BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing

AIBC, EGBC, BOABC

Interpretation Date:	June 26, 2019
Building Code Edition:	BC Building Code 2018
Subject:	Building Service Penetrations at Contiguous Stairs
Keywords:	Contiguous, stairs, service penetrations
Building Code Reference(s):	3.4.4.4.(2) & (3), A-3.2.6.2.(2)

Question:

This project includes a below grade stair that discharges directly outside at Level 1. There is an above grade stair where its stair enclosure is directly above the below grade stair. The above grade stair also discharges directly outside at Level 1 via a shared exit corridor. Refer to Drawing #3 & #4 on Pages 5 & 6.

1. Does the ceiling assembly of the below grade stair at Level 1, which also acts as the floor assembly of the above grade stair create a "contiguous stair" between the above and below grade stairs?
2. Can a standpipe riser penetrate the ceiling assembly of the below grade stair at Level 1, which also acts as the floor assembly of the above grade stair?

Interpretation:

1. No

   Although the term "contiguous stair" is not a defined term in the building code, it is generally considered to be either 2 scissor stairs or 2 side by side stairs with a common wall for the full height of the stair enclosures as illustrated on Pages 3 & 4. Also, 2 contiguous stairs generally serve the same floor area, so penetrations between the 2 exit stairs would compromise both means of egress from a floor area.

2. Yes
   Sentence 3.4.4.4.(2) requires that exits within scissor stairs and other contiguous stairs be separated from each other with a smoke-tight fire separation with a fire resistance rating not less than that required for the floor assembly through which they pass.

   Sentence 3.4.4.4.(3) prohibits penetrations through floor or wall assemblies that separate scissor stairs and other contiguous stairs such as doorways, ductwork or piping. Since the above and below grade stairs are not considered to be "contiguous stairs", the requirements of Sentence 3.4.4.4.(3) do not apply.

Patrick Shek, P.Eng., CP, FEC, Committee Chair

Since the above grade stair in this example serves a different floor area from the below grade stair, any failure of the firestop system at the penetration through the shared floor/ceiling assembly would not compromise every exit from the floor area.

Notes to Part 3 – A-3.2.6.2.(2) clearly permits a below grade stair and an above grade stair to discharge through a common exit corridor to the exterior. As stated in A-3.2.6.2.(2) – 2a, the below grade stair cannot pass though the floor above the lowest exit storey. Obviously, the doors from the 2 stairs to this common exit corridor would compromise the integrity of the fire/smoke separation between the 2 exit stairs much more significantly than a standpipe riser penetration. This supports the interpretation that superimposed above and below grade stairs are not intended to be treated as contiguous stairs for the purposes of Article 3.4.4.4.

Refer to the following drawings:

Drawing #1 – section of typical scissor stair which is one type of contiguous stair.

Pipe penetrations are not permitted through the stair floor slabs that separate 2 separate exit stairs unless the vertical pipe riser is located with a fire rated shaft enclosure with a fire resistance rating equal to the exit stair wall fire resistance rating. Some AHJs may also accept an alternative solution utilizing an enhanced firestop system at the pipe penetration for standpipe risers.

Drawing #2 – plan of back to back set of stairs which is a second type of contiguous stair.

Pipe penetrations are not permitted through the common shared wall that separates the 2 adjacent exit stairs. Some AHJs may accept an alternative solution utilizing an enhanced firestop system at the pipe penetration through this shared wall for standpipe risers.

Drawing #3 – plan of below grade exit stair beneath an above grade exit stair with a shared exit corridor serving both exit stairs.

This configuration is not considered to be contiguous stairs for the purposes of Article 3.4.4.4.

Drawing #4 – section of below grade exit stair beneath an above grade exit stair.

This configuration is not considered to be contiguous stairs for the purposes of Article 3.4.4.4.

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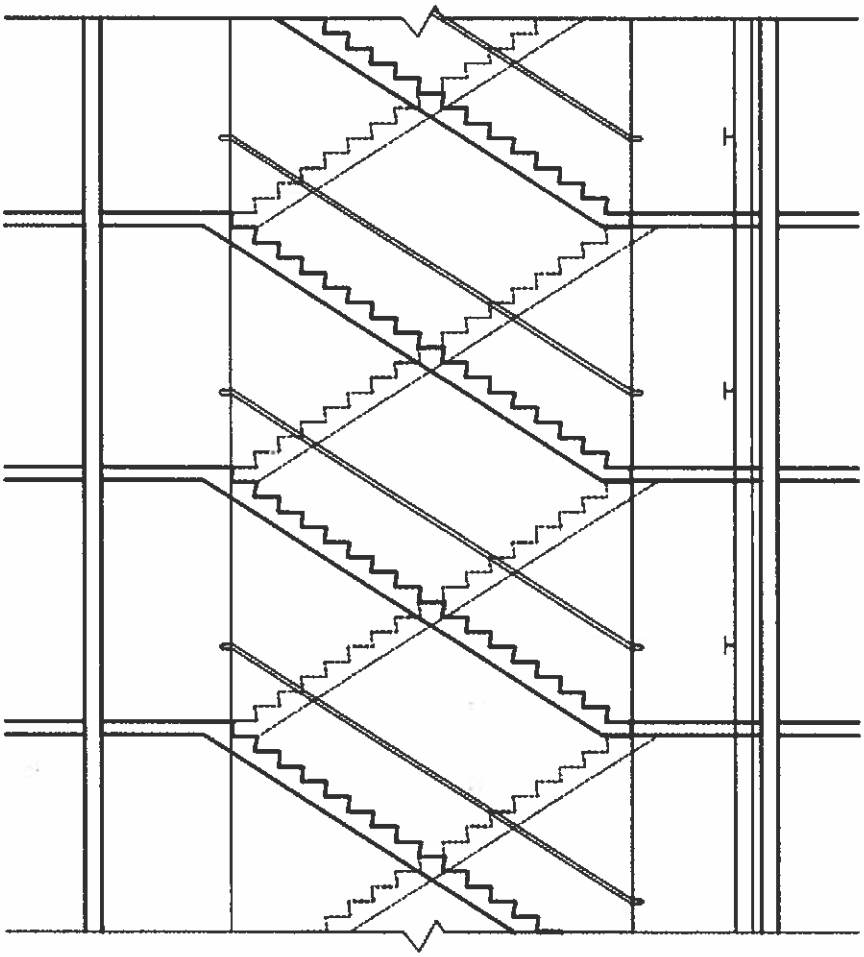

Drawing #1 - Scissor Stair
One Type of Contiguous Stair

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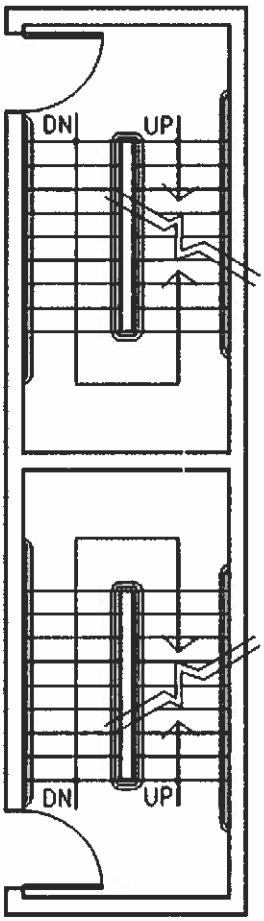

Drawing #2 - Back to Back Stairs
A Second Type of Contiguous Stair

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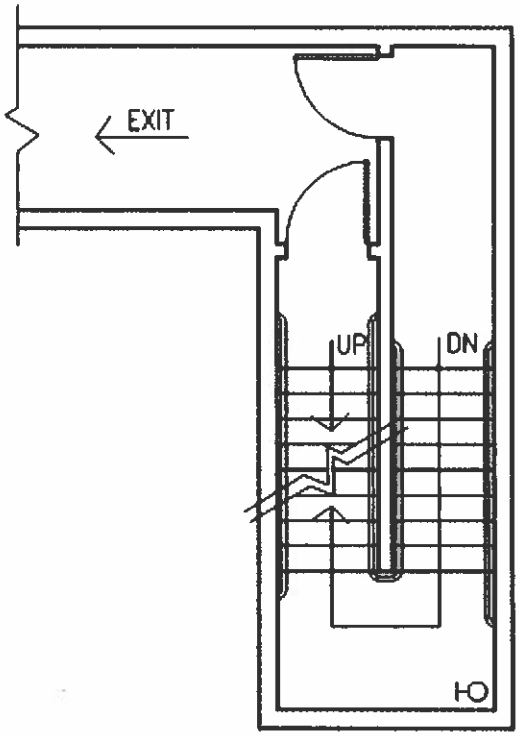

Drawing #3 - Below Grade Exit Stair Beneath an Above Grade Exit Stair With a Shared Exit Corridor

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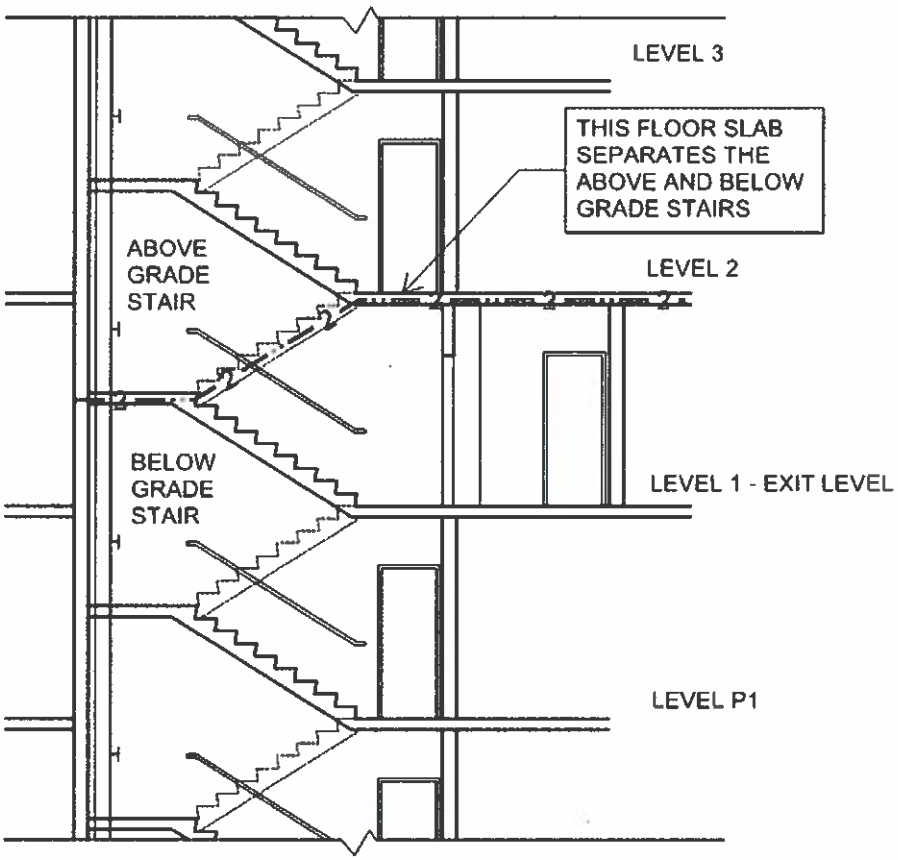

Drawing #4 - Below Grade Exit Stair Beneath an Above Grade Exit Stair With a Shared Exit Corridor

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