

**To**

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 Managing Principal  
 QuantumPlace Developments Ltd.

**From**

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 Transportation Project Manager

**Re**

The Gateway at Three Sisters - Fire Access Standards  
 Access Review

**Date**

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**File Number**

2531-23606-00

McElhanney Ltd. was retained by QuantumPlace Developments Ltd. to provide engineering services for the development of the Stewart Creek site, which includes Sites 3, 4 & 5 of the Three Sisters Mountain Village development. The mixed-use development is proposed to include residential, commercial/retail, and office land uses and is located on the south side of the Town of Canmore within a greenfield lot.

This technical memorandum will provide an overview of fire and emergency access standards required for the development, as well as the proposed plans to ensure the site is compliant with these standards. As required by the Town of Canmore, this technical memorandum “outlines how NFPA1141 and the intent of the City of Calgary Fire Department Access standard are met”. While industry fire standards were included in the review, the Town’s Engineering Design and Construction Guidelines (EDCG) takes into consideration local design objectives which ultimately supersede guidelines from other jurisdictions. The intent of this memo is to review the guidelines outlined in NFPA1141 and the City of Calgary Fire Department Access standard and provide commentary on the development achieving these targets.

## 1. FIRE ACCESS STANDARDS

A review of the *Fire Department Access Standard* (2008) by the City of Calgary Fire Department and the Fire Prevention Bureau was carried out to ensure compliance of the proposed site accesses with fire protection standards. In addition to the City of Calgary standards, the National Fire Protection Association’s 2017 publication *NFPA 1141: Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas* was reviewed for any additional standards applicable to the proposed development. The 2006 *Alberta Building Code* and the 2006 *Alberta Fire Code* were also referenced to ensure compliance of the site with existing standards.

The key applicable requirements of the standards are summarized below (sourced from the City of Calgary standards unless otherwise noted).

1. Primary access to a site must be connected to a thoroughfare that has a minimum 9m width.

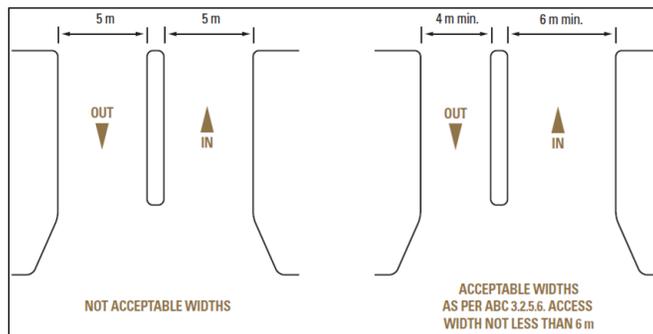


Figure 1: Split-Entry Access - Source: City of Calgary Fire Department Access Standard (2008)

2. New communities with 101 to 600 households require two access points.
3. A second public access is required when the distance from the centre line of the primary access street to the closest point of the access route at a building's principal entrance exceeds 200 m and/or the total number of households exceeds 100 (*NFPA 1141*) to provide an additional route into and out of building sites, complexes, developments, communities, or subdivisions from a thoroughfare. The second public access must have a minimum width of 9m.
4. As per the *NFPA 1141* standards, where residential areas are mixed with non-residential areas, one access route is required for 0-1,250 calculation parking spaces, two access routes are required for 1,251-3,000 spaces, and three access routes are required for greater than 3,000 spaces, where the total number of spaces are calculated as follows:
  - a. Each dwelling unit is allocated five parking spaces and added to the non-residential parking space count for the purposes of fire access route frequency calculations.
5. Routes should be designed to readily allow for snow removal throughout the year, which is the responsibility of the owner to maintain under all weather conditions.
6. A turbo roundabout is proposed to replace the existing four-way stop intersection at Three Sisters Boulevard and Three Sisters Parkway and achieves the minimum dimensions as per Figure 2 below.

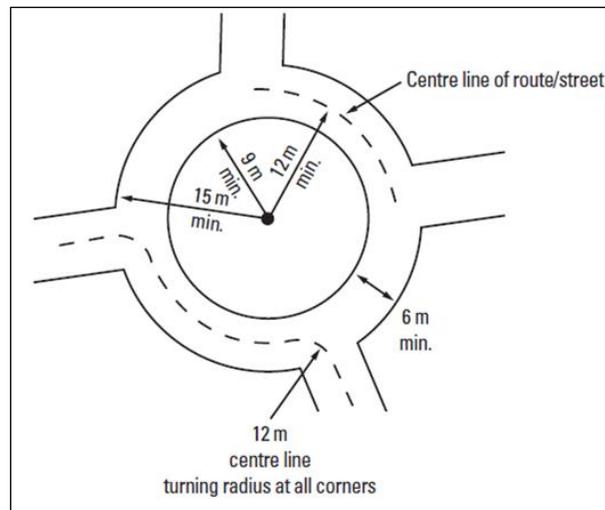


Figure 2: Roundabout Minimum Dimensions - Source: City of Calgary Fire Department Access Standard (2008)

7. No parking of any kind is permitted if the access route is 6m wide or less. For 7.5m wide access routes, parking is only permitted on one side and signage prohibiting parking must be posted on the other side. Parking is permitted on both sides of access routes 9m wide or greater.
8. Access routes must have a grade of not more than 8% (*Alberta Building Code 3.2.5.6*, 2006).
9. Vehicles must not be parked to obstruct access by fire department vehicles and signs must be posted prohibiting such parking. Posted signs must be permanently installed not more than 20m apart and not more than 2.3m above surrounding ground level to ensure they are clearly visible to approaching vehicles (*Alberta Fire Code 2.5.1.1*, 2006).

