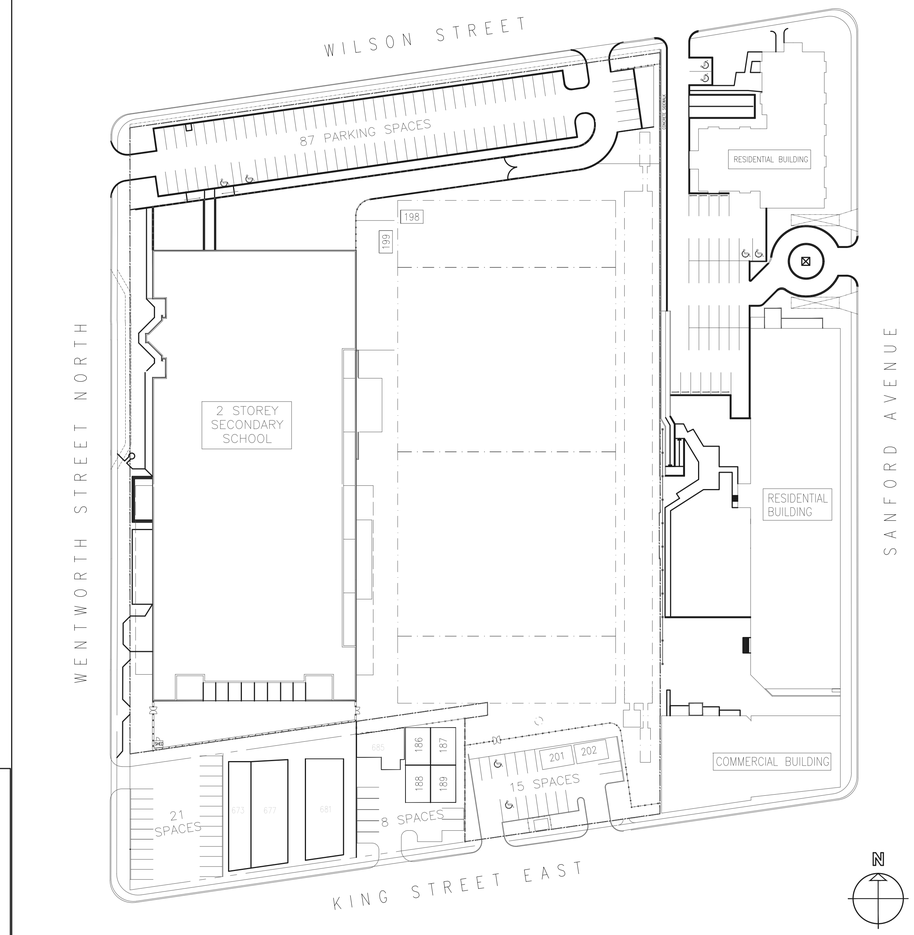
FIRE PROTECTION LEGEND:

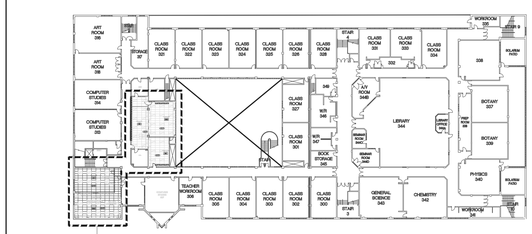
- FIRE PROTECTION SUPPLY
- FE ○ SURFACE MOUNTED FIRE EXTINGUISHER
- FEC ▣ RECESSED FIRE EXTINGUISHER C/W CABINET
- △ CONCEALED SIDEWALL QUICK RESPONSE SPRINKLER HEAD
- △ SIDEWALL QUICK RESPONSE SPRINKLER HEAD
- ○ UP-RIGHT QUICK RESPONSE SPRINKLER HEAD WITH CAGE PROTECTION
- ◉ CONCEALED QUICK RESPONSE SPRINKLER HEAD
- ◍ COATED UPRIGHT QUICK RESPONSE SPRINKLER HEAD WITH CAGE PROTECTION
- ● SEMI-RECESSED QUICK RESPONSE SPRINKLER HEAD
- ◉ CONCEALED COATED SPRINKLER

GENERAL DEMOLITION NOTES:

