

| No. | Revisions | Date |
|-----|-------------------|------------|
| 1 | ISSUED FOR REVIEW | 2024-03-25 |
| 2 | ISSUED FOR TENDER | 2024-04-25 |
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Alteration to
**Cathedral High School
HWCDSB**
30 Wentworth Street North
Hamilton, Ontario

job no. 24.025

dwg. file

dwn. by VP

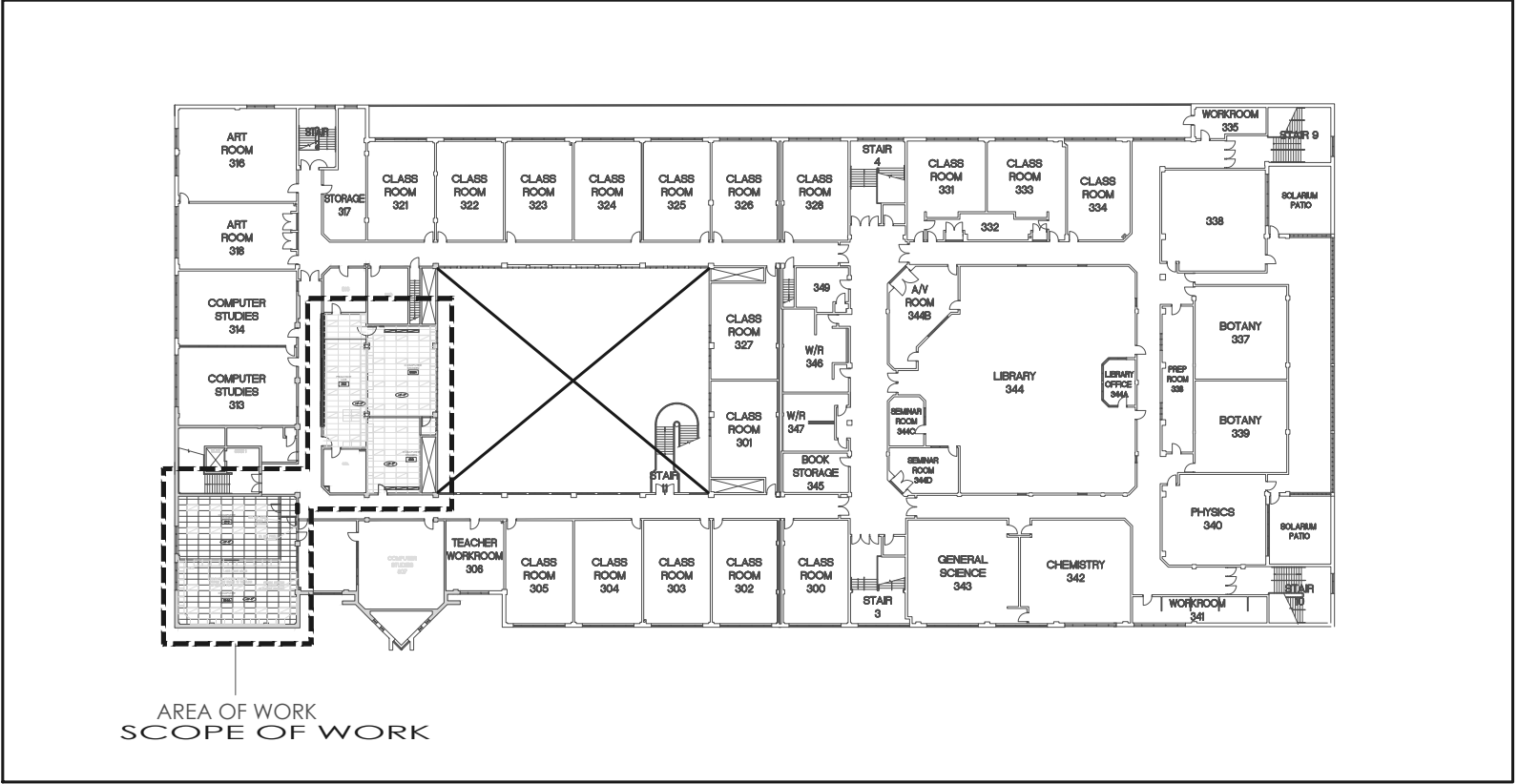
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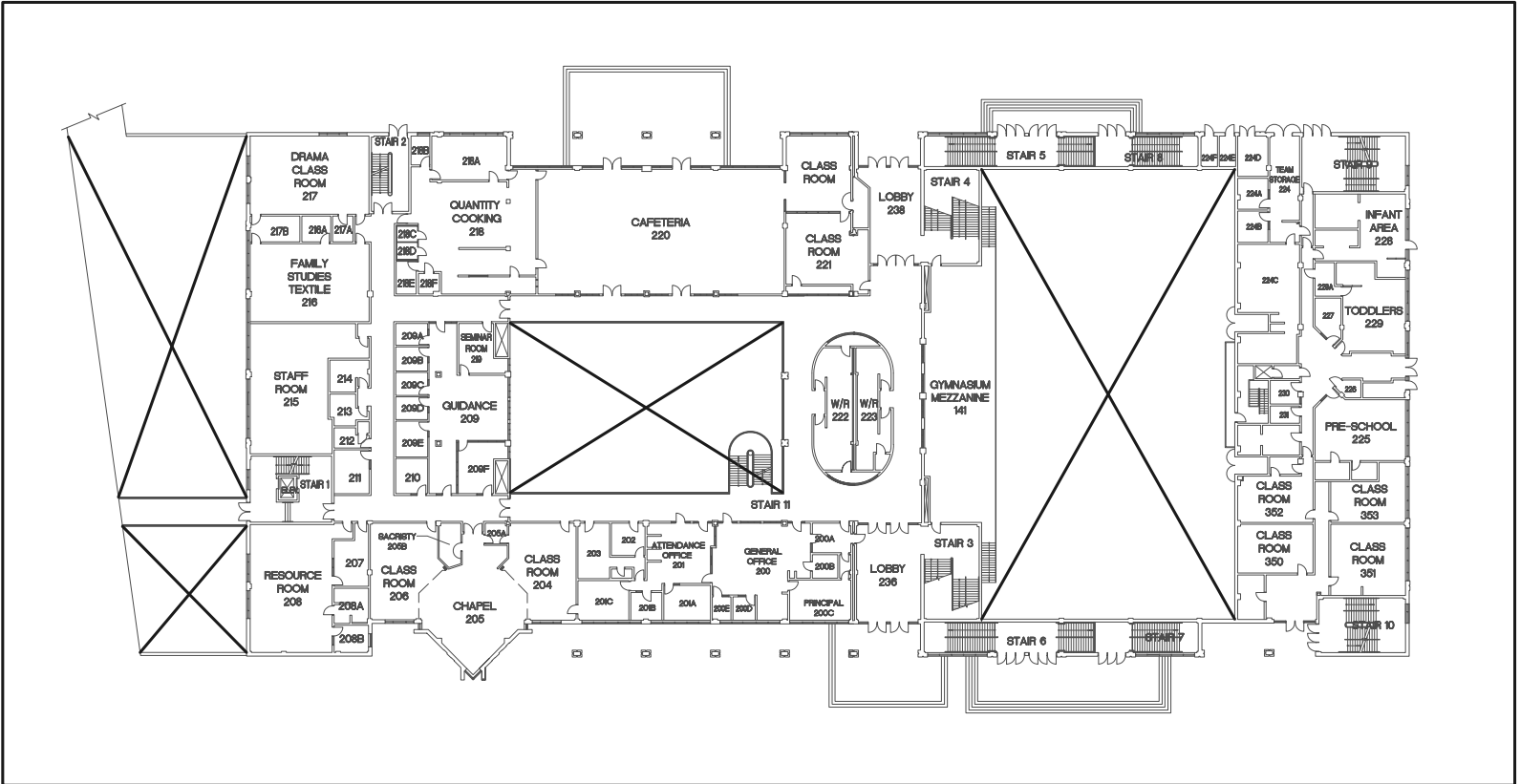
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MECHANICAL LEGEND,
DRAWING LIST,
KEY PLAN
& SCOPE OF WORK

