

DRAWING LIST

M-1.0 FLOOR PLAN-PLUMBING
M-1.1 FLOOR PLAN-HVAC
M-2.0 EQUIPMENT LIST & DETAILS
M-3.0 SPECIFICATIONS

TOTAL: 4 DWGS.

ABBREVIATIONS

FFL FINISHED FLOOR LEVEL
U/G UNDERGROUND
S/A SUPPLY AIR

LEGEND

HEAT TRACED & INSULATED PIPE
DOMESTIC COLD WATER
DOMESTIC HOT WATER
SANITARY DRAIN
U/G SANITARY DRAIN
U/G STORM DRAIN
U/G FOOTING DRAIN
LOW PRESSURE CAS

T/B TO BELOW

T/A TO ABOVE

F/B FROM BELOW

F/A FROM ABOVE

DCW COLD WATER

DHW HOT WATER

INV INVERT ELEVATION

VTR VENT THROUGH ROOF

BD BALANCING DAMPER

BDD BACKDRAFT DAMPER

RWL RAINWATER LEADER

NTS NOT TO SCALE

UNO UNLESS NOTED OTHERWISE

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE LATEST ARCHITECTURAL, STRUCTURAL, CIVIL, LANDSCAPE, SPRINKLER & ELECTRICAL

PRIOR TO PRICING/CONSTRUCTION
REFER TO ARCHITECTURAL DRAWINGS
FOR EXACT FLOOR PLAN, FLOOR
ELEVATIONS, DIMENSIONS AND FIXTURE

DO NOT SCALE OFF THIS DRAWING

CABINET FAN

PROPELLER FAN

DRAWINGS.

LOCATIONS.

R/A RETURN AIR

O/A OUTDOOR AIR

DOMESTIC HOT WATER DOMESTIC HOT WATER RECIRC. SANITARY DRAIN U/G SANITARY DRAIN STORM DRAIN U/G STORM DRAIN U/G FOOTING DRAIN LOW PRESSURE GAS HIGH PRESSURE GAS PLUMBING VENT DUCTWORK LANDSCAPE IRRIGATION CONDENSATE DRAIN DIRECTION OF FLOW FLEXIBLE DUCT CONNECTION PLUMBING VENT RISER OR TERMINAL FIRE DEPT. SIAMESE PUMPER CONNECTION STRAINER $\overline{}$ —战— PRV __ GAS COCK SHUT-OFF VALVE BALANCING VALVE **→**▼ CHECK VALVE THERMOSTAT PRESSURE GAUGE U/G CLEANOUT EXTEND TO GRADE/F.F. CLEANOUT (EXPOSED) \circ HOSE BIBB FLOOR DRAIN ROOF DRAIN DECK DRAIN RWL COMBUSTIBLE GAS DETECTOR MAN HOLE CATCH BASIN FIRE DAMPER SG-1 TYPE
16"x12" SIZE/SLOT
CFM GRILLE/REGISTER/LOUVRE ₩ F.E. FIRE EXTINGUSHER

OR OR

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SHALL VERIFY AND BE RESPONSIBLE FOR
ALL DIMENSIONS AND CONDITIONS ON THE
JOB AND THIS OFFICE SHALL BE
INFORMED OF ANY VARIATIONS FROM THE
DIMENSIONS AND CONDITIONS SHOWN ON
THE DRAWING.

Electrical and Mechanical
SRC ENGINEERING CONSULTANTS LTD.

100 - 4240 Manor St., Tel: (604) 268-9091
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MECHANICAL

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INTEGRATED WELLNESS PHYSIOTHERAPY
1100 Marine Drive at Lloyd Ave
North Vancouver, B.C.
SHEET DESCRIPTION

MARK DATE DESCRIPTION

1. OCT 12. 2011 ISSUED FOR B.P.

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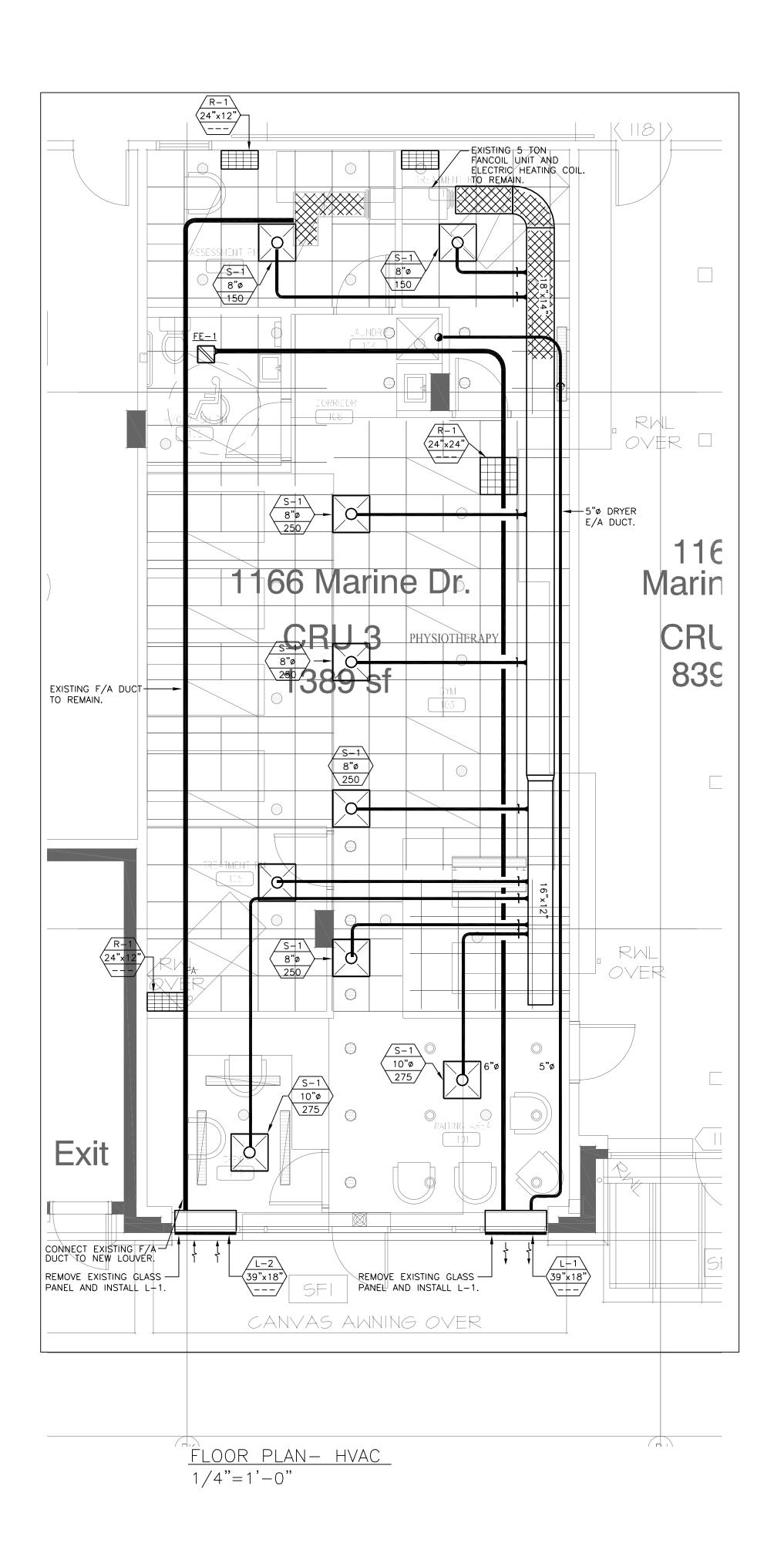
FLOOR PLAN PLUMBING