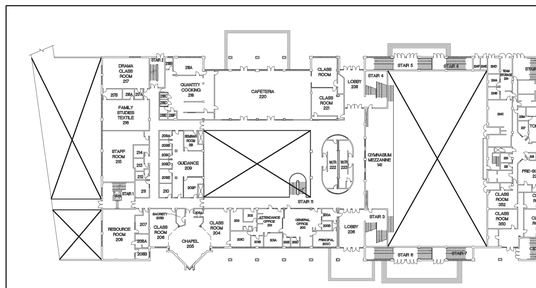
1. DEMO PLANS REFER TO ARCHITECTURAL DRAWING. G.C. SHALL VERIFY ALL SITE CONDITIONS ON SITE AND MAKE REQUIRED DEMOLITION WORK AS PER PROPOSED PLANS. DRAWINGS TO BE REFERENCED BUT NOT LIMITED ARE: ARCHITECTURAL, STRUCTURAL, MEP, AND ID (IF APPLICABLE).
2. THE EXISTING SERVICES SHOWN ON THIS DRAWING HAVE 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.
3. IN THE EVENT OF SITE DISCREPANCIES TO THE DEMOLITION AND PROPOSED PLANS, ARCHITECTS MUST BE NOTIFIED IMMEDIATELY.
4. ALL THE SITE DISCONNECTIONS SUCH AS: GAS, HYDRO, WATERMAIN & ETC. SHALL BE COORDINATED WITH LOCAL SERVICES AND AUTHORITIES AS REQUIRED.
5. 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.
6. ALL DEMOLITION WORK TO BE PERFORMED AND COORDINATED IN COMPLIANCE WITH CURRENT AND LOCAL CODE, REGULATIONS, BY-LAWS, AND AUTHORITIES WITHIN THE RELATED JURISDICTION.
7. 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.
8. 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.
9. 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.
10. G.C. AND/OR INDIVIDUAL TRADE ARE RESPONSIBLE FOR THE DISPOSAL OF DEMOLISHED MATERIALS, UNLESS OTHERWISE NOTED.
11. MAKE GOOD SURFACES IN ALL EFFECTED AREA TO RECEIVE NEW FINISH.



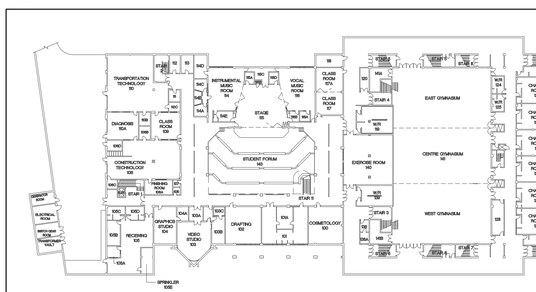
1 SP1.0 SITE PLAN
SCALE: 1/32" = 1'-0"



4 SP1.0 SECOND FLOOR KEY PLAN (REFERENCE ONLY)
SCALE: 1/64" = 1'-0"



3 SP1.0 GROUND FLOOR KEY PLAN (REFERENCE ONLY)
SCALE: 1/64" = 1'-0"



2 SP1.0 BASEMENT FLOOR KEY PLAN (REFERENCE ONLY)
SCALE: 1/64" = 1'-0"

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
SP-1	MECHANICAL LEGEND, DRAWING LIST, KEY PLAN & SCOPE OF WORK
SP-2	FLOOR PLANS AND DETAILS - SPRINKLER
SP-3	SPECIFICATIONS - SPRINKLER

GENERAL NOTES:

1. *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.*
2. *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.*
3. *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.*
4. *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.*
5. *CO-ORDINATE LOCATIONS OF ALL GRILLES AND DIFFUSERS WITH LIGHTS, SPRINKLERS, ETC AND 5. REFLECTED CEILING PLANS.*
6. *KEEP ALL SERVICES AS HIGH AS POSSIBLE TO MAINTAIN CEILING HEIGHTS SHOWN ON ARCH. 6. DRAWINGS.*
7. *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.*
8. *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.*
9. *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..*
10. *PROVIDE FIRE DAMPERS IN ALL DUCTS PENETRATING FLOORS VERTICALLY.*
11. *ALL PIPES & DUCT CONNECTIONS TO UNITS SHALL BE THROUGH A FLEXIBLE CONNECTION.*
12. *CONTRACTOR MUST VERIFY PIPE LENGTHS ON SITE.*
13. *PROVIDE BALANCING DAMPER ON ALL FRESH AIR, EXHAUST AIR, SUPPLY AIR BRANCHES WEATHER SHOWN OR NOT.*

