Fraser Valley Regional District

REQUEST FOR QUOTATIONS

FOR THE PROVISION OF:

Ventilation installation at North Fraser Fire Halls II and III

RFQ TITLE: North Fraser Fire Hall Ventilation Installation

RFQ NUMBER: RFQ-25011

DATE ISSUED: November 6, 2025

CLOSING DATE: December 4, 2025

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1.0 INTRODUCTION

North Fraser Fire Halls II and III are located east of Mission at 43824 Watkins Road, Lake Errock and 11980 Sylvester Road, McConnell Creek respectively. Indoor air quality testing at both halls showed poor results and ventilation improvements are necessary to improve conditions.

The Fraser Valley Regional District (FVRD) is requesting contractors with proven capacity, capabilities and experience in the installation and maintenance of heating, venting and cooling systems to provide a quotation on the form attached in Schedule B (the Quotation) in response to the following specifications.

2.0 SCOPE OF WORK

The work consists of providing and installing an integrated ventilation system at North Fraser Fire Hall II and North Fraser Fire Hall III as described in Straiton Engineering's July 11, 2025, FVRD Fire Hall Ventilation Study Halls II and III Report and includes:

- Supply and installation of truck bay exhaust ventilation, gas monitoring and makeup air supply systems;
- complete integration of systems above as well as with overhead door circuits;
- provision for all necessary trade work, services, connections and finishing work;
- relocation of the furnace's return air inlet at North Fraser Fire Hall II;
- provision for necessary permitting including FVRD Building permitting;
- installation, testing and commissioning of all equipment and components necessary to complete the work above and that laid out in Section 2.3 of the Straiton Report attached in Schedule A; and
- restoration of the work site to a state of order that meets or exceeds that of its previous condition.

Work will be completed prior to March 31, 2026

3.0 SITE VIEWING

The fire halls will be available for viewing on November 17 and 18, 2025 as follows:

- North Fraser Fire Hall II - 43824 Watkins Road, Lake Errock, from 12:00 pm till 1:30 pm; and
- North Fraser Fire Hall III - 11980 Sylvester Road, McConnell Creek, from 2:15 pm till 3:45 pm.

Individuals who choose to visit the site are requested to park at the side of the building and not in front of the bay doors.

4.0 SUBMISSION

One completed copy of the Quotation marked North Fraser Fire Hall Ventilation Installation, RFQ-25011 should be delivered by hand, regular mail, courier or email before 1:00 pm on December 4, 2025 to:

Fraser Valley Regional District
Attn: Deanne Bozek, Protective Services Specialist
1 - 45950 Cheam Avenue
Chilliwack, BC, V2P 1N6
Email: fireservices@fvrd.ca

An electronic version is preferred (such as a PDF or Word file) either by email or delivered on a USB flash drive. Hard copies will also be accepted in person, through regular mail or by courier. Quotations received after the time specified above will not be considered. The FVRD reserves the right to cancel this RFQ for any reason whatsoever without any liability to any party for any claims of any kind whatsoever. All Quotations will remain confidential, subject to the statutory requirements for disclosure set out under the *Freedom of Information and Protection of Privacy Act*.

5.0 INQUIRIES AND ADDENDA

All inquiries regarding this RFQ should be directed to:
Dave Driediger, Manager of Regional Facilities
Phone: 604-702-5095
Email: ddriediger@fvrd.ca

Any enquiries that are received by the FVRD and that affect this RFQ will be issued as addendum to all contractors that received the original RFQ. By delivery of a Quotation, the Contractor is deemed to have received, accepted and understood the entire RFQ including any addenda. Any information regarding this RFQ obtained by a party from any source other than from the FVRD by way of addenda is not authorized and should not be relied upon.

6.0 NO CONTRACT

This RFQ is simply an invitation for quotations for the convenience of all parties and should not be construed as an intention by the FVRD to enter into contractual relations with any party submitting a Quotation. The FVRD will provide written notice of acceptance of a Quotation in the event that the FVRD seeks to acquire the Services and formalize a contract for that purpose. The FVRD may negotiate changes to any term of a Quotation for the purposes of finalizing a contract.

