MECHANICAL NOTES AND SPECIFICATIONS

GENERAL REQUIREMENTS FOR MECHANICAL WORK

1. SCOPE OF WORK
(a) The General Requirements of the Contract Documents, and the Supplementary Requirements for Mechanical Work, shall form an integral part of this Specification.
(b) This General Specification shall apply to and form a part of each of the sections covering Mechanical and Electrical Trades work.

2. RESPONSIBILITY OF BIDDERS
(a) Each Contractor before tendering, shall attend and examine the site, the Architectural, Structural, Mechanical, Electrical and any other relevant documents, and fully familiarize himself with the designer's intent, so that the tender price will include everything necessary for the proper completion of the work in accordance with the intent of the documents. Obtain the approval of the Engineer, Architect and Project Manager before any alterations to the work indicated.
(b) Ensure that all products and materials necessary for the execution of the contract can be brought into the spaces where they are to be located, either through specified openings or partially assembled. Any cutting or restoration work required, due to failure to accomplish this, will be the responsibility of this contractor.
(c) Bidders shall not rely on any verbal clarification of the drawings or specifications. Any questions or clarifications shall be referred to the Engineer at least five (5) working days prior to completion of bidding to allow for issuance of an addendum.
(d) Delivery, storage and handling of materials and equipment is the responsibility of the contractor.
(e) All materials removed become the property of the Contractor and must be disposed of in conformance with municipal, provincial, federal and Workers Compensation Board requirements.
(f) If conflicts occur between mechanical drawings and applicable codes or the requirements of the local authority having jurisdiction, the latter requirements shall govern.

3. RELATIONSHIP TO OTHER TRADES
(a) The Contractor shall confer with other trades working in the area, to ensure that his installation will be the result of co-operation between all parties. All devices must be accessible for service, and the recommendations of the equipment suppliers shall govern.
(b) Ensure that all work will be installed within the prescribed limited of the building, such as ceiling heights, and notify the General trade of any requirements for inserts, sleeves, openings, curbs and bases in sufficient time to have the items completed in the normal course of construction.
(c) Confirm with the Electrical trade, the available electrical power supply characteristics, before finalizing equipment orders. No compensation will be allowed to change any device due to this contractor's failure to verify the supply.
(d) All newly installed piping, ductwork, or equipment must have a minimum clearance of 3" from underside of roof decking.

4. SUBMITTAL / SHOP DRAWINGS AND ALTERNATIVE EQUIPMENT
(a) This review is for General conformity only and does not relieve the supplier and/or subcontractor from providing the necessary product(s) to meet the design intent.
(b) Provide electronic copies of submittal/shop drawings for each piece of equipment to be used in construction to the Engineer for review. The contractor shall verify that the submittal/shop drawings correctly identify the equipment that will be supplied, that the equipment will fit the space allotted, and perform the service intended.
(c) Before submission, all submittal/shop drawings must be checked for accuracy and the inclusion of all necessary details such as: project identification, item labels (tags), clear indication of which item is being submitted (e.g. Model) and all associated accessories or features associated with the submission. Shop drawings/submittals without this information and that are confusing, unclear, or ambiguous will be rejected and returned as not approved.
(d) Equipment described either generically or by brand name is to establish the minimum standard required for the installation. Alternative equipment may be suggested by the bidder, but the equivalence shall be determined by the Engineer. Bidders must tender on the basis of the specified equipment, and if alternatives are proposed, they will be considered on their own merits, after the close of tenders. Any lowering of the price based on alternative suppliers will be permitted with the savings being passed to the Owner.
(e) Any equipment installed without prior acceptance shall be subject to rejection.

5. CONSTRUCTION SUPERVISION
(a) All work shall comply with the governing Codes and local requirements. Any items required to accomplish this, whether explicitly noted or not, shall be provided.
(b) Where the Authority Having Jurisdiction (AHJ) person requests items not deemed to be included, the matter shall be immediately referred to the Engineer for a ruling. No extra will be considered if the work done by the Contractor to satisfy such a request, could have been avoided by discussion between the Inspector and the Engineer.
(c) Provide notice to AHJ as required for the progress of the project, and ensure that such inspections are carried out, before work is covered.
(d) Any changes or alterations required by AHJ shall be rectified at the contractor's cost.
(e) During the course of construction, the Engineer will conduct field reviews as deemed necessary to confirm compliance with specifications.
(f) The Contractor is to contact the Engineer a minimum of 48 hrs prior to concealing any piping and ductwork to determine if a field review is necessary and prior to performing any testing procedures to allow the Engineer to witness test.

6. CERTIFICATES, PERMITS AND FEES
(a) Obtain all required permits, and pay all inspections fees, except where specifically noted to the contrary.
(b) Furnish to the Owner any certificates that may be necessary as evidence that the work as installed conforms to all the laws and regulations of those authorities having jurisdiction. Before final certificates are issued, make these alterations that are required by the authority having jurisdiction, and accepted by the Engineer as a law, or regulation that should have been followed by the contractor.

7. GUARANTEE
(a) Guarantee all material and workmanship for a period of two (2) years from the date of certified substantial completion by the Owner, or his authorized agent. This shall not supersede any warranties for specific items of equipment, which may be for a longer term. This warranty shall be in writing and shall include written copies of factory warranties.
(b) The cost of repair of damage to any other work, caused by the failure of either material or workmanship within the period covered by the guarantee noted in (a) shall be included in this warranty.
(c) Where equipment is put into operation prior to completion of the work the period of guarantee covering such equipment shall still commence as noted in item 8(a) above. The putting into operation of any equipment prior to completion of the work shall only be with written approval of the Engineer and Owner. No equipment shall be started up without first ascertaining that all systems and services associated with its operation are functioning and that responsibilities for equipment maintenance have been arranged.

8. DRAWINGS
(a) The drawings produced by the Engineer are intended to be diagrammatic. They are not intended to show every item in its exact location, the exact dimensions, or all the details of the equipment. The contractor shall verify the actual dimensions of the equipment proposed to ensure that the equipment will fit in the available space with adequate space for maintenance.
(b) The drawings are issued for the express purpose of obtaining tenders for the work and for the erection of the systems described in the scope of work to be done. Unless specifically shown, the responsibility for the installation and workability of the system(s) rests with the Contractor.
(c) Drawings, specifications, diagrams and schedules are complementary, each to the other, and what is required by one, to be binding as if required by all.
(d) Should any conflict or discrepancy appear between documents, which leaves doubt as to the intent or meaning, obtain guidance or direction from the Engineer. Where necessary, the Contractor shall prepare interference drawings to ensure that the installation will be coordinated with all services to be installed in the area. The Engineer and other Professionals of Record may be required to approve of these proposals.
(e) Install piping, conduit or wire conductors and fixtures not shown or indicated diagrammatically in schematic or riser diagrams, to result in an operational assembly or system. Install components to physically conserve headroom, to minimize furring spaces, or obstructions. Locate devices with primary regard for convenience of operation and usage.
(f) Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or perceived additional work, beyond work described, notify the Engineer.
(g) The contractor shall refer to the architectural edge of slab drawings for the exact location of equipment, fixtures and penetrations. Engineering drawings provide the general design intent and are therefore not dimensioned. Refer to architectural drawings for dimensions.
(h) It is the contractor's responsibility to record red lines on the construction drawings and plans. The contractor shall convert the record drawings to electronic AutoCAD (latest version) drawing format and provide a copy to the Engineer and Owner.

9. RESPONSIBILITY AND LIABILITY
(a) Notify the Engineer of any discrepancies for inconsistencies and abide by the decision of the Engineer. Failure to notify the Engineer will not relieve this Contractor of the responsibility to provide a fully working system.
(b) This contractor shall correct any deficiencies noted by the owner or engineer of record at the contractor's cost.

10. OPERATOR TRAINING AND INSTRUCTIONS
(a) Provide complete operating and Maintenance instructions for all equipment supplied, complete with parts lists and the names of the suppliers.
(b) Provide a written description of the systems and the operating characteristics, for use by the system operators/maintenance personnel, and to instruct the users how to set thermostats, fan control switches, etc. Consult the Engineer when preparing this instruction sheet, to ensure that the system will be operated as intended.

11. ELECTRICAL WIRING AND CONTROLS
(a) All power wiring for all mechanical equipment shall be done by Division 26 - Electrical, except where specifically noted otherwise.
(b) All electric heaters to be supplied and installed by Division 26 - Electrical.
(c) The Mechanical division shall provide all starters, relays, control devices, and any built-in safety switches. The Electrical will provide all field-mounted safety disconnects.
(d) The Mechanical division shall provide all connections and wiring for controls, and interlocks (control wiring).
(e) All electrical devices shall be Canadian where possible and all motors up to 1/3 HP shall be single phase, larger motors 3 phase, except as noted. CONFIRM ALL ELECTRICAL CHARACTERISTICS ON SITE.

12. COMPLETION, TESTING, BALANCING AND ADJUSTMENTS
(a) Certify to the Engineer that all systems have been completely installed per the documents, set in operation, and adjusted to the requirements of the project.
(b) Provide a Balancing Report for all air and hydronic systems, which has been prepared by an INDEPENDENT Testing company approved by the Engineer. Record model and serial numbers for all equipment on report.
(c) Replace all filters, and any indicator lights that have burned out, and lubricate all rotating devices immediately prior to turn over to the Owner or his agent.
(d) Touch up or repaint as necessary, all scratches or other finish defects, that have occurred on any devices supplied under this contract.

13. ACCESS DOORS AND FIRE STOPPING
(c) Provide adequately sized access doors to permit servicing of any mechanical device, cleanout, check valve, etc. The doors will be installed by the Trade providing the surface where the door is to be located. This Contractor shall be fully responsible for accurately locating the door, considering all obstructions.
(d) Provide sleeves for pipes passing through walls and floors where pipe movement is possible. Use Schedule 40 pipe sections for masonry walls, large enough to accommodate pipe insulation. Floor sleeves through drainable floors shall extend up above the finished floor level.
(e) Fire stop all sleeves passing through fire separations with an approved fire stopping material, and make waterproof. Provide escutcheons for all exposed penetrations through walls, and floors as directed.

14. WORKMANSHIP
(a) Only first class workmanship will be accepted, not only with regards to safety, efficiency, durability, etc., but also with regards to the neatness of detail. All pipe work shall be lined up parallel, or at right angles to the building walls where possible. Equipment must be accurately set, plumb and level, and all hangers must be in true vertical alignment. In general, the entire work shall be first class and workman like and present a neat clean appearance upon completion.

PLUMBING AND DRAINAGE

1. WORK INCLUDED
(a) This Contractor shall do all plumbing, drainage, and fire protection work, including all underground services within the building lines, except where specifically noted otherwise. Work to include all Domestic and DWV testing as required by OBC 7.3.6 and 7.3.7. Remove all obsolete piping from the site, and cap all unused services.

2. SERVICE CONNECTIONS
(a) Provide all work from the existing service connection points and coordinate on site exact locations of any existing service points with Site Engineer as to the exact location. Start all drain work at the connection point to ensure that connection provided by the existing service will be at an elevation equal to or lower than the design.

3. DRAINAGE SYSTEMS
(a) Provide complete drainage systems as shown on the drawings and/or modified as required, all as noted.

4. PIPE AND FITTINGS FOR PLUMBING AND DRAINAGE
(a) Unless otherwise noted, all buried drainage pipes shall be SDR-35 or acceptable alternative piping as noted below. When located on unstable soil, special bedding in reinforced concrete shall be used.
(b) All above ground domestic water piping shall be Certified copper type "L", CPVC certified to CAN/CSA-B137.6 for CPVC Pipe and Fittings for Hot and Cold Water Distribution Systems (IPEX AquaRise or equal alternate), or PEX-A certified as a system by CSA conforming to CAN/CSA B137.5 (Uponor or equal alternate) piping can also be used where permitted by local codes. Drain, waste and vent piping shall be IPEX System 15 or IPEX System XFR (or equal alternate), see specifications below. Where piping runs in return air plenum or penetrating through fire rated wall, piping shall be copper, Uponor PEX-A, cast iron hubless (MJ) depending on size, or System XFR, see specifications below. All rain water leaders shall be hub & spigot cast iron with caulked joints and hub support at each floor, or System 15 or System XFR (or equal alternate), see specifications below

"Sanitary and Storm Drainage System"
Pipe and Fitting Requirements:
(O.B.C. 3.1.5.16 Combustible Piping Materials)
In compliance with the Ontario Building Code 7.2.5.12, this pipe and fitting system shall be Tested and Certified to CAN/CSA-B181.2 for Drain, Waste and Vent applications. In addition, in compliance with the requirements outlined in the O.B.C. 3.1.5.16, when installed in buildings Classified as Low-rise non-combustible, this pipe and fitting system shall be Tested and Listed to CAN/ULC-S102.2-M and have a "flame-spread rating" not more than 25 (IPEX System 15 or equal alternate). Further, when installed in plenums as noted by O.B.C. 3.6.4.3 (1a) or buildings Classified as High Building as noted by O.B.C. 3.2.6 or parking garages, this pipe and fitting system shall also have a smoke developed classification not more than 50 (IPEX System XFR or equal alternate).

(c) All sewer lines shall be graded as shown on the drawings and inside the building drains shall be sloped at not less and 1%, except where noted. Flush all water lines after installation.
(d) Label all piping with acceptable identification system. All valves to be tagged and all equipment to be identified with Lama-cold Labels (and matching electrical disconnect switch where applicable). All identification to be neat and legible and agree with labels in maintenance manuals. Provide sufficient identification markers & arrows for easy identification of all piping in any location.

5. ROOF AND FLOOR DRAINS
(a) All floor drains shall be cast iron floor drains complete with sump, adjust-to-level strainer, and double drainage flange with weeper holes and primer connection. Strainers shall be polished bronze 130mm diameter in all areas. Floor drains for wet areas with membrane floor finish such as "Altro" shall have membrane clamp integral with the drain and strainer as above.
(b) All floor drains shall be primed and vented to Code requirements through the use of a proper trap seal primer device. Certified trap guards acceptable in place of trap seal primer if accepted by AHJ. Suggested trap primer make P.P.P Inc., model # PO-500 automatic trap seal primer valve, serving individual or remote area drains with 1/2" (12.7mm) NPT connections with strainer and integral backflow preventer and vacuum breaker.

6. VALVES
(a) Provide isolation water valves for each fixture, group of fixtures, and each main.
(b) Valves shall be certified for the use, and minimum 150 psi pressure rated, except where noted otherwise.
(c) Wall hydrants or hose bibs shall be with detachable key and with inside stop and waste valve located in common area.
(d) Wherever isolating valves are located behind wall finishes, provide suitably sized access doors in the proper location to permit access.

7. PIPE SUPPORTS
(a) Provide necessary hangers, rods, concrete inserts and supports to properly secure piping and ensure that required grading is maintained, vibration is minimized, and to provide for movement due to expansion and contraction and to protect against movement due to earthquakes.
(b) Pipe supports shall be provided at maximum 8' intervals, more frequent intervals for smaller sizes. Where structural members are not spaced accordingly, provide intermediate support members as required.
(c) Hangers shall be clevis type with threaded rod supports fastened into the structure. Isolate pipe from hanger where dissimilar materials exist such as copper on steel or aluminum hanger straps. Perforated strap material shall not be accepted under any circumstances. Where hangers are supporting large diameter pipes subject to lateral movement provide spring isolation.
(d) Vertical piping shall be supported at each floor, and all elbows at the bottom of, or offset in stacks shall be independently supported to eliminate longitudinal force in the MJ clamp. Use riser clamps to fasten the pipe, and isolate the clamp from bearing on concrete with neoprene pads.
(b) Where supported pipe is insulated the hangars are either to support the pipe around the outside of the insulation with a sheet metal sleeve surrounding the lower half of the insulation or alternately, the insulation is to be completely enclosed around the hangar (where acceptable to the Engineer). Where dissimilar metals are used, an approved wrap/covering of the hangar/support must be used.

8. EXPANSION COMPENSATION
(a) Make adequate provision for pipe expansion through the use of pipe loops with anchors at the appropriate points, expansion joints and use swing offset take-offs at each branch.
(b) Make sure that pipes are free of structure so that they can move without noise.
(c) Provide anchors in all horizontal piping networks to constrain overall movement, and prevent branch breakage.

9. EXPANSION TANKS
(a) Install all expansion tanks with an isolation valve and with a drain installed between the isolation valve and the expansion tank (to allow for isolating tank and checking pressure of tank charge).
(b) The contractor is responsible for setting/adjusting the pressure of the charge in all expansion tanks to suit the system pressure being connected into. The contractor is to isolate the tank and open the drain to ensure that pressure of expansion tank charge is being measured/set (as per manufacturer's recommendations) and not the piping system pressure.
(c) All domestic hot water expansion tanks to be ASME rated (unless otherwise noted) with tank pressure selected to suite the system pressure required, and tanks to be suitable and rated for domestic water application.
(d) Install all tanks to the manufacturer's recommendations including installing at acceptable tank angle for proper operation.

10. CLEANOUTS
(a) Provide cleanouts at every change in direction, ends of lines and wherever else in necessary for the proper maintenance of the drainage system. Cleanout spacing shall not exceed 50' on all pipe sizes up to 4" and 100' for larger sizes.
(b) Extend all cleanouts in buried drains up to the floor level, and provide bronze screw cap, or special cover for tile or carpet insert as directed on site. Clarify with the Architect prior to ordering.
(c) For stack cleanouts, provide Barrett style at the base of the stack, and ensure accessibility by locating cover on proper side of stack. Provide access door as required.

11. TRAPS AND VENTS
(a) Provide every fixture and drain with a proper trap and vent as required by the Code. Provide certified flashing cone fitting for each vent penetrating the roof.

12. SHOCK ABSORBERS
(a) Provide "shockstops" at the top of all risers, and in the water piping, hot and cold, at each group of fixtures.

13. DOMESTIC HOT WATER SYSTEM
(a) Provide system as shown on the drawings, complete with all required fittings, pumps, tanks, and heaters etc. Vents will be provided by Heating Contractor.
(b) Recirculation System: All piping to be minimum ¾" in size, designed and operated at 2fps in velocity as well as under 140°F in temperature.

14. PLUMBING FIXTURES
(a) Refer "Plumbing Fixture Connection Schedule" for specifications
(b) Provide plumbing fixtures and trim and as shown on the plans. This Contractor shall also obtain a copy of the latest Architectural and Interior Design plans for exact type and quantity of plumbing fixtures. Any discrepancies between the plans are to be reported to Engineer at once.
(c) Provide thermostatic mixing valve on all lavatory and sinks when not on main hot water supply. "Lawler" # TMM-1000 Mechanical Mixing Valve with Thermostatic Limit Stop, with temperature adjustment dial and with integral back checks. Set valve temperature at 115º F (46º C), shut-off temp. at 120º F (48.8º C). Mixer installed in H & CW supplies to provide tempered water to hot side of faucet.
(d) All fixtures shall be new and free from flaws or blemishes. All finished surfaces shall be clear, smooth and bright and guaranteed not to craze, colour or scale. All visible parts of all fixtures including faucets, escutcheons, of the trimmings wastes, strainers, traps, supplies, etc., shall be chrome plated unless otherwise noted.
(e) Fixtures shall be complete with all accessories, supplies, frames, all hangers, etc. Fixtures shall be accurately installed to structure and lavatories shall be supplied with steel brackets accurately attached to masonry walls.

15. PIPE INSULATION
(a) Compliance: Materials shall conform to Flame Spread and Smoke Developed requirements of the Ontario Building Code. Pipe Insulation shall be Greenguard Certified
(b) All exposed domestic water piping shall be insulated with thermal cell insulation.
(c) All domestic hot water piping shall be insulated as per ASHRAE 90.1-2013.
(d) All horizontal storm piping located in ceilings to be insulated the full length of the horizontal pipe to limit potential damage due to condensation as per OBC 7.3.5.6. Protection from Condensation.

16. PIPE SLEEVES
(a) Provide sleeves for all piping passing through walls or floors of a sufficient size to accommodate insulation.
(b) Sleeves for wet floors shall extend 6" above the floor level to prevent water damage to the insulation.
(c) Installer shall provide fire-stop systems for all piping, at all penetrations through fire-rated separations tested and listed in accordance with CAN/ULC-S115.

17. ACCESS PANELS
(a) Access panels to be 8"x8" for clean-out access and for hand entry (provide larger where required for appropriate access, to allow for full range of movement, etc.). Doors to open 180 degrees, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps. For special areas such as tiled or marble type surfaces use stainless steel with brushed satin or polished finish. For other areas use prime coated steel.
(b) Access panels required in fire partitions/separations shall be U.L.C. approved suitable for the structure and orientation in which they are to be mounted.

HEATING, VENTILATING AND AIR CONDITIONING

1. WORK INCLUDED
(a) This contractor shall do all heating, ventilation and air conditioning work as shown on the drawings, including all required insulation, flue gas vents, and provision of any gas fired equipment.
(b) Provide all gas piping, thermostatic controls, interlocking devices, damper controls and wiring for them, except as may be specifically noted.
(c) Label all piping and all duct-work with acceptable identification system. All valves to be tagged and all equipment to be identified with Lama-cold Labels (and matching electrical disconnect switch where applicable). All identification to be neat and legible and agree with labels in maintenance manuals. Provide sufficient identification markers & arrows for easy identification of all piping in any location.

2. WORK NOT INCLUDED
(a) Power wiring to all equipment and provision of safety disconnects, EXCEPT where the piece of equipment comes with a built-in disconnect provided as a part of the package.

3. TESTING, START-UP AND GUARANTEE
(a) Start up all systems in conjunction with manufacturer's representative. Log all operating conditions such as temperature rise, air volume and pressure. Provide associated reports to the Engineer. Balance air systems to within 5% of design.
(b) Lubricate all equipment, change filters and any indicator lamps, and provide a warranty letter to the Owner recording the date of start and the duration of warranty.
(c) Warranty on all systems is one full year parts and labor, and an additional one year on all all refrigeration systems including labor.
(d) Performs tests on all piping as required by Authority Having Jurisdiction. Piping Tests as follows:
- Test hydronic piping systems to 1½ times maximum operating pressure.
- Test ground source field piping as specified in ground source specification.

4. HEATING & VENTILATING UNITS
(a) Provide units as shown on the drawings complete with discharge modulating thermostat with electronic modulation gas valve for smooth linear discharge temperature. As per NFPA 90A, units with air capacities of 2000 cfm or greater shall have smoke sensing device installed on the supply duct downstream of the air filters and upstream of any branch ducts, and wired to stop the system on activation. Provide factory standard high temperature cutoff limit, all to suit AGA requirements.
(b) Thermostat mounting height shall be 1,200 mm above finished floor as per OBC 3.8.1.5.(a)(i).
(c) Make sure that unit will not draw in air from exhaust fans or gas or plumbing vents. If this is a possibility, extend the vents to maintain 10 feet above the unit.

5. DUCTWORK
(a) Provide ductwork as shown and required. All metal shall be prime coat galvanized cold rolled steel with gauges and construction per SMACNA and ASHRAE standards.
(b) Where ducts are acoustically lined, duct sizes shown are net.
(c) Ducts shall be supported using angle iron trapeze hangers with threaded rod supports. 18ga. Strips are acceptable for ducts less than 18" longest side.
(d) Elbows shall be round throat where possible with one duct width radius. Square throat or back elbows shall only be used where space does not permit standard elbows and turning vanes shall be installed.
(e) All take-offs shall be fitted with manual balancing dampers to ensure proper balancing of airflows through all terminals. Manual balancing dampers to come with factory mounted locking hand quadrant and shall be expanded throat type, with exception of spin-in fittings which are acceptable for diffused branches.
(f) Flex ducts shall not exceed 3m (10 ft) in length, be supported every 5ft and shall not be used in lieu of rigid elbows or fittings. Where flex ducts connect to a diffuser, a metal elbow shall be mounted on the diffuser and connected to the duct, to provide equal flow out of the diffuser.
(g) Provide flex connections to all pieces of equipment, and where the unit is outside, provide a rain shield over the top of the connection. For exterior ducts, break the duct on top to provide positive rain shedding, and brace from inside if necessary.
(h) Supply duct or return ducts located in an unconditioned space or outdoors shall have all joints of the ductwork sealed to a Class A seal level in accordance with the SMACNA, "HVAC Duct Construction Standards – Metal and Flexible". (OBC 6.2.4.3.(11))
(i) Supply duct located in a conditioned space shall be sealed to a Class C seal level in accordance with the SMACNA, "HVAC Duct Construction Standards – Metal and Flexible". (OBC 6.2.4.3.(12))

6. DUCT INSULATION
(a) All exhaust ductwork (with the exception of kitchen exhaust ductwork) shall be externally wrap with 25mm (1") thick fiber glass vinyl jacket insulation for a minimum length of 6'-0" (1.8m) from exterior wall or insulated the entire length when passing through unheated space. Insulation sleeve may be used in place of aforementioned insulation if approved for application. Minimum insulation thermal resistance of RSI 0.5 required (OBC 9.32.3.10(3)).
(b) Intake ducts carrying un-tempered outdoor air shall be insulated as per values noted in O.B.C. Table 9.32.3.10A for associated outdoor design air temperature as per SB-1.
(c) All ducts handling outside air shall be insulated for the entire length of duct.
(d) Insulate all supply air and return air ductwork with 2" thick insulation c/w vapour barrier inside attic space (typical for all ductwork route throughout attic) to achieve a minimum thermal resistance of RSI 2.1 as per OBC 6.2.4.3(10)
(e) All exterior ductwork shall have 1" (25mm) mold proof acoustic insulation inside duct and shall be covered with 2" thick rigid thermal insulation c/w vapor barrier and covered with an overcalling of 26 ga. Galvanized steel, 22 ga. Aluminum or Aluma-Clad along the top and sides of the duct, and extending below the insulation but clear of water ponding on the roof. Tie the sections together to ensure stability of the final cladding. Provide all necessary supports for exterior ductwork before thermal covering is installed
(f) All ductwork from VVT terminal up to roof top Air conditioning unit shall be of medium pressure duct standard.
(g) All air conditioning ductwork shall be sealed with high pressure duct sealer.
(h) All supply ducts and return ducts located in an unconditioned space or outdoors shall be sealed to Class A seal level as per OBC 6.2.4.3(11)
(i) All supply ducts and return ducts located in a conditioned space shall be sealed to Class C seal level as per OBC 6.2.4.3(12).

7. HYDRONIC SYSTEMS AND PIPING
(a) Due to on-site conditions and slight changes to pipe runs, locations of air vents shown on drawings may need to be adjusted. Contractor to ensure air vent is installed on hydronic system at critical points in system as required.
(b) All condensate drain pans and equipment drain connections to be drained c/w p-trap as per manufacturer's recommendations. Install p-trap with vent on discharge side (as per manufacturer's recommendations).

8. HYDRONIC SYSTEM INSULATION
(a) Hydronic system components including but not limited to pumps, piping, tanks, vessels, heat exchangers shall be insulated to minimize condensation by keeping surface temperature above dew point of surrounding air and to minimize unwanted heat loss/gain of the HVAC systems as per ASHRAE Fundamentals 2017 Chapter 23. Equipment such as pumps and heat exchangers etc. shall be completely insulated with thermal blankets to minimize exposure to the surrounding environment.
(b) Insulation covering chilled-water piping, refrigerant suction piping, or cooling ducts located outside the conditioned space shall include a vapor retardant located the insulation (unless the insulation is inherently retardant), all penetrations and joints of which shall be sealed. All exposed insulated pipe to be finished with all service white paper covering (or other approved covering system). Exposed areas includes mechanical rooms, parking garages, exposed ceilings, storage areas, etc.
(c) Geothermal Heat Pump Piping: ½" (12mm) min. insulation on runouts up to 12' (3.65m) and 1"(25mm) or less diameter; 1" (25mm) min. insulation on all other piping.
(d) All piping, flexible connections, equipment connections, valves, etc in water source heat pump loop system must be insulated to prevent condensation. All insulation to have vapour barrier jacket.

9. FIRE DAMPERS
(a) Fire dampers shall be provided at each duct opening in a fire separation and the dampers shall be Listed types and installed in accordance with the Manufacturer's instructions.
(b) Access panels are required for each fire damper.

10. LOUVRES, GRILLES, DIFFUSERS AND REGISTERS
(a) Provide units as shown on the plans and listed in the schedule.
(b) Ceiling diffusers shall be adjustable pattern, lay-in style in off-white color to match ceiling grid. Each unit shall have a volume damper and where close to a wall provide additional blank-off baffles to prevent downdraft.
(c) Registers shall be double deflection, with front bars to suit throw pattern as listed on drawings, and be complete with OB damper. All ceiling registers shall have curved blades,except where noted otherwise, and all wall registers for corridor supplies shall be curved blade style.
(d) Return grilles shall be ½" aluminum grid for ceilings and steel, framed units with fixed 35 deg. bars for wall or ceiling installation with ducted return, complete with OB damper. Exhaust grilles same.
(e) Door grilles shall be single vane with frame on both sides.
(f) All wall grilles and louvres to be complete with bird screen

11. EXHAUST FAN
(a) Provide exhaust fans as shown on the drawings complete with back draft damper and control as listed.
(b) Roof mounted fans shall be provided with integral disconnect switch, and shall be mounted on a prefabricated curb with a neoprene insulation strip on top of curb, under the fan. For direct drive fans provide integral electronic speed control mounted under the cover.

12. GAS PIPING
(a) Provide all gas piping as shown on the drawings to the requirements of the National Fuel Code, most recent edition. Piping shall be welded for 2½" and larger sizes and where located in plenums or concealed spaces. Gas piping for Emergency Gas generators shall be protected by a 2hr. rated construction assembly or located in a service room of the same rating as per CSA 282 7.3.9.2 as required by the General Contractor
(b) Paint all exterior gas piping to Code and identify all interior gas piping as per CSA B149.1.
(c) Where higher gas pressures are used, provide pounds to inches gas regulators with internal relief, for each appliance or group and vent the relief to the exterior in a safe manner.

13. GAS FIRED HEATING APPLIANCES
(a) Provide gas fired furnaces, or other heating appliances as shown on the drawings, complete with approved venting system, controls and gas piping.
(b) Condensing units to be mounted on concrete slab pad. Refrigeration piping sized as per equipment manufacturer recommendation.

14. VIBRATION ISOLATION
(a) All mechanical equipment shall be mounted on vibration isolators to prevent the transmission of vibration and mechanically transmitted sound to the building structure. Vibration isolators shall be selected in accordance with the weight distribution so as to produce reasonably uniform deflection.

GENERAL INSULATION

MINIMUM PIPE INSULATION THICKNESS FOR HEATING SYSTEMS
(Steam, Steam Condensate, Hot Water, Domestic Hot Water)

Fluid Design Operating Temp. Range (°F) and Usage	Insulation Conductivity		Nominal Pipe or Tube Size (in)				
	Conductivity (BTU-in/hr-ft²-°F)	Mean Rating Temperature (°F)	<1	1 to <1½	1½ to <4	4 to <8	≥8
			Insulation Thickness (in)				
>350	0.32 to 0.34	250	4.5	5.0	5.0	5.0	5.0
251 to 350	0.29 to 0.32	200	3.0	4.0	4.5	4.5	4.5
201 to 250	0.27 to 0.30	150	2.5	2.5	2.5	3.0	3.0
141 to 200	0.25 to 0.29	125	1.5	1.5	2.0	2.0	2.0
105 to 140	0.22 to 0.28	100	1.0	1.0	1.5	1.5	1.5

Reference: ASHRAE 90.1-2013 Table 6.8.3-1

MINIMUM PIPE INSULATION THICKNESS FOR COOLING SYSTEMS
(Chilled Water, Brine, Refrigerant)

Fluid Design Operating Temp. Range (°F) and Usage	Insulation Conductivity		Nominal Pipe or Tube Size (in)				
	Conductivity (BTU-in/hr-ft²-°F)	Mean Rating Temperature (°F)	<1	1 to <1½	1½ to <4	4 to <8	≥8
			Insulation Thickness (in)				
40 to 60	0.21 tp 0.27	75	0.5	0.5	1.0	1.0	1.0
<40	0.20 to 0.26	50	0.5	1.0	1.0	1.0	1.5

Reference: ASHRAE 90.1-2013 Table 6.8.3-2

MINIMUM DUCT INSULATION R-VALUE
FOR SUPPLY AND RETURN DUCTS FOR HEATING AND COOLING

Climate Zone	Duct Location		
	Exterior [a]	Unconditioned Spaces and Buried Ducts	Indirectly Conditioned Space [b]
0 to 4	R-8	R-6	R-1.9
5 to 8	R-12	R-6	R-1.9

[a] Includes attics above insulated ceilings, parking garages and crawl spaces.
[b] Includes return air plenums with or without exposed roofs above. Return ducts in this duct location do not require insulation.