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ENGINEER SEAL

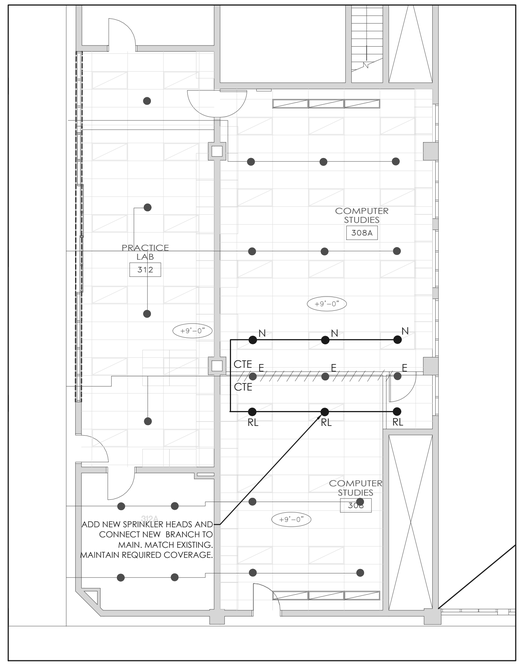
No.	Revisions	Date
1	ISSUED FOR REVIEW	2024-03-26
2	ISSUED FOR TENDER	2024-04-22

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

job no. 24.025
dwg. file
dwn. by VP
scale AS NOTED
date MAR 2024

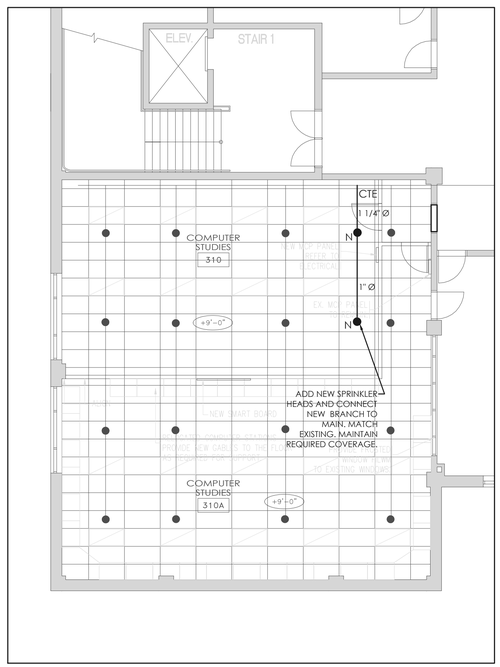
dwg. title
MECHANICAL LEGEND, DRAWING LIST, KEY PLAN & SCOPE OF WORK

dwg. SP1



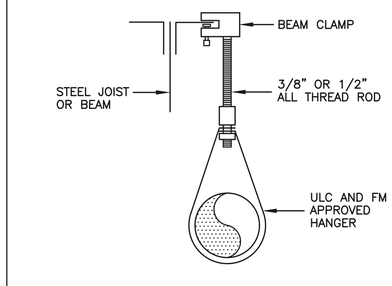
2 M2.0 ROOM 308/308A SPRINKLERS

SCALE 1/8" = 1'-0"



2 M2.0 ROOM 310/310A SPRINKLERS

SCALE 1/8" = 1'-0"



AS PER N.F.P.A.13

HANGER DETAIL

N.T.S.

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.

ALL ALL FIRE PROTECTION SYSTEMS SHALL BE FLUSHED AND CLEANED TO THE REQUIREMENTS OF BASE BUILDING STANDARDS PRIOR TO CONNECTION TO THE BASE BUILDING SYSTEM

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ENGINEER SEAL

No.	Revisions	Date
1	ISSUED FOR REVIEW	2024-03-26
2	ISSUED FOR TENDER	2024-04-22

Alteration to Cathedral High School HWCDSB
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 - MECHANICAL

dwg. SP2

MECHANICAL GENERAL REQUIREMENTS

1.01 GENERAL CONDITIONS

.1 Conform to Instructions to Bidders.

.2 All work must confirm to local Bylaws, BC Building Code and Authorities having jurisdictions.

.3 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.

.4 The most straight of the base building specifications and this specification shall form the basis for construction.

.5 Contractor shall account in his tender price for premium time cost for work performed outside of the regular working hours.

.6 Obtain Architect / Engineer's approval; of diffusers, grilles, access doors and thermostats location prior to installation of different from drawings.

.7 Contemplated change notices shall be quotation shall be submitted with breakdown of materials on labor cost. Pricing shall be in accordance with MCA (Mechanical Contractor Association).

.8 Contractor shall adhere to the construction schedule prepared by the General Contractor.

1.02 BY-LAWS & PERMITS

.1 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.

1.03 CO-OPERATION & CO-ORDINATION

.1 Each Section and Trade shall:
Confer with other Sections and arrange work so it will be carried on in best interests of all concerned bearing in mind building construction and finish required.

1.04 EXAMINE SITE & CONDITIONS

.1 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 make these examinations or due to existing conditions or to report any such discrepancies in writing.

1.05 DRAWINGS

.1 Mechanical Drawings do not show all existing, structural and related details. Take information involving accurate measurement from building drawings, or at building. Make, without additional charge, any necessary changes or additions to runs of piping, conduits and ducts to accommodate structural conditions.

1.06 CUTTING & PATCHING

.1 Perform all cutting and patching of portions of building as necessary to accomodate installation of work of the Contract.

.2 Core drill holes in concrete walls and floors for piping where not previously sleeved.

1.07 SUPPORTS

.1 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 shown or specified. Provide necessary anchor bolts and other fastenings. Secure work to concrete with Phillips 'Red Head' concrete anchors.

1.08 HANGERS

.1 Provide hangers to support unburied 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.

.2 Do not hang from steel or tectum decking. Provide structural framing where necessary to support work in these areas. Provide hanger at each fitting.

.3 Support unburied horizontal cast iron piping at each hub length (max. 1500 mm) with Grinnell #260 or Myatt #124 clevis hangers. Where groups of fittings occur, not more than 900 mm shall be between hangers. Support other horizontal piping with Grinnell #260 or Myatt #124 clevis hangers as follows:

Up to 1-1/4" size – 6' maximum spacing
1-1/2" to 3" size – 10' maximum spacing

.6 Where structural bearings do not exist, provide angle or channel iron of sufficient size from other structural bearings to support hangers or equipment.

1.09 SLEEVES

.1 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.

.2 Seal spaces between unburied pipes and ducts through "required fire separations" with U.L.C. listed (Guide 40U19) 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 (hose stream) rating.

.3 Seal all holes and openings through floors water tight.

1.10 ACCESS DOORS

.1 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 unaccessible controls, dampers, valves, cleanouts and components.

.2 Access doors shall be Stelpro 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.

1.11 PAINTING

.1 Supply all equipment and materials fabricated from iron or steel (except piping and ductwork materials) prime painted at factory before shipment.

.2 All metal parts, miscellaneous metal items and work installed exterior to building must be degreased and prime painted unless otherwise noted.

1.12 Shop Drawings:
Provide 5 copies of shop drawings for all specified equipment. Allow for 5 working days for review by the Engineer.

1.13 Flashing & Counter Flashing for Roofs, Walls & Floors:
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.

1.14 As-Builts Drawings:
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 CD?s to the Engineer for review against the site set of drawings at the end of the job.

1.15 Operating & Maintenance Manuals
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.

1.16 Temporary Filters:
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.

1.17 Turn Over of Existing Equipment:
Prior to disposal of nay equipment, the Contractor shall turn over removed CAV Boxes, heat pumps, fan coil units, diffusers, thermostats, light troffers, etc to the Owner / Landlord for their directions.

1.18 Identification
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.

1.19 Final Inspection

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.

20 CLEANUP

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.

.2 Fill in, compact and level off exterior excavations after final settlement of backfill to approval.