7.0 LIMITATION OF LIABILITY

By submitting a Quotation, each contractor irrevocably agrees that the FVRD shall not be liable to any contractor, proponent or any person whatsoever, for any claim of any nature (in contract, in tort, or otherwise), for any costs, expenses, compensation, damages, or anything whatsoever, including without limitation, costs and expenses associated with the Contractor's preparation and submission of their Quotation, their participation in this RFQ, for loss of revenue, opportunity or anticipated profit, arising in

connection with their Quotation, this RFQ, any subsequent processes or opportunity, any contract, or any matter whatsoever.

8.0 CONFLICT OF INTEREST

Contractors shall disclose any potential conflict of interest and existing business relationship they may have with the FVRD, its elected or appointed officials or employees.

9.0 NO LOBBYING

Contractors and their agents are not permitted to contact any member of the FVRD Board of Directors or staff with respect to this RFQ, except as expressly provided for herein. Contractors will not offer entertainment, gifts, gratuities, discounts, or special services, regardless of value, to any employee or elected official of the FVRD. The FVRD reserves the right to disqualify any contractor from participation in this RFQ that acts in contravention of this requirement.

10.0 EVALUATION

The evaluation of Quotations received in response to this RFQ will be completed in accordance with the FVRD Purchasing and Procurement Policy.

Schedule A

July 11, 2025, Straiton Engineering FVRD Fire Hall Ventilation Study Halls II and III Report

STRAITON ENGINEERING

FVRD Fire Hall Ventilation Study

Halls II & III

Date: 2025-07-11

Project #: 25024

Client: Fraser Valley Regional District

EXECUTIVE SUMMARY

Straiton Engineering ltd. has been retained to review the two existing truck bays at Fire Halls #2 and #3 within the FVRD and provide recommendations for implementing new gas detection and ventilation systems there to improve indoor air quality for the volunteer firefighter force.

To comply with provincial regulations, we recommend installation of gas detection systems in each fire hall to monitor CO and NO_2 levels. Initial data collection will determine whether there is need for an active ventilation system, though such a system may be desirable regardless. The ventilation system should integrate with gas detectors to automatically adjust airflow, with additional heating to accommodate outdoor air intake.

This approach ensures regulatory compliance and a safe working environment. The existing building structure, electrical infrastructure, and gas/propane supplies support these upgrades. With sufficient funding, we advise proceeding with the installation of both gas detection and ventilation systems. The recommendations herein do not form detailed engineering designs; complete design packages will be required prior to tendering or constructing these upgrades.

Contents

List of Tables & Figures

1. INTRODUCTION

1.1. Purpose of Study

Straiton Engineering Ltd. (SEL) has been retained to conduct a study of existing building configuration, typical use patterns of diesel-engine fire trucks, and potential addition of new ventilation systems to improve health and safety conditions in the two existing fire halls located at 11980 Sylvester Road and 43824 Watkins Road.

The primary concern is ensuring a safe working environment for the largely volunteer force of firefighters using these facilities. The Canadian Centre for Occupational Health and Safety lists many gases, vapours, particles, and aerosols produced by the operation of diesel engines, and notes that adverse health effects due to exposure may range from coughing and irritation (short term) to lung and bladder cancer (long term)[1]. Understanding exposure levels and implementing controls to limit exposures are important for long term health and safety.

1.2. Assumptions and Inputs

The two buildings in question are both of similar size, construction, layout, and use. Unless stated otherwise, any statements herein apply equally to both halls.

As record drawings are not available, we have relied on our own photos and sketches from our site visit, as well as information provided by the Client, such as model of diesel engines and usage patterns for the fire trucks. We note that additional relevant information may be present but unknown at this time, such as concealed services, roof structure, envelope assemblies, and other details.

1.3. Prevailing Codes and Standards

The relevant codes and standards that govern health and safety requirements within a vehicle bay, as well as technical requirements for ventilation systems used to address vehicle exhaust, are listed below:

- 2024 BC Building Code (“BCBC”)
- ACGIH Industrial Ventilation Manual of Recommended Practice
- ASHRAE 62.1: Ventilation and Acceptable Indoor Air Quality
- WorkSafeBC OHS Regulation Part 5: Chemical Agents and Biological Agents
- WorkSafeBC Guidelines G31.32: Vehicle Exhaust in Firehalls

1.4. Description of Existing Buildings

1.4.1. Building Form and Space Use

Both halls have similar size, form, and construction, comprised of Concrete Masonry Unit (CMU) block walls, wood framed interior walls and mezzanine, and wood truss roof structure with ventilated attic and metal channel roofing. The buildings are bisected into two equal halves, with the truck bay and mechanical/electrical services on one side, and break room, offices, and washroom on the other. The

[1] CCOHS Chemicals and Materials: https://www.ccohs.ca/oshanswers/chemicals/diesel_exhaust.html

overall building footprint is approximately 40ft x 50ft, with the truck bay itself at 19ft x 34ft (650 ft^2), with 14.5ft ceiling height.

