Invitation to Tender

NELSON & DISTRICT COMMUNITY COMPLEX RTU REPLACEMENT
PRJ24038

ADDENDUM NO. 1

Issued: March 25, 2025

Closing Date: 2:00 pm Local Time (PST), April 30, 2025

This Addendum shall be read in conjunction with and considered as an integral part of the Contract Documents; revisions supersede the information contained in the original specifications or previously issued Addendum. Price submitted shall include all items of this Addendum.

By this **Addendum No. 1**, dated March 25, 2025, the Invitation to Tender documents for the PRJ24038 shall be amended as specified below.

QUESTIONS & ANSWERS:

Q1: **Drawings specify "connect new duct to existing" and "connect new upsized ductwork to existing". Can we get clarification on what is existing in these drawings? Perhaps a site visit is required to clear this up?**

A1: Please send all questions or concerns to directly to the project manager listed in the tender package and responses will be provided via addendum.

A pre-tender site review was scheduled for March 12, 2025 at @ 1:00 PM local time.

See attached updated drawing set for duct work updates.

Q2: **I've reviewed the sample contract in appendix B, and I cannot locate any language related to changes in taxes or tariffs after the tender closes. Is there any protection for us against the ongoing trade war included in this contract?**

A2: The onus is on the Bidding Contractor to determine during the course of the open tender (through engagement with the manufacturers and their suppliers) which of the equipment and or materials that have been specified, are subject to tariffs and the applicable percentage applied. The Bidder should undertake their own cost risk analysis and determine their bid amount accordingly. The RDCK at this time, will not accept cost increases after tender closing and prices submitted are to be held for the ninety (90) days, as specified in the tender documents.

CLARIFICATIONS:

1. NDCC building drawings will only be made available to bidders upon request in writing to the Project Manager.

2. Due to the existing bulkhead located in the cardio room (rm 320) and the lack of available overhead space located in the natatorium, the RDCK is requesting that bidders provide an optional line item price for the complete supply and installation (includes, unit, hardware, electircal requirements, alterations of the building, etc.) of the specified mini-split wall mount and heat pump condensing unit. Schedule C: Pricing Schedule has been amended to include the optional line item and is included as part of this Addendum.

3. Twin Rivers is to be contacted directly by the bidder to receive a quote for the required controls work and should be incorporated into the bidders amount. Please contact Jason Larson at Twin Rivers Controls Ltd at jlarson@trcontrols.ca.

Except as modified by Addendum No. 1 issued March 25, 2025, the Invitation to Tender documents for PRJ #24038 shall remain unchanged.

Carolyn Hogan
Project Manager

Attachments: 2025.03.21 – NDCC RTU Replacement – Reissued for Tender
Schedule C: Pricing Schedule

- END OF DOCUMENT -

SYMBOL SCHEDULE

- ELBOW DOWN
- ELBOW UP
- TEE DOWN
- TEE UP
- FLOW DIRECTION
- P-TRAP
- GATE VALVE
- BALL VALVE
- PLUG VALVE
- CHECK VALVE
- BALANCING VALVE
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- PRESSURE REDUCING VALVE
- STRAINER
- BACKFLOW DEVICE
- PIPE BREAK
- CLEANOUT AT GRADE
- PIPE CAP
- PIPE UNION
- HOSE BIB
- PUMP
- RELIEF VALVE
- AIR VENT
- PRESSURE GAUGE
- THERMOMETER
- DIFFERENTIAL PRESSURE REGULATOR
- PIPE TO DRAIN
- FLOOR DRAIN
- FUNNEL FLOOR DRAIN
- SAN — SANITARY DRAIN
- ST — STORM DRAIN
- SAN — SANITARY – BELOW GRADE
- ST — STORM – BELOW GRADE
- X — DRAIN TILE (PERFORATED)
- G — GAS – PROPANE
- V — SANITARY VENT
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER RECIRC.
- HWS — HEATING WATER SUPPLY
- HWR — HEATING WATER RETURN
- RS — REFRIGERANT SUPPLY
- RR — REFRIGERANT RETURN
- SUPPLY AIR DUCT (DOWN / UP)
- RETURN AIR DUCT (DOWN / UP)
- EXHAUST AIR DUCT (DOWN / UP)
- ROUND DUCT BREAK
- DUCT ACOUSTIC INSULATION
- SQUARE ELBOW WITH TURNING VANES
- ROUND ELBOW, r/W = 1.5
- ROUND DUCT UP
- ROUND DUCT DOWN
- FLOOR GRILLE
- BALANCING DAMPER
- SUPPLY AIR DIFFUSER / GRILLE
- RETURN GRILLE
- EXHAUST GRILLE
- CABINET EXHAUST FAN
- FIRE DAMPER IN VERTICAL DUCT
- FIRE DAMPER IN HORIZONTAL DUCT
- AIRFLOW DIRECTIONAL ARROW
- THERMOSTAT
- DETAIL DESIGNATION / DRAWING TO FIND DETAIL (e.g. 3 / M10)
- EQUIPMENT IDENTIFIER – REFER TO EQUIPMENT SCHEDULES FOR NEW EQUIPMENT. (#)
- GRILLE TYPE – REFER TO EQUIPMENT SCHEDULES.
- INLET SIZE
- AIRFLOW (CFM)
- INV. ___'-___" — PIPE INVERT RELATIVE TO REFERENCE FLOOR ELEVATION

REGIONAL DISTRICT CENTRAL KOOTENAY

CONSULTANT:

ROCKY POINT ENGINEERING LTD.
VANCOUVER • LANGLEY • VICTORIA • NANAIMO • KELOWNA • KAMLOOPS • NELSON
NELSON OFFICE:
2-373 BAKER STREET
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WWW.RPENG.CA
TEL: (250) 352-7933

NDCC RTU REPLACEMENT

305 Hall St, Nelson BC

ISSUE	DATE	DESCRIPTION
4	2025.03.21	REISSUED FOR TENDER
3	2025.03.12	UPDATED EXISTING MECHANICAL
2	2025.01.28	ISSUED FOR TENDER
1	2025.01.07	ISSUED FOR CLIENT REVIEW

SEAL:

PERMIT TO PRACTICE #1000700

PROJECT #: 24675

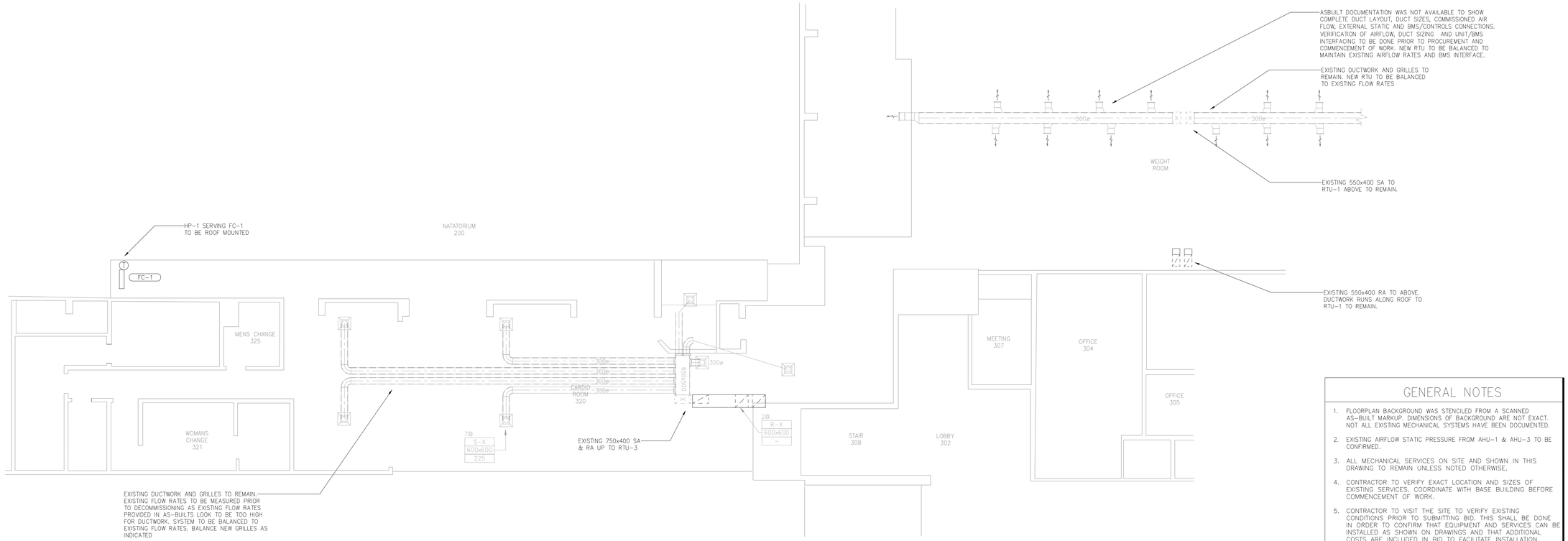
DRAWN BY: JRM

CHK'D BY: JRM

COVER PAGE

M0

SCALE: AS NOTED



1 M1.1 ROOF PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. FLOORPLAN BACKGROUND WAS STENCILED FROM A SCANNED AS-BUILT MARKUP. DIMENSIONS OF BACKGROUND ARE NOT EXACT. NOT ALL EXISTING MECHANICAL SYSTEMS HAVE BEEN DOCUMENTED.
2. EXISTING AIRFLOW STATIC PRESSURE FROM AHU-1 & AHU-3 TO BE CONFIRMED.
3. ALL MECHANICAL SERVICES ON SITE AND SHOWN IN THIS DRAWING TO REMAIN UNLESS NOTED OTHERWISE.
4. CONTRACTOR TO VERIFY EXACT LOCATION AND SIZES OF EXISTING SERVICES. COORDINATE WITH BASE BUILDING BEFORE COMMENCEMENT OF WORK.
5. CONTRACTOR TO VISIT THE SITE TO VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BID. THIS SHALL BE DONE IN ORDER TO CONFIRM THAT EQUIPMENT AND SERVICES CAN BE INSTALLED AS SHOWN ON DRAWINGS AND THAT ADDITIONAL COSTS ARE INCLUDED IN BID TO FACILITATE INSTALLATION. NOTIFY THE ENGINEERS OF ANY DISCREPANCIES, OMISSIONS, AND INTERFERENCES.
6. ENSURE THAT ALL NEW AND EXISTING MECHANICAL EQUIPMENT REQUIRING MAINTENANCE IS ACCESSIBLE AND THAT ACCESS REQUIREMENTS ARE NOT OBSTRUCTED BY NEW OR EXISTING SERVICES AND STRUCTURE – COORDINATE WITH PROJECT MANAGER AND ALL OTHER TRADES. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED TO PROVIDE ALL ACCESS REQUIREMENTS – REFER TO SHOP DRAWINGS AND/OR MANUFACTURER'S RECOMMENDATIONS FOR ACCESS REQUIREMENTS. REPORT ANY OBSTRUCTIONS TO THE PROJECT MANAGER AND MECHANICAL ENGINEER. PROVIDE ACCESS DOORS/PANELS TO MATCH BASE BUILDING STANDARD AS REQUIRED.
7. EXITING DUCT LAYOUT TO STAY AS IS IN OCCUPIED SPACE AS SHOWN. CONTRACTOR IS TO COORDINATE DUCT TRANSITIONS AND RECONNECTION AND ALL NECESSARY FITTINGS TO ACCOMMODATE SITE CONDITIONS. ALL DUCTS TO COME C/W SUPPORTS AND NECESSARY HARDWARE TO COMPLETE INSTALLATION.
8. PROVIDE SEISMIC RESTRAINTS WHERE REQUIRED BY LOCAL CODE REQUIREMENTS. OBTAIN THE SERVICES OF A SEISMIC RESTRAINT ENGINEER AND COMPLY WITH ALL REQUIREMENTS IN THEIR REPORT. SUBMIT A COPY OF THE REPORT TO MECHANICAL AND ELECTRICAL CONSULTANT AND INCLUDE IN MAINTENANCE MANUAL.
9. COORDINATE WITH CLIENT, ARCHITECTURAL AND GENERAL TRADES FOR ALL CUTTING AND CORING ACTIVITIES. PRIOR TO CUTTING AND CORING, SCAN FOR EXISTING SERVICES AND NOTIFY CONSULTANT OF ANY OBSTRUCTION.
10. PROVIDE THE SERVICES OF A QUALIFIED BALANCING CONTRACTOR TO PROVIDE TESTING, ADJUSTMENT, AND BALANCING OF NEW SUPPLY & EXHAUST OUTLETS.
11. COORDINATE ALL FINAL EQUIPMENT LOCATIONS WITH BUILDING OWNER ON SITE.
12. REPLACEMENT RTUs AND SENSORS TO BE CONNECTED TO EXISTING BMS SYSTEM
13. VERIFY EXISTING GAS SUPPLY PRESSURE AND PROVIDE A PRV IS REQUIRED.

WEIGHT ROOM RTU-1 NOTES

1. AS-BUILTS DO NOT SHOW UNIT DESIGN AIRFLOW RATES
2. COMMISSIONING PROVIDED BY TRAINOR MECHANICAL SHOW UNIT DESIGNED TO 1694 L/S AND COMMISSIONED TO 1667 L/S.
3. EXISTING SUPPLY DUCTWORK IS ADEQUATELY SIZED
4. BALANCE NEW UNIT TO EXISTING AIRFLOW RATES.
6. EXISTING UNIT 48TFE008-M-121RG – 7.5 TON W/144,000 BTUH GAS OUTPUT. 870-893 LBS

CARDIO ROOM RTU-3 NOTES

1. AS-BUILTS SHOW UNIT DESIGN AIRFLOW AT 1785 L/S (7x255 L/S)
2. COMMISSIONING PROVIDED BY TRAINOR MECHANICAL SHOW UNIT DESIGNED TO 1680 L/S AND COMMISSIONED TO 1584L/S.
3. SUPPLY DUCTWORK IS UNDERSIZED LEADING TO UNDER-PERFORMANCE.
4. PROVIDE NEW DUCT MAIN AS SHOWN.
5. TIE EXISTING DUCTWORK INTO NEW.
6. EXISTING UNIT 48TFE008-M-121RG – 7.5 TON W/144,000 BTUH GAS OUTPUT 870-893 LBS

EXISTING RTU-3 TO BE REPLACED. EXISTING DUCTWORK TO BE MAINTAINED. PROVIDE NEW ROOF CURB, GAS AND ELECTRICAL CONNECTIONS. TYPICAL FOR RTU-1 SERVING WEIGHT ROOM

2 M1.1 EXISTING RTU-3 – CARDIO ROOM
SCALE: N.T.S.

ROOFTOP UNIT SCHEDULE

UNIT No.	MANUFACTURER	MODEL No.	AIR		HEATING GAS			HEATING HP		COOLING				ELECTRICAL			WEIGHT (LBS)	REMARKS
			AIR FLOW (cfm)	EXT. STATIC PRESS. (in. H2O)	INPUT CAPACITY (MBH)	OUTPUT CAPACITY (MBH)	EFFICIENCY (%)	OUTPUT CAPACITY (MBH)	COP@47F /COP@17F	TOTAL COOLING CAPACITY (MBH)	SENSIBLE COOLING CAPACITY (MBH)	COOLING MEDIUM	EER/IEER RATING	FAN MOTOR SIZE (HP)	MCA	V/Ph/Hz		
RTU-1	TRANE	DHK102A3SAH	3590	0.5	200	162.0	81	97.18	3.7/2.25	108.86	84.67	R-454B	11.9/ 16.8	3	56	208-230 /60/3	1184	1,2,3,4,5,6,7,8
RTU-3	TRANE	DHK102A3SAH	3340	0.5	200	162.0	81	97.18	3.7/2.25	108.86	84.67	R-454B	11.9/ 16.8	3	56	208-230 /60/3	1184	1,2,3,4,5,6,8

REMARKS:
1. ECONOMIZER
2. VIBRATION ISOLATORS
3. MERV 13 FILTERS
4. TO FIT EXISTING ROOF CURB W/ CURB ADAPTER
5. DOWN DISCHARGE
6. C/W BMS CAPABILITY TO CONNECT AND INTEGRATE TO EXISTING SYSTEM
7. SIDE/DOWN DISCHARGE
8. HIGH EFFICIENCY

INDOOR MINI-SPLIT HEAT PUMP UNIT SCHEDULE

TAG No.	DESCRIPTION	MANUFACTURER	MODEL NO.	SUPPLY AIR		REFRIGERANT	NOMINAL COOLING (MBH)	NOMINAL HEATING (MBH)	ELECTRICAL (V/Ph/Hz)	POWER (WATTS)	REMARKS
				FLOW (cfm) (SPEED H/M/L/Q)	EXT. PRESS. DROP ("w.c.)						
FC-1	WALL MOUNT DUCTLESS HEAT PUMP	SAMSUNG	AR12CSDABWKNCV	250/321/374/427	N/A	R-410A	12	12	208-230/1/60	27	1,2

REMARKS:
1. 24VAC THERMOSTAT ADAPTOR
2. SUPPLY AND INSTALL 7-DAY PROGRAMMABLE HEAT/COOL THERMOSTAT
3. ELECTRIC HEATERS IN THE SAME ROOM TO BE CONTROLLED BY THE SAME THERMOSTAT AS THE HEAT PUMP. ELECTRIC HEATER, LINE VOLTAGE WIRING, AND RELAY TO BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THERMOSTAT AND LOW VOLTAGE WIRING BY MECHANICAL. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR
4. HARD WIRED THERMOSTAT C/W VANDAL PROOF ENCLOSURE.

OUTDOOR MINI-SPLIT HEAT PUMP UNIT SCHEDULE

TAG No.	INDOOR UNIT	DESCRIPTION	MANUFACTURER	MODEL NO.	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	COOLING SEER2/EER2	HEATING COP/HSPF2	REFRIGERANT	ELECTRICAL (V/Ph/Hz)	MCA	REMARKS
HP-1	FC-1	HEAT PUMP CONDENSING UNIT	SAMSUNG	AR12CSDABWKXCV	12	12	23/13.5	10.5	R-410A	208-230/1/60	20	1,2,3

REMARKS:
1. ROOF MOUNTED UNITS TO BE INSTALLED 24" ABOVE FINISHED ROOF LEVEL MOUNTED ON METAL RACKS METAL RACK TO BE SUPPLIED AND INSTALLED BY MECH CONTRACTOR AND COORDINATED WITH ROOFING SYSTEM FOR MOUNTING
2. DISCONNECT SWITCH
3. SINGLE ZONE HEAT PUMP
4. MULTI-ZONE HEAT PUMP
5. HEATING OPERATION DOWN TO -4°F
6. HIGH HEATING CAPACITY DOWN TO -13°F
7. c/w WALL BRACKET FOR EXTERIOR WALL MOUNTING

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PERMIT TO PRACTICE #1000700

PROJECT #: 24675

DRAWN BY: JRM

CHK'D BY: JRM

MECHANICAL

M1.1

SCALE: AS NOTED

11 GENERAL INTENT AND REQUIREMENTS

.1 The Mechanical Specifications form part of the project requirements and shall be read in conjunction with all other contractual documents, drawings and specifications.

.2 The Contractor shall provide a complete, tested and fully operational Mechanical, heating, ventilation, air conditioning, plumbing, controls and fire suppression system installation. All installations shall be in accordance with all codes, contract documents and Client requirements. The Contractor shall be responsible for provision of all materials and labour to comprise a complete installation.

