REGIONAL DISTRICT OF NANAIMO

REQUEST FOR TENDER No. 21-012

Church Road Transfer Station Residential Transfer Building Upgrade

Addendum 4
Issued: September 24, 2021
Total Pages: 5

Closing Date & Time: on or before 3:00 PM Pacific Time on September 29, 2021

This addendum shall be read in conjunction with and considered as an integral part of the Request for Tender. Revisions supersede the information contained in the original Tender or previously issued Addendum. No consideration will be allowed for any extras due to any Vendor not being familiar with the contents of this Addendum. All other terms and conditions remain the same.

Enclosed is Addendum 4 from the Project Engineer, Herold Engineering Ltd.

End of Addendum 4

HEROLD ENGINEERING

Addendum

DATE: September 24, 2021 **PROJECT No.:** 0837-068

Attn: Kurtis Felker
Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo BC V9T 6N2

PROJECT NAME:
CRTS - Phase 1: Ventilation System
860 Church Road, Parksville BC

From: Erich Streit, Arch HTL, Project Manager

3 Pages Following

ADDENDUM – 04

1. *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 drawings, specifications or previously issued Addendum.*
2. *Tender Price submitted shall include all items of this Addendum.*
3. *No consideration will be allowed for any extras due to any bidder not being familiar with the contents of this Addendum.*

Addendum Information:

1. Electrical Addendum E2:
   Refer to the attached electrical Addendum E2 issued by RB Engineering Ltd.

2. Mechanical Drawings:
   Refer to updated mechanical drawings M-1 and M-2 with issued date of January 26 2021 attached to this Addendum.

3. Response to Bidder questions:
   .1 The new wall mounted exhaust fans are located in the same position as existing – approximately 8' down from the top of the structure where located.
   .2 The type of exhaust fan specified have their own integral starters. However, this may change depending on the actual fans that get submitted at shop drawing review, in which case supply fans may require sepaate starters.
   .3 Existing roof above the Residential Transfer Building is of Standing Seam Metal
   .4 Anticipated start of construction is October 25th and completion by end of February 2022

Per: _____Erich Streit, Arch HTL_____

CC: Kurtis Felker - RDN
Kevin Guizzetti / Ben Routledge - RDN
BC Bid & RDN Website
All Sub-Consultants

RB ENGINEERING LTD
ELECTRICAL CONSULTING ENGINEERS

Electrical Addendum

Project: **CRTS Ventilation System Upgrade Phase 1**
Parksville, BC
19-3308

Addendum: **E2**

Date: **September 24th, 2021**

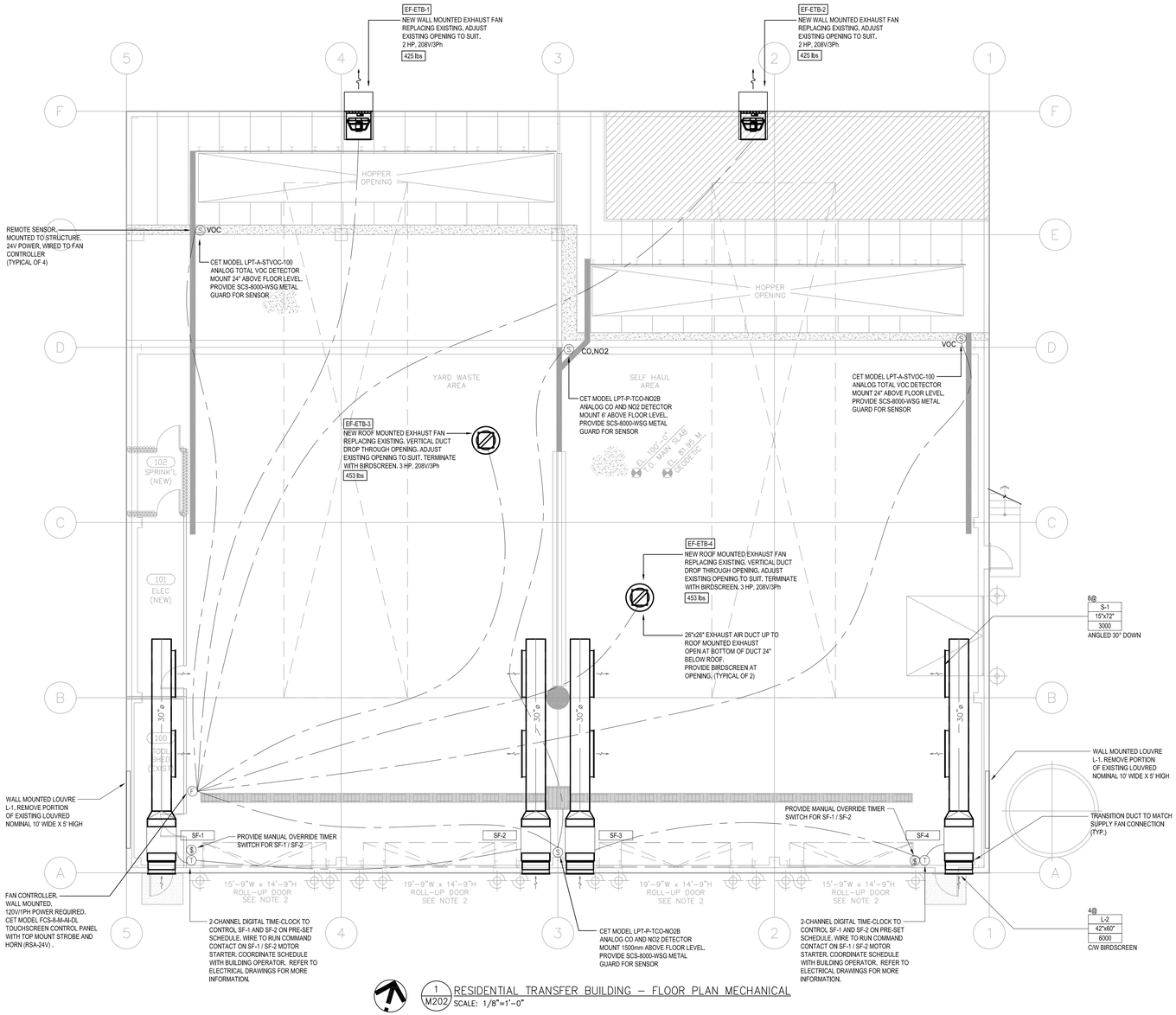
This Addendum forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts. The cost of all work contained herein shall be included in the Contract Sum. The following revisions supersede the information contained in the original drawings and specifications issued for the above named project to the extent referenced and shall become part thereof.

