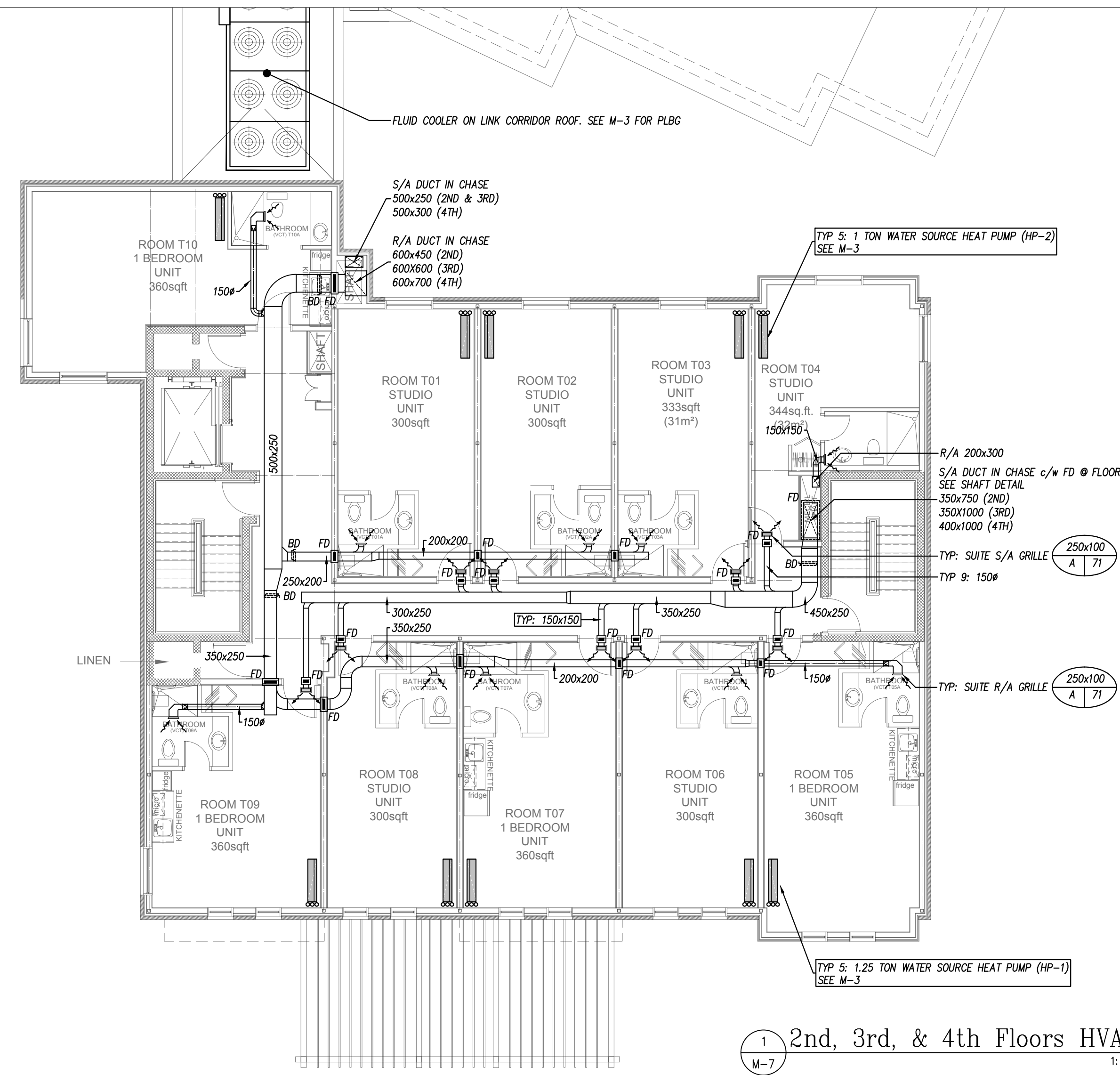