.3 All installations shall be in accordance with the manufacturer's installation instructions and requirements.

.4 The layouts and arrangements shown on the Mechanical drawings are approximate and may be diagrammatic. The Contractor shall provide all additional fittings, equipment, material, labour, etc. to comprise a complete installation.

.5 The Mechanical Drawings and Specifications are not detailed installation instructions, nor provide a method of construction.

.6 Refer to and follow manufacturer's reference and installation literature, supplemented by the contract documents.

.7 The Contractor shall be skilled and experienced in the Mechanical works relating to the project. Only licensed trades persons shall be retained to undertake the work. Where apprentices are utilized, work shall be under the direct supervision of an on-site licensed journeyman.

.8 Only new material shall be used of full weight and of first class quality, unless stated otherwise.

.9 Use the same brand or manufacturer for each specified application.

.10 All installations and materials shall be to the approval of the Engineer and Authority Having Jurisdiction. Rejected materials or installations shall be removed and replaced by the Contractor at no cost to the Client.

2 DEFINITIONS

.1 The following definitions shall apply to the Mechanical Drawings and Specifications:

.1 AHJ - Authority Having Jurisdiction

.2 Client - The Company or Individual representing the project End User.

.3 Contractor - The Company undertaking the Mechanical scope of work.

.4 Engineer - Rocky Point Engineering Ltd. and their Representatives

.5 Mechanical - Referring to the HVAC, Plumbing, Controls and/or Fire Suppression scope of work.

.6 LOA - Schedule Letters of Assurance

.7 RPR - Registered Professional of Record

.8 SRP - Supporting Registered Professional

3 GENERAL DESCRIPTION OF WORK

.1 The following is intended to provide a general description of the Mechanical works in order to assist in clarification of project requirements. This list is not comprehensive and is intended to be read in conjunction with the Mechanical Drawings, Mechanical Specifications and all other project related documents.

.2 HVAC

.1 Install and replace RTU-1 & RTU-3 as shown on HVAC Drawings

.2 Contractor to connect to existing ductwork

.3 Units to be balanced and commissioned to maintain current airflow rates or as indicated.

.4 RTU to connect to existing gas supply.

.5 Provide roof curbs to allow for reuse of existing roof penetrations.

.6 Connect to existing rooftop outdoor return air ductwork. Contractor to review condition of existing ductwork for suitability of reuse. If ducting and insulation is in poor condition, ductwork to be cut back, replaced with new and insulated to current ASHRAE requirements.

.3 Controls

.1 Contractor to connect new RTUs to existing BMS system and provide all necessary elements including sensors, wiring and controls to facilitate interfacing.

4 REGULATIONS

.1 All materials, equipment and installations are to comply with applicable codes, regulations, bylaws and the AHJ requirements, including but not limited to:

.1 British Columbia Building Code

.2 City or District Bylaws

.3 ANSI

.4 ASHRAE

.5 ASME

.6 ASPE

.7 AWWA

.8 British Columbia Boiler and Pressure Vessel Act

.9 British Columbia and Canadian Gas Code

.10 British Columbia Plumbing Code

.11 British Columbia and Canadian Refrigeration Code

.12 Canadian Electrical Code

.13 Canadian Environmental Protection Act

.14 CSA Standards

.15 Fall Protection Requirements

.16 Fire Marshall

.17 Insurers Assurance Organization (IAO)

.18 National Fire Protection Agency (NFPA)

.19 SMACNA

.20 ULC Standards

.21 WHMIS

.22 WorkSafeBC

5 PERMITS, FEES AND INSPECTIONS

.1 The Contractor shall pay for and obtain all necessary permits and inspections in order to undertake the installations. All cost shall be included in the Contractor's project pricing/tender values.

.2 The Contractor shall provide the Engineer with proof of all obtained permits, certificates and inspections as requested.

6 CONTRACTOR QUERIES

.1 Should there be a conflict between the Drawings, Specifications or contract documents, the Contractor shall advise the Engineer in writing to seek clarification during the pricing/tendering stage of the project. Should clarification not be provided, the Contractor shall allow for the higher quality or greater extent of work in their scope.

.2 All queries shall be submitted in accordance with the Contract requirements.

.3 Ensure queries are submitted to the Engineer within 7 working days prior to the pricing/tender close to allow for response to all required parties. Should a response be deemed required, it will be made via addenda as per the project requirements.

.4 Should no queries be made, materials and installations shall be governed by the reasonable interpretation of the Engineer.

7 PRICING/TENDERING

.1 Prior to submitting their pricing/tender bid, the Contractor shall visit the site and make themselves thoroughly aware of all aspects relating to the work. Requested changes to contract scope, contract cost or contract time due to failure in reviewing the site conditions will not be considered.

.2 Pricing/tenders are to be based on the equipment specified. Base bid refers to items specified by manufacturer and model number which meets the specifications in all respects regarding performance, quality of material and workmanship and is deemed acceptable to the Engineer without qualification. Base bid equipment and materials are as listed on the Mechanical Drawings and in the Mechanical Specifications.

.3 Refer to the "Alternate Equipment" section of these specifications for further information.

.4 Request for review from manufacturers of equipment and materials not included on the "Alternate Equipment" list shall be made a minimum 7 working days prior to close of tender/pricing. All information required by the Engineer to evaluate the proposed manufacturer shall be provided at the time of request.

.5 Separate prices/scope of work, unless stated otherwise, shall be included in the base/tender price. However, the cost and schedule values shall be identified separately for review by the Engineer.

8 SCHEDULE

.1 The Contractor shall undertake all works in accordance with the project schedule and in coordination with the General Contractor.

.2 Allow for all phasing of work as required and directed.

.3 Allow for all out of hours or premium labour to complete work in accordance with the project schedule.

9 WARRANTY, GUARANTEE, QUALITY ASSURANCE AND LIABILITY

.1 The Contractor shall assume full responsibility for layout of the Mechanical work and for any damage caused by improper location or performance of work.

.2 Protect work and building surfaces from damage due to the Contractor's performance of the work. Pay particular attention to protection of building vapour barriers and waterproof membranes.

.3 The Contractor shall cover floors and other finished surfaces to avoid damage.

.4 During periods of freezing or potential freezing, ensure all systems are protected and that mechanical openings in the building envelope are weather and temperature protected.

.5 Maintain the site in a clean and orderly condition at all times.

.6 At the completion of work remove tools, waste and surplus equipment/materials from the site.

.7 The Contractor shall provide a written guarantee warranting that equipment, materials and systems supplied as part of the project will be free of defects and in a servable condition in conjunction with the project requirements for a minimum 1 Year from the date of the project Substantial Completion, which shall include one complete summer and one complete winter of uninterrupted operations.

.8 During the warrantee period the Contractor shall promptly remedy all defects in equipment, materials, systems or installations to the satisfaction of the Client, Engineer and at no cost.

10 LIABILITY INSURANCE

.1 The Contractor shall maintain comprehensive Liability Insurance for an amount not less than $2,000,000. Insurance to include non-owned car insurance and contractual liability with cross liability clause. Coverage shall include loss or damage caused by the Contractor to the project, the building, work by other trades and to the Client's staff, equipment and personnel.

.2 Insurance deductible clause shall not be more than $1,000.

.3 Liability insurance shall be maintained in accordance with WorkSafeBC requirements.

.4 Cost of insurance coverage shall be included in the contract price.

.5 The Contractor shall provide proof of insurance to the Engineer if requested.

11 CONTRACT PRICE BREAKDOWN AND PROGRESS CLAIMS

.1 At the request of the Engineer and within 10 days of award of contract, provide a price breakdown of all values associated with the scope of work pricing/tender.

.2 Price breakdowns shall identify cost of material and labour separately.

.3 The sum of the cost breakdown shall be equal to the contract price.

.4 The Contractor shall provide for each Progress Claim an updated contract price breakdown indicating for each value the contract price, amount previously billed, amount completed to date and remaining amount to be completed.

.5 Cost breakdowns shall be provided for all changes in scope of work.

12 SHOP DRAWINGS

.1 Prior to ordering any equipment the Contractor shall Submit Shop drawings to the Engineer for review and acceptance.

.2 All shop drawings shall be submitted a maximum of 30 days after award of contract.

.3 Shop drawings shall include the name of the manufacturer, model number, performance/operating characteristics, electrical requirements, physical dimensions, available/selection options, weight and controls connection requirements. Applicable heating output, cooling output, flow rates, pressure losses, power requirements, etc. to be identified.

.4 Submit weights of all major equipment for review such that the loads can be reviewed by the appropriate Consultant.

.5 Submit lists of all electrical motors and power requirements to the Electrical Trade and through the specified shop drawing process for review by the Electrical Consultant.

.6 Clearly mark shop drawing submittals with arrows, underlining or circling to show differences between specified and selected ratings. Cross out nonapplicable material.

.7 Unless stated otherwise, all performance data is to be of net values and are to be external of any internal losses or gains of the equipment.

.8 All shop drawings shall be in the same units as the project designs.

.9 The Contractor shall review all shop drawings prior to submittal to the Engineer. The Contractor shall stamp, sign and date all shop drawings as reviewed prior to submittal. The Contractor's stamp shall be their certification that shop drawings are accurate, in conformance with the project requirements and have been coordinated with site requirements. Shop drawings not stamped as reviewed will be rejected and returned to the Contractor without being reviewed by the Engineer.

.10 Submit shop drawings in accordance with Engineers and Geoscientists of British Columbia (EGBC) Professional Practice Guidelines and in accordance with the Mechanical Contractors Association of British Columbia (MCABC).

.11 The Contractor shall submit drawing to the General Contractor/Project Manager who shall then forward to the project Architect once reviewed. Thereon the Architect will forward shop drawings to the Engineer. Once reviewed, shop drawings will be returned from the Engineer to the Architect who shall forward to the General Contractor/Project Manager and thereon the Contractor.