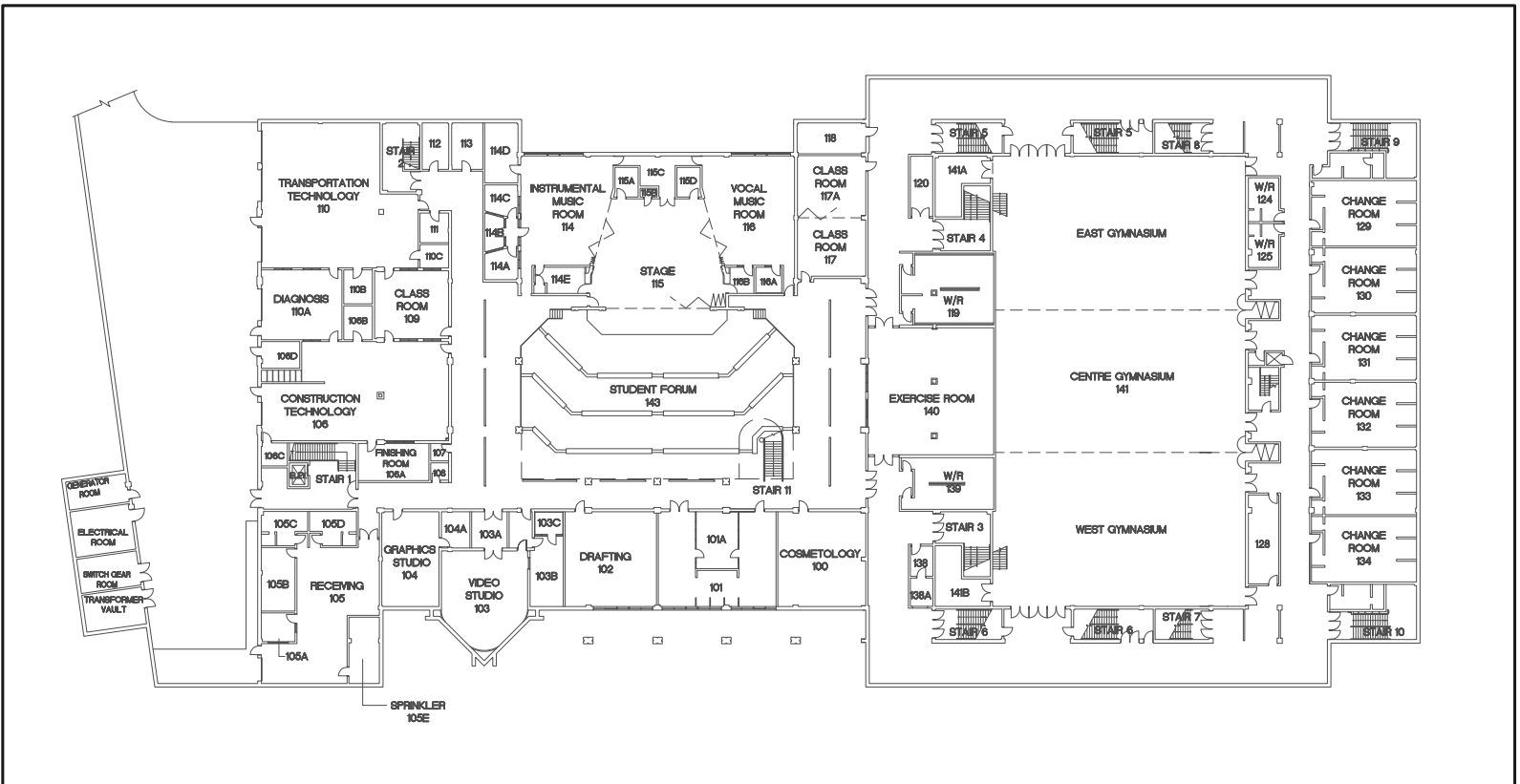
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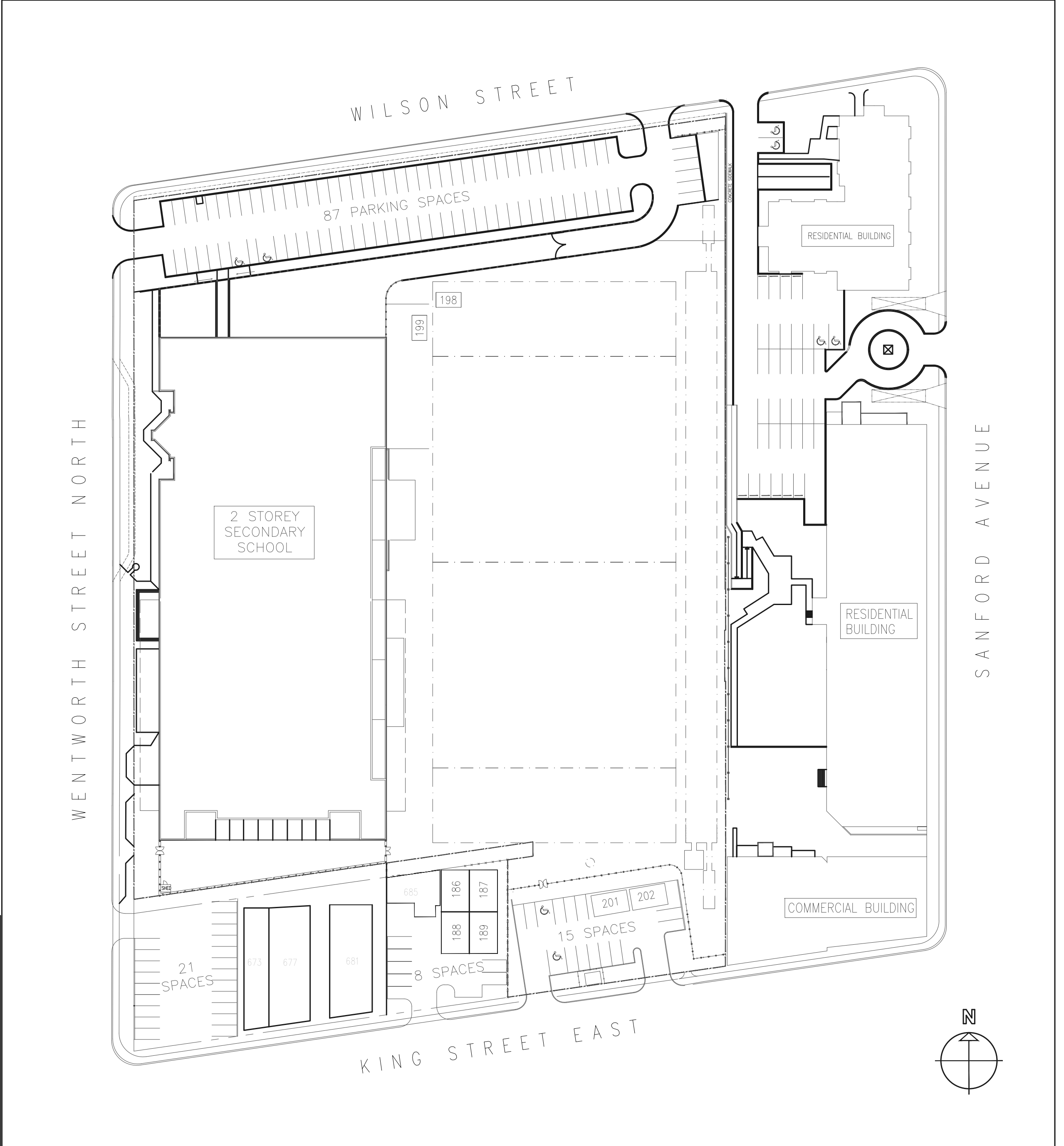
4 SECOND FLOOR KEY PLAN (REFERENCE ONLY)
P1.0 SCALE: 1/64" = 1'-0"



3 GROUND FLOOR KEY PLAN (REFERENCE ONLY)
P1.0 SCALE: 1/64" = 1'-0"



2 BASEMENT FLOOR KEY PLAN (REFERENCE ONLY)
P1.0 SCALE: 1/64" = 1'-0"



1 SITE PLAN
P1.0 SCALE: 1/32" = 1'-0"

PLUMBING LEGEND

| | |
|--|---|
| | SANITARY DRAIN (ABOVE GRADE) |
| | SANITARY DRAIN (BELOW GRADE) |
| | VENT LINE |
| | DOMESTIC COLD WATER LINE |
| | DOMESTIC HOT WATER LINE |
| | DOMESTIC RECIRCULATION LINE |
| | FIRE LINE (STANDPIPE SYSTEM) |
| | FLOOR CLEANOUT |
| | GATE VALVE |
| | CHECK VALVE |
| | GLOBE VALVE |
| | UNION |
| | STRAINER |
| | RECIRCULATION LINE CONTROL |
| | 'DOLE' FITTING & SIZE |
| | ELECTRICALLY SUPERVISED VALVE (MONITORING SWITCH) |
| | FIRE HOSE CABINET |
| | FIRE EXTINGUISHER |
| | FIRE EXTINGUISHER & CABINET |
| | F.H.C. |
| | F.E. |