The following relates to the existing panels:

1. Panel 2A is Eaton Culter Hammer Pow-R-Line 1a. Panel 6A make and manufacturer is unknown.

The following relates to the starters for supply and exhaust fans:

1. Starters to be supplied and installed by electrical contractor.



1 / M202 RESIDENTIAL TRANSFER BUILDING – FLOOR PLAN MECHANICAL
SCALE: 1/8"=1'-0"

1/26/2021 10:53 AM

ROCKY POINT
ENGINEERING LTD.
Vancouver • Langley • Victoria • Nanaimo • Kelowna • Kamloops • Nelson
Mechanical Consulting Engineers
www.rpeng.ca
NANAIMO
102-3721 SHENTON ROAD
NANAIMO, BC, V9T2H1
ph. 250.585.0222

SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
3	26JAN2021	ISSUED FOR TENDER	AM
2	21AUG2020	REVISED	AM
1	20DEC2019	COORDINATION	AM

REVISIONS:

SEAL:

CLIENT:

PROJECT:

CRTS - RESIDENTIAL TRANSFER BUILDING UPGRADES

860 CHURCH ROAD
PARKSVILLE, BC

DRAWING NAME:

FLOOR PLAN - MECHANICAL

PROJECT NUMBER:

19615-N

DRAWN BY:	NG
DESIGNED BY:	AM
APPROVED BY:	AM
SCALE:	1/8" = 1'0"

DRAWING:

M-1

SUPPLY FAN SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	VOLUME	TOTAL EXTERNAL SP	FAN RPM	OPERATING POWER	SIZE	ELECTRICAL			MOTOR RPM	WINDINGS	WEIGHT	ENCLOSURE	COMMENTS
UNITS					CFM	IN. WG	RPM	HP	HP	VOLTAGE	PHASE	FREQUENCY	RPM		LB		
SF-1	GREENHECK	BSQ-300-15	SOUTH CEILING	YARD WASTE AREA	6000	0.4	450	0.84	1.5	575V	3	60Hz	1725	1	536	OP	
SF-2	GREENHECK	BSQ-300-15	SOUTH CEILING	YARD WASTE AREA	6000	0.4	450	0.84	1.5	575V	3	60Hz	1725	1	536	OP	
SF-3	GREENHECK	BSQ-300-15	SOUTH CEILING	SELF HAUL AREA	6000	0.4	450	0.84	1.5	575V	3	60Hz	1725	1	536	OP	
SF-4	GREENHECK	BSQ-300-15	SOUTH CEILING	SELF HAUL AREA	6000	0.4	450	0.84	1.5	575V	3	60Hz	1725	1	536	OP	

ADDITIONAL INFORMATION:

SF-1 THROUGH SF-4 ; SELECTED OPTIONS AND ACCESSORIES

UL/cUL 705 Listed - "Power Ventilators"
Switch , NEMA-1, Toggle, Shipped with Unit
Seismic Rated to Design Category F per IBC-2012 & ASCE 7-05 Standards
OSHPD Seismic Certified, #OSP-0113-10
Isolators Required - OSHPD Certified by Others
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Motor Cover
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)

