

# CITY OF BURLINGTON CITY HALL TREASURER'S SUITE HVAC

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CITY HALL

149 CHURCH STREET, BURLINGTON VERMONT

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ISSUED FOR BIDDING

JULY 10, 2015

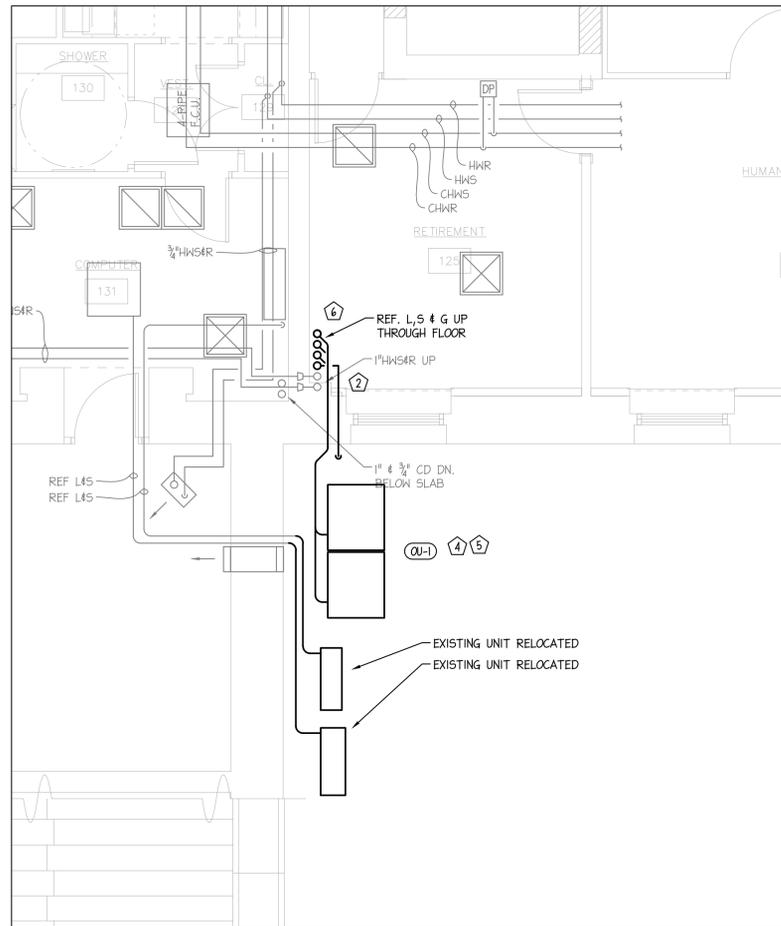
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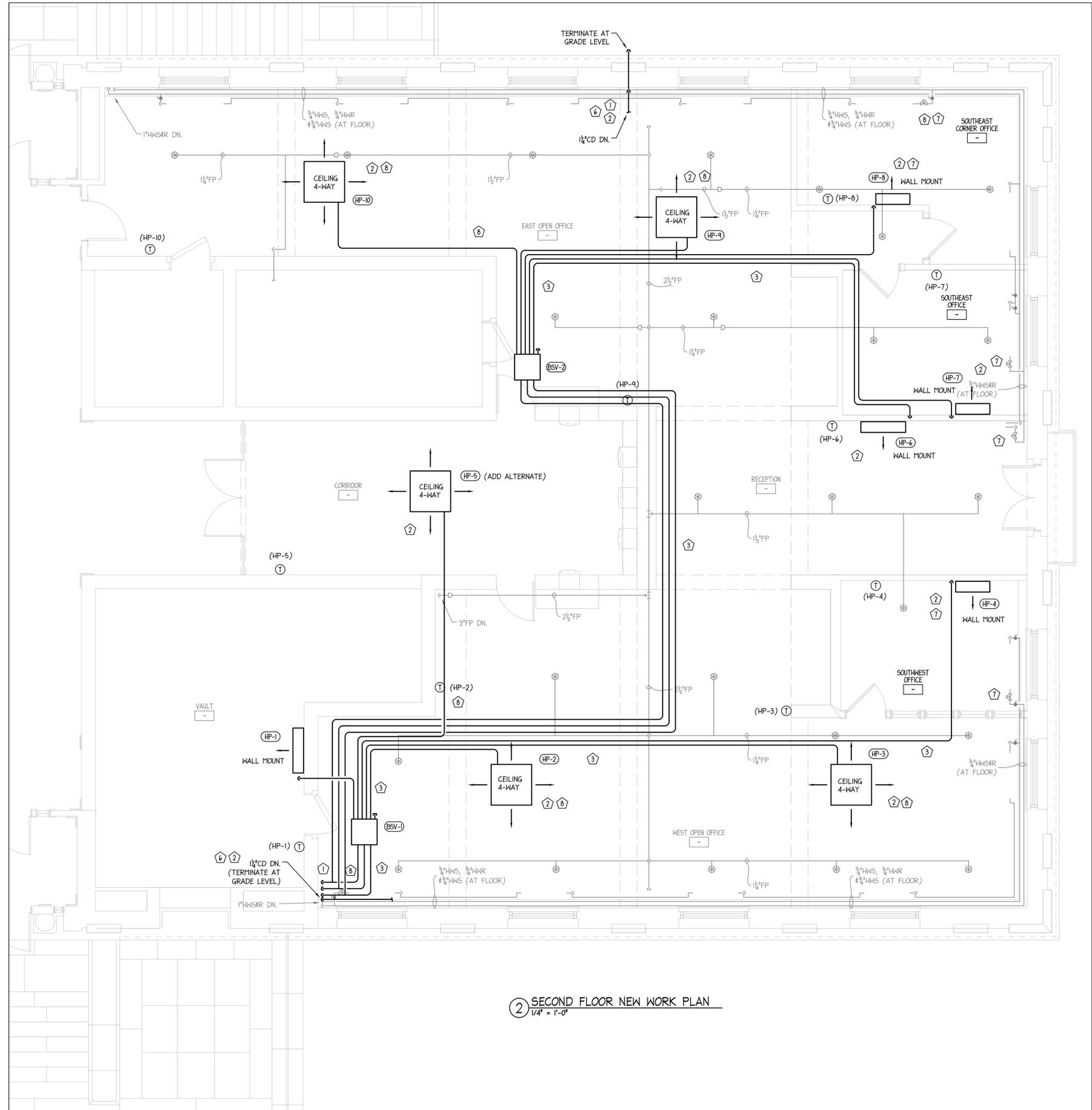
MECHANICAL NEW WORK LEGEND	
	NEW MECHANICAL TO BE FURNISHED AND INSTALLED
	EXISTING MECHANICAL TO REMAIN

