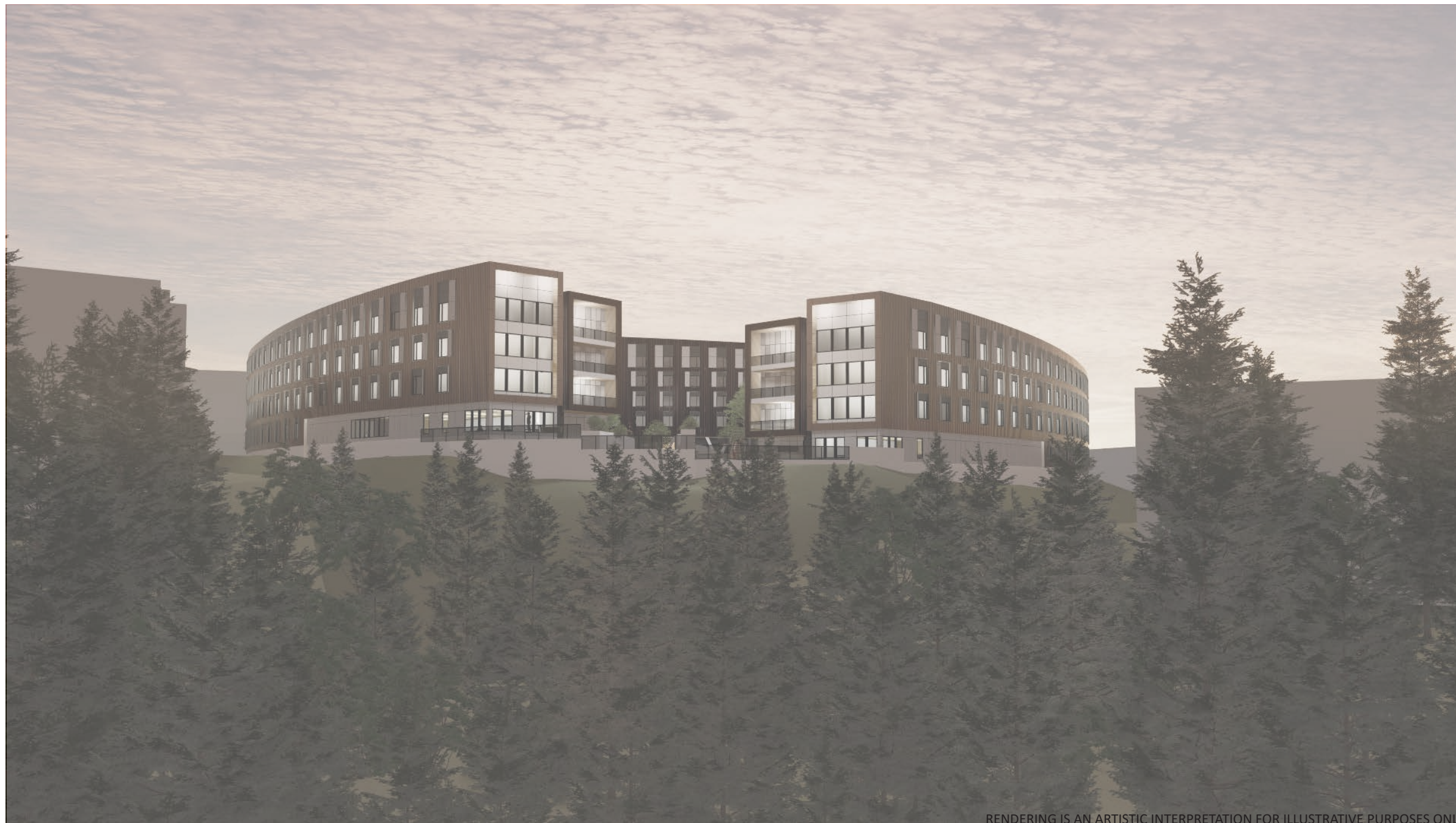


Development Permit Application

22-003 - 825 Academy Way
Kelowna, BC August 2024



RENDERING IS AN ARTISTIC INTERPRETATION FOR ILLUSTRATIVE PURPOSES ONLY

FACTIONTM

CONTENT

EXECUTIVE SUMMARY	1
1.0 SITE ANALYSIS	2
1.1 NEIGHBOURHOOD CONTEXT	2
1.2 LOCATION	3
1.3 CONTEXTUAL ZONING	4
1.4 EXISTING SITE PHOTOS	5
2.0 SITE DESIGN	7
2.1 SURVEY	8
2.2 GEOTECHNICAL	9
2.3 CIVIL	10
2.4 LANDSCAPE	19
3.0 ARCHITECTURAL FORM & CHARACTER	21
3.1 DESIGN RATIONALE	21
3.2 ARCHITECTURAL DRAWINGS	24
3.3 ARCHITECTURAL MATERIALS	41
3.4 CONCEPTUAL RENDERINGS	42
4.0 DEVELOPMENT INFORMATION	48
4.1 PRELIMINARY DEVELOPMENT INFORMATION	48
4.2 PARKING STUDY	49
4.3 CONTEXTUAL BUILDING HEIGHTS STUDY	57
5.0 APPENDICES	
A - GEOTECHNICAL REPORT	

EXECUTIVE SUMMARY

The project at 825 Academy Way offers a unique student oriented and community-based living environment. The student population has different needs and desires that are often neglected by traditional rental development projects. In harmony with the aspirations of university student life, the design for this privately owned and operated student rental housing project endeavours to facilitate study, socializing and community. With the need for student housing never being more prevalent, the timing of this proposed project will help address this need specific to the UBC Okanagan Campus ('UBCO').

It is understood that students living in off campus student-oriented housing near to the university achieve better results in reaching their overall academic goals due to the proximity of resources and supports. Students in this type of housing are provided with secure, maintained, and convenient student housing. They benefit from living in a community that is focused on academic success, personal learning, development, and growth. With ground-oriented retail spaces fronting Academy Way, this project will become the heart of the village centre and will create a destination for the student population and the broader Kelowna University District community.

The project consists of ± 451 units distributed within three buildings surrounding a central open-air community plaza. The project includes ± 11,500 ft² of commercial space and ± 78,500 ft² of indoor and outdoor amenity space. Building 1, fronting Academy Way, is proposed to be 5 storeys in height and Buildings 2 and 3 have a 4-storey height profile. Multiple points of pedestrian connection have been incorporated into the design, creating a permeable and welcoming frontage along the City of Kelowna's active transportation corridor. This will encourage pedestrians to enter the site to visit the commercial spaces and central plaza area. Vehicular access is limited to the southwest corner of the site with the majority of that traffic being routed immediately to the single level, underground parkade. Short term parking stalls, divided into smaller groupings to reduce their presence within the plaza, will be located at grade adjacent to the commercial spaces.

Although a height variance has been proposed to accommodate a 5-storey building (Building 1), only a small portion of the roof parapet extends beyond the permitted 18m building height. From a massing perspective, most of Building 1 fits within the allowable 18m height profile. The proposed FAR (0.82) is well below what is permitted (1.5) in this village centre location. Maximizing the permitted Floor Area Ratio (FAR) would result in an aggressive approach to building heights, massing and parking that would negatively impact the surrounding community.

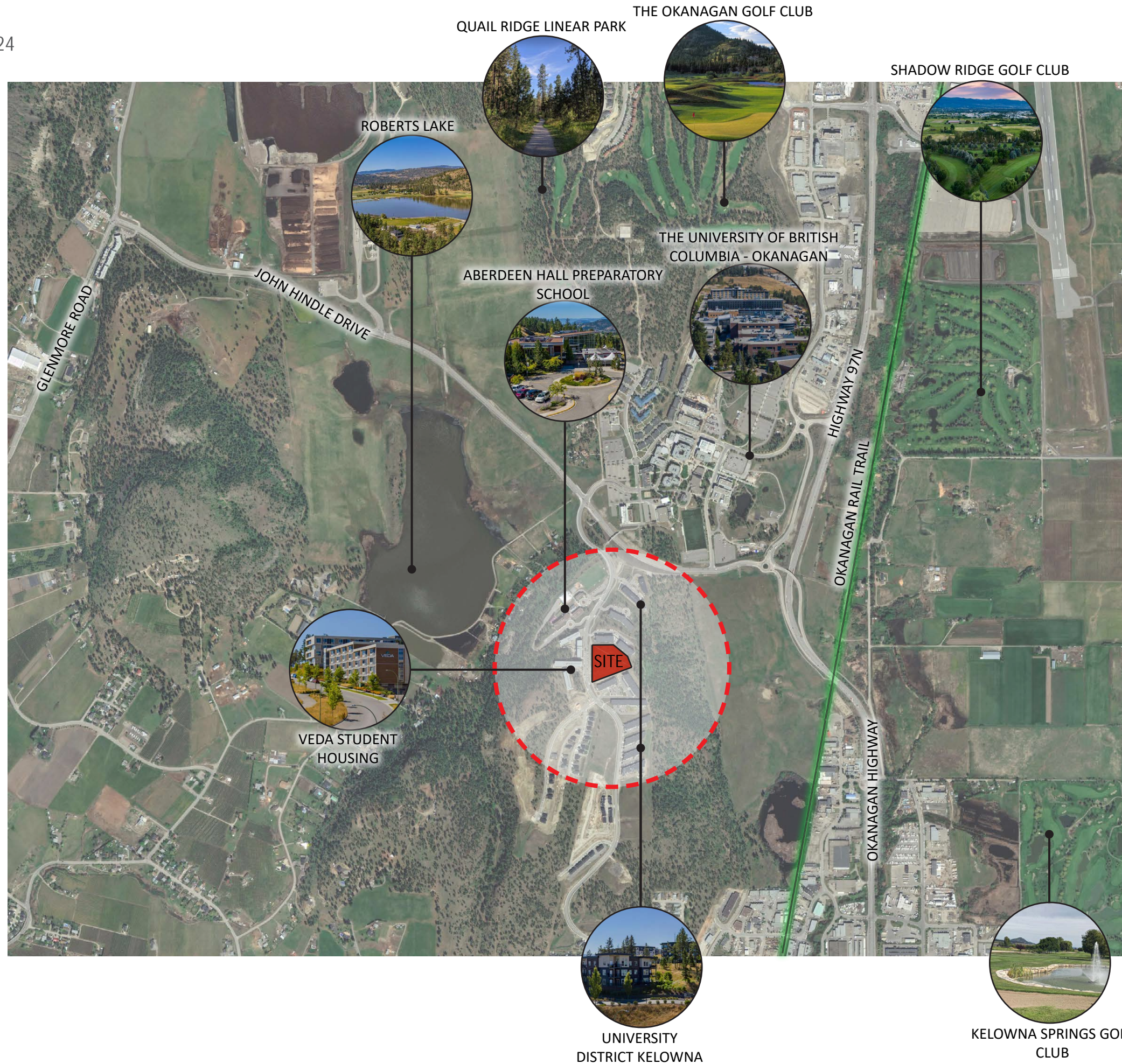
While both height and parking variances are proposed, we believe there is a strong rationale for this approach. The site is located within walking distance to UBCO along the active transportation corridor with direct access to the university and has a bus stop located at the front entrance. The parking variance is also being proposed due to the nature and actual demand of purpose-built student rental housing projects that the City of Kelowna's Zoning Bylaw does not accommodate. The proposed parking ratio of 0.35 stalls per bed and 0.05 visitor stalls per bed will adequately meet parking demand and afford the opportunity to integrate a large plaza and outdoor amenity spaces to improve the project's livability. The proposed single storey height variance for Building 1 provides much needed student housing units while only modestly exceeding the maximum allowed height. The project's height profile is still lower relative to the existing developments located directly across Academy Way. This Design Brief contains a comprehensive design and a strong rationale for the proposed variances which are critical to the viability and overall success of the project.

This project is the last development site within the University South Village Centre and is the culmination of the Watermark Group's vision that began over 14 years ago with approval of the Area Structure Plan. Once complete, 825 Academy will realize a lasting legacy, provide much needed student housing and more importantly, create a village heart enjoyed and experienced by all neighbourhood residents.

We believe that the proposed development strikes a balance and results in a project that will provide a significant amount of student housing and amenities in a strategic location with a form and character that is well suited for the University South Village Centre.

1.0 SITE ANALYSIS

1.1 NEIGHBOURHOOD CONTEXT



825 Academy Way

Kelowna, BC

August 2024

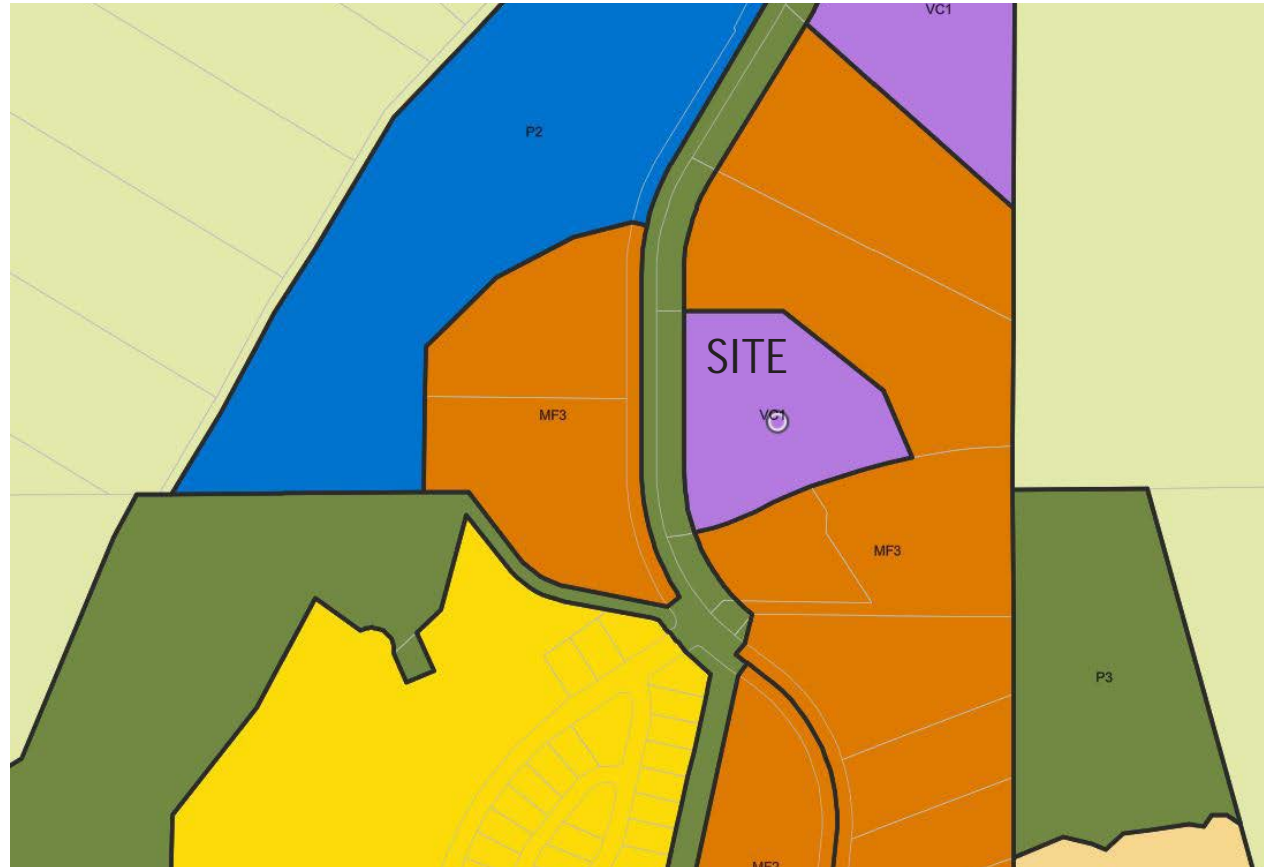
1.2 LOCATION

The predominantly level, ± 4.47 acre property is located on Academy Way within an apartment housing area just south of UBCO. The Site has been cleared, it is vacant and has never been developed. Given the Site's location at the heart of the Plan Area, development on the Site will play an important role in reinforcing and defining the Plan Area.



N
AERIAL VIEW

1.3 CONTEXTUAL ZONING

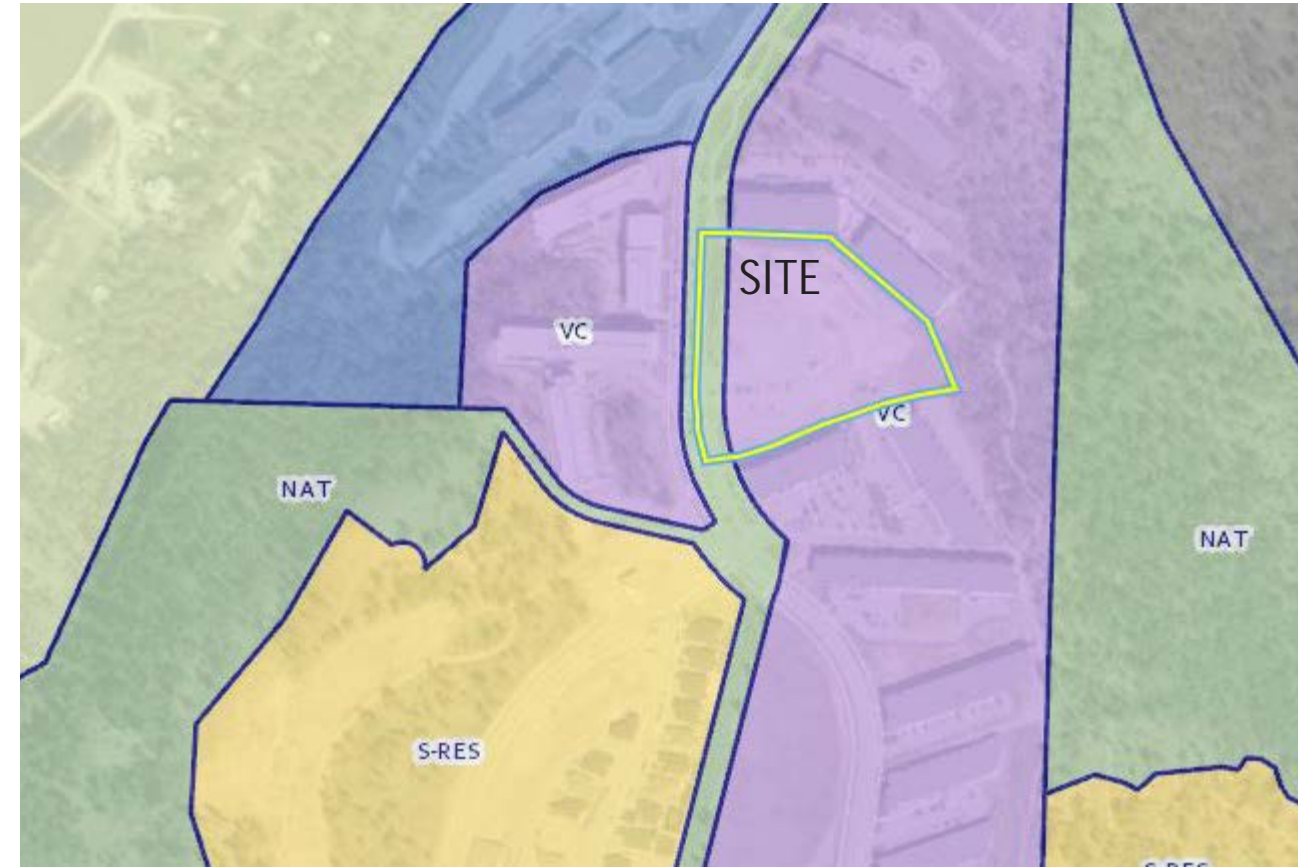


 SOURCE: CITY OF KELOWNA - ZONING MAP AND PROVISIONS

N.T.S.