EXHAUST FAN SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	VOLUME	TOTAL EXTERNAL SP	FAN RPM	OPERATING POWER	SIZE	ELECTRICAL			MOTOR RPM	WINDINGS	WEIGHT	ENCLOSURE	COMMENTS
UNITS					CFM	IN. WG	RPM	HP	HP	VOLTAGE	PHASE	FREQUENCY	RPM		LB		
EF-ETB-1	GREENHECK	SE2-30-620-B-VGD	NORTH WALL	YARD WASTE AREA	8000	0.25	828	0.81	2	208V	3	60Hz	1160	1	425	OP	
EF-ETB-2	GREENHECK	SE2-30-620-B-VGD	NORTH WALL	SELF HAUL AREA	8000	0.25	828	0.81	2	208V	3	60Hz	1160	1	425	OP	
EF-ETB-3	GREENHECK	CUE-300HP-C-VGD	ROOF	YARD WASTE AREA	8000	0.2	756	1.68	3	208V	3	60Hz	860	1	453	OP	
EF-ETB-4	GREENHECK	CUE-300HP-C-VGD	ROOF	SELF HAUL AREA	8000	0.2	756	1.68	3	208V	3	60Hz	860	1	453	OP	

ADDITIONAL INFORMATION:

EF-ETB-1 AND EF-ETB-2 ; SELECTED OPTIONS AND ACCESSORIES

No UL Listing
Airflow Direction: Exhaust
Long Wall Hsg, Flush Exterior, w/ OSHA Grd., Ctd with Permatector, Concrete Gray-RAL 7023
Motor Access: From Int. of Bldg.
Switch, NEMA-4X, Heavy Duty w/Auxiliary Contact, Shipped with Unit
Closure Angles
Weatherhood, Aluminum 45 deg. with Bird Screen Ctd Permatector, Concrete Gray-RAL 7023
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc

EF-ETB-3 AND EF-ETB-4 ; SELECTED OPTIONS AND ACCESSORIES

UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-4X, Heavy Duty, Shipped with Unit
Hinged Curb Cap Kit w/Cables (PN 853443) & Support Bracket (Shipped Loose)
Foam Curb Seal (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Non-Stick Coated Wheel (Teflon)
Hood Hasps
Birdscreen: Aluminum, nom. 62% Free Area
Clean-out Port

AIR TERMINAL SCHEDULE

DESIGNATION	SYSTEM	MANUFACTURER	MODEL	DESIGN AIR VOLUME	AIR VELOCITY	PRESSURE DROP	FINISH	WIDTH	HEIGHT	COMMENTS
UNITS				CFM	FPM	in. w.g.		in	in	
L-1	RELIEF AIR	EH PRICE	DE439	13,500	460	0.04	ALUMINUM	120	60	C/W BIRDSCREEN, FLANGED MOUNTING
L-2	SUPPLY AIR	EH PRICE	DE439	6000	615	0.06	ALUMINUM	42	60	C/W BIRDSCREEN, FLANGED MOUNTING
S-1	SUPPLY AIR	EH PRICE	HCD2	3000	400	0.03	B15	72	15	STEEL CONSTRUCTION, SPRIAL DUCT FRAME, VCS5 HEAVY DUTY OPPOSED BLADE DAMPER

ADDITIONAL INFORMATION:

GAS DETECTION & CONTROLLER SYSTEM

Multi-Channel Gas Detection System for Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) & TVOCs

Provide a wall mount, self-contained, field programmable central control panel with back-lit, LCD digital display, LED alarm indication, and door mounted 90 dB audible alarms with silence / acknowledge switch. There shall be an LCD display of gas type, concentration measured, and alarm status. System controller shall be capable of supporting up to a combined (digital and analog) total of 128 transmitters on a RS485 Modbus network. The controller shall have 4 on board relays and shall support analog output modules (four only 4 - 20 mA outputs per module) and relay output modules (four or eight 5 A SPDT relays per module) if required. System digital network wiring shall be 4-wire digital network (2 low voltage power wires and a shielded twisted pair for the communication bus). System analog wiring shall be 3-conductor, 16-18 gauge, shielded. System power requirement is 90 to 240 VAC, 47 to 63 Hz. The controller shall be CSA / UL / CE / FCC / IP tested and certified, and powered by 90 to 240 VAC, 47 to 63 Hz. The controller should be installed in a dry area if it does not have the optional key lock. If it is to be installed in an area that requires a waterdust tight enclosure the key lock version must be requested.
FCS-8-M-AI-DL model supports digital and analog transmitters.

Provide remote mount digital sensor transmitters with three sensor capability for Carbon Monoxide (CO) from gas engine exhaust, with an electrochemical sensor for CO with a detection range of 0 - 200 ppm and Nitrogen Dioxide (NO2) from diesel engine exhaust, with an electrochemical sensor for NO2 with a detection range of 0 - 10 ppm. The sensor transmitter and shall be housed in a rugged, waterdust tight, wall mount, polycarbonate junction box with a secured, hinged door. The remote mount sensor transmitter shall operate on power supplied by the control panel and shall provide a Modbus digital output signal to the control panel. Install the CO and NO2 sensor at approximately 4' to 6' from the floor (breathing zone).
Model LPT-P-TCO-NO2B

Provide remote mount analog transmitter **model LPT-A-STVOC** for Volatile Organic Compounds, with a semi-conductor (solid-state) sensor with a detection range of 0 - 500 ppm. The sensor / transmitter shall be housed in a rugged, wall mount, ABS/polycarbonate junction box with a secured, hinged door and metal & splash guard (SCS-8000-WSG). The remote mount transmitter shall operate on power supplied by **FCS-8-M-AI-DL** control panel and shall provide an analog output signal to the control panel. Install the TVOC sensor at approximately 6" from the floor (most TVOCs are heavier than air).

