

HVAC ABBREVIATIONS

S/A

R/A

AHU

HP

HRV

THRU

SUPPLY AIR

**RETURN AIR** 

EXHAUST FAN

HEAT PUMP

THROUGH

AIR HANDLING UNIT

HEAT RECOVERY UNIT

### 1. INTENT

1.1. Provide complete and fully operational Mechanical and HVAC systems in complete accordance with good applicable codes and bylaws. Drawings are diagrammatic and approximately to scale unless detailed otherwise; they are not intended to show structural details or architectural features. Contract Documents establish scope, material and installation quality and are not detailed installation instructions. Install distribution systems and equipment generally in locations and routes shown, close to building structure avoiding interference with other services or free space. Quality of systems and equipment shall be "premium" using the best trade practices in "high end" residential construction and as specified. Employ only tradesmen properly licensed for work requiring tradesmen with special skill.

- 1.2. For any unspecified, equivalent equipment or systems the Mechanical Contractor shall submit shop drawings before start of construction to the General Contractor for technical review and checking for compliance with scope of work.
- 1.3 Drawings are diagrammatic and exact locations of services shall be coordinated on site with the Construction Manager before rough in.
- 1.4 All system components and equipment shall bear CSA or CGA label and factory label or nameplates.
  1.5 Follow all manufacturers' recommendations for installation, safety, access for inspection, maintenance and repairs. Install equipment to permit
- maintenance and disassembly with minimum disturbance to connecting piping or duct systems.
  1.6 At completion of project, Mechanical Contractor shall instruct Owner and/or Owner's Representatives in operation and maintenance of

#### 2. GENERAL ITEMS INCLUDED IN SCOPE

equipment and systems.

- 2.1. Obtain and pay for Permits and Certificates required for mechanical work, and provide all documentation required or requested by any Authority Having Jurisdiction.
- 2.2. Seismic restraint of suspended mechanical equipment to satisfy requirements of B.C. Building Code.
- 2.3. Mechanical Contractor is responsible for balancing of heat recovery ventilator system.
- 2.4. Maintenance manuals and As Built: Provide 1 (one) copy of indexed plastic binders containing the following:
  (1)Description of systems and recommended maintenance schedule for systems and equipment.
  (2)Final balancing report.
- (3)Inspection certificates provided by Municipal and Provincial Inspection Branches and Authorities.
   (4)Detailed equipment manufacturer shop drawings, installation, maintenance and operating instructions for all equipment and
- systems. (5)Warranty and extended certificates indicating starting and ending dated and party to contact for warranty work. (6)One printed set of marked up (red) As-Built drawings indicating
- changes made to location of services, equipment and systems installed, to be turned over to construction manager at completion of the work. Mark up As Built as work is proceeding on site.
- 2.5. Coordinate requirements for access panels as required for servicing or accessing mechanical equipment or components.
- 2.6. Installation of systems will be guaranteed for two (2) years. Equipment warranties as per manufacturer. Provide written certificates to Owner. Guarantee coverage shall include the labor and material to correct defective equipment, workmanship, material and building damage caused by failure of the same. Warranties shall be effective from date of commissioning.
- 2.7. Provide all control, relays and devices, low voltage control wiring for heating and ventilation. Provide wiring schematics in the mechanical room with simple descriptive sequences of operation for each system.
- 2.8. Tag emergency shut off valves, equipment, automatic controls, electric switches, and thermostats (inside covers) with labels.
- 2.9. Provide start up and commissioning service for each system and major pieces of equipment simulating various load and safety conditions at completion of operation with Owner's representative in attendance.
- 2.10. Coordinate all opening for mechanical in walls, floors, or roof. Requirements for thickened walls/furring, areas for dropped ceilings or bulkheads and framed openings in wood of concrete structure as required to complete the mechanical installation shall be indicated on the design drawings and shall be coordinated with the Construction Manager as work progresses on the site. Indicate locations and electrical requirements for all mechanical components on the design drawings.
- 2.11. All equipment equivalents shall be submitted to the General Contractor for approval prior to installation.2.12. Any deviation from approved design drawings and system specifications
- shall be submitted for approval.

## 3. TESTING

- 3.1 Test equipment and material where specified or required by Authority Having Jurisdiction.
- Test in accordance with applicable portions of ASME, ASHRAE, SMACNA, NFPA, CSA and other recognized test codes.
   (1)Provide notice of tests to the General Contractor.
   (2)Conduct performance tests to demonstrate equipment and systems
- meet specified requirements after installation is complete and before occupancy. (3)Calibrate and adjust control devices. (4)Fasten loose and rattling pieces of equipment (new and existing) to
- ensure quiet operation. (5) Test equipment and materials to demonstrate proper operation.

### 4. SHEET METAL

- 4.1. All sheet metal duct shall be sealed using duct mastic at every joint and connection.
- 4.2. All sheet metal piping shall be sealed using duct mastic on all joints, and all longitudinal and transverse seams.
- 4.3. Minimum sheet metal gauge for round ducts shall be 30 gauge.
  4.4. <u>All</u> forced-air cooling sheet metal to be sealed with duct mastic at every joint and connection and shall be insulated with standard foil-back wrap or
- spray foam insulation. 4.5. All air-handlers, fan coils will be mounted on rubber/cork waffler pads (or equivalent) to provide isolation from direct contact with floor surface.
- 4.6. All sheet metal plenums, return air drops, or plenum take-offs attached to air-handlers or fan coils will be isolated with neoprene flex connectors to isolate equipment from duct trunks and branch distribution.

# 5. COOLING

- 5.1. Cooling to be provided by mitsubishi outdoor heat pump units with 3.5 ton indoor air handling unit, refer to schedules for make and models.1) Location of outdoor Heat Pump units to be determined. Allow for maximum line set distance.
- Outdoor units shall be placed on concrete -- poured or preformed, mounted on waffle pads, or equivalent, to isolated equipment from surface.
- Each of the indoor Air Handling units will be zoned using Honeywell Zoning System, to the zones shown in the table.
- 5.2 All grilles TO BE CONFIRMED by Mechanical Contractor, and may vary in sytle and dimension based on finished design criteria. For the purpose of this Scope of Work, Mechanical Contractor will assume all grilles to be of a extruded aluminum *linear bar* type EH Price LBP Series, with quantity and dimensions as shown on drawings. Grilles to be separated in proposal as an independent option.

# 6. HEATING

- 6.1 Primary space heating to be provided through Mitsubishi heat pump unit and air handler unit.
- 6.2 Domestic Hot Water TBD.
- 7. PLUMBING & GAS
- 7.1 All plumbing and gas shall be installed in accordance with the most current BC Building Code, BC Plumbing Code, BC Gas Code and any relevant Municipal codes, regulations and by-laws, and installed to a standard in keeping with the highest quality of custom home construction.
- **7.2** Gas loads TO BE DETERMINED.

### 8. CONTROLS

8.1 Ecolighten has not been made aware of any whole house automation system

#### 9. INSULATION

- 9.1 Thermal insulation, unless noted otherwise on the drawings, shall be required on:
  (1)All cooling sheet metal duct and piping.
  (2)All HRV exhaust and intake piping connected to outdoors.
  (3)All domestic hot & cold piping, and all recirculation piping.
- (4) All mechanical room hydronic piping.

### 10. VENTILATION

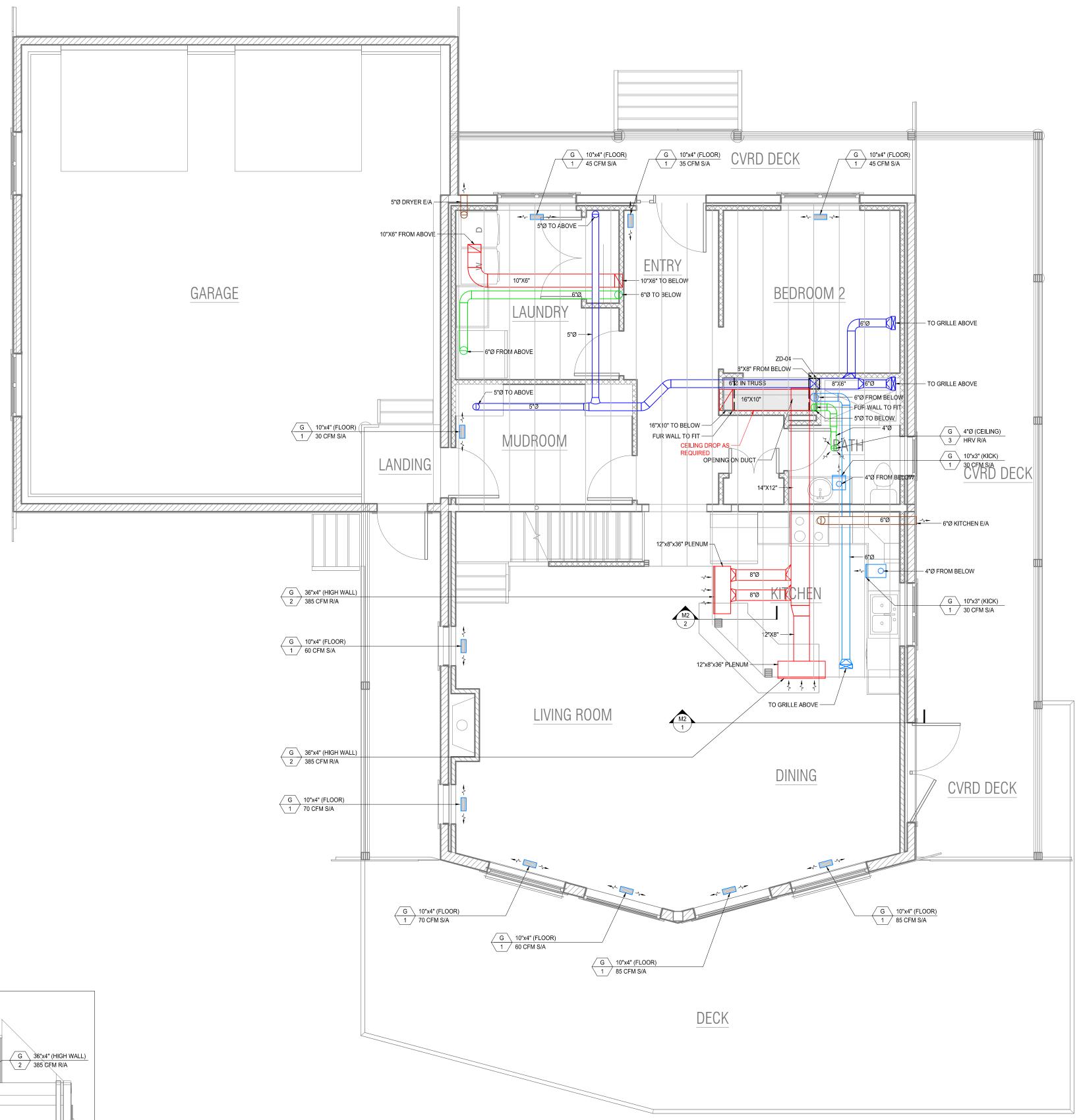
- 10.1 Heat Recovery Ventilator is Venmar ECM E15 HRV with central Electronic Controllers.
  (1)HRV unit shall be mounted on racks with vibration isolation pads, located in crawlspace.
  (2)HRV intake and exhaust duct to/from exterior to be insulated by Mechanical Contractor.
- (3)Use Eneready Speedi-Sleeves and Elbows where applicable.
  (4)Balancing shall be conducted as per manufacturer's instructions, and one copy of balancing report will remain within mechanical room in readable condition and protected from dirt or moisture.
- 10.2 All exhaust provided by Panasonic ceiling fans, located as per drawings.
- 10.3 Range Exhaust and Dryer Venting(1)Range exhaust hood size and style TO BE DETERMINED.(2)Dryer venting to outdoors.
- 10.4 Make-up Air TO BE DETERMINED based on if any NAFFVA (Naturally Aspirated Fuel Fired Vented Appliances) is present in the building.
- 10.5 All NAFFVA (Naturally Aspirated Fuel Fired Vented Appliances) shall have passive fresh air inlet from outside terminated as close to combustion as possible.

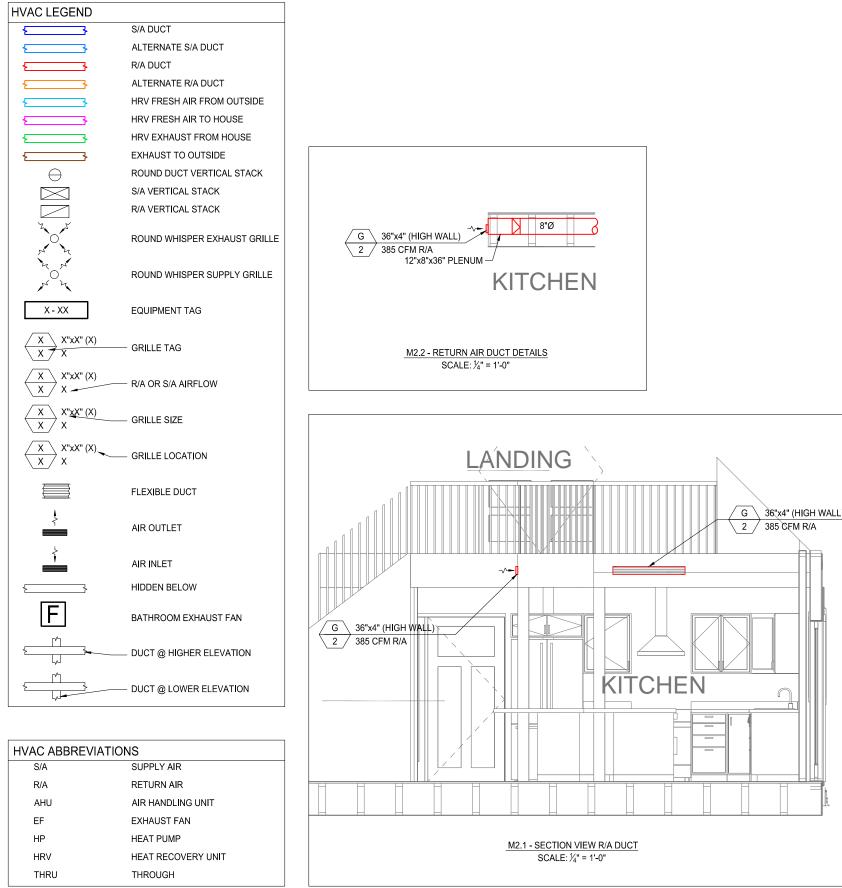
DESIGNS HEREIN AND INSTALLATION SHALL COMPLY WITH ALL RELEVANT SECTIONS OF BCBC 9.32 and 9.36.