1.21 Wiring, Starters & Electrical Components
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.

1.22 Completion of Contract:
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.

HEATING, VENTILATING & AIR CONDITIONING

1.01 GENERAL CONDITIONS

Mechanical General Requirements, Section 15010, form integral part of this Section.

1.02 MATERIALS

Materials shall be new, of Canadian manufacture where available, of best quality of their respective kinds and of uniform pattern throughout.

1.03 CLEANING SYSTEMS

After work is completed and before system has been put in operation, clean each HVAC Unit, gas piping and equipment

1.04 GRILLES & DIFFUSERS

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. 1062R2 of latest date.

.2 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 ?hairline?. Attachment shall be with stainless steel or c.p. screws with 1/4" thick urethane sponge gasket set under flange.

.3 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 eggcrate facepiate, 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.

.4 Type A diffusers shall be #?CD, square style of steel constuction 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.

.5 Alternate Equipment:
1. Airvector
2. Barber Colman (Kayair Products Ltd.)
3. Nailor Hart Ind. Ltd.
4. Carnes Corp. (Alrex)
5. Lisi-Aero-Guide Inc.
6. Titus

MECHANICAL GENERAL REQUIREMENTS

1.05 DUCTWORK

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 SMACNA 1" W.G. seal Class 'B' guaranteed to double seam without fracturing.

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.

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.

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.

Provide Duralon coated glass fabric connections between ductwork and equipment.

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. Mastic seal all joints. Where ducts are acoustic lined, sizes shown shall be inside liner.

Provide where shown, preinsulated-Trans Continental Equipment Ltd. type "SI" 'A1-U-FLEX' aluminum or Thermoflex M.KC glass fibre flexible air duct hoses each U.L.C. listed for service. Secure hose to metal ducts with Duro Dyne S--5 duct sealant and tape seal with Permascreen fiberglass duct tape. Minimum length 25% longer than measured distance. Maximum length 50% more than measured length, 120" total. Provide manual balancing damper in truck duct at connection to each flexible duct.

1.06 INSULATION

.1 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

.2 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 equipm nameplates.

.3 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

.4 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

.5 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 1" thick, 0.748 lbs/cubic feet density glass fibre reinforced foil faced flexible vapour sea duct insulation (not more think 1.72 perm)

.6 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.

.7 Do NOT break continuity of insulation vapour barrier by hanger or support. Remove

.8 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

.9 members.

Repair or replace existing insulation where damaged or broken during construction to approval.

.10 Recover exposed interior insulation including fittings with 0.0416lbs/sqft canvas duck pasted on over entire surface of insulation with approved incombustible lagging adhesive and finished with 1 coat of lagging adhesive.

Controls

.3 The Control Contractor must be approved by the Landlord / Owner.

.4 Any new controls shall be compatible with the Base Building Central Control System (BMS).
Mounting height of thermostats or sensors shall be 1200 mm to 1500 mm (4'-

.5 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 components from the nearest electrical distribution panle.

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.

.1

OPERATE AND ADJUST SYSTEMS

.2 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,

.3 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.

.4 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.

.5 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 achieve these results. Prepare and submit a final balancing report for checking and approval.

.6 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.

1.09 If spot checking systems reveals actual air quantities do not agree with air balance report, this Section will be called upon to completely rebalance systems until satisfactory, without

.1 extra remuneration.

QUIET OPERATION

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

.1 will be maintained satisfactory to Architect.

WARRANTY

.2 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.

.3 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.

1.11 Warranty shall entail repair or replacement of materials installed without charge to Owner

.1 except where, in opinion of Architect, such repair or replacement was caused by improper use or lack of proper maintenance.

.2 Mechanical Demolition

.3 Removal & storage of salvaged equipment & materials shall be at the direction of the landlord / Owner?s representative.

.4 Disposal off site of all debris shall be in accordance with authorities having jurisdictions.

.5 Unsalvageable materials & equipment shall be regularly removed from site & not

.6 allowed to accumulate.

Work shall be left in a safe position after each work shift.

.7 Materials shall only be allowed to be stored in areas designated by the Landlord / Owner. Schedule & perform work in ash a manner that minimum disturbance occurs to the

.8 existing services & facilities.
Protect existing system & components from damage throughout the construction duration.