In all cases use liquid tight conduit hubs when entering any watertight enclosure types to maintain watertight status. Install to the wall only by the provided enclosure mounting locations. Failure to do so voids any damage from water intrusion.

Provide remote mount audible, visual (strobe/siren) alarms model RSA-24V to be mounted at higher elevations and activated upon any high alarm condition to alert workers of gas build up beyond high alarm concentration. The RSA-24V will be powered by installer supplied 24VAC power and controlled by the controller relays.

System operation shall be as follows: Upon detection of 25 ppm CO, 0.7 ppm NO_2 and 100 ppm TVOCs the system shall illuminate the Low alarm LED, the Low alarm relays (exhaust fans) will be activated immediately. The system shall keep the fans running for a minimum of 10 minutes to avoid cycling. Upon detection of 50 ppm CO, 0.9 ppm NO_2 and 200 ppm TVOCs the system shall illuminate the Mid alarm LED and the Mid alarm relays will be activated, (only if any relays are assigned to mid alarm). The system shall keep the Mid relays active for a minimum of 10 minutes. Upon detection of 100 ppm CO, 1.0 ppm NO_2 and 300 ppm TVOCs the system shall illuminate the High alarm LED, the High alarm relays and audible alarm will be activated. The system shall keep the High relays active for a minimum of 10 minutes. Audible alarm can be silenced from the front panel push button. Any remote alarm devices shall be activated at this alarm level as well.

The contractor shall provide all wiring (analog), conduit and interconnection required for a successfull installation. Wiring must be 16-18 gauge, stranded, shielded. System shall be tested and commissioned after installation by a trained, authorized service representative of the manufacturer, with a detailed service report provided after the site visit.

Approved manufacturer:
Critical Environment Technologies Canada Inc.

SUMMARY OF REQUIRED COMPONENTS:
FCS-8-M-AI-DL
Modbus WAN Output FCS Controller c/w:
- Four Internal 4-20mA Analog Inputs
- Enclosure Door Lock and Keys

LPT-P-TCO-NO2B
Dual Channel Digiltal Sensor Transmitter to Detect:
- CO In Range of 0-200 ppm
- NO2 in Range of 0-10 ppm

Enclosed Within Polycarbonate Junction Box

LPT-A-STVOC & SCS-8000-WSG
Analog Transmitter with Internal Solid State Sensors to Detect:
- TVOC's In Range of 0-500 ppm

Enclosed Within Small Metal Protective Guard c/w:
- 16 Guage Galvanized Metal
- Splash Cover

RSA-24V-R
Remote LED Strobe Light conforming to IP65

SEQUENCE OF OPERATION

EF-ETB-1, EF-ETB-2, EF-ETB-3, EF-ETB-3:
1. FANS TO OPERATE ON A SCHEDULE BASED ON THE FACILITIES OPERATIONAL HOURS. COORDINATE SCHEDULE WITH BUILDING OPERATOR.
2. DURING UN-OCCUPIED HOURS:
   2.1. UPON DETECTION OF 25ppm CO, 0.7ppm NO2, 100ppm TVOCs THE SYSTEM SHALL ILLUMINATE THE LOW ALARM LED, THE LOW ALARM RELAYS (EXHAUST FANS) WILL BE ACTIVATED IMMEDIATELY. THE SYSTEM SHALL KEEP THE FANS RUNNING FOR A MINIMUM OF 10 MINUTES TO AVOID CYCLING. UPON DETECTION OF 100ppm CO, 1.0ppm NO2, 300ppm TVOCs THE SYSTEM SHALL ILLUMINATE THE HIGH ALARM LED AND THE HIGH ALARM RELAYS AND AUDIBLE ALARM WILL BE ACTIVATED. THE SYSTEM SHALL KEEP THE HIGH ALARM RELAYS ACTIVE FOR A MINIMUM OF 10 MINUTES. AUDIBLE ALARM CAN BE SILENCED FROM THE FRONT PANEL PUSH BUTTON. ANY REMOTE ALARM DEVICES SHALL BE ACTIVATED AT THIS ALARM LEVEL AS WELL.
3. DURING OCCUPIED HOURS:
   3.1. THE EXHAUST FAN SHALL RUN CONTINUOUSLY. UPON DETECTION OF 100ppm CO, 1.0ppm NO2, 300ppm TVOCs THE SYSTEM SHALL ILLUMINATE THE HIGH ALARM LED AND THE HIGH ALARM RELATS AND AUDIBLE ALARM WILL BE ACTIVATED. THE SYSTEM SHALL KEEP THE HIGH ALARM RELAYS ACTIVE FOR A MINIMUM OF 10 MINUTES. AUDIBLE ALARM CAN BE SILENCED FROM THE FRONT PANEL PUSH BUTTON. ANY REMOTE ALARM DEVICES SHALL BE ACTIVATED AT THIS ALARM LEVEL AS WELL.

SF-1, SF-2:
4. SF-1 / SF-2 SHALL RUN BASED ON SIGNAL FROM A PROGRAMMABLE TIME-CLOCK. TIME CLOCK TO BE PROGRAMMED TO RUN FANS CONTINUOUSLY DURING OCCUPIED HOURS. COORDINATE SCHEDULE WITH BUILDING OPERATOR.
5. PROVIDE MANUAL OVERRIDE BUTTON TO OVERRIDE TIME CLOCK AND BRING FUNS ON FOR 10 MINUTES DURING UN-OCCUPIED HOURS.

SF-3, SF-4:
4. SF-1 / SF-2 SHALL RUN BASED ON SIGNAL FROM A PROGRAMMABLE TIME-CLOCK. TIME CLOCK TO BE PROGRAMMED TO RUN FANS CONTINUOUSLY DURING OCCUPIED HOURS. COORDINATE SCHEDULE WITH BUILDING OPERATOR.
5. PROVIDE MANUAL OVERRIDE BUTTON TO OVERRIDE TIME CLOCK AND BRING FUNS ON FOR 10 MINUTES DURING UN-OCCUPIED HOURS.

THE CONTRACTOR SHALLPROVIDE ALL WIRING (ANALOG), CONDUIT AND INTERCONNECTION REQUIRED FOR A SUCCESSFUL INSTALLATION. WIRING MUST BE 16-18 GAUGE, STRANDED, SHIELDED. SYSTEM SHALL BE TESTED AND COMMISSIONED AFTER INSTALLATION BY A TRAINED, AUTHORIZED SERVICE REPRESENTATIVE OF THE MANUFACTURER, WITH A DETAILED SERVICE REPORT PROVIDED AFTER THE SITE VISIT.

1/8/2021 10:21 AM

1.0 BASIC MECHANICAL REQUIREMENTS

1.1 DRAWINGS AND SPECIFICATIONS
.1 Work of this Division shown on the drawings includes the provision of complete, operational, tested and balanced heating, ventillation and plumbing systems.
.2 Provide all labour, materials and products as specified herein and shown on the drawings as required to accomplish this work. Drawings are diagrammatic and indicate general arrangement of systems and work included.

1.2 PERMITS AND INSPECTIONS OF THE WORK
.1 Install to the requirements of the 2018 British Columbia Building Code, WorksafeBC, Authorities Having Jurisdiction, SMACNA Guidelines and as per the written Instructions of the equipment manufacturers and suppliers.
.2 Obtain and pay for all necessary permits required to carry out the work specified. Furnish certificates and inspection certificates received from Authorities Having Jurisdiction, verifying that work installed conforms to necessary codes and standards.

1.3 QUALITY ASSURANCE
.1 At completion of the work provide written declaration that all systems are installed and operating as per the requirements of the contract documents, and that the Contractor warranties the work, including all required parts and labour for a period of one full year from the date of Substantial Performance.
.2 Installation of all ventilation, heating, and plumbing systems must be carried out by skilled tradesman holding a valid TQ licence, or apprentices working under the supervision of a licenced tradesman. When apprentices are working, the licenced tradesman for each discipline must be on the site.

1.4 COORDINATION AND EXAMINATION
.1 Before submitting a bid, visit and examine the site and space conditions on which the work is in any way dependent. No claims for an increase in Contract Price or Contract Time arising from observable or reasonably inferable conditions will be accepted by the Consultant. Report to the consultant any conditions which might prevent installing the equipment in the manner intended.

1.5 SHOP DRAWINGS, MAINTENANCE MANUALS AND AS-BUILTS
.1 Provide electronic copies of shop drawings for the equipment listed below, in accordance with MCA-BC standards. Shop drawings shall indicate all aspects of the construction and operating performance of the product proposed for supply. All shop drawings must be submitted within 30 days after award of contract. Provide for:
   .1 Exhaust Fan
   .2 Motorized Dampers and Actuators
   .3 Louvers
   .4 Control Components
.2 Maintain a set of record drawings at the site. Record drawings shall be neatly maintained on a set of "Issued for Construction" prints. Drawings are to be maintained in an up to date condition at all times, recording all changes and deviations to the installation from those indicated on the construction issue drawings. The Contractor is to sign and seal all drawings certifying that they are "as-built" then provide the consultant with electronically (CAD) updated drawings on a USB.
.3 Supply two copies of the operating and maintenance data published by the equipment manufacturers with reviewed shop drawings. Include a USB drive with the electronic PDF files of the above information.

1.6 ACCESSIBILITY
.1 Locate all equipment which must be serviced, operated or maintained in fully accessible positions, with minimum interference and maximum usable space.

1.7 CLEANING
.1 Any dirt, rubbish or grease on walls, floors or fixtures for which this Division is responsible must be removed and the premises left in first class condition in every respect.

1.8 STANDARD OF ACCEPTANCE
.1 Base Bid means an item is specified by manufacturer and model number meets the specifications in all respects regarding performance, quality of material and workmanship and is acceptable to the Consultant without qualification, Base Bid equipment is as listed in the Specification and Mechanical Equipment Schedules and on the Drawings.
.2 Request for review from manufacturers of materials, fixtures and equipment who are not listed as equall and wish to be accorded "equall" status, shall be made at least seven (7) days prior to close of tender. Such material, fixtures, and equipment shall meet the requirements for an equal as described in the Standard of Acceptance. All information required by the Consultant to evaluate proposed manufacturer shall furnish the proposal at the time of the request.
.3 Approved Equall Manufacturers

Grilles, Registers and Diffusers
Titus, E.H. Price
Fans
Greenheck, Cook
Motorized Dampers
Ruskin, Tamco, Greenheck
Damper Actuators
Bellimo

1.9 ELECTRICAL WIRING AND MOTORS
.1 All electrical equipment supplied by the Mechanical contractor shall bear CSA label. Obtain special inspection labels required by Provincial Authority having jurisdiction for equipment that does not have a CSA label and/or a ULC label. Conform to requirements of Canadian Electrical Code and the Provincial Electrical Inspector.
.2 Division 16 will provide all power wiring, connections and other electrical items required for operation of mechanical systems except for factory installed wiring and equipment on package units provided by Division 15 and control wiring as specified.
.3 Division 16 provides and installs motor starters for electric motors except where equipment is furnished with integral starters.
.4 It shall be the responsibility of Division 15 to supply motors with proper voltage characteristics to suit electrical distribution systems and suitable construction such as explosion-proof, dust-proof, part wind starting, etc., as required to suit operating conditions. Division 15 is responsible of complete working installation and must coordinate all electrical and control work.

1.10 CUTTING AND PATCHING
.1 The Mechanical Contractor shall coordinate the wall openings with the Owner to suit new ventillation systems.

1.11 LIABILITY
.1 The Mechanical Contractor shall assume full responsibility for laying out the work of Division 15 and for any damage caused by improper location or performance of the work.
.2 Protect work and building surfaces from damage due to the contractor's performance of the work. Pay particular attention to the protection of building vapour barriers and waterproof membranes. Cover floors and other finished surfaces to avoid damage. During periods of freezing weather, ensure all piping is protected from potential freeze-up and any mechanical openings in the building envelope are weather and temperature protected.
.3 Maintain the site in a clean and orderly condition at all times.
.4 At the completion of the work remove tools, waste and surplus equipment and materials from the site.
.5 Maintain insurance that will fully protect the Owner, the General Contractor, the Mechanical Contractor and the Mechanical Contractor's sub-trades, from all claims which may arise from the Mechanical Contractor's performance of the work.

2.0 TESTING, AJUSTING, AND BALANCING
.1 The mechanical contractor will provide TAB services to ensure the ventillation system is operating as intended. At conclusion of the project the TAB agent is to verify proper operation of all systems and submit report detailing fan air flows, speed settings (RPM), running amperages.
.2 Organize and conduct the demonstration to the Owner of all mechanical equipment and systems supplied under this contract. The demonstrations shall occur only after the operation and testing has been successfully completed.

3.0 VIBRATION AND SEISMIC CONTROL
.1 Provide neoprene pad isolators between all mechanical equipment and the building structure.
.2 Provide a signed and sealed letter from a Registered Professional Engineer indicating that all mechanical equipment is seismically restrained in accordance with the 2018 British Columbia Building Code and SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems."

