FIRE SAFETY PROGRAM MANUAL

for

NOVA SCOTIA SCHOOLS

Prepared for:

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1.0 Program Management

1.1 Purpose of the Fire Safety Program

The Nova Scotia Department of Education and Early Childhood Development (EECD) is responsible for all public schools and associated buildings in the Province of Nova Scotia through eight *school boards*. The objective of this document is to develop a process that will help EECD to establish and maintain a standard for the *school board*s to achieve compliance with the requirements of the Nova Scotia Fire Safety Act on a consistent basis.

1.2 Definitions

The following definitions shall apply with respect to this document:

Area of Refuge – for the purposes of Nova Scotia schools, the definition in the National Building Code does not apply. Refer to section 3.9 of this manual for information related to Nova Scotia School facilities.

Authority Having Jurisdiction (AHJ) – This person is defined as a representative of the Office of the Fire Marshal, municipal fire inspector, or designate of the local fire department.

Fire Safety Plan – As described in the National Fire Code, Division B, Part II, Building & Occupant Safety, Section 2.8 Emergency Planning.

Fire Safety Program – A program developed for school boards to customize and implement for each individual school using a series of approved template documents, developed by the Nova Scotia Schools Fire Safety Committee (NSSFSC). These documents provide the necessary information, outline expectations and requirements for documentation to meet the requirements of the Nova Scotia Fire Safety Act.

Log Books - Log books are found in a document titled "Fire Safety Systems Log", generally presented in a binder format and customized for each school by individual school boards. These logs are preferred to be located in the Administrative Office of the individual school.

Maintenance Staff – Persons employed by the board or contracted by the board or building owner for the purposes of providing maintenance and custodial duties.

EECD Fire Safety Committee *(NSSFSC)* – For the purposes of this document, this committee will be known as the Fire Safety Committee. This committee is comprised of persons representing EECD, Transportation and Infrastructure Renewal (TIR), the Office of the Fire Marshal (OFM), persons representing *school board*s and *private sector developers* also referred to as P3 partners within the Province of Nova Scotia. This committee is responsible for development and management of the Nova Scotia school *fire safety program*.

Office of the Fire Marshal (OFM) - The OFM is comprised of the Fire Marshal and Deputy Fire Marshals appointed under the Fire Safety Act to enforce compliance with the Act, regulations and incorporated standards; and to promote, inform and advise on fire prevention, fire safety, and life safety matters in the Province.

Private Landlord – A sole proprietor, partnership or corporation that rents or leases *facilities* to a School Board or to the *Province*.

Private Sector Developer – Also known as Public Private Partnership (P3) partner is a person, company or association of persons, including but not limited to, a joint venture or limited partnership, other than the

province or a *school board*, who enter into an agreement with the Province to construct a school and operate the school for an agreed period of time.

School Board – A corporate body responsible for the control and management of public schools and *facilities* within its jurisdiction.

School Facilities – Refers to any structure, or part thereof that is owned or leased from a third party by the *School board* or EECD (including P3 schools) for the purpose of education or recreation. This also applies to facilities the board may make available to third parties, such as, daycares or afterhours programs.

School Fire Safety Program Administrator - Person designated by each school board responsible to coordinate the board-wide specific Fire Safety Program and for supporting schools on their individual Fire Safety Plans.

1.3 Objectives

The objectives of the Fire Safety Committee are:

- Establish a framework for the promotion of fire safety and effective emergency response for all *school board facilities*, required by Section 2.8 of the National Fire Code of Canada 2010 (NFC).
- Establish a template for the development of a *fire safety program, to* be implemented in all *school board facilities, private sector developer facilities* and school *facilities* rented/leased by the s*chool* b*oard*.
- Collaborate with the OFM, *school boards, private sector developers*, and TIR to help ensure the implementation of fire safety plans.

1.4 Applicable Provincial Legislation

Three primary provincial legislative acts that apply to safety in Nova Scotia school facilities are:

- Nova Scotia Fire Safety Act, 2002 and latest amendment.
- Education Act, 1995 and latest amendment.
- Occupational Health and Safety Act1996 and latest amendment.

Each of the above listed acts, and regulations outline responsibilities of school boards, administrators, owners and employees.

1.5 Coordination with the Authority Having Jurisdiction

In order to ensure that the fire safety requirements within a school or a *facility* are being met, it is important that the Owner and administration of the school or *facility* liaise with the OFM and/or local fire department(s) on fire safety items.

1.5.1 Fire Safety Inspections

It is the responsibility of the Authority having Jurisdiction to conduct inspections of a school once every three years as required by section 14, sub-section (1) of the Nova Scotia Fire Safety Regulations.

The OFM has an official role in confirming that new construction, additions, alterations, and renovations of *facilities* are in compliance with applicable fire codes.

1.5.2 Fire Safety Program Audits

With respect to the Nova Scotia Fire Safety Act, the OFM will conduct audits of school *facilities*. The intent of the Fire Safety Act is for OFM representatives to go to the school or *facility* and meet with someone knowledgeable in the fire safety systems (Principal or designate for the *facility*), to review maintenance records demonstrating that a fire safety plan exists and is fully implemented.

The purpose of the fire safety program audits is to review the administration of the fire safety program at individual school/facility sites. These audits provide the following:

- Assistance to School Boards and administrators in implementing the fire safety program, by providing clarifications and interpretations.
- Opportunities for dialogue relating to improvements and best practices.
- Opportunities to clarify requirements of the fire safety plan.

The OFM requires a system of maintenance records that will contain up-to-date information relating to fire safety systems maintenance which will be reviewed during an audit. The maintenance records system developed by the Nova Scotia School Fire Safety Committee shall be implemented at each school facility.

Fire safety program audit categories can be found in Appendix E.

1.6 Responsibilities for Nova Scotia School Fire Safety Program

The *fire safety* program outlines responsibilities of various stakeholders such as, but not restricted to, the Nova Scotia School Fire Safety Committee, individual *school boards*, school administration, and *private sector developer*s.

Part II

2.0 Nova Scotia Schools Fire Safety Committee

2.1 General

The role of the fire safety committee is to assist boards in developing, with consistent on-going messaging and tools, in implementing the fire safety program.

The fire safety committee will meet on a regular basis to discuss *fire safety plan* issues and to provide a means for disseminating updated information related to fire safety to the appropriate persons.

The fire safety committee will also be responsible for providing tools for training and communication.

It is the responsibility of all fire safety committee stake holders to report findings, initiatives, decisions and legislative requirements to the organizations they represent.

2.2 Nova Scotia Schools Fire Safety Committee - Members

- Representative(s) from EECD
- Representative(s) from the OFM
- Representative(s) from all eight Nova Scotia School Boards
- Representative(s) from P3 Owners
- Representative(s) from TIR

2.3 Nova Scotia Schools Fire Safety Committee Terms of Reference

The Nova Scotia Schools Fire Safety Committee is responsible to oversee and ensure that *fire safety programs* for schools and *facilities* are provided and are to be consistently administered within Nova Scotia schools. The committee will be responsible for the following:

1. Provide an opportunity for representatives of the Department of Education and Early Childhood Development, Department of Transportation and Infrastructure, Office of the Fire Marshal, School Boards and P3 Owners to liaise regarding items concerning fire safety.
2. Promote and support the Fire Safety Program. Develop training tools for fire safety.
3. To provide a forum for school boards and other stakeholders to raise concerns, seek clarifications and implement changes to collectively develop best practices.
4. Periodic fire safety program review: incorporation of applicable code an*d regulation* updates and changes; incorporation of best practices.
5. *Conduct a r*eview of the recommendations for each school as no*ted during an a*udit by the OFM, respective School Boards and EECD
6. Provide a consistent inspection an*d documentat*ion p*rocess for the fire safety program*.
7. Hold up to *four regular me*etings, with minutes, within a calendar year.
8. The Fire Safety Committee will be chaired by Board representatives on a year-to-year rotating basis with assistance from the OFM and EECD.
9. Recording, distributing, and saving meeting minutes of the fire safety committee.
10. Maintain current and updated master electronic files and make available when required by stakeholders.
11. To advise DTIR of fire safety issues with respect to developing standards for new school design, construction and operation.

2.4 Department of Education and Early Childhood Development

1. To provide governance of the fire safety program.
2. To provide representation on the fire safety committee.
3. To assist in coordination of the fire safety committee.
4. To provide communications on matters relating to school fire safety.
5. To participate with the OFM in school fire safety program audits, as is possible.

2.5 Office of the Fire Marshal

1. To provide governance of fire safety in Nova Scotia.
2. To provide representation on and assistance in co-ordination of the fire safety committee.
3. To provide interpretations, and clarifications on matters relating to school fire safety.
4. To provide communications on matters related to school fire safety.
5. To conduct school fire safety program audits.
6. To conduct school fire safety inspections.

2.6 Department of Transportation and Infrastructure

1. To design and provide for construction of Nova Scotia schools.
2. To provide representation on fire safety committee.
3. To develop and update standards (DC 350) for fire safety design for Nova Scotia schools.
4. To assist the fire safety committee in resolving building design, construction, renovation and operation issues.
5. To provide communications on matters relating to school fire safety.

2.7 School Boards

1. To ensure the fire safety program is customized and provided for each school facility within their board.
2. To maintain and promote fire safety planning.
3. To provide the administrative structure and resources to support the Fire Safety Program.
4. To assign responsibilities to individual staff members for implementing, operating and updating the fire safety program requirements and for addressing other related fires safety concerns.
5. To provide training of appropriate staff on their roles and responsibilities within the Board, P3 and leased facilities.
6. To ensure that fire safety plans (as per the directive received from the OFM, dated October 6th, 2014, see Appendix F) are implemented and up-to-date.

7. To ensure that fire safety systems are tested and maintained as required.
8. To conduct periodic reviews to ensure fire safety programs and plans are current and implemented.
9. To liaise with the fire department and the OFM regarding fire safety issues.
10. To complete occupant load and exiting calculations in concert with the OFM for all facilities operated by the school board, as required.
12. To keep files and drawings current and updated, as required.
13. To ensure information received from the OFM and the fire safety committee is distributed to the respective individuals, schools and departments who require them and that they are implemented.
14. The School Board is required to complete the Fire Safety Systems Information form located in Section D of the Maintenance Information Binder. A copy of this form shall be distributed to the local Fire Service or Office of the Fire Marshal, as appropriate.
15. The Fire Department Information Form located in Appendix 7B of the Principal's Guide, is to be completed annually by the Principal and retained in the Principal's Guide. The Principal shall provide a copy to their local Fire Service or the OFM for distribution to the local fire department and/or AHJ. This submission is required to be completed on or prior to September 30th of the current school year.

2.7.1 School Administrator Responsibilities

The School Administrator is responsible for the overall administration and implementation of the *fire safety plan at their individual site(s)*. The owner of the building is defined in the Fire Safety Act as the person responsible for the controlling land or premises or the activity on the land or premises. For the purposes of the fire safety plan, the School Administrator is considered the owner.

The School Administrator is responsible for the following:

1. To be the person in charge during emergencies.
2. To indicate a designate during the *Principal's* absence.
3. To review and update the *fire safety plan*, including, but not limited to, exit route drawings and files on specific/unique fire safety issues at the school.
4. To attend training provided by the board on fire safety and record in the Principal's binder.
5. To provide and document *fire safety plan* training for the respective staff related to the school site.
6. To conduct and document fire drills in accordance with Section 8.0.
7. To ensure that occupant load signage is posted in appropriate locations.
8. To review and initial the fire safety systems maintenance log book to confirm it is up-to-date and properly documented for maintenance and testing requirements. (Principal sign off maintenance manual at every two month interval).
9. To ensure combustible/decorative materials are not located in stairwells, vestibules, on doors or ceilings. Ensure combustible/decorative materials, such as student artwork, decorations and

teaching aids attached to any individual wall is not greater than 20% of the individual wall surface unless the requirements outlined in item 6.3.1 of this document are satisfied. Clothing is considered a combustible material, therefore combustible/decorative materials are not permitted on walls above or below open coat racks.

10. At the start of each school year, complete the Fire Department Information Form in Appendix 7B and issue to the local fire department not later than September 30th for the current school year.
11. Consult with the *School Board* fire safety representative regarding fire safety issues.
12. Notify the Nova Scotia School Insurance Program (S.I.P.) by phoning pager number 902-448-2840 of all interruptions in any fire protection system. Leave message with name and phone number, name of *School Board*, school name and address, and the estimated length of the interruption. Indicate what system(s) is/are being shut down, i.e., fire alarm, sprinkler, etc. Once the system is back up and running, call the pager and leave a message that the system is restored to service.
13. To record and notify the *School Board,* the Office of the Fire Marshal of **all fires,** fire alarm activations, including incidents with no fire alarm activations or fire department response. All incidents must be documented on the incident report form provided by the School Board or in Appendix 7C, and forwarded to the *School Board* within 48 hours. The school board will ensure the form is forwarded to the OFM within 10 business days.
14. To liaise with the school Joint Occupational Health and Safety Committee (JOHSC) regarding fire safety issues, in accordance with clause 20 (3)(b) of the Nova Scotia Fire Safety Act.

2.8 Private Sector Developer

1. The developer, or as otherwise agreed to with the school board, is responsible to ensure that a *fire safety program* is provided for each school *facility* operated by the developer.
2. To maintain and promote fire safety.
3. To ensure all maintenance personnel or firms performing work at school *facilities* operated by the developer are trained and familiar with the maintenance requirements of the *fire safety plan*.
4. To ensure that *fire safety plan*s for school *facilities* are implemented and up-to-date.
5. To ensure that fire safety systems are tested and maintained as required.
6. To coordinate with school administrators that *fire safety plan*s are implemented and up-to-date.
7. To liaise with the fire department and OFM regarding fire safety issues.
8. To complete occupant load and exiting calculations in concert with the OFM or designate for all school *facilities* operated by the developer as required.
9. To keep fire safety files current and updated as required.
10. To ensure that drawings related to the fire safety plan are maintained and up-to-date (electronic and hard copies).

11. To ensure information received from the OFM and the fire safety committee is distributed and implemented to the appropriate respective individuals, schools and departments who require them.

3.0 FIRE SAFETY PLANNING

3.1 General

The fire safety committee develops a template program for all Nova Scotia schools and each School Board is responsible to ensure that a fire safety program is customized as required for each individual schools. This includes the customization of the Maintenance Information Binder and the Maintenance Log Books. The School Administrator is responsible to implement the school fire safety plan and provide associated training to school staff and others as required (i.e. after hours use). The training shall include protocols and procedures specific to the respective school site.

3.2 Board Responsibilities

The School Board is responsible to designate responsibility for the implementation and on-going management of the fire safety plan. Designated staff shall be trained in the following:

1. Promotion of fire safety planning.
2. A working knowledge of the functions and locations of the fire safety systems and safety devices that have been installed throughout the *facility*.
3. A working knowledge of how to read and *interpre*t the information displayed on the fire alarm enunciator panels.
4. An understanding of the responsibilities of the various groups or staff members during a fire alarm or fire situation.
5. An understanding of how to minimize risks associated with fire hazards.
6. An understanding of how to address fire safety concerns within each school.

3.3 School Administrator and Facilities Supervisors

It is important that all *School Board* and *facility* staff are aware of the fire safety hazards in their work area and develop appropriate habits for good fire safety. These include but are not limited to:

1. Ensure safe storage and appropriate use of combustibles or flammable materials, solids, liquids or gases.
2. Ensure all exit routes are kept clear and free of obstructions.
3. Smoking prohibited on *School Board* premises.
4. Be alert for signs of fire.
5. Ensure doors are not obstructed, wedged open or blocked to prevent the intended operation.

6. Ensure appropriate use of electrical appliances/equipment.
7. Be familiar with the use and location of the school fire emergency procedures, evacuation plans and routes, pull stations, fire extinguishers, and fire blankets.
8. Combustible/decorative materials are not permitted in stairwells, vestibules, on doors or ceilings. Ensure combustible/decorative materials, such as student artwork, decorations and teaching aids attached to any individual wall is not greater than 20% of the wall surface unless the requirements outlined in item 6.3.1 of this document are satisfied. As determined by the Office of the Fire Marshal, clothing is considered a combustible material, therefore, combustible/decorative materials are not permitted on walls above or below open coat racks.
9. Report all fires. See 2.7.1.13 above.

3.4 Fire Safety Program

1. In *buildings* or areas described in Article 2.8.1.1, a fire safety plan, as per the approved template that meets the requirements listed in this Section shall be prepared in cooperation with the OFM and/or designate and other applicable regulatory authorities and shall include:
   a) The emergency procedures to be used in case of fire, include:
      i. Sounding the fire alarm (see Appendix A),
      ii. Notifying the fire department,
      iii. Instructing occupants on procedures to be followed when the fire alarm sounds,
      iv. Evacuating occupants, including special provisions for persons requiring assistance,
      v. Ensuring all occupants have exited the building
      vi. Confining, controlling and extinguishing the fire,
   b) The appointment and organization of designated *supervisory staff* to carry out fire safety duties,
   c) The training of *supervisory staff* and other occupants in their responsibilities for fire safety,
   d) Document, including diagrams, showing the type, location and operation of the *building* fire emergency systems,
   e) Conducting fire drills,
   f) The control of fire hazards in the *building,* and
   g) The inspection and maintenance of *building* facilities provided for the safety of occupants.

2. The fire safety plan shall be reviewed at intervals not greater than 12 months to ensure that it takes account of changes in the use and other characteristics of the *building*.

3.5 Documentation

The Nova Scotia Fire Safety Act requires that inspections take place in school facilities and records of these inspections be maintained.

The Maintenance Log provides the tools necessary for documenting the required inspections. The Principals Guide provides a means to document the required training of staff.

Documentation of the required maintenance items and actions is an essential aspect of the fire requirement for a fire safety program and failure to comply may result in legal action against the school board and the school Principal.

3.6 Fire Drills

The fire safety act stipulates the number of fire drills and when they are to be completed each year. The Principal's Guide provides details related to this requirement. The fire drills must be recorded in the Maintenance Log Book (or an on-line format with prior approval of the OFM) and is subject to review by the OFM.

This is an essential aspect of the fire requirement for a fire safety plan and failure to comply may result in legal action against the school board and the school Principal.

3.6.1 Methods

According to Article 2.8.3.1 of the National Fire code of Canada 2010 (NFC), "The procedures for conducting fire drills shall be determined by the person in responsible charge of the building … ".

The NFC requires that Fire drills in schools attended by children are to be held at least three times in each of the fall and spring school terms. Schools with Early Learning Centres or Day Cares may need to ensure alternate procedures are in place to meet the increased requirements for these programs.

For schools, the first fire drill shall be held within the first week of the fall term, followed by two more drills evenly distributed between this time and the end of the fall term. The same sequence shall occur following the start of the winter term. If a problem occurs in any drill, a repeat drill should be conducted shortly after. It is important that there are six successful fire drills.

The NFC requires that fire drills in daycare centres are held at intervals not greater than one month, however, they can be silent drills (fire drills that are carried out as per the normal procedures except that an alarm is not sounded throughout the *facility*). Silent drills can also be conducted in non-school buildings.

Silent drills can be effective for non-school *facilities* or day cares to assure that staff members are well practiced in their responsibilities and duties to be performed in the event of a fire emergency. The options for "silent" drills shall be determined in consultation with the OFM.

3.6.2 Fire Evacuation Plan

Procedures for conducting fire evacuations shall be determined by the *facility*'s administrator in cooperation with the OFM. Fire evacuation procedures shall include:

1. Notifying the fire department and central station monitoring company.
2. Sounding the fire alarm by using a manual pull station.
3. Evacuating occupants, including provisions for persons requiring assistance.
4. Confining fires such as making sure that the last person out of a room closes the door.
5. Performing a head count of occupants once gathered at the safe mustering area.

A fire escape diagram shall be posted in conspicuous locations, in all classrooms, and assembly areas near the corridor door(s) in such a manner that the fire escape diagram is properly oriented and shall be readily viewed by the occupants. These diagrams shall identify escape routes out of the *facility*, the locations of refuge areas within a *facility*, as well as the locations of safe muster areas to assemble.

Procedures instructing occupants and staff what to do when a fire alarm sounds shall be made available to all occupants and staff. These procedures shall be reviewed to ensure all occupants and staff are aware of the procedures.

Procedures for those requiring special assistance during fire evacuations shall be clearly documented. Information on these procedures shall be kept in the *fire safety program manual plan* and shall be reviewed by the responsible staff to ensure that they are familiar the requirements.

Staff shall be made aware of portable fire extinguisher and pull stations locations throughout the facility.

Fire drills should be scheduled in advance and the affected fire department and the central station monitoring company (if applicable) shall be notified prior to conducting a fire drill. The specific procedure shall be coordinated with the fire department on an individual basis.

3.6.3 Procedures for Person(s) Requiring Special Assistance during an Evacuation

Under no circumstances shall a person requiring special assistance be left unattended during a fire evacuation, drill or emergency situation.

Sub-Clause 2.8.2.1.(1)(a)(iv) of the NFC requires that emergency procedures for a *facility* shall include special provisions for persons requiring assistance. Some occupants of a building may require special assistance during evacuation of a building because of various cognitive or physical limitations which make them unable to proceed independently to a place of safety. Because physical and cognitive limitations may vary from person to person, individualized evacuation plans must be established in consultation with the parents/guardians, school administration and emergency responders. Reference should be made to the EECD support document.

3.6.4 Considerations When Completing a Fire Drill

1. Ensure the alarm is reset immediately after the drill is complete.
2. Drills should be initiated by activating a manual pull station (a different one each time). Initially, the system service company should be consulted for instruction on how to initiate and reset the fire alarm system and the tools needed to reset pull stations.
3. The NFC states: any keys or special devices needed to operate the fire alarm system or provide access to any fire protection system or equipment shall be readily available to on-duty supervisory staff.

Following the fire drill, all staff, as well as the central station monitoring company (if applicable) shall be informed that the fire drill is over.

3.6.5 Records

The School Administrator or designate shall observe the fire drill and have post-drill debriefing with employees involved, emphasizing areas in which they did well and areas where they need to improve. The date and time, as well as the time taken to evacuate for each fire drill shall be recorded in the appropriate section of the fire safety systems maintenance log. A simple report of the drill shall be recorded and kept for future review and reference.

3.7 Liaising with Fire Officials

Boards are encouraged to use the resources within the fire safety committee as well as the OFM to obtain clarifications and training resources as deemed necessary.

The Fire Department Information Form located in Appendix 7B of the Principal's Guide, is to be completed annually by the Principal and distributed to the local Fire Department or OFM and a copy retained in Principal's Guide. This submission is required to be completed on or prior to September 30th of each current school year.

3.8 Reporting Fires in School Facilities or School Grounds

The Office of the Fire Marshal requires all fires, including events that produce smoke, which occur in schools to be reported to their office within 10 days of the fire occurring. The OFM uses this information to gather data that will allow them to provide tools and safety information to the public at large. A copy of the form to be submitted to the OFM is included in Appendix C of this guide. Each school board shall develop a written procedure for reporting fires to the Board and the OFM.

3.9 Hold in Place/Areas of Refuge

Some individuals are unable to access the normal means of evacuation routes due to physical or cognitive limitations. For the purposes of the Nova Scotia School Fire Safety Program an Area of Refuge is a designed space provided to protect people in place for a limited duration during an event in a building where evacuation is required for the occupants, There are a number of items that need to be considered when determining if and where an area of refuge (protect in place) should be located, such as;

- Multi-level buildings.
- Must be within a fire separated compartment (normally an enclosed stairwell landing), other spaces may be considered with approval from the Office of the Fire Marshal.
- Board procedure on determining whether protecting in place or evacuation is the most reasonable option for the safety of the student and staff.
- Evacuation plans must be established in collaboration with School Administration, Fire Department/Emergency Responders and Parents (if applicable).
- Supervision for protecting in place.
- Determination of level of training required for evacuation.

3.10 Dust Collection Systems

Dust Collection Systems require periodic inspection and maintenance, determined by the National Fire Code, applicable NFPA standards and Health and Safety requirements. These records, equipment manuals and training logs shall be maintained at each site where a dust collection system is installed. The inspection and maintenance tasks are to be completed by various skill levels, described in the Operation & Maintenance (O&M) for the Dust Collection System, these include; teaching staff, operations staff and outside contractors. The main documentation for the dust collection systems are kept within the space utilized by the teaching staff. For further information specific to Dust Collection Systems the O&M document should be referred to.

3.11 Chemical Use in Schools and Fume Hoods

The Science Safety Guidelines published by EECD is a supplementary document designed to meet the needs of curriculum delivery. However, schools are still responsible to understand and meet the requirements of the National Fire Code and Occupational Health and Safety Legislation.

In circumstances where a safety concern is identified related to safe chemical use or chemical storage in a school, the school board fire safety representative shall be notified. He/she shall review suitable solutions either permanent or temporary depending upon the circumstances in consultation with the school board science programs representative and where necessary the EECD Science Consultant. Each school board will develop a procedure for reporting and addressing safety concerns.

For current safe practices for fume hood use and testing requirements, refer to the most recent Directive issued by the OFM and the Fume Hood Safety Program.

3.12 Overnight Accommodations

Schools are not designed as residential facilities. To hold any overnight accommodation activities (students or other groups) special arrangements and approvals must be obtained through the OFM. A procedure for contacting the OFM for overnight accommodations shall be developed for each board. The process for seeking approval from the OFM is located in the Principal's Guide.

3.13 Limitations on Combustible Wall Materials (20% rule)

Sentence (1) of Article 2.3.1.3 of the 2010 Canadian NFC states: "Decorative materials on walls or ceilings shall have a flame-spread rating not greater than that required for interior finish of the space in which they are located".

As provided under "Modifications to National Fire Code" in the Fire Safety Regulations made under Section 29 of the Fire Safety Act: "Article 2.3.1.3 of the National Fire Code is modified by adding the following Sentences immediately after Sentence (1):

3) *Combustible materials, such as student artwork and teaching aids attached to walls or ceilings of a school classroom or access to exits, shall not be greater than 20% of the wall or ceiling surface unless*

a) *The combustible materials have been tested in accordance with CAN/ULC-S102-M88 "Standard Method of Tests for Surface Burning Characteristics of Building Materials and Assemblies", and*

b) *The flame-spread rating does not exceed the rating that is required for the interior finish of the space in which they are located.*

As determined by the Office of the Fire Marshal, clothing is considered a combustible material. Therefore combustible/decorative materials are not permitted on walls above or below open coat racks.

For applications where student artwork or murals are painted directly on the surface of walls or ceilings of a school classroom or access to exit, the flame spread rating and the smoke development rating for the paint used shall not exceed the rating that is required for the interior finish of the space in which they are located. The Office of the Fire Marshal should be consulted prior to using paints to confirm that they are appropriate for application.

For daycare *facilities*, Sentence 2.10.3.1. (1) of the NFC states, "Combustible materials such as artwork and teaching materials which are attached to walls shall not exceed 20% of the area of such walls".

It is important to ensure that fire safety system components (pull stations, bells, strobes, sprinklers, etc.) mounted on walls or ceilings are not obstructed or covered by the materials mentioned above.

3.14 Safe Storage of Flammable and Combustible Liquids

Flammable liquids should be stored in approved containers with capacities no greater than 5L. Total quantities of flammable liquids in open storage in chemical storage rooms should not exceed 20L. Quantities of flammable liquids stored in specially designed cabinets should not exceed the cabinet manufacturer's specifications.

As per the Science Safety Guidelines, non-compatible chemicals should not be stored in close proximity.

For more detailed information refer to the National Fire Code.

3.15 Safe Storage of Compressed Flammable Gases

For the storage of compressed flammable gases in buildings, Sentence 3.2.8.2(2) of the NFC permits the storage of cylinders containing Class 2.1 flammables lighter than air gases (the numbers refer to the class and division of dangerous goods, as defined in the "Transportation of Dangerous Goods Regulations") outside of rooms that are specially designed and constructed for the storage of such cylinders provided the following:

1. There is no more than a total aggregate capacity of 60 m^3 of expanded gas outside of any specially constructed rooms in an unsprinklered building of combustible construction (refer to example below).

Sample Calculation:

EXAMPLE TO BE ADDED

2. There is no more than a total aggregate capacity of 170 m^3 of expanded gas outside of any specially constructed rooms in sprinklered buildings or buildings of non-combustible construction.

The following table is from Appendix A-3.2.8.2(2) of the NFC. It gives the specific volume (m^3/kg) of some common gases at normal temperature and pressure. The information in the table can be used to convert gas weight (kg) into gas expanded volume (m^3) and vice versa. The information in the tables is available from manufacturer's literature.

Specific Volume of Common Gases

Gas	Specific Volume (m^3/kg)
Acetylene	0.9
Ammonia, Anyhydrous	1.4
Arsine	0.3
Botane	0.4
Carbon Dioxide	0.5
Chlorine	0.3
Ethylene Oxide	0.5
Fluorine	0.6
Hydrogen	12.0
Methane	1.5
Methyl Acetylene	0.6
Methyl Chloride	0.5
Nitrogen	0.9
Oxygen	0.8
Phosphine	0.8
Propane	0.5
Propylene	0.6

3.16 Use of Assembly Areas (Gymnasiums, Cafeterias, Theatres)

School gymnasiums, cafeterias and other areas may occasionally be modified to facilitate the assembly of persons for a specific function. There could be a wide range of occupancy scenarios for each within a school. Some examples would be: proms, dances, public events involving liquor, graduation ceremonies, Christmas concerts, variety shows, wedding receptions, conventions, flea markets, or a temporary emergency shelter.

To ensure adequate fire safety within the school or *facility*, maximum occupant loads for each possible scenario should be calculated. The occupant load calculation methods provided in this section are used as a guideline and do not necessarily cover all possible use scenarios. Where the use is not clearly covered by

this section, it is intended that an informed opinion be made on the occupant load using the information provided. All calculations shall be reviewed by the OFM.

The Fire Safety Act refers to the Fire Safety Regulations, the NBC, and NFC for addressing occupant loads and egress. This is expanded upon in Appendix B.

According to Part 3 of the National Building Code of Canada 2010 (NBC), schools are classified as Group A, Division 2 assembly occupancies.

The school board is responsible for ensuring that calculations of egress and maximum occupant loads for each *facility* have been completed. It is the responsibility of the school principal or the administrator of a school board *facility* to ensure that their respective *facility* is compliant with code requirements with respect to occupancy and egress.

The following outlines the approach to be followed when providing occupant load and egress capacity calculations. A detailed example along with the appropriate worksheets and tables are provided in Appendix B.

3.17 Occupant Load Calculation

The occupant load is defined as the number of persons for which a building or part of a building is designed.

The occupant load for any room or floor area of an assembly occupancy shall be the **lesser of:**

- The number of persons for which the area is designed under the Building Code using the table provided below:
- The number of persons as calculated using 0.6 sqm of net floor area per person for dining, alcoholic beverage or cafeteria space or 0.4 sqm of net floor area per person for all other uses.
- The number of persons for which the means of egress is provided as determined under the Building Code using the table provided below;

  (Note: In all cases, the occupant load of a room with a dance floor shall be determined using only the space not occupied by the dance floor).

3.17.1 Building Code Calculation

The number of persons for which the area is designed under the Building Code is determined by dividing the calculated gross floor area of the room by an appropriate load factor as listed in Table 3.1.16.1 of the NBC. This table information is provided below and is also included in Appendix B.

1. Determine the overall area of the room in square meters.
2. Using the NBC Table, determine the appropriate load factor for the use.
3. Determine the final occupant load by dividing the overall room area by the appropriate load factor to determine the building code calculated load.

Type of Use of Floor Area or Part Thereof	Area per Person (m^2)
space with fixed seats	(1)
space with non-fixed seats	0.75
stages for theatrical performances	0.75
space with non-fixed seats and tables	0.95
standing space (2)	0.40
stadia and grandstands	0.60
classrooms	1.85
school shops and vocational rooms	9.30
reading or writing rooms or lounges	1.85
dining, beverage, and cafeteria space (2)(3)	1.20
laboratories in schools	4.60

(1) The number of fixed seats in an assembly occupancy (i.e. auditorium) is the occupant load. Where fixed bench type seats without arms are provided, the occupant load shall be based on a seat width of 450mm per person.
(2) The occupant load of a room with a dance floor shall be based on the portion of the room that is not occupied by the dance floor.
(3) "Beverage" space includes any area where alcoholic beverages are consumed.

The load factors provided in Table 3.1.16.1 of the NBC apply to the whole floor area intended for occupancy, including space occupied by fixtures, equipment, products, displays, etc. Floor areas not intended for occupancy such as vertical service shafts, elevator, stairs, ducts, etc. are to be omitted from the calculation of the total floor area.

Example: What is the occupant load for a 10m x 15m cafeteria is set up for a meeting? There are three large tables being used for papers and handouts. Each table is 2.5m x 0.75m in size. The stacking chairs being used for the meeting are 510mm x 510mm.

1. The gross floor area is 10m x 15m for a total of 150 sqm.
2. The occupant load factor from the NBC table for non-fixed seating is 0.75 sqm/person.
3. The gross floor area of 150 sqm divided by the total area per person, 0.75 sqm would allow for a final occupant load of 200 persons.

3.17.2 Net Floor Area Calculation

The Net Floor Area Calculation is determined by subtracting the area of all of the furnishings required in the space from the overall floor area and applying an occupant load factor for each person for the remaining or "net" space.

For the purpose of this calculation method, "gross" floor area means the overall floor area of the space including the area occupied by furnishings, fixtures, equipment, displays, tables, chairs, etc. "Usable" floor area is that floor area remaining when the area of the non-occupied furnishings (or a dance floor) are

subtracted from the gross (overall) floor area. “Net” floor area is that floor area remaining when the area of all the furnishings, fixtures, equipment, displays, tables, chairs, etc. has been removed from the gross (overall) floor area.

1. Determine the overall area of the room in square meters.
2. Determine the area of all furnishings not occupied by persons (furnishings other than tables and chairs, etc.).
3. Subtract the area of the non-occupied furnishings from the gross floor space to determine a “usable” floor area.
4. Determine the appropriate occupant factor (0.6 sqm for dining, alcohol beverage or cafeteria. 0.4 sqm for others).
5. Determine the area of the occupied furnishings per person in square meters. (a 500mm x 500mm stacking chair has an area of 0.25 sqm per person.) (A 2m x 1m table that can accommodate 6 persons has a total area of 2 sqm for 6 persons or 0.33 sqm per person).
6. Determine the total required area per person/occupied furnishings by adding the appropriate occupant factor and the area of occupied furnishings per person.
7. Determine the final occupant load by dividing the “usable” floor area by the total required area per person/occupied furnishing combination.

Example: What is the occupant load for a 10m x 15m cafeteria is set up for a meeting? There are three large tables being used for papers and handouts. Each table is 2.5m x 0.75m in size. The stacking chairs being used for the meeting are 510mm x 510mm.

1. The gross floor area is 10m x 15m for 150 sqm.
2. The area of the non-occupied furnishings is 3 of 2.5m x 0.75m for 5.63 sqm.
3. The usable floor area is 150 sqm subtract 5.63 sqm for 144.37 sqm.
4. As the space is not being used for dining, beverage and cafeteria space, the occupant factor would be 0.40 sqm.
5. Each chair is 510mm x 510mm for an area of 0.26 sqm.
6. The total required area per person/occupied furnishings would be 0.40 sqm per person plus 0.26 sqm per chair for a total of 0.66 sqm.
7. The usable floor area of 144.37 sqm divided by the total area per person/occupied furnishings, 0.66 sqm to allow for a final occupant load of 219 persons.

3.17.3 Egress Capacity Calculation

Means of Egress means a continuous path of travel provided for the escape of persons from any point in a building or contained open space to a separate building, an open public thoroughfare, or an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare. Each egress facility along the path of travel has an egress capacity, depending on the type of facility and its clear width. The facility with the most restrictive capacity sets the egress capacity along the entire path.

1. Measure the clear width of the egress facility in mm. (note: projections such as handrails are permitted to extend into the clear width to a maximum of 100mm without diminishing the width of the egress facility.)
2. Determine the correct Egress Capacity Factor from the table below.

3. Determine the egress facility capacity by dividing the clear width by the egress capacity factor.

Example: What is the egress capacity from a cafeteria being used for a meeting, if one must pass through a 870mm wide doorway, travel down 1100mm stairs, pass along a 1600mm corridor and exit through a 900mm wide exit door.

1. The clear width of each facility would be:
   Door 1 - 870mm
   Stairs – 1100mm
   Corridor – 1600mm
   Door 2 – 900mm.

2. Egress Capacity Factor for each facility would be:
   Door 1 – 6.1mm/person
   Stairs – 8.0 mm/person
   Corridor – 6.1mm per person
   Door 2 – 6.1 mm/person

3. The egress capacity for each facility would be:
   Door 1 – 870mm / 6.1mm/person = 143 persons
   Stairs – 1100mm / 8.0 mm/person = 138 persons
   Corridor – 1600mm / 6.1mm/person = 262 persons
   Door 2 – 900mm / 6.1mm/person = 148 persons

The egress capacity for the cafeteria would be **138** persons.

The table below is a sample worksheet for the exit capacity calculation and can be found in Appendix B

.

Type of egress	Egress Capacity Factor
1. Ramp with slope not more than 1 in 8.	6.1 mm/person
2. Doorways	6.1 mm/person
3. Corridors	6.1 mm/person
4. Passageways	6.1 mm/person
5. Stair with rise not more than 180 mm and run not less than 280 mm	8.0 mm/person
6. Ramp with slope more than 1 in 8	9.2 mm/person
7. Stairs, other than those described in 5	9.2 mm/person

3.18 Ganging of Chairs in Assembly Occupancies

In assembly spaces designed for 200 or more persons individual chairs must be ganged together as per the National Fire Code requirements in 2.7.1.5. An approved variation for specific exceptions may be acquired through the Office of the Fire Marshal (i.e. instrument bands, etc.).

Ganging chairs minimizes the disruption during evacuation.

In instances where chairs are not equipped with ganging hardware, boards must establish a ganging method approved by the Office of the Fire Marshal.

3.19 Requirements for Special Uses of Schools and School Board *Facilities*

There are cases where a school or school board *facility* has special occupancies, either long term, such as the case of daycare *facilities*, or temporary use such as the case with providing temporary *facilities* for use by emergency organizations to shelter local residents during emergencies. There may also be cases when a sleep over or other unique function might be held at a school.

The cases listed above, as well as other possible scenarios are all unique, therefore consultation with the OFM or *Authority Having Jurisdiction* is required to discuss *fire safety planning* procedures on a case-by-case basis for each unique occupancy. Examples of procedures that could be implemented at facilities being used for sleepovers or temporary shelter may include notifying the local fire department that the facility is having such an event, or providing a 24 hour watch at the facility during these events.

Schools have been designed with specific requirements based on their use. When the usage in a building changes (overnight accommodations, craft fairs, etc.) the requirements for fire safety planning may need to be enhanced and requires the approval of the OFM.

The school principal is responsible to make a request through the board fire safety administrator or directly to the OFM (as pre-determined by board procedures) for matters related to fire safety requirements during special uses of schools. This request must be made and approved by the OFM prior to having such events at the school *facility*.

Special uses of schools may include:

1. Activities that are not part of the academic and recreation programs.
2. Over-night sleeping accommodations (within the school and camping).
3. Craft fairs and community activities organized by outside agencies.

3.20 Fire Watch

In the event there is a disruption to a fire safety system at the school or if demolition or construction of part of an existing building is taking place a fire watch may need to be implemented. Each School Board is required to have a procedure when a fire watch is required.

See Appendix D for example of procedure.

Part IV

4.0 Fire Safety System Maintenance

4.1 General

The fire safety systems in the Nova Scotia Schools are required to be tested and maintained according to the provisions of the National Fire Code of Canada 2010 and referenced standards. The Property Services department for each school board or *facility or P3 Owner* will be responsible for administering this task.

Detailed descriptions of maintenance requirements are provided in the Maintenance Information Binder.

4.2 Fire Safety Systems

Fire safety systems are building components or equipment that assist in the monitoring, detection, notification, prevention or control of fires. The school board or private sector developer is responsible to maintain all aspects of fire safety systems and documentation within school facilities.

The following are typical fire safety systems in Nova Scotia schools. For various reasons; age of building, design, alterations, not all of these systems may exist in an individual school.

- Sprinkler Systems (wet, dry, zoned)
- Water Supply
- Fire Detection and Alarm System
- Egress Systems Applying to Corridors and Access to Exits
- Portable Fire Extinguishers
- Smoke Control Systems

Part V

5.0 Fire Safety Maintenance Schedule

5.1 General

The National Fire Code of Canada 2010 (NFC) outlines the requirements for inspections and testing of fire safety systems as outlined in Section B of the Maintenance Information Binder.

To ensure regulatory compliance and fire safety program administration the AHJ will conduct periodic inspections and audits of Nova Scotia school facilities.

Maintenance and/or custodial operations staff for a *facility* will be responsible for operating the following components of the *fire safety plan*.

5.2 Inspections

According to the Fire Safety Act, a system of on-site inspections of schools and school board *facilities* by fire officials will be implemented by the Fire Marshal. The purpose of these inspections will be to ensure that fire safety systems maintenance logs (records) reflect the actual condition at these premises. Where a person or body that is responsible for implementing a system of inspections pursuant to the Fire Safety Act fails to do so, the Fire Marshal may perform the inspections and may recover the expenses for such expenses and/or issue an Order and/or an offence ticket.

5.3 Discharged Sprinkler System

In the circumstance where the sprinkler system is non-operational; Section 37 of the Nova Scotia Fire Safety Act States:

> "The Owner of a sprinkler system or a fixed-pipe extinguishing system shall, subject to the regulations, notify the Fire Marshal of the activation of the system within 48 hours of the discharge."

5.4 Out of Service Sprinkler System

The owner of a sprinkler system or a fixed-pipe extinguishing system shall ensure the local authority is notified of any work that is planned on such systems that will require the system(s) to be shut down or temporarily out of service. A fire watch maybe required during the time the system is out of service and the OFM shall be notified of the event. As per regular process SIP should be notified during this type of event.

5.5 Maintenance Testing/Inspection

For the purpose of carrying out maintenance procedures, the following definitions should be considered applicable:

INSPECT means physical examination to determine that the device or system will apparently perform in accordance with its intended function; to inspect a device does not require its operation;

and

TEST means operation of device or system to ensure that it will perform in accordance with its intended function.

5.6 Skill Categories

The Fire Safety systems Information Binder describes the degree of maintenance required to inspect or test, as well as the skill level necessary to perform the level of maintenance.

Skill categories have been established to identify the skills and knowledge deemed appropriate to perform the Inspection and Test duties required by the National Fire Code of Canada, 2010.

Skill 1 – This person has average observational skills. This person is a teacher or part of the facility's administrative personnel. This person is not part of a facility's maintenance staff.

Skill 2 – This person has some familiarity with mechanical devices, such as valves and pressure gauges. This person should be able to determine, by observation, whether valves are open or closed and should be able to read pressure gauge indications. This person must have the ability to recognize where the mechanical system requires repairs beyond his or her ability. This person is part of a school or facility's maintenance staff and/or custodial staff or a contractor employed by the board.

Skill 3 – This person has specialized training and hands-on experience related to mechanical systems and electrical systems. This individual will have had training associated with emergency generators, heating and air conditioning equipment, plumbing, and other building systems. It is not required that this individual be an electrician.

Skill 4a – This individual may or may not be an electrician but is usually a representative of a fire alarm system manufacturing or testing company or certified by the Canadian Fire Alarm Association (CFAA). This company will be engaged in day-to-day activities that include the maintenance and testing of fire alarm systems and, as such, will have developed specific skills related to fire alarm systems.

Skill 4b – This individual is usually a representative of a company engaged in the servicing and maintenance of fire extinguishers on a day-to-day basis. This skill level includes individuals licensed by the Office of the Fire Marshal.

Skill 4c – This individual is usually a representative of a company engaged in the supply, installation, and maintenance of sprinkler systems and is employed by the company as a field service technician.

Skill 4d – This individual is usually a representative of a company engaged in the supply, installation, and maintenance of kitchen hood fire suppression equipment and is employed by the company as a field service technician.

Skill 4e – This individual is usually a representative of a company engaged in the supply, installation, and maintenance of elevators and is employed by the company as a field service technician.

Skill 4f – This individual is usually a representative of a company engaged in the supply, installation, and maintenance of Emergency Generators and is employed by the company as a field service technician.

Part VI

6.0 Maintenance Documents

6.1 Drawings

Maintenance drawings are required for school facilities as described in Section C of the Maintenance Information Binder.

6.2 Maintenance Log

Documentation of fire safety systems maintenance is required and shall be recorded and kept in the approved log book developed by the Fire Safety Committee. The log shall be available for review in accordance with the Fire Safety Act by the AHJ.

The log is specifically created for Nova Scotia schools to reflect inspection frequency requirements for sprinklered as well as non-sprinklered *facilities.*

6.3 Maintenance Information Binder

This binder shall be customized for each site and provide detailed information related to the fire safety systems in place and the inspection process that shall be included for each system.

6.4 Five Year Binder

Each board is required to keep fire safety inspection records on file for a minimum of five years at each site and readily available for review by the OFM as requested. This binder is intended to meet the record retention requirement of five years. Other records shall not be kept in this binder.

6.5 Principal's Guide

This binder shall provide Principal's and other Administrative staff with elements related to the development, implementation and maintenance of a fire safety plan for each school. Including board related requirements for reporting fires and other relevant information. Fire safety training information and documentation is also included in this binder.

Part VII

7.0 Fire Extinguisher Types, Placement, and Maintenance

Portable fire extinguishers are used in *facilities* of varying occupancy hazards for application on fires of various class rating. Fire extinguishers are selected based on the class of fire anticipated. Image 1 below is of a typical 2.3 kg Class 3A-40 BC fire extinguisher.

Image 1

The following summarizes classes of fires:

- Class A fires involve combustibles such as wood and paper.
- Class B fires involve combustible and flammable liquids.
- Class C fires involve energized electrical equipment.
- Class D fires involve combustible metals.
- Class K fires involve combustible cooking media such as vegetable or animal oils and fats.

It is common to have a fire extinguisher that can be applied to various classes of fires used for protecting an area, for example, a Class ABC fire extinguishers can be used on Class A, Class B, or Class C fires.

The table below summarizes the different hazard areas in a school, the minimum extinguisher size and rating required, and the maximum travel distance to an extinguisher within the protected area. The following table is an overview of the minimum requirements for fire extinguishers in order to select fire extinguishers without a thorough review of the applicable codes and standards.

Area Protected	Minimum Extinguisher Rating	Requirements
Mechanical Rooms Electrical Rooms Refuse Areas	4A – 40B, C	Maximum travel distance to extinguisher within the protected area is 9 m. Mount inside of space near door service space.
Laboratories	4A – 40B, C	Maximum travel distance to extinguisher within the protected area is 15 m to a maximum area of 600 m^2. Mount inside of space near door serving space.
Kitchens using oil or fat fryers	Type K	Maximum travel distance to extinguisher is 15 m. Mount in kitchen.
All Other Areas	4A – 40B, C	Maximum travel distance to extinguisher within the protected area is 15 m.

There may be special applications where specific fire extinguisher selection may require review. The *Authority Having Jurisdiction* shall be consulted on a case-by-case basis for such applications.

Fire extinguishers are required to be inspected and maintained as per the inspection and test requirements outlined under Section 7.0 “Fire Safety Systems and Maintenance” in this document.

Only individuals that are an authorized representative of a company engaged in servicing and maintenance of fire extinguishers, or individuals licensed by the Office of the Fire Marshal for servicing and maintenance of fire extinguishers are permitted to carry out such work.

The Office of the Fire Marshal will provide training for individuals who are employed by the School Boards for maintaining fire extinguishers.

Part VIII

8.0 Storage of Combustible Materials

Sentence 2.4.1.1.(2) of the National Fire Code of Canada 2010 (NFC) states, "Combustible materials, other than those for which the location, room, or space is designed, shall not be permitted to accumulate in any part of an elevator shaft, ventilation shaft, means of egress, service room, or service space".

The NFC provides the following definitions:

Means of Egress – means a continuous path of travel provided for the escape of persons from any point in a building or contained open space to a separate building, an open public thoroughfare, or an exterior open space protected from fire exposure from the building and having access to an open public thoroughfare. Means of egress includes exits and access to exits.

Service Room – means a room provided in a building to contain equipment associated with building services. Typical examples include boiler rooms, furnace rooms, incinerator rooms, garbage handling rooms, and rooms to accommodate air conditioning or heating appliances, pumps, compressors, and electrical equipment. Elevator machine rooms and common laundry rooms are not considered to be service rooms.

Service Space – means space provided in a building to facilitate or conceal the installation of building service *facilities* such as chutes, ducts, pipes, shafts, or wires.

Sub-Section 3.3.3 of the NFC requires that outbuildings and refuse/garbage bins are maintained a minimum distanced of 6 m from a building on the same property. Where it is impractical or unnecessary due to specific configurations, the Office of the Fire Marshal shall be consulted on an individual basis.

8.1 Fire Watch

A Fire Watch is a procedure that may be put into place whenever there is a disruption in any fire safety system, such as the sprinkler system. The first step is for the supervisor to notify the local Fire Department of the disruption and the plan for the Fire Watch. Depending on the circumstances, the Fire Department may offer suggestions or directives. As a minimum, the Fire Watch will consist of a responsible individual who will carry a communication device and check all areas of the complex at least once per hour until the problem is corrected. A record is to be kept of each round of inspections (an hourly log).

8.2 Procedures during Fire Protection System Shutdown or Repairs

Should a component of the fire safety system become inoperative (such as breakdown or maintenance), alternate measures must be taken to assure fire safety. A "Fire Watch" is the most common temporary measure and involves a responsible person checking every area of the building on an hourly basis until the problem is corrected.

Each School Board is responsible to develop a procedure. Appendix D is an example.

When a building fire protection system is shut down or inoperative for a period of more than 2 hours, the Nova Scotia Fire Safety Regulations requires that the fire department be notified. Procedures to provide protection to the building if a sprinkler system or part of that system is shut down for more than 6 hours shall be coordinated with the AHJ. These procedures shall include measures for notifying occupants of the building if a fire or other emergency occurs when the fire alarm and detection system are shut down or inoperative.

The Nova Scotia School Insurance Program (S.I.P.) must also be notified of all interruptions in any fire protection system by phoning pager number 902-448-2840. Leave a message with name and phone number, name of School Board, name and address of the location, and the length of the interruption. Indicate what system is being shut down, i.e., fire alarm, sprinkler, etc. Once the system is back up and running, call the pager and leave a message that the system is back up and running.

Fire Safety Plans also apply during construction and renovations.

During any renovation work the current school fire safety plan must be adjusted to accommodate the work and fire safety precautions for students and staff. In addition a fire safety plan specifically outlining fire safety procedures related to the construction/demolition/alteration must be developed and coordinated with the school specific plan. Depending upon the completion of the construction/demolition/alteration the board may be required to implement a revised school fire safety plan.

During any renovation/construction/demolition the National Fire Code of Canada should be referenced to determine the potential requirement for a Fire Watch or other additional fire safety precautions.

8.3 Open Plan Schools – Special Procedures for Fire Safety Planning

Evacuation planning should be completed in conjunction with the local Deputy Fire Marshal as this concept of learning may create obstacles for traditional evacuation planning and accounting for students and staff in the event of an emergency.

APPENDIX A

A.1 Fire Safety Act and Regulations

Insert a copy of the Nova Scotia Fire Safety Act in this section of the appendix.

A.2 Education Act

Insert a copy of the Education Act in this section of the appendix

APPENDIX B

Example Occupant Load and Exit Capacity Calculations and Reference Tables

APPENDIX B

Example Occupant Load Calculations and Reference Tables

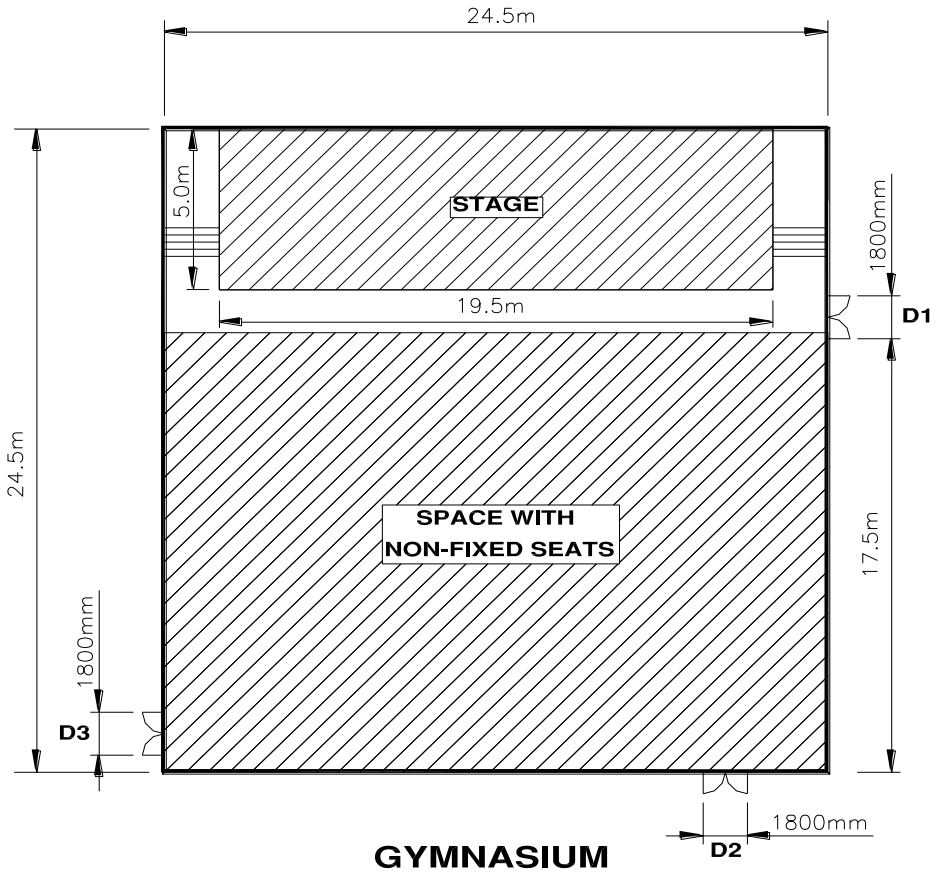
Example 1: Occupant Load Calculations

The following example provides a scenario where an area within a school is being used differently than its original intended use.

In this example, a local high school is hosting a Christmas concert. The concert is to be held in the school gymnasium. It is intended that the chairs will be set up in the gym as shown in the sketch below. The following sketch of the school gymnasium provides the required information for conducting the occupant load calculations.

The following information is also provided for the calculations:

- The area occupied by the set on the stage is 24 sqm.
- The width of each set of stairs serving the stage is 915mm.
- The chairs for the viewing audience are 510mm x 510mm in size.



GYMNASIUM

(N.T.S.)

(TOTAL AREA = 600 m^2)

Building Code Calculation:

1. First the area of each portion of the space is calculated using the worksheet provided below.

Building Reference	**Length(m)**		**Width**(m)		**Area (m^2)**
Stage	19.5	multiplied by	5.0	=	98

Seating Area	24.5	multiplied by	17.5	=	429

2. Next the occupant load factor will be required to be determined. It is determined that the gym will be used as an assembly for the concert. Looking at Table 3.1.16.1 from the NBC and provided in this appendix, it is determined that non-fixed seats best describes the assembly use for the viewing area of the concert, and the stage is best described as stage for theatrical performance.

Type of Use of Floor Area or Part Thereof	Area per Person (m^2)
space with fixed seats	(1)
space with non-fixed seats	0.75
stages for theatrical performances	0.75
space with non-fixed seats and tables	0.95
standing space (2)	0.40
stadia and grandstands	0.60
classrooms	1.85
school shops and vocational rooms	9.30
reading or writing rooms or lounges	1.85
dining, beverage, and cafeteria space (2)(3)	1.20
laboratories in schools	4.60

Building Reference	Area per person (m^2)
Stage Area (stages for theatrical performances)	0.75
Seating Area (space with non-fixed seats)	0.75

3. Finally, the Building Code calculated occupant load is determined using the worksheet below. The area of each space is divided by the appropriate load factor.

Building Reference	Area (m^2)		Load Factor (m^2/person)		Load (persons)
Stage	98	divided by	0.75	=	131
Seating Area	429	divided by	0.75	=	572

The NBC calculated occupant load of the stage area is 131 persons and the seating area is 572 persons.

Net Floor Area Calculation:

The net floor area calculation shall be determined for each part of the floor area.

1. First the gross floor area of each portion of the space is calculated using the worksheet provided below.

Building Reference	Length (m)		Width (m)		Gross Floor Area (m^2)
Stage	19.5	multiplied by	5.0	=	98
Seating Area	24.5	multiplied by	17.5	=	429

2. Next, the area of the non-occupied furnishings is determined. The only non-occupied furnishings in use are the set materials, of which the total area is 24 sqm.

3. Next, the usable floor area for each portion is calculated by subtracting area of the non-occupied furnishings from the gross floor area using the table below. Note that set materials on the stage area would be considered as non-occupied furnishings and that there are no non-occupied furnishings in the seating area.

Building Reference	Gross Floor Area (m^2)		Area of non-occupied furnishings (m^2)		Usable Floor Area (m^2)
Stage	98	subtract	24	=	74
Seating Area	429	subtract	0	=	429

4. Next, the area of the occupied furnishings is determined using the table below. Note that there are no occupied furnishings in the stage area and that seating area contains just occupied furnishings, being the non-fixed seating.

Building Reference	Length (mm)		Width (mm)		Furnishing Area (m^2)
Stage occupied furnishings	0	multiplied by	0	=	0
Seating Area occupied furnishings	510	multiplied by	510	=	0.26

5. Next, the appropriate occupant factor is determined using 0.6 sqm of net floor area per person for dining, alcoholic beverage or cafeteria space or 0.4 sqm of net floor area per person for all other uses. In this case, the space is not being used for dining, beverage or cafeteria space so the factor would be 0.4 sqm as noted in the table below:

Building Reference	**Occupant Factor (m^2 per person)**
Stage Area	0.40
Seating Area	0.40

6. Next, the total required area per person/occupied furnishings is determined by adding the occupant factor for each person and the area of the occupied furniture.

Building Reference	**Area of occupied furnishings (m^2)**		**Occupant Factor (m^2)**		**Total Person/Occupied Furnishings Area (m^2)**
Stage Area	0	plus	0.40	=	0.40
Seating Area	0.26	plus	0.40	=	0.66

7. Finally, the net occupant load is determined by dividing the usable area by the Person/occupied furnishings area using the table below.

Building Reference	**Usable Floor Area (m^2)**		**Person/Occupied Furnishings Area (m^2)**		**Final Net Occupant Load (Persons)**
Stage Area	74	divided by	0.40	=	185
Seating Area	429	divided by	0.66	=	650

The net occupant load for the stage area is 185 persons and the seating area is 650 persons.

Egress Capacity Calculation:

The egress capacity for each egress facility is determined by dividing the clear width of each facility by the appropriate load factor. The total available egress capacity is then calculated.

1. First, the clear width of each egress facility is determined using the table below:

Egress Facility	Clear Width (mm)
Double doors, D1	1800
Double doors, D2	1800
Double doors, D3	1800
Stage stairs S1	915
Stage stairs S2	915

2/ Next, the correct egress capacity factor is determined from the NBC table shown below:

.

Type of egress	Egress Capacity Factor
1. Ramp with slope not more than 1 in 8.	6.1 mm/person
2. Doorways	6.1 mm/person
3. Corridors	6.1 mm/person
4. Passageways	6.1 mm/person
5. Stair with rise not more than 180 mm and run not less than 280 mm	8.0 mm/person
6. Ramp with slope more than 1 in 8	9.2 mm/person
7. Stairs, other than those described in 5	9.2 mm/person

Egress Facility	Egress Capacity Factor
Double doors, D1	6.1 mm/person
Double doors, D2	6.1 mm/person
Double doors, D3	6.1 mm/person
Stage stairs S1	8.0 mm/person
Stage stairs S2	8.0 mm/person

3/ Finally, the capacity of each facility is determined using the table below.

Building Reference	Width (mm)		Load Factor (mm/person)		Capacity (persons)
Double doors, D1	1800	divided by	6.1	=	295
Double doors, D2	1800	divided by	6.1	=	295
Double doors, D3	1800	divided by	6.1	=	295
Stage stairs S1	915	divided by	8.0	=	114
Stage stairs S2	915	divided by	8.0	=	114

The total egress capacity of the stage area is the total of the two stairs for 228 persons. The total egress capacity of the seating and stage area combined is 885 persons as the entire area is served by the three sets of double doors.

Final Occupant Load Determination:

Now the final occupant load is determined for the stage and seating area by considering which calculation is the most restrictive. The final calculations are indicated in the table below.

Building Reference	NBC Calculation	Net Occupant Load Calculation	Egress Capacity	Final Occupant Load
Stage Area	131	185	228	131

Seating Area	572	650	885 less stage load	572
Total Gym Area			885	**703**

The most restrictive load for the stage area is the NBC calculation at 131 persons.
The most restrictive load for the seating area is also the NBC calculation of 572 persons.
Using both numbers, the total occupant load for the entire area was **703** persons which is well below the total permitted egress capacity of 885 persons.

Note:
-The remaining paths of egress from the gym to the exterior of the building would have to be checked for adequate egress capacity.
- Article 2.7.1.5 of the National Fire Code of Canada related to the ganging and placement chairs would also need to be addressed.

Example 2: Occupant Load Calculations

In this example, a small town is hosting a community dance. The dance is to be held in the school gymnasium. It is intended that the chairs will be set up in the gym as shown in the sketch below. The following sketch of the school gymnasium provides the required information for conducting the occupant load and egress capacity calculations.

The following information is also provided for the calculations: The non-fixed chairs are 520mm x 520mm in size.

APPENDIX C – Reporting Form

NOVA SCOTIA
Labour and Advanced Education

Office of the Fire Marshal
PO Box 697 B3J 2T8
Halifax, Nova Scotia
Ph: 902 424-5721
Fax: 902 424-3239
Toll Free: 1-800-559-3473
www.gov.ns.ca/lae

FIRE INCIDENT REPORT

Please complete the following Incident Report Form for every fire incident that occurs within the premises of your facility. Each report should be fully completed and forwarded to the following address no later then **10 days** after the date of incident.

Office of the Fire Marshal
PO Box 697
Halifax, Nova Scotia
B3J 2T8

If you have any questions or require any assistance please contact the Office of the Fire Marshal.

INCIDENT DETAIL

Date of Incident (yyyy/mm/dd)	**Time of Incident** (24-hour clock)	
Civic Address	**Community**	**Postal Code**
Building Name		
Contact Person	**Contact Phone Number**	

Did a Fire Department Respond? Yes ☐ No ☐
If yes, which department? _____

FIRE DETAIL

Property Classification
Fire Origin
Igniting Object
Fuel or Energy
Material First Ignited
Possible Cause
Description

Injuries Yes ☐ No ☐	**Fatalities** Yes ☐ No ☐	**Estimate of Damage**

Submission Date (yyyy/mm/dd)	**Name**	**Signature**

APPENDIX D

Fire Watch Activation Checklist

If System is shut down or inoperable for two or more hours

- ☐ Fire Department has been notified, this is required if system down more than two hours.
  Name and Contact Information and time contacted: _____
- ☐ SIP Emergency Information Line has been notified: 1-902-448-2840.
- ☐ Procedure reviewed with Custodian or individual responsible for fire watch. Any high risk areas shall be identified to be highlighted on the documentation page and checked during the rounds.
- ☐ Staff responsible for fire watch have been trained in how to use a fire extinguisher. (PASS)
- ☐ Staff responsible for the fire watch have a means of communication (cell phone or walkie-talkies)
- ☐ Staff responsible for the fire watch are aware of the procedure for initiating fire alarm and what systems are functioning i.e. systems (sprinklers, alarm panel or if school has monitoring company or if calling 911 is required).
- ☐ Documentation (identify locations to be checked on an hourly basis, provide contact information for relevant board staff and outside agencies). Board provided template to be used for documentation.
- ☐ The Principal is responsible to notify staff working in the building of the Fire Watch and their responsibility to monitor areas for signs of fire or smoke and have been reminded of required actions to take according to the school fire safety plan.
- ☐ Deputy Fire Marshal has been notified, as required (for an inoperable fire alarm, fire pump, watch is beyond 12 hours or other unique circumstances). The Coordinator of Property Services or Health & Safety will contact the OFM.
- ☐ All relevant information has been documented in the school's fire books. Including date, time and reason for fire watch.

Fire Watch De-Activation Checklist

- ☐ Document the date, time and actions taken to remedy the deficiency requiring the fire watch.
- ☐ Fire Chief has been notified.
- ☐ Fire Marshal has been notified.
- ☐ SIP has been notified.
- ☐ Copy of the Fire Watch documentation is kept in the fire book and the original is sent to the Health and Safety Department.

APPENDIX E

Audit Categories

	Audit Work Sheet 2013-14	Weight
1	**Administration and Oversight by Board or P3 Partner/Building Owner**	
	Training by board of Principals, Supervisory staff, custodians	5
	Corrections By Board or P3 Owner Completed in Reasonable Time	10
	Review by board or P3 Owner of Fire Safety Plan with School staff	5
	Board's Evacuation Back-Up Plan, feasibility	5
	Board Staff Knowledge of Fire Separation locations	5
	Sub Total	**30**
2	**Administration Oversight by Principal & School Staff**	
	Training by principal of school staff	10
	Training Recorded	5
	Review by the Principal of Maintenance logs with Custodians	5
	After hours Use by non-school groups	5
	Fire Bag or Fire Box available with approved contents	5
	Sub Total	**30**
3	**Documentation & Records**	
	Log Book Conformed and Customized	10
	Inspections Documented	5
	Log of Corrections	10
	Occupancy Loads Sheet Posted	10
	Evacuation Plan for Each Room	10
	Plan for Evacuation and Fire Truck Route- Outside	5
	Record of Visits by Authority Having jurisdiction	5
	Sub Total	**55**
4	**Fire Drills**	
	Fire Drill procedures	5
	Special Needs Children Evacuation Plans	5
	Lessons learned and adjustments	2
	Altered fire drills, hide child, Blocked Exits	3
	Evacuation Times Recorded	2

	Audit Work Sheet 2013-14	Weight
	Identified area for Refuge	3
	Required Fire Drills Completed to date	10
	Sub Total	**30**
5	**Building Conditions & Fire Safety Systems**	
	Exit and Emergency Lights	5
	Exits and Access to Exits, no stored items in corridors, stairs and vestibules	5
	20% Rule for Paper on Walls	5
	Service Rooms Cleanliness: Boiler, Elevator machine, A H, Sprinkler, Electrical	5
	Functioning Hardware at exits and Fire Separations	5
	Functioning Separations; no openings in Ceilings	5
	Fire extinguisher Monitoring	5
	Dust Collector Inspection and maintenance	10
	Sub Total	**45**
	SUMMARY	
	Category 1	30
	Category 2	30
	Category 3	55
	Category 4	30
	Category 5	45
	Total	190
	Percent Score	

Appendix F
Fire Safety Plan Directive

NOVA SCOTIA
Municipal Affairs
Office of the Fire Marshal

PO Box 697
Halifax, NS
B3J 2T8

tel 902-424-5721
fax 902-424-3239

www.gov.ns.ca

MEMORANDUM

To: Nova Scotia School Boards/P3 Schools

Fr: Harold Pothier, Fire Marshal

Date: October 6, 2014

Re: Fire Evacuation Plan

During the past couple of months there has been some discussion on the requirements for a fire safety plan versus a fire evacuation plan. From the perspective of the Office of the Fire Marshal there still appears to be some confusion. This item has been discussed at length at the Office of the Fire Marshal and we want to provide some clarity on the requirements for a fire evacuation plan.

Under the National Fire Code of Canada section 2.8.2.1 (1)(a) The emergency procedure to be used in case of fire, includes the following:

a) the sounding of the fire alarm,
b) notifying the fire department,
c) instructing occupants on procedures to be followed when the alarm sounds,
d) evacuating occupants, including special provisions for persons requiring assistance,
e) confining, controlling and extinguishing the fire.

The emergency procedure in a fire evacuation plan are not the procedures that are set forth in the master fire safety plan that is located in the principal's guide of the fire safety plan. Although much of the information that is required for the fire evacuation plan may be located in the principal's guide, the information must be transformed into a smaller one or two page document that will outline what the above emergency procedures entail for the school. Once completed for each school the fire evacuation plan is required to be reviewed and/or revised annually by supervisory staff and the local fire department. The fire evacuation plan shall be accessible to the local fire service when necessary and to all supervisory staff and other personnel.

If you have any further questions in this regard, please contact Deputy Fire Marshal Ron Thibeau at 902-749-6230 or via email at thibearw@gov.ns.ca

Appendix G
Fume Hood Directive

NOVA SCOTIA

Municipal Affairs
Office of the Fire Marshal

PO Box 697
Halifax, NS
B3J 2T8

tel 902-424-5721
fax 902-424-3239

www.gov.ns.ca

MEMORANDUM

To: Nova Scotia School Boards

From: Harold Pothier, Fire Marshal, Province of Nova Scotia

Re: Science Lab Fume Hoods

Date: October 6, 2014

The National Fire Code of Canada and the Nova Scotia Occupational Health and Safety Act sets out the requirements for the use of chemicals and fume hoods. National Fire Protection Association (NFPA) 91 is the Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids. Canadian Standards Association (CSA) Standard, CSA Z316.5, is considered to be an equivalent document.

It has come to the attention of the Nova Scotia Office of the Fire Marshal and the Nova Scotia Dept. of Labour and Advanced Education, Occupational Health and Safety Division, that some issues with respect to the installation, commissioning and maintenance of these fume hoods exist in the Province of Nova Scotia.

Inspections carried out using risk analysis have shown a number of safety issues with regards to design, installation, commissioning, use and maintenance of these units.

It is important to note that these two standards are used not only for schools but for all fume hoods falling into this category. There is no distinction between a large manufacturing facility operating 24 hours a day, and the schools which use these hoods approximately 8 times per school year on average.

It is for this reason the Office of the Fire Marshal has designed a variance with regards to maintenance and use of these units. Dept. of Transportation and Infrastructure Renewal have been instructed to ensure that any new fume hoods follow NFPA 91/CSA Zz316.5 for design, installation and commissioning.

School Boards will be responsible to have baseline face velocity testing conducted on all existing fume hoods. This initial test must be completed by an outside agency competent in conducting this nature of

testing. Following the baseline testing by the outside agency, Board staff trained in the proper functioning of a fume hood and competent in conducting flow rate testing within the fume hood, shall be permitted to conduct the velocity tests. This testing shall be completed every six months and documented in the Fire Log Book kept in the school offices. Boards will then be required to have an outside agency complete the baseline face velocity testing every five years to ensure consistency with the processes and to validate flow rates and to ensure the hood and all its systems are in good working condition.

School Boards shall ensure that the flow rates measured are documented and this information is kept in close proximity to the fume hood, along with the date the fume hood was tested and the name of the person who conducted the testing.

Prior to testing the fume hood, the trained maintenance staff shall also ensure the following:

- The building ventilation is operating when the testing takes place
- Doors and windows are in the normal position
- There is no storage of materials within the fume hood
- The equipment used for testing the velocity is calibrated as per the manufacturer's instructions and duly recorded and will have a range of 50-400 fpm, as specified in the ASHRAE Standard 110.

As part of the regular maintenance procedure and as noted in the NFPA/CSA Standard, on an annual basis, the following items shall be evaluated:

- Sash, lights, electrical switches, fixtures, interior, baffles and cabinets for proper operation, alarms if applicable
- Ensure that fans are operating properly
- Check the outside exhaust, which must be vented directly outside to ensure that it is operating properly.

Science teachers using these hoods will be required to complete a test to ensure that the unit is operating before use. This can be done with a simple Kleenex test or any other test that is acceptable by the Authority Having Jurisdiction.

Further to these requirements all fume hoods that are being disposed of are required to go through a decommissioning phase as per the NFPA Standard. It is recommend by this office that all hoods not being used be decommissioned or they will also be required to be tested as per this variance.

School Boards shall design a fume hood safety program that cover risk assessments, hazards, school administrative responsibilities, as well as training requirements, documentation requirements, safe work practices for users of these systems (refer to CSA Z316.5). Chemical storage should also be a part of this plan.

In closing the intent of this document is to provide a variance to sections of NFPA 91 Standard (CSA Z316.5) to ensure that fume hoods are being used and property maintained to ensure the health and safety of staff and students.