


## 1. What is Single Egress Construction (SEC)/Single Stair Design (SSD), and why is it so popular?

**What is SEC/SSD?** Single-stair design (SSD) or single-egress construction (SEC) is an architectural approach for small-to-medium residential buildings that utilizes a single, central, fire-protected staircase for all occupant entry and exit instead of the traditional two separate stairwells and exits, resulting in only one way out.

**Why is SEC/SSD discussed?** This design is believed by some to maximize land use, building efficiency, enable dual-aspect, naturally lit apartments, and reduce construction costs. To date, fire chiefs have not been presented with any data supporting these propositions.

## 2. Why are Fire Chiefs Concerned?

**Why are Fire Chiefs concerned?** A two-exit standard was introduced for residential construction in Canada in 1941 in response to devastating fires compromising residents across North America. While removing this safety feature is seen as an architectural innovation, it is a regression in fire and life safety standards to those of pre-World War II construction. This section outlines some of the fire, emergency and life safety concerns.

**OVERVIEW: Time is life (Evacuation times and egress behaviour + Exit choice + Flashover and fire behaviour + Fires in exits + Removing an exit means removing an entrance) + Fire Operations (Ladder operations + Last resort tactics + Access challenges and road width + Fire alarms and sprinklers + Elevators + Smoke in exit) + NFPA Standards (Single point of failure + Combustible materials + Deployment and response time requirements + Standards for the installation of standpipe and hose systems) + Over-taxing the system (Confluence of fire sector pressures + Compounding code changes + Intersection of risks + Municipal resources + Training burden + Intersection of social risk) = Not the right time to remove an emergency exit**

*Time is life*

**Evacuation times and egress behaviour:** Evacuation times increase when we decrease exits (Wei et al, 2023, Johnson and Feinberg, 1997). "... designers do not always anticipate how occupants will behave in emergency" (Kinateder and Warren, 2021).

**Exit choice:** During evacuation the choice of exit and whether people exit are influenced by the size and proportion of the egressing crowd (Kinateder and Warren, 2021).

**Flashover and fire behaviour:** Fire grows exponentially by the minute, and within 5 minutes, it is expected to flashover (NFPA 1700). This means all exposed combustible materials will ignite simultaneously. Time is life.

**Fires in exit:** The 2024 Jensen Hughes report suggests that 8-10% of fires start in stairwells. This means that for single-egress construction, 1 in 10 fires will have no entry or exit, if the single stair is compromised.

**Removing an exit means removing an entrance:** Removing one emergency exit also means removing one entrance, hampering entry and arrival times, not only for fire, but also for police and paramedics.

*Fire Operations*

**Aerial operations:** SEC/SSD assumes aerial operations can be used for rescue. These are last resort tactics. They are high risk, dangerous and expensive, require advanced skills and are not suitable for individuals with vulnerabilities.

**Ladder heights**: Ground ladders are only effective up to 28 feet. Aerial ladders range from 75-125 feet and require a firm area, typically 25x45 feet for setup, and can only serve 2 sides of a building. Two are required to affect full rescue access.

**Access challenges and road width:** Fire-rescue requires access free from parked cars, alleyways, dumpsters, and other obstructions. Current efforts to reduce roadway widths may also further complicate access.

**Fire alarms and sprinklers:** SEC/SSD safety considerations over-rely on fire alarms and sprinklers. The code can require these, but cannot ensure they are maintained and working.

**Smoke in exit:** Firefighting typically uses one entrance or exit for fire equipment, and the other for residents. One stairwell will become smoke-filled and will require a roof hatch to get rid of smoke. One entry or exit does not permit these considerations.

**Elevators:** In SEC/SSD, one elevator will be required as an Occupant Evacuation Elevator (OEE). These are designed to be used for self-evacuation during an emergency by people unable to use the stairs.

*FP Standards*

**Single points of failure:** SEC/SSD creates single points of failure through over reliance on the sprinkler system, egress ventilation, or availability of the exit stair. These can have catastrophic consequences for residents and firefighters (NFPA 1710/1750, GVFCA).

**Combustible materials:** Canada has increased its commitment to building with combustible materials compared to other international jurisdictions using single-egress construction (NFPA 1710, NFPA 1750, GVFCA).

**Deployment and response time requirements:** There are significant differences in deployment and emergency response time requirements for a 3-story building compared to a 6-story building (NFPA 1710, NFPA 1750, GVFCA).

**Standard for the installation of standpipe and hose systems:** SEC/SSD construction has not considered the size, location, and quantity of water needed for standpipe and hose systems, which may be in the only stairwell (NFPA 14, CASA).

Draft

**Commented [1]:** The last statement in the Section, "Why is SEC/SSD discussed?" seems to imply that no data has been provided to any fire chiefs, ostensibly including empirical analysis for alternative solutions which have been administered in a number of Canadian jurisdictions, including in my experience the City of Edmonton. How is this statement meant to be understood given this information?

**Commented [2]:** There have been other examples of research into the safety of single exit buildings in particular - does this report contradict this statement? https://www.pew.org/en/research-and-analysis/reports/2025/02/small-single-stairway-apartment-buildings-have-strong-safety-record

**Commented [3]:** This appears to be a misrepresentation of the Code - the first NBC was published in 1941, which does not seem to have been in response to devastating fires across north america. It was predominantly to consolidate safety standards more broadly, addressing the patchwork of codes and standards at the time. The Foreword of the 1941 NBC is exceptionally helpful in establishing this basis, as is the excellent paper, "A Brief History of the National Buildings Code of Canada" by Archer, 2003.

Further the NBC 1941 did provide for a wide range of single-exit configurations, including for residential apartments (up to three stories without sprinklers) and office buildings with floor areas up to 6000sqft, and travel distances no more than 50', with non-combu ... [1]

**Commented [4]:** I disagree with how this sentence is presented as it implies that the design is simply a "removal" of a building feature, disregarding the ho ... [2]

**Commented [5]:** Incorrect. For this statement to be true, the code would also need to remove firestopping, fire compartmentation, fire resistance ratings, ... [3]

**Commented [6]:** Generally speaking I would suggest providing the full references, either as footnotes or at the end of the document. For example, there are ... [4]

**Commented [7]:** I think this citation might be referencing this study: Johnson, N. R., & Feinberg, W. E. (1997). The impact of exit instructions and numb ... [5]

**Commented [8]:** These 2 bullet points reference an academic study on exit choice that I co-authored while I was a postdoc at Brown University. ... [6]

**Commented [9]:** This is misleading and misrepresents fires in the context of other factors such as fuel availability, ventilation, and crucially fire suppressio ... [7]

**Commented [10]:** The Jensen Hughes report did not suggest that 8-10% of fires start in stairwells. The Jensen Hughes report included that statistic based ... [8]

**Commented [11]:** Even if the fire initiation statistic were true, the conclusion that there is no entry or exit in these cases oversimplifies building fire safety by implying ... [9]

**Commented [12]:** This is a logical stretch, as exits are not only not regulated to ensure entry, but from the fact that many exits are designed to specifically preve ... [10]

**Commented [13]:** This is not an assumption under the code.

**Commented [14]:** I can find no aspect of the building code regulations which either requires, nor assumes aerial devices are used. For example, above grad ... [11]

**Commented [15]:** This disregards that ladder access by firefighters is both contemplated and regulated by the building code in Subsection 3.2.5. - but also th ... [12]

**Commented [16]:** Emergency access is regulated by the building code - how does a single exit building affect these existing regulations/situations? What ... [13]

**Commented [17]:** This appears misleading, as suppression systems are regulated and designed to be monitored for operation/tampering, and Fire Code ... [14]

**Commented [18]:** The building code assumes that these systems exist. This statement is risky as it implies that sprinklers and alarms may not be needed for ... [15]

**Commented [19]:** It is not clear in what way these systems are "over-relied" upon - what is the basis for this argument?

**Commented [20]:** Its unclear how this can be argued in buildings without voice communication systems (i.e. six storeys and under) - how exactly are the stairwell ... [16]

**Commented [21]:** Where does this requirement come from?

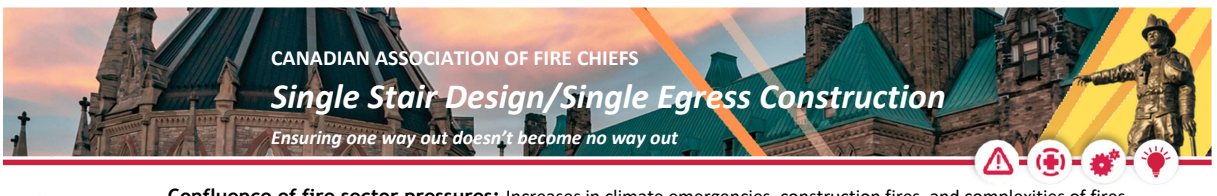
**Commented [22]:** Its not clear what this point is suggesting - I think it is making a suggestion for elevator design to be included as a consideration ... [17]

**Commented [23]:** This narrative of a "single point of failure" doesn't make any sense, even as it is explained here. If the single point of failure is the stair, why ... [18]

**Commented [24]:** What data is there to suggest that combustible construction contributes to fire safety outcomes relative to these types of building, spec ... [19]

**Commented [25]:** I think information on these differences could be very valuable for this discussion; the distinction is also more usefully between typic ... [20]

**Commented [26]:** I believe that there has been considerable discussion and consideration of adequate water supplies in current code discussions. Curio ... [21]




Toxining the SES

**Confluence of fire sector pressures:** Increases in climate emergencies, construction fires, and complexities of fires suggest that now is not the right time to alter a fundamental fire and life safety principle.

**Compounding code changes:** Event if construction materials such as encapsulated mass timber construction introduced in the code are tested for fire safety, assemblies of those materials are not currently tested which compounds risks for SEC/SSD. **Intersection of risks:** Increased use of lithium ion batteries, chargers, hydrogen, solar panels, and green technologies all lead to higher risks of fire as SEC/SSD is considered.

**Municipal resources:** Single-egress changes the NFPA risk standard of buildings requiring additional firefighters and equipment, which will be costly to the municipalities (Ontario Fire Marshall's office, Greater Vancouver Area Fire Chiefs Association letter).

**Training burden:** NFPA training assumes two exits. Training would need to be revised at a time when other risks are emerging.

**Intersection of social risk:** Aging demographic, lower mortality, higher morbidity, and decreased mobility call for

## What policy makers, architects, engineers, and builders need to know about SEC fire and life safety analyses?

1. International comparisons are unreliable if they compare construction in countries with different building materials, non-combustible construction, fire operations, hydrants, and zoning requirements.
2. The safety of single-egress construction can't be analyzed without assessing all concurrent changes in the code. In the past code cycle there have been close to 400 code changes.
3. Sprinklers can save lives when they are part of the standard fire, emergency, and life safety practices. They are not intended to displace an emergency exit because there is no capacity or sufficient municipal budget to inspect or enforce maintenance.
4. Equating single-egress construction to small sprinklered buildings and comparing these to larger sprinklered buildings is false logic. The correct comparison is a building with single stair design compared to the same building with two exits.
5. Incorrect information is being perpetuated about ground ladder and aerial operations. It is not advisable for architects, engineers, and policy makers to make assumptions about fire, emergency, and life safety implications of SES/SSD.
6. NFPA 1710 (now 1750) is being misquoted as simply requiring the first truck to arrive in 5 minutes and 20 seconds. It requires >28 firefighters in 8 minutes for most single-family homes and >42 firefighters in 10 minutes for six-story buildings.
7. External staircases won't work in areas where there is high snowfall or ice, nor are they practical in buildings, housings, individuals with diverse fire, emergency, or evacuation needs.

## What do individuals with diverse needs during fire or emergency say about SEC/SSD?

A study funded by Accessibility Standards Canada and led by the Canadian Association of Fire Chiefs, in collaboration with the Rick Hansen Foundation, identified the removal of an emergency exit as a significant concern alongside steps without ramps, elevator failure, and the absence of adequate safe refuge or waiting areas of sufficient protection and capacity.

## How are some municipalities allowing SEC/SSD?

- By requiring a second stairwell on the outside of a building, only viable where weather conditions are temperate.
- By ensuring the building has mechanical pressure in the egress stairway, the vestibule has positive mechanical pressure, door closes, and two entry points per floor to an egress stairway in the same square footage allotted to SEC.
- By installing backup power supply to power the mechanical positive pressure should the power grid fail, including
- By requiring separated dual access scissor stairways in the building's egress stairway space.
- By ensuring that maintenance requirements and frequency are clearly defined and that the building face is 10 meters away from any overhead primary hydro power lines.
- By ensuring the building is required to allow access for an aerial ladder truck on all 4 faces/sides of the building.
- By having a robust, equipped, full-time career department which can handle the additional pressure.

## Avoid the tragic conclusion of the Grenfell study

"We conclude that the fire at **[INSERT]** was the culmination of decades of failure by central government and other bodies in positions of responsibility **[INSERT]** to look carefully into **[INSERT]** and to act on the information available to them".

*Adapted from: Rt. Honourable Sir Martin-Brooke, Executive Summary of the Grenfell Tower Report Part II.*

**Commented [27]:** regarding the first point above, "increases in climate emergencies. . ." it is not clear what point is being made. From this it could just as easily be argued that replacing existing buildings with newer ones (which are in general safer because of the application of modern safety regulations, specifically including sprinklers) is important now to reduce the risk associated with older buildings. PEW has done some excellent work here as well: https://www.pew.org/en/research-and-analysis/issue-briefs/2025/09/modern-multifamily-buildings-provide-the-most-fire-protection

**Commented [28]:** with respect to the comment above ". . .assemblies of those materials are not currently tested. . ." it is unclear what is being stated/implied, or how mass timber is relevant in this context.

**Commented [29]:** regarding the comment above, ". . .NFPA risk standard of buildings requiring. . ." it is unclear why these proposed buildings require additional firefighters relative to non-single-exit buildings. What specific characteristics and tasks support this conclusion (for example, using 1710 - what are the additional firefighters doing?)

**Commented [30]:** with respect the comment above, "NFPA training assumes two exits." This would be helped significantly by a citation. There are many single exit buildings (historical) throughout north america - is this comment suggesting that fire services are not trained to address those? And what about the fire services which have decades of direct experience with SES - notably Seattle doesn't even feel the need to keep track of where these buildings exist, and it seems the Seattle Fire Service has no issue with respect to lack of training.

**Commented [31]:** With respect to the above comment, "Aging demographic, lower mortality. . ." - This seems non-specific to single exit buildings, but also disregards the fact that newer multi-family buildings are significantly safer than older buildings, largely due to sprinklers - these are not relaxed considerations, they are improvements to the current state. Again, the argument could be made in exactly the opposite direction - newer, specifically sprinkler protected buildings replacing older non-sprinklered buildings could help address the over-taxing of the fire service. https://www.pew.org/en/research-and-analysis/issue-briefs/2025/09/modern-multifamily-buildings-provide-the-most-fire-protection

**Commented [32]:** With respect to international comparisons, it would be easier to say that international comparisons are impractical simply because there is too much complexity and differences between most regional codes to be able to single out a specific f ... [22]

**Commented [33]:** This is a hyperbolic argument which is contradicted by the number of alternative solutions (successful analysis demonstrating equal or better performance) which have been conducted. This is where tools such as the fire safety concepts tree ... [23]

**Commented [34]:** It is a clear straw-man to suggest that "sprinklers replace an exit" - I am not aware of this position from any stakeholder on this issue.

**Commented [35]:** Sprinklers are never intended to "displace an emergency exit." This statement is risky as it implies that sprinklers may not be needed in buildings.

**Commented [36]:** Suggesting that sprinklered budlings represent a risk because some municipalities do not enforce sprinkler maintenance is hard to understand - and ignorant to the fact that local AHJ's can (and are directed to) reject buildings for which their munici ... [24]

**Commented [37]:** I don't see the false logic here. Both buildings would be sprinklered under current code.

**Commented [38]:** The comparisons to acceptable buildings especially with respect to the impact to occupants including responders is absolutely relevant, and is 100% supported by the alternative solution process which has been in the code since 2005 a ... [25]

**Commented [39]:** Oh, I see, the comment was on the size. Agreed with Cameron. The point of the analysis this way is to determine what the minimum level of safety is. Without this comparison this way, we would essentially be suggesting that a larger, code max ... [26]

**Commented [40]:** with respect to the above comment, "it is not advisable for architects. . ." - it is not clear what assumptions are currently being made, and what information ought designers to have? This problem is different on the local/alternative solution level, wh ... [27]

**Commented [41]:** This appears technically incorrect - there is no specific deployment for a six storey building, and what is being quoted here appears to be a high-rise, which overstates the archetypes for SES being discussed. How is 1710/1750 being used here?

**Commented [42]:** This sounds interesting - a citation would be very welcome!

**Commented [43]:** Its a shame that this doesn't include probably the most valuable reference - alternative solutions - as these can be used as supporting evidence that SES buildings can be just as safe or safer, through empirical evaluation using enginee ... [28]

**Commented [44]:** It is unclear to me what characteristics of the Grenfell disaster are applicable/contextual in this discussion. If there are aspects of Grenfell which are applicable here, it would be useful to everyone if they were clearly stated - ... [29]

*Fire Sector by the numbers*

***3200*** *fire departments*
***80%*** *volunteer*
***90%*** *concerned about SEC*

***60%*** *experience rapid construction*
***19%*** *require new resources for firefighting*

***45,000*** *residential fires in 2025*
***50%*** *using equipment older than industry standards.*

***70%*** *believe firefighting practices need to change, given the changes in code*

**Commented [45]:** I am interested in how these numbers in this section inform this discussion - what is it about each of these that suggest there is a critical issue with respect to single exit buildings?

Draft

**Page 1: [1] Commented [3]** **Cameron Bardas** **4/17/2026 9:00:00 PM**

This appears to be a misrepresentation of the Code - the first NBC was published in 1941, which does not seem to have been in response to devastating fires across north america. It was predominantly to consolidate safety standards more broadly, addressing the patchwork of codes and standards at the time. The Foreword of the 1941 NBC is exceptionally helpful in establishing this basis, as is the excellent paper, "A Brief History of the National Buildings Code of Canada" by Archer, 2003.

Further the NBC 1941 did provide for a wide range of single-exit configurations, including for residential apartments (up to three stories without sprinklers) and office buildings with floor areas up to 6000sqft, and travel distances no more than 50', with non-combustible construction *excluding* sprinkler protection (for offices). Single exit buildings were very much permitted by the 1941 NBC (4.6.5.2.(c)(v)).

**Page 1: [2] Commented [4]** **Cameron Bardas** **4/17/2026 9:06:00 PM**

I disagree with how this sentence is presented as it implies that the design is simply a "removal" of a building feature, disregarding the holistic aspects of the overall building. It misleads readers to think that these buildings are the same, except for one fewer exits. This oversimplification of both the design process and building occupant safety in general is misleading. Referring to pre-WWII construction for example is ignorant of the presence and very-well studied effectiveness of sprinkler systems.

This also completely overlooks that there are instances where the code regulates single exits for other uses (even currently). Suggesting there are "always two ways, and that's always been the case" is simply wrong.

**Page 1: [3] Commented [5]** **Kevin Harding** **4/17/2026 7:57:00 PM**

Incorrect. For this statement to be true, the code would also need to remove firestopping, fire compartmentation, fire resistance ratings, ventilation, sprinklers, alarms, signals to fire departments, pressurization or ventilation, assumptions on fire service, and more.

**Page 1: [4] Commented [6]** **Max Kinateder** **3/23/2026 1:56:00 PM**

Generally speaking I would suggest providing the full references, either as footnotes or at the end of the document. For example, there are multiple studies (unrelated to the topic) that could be cited as Wei et al. 2023.
In this example, I believe the following reference is intended: Wei, X., Lou, Z., Song, H., Qin, H., & Yao, H. (2023). Exploring the impacts of exit structures on evacuation efficiency. Fire, 6(12), 462.

If this is correct, I would also suggest reviewing the reference. The study was a simulation study which compared flow rates in exits with 100-500 pedestrians that was mostly interested in exit width. If I read the study correctly (I only skimmed it), there were scenarios in which a single exit performed better than a 2 exit scenario. The authors also write "It is worth emphasizing that practical building exits typically incorporate doors or gates, while Exit 3 remains confined to the realm of theoretical research and is not directly applicable to real architectural structures."

**Page 1: [5] Commented [7]** **Max Kinateder** **3/23/2026 2:04:00 PM**

I think this citation might be referencing this study: Johnson, N. R., & Feinberg, W. E. (1997). The impact of exit instructions and number of exits in fire emergencies: A computer simulation investigation. Journal of Environmental Psychology, 17(2), 123-133.

If that is correct, the study only considered scenarios with a minimum of 2 exits in a single room (I think 2, 3,4, and 5 exits) and the assumption is made that the room is occupied by 200 people.

Let me know if you need help with accessing the paper.

https://www.sciencedirect.com/science/article/pii/S0272494497900475

Given that this study is a modeling study from 1997 it is likely outdated (for example significant advances in crowd modeling were made in the early 2000s).

In general, there are very few studies that directly study single vs dual egress. The only ones that I am aware of are these:

M. M. Islam, "Assessment of single-stair design in high-rise buildings when compared to two stairs," M.S. thesis, Fac. of Engineering and Architecture, Ghent Univ., Ghent, Belgium, 2024. [Online]. Available: https://lib.ugent.be/fulltxt/RUG01/003/213/074/RUG01-003213074_2024_0001_AC.pdf

Ndlovu, S., Fowler, J., Catelblanco, G., Khan, K., Graham, T. L., Bradford, T. E., ... & Asimakopoulou, E. (2025). Experimental Investigation of Strategies Aiming at Effective Fire Evacuation using Evacuation Alert System in Single and Dual Staircase High-Rise Residential Buildings. In Interflam 2025.
https://knowledge.lancashire.ac.uk/id/eprint/56335/
(The study is not publicly available but the authors would likely be open to sharing it)

**Page 1: [6] Commented [8] Max Kinateder 3/23/2026 1:31:00 PM**

These 2 bullet points reference an academic study on exit choice that I co-authored while I was a postdoc at Brown University.

The quotation in the first bullet is not from this study and appears to be taken out of context. I think the authors refer to another study that I co-authored while at Brown about the color of exit signs: https://www.sciencedirect.com/science/article/pii/S0003687018302837?via%3Dihub
(the study showed that participants were more likely to choose exits with a green colored exit sign, even when they stated that red would be a better color).

If the quotation is included, I suggest including
(a) the correct citation/reference (Kinateder, Warren & Schloss, 2019) and
(b) change how it is used. Critically, the original paper highlights the speculative nature of the statement: "Observers, and perhaps designers, do not always anticipate how occupants will behave in emergency situations, which emphasizes the importance of behavioral evaluations for egress safety."

The second bullet point is about the core findings of the Warren & Kinateder, 2021 study, which showed, when people can choose between 2 exits (from a room) that decision is influenced by the behavior of others as a function of crowd size and the uniformity of the crowd. Essentially, participants were more likely to avoid the busier exit when there were more people in front of them. One possible interpretation of this finding is that having to choose between two exits could potentially delay the evacuation decision. Link for reference.
https://www.sciencedirect.com/science/article/pii/S0378437121000182?via%3Dihub#sec4

For additional context: Neither study is an NRC study. The affiliation with NRC appears because I had joined the NRC when the paper was published.

Let me know if you have trouble accessing the papers.

**Page 1: [7] Commented [9] Cameron Bardas 4/17/2026 9:08:00 PM**

This is misleading and misrepresents fires in the context of other factors such as fuel availability, ventilation, and crucially fire suppression systems. Suggesting this is the expected fire growth rate relative to a full sprinkler protected building is misleading at best.

**Page 1: [8] Commented [10] Kevin Harding 4/17/2026 6:38:00 PM**

The Jensen Hughes report did not suggest that 8-10% of fires start in stairwells. The Jensen Hughes report included that statistic based on what fire services had told them, as there was no available data to validate the statement.

**Page 1: [9] Commented [11] Cameron Bardas 4/17/2026 9:17:00 PM**

Even if the fire initiation statistic were true, the conclusion that there is no entry or exit in these cases oversimplifies building fire safety by implying that the only method of protection in a fire is escape. This contradicts concepts in fire safety including utilizing areas of refuge.

**Page 1: [10] Commented [12] Cameron Bardas 4/17/2026 9:19:00 PM**

This is a logical stretch, as exits are not only not regulated to ensure entry, but from the fact that many exits are designed to specifically prevent entry, both through mechanical design, and relative location to emergency access routes. This would seem one of the important considerations for principal entrances and access routes for responders which are already regulated by the building code.

**Page 1: [11] Commented [14] Cameron Bardas 4/17/2026 9:20:00 PM**

I can find no aspect of the building code regulations which either requires, nor assumes aerial devices are used. For example, above grade access for sprinklered buildings is not even regulated, and aside from access routes (which are generally not required to be located proximate to any building feature other than the principal entrance) there are no designed staging location for aerial devices. That fire services are able to utilize aerial devices does not automatically imply that they are necessary in order for the building to provide an expected level of life safety and property protection.

**Page 1: [12] Commented [15] Cameron Bardas 4/17/2026 9:22:00 PM**

This disregards that ladder access by firefighters is both contemplated and regulated by the building code in Subsection 3.2.5. - but also that above grade access is not required for sprinkler protected buildings.

**Page 1: [13] Commented [16] Cameron Bardas 4/17/2026 9:24:00 PM**

Emergency access is regulated by the building code - how does a single exit building affect these existing regulations/situations? What consideration is given to the fact that many existing buildings, with the existing provisions for emergency access, also lack sprinkler systems - what is the relative impact/safety of these existing buildings? What effect does sprinkler protection have on the effect of response level, and timeliness? It would appear that newer sprinklered buildings in particular improve the existing emergency access issue by providing additional time for firefighters to undertake firefighting activities.

**Page 1: [14] Commented [17] Cameron Bardas 4/17/2026 9:28:00 PM**

This appears misleading, as suppression systems are regulated and designed to be monitored for operation/tampering, and Fire Code's across Canada explicitly mandate both responsibilities

for this operation and maintenance, but also employ enforcement mechanisms to ensure this is done. Arguing that sprinklers are unreliable therefore ignores the existing research on sprinkler effectiveness (they are exceptionally reliable) as well as the obligation for (in most cases) the Fire AHJ to oversee that inspection testing and maintenance regulation.

**Page 1: [15] Commented [18] Kevin Harding 4/17/2026 7:54:00 PM**

The building code assumes that these systems exist. This statement is risky as it implies that sprinklers and alarms may not be needed for acceptable levels of safety.

**Page 1: [16] Commented [20] Cameron Bardas 4/17/2026 9:42:00 PM**

Its unclear how this can be argued in buildings without voice communication systems (i.e. six storeys and under) - how exactly are the stairwells delegated, how are occupants informed, and given the relative evacuation times of these smaller buildings, how is this even relevant? This feels like an argument in principle based on assumptions which do not even apply to the building types in question. Are there any SOP's or training which detail how this can actually be achieved by the fire service?

**Page 1: [17] Commented [22] Cameron Bardas 4/17/2026 9:44:00 PM**

Its not clear what this point is suggesting - I think it is making a suggestion for elevator design to be included as a consideration, but its not clear. This is a good place to convey that evacuation of people with physical disabilities is an existing and serious issue in most buildings where elevators cannot be used as evacuation routes. SES buildings are neither unique in this regard, nor a greater issue than any other multi-storey building, the exception of course being compared to unsprinklered buildings.

**Page 1: [18] Commented [23] Cameron Bardas 4/17/2026 9:45:00 PM**

This narrative of a "single point of failure" doesn't make any sense, even as it is explained here. If the single point of failure is the stair, why does it also rely on failure of the sprinkler system, which itself requires failure of the maintenance/operation of that sprinkler, etc etc. This type of argument can best be framed by considering the fire safety concepts tree, which can help structure and isolate how performance is achieved through interconnected features/systems. Why not reference NFPA 550 or 551 here? Doing so is a fantastic way to trace what failures must occur in order for fire safety objectives to be lost.

**Page 1: [19] Commented [24] Cameron Bardas 4/17/2026 9:52:00 PM**

What data is there to suggest that combustible construction contributes to fire safety outcomes relative to these types of building, specifically the outcomes for occupants? Significant research has been conducted in Canada to support combustible construction through demonstrating acceptable fire safety performance. This is particularly relevant given the relatively short evacuation times implied by these built forms - suggesting combustible structural elements contribute to fire growth and negative life safety outcomes within this timeframe suggest (much like with the critique against sprinkler effectiveness) that aspects such as maintenance/modification outside of permits are an important factor.

**Page 1: [20] Commented [25] Cameron Bardas 4/17/2026 9:56:00 PM**

I think information on these differences could be very valuable for this discussion; the distinction is also more usefully between typical and single exit buildings of similar heights, not the difference between 3 and 6 storey buildings.

What is the argument being made here with respect to SES buildings to suggest aspects of them require a greater deployment relative to a similar building with two (or more) exits?

**Page 1: [21] Commented [26] Kevin Harding 4/17/2026 7:55:00 PM**

I believe that there has been considerable discussion and consideration of adequate water supplies in current code discussions. Curious why the statement that code system has not considered it.

**Page 2: [22] Commented [32] Cameron Bardas 4/17/2026 10:13:00 PM**

With respect to international comparisons, it would be easier to say that international comparisons are impractical simply because there is too much complexity and differences between most regional codes to be able to single out a specific feature like this (i.e. apples and oranges). Therefore, safety and performance of new designs should be compared to the buildings/safety performance we currently allow within our regulations. i.e. there is no need to compare to others internationally when we can focus on comparing proposed designs to our own, current regulations.

**Page 2: [23] Commented [33] Cameron Bardas 4/17/2026 10:17:00 PM**

This is a hyperbolic argument which is contradicted by the number of alternative solutions (successful analysis demonstrating equal or better performance) which have been conducted. This is where tools such as the fire safety concepts tree developed by NFPA are so useful for comparative analysis - code changes which do not impact relevant fire safety concepts can be shown to be irrelevant.

**Page 2: [24] Commented [36] Cameron Bardas 4/17/2026 10:22:00 PM**

Suggesting that sprinklered budlings represent a risk because some municipalities do not enforce sprinkler maintenance is hard to understand - and ignorant to the fact that local AHJ's can (and are directed to) reject buildings for which their municipality is not equipped to address through the Notes to Part 3. Further, enforcement of sprinkler maintenance is not the same as the regulatory requirement that the owner conduct inspection testing and maintenance. I am unaware of, but interested in any examples of municipalities that due to their lack of enforcement of the Fire Code, disallow sprinklered buildings in their jurisdiction.

**Page 2: [25] Commented [38] Cameron Bardas 4/17/2026 10:24:00 PM**

The comparisons to acceptable buildings especially with respect to the impact to occupants including responders is absolutely relevant, and is 100% supported by the alternative solution process which has been in the code since 2005 as a tenet of our Objective Based Codes.

**Page 2: [26] Commented [39] Kevin Harding 4/17/2026 10:32:00 PM**

Oh, I see, the comment was on the size. Agreed with Cameron. The point of the analysis this way is to determine what the minimum level of safety is. Without this comparison this way, we would essentially be suggesting that a larger, code max building is safer - with 50-100m of corridor between stairs and unlimited occupants.

**Page 2: [27] Commented [40] Cameron Bardas 4/17/2026 10:26:00 PM**

with respect to the above comment, "it is not advisable for architects. . ." - it is not clear what assumptions are currently being made, and what information ought designers to have? This problem is different on the local/alternative solution level, where AHJ's can (and should!) provide information on the capabilities of their fire service, but what assumptions can be made at a national level other than instructing designers to look at the Notes to Part 3 Firefighting Assumptions?

**Page 2: [28] Commented [43] Cameron Bardas 4/17/2026 10:29:00 PM**

Its a shame that this doesn't include probably the most valuable reference - alternative solutions - as these can be used as supporting evidence that SES buildings can be just as safe or safer, through empirical evaluation using engineering best-practices. Why was this not included? The CAFC has previous raised this at the NFPA Symposium - why not advocate for excellent

alternative solutions?

**Page 2: [29] Commented [44] Cameron Bardas 4/17/2026 10:34:00 PM**

It is unclear to me what characteristics of the Grenfell disaster are applicable/contextual in this discussion. If there are aspects of Grenfell which are applicable here, it would be useful to everyone if they were clearly stated - our collective ability to learn from and apply lessons from that tragedy are dependent on public safety stakeholders faithfully and accurately communicating them.