## 2. STEWART CREEK DEVELOPMENT ACCESS REVIEW

The City of Calgary standards indicate that two access points are required for developments with 101 to 600 residential dwelling units. Based on the *NFPA 1141* standards, the number of access routes required depends on the number of non-residential parking stalls provided and the number of dwelling units on site (note #4 above). The Stewart Creek development is proposed to include a total of 300 dwelling units as per the latest site plan, which amounts to “1,500 residential parking spaces” as per the NFPA standards calculation methods. With an additional 581 parking spaces provided for non-residential parking on site, the total number of parking spaces amounts to 2,081 stalls, resulting in the need for two fire access routes to service the Stewart Creek development based on *NFPA 1141* standards. Please note the above parking requirements are not those dictated by the Town of Canmore for development purposes; these are strictly to determine the requirement for 2 access points.

As shown in Figure 3, the development will have two public accesses identified as “1 & 2”, with an emergency access identified as “3”, closed to the general-purpose traffic. The roundabout just west of the interchange will be the primary access for the site, replacing the existing all-way stop intersection. The roundabout will also provide connections to the south with the reconfigured Three Sisters Parkway approach and secondary access into the site. The emergency access is proposed just before eastbound Highway 1 on-ramp and will be restricted to emergency vehicles and public use in the case of emergencies and will allow for left hand turns across the median of Three Sisters Boulevard. Figure 3 illustrates the proposed access configuration for the site.



Figure 3: Proposed Site Access Plan

Based on discussions with the Town of Canmore, public access “1” will act as two separate primary accesses from the roundabout to the residential loop. Figure 4 illustrates the spine road cross section which will be applied from access point ‘1’ to the residential loop road. The section provides two 7.5m wide unobstructed corridors consisting of a 3.3m travel lane, 1.7m mountable median, and 2.5m bike lane with no parking allowed on either side of “The Gateway Boulevard. By creating the 7.5m unobstructed mountable hard surface, the proposed cross section exceeds the minimum 6.0m width outlined in the Fire Department Access Standard. This design ensures continued access and egress for the residential district in the case where one side of the road is rendered unusable due to an emergency incident.

During an emergency scenario, access 2, and 3 are available for public and emergency vehicle use in addition to the primary spine road.

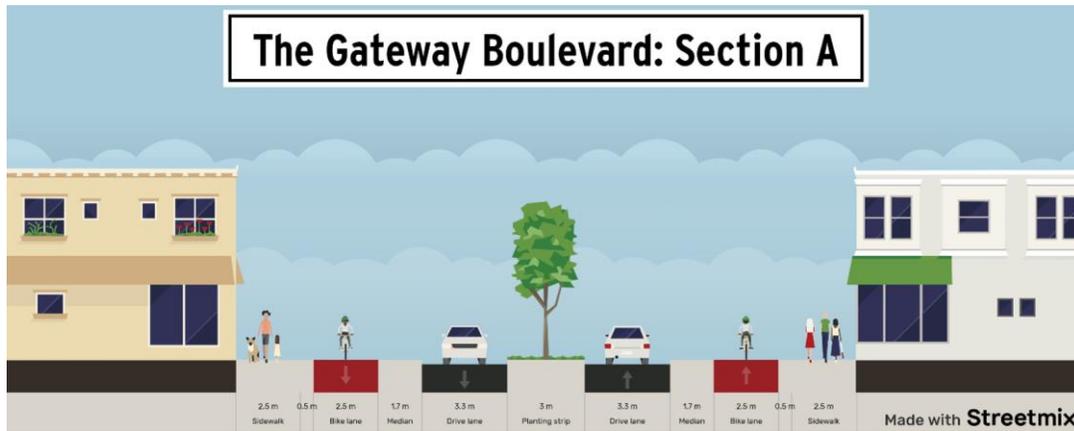


Figure 4: Section A - Stewart Creek Commercial Subdivision

### 3. CLOSURE

Based on the site plan and proposed geometric design of the access routes, the following provides commentary on the applicability in relation to the Town of Canmore:

1. Primary access to the site will be provided through two 7.5m corridors, which meet the intent of the guidelines provided in the Fire Department Access Standards.
2. Snow removal and maintenance of the primary site access is provided by the Town of Canmore. Snow removal and maintenance in the commercial areas will be the responsibility of the owner.
3. Raised crosswalks are required by the Town for this development; these will serve as speed tables to ensure pedestrian safety.
4. Minimum turning radii, roundabout dimensions, vertical clearances, and other geometric elements meet industry standard and those outlined in the City of Calgary Fire Department Access Standards.

The network of primary roads, drive aisles and accesses provide the ability for emergency and other vehicles to navigate through the site uninterrupted in the event of an emergency, provide multiple routes to egress from the development. We are of the opinion that the intent of the applicable fire protection standards has been met for this development, considering the local objectives for the design intent of the community had been provided by the Town.

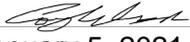
We trust that this memorandum sufficiently details the fire protections standards applicable to the proposed Stewart Creek development. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Sincerely,

**McElhanney Ltd.**

Prepared by:

Reviewed by:

<b>PERMIT TO PRACTICE</b> McElhanney Ltd.	
Signature	
Date	<b>January 5, 2021</b>
<b>PERMIT NUMBER: P6383</b> The Association of Professional Engineers and Geoscientists of Alberta	

**2021-01-05**

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