In September 2022, the City of Kelowna (CoK) updated its Zoning Bylaw. The Site is now zoned VC1 - Village Centre which allows a broad array of uses and a form of development consistent with Watermark’s vision for the Site. The purpose of the VC1 zone is to provide a zone with an integrated design for a comprehensive mixed-use area which can include a variety of uses as specified to each Village Centre (as identified within the OCP). The Site is surrounded by MF3 - Medium Density Apartment-Style Multiple Housing zoned properties which is primarily intended for apartments ranging from 3 to 6 storeys on serviced urban lots.

The Site is located outside the Airport’s Noise Buffer Area but is located within the Height Restriction Area which requires consultation with the Kelowna International Airport, Transport Canada and NavCanada. Preliminary discussions with Transport Canada staff indicate that the project will need to be assessed but due to precedent within the Plan Area they don’t anticipate any concerns. There is a height restriction, called the outer surface, and an assessment will be required to determine if the building impacts the height restriction and if it does a Permanent Exemption to the Kelowna Airport Zoning Regulation will be required. An assessment will be required for the buildings, cranes, and other tall equipment used during construction.



 SOURCE: 2040 OFFICIAL COMMUNITY PLAN (OCP)

N.T.S.

In December 2021, the CoK updated its Official Community Plan. The Site is now designated VC - Village Centre. The OCP notes that Village Centres act as smaller hubs of activity in the city serving their immediate surroundings, providing basic day-to-day services within a short walking or biking trip. This contributes to the overall livability of Core Area, Gateway and Suburban Neighbourhoods by providing these options closer to residents. Village Centres in the Core Area would typically have a larger commercial component, servicing a more densely populated neighbourhood, while Village Centres in Suburban Neighbourhoods would likely have a smaller commercial component and serve a more sparsely populated neighbourhood. The University South Village Centre plays a unique role in the Gateway, serving growth at UBCO. A Natural Environment Development Permit was approved with the Area Structure Plan and areas of environmental significance were protected as part of that process.

1.4 EXISTING CONTEXT PHOTOS



Existing Site Photos Keyplan N.T.S



(A) Site Entrance - View East



(B) Southwest Corner of Site - View North



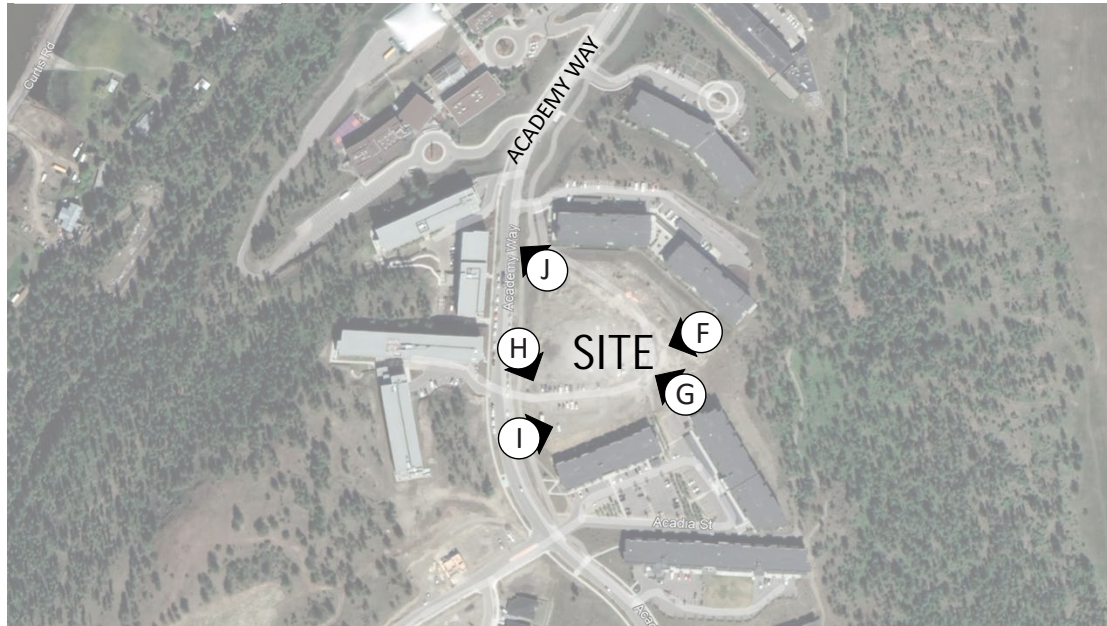
(C) Northwest Corner of Site - View Southeast



(D) North Boundary of Site - View West



(E) Northwest of Site - View East



Existing Site Photos Keyplan N.T.S



F Northeast Corner of Site - View Southwest



G Southeast Corner of Site - View Northwest



H Middle of West Boundary Fence - View South



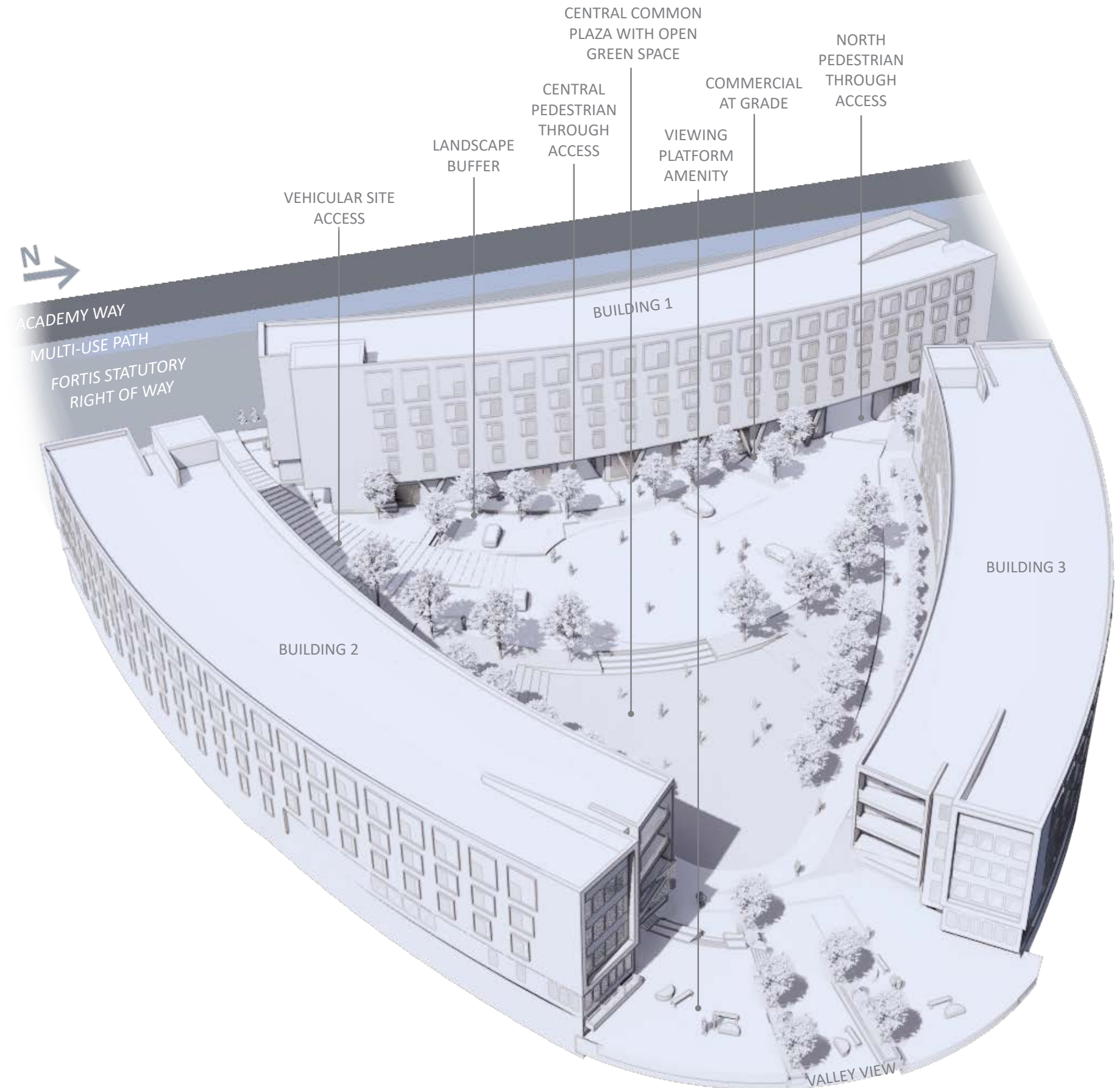
I Southwest Corner of Site - View East



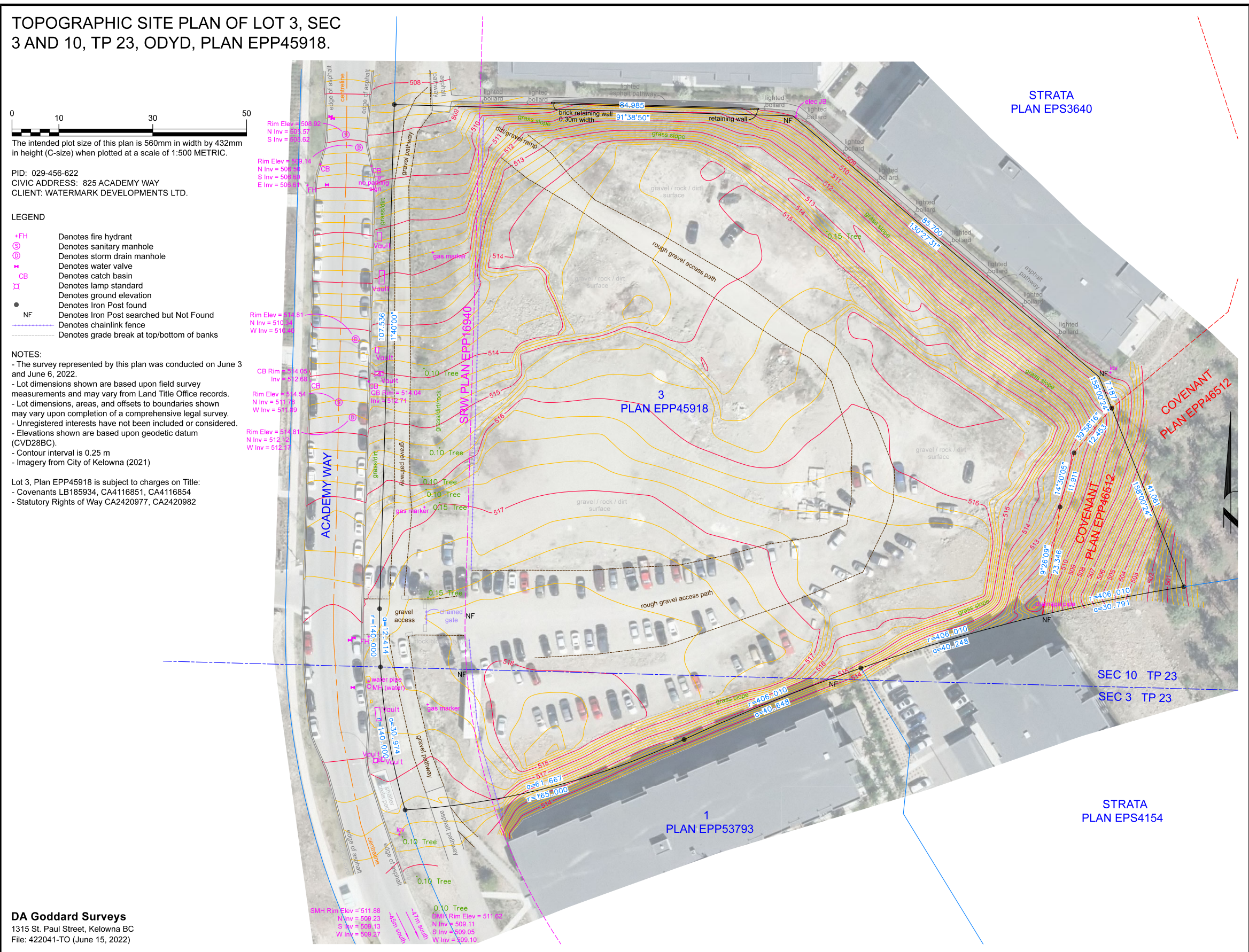
J North Boundary of Site - View Northwest

2.0 SITE DESIGN

The proposed development includes three buildings located around a central outdoor plaza. Building 1 is located along the frontage of Academy Way with commercial uses at grade facing the street and central plaza. Generous landscape buffers, which include the City of Kelowna's multi-use path within the Fortis Statutory Right of Way is the project's interface with Academy Way. This treatment animates the street while satisfying the City's expectations and OCP policy for street fronting commercial uses within this Village Centre location. Though buffered from the street, the commercial uses will have patio space that will further animate the streetscape. Several pedestrian cut throughs allow access through the commercial spaces creating strategic access nodes inviting access to the interior central plaza. The two buildings on the East are positioned to frame the commanding view of the valley to the East. The central plaza provides smaller intimate pockets for gathering events while still able to accommodate larger social events. The main access is located directly across from the 800-802 Academy Way access to create an aligned entry way.



2.1 SURVEY



2.2 GEOTECHNICAL

A preliminary geotechnical assessment was completed so that existing soil conditions could be understood. No further analysis was recommended but the geotechnical engineer will need to be engaged as the design develops. The full assessment is attached as Appendix A.



Watermark Developments Ltd.
101-1865 Dilworth Drive,
Kelowna, BC V1Y 9T1

geopacific.ca
1340 St. Paul Street
Kelowna, BC V1Y 2E1

June 14th, 2022
File #: 21401

Attention: Christian Holzhey

**Re: Preliminary Geotechnical Investigation Report – Proposed Residential Development
825 Academy Way, Kelowna, BC**

1.0 INTRODUCTION

As requested, GeoPacific Consultants Ltd. (GeoPacific) has carried out a geotechnical investigation for the proposed residential development at the above noted location. At time of this report architectural drawings were not provided and we understand that the project is in its conceptual design stage. We anticipate that the proposed development will consist of multi-family apartment buildings with 4 to 6 storeys of wood frame construction with 1 level of underground parking.

This report presents the results of our field investigation and provides preliminary geotechnical recommendations for the design and construction of the proposed development. This report has been prepared exclusively for Watermark Developments Ltd. for their use, and for the use of others within their design and construction team. We assume that the City of Kelowna would rely on the report during their development review process.

2.0 SITE DESCRIPTION

The site is located near the University of British Columbia- Okanagan campus, which is in the north end of Kelowna, BC. The site is bounded by Academy Way to the west, residential developments to the north, south, and northeast, and forested undeveloped parcels to the east. The site is presently unimproved and surfaced with sand and gravel for use of parking. The site has an average geodetic elevation of 514.0 m according to the Regional District of Central Okanagan Geographic Information System mapping tool.

The site is relatively flat with a gradual slope downwards to the north. Small slopes exist along the north and south property line as part of the placement of the engineered fill. Along the eastern corner of the property, a significant slope of approximately 1.9(H):1(V) to 2.2(H):1(V) exists which continues down into the neighbouring lot. Bedrock outcrops are noted along this eastern facing slope and is surfaced with small shrubs and trees throughout.

The site dimensions are approximately 130 m north-south and 150 m east-west. The location of the site and surrounding lands are shown on the attached Drawing 21401-01.

3.0 SITE INVESTIGATION

The proposed development site was investigated by GeoPacific on June 10th, 2022. At that time, a total of six solid stem auger test holes were advanced up to a maximum depth of 1.5 m below the existing site grades where bedrock refusal was encountered. The test holes were drilled using a track mounted rig supplied and operated by On Track Drilling of Langley, BC.

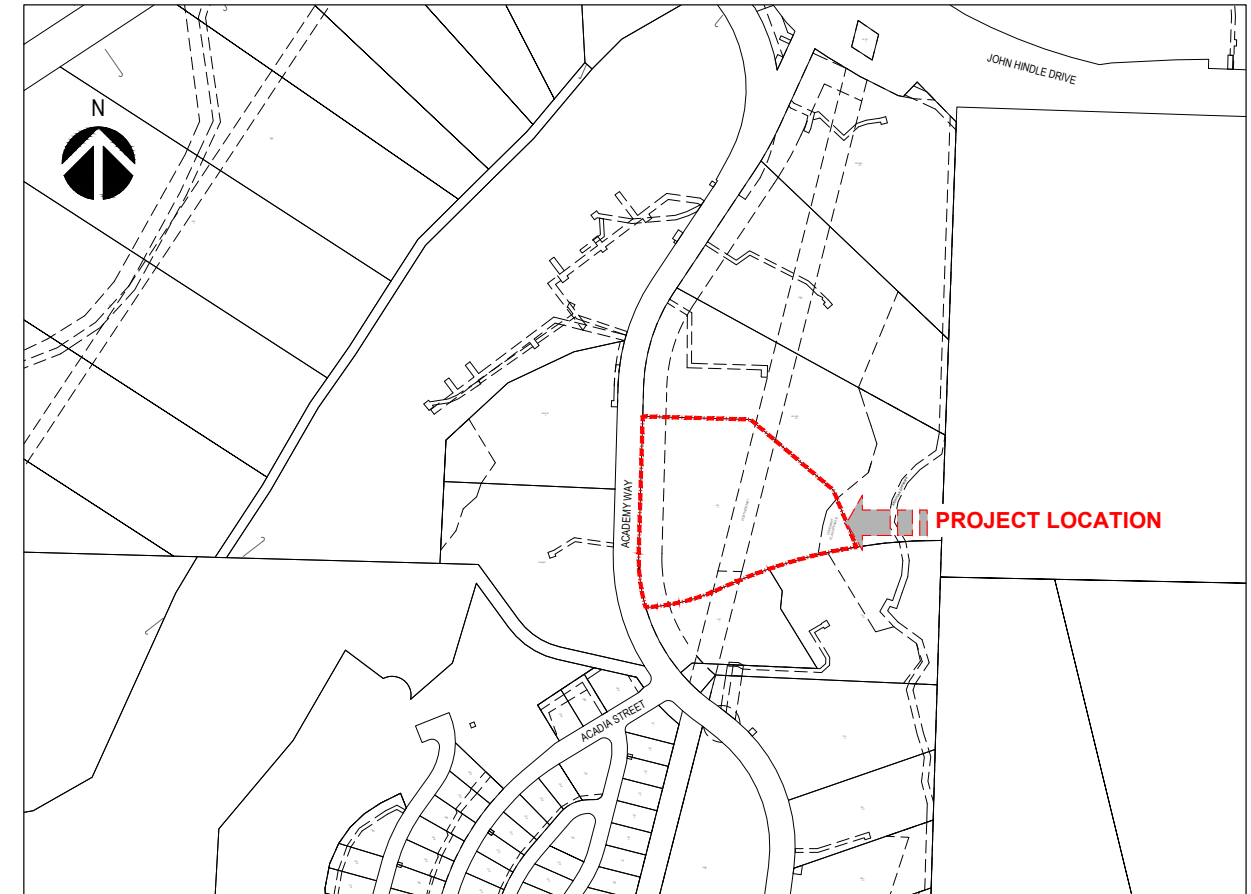
825 ACADEMY WAY

825 ACADEMY WAY, KELOWNA, BC, LOT 3, PLAN EPP45918

ISSUED FOR DEVELOPMENT PERMIT

WSP Project No: CA0004848.6139

Date: May 03, 2024



LOCATION PLAN
SCALE: 1:2500

LEGEND:

	EXISTING	MANHOLE		PROPOSED		ASPHALT
	EXISTING	DRYWELL		PROPOSED		CONCRETE
	EXISTING	CLEAN OUT		PROPOSED		LANDSCAPE
	EXISTING	INSPECTION CHAMBER		PROPOSED		
	EXISTING	CURB STOP		PROPOSED		
	EXISTING	CATCH BASIN		PROPOSED		
	EXISTING	LAWN BASIN		PROPOSED		
	EXISTING	HYDRANT		PROPOSED		
	EXISTING	GATE VALVE		PROPOSED		
	EXISTING	REDUCER		PROPOSED		
	EXISTING	COUPLER		PROPOSED		
	EXISTING	METER		PROPOSED		
	EXISTING	IRRIGATION BOX		PROPOSED		
	EXISTING	CAP		PROPOSED		
	EXISTING	POWER POLE		PROPOSED		
	EXISTING	POLE ANCHOR		PROPOSED		
	EXISTING	STREET LIGHT		PROPOSED		
	EXISTING	LAMP POST		PROPOSED		
	EXISTING	JUNCTION BOX		PROPOSED		
	EXISTING	UTILITY VAULT		PROPOSED		
	EXISTING	UTILITY KIOSK		PROPOSED		
	EXISTING	TRANSFORMER		PROPOSED		
	EXISTING	BOLLARD		PROPOSED		
	EXISTING	SIGN		PROPOSED		
	EXISTING	TREE		PROPOSED		
	EXISTING	SANITARY SEWER MAIN		PROPOSED		
	EXISTING	STORM SEWER MAIN		PROPOSED		
	EXISTING	WATER MAIN		PROPOSED		
	EXISTING	IRRIGATION MAIN		PROPOSED		
	EXISTING	GAS MAIN		PROPOSED		
	EXISTING	COMMUNICATIONS DUCT		PROPOSED		
	EXISTING	ELECTRICAL DUCT		PROPOSED		
	EXISTING	SANITARY SEWER SERVICE		PROPOSED		
	EXISTING	STORM SEWER SERVICE		PROPOSED		
	EXISTING	WATER SERVICE		PROPOSED		
	EXISTING	GAS SERVICE		PROPOSED		
	EXISTING	COMMUNICATIONS SERVICE		PROPOSED		
	EXISTING	ELECTRICAL SERVICE		PROPOSED		
	EXISTING	EDGE OF ASPHALT		PROPOSED		
	EXISTING	EDGE OF GRAVEL		PROPOSED		
	EXISTING	SWALE		PROPOSED		
	EXISTING	FENCE		PROPOSED		
	EXISTING	SLOPE - TOP		PROPOSED		
	EXISTING	SLOPE - BOTTOM		PROPOSED		
	EXISTING	CONTOUR - MAJOR		PROPOSED		
	EXISTING	CONTOUR - MINOR		PROPOSED		
	EXISTING	VEGETATION		PROPOSED		
	EXISTING	BUILDING		PROPOSED		
	EXISTING	RETAINING WALL		PROPOSED		
	EXISTING	NO-POST BARRIER		PROPOSED		

NOTES:

GENERAL NOTES:

- ELEVATIONS ARE BASED ON GEODETIC DATUM, SURVEY CONTROL MONUMENTS AND SURVEY DATA PROVIDED BY DA GODDARD SURVEYS ON JUNE 15, 2022.
- ALL MEASUREMENTS AND DIMENSIONS ARE IN METRIC UNLESS NOTED OTHERWISE.
- HYDRO, TELEPHONE, CABLE AND GAS UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE MOST RECENT SPECIFICATIONS FOR EACH UTILITY.
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
- THE EXISTENCE, LOCATION AND ELEVATION OF UTILITIES AND/OR CONCEALED STRUCTURES AT THE PROJECT SITE ARE NOT GUARANTEED BY WSP.
- THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND INVERTS OF ALL EXISTING UTILITIES AND PROPOSED CROSSINGS PRIOR TO CONSTRUCTION. THE CONTRACTOR TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR OMISSIONS AT LEAST 48 PRIOR TO CONSTRUCTION OF THE NEW UNDERGROUND UTILITIES.
- THE CONTRACTOR SHALL CONDUCT A BC ONE CALL PRIOR TO CONSTRUCTION. ALL APPROPRIATE PARTIES SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. PARTIES INCLUDE AND ARE NOT LIMITED TO THE CITY OF KELOWNA, TELUS, SHAW CABLE, FORTIS GAS, AND BC HYDRO.
- THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS, IF REQUIRED, FOR THE INSPECTION OF ALL REQUIRED UTILITY CONNECTIONS.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE CITY OF KELOWNA AND ALL OTHER JURISDICTIONS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY ALL APPROPRIATE PARTIES INCLUDING CITY OF KELOWNA, FORTIS GAS, FORTIS ELECTRICITY, TELUS, AND SHAW CABLE PRIOR TO BEGINNING CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 7 DAYS IN ADVANCE OF BEGINNING CONSTRUCTION.
- STOCKPILE STRIPPING MATERIAL AND EXCESS EXCAVATION MATERIAL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- THE CONTRACTOR SHALL ADJUST AND/OR RESET ALL EXISTING SURFACE FEATURES, SUCH AS MAINTENANCE HOLE LIDS/RIMS, VALVE BOXES, UTILITY BOXES, WATER VALVES, INSPECTION CHAMBER'S ETC. WITHIN THE WORKING AREA TO FINISH GRADE.
- CONTRACTOR TO ADVISE THE GEOTECHNICAL ENGINEER TO INSPECT PRIOR TO START OF ROAD BASE AND SUB BASE COURSES.
- CONTRACTOR TO ADVISE THE CIVIL ENGINEER TO INSPECT PRIOR TO BACKFILL OF ALL UNDERGROUND SERVICES.
- THE CONTRACTOR SHALL VERIFY THAT ALL PROPOSED CURB, DRIVEWAY AND SIDEWALK ELEVATIONS ACHIEVE POSITIVE DRAINAGE.
- THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL 24 HOURS PER DAY DURING CONSTRUCTION. ALL TRAFFIC CONTROL SHALL CONFORM TO THE BCMOT MANUAL FOR TEMPORARY TRAFFIC CONTROL.
- CLEARING AND GRUBBING WITHIN CONSTRUCTION LIMITS ARE AS DIRECTED BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR IS TO PROTECT EXISTING LANDSCAPING ADJACENT TO LIMITS OF WORK. TREE ROOTS CUT OR DAMAGED SHALL BE TREATED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.
- ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE STANDARD SPECIFICATIONS IN ORDER OF PRECEDENCE.
 - AS PER SUPPLEMENTARY SPECIFICATIONS
 - AS DETAILED IN THIS DRAWING SET
 - THE CITY OF KELOWNA SUPPLEMENTARY SPECIFICATIONS AND DETAILED DRAWINGS
 - MMCD 2019 EDITION STANDARDS AND SPECIFICATIONS
 - MOTI 2012 STANDARD SPECIFICATION FOR HIGHWAYS CONSTRUCTION

COMPACTION REQUIREMENT NOTES:

- ENGINEERED FILL TO BE COMPACTED TO NOT LESS THAN 95% MPMD UNDER THE FULL TIME SUPERVISION OF THE GEOTECHNICAL ENGINEER.
- PRIOR TO CONSTRUCTING THE PAVEMENT AND DRIVEWAYS, ALL SERVICE TRENCHES MUST BE COMPACTED TO AT LEAST 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY (MPMD).
- THE SUBGRADE SHOULD BE PROPERLY SHAPED AND CROWNED. PROOF-ROLLING PER GEOTECHNICAL ENGINEER'S RECOMMENDATION. SOFT OR SPONGY SUBGRADE AREAS SHOULD BE SUB-EXCAVATED AND PROPERLY REPLACED WITH SUITABLE APPROVED BACKFILL COMPACTED TO 95% MPMD AS DIRECTED BY THE CONSULTANT.
- THE GRANULAR BASE AND SUB-BASE MATERIAL SHALL BE COMPACTED TO 95%.
- THE ASPHALT CONCRETE MUST BE COMPACTED PER PROJECT SPECIFICATION.

WATER SYSTEM SPECIFIC NOTES:

- UTILITY TRENCH AS PER MMCD STANDARD DRAWING G4 AND WORKSAFE BC STANDARDS AND CITY OF KELOWNA STANDARD DRAWING SS-G4 WHEN WITHIN CITY RIGHT OF WAY.
- WATERMAIN TO BE PVC C900 CLASS 235 DR18.
- GATE VALVE INSTALLATION AS PER MMCD STANDARD DRAWING W3.
- ALL MATERIALS AND CONSTRUCTION TO BE IN ACCORDANCE WITH MMCD, THE CURRENT CITY OF KELOWNA SUPPLEMENTARY SPECIFICATIONS AND DETAIL DRAWINGS.

SANITARY SEWER SPECIFIC NOTES:

- UTILITY TRENCH AS PER MMCD STANDARD DRAWING G4 AND WORKSAFE BC STANDARDS OR AS DIRECTED BY GEOTECHNICAL ENGINEER.
- SANITARY SEWER INSTALLATION AS PER MMCD AND THE CITY OF KELOWNA STANDARDS AND SPECIFICATIONS.
- ALL SANITARY MAINS SHALL BE PVC SDR35.
- INSPECTION CHAMBERS AS PER CITY OF KELOWNA STANDARD DRAWING SS-S9.

STORM SEWER SPECIFIC NOTES:

- UTILITY TRENCH AS PER MMCD STANDARD DRAWING G4 AND WORKSAFE BC STANDARDS OR AS DIRECTED BY GEOTECHNICAL ENGINEER.
- STORM SEWER INSTALLATION AS PER MMCD AND THE CITY OF KELOWNA STANDARDS AND SPECIFICATIONS.
- ALL STORM MAINS SHALL BE PVC SDR35.
- CLEANOUTS AS PER CITY OF KELOWNA STANDARD DRAWING SS-S6.
- ALL PIPE DIMENSIONS ARE 2D AND SHOWN FROM CENTER OF MAINTENANCE HOLE TO CENTER OF MAINTENANCE HOLE.
- CONTRACTOR TO PROVIDE CCTV CAMERA INSPECTION OF SEWERS AFTER COMPLETION OF WORK AND FLUSHING OF LINES AS PER MMCD STANDARDS.

ROADWORKS SPECIFIC NOTES:

- THE CONTRACTOR SHALL LOAD AND HAUL WASTE ASPHALT AND CONCRETE MATERIAL OFFSITE TO AN APPROVED DISPOSAL SITE.
- ALL NEW PAVEMENT INTERFACE SHALL HAVE CLEAN AND STRAIGHT SAWCUT.
- CURB AND GUTTER TO BE AS PER CITY OF KELOWNA STANDARD DRAWING SS-C6. UNLESS OTHERWISE NOTED.
- EXPOSED SUBGRADE APPROVED BY THE GEOTECHNICAL CONSULTANT SHALL BE COMPACTED TO 95% MPMD. THE GRANULAR BASE AND SUB-BASE SHOULD BE COMPACTED TO 95% MPMD. UNSTABLE AREAS MAY REQUIRE SUB-EXCAVATION AND RE-COMPACTION OR INCREASED THICKNESS OF GRANULAR SUB-BASE, AS DIRECTED BY THE GEOTECHNICAL CONSULTANT.
- THE STABILITY AND COMPACTION OF ALL EXISTING AND FILL MATERIALS SHALL BE CONFIRMED BY A GEOTECHNICAL CONSULTANT PRIOR TO PLACEMENT OF ROAD BASE.
- PAVEMENT STRUCTURE:

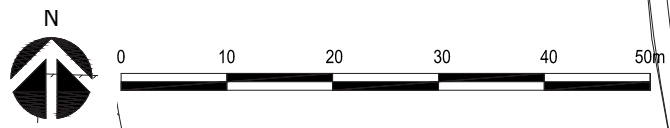
50mm	ASPHALT SURFACE
100mm	BASE
300mm	SUB-BASE
- ALL DISTURBED PAVEMENT ON ADJACENT ROADS SHALL BE RESTORED TO EXISTING DEPTH AND TYPES OF MATERIAL OR BETTER UPON COMPLETION OF PAVEMENT WORKS.
- REFER TO LANDSCAPE FOR DRIVEWAY PAVING STONE STRUCTURE.

PAVEMENT MARKING AND SIGNAGE SPECIFIC NOTES:

- ALL STOP BARS, DIRECTIONAL ARROWS AND CROSS WALKS SHALL BE THERMOPLASTIC.
- ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE (LATEST) MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CANADA (2014).
- PROTECT EXISTING SIGNS UNLESS OTHERWISE NOTED.

DRAWING LIST:

DWG. NO	SHEET TITLE	SHEET DESCRIPTION	SCALE	ISSUED
C000	GENERAL	COVER	N/A	Y
C001	GENERAL	LEGEND, DRAWING LIST & NOTES	N/A	Y
C101	OVERVIEW PLANS	SITE PLAN	1:500	Y
C102	OVERVIEW PLANS	COMPOSITE UTILITY PLAN	1:300	Y
C103	SWMP	STORMWATER MANAGEMENT	1:300	Y
C105	EROSION & SEDIMENT CONTROL	PLAN	1:500	Y
C106	EROSION & SEDIMENT CONTROL	DETAILS	N/A	Y
C301	GRADING PLAN		1:300	Y



SITE PLAN

EXISTING BUS STOP PAD



COMPOSITE UTILITY PLAN



881-883
CP



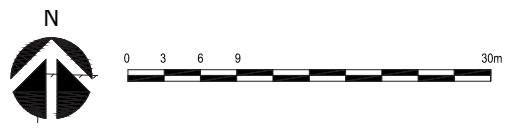
Sub-Catchment Properties	Area (sq.m)	Land Use
ID	Description	Type
1	Site	UNIMPR
2		
3		
4		

Outlet Properties/Discharge Locations	Area (sq.m)
ID	Description (Optional)
A	Site
B	
C	
D	

Catchment Calculations	Area (sq.m)
1 Site	18,055.0
2	
3	
4	
TOTAL SITE:	18,055

Site Discharge Summary:	Contributing Area (sq.m)
A Site	18,055.0
B	
C	
D	
TOTAL DISCHARGE AT PEAK TOC:	18,055

Post-Development Stormwater Calculations
 City/Project: 825 Ac
 Date: 2024-0
 Post-Development Flow Rate
 Q = 0.1
 Where:
 Assum:
 BASIN
 Total



STORM WATER MANAGEMENT PLAN



LEGEND

- 1:100 STORM OVERLAND FLOW PATH
- 1:100 STORM PIPED FLOW PATH

Select Analysis Parameters: Select Location: Kelowna
 Method: Airport
 Period: 1,100 Year
 Intensity (%): 15%

Location: 825 Academy Way
 Area (sq.m): 18,055
 Land Use: UNIMPR
 Type: C
 RES (H): 0.4

Catchment Calculations	Area (sq.m)
1 BASIN 1	18,055.00
TOTAL SITE AT MAX CATCHMENT TOC:	18,055

Method 1: Modified Rational Method, Constant Intensity S1


Outlet	Duration to Max V ₂ (min)
A BASIN 1	21.0
B	0.0
C	0.0
D	0.0

TOTAL PEAK STORAGE Method 1:

Summary of Storage Provided	Method 1 Storage Required
Outlet	Storage Required

LEGEND

MAJOR SYSTEM DESIGN

Select Analysis Parameters:		
Select Location:	Kelowna	
Select ToC Calculation Method:	Airport	
Select Return Period:	1:100 Year	
Enter Climate Change Increase (%):	15%	

Site Properties																
Enter Site Location:		825 Academy Way														
Enter Total Site Area (sq.m):		18,055														
Sub-Catchment Properties		Area (sq.m)		Land Use		Soil Type		Surface Type		Longest Path in Catchment		TO		DS Inlet to Outlet Path		
ID	Description			Type	C	Type	C _{AF}	Type		L (m)	S (%)			L (m)	S (%)	
1	BASIN 1	18,055.00		RES-HD	0.45	SANDS	1.00	IMPERV		130.0	3.0%		A			
Unallocated Area =		0.0														

Catchment Calculations	Area (sq.m)	Effective Area		Catchment ToC (min)	Cumulative AC x C _{AF}	Cumulative ToC (min)	Intensity (mm/hr)	Catchment Peak Q (L/s)
		C x C _{AF}	AC x C _{AF}					
1 BASIN 1	18,055.00	0.45	8,124.8	16.8	8,124.8	16.8	65.3	147.4
TOTAL SITE AT MAX CATCHMENT TOC	18,055	0.45	8,125	-	8,125	16.8	65.3	147.4

Detention Storage Calculation Summary


Method 1: Modified Rational Method, Constant Intensity Storm, Constant Release									
Outlet		Duration to Max V _{in} (min)	Intensity (mm/hr)	Peak Q _{in} (L/s)	Max V _{in} (cu.m)	Q _{out} Allow (L/s)	Q _{out} Infiltr. (L/s)	Total V _{out} (cu.m)	Max Storage Req'd (cu.m)
A	BASIN 1	20.0	57.2	129.0	154.8	31.5	0.0	37.8	117.0
B		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL PEAK STORAGE Method 1:									117.0

Summary of Storage Provided											
Outlet		Method 1		Infiltration Storage (cu.m)			Pipes and Manholes Storage (cu.m)				Storage Provided (cu.m)
ID	Description	Storage Required (cu.m)	<- SF	% Void	Trench	Drywell	CBs	MHs	Pipes	Other	
A	BASIN 1	128.7		0.4	0.0	0.0	0.0	0.0	0.0	0.0	133.2
B		0		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C		0		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D		0		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL STORAGE PROVIDED		128.7	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.2

STORM WATER MANAGEMENT DETAILS



PRE-DEVELOPMENT CONDITIONS

Select Analysis Parameters:		
Select Location:	Kelowna	
Select ToC Calculation Method:	Airport	
Select Return Period:	1:5 Year	

Site Properties																
Enter Site Location:		825 Academy Way														
Enter Total Site Area (sq.m):		18,055														
		1.81 ha														
Sub-Catchment Properties		Area (sq.m)		Land Use		Soil Type		Surface Type		Longest Path in Catchment		TO		DS Inlet to Outlet Path		
ID	Description			Type	C	Type	C _{AF}	Type		L (m)	S (%)			L (m)	S (%)	
1	Site	18,055.00		UNIMPR	0.20	SANDS	1.00	RGHSOIL		126.0	8.6%		A			
2																
3																
4																
Unallocated Area =		0.0														

Outlet Properties/Discharge Locations		
ID	Description (Optional)	Comment/Constraints
A	Site	
B		
C		
D		

Catchment Calculations	Area (sq.m)	Effective Area		Catchment ToC (min)	Cumulative AC x C _{AF}	Cumulative ToC (min)	Intensity (mm/hr)	Catchment Peak Q (L/s)
		C x C _{AF}	AC x C _{AF}					
1 Site	18,055.0	0.20	3,611.0	16.2	3,611.0	16.2	31.4	31.5
2								
3								
4								
TOTAL SITE:	18,055	0.20	3,611	-	-	16.2	31.4	31.5

Site Discharge Summary:		Contributing Area (sq.m)	Effective Area		Cumulative ToC (min)	Intensity (mm/hr)	Pre-Dev Peak Discharge Q (L/s)	Override Q _{allow} (L/s)
			Average C x C _{AF}	AC x C _{AF}				
A	Site	18,055.0	0.20	3,611.0	16.2	31.4	31.5	
B								
C								
D								
TOTAL DISCHARGE AT PEAK TOC:		18,055	0.20	3,611	16.2	31.4	31.5	0.0

