SCHOOL DISTRICT NO. 60
545 SEMINARY AVENUE, SHELLEY, IDAHO 83274

REVISIONS

1 Addendum#1

PROJECT NO.
21015
DATE:
10/29/2021
DRAWN BY:
JM
CHECKED BY:

TM

DRAWING NO.:

M1.11

- A. DO NOT FABRICATE OR PURCHASE DUCTWORK OR EQUIPMENT PRIOR TO CONFIRMING ALL ROUTING, SIZING, AND INSTALLATION REQUIREMENTS WITH
- EXISTING CONDINTIONS AND ALL TRADES. B. PROVIDE A SEPARATE DUCT RUNOUT FROM EACH AIR DEVICE TO THE NEAREST DUCT MAIN. DUCT RUNOUTS TO MATCH AIR DEVICE NECK SIZE UNLESS NOTED
- C. COORDINATE ALLL CUTTING, REPAIRING, AND PATCHING OF WALLS, CEILINGS, AND ROOFS WITH GENERAL CONTRACTOR.
- D. CORRIDORS WALLS ARE 1-HOUR FIRE RATED.

# **KEYNOTES**

- M5 PROVIDE PLENUM BOX ABOVE DIFFUSERS. ROUTE SUPPLY DUCTWORK TO PLENUM
- M17 ALL WORK IN CORRIDORS WILL BE ABOVE EXISTING LAY-IN GRID CEILINGS. SCOPE OF ACCESS AND INSTALLATION IS MEANS AND METHODS AND MUST BE ACCOUNTED FOR IN SCOPE OF WORK. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO CEILING TILE, FRAME, OR WALLS. REPAIR, PATCH, AND PAINT TO MATCH EXISTING.
- M22 REPLACE EXISTING CEILING FAN WITH NEW AND CONNECT TO EXISTING DUCT WORK. REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.
- M23 CONNECT NEW EXHAUST GRILL TO EXISTING DUCT WORK AND CONNECT BOTH NEW EXHAUST GRILL AND EXISTING DUCT WORK TO NEW ROOF EXHAUST FAN. REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.
- M30 NEW DUCTWORK TO BE SPIRAL ROUND DUCT LOCATED UNDER FINISHED CEILING.
- M33 BALANCE DIFFUSER TO CFM NOTED ON DRAWINGS.
- M36 TRANSITION NEW DUCT TO (E) DUCT. REFER TO SIZE ON PLAN FOR EXISTING DUCT
- M61 GENERAL CONTRACTOR WILL SAW-CUT OR CORE-DRILL OPENINGS THROUGH EXISTING WALL, CEILING, OR ROOF. COORDINATE ALL LOCATIONS AND REQUIREMENTS WITH GENERAL CONTRACTOR.

HVAC HOBBS SHELLEY S

REVISIONS

PROJECT NO.

21015 DATE:

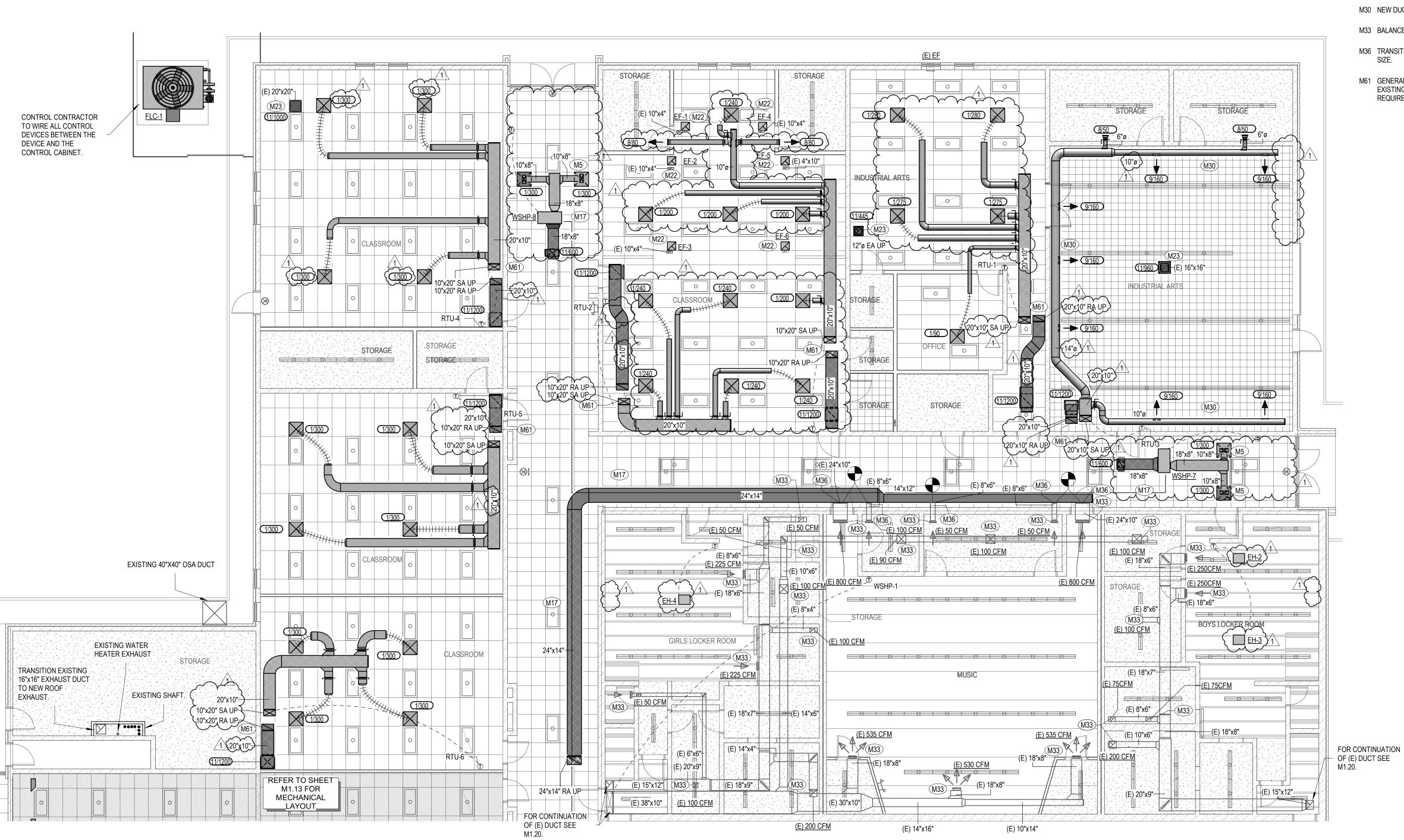
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DRAWING NO.:

BASEMENT-AREA B

ENGINEERING SYSTEM JOB NUMBER: 21.3010 - I21



M22 REPLACE EXISTING CEILING FAN WITH NEW AND CONNECT TO EXISTING DUCT

M23 CONNECT NEW EXHAUST GRILL TO EXISTING DUCT WORK AND CONNECT BOTH

NEW EXHAUST GRILL AND EXISTING DUCT WORK TO NEW ROOF EXHAUST FAN.

WORK. REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.

REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.

**KEYNOTES** 

A. DO NOT FABRICATE OR PURCHASE DUCTWORK OR EQUIPMENT PRIOR TO CONFIRMING ALL ROUTING, SIZING, AND INSTALLATION REQUIREMENTS WITH EXISTING CONDINTIONS AND ALL TRADES. B. PROVIDE A SEPARATE DUCT RUNOUT FROM EACH AIR DEVICE TO THE NEAREST DUCT MAIN. DUCT RUNOUTS TO MATCH AIR DEVICE NECK SIZE UNLESS NOTED M12 TRANSITION NEW DUCT FROM NEW EXHAUST FAN TO EXISTING DUCT. INSTALL NEW MECHANICAL EQUIPMENT PER MANUFACTURE'S RECOMMENDATIONS.

C. COORDINATE ALLL CUTTING, REPAIRING, AND PATCHING OF WALLS, CEILINGS, AND ROOFS WITH GENERAL CONTRACTOR.

**PLAN NOTES** 

M32 TRANSITION (E) DUCT TO NEW ROOF EXHAUST FAN. REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.

M33 BALANCE DIFFUSER TO CFM NOTED ON DRAWINGS.

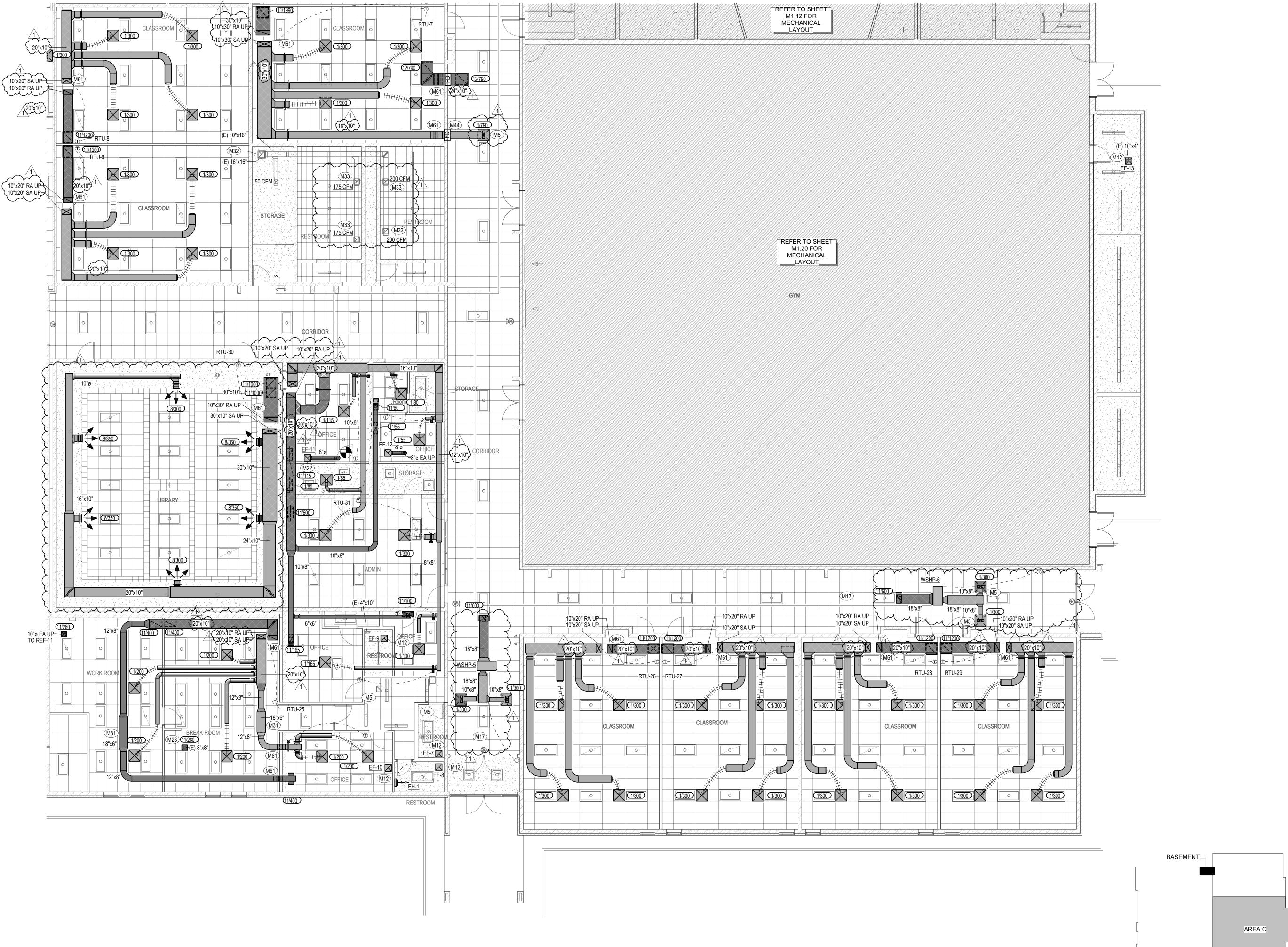
M44 CMU WALL WITH 1 HOUR FIRE RATING.

