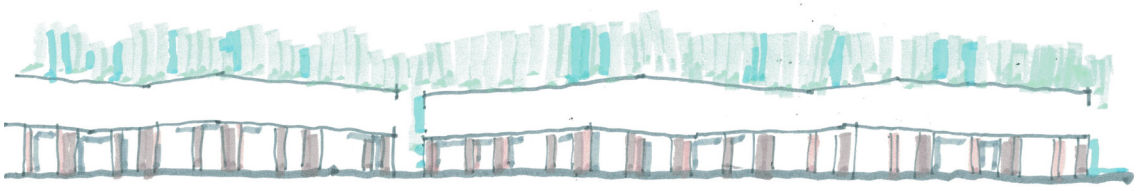


Aboriginal Housing Society of Prince George | 1919 17th Avenue

INDIGENOUS DESIGN STUDIO

dys architecture

PHASE I - Multiple Res. Form + Character

Aboriginal Housing Society Of Prince George : CLIENT
Dys Architecture : ARCHITECT
01/22/20 : DATE

THE MASTER PLAN

This proposed residential development presents a unique opportunity for the development of a Master Planned Urban Aboriginal Community that is inspired by the history, the culture, and the future for Indigenous people.

The site is currently home to the Aboriginal Housing Society of Prince George who own and occupy the existing facility located on 17th Avenue at the North East corner of the site. This facility houses their management offices and provides spaces for their community programs.

This existing facility is ideally located to allow for the proposed development of the remaining land to provide a variety of affordable housing types and expanded program spaces in support of the residents and the community.

PLANNING AND DESIGN PRINCIPLES

The character and form of this community comes from key Planning and Design Principles established for this development through a process of Owner, community, and stakeholder engagement and workshops.

- The planning and architecture must be culturally responsive to Indigenous heritage and culture, and must demonstrate elements of Indigenous character and design.
- There must be an emphasis on the outdoor environment to create a sense of place that will encourage connections throughout the community and influence the built form.
- The character should express the concept of a community sharing and living together; the expression of individual units should be minimal.
- The project must be designed to be environmentally sensitive, to reduce the use of energy, to provide a high standard of liveability, and to reduce maintenance.

CONTEXT IMAGE : AERIAL OF SITE.

MULTIPLE RESIDENTIAL FORM AND CHARACTER

PLANNING AND DESIGN RESPONSE

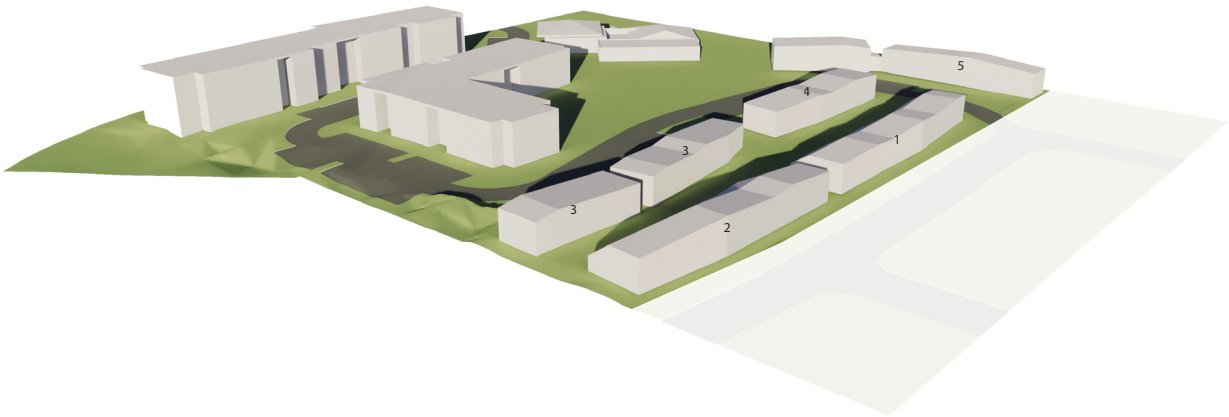
The character of place is defined by areas of landscaped and useable open spaces distributed across the site providing spaces for gathering, playing, resting, learning, and feasting. Pedestrian walkways interconnect the spaces with the main focus being the central gathering space and community facility.

The interior private road can be characterised as a river meandering through the landscape providing access to the buildings.

MULTIPLE RESIDENTIAL FORM AND CHARACTER

The character of the built form is derived from the setting created by the natural sense of the place. The buildings are arranged to respond to the outdoor spaces and to define the edges of the landscape areas, activities, and circulation, resulting in a grouping of organic forms at the ground plane. The massing of the buildings will reflect the organic character of the site planning.

The building configuration has been developed to maximize the efficiency of the exterior envelope in order to meet the new energy code requirements. The organic forms enhance the performance and liveability of the buildings, reflect the historical architecture, and create an elegant backdrop to the ground level detail to strengthen the sense of connection to the land.



MASTERPLAN

An integrated landscape environment supports an open and community centered neighbourhood supporting accessible pedestrian & cultural activities. Nodal central gathering spaces and rich landscaping amenities extend the value of individual family homes beyond their boundaries. Central sites of public cultural art, learning, community events, pedestrian paths, and patios are part of the proposed development. A core part of the project is a central gathering area expanding from the existing cultural center.

DESIGN RATIONALE

PHASE 1 DESIGN RATIONALE

The first phase of development consists of five buildings providing 50 homes for families. The buildings are 2 storeys in height to provide a transition from the adjacent existing single family residences. For the benefit of the families that will reside here each home has direct access to the outdoor landscaped areas and streets.

In keeping with the Indigenous character of the development the design does not overtly define individual units within each building. The building design expresses community living.

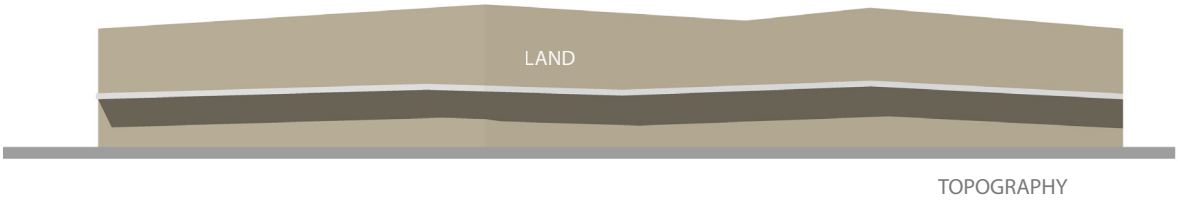
Design rationale diagrams :

1. The built forms should be a backdrop reflecting the organic character of the site

- The building massing reflects the shapes and character of the plan and the natural environment of the region

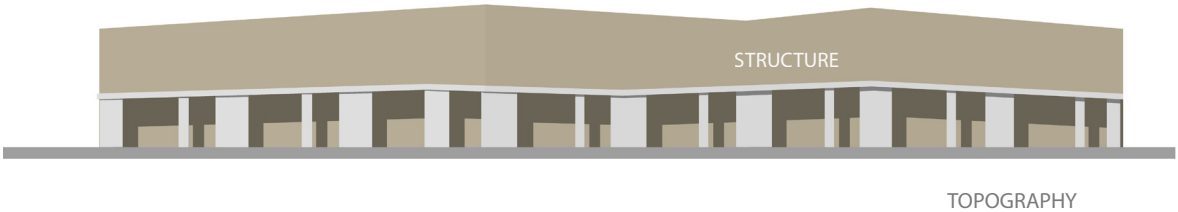
2. The buildings should have elements that emphasize the human scale of the community

- The human scale is emphasized by lower roof elements that provide a residential feel



3. Enhance the connection of the building forms to the land

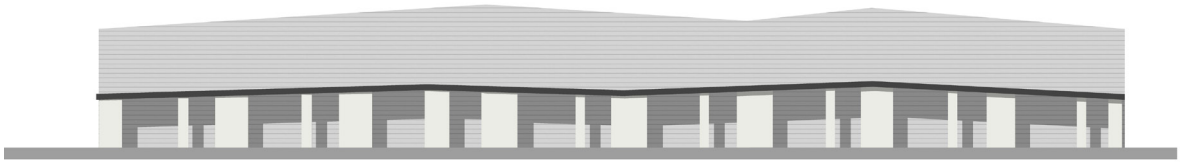
- Wall elements supporting the lower roof provide a connection to the land and enhance the pedestrian experience