Post-Development Stormwater Calculations

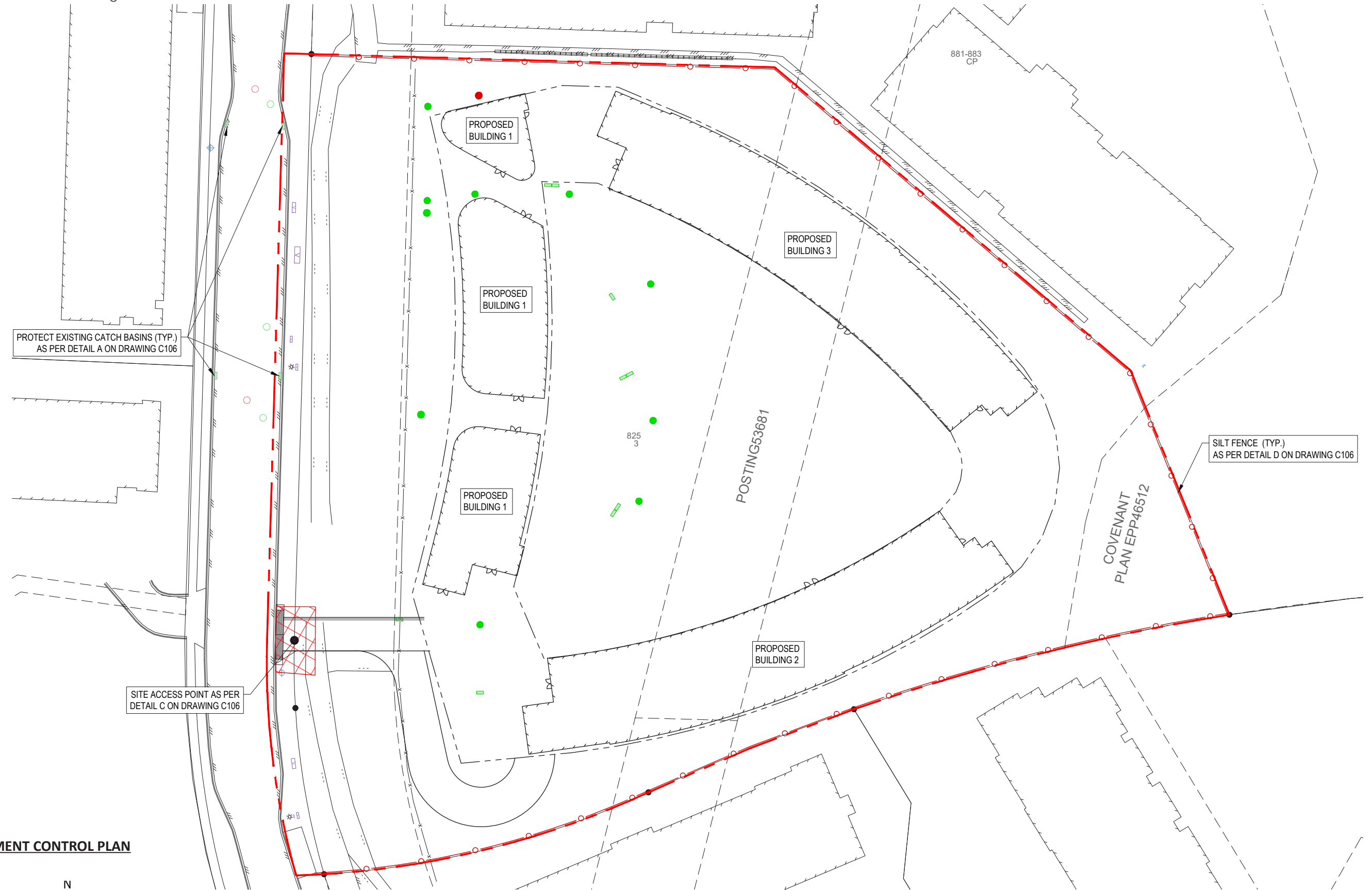
Client/Project: 825 Academy Way Project Number: CA0004848.6139
Date: 2024-03-15 By: NAS

Post-Development Flow Rate

Q = 0.00278 x C x I x A
Where:
Q = Flow (m³/s)
C = Weighted Runoff Coefficient
I = Rainfall Intensity
A = Area

Assuming:	BASIN 1:			
	9883.0 m ²	Landscape	C=	0.08
	3641.0 m ²	Hardscape	C=	0.90
	4531.0 m ²	Building	C=	0.90
	18055.0			

BASIN 1 =	1.8055 ha	Combined C =	0.45
Total Site Area =	1.8055 ha		



EROSION & SEDIMENT CONTROL PLAN



GENERAL NOTES:

- UNDER THIS PLAN, ALL PERSONS INCLUDING BUT NOT LIMITED TO THE ENGINEER OF RECORD, ESC SUPERVISOR, CIVIL CONTRACTOR, CIVIL SUB-CONTRACTOR, BUILDER & BUILDING SUB-TRADES HEREIN AFTER REFERRED TO AS THE PERSON RESPONSIBLE; ENGAGED ON SITE SHALL COMPLY WITH ALL REGULATORY REQUIREMENTS SPECIFIED BY FEDERAL, PROVINCIAL AND MUNICIPAL AUTHORITIES; PERTAINING TO ON SITE MANAGEMENT AND DISCHARGE ASSOCIATED WITH EROSION AND SEDIMENT CONTROL REGULATIONS.
- THE PERSONS RESPONSIBLE SHALL COMPLETE ALL CONSTRUCTION ACTIVITIES IN A MANNER THAT ACHIEVES BEST MANAGEMENT PRACTICES TO PREVENT AND CONTAIN ON-SITE SILT LADEN RUNOFF FROM ENTERING ONSITE INFILTRATION SYSTEM INFRASTRUCTURE DOWNSTREAM DRAINAGE INFRASTRUCTURE AND AQUATIC SYSTEMS.
- THE ESC SUPERVISOR IS RESPONSIBLE TO MONITOR, INSPECT AND REPORT TO THE ENGINEER OF RECORD, AND CONTRACTOR ON EROSION AND SEDIMENT CONTROL FACILITIES & SITE DISCHARGE PERFORMANCE.
- THE PERSONS RESPONSIBLE MUST COMPLY WITH THE ESC PLAN AND BEST MANAGEMENT PRACTICES WITHIN THE SPECIFIED TIMEFRAME, AND COMPLY WITH ALL INSTRUCTION ISSUED BY THE ESC SUPERVISOR TO RECTIFY DEFICIENCIES THAT RESULT IN NON-CONFORMANCE.
- ALL SITE ACCESS FROM DISTURBED AREAS TO PAVED SURFACES IS TO BE RESTRICTED AND SHALL LIMIT THE TRANSPORT OF SEDIMENT ONTO ROADWAYS.

MAINTENANCE ALL STAGES (AS APPLICABLE)

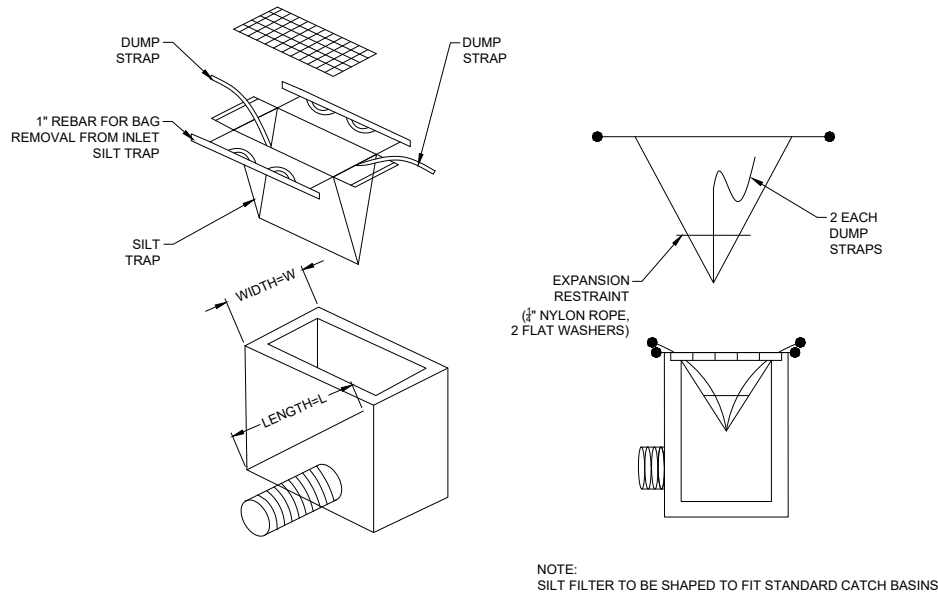
- ALL INSPECTIONS/MONITORING TO BE CARRIED OUT BY THE ESC SUPERVISOR.
- UPON INSTRUCTION/NOTIFICATION BY ESC SUPERVISOR; PERSONS RESPONSIBLE ARE REQUIRED TO UNDERTAKE MAINTENANCE ACTIVITIES AS DEEMED SPECIFIED TO MODIFY OR MAINTAIN ESC FACILITIES.
- ACCUMULATED SEDIMENT DEPOSITION DOWNSTREAM OF DITCH BLOCKS ARE TO BE REMOVED AT 50% CAPACITY.
- THE BUILDER MUST REGULARLY CLEAN ON AND OFF SITE PAVED ROAD SURFACES OF ACCUMULATED SEDIMENTS AT THE END OF EACH DAY OR AS REQUIRED. NO SOIL, SAND OR OTHER MATERIAL WITH A HIGH SEDIMENT CONTENT SHALL BE DEPOSITED OR PILED OUTSIDE OF THE PROPERTY BOUNDARIES, PARTICULARLY ON PAVED ROAD SURFACES.
- SILT FENCE SHALL BE PLACED AS SHOWN ON THE ESC PLAN.
- ALL SEDIMENT REMOVED FROM ESC CONTROL FACILITIES TO BE DISPOSED OF IN A MANNER AS TO NOT COMPOUND OR COMPROMISE THE SEDIMENT LOADING OF OTHER CONTROL MEASURES.
- SITE SOIL COMPOSITION VARIES: SAND, GRAVEL AND BOULDERS

CLEARING, ROAD STRIPPING, BUILDING EXCAVATION, TEMPORARY ACCESS ROAD, UTILITY AND ROADWORKS INSTALLATION STAGE

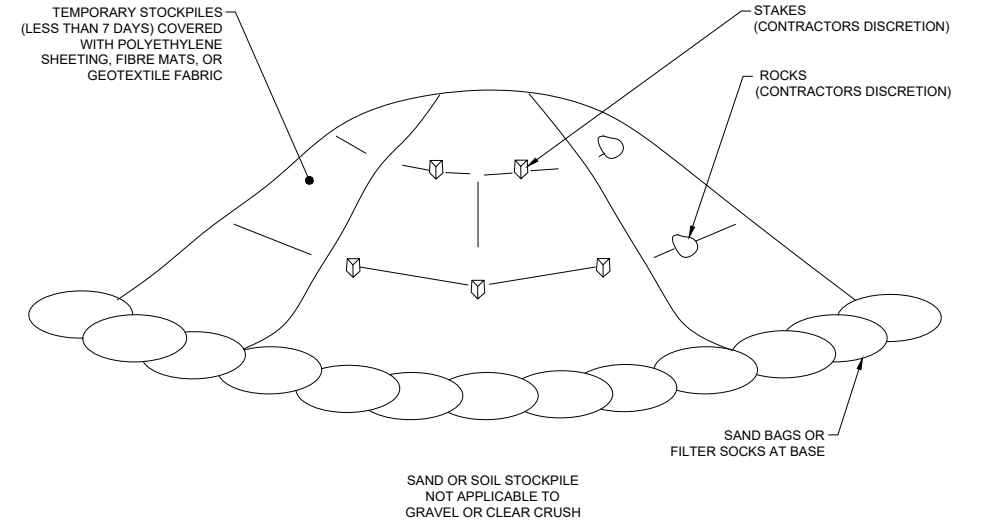
- GENERAL CONTRACTOR TO NOTIFY THE ESC SUPERVISOR 48 HOURS PRIOR TO CLEARING AND GRUBBING. GENERAL CONTRACTOR TO PROVIDE THE CLEARING AND GRUBBING CONTRACTOR WITH A COPY OF THE BEST MANAGEMENT PRACTICES INCLUDING ESC PLANS.
- PRIOR TO LEAVING THE SITE, ON-SITE CLEARING AND GRUBBING CONTRACTOR TO OBTAIN SIGN OFF BY THE ESC SUPERVISOR.
- GENERAL CONTRACTOR TO HAVE A COPY OF THE ESC PLAN AND CEMP ON-SITE AT ALL TIMES.
- ANY STOCKPILED MATERIAL TO BE COVERED AND ENCIRCLED BY SEDIMENT FENCE AS SPECIFIED.
- THE ESC SUPERVISOR WILL BE RESPONSIBLE FOR REVIEWING THE EXISTING ROADS DAILY AND THAT THE GENERAL CONTRACTOR SWEEPS THEM REGULARLY. FLUSHING OF ROADWAYS IS PROHIBITED.
- UPON THE COMMENCEMENT OF WORKS, ESC SUPERVISOR TO CONDUCT MONITORING.
- CONTRACTOR TO IDENTIFY LOCATION OF TEMPORARY STOCKPILES ON PLAN FOR REVIEW BY ESC SUPERVISOR PRIOR TO STOCKPILING.
- CONTRACTOR TO ENSURE THAT THE ESC MEASURES ARE WELL MAINTAINED, CLEARED, REPAIRED, OR REPLACED AS REQUIRED.
- CATCH/LAWN BASINS COMPLETE WITH PROTECTIVE MEASURES ARE TO BE INSTALLED BY THE CONTRACTOR AT THE FIRST OPPORTUNITY.
- CONTRACTOR TO CO-ORDINATE THE ELIMINATION OF TEMPORARY ESC FACILITIES IF THEY ARE NO LONGER REQUIRED OR TO FACILITATE SITE OPERATIONS WITH THE ESC SUPERVISOR. ADDITIONAL ESC FACILITIES MAY NEED TO BE INSTALLED AS PER THE DIRECTION OF THE ESC SUPERVISOR.

FINAL GRADING STAGE THROUGH TO SUBSTANTIAL COMPLETION

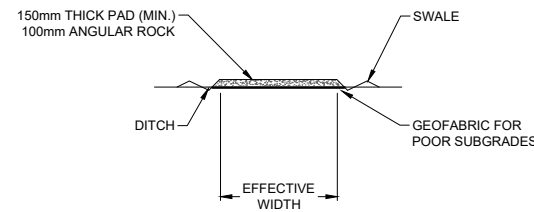
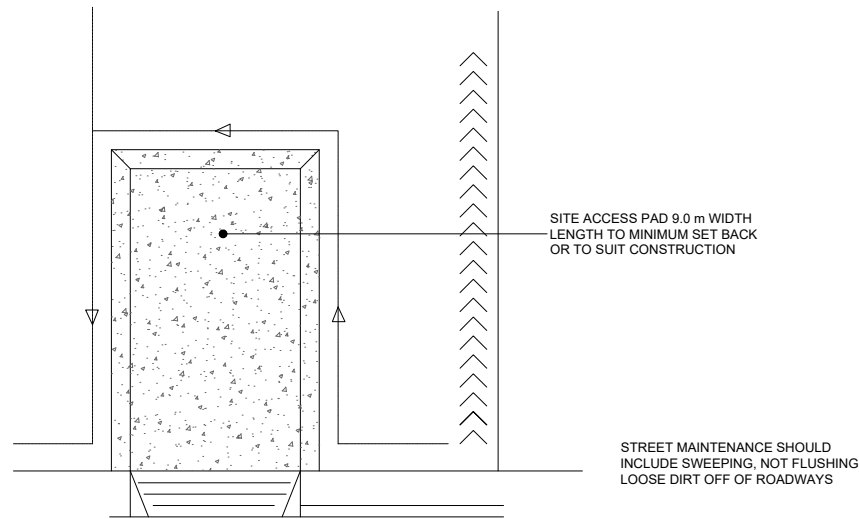
- GENERAL CONTRACTOR TO ENSURE THAT DITCHES, OR ENTRY POINTS TO PIPED NETWORKS, ARE ADEQUATELY PROTECTED.
- CONTRACTOR TO ENSURE THAT ESC FACILITIES SPECIFIED IN THE ESC PLAN ARE IMPLEMENTED ACCORDINGLY.
- ALL CATCH BASIN FILTER SOCKS ARE TO BE INSPECTED WEEKLY OR FOLLOWING STORM EVENTS, INLINE FILTERS ARE TO BE REMOVED AND CLEANED AT 33% CAPACITY.
- CONTRACTOR TO CO-ORDINATE THE ELIMINATION OF TEMPORARY ESC FACILITIES AS THEY ARE NO LONGER REQUIRED; WITH THE ESC SUPERVISOR. ADDITIONAL ESC FACILITIES MAY NEED TO BE INSTALLED AS PER THE DIRECTION OF THE ESC SUPERVISOR.
- AT THE FINAL SITE INSPECTION PRIOR TO THE COMMENCEMENT OF THE MAINTENANCE PERIOD; ESC SUPERVISOR IN ASSOCIATION WITH THE ENGINEER OF RECORD TO INSPECT AND SIGNOFF ON ESC MEASURES.
- UPON COMPLETION OF THE PROJECT AND AFTER PERMANENT BEST MANAGEMENT PRACTICES FOR EROSION CONTROL ARE ESTABLISHED, THE CATCH BASIN FILTER SOCKS SHOULD BE REMOVED FROM SITE.
- ALL DISTURBED AREAS TO BE HYDROSEEDDED.



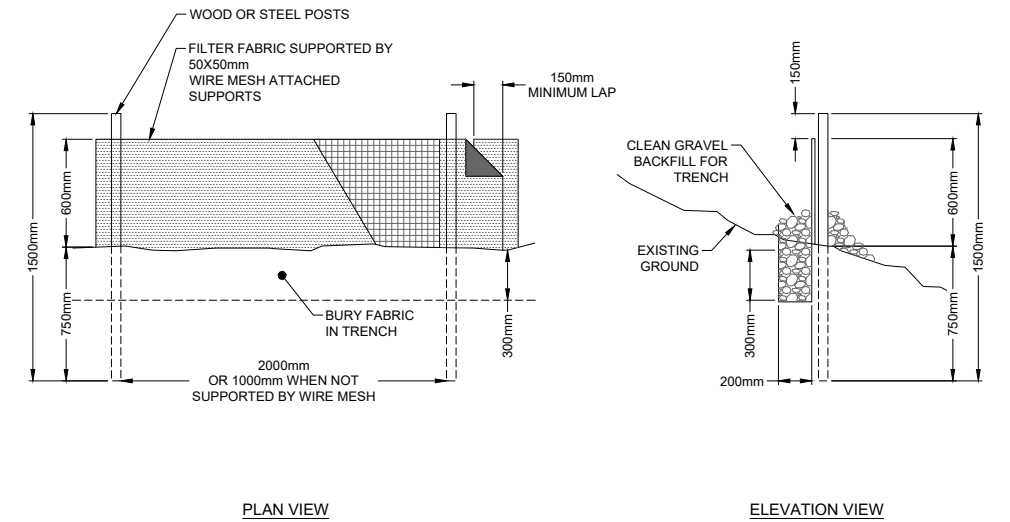
A SILT FILTER FOR CATCH BASINS
SCALE: nts



B TEMPORARY STOCKPILE
SCALE: nts



C ACCESS ROAD SECTION
SCALE: nts



D SILT FENCE INSTALLATION
SCALE: nts



GRADING PLAN

FACTION

2.4 LANDSCAPE

The landscape design for the residence buildings at 825 Academy Way aims to create an inviting and inclusive space for residents. The concept was to create a communal “front yard”, “back yard” and “deck”, amenities typically reserved for single family housing for residents to gather, interact or enjoy on their own.