GENERAL DEMOLITION NOTES:

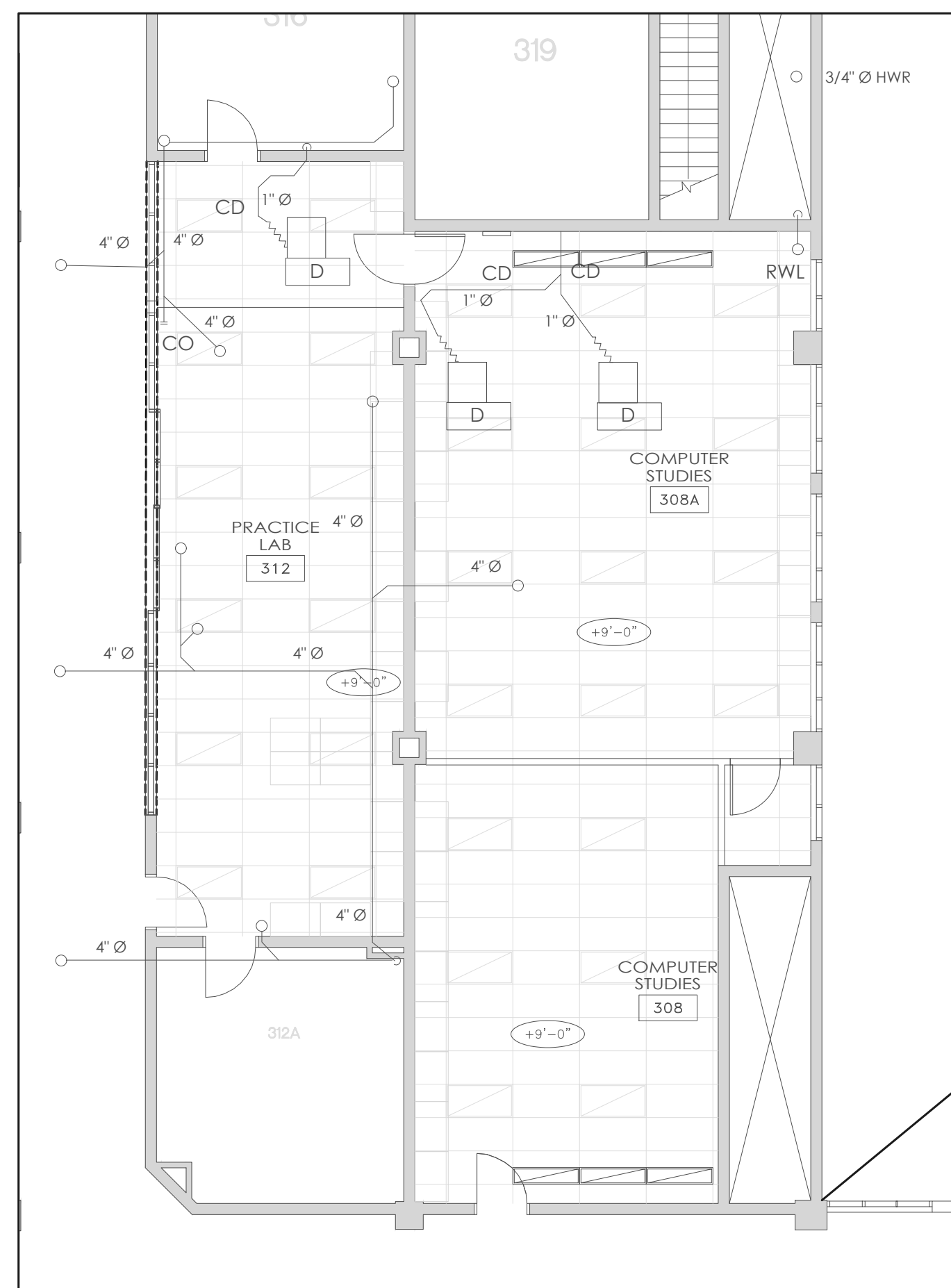
- DEMO PLANS REFER TO ARCHITECTURAL DRAWING. G.C. SHALL VERIFY ALL SITE CONDITIONS ON SITE AND MAKE REQUIRED DEMOLITION WORK AS PER PROPOSED PLANS. DRAWINGS TO BE REFERENCED BUT NOT LIMITED ARE: ARCHITECTURAL, STRUCTURAL, MEP, AND ID (IF APPLICABLE).
- THE EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM THE AS-BUILT DRAWINGS AND SITE SURVEY. THIS INFORMATION MUST NOT ASSUMED TO BE COMPLETE OR UP-TO-DATE. THIS MECHANICAL CONTRACTOR SHALL CARRYOUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM THE SIZE AND LOCATION OF THESE SERVICES, BEFORE THE COMMENCEMENT OF ANY WORK.
- IN THE EVENT OF SITE DISCREPANCIES TO THE DEMOLITION AND PROPOSED PLANS, ARCHITECTS MUST BE NOTIFIED IMMEDIATELY.
- ALL THE SITE DISCONNECTIONS SUCH AS: GAS, HYDRO, WATERMAIN & ETC. SHALL BE COORDINATED WITH LOCAL SERVICES AND AUTHORITIES AS REQUIRED.
- ALL AREAS WHERE DEMOLITION WORK IS PROPOSED SHALL HAVE MECHANICAL, ELECTRICAL, PLUMBING, DATA, PHONE, AND NETWORK DISCONNECTED. SECURE AND CAP ALL THE ABOVE AND EFFECTED ITEMS AS REQUIRED FOR FUTURE CONNECTION.
- ALL DEMOLITION WORK TO BE PERFORMED AND COORDINATED IN COMPLIANCE WITH CURRENT AND LOCAL CODE, REGULATIONS, BY-LAWS, AND AUTHORITIES WITHIN THE RELATED JURISDICTION.
- G.C. SHALL PROTECT FROM DAMAGES, PREVENT POSSIBLE MOVEMENTS, SHIFTING OR SETTLING OF EXISTING OR ADJACENT STRUCTURAL ELEMENTS. ALL REQUIRED METHODS SHALL BE USED IN REGARDS AS SHOWN IN STRUCTURAL DRAWINGS OR AS PER GOOD PRACTICES AS THEY RELATE TO THE TASK TO ENSURE STRUCTURAL STABILITY IS MAINTAINED.
- WHERE NEW MEP PENETRATIONS ARE REQUIRED TO GO THROUGH OR WITHIN THE EXISTING CONCRETE STRUCTURES, SAWCUT TO THE EXTENT OF PROVIDED DETAIL WITHIN MEP DWGS. AND/OR ARCHITECTURAL DWGS AND/OR STRUCTURAL DWGS.
- ALL MECHANICAL EQUIPMENTS AND RELATED ACCESSORIES AND ELEMENTS SUCH AS: PIPING, DUCTWORK, HANGERS, AND ANY OTHER ASSOCIATED PARTS THAT ARE REDUNDANT AS PER NEW DESIGN AND DEMOLITION PLAN TO BE ENTIRELY REMOVED TO THE REQUIRED EXTENT, UNLESS OTHERWISE NOTED. NOTE: DO NOT REMOVE THE UNDERGROUND PIPING.
- G.C. AND/OR INDIVIDUAL TRADE ARE RESPONSIBLE FOR THE DISPOSAL OF DEMOLISHED MATERIALS, UNLESS OTHERWISE NOTED.
- MAKE GOOD SURFACES IN ALL EFFECTED AREA TO RECEIVE NEW FINISH.

NOTE:
CONTRACTOR TO PROVIDE INTERFACE DRAWINGS SHOWING ALL EQUIPMENT, PIPING, DUCT, ELECTRICAL, BEAMS, ELEVATION ETC. IN THE CORRIDOR OF THE ALL FLOORS AND THE BASEMENT LEVELS.