DESIGN RATIONALE

4. The building typology should be the foundation for all the buildings across the site

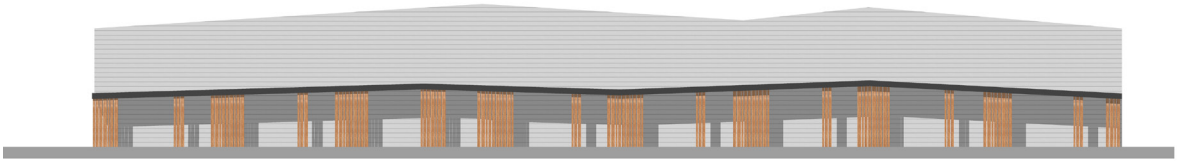
- The principles of massing, scale, and grounding are combined to create a distinctive building type
- The building typology is the foundation that, with the addition of a variety of detailed elements, becomes the image of shelter and home



BASE

5. Incorporate materials that reflect Indigenous culture and enhance the connection to the environment

- The wood panels and structures reflect the historical use of wood in Indigenous culture
- The elements of timber along the base of the buildings provide a connection to the land in the way trees are rooted to the land



WEAVE / STRUCTURE

6. Incorporate design elements that speak to the place and the community, and that provide a unique identity for this Urban Aboriginal Community

- The plan, roof forms, materials, and colours will be unique to this community
- The Northern Lights feature provides an element of art and colour that will be unique to this community
- The Northern Lights are symbolic of the North and universal to all Indigenous groups, provide an element of art and culture, and identity to this community

NORTHERN LIGHTS

COLOUR

MULTIPLE RESIDENTIAL FORM AND CHARACTER GUIDELINES

DESIGN RESPONSE:

8.8.2 Row housing shall not contain more than 16 units in one building. Smaller clusters that take advantage of views and natural vegetation are preferred. Design should relate to nearby public spaces such as adjacent greenbelts, landscape features, parks and highways.

8.8.3 Row house buildings should not have a continuous façade of more than four units unless setbacks in facades of at least 0.75 m are provided.

- In keeping with the design concept, this is a community that is living and sharing common spaces and activities, not a development of individual homeowners. The project is designed as a small cluster of 5 residential buildings that share a common site, not as Row Housing.

- The buildings contain a range of 8 to 14 family units.

- The design relates to the public realm and the internal site spaces. Refer to the Master Plan and the phase 1 landscape plan, site plan, and design rationale.

8.8.4 Apartments and row housing should be designed with varied and interesting facades, including a variety of rooflines, roof cover over entry points, balconies, and porches.

- The building design references Indigenous elements of history and culture. The facades incorporate interesting rooflines, wood elements, and porches to reinforce the natural character of the site and the connection to the land.

8.8.5 Dwellings should be designed to maximize year round exposure to the sun, with special consideration given to sun angles during winter. Buildings should be designed to minimize the casting of shadows on nearby dwellings.

- The project has been designed to meet the basic principles of energy conservation through passive design. The buildings have been modelled to meet Step 3 of the BC energy code. The south and west orientation of the buildings will maximize the exposure to the sun for winter solar gain.

- The separation between the south and north rows or buildings combined with the reduced upper floor mass and sloped roofs of buildings 1 and 2 minimize the overshadowing of buildings 3 and 4 to the north.

- Sun shading devices will be incorporated as required by the energy modelling to south and west facing glazing.

Buildings are designed to minimize use of energy :

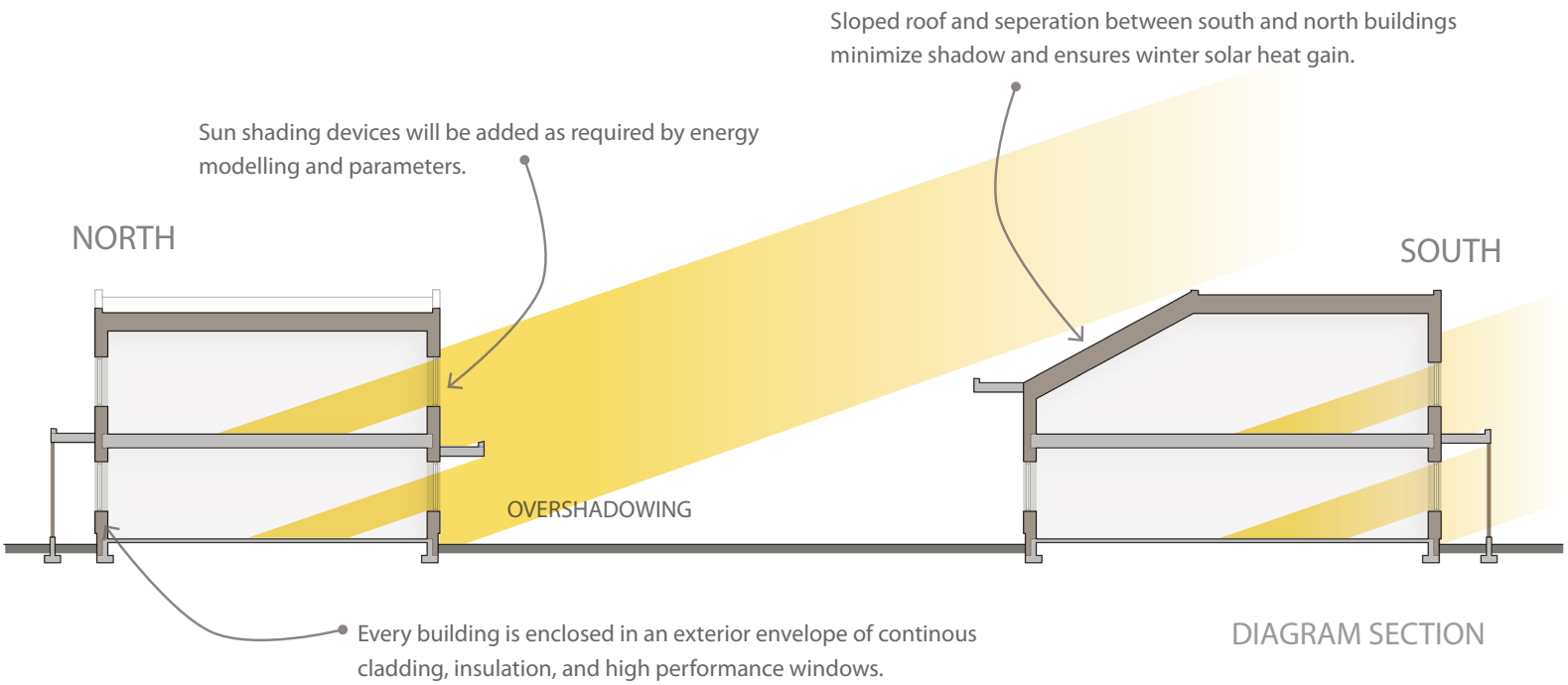


DIAGRAM CROSS SECTION OF PROPOSED PROJECT LOOKING EAST.

8.8.6 Buildings fronting highways should have front doors oriented to the highway and be finished with high quality materials.

- The buildings have been designed with entry doors that address the public streets and the private interior road. To benefit the liveability for families and interaction within the community the homes also have doors providing direct access to the common outdoor activity spaces.

8.8.7 Safety and security should be considered in site design and layout. Design should respond positively to CPTED (Crime Prevention Through Environmental Design) principles of territoriality and defensible space, hierarchy of space, natural surveillance, access control, and image and maintenance as well as addressing the components of movement predictors, entrapment areas, activity generators, crime facilitators, hot spots and crime corridors, areas of conflict, edge effects, and displacement effects.

- The Master Plan has been developed with attention to safety and security for all phases of development with special attention to the use of the site by children and youth.

- The streets, open spaces, and edges have overview from the residences, interior roads and pedestrian circulation.

- The landscape has been designed to avoid areas of planting that may provide concealment.

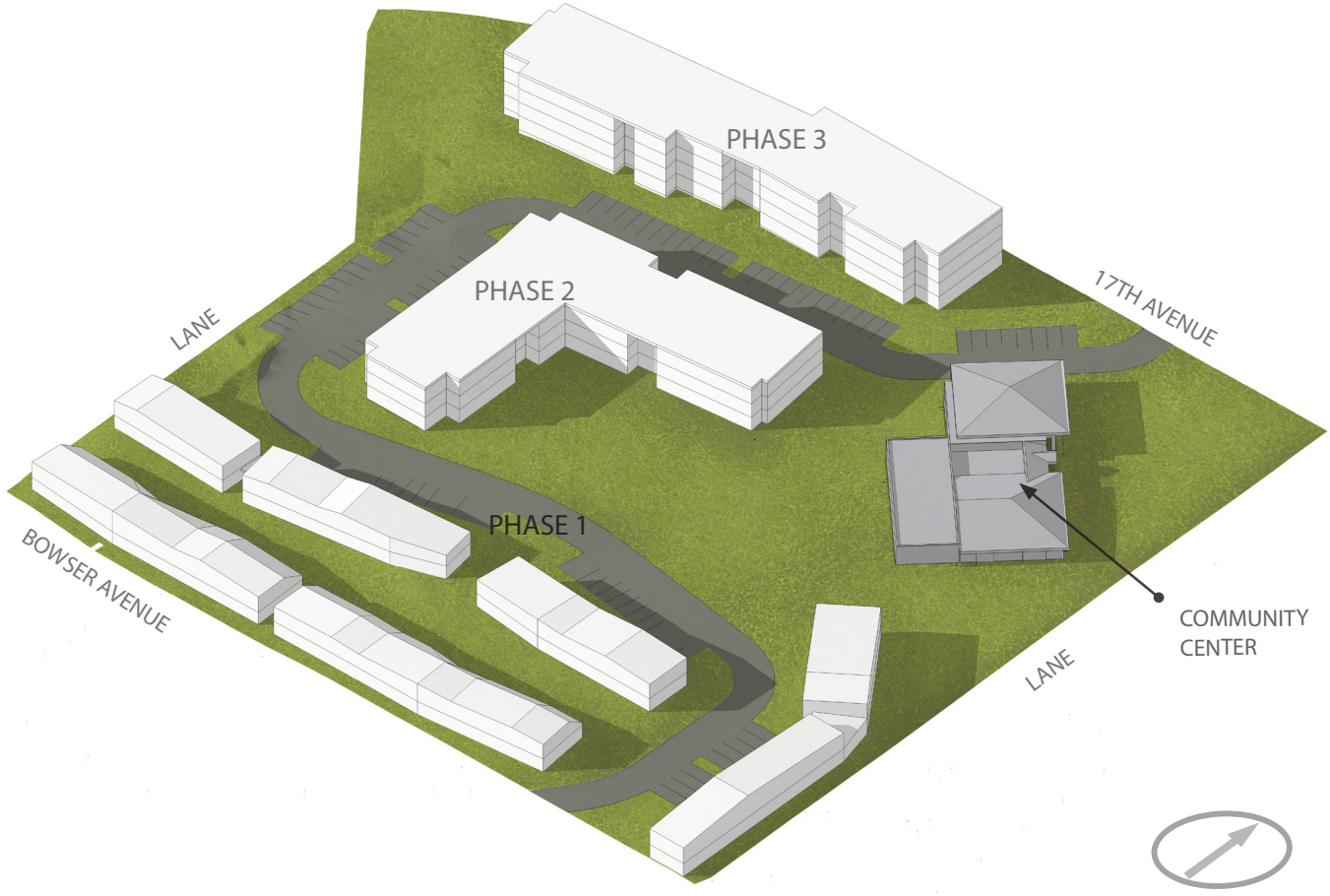
- The layout of the private interior road is configured to deter public use, provide traffic calming, and have good access control.

8.8.8 The form and character of new development should respect the form and character of existing development in the area around the development site.

- The Master Plan has established a pattern of development that provides a transition of form and character across the site from the low scale residential to the south and west to the higher scale and density of the existing developments to the north on 17th Avenue.

- Phase 1 is 2 a storey ground oriented development cluster of smaller buildings that responds to the adjacent existing residential developments.

- Phase 2 is envisioned to be a 3 storey building internally located away from the existing low scale residential neighbourhood. It will be the mid-height massing in the transition up to Phase 3 which is envisioned to be a 4 storey development in scale with the existing residential developments across 17th Avenue.



8.8.9 Roof top mechanical equipment is to be screened.

- It is not anticipated that there will be any significant roof top mechanical for Phase 1.

8.8.10 Natural environmental features on the site shall be protected. Emphasis will be placed on retention of native and mature trees. Where disturbed by construction, areas should be rehabilitated to a level acceptable to the City.

- The site has little existing vegetation that would benefit the environment. A proposed new project landscape concept has been developed to enhance the future built environment.

- The flood zone area is a natural feature that will be retained as open space, and will have planting that is appropriate for that area.

FLOOD ZONE
NATURAL PLANTING

GREEN SPACES
LANDSCAPED AREAS

8.8.11 Dwellings fronting on a highway should have screened outdoor areas to provide privacy to residents.

- A key principle of the planning is to create outdoor spaces that encourage community activities and resident interaction. The Master Plan has been developed to provide outdoor areas within the community that are shielded from the public streets by the built form. Patios and play spaces have been placed within the site where to provide supervised safe areas for families, and privacy for the residents.

8.8.12 All areas not covered by buildings, structures and parking shall be fully landscaped.

- The areas not covered by buildings will be landscaped. There will be a combination of soft and hard landscape treatments to provide for a variety of activities for children and adults.

8.8.13 Garbage and recycling containers should be effectively screened behind a sight obscuring fence on a minimum of three sides.

- The garbage and recycling is easily accessible for the residents and for trucks removing the garbage. The containers are screened from the residences.

8.8.14 Noise attenuation should ensure the livability of the residential development along arterials and highways.

- The buildings are designed with exterior envelopes that meet the new step code standards. This includes high performance windows and walls with continuous exterior insulation and ventilation systems for each home that provide for continuous ventilation without opening windows. These building envelopes provide a high level of noise attenuation as well as comfort.

Buildings are designed to minimize use of energy :

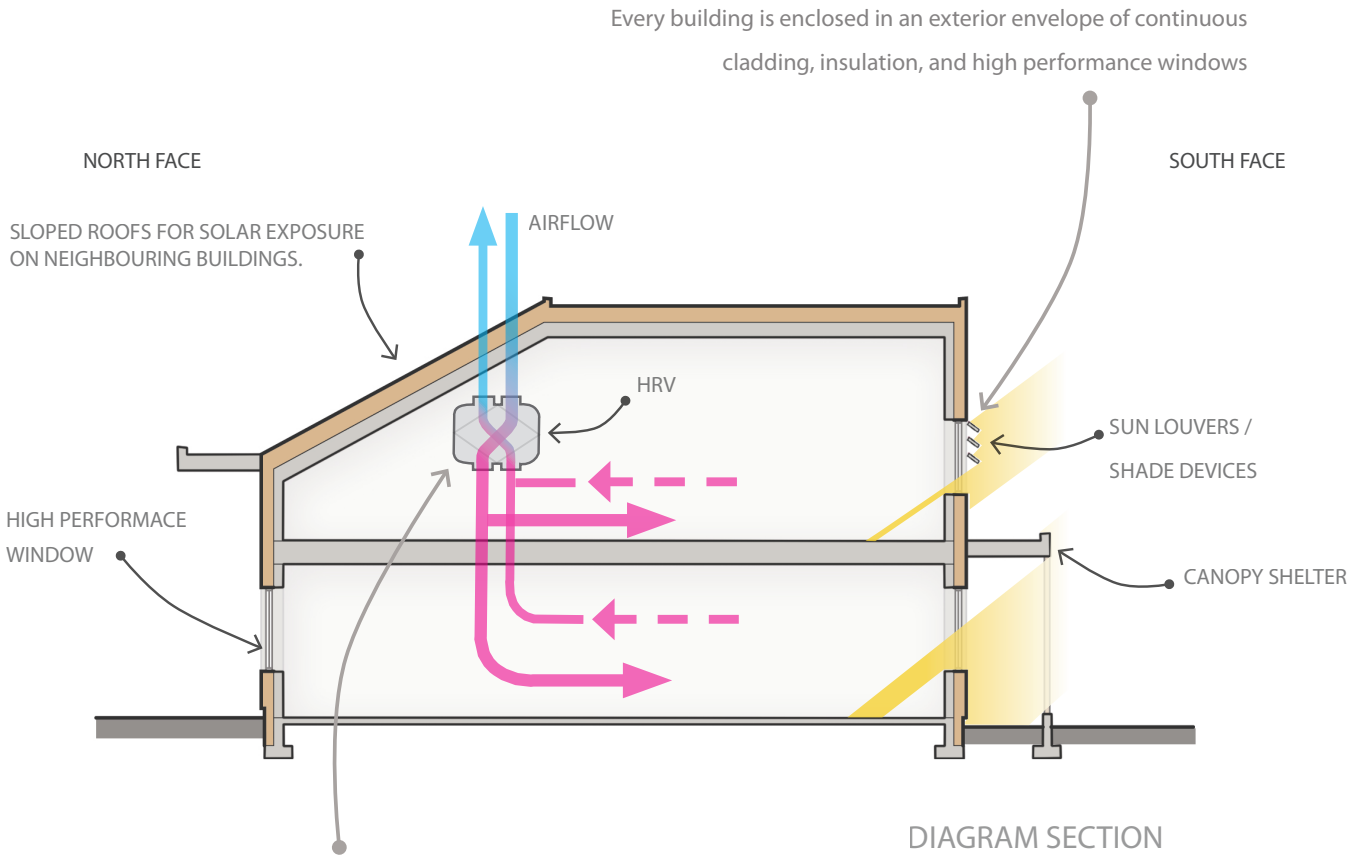


DIAGRAM SECTION

8.8.15 Landscaping materials should be chosen to provide colour in the winter. A suggested planting ratio is 60% coniferous and 40% deciduous.

- The landscaping materials proposed will provide the mix of deciduous and coniferous planting with winter colour as required.

8.8.16 In areas that have risk of bears, landscaping should be designed and selected to minimize conflict between bears and people.

- From discussions with planning, it was decided the landscape planting can include edible berries with other mixture of plants.

8.8.17 For development with a residential density of 124 dwellings/ha or less, the usable open space shall be provided at a minimum rate of 10.0 m2 per studio dwelling, 20.0 m2 per 1 bedroom dwelling, 40.0 m2 per 2 bedroom dwelling, and 50.0 m2 per dwelling with 3 or more bedrooms.

8.8.18 For development with a residential density of 125 dwellings/ha. or greater, usable open space shall be provided at a minimum of 20% of the site area. A maximum of 25% of the required outdoor recreation space may be provided on the roof of a principle building.

- The proposed phase 1 development residential density is 50 units/ha. The usable open space exceeds the minimum requirement.

END

8.8.19 Recreation and play areas should be sited away from highways and driveways, with

- The massing and roof forms of the buildings provide sunlight exposure to the recreational spaces and courtyard.

- The street front building placement creates a separation from the adjacent highways and driveways, providing privacy for the residents and a safe environment for children.

8.8.20 Private outdoor areas should have surveillance opportunity from windows of the adjacent dwelling.

- Private and common outdoor areas are overviewed by residential windows and exterior doors.

8.8.21 Parking should be screened from first floor windows of dwellings.'

8.8.22 Landscaping strips at least 1.5 m wide, except along lanes, should surround parking.

- Screening will be incorporated into the landscape design.

8.8.23 Below grade parking should be well lit and secured.

- All parking is at grade.

8.8.24 All visitor parking is to be easily accessible to the access points of the corresponding development and/or buildings.

8.8.25 In developments that have a reasonable expectation of needing more parking for the disabled than required by Section 7.1.29, additional parking shall be required to suit the circumstances.

- The parking has been arranged to provide the best possible access for the residents. The planning concept balances the priority of creating open spaces with pedestrian circulation for the families and access to the homes. This is achieved by minimizing the amount of road and grouping the parking in clusters.

8.8.26 A snow management plan should be provided for any development of six or more dwellings.

- Snow management plan provided with submitted drawings.

END

8.8.27 Lighting for parking areas should generally be at pedestrian level so as to deter vandalism. Area lighting should be designed to minimize glare over adjacent properties, and should not it impact the effectiveness of any traffic safety device.

- The lighting will be integrated with the planning and design of the outdoor spaces to provide the necessary security without negatively impacting community.

L&M ENGINEERING LIMITED
1210 Fourth Avenue
Prince George, B.C. V2L 3J4
Tel. (250) 562-1977
Fax (250) 562-1967

City of Prince George
1100 Patricia Boulevard
Prince George, BC V2L 3V9

Date: August 5, 2020
L&M Project: 1559-02

Attention: Kali Holahan
Planner

Reference: VP100562
1919 17th Avenue – Aboriginal Housing Society of Prince George
Parking Variance Letter

Dear Ms. Holahan,

On behalf of M'akola Development Services (M'akola), L&M Engineering is pleased to submit a parking variance rationale letter for the development at 1919 – 17th Avenue. M'akola is proposing to reduce the parking stall ratio to 0.6 parking stalls per dwelling unit. This reduces the required parking from 76 (required by parking bylaw) to 30 parking spaces. Table 1 summarizes the proposed parking reduction factors.

Table 1: Proposed Parking Stall Factors

	Dwelling Unit Size	# Parking Stalls Required / Dwelling	# Parking Stalls Proposed	Reduction In # Parking Stalls / Dwelling
Apartment Housing, Row housing, and Stacked Row Housing	Studio	1	0.6 stalls / dwelling	0.4
	1-bedroom			0.4
	2-bedroom	1.5		0.9
	3-bedroom	1.75		1.15
Designated Visitor Parking	n/a	0.1 (1 stall per 7 dwellings)	0 stalls / dwelling	0.1

The Aboriginal Housing Society of Prince George (AHSPG) currently owns and operates numerous sites in the City of Prince George that offer similar dwelling types and levels of affordability as the 1919 - 17th Avenue development. These sites were surveyed by the AHSPG to determine the current parking demand for this type of development. The surveys determined that a large majority of the parking stalls at these facilities were not being utilized. Table 2 summarizes the data from the parking lot surveys.

Table 2: Parking Lot Survey Data				
Location	**# of Dwellings**	**# Parking Stalls**	**# Parking Stalls in Use**	**# Stalls in Use / Dwelling**
1700 Yew Street	11	16	5	0.5
2060 Bowser Ave	11	16	6	0.5
950 Central Street	6	6	3	0.5
525 Freeman Street	8	14	3	0.4
1707 Redwood	4	8	2	0.5
573 Carney Street	5	8	3	0.6
2026 Laurier Crescent	6	10	2	0.3

Based on the data in Table 2, the proposed parking stall factor of 0.6 stalls per dwelling will be sufficient to accommodate the parking needs for the proposed development. Reducing the number of parking stalls from 76 to 30 provides numerous benefits. Some of the benefits include:

- Allowing for additional green spaces that create a strong identity for the site and encourage social opportunities and interaction between residents;
- Providing well-integrated parking areas throughout the site (as opposed to a large parking lot);
- Avoiding development on the 200-year Floodplain Zone in the northwest corner of the property; and
- Promoting accessibility by locating parking off the private road and near dwellings.

Residents living in residential developments located within proximity to public transportation and commercial goods tend to have a lower need and demand for vehicles/parking stalls. The development is located in proximity to both commercial goods and public transportation. This includes numerous amenities including Parkwood Mall, the Hospital, the YMCA, Masich Place Stadium and services within the Gateway as well as located within walking distance of schools including Ron Brent Elementary School and Franco-Nord. Further there are numerous bus routes within the immediate area of the site connecting residents throughout the City (Routes 46, 47, 10 and 15 within a 5-minute walk of the site).

Phase 1 of the project will consist of more than 0.6 parking stalls/dwellings unit (40 stalls rather than 30 stalls). However, the requested parking variance is for the entire property, therefore the development as a whole will average 0.6 parking stalls/dwelling unit.

Yours very truly,
L&M ENGINEERING LIMITED

Prepared By:

Tanner Fjellstrom, EIT
Project Engineer

Reviewed By:

Terry Fjellstrom, P.Eng.
President

Copy to: Katy Fabris (M'akola)
Julie Edney (M'akola)

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1919 17TH AVE., PRINCE GEORGE

BUILDING CODE COMPLIANCE REPORT

Prepared by:

Carlos Sheppard, MEng

Responsible Professional:

Jane Gachuche, P.Eng

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. N. GACHUCHE
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06/16/20

Prepared For:

DYS Architecture
260 - 1770 Burrard Street
Vancouver, BC V6J 3G7

Project #: 4V1906990
Report #: 100
Revision: 0
Date June 16, 2020

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Advancing the Science of Safety

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Table of Contents

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Acronyms and Abbreviations

AHJ	Authority Having Jurisdiction
BCBC	British Columbia Building Code
BCCR	Building Code Compliance Report
BCFC	British Columbia Fire Code
NFPA	National Fire Protection Association

1.0 Introduction

Jensen Hughes has been engaged by DYS Architecture (the "Client") to provide Building Code Consulting services to support and demonstrate compliance of five new residential buildings being developed at 1919 17th Avenue in Prince George, BC (the "Project"). The Building Code services specifically pertain to the fire and life safety requirements in the 2018 British Columbia Building Code (BCBC 2018). No additional end user goals have been raised to Jensen Hughes for inclusion within this report.

This report is intended to provide sufficient details to outline the approach to fire and life safety compliance and to support the building permit application.

1.1 PROJECT OVERVIEW

The project is a new development consisting of five new buildings to house domestic dwellings. Each building is two storeys in building height and the building areas range from approximately 370 m^2 to 700 m^2. An architectural concept rendering of one of the buildings is replicated in **Figure 1-1** below for reference.

Figure 1-1: Architectural Building Concept

Of the five buildings, Buildings 1 through 4 are made up of two-storey townhouses and Building 5 consists of a mix of two-storey townhouses and single-storey stacked flats. A summary of the accommodation type per building and the overall site layout of the five buildings are detailed in **Table 1-1** and **Figure 1-2** respectively below.

Table 1-1: Summary of Accommodation per Building

Building	Occupancy Type	Number of Units
1	3-bed townhouse	9
2	3-bed townhouse	8
3	2-bed townhouse	11
	Amenity	1
4	2-bed townhouse	8
5	1-bed stacked flats (stacked two in height)	10
	4-bed townhouse	4
	Service Room (mechanical room, electrical room and communal store)	1

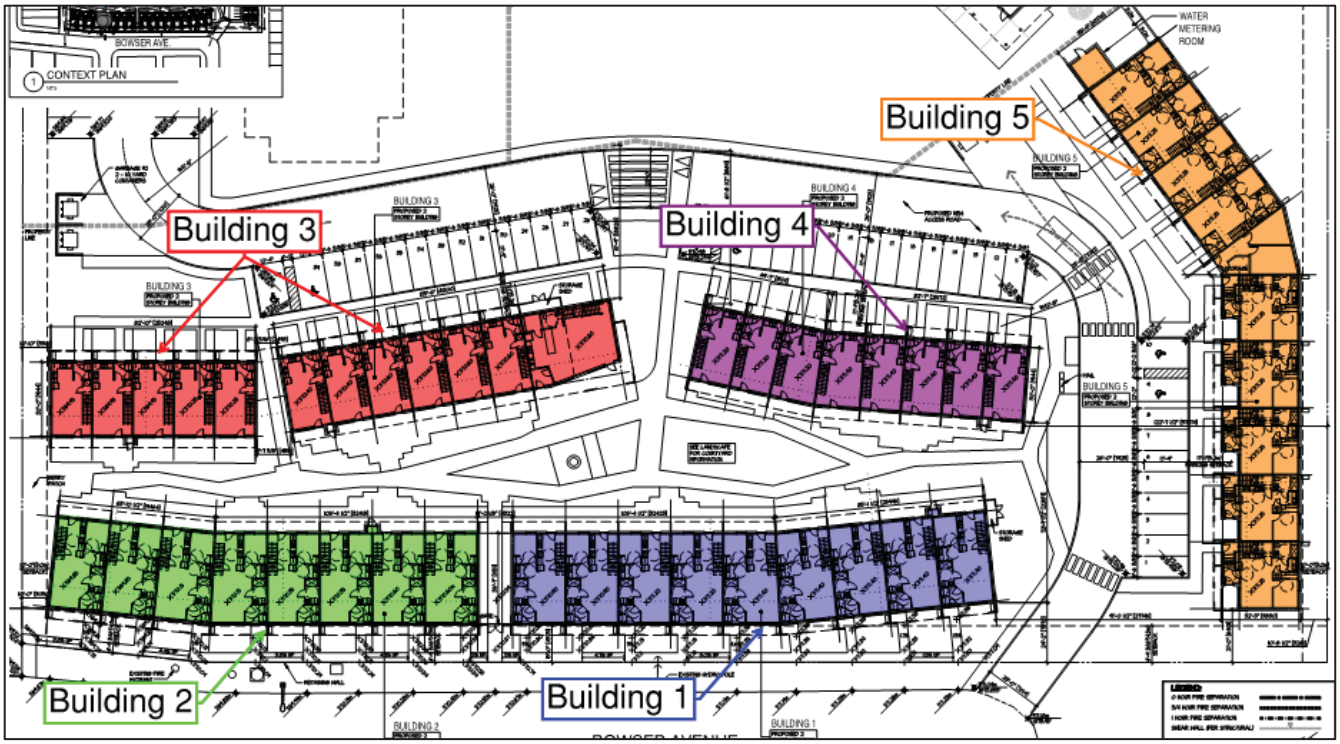

Figure 1-2: Site Plan

1.2 APPLICABLE CODES AND STANDARDS

The Authority Having Jurisdiction (AHJ) for all five buildings is understood to be the City of Prince George.

The applicable codes which the design of the buildings will be benchmarked against are:

+ 2018 British Columbia Building Code (2018 BCBC); and
+ 2018 British Columbia Fire Code (2018 BCFC).

Unless otherwise specified, all references are to Division B – Part 3 of the BCBC 2018.

1.3 REFERENCED DOCUMENTATION

This report is based on a review of the following design drawings as outlined in **Table 1-2** below. Please note that any variation of the below documents may invalidate the conclusions of the report.

Table 1-2: Drawings Reviewed

Drawing	*Drawing No.*	*Revision No.*	*Issue date*
Cover Sheet	A219457 – A0.01	A	Dec 11, 2019
Site Plan	A219457 – A1.01	A	Dec 11, 2019
Building 1 Elevations	A219457 – A3.01	A	Dec 11, 2019
Building 2 Elevations	A219457 – A3.02	A	Dec 11, 2019
Building 3 Elevations	A219457 – A3.03	A	Dec 11, 2019
Building 4 Elevations	A219457 – A3.04	A	Dec 11, 2019
Building 5 Elevations	A219457 – A3.05	A	Dec 11, 2019

2.0 Fire and Life Safety Construction Article

2.1 BUILDING CLASSIFICATION

The following summarizes the characteristics of the buildings for determining the applicable construction requirements as specified within

Table 2-1. The presence of the adjoining amenity space within Building 3 introduces a building with multiple major occupancies. As a result, the building must be designed according to the most onerous construction article, as per Article 3.2.2.6.

The amenity space mezzanine level shall be counted as a storey since less than 60% of the horizontal plane is open as per Clause 3.2.1.1.(3)(a).

Building area:	Building 1: 656 m^2 Building 2: 595 m^2 Building 3: 600 m^2 (Residential: 506 m^2, Amenity Space: 94 m^2) Building 4: 373 m^2 Building 5: 700 m^2
Building height:	Building 1-5: 2 storeys
Construction type:	Combustible
Major occupancy:	Building 1, 2, 4, 5: Group C Building 3: Group C, Group A-2
Sprinklered:	Yes
No. of streets facing:	Building 1 and 2: 1 street (Bowser Avenue) Building 3: 1 street (Access road) Building 4: 1 street (Access road) Building 5: 1 street (Access road)

2.2 CONSTRUCTION REQUIREMENTS

The primary supporting structure for the building is required to have the following fire-resistance ratings outlined in

Table 2-1. Building 3 contains both a Group C major occupancy and a Group A-2 major occupancy. In the event of multiple major occupancies, the most onerous construction article will apply. The most onerous construction article for Building 3 is Article 3.2.2.54, therefore all 5 buildings will be designed to this standard. The relevant construction article for a Group A-2 occupancy has also been included in

Table 2-1 for completeness to demonstrate that it is less onerous than the Group C construction article.

Table 2-1: Applicable Construction Requirements

Category	*Buildings 1-5*	*Building 3*
Major occupancy	Group C	Group A-2
Construction article	3.2.2.54 (Group C, up to 3 storeys, sprinklered)	3.2.2.27 (Group A, Division 2, up to 2 storeys, sprinklered)
Construction type	Combustible or Noncombustible	Combustible or Noncombustible
Permitted building area	2,700 m^2 if 2 storeys	600 m^2 if 2 storeys
Floor assemblies	45 min[1]	0 h
Load bearing structures	Not less than rating of the supported assembly	0 h
Roof assemblies	0 h	0 h
Sprinklers	Yes	Yes

Notes:

1. As per Sentence 3.2.2.54.(4), In a building which has no dwelling unit above another dwelling unit, the fire-resistance rating for floor assemblies entirely within the dwelling unit is waived.

2.3 INTERIOR FINISH

Interior finish material in the buildings will include any material that forms part of the interior surfaces such as walls, floors, partitions or ceiling, and includes lighting elements; cladding; surfacing of paint or fabric; doors, windows and trim; and carpet material. The interior finish materials are required to conform with the required flame-spread ratings in Subsection 3.1.13.