Reference: ASHRAE 90.1-2019 Table 6.8.2

DATE	NO.	DESCRIPTION	BY
MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS

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HUBBERT EME ENGINEERING
ELECTRICAL | MECHANICAL | ENERGY

LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
MECHANICAL SPECIFICATIONS

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	NTS
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-001

MECHANICAL SYMBOLS

MECHANICAL SYMBOLS

SYMBOL	DESCRIPTION
— SAN —	SANITARY BELOW GRADE
— SAN —	SANITARY ABOVE GRADE
— STM —	STORM BELOW GRADE
— STM —	STORM ABOVE GRADE
	WEEPER
— CHWS —	DOMESTIC COLD WATER ABOVE GRADE
— HWS —	DOMESTIC HOT WATER ABOVE GRADE
— CHWR —	DOMESTIC COLD WATER BELOW GRADE
— HWR —	DOMESTIC HOT WATER BELOW GRADE
— CHWS —	CHILLED WATER SUPPLY
— CHWR —	CHILLED WATER RETURN
— HWS —	HEATING HOT WATER SUPPLY
— HWR —	HEATING HOT WATER RETURN
— HPS —	HEAT PUMP LOOP SUPPLY
— HPR —	HEAT PUMP LOOP RETURN
— GLS —	GEOTHERMAL LOOP SUPPLY
— GLR —	GEOTHERMAL LOOP RETURN
— — — G/W —	NON POTABLE (GREYWATER) SUPPLY
— DR —	DRAIN LINE
— C —	CONDENSATE PIPE
— G —	LOW PRESSURE GAS LINE
— HG —	HIGH PRESSURE GAS LINE
— R —	IN FLOOR RADIANT PIPE
— VAC —	VACUUM LINE
— AIR —	COMPRESSED AIR LINE
	PRESSURE REDUCING VALVE (PRV)
	THERMOSTATIC MIXING VALVE
	BALL VALVE
	CHECK VALVE
PRV	PRESSURE RELIEF VALVE
TPV	TEMPERATURE AND PRESSURE RELIEF VALVE
	BACKFLOW PREVENTER
	PUMP
NFHB	HOSE BIB WITH CHECK VALVE
NFHB	HOSE BIB WITHOUT CHECK VALVE
NFHB	HOSE BIB WITH VACUUM BREAKER
	Y TYPE STRAINER
	UNION
	GAS PRESSURE REGULATOR WITH GAS COCK
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	WATER HAMMER ARRESTOR
G	GAS METER
M	WATER METER
FD FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
HD	HUB DRAIN
	SCUPPER
RD	ROOF DRAIN
	P-TRAP
	RUNNING TRAP
C.O. C.O.	FLOOR CLEANOUT
C.O.	WALL/CEILING CLEANOUT
	ELBOW UP
	ELBOW DOWN
	CAPPED PIPE
	SUPPLY DUCT
	RETURN DUCT
	FLEX DUCT
	EXHAUST FAN

	SUPPLY DIFFUSER - CEILING
	SUPPLY DIFFUSER - GRILLE
	SPIN COLLAR WITH MANUAL DAMPER
	EXHAUST AND RETURN AIR GRILLE - CEILING
	EXHAUST AND RETURN AIR GRILLE - WALL
	SUPPLY AIR DUCT UP - THROUGH SLAB
	SUPPLY AIR DUCT UP
	SUPPLY AIR DUCT DOWN
	RETURN AIR DUCT UP - THROUGH SLAB
	RETURN AIR DUCT UP
	RETURN AIR DUCT DOWN
R/A	BELLMOUTH RETURN
R/A	BELLMOUTH RETURN
	THERMAL INSULATION
	HEAT TRACED PIPE
X	PIPE ANCHOR
BDD	BACKDRAFT DAMPER
MD	MANUAL/BALANCING DAMPER
FD	FIRE DAMPER
CF/SD	COMBO FIRE AND SMOKE DAMPER
M	MOTORIZED DAMPER
S	OCCUPANCY SENSOR
T	THERMOSTAT
CO	CARBON OXIDE SENSOR
NO2	NITROUS DIOXIDE SENSOR
	CONCENTRIC VENT
	AIR TRANSFER DUCT
	AIR FLOW DIRECTION
	FORCED FLOW HEATER
E/HRV	ENERGY/HEAT RECOVERY UNIT
	INTAKE LOUVER
	WALL BOX
	CENTRIFUGAL PUMP
	UNIT HEATER
	VENT/COMBUSTION INTAKE PIPE UP/DN
	DOOR UNDERCUT
	WALL MOUNTED CIRCULATING FAN
A 2408 245	DENOTES: (24"X24") DIFF. FRAME SIZE DENOTES: (08) DIFF. NECK SIZE DENOTES: AIR QUANTITY (CFM) DENOTES: SUPPLY DIFFUSER TYPE
A 12X6 R/A	DENOTES: RETURN GRILLE SIZE DENOTES: RETURN GRILLE TYPE

FIRE PROTECTION SYMBOLS

	SUPERVISED O.S.&Y. VALVE WIRED TO FIRE ANNUNCIATOR PANEL (BY DIV. 16)
	CHECK VALVE WITH BALL DRIP
	UNION
	DRY VALVE WIRED TO ANNUNCIATOR PANEL (BY DIV. 26)
	WET VALVE WIRED TO ANNUNICATOR PANEL (BY DIV. 26)
FS.	FLOW SWITCH WIRED TO FIRE ANNUNCIATOR PANEL (BY DIV. 26)
P.G	PRESSURE GAUGE
P.S	PRESSURE SWITCH WIRED TO FIRE ANNUNCIATOR PANEL (BY DIV. 26)

NOTE: ALL STANDPIPE RISERS AND SPRINKLER MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS AND HYDRAULIC CALCULATION, ALL AT HIS COST. ALL IN ACCORDANCE WITH THE STANDARDS AS STIPULATED BY NFPA 13 REVISED TO DATE AND THE REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION.

ABBREVIATIONS

SYMBOL	DESCRIPTION
AAV	AUTOMATIC AIR VENT (VALVE)
ABV	ABOVE
AC	AIR CONDITIONING
ACCU	AIR-COOLED CONDENSING UNIT
ACH	AIR CHANGES PER HOUR
ACU	AIR CURTAIN
ACW	AFTER COOLER WATER
AD	AREA DRAIN
AFC	AUTOMATIC FLOW CONTROL
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATIVE
AP	ACCESS PANEL
AS	AIR SEPARATOR
APPROX	APPROXIMATE
ATD	AIR TRANSFER DUCT
AVG	AVERAGE
AWT	AVERAGE WATER TEMPERATURE
AXF	AXIAL FAN
B	BOILER
BBH	BASEBOARD HEATER
BD	BLOWDOWN
BDD	BACKDRAFT/PRESSURE RELIEF DAMPER
BF	BOILER FEED WATER
BG	BOTTOM GRILLE (3" - 12" ABOVE FLOOR)
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BV	BALANCE VALVE
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BR	BOTTOM REGISTER (3" - 12" ABOVE FLOOR)
BSMT	BASEMENT
CA	COMPRESSED AIR
CAP	CAPACITY
CC	COILING COIL
CCW	COUNTER CLOCKWISE
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CHR	CHILLER
CHWR	CHILLER WATER RETURN
CHWS	CHILLER WATER SUPPLY
CLG	COOLING OR CEILING
CO	CLEAN OUT OR CARBON MONOXIDE
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONN	CONNECTION
CONT	CONTINUOUS, CONTINUATION
CP	CONTROL PANEL OR CONDENSATE PUMP
CT	COOLING TOWER
CTE	CONNECT TO EXISTING
CU	CONDENSING/ER UNIT
CRU	CONDENSING RECOVERY UNIT
CU FT	CUBIC FEET
CV	CONSTANT VOLUME
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DRAIN OR DRYER
DC	DRY COOLER
DCW	DOMESTIC COLD WATER
DB	DECIBEL OR DRY BULB
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIFF	DIFFUSER
DHW	DOMESTIC HOT WATER
DS	DOWNSPOUT
DXC	DIRECT EXPANSION COOLING COIL
DEG.F	DEGREE FAHRENHEIT
DEMO	DEMOLISH
DG	DOOR GRILLE
DIAG	DIAGONAL
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
DX	DIRECT EXPANSION
E/P	ELECTRIC PNEUMATIC
EA	EXHAUST AIR
EAT	ENTERING EXHAUST TEMPERATURE
EBB	ELECTRIC BASEBOARD HEATER

EC	EXPANSION COMPENSATOR
EJ	EXPANSION JOINT
EG	EXHAUST GRILLE
EUH	ELECTRIC UNIT HEATER
EF	EXHAUST FAN
EL/ELEV	ELEVATION
EOM	END OF MAIN DRIP
ECWR	EQUIPMENT COOLING WATER RETURN
ECWS	EQUIPMENT COOLING WATER SUPPLY
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
ELEV	ELEVATOR
EMD	END OF MAIN DRIP (STEAM)
EMER	EMERGENCY
ENG	ENGINEER
ENT	ENTERING
EPUH	ELECTRIC PROPELLER UNIT HEATER
ERP	ELECTRIC RADIANT PANEL
ER	EXHAUST REGISTER
ERCP	ELECTRIC RADIANT CEILING PANEL
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETO	ETHYLENE OXIDE
EV	EXHAUST AIR VALVE
EVAP	EVAPORATOR
EVF	ELECTRIC FUME HOOD EXHAUST AIR VALVE
EVL	LAB EXHAUST AIR VALVE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
ER	EXISTING TO REMAIN
EXD	EXISTING TO BE DEMOLISHED
EXR	EXISTING TO BE RELOCATED
EXTG	EXISTING
EXT	EXTERNAL
(F)	FUTURE
F	FAHRENHEIT
F&T	FLOAT & THERMOSTATIC STEAM TRAP
FD	FLOOR DRAIN OR FIRE DAMPER
F. DPR	FIRE DAMPER
FA	FREE AREA
FC	FORWARD CURVED
FCU	FAN COIL UNIT
FF	FINAL FILTER
FFH	FORCE FLOW HEATER
FH	FUME HOOD
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FLT	FLASH TANK
FM	FLOW METER
FOB	FLAT ON BOTTOM
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FP	FIRE PROTECTION
FPB	FAN POWERED TERMINAL UNIT
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FPVAV	FAN POWERED VAV
FSD	COMINATION FIRE/SMOKE DAMPER
FSTAT	FREEZESTAT
FT	FEET
FTR	HYDRONIC FINNED TUBE RADIATION
FV	FACE VELOCITY
G	NATURAL GAS
GC	GENERAL CONTRACTOR
GA	GAUGE
GCWR	GEOTHERMAL CONDENSER WATER RETURN
GCWS	GEOTHERMAL CONDENSER WATER SUPPLY
GD	GRAVITY DAMPER
GPH	GALLON PER HOUR
GPM	GALLON PER MINUTE
GR	GLYCOL RETURN
GRD	GRILLE, REGISTER, OR DIFFUSER
GRL	GRILLE
GRV	GRAVITY RELIEF VENT
GS	GLYCOL SUPPLY
GV	GRAVITY VENTILATOR OR NATURAL GAS VENT
H	HUMIDISTAT OR HUMIDIFIER
HB	HOSE BIB
HC	HEATING COIL

HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER
HG	HOT GAS
HL	HIGH LIMIT
HORIZ	HORIZONTAL
HP	HORSEPOWER OR HEAT PUMP
HR	HOUR
HRC	HEAT RECOVERY COIL
HT	HEIGHT
HTG	HEATING
HW	HOT WATER
HTWR	HIGH TEMPERATURE WATER RETURN
HTWS	HIGH TEMPERATURE WATER SUPPLY
HUM	HUMIDIFIER
HWC	HOT WATER COIL
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INTERNAL OR INNER DIAMETER
IFB	INTEGRAL FACE AND BYPASS
IH	INTAKE HOOD
IN OR "	INCHES
IN W.C.	INCHES WATER COLUMN
IN W.G.	INCHES WATER GAUGE
INSUL	INSULATION
INT	INTERNAL
INV. EL.	INVERT ELEVATION
JW	JACKET WATER
KW	KILOWATT
KWH	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LDB	LEAVING DRY BULB TEMPERATURE
LF	LINEAR FEET
LPC	LOW PRESSURE CONDENSATE
LVG	LEAVING
L / LVR	LOUVER
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
M	MOTOR OPERATOR
MAINT	MAINTENANCE
MUA	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU/HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MERV	MINIMUM EFFICIENCY REPORTING VALUE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPR	MEDIUM PRESSURE CONDENSATE RETURN
MPS	MEDIUM PRESSURE STEAM (16 PSIG TO 59 PSIG)
MTD	MOUNTED
MS	MOP SINK
MUV	AUTOMATIC MAKE-UP VALVE
(N)	NEW WORK OR NEW EQUIPMENT
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NO2	NITROGEN DIOXIDE
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO. OR #	NUMBER
NR	NOT REQUIRED
NTS	NOT TO SCALE
NV	NATURAL VENTILATION
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OED	OPEN END DUCT
OD	OUTSIDE DIAMETER
OFD	OVERFLOW DRAIN
OFCI	OWNER FURNISHED/CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED/OWNER INSTALLED
OH	OVERHEAD
OPNG	OPENING
OSD	OPEN SITE DRAIN

P	PUMP
PA	PASCAL
PCD	PUMPED CONDENSATE DISCHARGE/RETURN
PCF	POUNDS PER CUBIC FOOT
PCWR	PROCESSED CHILLED WATER RETURN
PCWS	PROCESSED CHILLED WATER SUPPLY
PD	PRESSURE DROP
PF	PROPELLOR FAN
PFHX	PLATE AND FRAME HEAT EXCHANGER
PIV	POST INDICATOR VALVE
PG	PRESSURE GAUGE
PH	PHASE
PLBG	PLUMBING
PRESS	PRESSURE
PROP	PROPELLER
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE IN ABSOLUTE
PSIG	POUNDS PER SQUARE IN GAUGE
PSV	PRESSURE SAFETY VALVE
PUH	PROPELLER UNIT HEATER
QTY	QUANTITY
R	RETURN
RA	RETURN AIR
RAD	RADIATION
RAF	RETURN AIR FAN
RD	ROOF DRAIN
RF	RETURN OR RELIEF FAN
REBAL	RE-BALANCE
RECIRC	RECIRCULATING
REG	REGISTER
REQ	REQUIREMENT/REQUIRED
REV	REVISED
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RG	RETURN GRILLE
RL	REFRIGERANT LIQUID
RM	ROOM
RO	RELIEF OPENING
RP	RADIANT PANEL
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE BACKFLOW PREVENTER
RR	RETURN REGISTER
RIV	RETURN INTAKE VENT
RRV	ROOF RELIEF VENT
RV	REFRIGERANT VENT OR RELIEF VALVE (VENT) OR RETURN AIR VALVE
RTU	ROOF TOP UNIT
RS	REFRIGERANT SUCTION
S/W	SUMMER-WINTER
SA	SUPPLY AIR
SAN	SANITARY
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR OR DAMPER
SG	SUPPLY GRILLE
SENS	SENSIBLE LOAD
SF	SMOKE-FIRE DAMPER OR SUPPLY FAN
SHT	SHEET
SM	SMOKE DAMPER
SOL	SOLENOID
SHDR	SHOWER DRAIN
SK	SINK
SP	STATIC PRESSURE
SQ	SQUARE
SQ. FT.	SQUARE FEET
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
STHX	SHELL AND TUBE HEAT EXCHANGER
STD	STANDARD
STL	STEEL
STM	STEAM
STRUC	STRUCTURE/STRUCTURAL
SV	SUPPLY AIR VALVE
SWSI	SINGLE WIDTH, SINGLE INLET
TBV	THERMAL BALANCING VALVE
TCC	TEMPERATURE CONTROL
TCP	TEMPERATURE CONTROL PANEL
TD	TRANSFER DUCT
TEMP	TEMPERATURE
TL	TOTAL LOAD
TG	TRANSFER GRILLE
TO	TRANSFER OPENING

TP	TRAP PRIMER LINE
TYP	TYPICAL
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TU	THERMAL UNIT
TXV	THERMAL EXPANSION VALVE
UG	UNDERGROUND
UH	UNIT HEATER
UF	UNDER FLOOR
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
USG	GALLON
UV	UNIT VENTILATOR
V	VOLT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VCP	VARIABLE FREQUENCY DRIVE
VFD	VARIABLE FREQUENCY DRIVE
VS	VENT STACK
VTR	VENT THRU ROOF
VEL	VELOCITY
VERT	VERTICAL
VI	VIBRATION ISOLATION
VIF	VERIFY IN FIELD
VOL	VOLUME
VR	VACUUM RETURN
VRV	VARIABLE REFRIGERANT VOLUME
VSD	VARIABLE SPEED DRIVE
W	WATT
WB	WET BULB
WC	WATER CLOSET OR WALL CAP OR WATER COLUMN
WH	WALL HYDRANT
WS	WASTE STACK
W/	WITH
W/O	WITHOUT
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP
WT	WEIGHT
WTD	WATER TEMPERATURE DROP
WTR	WATER

NOTE

ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY NOT BE APPLICABLE TO THIS PROJECT

DATE	NO.	DESCRIPTION	BY
MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

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HUBBERT EME ENGINEERING ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER C. J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

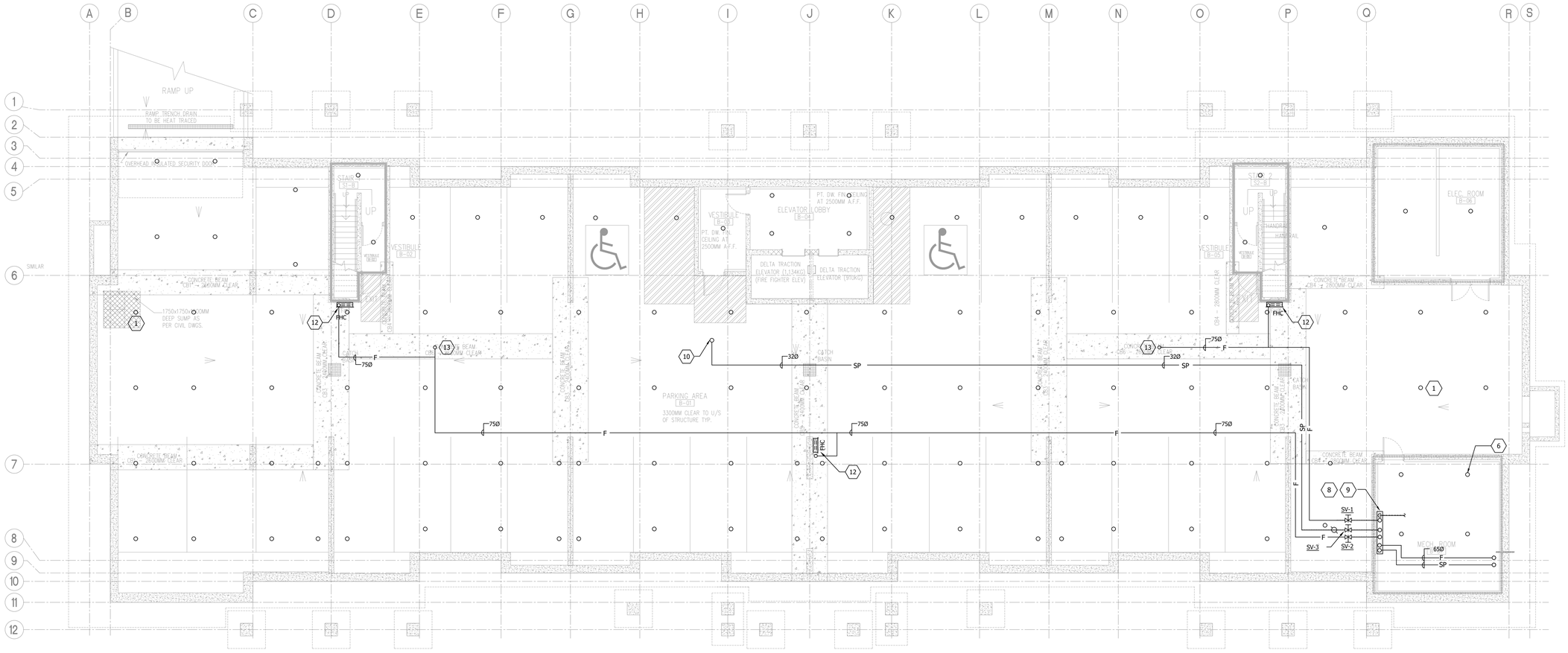
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

SYMBOLS AND ABBREVIATIONS

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	NTS
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-002



1 PARKING FLOOR SPRINKLER HEAD LAYOUT

Scale: 1:100

NOTE: ALL STANDPIPE RISERS MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS, AND HYDRAULIC CALCULATION, ALL AT HIS COST. AND REFER TO FIRE PROTECTION DRAWING PREPARED BY OTHERS FOR FURTHER DETAIL

NOTE: SUPPLY AND INSTALL ENTIRELY SPRINKLER SYSTEM IN THE PARKING GARAGE AREAS, LOCKERS, GARBAGE, MECHANICAL AND ELECTRICAL ROOMS INCLUDE SPRINKLER HEADS, PIPING, FITTINGS, HANGERS, ETC., FOR A COMPLETE INSTALLATION, ALL IN ACCORDANCE WITH THE STANDARDS AS STIPULATED BY NFPA 13 REVISED TO DATE AND THE REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. RISERS AND SPRINKLER MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS AND HYDRAULIC CALCULATION, ALL AT HIS OWN COST.

NOTE: FOR FIRE PROTECTION SYSTEM REEFER TO SPRINKLER DRAWINGS FOR DETAIL (TYPICAL)

PARKING LEVEL SPRINKLER KEYNOTES

1	UP-RIGHT SPRINKLER HEAD. (TYPICAL)
2	PENDANT SPRINKLER HEAD. (TYPICAL)
3	SIDEWALL SPRINKLER HEAD. (TYPICAL)
4	FIRE STANDPIPE LINE UP AND DN. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.
5	65Ø SPRINKLER LINE AND FIRE LINE UP TO SIAMESE CONNECTIONS.
6	SPRINKLER LINE AND FIRE LINE DN. TO MECHANICAL ROOM.
7	APPROX. 8'-0" SPRINKLER STATION PROVIDE FOR 144 SQ. FT. PER SPRINKLER HEAD BY SPRINKLER CONTRACTOR.
8	SPRINKLER STATION. FOR DETAIL REFER TO SPRINKLER DWG. PREPARED BY OTHERS.
9	32Ø CHUTE SPRINKLER LINE UP. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS ON DWG. M-114.
10	FIRE STANDPIPE LINE UP & DN. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.
11	FOR SPRINKLER HEADS LOCATION TO BE COORDINATED WITH ELECTRICAL REFLECTED CEILING AND LIGHTING PLANS.
12	EXACT LOCATION OF FHC REFER TO ARCHITECTS DRAWINGS.
13	75Ø FIRE STANDPIPE LINE UP TO FHC ABOVE. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.

GENERAL NOTES:
- ALL SPRINKLER WORK TO BE COMPLETED BY LANDLORD APPROVED SPRINKLER CONTRACTOR
- LAYOUT OF SPRINKLER HEADS FOR PERMIT ONLY. FINAL LOCATIONS TO BE DETERMINED BY SPRINKLER CONTRACTOR.
- ALL STANDPIPE RISERS AND SPRINKLER MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS PROVIDED BY OTHERS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS AND HYDRAULIC CALCULATION, ALL AT HIS COST.
- PROVIDE SEISMIC RESTRAINT SYSTEM FOR ALL CEILING AND FLOOR MOUNTED EQUIPMENT IF REQUIRED BY CODE.
- PROVIDE SEISMIC RESTRAINT SYSTEM FOR PIPES IF REQUIRED BY CODE.

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HUBBERT ENGINEERING ELECTRICAL MECHANICAL ENERGY

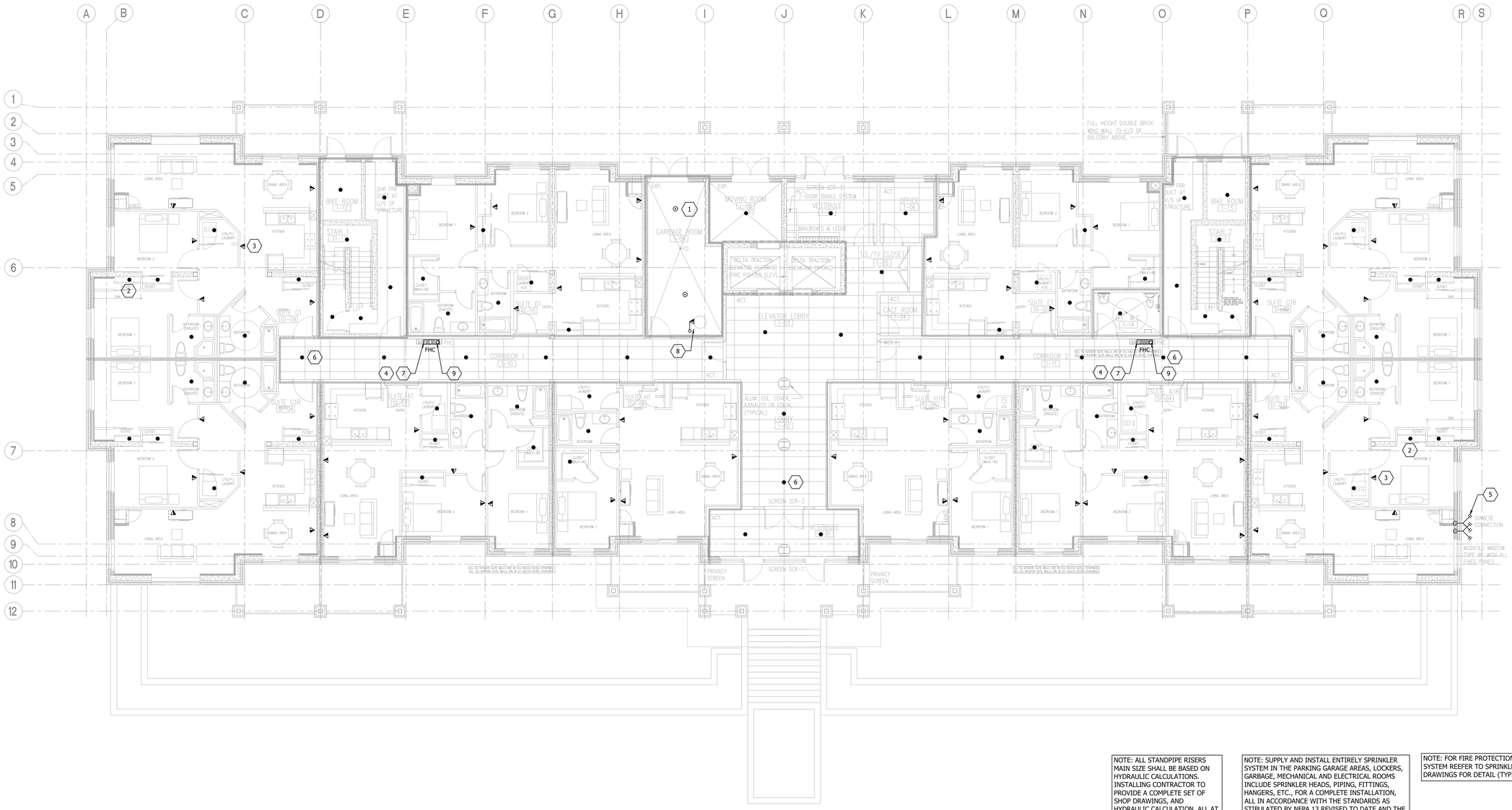
LICENSED PROFESSIONAL ENGINEER C. J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
PARKING LEVEL
SPRINKLER HEAD LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	SP-101



1 GROUND FLOOR SPRINKLER HEAD LAYOUT

Scale: 1:100

NOTE: ALL STANDPIPE RISERS MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS, AND HYDRAULIC CALCULATION, ALL AT HIS COST. AND REFER TO FIRE PROTECTION DRAWING PREPARED BY OTHERS FOR FURTHER DETAIL

NOTE: SUPPLY AND INSTALL ENTIRELY SPRINKLER SYSTEM IN THE PARKING GARAGE AREAS, LOCKERS, GARBAGE, MECHANICAL AND ELECTRICAL ROOMS INCLUDE SPRINKLER HEADS, PIPING, FITTINGS, HANGERS, ETC., FOR A COMPLETE INSTALLATION, ALL IN ACCORDANCE WITH THE STANDARDS AS STIPULATED BY NFPA 13 REVISED TO DATE AND THE REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. RISERS AND SPRINKLER MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS AND HYDRAULIC CALCULATION, ALL AT HIS OWN COST.

NOTE: FOR FIRE PROTECTION SYSTEM REEFER TO SPRINKLER DRAWINGS FOR DETAIL (TYPICAL)

GROUND FLOOR SPRINKLER KEYNOTES

1	UP-RIGHT SPRINKLER HEAD. (TYPICAL)
2	PENDANT SPRINKLER HEAD. (TYPICAL)
3	SIDEWALL SPRINKLER HEAD. (TYPICAL)
4	FIRE STANDPIPE LINE UP AND DN. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.
5	SIAMESE CONNECTION. FIRE DEPARTMENT PUMPER CONNECTION EXPOSED, BRASS C/W 2- 65Ø x 65Ø x 100Ø FIRE DEPARTMENT THREADED CONNECTIONS AND AUTO SPRINKLER/STANDPIPE NAMEPLATE, LOCATED MAX. 45 M FROM EXISTING HYDRANT AND MIN. 300 MM ABOVE FINISHED GRADE.
6	FOR SPRINKLER HEADS LOCATION TO BE COORDINATED WITH ELECTRICAL REFLECTED CEILING AND LIGHTING PLANS.
7	EXACT LOCATION OF FIRE RATED FHC REFER TO ARCHITECTS DRAWINGS.
8	FOR CHUTE SPRINKLER DETAIL REFER TO FIRE PROTECTION FLOW DIAGRAM ON DWG. M-114.
9	STAND PIPE RISER MUST BE FIRE CAULKED AT THE FLOOR LEVEL.

GENERAL NOTES:
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- LAYOUT OF SPRINKLER HEADS FOR PERMIT ONLY. FINAL LOCATIONS TO BE DETERMINED BY SPRINKLER CONTRACTOR.
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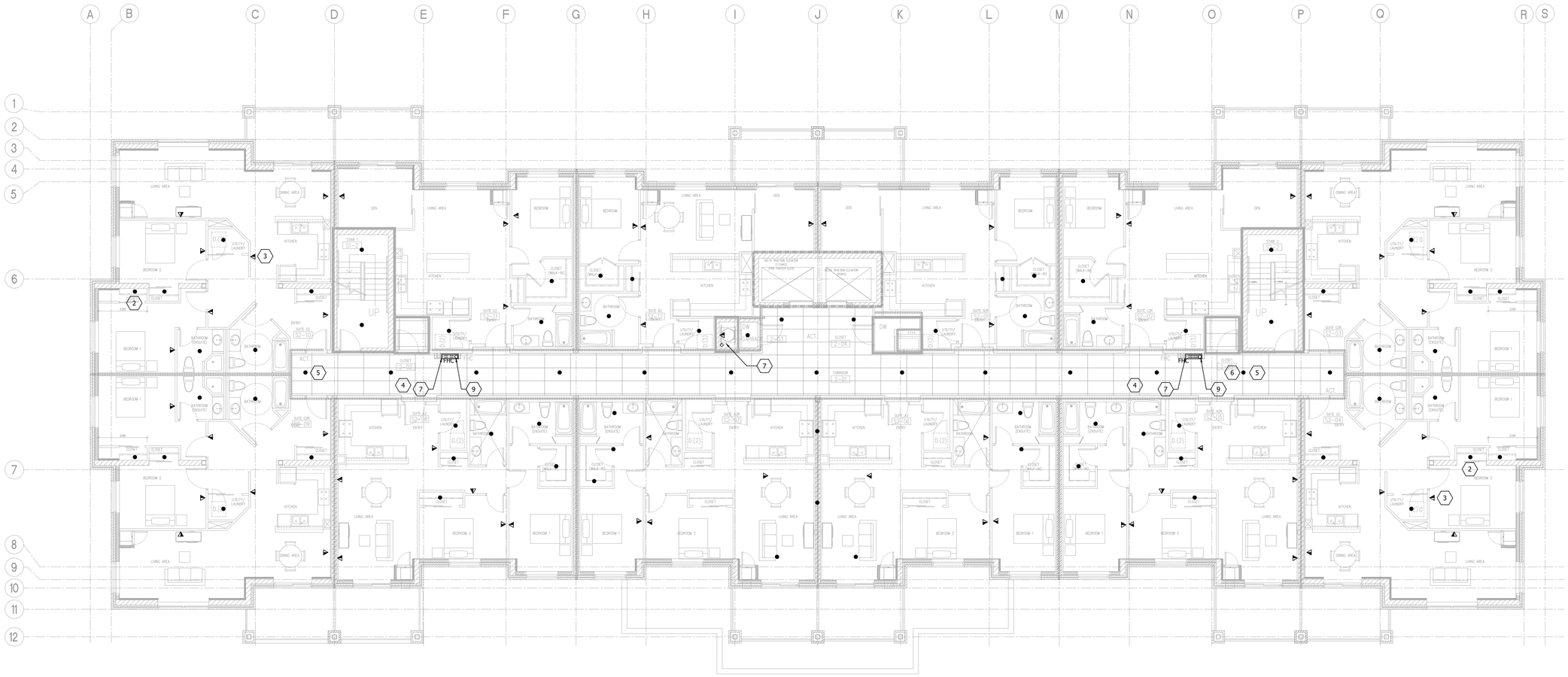
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

GROUND FLOOR
SPRINKLER HEAD LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	SP-102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LIVING AREA
DINING AREA
KITCHEN
DEN
BEDROOM
BEDROOM 2
BEDROOM 1
BATHROOM
BATHROOM (ENSUITE)
CLOSET
CLOSET (WALK-IN)
UTILITY/ LAUNDRY
ENTRY
CORRIDOR
STAIR 1
STAIR 2
SUITE 101
SUITE 102
SUITE 103
SUITE 104
SUITE 201
SUITE 202
SUITE 203
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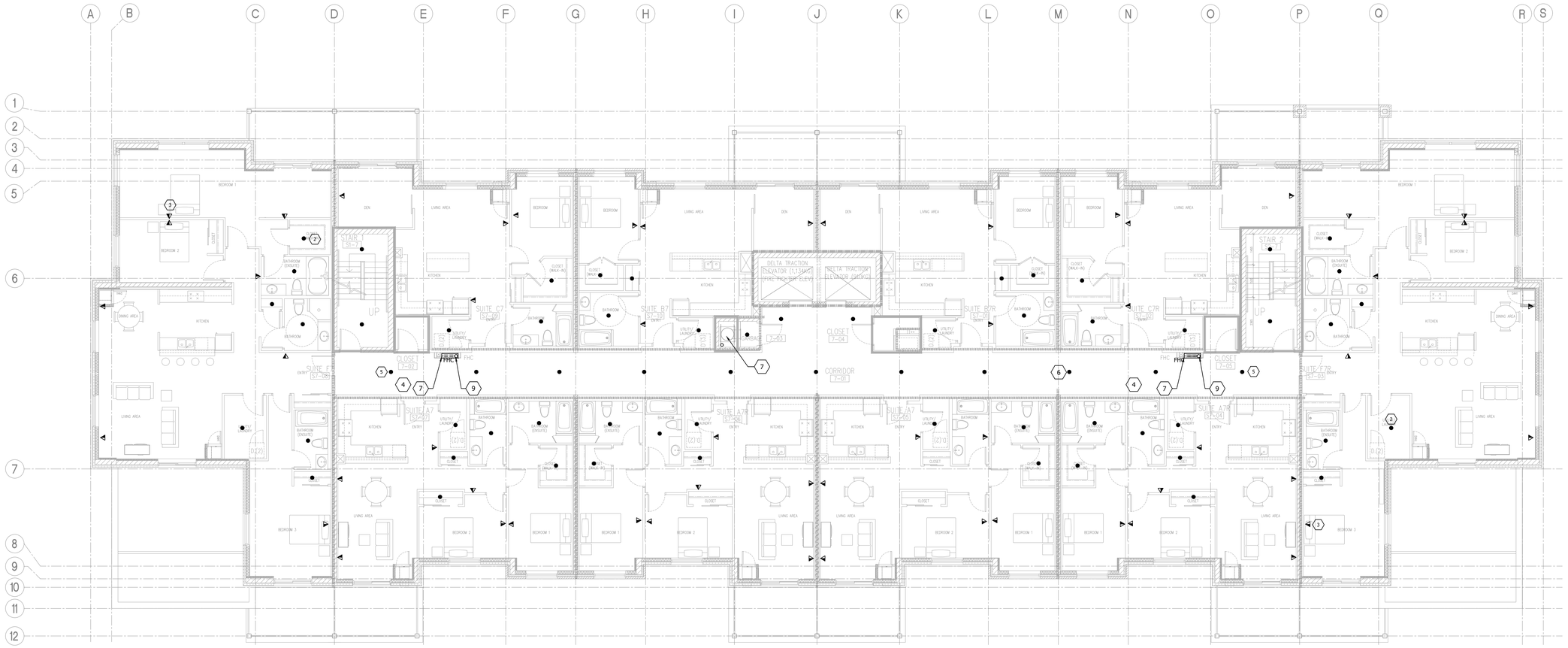

1 SEVENTH FLOOR SPRINKLER HEAD LAYOUT

Scale: 1:100

NOTE: ALL STANDPIPE RISERS MAIN SIZE SHALL BE BASED ON HYDRAULIC CALCULATIONS. INSTALLING CONTRACTOR TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS, AND HYDRAULIC CALCULATION, ALL AT HIS COST. AND REFER TO FIRE PROTECTION DRAWING PREPARED BY OTHERS FOR FURTHER DETAIL

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NOTE: FOR FIRE PROTECTION SYSTEM REEFER TO SPRINKLER DRAWINGS FOR DETAIL (TYPICAL)

7TH FLOOR SPRINKLER KEYNOTES

1	UP-RIGHT SPRINKLER HEAD. (TYPICAL)
2	PENDANT SPRINKLER HEAD. (TYPICAL)
3	SIDEWALL SPRINKLER HEAD. (TYPICAL)
4	FIRE STANDPIPE LINE UP AND DN. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.
5	FOR SPRINKLER HEADS LOCATION TO BE COORDINATED WITH ELECTRICAL REFLECTED CEILING AND LIGHTING PLANS.
6	EXACT LOCATION OF FHC REFER TO ARCHITECTS DRAWINGS.
7	FOR CHUTE SPRINKLER DETAIL REFER TO FIRE PROTECTION FLOW DIAGRAM ON DWG. M-114.