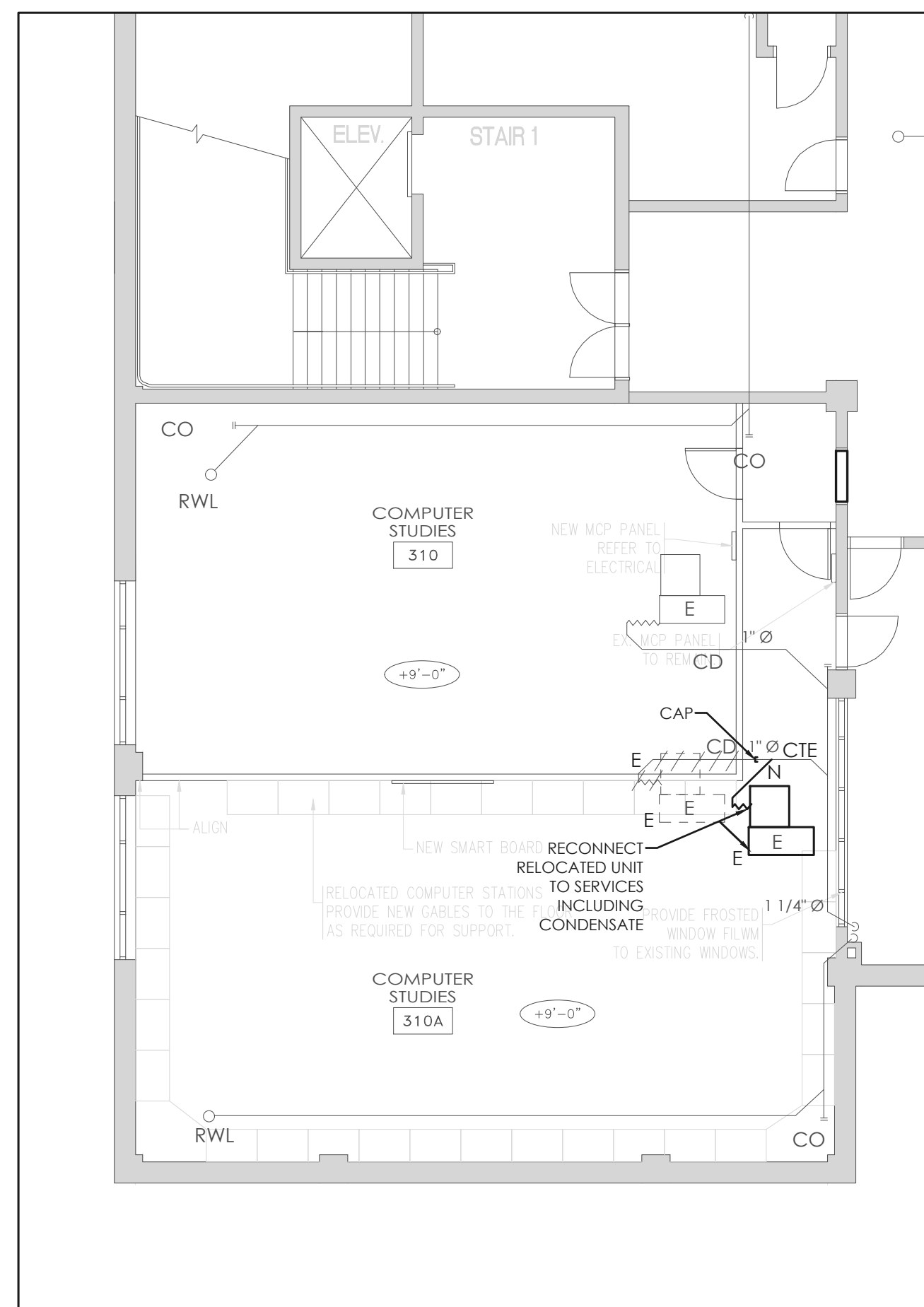
DRAWING LIST

| DWG.NO | DRAWING TITLE |
|--------|---|
| P-1 | MECHANICAL LEGEND, DRAWING LIST, KEY PLAN & SCOPE OF WORK |
| P-2 | FLOOR PLANS AND DETAILS - PLUMBING |
| P-3 | SPECIFICATIONS - PLUMBING |

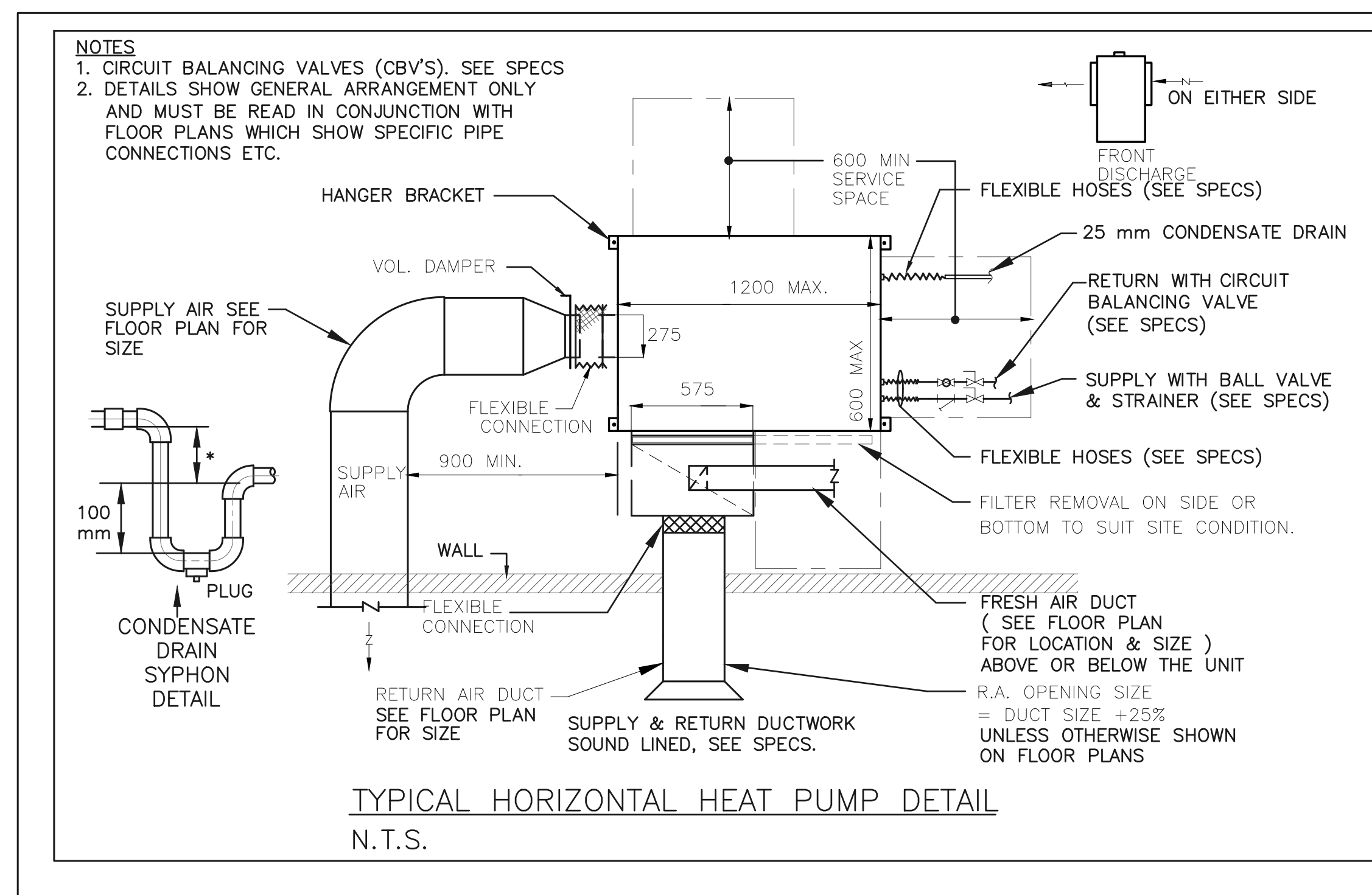
- GENERAL NOTES:**
- MECHANICAL DRAWINGS SHALL NOT BE SCALED FOR EQUIPMENT, DUCT, PIPE LOCATIONS. DIV.15 IS RESPONSIBLE TO COORDINATE THEIR EQUIPMENT, DUCT & PIPE LOCATIONS WITH OTHER TRADES. DIV.15 SHALL AVOID ALL STRUCTURAL OBSTACLES KEEPING THEIR SERVICES AS HIGH AS PERMITTED BY THE SITE CONDITIONS.
 - MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL ITEMS SHOWN ON ALL 2. MECHANICAL DRAWINGS. SOME ITEMS WILL BE SHOWN ON SCHEMATIC ONLY OR FLOOR PLANS ONLY. MECHANICAL DRAWINGS SHALL BE READ AS A WHOLE AND SHALL NOT BE SEPARATED FROM ONE ANOTHER.
 - DUCTS RUNNING PARALLEL TO THE JOIST SHALL RUN BETWEEN THE JOISTS, AND DUCTS PERPENDICULAR TO THE JOIST SHALL RUN THROUGH THE OPEN WEB. ALL DUCT, PIPE & EQUIPMENT HANGER SHALL BE CONNECTED AT PANEL POINTS IN THE JOISTS.
 - COORDINATE WITH ALL OTHER TRADES AND SERVICES BEFORE FINAL LOCATIONS OF DUCTS, PIPES, DIFFUSERS, EQUIPMENT, ETC. ARE FINALIZED. CONTRACTOR TO COORDINATE THERMOSTAT FINAL LOCATION WITH OTHER ELECTRICAL SERVICES AND TO ARCH APPROVAL.
 - CO-ORDINATE LOCATIONS OF ALL GRILLES AND DIFFUSERS WITH LIGHTS, SPRINKLERS, ETC AND 5. REFLECTED CEILING PLANS.
 - KEEP ALL SERVICES AS HIGH AS POSSIBLE TO MAINTAIN CEILING HEIGHTS SHOWN ON ARCH. 6. DRAWINGS.
 - ALL SOUND LINING OF DUCTWORK SHALL BE AS SPECIFIED IN SPECIFICATIONS OR WHERE SHOWN 7. ON DRAWINGS. FAN COIL UNITS UNITS S.A. DUCTS SHALL BE SOUNDLINED OVER THEIR ENTIRE LENGTH, R.A. DUCTS TO BE LINED FOR 3 m FROM UNIT UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS.
 - FINAL LOCATION OF ALL AIR MOVING UNITS MUST BE SUCH THAT SERVICE SPACE IS MAINTAINED 8. AND UNITS ARE NOT LOCATED ABOVE LIGHT FIXTURES, GYPSUM BOARD CEILING, BULKHEADS, PIPING, DRAINS OR ANY OTHER MECHANICAL OR ELECTRICAL FACILITIES IN ORDER THAT THEY ARE READILY ACCESSIBLE, SERVICEABLE AND REMOVABLE.
 - PROVIDE ALL DUCT & PIPE DROPS OR RISERS IN CEILING SPACE, WHETHER SHOWN OR NOT AS REQUIRED TO SUIT STRUCTURAL STEEL, ROOF LEVELS, CEILING LEVELS, ETC..
 - PROVIDE FIRE DAMPERS IN ALL DUCTS PENETRATING FLOORS VERTICALLY.
 - ALL PIPES & DUCT CONNECTIONS TO UNITS SHALL BE THROUGH A FLEXIBLE CONNECTION.
 - CONTRACTOR MUST VERIFY PIPE LENGTHS ON SITE.
 - PROVIDE BALANCING DAMPER ON ALL FRESH AIR, EXHAUST AIR, SUPPLY AIR BRANCHES WEATHER SHOWN OR NOT.



1 ROOM 308/308A PLUMBING
SCALE 1/8" = 1'-0"



2 ROOM 310/310A PLUMBING
SCALE 1/8" = 1'-0"



ALL SHUTDOWNS OF ANY BASE BUILDING SYSTEMS SHALL BE PERFORMED BY THE LANDLORD'S / OWNER'S BUILDING OPERATIONS STAFF AND COORDINATED WITH THE LANDLORD / OWNER FOR THE TIME AND DURATION OF INTERRUPTIONS. WRITTEN REQUESTS MUST BE PROVIDED 72 HOURS (MINIMUM) IN ADVANCE FOR SHUTDOWN OF ANY MECHANICAL SYSTEM PRIOR TO THE PROPOSED SHUTDOWN TIME. FILLING, DRAINING, AND TESTING OF FIRE PROTECTION AND OTHER SYSTEMS SHALL BE CARRIED OUT AFTER REGULAR RETAIL HOURS OF OPERATION AND SCHEDULED WITH THE LANDLORD / OWNER.

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Alteration to
Cathedral High School
HWCD5B
30 Wentworth Street North
Hamilton, Ontario

job no. 24.025

dwg. file

dwn. by VP

scale AS NOTED

date MAR 2024

dwg. title
FLOOR PLANS - PLUMBING

| No. | Revisions | Date |
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| 1 | ISSUED FOR REVIEW | 2024-03-28 |
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SPECIFICATIONS - PLUMBING

dwg. **P3**

MECHANICAL GENERAL REQUIREMENTS

| | | | | | | | | |
|--|---|---|-------------|--|-------------------------|-------------------------|------------------------|----------|
| <p>1.01 GENERAL CONDITIONS</p> <ol style="list-style-type: none"> Conform to Instructions to Bidders. All work must conform to local Bylaws, BC Building Code and Authorities having jurisdictions. Work includes supply and installation of all labour and material necessary for various systems as required to make finished and fully functional installations even though each and every miscellaneous item of labour and material is not mentioned in Specifications or shown on Drawings. The most stringent of the base building specifications and this specification shall form the basis for construction. Contractor shall account in his tender price for premium time cost for work performed outside of the regular working hours. Obtain Architect / Engineer's approval of diffusers, grilles, access doors and thermostats location prior to installation of different from drawings. Contemplated change notices shall be quoted/valued be submitted with breakdown of materials on labor cost. Pricing shall be in accordance with MCA (Mechanical Contractor Association). Contractor shall adhere to the construction schedule prepared by the General Contractor. <p>1.02 BY-LAWS & PERMITS</p> <ol style="list-style-type: none"> Obey Government, Municipal and Underwriters Standards and perform work in accordance with requirements of By Laws and Regulations in force where building is located. Obtain and pay for all permits, fees, inspections, deposits and service charges required by Authorities. <p>1.03 CO-OPERATION & CO-ORDINATION</p> <ol style="list-style-type: none"> Each Section and Trade shall confer with other Sections and arrange work so it will be carried on in best interests of all concerned being in mind building construction and finish required. <p>1.04 EXAMINE SITE & CONDITIONS</p> <ol style="list-style-type: none"> Examine site and local conditions during tender period. Examine carefully all Drawings and complete Specifications to ensure that work can be satisfactorily carried out as shown. Before commencing work, examine the work of other Sections and report at once any defect or interference affecting the work, its completion or warranty. No allowance will be made later for any expense incurred through failure to examine these conditions or due to existing conditions or to report any such discrepancies in writing. <p>1.05 DRAWINGS</p> <ol style="list-style-type: none"> Mechanical Drawings do not show all existing, structural and related details. Take information involving accurate measurement from building drawings, or at building locations. Obtain and pay for all charge, any necessary changes or additions to fans of piping, conduits and ducts to accommodate structural conditions. <p>1.06 CUTTING & PATCHING</p> <ol style="list-style-type: none"> Perform all cutting and patching of portions of building as necessary to accommodate installation of work of the Contract. Core drill holes in concrete walls and floors for piping where not previously sleeved. <p>1.07 SUPPORTS</p> <ol style="list-style-type: none"> Provide supports, stands and platforms necessary for proper installation of equipment and components, of concrete, steel or wood as may be required and as approved or elsewhere show or specified. Provide necessary anchor bolts and other fastenings. Secure work to concrete with Phillips #24 steel anchors. <p>1.08 HANGERS</p> <ol style="list-style-type: none"> Provide hangers to support unbanded piping and ducts. Obtain approval of methods of hanging to building before proceeding. Ensure that load on building structure does not exceed maximum mechanical loading per square metre. Do not hang from steel or teakum decking. Provide structural framing where necessary to support work in these areas. Provide hanger at each fitting. Support unbanded horizontal cast iron piping at each hub length (max. 1500 mm) with brinnell #260 or Mytt #24 clevis hangers. Where groups of fittings occur, not more than 900 mm shall be between hangers. Support other horizontal piping with brinnell #260 or Mytt #24 clevis hangers as follows: Up to 1-1/4" size - 6', maximum spacing 1-1/2" to 3" size - 10' maximum spacing | <p>2.01 Where structural bearings do not exist, provide angle or channel iron of sufficient size from other structural bearings to support hangers or equipment.</p> <p>1.09 SLEEVES</p> <ol style="list-style-type: none"> Where pipes pass through interior masonry walls, provide metallic pipe sleeves of equivalent weight and material. Where ducts pass through in terior masonry walls, provide suitable 18 gauge galvanized steel sleeves. Size sleeves on insulated piping or ducts to permit insulation to continue through sleeves. Seal spaces between unbanded pipes and ducts through "required fire separations" with U.L.C. listed (Guide 4879) fire stopping including pipe insulation. Fire stopping shall comply with O.B.C., be approved by local Building Department and installed as per listing card. Fire stopping shall have approved FH (nose stream) rating. Seal all holes and openings through floors water tight. <p>1.10 ACCESS DOORS</p> <ol style="list-style-type: none"> Supply as required, 2.8 mm thick hinged metal access doors with frames for installation by other sections in walls or ceilings to permit access to built in or inaccessible controls, dampers, valves, cleanouts and components. Access doors shall be Stolpa Ltd. #722 flush type of size to suit controls, valves, cleanouts, dampers or components serviced, minimum size 300 mm x 300 mm "reach-in", with prime coat finish, concealed hinges, screwdriver lock and plaster key. Access doors in finished masonry or drywall construction shall be #722 less plaster key. Access doors shall be #726 in acoustic tile ceilings; #726E in plaster ceilings and #704 in drywall ceilings. <p>1.11 PAINTING</p> <ol style="list-style-type: none"> Supply all equipment and materials fabricated from iron or steel (except piping and ductwork materials) prime painted at factory before shipment. All metal parts, miscellaneous metal items and work installed exterior to building must be degreased and prime painted unless otherwise noted. <p>1.12 Shop Drawings</p> <p>Provide 5 copies of shop drawings for all specified equipment. Allow for 5 working days for review by the Engineer.</p> <p>1.13 Flashing & Counter Flashing for Roofs, Walls & Floors</p> <p>FLASH all mechanical components passing through the roof or exterior wall or floor water tight. Use PVC or prefabricated aluminum flashing for roof & copper or membrane for floors & walls. Openings shall be weather, water & fire proof by the use of flexible sealants.</p> <p>1.14 AS-BUILTS Drawings</p> <p>The contractor shall record as built conditions on a site set of drawings at all times. At the end of the job the Contractor shall produce a set of CAD drawings reflecting all as built modifications. The contractor shall submit a set of CDs to the Engineer for review against the site set of drawings at the end of the job.</p> <p>1.15 Operating & Maintenance Manuals</p> <p>Manuals shall include a set of approved shop drawings, equipment data sheet, valves schedule, air & water balancing report, operating & maintenance instructions, warranties. Contractor shall make all the changes requested but h consultant and resubmit the manuals if required.</p> <p>1.16 Temporary Filters</p> <p>1" (25mm) pleated filters shall be provided in the branch return air ducts connected to the base building central air systems. Filters shall be replaced on a weekly basis.</p> <p>1.17 Turn Over of Existing Equipment</p> <p>Prior to disposal of any equipment, the Contractor shall turn over removed CAV Boxes, heat pumps, fan coil units, diffusers, thermostats, light truffers, etc to the Owner / Landlord for their directions.</p> <p>1.18 Identification</p> <p>Mechanical equipment shall be provided with name plates showing performances and electrical characteristics. Numbers & letter shall be 10 mm (3/8") high in white color on black laminated plastic tags.</p> | <p>1.19 Final Inspection</p> <p>Prior to the installation of the ceiling tiles, the Contractor shall give the engineer a 72 hrs notice for final inspection. When the ceiling tiles have been installed the Contractor shall remove tiles at the direction of the Engineer.</p> <p>20 CLEANUP</p> <p>On completion, remove from premises surplus materials and debris resulting from work of this Division. Keep work areas clean and in a workmanlike manner at all times to approval.</p> <ol style="list-style-type: none"> Fill in, compact and level off exterior excavations after final settlement of backfill to approval. <p>1.21 Wiring, Starters & Electrical Components</p> <p>Equipment starters & disconnect shall be provided by the mechanical contractor. Co ordinate with the Electrical Contractor for power wiring to equipment. Verify voltage on site prior to ordering equipment.</p> <p>1.22 Completion of Contract</p> <p>The entire installation shall be complete, functional & tested and ready for use at the completion date. Contractor shall submit all certificates of inspections & testing results for Consultant's review.</p> <p>HEATING, VENTILATING & AIR CONDITIONING</p> <p>1.01 GENERAL CONDITIONS</p> <p>Mechanical General Requirements, Section 15010, form integral part of this Section.</p> <p>1.02 MATERIALS</p> <p>Materials shall be new, of uniform manufacture where available, of best quality of their respective kinds and of Canadian pattern throughout.</p> <p>1.03 CLEANING SYSTEMS</p> <p>After work is completed and before system has been put in operation, clean each HVAC Unit, gas piping and equipment.</p> <p>1.04 GRILLES & DIFFUSERS</p> <p>Provide E.H. Price Ltd. grilles and diffusers of sizes and types shown conforming to and Certified Test Rated in accordance with Air Diffusion Council Equipment Test Code No. 1062P2 of latest Construction Standards - Metal and Flexible.</p> <ol style="list-style-type: none"> Grilles shall be of steel construction (except where noted) with baked white enamel finish, except in walls where prime coat finish shall be supplied. Steel frames and bars shall be extruded from hard stock, free from pits and spots. Joints shall be "fluted". Attachment shall be with stainless steel or c.p. screws with 1/4" thick urethane sponge gasket set under flange. Exhaust air grilles in lay - in ceilings in sizes 12" x 12" and larger shall be R80/BFD-0 steel frame return air grille with aluminum aggregate facade, 3/8" wide margin to fit 24" O.C. lay - in inverted T - bar ceiling, with volume damper. Where located in ducted system, register shall have volume damper. Type A diffusers shall be JRCO, square style of steel construction for surface or flush mounting to ceiling. Inner assembly shall be easily adjustable for projection heating. Secure diffusers to duct by a permanent means. Support circular diffusers by proper chain to roof structure. <p>5. Alternate Equipment:</p> <table border="0"> <tr> <td>1. Director</td> <td>2. Barber Colman (Kovar Products Ltd.)</td> </tr> <tr> <td>3. Nalor Hart Ind. Ltd.</td> <td>4. Carnes Corp. (Airex)</td> </tr> <tr> <td>5. LisiAero-Guide Inc.</td> <td>6. Titus</td> </tr> </table> | 1. Director | 2. Barber Colman (Kovar Products Ltd.) | 3. Nalor Hart Ind. Ltd. | 4. Carnes Corp. (Airex) | 5. LisiAero-Guide Inc. | 6. Titus |
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PLUMBING SPECIFICATIONS :

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| <p>1. INSTALL ALL PLUMBING SYSTEMS & VENT PIPING IN ACCORDANCE WITH PROVINCIAL PLUMBING CODE AND LOCAL AUTHORITY HAVING JURISDICTION .</p> <p>2. PROVIDE CRANE OR EQUAL APPROVED GLOBE VALVES, #37 CHECK VALVES, GAS COCKS SHALL BE CGA APPROVED WITH QUARTER STOPS. PROVIDE ACCESSIBLE SCREW DRIVER STOPS OR VALVES ON WATER SERVICES AT ALL FIXTURES AND EQUIPMENT. INSTALL BACKFLOW PREVENTERS ON EQUIPMENT CONNECTIONS. PROVIDE ISOLATING VALVES ON THE DOMESTIC COLD AND HOT WATER BRANCHES TO EACH WASHROOM.</p> <p>3. BEFORE STARTING THE WORK, VERIFY EXACT LOCATIONS, INVERTS & SIZES OF ALL EXISTING SERVICES AND CONNECTIONS.</p> <p>4. CO-ORDINATE PIPING INSTALLATION WITH OTHER TRADES AND RUN PIPES IN CEILING SPACE AS HIGH AS POSSIBLE.</p> <p>5. READ PLUMBING DRAWINGS IN CONJUNCTION WITH I.D. DRAWINGS AND SHOP DRAWINGS. PROVIDE HOOK-UP OF ALL PLUMBING AND NATURAL GAS SERVICES OF THE REQUIRED SIZE AND AT REQUIRED LOCATION.</p> <p>6. PIPING INSULATION: COMPONENTS OF INSULATION SYSTEM TO HAVE MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50 IN ACCORDANCE WITH CAN/ULC-S102.</p> <p>DOMESTIC HOT WATER PIPING: FORMED MINERAL FIBER TO 200°C, RIGID MINERAL FIBER SLEEVING FOR PIPING, 25MM THICK FOR PIPES 50MM & UNDER. 38MM THICK FOR PIPES 65MM & OVER.</p> <p>DOMESTIC COLD WATER: FORMED MINERAL FIBER WITH VAPOUR BARRIER TO 85°C, RIGID MINERAL FIBER SLEEVING FOR PIPING AND CGSB 51-GP-52MA, VAPOUR BARRIER JACKET AND FACING MATERIAL, 25MM THICK FOR PIPES 25MM & UNDER. 38MM THICK FOR PIPES 32MM & OVER.</p> <p>JACKETING FOR EXPOSED PIPING: PVC, APPLY IN ACCORDANCE WITH CGSB 51-GP-53M, 0.38 MM THICK MINIMUM. FITTING COVERS, ONE PIECE, PREMOULDED TO MATCH.</p> <p>ON PIPING WITH INSULATION AND VAPOUR BARRIER, INSTALL HIGH DENSITY INSULATION UNDER HANGER SHIELD. MAINTAIN INTEGRITY OF VAPOUR BARRIER OVER FULL LENGTH OF PIPE WITHOUT INTERRUPTION AT SLEEVES, FITTINGS AND SUPPORTS.</p> <p>7. PIPING, DOMESTIC HOT & COLD, WITHIN BUILDING: ABOVE GROUND COPPER TUBE HARD DRAWN, TYPE L TO ASTM B88M. BURIED OR EMBEDDED: COPPER TUBE SOFT ANNEALED, TYPE K TO ASTM B88M, IN LONG LENGTHS AND WITH NO BURIED JOINTS, IN PVC CONDUIT. FLUSH-OUT, DISINFECT AND RINSE SYSTEM TO REQUIREMENTS OF AUTHORITY HAVING JURISDICTION.</p> <p>8. ABOVE GROUND SANITARY AND VENT PIPING: COPPER TUBE AND FITTINGS TYPE DWV TO: ASTM B306. CAST IRON PIPING AND FITTINGS TO CAN/CSA-B70. USAGE OF PVC PIPES IS ACCEPTABLE WHERE PERMITTED BY LOCAL CODES/BASE BUILDING (EXCEPT IN RETURN AIR PLENUM)</p> <p>9. BURIED SANITARY AND VENT PIPING: PVC DWV PIPING TO CAN/CSA-B181.1, CAN/CSA-B181.2 & CAN/CSA-B182.1. EXCAVATION AND BACKFILLING OF ALL BURIED PIPING & SERVICES FOR PLUMBING TRADE IS THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO THE SPECIFICATIONS OF RELATED SECTIONS OF GENERAL SPECIFICATIONS.</p> | <p>10. NATURAL GAS PIPING: TO THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION. ASTM A-53 SCH. 40 STEEL PIPING, SCREWED OR WELDED TO CODE REQUIREMENTS.</p> <p>11. PLUMBING SPECIALTIES AND ACCESSORIES :</p> <p>FLOOR DRAINS (FD) : TO CAN3-B79, ACCEPTABLE MANUFACTURERS: WATTS, ZURN.</p> <p>CLEANOUTS (CO) : FLOOR ACCESS: ROUND NICKEL BRONZE BODY AND FRAME WITH ADJUSTABLE SECURED NICKEL BRONZE TOP. COVER FOR CARPETED FLOORS, POLISHED NICKEL BRONZE WITH DEEP FLANGE COVER FOR CARPET INFILL, COMPLETE WITH CARPET RETAINER VANDAL-PROOF LOCKING SCREWS. ACCEPTABLE: WATTS, ZURN</p> <p>WATER HAMMER ARRESTORS: STAINLESS STEEL CONSTRUCTION, BELLWOS OR PISTON ACCEPTABLE: PPP INC, WATTS</p> <p>TRAP SEAL PRIMERS: WITH INTEGRAL VACUUM BREAKER, NPS 1/2" SOLDER ENDS, NPS 1/2" DRIP LINE CONNECTION. INSTALL FOR ALL FLOOR DRAINS. INSTALL ON COLD WATER SUPPLY TO NEAREST FREQUENTLY USED PLUMBING FIXTURE, IN CONCEALED SPACE, TO APPROVAL OF ENGINEER. INSTALL SOFT COPPER TUBING TO FLOOR DRAIN.</p> <p>12. COMMISSIONING OF PLUMBING SPECIALTIES: CLEAN OUT AND PRIME ALL FLOOR DRAIN TRAPS USING TRAP SEAL PRIMERS OR OTHER MEANS ACCEPTABLE TO THE AUTHORITIES. PROVE FREEDOM OF MOVEMENT OF CLEANOUTS.</p> <p>13. PLUMBING FIXTURES:</p> <p>FIXTURES AND TRIM: ARCHITECTURAL DRAWINGS TO GOVERN IN DETERMINATION OF NUMBER AND LOCATION OF FIXTURES. EXPOSED PLUMBING BRASS TO BE CHROME PLATED. FOR SPECIFICATIONS REFER TO PLUMBING FIXTURE SCHEDULE.</p> <p>14. DOMESTIC HOT WATER HEATER: REFER TO SCHEDULE ON DRAWING. SUPPLY AND INSTALL THERMOMETER ON HW DISCHARGE PIPE, ADJUST DISCHARGE TEMPERATURE FOR 140 °F. SUPPLY AND INSTALL HEAT TRAP, SHUT-OFF VALVES, TEMPERATURE AND PRESSURE RELIEF VALVE, PIPE RELIEF TO DISCHARGE LOCATION AS SHOWN ON DRAWING. PROVIDE EXPANSION TANK AS INDICATED ON DRAWING. ACCEPTABLE: AMTRONL</p> <p>15. PROVIDE AND INSTALL THERMOSTATIC MIXING VALVE, SIZE INDICATED ON DWG. ACCEPTABLE: HYDROGUARD, LEONARD, RADA. INSTALLATION STRICTLY PER MANUFACTURER'S INSTRUCTION.</p> |
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MECHANICAL GENERAL REQUIREMENTS