M61 GENERAL CONTRACTOR WILL SAW-CUT OR CORE-DRILL OPENINGS THROUGH EXISTING WALL, CEILING, OR ROOF. COORDINATE ALL LOCATIONS AND REQUIREMENTS WITH GENERAL CONTRACTOR.

REFER TO SIZE ON PLAN FOR EXISTING DUCT SIZE.

M25 CONNECT EXISTING DUCT TO WSHP-1 M31 DUCT TO BE ROUTED UNDER EXISTING PIPING. TO MATCH EXISTING.

D. CORRIDORS WALLS ARE 1-HOUR FIRE RATED. M17 ALL WORK IN CORRIDORS WILL BE ABOVE EXISTING LAY-IN GRID CEILINGS. SCOPE OF ACCESS AND INSTALLATION IS MEANS AND METHODS AND MUST BE ACCOUNTED FOR IN SCOPE OF WORK. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO CEILING TILE, FRAME, OR WALLS. REPAIR, PATCH, AND PAINT



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JOB NUMBER: 21.3010 - I21

PARTIAL MECHANICAL 1ST FLOOR - C

PROJECT NO. 21015 DATE: 10/29/2021 DRAWN BY:

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- **PLAN NOTES** A. DO NOT FABRICATE OR PURCHASE DUCTWORK OR EQUIPMENT PRIOR TO
- CONFIRMING ALL ROUTING, SIZING, AND INSTALLATION REQUIREMENTS WITH EXISTING CONDINTIONS AND ALL TRADES. B. PROVIDE A SEPARATE DUCT RUNOUT FROM EACH AIR DEVICE TO THE NEAREST
- DUCT MAIN. DUCT RUNOUTS TO MATCH AIR DEVICE NECK SIZE UNLESS NOTED
- C. COORDINATE ALLL CUTTING, REPAIRING, AND PATCHING OF WALLS, CEILINGS, AND
- ROOFS WITH GENERAL CONTRACTOR. D. PROVIDE 2-WAY CONTROL VALVES FOR EVERY PIECE OF EQUIPMENT UNLESS
- NOTED AS 3-WAY VALVE. E. CORRIDOR WALLS ARE 1 HOUR FIRE RATED.

# **KEYNOTES**

- M3 CONNECT (E) SUPPLY DUCT ABOVE GYM TO NEW SUPPLY DUCT FROM NEW AHU.
- M9 CONNECT (E) RETURN DUCT IN GYM TO NEW RETURN DUCT FROM NEW AHU.
- M21 OUTDOOR ECONOMIZER MOTORIZED DAMPER TO MODULATE WITH RETURN AIR MOTORIZED DAMPER.

- Z

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- M26 TRANSITION NEW DUCT FROM NEW WSHP TO (E) 36"X10" DUCT. MOUNT UNIT MINIMUM 3.25 FEET OFF OF GROUND TO ALLOW FOR DUCT TRANSITIONS.
- M49 GYPSUM WALL WITH 1 HOUR FIRE RATING.
- 1 M51 RELIEF AIR MOTORIZED DAMPER TO MODULATE WITH OUTDOOR AIR ECONOMIZER. PROVIDE NEW MOTORIZED DAMPER TO RETURN GRILLE ASSEMBLY.
- M52 MOTORIZED DAMPER TO MODULATE WITH OUTDOOR AIR ECONOMIZER.
- M61 GENERAL CONTRACTOR WILL SAW-CUT OR CORE-DRILL OPENINGS THROUGH EXISTING WALL, CEILING, OR ROOF. COORDINATE ALL LOCATIONS AND REQUIREMENTS WITH GENERAL CONTRACTOR.
- M67 REPLACE GYMNASIUM AIR DEVICES WITH NEW. NEW AIR DEVICE TO REPLACE EXISTING APPROXIMATELY 48"X48" CEILING TILE. PROVIDE POWDER COATED SHEET METAL FRAME (MATCH AIR DEVICE COLOR) TO HOUSE THE AIR DEVICE AND TO FIT THE EXISTING CEILING TILE. SUPPORT FROM STRUCTURE AND CONNECT TO EXISTING MAIN DUCT. SET (2) OUTSIDE AIR DEVICES IN VERTICAL THROW POSITION AND (2) INSIDE AIR DEVICES IN HORIZONTAL THROW POSITION FOR EACH DUCT RUN

REVISIONS

HVAC REPLACEMENT TO:
HOBBS MIDDLE SCHOOL
SHELLEY SCHOOL DISTRICT NO. 60
45 SEMINARY AVENUE, SHELLEY, IDAHO 83274

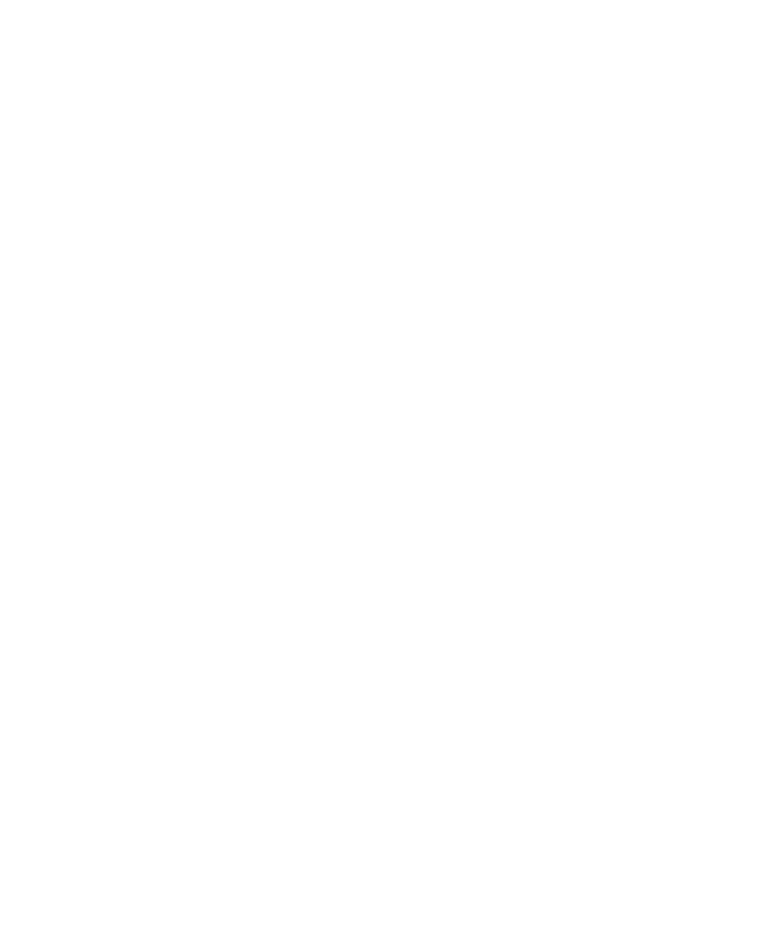
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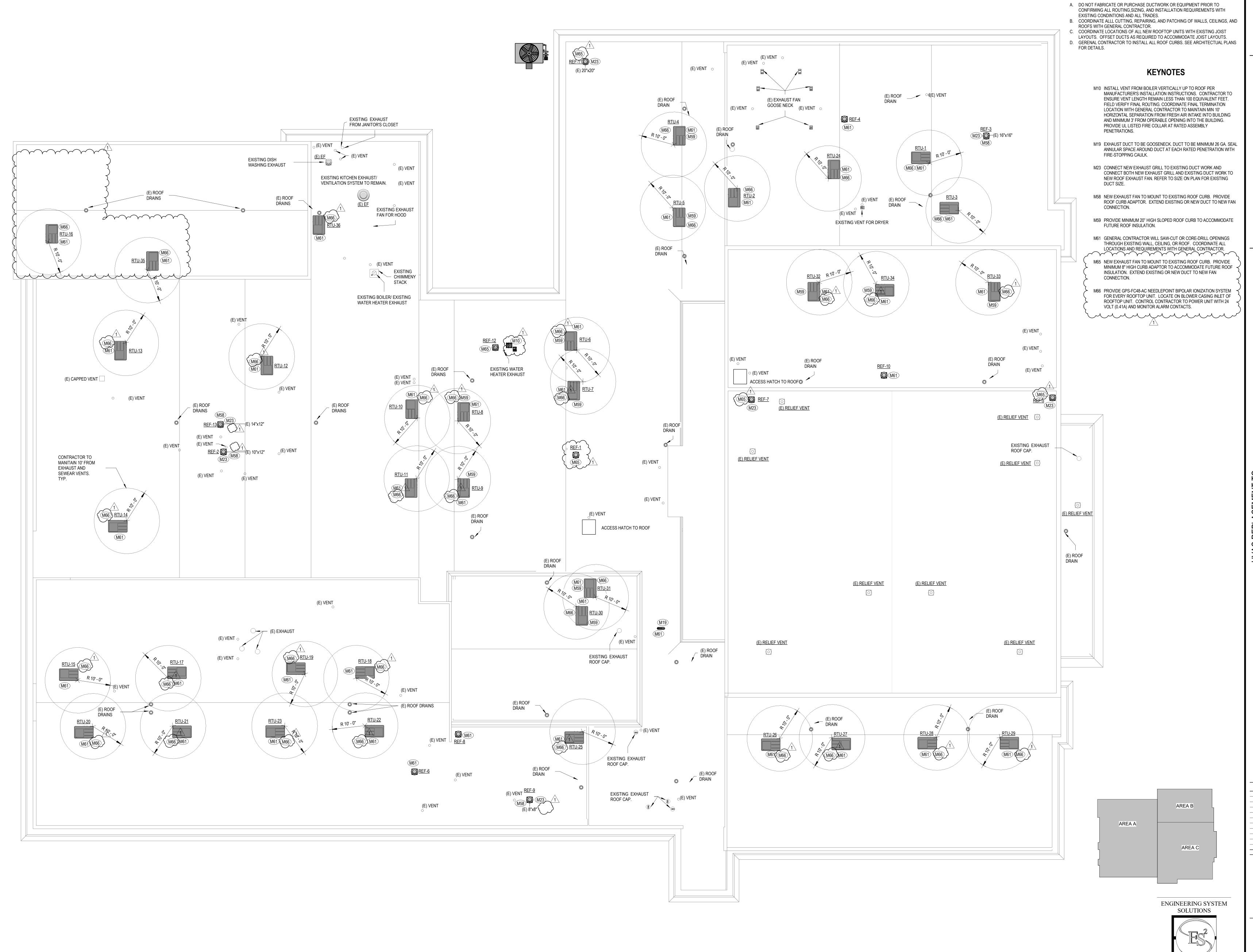
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JOB NUMBER: 21.3010 - I21