GENERAL NOTES:
- ALL SPRINKLER WORK TO BE COMPLETED BY LANDLORD APPROVED SPRINKLER CONTRACTOR
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2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
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67 HIGH STREET
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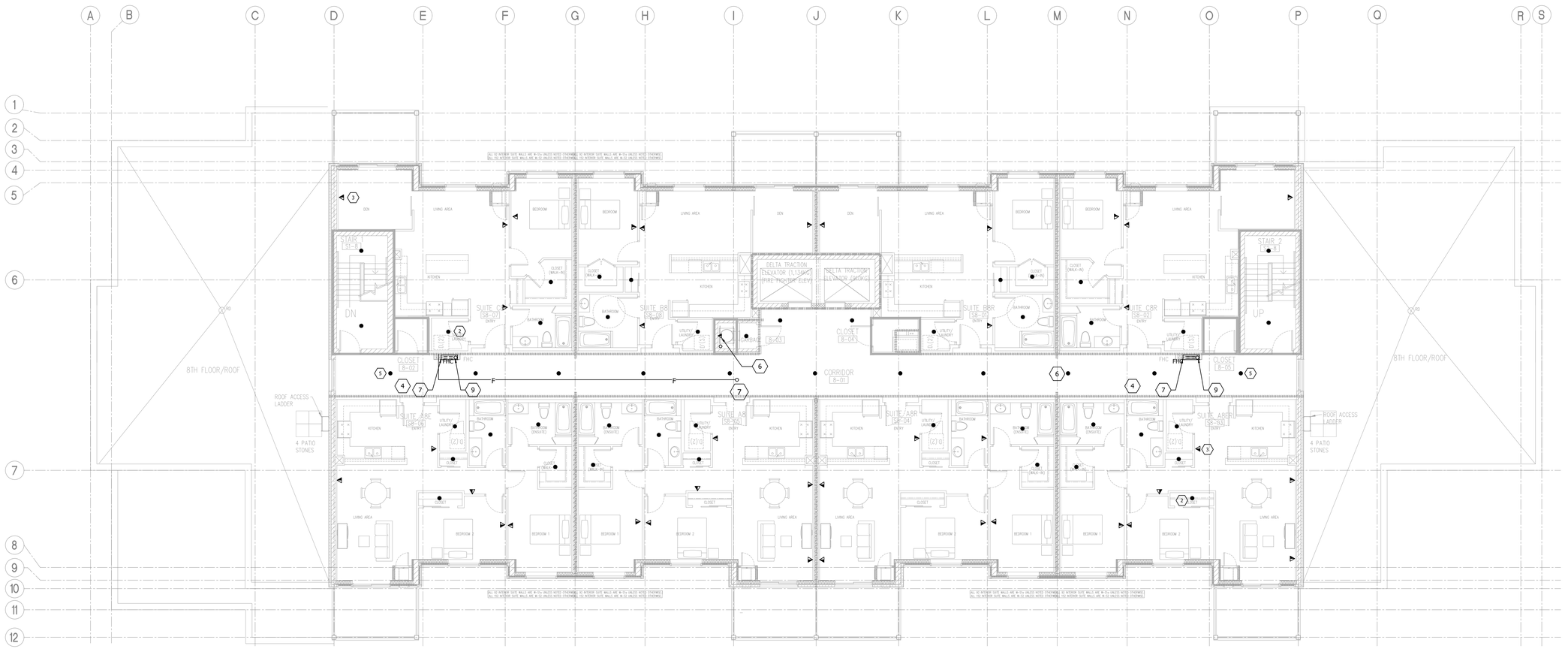
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
SEVENTH FLOOR
SPRINKLER HEAD LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	SP-104



1 EIGHTH FLOOR SPRINKLER HEAD LAYOUT

Scale: 1:100

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NOTE: FOR FIRE PROTECTION SYSTEM REEFER TO SPRINKLER DRAWINGS FOR DETAIL (TYPICAL)

8TH FLOOR SPRINKLER KEYNOTES

1	UP-RIGHT SPRINKLER HEAD. (TYPICAL)
2	PENDANT SPRINKLER HEAD. (TYPICAL)
3	SIDEWALL SPRINKLER HEAD. (TYPICAL)
4	FIRE STANDPIPE LINE UP AND DN. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.
5	FOR SPRINKLER HEADS LOCATION TO BE COORDINATED WITH ELECTRICAL REFLECTED CEILING AND LIGHTING PLANS.
6	FOR CHUTE SPRINKLER DETAIL REFER TO FIRE PROTECTION FLOW DIAGRAM ON DWG. M-114.
7	FIRE STANDPIPE LINE UP TO MECHANICAL ROOM. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.

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90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
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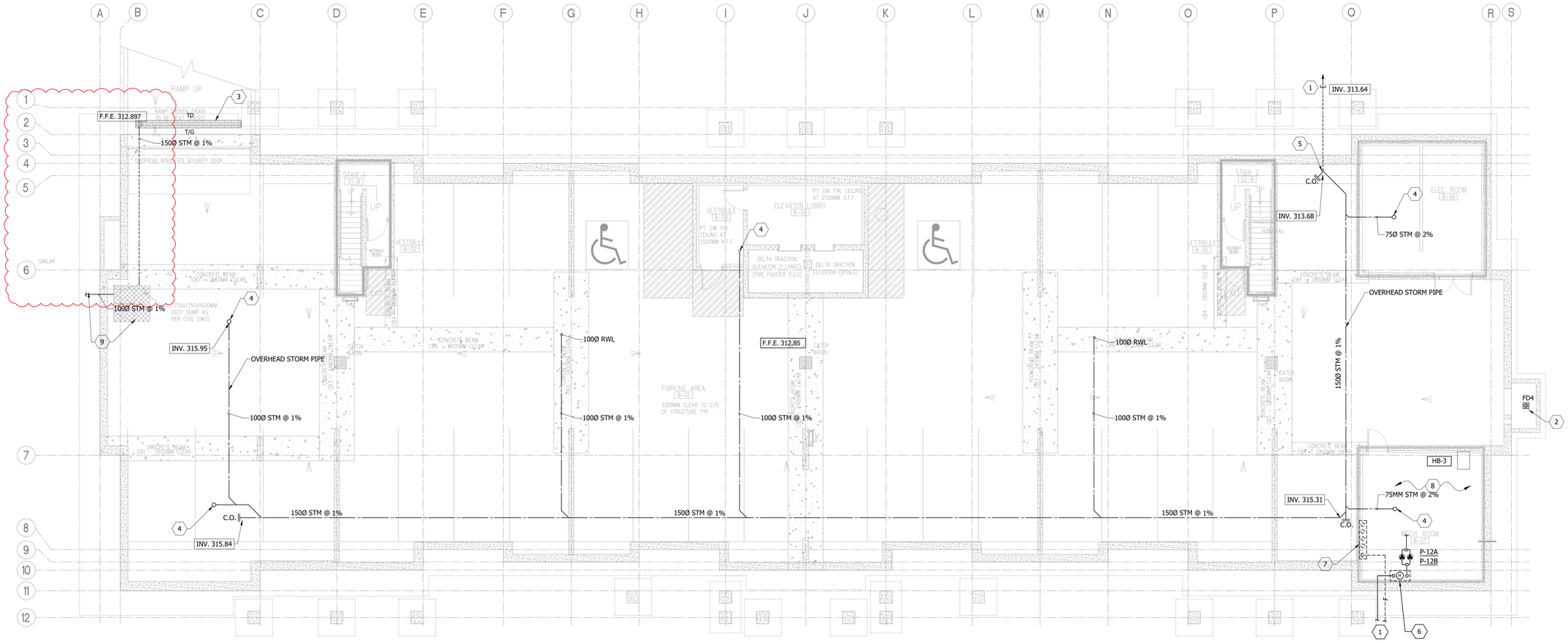
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

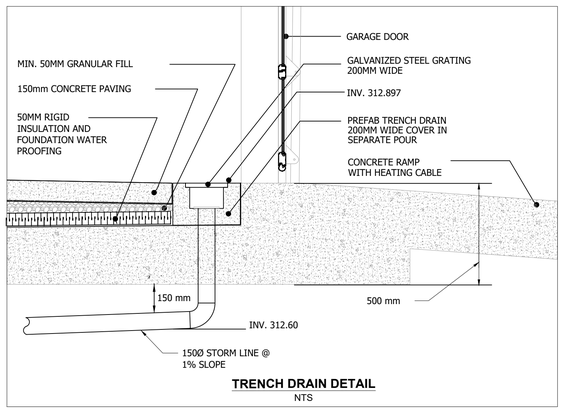
SEVENTH FLOOR PLAN
SPRINKLER HEAD LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	SP-105



1 PARKING PLAN STORM DRAINAGE LAYOUT

Scale: 1:100



TRENCH DRAIN DETAIL

NTS

PARKING LEVEL STORM KEYNOTES

1	FOR CONTINUATION AND EXACT LOCATION SEE SITE SERVICING AND GRADING PLAN PREPARED BY OTHERS.
2	FLOOR DRAIN LOCATED IN ENCLOSED WELL INTERIOR TO THE BUILDING.
3	REFER TO TRENCH DRAIN DETAILS ON THIS DWG. TRENCH DRAIN TO BE 6M ACO KLASSIKDRAIN K200. TRENCH DRAIN @ 400MM DEPTH.
4	75Ø STORM LINE UP.
5	75Ø STORM LINE DN. TO UNDER SIDE OF FLOOR SLAB.
6	65ØWATER COMPOUND METER. REFER WATER METER DETAILS ON DWG. M-113.
7	SPRINKLER STATION. FOR DETAIL REFER TO SPRINKLER DWG. PREPARED BY OTHERS.
8	FOR PIPING CONNECTIONS AND ARRANGEMENT REFER TO SCHEMATIC DWG. M-111, M-112 AND M-113.
9	REFER TO CIVIL DWGS FOR CONNECTIONS, INVERTS, AND PUMP SPECIFICATIONS / REQUIREMENTS.

GENERAL NOTES:
- REFER TO "PLUMBING FIXTURE CONNECTION SCHEDULE" FOR CONNECTION SIZES.
- VENT ALL PLUMBING FIXTURES AS PER PROVINCIAL CODE. PROVIDE MIN 3"ø VENT SIZE AT ROOF TERMINATION.
- PROVIDE CLEANOUTS AND TRAP PRIMING FOR SANITARY DRAINAGE SYSTEM AS REQUIRED BY PROVINCIAL CODE
- EXACT LOCATION OF EXISTING SERVICES TO BE VERIFIED ON SITE BY CONTRACTOR
- ALL HOT AND COLD WATER PIPING TO BE INSULATED.
- EXACT ELEVATIONS, INVERTS AND SLOPES OF SANITARY AND STORM LINES TO BE DETERMINED ON SITE BY MECH. CONTRACTOR. MECH. CONTRACTOR SHALL CO-ORDINATE EXACT TERMINATION OF SERVICES WITH LOCATION SHOWN ON DRAWING.

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PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

PARKING PLAN
STORM DRAINAGE

DRAWN BY:	CHECKED BY:	SCALE:
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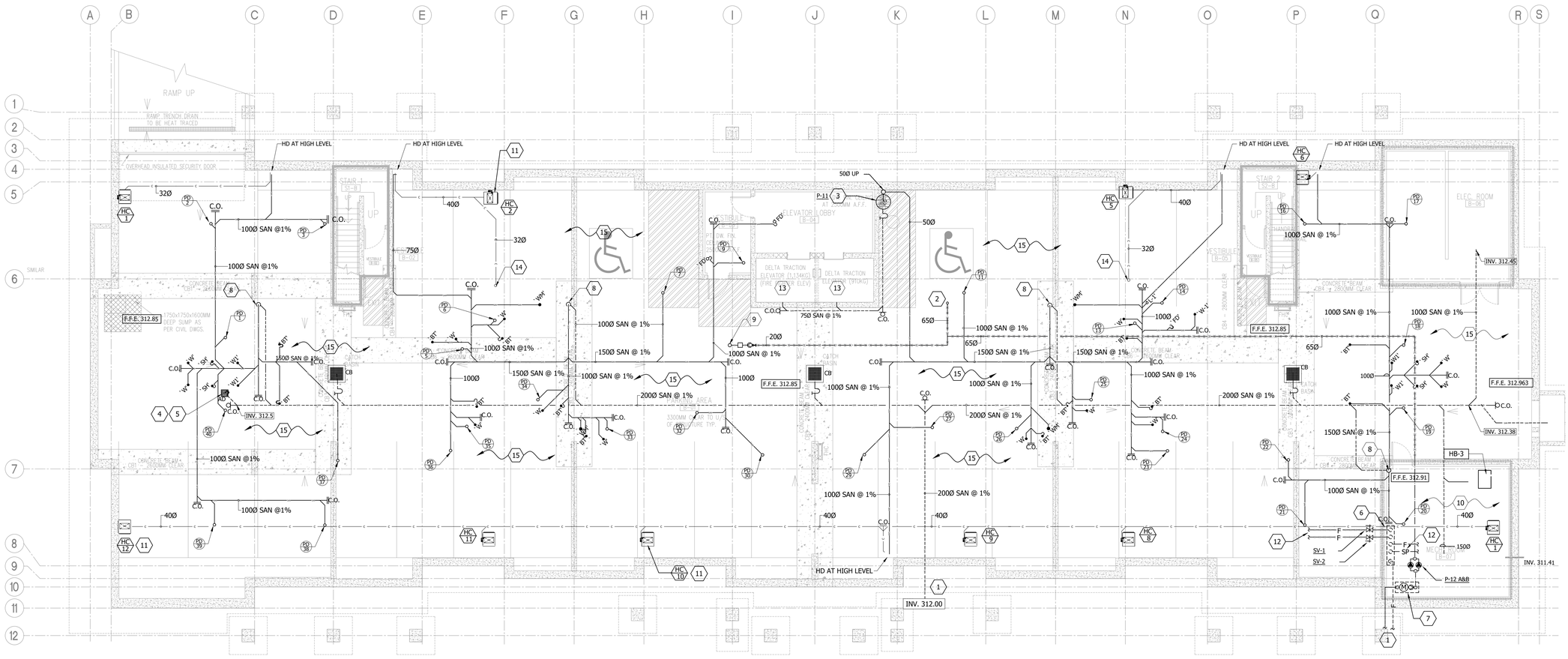
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	PD-101



1 PARKING PLAN PLUMBING & DRAINAGE LAYOUT

Scale: 1:100

PARKING LEVEL PLUMBING AND DRAINAGE KEYNOTES

1	FOR CONTINUATION AND EXACT LOCATION SEE SITE SERVICING AND GRADING PLAN PREPARED BY OTHERS.
2	65Ø DOMESTIC COLD WATER LINE UP.
3	600MM Ø x 600MM BELOW ELEVATOR PIT AND PUMP P-11, SEE DETAIL ON DWG M-116.
4	'AD' 12-3/4" x 12-3/4", 6Ø OUTLET AREA DRAIN EQUAL TO "MIFAB" MODEL # F1480 SERIES, C/W SEDIMENT BUCKET, SECONDARY DOME STRAINER. FOR GARAGE DETAIL REFER TO DWG M-116.
5	APPROXIMATE LOCATION OF 'AD' PARKING GARAGE DRAIN. FOR EXACT LOCATION REFER TO SPRINKLER DWG. PREPARED BY OTHERS.
6	SPRINKLER STATION. FOR DETAIL REFER TO SPRINKLER DWG. PREPARED BY OTHERS.
7	65Ø WATER COMPOUND METER. REFER TO WATER METER DETAIL ON DWG. M-113.
8	SANITARY LINE DN. TO UNDER SIDE OF FLOOR SLAB
9	20Ø COLD WATER LINE UP. REFER TO CHUTE DETAIL ON DWG M-114.
10	FOR PIPING CONNECTIONS AND ARRANGEMENT REFER TO SCHEMATIC DWGS. M-111, M-112 AND M-113.
11	HEAT PUMP UNIT ABOVE. (TYPICAL)
12	FOR CONTINUATION REFER TO SPRINKLER DWG.
13	ANGLE PIT DRAIN WITH BACKWATER VALVE "MIFAB" MODEL BV210.
14	32Ø CONDENSATE DRAIN LINE UP.
15	ALL SANITARY 'P' TRAP, WATER LINES, AND CONDENSATE LINES RUNNING WITHIN UNHEATED PARKING GARAGE SHALL BE ELECTRICALLY HEAT TRACED AND INSULATED. ALL ELECTRIC OUTLET FOR PIPING HEAT TRACE BY DIV. 26

GENERAL NOTES:
- REFER TO "PLUMBING FIXTURE CONNECTION SCHEDULE" FOR CONNECTION SIZES.
- VENT ALL PLUMBING FIXTURES AS PER PROVINCIAL CODE. PROVIDE MIN 3"Ø VENT SIZE AT ROOF TERMINATION.
- PROVIDE BACKFLOW PREVENTER FOR KITCHEN EQUIPMENT AS REQUIRED BY PROVINCIAL CODE
- PROVIDE CLEANOUTS AND TRAP PRIMING FOR SANITARY DRAINAGE SYSTEM AS REQUIRED BY PROVINCIAL CODE
- EXACT LOCATION OF EXISTING SERVICES TO BE VERIFIED ON SITE BY CONTRACTOR
- ALL HOT AND COLD WATER PIPING TO BE INSULATED.
- EXACT ELEVATIONS , INVERTS AND SLOPES OF SANITARY AND STORM LINES TO BE DETERMINED ON SITE BY MECH. CONTRACTOR. THIS MECH. CONTRACTOR SHALL CO-ORDINATE EXACT TERMINATION OF SERVICES WITH LOCATION SHOWN ON DRAWING.

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MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS

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HUBBERT EME ENGINEERING
ELECTRICAL MECHANICAL ENERGY

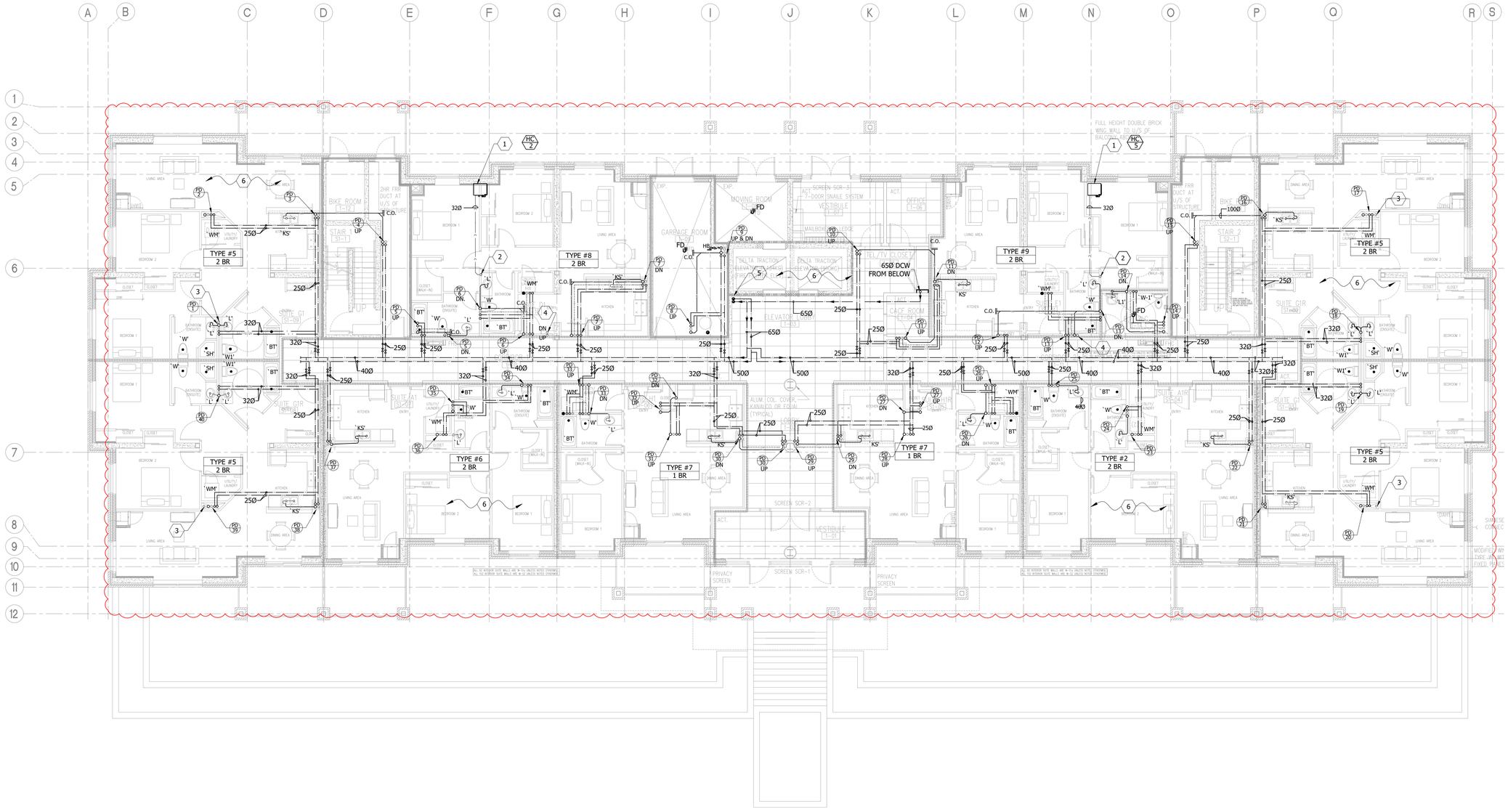
LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
PARKING LEVEL
PLUMBING AND DRAINAGE

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	PD-102



1 GROUND FLOOR PLUMBING & DRAINAGE LAYOUT

Scale: 1:100

GROUND FLOOR PLUMBING AND DRAINAGE KEYNOTES

1	HEAT PUMP UNIT ABOVE.
2	32Ø CONDENSATE DRAIN LINE DN.
3	75Ø STORM LINE UP AND DN.
4	75Ø STORM LINE DN.
5	65Ø DOM. HOT WATER LINE UP AND COLD WATER LINE UP.
6	REFER TO PLUMBING DRAINAGE RISERS DIAGRAMS M-111, M-112 AND M-113 DWGS. FOR PIPING TAKEOFF RISER SIZING. (TYPICAL)

GENERAL NOTES:
- REFER TO "PLUMBING FIXTURE CONNECTION SCHEDULE" FOR CONNECTION SIZES.
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HUBBERT ENGINEERING ELECTRICAL MECHANICAL ENERGY

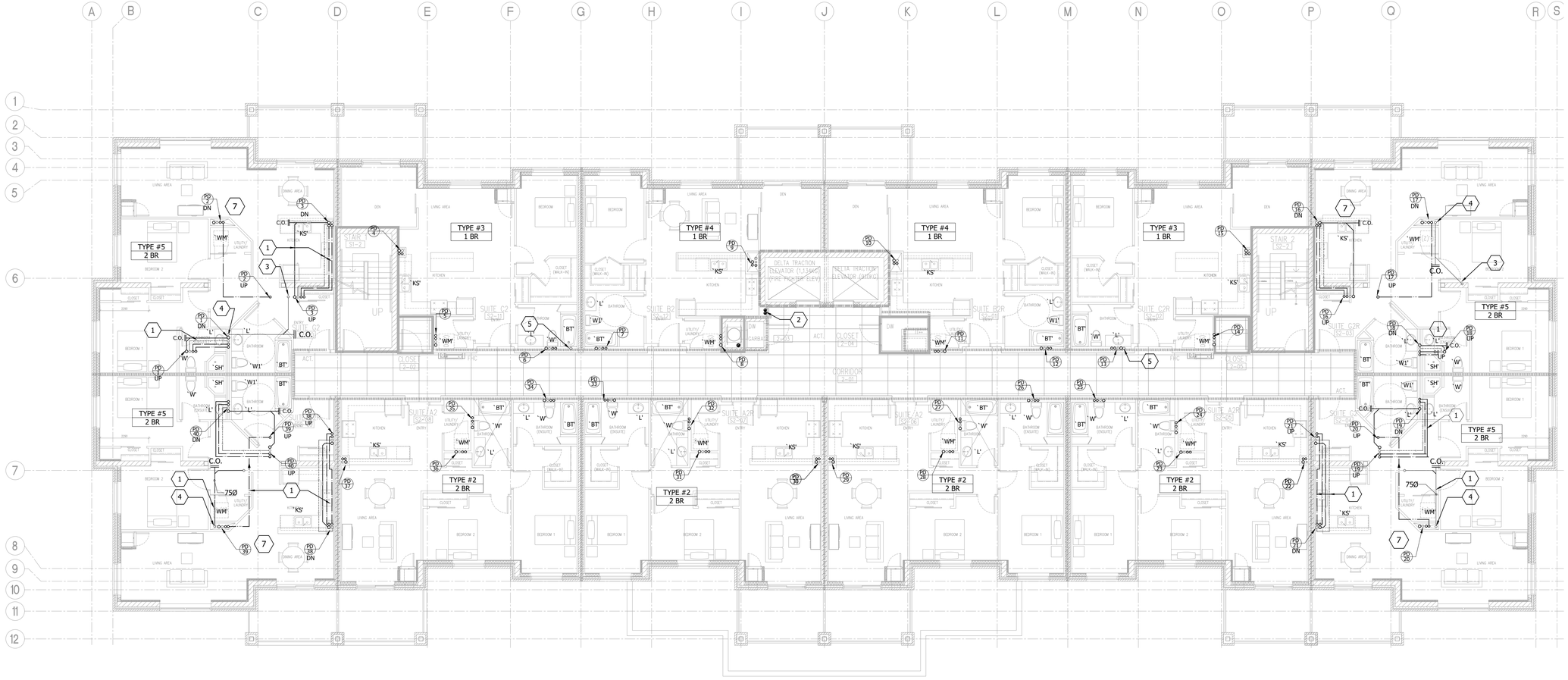
LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
GROUND FLOOR PLAN
PLUMBING AND DRAINAGE

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	PD-103



1 TYPICAL FLOOR PLUMBING & DRAINAGE LAYOUT

Scale: 1:100

TYPICAL FLOOR PLUMBING AND DRAINAGE KEYNOTES

1	OFFSET PLUMBING RISERS IN CEILING SPACE OF 6TH FLOOR
2	DOM. HOT AND COLD RISERS.
3	75Ø STORM LINE UP.
4	75Ø STORM LINE DN.
5	100Ø STORM LINE UP AND DOWN.
6	ROOF DRAIN ABOVE (TYPICAL).
7	REFER TO PLUMBING DRAINAGE RISERS DIAGRAM M-111, M-112 AND M-113 DWGS. FOR PIPING TAKEOFF RISER SIZING (TYPICAL).

GENERAL NOTES:
- REFER TO "PLUMBING FIXTURE CONNECTION SCHEDULE" FOR CONNECTION SIZES.
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ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
SECOND TO SIXTH FLOORS
PLUMBING AND DRAINAGE

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DATE:	PROJECT NUMBER:	DRAWING NUMBER:
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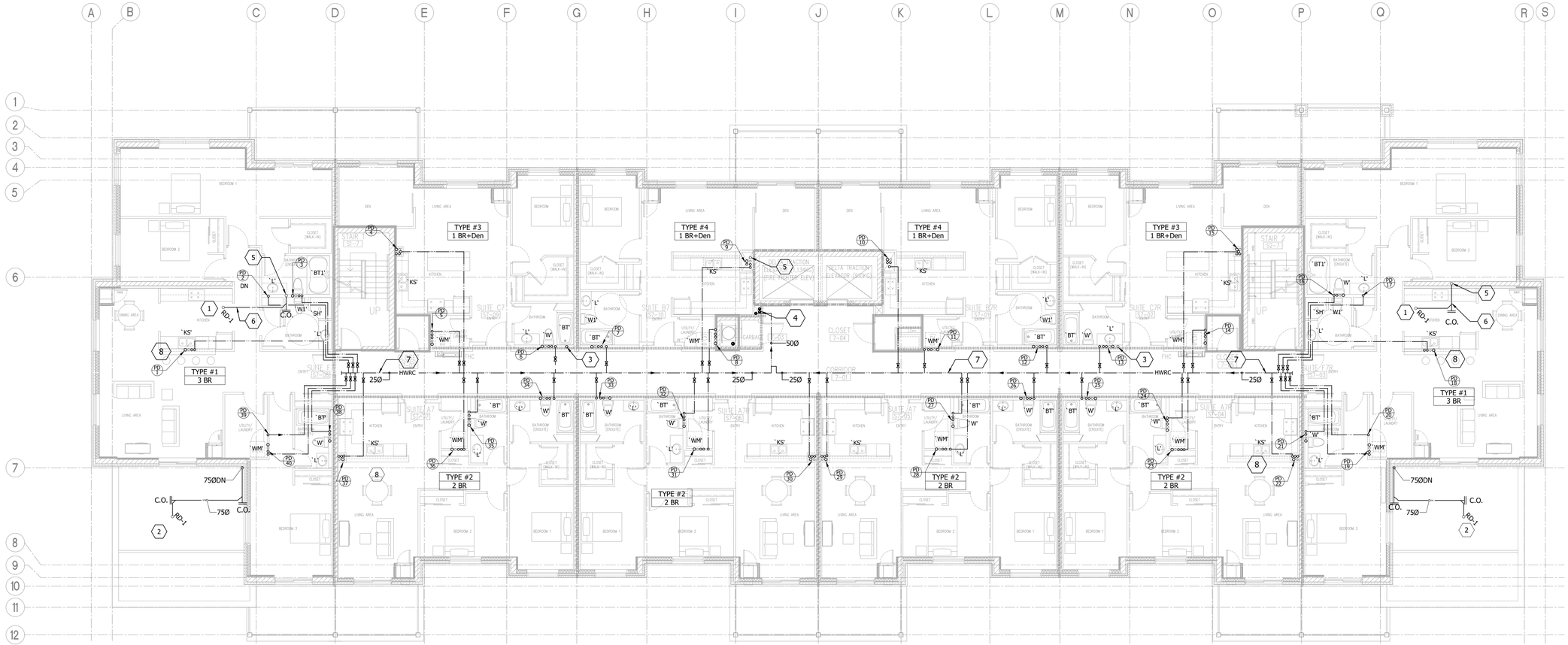

1 SEVENTH FLOOR PLUMBING & DRAINAGE LAYOUT

Scale: 1:100

7TH FLOOR PLUMBING AND DRAINAGE KEYNOTES

1	ROOF DRAIN ABOVE (TYPICAL).
2	'RD-1' CONTROLLED FLOW ROOF DRAIN TYPE 1-WEIR (TYPICAL).
3	100Ø STORM LINE UP AND DN.
4	50Ø DHW, DCW AND RECIRC. RISERS.
5	75Ø STORM LINE DN.
6	STORM LINE ROUTING IN 7TH FLOOR CEILING SPACE ONLY.
7	HOT WATER RECIRC. PIPING ROUTING IN CEILING SPACE, REFER TO SCHEMATIC DIAGRAM
8	REFER TO PLUMBING DRAINAGE RISERS DIAGRAM M-111, M-112 AND M-113 DWGS. FOR PIPING TAKEOFF RISER SIZING (TYPICAL).

GENERAL NOTES:
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FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
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HUBBERT EME ENGINEERING ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER C.J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

SEVENTH FLOOR
PLUMBING AND DRAINAGE

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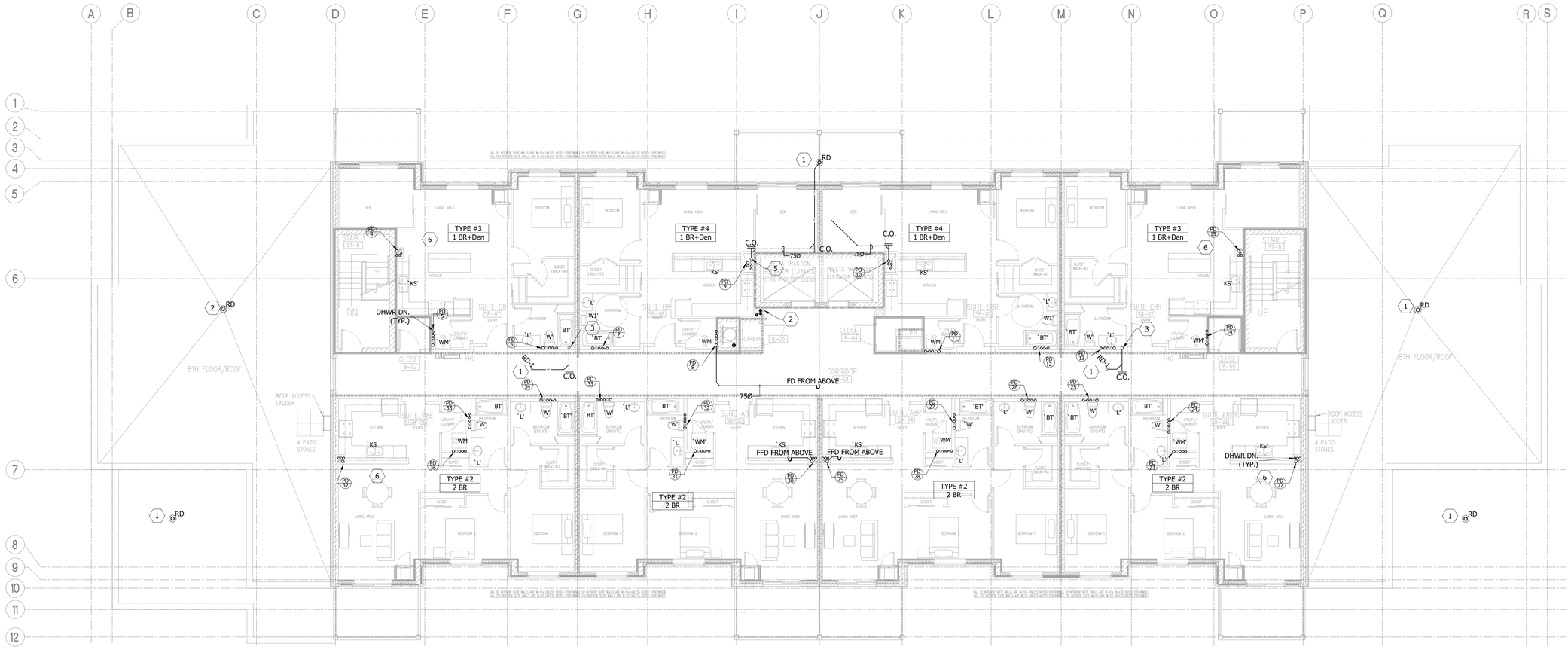

1 EIGHTH FLOOR PLUMBING & DRAINAGE LAYOUT

Scale: 1:100

8TH FLOOR PLUMBING AND DRAINAGE KEYNOTES

1	ROOF DRAIN ABOVE (TYPICAL).
2	'RD-1' CONTROLLED FLOW ROOF DRAIN TYPE 1-WEIR (TYPICAL).
3	100Ø STORM LINE UP AND DN.
4	50Ø DHW, DHC AND RECIRC. WATER LINES RISERS.
5	75Ø STORM LINE DN.
6	OFFSET STORM LINE IN 7TH FLOOR CEILING SPACE ONLY.
7	HOT WATER RECIRC. PIPING ROUTING IN CEILING SPACE.
8	REFER TO PLUMBING DRAINAGE RISERS DIAGRAM M-111, M-112 AND M-113 DWGS. FOR PIPING TAKEOFF RISER SIZING (TYPICAL).