MECHANICAL SPECIFIC NEW WORK NOTES:

- PROVIDE SERVICES OF A GENERAL CONTRACTOR TO FURNISH AND INSTALL VERTICAL ENCLOSURE TO CONCEAL REFRIGERANT PIPING, CONDENSATE DRAINAGE, CONTROLS AND ELECTRICAL CONDUITS FROM THE FLOOR TO THE CEILING. SIZE AND COLOR/MATERIAL OF ENCLOSURE TO BE APPROVED BY OWNER.
- FURNISH AND INSTALL A SYSTEM OF CONDENSATE DRAINAGE PIPING FROM EACH UNIT TO TERMINATION LOCATION INDICATED. WALL MOUNTED UNITS SHALL HAVE FIELD INSTALLED CONDENSATE LIFT PUMP INSTALLED. SEE EQUIPMENT SCHEDULE.
- EXPOSED PIPING SHALL BE INSULATED WITH WHITE ARMAFLEX INSULATION.
- FURNISH AND INSTALL 4" THICK REINFORCED CONCRETE SLAB FOR EQUIPMENT INSTALLATION.
- FURNISH AND INSTALL FIELD FABRICATED STEEL SNOW GUARD OVER TOP OF EQUIPMENT TO KEEP UNIT FROM BEING DAMAGED BY SNOW AND ICE. PROVIDE ROOF THAT WILL NOT OBSTRUCT AIRFLOW OR SERVICE CLEARANCES.
- PROVIDE NEW FLOOR PENETRATIONS OR MODIFY EXISTING AS NECESSARY FOR NEW SERVICES. COORDINATE ALL PENETRATIONS WITH CONTROLS AND ELECTRICAL CONTRACTOR.
- CONTROLS CONTRACTOR SHALL WIRE CONTROL VALVE END SWITCH TO INDOOR HEAT PUMP UNIT (FORCE-OFF) TERMINALS TO PROHIBIT UNIT OPERATION SHOULD THE HOT WATER CONTROL VALVE BE COMMANDED OPEN VIA EXISTING TEMPERATURE CONTROL SYSTEM.
- CONTROLS CONTRACTOR SHALL WIRE AUXILIARY (SECOND STAGE) HEATING TERMINALS TO NEW RELAY TO COMMAND EXISTING HOT WATER CONTROL VALVE OPEN UPON ADDITIONAL SPACE HEATING REQUIREMENT.



① FIRST FLOOR NEW WORK PLAN  
1/4" = 1'-0"



② SECOND FLOOR NEW WORK PLAN  
1/4" = 1'-0"

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DRAWN	ARW
APPROVED	WEN
DATE	JULY 10, 2015
NO.	DATE
1	07.10.15
	ISSUED FOR BID
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PROJECT TITLE  
CITY OF BURLINGTON  
CITY HALL TREASURER'S SUITE HVAC

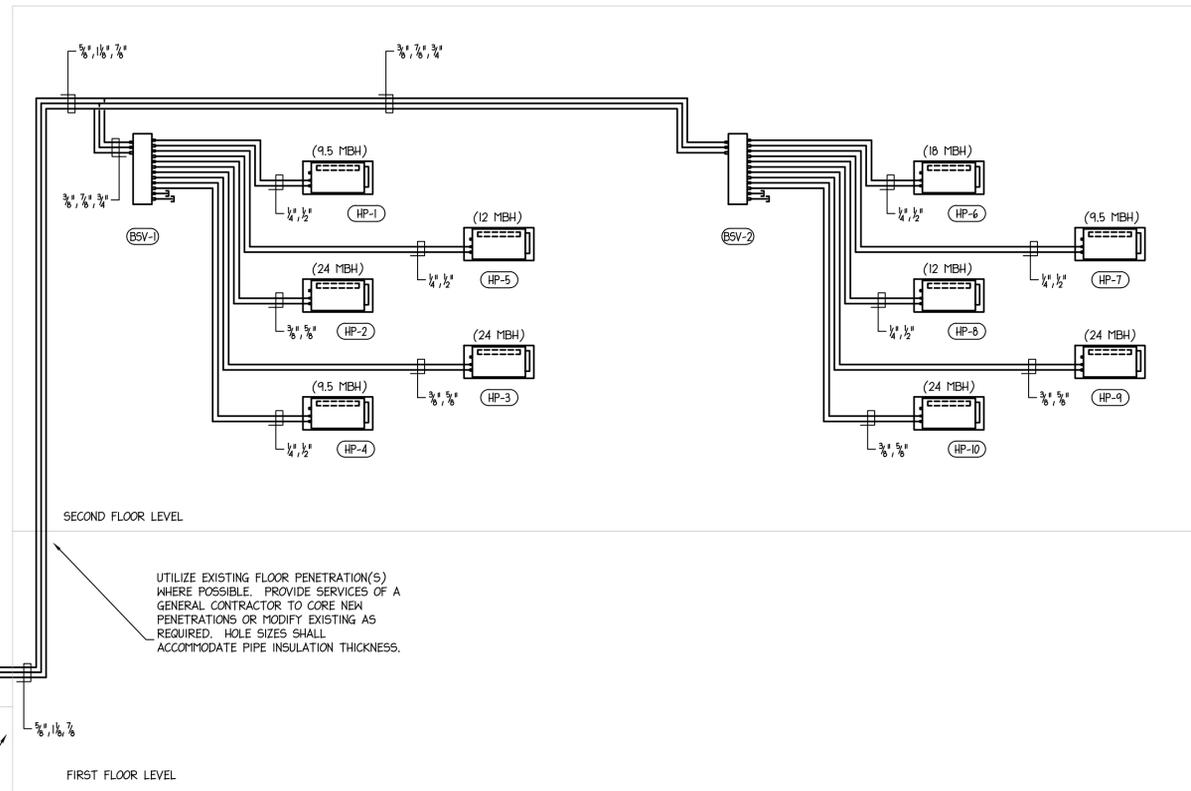
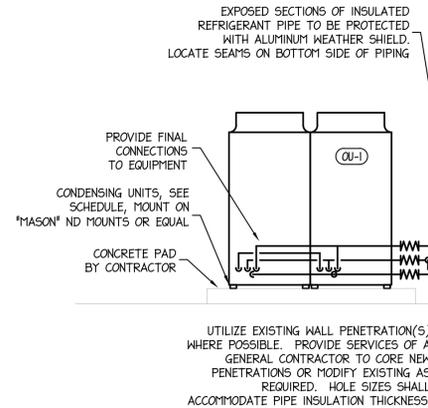
SHEET TITLE  
MECHANICAL NEW WORK PLAN

SCALE: 1/4" = 1'-0"  
PROJECT NO. 15235  
SHEET NO.

**M1.11**

**MECHANICAL GENERAL NOTES:**

1. ALL REFRIGERANT PIPING TO BE INSULATED PER THE SPECIFICATIONS. INSULATION INSTALLED EXTERIOR TO BUILDING SHALL BE PROTECTED WITH ALUMINUM PROTECTIVE COVER.
2. PROVIDE WHITE CLOSED CELL INSULATION FOR EXPOSED REFRIGERANT PIPING INSIDE BUILDING.
3. PROVIDE CONDENSATE DRAINAGE PIPING AND P-TRAP FOR EACH INDOOR UNIT DRAIN CONNECTION. TERMINATE IN LOCATIONS INDICATED ON FLOOR PLANS. CONDENSATE DRAINS SHALL BE INSULATED PER THE SPECIFICATIONS.
4. INSTALL INDOOR UNITS, OUTDOOR UNITS, REFRIGERANT PIPING, DRAINS, AND CONTROLS PER MANUFACTURER'S INSTALLATION MANUALS.



① VRV MULTI-ZONE HVAC SYSTEM SCHEMATIC PIPING DIAGRAM  
N.T.S.

**DIRECT DIGITAL CONTROLS GENERAL NOTES**

1. THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROLS CONDUIT. ALL CONTROLS CABLES AND WIRING EXPOSED AND IN ALL EQUIPMENT ROOMS SHALL BE INSTALLED WITHIN E.M.T. OR FLEXIBLE METAL CONDUIT. THE CONTROLS CONDUIT SHALL BE A MINIMUM OF 3/4" EMT. FINAL DROPS TO TEMPERATURE SENSORS MAY BE IN 1/2" EMT. ALL CONTROL WIRING CONCEALED IN CEILINGS AND WALLS MAY BE INSTALLED WITHOUT CONDUIT. PROVIDE "J" HOODS OR SIMILAR METHODS TO SUPPORT WIRING 4'-0" ON CENTER. ANY WIRING INSTALLED IN PLENUM SPACES SHALL BE PLENUM RATED.
2. A MAXIMUM DISTANCE OF 6'-0" SHALL BE PERMITTED FOR UTILIZING FLEXIBLE METAL CONDUIT OR SEAL TIGHT CONDUIT.
3. THE CONTROLS CONTRACTOR SHALL BE PRESENT DURING THE FINAL BALANCE OF THE NEW AIR HANDLING SYSTEMS.
4. THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPERATURE CONTROL VERIFICATION, SEQUENCE OF OPERATIONS VERIFICATION, AND SYSTEM COMMISSIONING AT THE COMPLETION OF EACH PHASE OF WORK. THE CONTROLS CONTRACTOR SHALL BE PRESENT DURING THE FINAL CONTROLS SYSTEM COMMISSIONING PROCESS AND SHALL ASSIST THE COMMISSIONING AGENT, THE BALANCE CONTRACTOR, AND THE MECHANICAL CONTRACTOR DURING THE COMMISSIONING PROCESS.

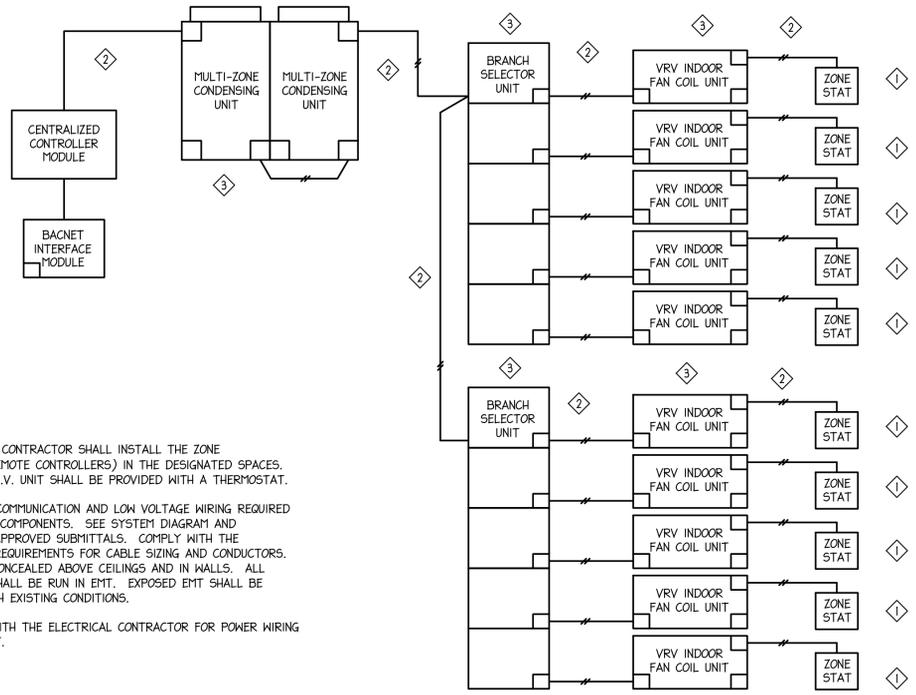
**SEQUENCE OF OPERATIONS**

**UNIT OPERATION**  
THE V.R.V. UNIT BLOWERS SHALL OPERATE CONTINUOUSLY DURING OCCUPIED HOURS. EACH UNIT THERMOSTAT UNIT SHALL BE PROGRAMMING FOR OCCUPIED HOURS. UNIT BLOWERS SHALL CYCLE ON DEMAND DURING UNOCCUPIED HOURS. COORDINATE BLOWER OPERATION AND SPECIFIC AIRFLOW DIRECTION FOR EACH UNIT WITH OWNER.

**COOLING MODE (TYPICAL FOR EACH ZONE)**  
UPON AN INCREASE IN SPACE TEMPERATURE ABOVE SET POINT, THE INDIVIDUAL V.R.V. INDOOR UNITS SHALL CYCLE THEIR RESPECTIVE HEAT PUMP UNITS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. SPACE TEMPERATURE, ZONE STATUS AND LOAD DATA SHALL BE TRANSMITTED TO THE CENTRALIZED CONTROLLER AND THE CONDENSING UNIT CONTROLS. THE OUTDOOR UNIT SHALL OPERATE WITH LOAD MODULATION AS REQUIRED TO MEET THE ZONE LOADS. SET UP UNIT THERMOSTATS WITH PROGRAMMED OCCUPIED COOLING SET POINT AND UNOCCUPIED SET POINTS.

**HEATING MODE (TYPICAL FOR EACH ZONE)**  
UPON AN DECREASE IN SPACE TEMPERATURE BELOW SET POINT, THE INDIVIDUAL V.R.V. INDOOR UNITS SHALL CYCLE THEIR RESPECTIVE HEAT PUMP UNITS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SET POINT. SPACE TEMPERATURE, ZONE STATUS AND LOAD DATA SHALL BE TRANSMITTED TO THE CENTRALIZED CONTROLLER AND THE CONDENSING UNIT CONTROLS. THE OUTDOOR UNIT SHALL OPERATE WITH LOAD MODULATION AS REQUIRED TO MEET THE ZONE LOADS. AT A PROGRAMMED OUTDOOR AIR TEMPERATURE THE V.R.V. SYSTEM CONDENSING UNITS AND INDOOR HEAT PUMPS SHALL BE "LOCKED OUT". THE UNIT BLOWERS SHALL CONTINUE TO OPERATE DURING OCCUPIED HOURS ONLY. SPACE HEATING SHALL BE ACCOMPLISHED BY THE EXISTING HYDRONIC HEATING SYSTEM.

ALL TEMPERATURE SETPOINTS, FAN MODES, ETC. SHALL BE ADJUSTABLE AND CONTROLLABLE VIA THE CENTRAL CONTROLLER. COORDINATE LOCATION OF CENTRAL CONTROLLER WITH OWNER.



**NOTES:**

1. THE CONTROLS CONTRACTOR SHALL INSTALL THE ZONE THERMOSTATS (REMOTE CONTROLLERS) IN THE DESIGNATED SPACES. EVERY INDOOR V.R.V. UNIT SHALL BE PROVIDED WITH A THERMOSTAT.
2. PROVIDE ALL COMMUNICATION AND LOW VOLTAGE WIRING REQUIRED BETWEEN SYSTEM COMPONENTS. SEE SYSTEM DIAGRAM AND MANUFACTURERS APPROVED SUBMITTALS. COMPLY WITH THE MANUFACTURERS REQUIREMENTS FOR CABLE SIZING AND CONDUCTORS. RUN ALL WIRING CONCEALED ABOVE CEILINGS AND IN WALLS. ALL WIRING EXPOSED SHALL BE RUN IN EMT. EXPOSED EMT SHALL BE PAINTED TO MATCH EXISTING CONDITIONS.
3. COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR POWER WIRING TO ALL EQUIPMENT.

② VRV MULTI-ZONE HVAC SYSTEM SCHEMATIC WIRING DIAGRAM  
N.T.S.

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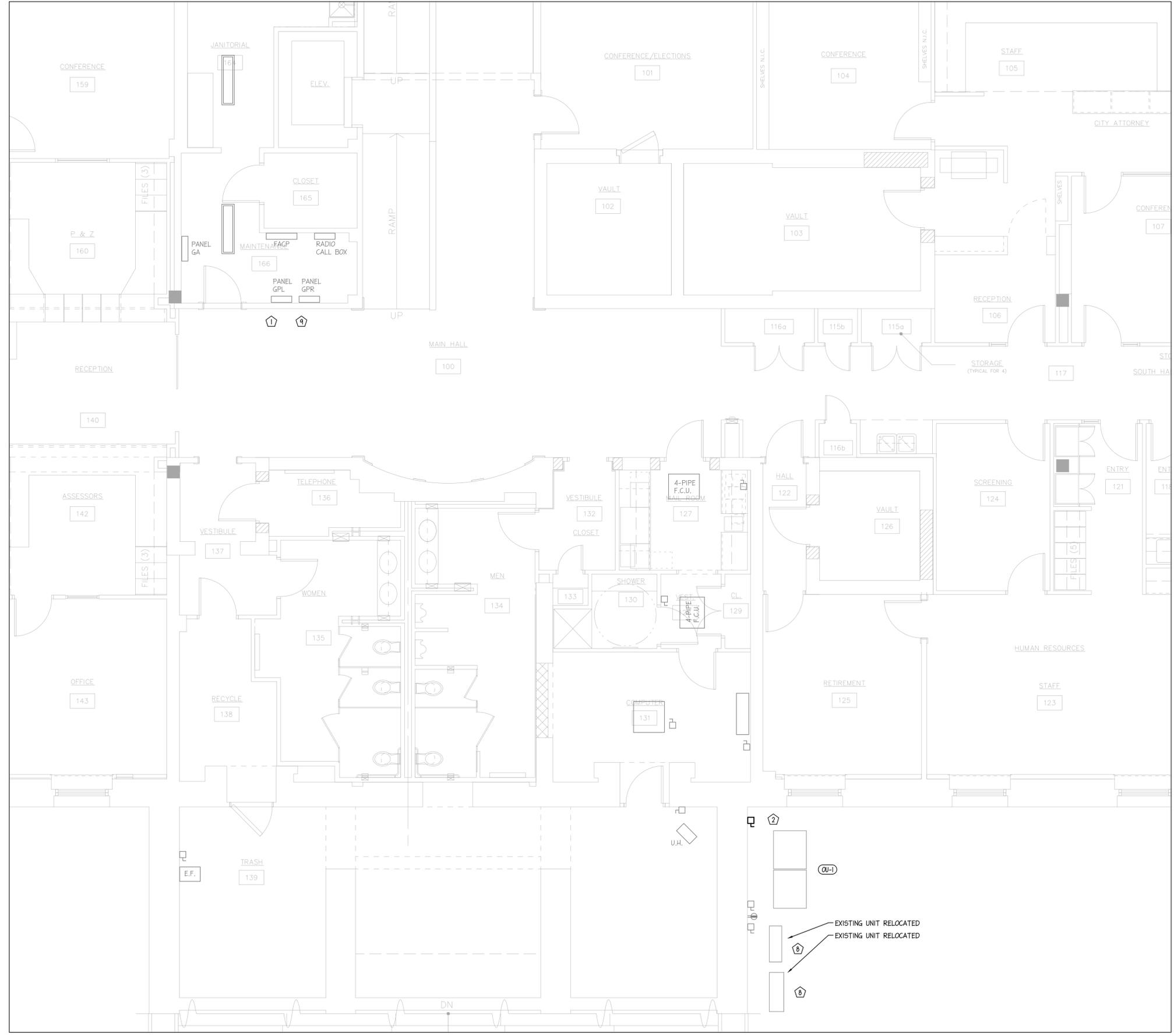
PROJECT TITLE  
CITY OF BURLINGTON  
CITY HALL TREASURER'S SUITE HVAC  
SHEET TITLE  
VRV SYSTEM  
ONE-LINE DIAGRAMS

SCALE:	N.T.S.
PROJECT NO.	15235
SHEET NO.	









ELECTRICAL NEW WORK LEGEND	
	NEW ELECTRICAL TO BE FURNISHED AND INSTALLED
	EXISTING ELECTRICAL TO REMAIN

- ELECTRICAL SPECIFIC NEW WORK NOTES:**
- FURNISH AND INSTALL NEW 3 POLE CIRCUIT BREAKER IN EXISTING PANELBOARD. REWORK EXISTING BREAKERS AND BRANCH CIRCUITS AS REQUIRED TO ACCOMMODATE NEW 3 POLE BREAKER.
  - FURNISH AND INSTALL NEMA 3R DISCONNECT SWITCH AT EQUIPMENT LOCATION. PROVIDE SEAL TIGHT WEATHER PROOF FLEXIBLE CONDUIT FOR FINAL CONNECTION TO EQUIPMENT.
  - FURNISH AND INSTALL NEMA 1 DISCONNECT SWITCH AT EQUIPMENT LOCATION.
  - FIELD INSTALLED CONDENSATE LIFT PUMPS SHALL BE WIRED TO EQUIPMENT POWER FEED. PROVIDE WIRING AND CONNECTION BETWEEN PUMP HIGH LEVEL SWITCH AND EQUIPMENT SHUT OFF PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. UNIT SHALL BE DISABLED UPON CONDENSATE PUMP FAILURE OR DRAIN BLOCKAGE.
  - NEW CONDUITS INSTALLED SHALL BE ROUTED PERPENDICULAR AND PARALLEL TO EXISTING BUILDING STRUCTURE. CONDUITS ON SECOND FLOOR LEVEL WILL BE EXPOSED AND WILL BE REQUIRED TO BE PAINTED. COORDINATE ROUTING WITH MECHANICAL REFRIGERANT PIPING LAYOUT.
  - PROVIDE ADD ALTERNATE PRICE FOR INSTALLATION OF THIS UNIT.
  - THERMOSTATS ASSOCIATED WITH INDOOR UNITS ARE INDICATED ON THE MECHANICAL PLANS. PROVIDE INSTALLATION OF WIRED THERMOSTATS AND WIRING BETWEEN EACH UNIT, BRANCH SELECTOR BOXES AND OUTDOOR UNIT. REFER TO EQUIPMENT ONE-LINE DIAGRAM.
  - FURNISH AND INSTALL NEW ELECTRICAL CIRCUIT BETWEEN EXISTING DISCONNECT SWITCH AND RELOCATED MECHANICAL EQUIPMENT. COORDINATE SHUTDOWNS OF EXISTING HVAC EQUIPMENT WITH OWNER PRIOR TO ANY DEMOLITION OR NEW WORK.
  - FURNISH AND INSTALL NEW 2 POLE CIRCUIT BREAKER IN EXISTING PANELBOARD. REWORK EXISTING BREAKERS AND BRANCH CIRCUITS AS REQUIRED TO ACCOMMODATE NEW 2 POLE BREAKER.

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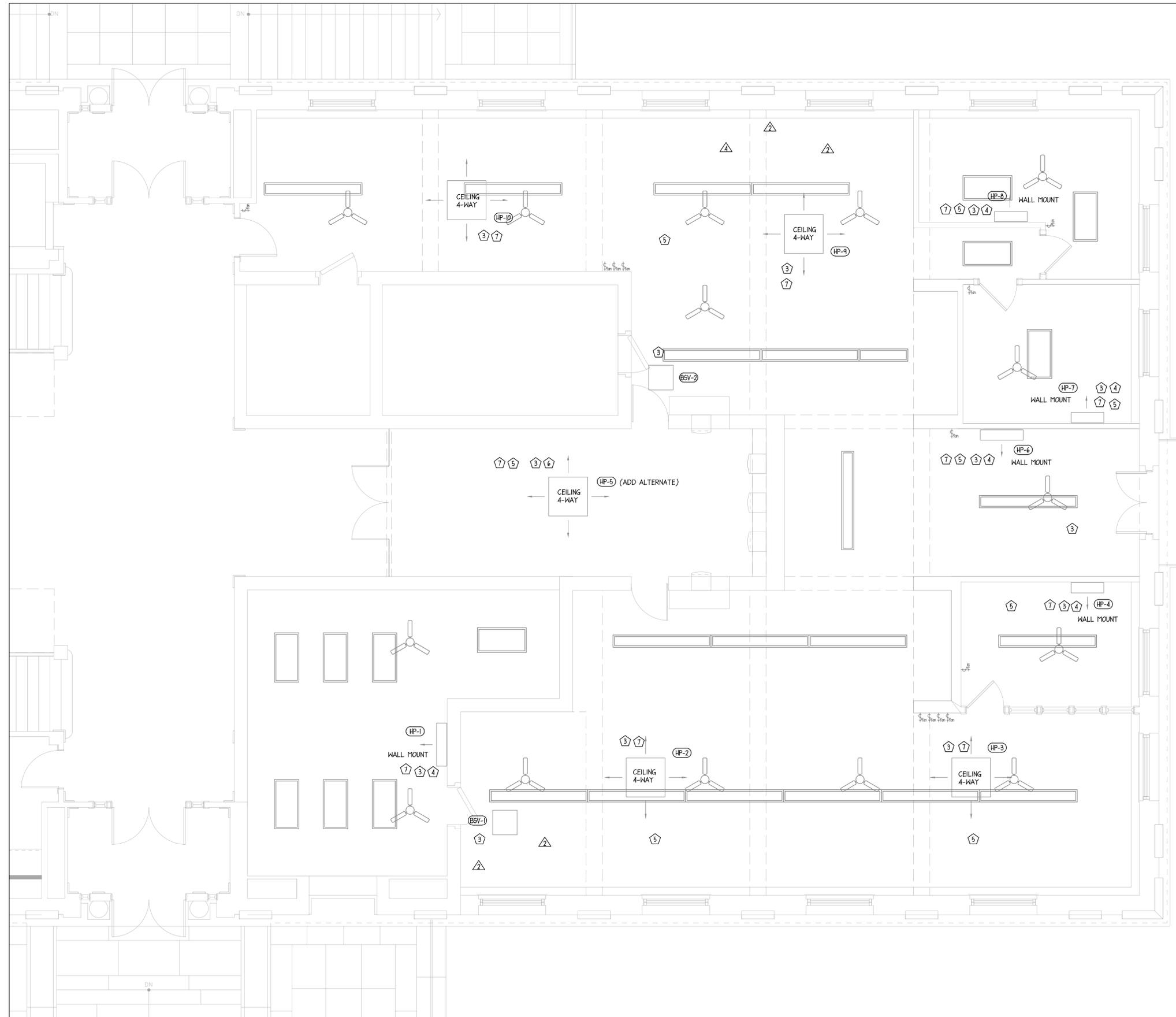
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 CITY OF BURLINGTON  
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SHEET TITLE  
 FIRST FLOOR  
 ELECTRICAL NEW WORK PLAN

SCALE: 1/4" = 1'-0"  
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 SHEET NO.

**E1.11**



ELECTRICAL DEMOLITION LEGEND	
---	EXISTING ELECTRICAL TO BE DEMOLISHED
—	EXISTING ELECTRICAL TO REMAIN

- ELECTRICAL SPECIFIC DEMOLITION NOTES:**
- SPLIT SYSTEM REMOTE CONDENSER TO BE REMOVED. DEMOLISH EXISTING ELECTRICAL DISCONNECT AND POWER CIRCUIT. PATCH AND SEAL EXISTING WALL AND FLOOR PENETRATIONS TO MATCH EXISTING CONDITIONS.
  - SPLIT SYSTEM EVAPORATOR TO BE REMOVED. DEMOLISH EXISTING ELECTRICAL DISCONNECT SWITCH AND POWER CIRCUIT. PATCH AND SEAL EXISTING WALL AND FLOOR PENETRATIONS TO MATCH EXISTING CONDITIONS.
  - REMOVE EXISTING 2 POLE CIRCUIT BREAKERS ASSOCIATED WITH DEMOLISHED HVAC EQUIPMENT. REWORK EXISTING CIRCUIT BREAKERS AND CONDUCTORS TO ACCOMMODATE NEW 3 POLE CIRCUIT BREAKER. ASSOCIATED WORK SHALL BE FIELD VERIFIED PRIOR TO BID QUOTATION.
  - ELECTRICAL CONTRACTOR SHALL COORDINATE ACCESS TO ALL SPACES WITH MECHANICAL CONTRACTOR AND OWNER TO LIMIT DISTURBANCE TO EXISTING CONDITIONS.
  - TEMPORARILY REMOVE EXISTING ELECTRICAL POWER AND CONTROL CONDUCTORS BETWEEN REMOTE CONDENSING UNIT AND INDOOR UNIT TO ACCOMMODATE RELOCATION OF OUTDOOR UNITS. EXTEND EXISTING CIRCUITS TO NEW UNIT LOCATION. SEE NEW WORK PLAN.

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—	NEW ELECTRICAL TO BE FURNISHED AND INSTALLED
---	EXISTING ELECTRICAL TO REMAIN

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SHEET TITLE  
 SECOND FLOOR  
 ELECTRICAL NEW WORK PLAN

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

PROJECT NO. 15235

SHEET NO.

**E1.21**