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| <p>1.05 DUCTWORK</p> <p>Provide ducts and sheet metal work shown and required to complete duct systems and put each in operating condition. Ducts shall be constructed of #24 gauge (#22 gauge over 30" width) first quality, smooth finished, cold rolled galvanized steel per SMANZA 1" M.C. seal Class 'B' guaranteed to duct seam without fracturing.</p> <p>Make joints suitably air tight with laps in direction of air flow. Whenever possible, sizes of ducts shall conform to those indicated. Where structural conditions require shape be modified, ducts MUST have same cross sectional area indicated and width of duct shall NOT EXCEED SIX times depth except with special approval. Ductwork shall be in accordance with ASHRAE Guide of latest publication.</p> <p>Support duct assemblies from building structure with 1" x 1/8" galvanized steel 'Z' band hangers secured under ducts. Hangers shall be spaced at NOT OVER 72" CENTRES.</p> <p>Provide extension collars for outlets, air guide vanes and other special features indicated or required. Transition ducts at not more than 30 degree slope. Elbows and bends shall be minimum one duct width radius.</p> <p>Provide Duralon coated glass fabric connections between ductwork and equipment.</p> <p>Provide 1" thick Fibreglass Flexible Duct Liner acoustic liner with Neoprene facing in 20' of supply and return ducts. Secure liner with welded pins and push on caps. Metallic seal all joints. Where ducts are acoustic lined, sizes shown shall be inside liner.</p> <p>Provide where shown, preinsulated-Trans Continental Equipment Ltd. type "SI" "A1-U-FLEX" aluminum or Thermoflex M.K.C. glass fibre flexible air duct hoses each U.L.C. listed for service. Secure hose to metal ducts with Duro Dyne S-3 duct sealant and tape seal with Permoseal fibreglass duct tape. Minimum length 25% longer than measured distance. Maximum length 50% more than measured length, 120' total. Provide manual balancing damper in trunk duct at connection to each flexible duct.</p> <p>1.06 INSULATION</p> <ol style="list-style-type: none"> Provide insulation of new equipment and ductwork as described or noted. Insulation, jackets and adhesives shall be incombustible, in compliance with BC Building Code, installed to manufacturer's standards, and to approval. No wheat pastes or asbestos materials shall be used. Make suitable approved openings in insulation for inspection outlets and equip manifolds. Insulation shall continue through sleeves and openings except at "Required Fire Separations" where sleeves and openings shall be "Fire Stopped". See Sleeves. Insulation shall be butted tight to fire stopping and vapour sealed. Work which is inaccessible for application of insulation after installation shall be insulated and finished before being placed in position. Seal duct insulation with mastic at all joints and pins. Tape all joints with approved self-adhesive foil faced glass fibre reinforced 2" wide vapour barrier tape. Where ducts are sound lined or fire proofed thermal insulation is not required but shall overlap liner at least 6" except where noted. Externally insulate all concealed supply air ducts carrying cooled conditioned air with thick, 0.748 lbs/cubic foot density glass fibre reinforced foil faced flexible vapour seal duct insulation (not more than 1.72 perm) glued and copper wired on and secured to approval. Mechanically secure insulation on ducts over 30" wide. A.C. supply air ducts in return air ceiling plenums from air conditioned spaces. Do NOT break continuity of insulation vapour barrier by hanger or support. Remove hangers temporarily to facilitate installation of vapour barrier where necessary. Supply and install cap strips to cover turned out legs of ductwork reinforcing and supporting members. Repair or replace insulation where damaged or broken during construction to approval. Recover exposed interior insulation including fittings with 0.0418lbs/sqft canvas duck pasted on over entire surface of insulation with approved incombustible lagging adhesive and finished with 1 coat of lagging adhesive. | <p>Contrails</p> <ol style="list-style-type: none"> The Control Contractor must be approved by the Landlord / Owner. Any new controls shall be compatible with the Base Building Central Control System (BACS). Mounting height of thermostats or sensors shall be 1200 mm to 1500 mm (4'-0"). Contractor shall provide all necessary EMT Conduits, and wire to provide a complete and totally functional control system. Wire control wiring to equipment starter Auxiliary Contractor. Provide transformer & power to component at the nearest electrical distribution panel. <p>1.08 Control wiring & devices are part of this contract. When required, control wiring shall be performed by the landlord / Owners Control Contractor & paid for under this contract.</p> <p>1. OPERATE AND ADJUST SYSTEMS</p> <ol style="list-style-type: none"> Operate system to full capacity and verify proper, safe efficient operation of all parts and each complete system. Oil motors and grease bearings before operating equipment. When work is complete and system is in operation, adjust valves, belt drives, controls, dampers and thermostats so that there is even distribution of cooling, heating and ventilation air throughout. Turn over to Owner, necessary keys, handles and operating devices for each system. Each air handling system shall be balanced and air quantities per outlet listed and forwarded to Engineer for checking and approval. Balancing Report shall be suitably bound, 8 size, six copies required. Clean or replace filters and leave systems in clean operating condition. Test and balance air system such that air quantities at each outlet, grille and register are within 5% of design figures. Fan speeds, splitter and balancing dampers shall be adjusted to achieve these results. Prepare and submit a final balancing report for checking and approval. Testing and balancing of air handling systems shall be under supervision of qualified personnel. Balancing and testing shall be performed by trained personnel with records kept of each trial balance for supervision and approval. <p>1.09 If spot checking systems reveals actual air quantities do not agree with air balance report, this report will be called upon to completely rebalance systems until satisfactory, without extra remuneration.</p> <p>1. QUIET OPERATION</p> <p>1.10 Each air handling systems has been designed to be quiet in operation, N.C. 35 maximum. It is responsibility of this Section to supply equipment and install systems to ensure noise levels will be maintained in accordance to Architect.</p> <p>WARRANTY</p> <ol style="list-style-type: none"> Furnish to Owner through General Contractor and Architect, written warranty covering materials and workmanship and free service for one year from date of start of lien period. Warrant apparatus installed to properly cool, heat and ventilate without undue noise through every item of equipment and system and to maintain required room conditions. <p>1.11 Warranty shall entail repair or replacement of materials installed without charge to Owner except where, in opinion of Architect, such repair or replacement was caused by improper use or lack of proper maintenance.</p> <p>2. Mechanical Demolition</p> <ol style="list-style-type: none"> Removal & storage of salvaged equipment & materials shall be at the direction of the landlord / Owner's representative. Disposal of all site of all debris shall be in accordance with authorities having jurisdictions. Unsalvageable materials & equipment shall be regularly removed from site & not allowed to accumulate. Work shall be left in a safe position after each work shift. Materials shall only be allowed to be stored in areas designated by the Landlord / Owner. Schedule & perform work in such a manner that minimum disturbance occurs to the existing services & facilities. Protect existing system & components from damage throughout the construction duration. Interruptions to the base building services shall be kept to a minimum. | <p>1.12 SEISMIC RESTRAINTS</p> <p>Work shall conform to Ontario building code, American Society of Heating, Refrigerating and Air Conditioning Engineers ASHRAE Handbook, HVAC Systems and Equipment and ASHRAE Handbook, HVAC Applications along with National Fire Protection Association (NFPA) 90A and NFPA 13, Standard for the Installation of Air Conditioning and Ventilating Systems and Sheet Metal and Air Conditioning Contractors National Association Inc. (SMACNA) Seismic Restraint Manual Guidelines for Mechanical Systems and SMACNA Duct Construction Standards - Metal and Flexible.</p> <ol style="list-style-type: none"> Submit Shop Drawings showing isolator types and sizes, locations with static and dynamic load on each location, and installation details, including recording and alarm device wiring and control diagrams where required. Including manufacturer's product data and certificates of compliance for each type of vibration control product provided. Submit Seismic Calculations: Submit seismic calculations on all equipment, ductwork and piping restraints, anchors and supports. Calculations shall be prepared by a civil or structural engineer currently registered in the province of British Columbia and shall conform to BART Facilities Standards Structural - Seismic Design Criteria. <p>The Contractor shall arrange with the manufacturers of the vibration isolation and seismic control devices to provide field services. And provide the calculation of seismic loading, installation instructions, and Provide piping, ductwork and equipment isolation systems and seismic control systems as indicated along with the specified equipment and control devices.</p> <ol style="list-style-type: none"> Restraints shall permit adjustment during installation to ensure sufficient clearance between vibration isolated element and rigid restraining device. A restraint shall not be installed until vibration isolators have been loaded and adjusted to achieve the specified static deflection and clearance. And Restraints at base supported equipment shall include resilient neoprene pads at all potential contact areas between isolated equipment and rigid restraining element. Piping to vibration-isolated equipment shall have vibration isolation joints and isolator type seismic restraints. The isolator type seismic restraints shall, as a minimum, consist of steel rods, 3/8 inch minimum diameter together with neoprene snubbers arranged to achieve the required all-directional restraint anchored and sized to resist the seismic forces as specified above. Shop Drawings shall indicate proposed method for achieving vertical restraint for ceiling suspended piping. Rods shall have sufficient slack to avoid short-circuiting the vibration isolators. Seismic control for piping shall be longitudinal and transverse seismic bracing of all piping, including plumbing piping, fire protection piping, and storm drain piping, shall be installed in accordance with Section Piping isolation shall be by means of flexible connector furnished as follows: <ol style="list-style-type: none"> For system pressure of 60 to 250 psig: Provide stainless steel below hose assembly complete with bellows with stainless steel woven wire mesh jacket and stainless steel nipple ends, threaded for piping 2 inches and smaller, flanged, 250 pounds for piping 2-1/2 inches and larger. The below hose assembly shall be rated for 450 pounds operating pressure at 120 degrees F. For system pressure less than 60 psig: Provide woven nylon or polymer reinforced neoprene or BUNA O corrugated or bellows-type flexible connector with integral flanges, 125 pound drilling. Unit shall be rated for a minimum 125 pound drilling. Unit shall be rated for minimum 125 psig operating pressure. For refrigerant lines: Provide stainless steel or copper bellows assembly with woven stainless steel wire mesh jackets rated for refrigerant service, 12 inch minimum length overall. For electrical conduit: Provide 3 foot length seal tight flexible conduit in accordance with applicable requirements of the Canadian Electrical Code. <p>Seismic control for ductwork shall be by means of physical 3-inch gap with flexible fabric connections furnished and installed in accordance with SMACNA Duct Construction Standards - Metal and Flexible and ASHRAE Handbook, HVAC Systems and Equipment, Chapter 16. Flexible fabric connections shall conform to NFPA 90A. Fabric shall be unspun glass fiber cloth weighing not less than 32 ounces per square yard. Cloth shall be coated with fire-resistant neoprene on both sides. Flexible portion shall be 6-inches long. Perimeter connection on each end shall be 3-inch wide galvanized sheet steel, and shall be mechanically bonded to the fabric. Fasteners shall be either screws or bolts. Flexible connectors shall be mechanically secured, at both ends, to provide airtight joints.</p> <ol style="list-style-type: none"> All piping, electrical conduit, and ductwork shall be isolated from the equipment to which they are attached. Isolators shall Comply with minimum static deflections recommended by ASHRAE referenced standards for selection and application of vibration isolation materials and units as indicated along comply with manufacturer's instructions and recommendations for selection and application of vibration isolation materials and devices. |
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