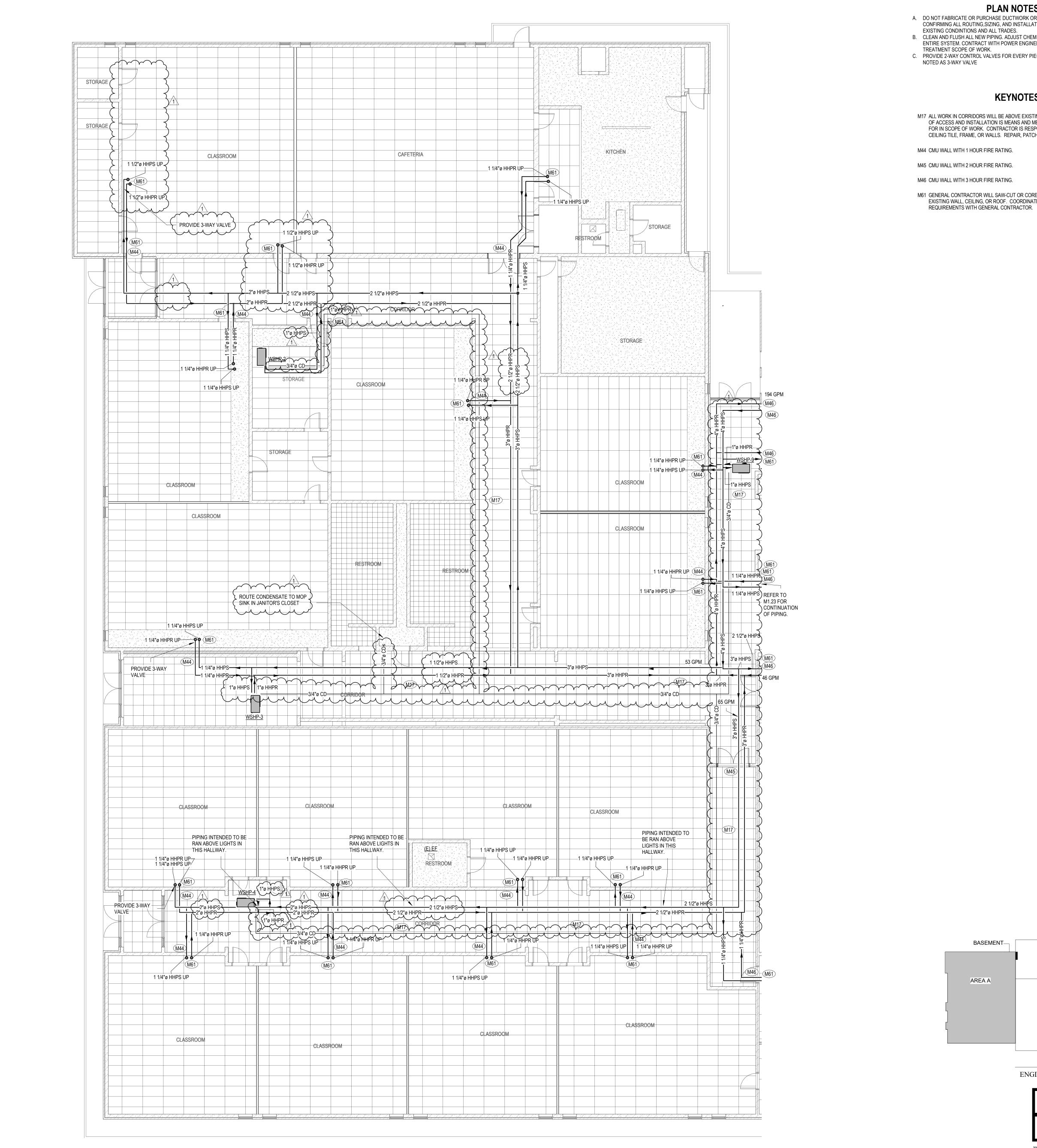
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JOB NUMBER: 21.3010 - I21



A. DO NOT FABRICATE OR PURCHASE DUCTWORK OR EQUIPMENT PRIOR TO CONFIRMING ALL ROUTING, SIZING, AND INSTALLATION REQUIREMENTS WITH

EXISTING CONDINTIONS AND ALL TRADES.

B. CLEAN AND FLUSH ALL NEW PIPING. ADJUST CHEMICAL CONCENTRATION FOR ENTIRE SYSTEM. CONTRACT WITH POWER ENGINEERING FOR ALL WATER

TREATMENT SCOPE OF WORK. C. PROVIDE 2-WAY CONTROL VALVES FOR EVERY PIECE OF EQUIPMENT UNLESS

## **KEYNOTES**

M17 ALL WORK IN CORRIDORS WILL BE ABOVE EXISTING LAY-IN GRID CEILINGS. SCOPE OF ACCESS AND INSTALLATION IS MEANS AND METHODS AND MUST BE ACCOUNTED FOR IN SCOPE OF WORK. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO CEILING TILE, FRAME, OR WALLS. REPAIR, PATCH, AND PAINT TO MATCH EXISTING.

M44 CMU WALL WITH 1 HOUR FIRE RATING.

M45 CMU WALL WITH 2 HOUR FIRE RATING.

M61 GENERAL CONTRACTOR WILL SAW-CUT OR CORE-DRILL OPENINGS THROUGH EXISTING WALL, CEILING, OR ROOF. COORDINATE ALL LOCATIONS AND

HVAC PHOBBS NO SHELLEY SO SEMINARY AV

PROJECT NO. 21015

DATE: 10/29/2021 DRAWN BY: CHECKED BY:

ENGINEERING SYSTEM

JOB NUMBER: 21.3010 - I21

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# **KEYNOTES**

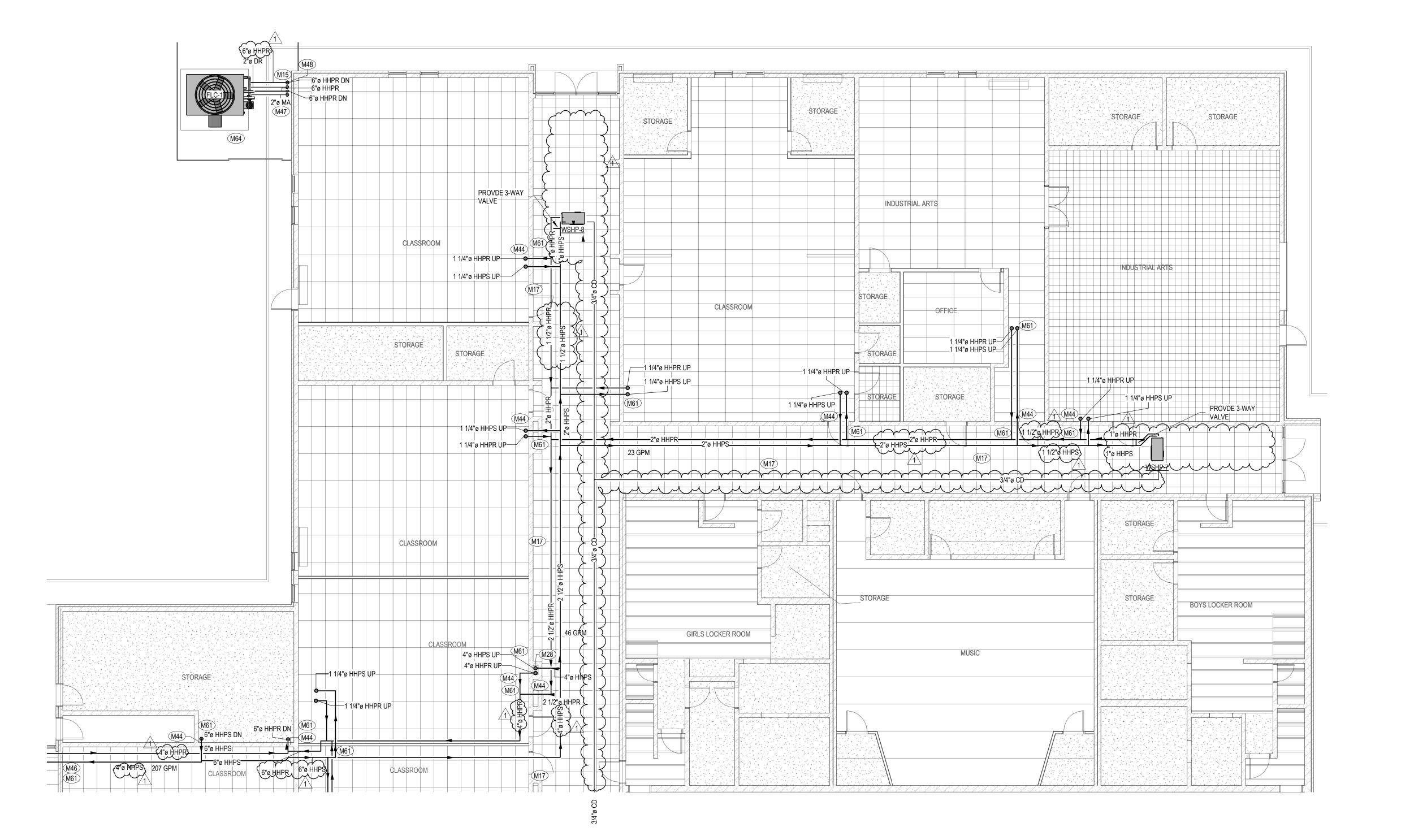
### M15 SLOPE PIPING CONNECTED TO FLC-1 BACK TO BASEMENT.

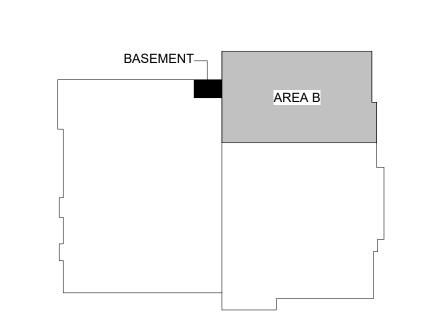
- M17 ALL WORK IN CORRIDORS WILL BE ABOVE EXISTING LAY-IN GRID CEILINGS. SCOPE OF ACCESS AND INSTALLATION IS MEANS AND METHODS AND MUST BE ACCOUNTED FOR IN SCOPE OF WORK. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO
- CEILING TILE, FRAME, OR WALLS. REPAIR, PATCH, AND PAINT TO MATCH EXISTING. M28 REMOVE EXISTING STEAM PIPING AND RUN NEW HYDRONIC PIPING UP TO 2ND FLR MECHANICAL ROOM.
- M44 CMU WALL WITH 1 HOUR FIRE RATING.