The front yard of the project includes at grade plaza space including commercial patios fronting Academy Way. The plaza is lined with large trees to shade the outdoor patios and plaza during the summer months. Additionally electrical connections will be provided for seasonal lighting.

The back yard consists of a central courtyard with both hard and soft surfaces. The interior courtyard hosts an arrival plaza with unit paving from the entrance through the firetruck turn around, parking and patio spaces for a contiguous space that is pedestrian friendly. The fire lane will be delineated with lighting or colour change in the unit paving and the parking spaces with markers or a change in paver colour. Adjacent to the building on Academy Way is an additional patio space for the at grade commercial component with large trees similar to the building frontage. Building drop off areas for the 2 rear buildings are adjacent to the front doors and two locations Molok trash receptacles service the three buildings. The hard and soft spaces are separated with a concrete curb.

The open lawn provides an unprogrammed space for ultimate versatility. The change in grade through the great lawn allows for amphitheatre style seating along the southern edge and connects the lawn to the south building through stairs and seat steps. In combination with an open deck space, there is an opportunity to host a variety of events. Again, large trees are provided for shade in the hot summer months and seasonal lighting can be used to create round year ambience. The amphitheatre seating connects the great lawn to the deck area that separates the 2 rear buildings.

The deck area consists of multiple levels that create a variety of seating options, open hardscape, large planting areas, all while connecting the two amenity spaces at the ends of the buildings. Views are focused on both the Okanagan Valley as well as the event space. Planting areas in front of the two rear buildings provides separation from the path that circles around the lawn as well as act as a privacy buffer for the ground floor units. Areas outside of the buildings and courtyard will

be seeded with a native mix that will not require significant maintenance or watering beyond the establishment period.

The project is connected to the larger neighbourhood via 3 access points from the multi-use path along Academy Way. When approaching from the north, a grand stair, supplemented with planting and seats steps, guides pedestrians up into the main courtyard. Views are framed by trees and pull visitors and residents through the site. A stair from the lower portion of the deck provides a connection to the trail system that sits directly below the building to the north.

Crime Prevention Through Environmental Design principles guiding the landscape design include natural access control, natural surveillance, and territorial reinforcement. Natural access control is achieved by strongly defined, well lit pedestrian circulation. The bulk of the outdoor space is in the central courtyard. Numerous windows face onto the outdoor space providing natural surveillance and limited access points. The building entrances also face onto the central courtyard with no opportunities for concealment. Activity generated by the commercial component will animate the site during the day when residents are most likely to be away to work and school. Residents will animate the space morning, and evening hours. Student traffic to and from campus, the likely tenant demographic, will generate pedestrian activity. Territorial reinforcement will also be achieved via the central courtyard by creating a sense of ownership and pride in place of an inclusive and welcoming environment. Maintenance will be simplified by planting native species that thrive in the local conditions and by using hardscape materials that are aesthetic and durable. Clear views through the site will be achieved by adhering to the 2’/6’ rule of thumb for planting that maintains a view corridor over shrub planting and under tree canopies.

All landscaping will meet or exceed minimum standards as set out in the Canadian Landscape Standard (CLS). New trees will be planted to provide shade as well as shrub planting where appropriate. Hydroseeded areas will be a native mix for a natural transition to the existing landscape. The design will focus on using plant material that is culturally appropriate as well as sensitive to the local climate and growing conditions. The principles of a water efficient landscape will be incorporated during the design process.



We see the future more clearly and design for it today.



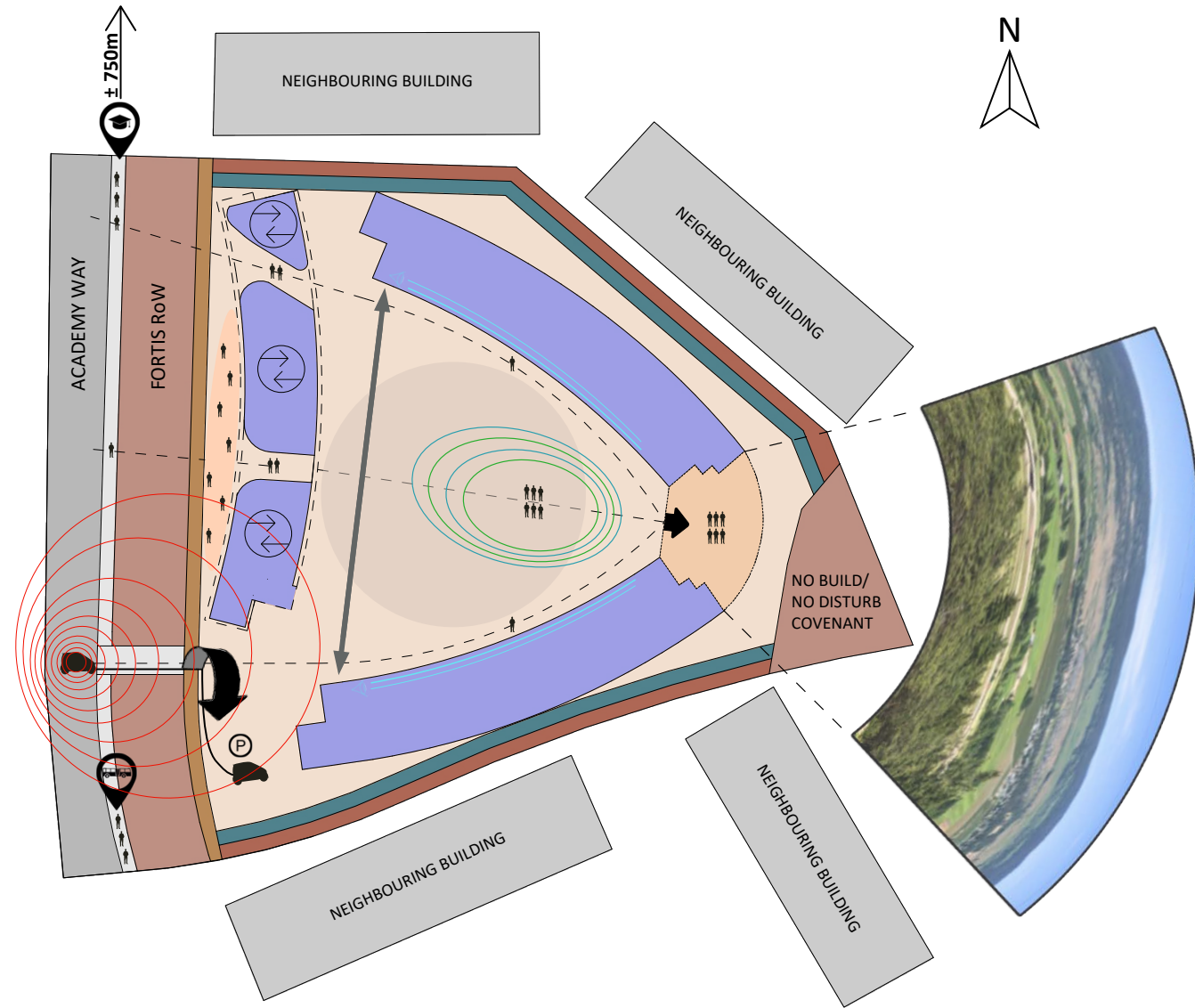
- LIMIT OF WORK
- PROPERTY LINE
- C.I.P. CONCRETE PAVING
- CRUSHED AGGREGATE
- MOLOK WASTE CONTAINER
- LAWN
- NATIVE PLANTING
- ORNAMENTAL PLANTING
- PROPOSED TREE
- SEED

GENERAL LEGEND

- ① EXISTING MULTI USE PATH
- ② NEW MULTI USE PATH
- ③ PEDESTRIAN CONNECTIONS INTO SITE
- ④ VEHICULAR ACCESS INTO SITE
- ⑤ UNDERGROUND PARKING ACCESS
- ⑥ CENTRAL PLAZA WITH DELINEATED FIRE LANE
- ⑦ SHORT TERM AT GRADE PARKING
- ⑧ SHADE TREES
- ⑨ SUNKEN "OUTDOOR" LIVING ROOM LAWN AREA
- ⑩ CONCRETE FOOT PATH
- ⑪ AMENITY DECK WITH ACCESS TO PATH NETWORK BELOW
- ⑫ NATURALIZED AREA WITH NATIVE SEED MIX
- ⑬ RESIDENTIAL BUILDING WITH GROUND FLOOR COMMERCIAL
- ⑭ RESIDENTIAL BUILDING
- ⑮ INDOOR AMENITY SPACE
- ⑯ ARRIVAL PLAZA
- ⑰ NO BUILD AREA/STEEP SLOPE
- ⑱ FORMALIZE EXISTING DESIRE LINE TO PATH BELOW
- ⑲ CONCRETE SEAT STEPS
- ⑳ EVENT / AMENITY DECK

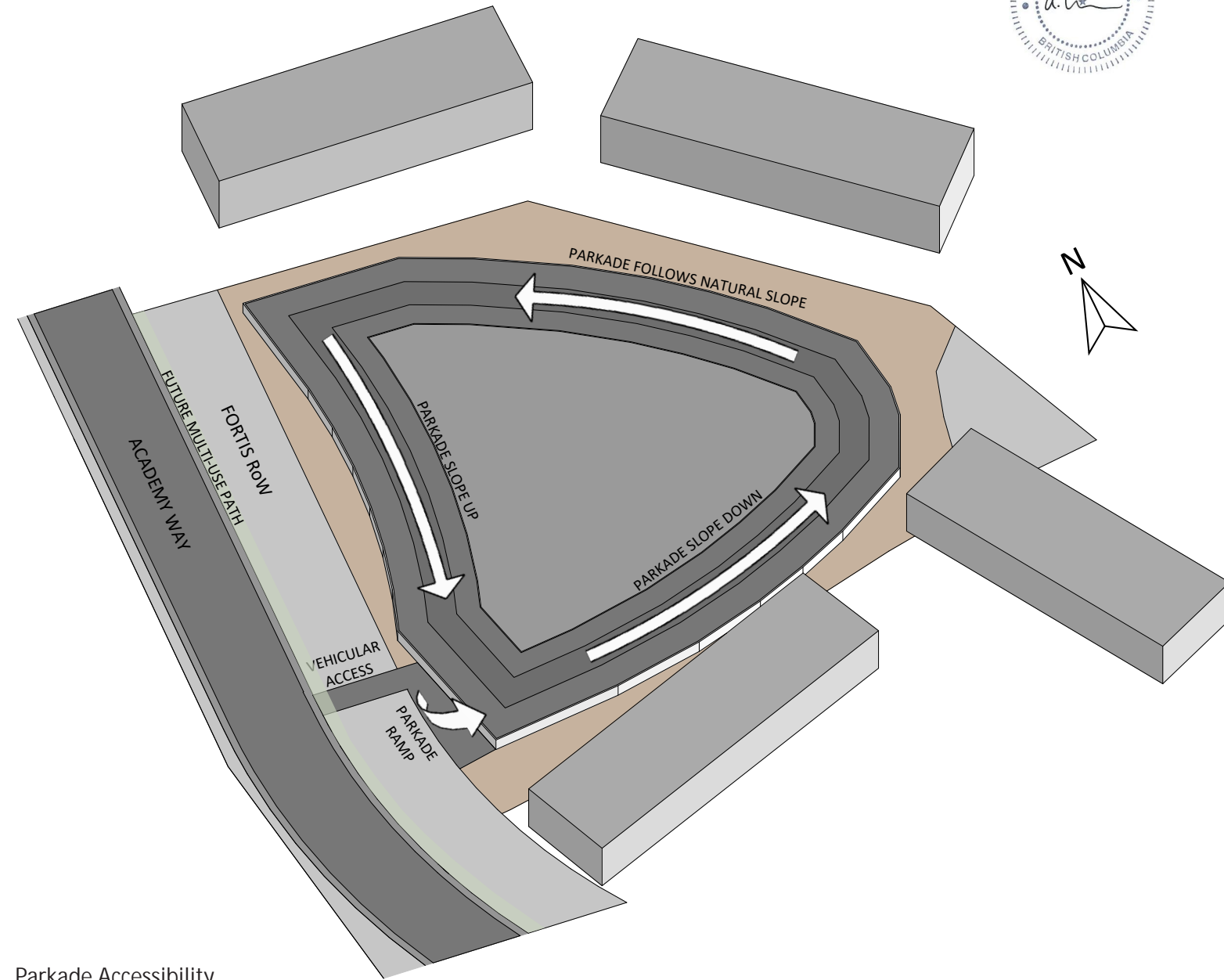
3.0 ARCHITECTURAL FORM & CHARACTER

3.1 DESIGN RATIONALE



General Site Layout

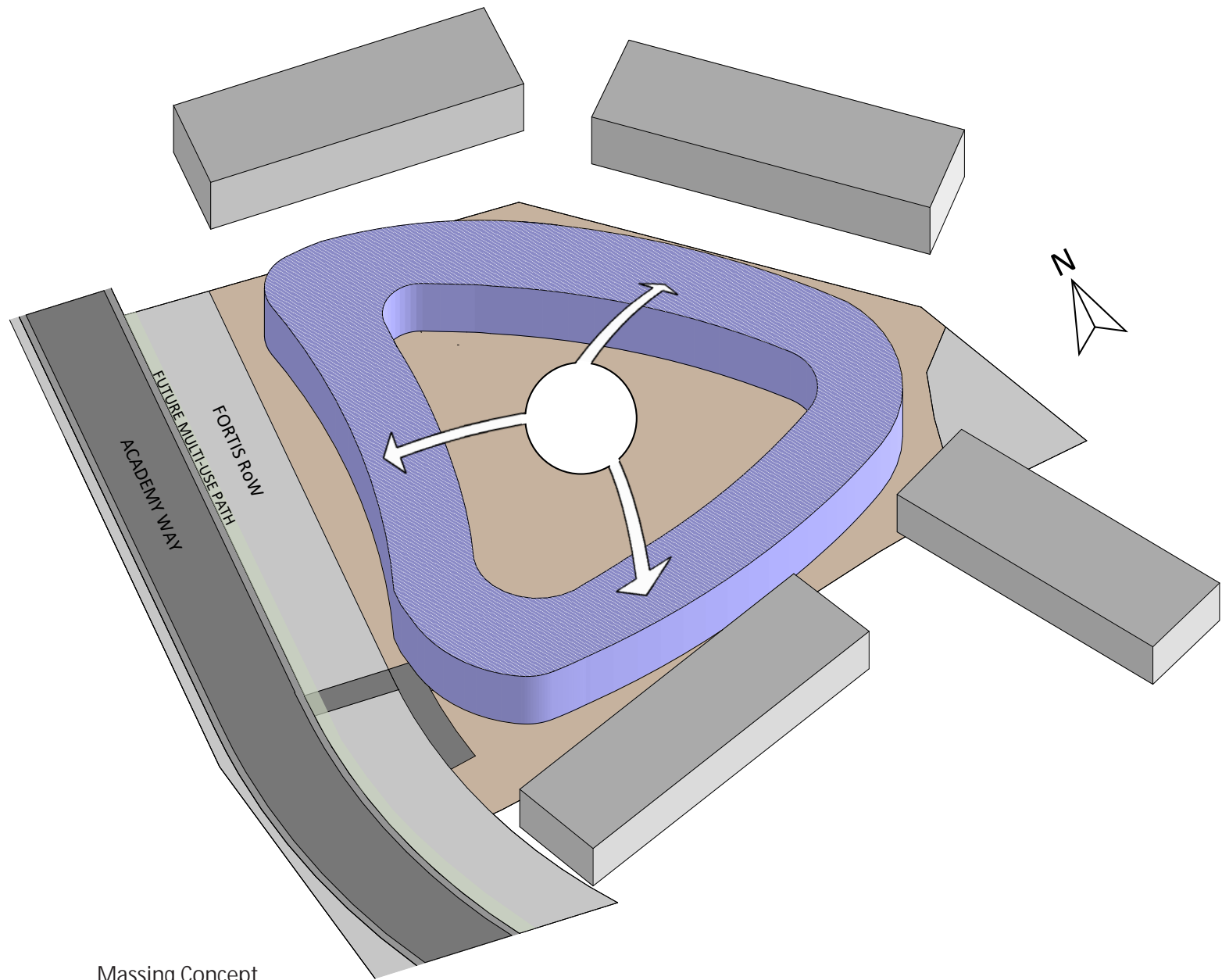
The site layout responds to the goal of creating a central common area and activity hub while also managing density and pedestrian and vehicular movements. The design emphasizes the pedestrian experience resulting in a layout that maximizes green space in the central plaza while framing and capturing views to the surrounding landscape. The central plaza is designed around the pedestrian while including visitor parking in strategic locations. The parkade is accessed immediately upon entry to the site. Building 1, which is the main interface with Academy Way, is designed to have a porous ground floor for pedestrian access and creates open and inviting entry spaces for residents and visitors to connect to the project and the central plaza.



Parkade Accessibility

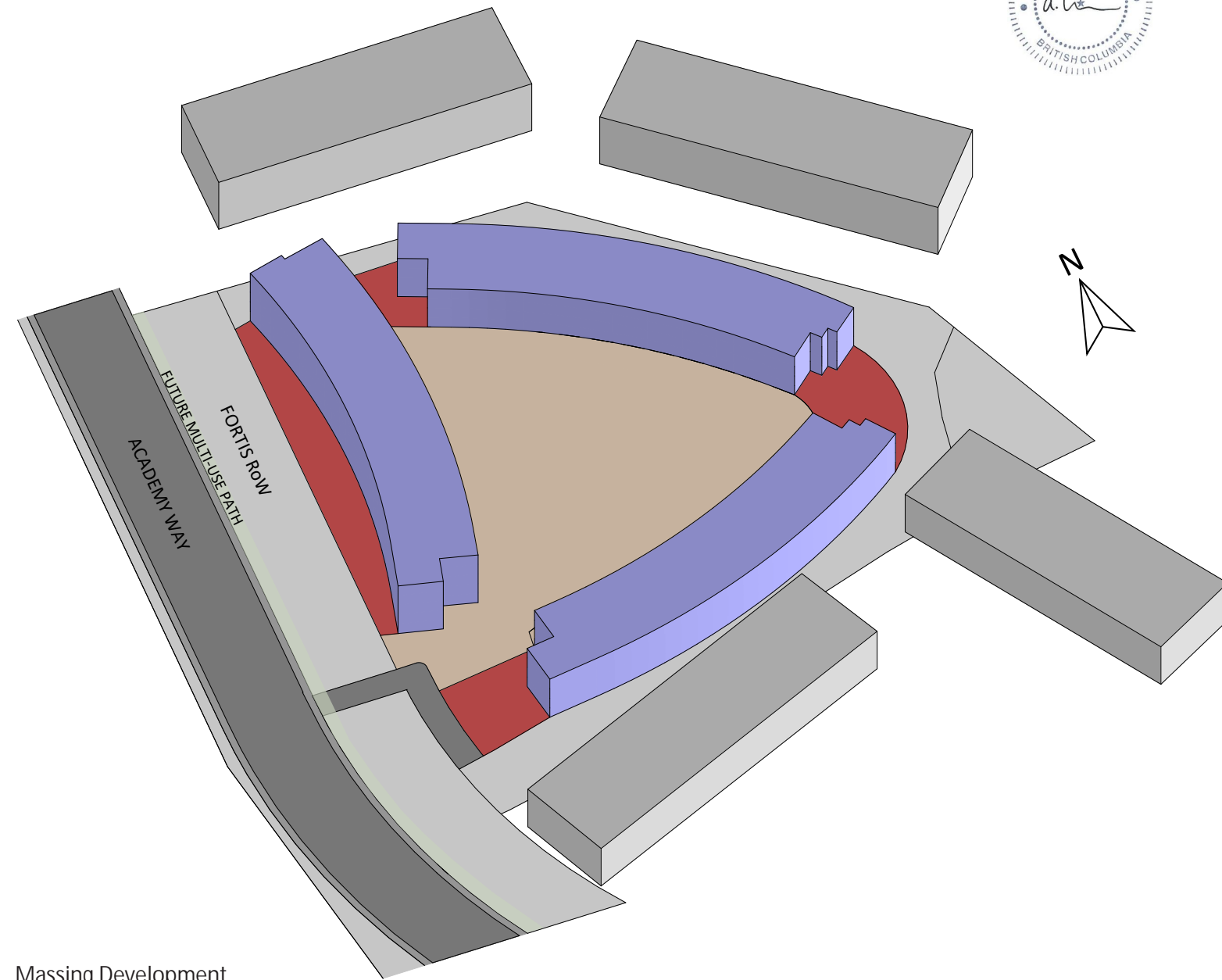
The design process has confirmed the need to balance density with parking from both a demand and municipal regulation perspective. The most efficient approach results in a single level, continuous parkade connected beneath the building footprints. Analyzing the existing topography on site, the parkade is designed to follow the natural grade by sloping down from the Southwest access to the low point in the Northwest, where the slope in the parkade reverses to slope upwards again. The three buildings are strategically placed on site with emphasis on pedestrian accesses and how they interact with the plaza within their respective slope elevations, maintaining a gradual slope throughout the site.