GENERAL NOTES:
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HUBBERT EME ENGINEERING ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER C. J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
EIGHTH FLOOR
PLUMBING AND DRAINAGE

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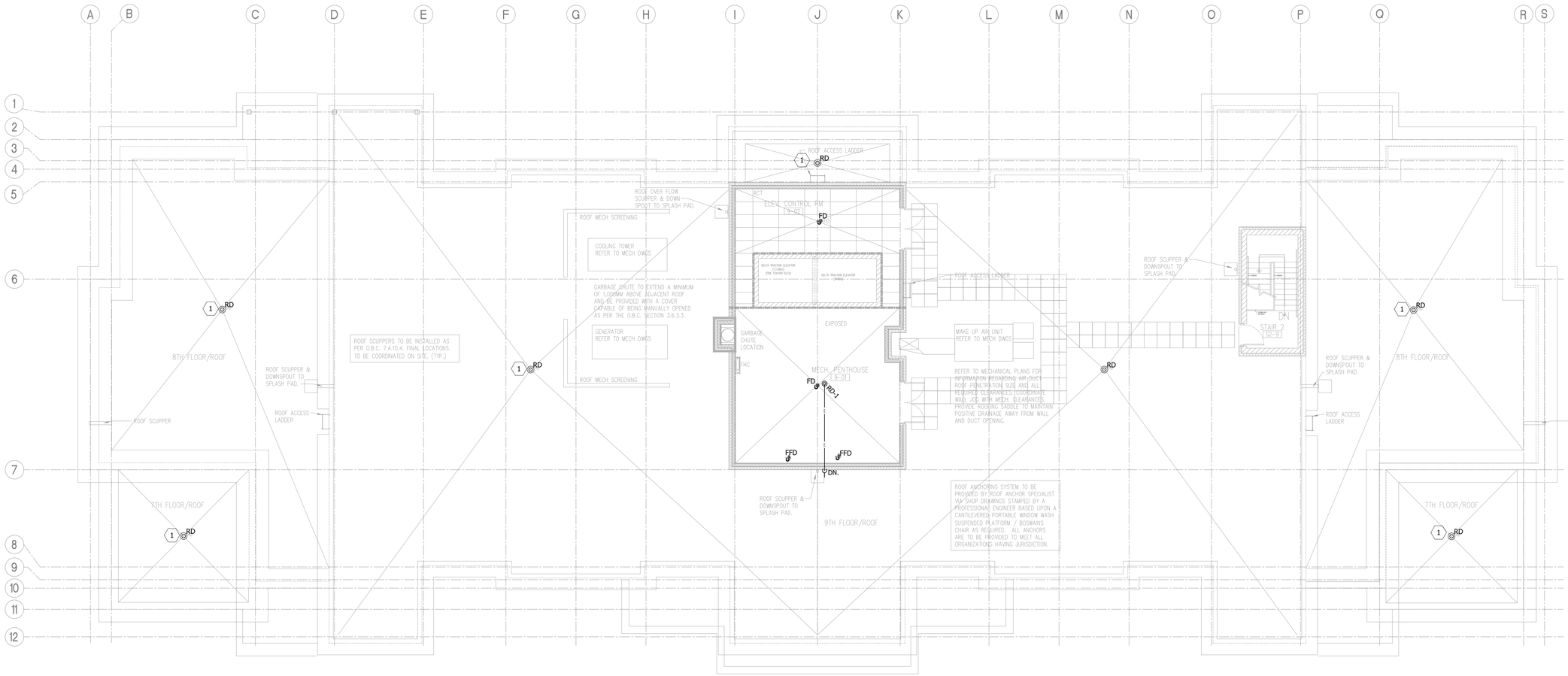
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	PD-106



1 ROOF PLAN DRAINAGE LAYOUT

Scale: 1:100

ROOF PLUMBING AND DRAINAGE KEYNOTES

1	'RD-1' CONTROLLED FLOW ROOF DRAIN TYPE 1-WEIR (TYPICAL). EXACT LOCATION REFER TO ARCHITECTURAL DWGS.
2	75MM RWL DOWN AND DISCHARGE ONTO DRAIN PAD ON LOWER ROOF

GENERAL NOTES:
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LICENSED PROFESSIONAL ENGINEER C. J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
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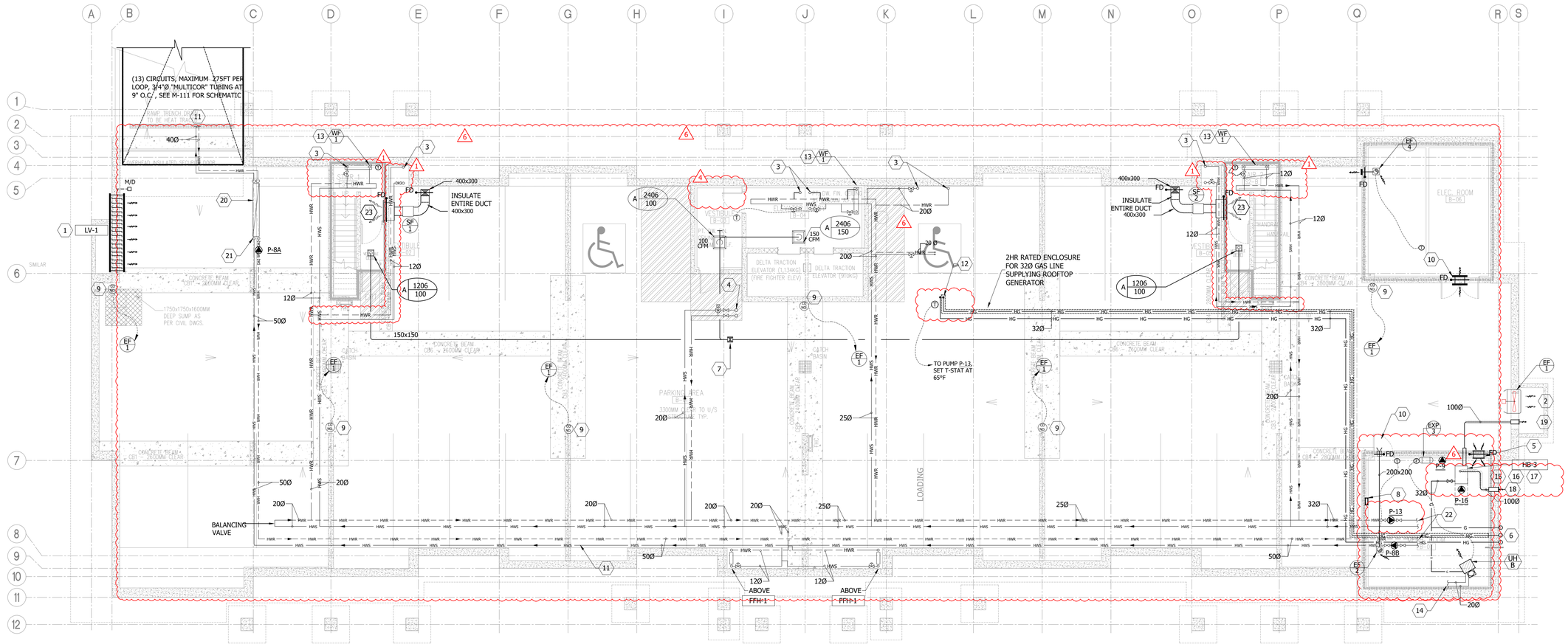
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
ROOF PLAN
STORM DRAINAGE

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	PD-107



1 PARKING PLAN HVAC LAYOUT

Scale: 1:100

4

CARBON MONOXIDE AND NITROGEN DIOXIDE ALARM AND VENTILATION CONTROL SYSTEM
(SUPPLIED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED BY ELECT. CONTRACTOR)

CO/NO$_2$ DETECTION SYSTEM:

1. CARBON MONOXIDE DETECTION TRANSMITTERS: HONEYWELL ANALYTICS E3SM-E3SCO & E3SM-E3NO2.

1.1. PROVIDING CONTINUOUS MONITORING IN AMBIENT AIR OF TWO FACTORY-SET ALARM LEVELS AND OUTPUTS.

1.2. THE TRANSMITTER WILL BE CAPABLE OF OPERATING ON A FULLY-ADDRESSABLE MODBUS RS-485 DIGITAL NETWORK IN A DAISY-CHAIN CONFIGURATION. COMMUNICATION 3000FT MAX PER CHANNEL AND POWER 24VAC 1000FT MAX PER CHANNEL.

1.3. TRANSMITTER WILL HAVE AN ONBOARD DPDT RELAY (RATED AT 5A, 30 VDC OR 250 VAC (RESISTIVE LOAD)) AND CAN BE TRIGGERED THROUGH THE PROGRAMMING ON THE CONTROL PANEL TO ACTIVATE REMOTELY LOCATED FAN STARTERS WITHOUT THE NEED FOR A SEPARATE RELAY PACK.

1.4. SENSOR CELL SHALL HAVE A CONTINUOUS SELF-TEST TO ENSURE OPERATION AND TO PROVIDE EOL NOTIFICATION.

1.5. THE TRANSMITTER SHALL HAVE A PLUG-IN CAPABILITY FOR A FIELD REPLACEABLE GAS CARTRIDGE. THE REPLACEABLE GAS CARTRIDGE SHALL BE FACTORY CALIBRATED AND CERTIFIED TO THE TARGET GAS READY FOR OPERATION WITHOUT THE REQUIREMENT FOR SITE CALIBRATION.

1.6. TRANSMITTER WILL BE CAPABLE OF OPERATING WITHIN RELATIVE HUMIDITY RANGES OF 5-95% NON-CONDENSING AND TEMPERATURE RANGES OF -4° F TO 104° F (-20° C TO 40° C).

1.7. LCD DISPLAY FOR LOCAL GAS CONCENTRATION READING AS WELL AS "ONE MAN" CALIBRATION.

2. CONTROL PANEL: HONEYWELL ANALYTICS 301C-DLC

2.1. THE CONTROL PANEL MUST BE CAPABLE OF COMMUNICATING DIGITALLY WITH THE NETWORKED GAS DETECTION MONITORS ON THREE SEPARATE RS-485 MODBUS COMMUNICATION CHANNELS.

2.2. THE CONTROLLER WILL HOUSE FOUR INTERNAL DPDT RELAYS AT FULLY PROGRAMMABLE ALARM LEVELS (AND WITHIN PROGRAMMABLE TIME DELAYS). THE RELAY RATING WILL BE NO LOWER THAN 5 A, 30 VDC OR 250 VAC (RESISTIVE LOAD).

2.3. THE CONTROLLER MUST INCLUDE A SELF-TEST FUNCTION THAT ALLOWS FOR THE ACTIVATION/DEACTIVATION OF ALL THE PROGRAMMED OUTPUTS BY SIMULATING A CONTINUOUS 5% INCREASE/DECREASE VALUE UNTIL THE MAXIMUM/MINIMUM VALUE IS REACHED.

2.4. THE CONTROLLER MUST INCLUDE A REAL-TIME CLOCK THAT ENABLES OPERATION OF THE OUTPUTS FOR A SPECIFIC TIME-FRAME.

2.5. THE CONTROLLER MUST ALSO INCLUDE AN ENERGY SAVING FEATURE THAT ALLOWS FOR OUTPUT OPERATION ON ALARMS SET AT THE MAX, MIN OR AVERAGE VALUE OF A SPECIFIC GROUP OF TRANSMITTERS. THIS FEATURE MUST ALSO ALLOW FOR THE ACTIVATION OF OUTPUTS UPON A CERTAIN NUMBER OF A SPECIFIC GROUP (¼, ½, ⅓ AND ¼) OF TRANSMITTERS REACHING THEIR ALARM LEVELS.

2.6. PROVIDE A STROBE WITH RED LENS TO BE CONNECTED TO RELAY ON CONTROL PANEL.

2.7. THE CONTROLLER WILL INDICATE THE EXACT CONCENTRATION OF GAS, THE GAS DETECTED, AND THE LOCATION OF THE SENSOR BY SWEEPING THROUGH THE NETWORK AND DISPLAYING THE DETECTED LEVELS AT EACH POINT ON A GRAPHIC LCD DISPLAY.

2.8. RATINGS AND CERTIFICATIONS
- CONFORMS TO INTERNATIONAL MECHANICAL AND ELECTRICAL CODES
- EMI/RFI COMPLIES WITH EMC DIRECTIVE 89/336/EEC
- CSA CERTIFICATION3.

3. SEQUENCE OF OPERATION

	FIRST ALARM SETPOINT (ACGIH-TWA)	SECOND ALARM SETPOINT (ACGIH-STEL)	SENSOR LOCATION	RADIUS OF COVERAGE
Carbon Monoxide (CO)	25 ppm	100 ppm	1200 mm AFF In OBC Range	15m (approx.)
Nitrogen Dioxide (NO_2)	0.2 ppm	1.2 ppm	1500 mm AFF In Breathing Zone	

3.1. WHEN FIRST ALARM LEVEL IS ACHIEVED RELAYS ARE ENERGIZED TO ACTIVATE THE EXHAUST FANS, WITH CORRESPONDING INTAKE DAMPERS.

3.2. ON SECOND ALARM LEVEL BEING REACHED STROBE/HORN TO ACTIVATE. PROGRAM A RELAY DELAY-ON OF TWO MINUTES TO ALLOW TII FOR GAS TO CLEAR.

4. INSTALLATION & VERIFICATION

4.1. INSTALL HAZARDOUS GAS MONITORING EQUIPMENT INCLUDING SENSORS AND CONTROL PANEL AS SHOWN ON CONTRACT DRAWINGS.

4.2. INSTALL CONDUIT AND WIRING FROM SENSORS TO CONTROL PANEL AND TO THE FAN STARTERS. COMMUNICATION WIRING 24 GAUGE SHIELDED TWISTED PAIR BELDEN 9841 OR EQUIVALENT; 2000FT MAX PER CHANNEL FROM CONTROLLER. POWER IS 24VAC, 14 GAUGE; 1000FT MAX FROM THE CONTROLLER.

4.3. TEST TO DEMONSTRATE OPERATION OF FUNCTIONS DESCRIBED ABOVE UNDER SEQUENCE OF OPERATION TO BE PERFORMED BY MANUFACTURER'S CERTIFIED TECHNICIAN. CERTIFICATE OF COMMISSIONING TO BE PRESENTED TO FACILITY OPERATORS.

PARKING LEVEL HVAC KEYNOTES

1	INTAKE AIR LOUVER C/W MOTORIZED DAMPER AND BIRD SCREEN.
2	GARAGE VENTILATION EXHAUST FAN EF-1. REFER TO DETAIL ON DWG. M-112.
3	20Ø HWS & HWR LINES UP.
4	20Ø HWS AND HWR LINES UP.
5	350x200 TRANSFER AIR DUCT C/W WIRE MESH SCREEN BOTH SIDE AND FIRE DAMPER.
6	32Ø HIGH PRESSURE GAS TO GEN-1, 32Ø HIGH PRESSURE GAS TO PH MECH RM EQUIPMENT, AND 32Ø LOW PRESSURE GAS LINE TO HB-3 UP.
7	250x250 FRESH AIR DUCT UP C/W FIRE DAMPER.
8	CO/NO MONITOR CONTROL PANEL.
9	CO/NO SENSOR. (TYPICAL)
10	1000x 600 TRANSFER AIR DUCT C/W WIRE MESH SCREEN BOTH SIDE AND FIRE DAMPER.
11	FOR HWS & HWR LINES TO RAMP HEATING MANIFOLD. REFER TO HEATING DIAGRAMS
12	32Ø HIGH PRESSURE GAS AND 100Ø LOW PRESSURE GAS RISERS UP TO ROOF.
13	HEATING WATER BASEBOARD HEATER C/W ELECTRIC CONTROL VALVE AND THERMOSTAT WHERE IS INDICATED.
14	CONNECT 20Ø HWS AND HWR TO HEATING LOOP SYSTEM.
15	HEATING BOILERS HB-3 APPROX. DIM. AND WEIGHT: 600mm L x855mm W x1160mm H (WEIGHT: 340 lbs)
16	REFER TO BOILER UNITS AND PUMPS CURB DETAIL ON DWG. M-116.
17	FOR PIPING CONNECTIONS AND ARRANGEMENT REFER TO SCHEMATIC DWG. M-110.
18	100Ø INTAKE VENT WITH "RBI" WALL VENT TERMINAL TERMINATING AT EXTERIOR WALL APPROXIMATELY 0.6M ABOVE THE SNOW LINE. MAINTAIN A MINIMUM OF 10FT. FROM THE GAS METER, PRV, AND ANY EXHAUST.
19	100Ø EXHAUST VENT WITH "RBI" WALL VENT TERMINAL TERMINATING AT EXTERIOR WALL APPROXIMATELY 0.6M ABOVE THE SNOW LINE
20	PROPOSAL LOCATION OF HYDRONIC RAMP SNOW MELTING HEATING MANIFOLD, SEE FLOW DIAGRAM ON M-111 FOR DETAIL
21	40Ø HWS & HWR LINES DN. TO RAMP HEATING MANIFOLD.
22	FOR HEATING WATER SUPPLY AND RETURN PIPING ARRANGEMENT AND SIZING REFER TO FLOW DIAGRAM SYSTEM ON DWG. M-113.
23	36"X12" REVERSOMATIC 4000 EA SUPPLY LOUVER. INSTALL WITH FIRE DAMPER AND THERMALLY INSULATE ALL DUCTWORK CONNECTED TO THE LOUVER AND FAN WITH A MINIMUM 1" THICK FIBERGLASS INSULATION, R-11.

GENERAL NOTES:
- LOCATION OF DIFFUSER TO BE COORDINATED WITH DIVISION 26.
- LOCATION OF THERMOSTAT TO BE COORDINATED WITH DIVISION 26 AND BE PLACED CLOSE TO END OF WALL, NEVER IN THE MIDDLE OF THE WALL.
- THE CONTRACTOR SHALL BALANCE THE AIRFLOW RATES FOR ALL DIFFUSERS AND PROVIDE AIR BALANCING REPORT.
- VENT ALL GAS APPLIANCES AS PER OBC AND CSA-B149

DATE	NO.	DESCRIPTION	BY
MAY 17/23	–	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	–	ISSUED FOR PERMIT	MB

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HUBBERT EME ENGINEERING
ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

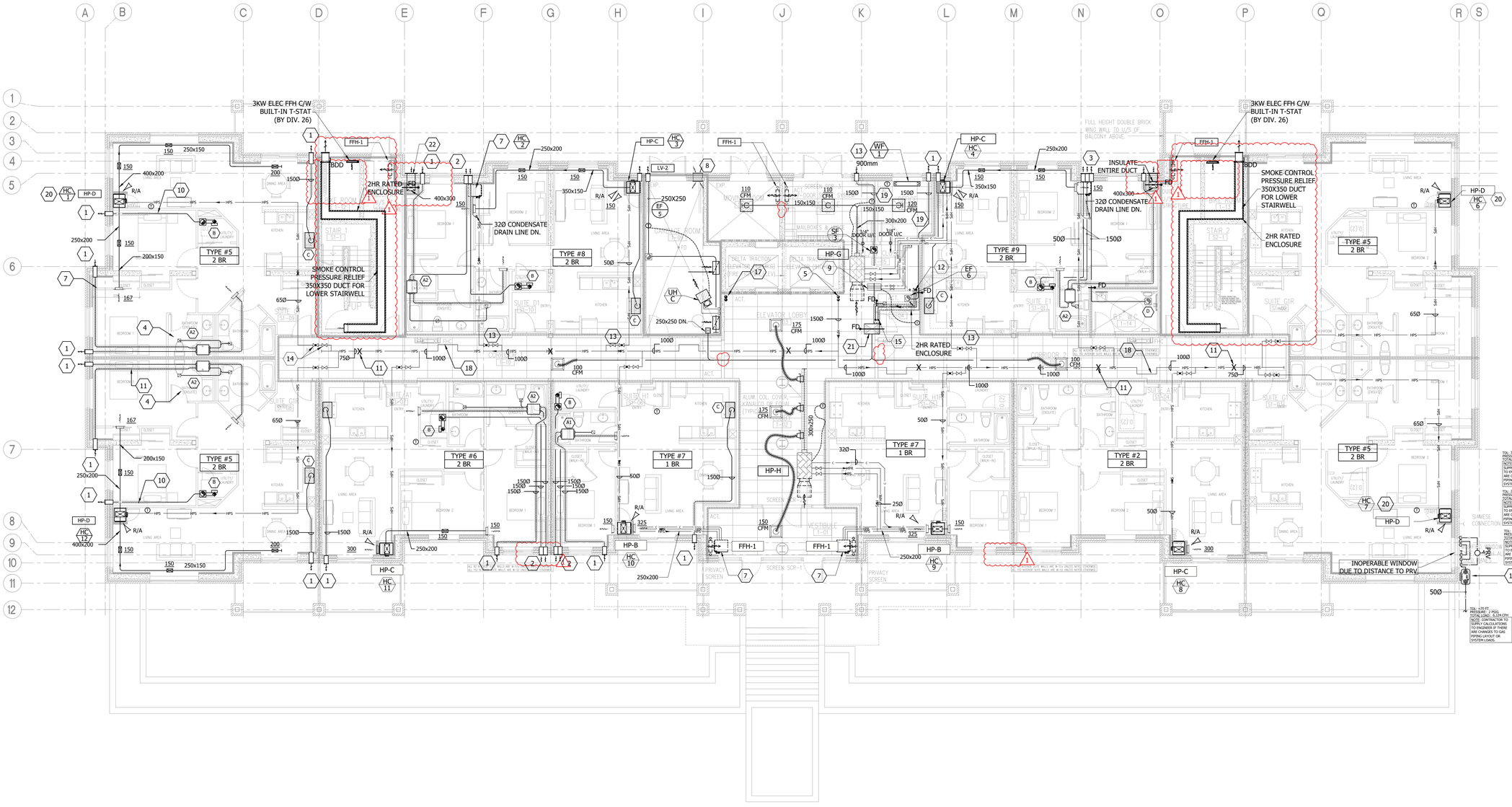
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

PARKING PLAN
HVAC LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-101



1 GROUND FLOOR HVAC LAYOUT

Scale: 1:100

GROUND FLOOR HVAC KEYNOTES

1	SINGLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
2	DOUBLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
3	TRIPLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
4	FOR TYPICAL OF HRV UNIT DUCTWORK CONNECTIONS REFER TO DETAILS
5	100Ø HEATING SUPPLY RISERS FROM ABOVE IN CEILING.
6	25Ø HEATING S AND R LINES DN.
7	HEAT PUMP UNIT FROM ABOVE. (TYPICAL)
8	150x150 T/A DUCT C/W WIRE MESH SCREEN BOTH SIDES.
9	PROVIDE 12 MBH HYDRONIC DUCT HEATER, INTERLOCK WITH SUPPLY FAN SF-3 AND "T" STAT
10	FOR EXHAUST DUCTS SIZING REFER TO DUCT SIZE SCHEDULE ON THIS DWG. (TYPICAL)
11	ANCHOR. (TYPICAL)
12	32Ø HIGH PRESSURE GAS LINES DOWN IN 2HR RATED ENCLOSURE.
13	CIRCUIT BALANCING AND BALL VALVES. (TYPICAL)
14	HPS LINE ROUTING ON GROUND FLOOR CEILING SPACE. (TYPICAL)
15	HIGH PRESSURE GAS RISERS UP.
16	PROPOSED MAIN GAS METER LOCATION, EXACT LOCATION TO BE DETERMINED ON SITE BY CONTRACTOR. INCOMING GAS SERVICE, METER AND REGULATOR BY LOCAL GAS COMPANY, APPROXIMATE GAS LOAD OF 6,124 CFH AT HIGH PRESSURE GAS 5.0 PSIG. REFER TO GAS PIPING SCHEMATIC ON DWG. M-115
17	DOM. HOT WATER UP AND COLD WATER UP.
18	EXPANSION LOOP ON HOT WATER HEATING LINES
19	SUPPLY AND EXHAUST DUCT TO BE INSTALLED IN A FIRE RATED SHAFT. ARCHITECT TO COORDINATE REQUIREMENTS
20	REFER TO HEAT PUMP RISERS DIAGRAMS M-110 DWG. FOR PIPING TAKEOFF RISER SIZING. (TYPICAL)
21	FRESH AIR DUCT UP. REFER TO FRESH AIR RISER DIAGRAM FOR MORE DETAILS.
22	24"X24" REVERSOMATIC 4000 EA INTAKE STORM PROOF LOUVER. THERMALLY INSULATE ALL DUCTWORK CONNECTED TO THE LOUVER WITH A MINIMUM 1" THICK FIBERGLASS INSULATION, R-11.

GENERAL NOTES:
- LOCATION OF DIFFUSER TO BE COORDINATED WITH DIVISION 26.
- LOCATION OF THERMOSTAT TO BE COORDINATED WITH DIVISION 26 AND BE PLACED CLOSE TO END OF WALL, NEVER IN THE MIDDLE OF THE WALL.
- THE CONTRACTOR SHALL BALANCE THE AIRFLOW RATES FOR ALL DIFFUSERS AND PROVIDE AIR BALANCING REPORT.
- FOR KITCHEN AND BAR EQUIPMENT AND FIXTURES SHOWN ON DRAWING, REFER TO EQUIPMENT LIST PREPARED BY OTHERS.
- VENT ALL GAS APPLIANCES AS PER OBC AND CSA-B149

DATE	NO.	DESCRIPTION	BY
MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
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REVISIONS

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HUBBERT EME ENGINEERING ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER C.J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

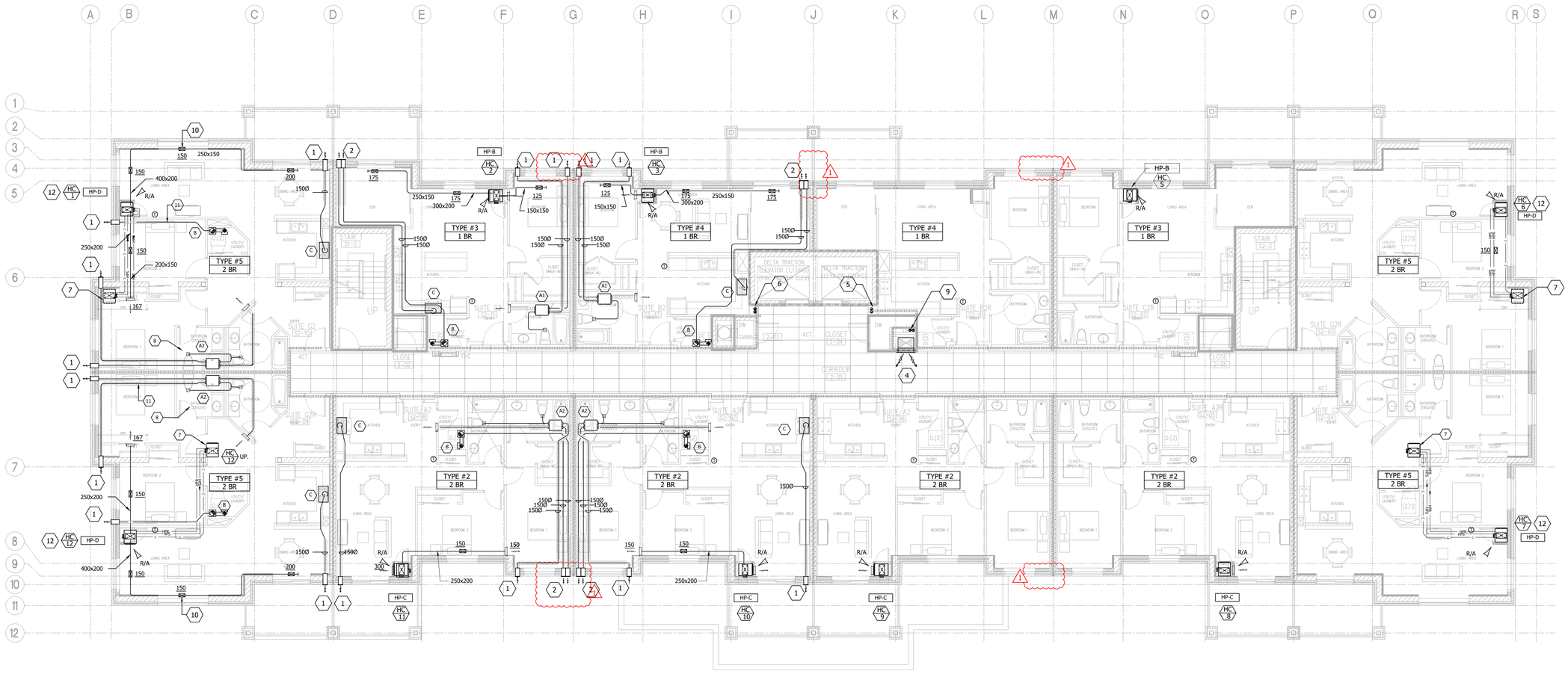
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

GROUND FLOOR PLAN
HVAC LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-102



1 TYPICAL FLOOR HVAC LAYOUT

Scale: 1:100

TYPICAL FLOOR HVAC KEYNOTES

1	SINGLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
2	DOUBLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
3	TRIPLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
4	CORRIDOR F/A RISER C/W SUPPLY AIR GRILLE, SEE RISER DIAGRAM ON M-114 FOR DETAILS.
5	HEATING SUPPLY RISER.
6	DOMESTIC HOT AND COLD WATER RISERS.
7	HEAT PUMP UNIT FROM ABOVE. (TYPICAL)
8	FOR TYPICAL HRV UNIT DUCT CONNECTION, REFER TO DETAIL ON DWG. M-116.
9	HIGH PRESSURE GAS AND LOW PRESSURE GAS RISERS. REFER TO GAS RISER DETAIL ON DWG. M-112.
10	FOR SUPPLY AIR GRILLE SIZING REFER TO GRILLE AND DIFFUSER SCHEDULE ON DWG. M-118. (TYPICAL)
11	FOR EXHAUST DUCTS SIZING REFER TO DUCT SIZE SCHEDULE ON THIS DWG. (TYPICAL)
12	REFER TO HEAT PUMP RISERS DIAGRAMS M-110 DWG. FOR PIPING TAKEOFF RISER SIZING. (TYPICAL)
13	DOM. HOT AND COLD WATER RISERS.

