

# UNIVERSITY OF MAINE

## AROOSTOOK HALL

### HVAC CONTROLS

#### ORONO, MAINE

**OWNER**

UNIVERSITY OF MAINE  
168 COLLEGE AVENUE  
ORONO, MAINE 04469  
PHONE: (207) 581-1865

**ENGINEER**

CARPENTER ASSOCIATES  
687 STILLWATER AVENUE  
OLD TOWN, MAINE 04468  
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- M8. RADIATION CONTROL SCHEMATIC
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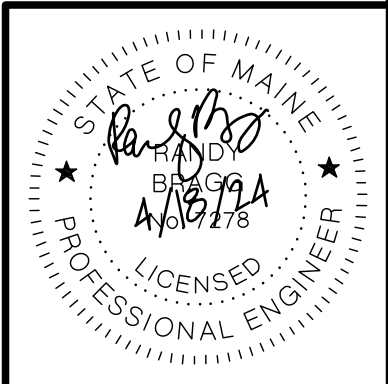
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PROJECT #2024053

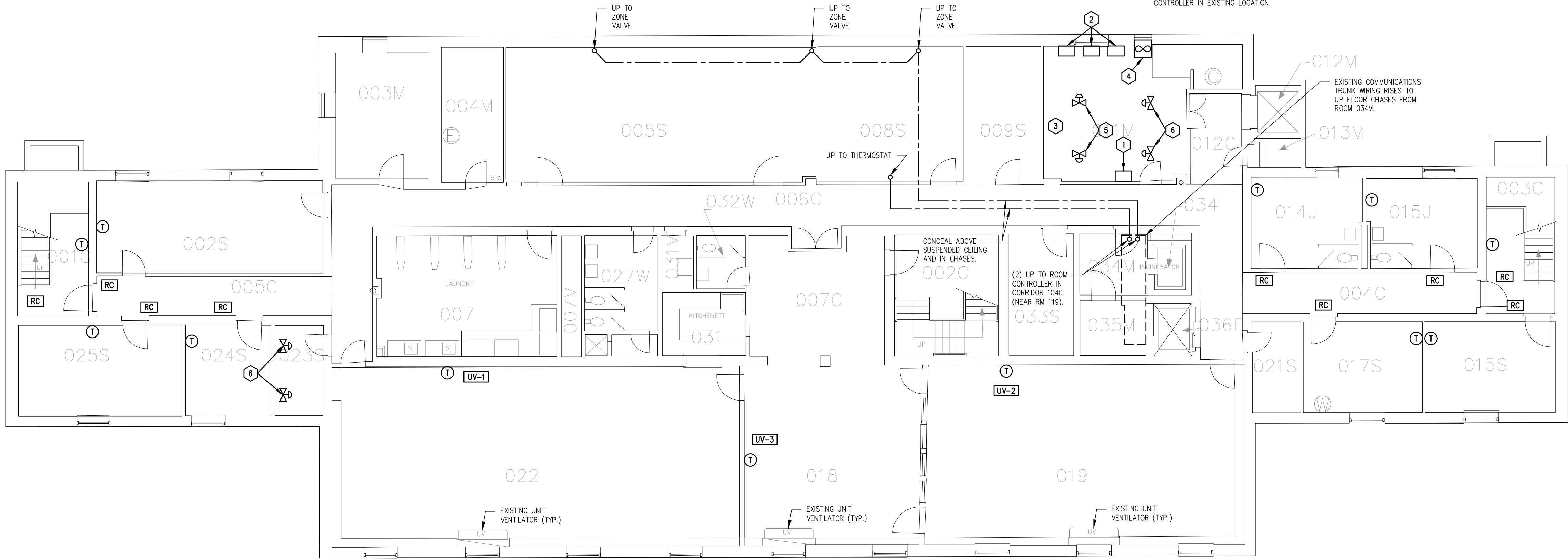
**CARPENTER ASSOCIATES**

CONSULTING ENGINEERS

687 STILLWATER AVENUE OLD TOWN, MAINE 04468



Apr 16, 2024 -- 2:56pm  
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BASEMENT MECHANICAL PLAN  
SCALE: 1/8" = 1'-0"

MECHANICAL KEY NOTES:

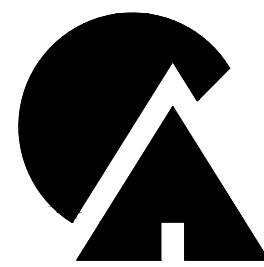
- EXISTING SUPERVISORY CONTROL PANEL TO REMAIN. SEE SHEET \_\_\_\_\_ FOR EXISTING SYSTEM ARCHITECTURE AND PROPOSED CHANGES TO PANEL.
- REMOVE THREE EXISTING CONTROL PANELS, REPLACE WITH ONE NEW CONTROL PANEL. LOCATE NEW AND EXISTING COMPONENTS FOR THE FOLLOWING EQUIPMENT, TO THE NEW CONTROL PANEL.
  - INTERFACE FOR TEMPERATURE SENSORS FOR EACH OF TWO HOT WATER STORAGE TANKS (DHW-1 & DHW-2).
  - INTERFACE FOR DHW-1 & DHW-2 PUMP CONTROL AND STATUS.
  - PRESSURE GAUGES AND EP DEVICES FOR DOMESTIC HOT WATER TANK TANKS (DHW-1 & DHW-2) STEAM CONTROL VALVES.
  - PRESSURE GAUGES AND EP DEVICES FOR FOUR BUILDING ZONE VALVES.
  - INTERFACE FOR ROOM 011M FAN.
  - LOW PRESSURE ALARM FOR CONTROL SYSTEM AIR COMPRESSOR.
- REVISE/ADD PNEUMATIC TUBING AND WIRING WITHIN ROOM 011M, TO ACCOMMODATE NEW CONTROL PANEL AND EP DEVICES, FOR SIX EXISTING PNEUMATIC CONTROL VALVES. ALSO, REVISE EXISTING COMPRESSED AIR SYSTEM MONITORING TO TIE IN TO NEW CONTROL PANEL.
- PROVIDE NEW INTERFACE FOR ON/OFF CONTROL AND MONITORING FOR EXISTING EXHAUST FAN (EF-1).
- PROVIDE NEW EP DEVICES FOR STEAM CONTROL VALVES FOR DOMESTIC HOT WATER HEATING. EXISTING PNEUMATIC OPERATORS TO REMAIN.
- EXISTING BUILDING CONTROL VALVES, WITH PNEUMATIC OPERATORS, TO REMAIN. PROVIDE NEW EP DEVICES.

MECHANICAL LEGEND:

- ① REMOVE EXISTING THERMOSTAT AND PROVIDE NEW THERMOSTATS IN EXISTING LOCATION
- RC REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER IN EXISTING LOCATION
- UV-X REMOVE EXISTING UNIT VENTILATOR CONTROLLER AND PROVIDE NEW UNIT VENTILATOR CONTROLLER IN EXISTING LOCATION

MECHANICAL NOTES:

- ALL SPACE THERMOSTATS SHALL BE MOUNTED 48" ABOVE FINISHED FLOOR (AFF).
- PIPING SHALL BE RUN AS DIRECT AS POSSIBLE, PARALLEL TO & FORMING RIGHT ANGLES TO THE LINES OF THE BUILDING, SUPPORTED FROM THE STRUCTURE, FREE FROM POCKETS & SACS & PITCHED TO LOW POINT DRAINS.
- LOCATE ALL VALVES FOR EASY ACCESS & OPERATION. DO NOT LOCATE VALVES W/STEMS BELOW HORIZONTAL. PROVIDE ACCESS PANELS WHERE REQUIRED.
- ALL EXTERIOR WALL PENETRATIONS SHALL BE SEALED WEATHERTIGHT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' RECOMMENDATIONS.
- DUCTWORK SHALL BE COORDINATED TO PREVENT ANY INTERFERENCES W/PLUMBING, PIPING, ELECTRICAL, STRUCTURAL, FIRE PROTECTION, ARCHITECTURAL AND OTHER WORK. FIELD VERIFY EXACT PATHWAY, ADJUST DUCTWORK AS REQUIRED.
- WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL AND STATE CODES AND REGULATIONS.
- ALL DUCT SIZES INDICATED ARE OUTSIDE (SHEET METAL) DIMENSIONS, WITH THE EXCEPTION OF ACOUSTICALLY LINED DUCT WHICH IS INSIDE ACOUSTICAL LINER.
- ALL CUTTING AND PATCHING SHALL BE PROVIDED BY GENERAL CONTRACTOR.
- ALL DUCTWORK AND PIPING SHALL BE INSULATED.
- ALL PIPING SHALL BE RUN CONCEALED AND ON WARM SIDE OF BUILDING INSULATION WHEREVER POSSIBLE UNLESS NOTED OTHERWISE.
- PIPING IS SHOWN DIAGRAMMATICALLY. EXACT LOCATION TO BE ADJUSTED AS REQUIRED TO SUIT FIELD CONDITIONS.
- ALL DIMENSIONS ARE APPROXIMATE AND ARE TO BE VERIFIED IN THE FIELD.
- PROVIDE AUTOMATIC AIR VENTS AT ALL LOCATIONS WHERE WATER PIPING DROPS IN THE DIRECTION OF FLOW, AT ALL HIGH POINTS AND ELSEWHERE AS INDICATED ON DRAWINGS.
- PROVIDE DRAINS AT ALL LOW POINTS IN THE WATER PIPING SYSTEM.
- COPPER PIPING SHALL BE TYPE 'L' OR 'K'. TYPE 'M' SHALL NOT BE USED FOR THIS PROJECT.
- STRUCTURAL MEMBERS SHALL NOT BE CUT, NOTCHED, OR BORED WITHOUT APPROVAL FROM ENGINEER.
- PIPE SIZING BASED ON TYPE 'L' COPPER. VERIFY SIZING WITH ENGINEER IF ALTERNATE PIPING IS INSTALLED.
- COORDINATE EXACT LOCATION OF DIFFUSERS IN EXISTING CORRIDOR CEILING GRID.



CARPENTER ASSOCIATES  
CONSULTING ENGINEERS  
687 STILLWATER AVENUE • OLD TOWN • MAINE 04468

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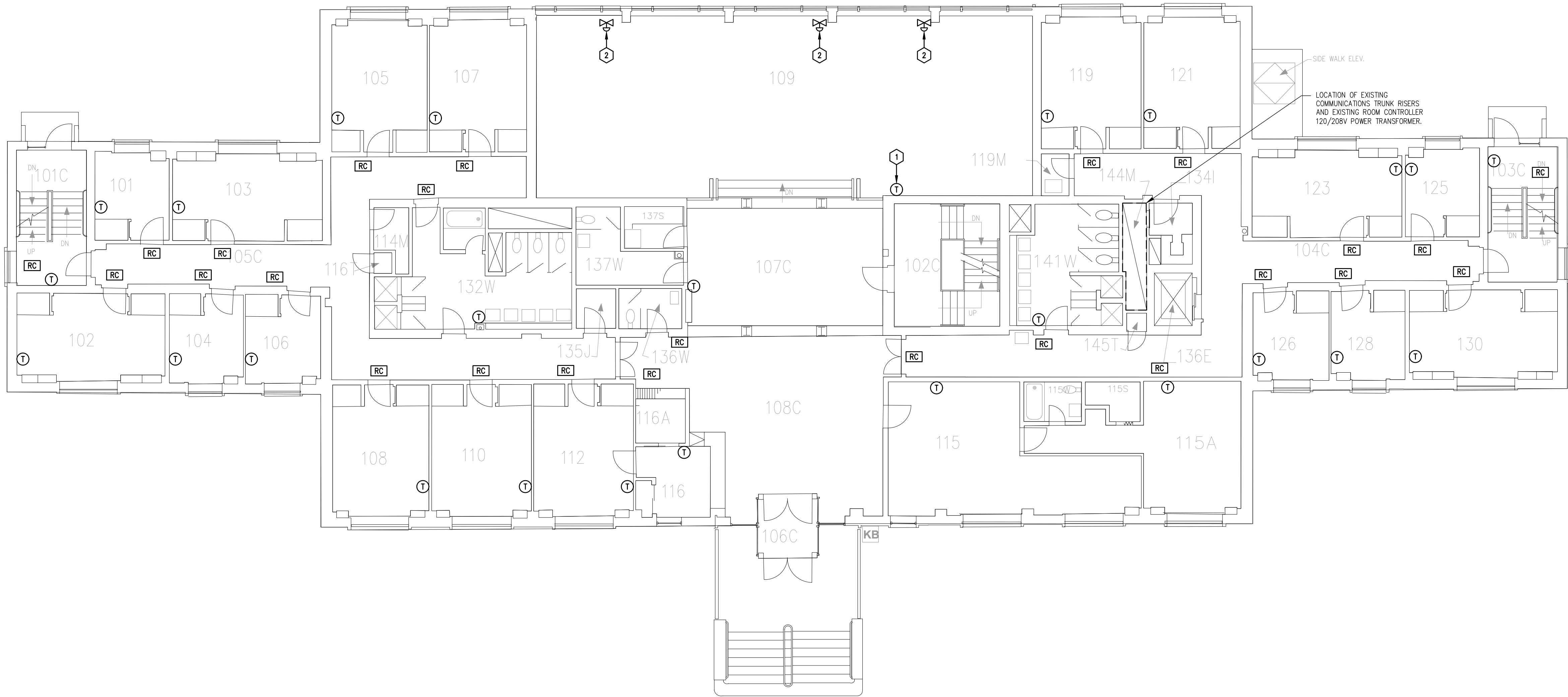


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| UNIVERSITY OF MAINE - AROOSTOOK HALL<br>HVAC CONTROLS<br>ORONO, MAINE | BASEMENT MECHANICAL PLAN |
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Drawn: JE  
Checked: RB  
Scale: AS NOTED  
Date: 04-17-2024  
Project No: 2024053  
Sheet Number:

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04-18-2024

M1



FIRST FLOOR MECHANICAL PLAN  
SCALE: 1/8" = 1'-0"

MECHANICAL KEY NOTES:

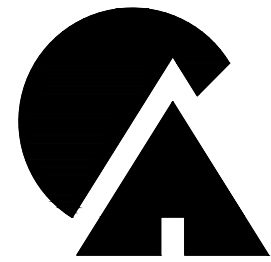
1. PROVIDE NEW ELECTRONIC THERMOSTAT IN PLACE OF EXISTING PNEUMATIC THERMOSTAT. WIRING TO BASEMENT CEILING AREA MAY BE IN SURFACE MOUNTED RACEWAY BELOW THERMOSTAT.
2. REMOVE EXISTING PNEUMATIC VALVE OPERATOR, AND PROVIDE NEW THERMO-ELECTRIC VALVE OPERATOR ON EXISTING RADIATION CONTROL VALVE.

MECHANICAL LEGEND:

- ① REMOVE EXISTING THERMOSTAT AND PROVIDE NEW THERMOSTATS IN EXISTING LOCATION
- RC REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER IN EXISTING LOCATION
- UV-X REMOVE EXISTING UNIT VENTILATOR CONTROLLER AND PROVIDE NEW UNIT VENTILATOR CONTROLLER IN EXISTING LOCATION

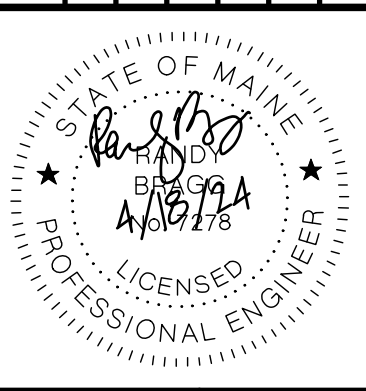
MECHANICAL NOTES:

1. ALL SPACE THERMOSTATS SHALL BE MOUNTED 48" ABOVE FINISHED FLOOR (AFF).
2. PIPING SHALL BE RUN AS DIRECT AS POSSIBLE, PARALLEL TO & FORMING RIGHT ANGLES TO THE LINES OF THE BUILDING, SUPPORTED FROM THE STRUCTURE, FREE FROM POCKETS & SAGS & PITCHED TO LOW POINT DRAINS.
3. LOCATE ALL VALVES FOR EASY ACCESS & OPERATION. DO NOT LOCATE VALVES W/STEMS BELOW HORIZONTAL. PROVIDE ACCESS PANELS WHERE REQUIRED.
4. ALL EXTERIOR WALL PENETRATIONS SHALL BE SEALED WEATHERTIGHT.
5. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' RECOMMENDATIONS.
6. DUCTWORK SHALL BE COORDINATED TO PREVENT ANY INTERFERENCES W/PLUMBING, PIPING, ELECTRICAL, STRUCTURAL, FIRE PROTECTION, ARCHITECTURAL AND OTHER WORK. FIELD VERIFY EXACT PATHWAY, ADJUST DUCTWORK AS REQUIRED.
7. WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL AND STATE CODES AND REGULATIONS.
8. ALL DUCT SIZES INDICATED ARE OUTSIDE (SHEET METAL) DIMENSIONS, WITH THE EXCEPTION OF ACOUSTICALLY LINED DUCT WHICH IS INSIDE ACOUSTICAL LINER.
9. ALL CUTTING AND PATCHING SHALL BE PROVIDED BY GENERAL CONTRACTOR.
10. ALL DUCTWORK AND PIPING SHALL BE INSULATED.
11. ALL PIPING SHALL BE RUN CONCEALED AND ON WARM SIDE OF BUILDING INSULATION WHEREVER POSSIBLE UNLESS NOTED OTHERWISE.
12. PIPING IS SHOWN DIAGRAMMATICALLY. EXACT LOCATION TO BE ADJUSTED AS REQUIRED TO SUIT FIELD CONDITIONS.
13. ALL DIMENSIONS ARE APPROXIMATE AND ARE TO BE VERIFIED IN THE FIELD.
14. PROVIDE AUTOMATIC AIR VENTS AT ALL LOCATIONS WHERE WATER PIPING DROPS IN THE DIRECTION OF FLOW, AT ALL HIGH POINTS AND ELSEWHERE AS INDICATED ON DRAWINGS.
15. PROVIDE DRAINS AT ALL LOW POINTS IN THE WATER PIPING SYSTEM.
16. COPPER PIPING SHALL BE TYPE 'L' OR 'K'. TYPE 'M' SHALL NOT BE USED FOR THIS PROJECT.
17. STRUCTURAL MEMBERS SHALL NOT BE CUT, NOTCHED, OR BORED WITHOUT APPROVAL FROM ENGINEER.
18. PIPE SIZING BASED ON TYPE 'L' COPPER. VERIFY SIZING WITH ENGINEER IF ALTERNATE PIPING IS INSTALLED.
19. COORDINATE EXACT LOCATION OF DIFFUSERS IN EXISTING CORRIDOR CEILING GRID.



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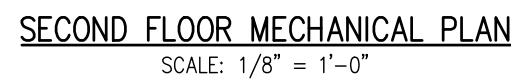


UNIVERSITY OF MAINE - AROOSTOOK HALL  
HVAC CONTROLS  
ORONO, MAINE  
FIRST FLOOR MECHANICAL PLAN

Drawn: JE  
Checked: RB  
Scale: AS NOTED  
Date: 04-17-2024  
Project No: 2024053  
Sheet Number:

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M2



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| <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;">T</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">RC</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 10px;">UV-X</div> | <p>REMOVE EXISTING THERMOSTAT AND PROVIDE NEW THERMOSTATS IN EXISTING LOCATION</p> <p>REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER IN EXISTING LOCATION</p> <p>REMOVE EXISTING UNIT VENTILATOR CONTROLLER AND PROVIDE NEW UNIT VENTILATOR CONTROLLER IN EXISTING LOCATION</p> |
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2. PIPING SHALL BE RUN AS DIRECT AS POSSIBLE, PARALLEL TO & FORMING RIGHT ANGLES TO THE LINES OF THE BUILDING, SUPPORTED FROM THE STRUCTURE, FREE FROM CORNERS & SAGS & PITCHED TO LOW POINT DRAINS.
3. LOCATE ALL VALVES FOR EASY ACCESS & OPERATION. DO NOT LOCATE VALVES W/STEMS BELOW HORIZONTAL. PROVIDE ACCESS PANELS WHERE REQUIRED.
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## SECOND FLOOR MECHANICAL PLAN

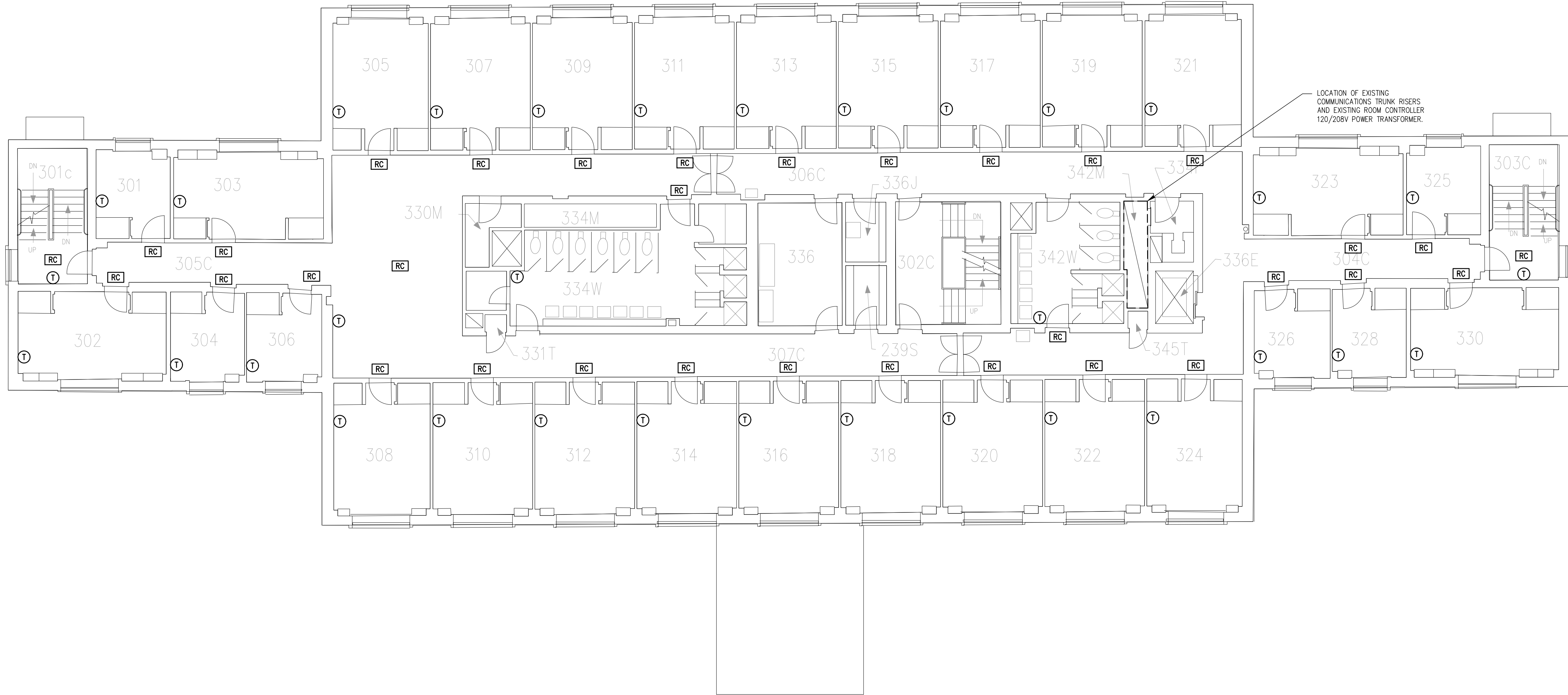
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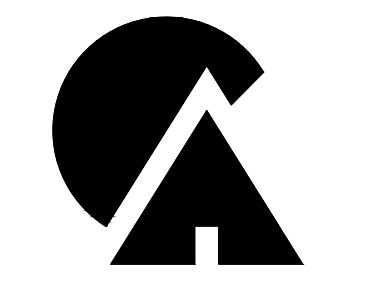
THIRD FLOOR MECHANICAL PLAN  
SCALE: 1/8" = 1'-0"

MECHANICAL LEGEND:

- ① REMOVE EXISTING THERMOSTAT AND PROVIDE NEW THERMOSTATS IN EXISTING LOCATION
- RC REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER IN EXISTING LOCATION
- UV-X REMOVE EXISTING UNIT VENTILATOR CONTROLLER AND PROVIDE NEW UNIT VENTILATOR CONTROLLER IN EXISTING LOCATION


MECHANICAL NOTES:

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STATE OF MAINE  
8187  
ASB 99A  
APR 18 2018  
LICENSED PROFESSIONAL ENGINEER

UNIVERSITY OF MAINE - AROOSTOOK HALL  
HVAC CONTROLS  
ORONO, MAINE

THIRD FLOOR MECHANICAL PLAN

Drawn: JE  
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Scale: AS NOTED  
Date: 04-17-2024

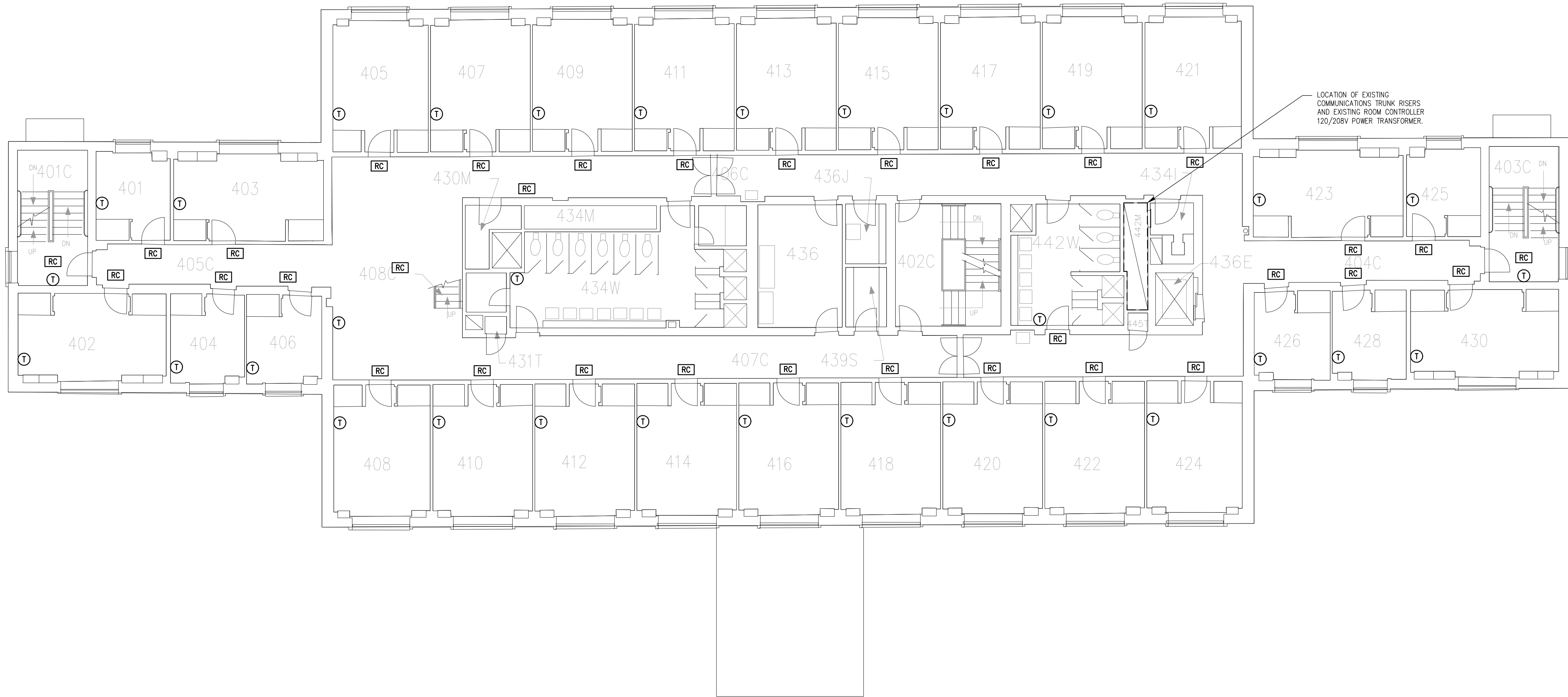
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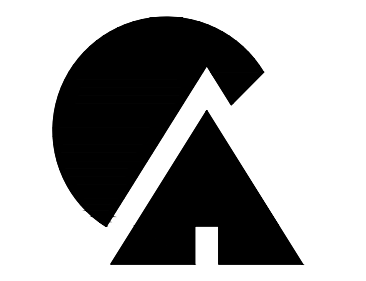
FOURTH FLOOR MECHANICAL PLAN  
SCALE: 1/8" = 1'-0"

MECHANICAL LEGEND:

- T** REMOVE EXISTING THERMOSTAT AND PROVIDE NEW THERMOSTATS IN EXISTING LOCATION
- RC** REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER IN EXISTING LOCATION
- UV-X** REMOVE EXISTING UNIT VENTILATOR CONTROLLER AND PROVIDE NEW UNIT VENTILATOR CONTROLLER IN EXISTING LOCATION


MECHANICAL NOTES:

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STATE OF MAINE  
81879A  
06/18  
LICENSED PROFESSIONAL ENGINEER

UNIVERSITY OF MAINE - AROOSTOOK HALL  
HVAC CONTROLS  
ORONO, MAINE

FOURTH FLOOR MECHANICAL PLAN

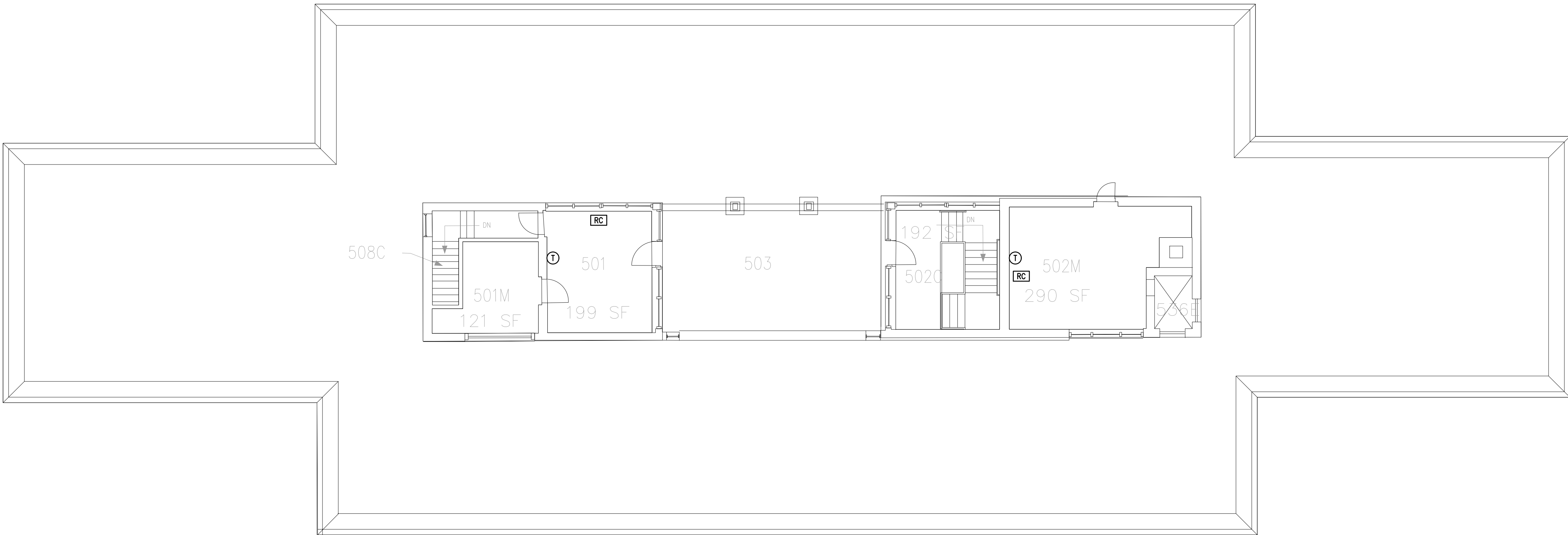
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**M5**



FIFTH FLOOR MECHANICAL PLAN  
SCALE: 1/8" = 1'-0"

MECHANICAL LEGEND:

- T

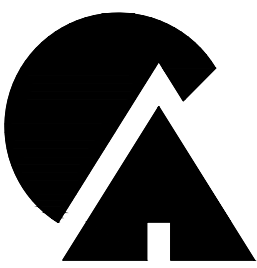
REMOVE EXISTING THERMOSTAT AND PROVIDE NEW THERMOSTATS IN EXISTING LOCATION
- RC

REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER IN EXISTING LOCATION
- UV-X

REMOVE EXISTING UNIT VENTILATOR CONTROLLER AND PROVIDE NEW UNIT VENTILATOR CONTROLLER IN EXISTING LOCATION

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5. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' RECOMMENDATIONS.
6. DUCTWORK SHALL BE COORDINATED TO PREVENT ANY INTERFERENCES W/PLUMBING, PIPING, ELECTRICAL, STRUCTURAL, FIRE PROTECTION, ARCHITECTURAL AND OTHER WORK. FIELD VERIFY EXACT PATHWAY, ADJUST DUCTWORK AS REQUIRED.
7. WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL AND STATE CODES AND REGULATIONS.
8. ALL DUCT SIZES INDICATED ARE OUTSIDE (SHEET METAL) DIMENSIONS, WITH THE EXCEPTION OF ACOUSTICALLY LINED DUCT WHICH IS INSIDE ACOUSTICAL LINER.
9. ALL CUTTING AND PATCHING SHALL BE PROVIDED BY GENERAL CONTRACTOR.
10. ALL DUCTWORK AND PIPING SHALL BE INSULATED.
11. ALL PIPING SHALL BE RUN CONCEALED AND ON WARM SIDE OF BUILDING INSULATION WHEREVER POSSIBLE UNLESS NOTED OTHERWISE.
12. PIPING IS SHOWN DIAGRAMMATICALLY. EXACT LOCATION TO BE ADJUSTED AS REQUIRED TO SUIT FIELD CONDITIONS.
13. ALL DIMENSIONS ARE APPROXIMATE AND ARE TO BE VERIFIED IN THE FIELD.
14. PROVIDE AUTOMATIC AIR VENTS AT ALL LOCATIONS WHERE WATER PIPING DROPS IN THE DIRECTION OF FLOW, AT ALL HIGH POINTS AND ELSEWHERE AS INDICATED ON DRAWINGS.
15. PROVIDE DRAINS AT ALL LOW POINTS IN THE WATER PIPING SYSTEM.
16. COPPER PIPING SHALL BE TYPE 'L' OR 'K'. TYPE 'M' SHALL NOT BE USED FOR THIS PROJECT.
17. STRUCTURAL MEMBERS SHALL NOT BE CUT, NOTCHED, OR BORED WITHOUT APPROVAL FROM ENGINEER.
18. PIPE SIZING BASED ON TYPE 'L' COPPER. VERIFY SIZING WITH ENGINEER IF ALTERNATE PIPING IS INSTALLED.
19. COORDINATE EXACT LOCATION OF DIFFUSERS IN EXISTING CORRIDOR CEILING GRID.



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A. B. 1994  
LICENSED PROFESSIONAL ENGINEER

UNIVERSITY OF MAINE - AROOSTOOK HALL  
HVAC CONTROLS  
ORONO, MAINE

FIFTH FLOOR MECHANICAL PLAN

Drawn: JE  
Checked: RB  
Scale: AS NOTED  
Date: 04-17-2024

Project No:  
2024053

Sheet Number:

FOR BID  
04-18-2024

M6

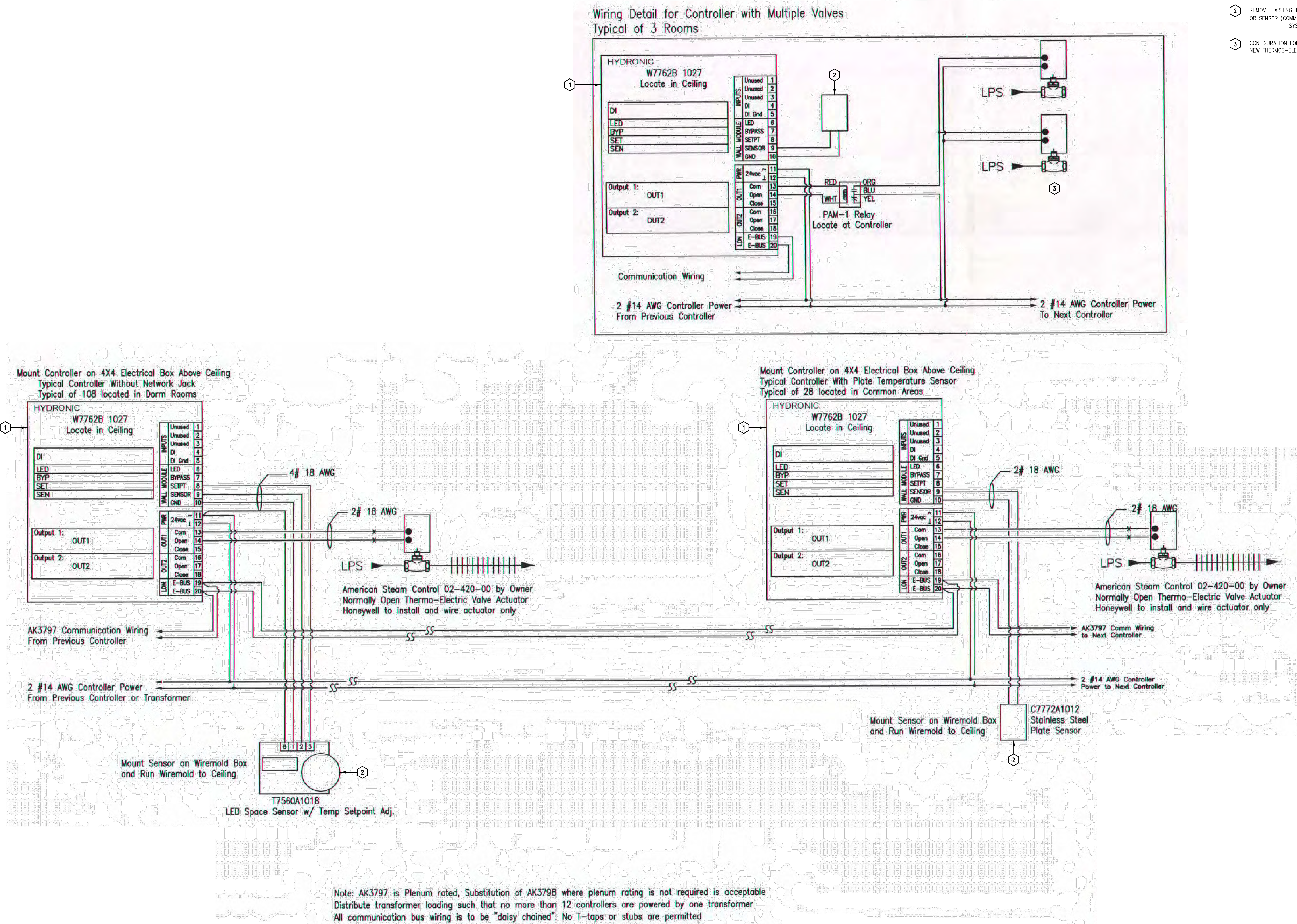






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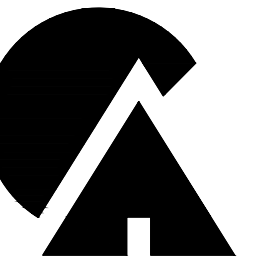
RADIATION CONTROL SCHEMATIC  
NOT TO SCALE

GENERAL NOTES:

1. INFORMATION ON THIS SHEET SHOWING PREVIOUS MODIFICATIONS AND EXISTING CONDITIONS, TAKEN FROM "AS BUILT" DRAWINGS BY HONEYWELL, TITLED "AROOSTOOK HALL RENOVATIONS ROOM CONTROL DORM ROOM TEMPERATURE CONTROL CONTROL UPGRADE", DATED 08-18-2008.

KEY NOTES:

1. REMOVE EXISTING ROOM CONTROLLER AND PROVIDE NEW ROOM CONTROLLER. SEE SHEET \_\_\_\_\_ SYSTEM ARCHITECTURE SCHEMATIC FOR QUANTITIES.
2. REMOVE EXISTING THERMOSTAT OR SENSOR AND PROVIDE NEW ROOM THERMOSTAT (DORM ROOMS) OR SENSOR (COMMON AREAS). EXISTING THERMOSTAT WIRING MAY BE REUSED. SEE SHEET \_\_\_\_\_ SYSTEM ARCHITECTURE SCHEMATIC, AND FLOOR PLANS, FOR QUANTITIES.
3. CONFIGURATION FOR PNEUMATIC TO THERMOS-ELECTRIC CONTROL OF ROOM 109 INCLUDES THREE NEW THERMOS-ELECTRIC VALVE OPERATORS, AND WILL SHARE A ROOM CONTROLLER WITH ROOM 119.



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ORONO, MAINE  
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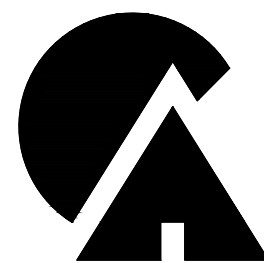
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GENERAL NOTES:

1. INFORMATION ON THIS SHEET SHOWING PREVIOUS MODIFICATIONS AND EXISTING CONDITIONS, TAKEN FROM "AS BUILT" DRAWINGS BY HONEYWELL, TITLED "AROOSTOOK HALL RENOVATIONS ROOM CONTROL DORM ROOM TEMPERATURE CONTROL CONTROL UPGRADE", DATED 08-18-2008.

KEY NOTES:

1. REMOVE EXISTING ROOM CONTROLLER FOR UNIT VENTILATOR, AND PROVIDE NEW ROOM CONTROLLER. SEE BASEMENT FLOOR PLAN FOR QUANTITY.
2. PROVIDE NEW TRANSFORMER AT EACH UNIT VENTILATOR ROOM CONTROLLER.
3. PROVIDE NEW ROOM SENSOR FOR EACH UNIT VENTILATOR.



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UNIVERSITY OF MAINE - AROOSTOOK HALL  
**HVAC CONTROLS**  
ORONO, MAINE

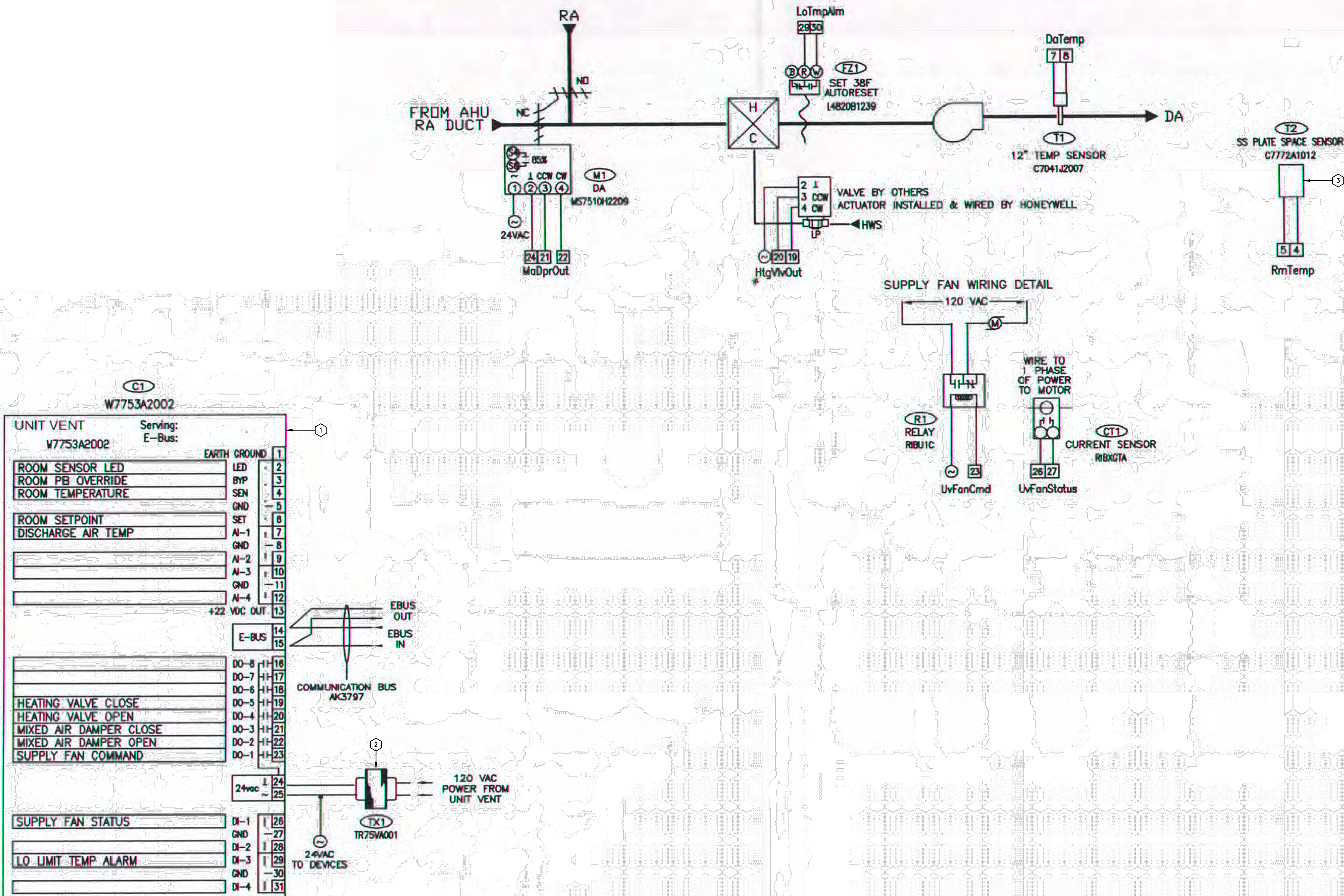
UNIT VENTILATOR CONTROL SCHEMATICS

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Unit Ventilators  
BASEMENT LEVEL



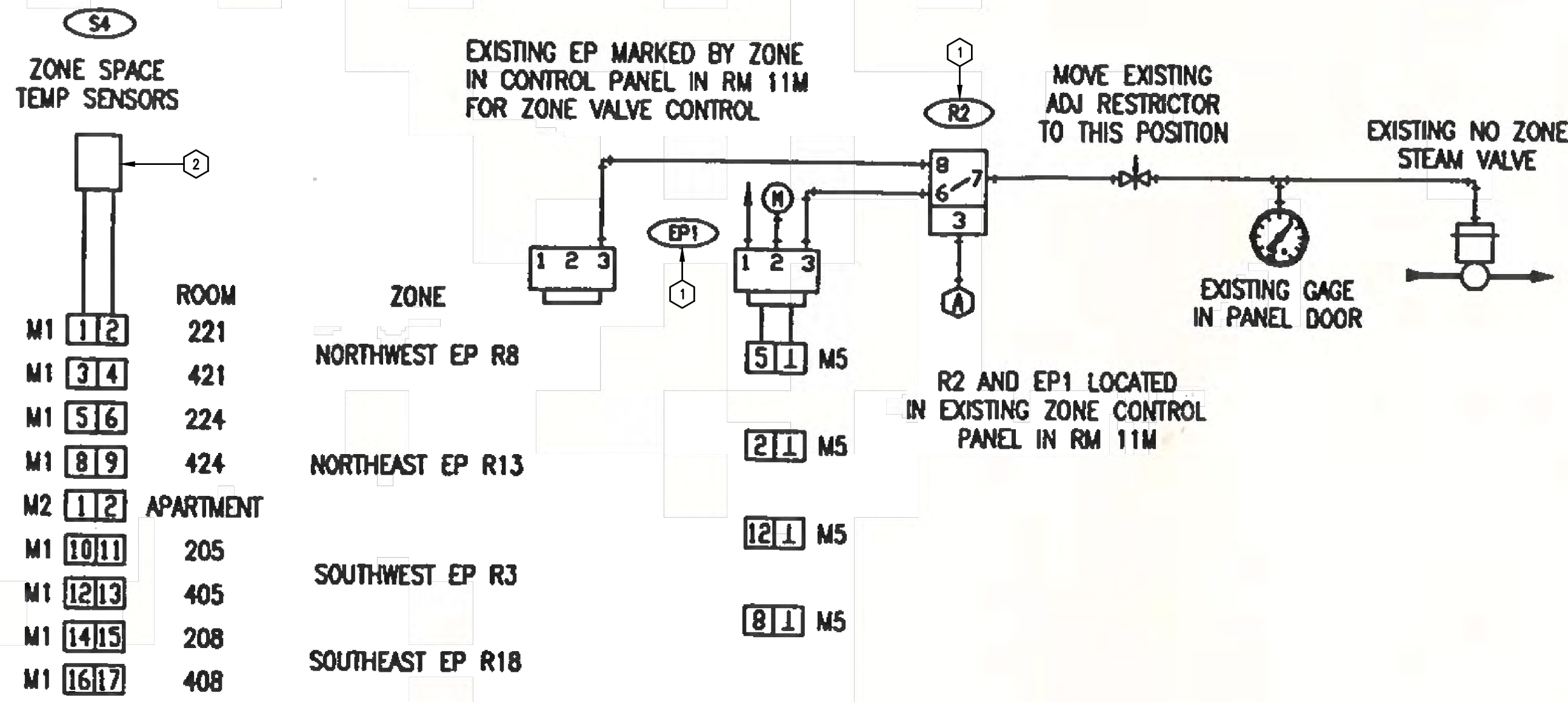
UNIT VENTILATOR CONTROL SCHEMATICS  
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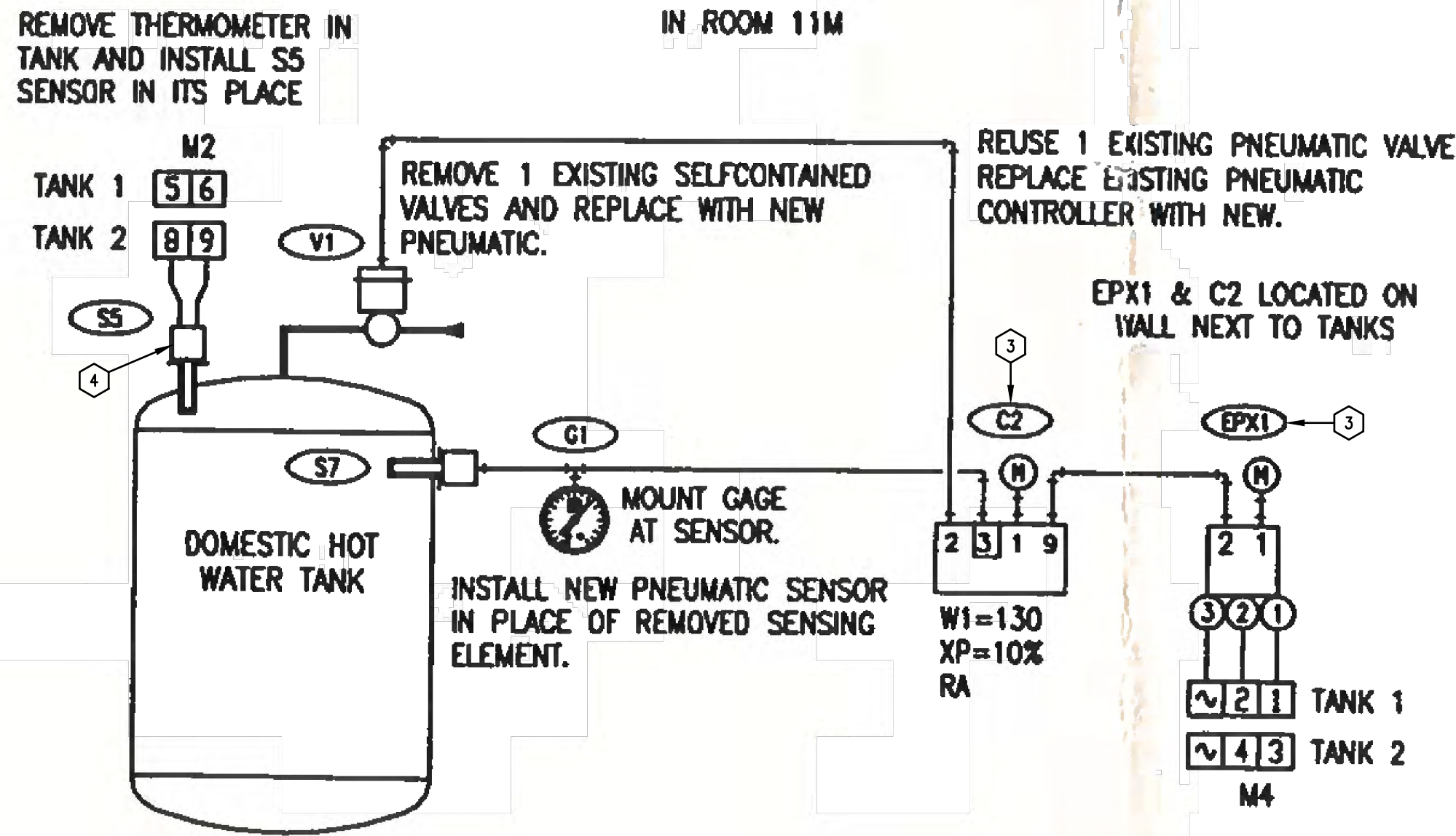
## BLDG ZONE SPACE TEMP CONTROL

TYPICAL FOR 4 ZONES



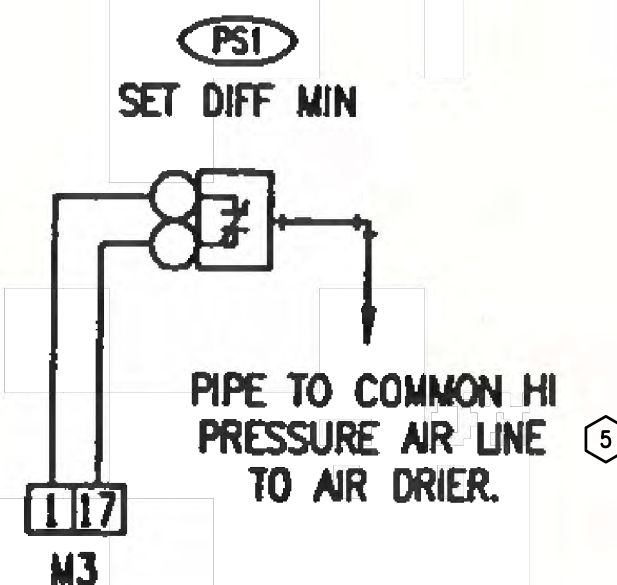
## DOMESTIC HW CONTROL

TYPICAL FOR 2 IN ROOM 11M



## AIR COMPRESSOR FAIL ALARM

TYPICAL FOR 1



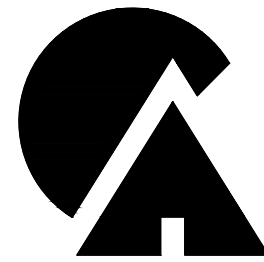
ROOM 011M CONTROL SCHEMATICS  
NOT TO SCALE

### GENERAL NOTES:

1. INFORMATION ON THIS SHEET SHOWING PREVIOUS MODIFICATIONS AND EXISTING CONDITIONS, TAKEN FROM "AS BUILT" DRAWINGS BY HONEYWELL, TITLED "UNIVERSITY OF MAINE ORONO CAMPUS LIVING EMS UPGRADE", DATED 03-30-1996.

### KEY NOTES:

1. PROVIDE NEW EP COMPONENTS FOR CONTROL OF EXISTING BUILDING ZONE CONTROL VALVES (TYPICAL OF FOUR).
2. SEE SECTION \_\_\_\_\_ SCOPE OF WORK, FOR DESCRIPTION OF ZONE CONTROL BASED ON ROOM THERMOSTATS/SENSORS WITHIN ZONES.
3. PROVIDE NEW EP COMPONENTS FOR CONTROL OF EXISTING DOMESTIC HOT WATER CONTROL VALVES (TYPICAL OF TWO).
4. PROVIDE NEW SENSORS AT DOMESTIC HOT WATER TANKS.
5. MOVE EXISTING PRESSURE TRANSDUCER TO NEW CONTROL PANEL, FOR MONITORING/ALARM OF CONTROL SYSTEM AIR PRESSURE.



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UNIVERSITY OF MAINE - AROOSTOOK HALL  
**HVAC CONTROLS**  
ORONO, MAINE

ROOM 011M CONTROL SCHEMATICS

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