

DRAWING LIST - HVAC_BOS			
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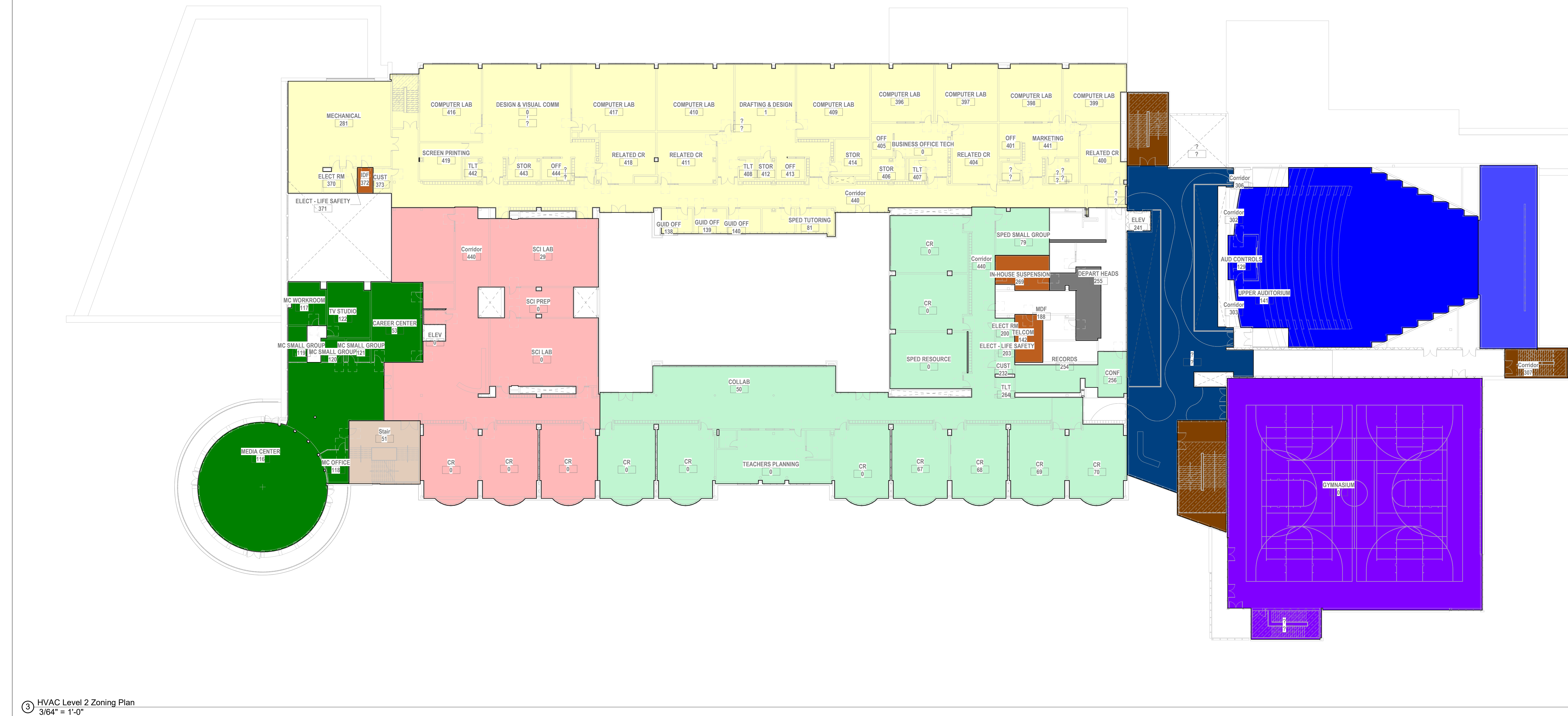
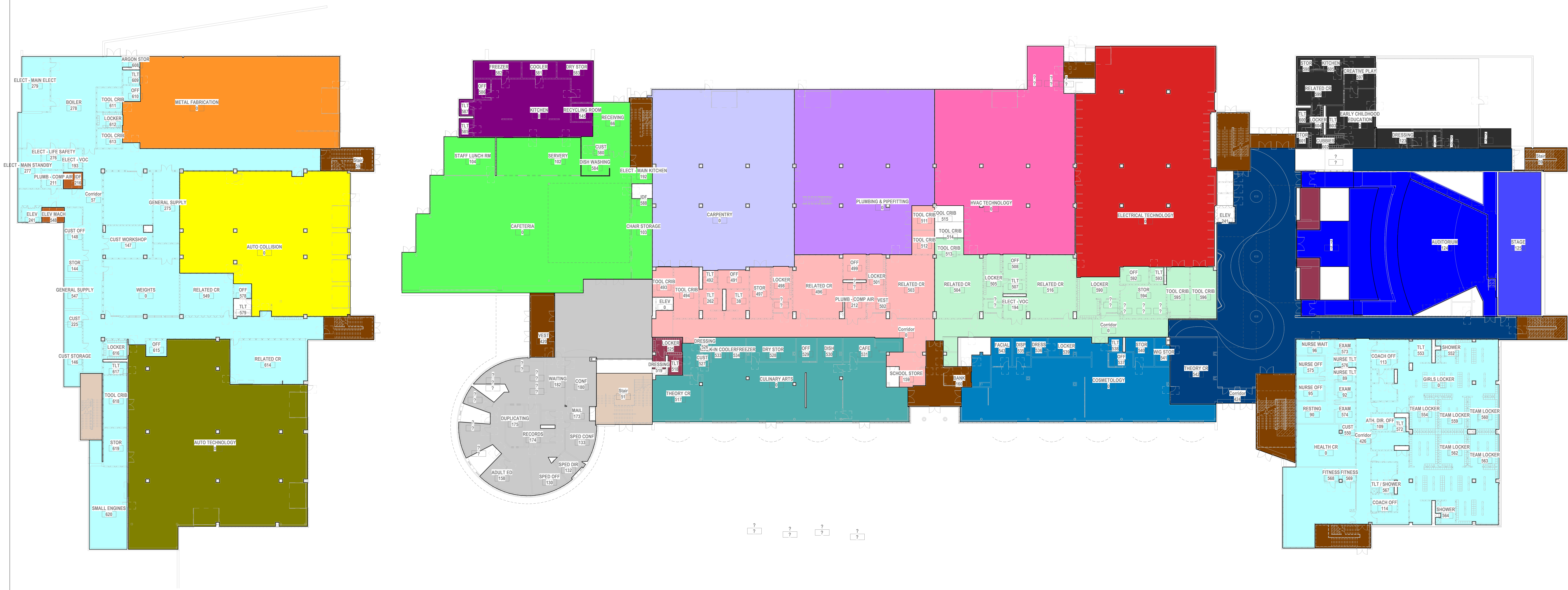
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Scale: NTS
Job No.: 6020409
Drawn By: DRA

M0-0-1



Zoning Plan Key

- VRF HEAT PUMP
- SPLIT AC
- HEATING AND VENTILATING ONLY
- EXHAUST ONLY
- ERV-1
- ERV-2
- ERV-3
- HRU-1
- HRU-2
- HRU-3
- HRU-4
- HV-1
- HV-2
- HV-3
- HV-4
- HV-5
- HV-7
- HV-8
- HVAC-1
- HVAC-2
- HVAC-3
- HVAC-4
- HVAC-5
- HVAC-6
- HVAC-7
- HVAC-8
- MAU-1

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JUNE 17, 2021

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

HVAC ZONING PLAN

Scale: 3/64" = 1'-0"