We were informed that the building is generally unoccupied unless there is an active call in progress.

1.4.2. Existing HVAC Systems

Both fire halls are currently heated by ducted furnaces, with either natural-gas (Hall #3, 75,000 btu/h) or propane (Hall #2, 90,000 btu/h). Furnace ducting in both cases extends into the truck bay and adjacent break room, forcing air from the truck bay to recirculate throughout the building. We noted that the furnace in Hall #2 appeared to have been taken out of service, with parts replacement in progress. Hall #3 also has electric unit heaters installed both in truck bay and break room.

There do not appear to be any fresh air connections to the furnaces, and so they do not provide ventilation for the spaces. Based on the natural gas meter and propane tank/regulator, it appears that there is additional capacity to expand the building heating systems at both sites, if needed.

Figure 1: Hall #3 Natural Gas Furnace (75,000 btu/h)

Cabinet-style exhaust fans were present in washrooms, but otherwise we did not witness any active ventilation systems in either building, or any dedicated fresh air openings. It was noted that the furnace return air inlet grille in Hall #2 was located directly in front of the discharge from the truck's exhaust outlet when parked, as shown in Figure 2.

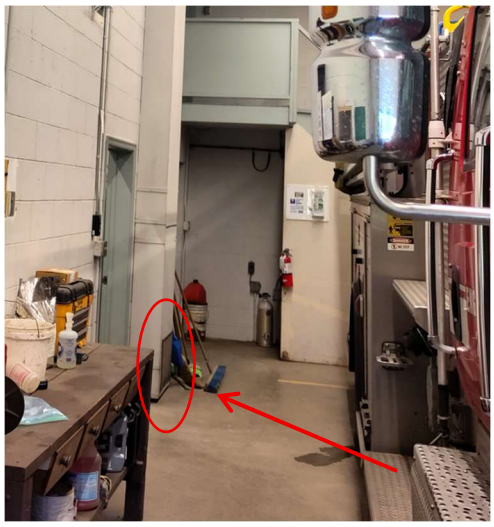


Figure 2: Hall #2 Furnace Return Air Location

1.4.3. Fire Truck Engine Specification

Two different engine specifications were provided by the Client for trucks used at these halls:

1. Caterpillar 3126: 7.2L, 6-cylinder, turbocharged, 330 horsepower
2. Caterpillar DT530: 8.7L, 6-cylinder, turbocharged, 300 horsepower

As these engine specifications are relatively close to one another, we have taken the larger horsepower engine as the basis for any ventilation rate sizing calculations.

1.4.4. Fire Truck Usage Patterns

Based on information provided by FVRD, we understand that the trucks are typically operated as follows:

- All maintenance requiring engine operation is performed outdoors or offsite.
- The trucks are typically “off”, unless on an active call, and are not idled indoors for extended periods (more than a few minutes).
- Upon receiving a call, the truck engine may be on for up to five minutes while the door is opened and the firefighters prepare to respond. The overhead door is closed shortly after the truck leaves the bay.
- Upon returning from a call, the truck engine will be on long enough to park the vehicle. The overhead door is closed shortly after the truck is in place and the engine is turned off.

2. NEW VENTILATION SYSTEM STUDY

2.1. Code Requirements

A number of building code and regulatory requirements and recommendations from the documents listed in Section 1.3 apply to these buildings, and should be reviewed by any team looking to implement the recommendations of this report prior to awarding contracts or starting construction.