.12 Review of shop drawings by the Engineer shall be understood to reflect the general project requirements and does not relieve the Contractor of fulfilling their contractual/project requirements.

.13 The Contractor shall be responsible for errors or omissions in the shop drawings and for meeting all requirements of the Contract Documents.

.14 The Contractor shall be responsible for confirming and correlating system/equipment dimensions.

.15 Submit shop drawings in electronic PDF format.

.16 Should shop drawings be submitted in hard copy format, the Contractor shall ensure a suitable quantity of shop drawings are provided. Allow for one copy to be retained by the Engineer, Architect and General Contractor/Project manager, in addition to requirements of the project Operating and Maintenance Manuals.

.17 All equipment shall comply with the project and contract requirements regardless of having been reviewed.

.18 Refer to the "Alternate Equipment" schedule for a list of required shop drawings.

.19 If shop drawings of Alternate Equipment are rejected 3 times for technical reasons, the Contractor shall provide products as specified with no additional cost or impact to the project schedule. Costs for time incurred during the abortive shop drawings review process will be for the Contractor's account.

.20 The Engineer shall not be responsible for determining product quantities or handling.

.21 The Contractor shall furnish samples of products or materials for the Engineer's review as requested.

.22 Equipment manufacturers shall ensure that the strength and anchorage of the internal components of the equipment exceeds the force level used to restrain and anchor the equipment itself to the supporting structure.

.23 Where required and requested, the Contractor shall submit Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) for products used on site.

13 ALTERNATE EQUIPMENT

.1 All Contractor proposed equipment or materials shall be similar and equal in all respects to that specified.

.2 The Contractor shall identify the cost and schedule differences for all proposed alternate equipment and materials for review and acceptance by the Engineer and Client prior to proceeding. List all and any revisions required to facilitate the alternate equipment and/or material.

.3 All alternate equipment and materials shall not exceed space limitations. Replace all which does not meet the project documents or space limitations at no cost.

.4 The Contractor shall assume all cost associated with redesign requirements of alternate proposed equipment or materials.

14 SEISMIC RESTRAINT REQUIREMENTS

.1 Seismic restraint shall be provided for all mechanical systems and equipment forming part of the work. Work pertains to Mechanical, HVAC, Plumbing, Controls and Fire Protection systems.

.2 Seismic restraint measures shall be in accordance with SMACNA Guidelines for Seismic Restraints, NFPA, the British Columbia Building Code and the AHJ.

.3 The Contractor shall retain the services of a British Columbia registered Professional Engineer who shall design the project specific restraint measures and provide Schedule Letters of Assurance for such.

.4 The Seismic Engineer shall act as a Supporting Registered Professional (SRP) providing documentation to the Engineer, acting as the Registered Professional of Record (RPR).

.5 The Seismic Engineer (SRP) shall carry liability insurance not less than $1,000,000 and shall provide proof of coverage to the Engineer (RPR) upon request.

.6 The Contractor shall install seismic restraint measures in accordance with the Seismic Engineer's requirements.

.7 Seismic restraint measures shall not compromise vibration isolation of motor driven equipment.

.8 Prior to construction commencement, the Contractor shall organize a meeting with the General Contractor, Mechanical Contractor, Structural Consultant and oether appropriate parties. At that meeting the Contractor shall present in general the approaches/details used to provide seismic bracing for equipment, ductwork and piping, highlighting attachments to structure and trade coordination.

15 COORDINATION AND EXAMINATION

.1 The Contractor shall be responsible for examination of all applicable site conditions.

.2 Coordinate installation with the General Contractor and all other trades to avoid conflicts. Do not proceed with installations until complete coordination has been made with all trades.

.3 Field verify all building and site dimensions prior to any fabrication and installation of equipment or materials. No additional charge shall be entertained for failure to verify these dimensions on site.

.4 Improperly coordinated installations shall be removed and reinstalled to the satisfaction of the Engineer, regardless of installation order.

.5 The Contractor shall closely coordinate installations with all other trades to ensure that suitable access clearances and pipe/equipment slopes are maintained.

.6 Report to the Engineer any conditions which may prevent the installation of equipment or systems in the manner intended.

.7 Alter location and routing of mechanical systems at the direction of the Engineer at no cost to the Engineer or Client, provided the revision is made before installation and does not necessitate additional materials.

16 RESPONSIBILITIES, LAYOUT OF WORK AND STORAGE

.1 The Contractor shall be responsible for layout for their work.

.2 Prior to installations, the Contractor shall examine all associated existing conditions.

.3 Protect all material and equipment from damage during delivery, while temporarily stored on site and prior to final turn over to the Client.

.4 Keep all material and equipment within factory provided covers until time of installation.

.5 Do not assume that the Client will provide storage space on site for materials.

.6 Route mechanical systems in an orderly manner and as indicated on the drawings. Generally follow routes parallel and perpendicular to the building structure.

.7 Where services are intended to be run within open web structural joists, the Contractor shall obtain shop drawings for the structural members and layout their work according to the building structure.

17 EXISTING SYSTEMS AND SERVICES

.1 Maintain existing services throughout the course of construction, unless indicated otherwise.

.2 The Contractor shall notify the Engineer in writing should any existing systems, equipment or installation be found to be non-operational, defective, dangerous or deemed to impede the project requirements.

.3 The Contractor shall notify the Engineer in writing should any existing system be found deviating from those shown on the Drawings and Specifications. The Contractor shall seek clarification from the Engineer prior to proceeding further.

.4 Connect into existing systems with minimum disruption to the existing systems.

.5 Include premium time for connection to existing systems so that normal use of the existing systems will not be affected.

.6 Before interrupting any services, complete all preparatory work as far as reasonably possible and have all necessary materials on site and prefabricated (where practical) and work continuously to keep the length of interruption to a minimum.

18 DEMOLITION

.1 The Contractor shall coordinate all required demolition work with the General Contractor and other trades.

.2 Materials or equipment intended for reuse shall be carefully removed and stored in a dry, clean and safe area. Protect from damage.

.3 All equipment and materials being removed shall be disposed of in a suitable manner off site. Equipment and materials shall be recycled as far as possible.

.4 Should the Client request to retain any equipment or materials, the Contractor shall coordinate and obtain a receipt for such.

.5 Systems or equipment requiring to be drained or purged, such as air conditioning refrigerant or fire suppression systems, shall be done so by a specialist in the field.

.6 All thermostats, temperature sensors, pressure sensors, control devices, etc. within the project area shall be carefully wrapped in poly sheet to protect from dust and dirt ingress during the construction process. Place thermostats and space temperature sensors coiled in plastic wrapping temporarily suspended adjacent to the associated equipment. Do not disconnect thermostats or temperature sensors unless required to undertake the works.

.7 Ductwork, diffuser, grille and register openings within the project area shall be wrapped in poly sheet to protect from dust and dirt ingress during the construction process.

.8 If ductwork or return air openings cannot be covered or wrapped, provide with temporary filter media during the construction process. Replace filter media if it becomes dirty.

.9 All equipment and systems within the project area shall be protected from damage or ingress of dirt and debris by suitable means of protection.

.10 All ductwork or branch takeoffs that become redundant shall be capped and sealed.

.11 Remove and reclaim refrigerant from demolished equipment in accordance with Refrigerant Management Canada guidelines and governing codes and regulations. Do not vent refrigerant to atmosphere. Dispose of reclaimed refrigerant by engaging the services of a licensed firm specializing in recycling of reclaimed refrigerant. If requested, provide documentation indicating refrigerant has been suitably removed, recycled and/or disposed of.

19 SYSTEM SHUT DOWNS AND CONNECTIONS

.1 The Contractor shall coordinate with the Client any service shut downs or service interruptions during the construction works. Time and duration of all shut downs shall be agreed with the Client.

.2 All connections shall be made to minimize impacts or disruption to existing systems.

.3 The Contractor shall be liable for any damages caused to the existing systems by the shutdown work.

.4 The Contractor shall include in their pricing any associated regular or premium costs associated with shut down work.

.5 If existing isolation valves are not available to isolate sections of piping to be removed or modified, provide such valves as part of the connection and/or shut down work.

20 SITE UTILITY SERVICES

.1 The Contractor shall coordinate with the Client any service shut downs or service interruptions to the site utility services during the construction works. Time and duration of all shut downs shall be agreed with the Client.

.2 The Contractor shall contact and coordinate all works with the utility providers as required.

21 TEMPORARY FACILITIES AND SERVICES

.1 The Contractor shall provide any necessary temporary facilities such as buildings, workshops, storage areas, washrooms, layout areas, etc. to undertake the work.

.2 Location of temporary facilities shall be coordinated with the General Contractor and Client. Do not assume that the Client will provide space on site.

.3 The Contractor shall provide temporary heating services as required throughout the project to facilitate the construction process. Coordinate with the General Contractor.

.4 Temporarily disconnect, remove and lift equipment and/or services as required to facilitate roofing work. Reinstall after working roof is complete.

22 TEMPORARY USE OF EQUIPMENT AND SYSTEMS

.1 Temporary use of permanent systems or equipment during construction shall not be permitted unless prior approved in writing by the Engineer and Client.

.2 Equipment or systems used during construction is to be thoroughly cleaned and overhauled as required and prior to Substantial Completion. Replace worn or damaged parts so equipment is in perfect condition to the satisfaction of the Engineer and Client.

.3 Temporary use of equipment and/or systems shall not impact or be deemed as project Substantial Completion, nor impact the Contractor's warranty/guarantee.

23 HOISTING AND SCAFFOLDING

.1 The Contractor shall be responsible to provide all hoisting, scaffolding, lifts, ladders, etc. required to undertake the Mechanical installations.

.2 All works to be in accordance with WorkSafeBC requirements.

.3 Coordinate all works with the General Contractor.