Massing Concept

A looped building configuration was used as the starting point for massing development as it achieved the goal of creating a central open space village centre. Building widths are determined by the width required to double load the residential studios. This massing concept set the base that was used to strategically break down the massing to provide access, frame views and meet building code requirements.



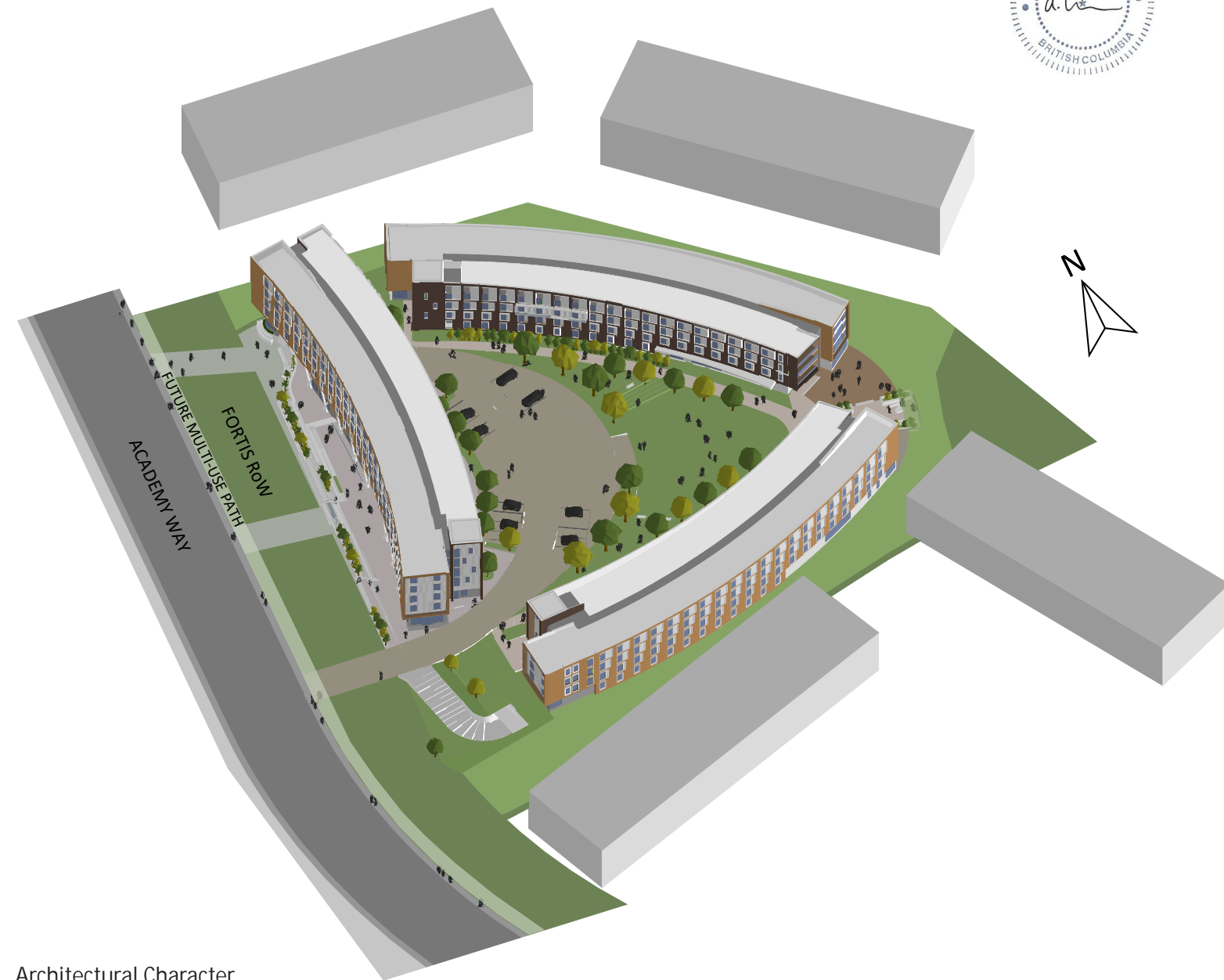
Massing Development

The massing concept was further developed to strategically break up the building volume to create open spaces between buildings and to distribute density. This provides the opportunity for different uses and interfaces that relate to their immediate surroundings while creating views and accessibility into and through the site. The curving building form naturally leads residents and visitors into the site where Building 1 provides a public "front porch" patio along Academy Way. Buildings 2 & 3 converge to a focal point that frames the panoramic view of the valley beyond.



Program & Unit Mix

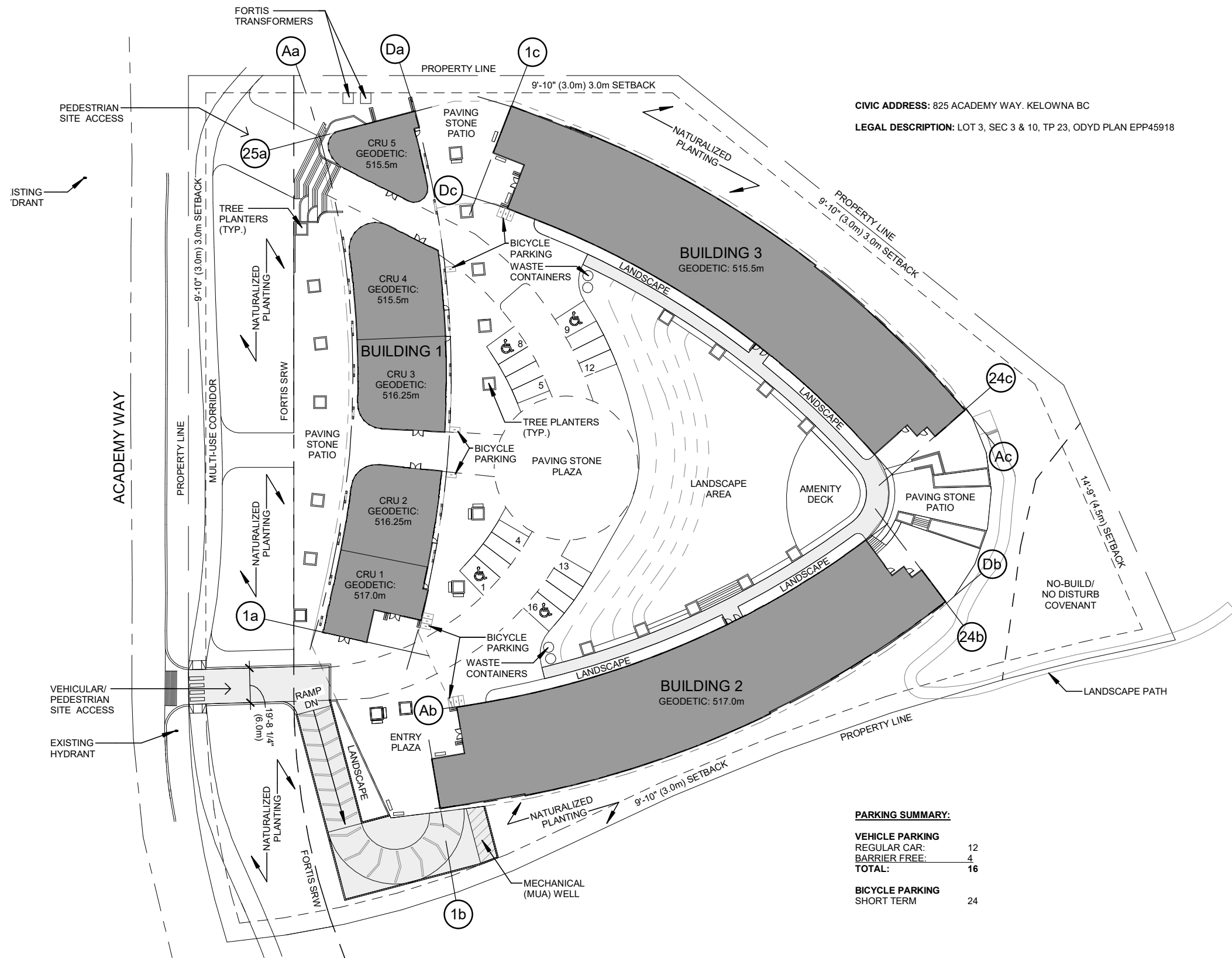
The program consists of commercial retail units, studios, 3-bedroom units and amenity areas within a format that focuses on student life and social interaction. The efficient circulation and unit arrangement contains indoor and outdoor amenity spaces, strategically located to face desired views. The ground floor of Building 1 embraces Academy Way and completes the Village Centre with commercial uses at grade. Buildings 2 & 3 focus primarily on student life with a mix of studio units and amenity areas framing the internal plaza. This helps to create an animated social atmosphere within the central plaza area.



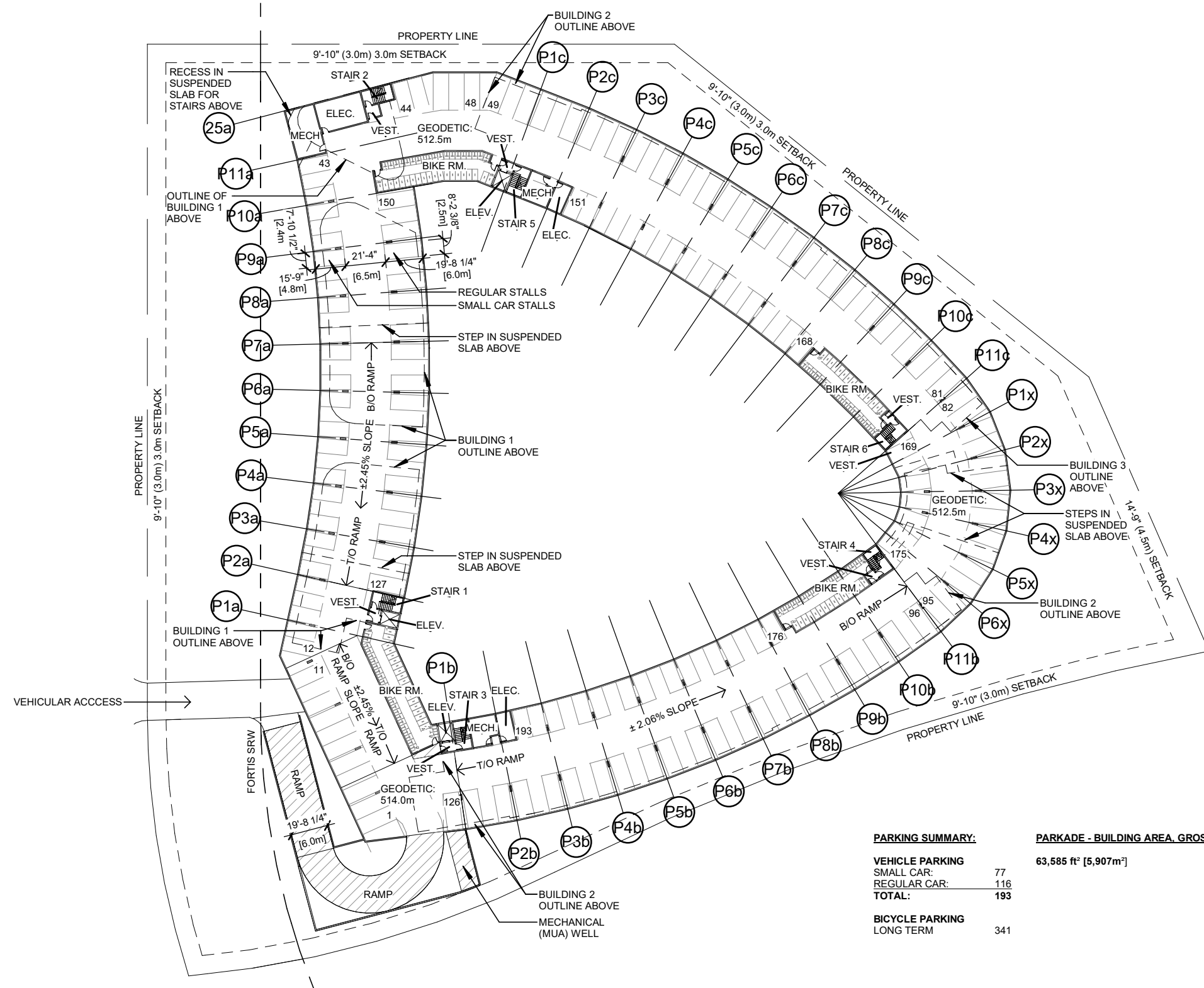
Architectural Character

The curvilinear shape results in a radial design that creates an inner and outer volume on either side of the building corridor. These volumes are further framed and enhanced to portray the underlying program be it residential, commercial or amenity areas. The façade is meant to further enhance the curvilinear feel which creates curiosity for the users to follow. The plaza is intended to slope gradually down from South to North and from West to East. This design approach creates a pedestrian friendly environment with landscaped gathering areas that transform this Village Centre location. Allowing it to become a destination for students, residents, and neighbours to meet, work, study, and play.

3.2 ARCHITECTURAL DRAWINGS

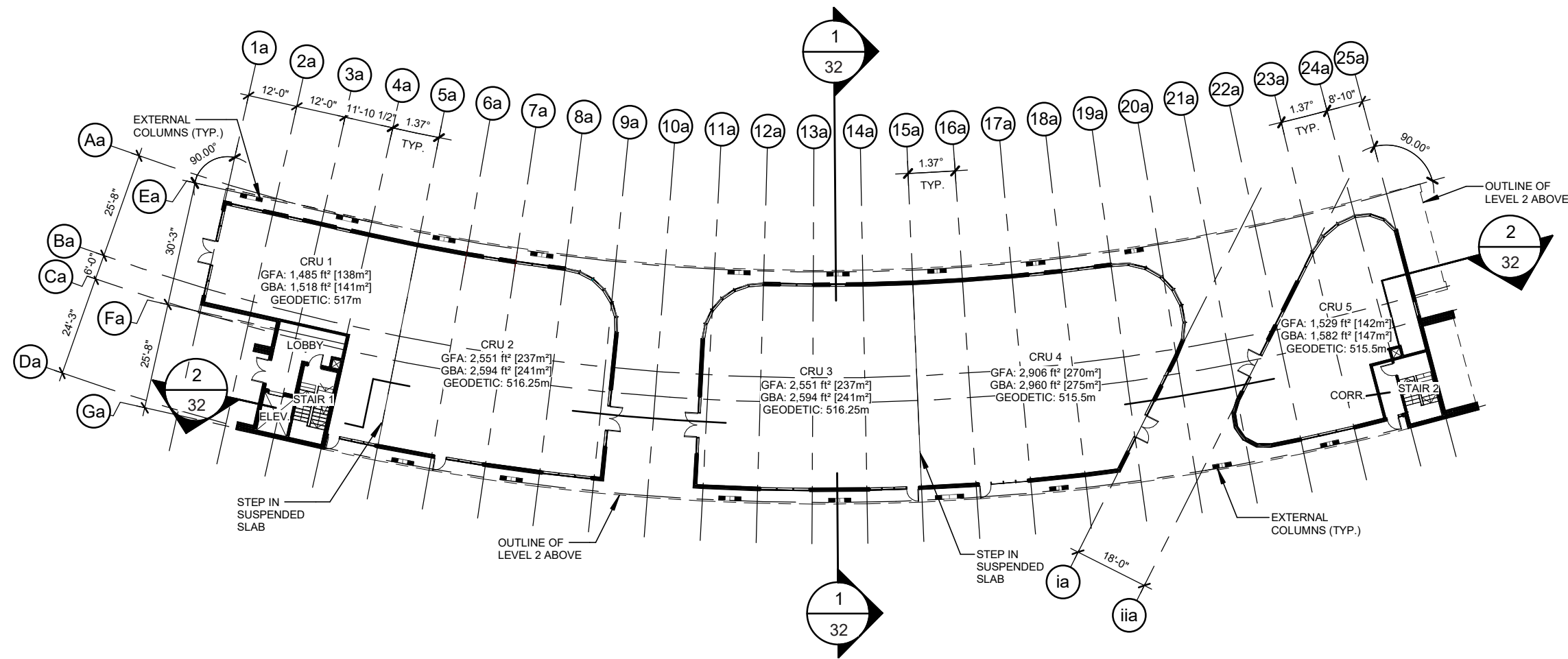


1 | **SITE PLAN - OVERALL**
24 | SCALE: 1/64" = 1'-0"



PARKING SUMMARY:		PARKADE - BUILDING AREA, GROSS:	
VEHICLE PARKING		63,585 ft ² [5,907m ²]	
SMALL CAR:	77		
REGULAR CAR:	116		
TOTAL:	193		
BICYCLE PARKING			
LONG TERM	341		

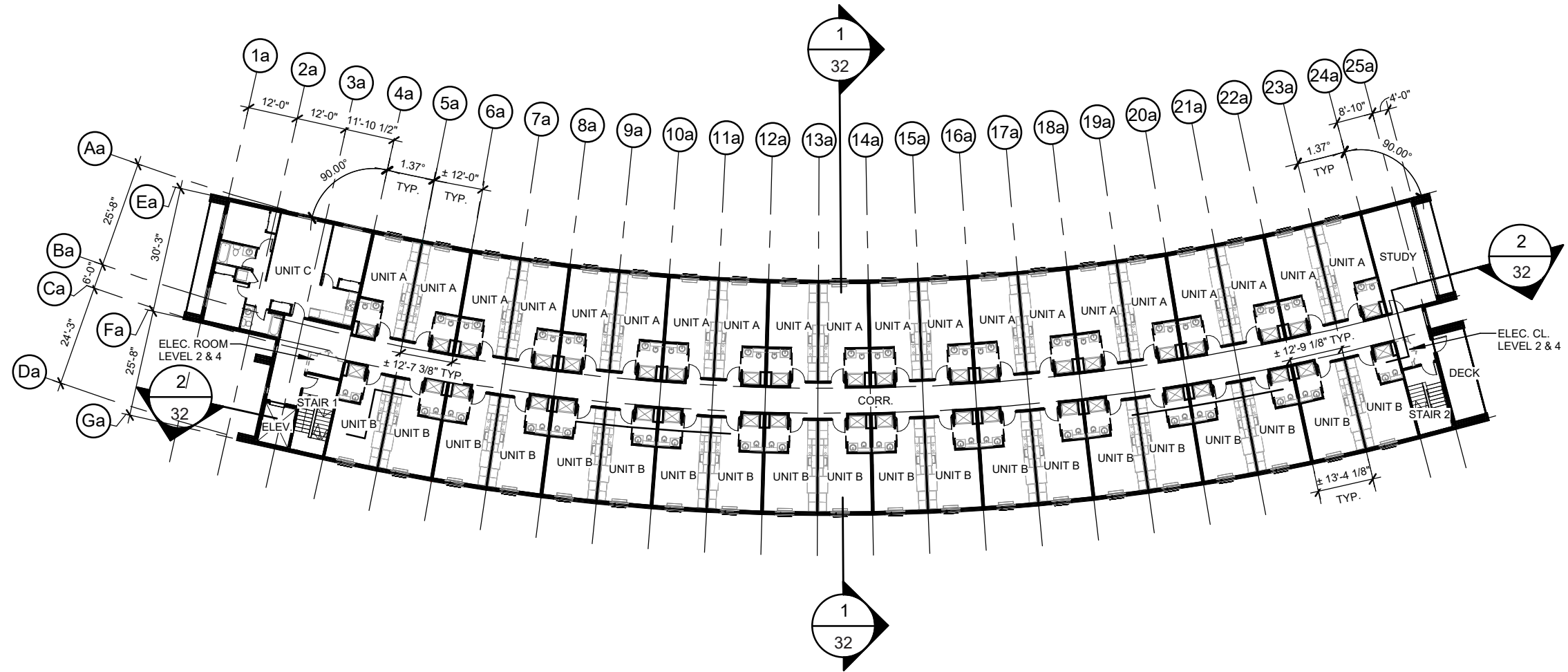




1 | **BUILDING 1 - LEVEL 1 FLOOR PLAN**

26 | SCALE: 1/32" = 1'-0"

BUILDING 1 - LEVEL 1 - CRU FLOOR AREA, GROSS (GFA) (CoK Zoning Bylaw):
11,022 ft² [1,024m²]
BUILDING 1 - LEVEL 1 - CRU BUILDING AREA, GROSS (GBA):
11,248 ft² [1,045m²]
BUILDING 1 - LEVEL 1 - TOTAL BUILDING AREA, GROSS (GBA):
11,959 ft² [1,111m²]



BUILDING 1 - LEVEL 2-5 BUILDING AREA, GROSS (GBA):

LEVEL	LEVEL AREA
L2:	16,286 ft ² [1,513 m ²]
L3:	16,286 ft ² [1,513 m ²]
L4:	16,286 ft ² [1,513 m ²]
L5:	16,286 ft ² [1,513 m ²]
TOTAL:	65,144 ft² [6,052 m²]

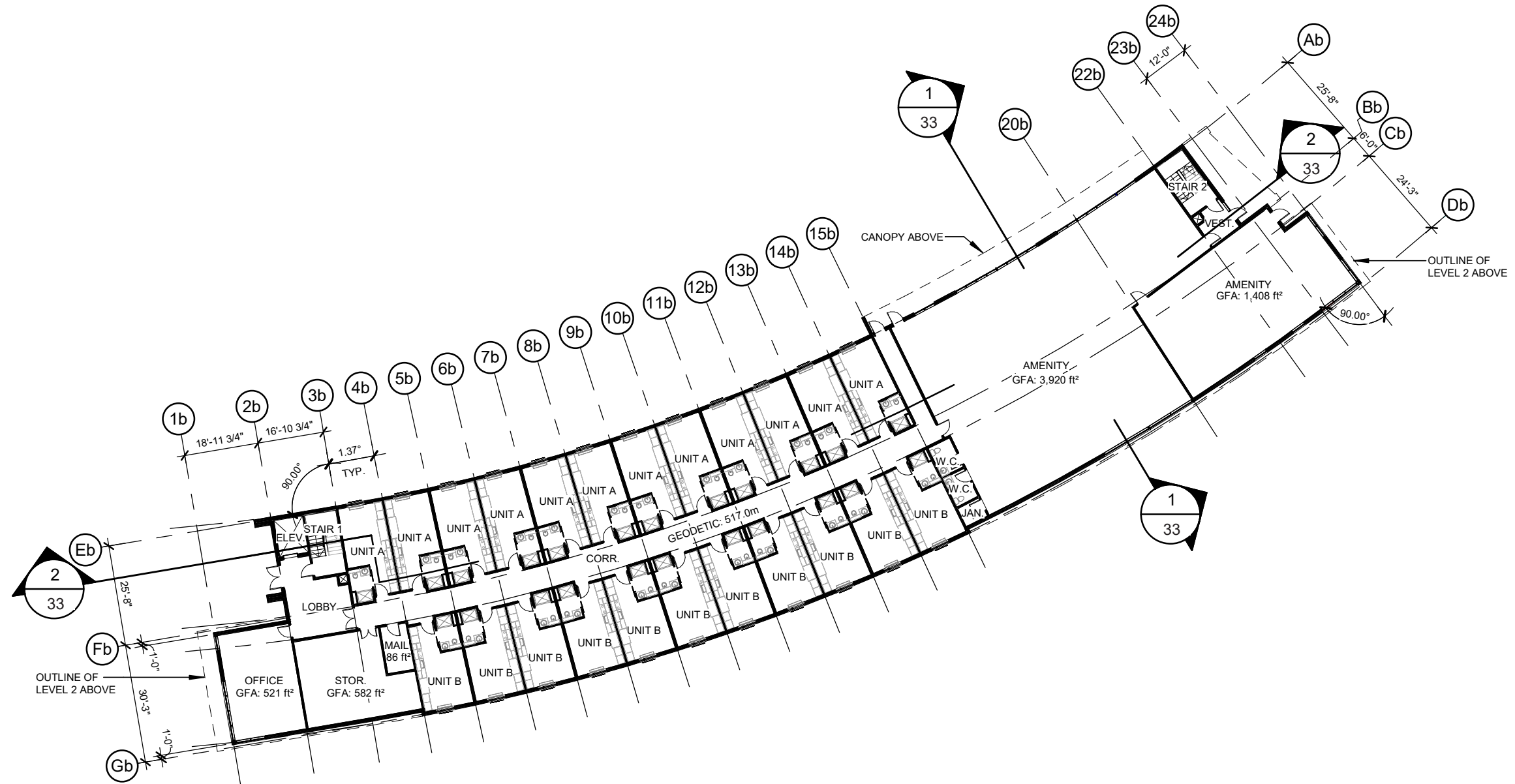
BUILDING 1 - LEVEL 2-5 UNIT COUNT:

UNIT	UNIT AREA	L2	L3	L4	L5	UNIT TOTAL	UNIT AREA SUBTOTAL
UNIT A	308 ft ²	20	20	20	20	80	24,640 ft ²
UNIT B	308 ft ²	20	20	20	20	80	24,640 ft ²
UNIT C	987 ft ²	1	1	1	1	4	3,948 ft ²
TOTALS		41	41	41	41	164	53,228 ft²



1 BUILDING 1 - LEVEL 2-5 FLOOR PLAN

27 SCALE: 1/32" = 1'-0"



1 BUILDING 2 - LEVEL 1

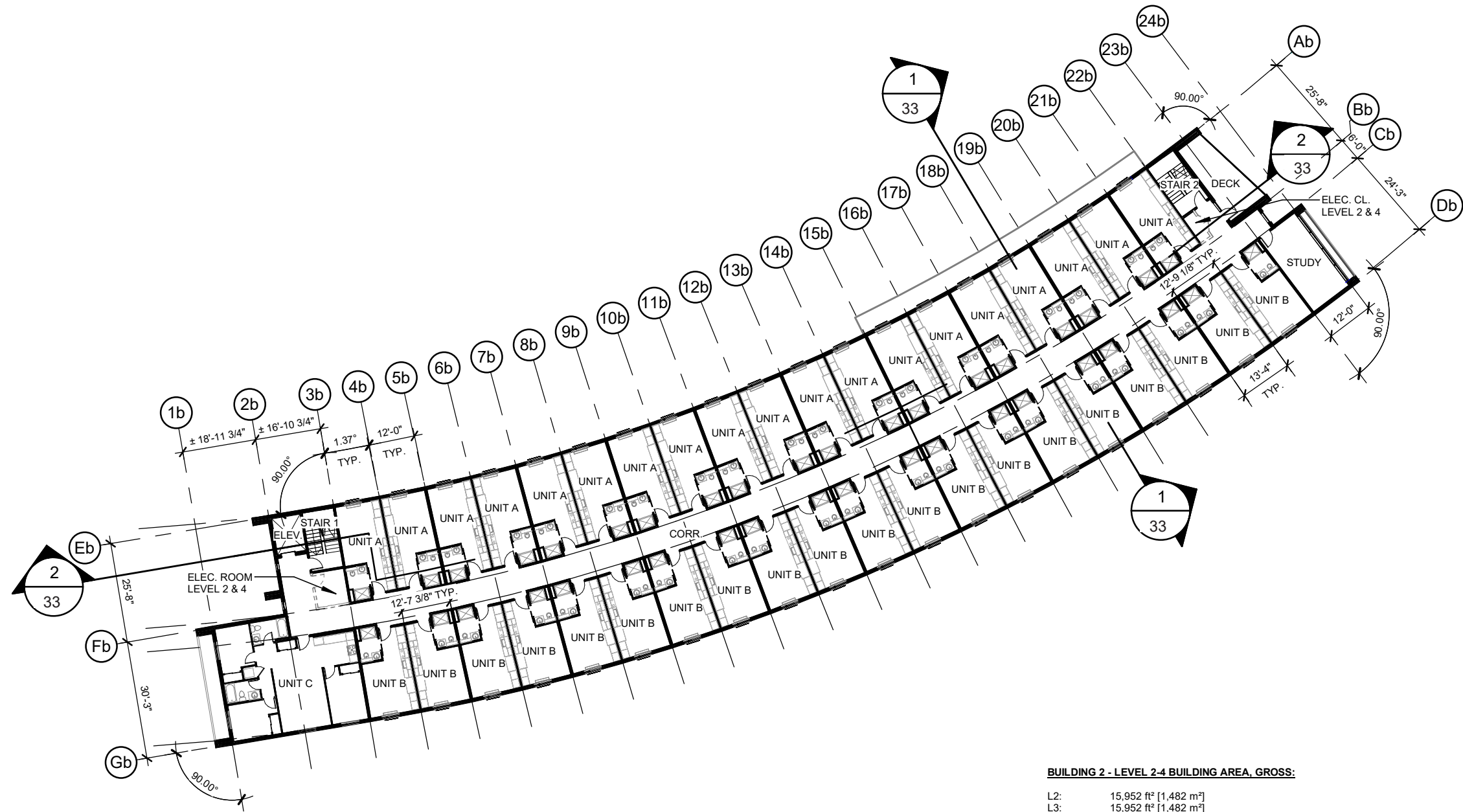
28 SCALE: 1/32" = 1'-0"

BUILDING 2 - LEVEL 1 - BUILDING AREA, GROSS (GBA):

15,737 ft² [1,462 m²]

BUILDING 2 - LEVEL 1-4 UNIT COUNT:

UNIT	UNIT AREA	L1	L2	L3	L4	UNIT TOTAL	UNIT AREA SUBTOTAL
UNIT A	308 ft²	12	19	19	19	69	21,252 ft²
UNIT B	308 ft²	11	20	20	20	71	21,868 ft²
UNIT C	987 ft²	1	1	1	1	3	2,961 ft²
TOTALS		23	40	40	40	143	46,081 ft²



BUILDING 2 - LEVEL 2-4 BUILDING AREA, GROSS:

L2:	15,952 ft ² [1,482 m ²]
L3:	15,952 ft ² [1,482 m ²]
L4:	15,952 ft ² [1,482 m ²]
TOTAL:	47,857 ft² [4,446 m²]

BUILDING 2 - LEVEL 1-4 UNIT COUNT:

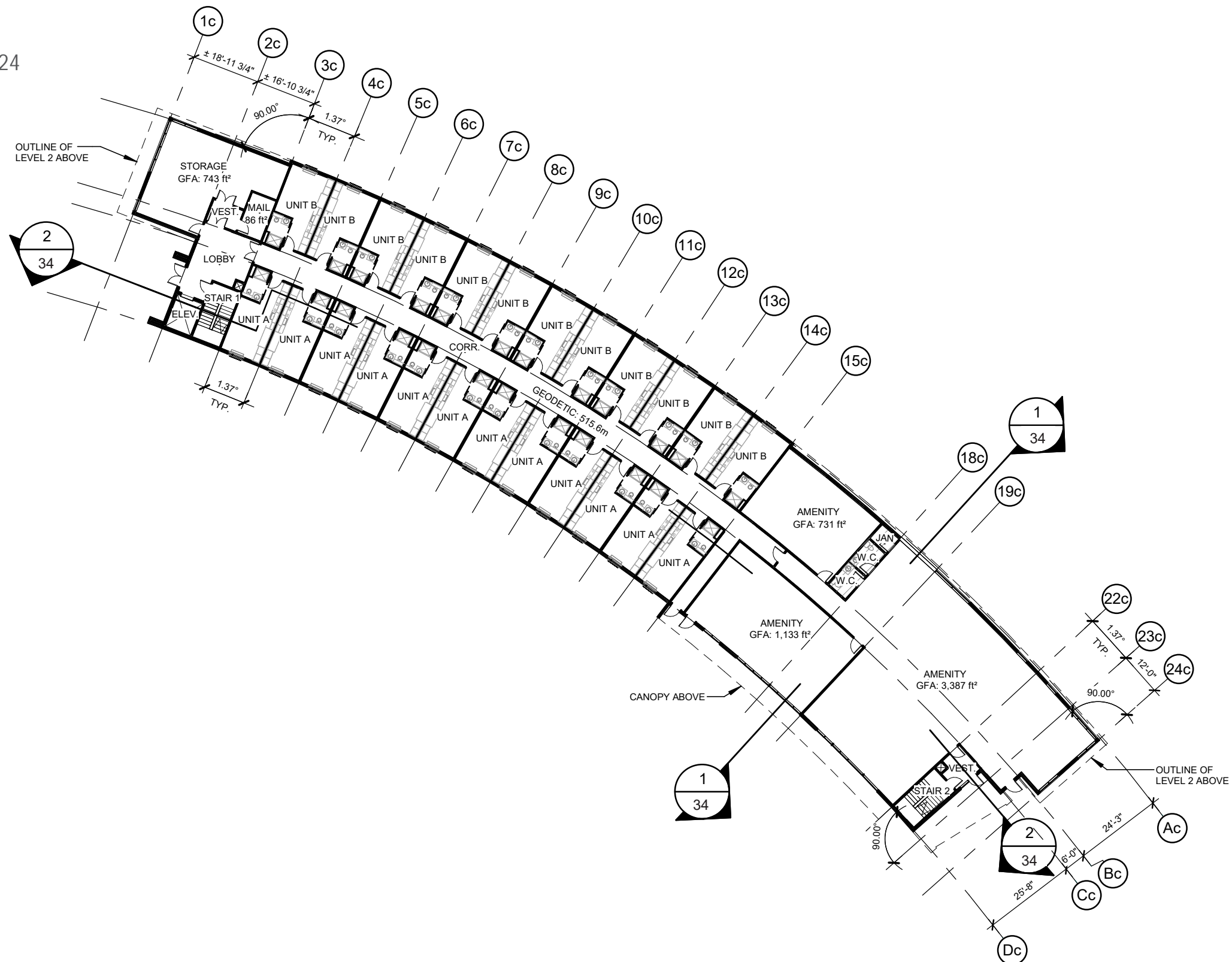
UNIT	UNIT AREA	L1	L2	L3	L4	UNIT TOTAL	UNIT AREA SUBTOTAL
UNIT A	308 ft ²	12	19	19	19	69	21,252 ft ²
UNIT B	308 ft ²	11	20	20	20	71	21,868 ft ²
UNIT C	987 ft ²	1	1	1		3	2,961 ft ²
TOTALS		23	40	40	40	143	46,081 ft²



1
29

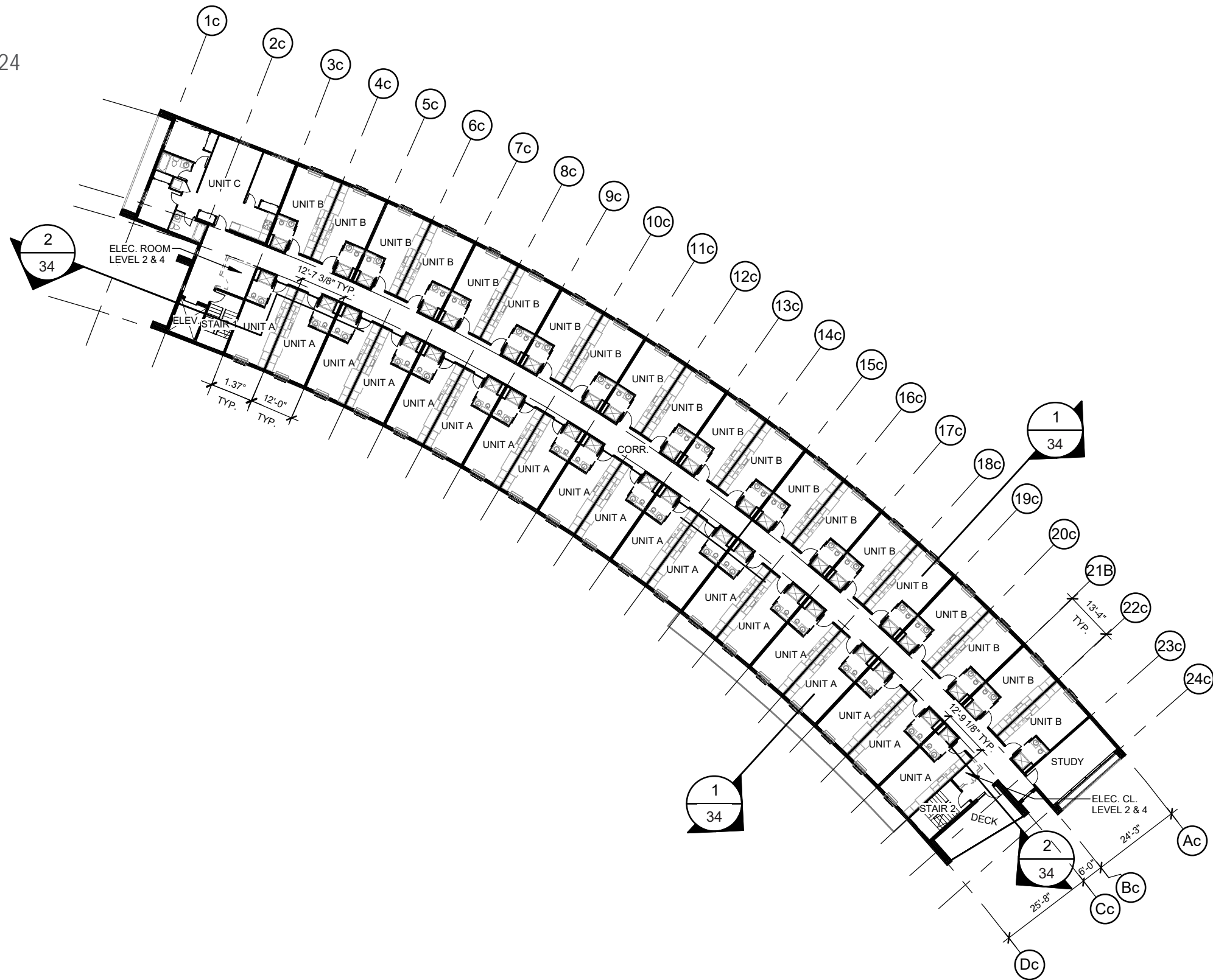
BUILDING 2 - LEVEL 2-4 FLOOR PLAN

SCALE: 1/32" = 1'-0"