M46 CMU WALL WITH 3 HOUR FIRE RATING.

PIPING PENETRATION AND BACKFILL

- M47 GENERAL CONTRACTOR WILL PROVIDE CONCRETE PAD AND ALL ASPHALT PATCH AND REPAIR FOR FLUID COOLER INSTALLATION. COORDINATE ALL REQUIREMENTS WITH GENERAL CONTRACTOR. EXCAVATE TO EXPOSE FOUNDATION WALL FOR
- M48 ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL TO BE PROVIDED WITH A PIPE SLEEVE. THE SLEEVE TO BE TWO PIPE SIZES GREATER THAN THE PIPE PASSING THROUGH THE WALL.
- M61 GENERAL CONTRACTOR WILL SAW-CUT OR CORE-DRILL OPENINGS THROUGH EXISTING WALL, CEILING, OR ROOF. COORDINATE ALL LOCATIONS AND REQUIREMENTS WITH GENERAL CONTRACTOR.
- M64 CONTROL CONTRACTOR TO WIRE ALL CONTROL DEVICES BETWEEN THE DEVICE AND THE CONTROL CABINET.





ENGINEERING SYSTEM

**PLAN NOTES** 

A. DO NOT FABRICATE OR PURCHASE DUCTWORK OR EQUIPMENT PRIOR TO CONFIRMING ALL ROUTING, SIZING, AND INSTALLATION REQUIREMENTS WITH

EXISTING CONDINTIONS AND ALL TRADES.

B. CLEAN AND FLUSH ALL NEW PIPING ADJUST CHEMICAL CONCENTRATION FOR ENTIRE SYSTEM. CONTRACT WITH POWER ENGINEERING FOR ALL WATER 1.

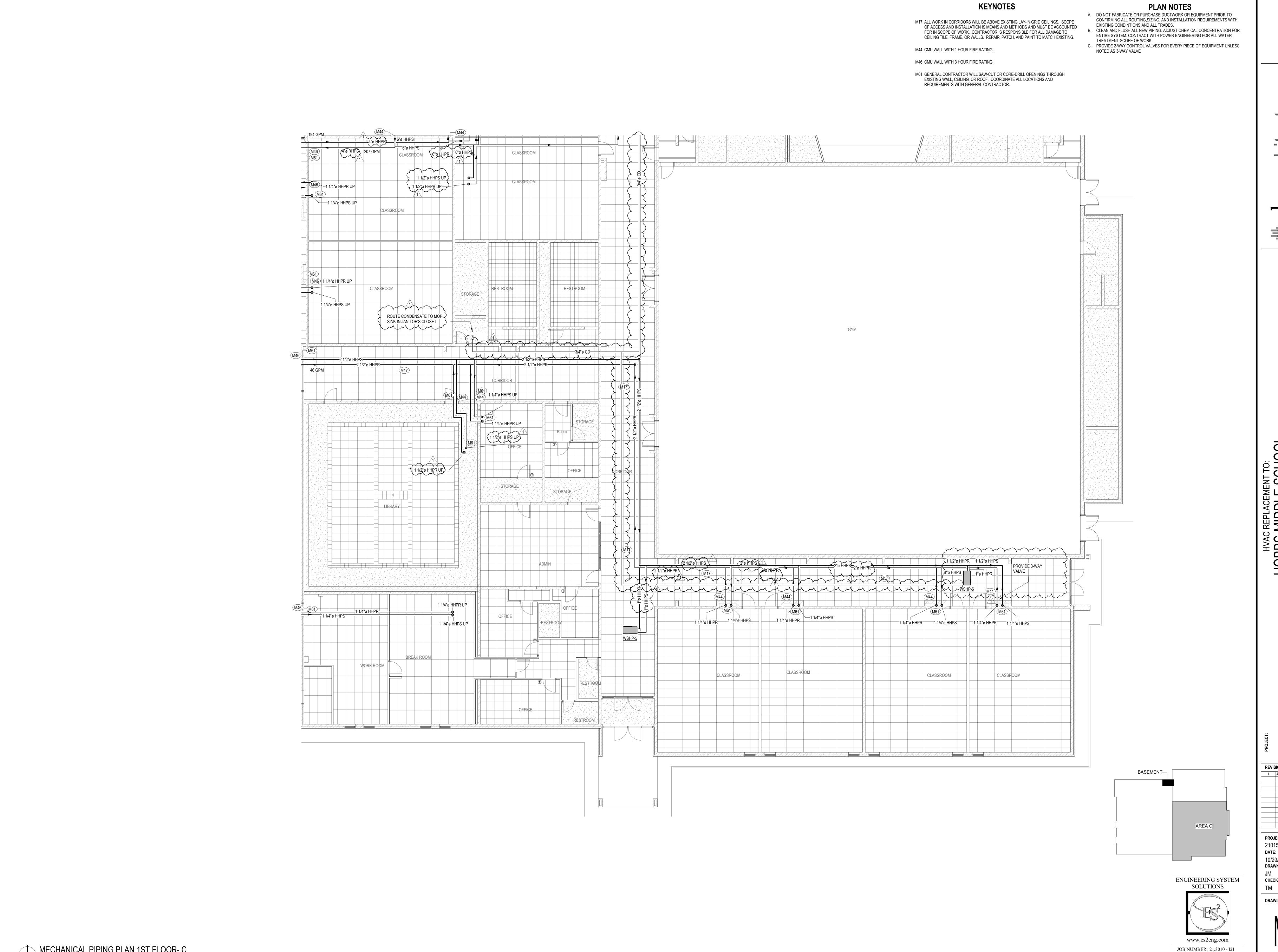
C. PROVIDE 2-WAY CONTROL VALVES FOR EVERY PIECE OF EQUIPMENT UNLESS NOTED AS 3-WAY VALVE

JOB NUMBER: 21.3010 - I21

MECHANICAL PIPING PLAN 1ST FLOOR- B

PROJECT NO.

21015 DATE: 10/29/2021 DRAWN BY: CHECKED BY:



HOBBS MIDDLE SCHOOL
SHELLEY SCHOOL DISTRICT NO. 60
45 SEMINARY AVENUE, SHELLEY, IDAHO 83

PROJECT NO.

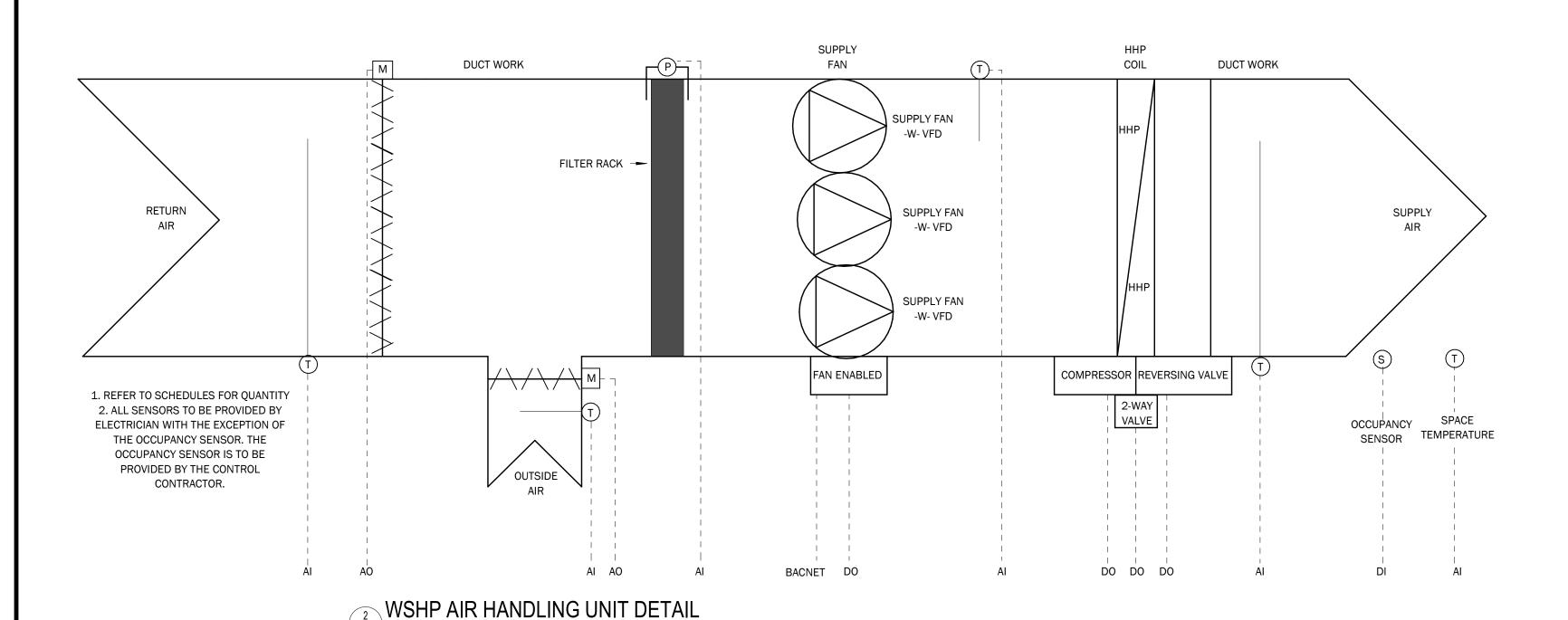
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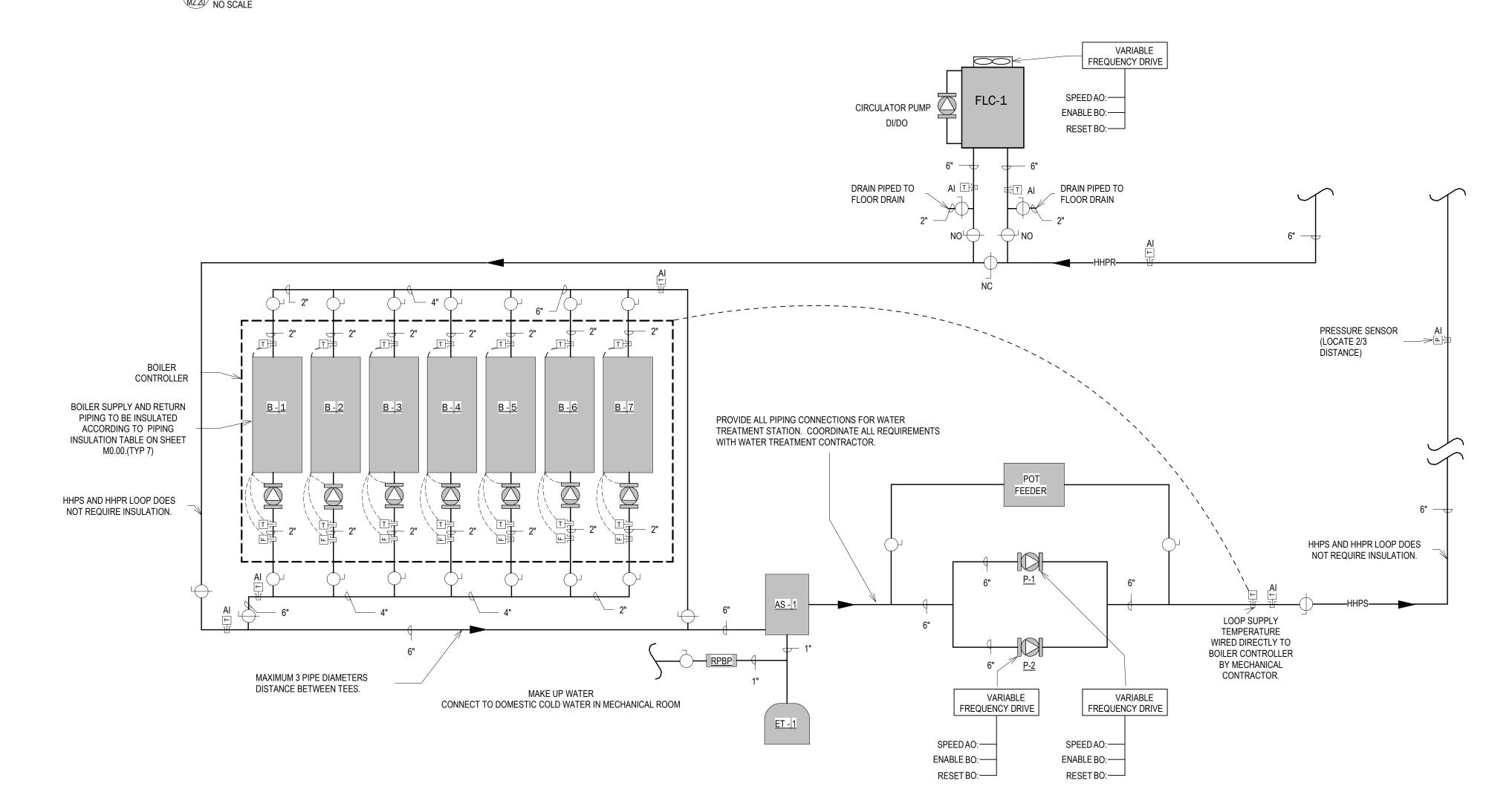
NOTES:

A. GAS SCHEMATIC SIZING BASED ON 11 IN WC DOWNSTREAM OF PRESSURE REGULATOR. CONTRACTOR TO CONFRIM PRESSURE PRIOR TO INSTALLATION. /1

- B. GAS PIPING SIZED PER LONGEST LENGTH
  METHOD PER TABLE 402.4(2) IN THE 2018 IFGC.
  C. 11 IN WC PIPING SIZED AT THE MAXIMUM EQUIVALENT LENGTH OF 125 FEET. VERIFY MAX PRESSURE OF EACH PIECE OF EQUIPMENT
- BEFORE INSTALL. . INSTALL ALL GAS CONNECTIONS TO APPLIANCES PER MANUFACTURERS RECOMMENDATIONS. INCLUDE THE GAS PIPING SEDIMENT TRAP INSTALLED DOWNSTREAM OF THE APPLIANCE SHUTOFF VALVE AS CLOSE TO THE INLET OF THE APPLIANCE AS PRACTICAL.

GAS SCHEMATIC





HEAT PUMP WATER SCHEMATIC

HOBBS MIDDLE SCHOOL SEQUENCE OF OPERATION

BMS SYSTEM MUST FULLY INTEGRATE WITH SCHOOL DISTRICT WIDE SYSTEM. DDC SYSTEM TO BE AUTOMATED LOGIC AND INSTALLED BY CLIMATECH. ENTIRE CONTROLS SCOPE OF WORK MUST BE INCLUDED IN GENERAL CONTRACTOR WORK SCOPE.

BMS MUST BE FULLY BACNET UTILIZING BACNET IP FOR NETWORK CONTROLLERS AND BACNET MS/TP FOR DEVICE CONTROLLERS AND DEVICES.

THE SEQUENCE OF OPERATION SUPERCEDES THE CONTROL SCHEMATICS WHICH MAY BE INCOMPLETE.

EACH PIECE OF EQUIPMENT AND SYSTEM LISTED BELOW WILL BE INCLUDED IN THE FRONT END GRAPHICS DISPLAYING ALL POINTS IN GRAPHICAL REPRESENTATION OF THE SPECIFIC PROCESS. ALL SETTINGS ARE TO BE ADJUSTABLE. PROVIDE LOCKABLE PROTECTION COVERS FOR ALL SENSORS LOCATED IN PUBLIC AREAS.

CONTROL CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL CONDUIT. SOME CONDUIT WILL BE INSTALLED BY THE ELECTRICIAN. THE CONTROL CONTRACTOR MUST PROVIDE ALL CONDUIT NOT SPECIFIED IN THE ELECTRICAL DRAWINGS. AIR HANDLING UNIT (AHU-1 & AHU-2)

EACH AIR HANDLING UNIT IS COMPRISED OF FILTER RACK, (3) SUPPLY FANS WITH VFDS, AND HYDRONIC HEAT PUMP COIL.

BMS TO PROVIDE ALL MANUFACTURER RECOMMENDED CONTROL, MONITORING, AND ALARMS OF HYDRONIC HEAT PUMP.

OCCUPIED/ UNOCCUPIED: OCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEDULE AND WHEN SPACE OCCUPANCY SENSOR INDICATES OCCUPIED STATUS. TEMPORARILY UNOCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEDULE AND WHEN SPACE OCCUPANCY SENSOR (PROVIDED BY CONTROL CONTRACTOR) INDICATES UNOCCUPIED STATUS. UNOCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED UNOCCUPIED SCHEDULE.

OCCUPIED MODE: 75 DEGREE SPACE COOLING, 70 DEGREE SPACE HEATING, FAN ON

TEMPORARILY UNOCCUPIED MODE: 79 DEGREE SPACE COOLING, 66 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING.

UNOCCUPIED MODE: 85 DEGREE SPACE COOLING, 60 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING.

THE BMS WILL INCORPORATE ADAPTIVE ALGORITHMS TO ENSURE SPACE IS AT OCCUPIED SET POINT WHEN OCCUPIED SCHEDULE BEGINS.

SUPPLY FANS: BMS TO ENABLE AND MONITOR EACH FAN VFD. UPON FAN FAILURE ALARM, CLOSE OUTSIDE AIR DAMPER.

MINIMUM OUTSIDE AIRFLOW: MINIMUM OUTSIDE AIR TO BE MAINTAINED AS A MINIMUM OUTSIDE AIR DAMPER POSITION DURING PROGRAMMED OCCUPIED SCHEDULE. MINIMUM OUTSIDE AIR TO BE SET TO ZERO DURING PROGRAMMED UNOCCUPIED

COOLING: SEQUENCE THE FOLLOWING COOLING STAGES TO MAINTAIN SPACE TEMPERATURE COOLING SET POINT.

FIRST STAGE OF COOLING IS OUTSIDE AIR ECONOMIZER. WHEN THE OUTSIDE AIR TEMPERATURE IS BETWEEN THE RETURN AIR TEMPERATURE AND 55 DEGREES, THE OSA AND RETURN AIR DAMPERS ARE SET TO 100% OSA. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 55 DEGREES, THE OSA AND RETURN AIR DAMPERS MODULATE BETWEEN 100% OUTSIDE AIR AND MINIMUM OUTSIDE AIRFLOW TO MAINTAIN SPACE TEMPERATURE SET POINT (MINIMUM DISCHARGE AIR TEMPERATURE OF 50 DEGREES). WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE THE RETURN AIR TEMPERATURE, THE OSA AND RETURN AIR DAMPERS ARE SET TO MINIMUM OUTSIDE AIRFLOW.

PROVIDE NEW SPACE PRESSURE SENSOR IN GYMNASIUM. MODULATE THE RELIEF DAMPERS TO MAINTAIN SLIGHTLY POSITIVE GYMNASIUM PRESSURE RELATIVE TO OUTDOORS.

THE SECOND STAGE OF COOLING IS THE HYDRONIC HEAT PUMP COIL. MODULATE RETURN AND OUTSIDE AIR DAMPERS TO MAINTAIN MIXED AIR TEMPERATURE MINIMUM 65 DEGREES PRIOR TO ENABLING COOLING STAGE 2. OPEN HYDRONIC LOOP CONTROL VALVE, ENABLE COMPRESSOR, AND SET REVERSING VALVE TO COOLING.

HEATING: HEATING IS PROVIDED BY THE HYDRONIC HEAT PUMP COIL. OPEN HYDRONIC LOOP CONTROL VALVE, ENABLE COMPRESSOR, AND SET REVERSING VALVE TO HEATING.

WHEN MIXED AIR TEMPERATURE (UPSTREAM OF COIL) DECREASES BELOW 40 DEGREES, DISABLE SUPPLY FANS, CLOSE OUTSIDE AIR DAMPER, AND INITIATE ALARM. WHEN DISCHARGE AIR TEMPERATURE EXCEEDS 100 DEGREES, CYCLE HEATING OFF FOR A GIVEN TIME PERIOD AS THE FAN CONTINUES TO OPERATE TO ALLOW STRATIFIED HOT AIR TO PUSH TO THE FLOOR.

FIRE SHUTDOWN: MONITOR FIRE SHUTDOWN STATUS FROM FIRE ALARM PANEL

MONITOR: FILTER RACK DP

HYDRONIC HEAT PUMP ROOFTOP UNITS (RTU)

EACH ROOFTOP UNIT TO BE EQUIPPED WITH MANUFACTURER MICRO-PROCESSOR CONTROL SYSTEM (BASIS OF DESIGN: RELIATEL CONTROLS). CONTROLLER TO COMMUNICATE WITH BMS VIA BACNET AND PROVIDE ALL MANUFACTURER RECOMMENDED CONTROL, MONITORING, AND ALARMS FOR OPERATION OF SUPPLY FAN, OUTSIDE AIR ECONOMIZER AND RELIEF, HYDRONIC HEAT PUMP HEATING AND COOLING.

THE BMS WILL PROVIDE THE FOLLOWING INFORMATION TO THE ROOFTOP UNIT CONTROLLER:

 ZONE TEMPERATURE ZONE COOLING TEMPERATURE SET POINT

3. ZONE HEATING TEMPERATURE SET POINT 4. MODE (FAN AUTO, FAN ON, HEATING, OR COOLING)

THE BMS TO OPEN THE HYDRONIC LOOP CONTROL VALVE DURING COOLING AND HEATING OPERATION.

OCCUPIED/ UNOCCUPIED: OCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEDULE AND WHEN SPACE OCCUPANCY SENSOR INDICATES OCCUPIED STATUS. TEMPORARILY UNOCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEDULE AND WHEN SPACE OCCUPANCY SENSOR (CONTROL CONTROL CO

OCCUPIED MODE: 75 DEGREE SPACE COOLING, 70 DEGREE SPACE HEATING, FAN ON

TEMPORARILY UNOCCUPIED MODE: 79 DEGREE SPACE COOLING, 66 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING.