24 ELECTRICAL COORDINATION AND REQUIREMENTS

.1 The Contractor shall be responsible for liaising with the Electrical Trade for provision of electrical connections to serve the mechanical equipment. Coordination to be completed prior to shop drawing submittals, ordering of equipment and installations.

.2 The Contractor shall be responsible for supply of motors with proper voltage characteristics to suit the electrical distribution systems and of suitable construction, such as dust proof, explosion proof, etc. as required to suit operating conditions. Motors shall be designed for continuous services and to limit temperature rise to 104F (40C) for open housing and 122F (50C) for closed housing installations. Motors shall operate at 1200 or 1800 RPM unless specified otherwise. Motors shall have ball or roller type bearings with grease lubrication fittings. Motors greater than 20 hp (15 kW) shall have capacitor and thermistor over heat protection. Belt driven devices shall have motors mounted on adjustable bases to ensure proper belt tensioning can be achieved. Do not use air over motor ratings.

.3 The Contractor shall be responsible for coordinating provision of power to the controls system.

.4 All electrical equipment supplied by the Contractor shall bear a CSA or ULC label. Obtain special inspection labels required by the Provincial Authority or AHJ for equipment that does not have an appropriate label. All shall be in accordance with the Canadian Electrical Code and to the approval of the Provincial Electrical Inspector and AHJ.

.5 The Electrical Trade shall provide all power wiring, connections and other electrical items required for operation of the mechanical systems, except for factory installed wiring, controls and equipment on packaged units provided by the Contractor.

.6 The Electrical Trade shall provide and install motor starters for electric motors, except where equipment is furnished with factory installed integral starters.

.7 All motors shall conform to Electrical Equipment Manufacturers Association of Canada (EEMAC) Standard MG11, Institute of Electrical and Electronic Engineers (IEEE) Standards and applicable CSA C22.2 Standards.

.8 Motors shall meet NEMA standards for the application and have associated maximum sound ratings under full load conditions.

.9 Minimum motor efficiencies shall meet the requirements of CAN/CSA C747, CAN/CSA C390, IEE 112B and ASHRAE Energy Standard 90.1.

25 CUTTING AND PATCHING

.1 Unless noted otherwise, the Contractor shall be responsible for all cutting and patching to facilitate the project requirements. Coordinate all works with the General Contractor.

.2 Include for all cutting and patching work to facilitate the installations, including that for beams, walls, floor slabs and masonry work necessary for hangers, brackets and sleeves.

.3 The Contractor shall review with the project Structural Engineer locations and sizes of all roof and wall openings to accommodate the mechanical services.

.4 Relocate improperly located holes, sleeves, hangers, brackets, etc.

.5 Cutting and patching work shall include, but not be limited to:

.1 Identification of required openings for the mechanical services.

.2 X-ray or scanning (GPR, ultrasonic, pachometer, impact-echo, etc.), review of floors, slabs and/or structural members prior to cutting. All works to be undertaken by specialists in this field.

.3 Submit X-ray or scanning results to the project Structural Engineer for their review and approval prior to proceeding.

.4 Undertake the cutting works.

.6 Patch and make good all openings and holes to the satisfaction of the Engineer and Client.

26 PAINTING

.1 The Contractor shall coordinate all painting with the General Contractor.

.2 Clean all exposed bare metal surfaces on Mechanical systems clear of dirt, dust, grease, scale, etc. in order to facilitate painting.

.3 All exposed bare metal surfaces exposed to outdoor weather conditions shall be painted with a suitable weatherproof paint.

.4 All outdoor gas and propane piping to be painted with suitable weatherproof paint. Coordinate paint colour in conjunction with system identification.

.5 All marred factory finished equipment shall be repainted to match the original factory finish.

27 EQUIPMENT PROTECTION AND CLEAN-UP

.1 Provide temporary covers over ductwork, piping, diffusers, grilles, etc. during the course of construction to prevent ingress of dust, dirt and debris. Protect all from damage during construction.

.2 Any dirt, rubbish or grease on walls, floor, fixtures, etc. which are caused by the Contractor shall be removed and the premises left in a first-class condition in every respect.

.3 Clean all systems prior to testing and turn over to the Client.

.4 All ductwork to be clean from dust and debris. If in the Engineer's opinion the ductwork has not been maintained in a clean condition the Contractor shall retain the services of a certified duct cleaning company to thoroughly vacuum and clean all outdoor air, supply air, return air, exhaust air, transfer air, etc. ductwork.

.5 Protect bearings and shafts during the project construction. Grease shafts and sheaves to prevent corrosion. Provide extended nipples for lubrication purposes as required.

28 INDOOR AIR QUALITY

.1 In the interest of providing an acceptable level of indoor air qualify for the occupants, the air systems shall be used to flush out fumes that may be present from the building products, such as cabinets, carpets, paints, solvents, etc.

29 HAZARDOUS MATERIALS

.1 Cease operations and notify the General Contractor, Client and Engineer in writing should any materials be discovered which are suspected of being hazardous material containing, including but not limited to: asbestos, mould, lead paint, etc.

.2 Coordinate with the General Contractor any required special protective measures and/or disposal instructions when working with hazardous materials.

30 ENGINEER SITE REVIEWS

.1 The Contractor shall contact the Engineer to coordinate review of the constructed work throughout the project. The Engineer will conduct site reviews as deemed required and at their discretion.

.2 The Contractor shall notify the Engineer in writing a minimum of 3 working days prior to requested site review.

.3 Should the Engineer prepare a written field review report, the Contractor shall complete all outstanding works/deficiencies, initial field report items as being complete and return a copy to the Engineer for their records.

.4 All final deficiencies to be completed a maximum of 15 working days after the project Substantial Completion, unless agreed upon with the Engineer and Client.

31 DEMONSTRATION AND TESTING

.1 Test and demonstrate operation of all equipment and systems as requested or required by the Engineer, Client and/or AHJ. The Contractor shall coordinate all requirements with their subtrades as required.

.2 All testing and demonstration procedures and durations shall be in accordance with applicable standards. Where multiple standards exist, apply the more stringent measures.

.3 The following systems shall be demonstrated in regards to performance and safety features, to the fullest degree:

.1 Air Handling Systems (supply, return, exhaust, etc)

.2 Heating Systems

.3 Cooling Systems

.4 Do not pressure test mechanical equipment.

.5 The Contractor shall consider all necessary precautions in protecting existing systems and arrangements prior to undertaking testing works.

.6 If test procedures are not provided by standard or the AHJ, the Contractor shall seek clarification with the Engineer prior to proceeding.

.7 The Contractor shall provide a minimum 3 working day's notice to the Engineer and AHJ prior to demonstration of any required systems.

.8 Upon completion of installations, the Contractor shall satisfactorily demonstrate all system operations and maintenance to the Client and/or their representative. The Contractor shall record the date of the demonstration and those in attendance. This written record to be included in the project close out documentation.

.9 The following minimum pipe testing shall be performed:

.1 Natural gas and propane:150psig (1030 kPa) hydraulic test for 8 hours

.10 The Contractor shall arrange for a third party to witness pressure tests. A written copy of the pressure test results with date and signature of the Contractor, along with the third party acknowledgement, shall be included with the project close out documentation.

32 START-UP, COMMISSIONING AND PERFORMANCE VERIFICATION

.1 The Contractor shall include for system Commissioning and Performance Verification by a licensed trade experienced in the scope of work.

.2 Prior to commissioning, and under the supervision of the equipment/system manufacturers' representative, start-up equipment/systems, make required adjustments, document procedures and leave equipment/systems in proper operating condition.

.3 All equipment shall be commissioning in accordance with:

.1 ASHRAE Standard 202 - Commissioning Process for Buildings and Systems

.2 ASHRAE Guideline 1.1 - HVAC&R Technical Requirements for the Commissioning Process

.3 ASHRAE Guideline 1.5 - The Commissioning Process for Smoke Control Systems

.4 CSA Z320 - Building Commissioning

.5 Equipment manufacturer's requirements.

.4 Complete equipment commissioning verifications forms as provided by the manufacturer or the commissioning agent. Include forms as part of the Operating and Maintenance Manuals.

.5 All controls components and equipment shall be commissioned, tested, calibrated and adjusted to place the systems into automatic operation, subject to the approval of the Engineer and Client.

.6 Commissioning shall include all end to end checks for all control points, verifying their proper operation. End to end checks are defined as visual confirmation that an input or output signal from the controls system results in correct operation of physical system components, not assumed operation as implied by output status indicated on system interface screens or graphics. Produce documents indicating date and results of all end to end checks, including calibration factors entered.

.7 Undertake commissioning of systems in coordination and in conjunction with air and water balancing.

.8 Installed equipment or systems whose performance is questioned by the Engineer may be subject to performance verifications.

.9 Where requested by the Engineer, equipment or systems shall be tested by the Contractor to determine compliance with the specified performance requirements. Where requested the Engineer, testing shall be undertaken by an independent third party engaged by the Contractor.

.1 Promptly provide all performance verification results to the Engineer.

.2 Should the performance verification results indicate the equipment or systems comply, costs for performance verification will be carried by the Client.

.3 Should the performance verification results indicate the equipment or systems do not meet the performance requirements, the Contractor shall:

.1 Remove and replace the associated equipment and/or systems with that meeting the specified performance requirements.

.2 Undertake further performance verification of replacement equipment and/or systems. Repeat until performance requirements are met.

.3 Carry all costs of performance verification and replacement of equipment and systems

33 AIR AND WATER BALANCING

.1 The Contractor shall include for system Balancing by a licensed trade experienced in the scope of work.

.2 Systems installations shall be complete and operational prior to completing the balancing work, unless specified otherwise.

.3 Balance systems within -5% or +10% of design values, except in air related life safety system which shall have a range of 0% to +5%, or as required otherwise by code or standard.

.4 New filters are to be installed by the Contractor prior to undertaking balancing work.

.5 Replace fan/motor pulley/sheaves as required to facilitate the balancing work and to achieve the required system performance.

.6 Upon completion of the balancing work, the Contractor shall provide a balancing report summarizing the final setpoints and arrangements. The report shall be stamped and signed by a British Columbia registered Professional Engineer or Certified Technician.

.7 The balancing report shall include a schematic diagram of the system showing all equipment, outlets, valves, etc. being balanced.

.8 Balancing report to include any notable observations, deficiencies or excessive noise issues.

.9 Balancing reports shall be submitted within 10 working days of the project Substantial Completion.

.10 Upon review of the balancing report the Engineer may request up to 10% of the terminal devices and equipment be retested at no additional cost to the Client.

.11 Balancing shall be undertaken in accordance with the National Standards for a Total System Balance published by the Associated Air Balance Council, or the Procedural Standards for Testing, Adjusting & Balancing of Environmental Systems published by the National Environmental Balancing Bureau.

.12 The following information shall be included as part of the balancing report:

.13 Air Handling Units

.1 Equipment manufacturer, model and serial number

.2 Required Supply air flow and actual air flow

.3 Required Return air flow and actual air flow

.4 Required Outdoor air flow and actual air flow at minimum outdoor air damper position

.5 Suction pressure, discharge pressure and total pressure across each fan

.6 Motor horsepower rating, voltage, listed current and running current for each fan motor

.7 Fan and motor sheave size at each fan

.8 Coil required and actual water flow rates

.9 Coil inlet and discharge air pressures

.10 Coil water pressure drop

34 RECORD & AS-BUILT DRAWINGS

.1 The Contractor shall retain one legible set of Mechanical drawings on site for the purposes of recording as-constructed conditions. Update the As-Built drawings on a daily basis, including revisions made by means of addenda, site instruction, change orders, or otherwise.

.2 As-Built drawings shall include, but are not limited to:

.1 Size, location, arrangement, route and extent of ductwork, piping, conduit, terminal units, equipment, fixtures, cleanouts, valves, rough-in, etc above and below grade inside the building, including locations of buried pipng.

.2 Inverts and dimensional location for all buried systems and services. Inverts shall be included at all cleanouts, manholes and changes in direction.

.3 Location, tagging and numbering of all valves, except individual plumbing fixtures or equipment isolation valves.

.3 Maintain As-Built drawing on site for review by the Engineer or Client.

.4 Upon completing the installations, the Contractor shall forward As-Built drawings to the Engineer for creation of Record Drawings. Drawings shall include all mechanical systems, equipment and devices including fire dampers, valves and valve tags, cleanouts, access doors and actual room names.

.5 The Engineer will return the Record Drawings to the Contractor, who shall verify their correctness, stamp as reviewed and sign.

.6 The Contractor shall print 3 hard copy sets of Record Drawings and include with an electronic PDF copy of the Drawings when submitting Operating and Maintenance Manuals to the Client.

.7 Under no circumstances will the Engineer's AutoCAD files used to prepare permit, tender or construction drawings. The AutoCAD files will not be provided to any other third party.

35 OPERATING AND MAINTENANCE MANUALS

.1 The Contractor shall be responsible for preparation of Operating and Maintenance Manuals for the Client's use.

.2 Submit a draft copy of the Manuals to the Engineer for review and comment.

.3 Unless stated otherwise, Operating and Maintenance Manuals shall be within a 3 "D" ring hard binder with the following tabbed sections:

.1 Name of the Project, Client, General Contractor, Contractor, Architect, Engineer and Agency preparing the Operating and Maintenance Manuals.

.2 Name and contact information for Manufacturers, Trades and Equipment Suppliers.

.3 Description of the Mechanical systems including components and sequence of operations.

.4 List of the Mechanical Drawings.

.5 A copy of all shop drawings, including review comments.

.6 Copy of all test and inspection reports.

.7 All project related warranty and guarantee letters.

.8 Operating and maintenance instructions including maintenance procedures, lubrication requirements, preventative maintenance procedures, lubrication schedule and belt schedule.

.9 Valve tag list noting service, location and size.

.10 Commissioning reports.

.11 Balancing reports.

.12 Record Drawings.

36 PROJECT AND SUBSTANTIAL COMPLETION

.1 The Contractor shall provide the following documentation to the Engineer as part of the project and prior to the project being deemed complete. Documents indicated with and asterisk "*" are required to be received by the Engineer prior to their issuance of the Mechanical Schedule C-B Letter of Assurance.

.2 The Contractor shall be responsible for assembling all documentation from their subtrades as required to fulfill the project requirements.

.3 General

.1 * Written certification by the Contractor that all installations are complete, functioning, operational and in compliance with the contract documents.

.2 Demonstration to the Client on system operations and maintenance.

.3 Provision of a list containing all outstanding or deficiency items which are required to be completed. Should the Engineer deem the list to be excessive, the project will not be deemed substantially complete.

.4 * Operating and Maintenance Manuals

.5 * Equipment/System commissioning reports

.6 * Fire stopping letter of completion

.7 Air and water balance reports

.8 As-Built/Record Drawings

.9 * Contractor's Seismic Engineer's Schedule B and C-B Schedule Letters of Assurance

.10 Contractors guarantee/warranty letter

.4 HVAC

.1 * Final Refrigerant inspection acceptance report from the AHJ

.2 Final Electrical Certificate for electrical wiring by the Controls Trade

.3 Controls system completion report

.4 * Gas detection calibration and commissioning certificate

.5 Gas TSBC certification

.5 Plumbing

.1 * Final Gas inspection acceptance report from the AHJ

37 ACCESSIBILITY, ACCESS DOORS AND PANELS

.1 Install all systems to provide maximum and adequate accessibility.

.2 Maintain all code and manufacturer's required clearances.

.3 The Contractor shall cooperate and coordinate with other trades to ensure that all equipment and systems are properly placed without interference with other services.

.4 Locate distribution systems, equipment and materials to eliminate interference, conserve headroom and leave maximum usable space. All systems shall be coordinated for elevation height to ensure they are concealed within ceiling spaces, unless noted otherwise.

.5 All equipment must be in a location where it may be serviced, operated and maintained.

.6 Obtain approval from the project Architect for the access door type and style prior to installing.

.7 Provide access doors to any and all concealed mechanical equipment or systems which requires maintenance or adjustment. Provide access doors as directed by the Engineer.

.8 The Contractor shall demonstrate all or any reasonable access to the Engineer as requested.

.9 Provide access door in ductwork upstream and downstream of all coils, square elbows, fire dampers, etc.

.10 Where access doors are provided in fire rated separations, they shall meet the fire rating as to maintain the fire integrity. All fire rated access doors shall be CSA or ULC listed for the applicable application.

38 PIPE CHASES AND DUCT SHAFTS

.1 Unless otherwise indicated, conceal all piping, ductwork and mechanical systems within the construction of walls, ceilings, furrings, chases and shafts.

.2 Revise the location of services if required to be concealed as described. The Contractor is to consult the Engineer and obtain written approval prior to proceeding with revised location of services.

39 INSULATION

.1 Refer to the Mechanical Drawings for Pipe and Ductwork Insulation requirements, which lists insulation material, thicknesses and finishing requirements.

.2 All insulation joints to be taped and vapour sealed to suit the application.

.3 Ductwork

.1 All ductwork insulation shall be in accordance with BCICA Quality Standards specifications 1502.

.2 Supply air ductwork shall be externally insulated unless provided with internal insulation liner or noted otherwise.

.3 All ductwork shall be externally insulated a minimum of 5ft (1500 mm) from exterior openings/sheathing connections and within soffits.

.4 Provide internal insulation liner on all ductwork as indicated and a minimum of 10 ft (3000 mm) upstream and downstream of all fans.

.5 All internal ductwork insulation to be provided with metallic Z nosing to avoid exposed insulation edges within the air stream.

.6 Attach internal ductwork insulation as per SMACNA standards and with pins at 12" (300 mm) on centre. Pins to be spot welded to the inner surface of the ductwork. Do not use pressure sensitive adhesives.

.7 All ductwork insulation shall be adequately glued and strapped.

.8 Provide internal duct insulation lining for all transfer air ducts, unless noted otherwise.

.4 Equipment

.1 All equipment insulation shall be in accordance with BCICA Quality Standards specifications 1503.

.5 Do not use spray on insulation systems.

.6 Do not apply insulation prior to pressure testing of systems.

.7 Ensure surfaces are clean and dry prior to application of insulation.

.8 Insulation system material inside the building shall not have a flame spread rating greater than 25 or a smoke developed rating greater than 50 in accordance with code requirements and in conjunction with CAN/ULC S102.

.9 Thermal insulation performance (conductivity, thickness, etc) shall meet or exceed the requirements of the National Energy Code of Canada and ASHRAE 90.1.

.10 Mineral fibre insulation shall conform with the requirements of CAN/ULC-S114. Elastometric insulation shall conform with the requirements of ASTM C534

.11 Blanket mineral fibre insulation to ASTM Standard C553. Apply to chilled or domestic cold water pump casings, roof drain sumps inside the building, water meters, top of radiant ceiling panel, top of ceiling active chilled water beams

.12 Semi Rigid Mineral fibre insulation to ASTM Standard C1393. Apply to uninsulated hot water storage tanks, shell and tube heat exchangers, heating water air separators, chilled water expansion tanks.

.13 Removable insulation shall be ceramic fibre insulation between silicone impregnated fibreglass fabric and provided for plate heat exchangers and 6" (150mm) and larger strainers, backflow preventers, etc. Overlap insulation and provide with double sided velcro stitched in place.

40 HEAT TRACING

.1 The Contractor shall supply and install heat tracing systems as indicated and as required to provide freeze protection of piping systems.

.2 All heat tracing systems shall be CSA or ULC listed and certified.

.3 The Contractor shall coordinate provision of power at an appropriate voltage for the heat trace systems with the Electrical trade.

.4 Do not insulate over or conceal heat tracing until reviewed by the Engineer and inspected by the AHJ.

.5 Heat trace systems shall be Raychem XL Trace self regulating cable providing 5 watts per foot of heating.

.6 Provide heat trace systems with all required power supplies, cables, strapping, controllers, labelling, testing, etc. to form a complete installation.

.7 After installation and prior to insulating/concealing the work, heat tracing shall be tested using a 2500 VDC megger. Minimum insulation resistance shall be 20 megohms or greater. All testing shall be in accordance with the manufacturer's requirements.

.8 All heat tracing for fire protection systems shall be rated for such. Systems to be monitored through the building fire alarm system. The Contractor shall coordinate the system monitoring with the appropriate trade.

41 SYSTEM IDENTIFICATION

.1 Identify all ductwork, piping and systems in accordance with the specifications and base building standards.

.2 Unless specified otherwise utilize ANSI and CSA piping identification standards, including nomenclature and colours.

.3 Each major component of equipment shall bear manufacturer's name, address, catalog, and serial number.

.4 Utilize WH Brady identification tapes, bands and markers made of vinyl film material unless noted otherwise.

.5 All markings shall be suitable for the surface operating conditions in which they are installed.

.6 Piping marking letters shall be 2" (50mm) high for pipes 3" (75mm) and larger diameter and not less than 3/4" (20mm) for smaller pipes.

.7 Pipe marking arrows shall be 6" (150mm) long x 2" (50mm) wide for pipes 3" (75mm) and larger diameter and not less than 4" (100mm) long x 3/4" (20mm) wide for smaller pipes. Mini markers may be used for very small diameter pipes.

.8 Ductwork identification shall consist of 2" (50mm) high black stenciled letters indicating service and direction of flow.

.9 All ductwork and piping to be labelled at minimum 20 ft (6000 mm) intervals with service and direction of flow. Provide minimum one label per room, at major changes in direction, at connections to equipment, on either side of floor penetrations and prior to enter/existing shafts. Marker and direction arrows shall be placed side by side on the bottom quarter of pipes.

.10 Provide ceiling dot identification for all balance dampers, fire dampers, valves, equipment, etc. located above T-bar ceilings. Provide identification dots on T-bar rails and not on the ceiling tiles.

.11 Provide valve tags in association with piping systems. Valve tags shall be lamacoid 1-1/2" (40mm) diameter, unless noted otherwise, or in accordance with the base building identification system.

.12 Prepare a valve tag chart.

.13 Valve tags are to match the existing building systems.

.14 Should there be no existing valve tag system in place, new valve tags shall be constructed of plastic and provided with a six digit numbering systems; the first three digits indicating the service and the last three digits indicating the individual valve number.

.15 All factory supplied equipment shall be installed with the manufacturer's nameplates.

.16 Provide equipment registration/nameplates (CSA, ULC, ASME, etc.) as required an in accordance with the AHJ.

.17 Gas and propane piping shall be identified in accordance with code requirements incorporating appropriate coloured paint over the entire length, banding at specified intervals and/or labeling with type of service.

.18 All heat traced piping shall be identified on the exterior surface as "Electrical Heat Traced."

.19 Provide lamacoid labels for equipment and control panels with black backing and white labelling. Size shall be 1/2" x 2" (12mm x 50mm) for small equipment, 1" x 2-1/2" (25mm x 65mm) for equipment and 2" x 4" (50mm x 100mm) for panels. Secure to equipment/panels with stainless steel screws or suitable epoxy cement.

.20 Equipment terminology shall match with the system noted in the Mechanical Drawings/Specifications, or in accordance with the Client's requirements when provided. The Contractor shall request clarification from the Client prior to providing system identification.

42 DUCTWORK & SHEET METAL

.1 All ductwork shall be fabricated and installed in accordance with SMACNA, ASHRAE and NFPA standards.

.2 All ductwork shall be galvanized steel lock forming with galvanized coating conforming to ASTM A525 G90, unless specified otherwise.

.3 Ductwork shall be lock formed and sealed to SMACNA Class B standards for low and medium velocity ductwork in systems rated up to 2" (50mm) WG. Seal ductwork to SMACNA Class A standards for ductwork in systems in excess of 2" (20mm) WG.

.4 All ductwork to be clean and free of scale.

.5 Any deviations in ductwork dimensions or sizes shall be based on SMACNA or ASHRAE sizing criteria.

.6 All ductwork sizes shall represent interior dimensions. The Contractor shall make allowances for ductwork thickness, insulation, bracing, etc.

.7 Ductwork shall be sealed and joints and seams in accordance with SMACNA Standards, ASHRAE Standards and code requirements. Use of duct tape will not be accepted.

.8 Ductwork penetrating through exterior wall assemblies shall be sealed to the weather barrier with self-adhesive bituminous membrane and expanding foam sealant.

.9 Provide balancing dampers where branch ductwork is installed, at grilles and diffusers. Provide additional balancing dampers at the request of the Balancing Trade. Balance dampers to be provided with shaft, standoff bracket, locking hand quadrant and be constructed of minimum 1.6mm thick galvanized steel.

.10 Provide turning vanes for all rectangular ductwork elbows as indicated, installed to SMACNA standards.

.11 Roof mounted ductwork shall have standing seams and sealed water/weather tight.

.12 Do not connect flexible ductwork directly to diffuser or grille outlets.

.13 Flexible ductwork shall be a maximum of 5 ft (1500 mm) in length and stretched tight to avoid sagging, sharp changes in direction or excessive pressure drops. Do not use flexible ductwork as offsets or elbows. Refer to specifications/schedules for insulation requirements.

.14 The Contractor shall ensure that all cooling coils are installed to provide positive slope and complete drainage to the drain point. Demonstrate cooling coil drainage at the request of the Engineer.

.15 In slab ductwork systems shall be Ecco Heating Products EccoDuct or approved alternate.

.16 Ductwork serving as exhaust for dishwashing equipment shall be constructed of welded 304 stainless steel or heavy gauge aluminum. The entire system shall be sloped back to the dishwasher or to a 2" (50mm) depressed drain pan.

.17 All rectangular duct flat surfaces are to be cross broken.

.18 Provide a minimum of 5 diameters of straight ductwork prior to VAV boxes.

.19 Install backdraft dampers on all exhaust outlets at exterior discharges, unless specified otherwise.

.20 Provide galvanized bird screen mesh on all exterior intake and exhaust discharge points.

.21 Support roof mounted ductwork on factory fabricated aluminum support assemblies to suit the roof construction, spaced, sized and arranged to suit the ductwork.

.22 At outdoor air intakes, where outdoors or otherwise required to be weathertight, construct ductwork without bottom longitudinal seams. Solder or weld the joints of bottom and side sheets. Seal all other joints with duct sealer. Slope horizontal duct to hoods, risers or drain points. Provide duct drain fittings at drain points.

.23 Provide curb, flashing and counter flashing for all ductwork passing through roof and external envelope of the building.

.24 Snaplock ductwork shall not be used unless approved by the Engineer.

.25 Install sheet metal drain pans under all hot water heater and storage tanks.

.26 Install sheet metal trip shields over electrical equipment to protect from fire protection sprinklers.

43 FIRE DAMPERS

.1 Ductwork penetrations passing through fire separations shall be provided with fire dampers meeting or exceeding the fire resistive rating of the penetrating surface.

.2 Fire damper to be CSA or ULC listed for the application.

.3 All fire dampers to be rated for Dynamic operation, unless listed otherwise.

.4 Fire dampers to have blades retained out of the air stream, unless noted otherwise.

.5 Install fire dampers in compliance with the manufacturer's requirements, including retaining angles, break away joints, access doors, expansion allowance, etc.

.6 Fire damper fusible links to have 162F (72C) melting point, unless noted otherwise.

.7 Fire dampers to be installed in order to allow for readily accessible access, testing and reset of the linkage assemblies.

.8 Where requested by the Engineer, the Contractor shall demonstrate operation of any or all fire dampers.

.9 Fire dampers in low pressure ductwork systems may be multiblade or curtain type.

.10 Combination fire and balance dampers shall be manufactured with linkage readily adjustable in the open position.

44 FIRE/SMOKE DAMPERS

.1 Fire/Smoke dampers to be CSA or ULC listed for the application.

.2 Provide dampers with motorized actuators compatible with the building fire alarm system.

.3 High velocity air foil design fire/smoke dampers to be utilized for all locations, unless noted otherwise.

.4 Fire/Smoke dampers with electro-thermal links shall not be used.

.5 The Contractor shall coordinate interconnection, testing and operation of Fire/Smoke dampers with the Electrical and/or Fire Alarm trades.

45 VIBRATION ISOLATION

.1 All components with rotating or dynamically operating components shall be provided with vibration isolators.

.2 Vibration isolation products shall be suitable for the application in order to ensure that Average Noise Criteria as published by ASHRAE are not exceeded.

.3 Ductwork connected to fans or vibrating equipment shall be provided with flexible canvas connections. Flexible ductwork connections shall not have a metal gap more than 1-1/2" and be more than ½" (12 mm) out of alignment from the equipment. Ensure flex connections do not impede air flow and allows movement of the equipment without transmitting vibration to the ductwork.

.4 Provide spring vibration isolators on motor driven equipment with motors 0.5 hp (0.37 kW) and greater. Provide neoprene grommets at support points for motor driven equipment with motors less than 0.5 hp (0.37kW).

46 EQUIPMENT PADS & BASES

.1 Provide all necessary equipment bases to facilitate a complete installation.

47 REFRIGERANT SYSTEMS

.1 All refrigerant installations are to be in accordance with CSA B52 Mechanical Refrigeration Code.

.2 All refrigerant distribution systems shall be sized in accordance with the manufacturer's requirements.

.3 Refrigerant systems shall be installed under the supervision of a licensed specialist and journeyman refrigeration mechanic.

.4 Provide piping traps, relief valves, moisture indicators, line filter driers, expansion valves, etc. as per the manufacturer's requirements.

.5 Provide isolation shut off valves at all equipment and in accordance with the manufacture's requirements. All valves to be listed for the application.

.6 Provide refrigerant approved for the associated with the installation.

.7 Provide flexible connections at exterior equipment.

.8 Provide refrigerant piping schematics for shop drawing review which incorporate a schematic piping diagram for each refrigerant system with pipe sizes, slopes, valves, traps and piping specialities. All are to be reviewed, approved and signed by the refrigeration equipment manufacturer prior to being submitted to the Engineer for review.

.9 Refrigerant piping specialties such as moisture indicators, liquid line filter-driers, relief valves, traps and thermostatic expansion valves are to be factory cleaned, degreased and supplied to the site with capped ends.

.10 During refrigerant system brazing process, ensure pipe and fittings are kept full of nitrogen or carbon dioxide to prevent scale formation.

48 NATURAL GAS SYSTEMS

.1 All installations shall be in accordance with CAN/CSA-B149.1 "Natural Gas and Propane Installation Code" latest adopted version.

.2 Seismic gas valves shall be KOSO series 300 earthquake actuated automatic gas shut off valves or approved alternate. Valves to be positively fastened to building structure by means of Unistrut attachment. Install valves in accordance with the manufacturer's requirements.

.3 The Contractor shall coordinate with the Utility Provider and Client provision of a natural gas supply service with associated gas pressure regulator and meter assembly.

.4 Coordinate with the General Contractor provision of concrete filled steel bollards at exterior gas meter and regulator assemblies in a protective pattern.

.5 Provide regulating valves at equipment/appliance connections where not provided by the manufacturer.

.6 Provide regulating and relief valve venting to atmosphere in accordance with code and regulation requirements.

.7 Provide 6" (150mm) drip pockets where shown, at the bottom of vertical risers and at piping low points.

.8 For underground services provide a continuous 3" (75mm) wide yellow PVC waring tape with "Caution - Gas Line Buried Below" wording at 30" (750mm) intervals, located above the pipe approximately 12" (300mm) below grade.

.9 Regulating valves for indoor appliances shall use lever acting design, dead end lockup type with a vent limiter, self-aligning valve, die cast aluminium housing, synthetic rubber compound diaphragm, mounted in a horizontal upright position. Regulator vales shall not require venting to atmosphere.

.10 Regulating valves for outdoor appliances shall use spring loaded self-operated design, tight closing, cast iron body with corrosive resistant epoxy enamel, aluminum diaphragm and spring case with nitrile diaphragm. Provide 1/4" (6mm) test ports upstream and downstream of regulator assemblies. Extend vent piping a minimum 10 ft (3000mm) from air intakes and building openings. Vent terminations shall be complete with a down turn fitting and bronze bug screen.

49 FIRE STOPPING

.1 All pipe penetrations passing through fire separations shall be provided with a listed fire stopping assembly meeting or exceeding the fire resistive rating of the penetrating surface. All fire stopping assemblies shall bear a CSA or ULC listing.

.2 Fire stopping assemblies shall be tested in accordance with CAN4-S115-M85 Standard Method of Fire Tests of Firestop Systems, CAN/ULC-S101, and in accordance with the applicable Building Code/Building Bylaw. All to be capable of maintaining an effective barrier against flame, smoke and gases in accordance with the testing standards.

.3 Contractor shall provide fire stopping with applicable temperature ratings to suit the application.

.4 Fire stopping materials shall be free of asbestos containing materials.

.5 Maintain a sample of fire stopping materials on site for review by the Engineer.

.6 All fire stopping shall be installed as per the manufacturer's requirements. Provide all fasteners, staples, mineral fibre, sealant, tapes, adhesives, coatings, frames, etc. to comprise a complete installation.

.7 Where the total size of holes in fire rated walls exceeds 645 mm^2 (20 in^2), the condition is unacceptable and must be patched with fire rated drywall or similar to maintain the required fire resistance rating.

.8 Upon request by the Engineer, the Contractor shall remove up to 4 fire stopping assembly locations for random review. Upon review the Contractor shall reinstall the assemblies at no cost to the Client. Should the reviewed locations be found in non-compliance with manufacturer or code requirements additional locations may be requested by the Engineer for disassembly, review and reassembly, all at the Contractor's cost.

.9 Fire stopping shall have F, FT, FH and/or FTH ratings in accordance with the project requirements.

50 CONTROLS

.1 Provide a complete and operational controls system in accordance with the Mechanical Drawings, Specifications and project requirements.

.2 Control systems are to generally be as indicated on the drawings, control diagrams, within the specifications and are to have all elements therein indicated or implied.

.3 The controls drawings, diagrams and descriptions show only the principal components controlling the equipment and systems. Supplement each control system with relays, transformers, sensor, etc required to enable each system to perform as specified and to permit proper operation and supervision.

.4 The control system installation company shall have local parts and service ability on a 24/7 basis.

.5 The controls scope of work shall include all required service and support until the end of the warranty/guarantee period. Include internet support as requested by the Client in order to solve occupant comfort issues and equipment performance diagnosis and problem resolution.

.6 Response time for on-site repair/replacement of controls components within the warranty/guarantee period shall be within 24 hours of the Client's request.

.7 All controls work shall be undertaken by a Base Building approved Controls Contractor.

.8 The controls system shall be commissioned and fully operational prior to the project being deemed complete.

.9 Provide all required hardware and software to comprise a complete and operational controls system.

.10 Refer to the points list included on the Mechanical Drawings for equipment and systems to be controlled by the Building Automation/DDC system.

.11 Update all software and graphics associated with the project requirements.

.12 All controls switchgear to be provided with lamacoid labelling.

.13 Controls work and wiring above 24V shall be completed by an approved Electrical trade. Low voltage wiring shall be by the Controls Contractor.

.14 All controls wiring to be installed within conduits, unless noted otherwise. The final 24" (600mm) connection to sensors and transmitters, and where wiring extends across flexible duct connections, shall be provided with liquid tight conduit.

.15 Control wiring and systems within ceiling spaces and wall cavities shall be plenum rated for the application.

.16 All new and existing thermostats/temperature sensors within the project area shall be checked and calibrated.

.17 Thermostats/room temperature sensors shall be mounted 5ft (1500mm) above the finished floor, unless noted otherwise. Thermostats intended to be operated by the occupants shall be mounted 47" (1200mm) above the finished floor in accordance with barrier free access and shall be installed in an accessible path of travel.

.18 Control dampers for modulating and mixing applications shall be parallel blade type. Dampers for open/closed applications shall be opposed blade type. Maximum blade length shall be 48" (1200mm).

.19 Motorized dampers connected to the building fire alarm systems or freeze protection measures shall be equipped to permit dampers to respond and move to the required position within 15 seconds from receipt of signal.

.20 Motorized damper operators, seals and ratings shall be suitable for the environment in which they are located.

.21 Controls shall operate motorized dampers open on outdoor air intakes and exhaust openings prior to enabling the associated fan system. Dampers to close upon system shut down.

End of Mechanical Specifications

Ductwork Insulation							
Ductwork Type	Class	Insulation Material	Building Exterior	Unconditioned Space	Exposed	Concealed/Plenum	Buried
Heating & Cooling Systems							
Round	A2	Mineral Fibre c/w Vapour Seal	4" - RD/4	2" - RD/2	1" - RD/2	1" - RD/2	2" - UI/1
Rectangular	A2	Mineral Fibre c/w Vapour Seal	4" - RF/5	2" - RF/2	1" - RF/2	1" - RF/2	2" - UI/1
Rectangular Lined	C1	Mineral Fibre	4" - RF/5	2" - RF/5	1" - RF/5	1" - RF/5	2" - RF/5
Ventilation Systems							
Round	A2	Mineral Fibre c/w Vapour Seal	2" - RD/4	2" - RD/2	N/A	N/A	1" - UI/1
Rectangular	A2	Mineral Fibre c/w Vapour Seal	2" - RF/5	2" - RF/2	N/A	N/A	1" - UI/1
Rectangular Lined	C1	Mineral Fibre	2" - RF/5	2" - RF/5	1" - RF/5	1" - RF/5	1" - RF/5
Notes:	All concealed piping shall utilize All Service Jacket, unless noted otherwise						
	Insulation thicknesses based on ASHRAE 90.1-2019 Zone 5 (Southern BC)						

REGIONAL DISTRICT CENTRAL KOOTENAY

CONSULTANT:

ROCKY POINT ENGINEERING LTD.
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NELSON, BC V1L 4H6
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TEL: (250) 352-7933

NDCC RTU REPLACEMENT

305 Hall St, Nelson BC

ISSUE	DATE	DESCRIPTION
4	2025.03.21	REISSUED FOR TENDER
3	2025.03.12	UPDATED EXISTING MECHANICAL
2	2025.01.28	ISSUED FOR TENDER
1	2025.01.07	ISSUED FOR CLIENT REVIEW

SEAL:

PERMIT TO PRACTICE #1000700

PROJECT #: 24675

DRAWN BY: JRM

CHK'D BY: JRM

SPECIFICATIONS

M2.1

SCALE: AS NOTED

SCHEDULE C: PRICING SCHEDULES

This section shall be read with and shall form part of the Contract Form. The Bidder hereby proposes the following prices to provide all materials, supervision, labour, equipment and all else necessary for the proper supply of the Services. Costs of a general nature that do not pertain to any one item shall be pro-rated among all items. No claim for extra payment on the grounds that the Services supplied could not be properly charged to items within the Description of Services will be considered.

The RDCK may ask and shall be provided with a breakdown of the lump sum pricing after tender closing.

ITEM	LUMP SUM
Complete all work as outlined in the Scope of Work and Specifications	$
Optional Item: Mini-Split Heat Pump supply and install	$
GST	$
TOTAL	$