.9 Interruptions to the base building services shall be kept to a minimum.

1.12 SEISMIC RETRAINTS

– 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

– 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.

– The Contractor shall arrange with the manufacturers of the vibration isolation and seismic control devices to provide 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.

– 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:

.1 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 bellow hose assembly shall be rated for 450 pounds operating pressure at 120 degrees F.

.2 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 o minimum 125 pound drilling. Unit shall be rated for minimum 125 psig operating pressure.

.3 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.

.4 For electrical conduit: Provide 3 foot length seal tight flexible conduit in accordance with applicable requirements of the Canadian Electrical Code.

– 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 unpainted 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.

– 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.

SPRINKLER NOTES:

1. QUALIFICATIONS
A. WORK OF THIS SECTION SHALL BE DONE BY LANDLORD APPROVED CONTRACTOR, QUALIFIED FIRE PROTECTION SPRINKLER CONTRACTOR AND A MEMBER OF CANADIAN AUTOMATIC SPRINKLER ASSOCIATION REGULARLY ENGAGED IN INSTALLATION OF AUTOMATIC FIRE SPRINKLER SYSTEMS AND OTHER FIRE PROTECTION EQUIPMENT.
B. SUBCONTRACTOR FOR THIS SECTION MUST HAVE AT LEAST 3 YEARS EXPERIENCE IN TYPE AND CLASS OF WORK SHOWN AND BE ABLE TO GIVE RESUME OF AT LEAST 3 SIMILAR PROJECTS COMPLETED WITHIN PREVIOUS 12 MONTHS.
C. MECHANICAL GENERAL REQUIREMENTS, FORM INTEGRAL PART OF THIS SECTION.
2. SYSTEM DESIGN
A. A STANDARD OR FIXED TEMPERATURE SYSTEM OF AUTOMATIC SPRAY SPRINKLERS BASED UPON REQUIREMENTS OF LOCAL FIRE DEPARTMENT AND OWNER'S INSURANCE UNDERWRITER IN ACCORDANCE WITH LATEST REQUIREMENTS OF NATIONAL FIRE PROTECTION ASSOCIATION (N.F.P.A.) STANDARD LOCAL FIRE DEPARTMENT AND BUILDING CODE. PAY ALL CHARGES REQUIRED BY INSURANCE UNDERWRITER.
3. DRAWINGS
A. ACCOMPANYING DRAWINGS INDICATE AREAS TO BE SPRINKLER PROTECTED AND IS NOT LIMITED TO EXACT NUMBER OF HEADS REQUIRED TO GIVE NECESSARY PROTECTION TO APPROVAL OF AUTHORITIES HAVING JURISIDICTION AND INSURANCE UNDERWRITER. PREPARE AND SUBMIT FOR REVIEW AT LEAST 2 COPIES AND ONE REPRODUCIBLE OF MINIMUM 1:100 SCALE DRAWINGS APPROVED BY INSURANCE UNDERWRITER AND LOCAL FIRE AND BUILDING DEPARTMENTS SHOWING ACTUAL SYSTEM BEING INSTALLED INCLUDING REQUIRED HYDRAULIC CALCULATIONS.
B. DRAWINGS SHALL BE COORDINATED WITH ALL TRADES CONCERNED.
C. AFTER REVIEW, REVISE DRAWINGS AS NECESSARY AND SUPPLY 10 SETS AND A REPRODUCEABLE FOR DISTRIBUTION TO TRADES CONCERNED THROUGH ARCHITECT.
4. PIPING TESTS
A. IN ADDITION TO ANY TESTS REQUIRED BY LOCAL AUTHORITIES, TEST PIPING IN PRESENCE OF ARCHITECT AS HEREINAFTER DESCRIBED.
5. SPRINKLER HEADS
A. PROVIDE WHERE SHOWN MATCHING BASE BUILDING SPRINKLER HEADS APPROVED BY ULI, ULC FM. EXACT LOCATIONS OF HEADS SHALL BE CO?ORDINATED WITH LIGHTS, DIFFUSERS, ETC. TO APPROVAL. SUPPLY SHOP DRAWINGS AND SAMPLE OF EACH TYPE OF HEAD PROPOSED FOR USE BEFORE STARTING WORK.
6. PIPE & FITTINGS
A. PROVIDE NEW PIPE AND FITTINGS FREE FROM RUST AND SCALE OF FULL WEIGHT, STANDARD SIZE AND THICKNESS, TRUE AND ROUND WITH FULL CUT THREADS. CUT PIPES TRUE WITH CLEAN SHARP PIPE CUTTERS. REAM AND FILE ENDS OF PIPE AND REMOVE BURRS FROM INTERIOR. USE REDUCING FITTINGS INSTEAD OF BUSHINGS WHEREVER REDUCTIONS IN PIPING OCCUR.
B. UNBURIED MAINS AND SPRINKLER PIPING: STANDARD BLACK STEEL SCHEDULE #40 (CSA #B63) WITH BLACK CAST IRON 1207 KPA WWP SCREWED OR FLANGED FITTINGS, U.L.C. APPROVED.
7. HANGERS
ALL HANGERS SHALL BE U.L. OR F.M. APPROVED AND COMPLY WITH U.S. FEDERAL SPECIFICATION #WW H 171C AND UL #203.
8. FINAL INSPECTIONS
A. ARRANGE FOR COMPLETED INSTALLATION TO BE INSPECTED BY OWNERS INSURANCE UNDERWRITER AND PRESENT TO ARCHITECT 4 COPIES OF CERTIFICATE OR LETTER OF APPROVAL STATING ENTIRE INSTALLATION MEETS WITH THEIR REQUIREMENTS.
B. ARRANGE FOR SIMILAR INSPECTION AND LETTER OF APPROVAL FROM LOCAL FIRE DEPARTMENT AND BUILDING DEPARTMENT.
9. WARRANTY
A. 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.
B. WARRANTY SHALL ENTAIL REPAIR AND REPLACEMENT OF MATERIALS WITHOUT CHARGE TO OWNERS EXCEPT WHERE, IN OPINION OF ARCHITECT, SUCH REPAIR OR REPLACEMENT WAS CAUSED BY IMPROPER USE.
10. EXISTING CONDITIONS
VERIFY EXTENT OF WORK INVOLVED AND ROUTES OF NEW PIPES DURING TENDER PERIOD AND ROUTE PIPES THROUGH EXISTING BUILDING. RELOCATE DUCTS, PIPES, CONDUITS, ETC. AS REQUIRED TO SUIT NEW PIPES. NO EXTRA WILL BE ALLOWED DUE TO ANY EXISTING CONDITIONS.
11. VERIFY LOCATION AND SIZE OF EXISTING WATER CONNECTION PRIOR TO MAKING NEW CONNECTION TO ENSURE THAT THE EXISTING SITE SERVICE SYSTEM HAS ADEQUATE CAPACITIES TO ACCOMMODATE NEW LOADS.
12. ALL MATERIAL, EQUIPMENT, VALVES AND DEVICES PROVIDED UNDER THIS SECTION SHALL BE ULC LABELLED, LISTED AND APPROVED, AS WELL AS APPROVED BY THE AUTHORITIES, AGENCIES, CODES AND STANDARDS NAMED IN THIS SECTION. FOR REFERENCE USE UNDERWRITERS' LABORATIES APPROVED FIRE PROTECTION EQUIPMENT LIST (ULC).
13. PROVIDE SPRINKLER HEADS TO CURRENT MANUFACTURER.
14. LOCATIONS OF THE SPRINKLER HEADS SHOWN ON THE DRAWING ARE APPROXIMATE. ALL SPRINKLER HEADS AND PIPE ROUTINGS AND SIZES ARE NOT SHOWN ON THE DRAWINGS. PROVIDE PIPING AND LOCATE HEADS TO SUIT LAYOUT.
15. CONTRACTOR TO ALLOW IN HIS QUOTATION FOR PROVISION OF 10% NEW SPRINKLER HEADS C/W 1 INCH DIAMETER, 10 FT LONG PIPING PER HEAD IN ADDITION TO THE SCOPE OF WORK SHOWN ON DRAWINGS.
