

- 1.0 GENERAL
- 1.1 GENERAL REQUIREMENTS
- This drawing to be read in conjunction with B.C.I.T. General Conditions.
 - For the purpose of this specification, the following terms shall be understood to mean:
 - "Consultant" - the person(s) representing the Mechanical Consulting Engineering firm of Keen Engineering Co. Ltd.
 - "Contractor" - the company awarded the contract to execute the work as defined herein and reflected on the drawings.
 - Should any conflicts occur between layouts shown on drawings and applicable codes, the code requirements shall be adhered to. Should the Contractor have any doubts or queries regarding the interpretation or requirements of the design, such queries shall be addressed to the Consultant promptly in writing to obtain resolution.
 - This Contractor shall visit the site prior to tender and shall become thoroughly familiar with site conditions. Problems arising from a failure to do so shall not constitute a contract change.
- 1.2 REGULATIONS
- All work shall be installed in accordance with but not be limited to approved editions of:
- British Columbia Code (latest edition)
Canadian Standard Association
B.C. Plumbing Code
Local Municipal/City By-Laws
Workers' Compensation Board
Factory Mutual Fire Insurance Companies
NFPA
- 1.3 INTENT
- The intent of this drawing is to provide one (1) complete and fully operating fume hood in accord with applicable codes. The Contractor shall make provisions for labour, material and equipment necessary to complete the mechanical work. The fume hood requires the following services:
 - Compressed air
 - Natural Gas
 - Cold water and sanitary waste
 - Lighting and electrical outlet and
 - Provide lab sinks and additional plumbing in accordance with applicable codes.
 - Conform to manufacturer's instructions, details and procedures for equipment installations.
 - Install equipment in locations and routes shown, close to building structure with minimum interference with other services or free space. Remove and replace improperly installed equipment.
- 1.4 INSURANCE
- The Contractor shall provide insurance as per B.C.I.T.'s requirements.
 - The Contractor shall carry full employee's liability insurance for the whole of the work in accordance with the Workers' Compensation Act.
- 1.5 LIABILITY
- Assume responsibility for laying out work and for damage caused by improper execution of work.
 - Protect finished and unfinished work from damage.
 - Take responsibility for condition of materials and equipment supplied and protect until work is completed and accepted.
 - All building and site dimensions shall be field verified prior to any fabrication and installation of equipment or materials. No contract revisions shall be entertained for failure to verify these dimensions on site.
- 1.6 CERTIFICATES
- Give notices, obtain permits and pay fees so work specified may be carried out. Furnish certificates if requested, as evidence that work conforms with laws and regulations of authorities having jurisdiction.
- 1.7 INTERRUPTION OF SERVICES
- While work is in progress, continuity of services shall be maintained to all existing systems. Interruptions shall be coordinated with the Owner as to time and duration. The Contractor shall be responsible for any interruptions to services and shall repair any damages to the existing systems caused by his operation.
 - The Contractor shall include in the price any costs for Premium Time outside of normal working hours to complete the work on schedule and to maintain all mechanical systems in operation.
- 1.8 CUTTING & PATCHING
- The Mechanical Contractor shall make provision and be responsible for:
- Identifying all openings and holes required for the passage of mechanical services through structures and dividing walls. Such identification shall be via marked up drawings showing opening locations, sizes, and levels - 2 copies of the drawing to be submitted to the Consultant's office for review prior to any cutting commencing. If required, the Contractor is to clearly mark on site the intended openings for cutting.
 - Unless builders work is excluded from his scope of work, the Mechanical Contractor shall include and be responsible for the cutting, patching and making good for all openings required for the installation of his services including costs involved with x-raying and provision of protective coverings.
- 1.9 TESTING
- Test equipment and materials where specified or required by authorities having jurisdiction to demonstrate proper and safe operation. Provide notice to Consultant before tests.
 - Test procedures shall be in accordance with applicable portions of ASME, ASHRAE, SMACNA, NFPA, CSA and other recognized test codes as far as field conditions permit.
- 1.10 GUARANTEE
- Provide the Client with a written guarantee warranting apparatus furnished to remain in serviceable condition for a period of one (1) year from date of final acceptance by the Owner.
- 1.11 STANDARD OF MATERIALS & WORKMANSHIP
- Make and quality of materials used are subject to approval by the Consultant. Remove condemned materials and install suitable materials in their place.
 - Materials shall be new and of uniform pattern throughout.
 - Only employ tradesmen properly licensed for work.
 - New systems shall match existing systems in material and tradesmanship.
- 1.12 SHOP DRAWINGS, ALTERNATIVE MATERIALS & EQUIPMENT
- Contract documents are based on materials and equipment specified. Approval by Consultant of equipment submitted as equal to that specified does not relieve the Contractor of any responsibility.
 - Submit shop drawings to Consultant on all equipment specified for review. Do not order equipment or materials until Consultant has reviewed shop drawings.
- 1.13 RECORD DRAWINGS
- Keep on site an extra set of white prints and specifications, recording changes and deviations daily.
 - Upon completion of work, submit mylar sepia record drawings to the Owner.
- 1.14 MAINTENANCE MANUALS
- Upon completion of project, three (3) maintenance manuals shall be submitted in 3-ring binders. The manual shall consist of the following information:
- description of operation
 - shop drawings of all equipment
 - extended warranties
 - maintenance and operation instructions
 - list of manufacturer and trade names
 - list of supply sources for maintenance
 - balance report
 - name of engineer and mechanical contractor
 - copies of record drawings