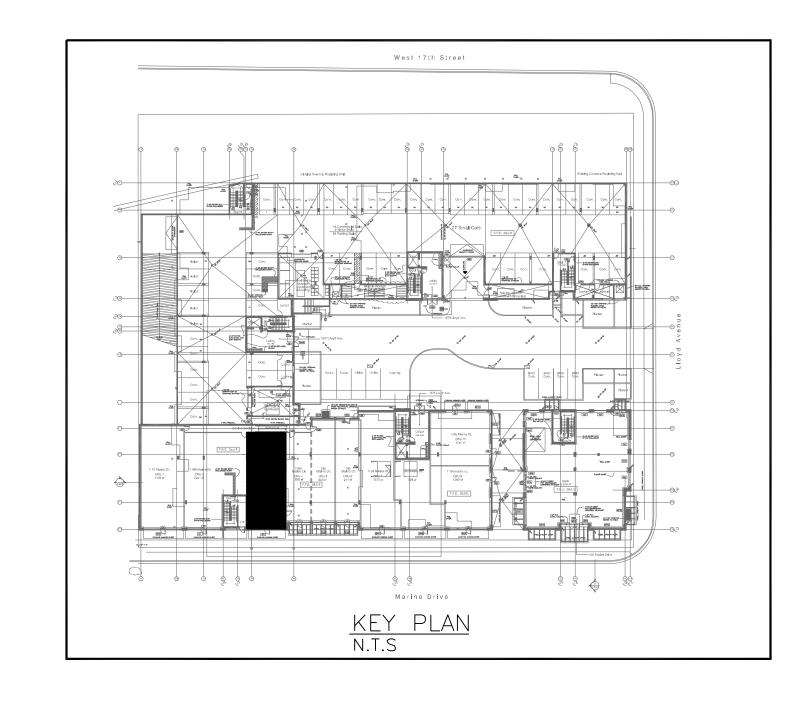
DOUGLAS R.
JOHNSON
ARCHITECT LTD.

855 GREENWOOD ROAD WEST VANCOUVER, BC V7S 1X8

PH. (604)926-0322 FAX. (604)926-0325

SCALE: AS SHOWN	PROJECT NO:
DATE:	2270
OCT 2011	
DRAWN: OA	SHEET:
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MECHANICAL

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FLOOR PLAN-HVAC

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LOCATIONS.

DO NOT SCALE OFF THIS DRAWING

				EXHAUS	ST F	ANS	SCHEDULE	
TAG	SPECIFICATIONS/ DESCRIPTION	SERVICE	LOCATION	MAKE/MODEL	CFM	S.P. (In.)	APPROX. CONTROL WT.(LBS)	ELECTRICAL DATA COMMENTS (POWER/V/PH)
FE-1	FORWARD CURVED CEILING FAN	BATHROOM EXHAUST	SUITES BATHROOM	BROAN S80U	70	0.15"	- ON/OFF	88W/120/1 -1.5 SONES MAX. -B.D.D.

				DOMESTIC	HOT WATER HEATERS			
TA	SPECIFICATIONS/ DESCRIPTION	SERVICE	LOCATION	MAKE/ MODEL	PERFORMANCE/ SPECIFICATION	CONTROLS	ELECTRICAL	COMMENTS/ NOTES
Н	ELECTRIC HOT WATER TANK	DOMESTIC HOT WATER	WASHROOM	BRADFORD WHITE M-I-WH12U6SS	7USGH RECOVERY 12USG STORAGE	THERMOSTAT	2000W/208/1PH	- 18" DIAMETER, 17" HIGH -C/W 26" GAUGE GALVANIZED STEEL PAN & DRAIN

			TYPE NECK S CAPACI	SIZE (IN) TY (CFM)		
TYPE	DESCRIPTION	MANUFACTURER	MODEL	SIZE	COLOUR	NOTES
S-1	SQUARE PLAQUE SUPPLY AIR DIFFUSER	PRICE	24"x24"/SPD/31/-	ON DRAWING	BY ARCHITECT	
R-1	EGG CRATE RETURN GRILLE	PRICE	80/F/A/B12	ON DRAWING	B12	
L-1	EXHAUST AIR LOUVRE	AIROLITE	K609X (c/w BIRDSCREEN)	ON DRAWING	SEE NOTE 1.	C/W 1.5" FLANGED FRAME
L-2	INTAKE AIR LOUVRE	AIROLITE	K638X (c/w BIRDSCREEN)	ON DRAWING	SEE NOTE 1.	C/W 1.5" FLANGED FRAME

NOTES:

1: CUSTOM BAKED ENAMEL FINISH COLOUR - PAINTING AT FACTORY TO SUIT ARCHITECTURAL REQUIREMENTS - TO MATCH PAINT CHIP SUPPLIED BY ARCHITECT.