16. SPRINKLER HEADS SHALL BE QUICK RESPONSE TYPE, WITH ½" DIAMETER ORIFICE, 165 DEGREE F TEMPERATURE RATING,
17. COORDINATE SPRINKLER HEAD LOCATIONS WITH REFLECTED CEILING PLANS TO PROVIDE FULL SPRINKLER COVERAGE.
18. CERTIFICATES: PROVIDE A CERTIFICATE INDICATING THAT THE SPRINKLER SYSTEM HAS BEEN INSTALLED IN CONFORMANCE WITH THE APPROVED PLANS, NFPA 13, AND THAT THE SYSTEM IS FULLY FUNCTIONAL.
19. SPRINKLER CONTRACTOR TO SUBMIT FIRE SPRINKLER SHOP DRAWINGS WITH HYDRAULIC CALCULATION TO THE CONSULTANT AND TO THE CITY AND TO THE AUTHORITIES HAVING JURISDICTION.. CALCULATIONS SHALL BE BASED ON NFPA REQUIREMENTS. ALL DOCUMENTS AND DWGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
20. SPRINKLER PIPES ARE SUBJECT TO REROUTING AND SPRINKLER HEADS SUBJECT TO RELOCATING FOR ARCHITECT, STRUCTURAL, PROPER COORDINATION AND COVERAGE REASONS AT NO ADDITIONAL COST.
21. ENSURE THAT ALL SPRINKLER HEADS ARE PROTECTED DURING RENOVATION. ANY DAMAGED OR PAINTED SPRINKLER HEADS OR ESCUTCHEON PLATES WILL REQUIRE REPLACEMENT.
22. SPRINKLER SYSTEM SHALL BE ZONED BY FLOOR AT A MINIMUM AND EACH ZONE SHALL BE ANNUNCIATED SEPARATELY BY THE FIRE ALARM.
23. ALL SPRINKLER HEADS SHALL BE FAST/QUICK RESPONSE TYPE.
24. REMOTE INSPECTOR'S TEST(S) SHALL COMPLY WITH THE FOLLOWING:
24.1.PROVIDE A REMOTE INSPECTORS TEST FOR THE WET SPRINKLER SYSTEM.
24.2.NSPECTORS TEST(S) SHOULD BE LOCATED AT BOTH ENDS OF A DUAL FED SPRINKLER ZONE.
24.3.INSPECTORS TEST SHALL BE LOCATED AT THE REMOTE END OF SINGLE RISER ZONES AND AREAS THAT HAVE LONG REMOTE EXTENSIONS.
24.4.DISCHARGE SHALL BE HARD PIPED TO THE EXTERIOR AT A LOCATION WHERE DISCHARGE WILL NOT DAMAGE EXTERIOR PAVEMENT OR LANDSCAPING OR TO AN INTERIOR DRAIN OR SUMP PIT THAT CAN HANDLE THE FULL FLOW.
25. THE FIRE DEPARTMENT CONNECTION SHOULD BE WITHIN 100' OF THE NEAREST HYDRANT UNLESS INSTRUCTED OTHERWISE BY THE AHJ (NFPA 14, 2013, 6.4.5.4).
26. PROVIDE SPRINKLER PROTECTION IN THE CHUTE PER NFPA 13 REQUIREMENTS. CHUTES SHOULD BE ZONED ON THEIR OWN RISER.
27. SPRINKLER PROTECTION IS REQUIRED IN GUESTROOM BATHROOMS GREATER THAN 55 FT2.
28. EXTERIOR PROJECTIONS GREATER THAN 4' (PORTE-COCHERE) SHALL MEET NFPA 13, SECTION 8.15.7, OR THE STRUCTURE SHALL BE SPRINKLERED.
29. DUCT DETECTORS SHALL BE INSTALLED AS REQUIRED PER NFPA 90A AND IMC (ON SUPPLY AND RETURN SIDES FOR UNITS OVER 2,000 CFM). A TEST STATION SHALL BE PROVIDED AND ACCESSIBLE (E.G. FROM THE FLOOR).

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ENGINEER SEAL

No.	Revisions	Date
1	ISSUED FOR REVIEW	2024-03-26
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Alteration to
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HWCDSB
30 Wentworth Street North
Hamilton, Ontario

job no. 24.025
dwg. file
dwn. by VP
scale AS NOTED
date MAR 2024
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SPECIFICATIONS - SPRINKLER
dwg. SP3