- 1.15 SCHEDULING
- Installation of work shall be coordinated and scheduled so as not to endanger or disturb the Owner or public users of the building. Shutdown of existing base building systems shall be coordinated with the Owner or his representative.
- 1.16 EXAMINATION OF SITE
- This project involves renovations to existing building. Therefore, careful examination of the site and local conditions will be required to determine the difficulties in carrying out the work indicated. The existing mechanical work shall not be construed as "as-built". Contractors to notify Consultant of differences between drawings and site prior to final tender for inclusion in any addendum issued. Allow for variations to mechanical work drawn and specified prior to submitting final price. Extras will not be considered based on the grounds of differences on site.
- 1.17 DIVISION 16 - ELECTRICAL
- All electrical equipment to be supplied by Owner.
- 2.0 VENTILATION
- 2.1 GENERAL
- Fume hood ductwork shall be 10 gauge type 316 stainless steel, fabricated in accordance with 1985 SMACNA Duct Manuals and ASHRAE Handbooks. Location of welded and spiral wound ductwork as per drawing.
 - Prior to fabrication of ductwork, check all ceiling spaces and heights and conflicts with other trades.
 - All ducts associated with fans, and other machinery shall be installed with flexible connections on the inlet and outlet openings.
 - EF-1 shall be mounted with vibration isolation and seismic supports.
 - Provide fume hood shut-off damper : Kerr-Hunt CDRFSS type 316 c/w 2B finish stainless steel, EPDM seal at fume hood and shaft seal.
 - All ducts thru wall or roof shall be packed with insulation sealed and weather proofed.
- 2.2 CONTROLS:
- Damper actuator and damper shall be provided by Mechanical Contractor for installation by the Mechanical Contractor.
 - Sequence of Operations:
 - fume hood shut-off damper shall open before the fume hood exhaust fan is allowed to start.
 - Electrical contractor shall wire fume hood shut-off damper.
- 2.3 AIR BALANCING
- Air balancing and testing shall be undertaken by K.D. Engineering or Western Mechanical at the contractor's expense. Provide four (4) copies of balancing report to include the following:
- Fan Data Sheets (supply)
 - make, model, serial number
 - motor HP, voltage, rated amp., running amp.
 - fan pulley size - motor pulley size and number and size of belts.
 - Air Outlet Sheet
 - outlet number, outlet make, model
 - area factor, required velocity, required CFM, actual velocity, actual CFM.
 - Single line schematic with outlets numbered corresponding to air outlet sheets. The Balancing Contractor shall make necessary adjustments, replace motor and fan sheaves and belts upon balancing of existing and new air systems.
- 3.0 PLUMBING
- General
 - All plumbing shall conform to the B.C. Plumbing Code.
 - Equipment and Materials
 - All domestic cold and hot water piping shall be type "K" hard copper, and sifos or 95-5 tin/antimony solder joints.
 - All cold and hot water pipes shall be insulated with 25 mm (1") thick pre-moulded insulation. Cold water pipes c/w foil wrap and vapour sealed. Do not use staples. Exposed pipe to be wrapped in Thermaconvas.
 - Acid waste and vent pipe - Kinox Glass
 - Provide isolation valves and unions at all equipment.
 - All piping compatibility copper pipe/hangers to be hung with rod and clevis hangers.
 - All sanitary drainage and vent piping (buried) - cast iron, ABS, PVC.
 - All sanitary drainage and vent piping (not buried) - type "DWV" copper, cast iron.
- 4.0 SEISMIC REQUIREMENTS
- Reference Standards
 - Seismic Requirements shall be in accordance with the following:
 - 1985 B.C. Building Code Section 4.1.9.1 (14).
 - 1985 B.C. Building Code Table 4.1.9 (d).
 - NFPA 13.
 - NFPA 20.
 - SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems".
- 5.0 EQUIPMENT
- Fume Hood Exhaust Fan EF-1
 - Manufacturer: "Prestair"
 - Model No: C15
 - Service: "FH-1"
 - Air Volume: 472 f/s
 - S.F.P: 246 Pa E.S.P.
 - Motor: 880 rpm, belt driven
 - Volts/Phase/Hz: 1/2 hp, 120V/1/60
 - construction - polypropylene
 - LAB SINK (DOUBLE) P-1
 - Sink: Steel Queen No. D-1831/10/316, 316 stainless steel, 40x356x254 bowl size 20 gauge, self rimming
 - Trim: Cambridge Brass deck mounted swivel mixing faucet model: Tack-W-67600, 70mm centers, index button handles, 6700.9 vacuum breaker and nozzle.
 - ACID INTERCEPTOR
 - Sceptor 26 litre Polypropylene Neutralizer tank. Contractor to supply marble chips.
 - FUME HOOD FH-1
 - Location: Lab.
 - Manufacturer: Hawkins
 - Model: ATFH-47
 - Dimensions: 1144 wide x 832 deep x 1302 high
 - complete with:
 - epoxy interior lining.
 - explosion proof light with switch.
 - cup sink.
 - cold water gooseneck with vacuum breaker and remote on-off located on cabinet front.
 - gas outlet with on-off located on front of cabinet.
 - duplex electrical outlet.
 - exhaust fan switch with pilot light.
 - compressed air outlet.
 - Fume Cabinet Base, complete with:
 - Hawkins model 47102, to match fume hood.
 - cabinet to be complete with hinged doors.
 - field assemble hood and cabinet.