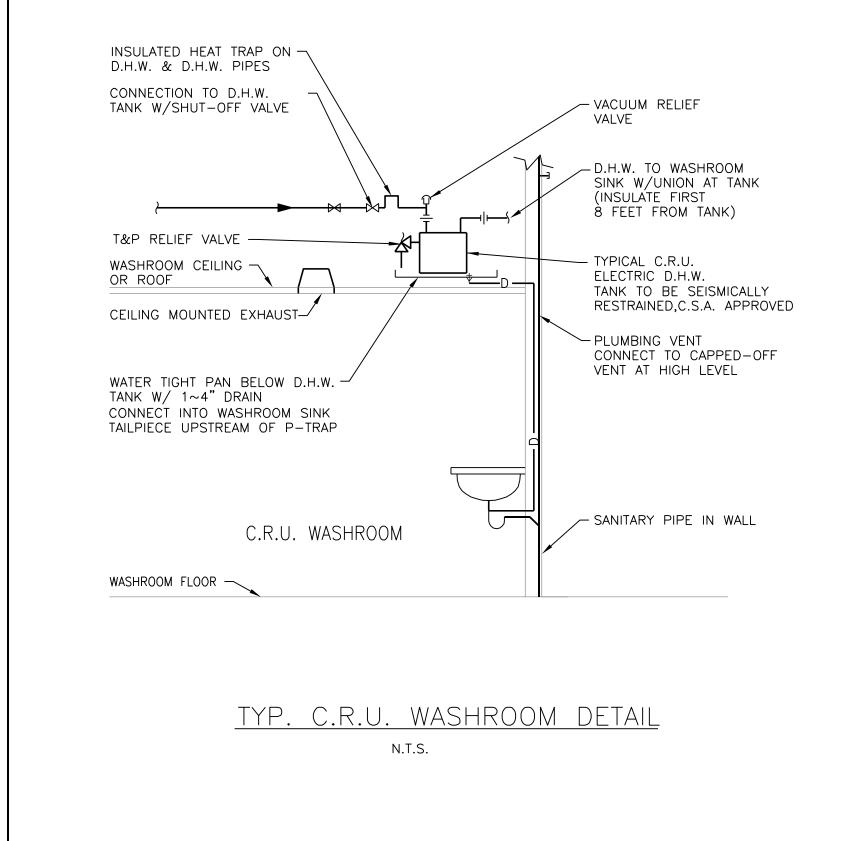
EQUIPMENT SPECIFICATIONS

RIGHT ANGLE CEILING FANS

CEILING MOUNTED, DIRECT DRIVEN, ULC LISTED AMCA CERTIFIED RATING. DYNAMICALLY BALANCED WHEEL.

ELECTRIC DOMESTIC WATER HEATER

ELECTRIC HOT WATER TANK, GLASS LINED CSA APPROVED. EFFICIENCY TO COMPLY WITH ASHARE STANDARD 90.1 C/W P.T.R.V., FACTORY INSTALLED HEAT TRAPS, SURFACE MOUNTED THERMOSTAT TOW NON-SIMULTANEOUS ELEMENTS.



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DRAWN:
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REVISIONS:

PROJECT NO:

2270

SHEET:

M-2.0

SPECIFICATIONS

MECHANICAL GENERAL - SECTION 15

- 1. <u>GENERAL CONDITIONS</u>
- A) THE GENERAL CONDITIONS OF THE CONTRACT SHALL FORM AN INTEGRAL PART OF THIS DIVISION OF THE SPECIFICATIONS.
- B) THE CONTRACTOR SHALL EXAMINE AND BE GOVERNED BY ALL SECTIONS OF THE SPECIFICATIONS, DRAWINGS AND TENDER DOCUMENTS PERTAINING TO THIS PROJECT. HE SHALL THUS BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK, AND HE SHALL INCLUDE IN HIS TENDER ALL MECHANICAL AND ASSOCIATED WORK AND MATERIAL SHOWN ON ANY DRAWING OR REQUIRED UNDER ANY SECTION
- C) WHEN WORK IS IN THE SPECIFICATION ONLY, OR SHOWN ON THE DRAWINGS ONLY, OR SHOWN ON ONE DRAWING AND NOT ON OTHER APPLICABLE DRAWINGS, IT SHALL BE DEEMED TO BE PART OF THE CONTRACT.
- D) THE CONTRACTOR SHALL MAKE CERTAIN THAT HE HAS RECEIVED ALL ADDENDA TO THESE SPECIFICATIONS AND ALL REVISIONS TO THE DRAWINGS AND THAT ALL ADDITIONS, DELETIONS AND ALTERATIONS TO THE PROPOSED WORK HAVE BEEN INCLUDED IN HIS QUOTATION.
- E) CHECK DRAWINGS OF ALL TRADES TO VERIFY SPACE AND HEADROOM LIMITATIONS FOR WORK TO BE INSTALLED. DO NOT DEVIATE FROM THE DESIGN INTENT OR MAKE CHANGES INVOLVING EXTRA COST WITHOUT THE ARCHITECT'S/OWNER'S WRITTEN
- F) ENSURE THAT ANY BUILDING STRUCTURE LOADED DURING THE INSTALLATION IS ADEQUATE TO CARRY SUCH LOAD. (CHECK WITH STRUCTURAL/OWNER/ARCHITECT).
- G) THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOUR, EQUIPMENT AND SERVICES NECESSARY TO COMPLETE THE MECHANICAL WORK IN ACCORDANCE WITH THE DRAWINGS AND THESE SPECIFICATIONS. ALL MATERIAL AND EQUIPMENT SHALL BE NEW (UNLESS NOTED OTHERWISE) AND APPROVED FOR MECHANICAL INSTALLATION.
- H) THE CONSULTANT SHALL NOT BE LIABLE FOR CODE CHANGES OCCURRING BETWEEN THE TIME OF ISSUING OF THE DRAWINGS AND THE TAKING OF THE BUILDING PERMIT.
- I) ALL PRODUCTS USED SHALL BEAR THE CSA STAMP OF APPROVAL TO MEET ALL CODES AND OTHER ENFORCEMENTS.
- J) ALL WORK SHALL SATISFY THE REQUIREMENTS OF THE CURRENT B.C. BUILDING CODE, AND ALL APPLICABLE CODES (I.E. PLUMBING, GAS, ETC.) AND ALL AUTHORITIES HAVING JURISDICTION.
- A) EMPLOY ONLY COMPETENT TRADESMEN TO PERFORM THE WORK AND ENSURE COOPERATION WITH OTHER TRADES. WORKMANSHIP SHALL BE IN ACCORDANCE WITH STANDARDS AND PRACTICES ACCEPTED AND RECOGNIZED BY THE TRADE.
- 3. <u>SITE CONDITIONS</u>
- A) THE CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION AND EXAMINE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS RELATING TO THE WORK. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITION SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR THE CONSULTANT AND CLARIFIED IN WRITING BEFORE THE SUBMISSION OF HIS BID. FAILURE TO NOTE SITE CONDITIONS AND MAKE SUITABLE ALLOWANCES FOR SAME IN THE TENDER WILL IN NO WAY JUSTIFY A CLAIM FOR ADDITIONAL CHARGES OR COMPENSATION.
- B) THE CONTRACTOR SHALL MAKE COMPLETE HIS WORK AS QUICKLY AS REASONABLY POSSIBLE AND SHALL FOLLOW THE GENERAL CONTRACTOR'S WORK SCHEDULE.
- 4. <u>DISCREPANCIES</u>
- A) ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND CLARIFIED IN WRITING PRIOR TO THE CONTRACTOR SUBMITTING HIS BID. IF THIS IS NOT DONE, IT SHALL BE ASSUMED THAT THE MOST EXPENSIVE ALTERNATIVE HAS BEEN ALLOWED FOR IN THE TENDER.
- 5. <u>COORDINATION WITH OTHER TRADES</u>
- A) THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL, LANDSCAPING, (ETC.) DRAWINGS. REPORT ANY CONFLICTS TO THE MECHANICAL CONSULTANT FOR WRITTEN INSTRUCTIONS.
- B) THE ARCHITECTURAL PLANS SHALL HAVE <u>PRECEDENCE</u> OVER THE MECHANICAL PLANS WITH REFERENCE TO WALLS, FIXTURES, FINISH ETC.
- 6. CUTTING, PATCHING DIGGING AND PLACEMENT OF LARGE EQUIPMENT
- SEALING OF OPENINGS SHALL BE PROVIDED BY THIS DIVISION.