UNOCCUPIED MODE: 85 DEGREE SPACE COOLING, 60 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING

THE BMS WILL INCORPORATE ADAPTIVE ALGORITHMS TO ENSURE SPACE IS AT OCCUPIED SET POINT WHEN OCCUPIED SCHEDULE BEGINS.

MODULAR NEEDLEPOINT BIPOLAR IONIZATION: EACH SYSTEM WILL BE POWERED AND CONTROLLED WITH 24 VOLT POWER. ENABLE SYSTEM DURING PROGRAMMED SCHEDULE. MONITOR MODULE ALARM CONTACTS.

ZONED SYSTEM: THE ADMINISTRATION RTU TO BE EQUIPPED WITH ZONING. PROVIDE ZONE DAMPERS, BYPASS DAMPER, AND ZONE SENSORS. CALL FOR COOLING OR HEATING WILL BE BASED ON THE MAJORITY OF ZONES. MODULATE ZONE DAMPERS TO MAINTAIN ZONE TEMPERATURE SET POINTS. MODULATE BYPASS DAMPER BASED ON DUCT PRESSURE.

THE CONFERENCE ROOM TO BE EQUIPPED WITH ZONE DAMPER AND ZONE SENSOR. MODULATE DAMPER TO MAINTAIN SPACE TEMPERATURE SET POINT.

NON-CORRIDOR WATER SOURCE HEAT PUMP (WSHP-1)

BMS TO PROVIDE ALL MANUFACTURER RECOMMENDED CONTROL, MONITORING, AND ALARMS OF HYDRONIC HEAT PUMP.

OCCUPIED/ UNOCCUPIED: OCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEBULE AND WHEN SPACE OCCUPANCY SENSOR INDICATES OCCUPIED STATUS. TEMPORARILY UNOCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEDULE AND WHEN SPACE OCCUPANCY SENSOR (PROVIDED BY CONTROL CONTRACTOR) INDICATES UNOCCUPIED STATUS. UNOCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED UNOCCUPIED SCHEDULE. OCCUPIED MODE: 75 DEGREE SPACE COOLING, 70 DEGREE SPACE HEATING, FAN ON

TEMPORARILY UNOCCUPIED MODE: 79 DEGREE SPACE COOLING, 66 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING.

UNOCCUPIED MODE: 85 DEGREE SPACE COOLING, 60 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING

THE BMS WILL INCORPORATE ADAPTIVE ALGORITHMS TO ENSURE SPACE IS AT OCCUPIED SET POINT WHEN OCCUPIED SCHEDULE BEGINS.

SUPPLY FANS: BMS TO ENABLE FAN AND MONITOR FAN STATUS.

MINIMUM OUTSIDE AIRFLOW: MINIMUM OUTSIDE AIR TO BE MAINTAINED AS A MINIMUM OUTSIDE AIR DAMPER POSITION DURING PROGRAMMED OCCUPIED SCHEDULE. MINIMUM OUTSIDE AIR TO BE SET TO ZERO DURING PROGRAMMED UNOCCUPIED

COOLING: COOLING IS THE HYDRONIC HEAT PUMP COIL. MODULATE OPEN HYDRONIC LOOP CONTROL VALVE, ENABLE COMPRESSOR, AND SET REVERSING VALVE TO COOLING.

HEATING: HEATING IS PROVIDED BY THE HYDRONIC HEAT PUMP COIL. OPEN HYDRONIC LOOP CONTROL VALVE, ENABLE COMPRESSOR, AND SET REVERSING VALVE TO HEATING.

MODULAR NEEDLEPOINT BIPOLAR IONIZATION: EACH SYSTEM WILL BE POWERED AND CONTROLLED WITH 24 VOLT POWER. ENABLE SYSTEM DURING PROGRAMMED SCHEDULE. MONITOR MODULE ALARM CONTACTS.

**CORRIDOR WATER SOURCE HEAT PUMP (WSHP)** 

BMS TO PROVIDE ALL MANUFACTURER RECOMMENDED CONTROL, MONITORING, AND ALARMS OF HYDRONIC HEAT PUMP.

OCCUPIED/ UNOCCUPIED: OCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED OCCUPIED SCHEDULE. UNOCCUPIED MODE WILL BE ENABLED DURING PROGRAMMED UNOCCUPIED SCHEDULE.

OCCUPIED MODE: 80 DEGREE SPACE COOLING, 65 DEGREE SPACE HEATING, FAN ON

UNOCCUPIED MODE: 90 DEGREE SPACE COOLING, 55 DEGREE SPACE HEATING, FAN CYCLES WITH HEATING OR COOLING.

THE BMS WILL INCORPORATE ADAPTIVE ALGORITHMS TO ENSURE SPACE IS AT OCCUPIED SET POINT WHEN OCCUPIED SCHEDULE BEGINS.

SUPPLY FAN: BMS TO ENABLE FAN AND MONITOR FAN STATUS.

COOLING: COOLING IS THE HYDRONIC HEAT PUMP COIL. MODULATE OPEN HYDRONIC LOOP CONTROL VALVE, ENABLE COMPRESSOR, AND SET REVERSING VALVE TO COOLING.

HEATING: HEATING IS PROVIDED BY THE HYDRONIC HEAT PUMP COIL. OPEN HYDRONIC LOOP CONTROL VALVE, ENABLE COMPRESSOR, AND SET REVERSING VALVE TO HEATING. **EXHAUST FAN (EF)** 

ENABLE ALL APPLICABLE EXHAUST FANS TO OPERATE ON PROGRAMMED SCHEDULE. MONITOR FAN STATUS WITH CURRENT OR DP SWITCH.

HYDRONIC HEAT PUMP LOOP

PRIMARY LOOP PUMPS (P-1 AND P-2): ONE PUMP TO REMAIN OFF AS A BACKUP. ALTERNATE BACKUP PUMP BASED ON RUN TIME. UPON PUMP FAILURE, DISABLE LEAD PUMP AND ENABLE BACKUP PUMP AND INITIATE ALARM. ENABLE LEAD PUMP WHEN TWO OR MORE ZONES ARE CALLING FOR HEATING OR COOLING. MODULATE PUMP VFD TO MAINTAIN LOOP PRESSURE SET POINT.

BOILERS (B-1 THRU 7): BOILERS TO BE EQUIPPED WITH MANUFACTURER MASTER CONTROLLER WITH BACNET INTERFACE TO BMS. ENABLE BOILER CONTROLLER WHEN LOOP SUPPLY TEMPERATURE DECREASES BELOW 70 DEGREES AND TWO OR MORE ZONES ARE CALLING FOR COOLING. BOILER CONTROLLER WILL ENABLE BOILERS, SEQUENCE BOILER STAGING, AND ENABLE CORRESPONDING PRIMARY BOILER PUMPS TO MAINTAIN THE LOOP SUPPLY MINIMUM SET POINT (70 DEGREES) AT OPTIMAL BOILER EFFICIENCY. RESET MINIMUM LOOP SUPPLY SET POINT BASED ON OUTSIDE AIR RESET SCHEDULE.

CLOSED CIRCUIT FLUID COOLER (FLC-1): ENABLE CIRCULATOR PUMP AND MODULATE FAN VFD TO MAINTAIN MAXIMUM LOOP SUPPLY TEMPERATURE SET POINT (85 DEGREES) AND WHEN TWO OR MORE ZONES ARE CALLING FOR COOLING. MONITOR: HHPR TEMPERATURES, BOILER LOOP SUPPLY AND RETURN TEMPERATURES, FLUID COOLER LOOP SUPPLY AND RETURN TEMPERATURES.





MIDI

HOBI

REVISIONS

PROJECT NO. 21015 DATE: 10/29/2021 DRAWN BY:

CHECKED BY

		Α	IR SEP	AR/	٩T	OR (A	S)		
		CONNECTION		MAX	(	DIMENS	ONS (IN)	OPER	MANUFACTURER &
MARK	SYSTEM SERVED	SIZE	MIN GPM	HEA (FI)	D )	D	Н	WT (LBS)	MODEL
AS-1	HHP	6	450	{ 1.5	}	20	36.88	170	TACO AC06-125

**ELECTRIC WALL HEATER (EH)** OPER MANUFACTURER & MARK LOCATION TYPE CFM EAT (°F) MOUNTING # STEPS VOLT PH KW NOTES MODEL EH-2 LOCKER ROOM WALL 160 70 SURFACE 1 208 1 3 16 16 8 25 INDEECO CDI 1-4

EH-3 LOCKER ROOM WALL 160 70 SURFACE 1 208 1 3 16 16 8 25 INDEECO CDI 1-4

EH-4 LOCKER ROOM WALL 160 70 SURFACE 1 208 1 3 16 16 8 25 INDEECO CDI 1-4

NOTES: . QMARK, INDEECO, AND MARKEL ARE APPROVED MANUFACTURERS. REFER TO MANUFACTURER AND MODEL FOR BASIS OF DESIGN. 2. PROVIDE WITH MOUNTING BRACKET.
3. PROVIDE 24V RELAY WITH TRANSFORMER TO INTEGRATE WITH BMS.
4. COLOR BY ARCHITECT.

							WATE	R SO	URCE HE	AT I	PUMP (\	WSHP)											
					Alf	R SIDE			W	ATER S	SIDE				El	LECTR	ICAL		DIMEN	ISIONS	(IN)		
MARK	LOCATION SERVED	OSA	ESP (IN WC)	AIRFLOW (CFM)	COOLING EAT (DB/WB) (°F)	COOLING LAT (DB/WB) (°F)	HEATING EAT/LAT (DB) (°F)	FLUID	FLOW RATE (GPM)	PD	COOLING (EWT)	HEATING (EWT)	EER	СОР	VOLTAGE	PH	МСА	МОСР	D	w	Н	OPER WT (LBS)	MANUFACTURER & MODEL
WSHP-1	MECHANICAL ROOM	345	0.75	1990	79/62	55/54	53/90	30% P.G.	12	15	85	70	15.5	5.2	208	3	25.4	40	52	28	23	340	DAIKIN WCCH
WSHP-2	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-3	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-4	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-5	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-6	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-7	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-8	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH
WSHP-9	CORRIDOR	0	0.6	600	78/62	61/59	65/90	30% P.G.	2	10	85	70	12.7	4.3	208	3	20	30	40	20	12	250	DAIKIN WCCH

PROVIDE WITH FACTORY MOUNTED DISCONNECT. PROVIDE FACTORY MOUNTED SMOKE DETECTOR IN AIRSTREAM FOR UNIT SHUTDOWN FOR WSHP-1. REFER TO SEQUENCE OF OPERATION.
WSHP'S LOCATED IN CORRIDORS TO BE PROVIDED WITH A CONDENSATE PUMP CAPABLE OF MOVING CONDENSATE A MINIMUM OF 150 HORIZONTAL FEET. BASIS OF DESIGN IS BELL & GOSSETT L'S CONDENSATE REMOVAL PUMP.

PROVIDE A WATER LEVEL DETECTION DEVICE CONFORMING TO UL 508 AT THE EQUIPMENT OVERFLOW DRAIN CONNECTION. WATER LEVEL DETECTION DEVICE TO SHUTDOWN EQUIPMENT UPON DETECTION OF WATER.

				EX	PANSIO	N TANK	(ET)			
	SYSTEM	MAX OPER.	GLYCOL	TANK VOL	ACCEP VOL	PRE	DIMENS	IONS (IN)	OPER WT	MANUFACTURER &
MARK	SERVED	WATER TEMP (°F)	(%)	(GAL)	(GAL)	CHARGE (PSI)	Н	D	(LBS)	MODEL
ET-1	HHP	240	30	53	53	125	38	24	170	AMTROL 200-L
NOTES: • AMTROL, V	/ATTS(THRUSH)	AND TACO ARE AP	PROVED MANUF	ACTURERS. REFE	R TO MANUFACTU	RER AND MODEL	FOR BASIS OF DI	ESIGN.		

CLIMATE MASTER, DAIKIN, TRANE ARE APPROVED MANUFACTURERS. REFER TO MANUFACTURER AND MODEL FOR BASIS OF DESIGN.

MARK	FLOW RATE	%	PD	EWT	LWT	OSA		ELE	CTRICAL		DIME	NSION	NS (IN)	OPER	MANUFACTURE
WARN	(GPM)	P.G.	(FT)	(°F)	(°F)	WB (°F)	MCA	MOCP	VOLTAGE	PHASE	L	W	Н	WT (LBS)	MODEL
FLC-1	450	30	14	97	85	63	69	100	208	3	90	102	188	17000	EVAPCO ATV

VFD CONTROL PANEL INCLUDING BACNET CARD, FAN VFD (10 HP), SPRAY PUMP (2 HP), BASIN HEATER (6 KW), IMMERSION TEMPERATURE SENSOR, DAMPER OUTPUT, 3-

STAGE TEMPERATURE CONTROLLER. ELECTRICIAN MUST WIRE ALL ELECTRICAL DEVICES FROM DEVICE TO PANEL.

				AIR SIDE				HYDRO	NIC HE	AT PUMP				E	LECTR	RICAL		DIME	NSION	S (IN)		
MARK	os	A ESP (IN WC)	AIRFLOW (CFM)	COOLING EAT (DB/WB) (°F)	COOLING LAT (DB/WB) (°F)	HEATING EAT/LAT (DB) (°F)	FLUID	FLOW RATE (GPM)	PD (FT)	COOLING (EWT)	HEATING (EWT)	EER	СОР	VOLTAGE	PH	MCA	МОСР	D	w	Н	OPER WT (LBS)	MANUFACTURER & MODEL
RTU-1	22		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-2	15	0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-3	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-4	17		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-5	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-6	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-7	33	0.75	1990	79/62	55/54	53/90	30% P.G.	12	8	85	70	14.83	4.62	208	3	30	45	55	89	41	850	TRANE GWSC
RTU-8	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-9	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-10	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-11	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-12			1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-13	18		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-14	19		1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
BTU-15		5 9.75	1200	79/62	55/54	53/90	30% P.G	7-0	5,5	85_	70	14,95	4.62	208	3	25	35	45	70_	41_	650	TRANE GWSC
RTU <sub>1</sub> 16		<u> </u>	Y 1990Y	79/62	55/54	53/90	30% <b>)</b> .G.	12,	8	85	7	<u> </u>	4.62	208		30	45	γ <sub>55</sub>	X89	<sup>Y</sup> 41	X 850	TRANE GWSC
RÍŬ-17	18	5 0.75	<del></del>	79/62	55/54	53/90	30% P.G.		5.5	85	70	14.95	4.62	<b>7</b> 08	$\mathcal{I}_{\mathfrak{I}}$	25	35	45	70	41	650	TRANEGWSC
RTU-18	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-19	18	0 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-20	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-21	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-22			1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70		4.62	208	3	25	35	45	70	41	650	TRANE GWSC
<b>BTU-23</b>	18	$\sim$	1200	79/62	55/54	53/90	30% P.G.	~~~	55	~85 ~	$\sim$ $70$	14,95	$\sim$	208	~3~	25_	35	45_	70	41_	650	TRANE GWSC
RŢU <mark>7</mark> 24	15	0.75	1200 <sup>x</sup>	79/62	55/54	53/90	30% P.G.	7,	5.5	85	7)		4.62	208	<b>1</b>	<b>2</b> 5	35	, 45 ,	770	<sup>7</sup> 41	650	TRANE GWSC
*KTU-25	180		1200	79/62	55/54	53/90	30% P.G.	$\frac{1}{7}$	5.5	85	70	14.95	4.62	208	3	25	35	45	Ø	41	650	TRANE GWSC
RTU-26	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-27	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95		208	3	25	35	45	70	41	650	TRANE GWSC
RTU-28	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-29	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-30	37	5 0.75	1990	79/62	55/54	53/90	30% P.G.	12	8	85	70	14.83	4.62	208	3	30	45	55	89	41	850	TRANE GWSC
RTU-31	10	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-32	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-33	18	5 0.75	1200	79/62	55/54	53/90	30% P.G.	7	5.5	85	70	14.95	4.62	208	3	25	35	45	70	41	650	TRANE GWSC
RTU-34	_		1990	79/62	55/54	53/90	30% P.G.	12	8	85	70		4.62	208	3	30	45	55	89	41	850	TRANE GWSC

Extreme Annual WS

27.2

2.5% 5%

24.3 20.7

CLIMATE MASTER, DAIKIN, TRANE, AND YORK ARE APPROVED MANUFACTURERS. REFER TO MANUFACTURER AND MODEL FOR BASIS OF DESIGN.

 PROVIDE WITH SPLASH BLOCK FOR CONDENSATE DRAIN. PROVIDE BACNET CARD AND RELIATEL CONTROLS (OR EQUAL). REFER TO SEQUENCE OF OPERATION FOR CONTROL REQUIREMENTS.

INTERNALLY ISOLATED FAN MOTOR AND COMPRESSOR. THERMOSTATIC EXPANSION VALVE, COPPER HEAT EXCHANGER, REVERSING VALVE, 2" FILTER (MERV8), FREEZESTAT, DISCHARGE LINE THERMOSTAT, AND

VIBRATION ISOLATORS. PROVIDE WITH OSA ECONOMIZER WITH BAROMETRIC RELIEF. PROVIDE FACTORY MOUNTED SMOKE DETECTOR IN AIRSTREAM FOR UNIT SHUTDOWN.

TOTAL WEIGHT OF ROOF TOP UNIT MUST BE LESS THAN 30 LBS PER SQ FT.

MINIMUM 1AT LICEUS LODED BOOF CLIDE LINE SESSIONED AS 20" ON ROOF PLAN. SLOPE TO MATCH ROOF SLOPE.

							Α	IR HANDLII	NG UNIT (	AHU)										
	SA	OSA	ESP		AIRSIDE			н	YDRONIC HEAT F	PUMP			ELECTR	RICAL			ENSIC (IN)		PERATING	MANUFACTURER
MARK			(IN WC)	COOLING EAT (DB/WB) (°F)	COOLING LAT (DB/WB) (°F)	HEATING EAT/LAT (°F)	FLUID	FLUID FLOW RATE (GPM)	FLUID PRESSURE DROP (FT)	COOLING (EWT) (°F)	HEATING (EWI) (°F)	MCA	МОСР	VOLT	PH	w	L		WEIGHT (LBS)	& MODEL
AHU-1	10000	1520	0.9	79/62	55/54	57/95	30% P.G.	70	18	85	70	135.6	175	208	3	81	30	67	1075	DAIKIN WLVC
AHU-2	10000	1520	0.9	79/62	55/54	57/95	30% P.G.	70	18	85	70	135.6	175	208	3	81	30	67	1075	DAIKIN WLVC

DAIKIN, TRANE, CARRIER, AND LENNOX ARE APPROVED MANUFACTURERS. REFER TO MANUFACTURER AND MODEL FOR BASIS OF DESIGN. PROVIDE WITH VIBRATION ISOLATORS, MERV 8 FILTER RACK, VFD FOR EACH SUPPLY FAN, REFER TO SEQUENCE OF OPERATION FOR REQUIREMENTS. PROVIDE WITH FACTORY MOUNTED DISCONNECT.

PROVIDE FACTORY MOUNTED SMOKE DETECTOR IN AIRSTREAM FOR UNIT SHUTDOWN. PROVIDED 36" FLANGED REMOVEABLE SECTIONS OF DUCTWORK FOR MAINTENANCE ACCESS FOR SUPPLY AND RETURN SIDES OF UNIT.

				• MINIMUM 14" HIG	GH SLOPED RC	OOF CURB (	JNLESS ———	NOTE	) AS 20" ON	ROOF PLAN. SLO	PE TO MATCH ROOF SLC	P _
A	IR HANDLII	NG UNIT (	AHU)									
	Н	YDRONIC HEAT F	PUMP		ELEC	CTRICAL		DIM	ENSIONS (IN)	OPERATING	MANUFACTURER	
	FILIID FLOW	FLUID	COOLING (FWD)							WEIGHT	& MODEL	١

												LOOP				
2017 ASHI	RAE Handbo	ook - Found	lamentals (II	-	IDAHO FA	LISPEC	IONAL ID	LICA (NA)	10. 725795	DE: • SEI  • PRI • PRI	_ LL & GOSSETT, GRU SIGN.	ND MOTOR TO F NLY. E FOR BOTH COM	PROVIDE SCH	EDULE FLOW A	T SCHEDULED PRE	CTURERS. REFER TO SSURE, AS WELL AS
						LLS KEG	IONAL, ID									
	3.516N		2.067W		:4729		StdP: 12.35	,	Ti	me zone:-7.	.00	Per	riod: <b>90</b> -	-14	WBAN	V:24145
Annual He	ating and Hu	ımıdıficatio	n Design Co		11.0	DATODE	1.110		_ ~		1 1110 2 100	DD.				
Coldest	Heatir	ng DB			dification D	P/MCDB a				oldest mont			N	ACWS/P		
Month	00.60/	000/	DD	99.6%	MODE	DD	99%	MODD		4%		1%	D 1/	99.6%		
	99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCD		ICWS	PCWD	
1	-6.6	-0.3	-11.7	3.5	-5.8	-6.0	4.7	0.3	29.6	34.1	27.0	31.8	;	5.8	0	
Annual Co	oling, Dehur	nidification	, and Enthal	lpy Design	Conditions											
77	Hottest			Cooling I	B/MCWB				]	Evaporation	WB/MCD	В			MCWS/I	PCWD to
Hottest Month	Month	0.4	1%	1	%	2	2%	0.4	4%	1	%		2%		0.4%	6 DB
Wionin	DB Range	DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	M	1CDB	MCWS	PCWD
7	35.4	92.1	60.9	89.6	60.5	86.7	59.6	64.7	83.2	63.0	81.9	61.5	; ;	81.8	10.4	200
		Ι	)ehumidifica	ation DP/M	CDB and H	R					Enthalp	y/MCDE	3			-
	0.4%			1%			2%		0.4	4%		1%		29	6	Extreme Max WB
DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCD:	B 1	Enth	MCDB	IVIAX WD
58.7	87.9	71.0	56.2	80.3	68.9	54.2	74.6	68.0	32.2	83.0	30.7	81.6	5 :	29.6	81.4	74.3
Extreme Ar	nnual Design	1 Condition	s													

Extreme Annual Temperature

-13.2 96.7

DB

Standard deviation

7.8

7.5

Max

2.6

2.8

Min

-19.1

Max

70.5

-18.8 98.6

		4511 4511	6" Ø	95 - 140	0.08	19	8-9		
		15" x 15"	8" Ø	141 - 185	0.08	17	9 - 11	1	
			8" Ø	186 - 245	0.08	21	11 - 13	-	
		18" x 18"	10" Ø	246 - 305	0.08	19	12 - 14	-	
			12" Ø	306 - 410	0.10	20	12 - 15	-	
1	LOUVERED FACE CEILING SUPPLY		6" Ø	95 - 140	0.08	18	8 - 9	TITUS TDC	1, 2, 3, 4, 5
	CEILING SUPPLY		8" Ø	141 - 245	0.08	20	10 - 13	-	
		0.411 0.411	10" Ø	246 - 305	0.08	19	12 - 14	-	
		24" x 24"	12" Ø	306 - 455	0.08	21	14 - 18	-	
			14" Ø	456 - 640	0.08	22	17 - 21	-	
			16" Ø	641 - 840	0.08	21	20 - 24	1	
		24" x 4"	6" Ø	70 - 125	0.08	19	15 - 19		
		24" x 4"	8" Ø	126 - 170	0.08	24	18 - 23	1	
7	PLENUM SLOT	48" x 4"	8" Ø	171 - 230	0.09	18	23 - 27	TITUS TBD-10	1, 2, 4, 8
	DIFFUSER	48" x 4"	10" Ø	231 - 285	0.09	21	27 - 31	-	
		48" x 4"	12" Ø	286 - 370	0.09	25	31 - 35	-	
		8" x 8"	6"x 6"	0-150	0.08	19	11-18		
		10" x 8"	8" x 6"	151 - 210	0.08	21	13-21	-	
	-	12" x 8"	10" x 6"	211 - 270	0.08	23	20 - 23	-	
	-	14" x 8"	12" x 6"	271 - 330	0.08	23	23 - 26	-	
8	WALL SUPPLY	16" x 8"	14" x 6"	331 - 385	0.08	24	26 - 28	TITUS 272R	1, 2, 4, 6
·		14" x 10"	12" x 8"	386 - 455	0.08	25	27 - 30	-	., _, ., •
		14" x 12"	12" x 10"	456 - 505	0.06	22	30 - 32	-	
		14" x 14"	12" x 12"	506 - 615	0.06	23	32 - 35	-	
		16" x 16"	14" x 14"	616 - 855	0.06	24	35 - 42	-	
		14" x 5"	12" x 3"	40 - 70	0.10	14	7 - 9		
	-	14" x 6"	12" x 4"	71 - 125	0.10	15	9 - 11	-	
	CDIDAL DUCT	14" x 8"	12" x 6"	126 - 195	0.10	17	11 - 14	_	
9	SPIRAL DUCT MOUNTED SUPPLY	14" x 10"	12" x 8"	196 - 260	0.10	18	14 - 16	TITUS S300FS	2, 4, 6, 7
	-	14" x 12"	12" x 10"	261 - 330	0.10	19	16 - 18	-	
	-	14" x 14"	12" x 10"	331 - 440	0.10	20	18 - 21	-	
		12" x 8"	10" x 6"	0 - 205	0.10	20	10-21		
	-	14" x 10"	10 x 8"	206 - 300	0.10	20	-		
10	WALL RETURN OR	20" x 14"	18" x 12"	301 - 745	0.10	20	N/A	TITUS 355RL	1, 2
10	EXHAUST	20 x 14 24" x 18"	22" x 16"	746 - 1130	0.10	20	I IN/A	11103 333KL	Ι, Ζ
	_	24 x 16 24" x 22"	22" x 20"	1131 - 1450	0.09	20	_		
		8" x 8"	6" x 6"	0 - 135	0.08	17			
		0 x 0 12" x 12"							
	CEILING EGGCRATE	16" x 16"	10" x 10"	136 - 415 416 - 855	0.08	18	_		
11	RETURN OR		14" x 14"		0.08	19	N/A	TITUS 50R	1, 2, 3
	EXHAUST	20" x 20"	18" x 18"	856 - 1450	0.08	19	-		
	_	24" x 12"	22" x 10"	0 - 960	0.08	19	_		
		24" x 24"	22" x 22"	961 - 2200	0.08	20			
	-	8" x 8"	6" x 6"	0 - 80	0.03	10			
	-	12" x 12"	10" x 10"	81 - 240	0.03	10			
12	CEILING EGGCRATE	16" x 16"	14" x 14"	241 - 495	0.03	10	N/A	TITUS 50R	1, 2, 3
	TRANSFER	20" x 20"	18" x 18"	496 - 835	0.03	10	_		
		24" x 12"	22" x 10"	0 - 555	0.03	10			
1		24" x 24"	22" x 22"	556 - 1260	0.03	10			
$\frac{1}{13}$	LOUVERED FACE	36" x 42"	30" x 36"	2500	0.13	27	28	TITUS TDCA	2, 11
$\mathcal{V}$	CEILING SUPPLY			mm		MM	M		المن بسر
*REEED TO	D FLOOR PLANS FOR T	HROW DATTEDN	INDICATED BY ADI	SUNS (3-1818 - 3 181	\ ∆V ∩R 1_\\\\\\\		I	1	
NLFERIU	O I LOUIN FLAINS FUR I	INOWFAITERN	INDICATED DI AKI	(J-VVAT, Z-VV/	~1, OIX 1-VVAT).	JUFFLI AIR			

AIR DEVICE SCHEDULE

FACE SIZE NECK SIZE CFM RANGE MAX T.P. N.C. MAX THROW

6" Ø 95 - 140 0.08 19 8 - 9

1/250 \_\_\_\_ CFM

NOTES

nbwa |

O

MIDD

HOBB

REVISIONS

PROJECT NO. 21015 DATE: 10/29/2021 DRAWN BY:

CHECKED BY:

DRAWING NO.:

MODEL

DEVICE INTENDED TO BE 4-WAY THROW IF ARROWS ARE NOT PRESENT.

\*\*NOT ALL AIR DEVICES IN THE AIR DEVICE SCHEDULE ARE USED. LL AIR DEVICES IN POOL EQUIPMENT AND POOL ROOM AND HIGH HUMIDITY AREAS TO BE OF ALUMINUM CONSTRUCTION.

PROVIDE FRAME COMPATIBLE WITH CEILING OR WALL TYPE. VERIFY FRAME TYPE OF ALL AIR DEVICES WITH ARCHITECTURAL

FLECTED CEILING PLAN BEFORE ORDERING. COLOR BY ARCHITECT.

TITUS, CARNES, NAILOR, PRICE, METALAIRE, AND KRUEGER ARE APPROVED MANUFACTURERS. REFER TO MANUFACTURER AND DEL FOR BASIS OF DESIGN.

DNLY 24" x 24" OR 24" x 12" FACE SIZE AIR DEVICES TO BE USED IN LAY-IN GRID CEILINGS. VERIFY CEILING TYPE WITH CHITECTURAL REFLECTED CEILING PLAN.

THROW VALUE RANGE IS FOR TERMINAL VELOCITIES OF 50 FPM BASED ON THE CFM RANGE. THROW VALUES BASED ON ISOTHERMAL CONDITIONS. FACE SIZE TO CORRESPONDING CORE SIZE - 15"x15" FACE : 9"x9" CORE, 18"x18" FACE: 12"x12" CORE, 24"x24" FACE: 18"x18" CORE.

DOUBLE DEFLECTION GRILLE. PERFORMANCE IS BASED ON 22.5 DEGREE DEFLECTION. PROVIDE ASD-AIR SCOOP DAMPER/ EXTRACTOR. MAX DUCT DIAMETER = 36". MIN DUCT DIAMETER : NECK SIZE HEIGHT - 6":3", 8":4", 10":6", 12":8", 14":10", 16":12"

2) 1" SLOTS WITH TWO-WAY AIR PATTERN. AMERICAN ALDES IS APPROVED MANUFACTURER. DUCT PRESSURE MUST BE BETWEEN 0.2" AND 0.8" (POSITIVE FOR SUPPLY AND NEGATIVE

PROVIDE OPPOSED BLADE DAMPER WITH SET/ TAMPER RESISTANT SCREW. PERFORMANCE DATA IS BASED ON VERTICAL DISCHARGE POSITION IN HEATING (20 DEGREE DELTA T).

n-Year Return Period Values of Extreme Temperature

n=20 years

Max

73.7

-27.7 101.6 -33.4

Min

n=50 years

Max

Min

n=10 years

-23.3 100.1

-23.5 72.1

Max

MADIZ	МВН С	APACITY	FFF 0//E7 E 9D	FLUE	FLUE	CDM		ELECT	RICAL		DI	MENSI (IN)	ONS	OPER WT	MANUFACTURER &
MARK	INPUT (MBH)	OUTPUT (MBH)	EFF %(57.5 °F)	TYPE	SIZE (IN)	GPM	MCA	МОСР	VOLT	PH	D	W	Н	(LBS)	MODEL
B-1	399	333	96.5	PVC	4	20 (	8.4	320	120	1	18	23	45	260	WEIL-MCLAIN EVG
B-2	399	333	96.5	PVC	4	20	8.4	20	120	1	18	23	45	260	WEIL-MCLAIN EVG
B-3	399	333	96.5	PVC	4	20	8.4	<b>5</b> 20	120	1	18	23	45	260	WEIL-MCLAIN EVG
B-4	399	333	96.5	PVC	4	20 /	8.4	20	120	1	18	23	45	260	WEIL-MCLAIN EVG
B-5	399	333	96.5	PVC	4	20	8.4	20	120	1	18	23	45	260	WEIL-MCLAIN EVG
B-6	399	333	96.5	PVC	4	20 (	8.4	20	120	1	18	23	45	260	WEIL-MCLAIN EVG
B-7	399	333	96.5	PVC	4	20	8.4	20	120	1	18	23	45	260	WEIL-MCLAIN EVG
		-	O BASIS OF DESIGN. LASEQUENCE OF OPE	•	•		1							~~	~~~ <u>`</u>

PUMP (P)									
MARK	TYPE	DUTY	GPM	HEAD (FT)	MIN EFF (%)	ELECTRICAL			MANUFACTURER &
						HP	VOLT	PH	MODEL
P-1	BASE	PRIMARY LOOP	450	85	74.4	15	208	3	BELL & GOSSETT 1510
P-2	BASE	PRIMARY LOOP	450	85	74.4	15	208	3	BELL & GOSSETT 1510

MANUFACTURER AND MODEL FOR BASIS OF

120% OF SCHEDULE PRESSURE WITH

SOLUTIONS

ENGINEERING SYSTEM

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