Firehalls are designated 'post disaster' buildings as per BCBC Division A, 1.4.1.2, unless exempted by the Authority Having Jurisdiction (typically the local municipality). This acknowledges the key role such buildings play in response to a major disaster. The existing buildings did not appear to have been constructed to this standard, however, so it is likely sensible to exempt additional work within the buildings from the associated increased structural support requirements. The BCBC does not stipulate prescriptive design practices for ventilation of such spaces other than to exercise "good engineering practice" while using ASHRAE 62.1 and the ACGIH manual for guidance.

While the ACGIH manual is not directly mandated by provincial regulation, it is widely considered the authoritative source on industrial ventilation system design and protection of workers from exposure of many typical airborne contaminants. The manual provides safe exposure concentrations for both long-term working environments and for a single 8-hour shift: these are Threshold Limit Value (TLV) and time-weighted average (TWA), respectively. Airflow rates and system configurations are recommended based on maintaining indoor air contaminant concentrations below these safe exposure limits.

WorkSafeBC (WSBC) also provides some general requirements for vehicle bays:

WSBC OHS Regulation 5.72-5.74:

- *"Whenever possible"*, engines must be vented to the outdoors. Otherwise, assess exposure hazard and install *"engineering controls"* to limit exposure.

WSBC Guidelines G31.32:

- Requires air monitoring of contaminant gas concentrations.
- Unless monitoring indicates gas levels below WSBC exposure limits (s5.48), *"effective local venting for the exhaust gases must be provided in vehicle areas"*.

2.2. Comparison of Sizing Methodologies

Both ASHRAE 62.1 and the ACGIH manual present potential methodologies for sizing dilution ventilation exhaust systems within vehicle maintenance bays, loading docks, and other areas with only intermittent engine operation.

2.2.1. ASHRAE 62.1 Recommendations

The ASHRAE method is a straightforward calculation based on a set airflow rate of 1.5 cfm/ft^2[2]. Applied to the truck bays in question, this would amount to approximately 975 cfm. This is a relatively low

[2] CFM/ft^2: airflow rate, in cubic feet per minute, per square foot of floor area.

exhaust rate, and is qualified in the standard as applying only if direct vehicle exhaust capture is *also* provided, which we understand is impractical for these locations. An example of such a system is indicated in Figure 3 below.

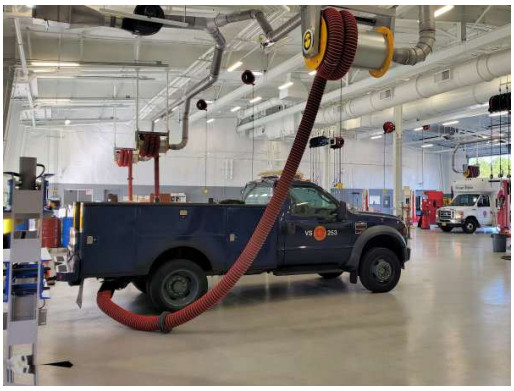


Figure 3: Direct Vehicle Exhaust Capture

While direct exhaust capture is not being entertained, there is the potential to locate the exhaust intake point within 5-6ft of the engine exhaust outlet near floor level. This means incomplete but meaningful capture may nevertheless take place, reducing the reliance on dilution to control contaminants. For this reason, we use the ASHRAE airflow rates as a useful minimum reference point in assessing potential system size.

2.2.2. ACGIH Recommendations

The ACGIH manual provides reference airflow rates for a number of scenarios, including forklifts and general continuous indoor engine use, as well as intermittent engine operation such as at loading docks. Flow rates can be based on number of active engines, total horsepower, flow rate per area, or flow rate per direct capture inlet. Example airflows resulting from the different sizing methods are listed in Table 1 below.

Table 1: ACGIH Exhaust Methods Comparison

Method	Resulting Airflow (cfm)
10,000 cfm+ per truck, 4 hrs per day	10,000
100 cfm/horsepower, 4 hrs per day	33,000
2 cfm/ft^2, engines off after parking	1,300
Direct Capture, 8L engine at 1,500 rpm	600

The use case at these fire halls is exclusively for intermittent and relatively short periods of operation, measured in minutes at a time, with extended periods of time where the trucks are not running. Weighing this usage and lack of direct exhaust capture, we believe it is sensible to choose a maximum exhaust air flow rate slightly exceeding the ACGIH recommendation of 2 cfm/ft^2. Please see Section 2.3.3 for further discussion.