A) ALL CUTTING, PATCHING (INCLUDING REPAIRS TO PLASTER), FIREPROOFING AND

- B) ALL CUTTING OR DRILLING OF STRUCTURAL ELEMENTS SHALL BE APPROVED BY STRUCTURAL ENGINEER PRIOR TO WORK.
- C) LAYOUT SLEEVES, OPENINGS, INSERTS FOR INSTALLATION OF WORK IN THIS DIVISION. FAILURE TO PROVIDE PROPER LOCATION AND SIZES SHALL MAKE THIS DIVISION LIABLE FOR EXTRA CHARGES TO PROPERLY EXECUTE THE WORK.
- D) ROOF FLASHING SHALL BE SUPPLIED FOR INSTALLATION BY ROOFING DIVISION.
- E) CONTRACTOR TO CO-ORDINATE WITH OTHER TRADES TO ENSURE CORRECT PLACEMENT OF LARGE EQUIPMENT.
- 7. <u>APPROVAL OF ALTERNATES</u>
- A) WHERE TRADE NAMES ARE LISTED, THE FIRST MENTIONED NAME WAS USED TO ESTABLISH QUALITY, FUNCTIONS, PERFORMANCE AND DIMENSIONS TO PREPARE THE CONTRACT DOCUMENTS.
- B) SUBSTITUTION OF ALTERNATES WILL BE ALLOWED IF:
- a) THIS DIVISION ASSUMES THE RESPONSIBILITY AND COSTS FOR ALL ASSOCIATED CHANGES IN THE WORK OF THIS DIVISION AND OTHER DIVISIONS.
- b) COMPLETE DETAILS OF THE ALTERNATE PROPOSED ARE SUBMITTED IN **DUPLICATE**
- THE APPLICANT RECEIVES AN APPROVED, SIGNED COPY OF THE APPLICATION. SUBMIT DETAIL DRAWING OF PROPOSED ALTERNATE AS REQUIRED BY ENGINEER TO DEFINE SPECIFIC REQUIREMENTS.
- 8. <u>DELIVERY, SCHEDULING AND PROTECTION OF WORK AND EQUIPMENT</u>
- A) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE DELIVERY TIME OF ITEMS SUPPLIED UNDER THIS DIVISION DOES NOT CAUSE A DELAY IN SCHEDULING OF THE PROJECT.
- B) ALL WORK SHALL START IMMEDIATELY AND FOLLOW THE SCHEDULE OF WORK AS OUTLINED BY THE OWNER.
- C) THE CONTRACTOR SHALL PROTECT FINISHED AND UNFINISHED WORK AND WORK OF ALL OTHER TRADES FROM DAMAGE DUE TO THE CARRYING OUT OF THE WORK.
- 9. <u>WARRANTIES AND GUARANTEE</u> A) GUARANTEE THE SATISFACTORY OPERATION OF ALL WORK AND EQUIPMENT INSTALLED UNDER THIS DIVISION, FOR A PERIOD OF 12 MONTHS AFTER FINAL COMPLETION.
- B) BE RESPONSIBLE FOR THE COST OF ANY DAMAGE TO THE WORK OF THIS OR OTHER DIVISIONS DUE TO FAULTY MATERIALS OR WORKMANSHIP, DURING CONSTRUCTION AND THE GUARANTEE PERIOD.

- C) SUBMIT GUARANTEES AS REQUIRED ON EQUIPMENT AND WARRANTIES WHICH EXTEND BEYOND A 12 MONTH PERIOD. BIND GUARANTEES AND WARRANTIES WITHIN MAINTENANCE MANUALS.
- 10. <u>CODES PERMITS & FEES</u>
- A) OBTAIN AND PAY FOR ALL PERMITS, APPROVALS AND INSPECTIONS BY REGULATION AGENCIES UNLESS ADVISED OTHERWISE.
- A) THE OWNER SHALL PAY ALL UTILITIES USUAGE CHARGES (I.E. GAS, ETC.). THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-ORDINATING ALL WORK WITH THE