In accordance with Article 3.1.13.1, interior finishes, furnishings, and decorative materials shall not have a flame-spread rating of more than 150. The flame-spread rating of the lobby entrance to the amenity space shall not be more than 25 as per Article 3.1.13.2. The flame-spread rating of interior wall and ceiling finishes for a bathroom in a suite of residential occupancy shall not be more than 200 as per Article 3.1.13.3.

3.0 Spatial Separation

With respect to Table 3.2.3.1.-D of the 2018 BCBC, the spatial separation calculations are based on the most restrictive fire compartment for each building façade. The area of unprotected openings and the minimum construction requirements for the exposed building faces are based on the applicable limiting distance. Based on the analysis, there is sufficient separation distance between all five buildings to permit all of the proposed openings from the elevation drawings to be unprotected. Additionally, there is sufficient distance between all five buildings and any external site boundaries to permit all of the proposed openings from the elevation drawings to be unprotected. The construction and cladding requirements are summarized in **Table 3-1** below. A table with the full analysis results is presented in **Appendix A**.

Table 3-1: Exterior Wall Construction Requirements

Exterior Wall	Type of Construction Required	Type of Cladding Required
Building 1		
East Facade	No requirement	No requirement
North Façade	C/NC/EMT	C/NC
West Façade	C/NC/EMT	NC
South Façade	No requirement	No requirement
Building 2		
South Façade	No requirement	No requirement
East Facade	C/NC/EMT	NC
North Façade	C/NC/EMT	C/NC
West Façade	C/NC/EMT	NC
Building 3		
West Façade	C/NC/EMT	NC
North Façade	No requirement	No requirement
South Façade	C/NC/EMT	C/NC
East Façade	C/NC/EMT	C/NC
South Façade (Amenity)	No requirement	No requirement
East Façade (Amenity)	C/NC/EMT	C/NC
Building 4		
West Façade	C/NC/EMT	NC
East Façade	No requirement	No requirement
South Façade	C/NC/EMT	C/NC
North Façade	No requirement	No requirement
Building 5		
North Façade	C/NC/EMT	C/NC
South Façade	No requirement	No requirement
Typical West Façade	No requirement	No requirement
East Façade (Townhouses)	No requirement	No requirement
East Façade (Service room)	C/NC/EMT	C/NC
East Façade (Typical stacked flat)	C/NC/EMT	C/NC

Legend: C – Combustible, NC – Noncombustible, EMT – Encapsulated Mass Timber

4.0 Fire Separations

As per Sentence 3.3.4.2.(3), floor assemblies within a dwelling unit need not be constructed as fire separations if the dwelling unit is separated from the remainder of the building by a fire separation with a fire resistance rating not less than 45 min and the building is sprinklered throughout.

The following internal fire separations are required within the buildings in accordance with the 2018 BCBC. These fire separations are illustrated within the associated fire safety drawings in **Appendix B**.

Table 4-1: Internal Fire Separation Requirements

Category	2018 BCBC reference	Separation fire resistance rating	Closure fire protection rating
General separation between dwelling Units	3.3.4.2.(2)	45min	45 min
Separation between dwelling unit and Amenity Space	Table 3.1.3.1	1 h	45 min
Service rooms (Mechanical and electrical rooms)	3.6.2.1	1 h	45 min
Communal storage room	3.3.4.3	45 min	45 min

5.0 Means of Egress and Exiting

5.1 OCCUPANT LOAD

Per Article 3.1.17.1, the total number of occupants anticipated in each building is described below.

Table 5-1: Occupant Load

Floor area	Area / no. beds	Occupant load factor	Occupant load
Building 1			
9 dwelling units (3-bed)	27 beds	2 persons/bedroom	54
		Sub-total	**54**
Building 2			
8 dwelling units (3-bed)	24 beds	2 persons/bedroom	48
		Sub-total	**48**
Building 3			
11 dwelling units (2-bed)	22 beds	2 persons/bedroom	44
Amenity space	93.5 m^2	1.85 m^2/person	51[1]
		Sub-total	**44**
Building 4			
8 dwelling units (2-bed)	16 beds	2 persons/bedroom	32
		Sub-total	**32**
Building 5			
4 dwelling units (4-bed)	16 beds	2 persons/bedroom	32
10 dwelling units (1-bed, double stacked)	10 beds	2 persons/bedroom	20
Service and storage areas	53.0 m^2	46 m^2/person	2
		Sub-total	**54**
		Total	**232**

Notes:

1. This is a transient occupant load that primarily consists of occupants from the adjacent dwelling units and does not contribute to the total occupant load.

5.2 MEANS OF EGRESS AND EXIT CAPACITY

5.2.1 Dwelling Units

Each dwelling unit has a single exit as required by Sentence 3.3.4.4.(3). The minimum width of stairs (900 mm) and doorways (800 mm) are in conformance as required by Article 3.4.3.2. The available exit capacity satisfies the required egress capacity for exit doors and stairs, based on 6.1 mm/person and 8 mm/person, respectively, in conformance with Sentence 3.4.3.2.(1).

5.2.2 Amenity Space

The amenity space has two (2) exits as required by Article 3.4.2.1. The distance between exits satisfy the requirements described by Article 3.4.2.3.

The minimum width of stairs (900 mm) and doorways (800 mm) are in conformance as required by Article 3.4.3.2. The available exit capacity satisfies the required egress capacity for exit doors and stairs, based on 6.1 mm/person and 8 mm/person, respectively, in conformance with Sentence 3.4.3.2.(1).

5.2.3 Service and Storage Areas

As per Sentence 3.4.2.1.(2), the service and storage areas are permitted to be served by a single exit.

The minimum width of doorways (800 mm) are in conformance as required by Article 3.4.3.2. The available exit capacity satisfies the required egress capacity for exit doors, based on 6.1 mm/person in conformance with Sentence 3.4.3.2.(1).

5.3 TRAVEL DISTANCES

The travel distances of the amenity space and the service and storage areas are within the maximum permitted travel distance of 45 m as required by Article 3.4.2.5.

6.0 Fire Alarm Systems

A fire alarm system is required in all of the buildings on the site as per Article 3.2.4.1. Fire alarm systems shall be installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems”.

Sentence 3.2.4.8.(2) requires a fire alarm annunciator to have separate zone indication in each floor area. This would apply to two storeys within a single suite. As this approach is impractical, an alternative solution has been provided to address this which will be provided as a separate accompanying report. The basis of the alternative solution will be that each building will serve as a separate zone. Upon actuation of the alarm initiating device, indication of the zone which triggered the alarm will be displayed on the annunciator panel. An additional identification device will be provided to identify which dwelling unit the fire is in. The additional identification device will be a flashing beacon located on the external face of the principal entrance for each dwelling unit.

The alternative solution mentioned above would reduce the number of fire alarm system zone indicators for each building to one. As per Sentence 3.2.4.8.(3), an annunciator panel need not be provided for a single zone indicator for each building. An annunciator panel for the system will be provided. The location of this annunciator panel is required to be located at the fire service response point and be readily identifiable.

As per coordination with the Prince George Fire Department, the annunciator panel will be located in the breezeway between Building 1 and Building 2. The annunciator panel will be placed in a heated closet to provide protection from the elements. The proposed annunciator panel location is provided in **Figure 8-1** below.

A manual pull station is required for the amenity space and service areas as per Sentence 3.2.4.16.(1). Manual pull stations are not required in dwelling units as per Sentence 3.2.4.16.(2).

An automatic sprinkler system shall be equipped with waterflow detecting devices conforming to Article 3.2.4.15. In addition the system shall be electrically supervised in accordance with Article 3.2.4.9.

From Sentence 3.2.4.20.(8), suites of residential occupancy are permitted to be equipped with smoke detectors in lieu of smoke alarms provided they form part of the fire alarm system, sound audible signals only within the suite they serve, and are installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems”. Smoke detectors installation shall also conform with Article 3.2.4.11.

7.0 Fire Fighting Provision

As Building 1 and Building 5 are greater than 600 m^2, they shall be provided with an access route for fire department vehicles to the building face having a principal entrance as per Article 3.2.5.4. Bowser Avenue satisfies this requirement for Building 1. The proposed site access route shall be provided in conformance with Article 3.2.5.6.

As per coordination with the Prince George Fire Department, the centreline turning radius of the access road will be increased to 15 m to accommodate the larger turning radius of their main ladder truck.

A turnaround facility will be provided for the access road on the north face of Building 3 as per Article 3.2.5.6.

8.0 Fire Suppression Systems

8.1 SPRINKLER AND STANDPIPE SYSTEM

Standpipes are not required as per Article 3.2.5.8.

Sprinkler protection is required for all buildings as per Section 9.4 “Fire and Life Safety Measures” of the BC Housing guidelines.

The design, construction and installation of a sprinkler system shall conform to the requirements of NFPA 13R, “Installation of Sprinkler Systems in Low-Rise Residential Occupancies” for Building 1, 2, 4 and 5.

For Building 3, the system is required to comply with NFPA 13, “Installation of Sprinkler Systems” due to the presence of multiple major occupancies.

8.2 FIRE DEPARTMENT CONNECTION

As per discussion with the Prince George Fire Department, a single fire department connection is proposed to serve all five buildings as they form part of a single sprinkler network.

This fire department connection will be provided adjacent to the breezeway between Building 1 and Building 2. The fire department connection will be on the south elevation facing Bowser Avenue as illustrated in **Figure 8-1** below. This fire department connection will be within 45 m of the existing public hydrant as per Article 3.2.5.15.(2).

8.3 FIRE HYDRANTS

The closest existing public hydrant location is illustrated in **Figure 8-1** below. The existing hydrant location does not provide sufficient coverage to comply with the 2018 BCBC requirements.

Two private fire hydrants are to be provided to satisfy the 2018 BCBC requirements. These hydrants are located such that the unobstructed path of travel for the firefighter from the vehicle to the building is not more than 45 m as per Sentence 3.2.5.5.(2). The proposed locations of the two private hydrants are illustrated in **Figure 8-1**.

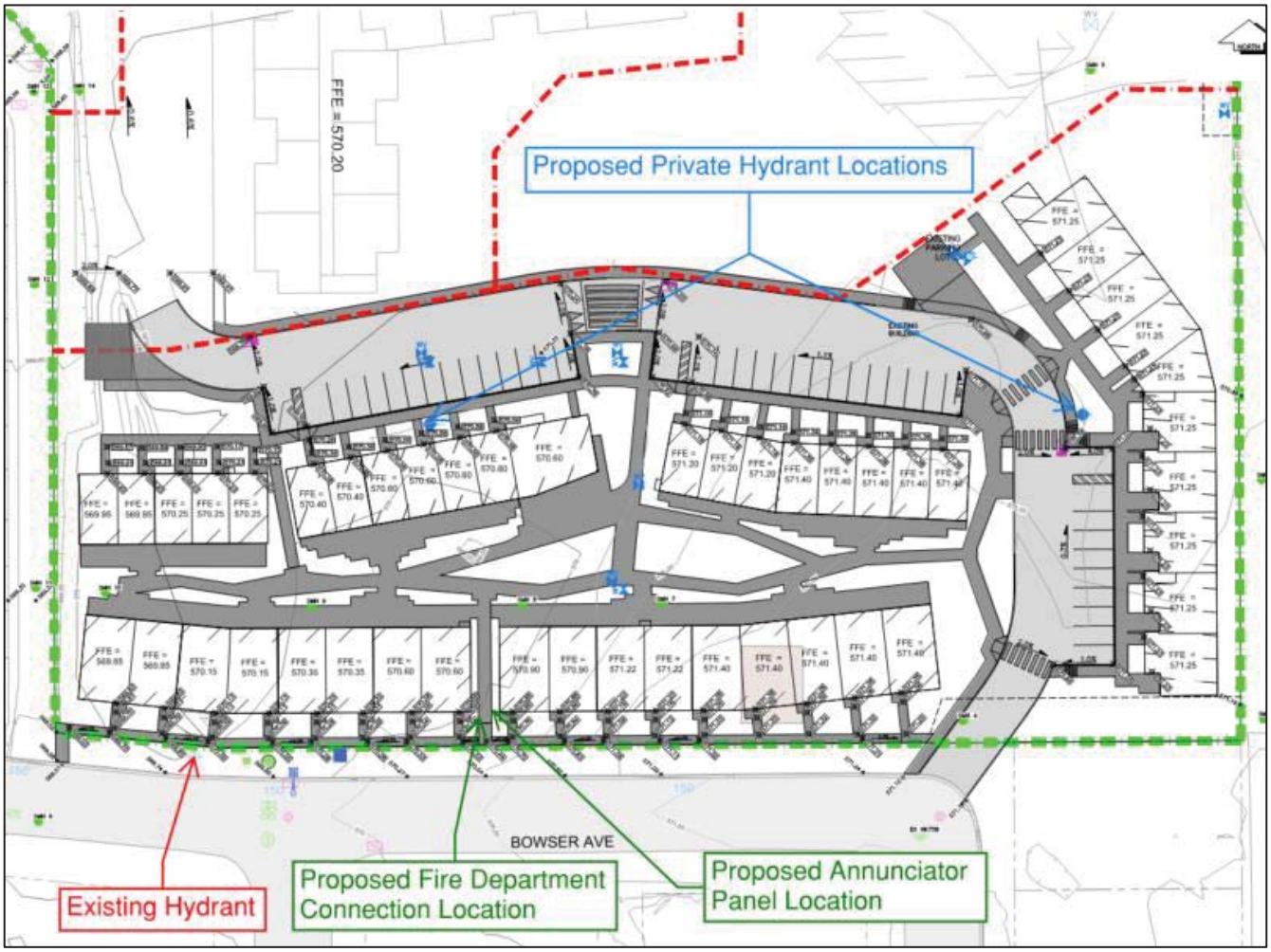

Figure 8-1: Existing Hydrant and Proposed Annunciator Panel, Fire Department Connection and Hydrant Locations

9.0 Emergency Lighting and Exit Signage

Emergency lighting is required to be provided in principal routes providing access to exits for service rooms in accordance with Article 3.2.7.3 of the 2018 BCBC. Emergency lighting shall be provided to an average level of illumination not less than 10 lx at floor or tread level.

Exit signs are not required as per Article 3.4.5.1.

10.0 Health Requirements

One (1) water closet is provided per dwelling unit as per Article 3.7.2.2.(11).

The Building 3 amenity space contains one (1) universal water closet. This capacity does not satisfy the minimum requirements outlined by Article 3.7.2.2; however, the amenity space is for tenant use only. As each residential unit will be provided with its own washroom, the washrooms within dwelling units satisfy the code requirements, with the universal washroom being provided for convenience. The amenity space washroom shall comply with the accessibility requirements of Article 3.8.2.8 outlined below.

11.0 Barrier-Free Design

The requirements of Section 3.8 do not apply to dwelling units as per Clause 3.8.2.1.(1)(a).

The mezzanine level of the amenity space need not be accessible as outlined by Clause 3.8.2.1.(1)(g) on the basis that the mezzanine contains only facilities that are also contained on the accessible (ground) floor.

The amenity space is required to conform with the minimum barrier-free requirements of Subsection 3.8.2 and Subsection 3.8.3 as summarised in the following sections.

As per coordination with Dys Architecture, both amenity space vestibule doors will be hung to swing such that the requirement of being separated by not less than 1,500 mm plus the width of any door that swings into the space in the path of travel is satisfied as per Sentence 3.8.3.6.(12).

11.1 BARRIER-FREE PATH OF TRAVEL

11.1.1 Width

Barrier-free paths of travel are permitted to include ramps and be designed as follows:

+ Have an unobstructed width of at least 920 mm [Clause 3.8.3.2.(1)],

11.1.2 Doors and Doorways

Doorways located in a barrier-free path of travel are required to be in conformance with Article 3.8.3.6 summarised as follows:

+ Every doorway located in a barrier-free path of travel will have a clear width of not less than 800 mm when the door is in the open position [Sentence 3.8.3.6.(2)].
+ The threshold of a doorway is required to be not more than 13 mm higher than the finished floor surface, and where it is higher than 6 mm, it is required to be beveled to a slope no steeper than 1 in 2 [Sentence 3.8.3.6.(5)].
+ Where a power door operator is not provided, a minimum latch-side clearance is required as follows [Sentence 3.8.3.6.(11)]:
  - 600 mm beyond the edge of the door opening if the door swings toward the approach side, and
  - 300 mm beyond the edge of the door opening if the door swings away from the approach side.
+ Doors in an accessible path of travel which are installed in series are required to be separated by not less than 1,200 mm plus the width of any door that swings into the space in the path of travel from one door to another [Sentence 3.8.3.6.(12)]
+ A clear, level space is required to be provided on each side of a door located in a barrier-free path of travel as follows [Sentence 3.8.3.6.(14)]:
  - Have a width equal to the width of the door plus the required latch clearance, and
  - Have a dimension perpendicular to the closed door of not less than the width of the barrier-free path of travel but need not exceed 1,500 mm.

11.1.3 Door Opening Devices

Door opening devices that are the only means of operation are required to be designed to be operable using a closed fist and mounted not less than 900 mm and not more than 1,100 mm above the finished floor [Sentence 3.8.3.6.(6)(v)].

Except for doors equipped with power door operators, and where greater forces are required to overcome the prevailing difference in air pressure on opposite sides of a door, self-closing devices for doors are required as follows [Sentence 3.8.3.6.(8) to (10)]:

+ Permit the door to open with a force of not more than 38 N when applied to the handle, push plate or latch-releasing device for exterior doors.
+ Permit the door to open with a force of not more than 22 N when applied to the handle, push plate or latch-releasing device for interior doors.
+ Have a closing period of not less than 3 seconds measured from when the door is in an open position of 70° to the doorway to when the door reaches a point 75 mm from the closed position for interior doors.

11.2 BARRIER-FREE WASHROOMS

Per Article 3.8.2.8, washrooms located within a barrier-free path of travel are required to be accessible. The minimum requirements are as follows:

+ At least one barrier-free stall that conforms with the requirements of Articles 3.8.3.11 and 3.8.3.13 [Sentence 3.8.2.8.(5)], and

+ At least one lavatory and one mirror that conform with the requirements of Article 3.8.3.15 [Sentences 3.8.2.8.(7) and (8)].

12.0 Conclusion

This report provides a holistic appraisal of the approach to fire, life safety and accessibility requirements relative to the proposed new 5-building development located at 1919 17th Avenue, Prince George, BC. The proposed development has been assessed relative to the applicable requirements of the 2018 BCBC.

The objectives of this BCCR are to:

+ Provide a holistic appraisal of building code compliance and detail pertinent interactions with acceptable solutions.
+ Demonstrate how the applicable fire and life safety requirements, as detailed within the above detailed design framework, are intended to be met.

The assessment demonstrates that the above objectives have been met with the proposed development by compliance with the minimum design provisions of the code.

A. Spatial Separation Analysis

Exterior Wall	Exposing Building Face (m^2)	Limiting Distance (m)	Unprotected opening (%)		Required Fire Resistance Rating	Type of Construction Required	Type of Cladding Required
			Permitted Area	Proposed Area			
Building 1							
East Facade	82	13.9	100	-	No requirement	No requirement	No requirement
North Façade (East-most unit)	48.8	5.7	95.1	8.6	45 min	C/NC/EMT	C/NC
West Façade	81.2	2	18	0	1 h	C/NC/EMT	NC
South Façade (West-most unit)	43.9	13.2	100.0	-	No requirement	No requirement	No requirement
Building 2							
South Façade (East-most unit)	45	13.2	100	-	No requirement	No requirement	No requirement
East Facade	81.2	2	18	0	1 h	C/NC/EMT	NC
North Façade (West-most unit)	45	4.9	86.1	9.4	45 min	C/NC/EMT	C/NC
West Façade	89	3	27.1	2.5	45 min	C/NC/EMT	NC
Building 3							
West Façade	75	3.3	33.5	2.9	45 min	C/NC/EMT	NC
North Façade (West-most unit)	34.9	16.3	100	-	No requirement	No requirement	No requirement
South Façade (West-most unit)	35	4.6	87.2	18.6	45 min	C/NC/EMT	C/NC
East Façade	73	4.6	55.5	7.9	45 min	C/NC/EMT	C/NC
South Façade (Amenity)	69	8.95	100	-	No requirement	No requirement	No requirement
East Façade (Amenity)	73	4.78	58.7	7.9	45 min	C/NC/EMT	C/NC
Building 4							
West Façade	72.4	4.2	48.7	2.3	45 min	C/NC/EMT	NC
East Façade	74.5	12	100	-	No requirement	No requirement	No requirement
South Façade	34.7	5.6	99.2	6.5	45 min	C/NC/EMT	C/NC
North Façade	34.3	18.76	100	-	No requirement	No requirement	No requirement
Building 5							
North Façade	81.9	5.75	73.5	0	45 min	C/NC/EMT	C/NC
South Façade (1st floor)	32.7	6.6	100	-	No requirement	No requirement	No requirement
South Façade (2nd floor)	33.9	6.6	100	-	No requirement	No requirement	No requirement
Typical West Façade	27.4	12.2	100	-	No requirement	No requirement	No requirement
East Façade (Townhouses)	45.2	6.8	100	-	No requirement	No requirement	No requirement
East Façade (Service room)	29	3.4	60.5	0	45 min	C/NC/EMT	C/NC
East Façade (South-most unit, 1st floor)	25.8	3.2	58.4	7.4	45 min	C/NC/EMT	C/NC
East Façade (South-most unit, 2nd floor)	31	3.2	51.6	4.8	45 min	C/NC/EMT	C/NC

Figure A-1: Full spatial separation analysis breakdown

B. Fire Safety Markups

The fire separation requirements below are based on the fire-resistance ratings outlined in **Section 3.0** and **Section 4.0** of this report.

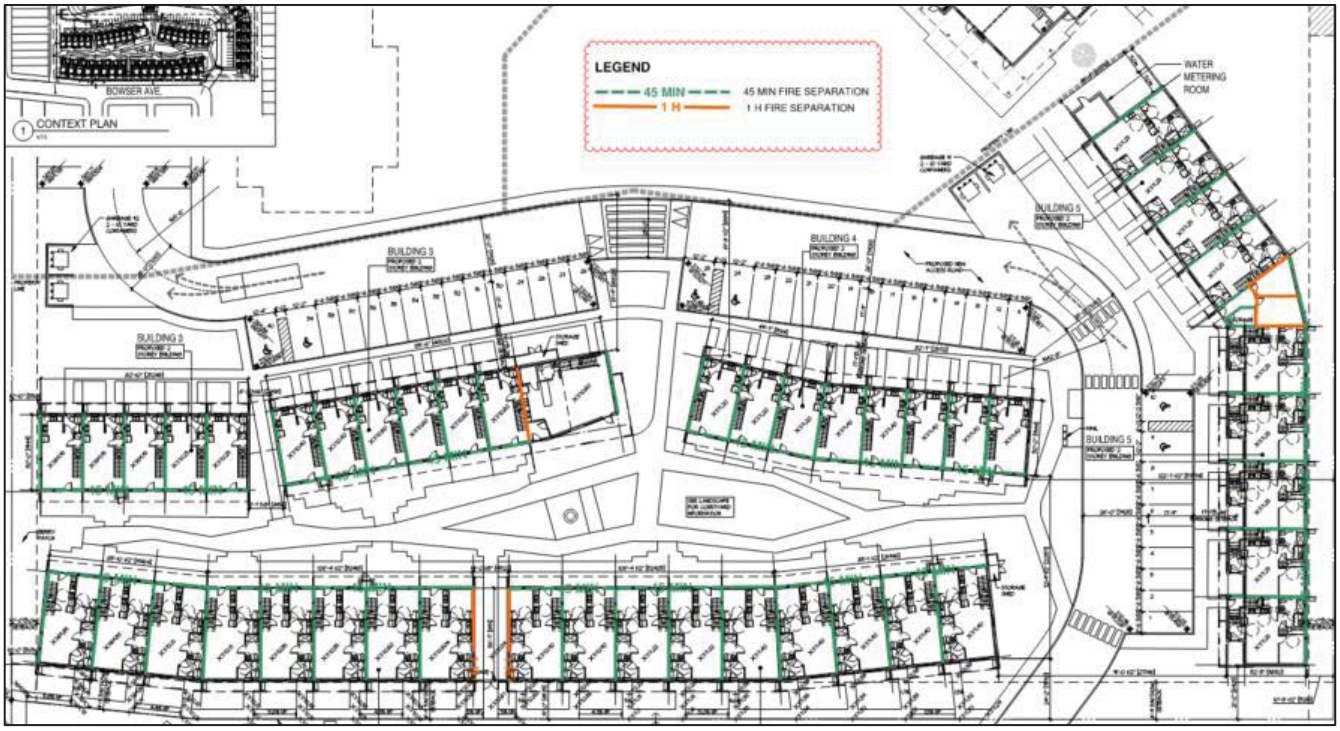

Figure B-1: Site plan fire separation drawing markup