Job No.: 6520409

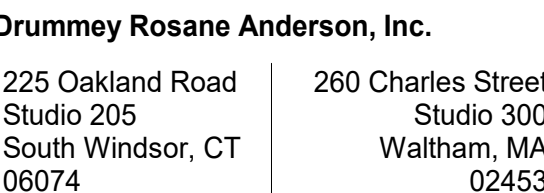
Drawn By: DRA

Date: JUNE 17, 2021

M0-0-2

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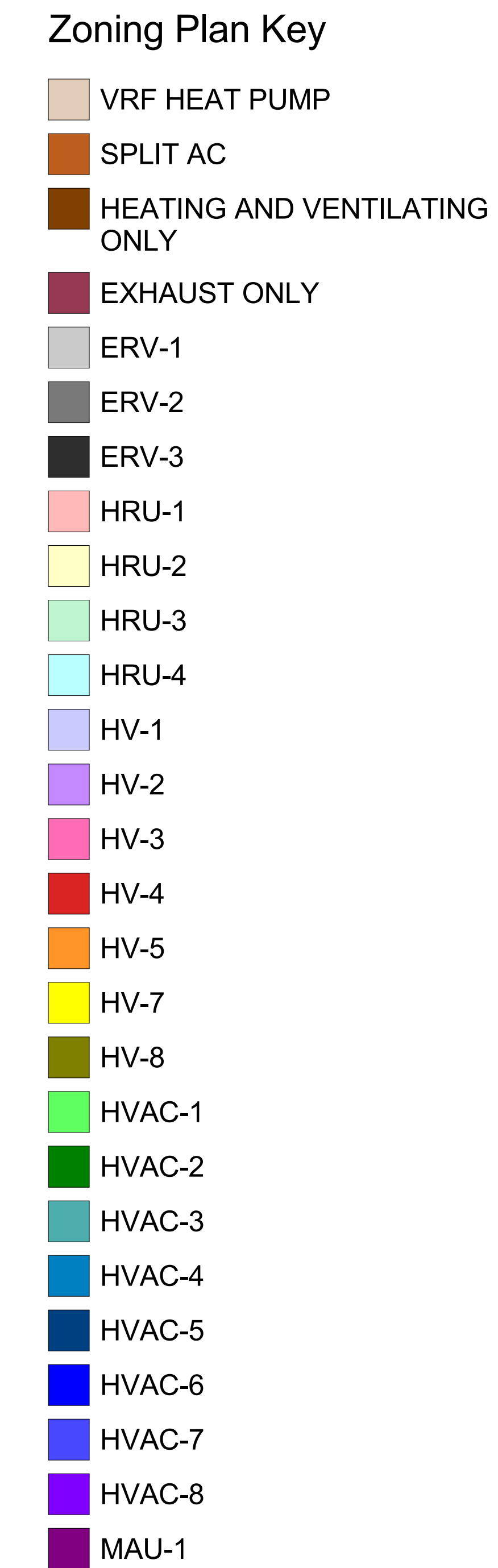
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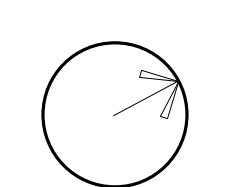
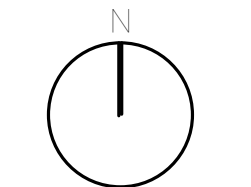
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JUNE 17, 2021



PROJECT NORTH

MAGNETIC NORTH



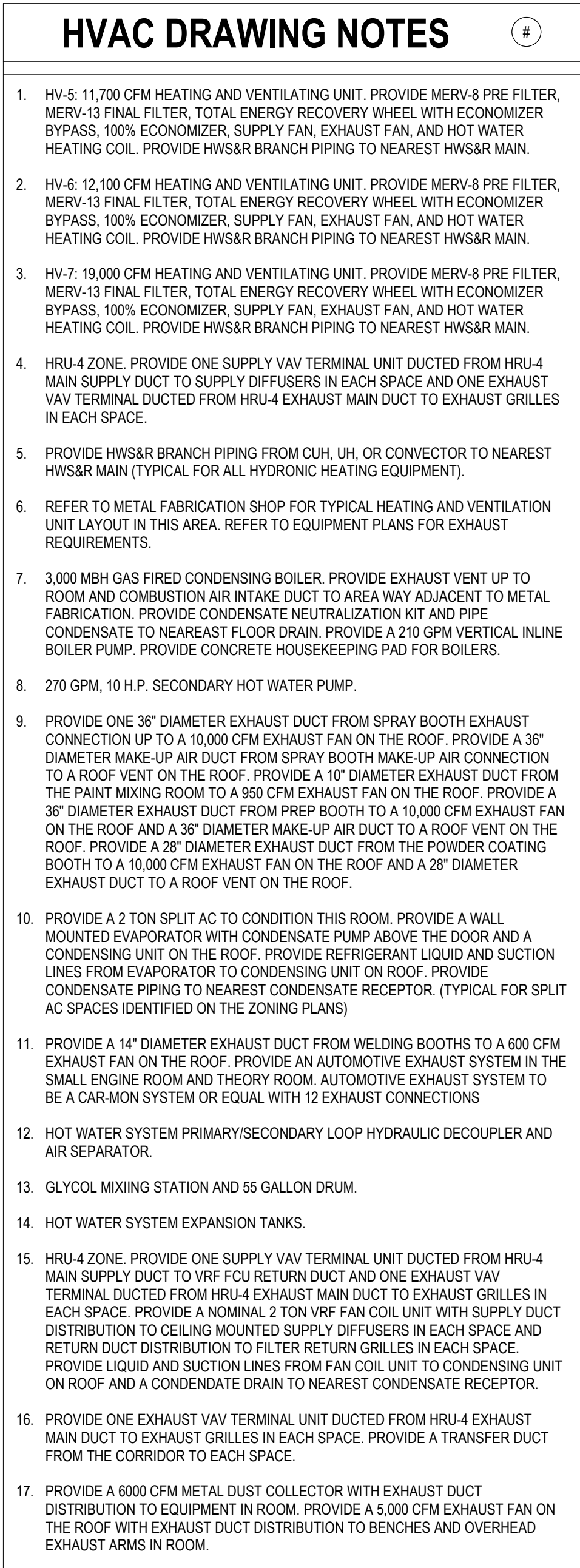
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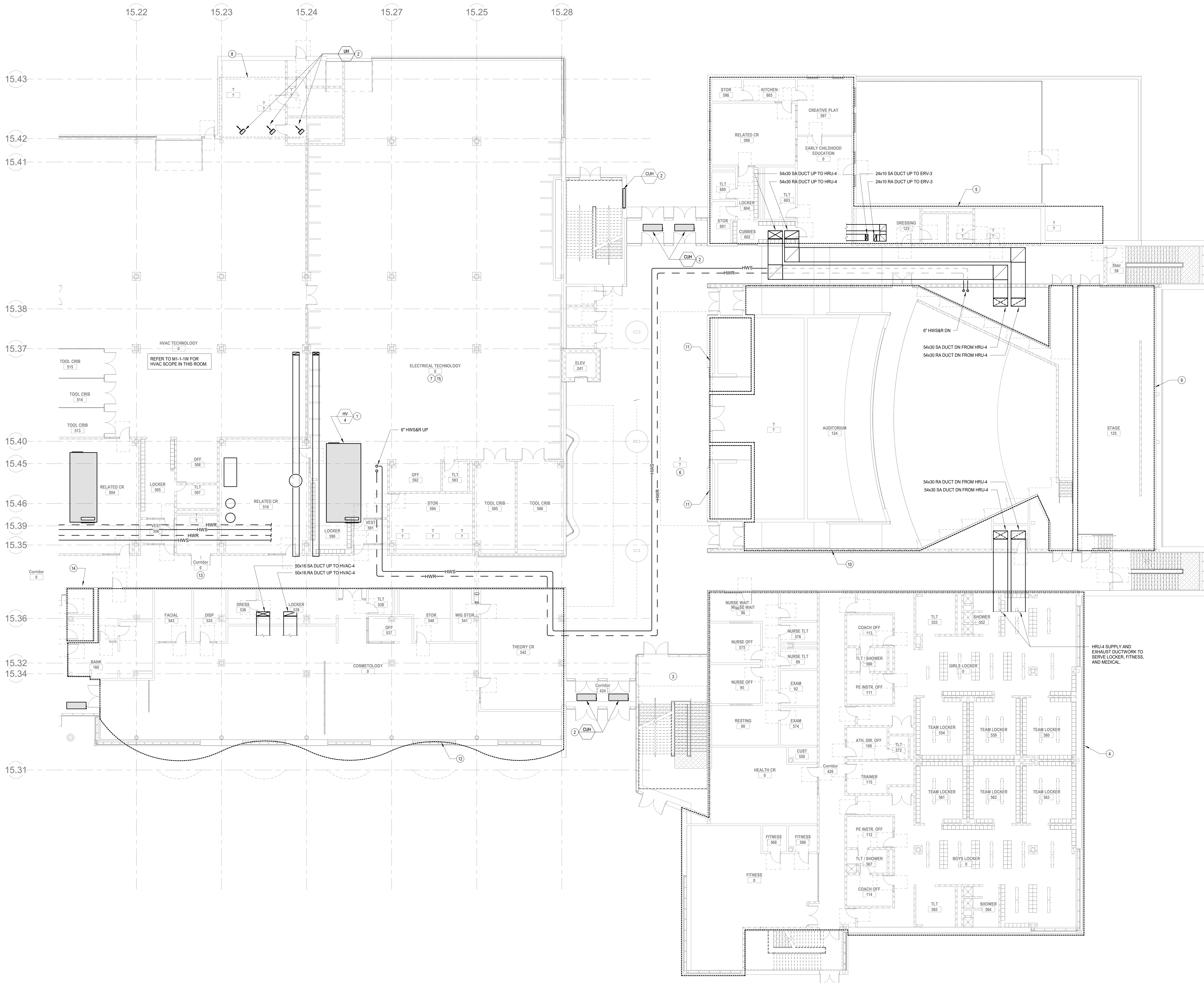
Job No: 6020409

DDA

Drawn By: DRA
Date: JUNE 17, 2021

MO-0-3





HVAC DRAWING NOTES

- 20,800 CFM HEATING AND VENTILATING UNIT. PROVIDE MERV-8 PRE FILTER, MERV-13 FINAL FILTER, TOTAL ENERGY RECOVERY WHEEL WITH ECONOMIZER BYPASS, 100% ECONOMIZER, SUPPLY FAN, EXHAUST FAN, AND HOT WATER HEATING COIL. PROVIDE HW/SR BRANCH PIPING TO NEAREST HW/SR MAIN.
- PROVIDE HW/SR BRANCH PIPING FROM CUH/UH, OR CONVECTOR TO NEAREST HW/SR MAIN (TYPICAL FOR ALL HYDRONIC HEATING EQUIPMENT).
- PROVIDE A 2 TON SPLIT HEAT PUMP SYSTEM TO CONDITION THIS ROOM. PROVIDE A WALL MOUNTED EVAPORATOR WITH CONDENSATE PUMP AND A CONDENSING UNIT ON THE ROOF. PROVIDE CONDENSATE PIPING TO NEAREST CONDENSATE RECEPTOR.
- AREA SERVED BY HRU-4. PROVIDE SUPPLY AND EXHAUST MAIN DUCTWORK FROM HRU-4 TO THIS AREA. PROVIDE A TOTAL OF 12 ZONES IN THIS AREA. EACH ZONE WILL BE PROVIDED WITH A VRF FOU DUCTED TO CEILING MOUNTED SUPPLY DIFFUSERS AND A FILTER RETURN GRILLE. A SUPPLY VAV TERMINAL UNIT DUCTED FROM HRU-4 SUPPLY MAIN TO THE FOU RETURN DUCT AND AN EXHAUST VAV TERMINAL UNIT DUCTED FROM HRU-4 EXHAUST MAIN TO A CEILING RETURN GRILLE. PROVIDE THREE 2.5 NOMINAL VRF COILS AND NINE 1.5 NOMINAL TON VRF COILS. PROVIDE CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. LINE SUPPLY AND RETURN DUCTWORK, HEAT RECOVERY BRANCH SELECTOR BOX, AND REFRIGERANT LINES SET FROM ROOF MOUNTED CONDENSING UNIT TO FOU.
- AREA SERVED BY ERV-3. PROVIDE SUPPLY AND EXHAUST MAIN DUCTWORK FROM ERV-3 TO THIS AREA. PROVIDE A TOTAL OF 8 ZONES IN THIS AREA. EACH ZONE WILL BE PROVIDED WITH A VRF FOU DUCTED TO CEILING MOUNTED SUPPLY DIFFUSERS AND A FILTER RETURN GRILLE. SUPPLY BRANCH DUCTWORK FROM ERV-3 MAIN DUCT TO THE FOU RETURN DUCT, AND AN EXHAUST BRANCH DUCT FROM ERV-3 EXHAUST MAIN TO A CEILING GRILLE. PROVIDE SIX 1.5 NOMINAL TON VRF COILS. EACH FOU SHALL BE PROVIDED WITH CONDENSATE DRAIN PIPING TO THE NEAREST CONDENSATE RECEPTOR. LINE SUPPLY AND RETURN DUCTWORK, HEAT RECOVERY BRANCH SELECTOR BOX, AND A REFRIGERANT LINE SET FROM ROOF MOUNTED CONDENSING UNIT TO FOU.
- AREA SERVED BY HVAC-5. PROVIDE 6 ZONES ON THIS LEVEL. EACH ZONE WILL HAVE A SUPPLY VAV TERMINAL DUCTED FROM HVAC-5 MAIN SUPPLY DUCTWORK TO CEILING MOUNTED SUPPLY DIFFUSERS. PROVIDE HW/SR PIPING FROM THE NEAREST HW/SR MAIN TO EACH VAV TERMINAL UNIT. PROVIDE SUPPLY AND RETURN DUCTWORK TO THE NEAREST HW/SR MAIN TO EACH VAV TERMINAL UNIT. PROVIDE RETURN DUCTWORK TO CEILING MOUNTED GRILLES.
- REFER TO METAL FABRICATION SHOP FOR TYPICAL HVAC LAYOUT IN THIS AREA. REFER TO EQUIPMENT PLANS FOR EXHAUST REQUIREMENTS. PROVIDE DEDICATED EXHAUST DUCTWORK FROM SHOP EQUIPMENT UP TO ROOF MOUNTED EXHAUST FANS.
- PROVIDE A 480 CFM INLINE EXHAUST FAN DUCTED TO A 3 S.F. LOUVER FROM EXHAUST GRILLES IN EACH SPACE. PROVIDE A 3 S.F. OUTSIDE AIR LOUVER WITH FLENUM DUCTED TO SUPPLY DIFFUSERS IN EACH SPACE.
- PROVIDE SUPPLY DUCTWORK DISTRIBUTION FROM HVAC-7 TO SUPPLY DIFFUSERS ON EACH SIDE OF STAGE AND RETURN DUCTWORK DISTRIBUTION TO GRILLES LOCATED HIGH IN SPACE.
- PROVIDE SUPPLY DUCTWORK DISTRIBUTION FROM HVAC-6 TO SUPPLY DIFFUSERS IN CEILING OF EACH SPACE AND RETURN DUCTWORK DISTRIBUTION TO CEILING GRILLES IN THE CEILING OF EACH SPACE.
- PROVIDE EXHAUST DUCTWORK FROM CEILING GRILLES IN SPACE TO EXHAUST FAN LOCATED ON ROOF.
- AREA SERVED BY HVAC-4. PROVIDE 5 ZONES. EACH ZONE WILL HAVE A SUPPLY VAV TERMINAL DUCTED FROM HVAC-4 MAIN SUPPLY DUCTWORK TO CEILING MOUNTED SUPPLY DIFFUSER AND RETURN DUCTWORK TO CEILING DIFFUSERS IN EACH SPACE. PROVIDE HW/SR PIPING FROM THE NEAREST HW/SR MAIN TO EACH VAV TERMINAL UNIT. PROVIDE A TEMPERATURE, HUMIDITY, AND CO₂ SENSOR FOR EACH ZONE. REFER TO EQUIPMENT PLANS FOR EQUIPMENT REQUIREMENTS. EXHAUST AND PROVIDE EXHAUST DUCTWORK FROM EQUIPMENT AND CEILING MOUNTED EXHAUST GRILLES UP TO A 4,000 CFM EXHAUST FAN ON THE ROOF.
- PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-3 SUPPLY MAIN TO SERVE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR.
- PROVIDE ONE EXHAUST VAV TERMINAL UNIT DUCTED FROM HRU-3 EXHAUST MAIN DUCT TO EXHAUST GRILLES IN EACH SPACE. PROVIDE A TRANSFER DUCT FROM THE CORRIDOR TO EACH SPACE.
- PROVIDE A 4,500 CFM EXHAUST FAN ON THE ROOF WITH EXHAUST DUCT DISTRIBUTION FROM ROOF FAN TO DUCT MOUNTED EXHAUST GRILLES IN THE SPACE AND LOCAL EXHAUST GRILLES AT EACH BOOTH.

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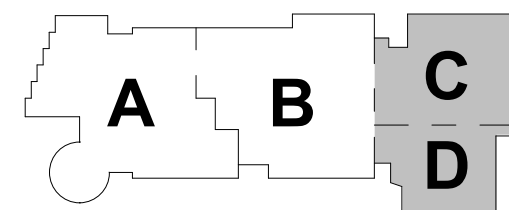
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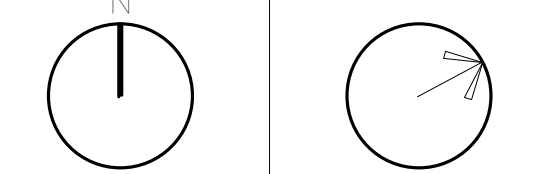
MSBA SCHEMATIC DESIGN SUBMITTAL

JUNE 17, 2021



KEY PLAN

PROJECT NORTH MAGNETIC NORTH

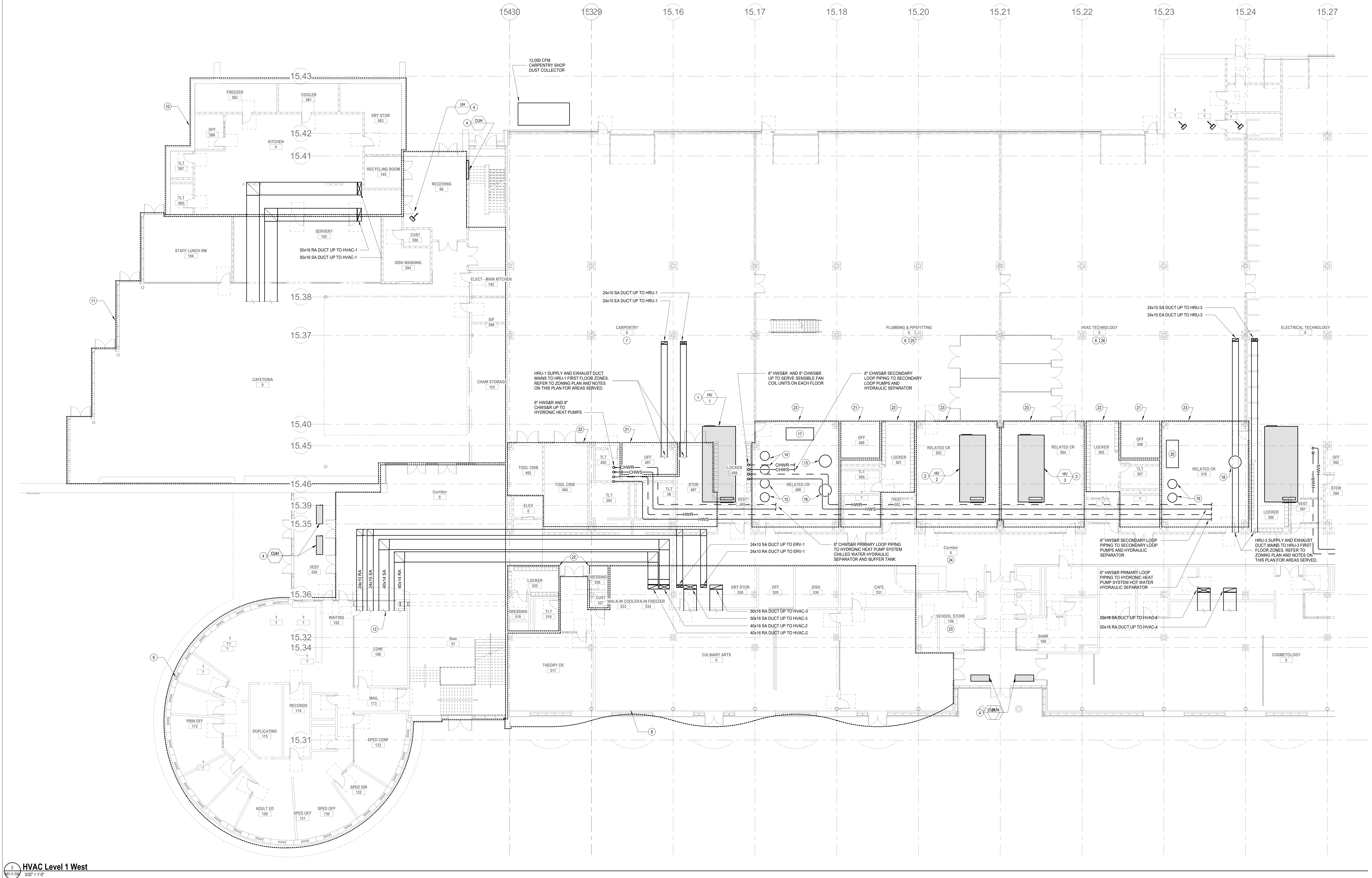


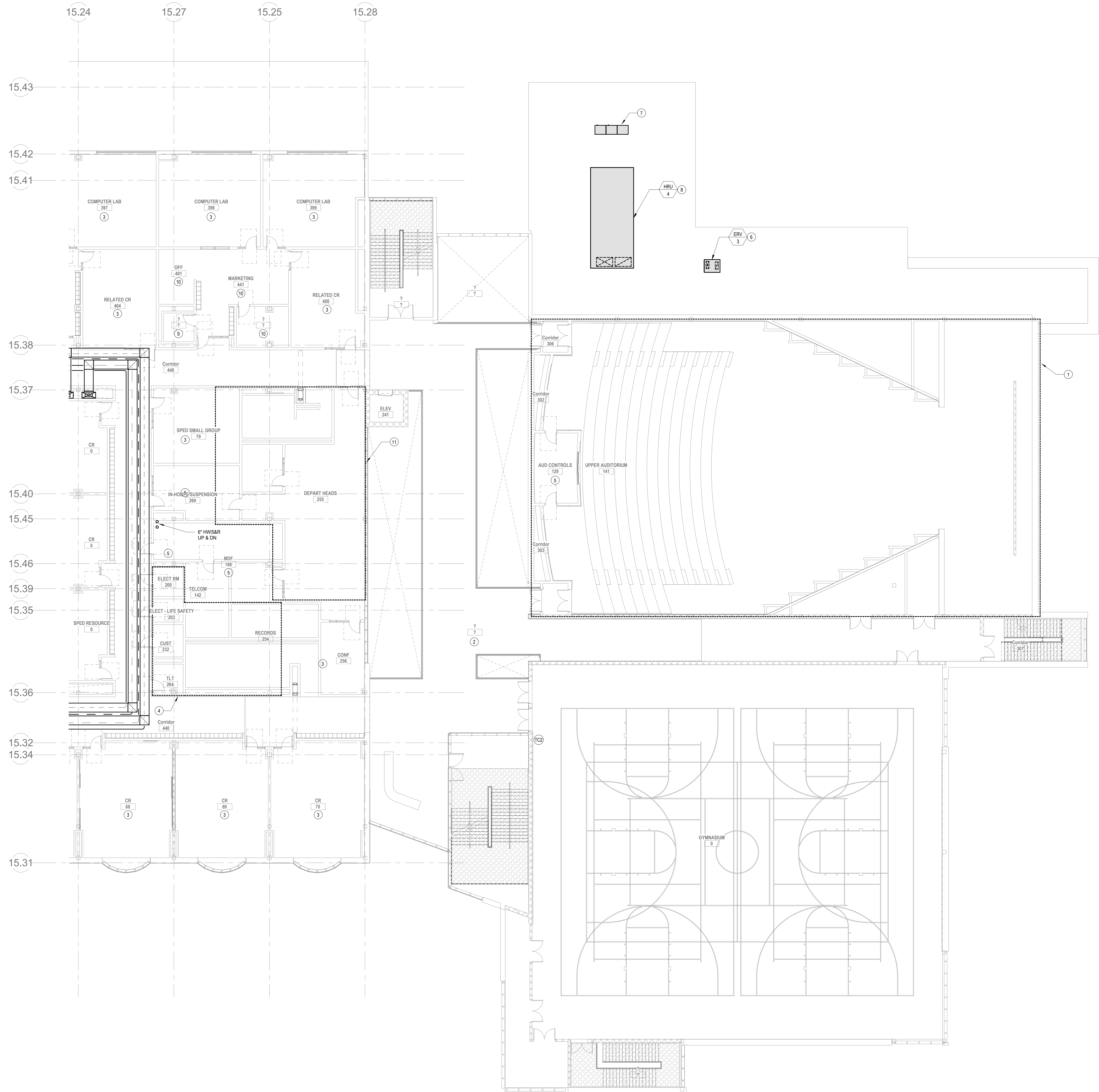
HVAC FIRST FLOOR PLAN - PLAN EAST

Scale: As indicated
Job No.: 6020409
Drawn By: DRA
Date: JUNE 17, 2021

M1-1-1E

2 HVAC Level 1 East
M1-1-1E 3/32" = 1'0"

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HVAC DRAWING NOTES

- REFER TO LEVEL 1 FOR HVAC SCOPE IN THESE SPACES.
- AREA SERVED BY HVAC-8. PROVIDE 4 ZONES ON THIS LEVEL. EACH ZONE WILL HAVE A SUPPLY VAV TERMINAL DUCTED FROM HVAC-8 MAIN SUPPLY DUCTWORK TO CEILING MOUNTED SUPPLY DIFFUSERS. PROVIDE HWWSR PIPING FROM THE NEAREST HWWSR MAIN TO EACH VAV TERMINAL UNIT. PROVIDE RETURN DUCTWORK TO CEILING MOUNTED GRILLES.
- REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT.
- PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-3 EXHAUST MAIN. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILLES IN EACH SPACE.
- PROVIDE A 3 NOMINAL TON SPLIT AC SYSTEM TO CONDITION THIS ROOM. PROVIDE A WALL MOUNTED EVAPORATOR WITH CONDENSATE PUMP ABOVE THE DOOR IN THE ROOM AND A CONDENSING UNIT ON THE ROOF. PROVIDE REFRIGERANT LIQUID AND SUCTON LINES FROM EVAPORATOR TO CONDENSING UNIT ON ROOF. PROVIDE CONDENSATE PIPING TO NEAREST CONDENSATE RECEPTOR.
- ERV-3: 2000 CFM VARIABLE VOLUME ENERGY RECOVERY VENTILATOR SERVING THE 1ST FLOOR EARLY CHILDHOOD EDUCATION AREA. PROVIDE UNIT WITH A SUPPLY AND EXHAUST FAN, ENERGY RECOVERY WHEEL, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, AND HOT WATER HEATING COIL.
- PROVIDE A 25 TON VRF HEAT PUMP CONDENSING UNIT SYSTEM WITH LOW AMBIENT CONTROL KIT AND AHU EXPANSION VALVE CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTON LINES FOR EACH CIRCUIT FROM THE CONDENSING UNIT TO HRU-4.
- HRU-4: 7,500 CFM VARIABLE AIR VOLUME DEDICATED OUTDOOR AIR UNIT SERVING ATHLETICS. PROVIDE UNIT WITH SUPPLY AND EXHAUST FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DR COOL, HOT WATER PRE-HEAT COIL, AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM HRU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
- PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-3 EXHAUST MAIN. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILLES IN EACH SPACE.
- SPACE SERVED BY HRU-2. PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HWWSR AND CHWSR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP HWWSR AND CHWSR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-2 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILLE TO THE SENSIBLE FAN POWERED TERMINAL UNIT AND SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER.
- AREA SERVED BY ERV-2. PROVIDE 8 ZONES. PROVIDE EACH ZONE WITH AN OUTSIDE AIR VAV TERMINAL DUCTED FROM ERV-2 MAIN TO THE FCU RETURN DUCT. AN EXHAUST VAV TERMINAL DUCTED TO A CEILING GRILLE. AND A 1.5 TON VRF FCU WITH SUPPLY DUCTWORK TO CEILING DIFFUSERS AND RETURN DUCTWORK TO FILTER RETURN GRILLES. PROVIDE A COMBINATION TEMPERATURE, HUMIDITY, AND CO2 SENSOR FOR EACH ZONE.

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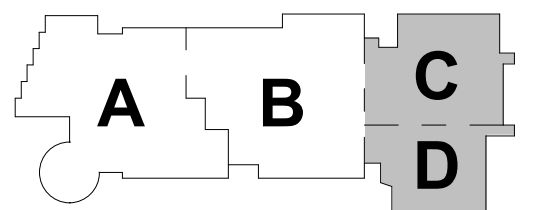
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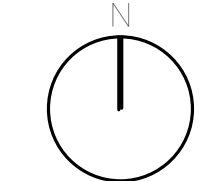
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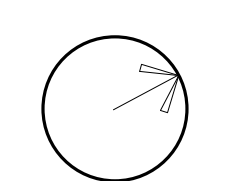
M1-1-2E SHAPE
NTS

KEY PLAN

PROJECT NORTH



MAGNETIC NORTH



HVAC SECOND FLOOR PLAN - PLAN EAST

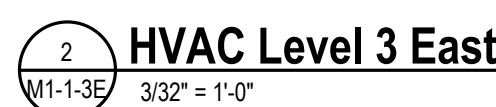
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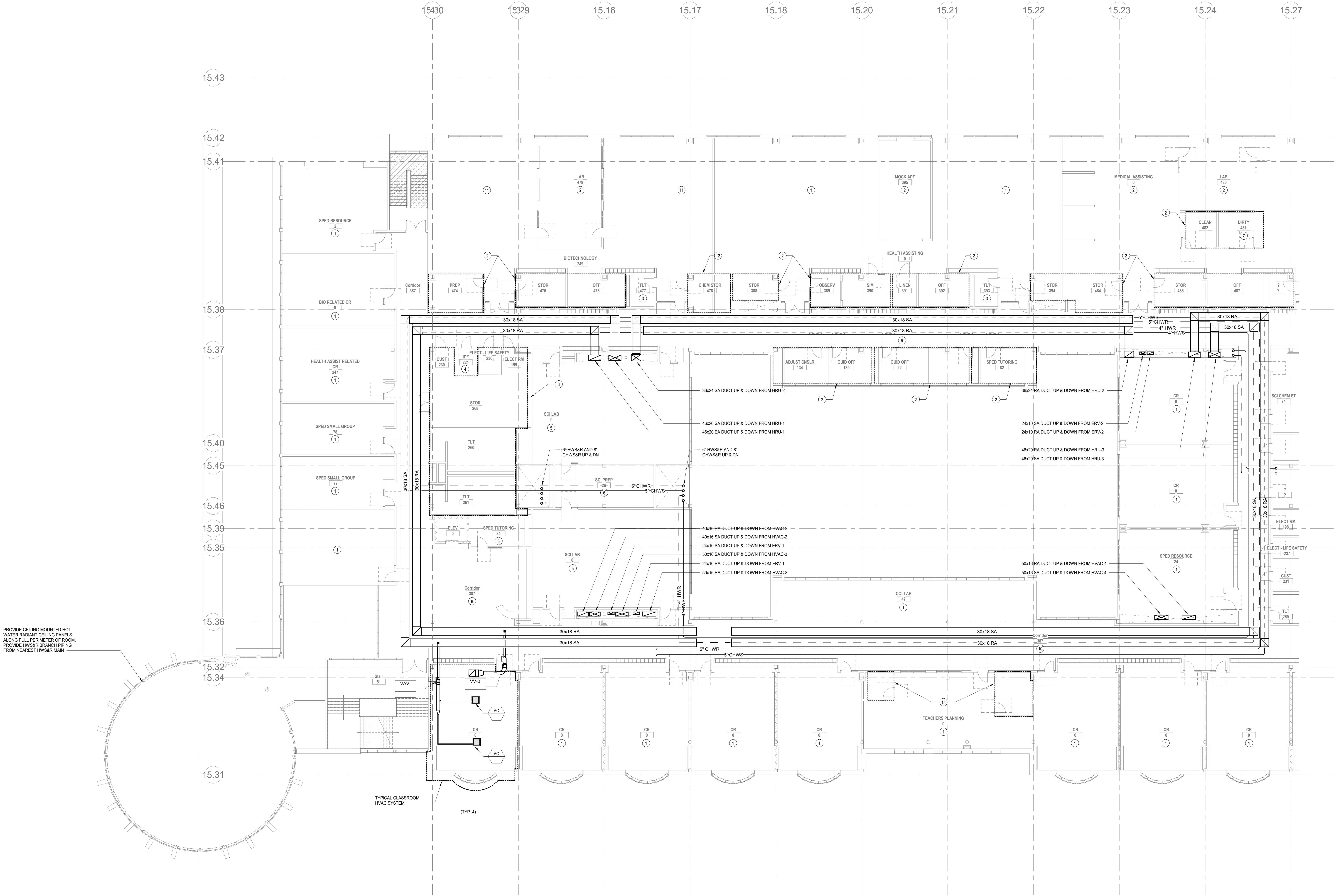
M1-1-2E



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HVAC DRAWING NOTES

1. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT.
2. ZONE SERVED BY HRU-2. PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HW/SAR AND CHW/SAR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP/HW/SAR AND CHW/SAR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-2 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILLE IN EACH SPACE TO THE SENSIBLE FAN POWERED TERMINAL UNIT. PROVIDE SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER IN EACH SPACE.
3. PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-2 EXHAUST MAIN. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILLES IN EACH SPACE.
4. PROVIDE A 2 NOMINAL TON SPLIT AC SYSTEM TO CONDITION THIS ROOM. PROVIDE A WALL MOUNTED EVAPORATOR WITH CONDENSATE PUMP ABOVE THE DOOR IN THE ROOM AND A CONDENSING UNIT ON THE ROOF. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM EVAPORATOR TO CONDENSING UNIT ON ROOF. PROVIDE CONDENSATE PIPING TO NEAREST CONDENSATE RECEPTOR.
5. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT. PROVIDE TWO SENSIBLE FAN COIL UNITS FOR EACH SCIENCE ROOM. PROVIDE A STAINLESS STEEL EXHAUST DUCT FROM FUME HOOD UP TO A DEDICATED FUME HOOD EXHAUST FAN.
6. ZONE SERVED BY HRU-1. PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HW/SAR AND CHW/SAR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP/HW/SAR AND CHW/SAR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-1 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILLE IN EACH SPACE TO THE SENSIBLE FAN POWERED TERMINAL UNIT. PROVIDE SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER IN EACH SPACE.
7. PROVIDE A DRYER EXHAUST BOOSTER FAN AND DUCTWORK FROM DRYER CONNECTION UP TO ROOF.
8. PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-1 SUPPLY MAIN TO SERVE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR.
9. PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-2 SUPPLY MAIN TO SERVE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR.
10. PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-3 SUPPLY MAIN TO SERVE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR.
11. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT. PROVIDE TWO SENSIBLE FAN COIL UNITS. PROVIDE A STAINLESS STEEL EXHAUST DUCT FROM EACH FUME HOOD UP TO A DEDICATED FUME HOOD EXHAUST FAN.
12. PROVIDE A CEILING EXHAUST GRILLE DUCTED TO A 200 CFM ROOF MOUNTED EXHAUST FAN.
13. PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-3 EXHAUST MAIN. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILLES IN EACH SPACE.



2 HVAC Level 3 West
M1-1-3W 332' x 110'

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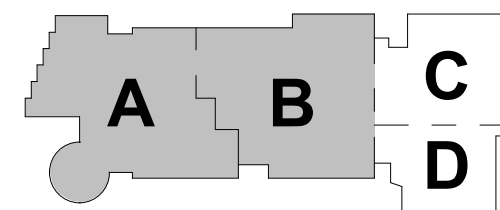
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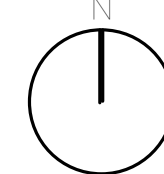
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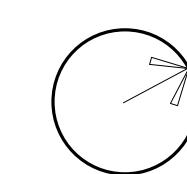


KEY PLAN

PROJECT NORTH



MAGNETIC NORTH



HVAC THIRD
FLOOR PLAN -
PLAN WEST

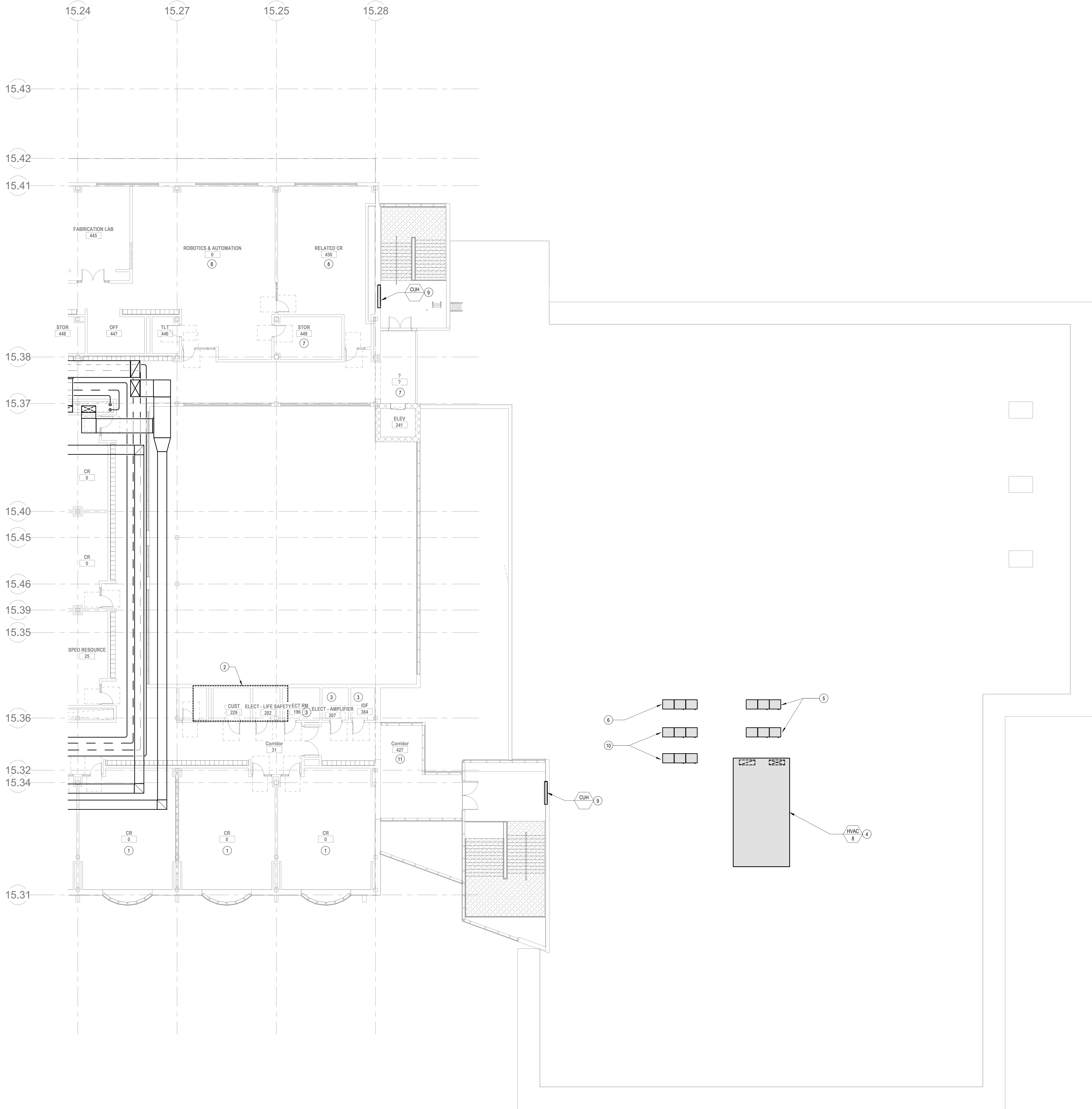
Scale: As indicated

Job No.: 6520409

Drawn By: DRA

Date: JUNE 17, 2021

M1-1-3W



1 HVAC Level 4 East
M1-1-4E
3/32" = 1'-0"

HVAC DRAWING NOTES

1. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT.
2. PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-3 EXHAUST MAIN. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILLES IN EACH SPACE.
3. PROVIDE A 2 NOMINAL TON SPLIT AC SYSTEM TO CONDITION THIS ROOM. PROVIDE A WALL MOUNTED EVAPORATOR WITH CONDENSATE PUMP ABOVE THE DOOR IN THE ROOM AND A CONDENSING UNIT ON THE ROOF. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM EVAPORATOR TO CONDENSING UNIT ON ROOF. PROVIDE CONDENSATE PUMP TO NEAREST CONDENSATE RECEPTOR.
4. HVAC-8: 21,000 CFM SINGLE ZONE MIXED AIR VARIABLE VOLUME ROOFTOP UNIT TO SERVE CHIVASAR. PROVIDE UNIT WITH SUPPLY AND RETURN FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER HEATING COIL AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM RETU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
5. PROVIDE A 55 TON VRF HEAT PUMP CONDENSING UNIT WITH LOW AMBIENT CONTROL KIT AND AHU CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM CONDENSING UNIT TO HVAC-8 DX COIL.
6. PROVIDE A 15 TON VRF HEAT PUMP CONDENSING UNIT WITH LOW AMBIENT CONTROL KIT AND AHU CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM CONDENSING UNIT TO HVAC-7 DX COIL.
7. ZONE SERVED BY HRU-2: PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HWASR AND CHIVASAR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP HWASR AND CHIVASAR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-2 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILLE IN EACH SPACE TO THE SENSIBLE FAN POWERED TERMINAL UNIT. PROVIDE SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER IN EACH SPACE.
8. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT.
9. PROVIDE HWASR BRANCH PIPING FROM CUH, LH, OR CONVECTOR TO NEAREST HWASR MAIN (TYPICAL FOR ALL HYDRONIC HEATING EQUIPMENT).
10. PROVIDE A 40 TON VRF HEAT PUMP CONDENSING UNIT WITH LOW AMBIENT CONTROL KIT AND AHU CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM CONDENSING UNIT TO HVAC-6 DX COIL.
11. ZONE SERVED BY HRU-3: PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HWASR AND CHIVASAR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP HWASR AND CHIVASAR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-3 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILLE IN EACH SPACE TO THE SENSIBLE FAN POWERED TERMINAL UNIT. PROVIDE SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER IN EACH SPACE.

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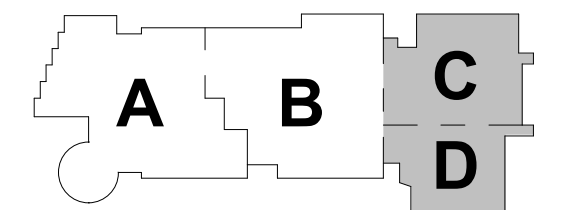
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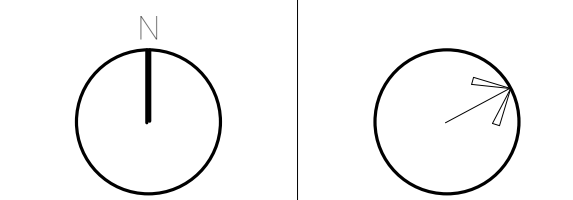
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JUNE 17, 2021



KEY PLAN

PROJECT NORTH MAGNETIC NORTH



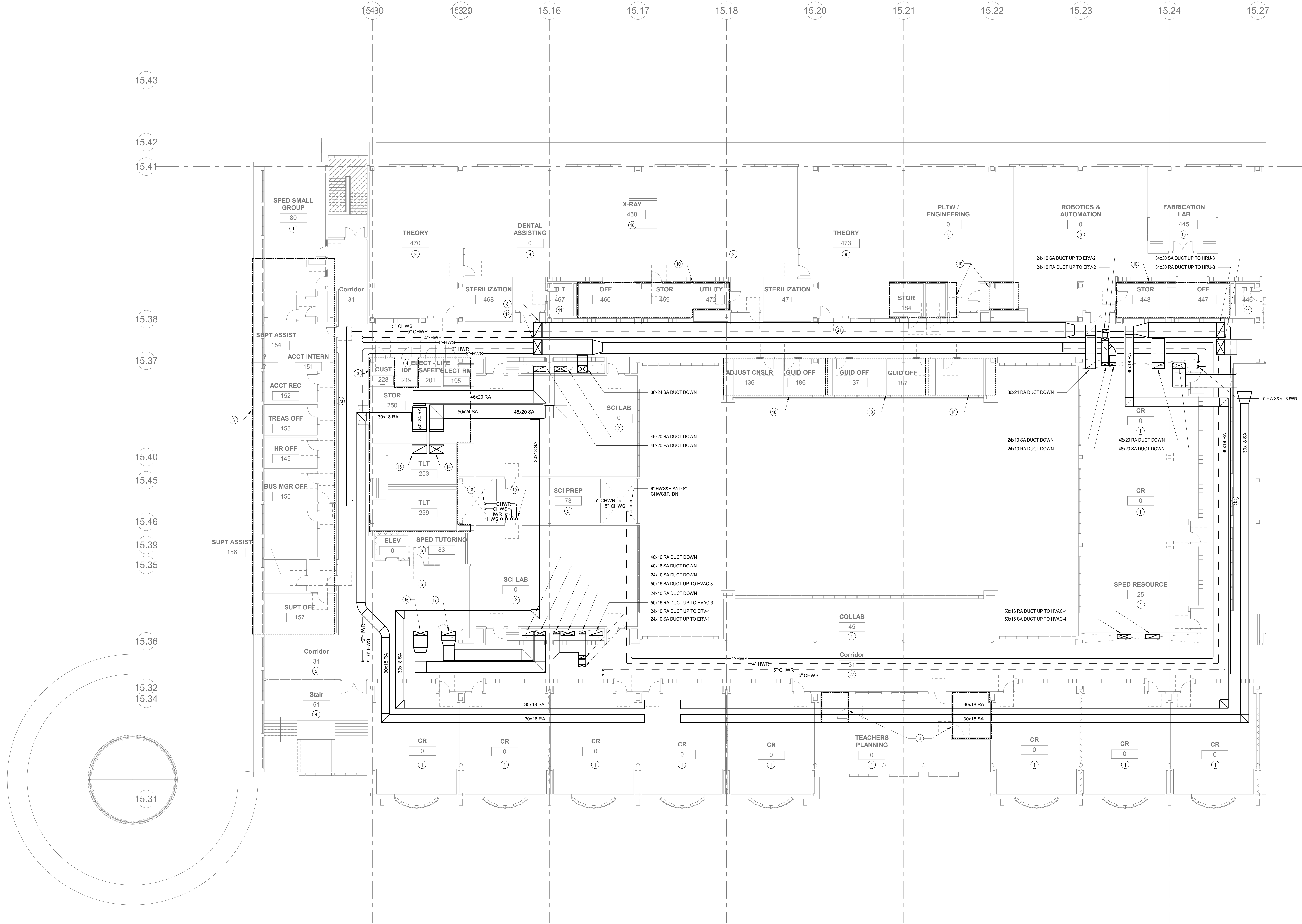
HVAC FOURTH FLOOR PLAN - PLAN EAST

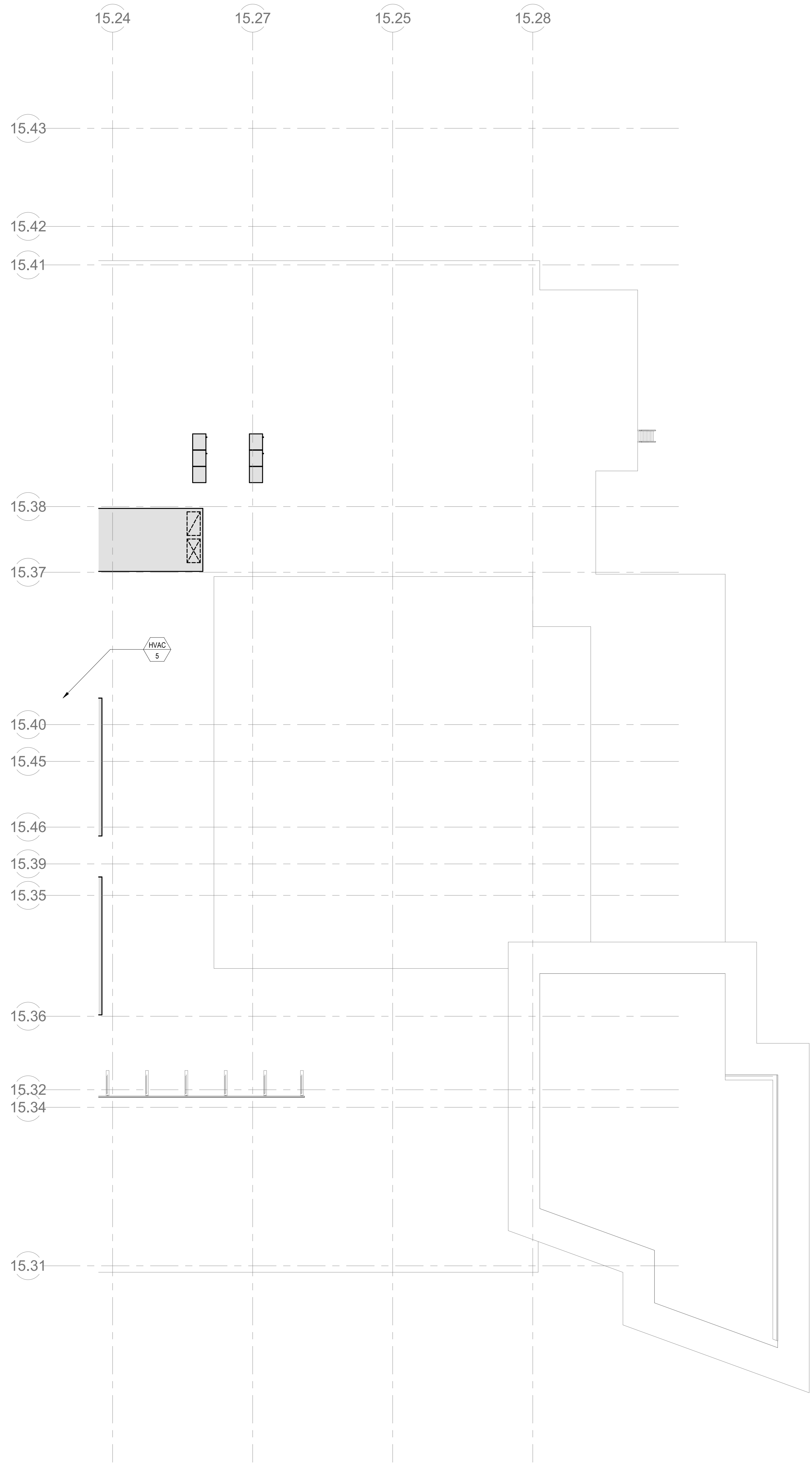
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Date: JUNE 17, 2021

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HVAC DRAWING NOTES

- | | | | |
|--|--|--|--|
| 1. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT. | 2. ZONE SERVED BY HRU-1: PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HWSR AND CHWSR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP HWSR AND CHWSR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-1 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILL IN EACH SPACE TO THE SENSIBLE FAN POWERED TERMINAL UNIT. PROVIDE SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER IN EACH SPACE. | 14. 54X20 SA DUCT UP TO HRU-1. | 15. 54X20 RA DUCT UP TO HRU-1. |
| 2. REFER TO 3RD FLOOR PLAN FOR TYPICAL CLASSROOM HVAC LAYOUT. PROVIDE TWO SENSIBLE FAN COL UNIT FOR EACH ROOM. PROVIDE A STAINLESS STEEL EXHAUST DUCT FROM FUME HOOD UP TO A DEDICATED FUME HOOD EXHAUST. | 3. PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-3 EXHAUST MAIN PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILL IN EACH SPACE. | 16. 50X16 SA DUCT UP TO HVAC-2. | 17. 50X16 RA DUCT UP TO HVAC-2. |
| 4. PROVIDE A NOMINAL 10N SPRT AS SYSTEM TO CONNECTION THROUGH ROOM. PROVIDE A WALL MOUNTED EVAPORATOR WITH CONDENSATE PUMP ABOVE THE DOOR IN THE ROOM AND A CONDENSING UNIT ON THE ROOF. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM VAPOR REFRIGERATING UNIT OUTDOOR. PROVIDE CONDENSATE PIPING TO NEAREST CONDENSATE RECEIVER. | 5. ZONE SERVED BY HRU-1: PROVIDE A SENSIBLE FAN POWERED TERMINAL UNIT WITH HWSR AND CHWSR BRANCH PIPING FROM NEAREST HYDRONIC HEAT PUMP HWSR AND CHWSR MAIN. PROVIDE SUPPLY DUCTWORK FROM NEAREST HRU-2 SUPPLY MAIN AND RETURN DUCTWORK FROM A CEILING MOUNTED FILTER RETURN GRILL IN EACH SPACE TO THE SENSIBLE FAN POWERED TERMINAL UNIT. PROVIDE SUPPLY DUCTWORK FROM THE SENSIBLE FAN POWERED TERMINAL UNIT TO A CEILING DIFFUSER IN EACH SPACE. | 18. 18" HWSR AND 8" CHWSR UP TO HYDRONIC HEAT PUMPS. | 19. PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-1 SUPPLY MAIN TO SERVICE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR. |
| 6. VAV TERMINAL DUCTED FROM ERV-1 MAIN TO THE FCU RETURN DUCT. AN EXHAUST VAV TERMINAL DUCTED TO CEILING GRILL AND A 15 TON RW FCU with SUPPLY DUCTWORK TO CEILING DIFFUSERS AND RETURN DUCTWORK TO FILTER RETURN GRILL. PROVIDE A COMBINATION TEMPERATURE, HUMIDITY, AND CO2 SENSOR FOR EACH ZONE. | 7. PROVIDE ONE EXHAUST VAV TERMINAL UNIT CONNECTED TO HRU-2 EXHAUST MAIN. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING GRILLS IN EACH SPACE. | 20. PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-2 SUPPLY MAIN TO SERVICE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR. | 21. PROVIDE A SUPPLY VAV TERMINAL UNIT CONNECTED TO HRU-3 SUPPLY MAIN TO SERVICE CORRIDOR. PROVIDE DUCT DISTRIBUTION FROM VAV TERMINAL TO CEILING DIFFUSERS IN CORRIDOR. |
| | 8. 54X20 SA DUCT UP TO HRU-2. | | |





① HVAC Main Roof East
3/32" = 1'-0"

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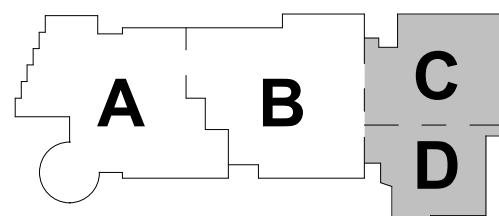
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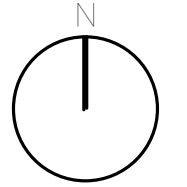
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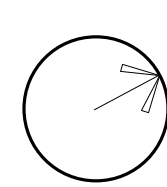


KEY PLAN

PROJECT NORTH



MAGNETIC NORTH



HVAC ROOF
PLAN - PLAN
EAST

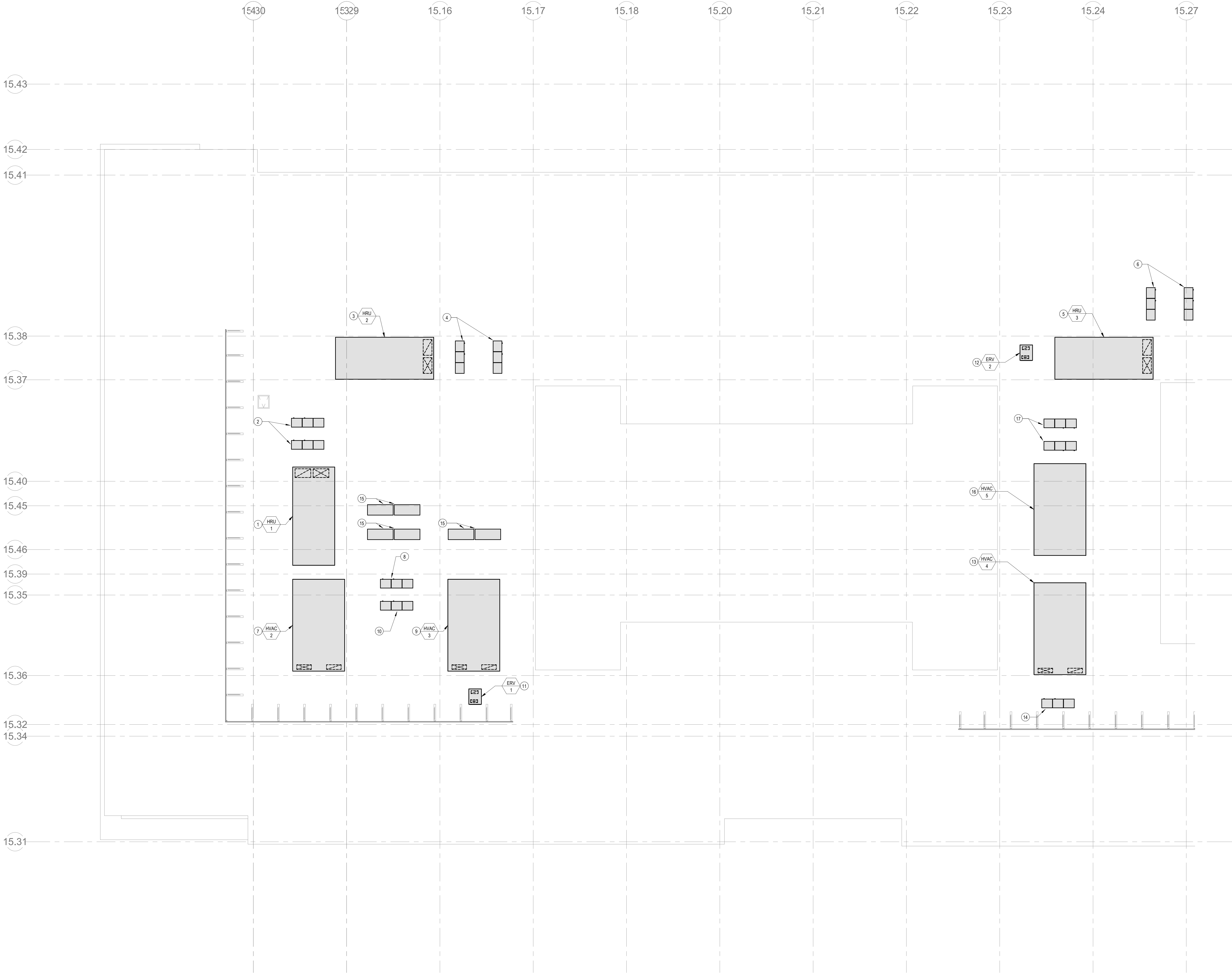
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Date: JUNE 17, 2021

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HVAC DRAWING NOTES

1. HRU-1: 16,500 CFM VARIABLE AIR VOLUME DEDICATED OUTDOOR AIR UNIT SERVING SPACES ON SOUTH SIDE OF ACADEMIC WING. PROVIDE UNIT WITH SUPPLY AND EXHAUST FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER PRE-HEAT COIL, AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM HRU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
2. PROVIDE A 65 TON, 2 CIRCUIT, VRF HEAT PUMP CONDENSING UNIT SYSTEM WITH LOW AMBIENT CONTROL KIT AND AHU EXPANSION VALVE CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FOR EACH CIRCUIT FROM THE CONDENSING UNIT TO HRU-1.
3. HRU-2: 16,500 CFM VARIABLE AIR VOLUME DEDICATED OUTDOOR AIR UNIT SERVING SPACES ON NORTH SIDE OF ACADEMIC WING. PROVIDE UNIT WITH SUPPLY AND EXHAUST FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER PRE-HEAT COIL, AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM HRU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
4. PROVIDE A 65 TON, 2 CIRCUIT, VRF HEAT PUMP CONDENSING UNIT SYSTEM WITH LOW AMBIENT CONTROL KIT AND AHU EXPANSION VALVE CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FOR EACH CIRCUIT FROM THE CONDENSING UNIT TO HRU-1.
5. HRU-3: 16,500 CFM VARIABLE AIR VOLUME DEDICATED OUTDOOR AIR UNIT SERVING SPACES ON SOUTH SIDE OF ACADEMIC WING. PROVIDE UNIT WITH SUPPLY AND EXHAUST FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER PRE-HEAT COIL, AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM HRU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
6. PROVIDE A 65 TON, 2 CIRCUIT, VRF HEAT PUMP CONDENSING UNIT SYSTEM WITH LOW AMBIENT CONTROL KIT AND AHU EXPANSION VALVE CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FOR EACH CIRCUIT FROM THE CONDENSING UNIT TO HRU-1.
7. HVAC-2: 7,000 CFM MULTI-ZONE MIXED AIR VARIABLE VOLUME ROOFTOP UNIT TO SERVE THE MEDIA CENTER. PROVIDE UNIT WITH SUPPLY AND RETURN FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER HEATING COIL AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM RTU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
8. PROVIDE A 20 TON VRF HEAT PUMP CONDENSING UNIT WITH LOW AMBIENT CONTROL KIT AND AHU CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM CONDENSING UNIT TO HVAC-2 DX COIL.
9. HVAC-3: 7,200 CFM MULTI-ZONE MIXED AIR VARIABLE VOLUME ROOFTOP UNIT TO SERVE CULINARY ARTS. PROVIDE UNIT WITH SUPPLY AND RETURN FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER HEATING COIL AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM RTU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
10. PROVIDE A 20 TON VRF HEAT PUMP CONDENSING UNIT WITH LOW AMBIENT CONTROL KIT AND AHU CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM CONDENSING UNIT TO HVAC-3 DX COIL.
11. ERV-1: 2000 CFM VARIABLE VOLUME ENERGY RECOVERY VENTILATOR SERVING THE 1ST FLOOR ADMIN AREA. PROVIDE WITH SUPPLY AND EXHAUST FAN, ENERGY RECOVERY WHEEL, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, AND HOT WATER HEATING COIL.
12. ERV-2: 1800 CFM VARIABLE VOLUME ENERGY RECOVERY VENTILATOR SERVING THE 2ND FLOOR DISTRICT OFFICES. PROVIDE WITH SUPPLY AND EXHAUST FAN, ENERGY RECOVERY WHEEL, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, AND HOT WATER HEATING COIL.
13. HVAC-4: 8,400 CFM MULTI-ZONE MIXED AIR VARIABLE VOLUME ROOFTOP UNIT TO SERVE COSMETOLOGY. PROVIDE UNIT WITH SUPPLY AND RETURN FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER HEATING COIL AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM RTU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
14. PROVIDE A 20 TON VRF HEAT PUMP CONDENSING UNIT WITH LOW AMBIENT CONTROL KIT AND AHU CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FROM CONDENSING UNIT TO HVAC-3 DX COIL.
15. TWELVE 30 NOMINAL TON VRF HEAT RECOVERY CONDENSING UNITS TO SERVE CLASSROOMS.
16. HVAC-5: 13,000 CFM MULTI-ZONE MIXED AIR VARIABLE VOLUME ROOFTOP UNIT TO SERVE AUDITORIUM AND GYMNASIUM LOBBIES. PROVIDE UNIT WITH SUPPLY AND RETURN FANS, MERV-8 PRE-FILTER, MERV-13 FINAL FILTER, ENERGY RECOVERY WHEEL, DX COIL, HOT WATER HEATING COIL AND 100% ECONOMIZER. PROVIDE CONDENSATE DRAIN FROM RTU CONDENSATE DRAIN CONNECTION TO NEAREST ROOF DRAIN.
17. PROVIDE A 40 TON, 2 CIRCUIT, VRF HEAT PUMP CONDENSING UNIT SYSTEM WITH LOW AMBIENT CONTROL KIT AND AHU EXPANSION VALVE CONTROL KIT. PROVIDE REFRIGERANT LIQUID AND SUCTION LINES FOR EACH CIRCUIT FROM THE CONDENSING UNIT TO HVAC-5.



1 HVAC Main Roof West
3/32" = 1'-0"

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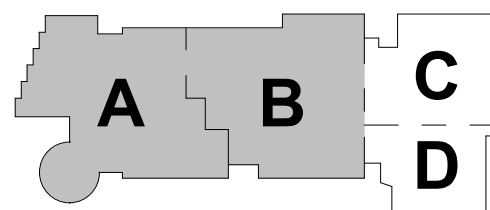
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BALA
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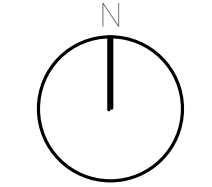
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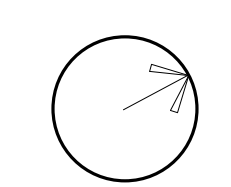


KEY PLAN

PROJECT NORTH



MAGNETIC NORTH



HVAC ROOF
PLAN - PLAN
WEST

Scale: As indicated

Job No.: 6520409

Drawn By: DRA

Date: JUNE 17, 2021

M1-2-1W