11. <u>UTILITY CHARGES:</u>

- UTILITY COMPANIES. A) ALL THE INFORMATION SHALL BE TYPEWRITTEN, INDEXED WITH IDENTIFICATION OF
- DESIGN AUTHORITIES, CONTRACTOR, SUBCONTRACTORS. THE MAINTENANCE MANUALS SHALL INCLUDE THE FOLLOWING:
- MAINTENANCE REQUIREMENTS FOR ALL EQUIPMENT.
- b) LOCAL SOURCE OF SUPPLY AND SPARE PARTS LIST. c) LUBRICATION SCHEDULE AND LUBRICANT COVERING ALL EQUIPMENT
- d) ONE CORRECTED COPY OF APPROVED SHOP DRAWINGS BY ENGINEER. e) SCHEMATIC AND MAINTENANCE DATA FOR SEPARATE SYSTEMS.
- B) INSTRUCT OWNER'S PERSONNEL ON OPERATING AND MAINTENANCE PROCEDURE AT SUBSTANTIAL COMPLETION.
- 13. AS-BUILT DRAWINGS
- A) THE CONTRACTOR SHALL KEEP A COMPLETE SET OF CONSTRUCTION DOCUMENTS (I.E. DRAWINGS, SPECIFICATIONS, SHOP DRAWINGS, ADDENDA, REVISIONS, ETC.) ON THE JOB SITE. THE CONSTRUCTION DRAWINGS SHALL BE CONTINUOUSLY AND ACCURATELY UPDATED TO SHOW ALL FIELD CHANGES (I.E. LOCATE NEW DUCT RUNS, EQUIPMENT, ALL UNDERGROUND PIPING, ETC.) TO THE DRAWINGS AS WELL AS ALL DEVIATIONS OF THE INSTALLATION FROM THAT SHOWN ON THE DRAWINGS. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PRODUCE A COMPLETE SET OF REPRODUCIBLE DRAWINGS (SEPIA) INCORPORATING NEATLY (I.E. CHANGES TO BE DONE BY COMPETENT DRAFTSPERSON) ON THEM ALL CHANGES AND DEVIATIONS TO THE WORK FROM THAT SHOWN. THESE "AS-BUILT" DRAWINGS SHALL BE SIGNED AND DATED BY THE MECHANICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL THEN PROVIDE TO THE OWNER:
- a)THREE (3) SETS OF "AS-BUILT DRAWINGS (BLACKLINE), b)ONE SET OF REPRODUCIBLE (SEPIA) DRAWINGS, AND c)ALSO PROVIDE ONE SET OF DRAWINGS IN "DXF" FILE FORMAT (I.E. "DOS-FORMATTED
- DISKETTES" IF THE DRAWINGS ARE IN ELECTRONIC FORMAT). B) AS BUILT DRAWINGS AND MAINTENANCE MANUALS MUST BE SUBMITTED TOT HE ENGINEER MINIMUM 15 WORKING DAYS BEFORE THE OWNER'S REQUEST FOR
- 14. SHOP DRAWINGS
- A) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, SHOP DRAWING FOR ALL MECHANICAL EQUIPMENT AS SPECIFIED ON THE EQUIPMENT SCHEDULE. THE SHOP DRAWINGS SHALL BE IDENTIFIED BY PROJECT NUMBER AND RELEVANT EQUIPMENT TAG. THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:
- CAPACITY AND PERFORMANCE CHARACTERISTICS

"OCCUPANCY PERMIT INSPECTION".

- SOUND POWER DATA WHERE APPLICABLE.
- ELECTRICAL POWER DATA CONTROL/INTERLOCKING DIAGRAM(S)/DESCRIPTION, AND WIRING DIAGRAMS. PHYSICAL CHARACTERISTICS; DIMENSIONS; PLANS; FINISHES; INSTALLATION
- RECOMMENDATIONS/REQUIREMENTS; DETAILED DRAWINGS FOR BASES, SUPPORTS AND ANCHOR BOLTS, AND RECOMMENDED CLEARANCES.
- B) THE CONTRACTOR TO SUBMIT 3 COPIES OF SHOP DRAWINGS AND RESUBMIT AS
- C) EQUIPMENT SHALL NOT BE PURCHASED PRIOR TO THE COMPLETION OF SHOP DRAWINGS REVIEW PROCESS.
- 15. <u>TESTING AND INSPECTIONS</u>
- A) THE CONTRACTOR SHALL PROVIDE ANY NECESSARY ASSISTANCE AND COOPERATION TO FACILITATE THE INSPECTION OF THE WORKMANSHIP AND MATERIAL AS SUPPLIED AND INSTALLED OR MATERIAL ON SITE TO BE INSTALLED UNDER THIS SPECIFICATION.
- B) WORK SHALL NOT BE CLOSED IN OR COVERED BY CONCRETE OR OTHER MATERIAL BEFORE INSPECTION AND APPROVAL BY THE ENGINEER AND MUNICIPAL INSPECTOR.
- A) IDENTIFY ALL MECHANICAL EQUIPMENT WITH PROPER LABELS (I.E. LAMICOID ETC.
- A) PROVIDE MISCELLANEOUS METALS TO SUPPORT, SECURE OR PROTECT EQUIPMENT IN THIS DIVISION.
- B) PRIME COAT MISCELLANEOUS STEEL AFTER INSTALLATION.
- 18. ELECTRICAL GENERAL
- A) LINE VOLTAGE WIRING BY THE ELECTRICAL DIVISION, LOW VOLTAGE WIRING BY THIS DIVISION. CONDUIT AND BOXES FOR CONTROL WIRING ARE BY THE ELECTRICAL
- B) SUPPLY DISCONNECTS, STARTERS, BREAKERS, CONTROL TRANSFORMER, RELAYS ETC. ASSOCIATED WITH EQUIPMENT IN THIS DIVISION WHERE INTEGRAL WITH EQUIPMENT AND AS SPECIFIED.
- C) ELECTRICAL SERVICE <u>VOLTAGE</u> SHALL BE CONFIRMED WITH THE ELECTRICAL ENGINEER/CONTRACTOR BEFORE EQUIPMENT ORDERED/INSTALLED.
- D) CONTRACTOR TO ENSURE NO PLUMBING IS LOCATED IN ELECTRICAL ROOMS, ELECTRICAL CLOSETS AND ELEVATOR MACHINE ROOMS.
- E) HEAT LAMPS MUST NOT BE INSTALLED WITHIN 12" (HORIZONTALLY) FROM A SHOWER ROD OR THE AREA COVERED BY THE SWING OF THE DOOR.
- 19. <u>CLEAN UP</u> A) ON COMPLETION OF WORK ALL TOOLS, WASTE MATERIALS ARE TO BE REMOVED AND THE JOB LEFT IN A CLEAN CONDITION.
- A) THE CONTRACTOR SHALL PROVIDE FIRE STOPPING FOR PLUMBING PENETRATIONS THROUGH RATED WALLS/FLOOR ASSEMBLIES.
- B) THE FIRE STOPPING MATERIALS AND COMPONENTS SHALL COMPLY WITH ULC REQUIREMENTS AND INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS.
- C) THE FIRE RESISTANCE RATING OF INSTALLED FIRE STOPPING ASSEMBLY SHALL NOT BE LESS THAN THE FIRE RESISTANCE RATING OF SURROUNDING FLOOR AND WALL
- D) THE FIRE STOPPING MATERIALS SHALL BE COMPATIBLE WITH VARIOUS PIPING
- E) SUBMIT SHOP DRAWINGS FOR DETAILS OF ULC APPROVED FIRE STOP ASSEMBLIES. F) NOTIFY CONSULTANT (ENGINEER) WHEN READY FOR INSPECTION AND PRIOR TO CONCEALING OR ENCLOSING THE FIRE STOP ASSEMBLIES.

- A) SUPPLY AND INSTALL (PROVIDE) WORK AS SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN. INCLUDE ALL LABOUR, TOOLS AND PLANS NECESSARY FOR WORK IN THE
- B) THIS SHALL INCLUDE BUT <u>NOT</u> BE LIMITED TO THE SUPPLY AND INSTALLATION OF THE FOLLOWING AS APPLICABLE:
 - ALL WORK SHOWN OR IMPLIED ON MECHANCIAL DRAWINGS.
 - PLUMBING SYSTEM HEATING, VENTILATION AND AIR-CONDITIONING SYSTEM
- INSULATION - SPRINKLER SYSTEM

SEISMIC RESTRAINT

- 22. PLUMBING:
- A) INSTALLATION AND MATERIALS TO B.C.B.C 2006 & LOCAL MUNICIPAL REQUIREMENTS. B) PRIOR TO COMMENCING THE PLUMBING AND UNDERGROUND PIPING THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE FOLLOWING:
 - a)THE WATER LINES CAN BE ROUTED AS SHOWN ON THE DRAWINGS TO MEET THE
 - b)INFORM THE ARCHITECT/ENGINEER IMMEDIATELY SHOULD ANY CHANGES BE
- c)OBTAIN ALL LATEST MUNICIPAL STANDARDS AND INCLUDE FOR THEIR PROVISION IN THE BID. a)ALL WATER DISTRIBUTION PIPING TO BE 3/4" MINIMUM EXCEPT AS NOTED. b)SOLDER JOINTS FOR (DOMESTIC WATER) COPPER PIPES TO BE LEAD FREE. c)PROVIDE SEISMIC RESTRAINT TO ALL EQUIPMENT (BOILERS, H.W. TANKS,
- d)ALL SHUT OFF VALVES IN THE DOMESTIC WATER SYSTEM 2" DIA AND LESS TO BE BALL VALES.
- e)ALL COPPER PIPES MUST BE CERTIFIED IN COMPLIANCE WITH THE B.C. PLUMBING CODE AND SUBSEQUENT AMENDMENTS.
- D) PIPE SUPPORTS SHALL BE ADJUSTABLE HANGER ROD TYPE FOR LINES OVER 2" E) PROVIDE PLASTIC SLEEVE 25mm LARGER THAN THE PIPES AND PACK WITH INSULATION
- WHEN PIPES ARE PASSING THROUGH CONCRETE. a)PROVIDE SUPPORTS TO SECURE PIPES, PREVENT PIPE VIBRATION, MAINTAIN REQUIRED GRADING BY PROPER ADJUSTMENTS, ALLOW FOR EXPANSION AND
- CONTRACTION AND PRODUCE A NEAT APPEARANCE. b)DESIGN SUPPORTS TO SUIT LOADING AND SERVICES AND PREVENT UNDUE STRESS TO STRUCTURAL MEMBERS.
- c)FOR ALL COPPER HORIZONTAL PIPING USE WROUGHT CLEVIS HANGERS (25mm LARGER THAN PIPE DIAMETER) SUITABLE FOR VERTICAL ADJUSTMENT, ISOLATED FROM PIPE WITH PLASTIC TAPE.
- G) ALL ACCESS PANELS FOR ALL VALVES AND EQUIPMENT TO BE FIRE RATED TO MATCH RATINGS OF WALL, CEILING OR FLOOR STRUCTURE IN WHICH THEY ARE LOCATED. FINISH TO BE PRIME COAT.
- 23. HVAC SYSTEM
- THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL WORK AS SHOWN ON THEDRAWINGS AND AS
- HEATING, VENTILATION
- SUPPLY AIR/RETURN AIR SYSTEM(S)
- EXHAUST AIR SYSTEM(S) - AUTOMATIC TEMPERATURE CONTROLS
- ACOUSTIC AND THERMAL INSULATION - TESTING, BALANCING AND HANDOVER
- B) DUCTWORK
- a)ALL DUCTWORK AND HANGERS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA STANDARDS.
- b)PROVIDE AND INSTALL LINE BALANCING DAMPERS ON ALL BRANCH LINES TAKE OFFS. c)FLEXIBLE DUCTS TO BE THERMOFLEX STL OR MKE (INSULATED) OR EQUAL d)ALL DUCTS ASSOCIATED WITH FANS AND OTHER MACHINERY SHALL BE INSTALLED WITH CANVAS FLEXIBLE CONNECTIONS ON INLET AND OUTLET OPENINGS e)ALL DUCTWORK PENETRATING FLOOR SLABS OR FIRE SEPARATIONS
- SHALL BE COMPLETE WITH ULC APPROVED FIRE DAMPERS. f)ALL CURTAIN DAMPERS TO BE DYNAMIC TYPE. q)ALL THE EXHAUST DUCTS ARE TO BE TERMINATED OUTSIDE THE BUILDING ENVELOPE. THE WALL CAPS (ECCO OR EQUAL) TO BE MINIMUM 26 GAUGE GALVANIZES.