2.3. Recommendations

2.3.1. Gas Monitoring System

An automatic gas monitoring and alarm system should be installed within the truck bays, to monitor gas levels of carbon monoxide (CO) and nitrogen dioxide (NO_2), two common toxic gases that are emitted during diesel engine operation and which are useful proxies for other common contaminants. We recommend such a system be comprised of the following:

- Controller module at breathing level, similar to Figure 4 below, with integrated CO sensor
- NO_2 sensor within 12in of floor level
- Local strobe alarm for high gas concentration detections
- Data logging capability, to demonstrate gas concentrations over time

Figure 4: Gas Monitoring Station with Local Alarm

It is worth noting that provincial OSHA regulation requires gas monitoring in all spaces (including existing buildings), but not necessarily active ventilation so long as detected gas levels are below regulation TLV and TWA exposure limits. If budget constraints are a primary consideration, it may be possible to initially install only a monitoring system to verify if unsafe conditions are, or are not, being created. Once that information is in-hand, a decision could be made to proceed with the addition of an active ventilation system as per Section 2.3.2.

Conversely, if the current safety concerns are of sufficient priority then simply proceeding with the complete gas detection and active ventilation system is the more conservative approach in terms of occupant health and safety.

2.3.2. Truck Bay Ventilation Sizing

In reviewing the various sizing scenarios outlined in Section 2.2 and comparing these to the intended use cycles (short duration engine operation, with long periods of inactivity), our opinion is that an exhaust system sized for approximately 1,500 cfm would be sensible and effective for both halls. We further recommend including variable speed fan operation, so that the system is only operating at full flow

when necessary to maintain safe contaminant concentrations, while avoiding freezing/condensation issues or excessive energy use the rest of the time.

Please note that these recommendations are conceptual only, and should not be implemented without a complete, fully engineered design.

2.3.3. Exhaust System

- New inline exhaust fan of approximately 1,500cfm capacity at 1.0" ESP pressure. Include low voltage speed control input and connection to gas detection system.
    - Example product: Greenheck SQ-140-VG, 3/4HP EC motor, 0-10VDC speed control input
- Extend new exhaust ducting to within 2ft of floor level, located approximately inline with typical diesel exhaust discharge location; refer to Figure 5 below:

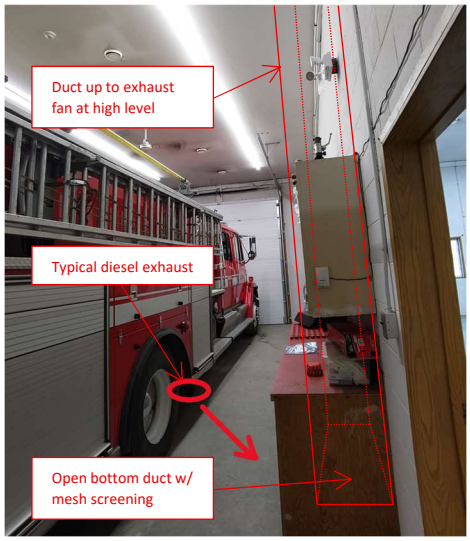


Figure 5: Recommended Exhaust Inlet

- Exhaust ducting from truck bay connected to exhaust fan at high level, and then run through attic space to new sidewall louvre discharge at front of building; suggested typical location indicated below in Figure 6:

Figure 6: Recommended Exhaust Louvre Outlet Location

- Recommended operation:
    - Fan normally "off" during unoccupied periods
    - Fan to operate at 20% speed upon light switch activation or detection of gases
    - Fan speed to modulate based on input from gas detection system, to maintain contaminants below preset limits

2.3.4. Makeup Air Supply

Due to the addition of a significant quantity of outdoor air, during winter outdoor conditions the incoming makeup air will need to be pre-heated to prevent freezing or condensation issues. A cursory review of the electrical loading of existing panels suggests that insufficient power will be available to rely on electric heating for this purpose; new sealed combustion gas- or propane-fired unit heaters are recommended, with combustion air and venting connections extended to the outdoors:

- Provide new intake sidewall louvre from attic space at the opposite end of the building from the new exhaust louvre
- Extend intake louvre to a ceiling-mounted diffuser within the truck bay, located to discharge in front of a heat source near the rear half of the truck, driver-side. A minimum of 15 kW (50,000 btu/h) heating is required near the new diffuser:
    - At Hall #2: existing electric unit heater installed in this location; remove and replace with new propane-fired unit heater of 75 MBH heating input
    - At Hall #3: no existing unit heaters installed; provide new gas-fired unit heater of 75 MBH heating input