GENERAL NOTES:
- LOCATION OF DIFFUSER TO BE COORDINATED WITH DIVISION 26.
- LOCATION OF THERMOSTAT TO BE COORDINATED WITH DIVISION 26 AND BE PLACED CLOSE TO END OF WALL, NEVER IN THE MIDDLE OF THE WALL.
- THE CONTRACTOR SHALL BALANCE THE AIRFLOW RATES FOR ALL DIFFUSERS AND PROVIDE AIR BALANCING REPORT.
- FOR KITCHEN AND BAR EQUIPMENT AND FIXTURES SHOWN ON DRAWING, REFER TO EQUIPMENT LIST PREPARED BY OTHERS.
- VENT ALL GAS APPLIANCES AS PER OBC AND CSA-B149

DATE	NO.	DESCRIPTION	BY
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ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER
C.J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

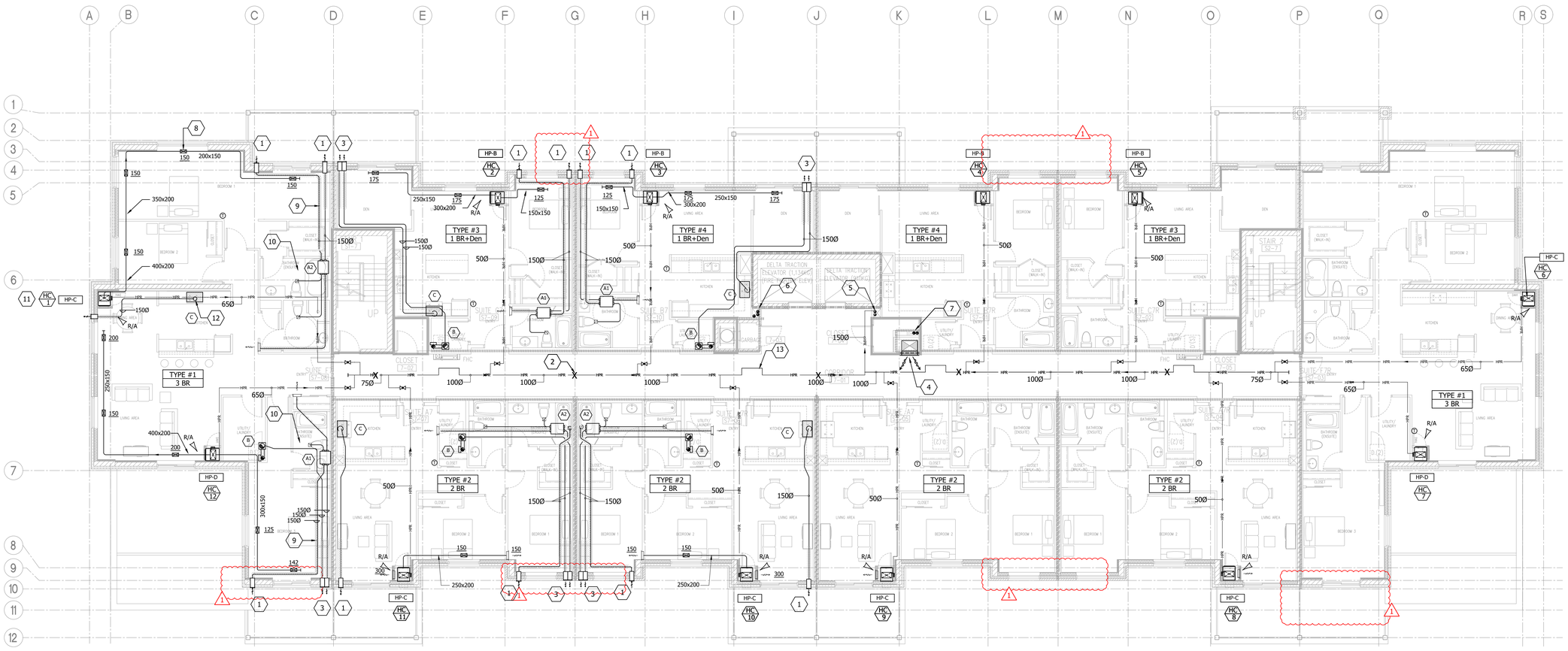
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

TYPICAL FLOOR PLAN
HVAC LAYOUT
(2ND TO 6TH)

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-103



1 SEVENTH FLOOR HVAC LAYOUT

Scale: 1:100

EXHAUST FAN DUCT SIZE SCHEDULE		
SYMBOL	DESCRIPTION	EXHAUST DUCT SIZE
A1	SINGLE BATHROOM EXHAUST	125Ø
A2	DOUBLE BATHROOM EXHAUST	125Ø
B	DRYER EXHAUST	150Ø
C	RANGE HOOD EXHAUST.	150Ø

NOTE: ALL EXHAUST DUCTWORK SHALL BE EXTERNALLY WRAP WITH 25MM (1") THICK FIBERGLASS VINYL JACKET INSULATION FOR A MINIMUM OF 6'-0" (1.8M) FROM EXTERIOR WALL (OR INSULATION SLEEVE), SEE TYPICAL DETAIL ON M-115

7TH FLOOR KEYNOTES	
1	8"X8" SINGLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
2	ANCHOR. (TYPICAL)
3	16"X8" DOUBLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
4	CORRIDOR F/A RISER C/W SUPPLY AIR GRILLE, SEE RISER DIAGRAM ON M-114 FOR DETAILS.
5	HEATING SUPPLY AND RETURN RISER.
6	DOMESTIC HOT AND COLD WATER RISERS.
7	HIGH PRESSURE GAS AND LOW PRESSURE GAS RISERS. REFER TO GAS RISER DETAIL ON DWG. M-112.
8	FOR SUPPLY AIR GRILLE SIZING REFER TO GRILLE AND DIFFUSER SCHEDULE
9	FOR EXHAUST DUCTS SIZING REFER TO DUCT SIZE SCHEDULE ON THIS DWG. (TYPICAL)
10	FOR TYPICAL HRV UNIT DUCT CONNECTION, REFER TO DETAILS
11	REFER TO HEAT PUMP RISERS DIAGRAMS FOR PIPING TAKEOFF RISER SIZING. (TYPICAL)
12	150Ø RANGE HOOD EXHAUST DUCT UP THRU ROOF C/W GOOSENECK.
13	EXPANSION LOOP ON HOT WATER HEATING LINES

GENERAL NOTES:
- LOCATION OF DIFFUSER TO BE COORDINATED WITH DIVISION 26.
- LOCATION OF THERMOSTAT TO BE COORDINATED WITH DIVISION 26 AND BE PLACED CLOSE TO END OF WALL, NEVER IN THE MIDDLE OF THE WALL.
- THE CONTRACTOR SHALL BALANCE THE AIRFLOW RATES FOR ALL DIFFUSERS AND PROVIDE AIR BALANCING REPORT.
- VENT ALL GAS APPLIANCES AS PER OBC AND CSA-B149

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FEB 09/23	3	REVISED AS PER RFI#6	EG
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VAUGHAN, ON L4L 6A9
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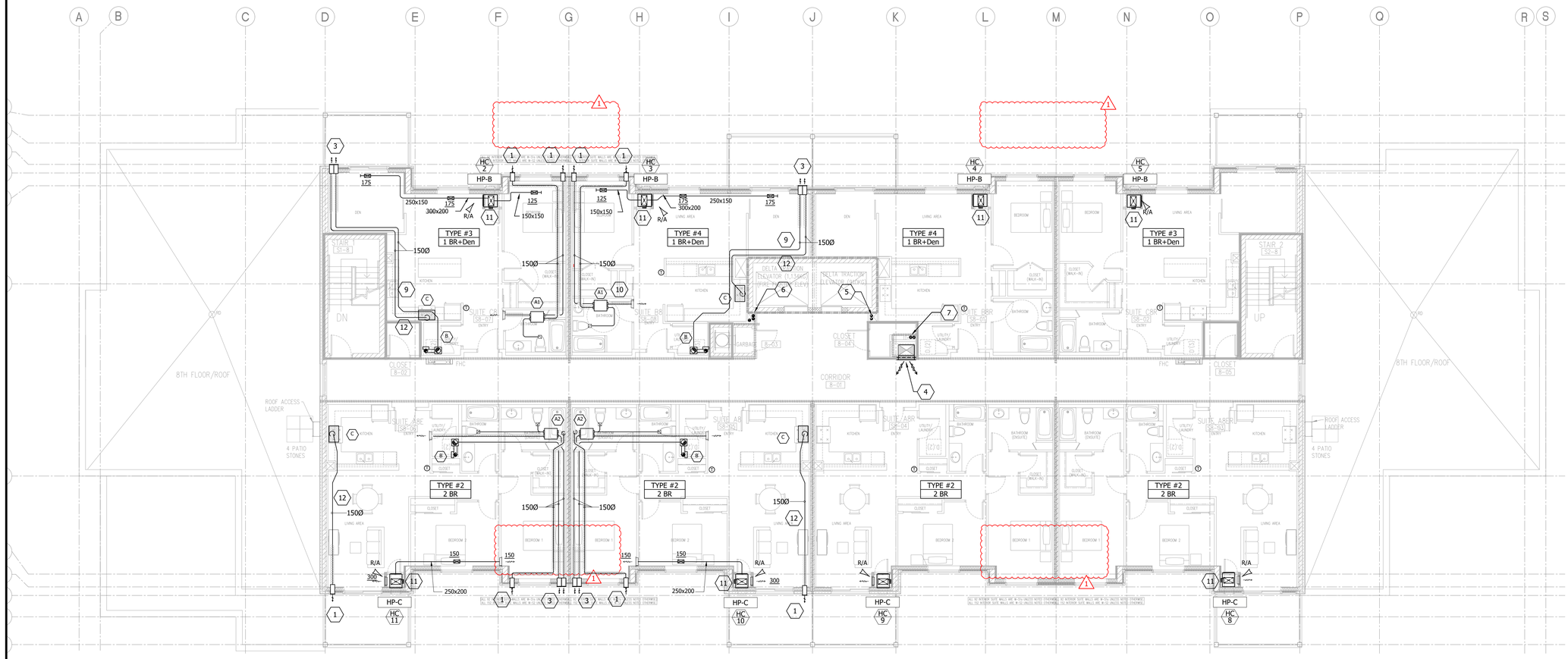
PROJECT:

PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

SEVENTH FLOOR PLAN
HVAC LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-104



1 EIGHTH FLOOR HVAC LAYOUT

Scale: 1:100

EXHAUST FAN DUCT SIZE SCHEDULE		
SYMBOL	DESCRIPTION	EXHAUST DUCT SIZE
A1	SINGLE BATHROOM EXHAUST	125Ø
A2	DOUBLE BATHROOM EXHAUST	125Ø
B	DRYER EXHAUST	150Ø
C	RANGE HOOD EXHAUST.	150Ø

NOTE: ALL EXHAUST DUCTWORK SHALL BE EXTERNALLY WRAP WITH 25MM (1") THICK FIBERGLASS VINYL JACKET INSULATION FOR A MINIMUM OF 6'-0" (1.8M) FROM EXTERIOR WALL (OR INSULATION SLEEVE), SEE TYPICAL DETAIL ON M-115

8TH FLOOR HVAC KEYNOTES	
1	8"X8" SINGLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
2	ANCHOR. (TYPICAL)
3	16"X8" DOUBLE EXHAUST WALL BOX. (TYPICAL) EXACT LOCATION REFER TO ARCH. DWGS.
4	CORRIDOR F/A RISER C/W SUPPLY AIR GRILLE, SEE RISER DIAGRAM ON M-114 FOR DETAILS.
5	HEATING SUPPLY AND RETURN RISER.
6	DOMESTIC HOT AND COLD WATER RISERS.
7	HIGH PRESSURE GAS AND LOW PRESSURE GAS RISERS. REFER TO GAS RISER DETAIL ON DWG. M-112.
8	FOR SUPPLY AIR GRILLE SIZING REFER TO GRILLE AND DIFFUSER SCHEDULE
9	FOR EXHAUST DUCTS SIZING REFER TO DUCT SIZE SCHEDULE ON THIS DWG. (TYPICAL)
10	FOR TYPICAL HRV UNIT DUCT CONNECTION, REFER TO DETAILS
11	REFER TO HEAT PUMP RISERS DIAGRAMS FOR PIPING TAKEOFF RISER SIZING. (TYPICAL)
12	150Ø RANGE HOOD EXHAUST DUCT UP THRU ROOF C/W GOOSENECK.

GENERAL NOTES:
- LOCATION OF DIFFUSER TO BE COORDINATED WITH DIVISION 26.
- LOCATION OF THERMOSTAT TO BE COORDINATED WITH DIVISION 26 AND BE PLACED CLOSE TO END OF WALL, NEVER IN THE MIDDLE OF THE WALL.
- THE CONTRACTOR SHALL BALANCE THE AIRFLOW RATES FOR ALL DIFFUSERS AND PROVIDE AIR BALANCING REPORT.
- VENT ALL GAS APPLIANCES AS PER OBC AND CSA-B149

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MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

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HUBBERT EME ENGINEERING
ELECTRICAL MECHANICAL ENERGY

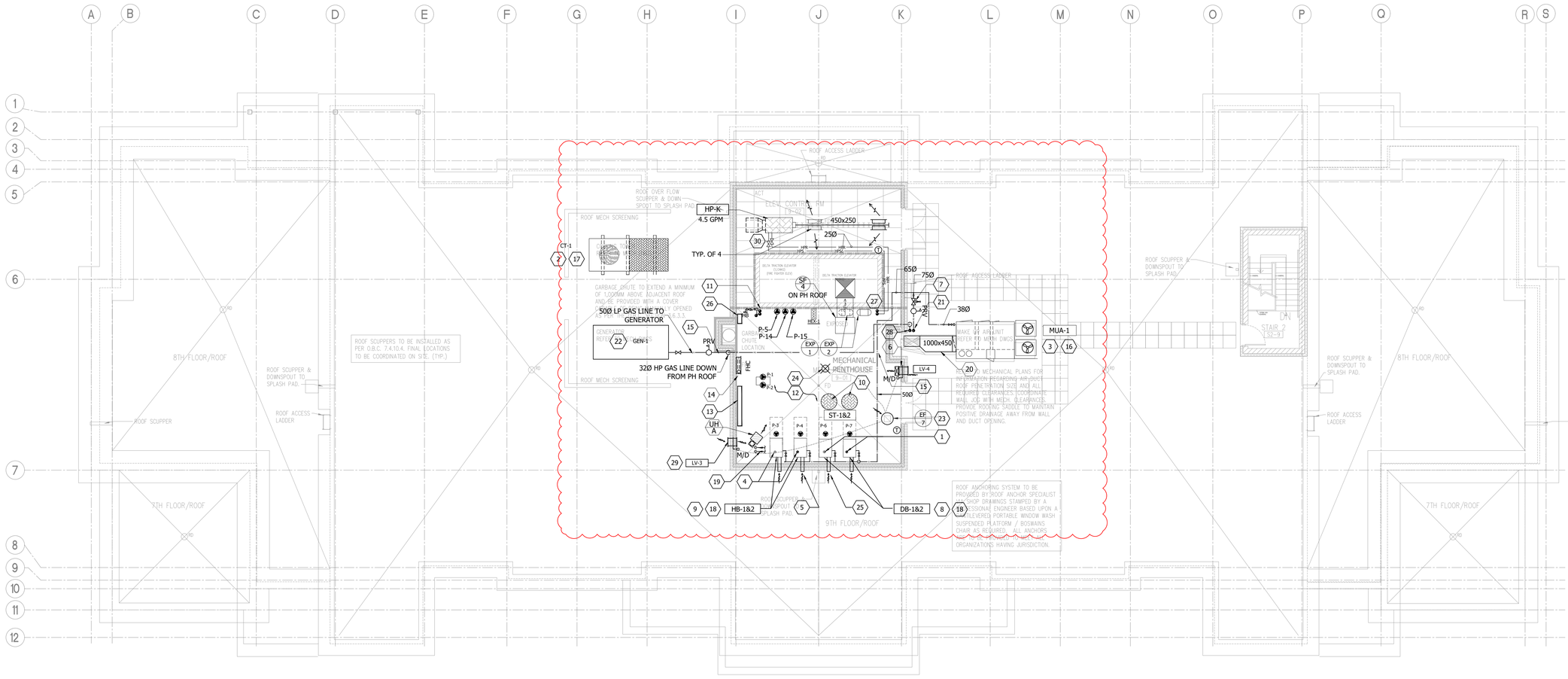
LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
EIGHTH FLOOR PLAN
HVAC LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-105



1 ROOF PLAN HVAC LAYOUT

Scale: 1:100

EQUIPMENT KEYNOTES	
1	BOILERS: TO BE MOUNTED ON `ISOMAT' OR EQUAL APPROVED AND THE CONCRETE PAD WILL BE WRAPPED CONCRETE. ANY SUPPORT POINTS TO THE FLOOR OR CEILING FOR FORCE DRAFT BLOWERS SHOULD BE MOUNTED ON STEEL SPRING AND NEOPRENE ISOLATORS GIVING AT LEAST 1" STATIC DEFLECTION. THE BOILER FIRING FREQUENCY SHOULD BE REVIEWED PRIOR TO SELECTION OF NOISE CONTROL. ASSOCIATED PIPING AND BREACHING SHOULD BE INCORPORATE VIBRATION ISOLATOR HANGERS AND/OS SPRINGS.
2	PUMPS: SHOULD BE MOUNTED ON DOUBLE DEFLECTION NEOPRENE ISOLATORS PROVIDING MINIMUM 0F 0.4" STATIC DEFLECTION.
3	FANS: SHOULD BE MOUNTED ON STEEL SPRINGS AND NEOPRENE HANGERS WITH 1" STATIC DEFLECTION.
4	PIPES AND PIPE RISERS: ALL PIPES WITH A DIAMETER GREATER THAN 75mm (3 INCHES) SHOULD BE VIBRATION FROM THE BUILDING STRUCTURE. THESE PIPES SHOULD BE SUPPORTED ON A VIBRATION ISOLATORS SYSTEM HAVING A STATIC DEFLECTION OF AT LEAST 12mm (12 INCHES). ALL PIPES THAT PENETRATE THROUGH FLOORS SHOULD DO SO THROUGH ENLARGE SLEEVE PENETRATION. THERE SHOULD BE NO MECHANICAL CONTACT BETWEEN THE TWO, THUS AVOIDING THE TRANSFER OF VIBRATION TO THE STRUCTURE.

ROOF HVAC KEYNOTES	
1	100Ø FLUE VENT UP THRU ROOF WITH APPROVED VENT CAP TERMINATING MINIMUM 1.0M ABOVE FINISHED ROOF
2	ROOF OUTDOOR MOUNTED COOLING TOWER CT-1 UNIT. COOLING TOWER APPROX. DIM. AND WEIGHT: 5'-1" w x 15'-3" L x 11'-9" H (APPROX. 12,530 lbs)
3	ROOF MOUNTED INDIRECT GAS FIRED, HEATING AND COOLING MAKE-UP AIR UNIT MUA-1 APPROX. DIM AND WEIGHT: 8'-0" w x 13'-5" L x 4'-0" H (APPROX. 4,300 lbs)
4	150Ø FLUE VENT UP THRU ROOF WITH APPROVED VENT CAP TERMINATING MINIMUM 1.0M ABOVE FINISHED ROOF
5	150Ø INTAKE VENT WITH "RBI" WALL VENT TERMINAL TERMINATING AT EXTERIOR WALL APPROXIMATELY 0.6M ABOVE THE SNOW LINE
6	500x350 COMBUSTION AIR DUCT DN. T0 450MM A.F.F. WITH 45° ANGLE CUT AND WIRE MESH SCREEN AT INLET.
7	EMERGENCY GAS SHUT-OFF VALVE
8	DOMESTIC HOT WATER BOILERS DB-1 AND DB-2 APPROX. DIM AND WEIGHT 600mm L x855mm Wx1160mm H, WEIGHT: 340 lbs
9	HEATING BOILERS HB-1 AND HB-2 APPROX. DIM. AND WEIGHT: 900mm L x600mm W x1815mm H (WEIGHT: 650 lbs)
10	STORAGE ST-1 APPROX. 200 GAL. (APPROX. 15lbs)
11	50Ø DHW, DCW AND 40Ø HOT WATER RECIRC. LINES DN.
12	FOR PIPING CONNECTIONS AND ARRANGEMENT REFER TO SCHEMATIC DWG. M-113.
13	CHEMICAL TREATMENT STATION.
14	FIRE STANDPIPE LINE FROM FLOOR BELOW. REFER TO FIRE PROTECTION FLOW DIAGRAM FOR DETAILS.
15	GAS LINE ROUTING ON ROOF SHALL BE SUPPORTED AT 2.5M INTERVALS AND AT ALL CHANGE OF DIRECTIONS. REFER TO DETAIL ON THIS DRAWING.
16	REFER TO MAKE UP AIR UNIT CURB DETAIL ON DWG. M-116.
17	REFER TO COOLING TOWER UNIT CURB DETAIL ON DWG. M-116.
18	REFER TO BOILER UNITS AND PUMPS CURB DETAIL ON DWG. M-116.
19	20Ø HWS AND HWR LINES TO SYSTEM LOOP.
20	EXPOSED DUCTWORK RUNNING ON ROOF SHALL BE INSULATED WITH 50MM RIGID FOIL FACED GLASS FIBRE ON THE EXTERIOR. WATER PROOFING AND OVER CLADDING OF 28 GA. GALVANIZED SHEET METAL. 1000X400 ARE INSIDE DIMENSIONS OF DUCTWORK AND DOES NOT INCLUDE THE INSULATION. WITH INSULATION, OPENING SIZE REQUIRED IS 1100X500
21	32Ø HIGH PRESSURE GAS LINE FOR GEN-1 AND 32Ø HIGH PRESSURE GAS LINE FOR MECH EQUIPMENT DN. REFER TO GAS RISER DETAIL ON DWG. M-116.
22	ROOF MOUNTED GENERATOR GAS FIRED UNIT GEN-1. REGULATE GAS PRESSURE DOWN TO OPERATING PRESSURE OF GENERATOR.
23	250X250 EXHAUST DUCT DOWN FROM FAN AND TERMINATE BELOW ROOF DECK WITH WIRE MESH SCREEN AT INLET
24	CARBON MONOXIDE DETECTOR
25	100Ø INTAKE VENT WITH "RBI" WALL VENT TERMINAL TERMINATING AT EXTERIOR WALL APPROXIMATELY 0.6M ABOVE THE SNOW LINE
26	CONTROL PANELS
27	150Ø HPS AND HPR RISERS.
28	32Ø GAS LINE UP TO HIGH ROOF.
29	INTAKE AIR LOUVER MOUNTED AT LOW LEVEL 2'-0" AFF.
30	CONNECT 25Ø HPS /HPR LINES TO HEAT PUMP SYSTEM IN MECH. ROOM AND RUN 38Ø CONDENSATE DRAIN LINE TO FLOOR NEAREST HUB/FLOOR DRAIN.

GENERAL NOTES:
- LOCATION OF DIFFUSER TO BE COORDINATED WITH DIVISION 26.
- LOCATION OF THERMOSTAT TO BE COORDINATED WITH DIVISION 26 AND BE PLACED CLOSE TO END OF WALL, NEVER IN THE MIDDLE OF THE WALL.
- THE CONTRACTOR SHALL BALANCE THE AIRFLOW RATES FOR ALL DIFFUSERS AND PROVIDE AIR BALANCING REPORT.
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LICENSED PROFESSIONAL ENGINEER C.J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
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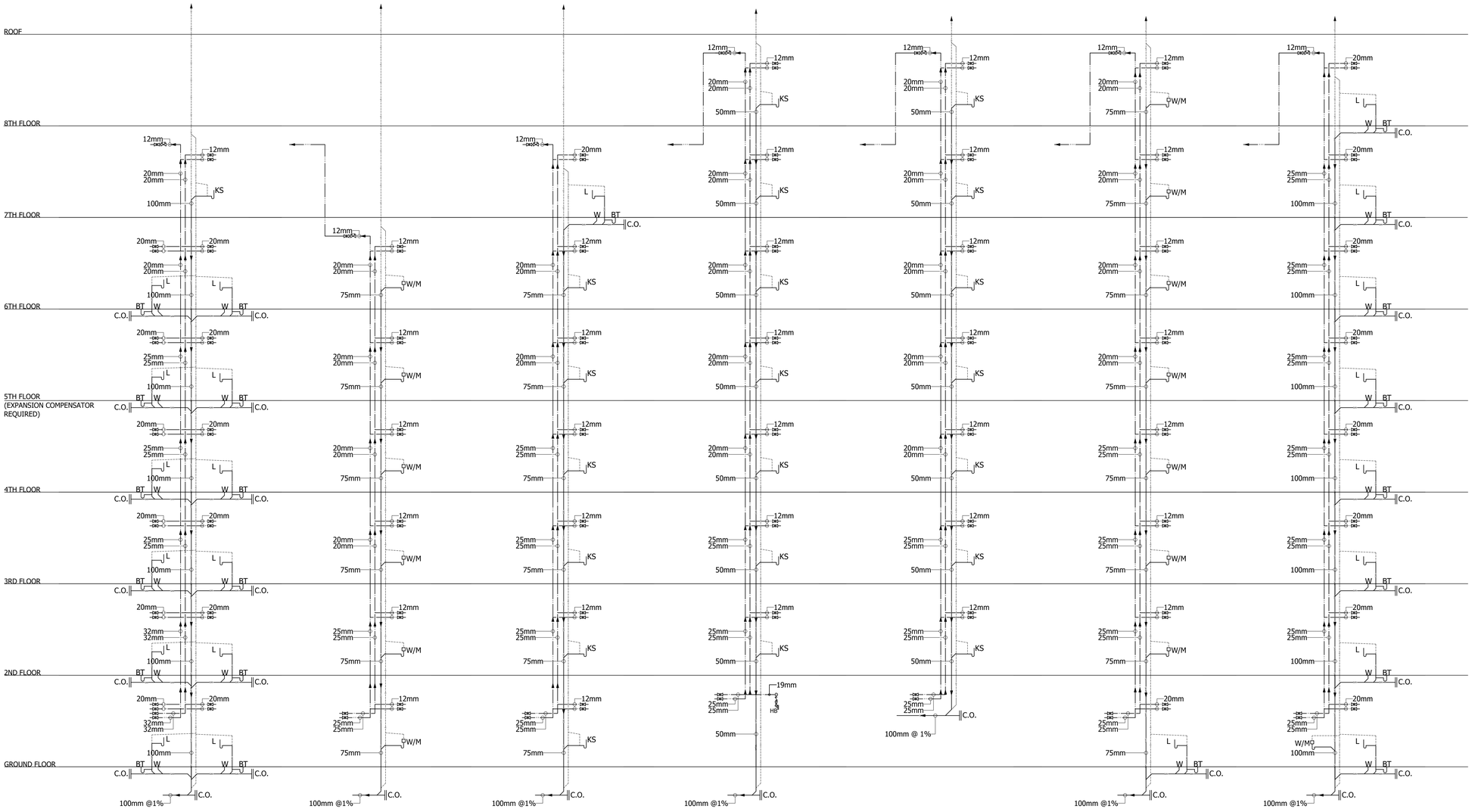
PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
ROOF PLAN
HVAC LAYOUT

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-106



PD 1 / PD 18 — 74 DFU, 48 GPM

PD 2 / PD 17 — 9 DFU, 19 GPM

PD 21 / PD 38 — 15 DFU, 24 GPM

PD 9 — 21 DFU, 28 GPM

PD 4 / PD 10 / PD 15 — 11 DFU, 21 GPM

PD 5 — 17 DFU, 25 GPM

PD 6 / PD 26 / PD 33 — 50 DFU, 41 GPM

LEGEND
L - LAVATORY
BT - BATH TUB
W - WATER CLOSET
KS - KITCHEN SINK
W/M - WASHING MACHINE
LT - LAUNDRY TUB
FD - FLOOR DRAIN

NOTE:
FOR PIPING OFFSET, REFER TO FLOOR PLAN. (TYPICAL)

NOTES:
SUPPORTING MAIN VERTICAL PIPE RISERS SHOULD HAVE DOUBLE LAYER RUBBER PADS UNDER ALL T-CLAMPS OR ANCHORS.
EXPANSION COMPENSATOR REQUIRED AT 5TH FLOOR.

NOTE:
RISER PD-8 DRAINS INTO PD-9 ON GROUND FLOOR

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Hubbert EME Engineering
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VAUGHAN, ON L4L 6A9
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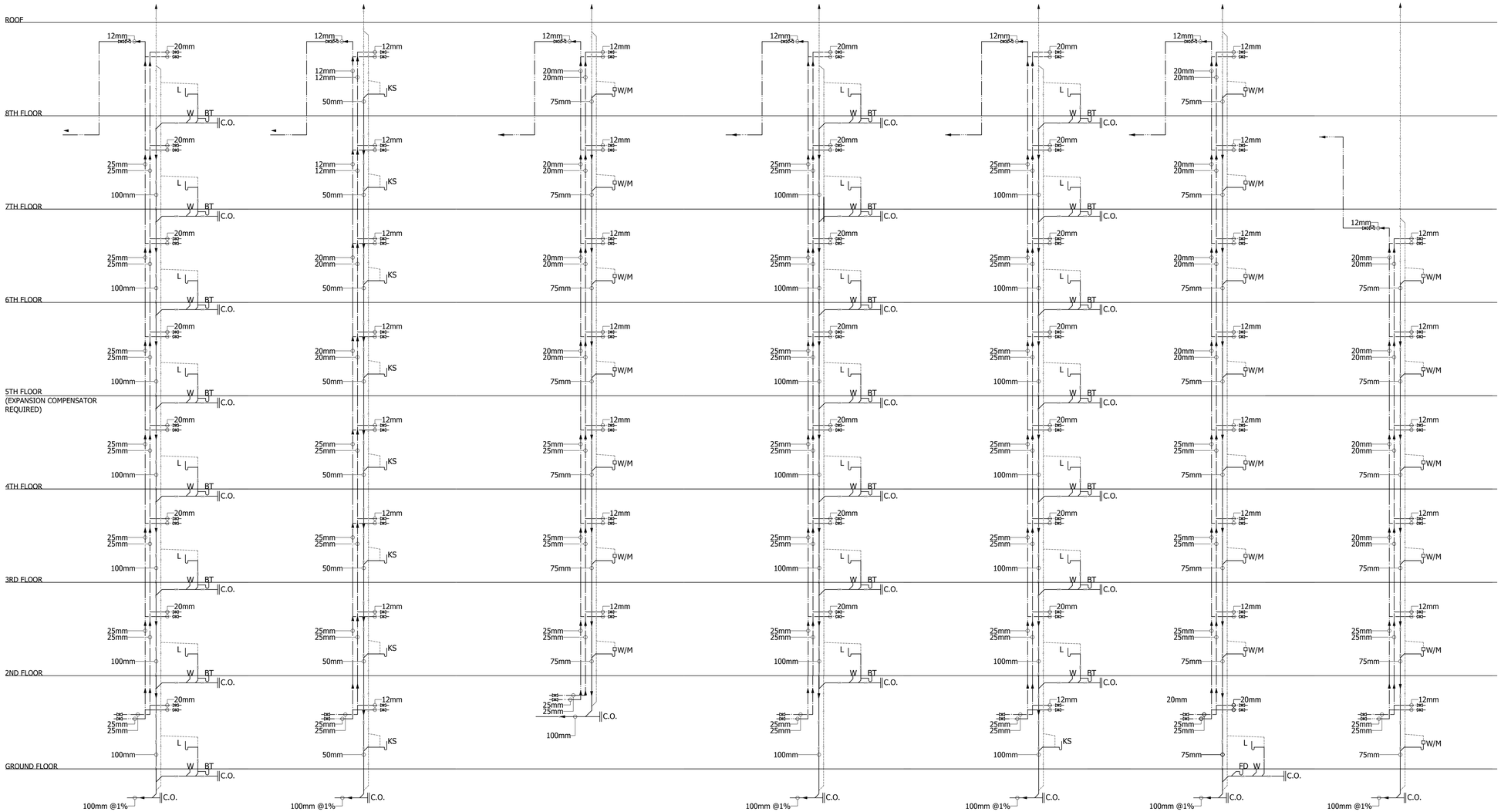
PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
PLUMBING DRAINAGE
RISER DIAGRAM

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-107



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BT - BATH TUB
W - WATER CLOSET
KS - KITCHEN SINK
W/M - WASHING MACHINE
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FD - FLOOR DRAIN

NOTE:
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NOTES:
SUPPORTING MAIN VERTICAL PIPE RISERS SHOULD HAVE DOUBLE LAYER RUBBER PADS UNDER ALL T-CLAMPS OR ANCHORS. EXPANSION COMPENSATOR REQUIRED AT 5TH FLOOR.

NOTE:
RISERS PD-28 AND PD-31 DRAIN INTO PD-27 AND PD-32 RESPECTIVELY ON GROUND FLOOR

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VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
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PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
PLUMBING DRAINAGE
RISER DIAGRAM

DRAWN BY:	CHECKED BY:	SCALE:
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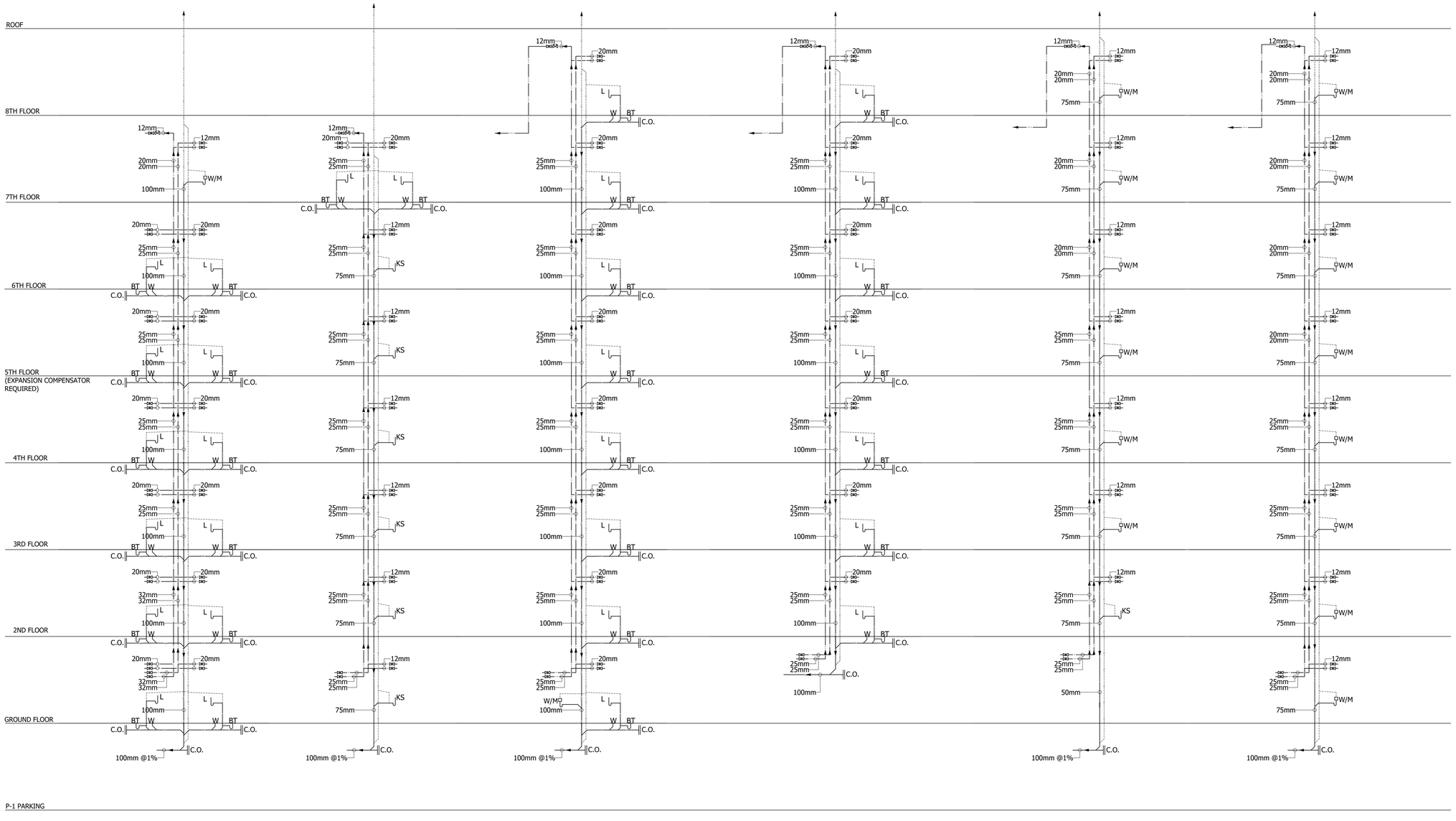
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-108



PD 19 PD 40
74 DFU
48 GPM

PD 3 PD 16
21 DFU
28 GPM

NOTE:
RISERS PD-4 AND PD-15
DRAIN INTO PD-3 AND
PD-16 RESPECTIVELY ON
GROUND FLOOR

PD 13
48 DFU
40 GPM

NOTE:
RISER PD-12 DRAINS
INTO PD-13 ON
GROUND FLOOR

PD 12
42 DFU
39 GPM

PD 11
11 DFU
21 GPM

NOTE:
RISER PD-10 DRAINS
INTO PD-11 ON
GROUND FLOOR

PD 23 PD 36
12 DFU
22 GPM

LEGEND
L - LAVATORY
BT - BATH TUB
W - WATER CLOSET
KS - KITCHEN SINK
W/M - WASHING MACHINE
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NOTE:
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(TYPICAL)

NOTES:
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556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
PLUMBING DRAINAGE
RISER DIAGRAM

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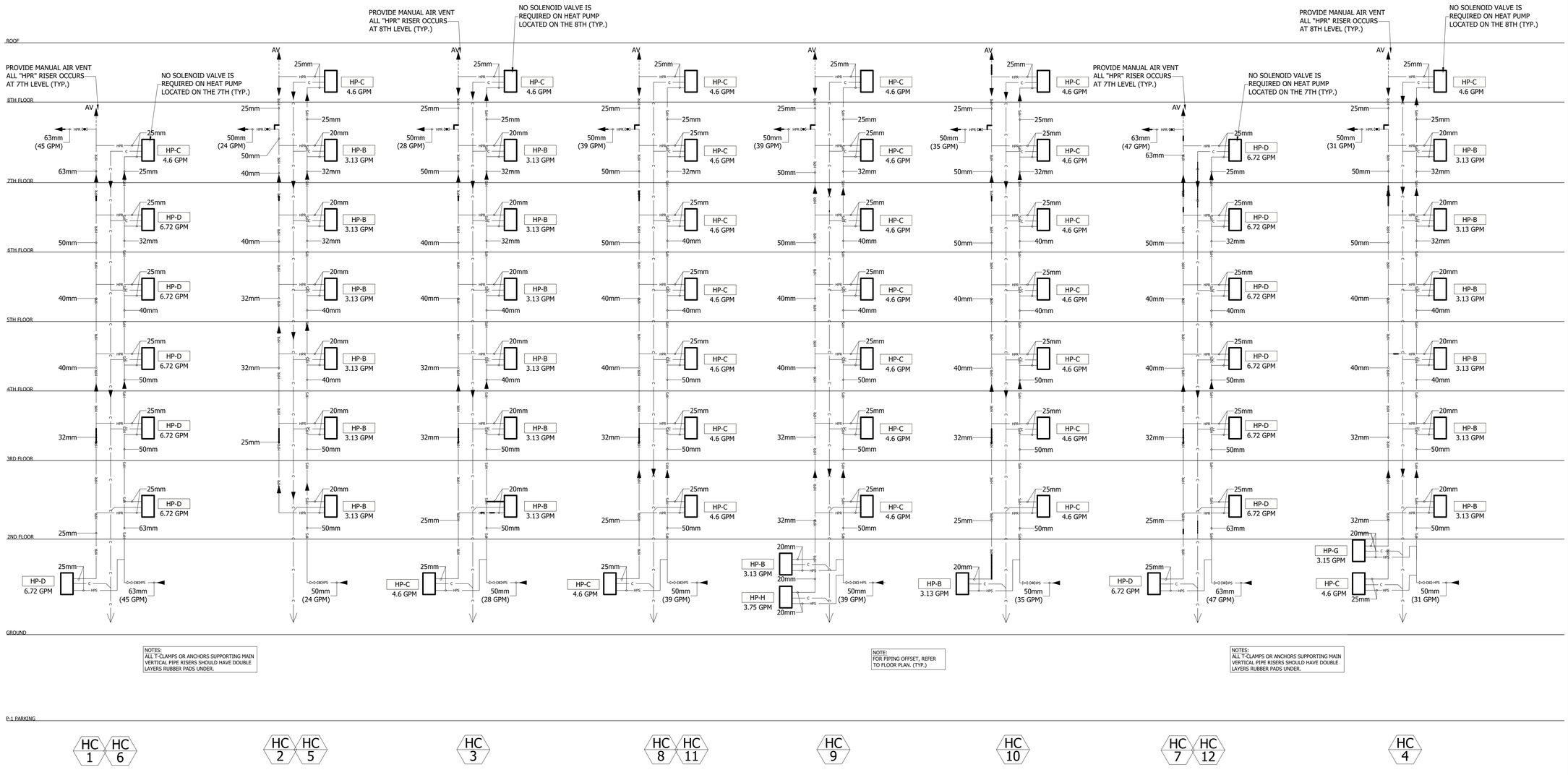
APR/2022	22-6229	M-109



NOTES:
ALL T-CLAMPS OR ANCHORS SUPPORTING MAIN VERTICAL PIPE RISERS SHOULD HAVE DOUBLE LAYERS RUBBER PADS UNDER.

NOTE:
FOR PIPING OFFSET, REFER TO FLOOR PLAN. (TYP.)

NOTES:
ALL T-CLAMPS OR ANCHORS SUPPORTING MAIN VERTICAL PIPE RISERS SHOULD HAVE DOUBLE LAYERS RUBBER PADS UNDER.

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556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
HEAT PUMP RISERS AND SCHEMATIC DIAGRAM

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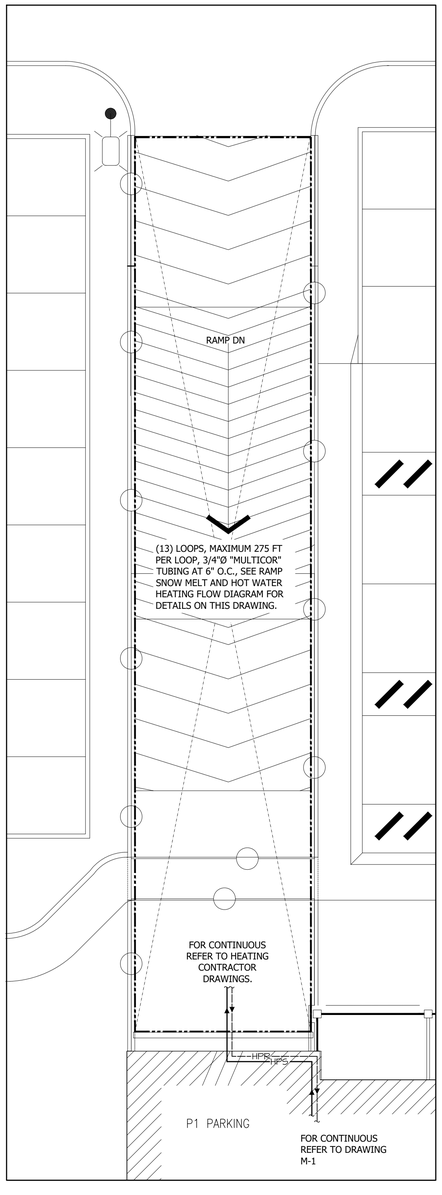
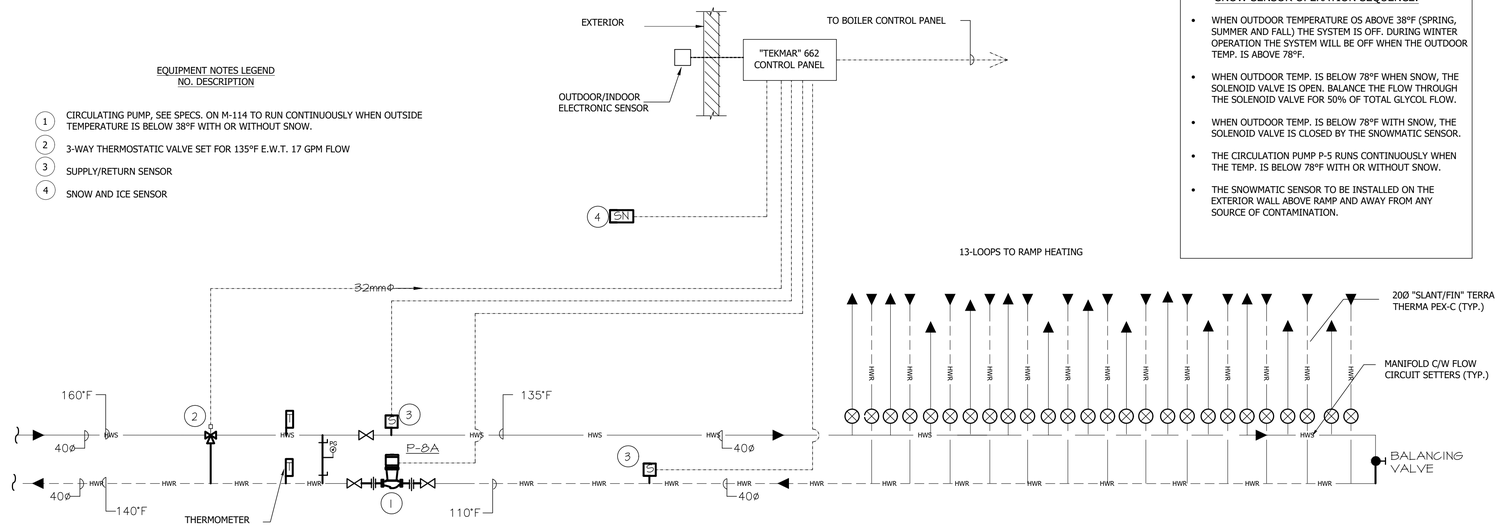


RAMP PLAN SCALE: 1: 100

EQUIPMENT NOTES LEGEND

NO. DESCRIPTION

1. CIRCULATING PUMP, SEE SPECS, ON M-114 TO RUN CONTINUOUSLY WHEN OUTSIDE TEMPERATURE IS BELOW 38°F WITH OR WITHOUT SNOW.
2. 3-WAY THERMOSTATIC VALVE SET FOR 135°F E.W.T. 17 GPM FLOW
3. SUPPLY/RETURN SENSOR
4. SNOW AND ICE SENSOR



SNOW SENSOR OPERATION SEQUENCE:

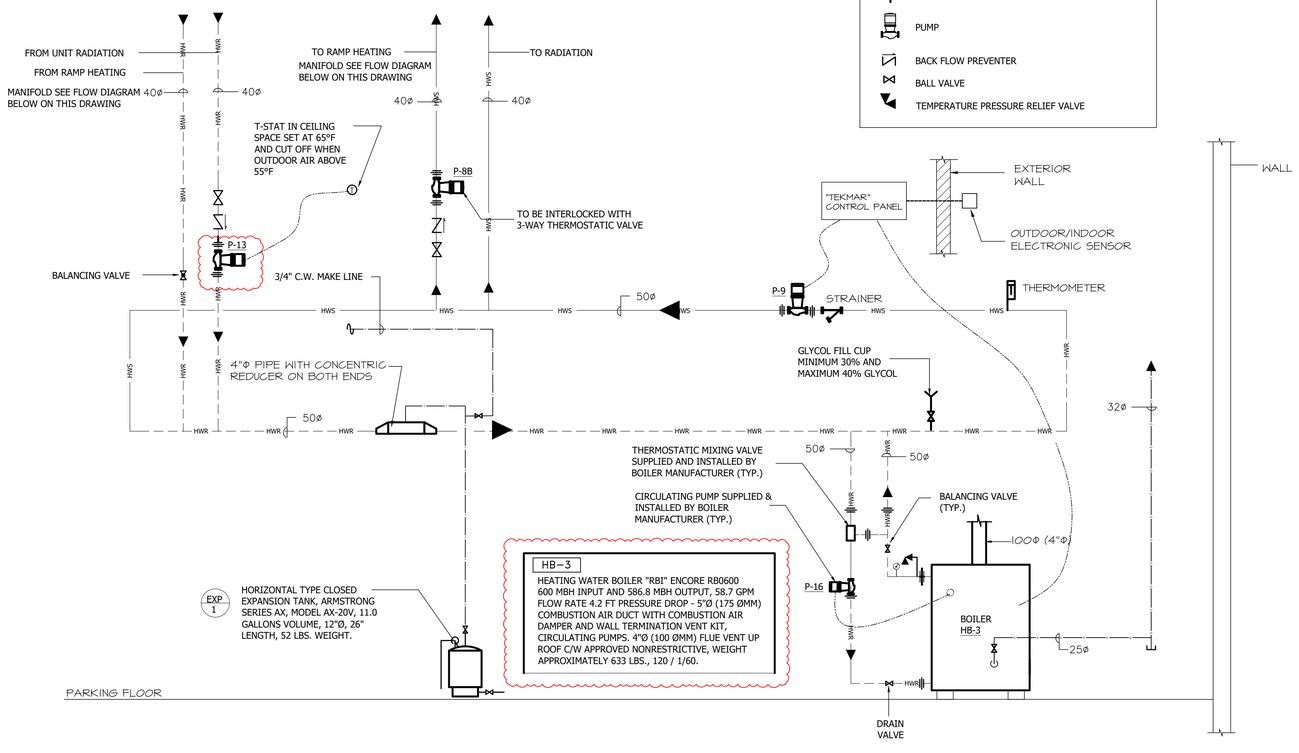
- WHEN OUTDOOR TEMPERATURE OS ABOVE 38°F (SPRING, SUMMER AND FALL) THE SYSTEM IS OFF. DURING WINTER OPERATION THE SYSTEM WILL BE OFF WHEN THE OUTDOOR TEMP. IS ABOVE 78°F.
- WHEN OUTDOOR TEMP. IS BELOW 78°F WHEN SNOW, THE SOLENOID VALVE IS OPEN. BALANCE THE FLOW THROUGH THE SOLENOID VALVE FOR 50% OF TOTAL GLYCOL FLOW.
- WHEN OUTDOOR TEMP. IS BELOW 78°F WITH SNOW, THE SOLENOID VALVE IS CLOSED BY THE SNOWMATIC SENSOR.
- THE CIRCULATION PUMP P-5 RUNS CONTINUOUSLY WHEN THE TEMP. IS BELOW 78°F WITH OR WITHOUT SNOW.
- THE SNOWMATIC SENSOR TO BE INSTALLED ON THE EXTERIOR WALL ABOVE RAMP AND AWAY FROM ANY SOURCE OF CONTAMINATION.

RAMP SNOW MELTING FLOW DIAGRAM

N.T.S.

LEGEND

- STRAINER
- THERMOMETER
- PUMP
- BACK FLOW PREVENTER
- BALL VALVE
- TEMPERATURE PRESSURE RELIEF VALVE



HOT WATER RADIATION HEATING / RAMP HEATING FLOW DIAGRAM

N.T.S.

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SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
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ELECTRICAL | MECHANICAL | ENERGY

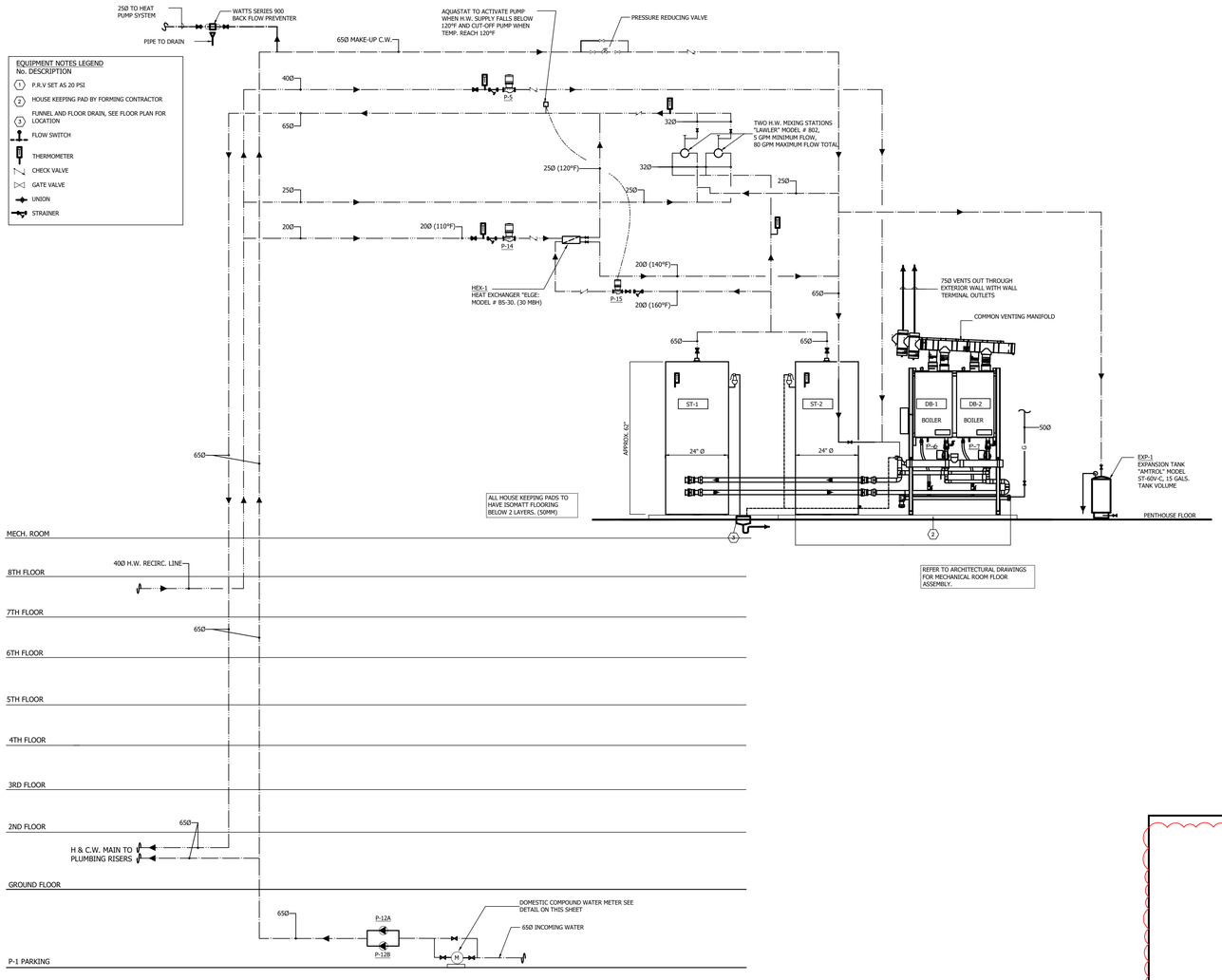
LICENSED PROFESSIONAL ENGINEER
C.J.LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
HEATING HOT WATER SCHEMATIC DIAGRAM

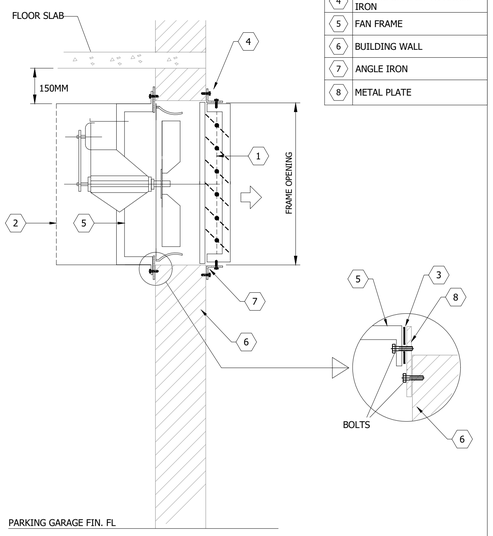
DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-111



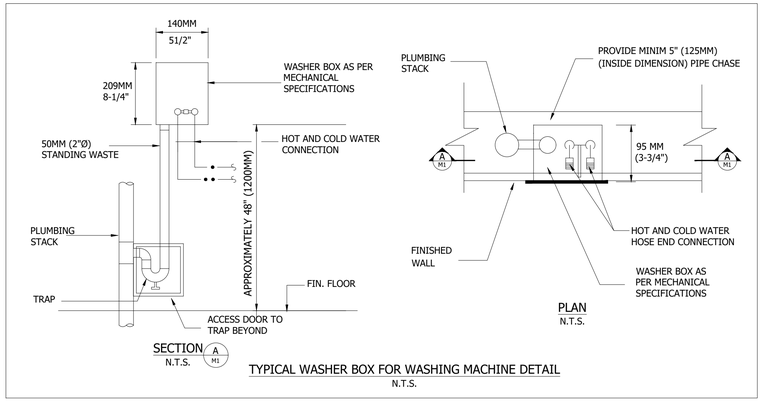
DOMESTIC HOT WATER SYSTEM FLOW DIAGRAM
N.T.S.

GARAGE EXHAUST FAN	
FAN NO.	WALL OPENING
EF-1	50" X 50"
EF-2	50" X 50"
NOTE: FOR EXACT SIZE OF FAN, REFER TO MANUFACTURER SHOP DWGS.	

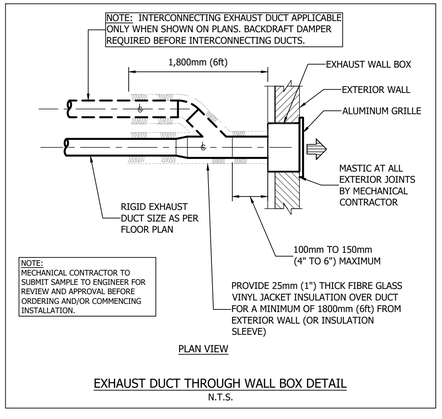
LIST OF EQUIPMENT	
1	WATER TIGHT BACK DRAFT DAMPER
2	SAFETY WIRE GUARD C/W ACCESS DOOR FOR BELT CHANGE
3	NEOPRENE VIBRATION ISOLATION BETWEEN FAN FRAME AND METAL PLATE
4	SECURE DAMPER TO ANGEL IRON
5	FAN FRAME
6	BUILDING WALL
7	ANGLE IRON
8	METAL PLATE



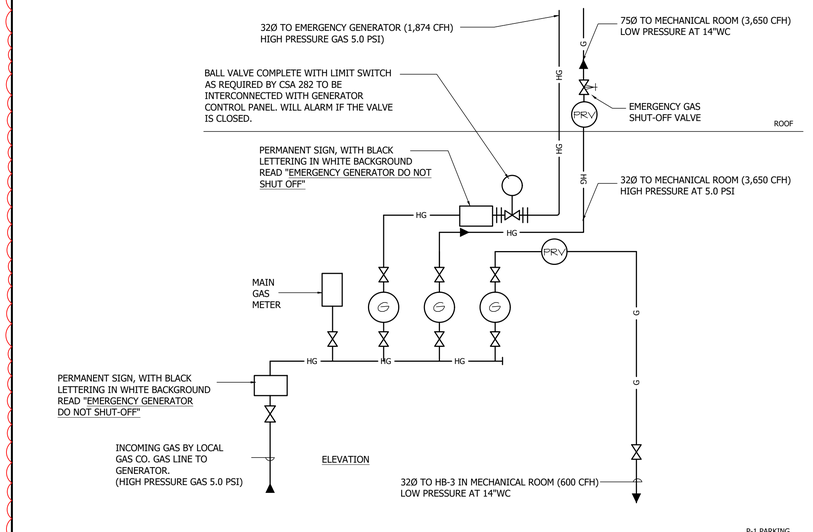
TYPICAL MOUNTING DETAIL OF GARAGE EXHAUST FAN
N.T.S.



TYPICAL WASHER BOX FOR WASHING MACHINE DETAIL
N.T.S.



EXHAUST DUCT THROUGH WALL BOX DETAIL
N.T.S.



ESTIMATE GAS CONSUMPTION:

BOILERS = 3,400 CFH
MAKE-UP AIR UNIT = 850 CFH
EMERGENCY GENERATOR = 1,874 CFH

TOTAL = 6,124 CFH

GAS METER SCHEMATIC FLOW DIAGRAM
N.T.S.

NOTE:
INSTALLATION OF GAS METER ASSEMBLY AND ASSOCAITED GAS PIPING SHALL BE AS PER RECENT "CSA 282 AND CSA B149.1 STANDARDS". REFER TO FIGURE CSA 282-15 B.1 FOR FURTHER DETAILS.

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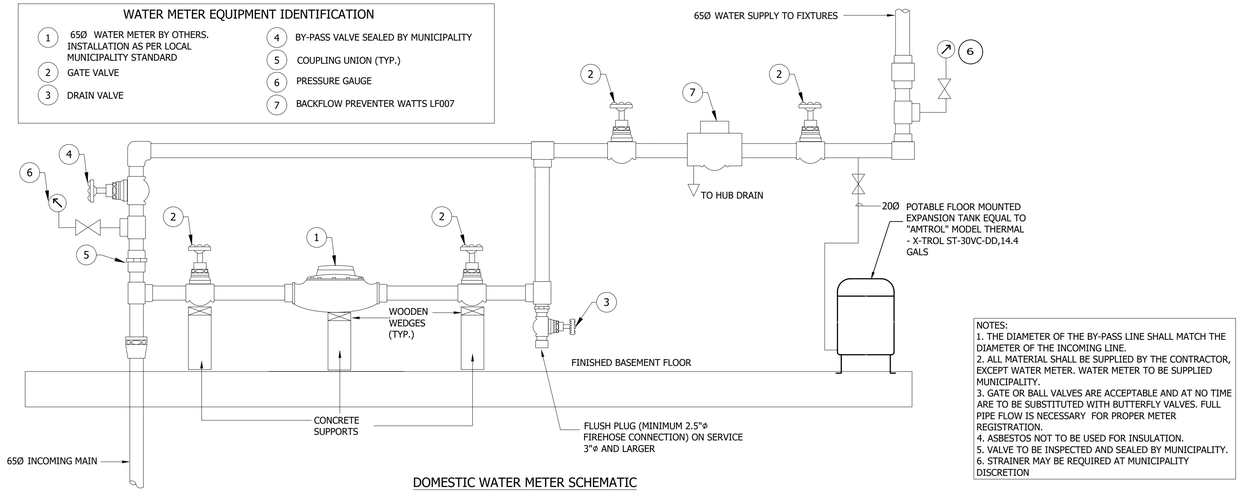
PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
DOMESTIC HOT WATER SCHEMATIC DIAGRAMS AND DETAILS

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-112

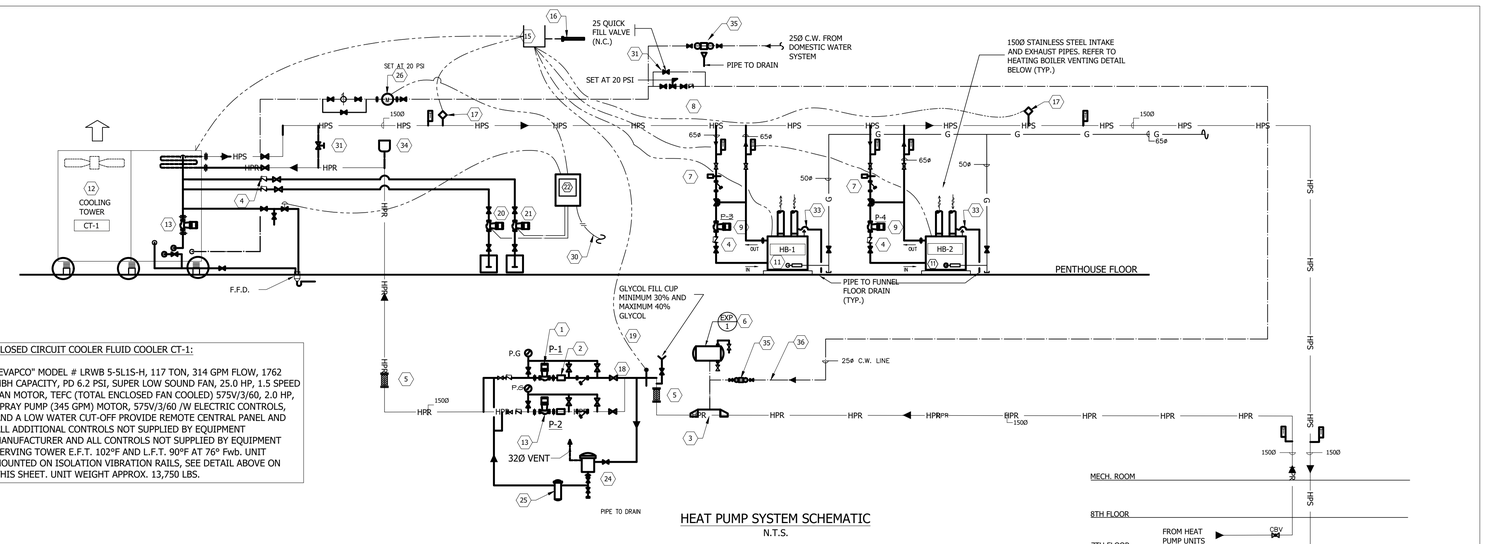
WATER METER EQUIPMENT IDENTIFICATION

1. 65Ø WATER METER BY OTHERS. INSTALLATION AS PER LOCAL MUNICIPALITY STANDARD
2. GATE VALVE
3. DRAIN VALVE
4. BY-PASS VALVE SEALED BY MUNICIPALITY
5. COUPLING UNION (TYP.)
6. PRESSURE GAUGE
7. BACKFLOW PREVENTER WATTS LF007



NOTES:
1. THE DIAMETER OF THE BY-PASS LINE SHALL MATCH THE DIAMETER OF THE INCOMING LINE.
2. ALL MATERIAL SHALL BE SUPPLIED BY THE CONTRACTOR, EXCEPT WATER METER. WATER METER TO BE SUPPLIED MUNICIPALITY.
3. GATE OR BALL VALVES ARE ACCEPTABLE AND AT NO TIME ARE TO BE SUBSTITUTED WITH BUTTERFLY VALVES. FULL PIPE FLOW IS NECESSARY FOR PROPER METER REGISTRATION.
4. ASBESTOS NOT TO BE USED FOR INSULATION.
5. VALVE TO BE INSPECTED AND SEALED BY MUNICIPALITY.
6. STRAINER MAY BE REQUIRED AT MUNICIPALITY DISCRETION

DOMESTIC WATER METER SCHEMATIC
N.T.S.



CLOSED CIRCUIT COOLER FLUID COOLER CT-1:

"EVAPCO" MODEL # LRWB 5-5L1S-H, 117 TON, 314 GPM FLOW, 1762 MBH CAPACITY, PD 6.2 PSI, SUPER LOW SOUND FAN, 25.0 HP, 1.5 SPEED FAN MOTOR, TEFC (TOTAL ENCLOSED FAN COOLED) 575V/3/60, 2.0 HP, SPRAY PUMP (345 GPM) MOTOR, 575V/3/60 /W ELECTRIC CONTROLS, AND A LOW WATER CUT-OFF PROVIDE REMOTE CENTRAL PANEL AND ALL ADDITIONAL CONTROLS NOT SUPPLIED BY EQUIPMENT MANUFACTURER AND ALL CONTROLS NOT SUPPLIED BY EQUIPMENT SERVING TOWER E.F.T. 102°F AND L.F.T. 90°F AT 76° Fwb. UNIT MOUNTED ON ISOLATION VIBRATION RAILS, SEE DETAIL ABOVE ON THIS SHEET. UNIT WEIGHT APPROX. 13,750 LBS.

HEAT PUMP SYSTEM SCHEMATIC
N.T.S.

KEYNOTES

1	HEATING/COOLING SYSTEM PUMP C/W SPRING HANGERS ON PIPES FOR THE FIRST 3FT ON EACH SIDE OF PUMP P1 & P2
2	SUCTION GUIDE WITH INTEGRAL STRAINER
3	200Ø PIPE WITH CONCENTRIC REDUCER AT BOTH ENDS
4	CHECK VALVE
5	FLEXIBLE PIPE CONNECTION
6	EXPANSION TANK "EPANFLEX" MODEL # 0T200 25 USG CAPACITY, 24" DIA. X 66" LONG
7	NO FLOW CUT-OFF SWITCH
8	NOT ASSIGNED
9	BOILER CIRCULATING PUMP
10	WATER MAKE-UP. PRV SET TO PRESSURE INDICATED AND C/W BY-PASS VALVE.
11	HEATING BOILER
12	CLOSED CIRCUIT FLUID COOLER
13	CLOSED CIRCUIT COOLER SPRAY PUMP
14	SOLENOID VALVE
15	HEAT PUMP SYSTEM CONTROL PANEL (WITH REPEATER PANEL IN SECURITY OFFICE OR TO OWNERS DISCRETION). REPEATER PANEL TO BE APPROX. 150mm x 150mm WITH A GREEN AND RED DISPLAY PILOT LIGHT. - GREEN INDICATES ALL SYSTEM OPERATING OK - RED INDICATES FAILURE IN SYSTEM OPERATION, TO BE INVESTIGATED. REPEATER PANEL SUPPLIED BY HEAT PUMP MANUFACTURER, INSTALLED AND WIRED BY MECHANICAL CONTRACTOR.
16	INDOOR/OUTDOOR ELECTRONIC SENSOR
17	WATER TEMPERATURE SENSOR WIRED TO PANEL
18	NOT ASSIGNED
19	GLYCOL FILL 30% REQUIRED
20	CHEMICAL FEED PUMP (INHIBITOR)
21	CHEMICAL FEED PUMP (BIOCIDE)
22	PACKAGED PRE-WIRED CHEMICAL FEED CONTROL PANEL
23	ALGAECIDE FEED BY-PASS POT FEEDER MICRON FILTER
24	BY-PASS POT FEEDER FOR LOOPMAN CHEMICALS
25	MICRON FILTER
26	MAKE-UP WATER METER WITH AUXILIARY CONTROLS (DEARBORN OR EQUAL)
27	FRAME SUPPORT, BY UNIT MANUFACTURER
28	VIBRATION ISOLATION RAIL SUPPLY BY TOWER MANUFACTURER
29	12" HIGH X 15' LONG X 10" WIDE CONCRETE SLEEPERS. ANCHOR TO CORESLAB WITH 15M BAR @ 1200 O/C BY MECH. CONTRACTOR
30	120V POWER SUPPLY BY DIV. 26
31	NORMALLY CLOSED (NC) BY PASS VALVE (LOCKED CLOSED)
32	4" (100mm) HIGH HOUSEKEEPING PAD BY GENERAL CONTRACTOR. (ALL HOUSEKEEPING PADS TO HAVE ISOMATT FLOORING BELOW 2 LAYERS 50mm)
33	TEMPERATURE AND PRESSURE RELIEF VALVE
34	AUTOMATIC AIR VENT (AT HIGHEST POINT OF SYSTEM)
35	WATTS SERIES 900 BACKFLOW PREVENTER
36	25Ø COLD WATER MAKE-UP

LEGEND

- STRAINER
- THERMOMETER
- PUMP
- BALL VALVE
- TEMPERATURE PRESSURE RELIEF VALVE
- LOW WATER CUT-OFF SENSOR
- 3-WAY MIXING VALVE
- CHECK VALVE
- BALANCING VALVE
- FFD. FUNNEL FLOOR DRAIN (BY PLUMBING CONTRACTOR)

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PROJECT:

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556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:

HEATING SCHEMATIC DIAGRAM AND DETAILS

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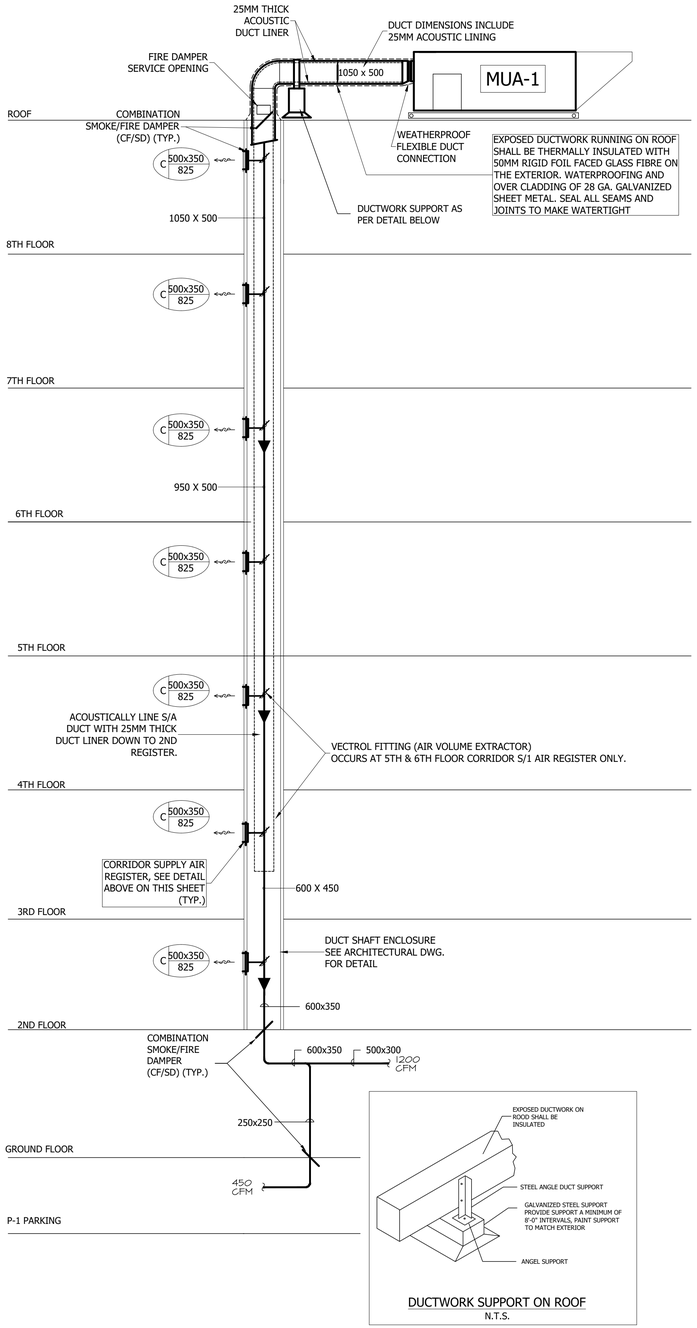
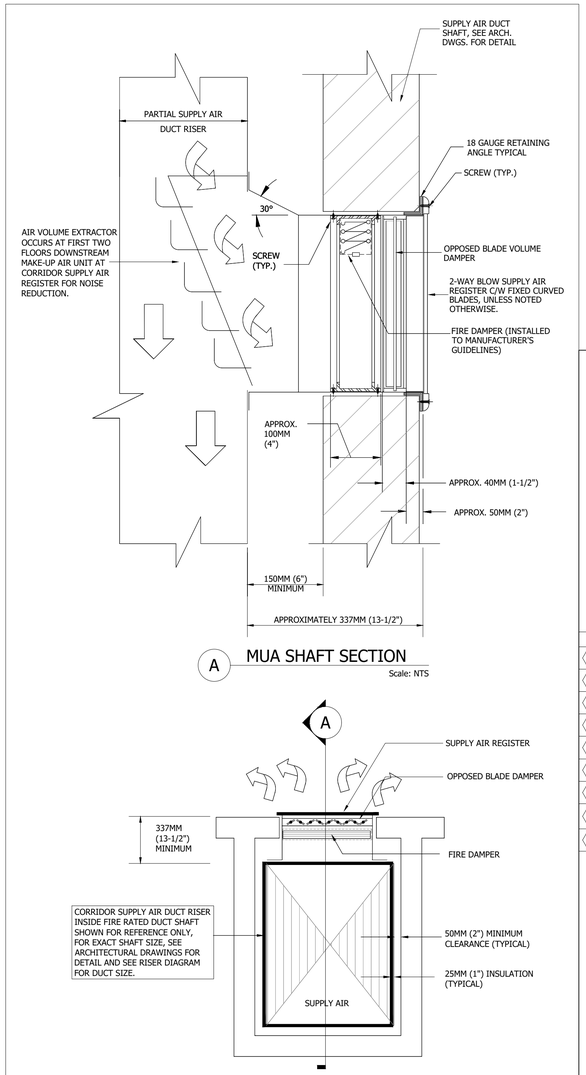


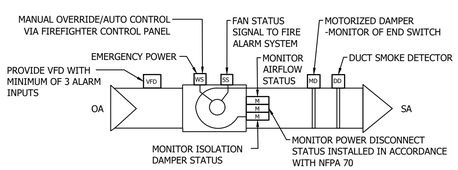
CORRIDOR SUPPLY AIR RISER
N.T.S.

DUCTWORK SUPPORT ON ROOF
N.T.S.

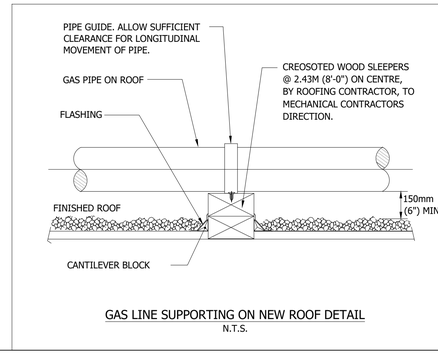


A MUA SHAFT SECTION
Scale: NTS

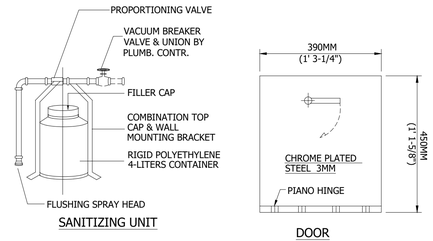
TYPICAL DETAIL OF CORRIDOR SUPPLY AIR DUCT SHAFT
N.T.S.



ELEVATOR PRESSURIZATION FAN CONTROLS
N.T.S.

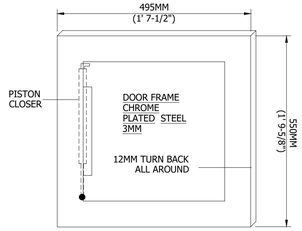


GAS LINE SUPPORTING ON NEW ROOF DETAIL
N.T.S.



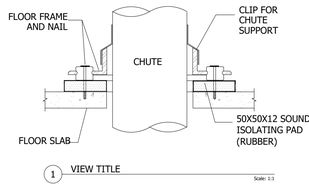
SANITIZING UNIT

DOOR



DOOR FRAME

LIST OF EQUIPMENT	
1	CHUTE RISER
2	INTAKE DOOR
3	FIRE DAMPER
4	WASHDOWN
5	SPRINKLER HEAT AT EVERY OTHER FLOOR
6	VENT CAP
7	ANGLE SUPPORT
8	ACCESS DOOR (SUPPLIED BY SPRINKLER CONTRACTOR)
9	PASS THRU DOOR



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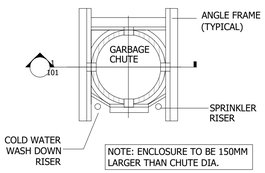
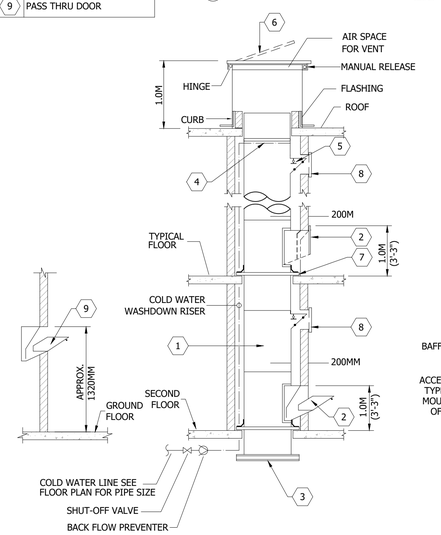
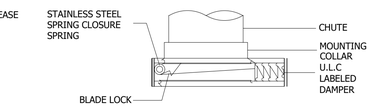


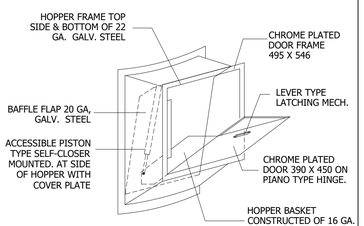
NOTE: ENCLOSURE TO BE 150MM LARGER THAN CHUTE DIA.

CHUTE SUPPORT DETAIL





FIRE DAMPER AT BOTTOM OF CHUTE



GARBAGE CHUTE DETAIL
(BASED ON MFR. YORK)
N.T.S.

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PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
FRESH AIR RISER DIAGRAM AND DETAILS

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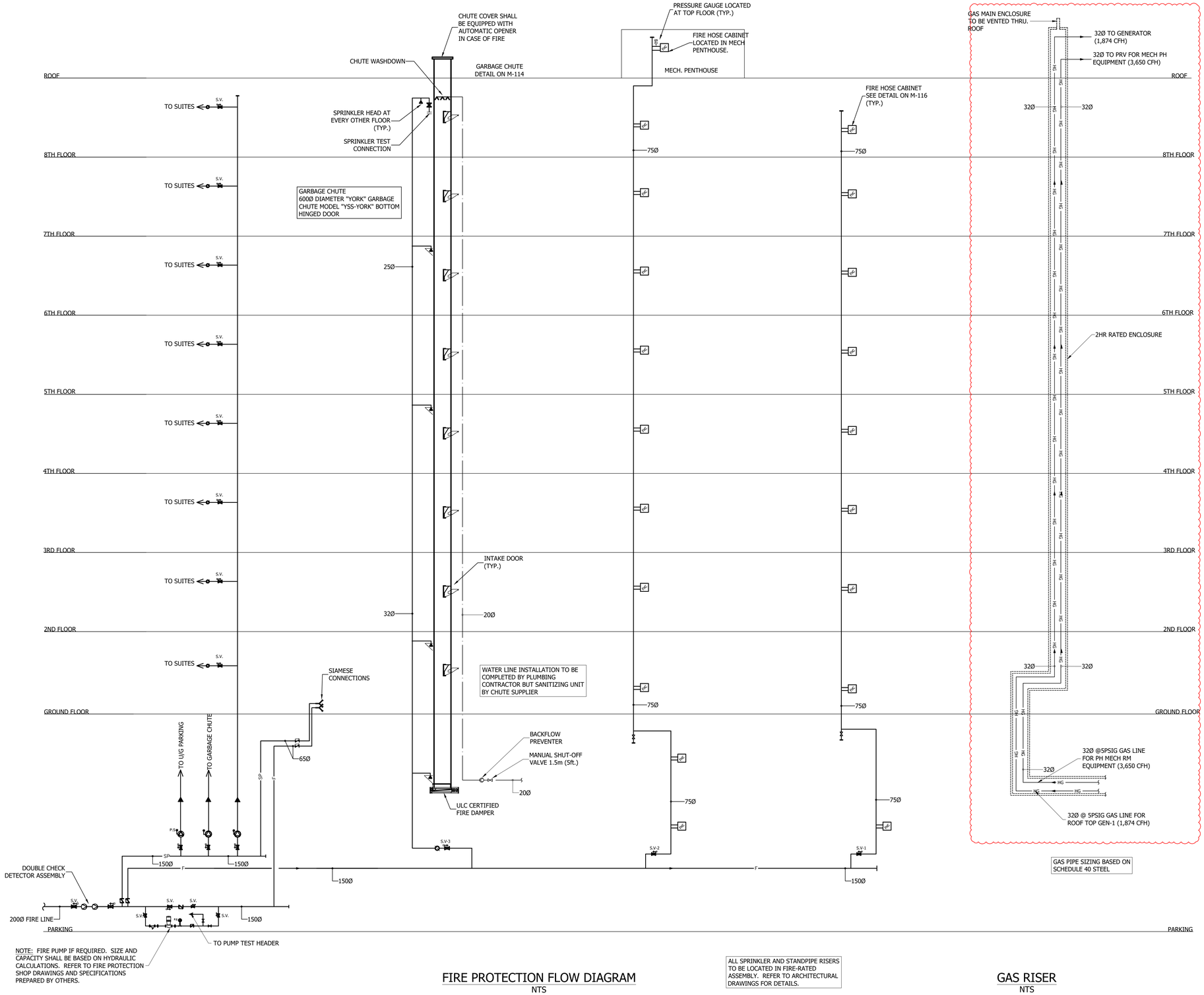

FIRE PROTECTION FLOW DIAGRAM
NTS

ALL SPRINKLER AND STANDPIPE RISERS TO BE LOCATED IN FIRE-RATED ASSEMBLY. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.

GAS RISER
NTS

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VAUGHAN, ON L4L 6A9
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PROJECT:
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SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
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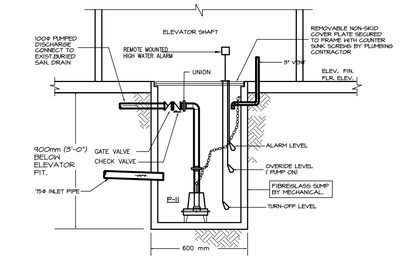
DRAWING TITLE:
MISCELLANEOUS RISER DIAGRAM

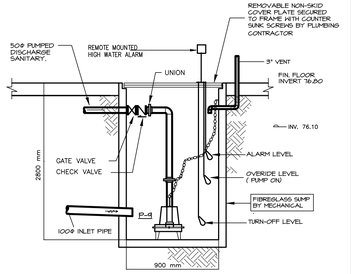
DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-115



SECTION

SECTION DETAIL OF ELEVATOR SUMP CHAMBER

N.T.S.



SECTION

DETAIL OF SANITARY SUMP CHAMBER

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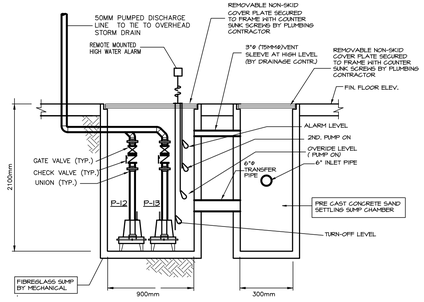
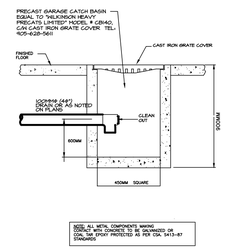


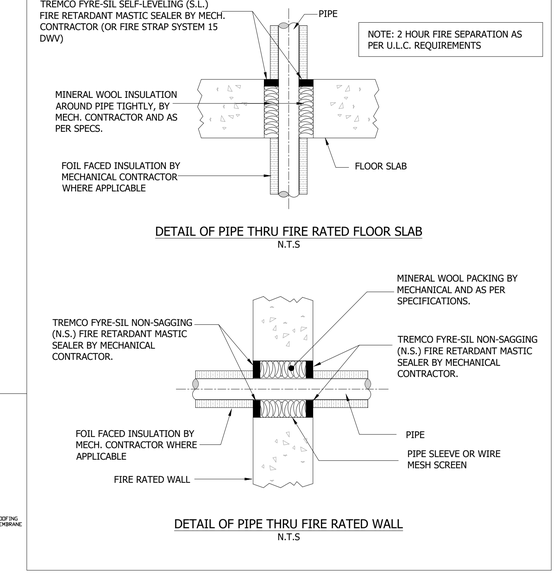
DETAIL OF SANITARY STORM CHAMBER

N.T.S.



GARAGE DRAIN DETAIL

N.T.S

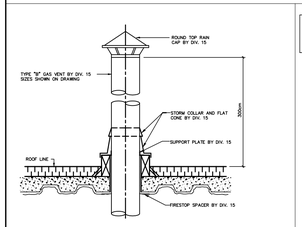


DETAIL OF PIPE THRU FIRE RATED FLOOR SLAB

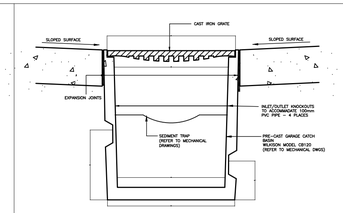
N.T.S

DETAIL OF PIPE THRU FIRE RATED WALL

N.T.S



DETAIL OF STACK THROUGH ROOF N.T.S.



AREA DRAIN DETAIL

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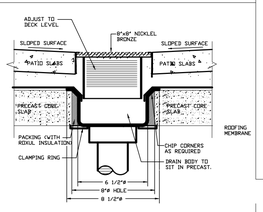

DECK DRAIN DETAIL

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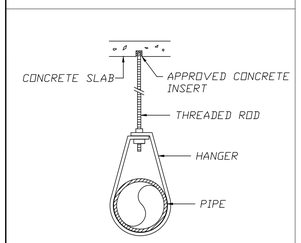
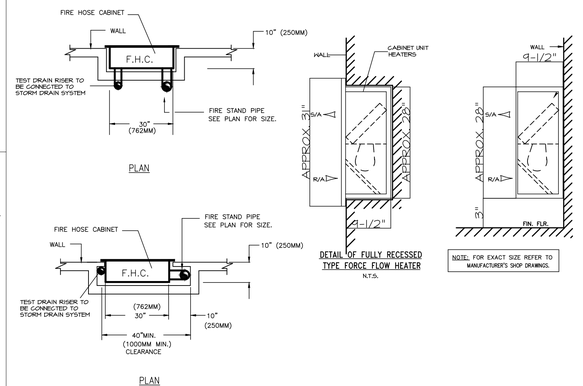


HANGER DETAIL

N.T.S.

ALL STANDPIPE RISERS TO BE LOCATED IN FIRE-RATED ASSEMBLY. REFER TO ARCHITECTS DWGS. FOR DETAILS.



DETAIL OF FULLY RECESSED TYPE FORCE FLOW HEATER

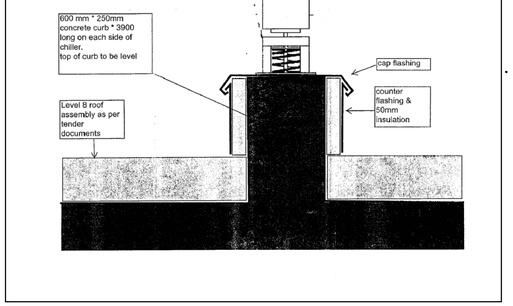
N.T.S.

NOTE: FOR EXACT SIZE REFER TO MANUFACTURER'S SHOP DRAWINGS.

PLAN

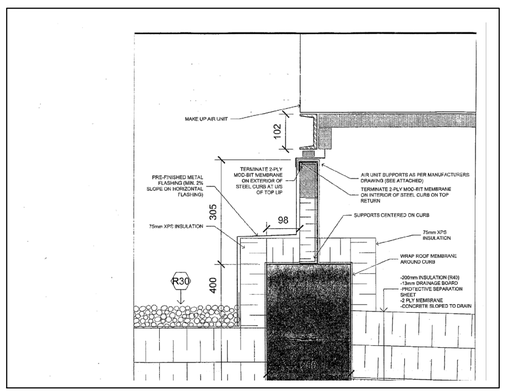
NON-RECESSED TYPE FORCE FLOW HEATER DETAIL

N.T.S.



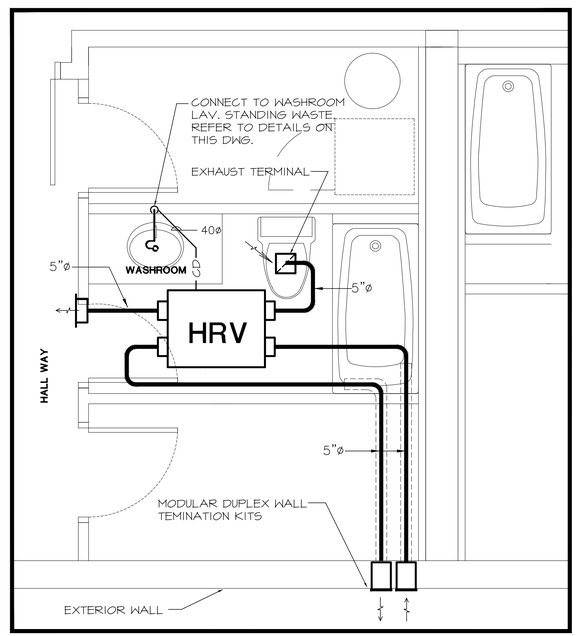
COOLING TOWER SUPPORT DETAIL

N.T.S.



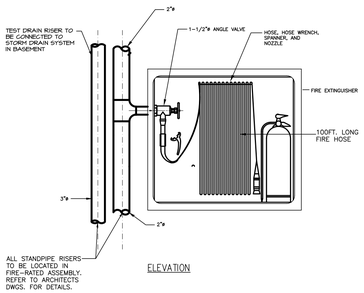
MAKE UP AIR UNIT SUPPORT DETAIL

N.T.S.



HRV UNIT DUCT CONNECTION DETAIL

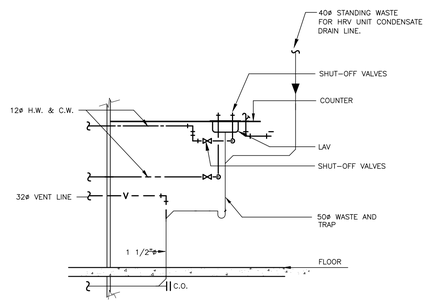
N.T.S.



ELEVATION

FIRE HOSE CABINET (REAR CONNECTION) DETAIL

N.T.S.



LAVATORY STANDING WASTE PIPING CONNECTION DETAIL

N.T.S.

DATE	NO.	DESCRIPTION	BY
MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS

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Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

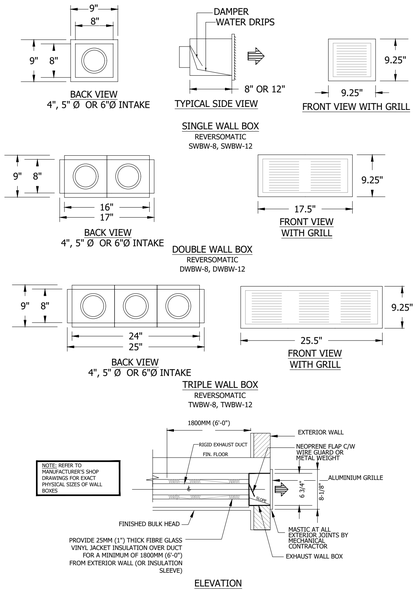
PROJECT:

PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

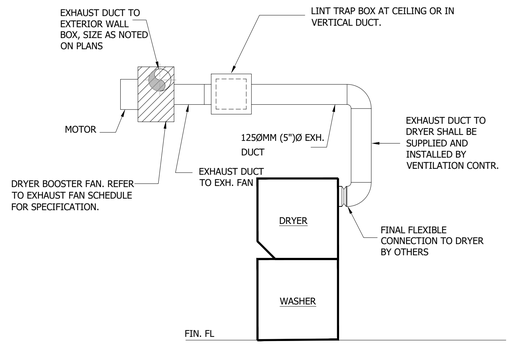
DRAWING TITLE:

MECHANICAL DETAILS

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-116



EXHAUST WALL BOX DETAIL
N.T.S



TYPICAL DRYER EXHAUST DUCT CONNECTION IN LAUNDRY ROOM
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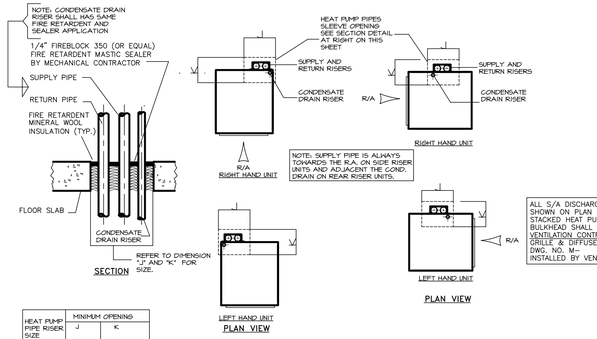
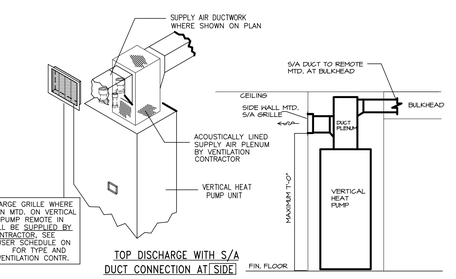


HEAT PUMP PIPE RISER SIZE	MINIMUM OPENINGS	
	J	K
3/4"	6"	8"
1"	6"	8"
1-1/4"	6"	8"
1-1/2"	6"	8"
2"	8"	10"
2-1/2"	8"	10"

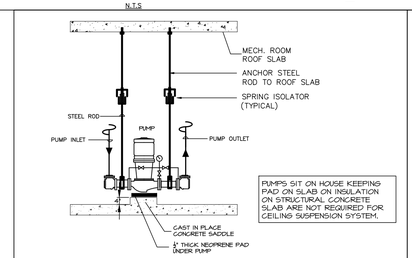
REFER TO HEAT PUMP MANUFACTURER'S SHOP DWGS. FOR EXACT SIZES

TYPICAL SLEEVING AND FIRE STOPPING DETAIL FOR FAN HEAT PUMP RISERS AT FLOOR SLAB
(DETAIL BASED ON "THE WHALEN MANUFACTURE")
N.T.S

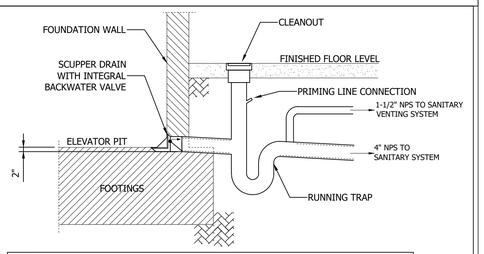
NOTE: FOR EXACT SIZE, REFER TO HEAT PUMP UNIT MANUFACTURER'S SHOP DWG.



TOP DISCHARGE WITH S/A DUCT CONNECTION AT SIDE OF PLENUM
N.T.S

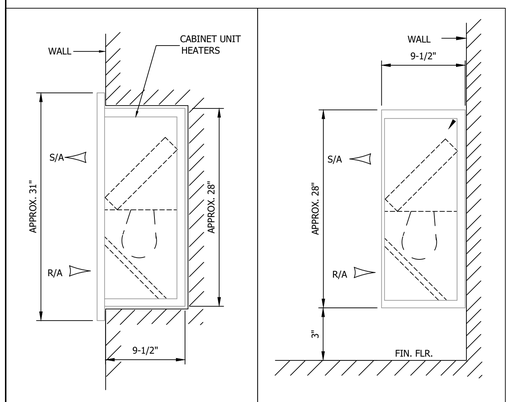


TYPICAL PUMP INSTALLATION DETAIL
N.T.S.



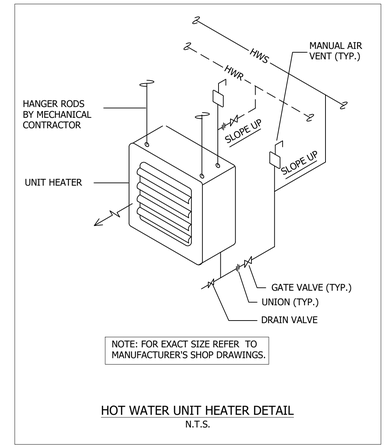
NOTES:
1. ELEVATOR SCUPPER DRAIN AND OUTFLOW PIPE TO BE CAST IN CONCRETE FOUNDATION WALL / FOOTING
2. FLOOR OF ELEVATOR PIT TO BE SLOPED TOWARD SCUPPER DRAIN.

ELEVATOR PIT DRAIN INSTALLATION
N.T.S.

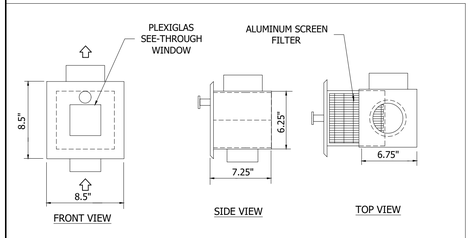


DETAIL OF FULLY RECESSED TYPE FORCE FLOW HEATER
N.T.S.

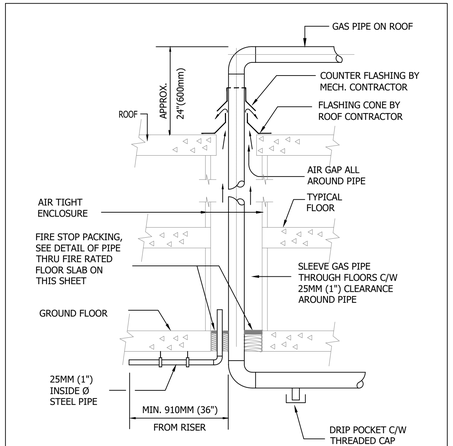
DETAIL OF NON-RECESSED TYPE FORCE FLOW HEATER
N.T.S.



HOT WATER UNIT HEATER DETAIL
N.T.S.



DRYER LINT TRAP
REVERSOMATIC LT-200 (WALL OR CEILING MOUNTED)
N.T.S.



DETAIL OF GAS RISER VENT SHAFT
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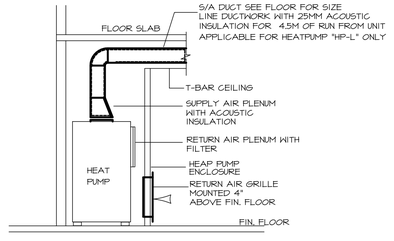
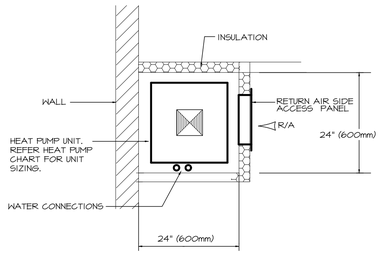
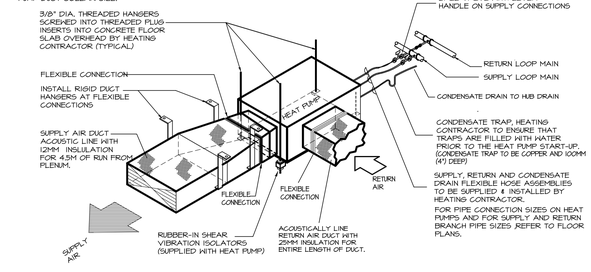


ELEVATION DETAIL OF HEAT PUMP ENCLOSURE
(APPLICABLE FOR HEAT PUMP LOCATED IN LOBBY ROOM GYM AND PARTY ROOMS IN GROUND FLOOR ONLY)
N.T.S

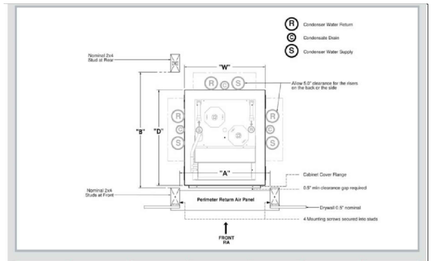


PLAN VIEW

NOTES:
1) ALL HORIZONTAL HEAT PUMPS SHALL BE LOCATED IN CEILING SPACE TO ALLOW FOR COMPLETE SERVICE ACCESS TO (3) THREE SIDES, FOR FILTER REPLACEMENT, FAN AND COMPRESSOR SERVICING PROVIDE MINIMUM 18" CLEAR BETWEEN REAR OF HEAT PUMP AND LOOP MAINS FOR COMPRESSOR REMOVAL.
2) ACOUSTIC LINED SUPPLY DUCT CONNECTIONS TO HEAT PUMP TO HAVE CLEAR INSIDE INSULATION DIMENSIONS MATCHING HEAT PUMP DUCT COLLAR SIZE.



HORIZONTAL HEAT PUMP PIPING AND SUPPORTING DETAIL
N.T.S.



Model Size	W	D	Return Air Opening (Width x Height)	A	B with Side Risers	B with Back Risers
HRP 30	16.00"	18.50"	14" x 36"	18.25" min.	18.25"	22.25"
HRP 40	16.00"	18.50"	14" x 36"	18.25" min.	18.25"	22.25"
HRP 60	18.00"	21.50"	16" x 38"	20.25" min.	21.25"	25.25"
HRP 80	22.00"	25.50"	20" x 38"	24.25" min.	25.25"	29.25"
HRP 100	22.00"	25.50"	20" x 38"	24.25" min.	25.25"	29.25"

DATE	NO.	DESCRIPTION	BY
MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

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HUBBERT EME ENGINEERING
ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER
C.J. LANGFORD
100114456
2023/05/17
PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
MECHANICAL DETAILS

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-117

PUMP SCHEDULE

TAG	DUTY	LOCATION	MANUFACTURER	MODEL	GPM	HEAD (FT)	HP	V/PH/C	REMARKS
P-1	MAIN BUILDING HEATING PUMPS	MECHANICAL PENTHOUSE	S.A. ARMSTRONG	4300 0308-005	315	60	5.0	575V/3/60	VARIABLE SENSOR LESS SPEED PUMP C/W FLORTEX: FTV-4FA, SUCTION GUIDE: SG-33 AND ALL NECESSARY CONTROLS AND CEILING MOUNTED ANTI-VIBRATION SPRING HANGERS FOR THE FIRST THREE FEET ON EACH SIDE OF THE PUMP. STARTER COIL VOLTAGE TO MATCH CONTROL PANEL.
P-2									
P-3	HB-1 BOILER CIRCULATING PUMP	MECHANICAL PENTHOUSE	TO BE SUPPLIED, MOUNTED AND TESTED BY BOILER MANUFACTURER						
P-4	HB-2 BOILER CIRCULATING PUMP	MECHANICAL PENTHOUSE							
P-5	DOMESTIC HOT WATER RE-CIRC. PUMP	MECHANICAL PENTHOUSE	S.A. ARMSTRONG	SERIES #S 33 ZF	24	25	1/6	120V/1/60	C/W ALL BRONZE BODY
P-6	DB-1 DHW HEATER CIRCULATING PUMP	MECHANICAL PENTHOUSE	TO BE SUPPLIED, MOUNTED AND TESTED BY BOILER MANUFACTURER						
P-7	DB-2 DHW HEATER CIRCULATING PUMP	MECHANICAL PENTHOUSE							
P-8 A	RAMP SNOW MELTING CIRCULATING PUMP	PARKING	S.A. ARMSTRONG	H41	17	15	1/4	120V/1/60	C/W ALL FITTING AND CONTROL
P-8 B	RAMP SNOW MELTING INJECTION PUMP	MECH. ROOM PARKING	S.A. ARMSTRONG	-	40	30	1/4	120V/1/60	
P-9	HEATING LOOP GARAGE MECH.RM	MECH. ROOM PARKING	S.A. ARMSTRONG	S55	40	10	0.50	120V/1/60	C/W AUTO CHANGE OVER CONTROL AND SPRING HANGERS WITH RUBBER ELEMENT IN SERIES FOR THE FIRST THREE ON EACH SIDE OF PUMP. STARTER COIL VOLTAGE TO MATCH CONTROL PANEL. PROVIDE 2" RUBBER PADS BELOW.
P-10	FIRE PUMP	MECH. ROOM PARKING	PROVIDE BY SPRINKLER DIVISION						FIRE PUMP REQUIRED, SIZE AND CAPACITY SHALL BE BASED ON HYDRAULIC CALCULATION. REFER TO FIRE PROTECTION SHOP DRAWINGS AND SPECIFICATIONS PREPARED BY OTHERS.
P-11	ELEVATOR PIT	PARKING	SCARBORO PUMP	SERIES SPD50H	50	25	1/2	120V/1/60	C/W FLOAT SWITCH, STARTER, HIGH WATER ALARM FRAME, 20FT POWER CORD AND COVER PLATE, CONTROL PANEL WITH AUTOMATIC RESET THERMAL OVERLOAD PROTECTION.
P-12 A B	DCW BOOSTER PUMPS	MECH. ROOM PARKING	GRUNDFOS	HYDRO MPC 3CME 10-3 3x208V	111	175	5	208V/3/60	50:50:50 RATIO C/W DIAPHRAGM TANK AMTROL ST-25V, 2-1/2" STAINLESS STEAL MANIFOLD, ALL NECESSARY CONTROL AND FITTING, PRESSURE REGULATING VALVES, VARIABLE FREQUENCY DRIVE, AND CONTROL PANEL. ONE PUMP IS STAND-BY.
P-13	SNOW MELT	MECH. ROOM PARKING	GRUNDFOS	UP15-42SF	13	30	3/4	575V/3/60	C/W SPRING HANGERS.
P-14	DOMESTIC HEAT EXCHANGER	MECHANICAL PENTHOUSE	GRUNDFOS	UP15-42SF	5	5	80 WATTS	120V/1/60	PUMP TO BE ALL BRONZE BODY, INTERCONNECTED WITH AQUA STAT ON H.W. RECIRC. LINE.
P-15	DOMESTIC HEAT EXCHANGER	MECHANICAL PENTHOUSE	GRUNDFOS	UP15-42SF	5	8	80 WATTS	120V/1/60	PUMP TO BE ALL BRONZE BODY, INTERCONNECTED WITH AUQUA STAT ON H.W. RECIRC. LINE.
P-16	HB-3 PUMP	TO BE SUPPLIED, MOUNTED AND TESTED BY BOILER MANUFACTURERS							

NOTE:
1. ENERGY EFFICIENCY RATINGS TO CONFORM TO ASHRAE 90.1-2013 STANDARD FOR ENERGY CONSERVATION.

GRILLE AND DIFFUSER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	CFM	SIZE	REMARKS
SUPPLY AIR GRILLES SERVING HEAT PUMP IN REMOTE BULKHEAD IN SUITES.	100 TO 120	61DV-0	100 TO 120	250 x 100	HEAT PUMP SUPPLY AIR GRILLES IN TYPICAL SUITES TO BE SUPPLIED AND INSTALLED BY VENTILATION CONTRACTOR, SEE DWGS. NO, M-2 TO M-5 FOR QUANTITY.
	130 TO 160	61DV-0	130 TO 160	300 x 100	
	180 TO 200	61DV-0	180 TO 200	300 x 150	
	210 TO 240	61DV-0	210 TO 240	300 x 200	
	240 TO 280	61DV-0	240 TO 280	350 x 200	
A	NAILOR	RNSA	AS NOTED ON PLAN	AS NOTED ON PLAN	24"x24" PANEL C/W VOLUME DAMPER AND TO SUIT CEILING FIN.
B	NAILOR	61DV-0	AS NOTED ON PLAN	AS NOTED ON PLAN	SUPPLY AIR GRILLE C/W O.B.D.
C	NAILOR	61CD-2B	AS NOTED ON PLAN	AS NOTED ON PLAN	CORRIDOR S/A REGISTER C/W 2-WAY BLOW AND FIXED CURVED BLADE C/W O.B.D.
D	NAILOR	6145H	AS NOTED ON PLAN	AS NOTED ON PLAN	EXHAUST/RETURN AIR GRILLE
E	NAILOR	51EC	AS NOTED ON PLAN	AS NOTED ON PLAN	RETURN AIR GRILLE
F	NAILOR	51DGS	AS NOTED ON PLAN	AS NOTED ON PLAN	TRANSFER DOOR GRILLE C/W FIRE DAMPER
G	NAILOR	SG-861DH	AS NOTED ON PLAN	AS NOTED ON PLAN	STAIR PRESSURIZE AIR GRILLE
H	TITUS	TDFI-48-10-02-ID	-	AS NOTED ON PLAN	DYNAFUSER C/W MOUNTING CLIP AND ALL NECESSARY ACCESSORIES
I	E.H. PRICE	SDA SERIES - 2 SLOT	-	AS NOTED ON PLAN	LINEAR SLOT DIFFUSER

FAN SCHEDULE

TAG	LOCATION	MANUFACTURER	MODEL	TYPE	FUNCTION	AIR FLOW (CFM)	ESP (IN)	RPM	V/PH/C	CONTROL	REMARKS
A1	ONE BATHROOM ERV	KANAIRE	BTR-150-1	CEILING	EXHAUST	100	0.5000		120V/1/60	WALL SWITCH	C/W EXHAUST TERMINATE AIR GRILLE AND COMBO INTAKE/EXHAUST WALL TERMINATION BOXES.
A2	TWO BATHROOM ERV	KANAIRE	BTR-150-2	CEILING	EXHAUST	155	0.2000		120V/1/60	WALL SWITCH	C/W EXHAUST TERMINATE AIR GRILLE AND COMBO INTAKE/EXHAUST WALL TERMINATION BOXES.
B	DRYER EXHAUST	REVERSOMATIC	RI-250	INLINE	EXHAUST	180	0.4000		120V/1/60	TIMER AND CURRENT SENSOR	C/W AMP SENSOR DAS-200 AND LINT TRAP
C	TO BE MOUNTED GR., 2ND &3RD FLOORS ONLY. FOR DUCTED KITCHEN RANGE HOOD	MIELE RANGE HOOD		KITCHEN HOOD	EXHAUST	180	0.4000	1.5 WATTS	120V/1/60	SWITCH	C/W GREASE FILTER (SPEC BY LANDFORM DEVELOPMENT GROUP)
D	PUBLIC UNIVERSAL WASHROOM	ZONEX	IL-400	CEILING	EXHAUST	150	0.5000	15 WATTS	120V/1/60	WALL SWITCH	C/W BACKDRAFT DAMPER
E	TO BE MOUNTED ON 4TH FLOOR. FOR DUCTED KITCHEN RANGE HOOD	NUVOLA RANGE HOOD		CEILING	EXHAUST	600	0.4000		120V/1/60	TIMER	C/W GREASE FILTER (SPEC BY LANDFORM DEVELOPMENT GROUP)
EF 1	PARKING GARAGE EXHAUST	REVERSOMATIC	BES-42	WALL	EXHAUST	9,000	0.25		120V/1/60	GARAGE CO SENSORS	FAN TO MOUNT APPROX. 2.10 M A.F.F. C/W FAN CABINET, B.D.D. REAR GUARD, MAG, STARTER, UNIT SHALL BE INTERLOCKED WITH CO SENSORS AND F/A INTAKE MOTORIZED DAMPER/
EF 2	PARKING - MECHANICAL ROOM	LOREN COOK	GC-320	INLINE	EXHAUST	200	0.125		120V/1/60	TIMER	C/W SPRING HANGERS AND STEEL RODS.
EF 3	DELETED	DELETED									
EF 4	PARKING - ELECTRICAL ROOM	LOREN COOK	GC-960	CEILING	EXHAUST	1,800	0.2000	564 WATTS	120V/1/60	REVERSE ACTING THERMOSTAT	C/W SPRING HANGERS AND STEEL RODS.
EF 5	GROUND FLOOR GARBAGE ROOM	LOREN COOK	GC-520	INLINE	EXHAUST	270	0.2500	351 WATTS	120V/1/60	LIGHT SWITCH AND REVERSE ACTING THERMOSTAT	C/W SPRING HANGERS, INLINE CONVERSION KIT AND STEEL RODS.
EF 6	GROUND FLOOR CACF ROOM	LOREN COOK	GC-320	CEILING	EXHAUST	150	0.3750	77 WATTS	120V/1/60	CONTINUING VENTILATION	C/W SPRING HANGERS AND STEEL RODS.
EF 7	MECHANICAL PENTHOUSE EXHAUST	LOREN COOK	90R15DM	INLINE	EXHAUST	500	0.1250	118 WATTS	120V/1/60	BUILT-IN CONTROLLER	C/W ROOF CURB, BACKDRAFT DAMPER AND INTEGRAL DISCONNECT SWITCH.
SF 1	PARKING GARAGE STAIRWELL #1 PRESSURIZATION FAN	NAILOR	HA18SE	INLINE	SUPPLY	1,400	0.5	1/2 HP	208V/1/60	FIRE ALARM	C/W SPRING ISOLATORS, BACKDRAFT DAMPER AND INTEGRAL DISCONNECT SWITCH. INTERLOCK WITH FIRE ALARM SUCH THAT THE FAN OPERATES WHEN THE FIRE ALARM IS ACTIVATED.
SF 2	PARKING GARAGE STAIRWELL #2 PRESSURIZATION FAN	NAILOR	HA18SE	INLINE	SUPPLY	1,400	0.5	1/2 HP	208V/1/60	FIRE ALARM	C/W SPRING ISOLATORS, BACKDRAFT DAMPER AND INTEGRAL DISCONNECT SWITCH. INTERLOCK WITH FIRE ALARM SUCH THAT THE FAN OPERATES WHEN THE FIRE ALARM IS ACTIVATED.
SF 3	GROUND FLOOR CACF ROOM	LOREN COOK	GC-320	INLINE	SUPPLY	150	0.3750	77 WATTS	120V/1/60	CONTINUING VENTILATION	C/W SPRING HANGERS AND STEEL RODS.
SF 4	ELEVATOR PRESSURIZATION	REVERSOMATIC	RBD-36	INLINE	SUPPLY	10,000	0.7500 0000	3.0 HP	575V/3/60	DISCONNECT SWITCH	FAN SHALL C/W FIRE FIGHTER PANEL WITH H.O.A. SWITCH IN PANEL, BACKDRAFT DAMPER, INLET HOOD WITH MOTORIZED DAMPER AND SCREEN, WEATHER COVER, TRANSITION CONNECTION, SUPPORT LEGS, CONCRETE PAD, RUBBER PADS FOR VIBRATION ISOLATION, AND DISC. SWITCH. PROVIDE FAN SWITCH AT THE FIRE ALARM ANNUNCIATION PANEL. INTERLOCK THE FAN WITH FIRE ALARM. FAN SHALL BE CONNECTED TO EMERGENCY GENERATOR.

NOTES:
1. DUCTWORK SHALL BE INSULATED FOR A MINIMUM OF 6'-0" (1.8M) FROM EXTERIOR WALL AS PER MECHANICAL SPECIFICATIONS.

STORAGE TANK SCHEDULE

SYMBOL	DUTY	LOCATION	MANUFACTURER	MODEL	TANK VOLUME (USG)	DIMENSION		WORKING PRESSURE (PSI)	APPROX. WEIGHT (LBS)	REMARKS
						DIAMETER (INCHES)	HEIGHT (INCHES)			
ST-1	DOMESTIC HOT WATER	PENTHOUSE MECHANICAL ROOM	A.O. SMITH	TJV-140A	140	30	87	150	516	INSULTED, GLASS LINED VERTICAL TANK C/W TEMPERATURE RELIEF VALVE & FITTING, CONTR. TO INSTALL 2" THICK FIBERGLASS INSULATION WITH CANVAS
ST-2	DOMESTIC HOT WATER	PENTHOUSE MECHANICAL ROOM	A.O. SMITH	TJV-140A	140	30	87	150	516	INSULTED, GLASS LINED VERTICAL TANK C/W TEMPERATURE RELIEF VALVE & FITTING, CONTR. TO INSTALL 2" THICK FIBERGLASS INSULATION WITH CANVAS

GAS FIRED MAKE UP AIR UNIT SCHEDULE

SYMBOL:	MANUFACTURER	MODEL No.	SUPPLY AIR (C.F.M)	ESP (IN. WG.)	HEATING CAPACITY		TEMP. RISE (°F)	TOTAL COOL CAP. (BTU/H)	SENSIBLE CAP. (BTU/H)	FAN H.P	COOLING COIL			V/PH/C	MCA (AMP.)	MOCP (AMP.)	APPROX. WEIGHT (LBS.)	REMARKS
					INPUT (MBH)	OUTPUT (MBH)					AIR EDBT/EWBT (°F)	AIR LDBT/LWBT (°F)	COIL SIZE (IN) H X L R X FPI					
MUA-1	ENGINEERED AIR	FWE112/DJS100/O	7,000	0.75	850	689	81	153,000	104,000	7.5	84/71.6	64.8/63.1	22.5 X 68X 2R/10	575/3/60	29.8	35	4,450	BELT DRIVE, DOWN DISCHARGE UNIT C/W 18" ROOF CURB, FILTERS, FRESH AIR INTAKE HOOD, BLOWER MOTOR VFD WITH CONTROL, DISCONNECT SWITCH, REMOTE SUMMER/WINTER CONTROL PANEL, WEATHER PROOF CASING, SUPPLY AIR TEMPERATURE SENSOR, MOTORIZED INLET AIR DAMPER, CONTROLS, AND CONDENSING TYPE BURNER WITH 15:1 MODULATING RATE, ELECTRIC MODULATING GAS VALVE. PROVIDE INDUCT SMOKE DETECTOR IN S/A DUCT TO SHUT DOWN FAN HEATING BY ELECTRONIC DISCHARGE DUCT THERMOSTAT.

GENERAL NOTES
1. ALL UNITS SHALL BE INSTALLED IN ACCORDANCE WITH ONTARIO BUILDING CODE (OBC).
2. ALL START-UP PROCEDURES RECOMMENDED BY THE MANUFACTURER INCLUDING AIR BALANCING AND AIR-FLOW DETERMINATION SHALL BE FOLLOWED
3. MAKEUP AIR UNIT SHALL OPERATE AS PER OBC 6.2.6.2 LIMITS TO SMOKE MOVEMENT (5.1) EXCEPT AS PROVIDED IN ARTICLE 3.2.4.13. OR AS OTHERWISE PROVIDED IN THIS PART, AIR HANDLING SYSTEMS USED TO PROVIDE MAKE-UP AIR TO PUBLIC CORRIDORS SERVING SUITES IN A GROUP C MAJOR OCCUPANCY SHALL NOT SHUT DOWN AUTOMATICALLY UPON ACTUATION OF THE FIRE ALARM SO AS TO MAINTAIN CORRIDOR PRESSURIZATION.

GAS BOILER SCHEDULE

SYMBOL	DUTY	LOCATION	MANUFACTURER	MODEL	INPUT (BTU/HR)	BOILER OUTPUT (BTU/HR)	DIMENSION			V/PH/C	FLA	MOCP	GPM	APPROX. WEIGHT (LBS)	REMARKS
							WIDTH (INCHES)	HEIGHT (INCHES)	DEPTH (INCHES)						
HB-1	HEATING BOILER	PENTHOUSE MECHANICAL ROOM	RBI INFINITE ENERGY 2	1000 SERIES	1,000,000	952,000	25	79	27	120/1/60	-	15	76.20	623	C/W PUMP AND 3-WAY MIXING VALVE, 6"Ø (150ØMM) COMBUSTION AIR DUCT WITH COMBUSTION AIR DAMPER AND WALL TERMINATION VENT KIT, CIRCULATING PUMPS (P-3A & P-4A) AND (6"Ø) 150Ø FLUE VENT UP ROOF C/W APPROVED NONRESTRICTIVE
HB-2	HEATING BOILER	PENTHOUSE MECHANICAL ROOM	RBI INFINITE ENERGY 2	1000 SERIES	1,000,000	952,000	25	79	27	120/1/60	-	15	76.20	623	C/W PUMP AND 3-WAY MIXING VALVE, 6"Ø (150ØMM) COMBUSTION AIR DUCT WITH COMBUSTION AIR DAMPER AND WALL TERMINATION VENT KIT, CIRCULATING PUMPS (P-3A & P-4A) AND (6"Ø) 150Ø FLUE VENT UP ROOF C/W APPROVED NONRESTRICTIVE
HB-3	RADIANT SNOW MELT BOILER	PARKING LEVEL MECHANICAL ROOM	RBI ENCORE	RB0600	600,000	586,800	27	66	40	120/1/60	17.1	20	58.7	633	C/W PUMP AND 3-WAY MIXING VALVE, 6"Ø (150ØMM) COMBUSTION AIR DUCT WITH COMBUSTION AIR DAMPER AND WALL TERMINATION VENT KIT, CIRCULATING PUMPS (P-3A & P-4A) AND (6"Ø) 150Ø FLUE VENT UP ROOF C/W APPROVED NONRESTRICTIVE
DB-1	DOMESTIC HOT WATER HEATER	PENTHOUSE MECHANICAL ROOM	RBI	339 SERIES	400,000	375,900	24	34	46	120/1/60	-	15	33.5	340	FULLY MODULATING DOMESTIC HEATING BOILER C/W 3-WAY MIXING VALVE, 4"Ø (100ØMM) COMBUSTION AIR DUCT WITH COMBUSTION AIR DAMPER AND WALL TERMINATION VENT KIT, CIRCULATING PUMPS. 175Ø FLUE VENT UP ROOF
DB-2	DOMESTIC HOT WATER HEATER	PENTHOUSE MECHANICAL ROOM	RBI	339 SERIES	400,000	375,900	24	34	46	120/1/60	-	15	33.5	340	FULLY MODULATING DOMESTIC HEATING BOILER C/W 3-WAY MIXING VALVE, 4"Ø (100ØMM) COMBUSTION AIR DUCT WITH COMBUSTION AIR DAMPER AND WALL TERMINATION VENT KIT, CIRCULATING PUMPS. 175Ø FLUE VENT UP ROOF

NOTE:
1. BOILERS, PRESSURE PIPING AND FITTINGS SHALL CONFORM WITH ONTARIO REGULATION 220/01, CSA B51-14 REQUIREMENTS AND B149.1-15.
2. BOILERS SHALL BE INSTALLED ON A FIRM AND LEVEL NONCOMBUSTIBLE FLOOR EXCEPT WHERE CERTIFIED BY BOILER MANUFACTURER.
3. AIR SUPPLY AND FLUE OUTLET FOR BOILERS SHALL CONFORM TO THE REQUIREMENTS OF B149.1-15

DATE	NO.	DESCRIPTION	BY
MAY 17/23	-	ISSUED FOR CONSTRUCTION	PD
APR 17/23	6	RFI-52 PARKING HEATING PLENUM REMOVED	NN
APR 03/23	5	REVISED AS PER CITY COMMENTS	NN
MAR 24/23	4	REVISED AS PER CITY COMMENTS	EG
FEB 09/23	3	REVISED AS PER RFI#6	EG
SEP 01/22	2	REVISED AS PER CITY COMMENTS	JC
JUN 17/22	1	REISSUED AS PER CITY COMMENTS	EG
APR 26/22	-	ISSUED FOR PERMIT	MB

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS

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HUBBERT EME ENGINEERING ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER C. J. LANGFORD 100114456 2023/05/17 PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

DRAWING TITLE:
EQUIPMENT SCHEDULES

DRAWN BY:	CHECKED BY:	SCALE:
MB	CL	1:100
DATE:	PROJECT NUMBER:	DRAWING NUMBER:
APR/2022	22-6229	M-118

PLUMBING FIXTURE CONNECTION SCHEDULE

SYMBOL	DESCRIPTION	HW	CW	WASTE	VENT	REMARKS
LAV	LAVATORY	12MM (1/2")	12MM (1/2")	32MM (1-1/4")	32MM (1-1/4")	TYPICAL SUITES
KS	KITCHEN SINK	12MM (1/2")	12MM (1/2")	40MM (1-1/2")	32MM (1-1/4")	TYPICAL SUITES
BT	BATHTUB	12MM (1/2")	12MM (1/2")	40MM (1-1/2")	32MM (1-1/4")	TYPICAL SUITES
SH	SHOWER	12MM (1/2")	12MM (1/2")	40MM (1-1/2")	32MM (1-1/4")	TYPICAL SUITES
W/D	WASHING AND DRYER MACHINE (HOSE END WITH SHUT-OFF VALVE)	12MM (1/2")	12MM (1/2")	40MM (1-1/2")	32MM (1-1/4")	TERMINATE IN WASHER BOX C/W P-TRAP AS PER DETAIL.
DW	DOMESTIC DISHWASHER	12MM (1/2")	-	40MM (1-1/2")	-	CONNECT DRAIN TO TAIL PIECE DRAIN OF KITCHEN SINK-NO LOAD IF CONNECT TO SINK.
W	WASTER CLOSET (FLUSH TANK)	-	12MM (1/2")	75MM (3")	40MM (1-1/2")	TYPICAL SUITES
RD	ROOF DRAIN - CONTROLLED FLOW SMITH 1083-CAN-ERCCID	-	-	100MM (4")	-	DUCO COATED C.I. BODY, UNDER DECK CLAMP SOLID EXTENSION TO SUIT ROOF, SUMP RECEIVER, FLASHING CLAMP WITH SEEPAGE OPENING AND 280Ø DOME WITH FLOW RATE CONTROL WEIR.
FD	FINISHED FLOOR DRAIN SMITH SERIES 2005A FLOOR DRAIN	-	-	100MM (4")	40MM (1-1/2")	D125Ø NICKEL BRONZE STRAINER
FD1	PARKING LEVEL AREA DRAIN (LARGE CAPACITY) MIFAB SERIES F1460 CATCH BASIN	-	-	100MM (4")	40MM (1-1/2")	400mmx400mm SQUARE x SQUARE ADJUSTMENT C/W HEAVY DUTY DUCTILE IRON GRATE. PROVIDE EXTENSION 'E' TO MEET INVERT OF PIPE.
FD2	PARKING DRAIN SMITH SERIES 2320 FLOOR DRAIN	-	-	100MM (4")	-	WITH FLOW PROFILE GALVANIZED CAST IRON DOME GRATE.
FD3	UNFINISHED FLOOR DRAIN SMITH SERIES 2320 FLOOR DRAIN	-	-	100MM (4")	-	D125Ø NICKEL BRONZE STRAINER.
AD	GARAGE AREA DRAIN, WILKINGSON MODEL # CB140	-	-	100MM (4")	-	PRECAST GARAGE CATCH BASIN, HEAVY PRECASTS C/W CAST IRON GRATE COVER TEL: 905-628-5611
DD	DECK DRAIN SMITH 1470C C/W EXTENSION	-	-	100MM (4")	-	DUCO COATED C.I. BODY, UNDER DECK CLAMP SOLID EXTENSION TO SUIT ROOF, SUMP RECEIVER, FLASHING CLAMP WITH SEEPAGE OPENING. REFER TO DETAIL.
PD-1	PLANTING AREA DRAIN SMITH 2675CID C/W EXTENSION AND S.S. MESH SCREEN	-	-	100MM (4")	-	DUCO COATED C.I. BODY, UNDER DECK CLAMP SOLID EXTENSION TO SUIT ROOF, SUMP RECEIVER, FLASHING CLAMP WITH SEEPAGE OPENING.
FD4	AIR WELL FLOOR DRAIN MIFAB MODEL # F1100-K	-	-	75MM (3")	40MM (1-1/2")	C/W DOME AND STRAINER ADJUSTMENT
TD	TRENCH DRAIN	-	-	-	40MM (1-1/2")	TRENCH DRAIN BY ARCHITECT
FFD	FUNNEL FLOOR DRAIN - FINISHED AREA SMITH SERIES 2005B-3580NB	-	-	-	-	
HD	HUB DRAIN SMITH SERIES 3822	-	-	-	-	
HB	HOSE BIBB - INTERIOR ACORN 'NEPTUNE # 8121CR HOSE VALVE	20MM (3/4")	-	-	-	
NFHB	NO-FREEZE HOSE BIBB - EXTERIOR SMITH SERIES 55D9QT BOX TYPE WALL HYDRANT	20MM (3/4")	-	-	-	

GENERAL NOTES:
- PROVIDE ISOLATING VALVES ON HOT AND COLD WATER LINES TO EACH PLUMBING FIXTURE (TYPICAL UNLESS OTHERWISE NOTED)
- WRAP ALL EXPOSED HOT WATER AND DRAIN PIPING AT BARRIER FREE LAVATORY WITH INSULATION
- INCLUDE FIXTURES WITH BUILT-IN CHECK VALVES AT SPRAY ARM / FAUCET TO PREVENT WATER FLOW THROUGH WATER PIPES WHILE SPRAY NOT IN USE.
- SIZES NOTED ABOVE ARE MINIMUM SIZES AS NOTED IN OBC TABLE 7.6.3.2.A. PLEASE REFER TO FIXTURE SPECIFICATIONS FOR ACTUAL SIZES REQUIRED IF NOT SHOWN ON DRAWINGS.
- PLUMBING FIXTURES SELECTED BY OTHERS. IF NOT LISTED ABOVE, REFER TO MANUFACTURERS SPECIFICATIONS FOR EQUIPMENT CONNECTIONS.
- TRAP SEAL PRIMER REQUIRED ON ALL FLOOR DRAINS. TRAP GUARDS MAY BE USED IN PLACE OF TRAP SEAL PRIMER IF PERMITTED BY AHJ.

HOT WATER RADIATION AND UNIT HEATER SCHEDULE

SYMBOL	DUTY	MANUFACTURER	MODEL	BTU/H BASED ON (160°F EWT.)	GPM	V/PH/C	REMARKS
UH A	MECH. RM PENTHOUSE	ENGINEERED AIR	H6	64,100	6.6	120V/1/60	UNIT HEATER C/W THERMOSTAT AND SPRING HANGER RODS.
UH B	MECH. RM BASEMENT	ENGINEERED AIR	H1	24,000	3	120V/1/60	UNIT HEATER C/W THERMOSTAT AND SPRING HANGER RODS.
UH C	GARBAGE RM	ENGINEERED AIR	H1	24,000	2.5	120V/1/60	UNIT HEATER C/W THERMOSTAT AND SPRING HANGER RODS.
FFH 1	GR. FL. VESTIBULE, MOVING RM	ENGINEERED AIR	C-3W	1,800	1.80	N/A	RECESSED CABINET UNIT HEATER C/W BUILT-IN THERMOSTAT, 24" LENGTH, 24" (H), 4" DEPTH
WF 1	BASEMENT	ENGINEERED AIR	WF-IA	1,780	0.178	N/A	FINED TUBE RADIATION. * CAPACITY IS NOTED AS BTU/H PER LINEAR FOOT.

NOTE:
ALL HEATING CAPACITIES ARE BASED ON 160°F INLET WATER TEMPERATURE.

LOUVER SCHEDULE

TAG	MANUFACTURER	MODEL	SIZE W X H	FUNCTION	REMARKS
LV-1	REVERSOMATIC	4000 E.A	3700 x 900	INTAKE	
LV-2	REVERSOMATIC	4000 E.A	250 x 250	EXHAUST	
LV-3	REVERSOMATIC	4000 E.A	400 x 300	INTAKE	
LV-4	REVERSOMATIC	4000 E.A	600 x 600	INTAKE	STORM PROOF LOUVER

NOTE:
1. LOUVERS SHALL BE CONSTRUCTED OF EXTRUDED ALUMINUM ALLOY WITH REINFORCING BASES AND BE A MINIMUM OF 50% OF FREE AREA
2. LOUVERS TO HAVE STORM TYPE BLADES AND SHALL BE COMPLETE WITH 50MM (2") WIDE FLANGED FRAMES AND BIRDSCREEN.
3. COLOR SELECTION SHALL BE CONFIRMED BY THE ARCHITECT.
4. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO CONSTRUCTION.

HEAT PUMP SCHEDULE

TAG	MANUFACTURER	MODEL	TONS (NOM.)	CFM	SP (IN)	GPM (U.S.)	P.D. (FT) OF WATER	COOLING E.W.T. (°F)	COOLING ENT. AIR TEMP. DB (°F)	COOLING ENT. AIR TEMP. WB (°F)	TOTAL COOLING (MBH)	EER	HEATING E.W.T. (°F)	HEATING ENT. AIR TEMP. DB (°F)	TOTAL HEATING CAPACITY (MBH)	V/PH/C	MCA	MAX FUSE	REMARKS
HP-B	OMEGA	VSHP 40	1.0	475	0.2	3.13	7.0	86.1	80.4	66.3	13,010	13.26	68.3	67.5	16,600	208V/1/60	7.1	15	VERTICAL HEAT PUMP UNIT TO BE COMPLETED WITH AUTO HEATING/COOLING T-STAT WITH LIMIT CUT-OFF SETTING, ACOUSTIC SOUND JACKET, FILTERS, R/A GRILLES, SUPPLY, RETURN AND CONDENSATE WATER RISERS, VIBRATION PAD, WITH AUTOMATIC ON/OFF MOTORIZED SOLENOID VALVE FOR ALL UNITS LOCATED ON GROUND TO 7TH AND 8TH FLOORS ONLY, REFER TO FLOOR PLAN FOR UNIT LOCATION AND UNFUSED DISCONNECT SWITCH, SEE TYPICAL DETAIL.
HP-C	OMEGA	VSHP 60	1.5	600	0.2	4.60	14.0	86.1	80.4	66.3	17,600	12.1	68.3	67.5	22,600	208V/1/60	11.9	15	
HP-D	OMEGA	VSHP 80	2.0	817	0.2	6.72	15.0	86.1	80.4	66.3	23,592	13.56	68.3	67.5	30,415	208V/1/60	17.8	25	
HP-G	DAIKIN	WCCH2012	1.0	340	0.4	3.15	11.0	86.0	80.4	66.3	12,290	12.15	68.3	67.5	15,827	208V/1/60	8	15	HORIZONTAL HEAT PUMP IN CEILING SPACE IN ANTI-VIBRATION ISOLATOR, HANGER RODS, FILTER, HEAT/COOL AUTO STAT WITH AUTOMATIC ON/OFF MOTORIZED SOLENOID VALVE FOR ALL UNITS AND UNFUSED DISCONNECT SWITCH, SEE TYPICAL DETAIL ON M-115
HP-H	DAIKIN	WCCH5015	1.5	500	0.4	3.75	4.17	86.0	80.4	66.3	15,261	13.6	68.3	67.5	18,437	208V/1/60	7.2	15	
HP-K	DAIKIN	WCCH5042	3.5	1400	0.4	10.20	4.94	86.0	80.4	66.3	41,344	14.53	68.3	67.5	50,022	208V/1/60	28.3	45	

NOTE:
1. ENERGY EFFICIENCY RATINGS TO CONFORM TO ASHRAE 90.1-2010 STANDARD FOR ENERGY CONSERVATION.
2. PROVIDE TWO WAY SOLENOID VALVE FOR ALL HEAT PUMPS EXCEPT TOP FLOOR HEAT PUMPS.
3. ALL HEAT PUMPS SHALL BE COMPLETE WITH PLENUM RATED SUPPLY, RETURN AND CONDENSATE DRAIN HOSES.
4. R410A REFRIGERANT FOR ALL UNITS.
5. AS PER NFPA 90A, UNITS WITH AIR CAPACITIES OF 2000 CFM OR GREATER SHALL HAVE SMOKE SENSING DEVICE INSTALLED ON THE SUPPLY DUCT DOWNSTREAM OF THE AIR FILTERS AND UPSTREAM OF ANY BRANCH DUCTS AND WIRED TO STOP THE SYSTEM IN ACTIVATION.
6. AS PER NFPA 90A, UNITS WITH AIR CAPACITIES OF 15000 CFM OR GREATER AND SERVING MORE THAN ONE STORY SHALL HAVE SMOKE SENSING DEVICE INSTALLED AT EACH STORY PRIOR TO THE CONNECTION TO A COMMON RETURN AND ALSO PRIOR TO ANY RECIRCULATION OR FRESH AIR INLET CONNECTION IN A AIR RETURN SYSTEM.

MINIMUM VENTILATION REQUIRED

Suite Numbers	Number of Suites	Suite Area [ft²]	Number of Bedrooms per Suite N_{br}	Minimum Total Ventilation Rate Required per Suite [cfm] Q_{TOT}	Total Ventilation via HRV/ERV per Suite [cfm]	Total Ventilation required by other means per Suite [cfm]	Minimum Total Ventilation Rate Required for ALL Suites [cfm] Q_{TOT}
Suites (via ASHRAE 62.2)							
1 Bedroom + Den	28	1875	2	**79**	155	**0**	**2205**
2 Bedroom	56	985	2	**52**	155	**0**	**2915**
1 Bedroom	2	765	1	**38**	100	**0**	**76**
3 Bedrooms	4	985	3	**60**	255	**0**	**238**
Totals:	**90**				**665**		**5,434**

Room Label on Drawing	Total Area [ft²]	Occupant Load [persons]	Occupancy Category (ASHRAE 62.1 2019: Table 6-1 for common areas)	People Outdoor Air Rate R_p [cfm/person] (ASHRAE 62.1 2019: Table 6-1)	Area Outdoor Air Rate R_a [cfm/ft²] (ASHRAE 62.1 2019: Table 6-1)	Total Ventilation Rate Required V_{bz} [cfm]	Air Distribution Configuration (ASHRAE 62.1 2019: Table 6-4)	Air Distribution Effectiveness E_z (ASHRAE 62.1 2019: Table 6-4)	Total Minimum Ventilation Rate Required V_{oz} [cfm]
Common Areas (via ASHRAE 62.1)									
Corridors	7700	**30**	Residential: Common corridors	0	0.06	**462**	Makeup supply outlet located less than half the length of the space from the exhaust, return, or both	0.5	**924**
Lobby	1000	**2**	Public Assembly Spaces: Lobbies	5	0.06	**70**	Makeup supply outlet located less than half the length of the space from the exhaust, return, or both	0.5	**140**
Amenity Spaces	0	**0**	Hotels, Motels, Resorts, Dormitories: Multipurpose assembly	5	0.06	**0**	Makeup supply outlet located less than half the length of the space from the exhaust, return, or both	0.5	**0**
							Total Minimum CFM Required from MUA		**6584**

MINIMUM EXHAUST RATE REQUIRED

REFERENCE: ASHRAE 62.1 2019: Table 6-2 Minimum Exhaust Rates and OBC 6.2.3.8(14)

ROOM IDENTIFICATION	OCCUPANCY CATEGORY	MINIMUM EXHAUST RATE [CFM/UNIT]	MINIMUM EXHAUST RATE [CFM/FT²]	NUMBER OF UNITS	ROOM AREA [FT²]	MINIMUM TOTAL EXHAUST RATE REQUIRED [CFM]
Parking Garage	Parking garages	0	0.75	0	11860	**8895**
Garbage Room	Janitor closets, trash rooms, recycling	0	1	0	270	**270**
					TOTAL MINIMUM EXHAUST RATE REQUIRED	**9165**

Number of Bathrooms in Suite	Bathroom Exhaust Operation	Minimum Total Bathroom Exhaust [cfm]	Total Designed Bathroom Exhaust Rate [cfm]	Range Hood Exhaust Rate [cfm] (if Nat Gas Range = 300cfm min. otherwise = 100cfm min req as per ASHRAE 62.2)	Total Exhaust Designed per Suite [cfm] (does not include HRV/ERV)	Total Exhaust via HRV/ERV [cfm]	Total Direct Exhaust per Suite [cfm] (does not include HRV/ERV)	Total Direct Exhaust for ALL Suites [cfm] (does not include HRV/ERV)	Total Ventilation via HRV/ERV for ALL Suite [cfm]
1	Intermittent	50	155	180	**335**	255	**80**	**2240**	**4340**
2	Intermittent	100	155	180	**335**	155	**180**	**10080**	**8680**
1	Intermittent	50	100	180	**280**	100	**180**	**360**	**200**
3	Intermittent	150	255	180	**435**	155	**280**	**1120**	**1020**
								13,800.00	**14,240**

NO.	DESCRIPTION	BY	DATE
-	ISSUED FOR CONSTRUCTION	PD	MAY 17/23
6	RFI-52 PARKING HEATING PLENUM REMOVED	NN	APR 17/23
5	REVISED AS PER CITY COMMENTS	NN	APR 03/23
4	REVISED AS PER CITY COMMENTS	EG	MAR 24/23
3	REVISED AS PER RFI#6	EG	FEB 09/23
2	REVISED AS PER CITY COMMENTS	JC	SEP 01/22
1	REISSUED AS PER CITY COMMENTS	EG	JUN 17/22
-	ISSUED FOR PERMIT	MB	APR 26/22

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS

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LICENSED PROFESSIONAL ENGINEER — C. J. LANGFORD — 100114456 — 2023/05/17 — PROVINCE OF ONTARIO

Hubbert EME Engineering
90 WINGES ROAD, SUITE 201
VAUGHAN, ON L4L 6A9
TEL: (905) 851-5492
67 HIGH STREET
BARRIE, ON L4N 1W5
TEL: (705) 735-1133
info@EMEeng.com

PROJECT:
PROPOSED CONDOMINIUM
SAVERINO INVESTMENTS INC.
556-560 ESSA ROAD
BARRIE, ON

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