ALL SEAMS TO BE SOLDERED FOR A WATER TIGHT JOINT. MINIMUM FLANGE

- WIDTH OF 2 1/2". ALL CAPS AND WEATHER LOUVER INSTALLATION DETAILS TO BE APPROVED BY THE ARCHITECT AND ENVELOPE CONSULTANT.
- 24. SHEET METAL
- A) DUCTWORK MATERIAL AND INSTALLATION TO SMACNA STANDARDS. B) FLEXIBLE DUCT THERMOFLEX STL OR MKE (INSULATED) OR EQUAL
- C) PROVIDE ACCESS PANELS "MILCOR" OR EQUAL STYLE L, K, OR M WITHIN CEILING WALLS OR DUCTS TO ALL FIRE DAMPERS, VALVES AND EQUIPMENT AS REQUIRED. FINISH TO BE PRIME COAT.
- D) <u>GRILLES, REGISTERS AND DIFFUSERS</u> AIR DISTRIBUTION TERMINALS ARE SHOWN ON DRAWINGS BY QUANTITY, SIZE, TYPE AND CAPACITY.
- (a) REFER TO SCHEDULE FOR DETAIL OF TYPE.
- (b) FINISH TO ARCHITECT'S APPROVAL OR AS NOTED. (c) COMBUSTIBLE PIPING MUST NOT BE RUN IN OR THROUGH RATED WALLS
- AND FLOORS.
- ACCESS SHALL BE PROVIDED TO ALL NEW OR EXISTING MECHANICAL EQUIPMENT, BALANCING DAMPERS, VALVES AND ALL OTHER ITEMS REQUIRING SERVICING IN CEILING OR WALL SPACE. PANELS TO BE FIRE RATED TO MATCH RATINGS OF WALL, CEILING OR FLOOR STRUCTURE IN WHICH THEY ARE LOCATED.
- G) <u>TEMPORARY HEATING</u>
- AIR HANDLING SYSTEMS USED FOR HEATING/VENTILATION DURING CONSTRUCTION SHALL BE SERVICED PRIOR TO COMPLETION OF PROJECT. ALL FILTERS REPLACED; ALL DUCTS CLEANED; ALL EQUIPMENT INSPECTED AND LUBRICATED.
- INSULATION
 PIPING TO BCICA #1501 a) DOMESTIC COLD WATER SUPPLY INCLUDING RUN OUTS TO HOSE BIBBS AND INTERIOR R.W.L. IN HEATED AREAS 1" MINERAL FIBRE WITH VAPOUR BARRIER. HOT WATER SUPPLY AND RECIRCULATING LINES 1" MINERAL FIBRE WITH DUAL
- TEMPERATURE JACKET. FINISH: CONCEALED PIPING WITHOUT FINISH, EXPOSED PIPING PF-3 ECONOMY. PACK ALL VOIDS, SLEEVES WITH FIRE AND/OR SOUND STOPS AS REQUIRED.

- B) <u>DUCTWORK TO BCICA #1502</u>
- DUCTS SUPPLYING UNHEATED OUTDOOR AIR IN HEATING AREAS AND SUPPLY
- DUCTS FROM AIR CONDITIONING UNITS 1" FIBREGLAS WITH VAPOUR BARRIER. DUCTS HANDLING HEATED AIR IN UNHEATED AREAS 1" FIBREGLAS.
- ACOUSTIC LINING AS SHOWN ON DRAWINGS TO BE 1" MINERAL FIBRE WITH SPRAYED VINYL FINISH, FOR A MINIMUM 6'-0" FROM EQUIPMENT. DIMENSIONS OF DUCTS ON THE DRAWINGS ARE INSIDE CLEAR SIZES. INCREASE DUCT WORK
- SIZES TO SUIT ACOUSTIC INSULATION. PROVIDE THERMALLY INSULATED FLEXIBLE DUCT CONNECTORS FROM BRANCH
- DUCTS TO SUPPLY AIR DIFFUSERS, 5'-0" MAXIMUM. FINISH: CONCEALED DUCTS WITHOUT FINISH.
 - EXPOSED DUCTS RF/4 ECONOMY.
- PACK ALL VOIDS AND SLEEVES WITH FIRE AND/OR SOUND STOP AS REQUIRED. ALL INSULATION, ADHESIVES, MASTICS, SEALANTS AND COATINGS TO BE USED INSIDE THE BUILDING WITH THE INSULATION SPECIFIED IN THIS SECTION SHALL BE FIRE RETARDANT AND MEET ULC AND NBC STANDARDS, WITH A FLAME SPREAD RATING OF NOT OVER 25 AND SMOKE DEVELOPED CLASSIFICATION NOT OVER 50.
- THE MECHANICAL CONTRACTOR MUST INCLUDE IN HIS PRICE TO ENGAGE THE SERVICES OF A STRUCTURAL CONSULTANT (REGISTERED PROFESSIONAL ENGINEER IN THE ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA) WHO SHALL ACT UNDER MECHANICAL CONSULTANTS DIRECTION TO PROVIDE DESIGN AND "FIELD REVIEW" FOR A COMPLETE SEISMIC PROTECTION SYSTEM, (I.E. SEISMIC RESTRAINT, ANCHORAGE AND STRUCTURAL CAPACITY) OF MECHANICAL COMPONENTS AS REQUIRED PER BUILDING CODE.
- THE SEISMIC ENGINEER RETAINED BY THE MECHANICAL CONTRACTOR SHALL PROVIDE THE

BY MECHANICAL CONSULTANT, MECHANICAL CONTRACTOR AND THE MUNICIPALITY.