3. DISCUSSION AND RECOMMENDATIONS

To comply with provincial regulations, a gas detection system monitoring CO and NO_2 should be installed in each fire hall to measure and log contaminant concentrations during typical operations. As it is not possible to know if unsafe gas concentrations are occurring until this monitoring is in place, a reasonable strategy could be to install these systems first, collect data for a few months, and then decide whether or not to proceed with an active ventilation system.

Should installation of a ventilation system be desirable either immediately or after completing a monitoring period of gas levels at the truck bays, we have provided recommendations in 2.3.3 and 2.3.4 as an approximate guideline for implementation, though we recommend a complete and engineered system design be done prior to construction. The new ventilation system should have its speed controlled by the gas detection system, so that airflow is adjusted automatically upon detection of increased contaminant gas concentrations. Due to the significant volumes of outdoor air required, additional heating will be needed.

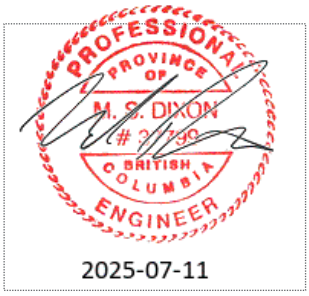
Ultimately, both regulatory compliance and provision of a safe working environment can be achieved through addition of a ventilation and gas detection system. The services and structure of the existing building appear to lend themselves well to the addition of such a system. Assuming funding is in place to proceed, we would recommend the addition of a gas detection and ventilation system.

4. CONCLUSION

This report is based on the information available to Straiton Engineering Ltd. at the time of writing, and represents our professional opinions and recommendations. It is intended for the use of Fraser Valley Regional District only, and should not be relied upon by other third parties without prior written consent from SEL. Should additional or modified information come to light, we reserve the right to update our findings to reflect this.

Sincerely,

Mike Dixon, P.Eng.
Principal
Straiton Engineering Ltd.
D: 778-752-5834
E: mdixon@straitoneng.com



Permit to Practice #: 1000512

John Buxton, P.Eng.
Principal
Straiton Engineering Ltd.
D: 778-752-5836
E: jbuxton@straitoneng.com

Schedule B

Quotation

Fraser Valley Regional District	RFQ NUMBER:
	RFQ TITLE:

Legal Name: _____

Address: _____

Name and title of Representative: _____

Phone: _____ Email: _____

Form of Business Organization

☐ Sole Proprietorship

☐ Partnership Date of Establishment _____

☐ Corporation Date of Incorporation _____ Business No._____

I/We hereby offer to provide to the Fraser Valley Regional District the Services for the prices plus applicable taxes:

Item #	Item Name	Estimated Quantity	Unit of Measure	Unit Price	Total Amount
1.	Labour				
2.	Materials				
3.	Sub-trades				
4.	Finishing				
8.	Other				
				Subtotal:	$
				GST (5%)	$
				PST (7%)	$
CURRENCY: Canadian				TOTAL:	$

Cost Plus Rates

1. Construction Labourer	$/hr_____
2. Supervisor	$/hr_____
3. Trades	$/hr_____
- Electrician	$/hr_____
- Sheet Metal	$/hr_____
- Carpenter	$/hr_____
- Framer	$/hr_____
- Painter	$/hr_____
- Other	$/hr_____
4. Other	$/hr_____
5. Materials	Additional %_____

If this offer is accepted by the FVRD, then such offer and acceptance will create a contract as described in the RFQ, this Quotation and other terms, if any, that are agreed to in writing by the parties.

I/We the undersigned authorized representatives of the Contractor, having received and carefully reviewed the RFQ, including without limitation the Specifications and General Terms and Conditions, submit this Quotation in response to the RFQ.

This Quotation is offered by the Contractor this ___ day of _____, 2025.

CONTRACTOR

I/We have authority to bind the Contractor

_____
Legal Name of Contractor

_____ _____
Signature of Authorized Signatory Signature of Authorized Signatory

_____ _____
Name & Title/Position: Name & Title/Position: