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**Canadian
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HIRF Q&A (as of May 1, 2009)

The recent builder breakfast/luncheon sessions held around the province in April 2009 on the High Intensity Residential Fire (HIRF) code changes were extremely well attended at all locations. In order to help members further understand how these HIRF changes could potentially affect projects, a list of commonly asked questions and their answers has been prepared with the assistance of government staff at the municipal and provincial levels. Responses mostly pertain to single-family home construction practices, unless the question specifically addresses multi-family homes. Please read all answers in the context of the references mentioned.

It is important to note that this Q&A document does not include every single detailed item and scenario in the regulation. It only provides simple answers to most commonly asked questions by residential construction industry members.

The HIRF Code changes for the 2006 Alberta Building Code are in effect for building permits applied for after May 3, 2009. The changes for the 2006 Alberta Fire Code are in effect as of March 11, 2009.

CHBA-Alberta does not assume any responsibility or liability for the accuracy of the interpretations found in this Q&A document. Users are encouraged to confirm the Code change requirements and interpretations with their authority having jurisdiction, and/or Alberta Municipal Affairs at 1.866.421.6929 or safety.services@gov.ab.ca

Commonly Asked Questions and Answers

Q) How is the exposed building face determined? Explain or define the term "exposing building face".

A) From the definitions in Division A, 1.4.1.2., the definition of Exposing Building Face is: "that part of the exterior wall of a building that faces one direction and is located between ground level and the ceiling of its top storey or, where a building is divided into fire compartments, the exterior wall of a fire compartment that faces one direction."

Typically on a house it is the face of sidewall from ground level to the top storey ceiling. It is called "exposing building face" because if this face were on fire it is the face that is "exposing" the adjacent building. Think of it that way.

Q) The term non-combustible is used in the changes. Define "non-combustible".

A) From the definitions in Division A, 1.4.1.2., the definition of non-combustible is a material that meets the acceptance criteria of CAN/ULC-S114, "Test for Determination of Non-combustibility in Building Materials." Some materials such as masonry or steel studs are obvious but others such as EIFS systems are not so obvious and you may need to see proof of non-combustibility.

Q) The term adjacent is used in the changes. How close is “adjacent”?

A) Where adjacent is used, it is used as a title or to indicate to which components something applies. Where a dimension is required, “adjacent” is not used. For definition of terms not defined in Division A, 1.4.1.2., the code makes reference to the Canadian Oxford Dictionary.

Q) Does Article 9.10.14.5 “Construction of Exposing Building Face and Walls Above Exposing Building Face” apply to single family dwellings, side by side duplexes, as well as 4-storey, stacked, multi-family structures in Part 9?

A) No - This sentence does not apply to single family dwellings or duplexes. The scope of article 9.10.14.5. is indicated in sentence 9.10.14.1. It says that anything that is not covered in 9.10.15. is covered in 9.10.14. Subsection 9.10.15.5 applies to single family dwellings and duplexes (see 9.10.15.1 and 9.10.14.1.).

Q) Table 3.2.3.1.E for Unprotected Openings notes a limiting distance of 1.2 metres. Does that mean at 1.2m or above or below?

A) The distances in this table are intended to be at that distance. However, you can also extrapolate between numbers. Keep in mind however, that you cannot extrapolate between 1.2m and 0m because article 3.2.3.5. states that any opening at less than 1.2m must be protected.

Q) There are concerns about the interpretation of the 1.2 meter designation with the SCO's and plans examiners. Code changes indicate 1.2m from side property line. Does this mean 1.20m, 1.22m, 1.25m, etc? What happens if the house is slightly off the 1.2m set back? Will the Builder be required to go back and add drywall/gypsum under the vinyl siding along the entire wall?

A) In the spatial separation articles, a distance of “less than 1.2m” and “not less than 1.2m” is referenced. First of all, 1.2m means 1.2000....m, not 1.20001m, 1.21m or any other derivative. When the distance referred to is “less than 1.2m” this means that at 1.2m you are outside of the requirement and in this case the requirement would not apply. If the house is designed to be at 1.2m and ends up being at less than 1.2m there could be an issue. Division C, Article 2.2.2.4.

(Dimensional Tolerances) allows a maximum 2% tolerance in a dimension given in the code. 2% of 1.2m is only 24mm. If you are out more than that you may be required to revise construction accordingly.

Q) Do openings other than windows, such as penetrations due to electrical outlets, dryer vents and chimney flues count as unprotected openings?

A) The direction that we have been given from the National Research Council (who produce the National Building Code which is the model code for the Alberta Building Code) is that yes, these openings are considered unprotected openings. However, the requirements for spatial separation for houses does not speak to “unprotected openings” or “penetrations”. Subsection 9.10.15 only speaks to “glazed openings”. Therefore you could have these openings in the wall.

Q) Does the glazed opening mean the glass area of the window, or the area of the rough opening?

A) Window Area - Subsection 9.10.15. that deals with houses and duplexes refers to “glazed openings” rather than “unprotected openings” which are referred to elsewhere in the building code. A “glazed opening” is the area of the glass area of the window. This is the area that can emit radiant heat in the event of a fire. It is also because the entire area of the exterior wall of a house or duplex is unrated and therefore an unprotected opening, so it does not make sense to refer to an unprotected opening in a wall that is an unprotected opening. However, because there are so many different styles of windows with so many different types of glass inserts into frames, Alberta Municipal Affairs recommends that for simplicity sake, “glazed opening” and “rough opening” could be used interchangeably.

Q) Do basement windows count in the calculation of total glazed openings?

A) Yes - Basement windows do count in the calculation of maximum aggregate area if they are above grade. The exposing building face as defined in an earlier question includes the building face from grade to ceiling of top storey.

Q) Can basement windows be placed under cantilevers, ensuring there is still enough room for egress?

A) This question does not deal with the changes. You would have to provide a detail of what you are trying to accomplish to the plans examiner. If you are asking about protection of the cantilever, this is required if it is an enclosed cantilever under 9.10.15.5.(7) whether there is a window there or not.

Q) If a house is 2 metres from the property line or if the building is sprinklered, is the size of the openings **unlimited**?

A) No – for a house you must comply with Table 9.10.15.4. for any distance. The 2m applies for the maximum area of individual glazed openings. You cannot exceed 50% of the maximum aggregate area in any individual glazed opening if you are 2m or less from the property line. If you are more than 2m from the property line your glazed opening can be 100% of the maximum aggregate area permitted in Table 9.10.15.4.

Q) Can windows be placed closer than 2 metres if separated by a wall or floor?

A) Yes – A full height partition with no openings (such as a door or archway) that extends within 1.5m of the exterior wall or a floor between windows is considered adequate separation in lieu of the 2m distance for windows in houses. 9.10.15.4.(5). The floor is intended to act the same as the wall. The floor would slow down the fire from getting from the area of one window to the other. A key point here is that if you have a window on the main floor, with another window below it in the basement, the walls and ceiling of the basement must be drywalled to allow these two windows to be within 2m of each other.

Q) Is a properly constructed fire separation required for a single family dwelling?

A) No – the term fire compartment was used here only for the purposes of reference within sentence 9.10.15.4. It is then expanded within the following 2 sentences. Fire separations do not exist with a house.

Q) At what set-back distance does the 2m spacing between windows no longer apply?

A) More than 2m limiting distance (distance to property line). Sentence 9.10.15.4.(4) states that a glazed opening constructed in accordance with sentence (3) has to have the separation. If the glazed openings are in a building face with a limiting distance of more than 2m then sentence (3) does not apply.

Q) Please clarify the allowable windows on side elevations. Is it individual windows with a maximum size of 0.35m² or is it 3.5% of wall area? What if this means windows no longer meet egress? In other words, do we use Table 9.10.15.4 or Table 3.2.3.1?

A) For a house constructed at 1.2m to the property line (limiting distance) the maximum area of all glazed openings is governed by Table 9.10.15.4. This table says 7% of the area of the exposing building face for 1.2m limiting distance. The maximum area of an individual opening may not exceed 50% of that area, which means 3.5% of the exposing building face (see 9.10.15.4.(3)). The area of 0.35 sq.m. is the minimum unobstructed opening required for a bedroom window. If you cannot get a window area of at least 0.35 sq.m. in an exposing building face where required for a bedroom then the limiting distance will have to be increased. This will only occur in very rare circumstances of very small exposing building faces.

Q) Does this mean 7% in each plane? (i.e. if the garage wall is set back from the 1.2m property line does this constitute a new plane?)

A) Yes – the garage wall in this case would be a new plane and could be considered as another exposing building face because the limiting distance is now greater. It may even permit a larger percentage of glazed openings. There are illustrations in the appendix of the building code that illustrate where the limiting distance is measured to for staggered walls and what percentage of openings could be considered. (See A-9.10.15.4.(2))



Q) What is the definition of a “full height wall”?

A) A full height wall is intended to mean a wall from floor to ceiling. The idea is that a fire in one room with an exterior window should have something to at least slow down the fire from getting to the other window otherwise you might as well consider the two windows as one. That means that there cannot be a door or any other opening in that wall for the 1.5m distance from the exterior wall.

Q) Industry has major concerns with lack of airflow due to non-venting soffits. Under the new code changes, what effects will this have on ventilation in attics? What are other solutions? Will we have to use extra roof vents or louvers at gable ends?

A) The venting of attics is covered in Subsection 9.19.1. Within that requirement not less than 25% must be provided at the top and not less than 25% at the bottom of the attic space. In a typical house there are four faces from which to obtain soffit ventilation. If two are required to be protected this still leaves two others. This is the same situation as an average townhouse. There are definitely other methods to achieve minimum required attic ventilation besides just soffit vents, such as roof venting, etc.

Q) 9.10.15.5 (5) makes reference to sentence (6)(a), seems to permit projections in buildings containing one or two dwelling units. Is this correct or an incorrect interpretation or an error in the Code wording?

A) Correct - Sentence 9.10.15.5.(5) says that combustible projections are not permitted. Sentence 6 exempts single and duplex dwelling units and detached garages.

Q) 9.10.15.5 (7) - Is there a contradiction in this sentence between the limiting distance of 1.2m referred to in sentence (a) with the height of a cantilever above finished ground level?

A) No – keep in mind that there are three types of projections covered in the building code.

1. Those that are open and could expose and adjacent building (such as steps, decks etc) that area covered in 9.10.15.5.(7)
2. Those that extend habitable living space (such as bump-outs, cantilevers, extensions etc.) that are covered under 9.10.15.2. and treated like an exposing building face, OR
3. Those that are enclosed projections (such as fireplaces or chimneys) that are covered under 9.10.15.5.(7)

Q) We have been told that soffits and cantilevers cannot project closer than 0.45m to the side property line. Does this mean they cannot extend more than 0.45m from the house or cannot be within 0.45m of the property line?

A) The soffit cannot be within 0.45m of the property line (9.10.15.5.(8))

Q) On a cantilever that projects into the side yard, are windows allowable if they do not directly face the side yard (example: windows on either side of a cantilever that are effectively facing the front yard and back yard)?

A) Yes – Article 9.10.15.2 permits those faces to have openings but not the face that faces the side property line. The only projections for which no windows are permitted on the side faces are the enclosed projections, (See 9.10.15.5.(7)) Construction of Exposing Building Face

Q) What alternative materials can be used in place of drywall on exterior walls and on interior walls of garages? Would a material that was fire treated with a proprietary product such as “No-burn” be acceptable?

A) The requirements for gypsum board on the exterior wall of houses under combustible claddings is only one option. Noncombustible cladding may be used or a tested wall assembly may be used (see 9.10.15.5.(2) & (3)). In garages gypsum board is also an option. Lath and plaster may be used or a material that has been shown by test to stay in place for a minimum of 15 minutes. (See 9.35.4.1.). There are no particular standards for proprietary products such as “No-burn” and others. If they have been or can be tested and shown to meet CAN/ULC S-101 “Fire Endurance Test of Building Construction Materials” then they may meet the requirements of this article.

Q) What is the process for an alternative material to be considered for use? Is this an objective process?

A) In the objective based code process an alternative solution may be proposed (see Division C Section 2.3.1.). An application has to be made for each project for which you want to use the alternative solution. The documentation required is indicated in the referenced article. The idea is that if you think you have a material that meets the intent of the article you can propose it to be used.

Q) If a product passes CAN/ULC S134, is it approved for use as an exterior wall or garage treatment?

A) Yes – if it meets the criteria listed in Sentences 3.1.5.5.(2) and (3) as indicated in 9.10.15.5.

Q) If the wall is built with a 45 minute fire rating, can the wall be clad with vinyl siding?

A) A 45 minute fire resistance rating is only one of the requirements that must be complied with when the limiting distance (distance to property line) is less than 1.2m. If using vinyl siding there must be gypsum board sheathing under it (see 9.10.15.5.).

Q) Section 9.10.15.5 notes that cladding “be of non-combustible materials conforming to Section 9.20, 9.27, 9.28”. Does the wording in Section 9.27 in particular (which deals with wood and vinyl cladding), contradict the above section? For example, 9.27.13 states vinyl siding, soffit and fascia installed in conformance with CAN/CBSG 41.24 is acceptable.

A) Section 9.27 also deals with installation of cladding in general, not just combustible or non-combustible. For sub-clause 9.10.15.5.(2)(a)(i) the reference to non-combustible material conforming to 9.27 is intended to mean any of the materials that are listed within 9.27 that are non-combustible, such as aluminum siding. It is then intended to include the methods of installation for any siding to be complied with.

Q) There is no fire resistance rating in the Code for a 2x6 wall. If Wall Type W1C conforms to the fire rating requirements, and all siding conforms to the Can/CGSB standard, then what has changed?

A) This is not a change. However, the notes for the table that includes W1C state that the fire and sound ratings apply to walls with 2x6 framing as well.

Q) Were the issues of durability of gypsum as an exterior sheathing material considered when it was chosen as a non-combustible cladding under combustible materials?

A) Yes – “gypsum sheathing” is a gypsum board designed for use as an exterior sheathing over which a suitable exterior finish is applied. In other words it is made to be installed outside.

Q) Gypsum thickness is different than OSB or plywood sheathing typically used in wood-frame residential construction. This creates compatibility issues in depth with trim and windows, creating a potential for water ingress into the building envelope in both single and multi-family projects. Were the practicality and the potential for water leakage issues, and the costs to adapt to this change considered before this requirement was brought into the Code?

A) Window manufacturers can change and adapt to just about any jamb depth that is required. This is not the first time that gypsum sheathing or any other sheathing not the same thickness as OSB has been installed on the exterior of a building. Protection of the building envelope involves a minor change in detailing depending on the types of windows used and the trim and sealing details.

Q) Does the drywall in the garages and on the exterior of homes need to be taped and mudded?

A) Yes – The subsection that is referenced in 9.35.4.1. is Subsection 9.29.5. which is for “Gypsum Board Finish (Taped Joints)”

Q) The Code does not note an insulation level for a garage as it does for other walls. Is there a requirement, a specified R-value?

A) Table 9.25.2.1. specifies the exterior wall of a heated garage and any other exterior wall to have an RSI of at least 2.1 (R12). However, table 9.25.2.1. does not contain information for an unheated garage. Alberta Municipal Affairs will be issuing a Building Code Interpretation which specifies that unheated,

attached garages should be insulated to a minimum insulation value equivalent to that for basements and crawl spaces (RSI 1.4).

Q) The code changes do not mention an air or vapour barrier in the garage such as a polyethylene. Is an air and vapour barrier, specifically poly, required on the garage walls?

A) Yes - This is not really a change. When you insulate the garage it must be constructed in accordance with the requirements of the building code including all the related requirements. Article 9.25.4.1.(1) requires a vapour barrier when you insulate a wall ceiling or floor assembly

Q) Which side of the garage is considered the "warm" side?

A) The interior of the garage would be considered the "warm" side.

Q) Will there be additional condensation issues as a result of this Code change in the walls when there is a bonus room above a garage?

A) Not sure of the intent of the question but do not see any condensation issues as a result.

Q) Garages must be insulated, polyed, drywalled, as well as taped and mudded. Are these changes inviting mould problems?

A) Attached garages are routinely finished on the interiors, and so it'll depend on the level of workmanship by the contractors and owners. The garage is an interior space from which protection from fire is to be provided as per the new Code requirements. The added benefit is that the garage now becomes more energy efficient.

Q) Although there is an "out clause" stating that if a single family builder installs residential sprinklers, they don't have to do all these Code changes. Question is, is everything precluded or do they still have to do some of the Code changes? If so, what?

A) Installation of sprinklers in a house will provide a couple of exemptions to building code requirements: 9.10.15.3. – do not have to design to half the limiting distance where fire department is further than 10 minutes away.

9.10.15.4.(3) – not restricted to half the aggregate glazed opening area for a single glazed opening.

Q) Although sprinklers are an "out clause", there are major concerns regarding flow ratios, maintenance, education, cost and availability of H2O lines with adequate pressure/volumes piped to the homes. Was consideration given to the practicality and build-ability of these changes when they were put forward and adopted?

A) The sprinkling of houses (or any building) has always allowed certain exemptions to building code requirements. Sprinklers have been an option to conforming to a large number of Code requirements for many years and have a proven history of acceptable performance in the single-family market. NFPA has a significant amount of data showing a number of municipalities across North America that have mandated residential sprinklers and have shown no problems related to flow rates, maintenance or water availability. Cost is a small consideration, but NFPA has found that where sprinklers have gained widespread acceptance in a community, costs tend to become less as contractors become familiar with the systems and are able to find cost-saving measures.

Q) There are significant impacts to the way a multi-family project will now progress, be granted occupancy, be fire protected of adjacent properties, extra sprinkling, etc. What size building will require that the FAC is monitored to ULC standards before granting occupancy?

A) This is not a change from the existing requirements. Refer to Subsection 3.2.4.

Q) Please recap the largest changes you see to multi-family projects and how these will be enforced. Which sections are the most critical to design or process changes?

A) Most critical are:

1. Limitation in individual unprotected openings when limiting distance is <2m (3.2.3.1.)

2. Roof soffit construction when the soffit is <2m limiting distance (3.2.3.6.)
3. Introduction of new category in Table 3.2.3.7. of >25% - 50% for construction of exposing building face and the cladding
4. Use of gypsum sheathing under combustible and vinyl claddings to meeting limiting distance and exposing building face requirements
5. Additional sprinklering of areas in buildings that are sprinklered (3.2.5.13 (10))

Q) If a wall is sheathed in gypsum, and the gypsum is applied before the wall is stood up, can the gypsum-clad wall be considered adequate fire protection for the adjacent structure?

A) Building Regulations advocates this option as it compensates for errors in building location on a site as well as providing fire protection. The final decision on this issue belongs to the fire department.

Q) If a standpipe is required during construction, does it need to be charged (contain water) in the winter?

A) Yes, and it would make sense to protect it from freezing as well.

Q) Who decides the 10 minute zone? Is this formally determined by a means such as a map, or arbitrarily determined on a discretionary basis by someone at the municipality level?

A) The 10-minute response time of a local fire department should be determined for an entire area by the local FD. It is not intended to be a value that is determined on a site-by-site basis. Prior to construction, builders are advised to contact the local fire department and determine what their response time is for the area being developed. Keep in mind that the 10 minute issue has always been in the Alberta Building Code. These changes simply clarify its application and make Part 9 (housing and small buildings) more consistent with Part 3 (large buildings).

Q) Where do builders go to get information on areas affected by the 10 minute response time?

A) By contacting their local Fire Marshall's office.

Q) Obviously, tall walls built with only exterior drywall sheathing is not a good practice, so we would suspect that placing the exterior drywall over OSB on tall walls would be acceptable.

A) Yes – there is no limitation on what is under the gypsum board.

Q) We need a clear definition of size and spacing of combustible vents that may encroach on a 1.2m setback. We have been told once, that anything over 5" diameter is not allowed, but several range hood vents are larger than 5".

A) These vents are considered "unprotected openings" for a building constructed under Part 3 and under 9.10.14 of the Alberta Building Code. For a building constructed under 9.10.15 (house, duplex, stacked units, etc.) the code is silent because openings are addressed as "glazed openings" only in 9.10.15. (as per a previous Q&A above).

Q) Many subdivisions in rural communities that are outside of the 10 minute response time build their homes at 1.2m from the side property line. In these cases, how do they build their exterior walls?

A) They must use non-combustible cladding (ie: masonry or stucco) with a 45 minute fire-resistance rating for wall assembly, or, if combustible cladding is used (ie: vinyl siding) then must have 12.7mm thick gypsum board under cladding AND have a 45 minute fire-resistance rating for wall assembly.

Q) Can you have windows on the side elevation if you are outside the 10 minute response time, if they are below or above a certain height?

A) No – if the house is designed to be built at 1.2m side yard and you are further than 10 minute response time from the fire hall then you must comply with article 9.10.15.3. This article requires that you must design as though you are at 0.6m to the property line. Since you cannot have glazed openings in a wall at less than 1.2m, you cannot have an opening in the side elevation. An option is to sprinkler the house in which case you do not have to comply with article 9.10.15.3.

Q) Even though the requirement for no windows at under 1.2m from side property line (in areas outside the 10 minute zone) has been in the Code for many years, the reality is that it hasn't been enforced in most rural areas. This (along with a 45 minute burn resistance) has a huge cost implication for rural communities, never mind the impracticality of this design and construction methodology. What options do these communities have to forego these unrealistic requirements?

A) The window requirements in accordance to limiting distance has been in the Alberta Building Code for many years, and rural authorities should have been enforcing it throughout Alberta.

Q) There is confusion regarding Part 5.6.1.2. "Protection of Adjacent Structures". Is this for single-family or for multi-family projects? How can builders protect adjacent properties when there sometimes isn't a structure next door, or if the structure is already partially completed, or if the structure is occupied?

A) This requirement applies to both single-family and multi-family projects. There is little information or strategy in place for how to do this, but Alberta Municipal Affairs is developing a Standata on this which should be available this summer.

Q) Why was industry not given any grace period to adjust to the Fire Code changes and only 6 weeks to adjust to the Building Code changes?

A) The government's main priority is to ensure the safety of homeowners, and therefore it was important to make these changes effective as soon as possible.

Q) Builders may be faced with increasing lot sizes to ensure adequate separation between buildings as a result of the limiting distance requirements. This in turn will lead to lower density in a subdivision and higher lot costs which will lead to higher costs for homes. During the code development process, what consideration was given to these impacts?

A) Cost increases may occur unless builders alter designs to account for the new requirements. These cost increases have been justified by the Government of Alberta on the basis of an increased need for fire protection. It should be pointed out, however, that not all housing will be affected (i.e. houses with stucco, larger setbacks, etc.).

Q) Not allowing cantilevers on side elevations for upper floors in multi-family buildings has huge design implications, particularly because multi projects are planned and designed years in advance. With a 6-week notice of Code changes, it is an impossible task to re-visit these projects, even if permits haven't been pulled yet. Were the design impacts and the resulting permit implications and costs to builders and future purchasers considered when the changes and the implementation dates were set?

A) It must be pointed out that for any buildings that have already obtained a building permit prior to May 3rd, 2009, the HIRF requirements do not apply. The vast majority of high-intensity residential fires have been large multi-family structures, which have the greatest impact on life safety and property protection. The Government of Alberta made the policy decision to implement the changes ASAP due to the increased hazard level of combustible, multi-family buildings and the approaching construction season. It must be stressed that in this matter, life safety has been deemed to be paramount to all other priorities.

Q) There is huge concern about "interpretation" issues of these changes between various municipalities in the same area and between SCO in the same municipality. What training has been provided to municipal SCO's and plans examiners?

A) Safety Codes Officers have been receiving training in the new requirements since the middle of January and earlier. Training at this point is a voluntary option for all SCOs and will be offered multiple times over the next several months. Additionally, Alberta Municipal Affairs will be issuing a number of Standata to help clarify some of the issues that have been raised and provide a common understanding across the province.

Please direct any other questions, comments or concerns to Alberta Municipal Affairs at 1-866-421-6929 or safety.services@gov.ab.ca