END OF SCOPE OF MECHANICAL WORK

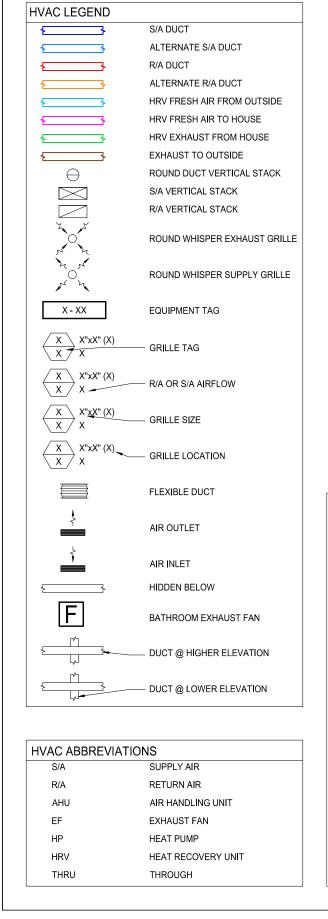
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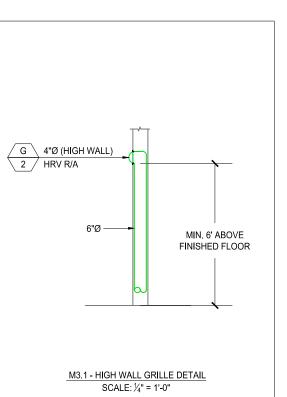
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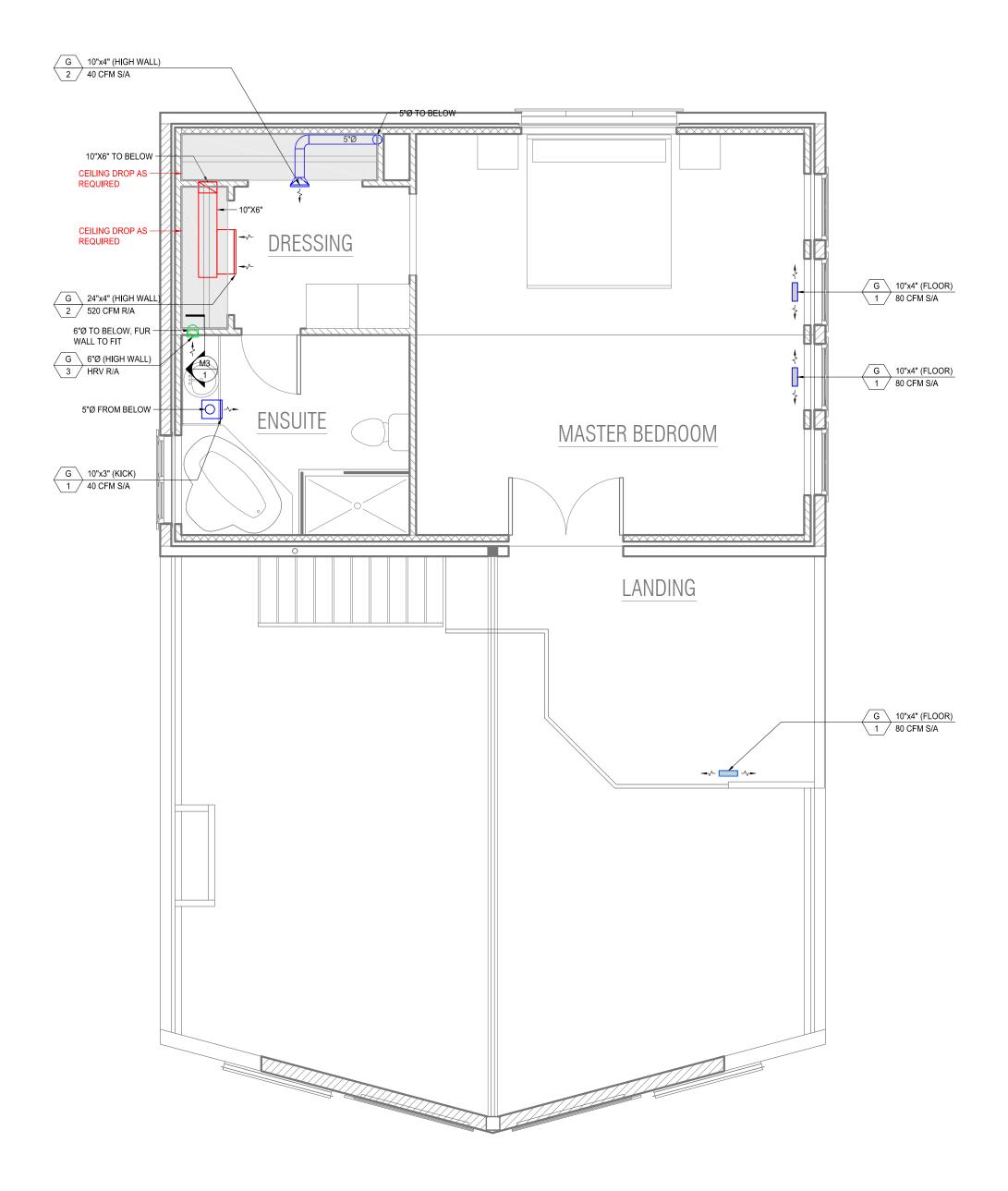




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