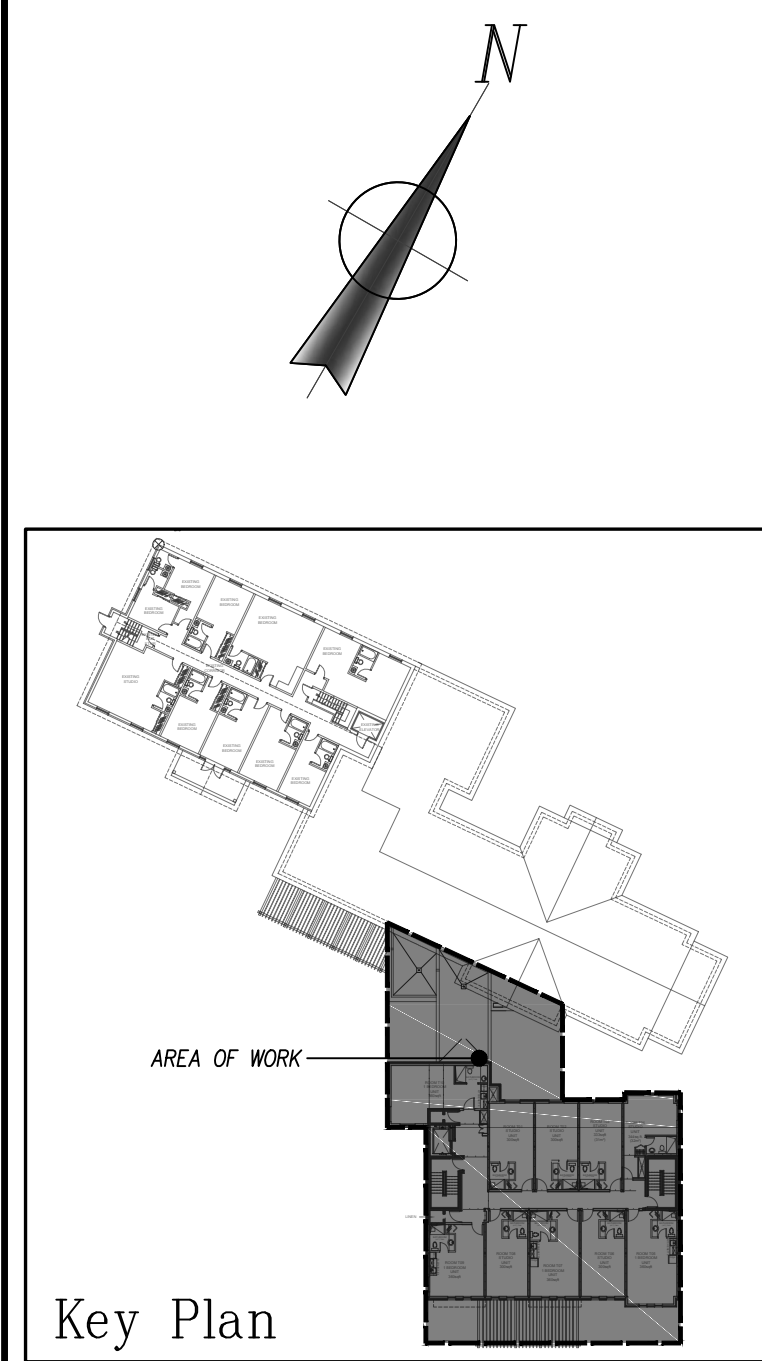


2 Attic HVAC
M-7 1:100



1 2nd, 3rd, & 4th Floors HVAC
M-7 1:100

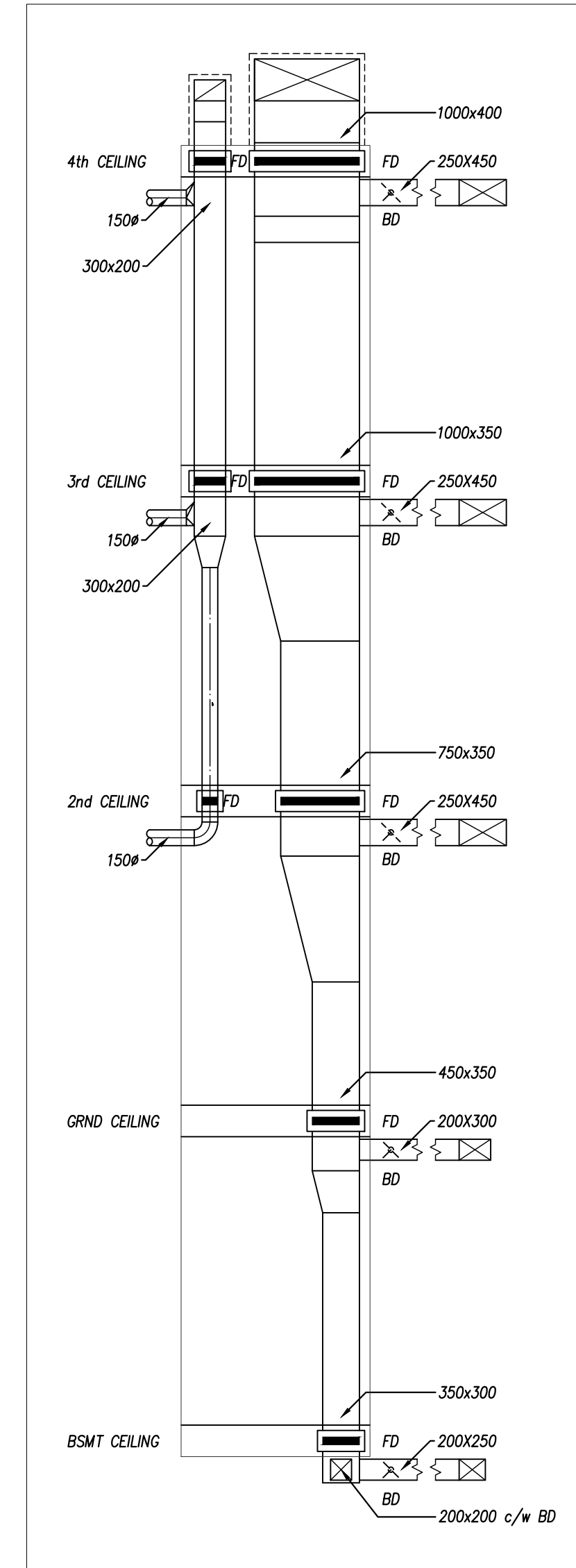


Key Plan

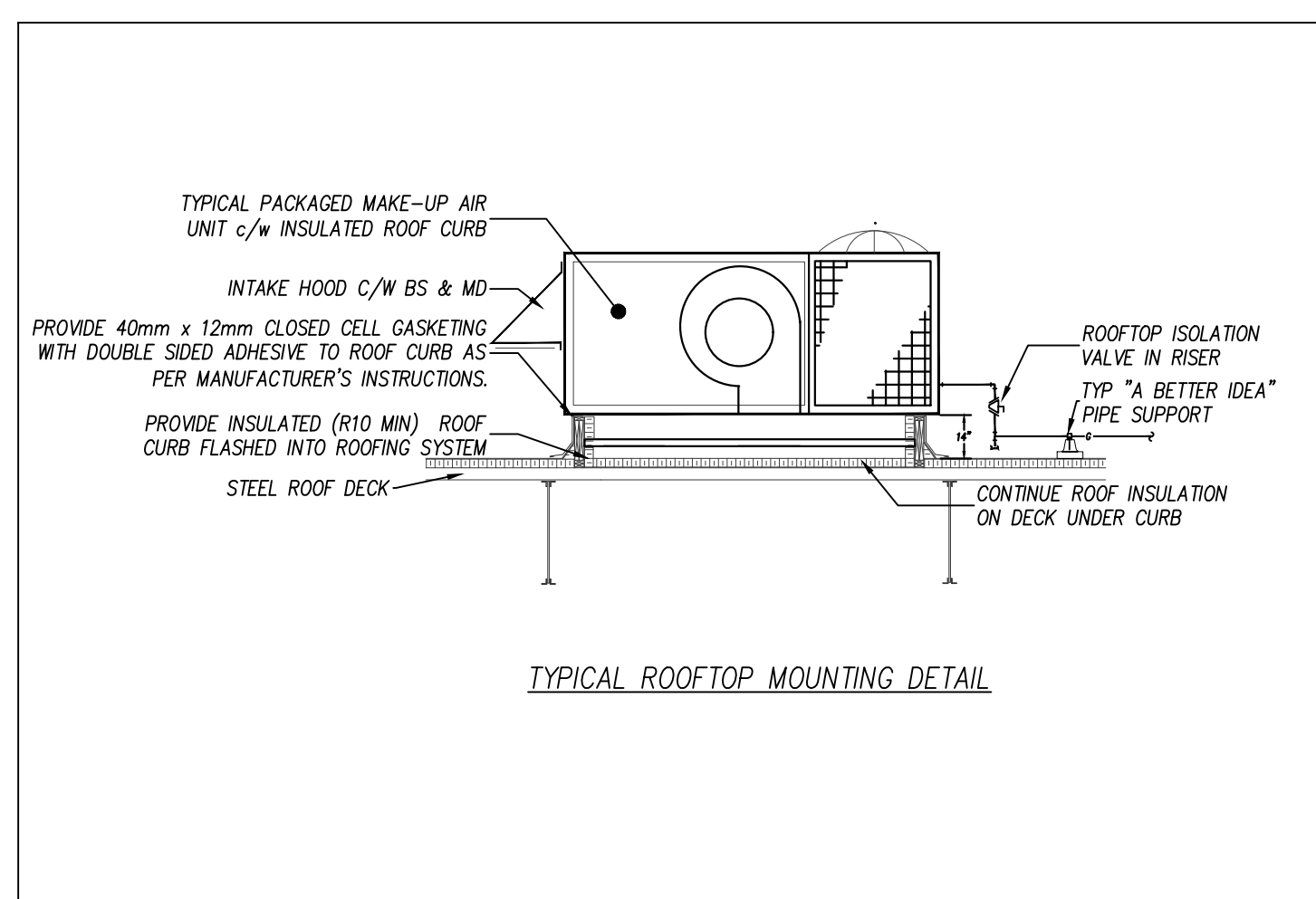
Mechanical Specifications Cont'

- HVAC**
- 51. Duct Work:**
- Ductwork shall comply with ASHRAE (medium pressure standards), SMACNA and ICCM details and recommended practices.
 - All Supply, Return and Exhaust ductwork: Provide radiused elbows and take-offs (r/D=1 min) unless turning vanes are provided.
 - At supply and return connections to roof top units, provide full radius fittings from vertical to horizontal runs, preferably with size transition just below the curb.
 - Bull head fittings, short and zero inside radius elbows (except where turning vanes are used) are entirely unacceptable and must be replaced at the Contractor's expense.
 - Do not re-organize ductwork layouts (indicated on the drawings) without written approval from the Engineer.
 - Tape and seal all supply air ductwork.
 - Install the ductwork free of pulsation and chatter and make any repairs required when system is commissioned.
- 52. Fire Dampers:**
- Do work in accordance with CAN4-S112-M82 (R1987), Fire Test of Fire Damper Assemblies, except where specified otherwise.
 - Fire dampers: listed and bear label of ULC meet requirements of provincial fire authority.
 - Mild steel, factory fabricated for fire rating requirement to maintain integrity of fire wall and/or fire separation.
 - Top hinges, multi-blade hinged or interlocking type; sized to maintain full duct cross section.
 - Fusible link actuated, weighted to close and lock in closed position when released or having negator spring closing operator for multi-leaf type in horizontal position with vertical air flow.
 - 40 x 40 x 3 mm retaining angle iron frame, on full perimeter of fire damper, on both sides of fire separation being placed.
 - Provide access doors into ductwork to permit re-setting of fire dampers. Contractor shall demonstrate that the fire damper can be reset through the access door provided by an average sized serviceman.
 - Install in accordance with NFPA 90A-1985 and in accordance with conditions of ULC listing.
 - Maintain integrity of fire separation.
 - After completion and prior to concealment obtain approvals of complete installation from authority having jurisdiction.
 - Install access door adjacent to each damper.
- 53. Fire stopping:**
- Retaining angles all around duct, on both sides of fire separation.
 - Fire stopping material and installation must not distort duct.
- 54. Duct Insulation:**
- Acoustic insulation:
 - Maintain the inside duct dimensions on the drawings by increasing the duct sizes to accommodate the insulation where required.
 - Natural cotton fiber or rigid board glass fiber duct liner acoustic/thermal (R=2) duct liner with air side factory coated with black fire resistant and abrasion resistant liner over 100% of the exposed surface.
 - Microbial resistant (complying with ASTM G21 and G22) and moisture resistant (ASTM C1104) with a flame spread and smoke development rating not exceeding 25/50 respectively without emitting toxic fumes (complying with UL 181 and NFPA98A).
 - Thickness:
 - 25mm (1") thick insulation on interior of supply and return ducts within 3m (10 ft) of fans as indicated.
 - Std: Titus Enviroloc, Fiberglass Canada "Line Acoustic-R" or Ottawa Fibre Industries Series 48
 - Adhesive & Sealer:
 - To requirements of ANSI/NFPA 90A with same flame spread and smoke ratings as insulation.
 - Fasteners:
 - Weld or adhesive plated pins 2.0mm diameter, length to suit insulation with metal retaining clips, 32mm square.
 - Joint Tape:
 - Poly-vinyl treated open weave fiberglass membrane 50mm wide.
 - Thermal insulation:
 - Insulate rectangular ductwork with rigid insulation, pinned and fastened complete with foil jacket.
 - Insulate round ductwork with flexible insulation complete with foil jacket (except for flexible ductwork which shall be supplied with factory installed insulation).
 - Thickness:
 - Inside space: 25mm w/ installed R=0.74
 - Truss space: 75 mm w/ installed R=1.46
 - Std: Owens Corning Duct Wrap Type 75
 - Insulate exhaust ductwork with 25mm insulation, at least 1500mm from the outlet.

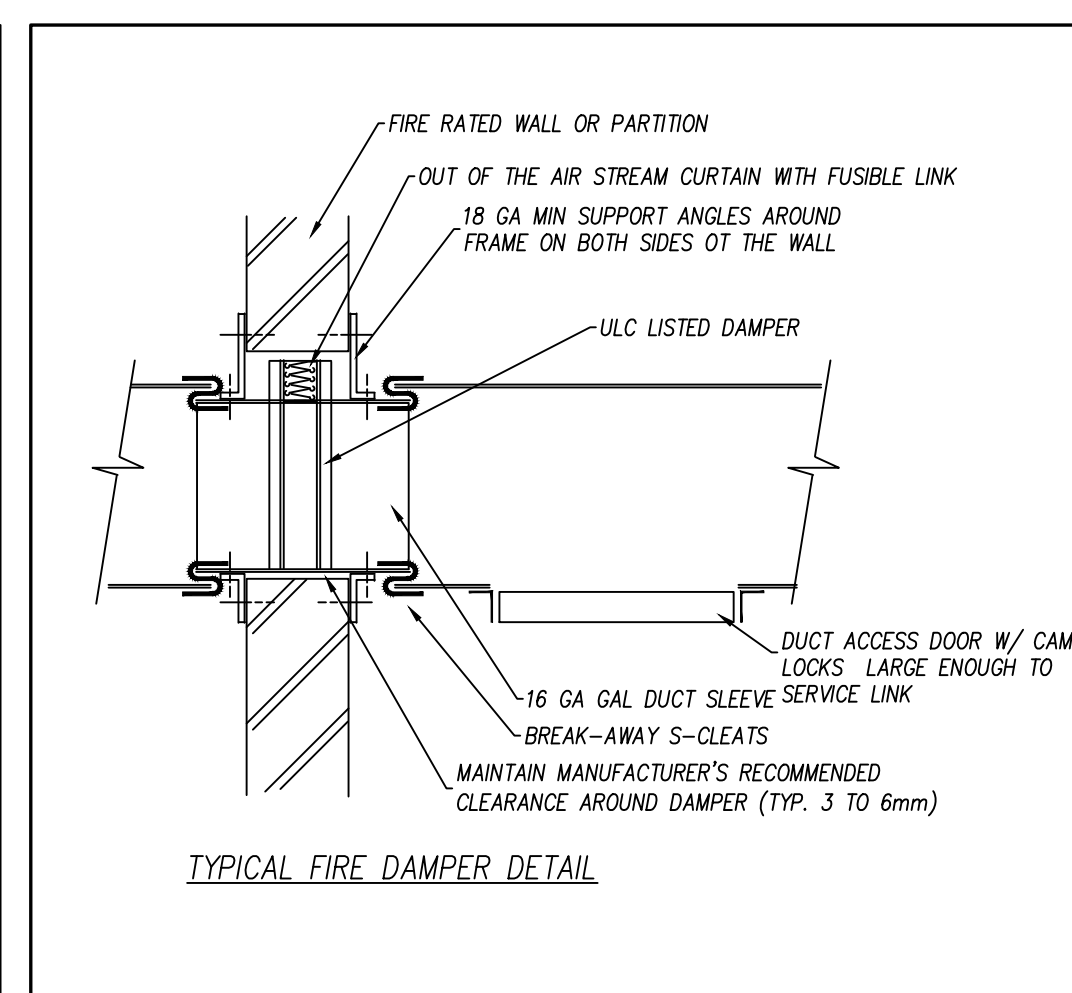
- 56. Flexible Connections:**
- Frame: galvanized sheet metal frame with fabric clamped by means of double locked seams.
 - Material: Fire resistant, self-extinguishing, neoprene coated glass fabric, temperature rated at minus 40°C to 90°C, density of 1.3 kg/m².
 - Length of connection: 100mm with min 75 mm installed clearance between frames.
- 57. Flexible Ducts:**
- Factory fabricated spiral wound flexible aluminum.
 - Minimum working pressure 2.5 kPa.
 - Maximum length in a branch run to a diffuser not to exceed 2 meters.
 - Provide nylon tie wrap around flex at connection to branch duct and sectional elbow at ceiling diffusers.
- 58. Provide New Diffusers As Follows:**
- Type "A"
 - Supply:
 - Aluminum, double deflection wall grilles with 20mm vertical blades parallel to the short dimension, 25mm border with separate mounting frame and baked enamel finish
 - Std: EH Price 620
 - Return:
 - Aluminum, fixed deflection wall grilles with 20mm spacing parallel to the long dimension, 25mm border with separate mounting frame and baked enamel finish
 - Std: EH Price 630
 - Type "B"
 - Four way, steel cone ceiling diffusers with OBD and pattern adjustment
 - Std: EH Price SCD4
 - Type "WMG"
 - Field fabricated wire mesh grill.
- 59. Transfer Fan:**
- TF-1:
 - Direct drive, backward inclined, plug type direct drive fan.
 - Capacity: 90 L/s & 75 Pa c/w high limit, line voltage 1'stat
 - Electrical: 120/1/60 with speed control
 - Std: Reversonatic RI-250
- 60. Packaged Heat Recovery Make-up Air unit (MUA-1):**
- Packaged gas fired unit complete with programmable controller, fan, heating and cooling sections for operation to -40 deg F. c/w 12" insulated, weatherproof, seismic roof curb.
 - Programmable Controller with adjustable discharge air temperature set point, heating/cooling/auto and fan switch, trouble and filter status indicators, mounted in ground floor admin office.
 - Statically and dynamically balanced belt driven fan with slide rails and isolators.
 - Casing: 18 Gauge galvanized sheet metal with baked enamel finish and neoprene coated 2" insulation with perforated metal liner for fan, coil and heating section. Include access doors with cam lock fasteners for service to all components.
 - Filter Section: As above less insulation complete with rack of 2" pleated, 30% ASHRAE efficiency replaceable filters and intake hood.
 - Direct expansion cooling system complete with hermetic compressors, refrigerant piping and accessories, coils, condensate drain and controls.
 - Heat Pipe:
 - 8 row, 8 FPI recovery coil c/w hermetically sealed refrigerant system to transfer heat from the exhaust to the supply air system, deostat lift and controller
 - Capacities:
 - Fan: 3776 L/s @ 187 Pa.
 - Cooling: 57 kW total @ 90/72 OAT, 75 IAT.
 - Heating: 278 kW input, 250 kW output.
 - Electrical: 208V/3ø/60 w/ unpowered GFI convenience outlet & WP disconnect.
 - Std: Engineered Air model FEW-143 cooling & DUX-100 heating.
- 61. Include the services of an air balancing company to verify and adjust the air quantities for the equipment shown.**



4 East Shaft Detail
M-7 1:50



TYPICAL ROOFTOP MOUNTING DETAIL



TYPICAL FIRE DAMPER DETAIL

10.		
9.		
8.		
7.		
6.		
5.		
4.		
3.	ISSUED FOR PERMIT, NEW BUILDING	Dec 18, 2014
2.	ISSUED FOR CLIENT REVIEW	Dec 15, 2014
1.	ISSUED FOR COORDINATION	Dec 12, 2014

NO.	REVISIONS	DATE

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29-Jul-15
PROJECT: Long Sault Villa
53 Long Sault Dr., Long Sault, On
DRAWING: 2nd, 3rd, 4th, Attic
HVAC

DATE	SCALE
29-Jul-15	As Shown
DRAWN BY: LNC	DESIGNED BY: JRB
JOB NO.: 2014-03	CHECKED BY: JRB
DRAWING NO.:	