4.0 VENTILATION EQUIPMENT
.1 Motorized Dampers
   .1 Automatic control dampers shall be composed of 16-mm galvanized steel or extruded aluminum multiple blades mounted in a 2,8-mm steel or extruded aluminum frame. Individual blades shall not exceed 150-mm in width or 1200 mm in length with interlocking edges and compressible neoprene edge seals.
   .2 Provide self-compensating santoprene blade end seals.
   .3 Provide oil impregnated bronze or nylon bearings with additional thrust bearings for vertical blades. Damper leakage shall not exceed 15 L/s per m2 at 250 Pa (3 CFM per ft2) static differential.
   .4 Provide insulated dampers where provided for outdoor air or relief air applications and installed in building envelope elements (walls or roofs).
.2 Motorized Damper Actuators
   .1 Provide drive-pin mounted, synchronous motor driven damper actuators with adjustable stroke and spring return fail-safe to normally open or normally closed position as required by the sequence of operation. Provide sufficient actuators and total torque on each damper to achieve smooth travel throughout full range of damper and tight shut-off.
   .2 Provide two-position actuators as required by the sequence of operation.
.3 Louvers
   .1 Drainable aluminum louvers sized to match wall cavity depth.
   .2 Finish tested to 1000-hr salt spray. Colour by Owner.
   .3 Louvers to be supplied with flange for wall mounting. Seal around louver as per manufacturers recommendations.
   .4 For performance data refer to the equipment schedule on the drawings.
.4 Wall Mounted Exhaust Fans
   .1 General Description:
      .1 Fan arrangement shall be exhaust
      .2 Sidewall mounted applications
      .3 Performance capabilities up to 45,600 cubic feet per minute (cfm) and static pressure to 1 Inches of water gauge
      .4 Fans are available in nine sizes with nominal wheel diameters ranging from 16 inches through 54 inches (16 - 54 unit sizes)
      .5 Maximum continuous operating temperature 130 Fahrenheit (54.4 Celsius)
      .6 Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number
   .2 Wheel:
      .1 Propeller shall be fabricated steel blades and hubs
      .2 Securely attached to fan shaft with a standard square key and set screw or keyless bushing
      .3 Statically and dynamically balanced in accordance to AMCA Standard 204-05
      .4 The propeller and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency
   .3 Motors:
      .1 Motor Enclosure: Open drip proof - opening in the frame body and or end brackets
      .2 Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and furnished at the specific voltage and phase
      .3 Accessible for maintenance
   .4 Drive Frame:
      .1 Frames and Panels shall be bolted construction
      .2 Drive frame assemblies and fan panels shall be galvanized steel
      .3 Drive frame shall have welded wire or formed channels and fan panels shall have prepunched mounting holes, formed flanges and a deep formed one piece inlet venturi
   .5 Disconnect Switches:
      .1 NEMA rated: Nema4X
      .2 Positive electrical shut-off
      .3 Wired from fan motor to junction box
   .6 Options/Accessories:
      .1 Closure Angles:
         .a Extra set of mounting flanges shall be available for field installation to close off the Interior wall opening for a finished appearance
      .2 Finishes:
         .a Permatector - thermo-setting polyester urethane
      .3 Wall Housing Mounting:
         .a Fan panel will be mounted vertically directing the air horizontally out of the building. Wall Housing will be mounted in a manner that will not have any housing protruding outside of the building. Motor and drives will be accessible from the interior of the building
         .b Constructed of galvanized steel with heavy gauge mounting flanges and prepunched mounting holes
         .c Housing shall include OSHA approved motor guard
         .d Final product will be fully assembled including motor and drives
      .4 Weatherhood:
         .a Shall shield wall opening and dampers from rain and snow
         .b Material Type: Aluminum
         .c Turndown Angle: 45
         .d 1/2 Inch by 1/2 Inch weld wire birdscreen
         .e Permatector - thermo-setting polyester urethane
.5 Roof Mounted Exhaust Fans
   .1 General Description:
      .1 Discharge air directly away from the mounting surface.
      .2 Upblast fan shall be for roof mounted applications for fan sizes 060-300 or wall mounted applications for fan sizes 060-200.
      .3 Performance capabilities up to 14,700 cubic feet per minute (cfm) and static pressure to 3 inches of water gauge.
      .4 Fans are available in twenty-two sizes with nominal wheel diameters ranging from 9 inches through 30 inches (060 - 300 unit sizes).
      .5 Maximum continuous operating temperature for fan sizes 098-300 is 400 Fahrenheit (204.4 Celsius) and for fan sizes 060-095 is 160 Fahrenheit (71,1 Celsius)
      .6 Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number
   .2 Wheel:
      .1 Material Type: Non-stick coating - Manufacturer's Patented coating allows buildup on wheel to be easily removed.
      .2 Non-overloading, backward inclined centrifugal wheel
      .3 Statically and dynamically balanced in accordance to AMCA Standard 204-05
      .4 The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency
   .3 Motors:
      .1 AC Induction Motor
         .a Motor Enclosure: Open drip proof (ODP) - opening in the frame body and or end brackets
         .b Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase
         .c Mounted on vibration isolators, out of the airstream
         .d For motor cooling there shall be fresh air drawn into the motor compartment through an area free of discharge contaminants
         .e Accessible for maintenance
   .4 Housing:
      .1 Constructed of heavy gauge aluminum Includes exterior housing, curb cap, windband, and motor compartment housing. Galvanized material is not acceptable
      .2 Housing shall have a rigid internal support structure
      .3 Windband to be one piece uniquely spun aluminum construction and maintain original material thickness throughout the housing
      .4 Windband to include an integrall rolled bead for strength
      .5 Curb cap base to be fully welded to windband to ensure a leak proof construction. Tack welding, bolting, and caulking are not acceptable
      .6 Curb cap to have integral deep spun inlet venturi and pre-punched mounting holes to ensure correct attachment to curb
      .7 Drive frame assemblies shall be constructed of heavy gauge steel and mounted on vibration isolators
      .8 Breather tube shall be 10 square inches in size for fresh air motor cooling, and designed to allow wiring to be run through it
   .5 Motor Cover:
      .1 Constructed of aluminum
   .6 Vibration Isolation:
      .1 Double studded or pedestal style true isolators
      .2 No metal to metal contact
      .3 Sized to match the weight of each fan
   .7 Disconnect Switches:
      .1 NEMA rated: NEMA 4X: same as NEMA 4, but corrosion resistant.
      .2 Positive electrical shut-off
      .3 Wired from fan motor to junction box installed within motor compartment
   .8 Drain Trough:
      .1 Allows for one-point drainage of water, grease, and other residues
   .9 Options/Accessories:
      .1 Birdscreen:
         .a Material Type: Aluminum
         .b Protects fan discharge
      .2 Clean Out Port:
         .a Removable grease repellent compression rubber plug allows access for cleaning wheel through windband
      .3 Roof Curbs:
         .a Type: GPFP - For pitched roofs, welded straight side curb with 5 Inch flashing flanges, no wood nailer
         .b Mounted onto roof with fan
         .c Material: Aluminum
         .d Insulation thickness: 1 Inches
      .4 Curb Seal:
         .a Foam Seal - dense foam tape seal
.6 INLINE SUPPLY FAN
   .1 General Description:
      .1 Base fan performance at standard conditions (density 0.075 Lb/ft3)
      .2 Performance capabilities up to 28,000 cubic feet per minute (cfm) and static pressure to 4 inches of water gauge
      .3 Fans are available in fourteen sizes with nominal wheel diameters ranging from 11 inches through 36 inches (70 - 420 unit sizes)
      .4 Normal operating temperature up to 180 Fahrenheit (82.2 Celsius)
      .5 Applications include: intake, exhaust, return, or make-up air systems
      .6 Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number
   .2 Wheel:
      .1 Non-overloading, backward inclined centrifugal wheel
      .2 Constructed of
      .3 Statically and dynamically balanced In accordance to AMCA Standard 204-05
      .4 The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency
      .5 Single thickness blades are securely riveted or welded to a heavy gauge back plate and wheel cone
   .3 Motors:
      .1 AC Induction Motor
         .a Motor Enclosure: Open drip proof (ODP) - opening in the frame body and or end brackets
         .b Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase
   .4 Shaft and Bearings:
      .1 Fan Shaft shall be ground and polished solid steel with an anti-corrosive coating
      .2 Permanently sealed bearings or pillow block ball bearings
      .3 Bearing shall be selected for a minimum L10 life in excess of 100,000 hours (equivalent to L50 average life of 500,000 hours), at maximum calculated operating speed
      .4 Fan Shaft first critical speed is at least 25 percent over maximum operating speed
   .5 Housing/Cabinet Construction:
      .1 Square design constructed of heavy gauge galvanized steel and shall include square duct mounting collars
      .2 Housing and bearing supports shall be constructed of heavy gauge bolted and welded steel construction to prevent vibration and to rigidly support the shaft and bearing assembly.
      .3 Aluminum construction is available in sizes 70-300
   .6 Housing Supports and Drive Frame:
      .1 Housing supports are constructed of structural steel with formed flanges
      .2 Drive frame is welded steel which supports the shaft and bearings and reinforcement for the housing
      .3 Pivoting motor plate with adjusting screws to make belt tensioning operations
   .7 Disconnect Switches:
      .1 NEMA rated: NEMA 1: indoor application no water. Factory standard.
      .2 Positive electrical shut-off
      .3 Wired from fan motor to junction box Installed within motor compartment
   .8 Drive Assembly:
      .1 Belts, pulleys, and keys oversized for a minimum of 150 percent of driven horsepower
      .2 Belt: Static free and oil resistant
      .3 Pulleys: Cast type, keyed, and securely attached to wheel and motor shafts
      .4 Motor pulleys are adjustable for final system balancing
      .5 Readily accessible for maintenance
   .9 Duct Collars:
      .1 Square design to provide a large discharge area
      .2 Inlet and discharge collars provide easy duct connection
   .10 Access Panel:
      .1 Two sided access panels, permit easy access to all Internal components
      .2 Located perpendicular to the motor mounting panel
   .11 Options/Accessories:
      .1 Belt Guards:
         .a Three-sided fabricated steel belt guard covers drive and motor
      .2 Belt Type:
         .a Standard Belt
      .3 Dampers:
         .a Type: WD-330, 115 VAC
         .b Galvanized frames with prepunched mounting holes
         .c Balanced for minimal resistance to flow
      .4 Extended Bearing Lube Lines:
         .a Grease zerks on housing exterior allows for lubrication of bearings without disassembling the fan
      .5 Finishes:
         .a Permatector - thermo-setting polyester urethane, Factory Standard
      .6 Motor Cover:
         .a Constructed of galvanized steel
         .b Covers motor and drives for safety
         .c Standard on unit specified with UL

5.0 CONTROLS
.1 Controls are to be supplied and installed by Div 15.
.2 Controls are to be packaged with equipment or alternate acceptable products.

ROCKY POINT
ENGINEERING LTD.
Vancouver • Langley • Victoria • Nanaimo • Kelowna • Kamloops • Nelson
Mechanical Consulting Engineers
www.rpeng.ca
NANAIMO
102-3721 SHENTON ROAD
NANAIMO, BC, V9T2H1
ph. 250.585.0222

SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
3	26JAN2021	ISSUED FOR TENDER	AM
2	21AUG2020	REVISED	AM
1	20DEC2019	ISSUED FOR REVIEW	AM

REVISIONS:

SEAL:

CLIENT:

PROJECT:
CRTS - RESIDENTIAL TRANSFER BUILDING UPGRADES
860 CHURCH ROAD
PARKSVILLE, BC

DRAWING NAME:
MECHANICAL SCHEDULES & SPECIFICATIONS

PROJECT NUMBER:
19615-N

DRAWN BY:	NG
DESIGNED BY:	AM
APPROVED BY:	AM
SCALE:	---

DRAWING:
M-2