- FOLLOWING: LETTERS OF ASSURANCE AS REQUIRED BY THE MUNICIPALITY CERTIFIED DETAILED DRAWINGS AND SPECIFICATIONS FOR SEISMIC RESTRAINT OF
- MECHANICAL SYSTEMS. WRITTEN REPORTS OF SITE REVIEWS. COPIES OF ALL THE ABOVE DOCUMENTS SHALL BE SUBMITTED ON TIMELY BASIS TO THE MECHANICAL CONSULTANT.
- THE MECHANICAL CONTRACTOR MUST CONTACT AND CO-ORDINATE THIS PORTION OF THE WORK WITH THE CONSULTANTS AND SHALL ENSURE THAT THE SEISMIC RESTRAINT SYSTEM INSTALLED IS PER DESIGN AND/OR RECOMMENDATION OF THE SEISMIC/STRUCTURAL/MECHANICAL CONSULTANTS.
- PROVIDE COMPLETE SEISMIC PROTECTION (I.E. STRUCTURAL SUPPORTS/BRACINGS, ETC.) FOR INSTALLATION OF MECHANICAL EQUIPMENT AND SYSTEMS. SEISMIC PROTECTION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO THE FOLLOWING:
- THE MECHANICAL EQUIPMENT INSTALLATION SHALL BE PER PART 4 OF THE BUILDING CODE (REF. TABLE 4.1.9E), THE STRUCTURAL CONSULTANT DESIGN/RECOMMENDATION AND PER MUNICIPAL REQUIREMENTS.
- ALL FREE STANDING MECHANICAL EQUIPMENT (ROOF TOP UNITS, WATER BOOSTER PUMPS, FIRE PUMPS, BOILERS, MAKE-UP AIR UNITS, ETC.) MUST BE BOLTED DOWN TO THE BUILDING STRUCTURE (WALL/FLOOR)
- PROVIDE ALL REQUIRED SEISMIC BRACING, SUPPORTS, BOLTS, WASHERS, NUTS, ETC. FOR SUSPENDED EQUIPMENT SUCH AS CEILING HUNG FANS, AIR HANDLERS, ETC. WHERE DRILLING/CORING OF THE STRUCTURE IS REQUIRED FOR ANCHORAGE REQUIREMENTS, THE DRILLING SHALL BE SUBJECT TO THE APPROVAL OF THE
- STRUCTURAL ENGINEER FOR THE PROJECT. ALL MECHANICAL EQUIPMENT REQUIRING SPRING MOUNTING FOR VIBRATION ISOLATION, SHALL HAVE SPRING MOUNTS WITH INTEGRAL SEISMIC RESTRAINTS
- 27. SPRINKLER SYSTEM FULLY SPRINKLERED BUILDING
- A) GENERAL a) THE CONTRACTOR SHALL PROVIDE COMPLETE ENGINEERING DESIGN, INSTALLATION AND TESTING FOR A FULLY SPRINKLERED BUILDING TO THE REQUIREMENTS OF NFPA13/13R, THE B.C.B.C., THE DISTRICT
 - OF NORTH VANCOUVER REQUIREMENTS & EQUIVALENCY REPORT BY GHL. b) ALL ISOLATING VALVES TO BE PROVIDED WITH SUPERVISORY SWITCHES. TEST STATIONS WITH DRAINS TO BE PROVIDED AS REQUIRED. SPRINKLER CONTRACTOR SHALL SUPPLY AND INSTALL ALL THE
- SPRINKLER SWITCHES REQUIRED FOR SPRINKLER "ALARM" AND "TROUBLE" INDICATION AS PER NFPA 13 STANDARDS, B.C.B.C. REQUIREMENTS. c) THE CONTRACTOR SHALL REVIEW ARCHITECTURAL AND STRUCTURAL DRAWING
- MUST BE CO-ORDINATED WITH THE GENERAL CONTRACTOR PRIOR TO START OF d) THE CONTRACTOR TO SUPPLY AND LOCATE PORTABLE FIRE EXTINGUISHERS TO

FOR CONSTRUCTION DETAILS. PIPE ROUTING AND SPRINKLER HEAD LOCATIONS

- NFPA 10 AND LOCAL FIRE MARSHALLS'S REQUIREMENTS. CO-ORDINATE INSTALLATION WITH ARCHITECT AND GENERAL CONTRACTOR. B) THE SPRINKLER ENGINEER RETAINED BY THE SPRINKLER CONTRACTOR SHALL
- TAKE FULL RESPONSIBILITY OF THE COMPLETE ENGINEERING OF THE SPRINKLER SYSTEM INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

b) PROVIDE COMPLETE SPRINKLER DRAWINGS (SEALED & SIGNED) AND

- a) PROVIDE LETTERS OF ASSURANCE (I.E. SCHEDULE B1, B2 & C) TO THE MUNICIPALITY.
- HYDRAULIC CALCULATIONS TO CITY FOR SPRINKLER PERMIT APPLICATION PRIOR TO COMMENCING WORK. c) PROVIDE FIELD REVIEW SERVICES AND REPORT TO:
- ASCERTAIN WHETHER OR NOT WORK IS IN ACCORDANCE WITH THE SPRINKLER CONTRACT DOCUMENTS. - ASSIST IN CONFIRMING, REPORTING AND SCHEDULING PROCEDURES FOR TESTING AND INSPECTIONS.
- CONDUCT SUBSTANTIAL AND TOTAL PERFORMANCE FIELD REVIEWS OF SPRINKLER SYSTEM, NOTE DEFICIENCIES AND INSPECT COMPLETED CONNECTIONS. d) REVIEW THE SHOP DRAWINGS AND OTHER SUBMITTALS FOR CONFORMANCE
- e) PROVIDE THE OWNER WITH THREE (3) COPIES OF OWNER'S MANUAL, SHOP DRAWINGS AND MAINTENANCE SCHEDULE TO THE REQUIREMENTS OF LOCAL MUNICIPAL FIRE DEPARTMENT. f) PROVIDE THE OWNER WITH AS BUILT DRAWINGS. REFER TO SECTION 13

WITH SPRINKLER CONTRACT DOCUMENTS AND THE INTENT OF THE DESIGN.

- OF THE GENERAL SPECIFICATIONS FOR DETAILS. C) HEAT TRACING
 - a) THE SPRINKLER CONTRACTOR SHALL IDENTIFY AND CO-ORDINATE WITH THE ELECTRICAL CONTRACTOR OF ALL HEAT TRACING REQUIRED FOR FREEZE PROTECTION OF SPRINKLER SYSTEMS ON THIS PROJECT. b) SUPPLY AND INSTALLATION OF HEAT TRACING SHALL BE BY SPRINKLER CONTRACTOR, OR THE SPRINKLER CONTRACTOR SUB TRADE. POWER CONNECTION BY ELECTRICAL.
- o) TEST SPRINKLER SYSTEM IN ACCORDANCE TO REQUIREMENTS OF THE NFPA 13, AND LOCAL AUTHORITIES HAVING JURISDICTION.

POWER CONNECTION BY ELECTRICAL.

a) STANDPIPE SHALL BE TO NFPA 14 AND LOCAL MUNICIPAL REQUIREMENTS.

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