HOTSON BAKKER ARCHITECTS

CORNERSTONE architects

#408 - 611 Alexander Street
Vancouver, B.C.
Canada V6A 1E1
(604) 253-8800
Fax (604) 255-1790

CONSULTANTS

keen

ENGINEERING CO. LTD.
Consulting Professional Engineers

116-930 West 1st St. North Vancouver,
British Columbia, Canada V7P 3N4
Phone (604) 980-5286
Fax (604) 980-3747

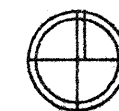
NOTES

NO. DATE DESCRIPTION

REVISIONS

Copyright reserved. This design and drawing is the exclusive property of Hotson Bakker Architects and cannot be used for any purpose without the written consent of the Architect. This drawing is not to be used for construction until issued for that purpose by the Architect. Prior to commencement of the Work the Contractor shall verify all dimensions, details and levels to identify any errors and omissions, ascertain any discrepancies between this drawing and the full Contract documents, and bring these items to the attention of the Architect for clarification.

KEY PLAN



PROJECT

**B.C.I.T.
TECHNOLOGY CENTRE
PROJECT LAB.**

NE03

DRAWING TITLE

**DETAILS AND
SPECIFICATION
- MECHANICAL**

SCALE: 1:50 DATE: SEPT. 1993

DRAWN BY: B.I.C.

REVIEWED: B.V.

CAD FILE:

PROJECT NO.

9330

DRAWING NO.

M-2