1 | **BUILDING 3 - LEVEL 1**
30 | SCALE: 1/32" = 1'-0"

BUILDING 3 - LEVEL 1 - BUILDING AREA, GROSS (GBA):		BUILDING 3 - LEVEL 1-4 UNIT COUNT:							
15,737 ft² [1,462 m²]		UNIT	UNIT AREA	L1	L2	L3	L4	UNIT TOTAL	UNIT AREA SUBTOTAL
		UNIT A	308 ft²	12	19	19	19	69	21,252 ft²
		UNIT B	308 ft²	12	20	20	20	72	22,176 ft²
		UNIT C	987 ft²	1	1	1		3	2,961 ft²
TOTALS				24	40	40	40	144	46,389 ft²



1
31

BUILDING 3 - LEVEL 2-4 FLOOR PLAN

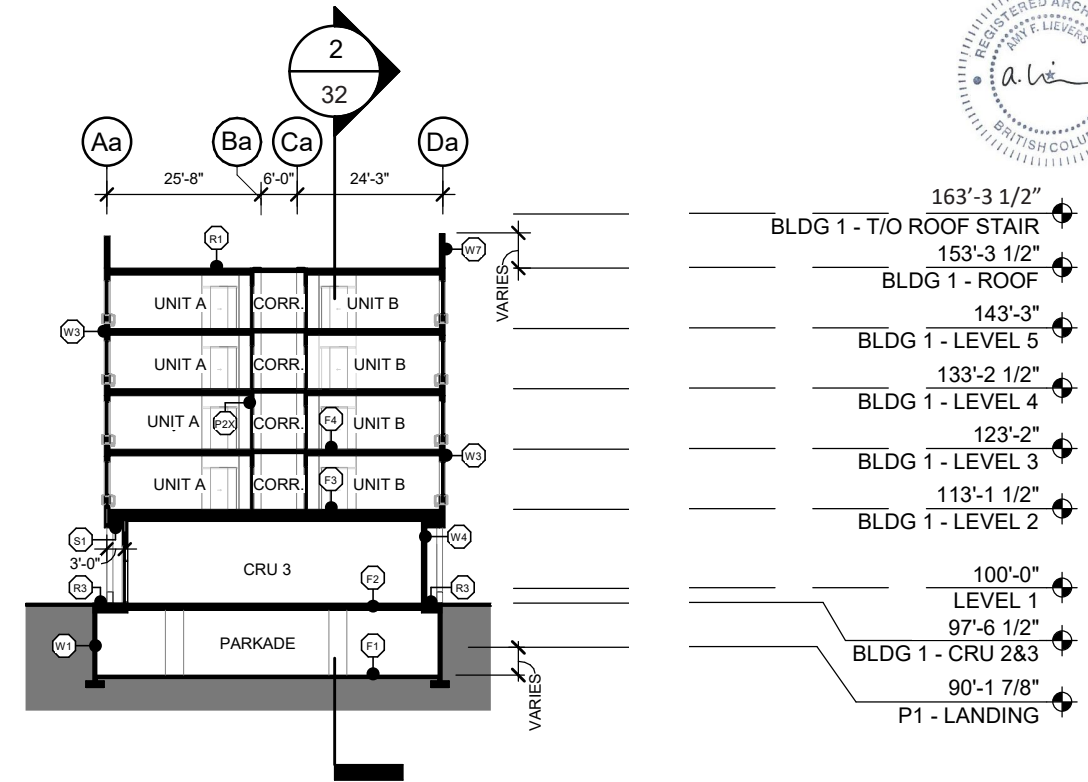
SCALE: 1/32" = 1'-0"

BUILDING 3 - LEVEL 2-4 BUILDING AREA, GROSS (GBA):

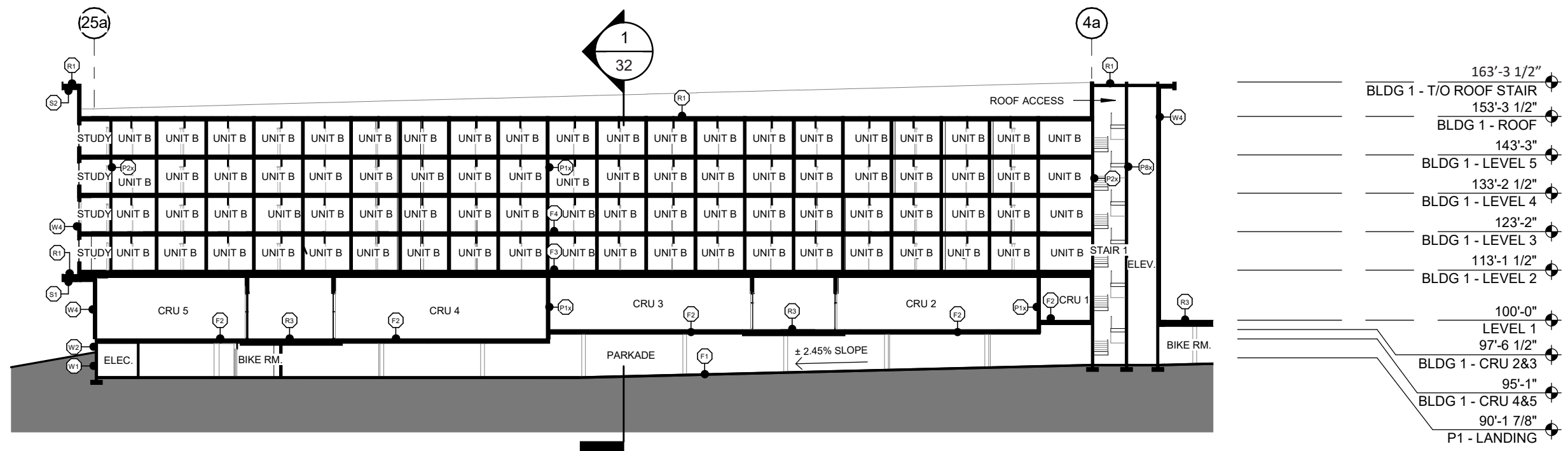
LEVEL	LEVEL AREA
L2:	15,952 ft ² [1,482 m ²]
L3:	15,952 ft ² [1,482 m ²]
L4:	15,952 ft ² [1,482 m ²]
TOTAL:	47,857 ft² [4,446 m²]

BUILDING 3 - LEVEL 1-4 UNIT COUNT:

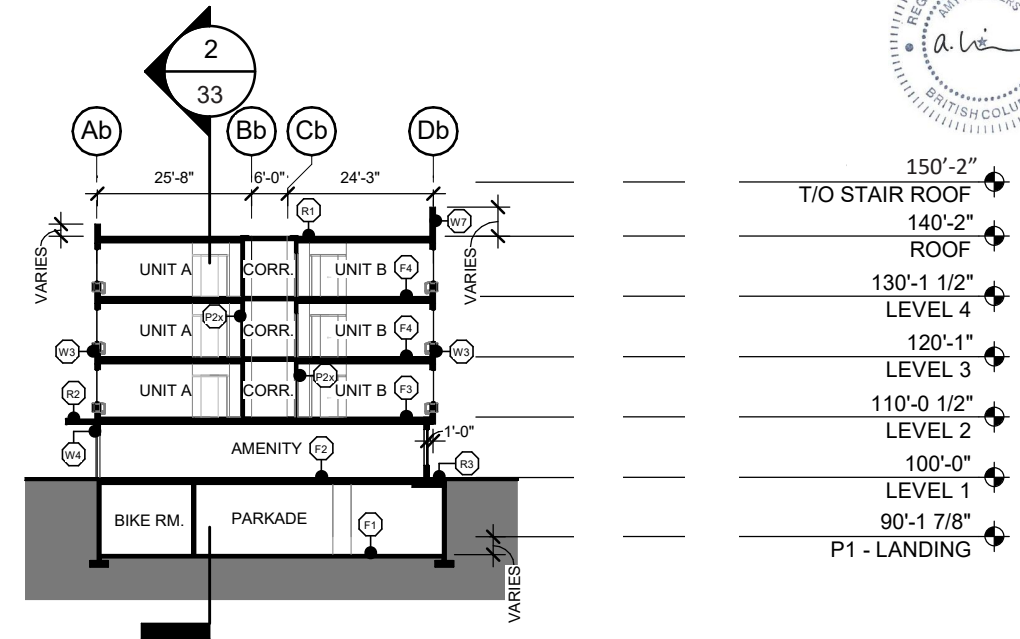
UNIT	UNIT AREA	L1	L2	L3	L4	UNIT TOTAL	UNIT AREA SUBTOTAL
UNIT A	308 ft ²	12	19	19	19	69	21,252 ft ²
UNIT B	308 ft ²	12	20	20	20	72	22,176 ft ²
UNIT C	987 ft ²	1	1	1		3	2,961 ft ²
TOTALS		24	40	40	40	144	46,389 ft²



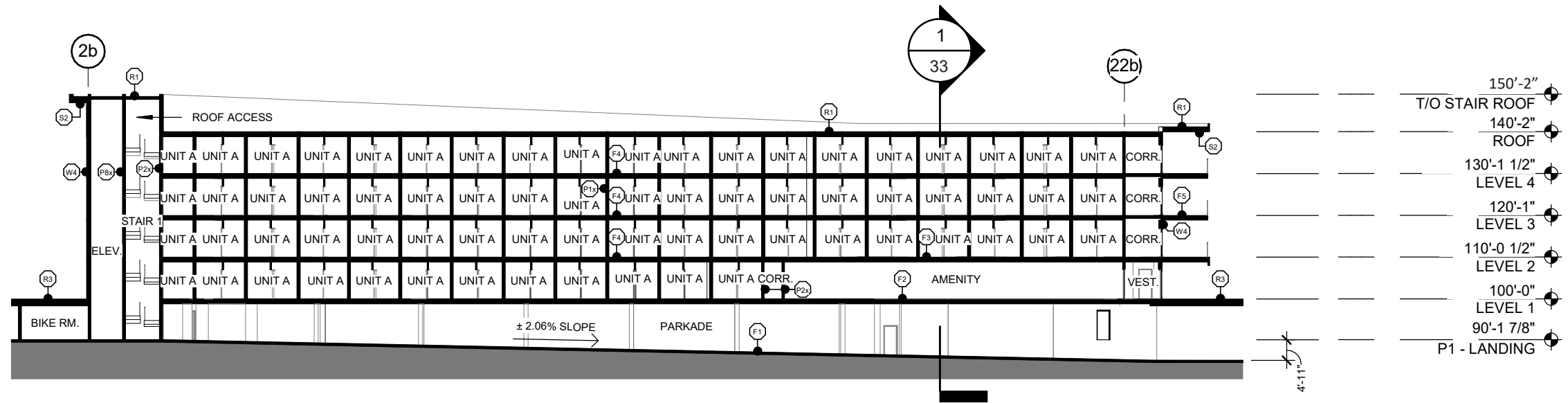
1 | **BUILDING 1 - SECTION 1**
32 | SCALE: 1/32" = 1'-0"



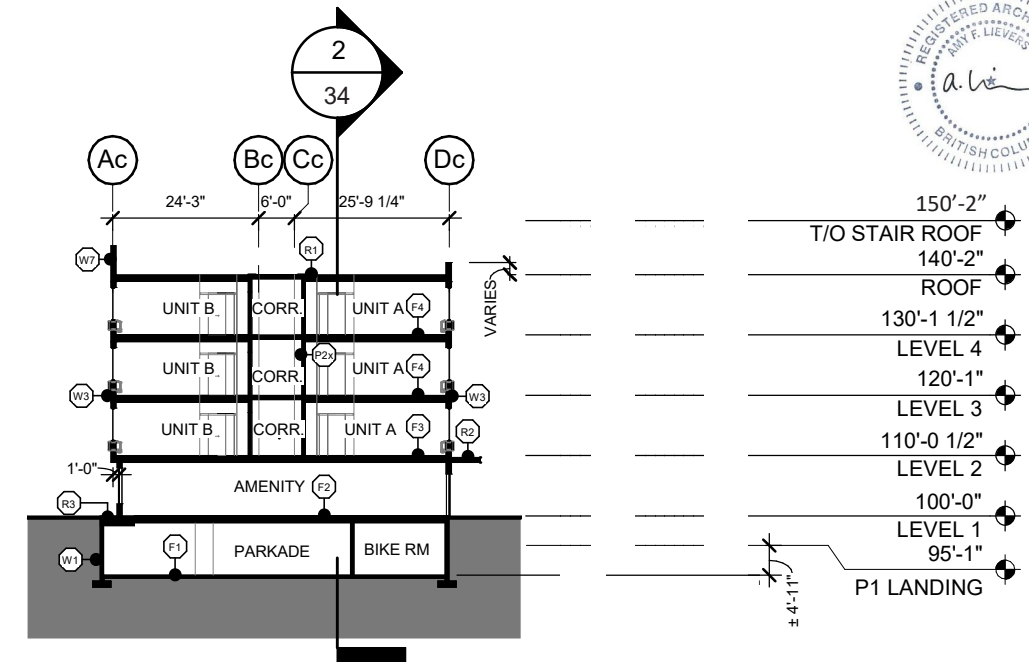
2 | **BUILDING 1 - SECTION 2**
32 | SCALE: 1/32" = 1'-0"



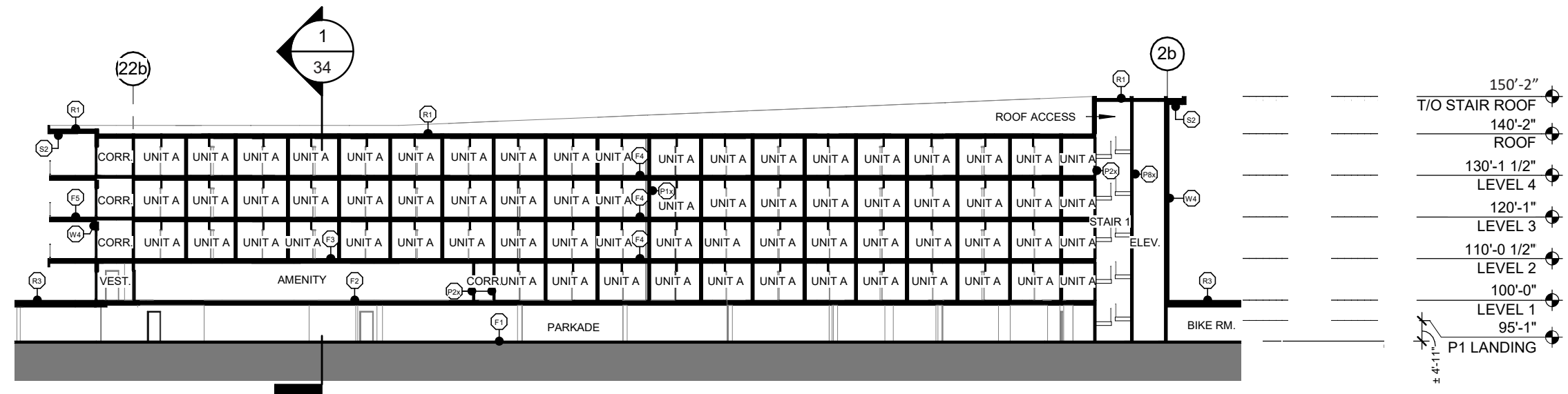
1 BUILDING 2 - SECTION 1
33 SCALE: 1/32" = 1'-0"



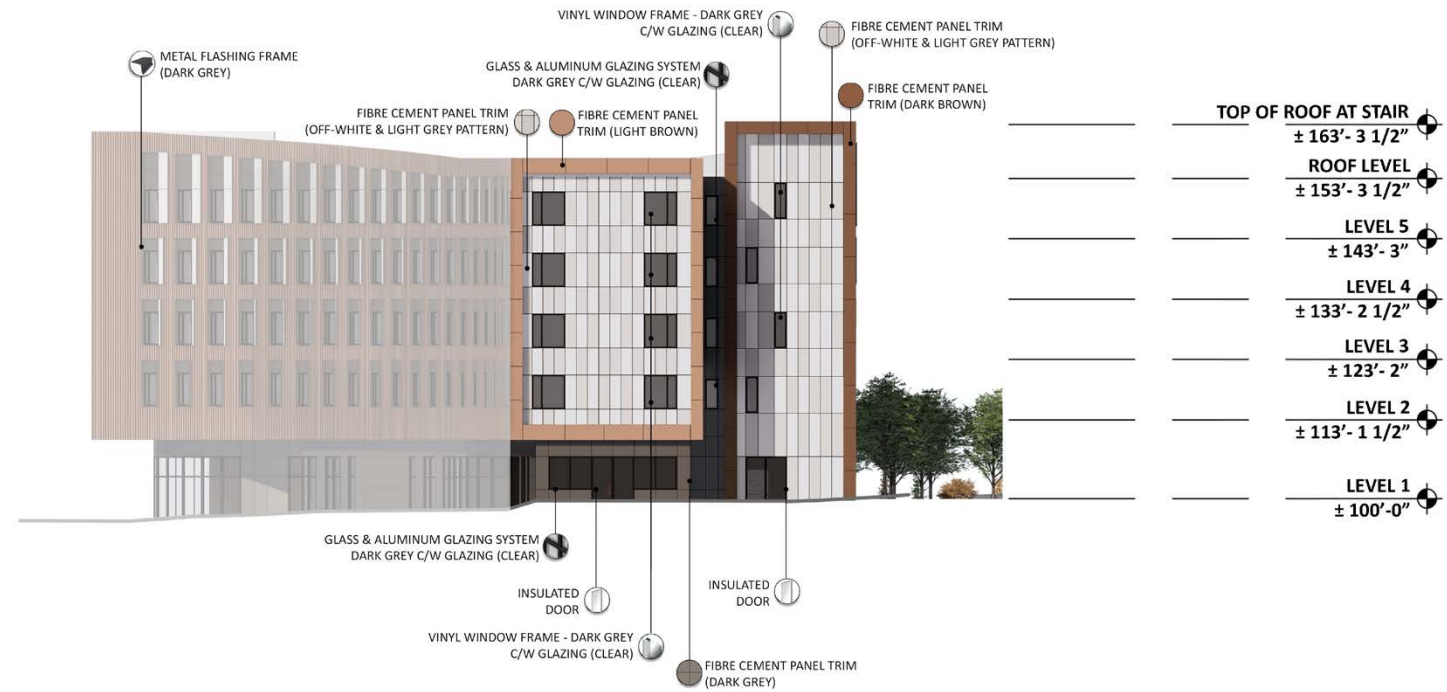
2 BUILDING 2 - SECTION 2
33 SCALE: 1/32" = 1'-0"



1 | **BUILDING 3 - SECTION 1**
34 | SCALE: 1/32" = 1'-0"

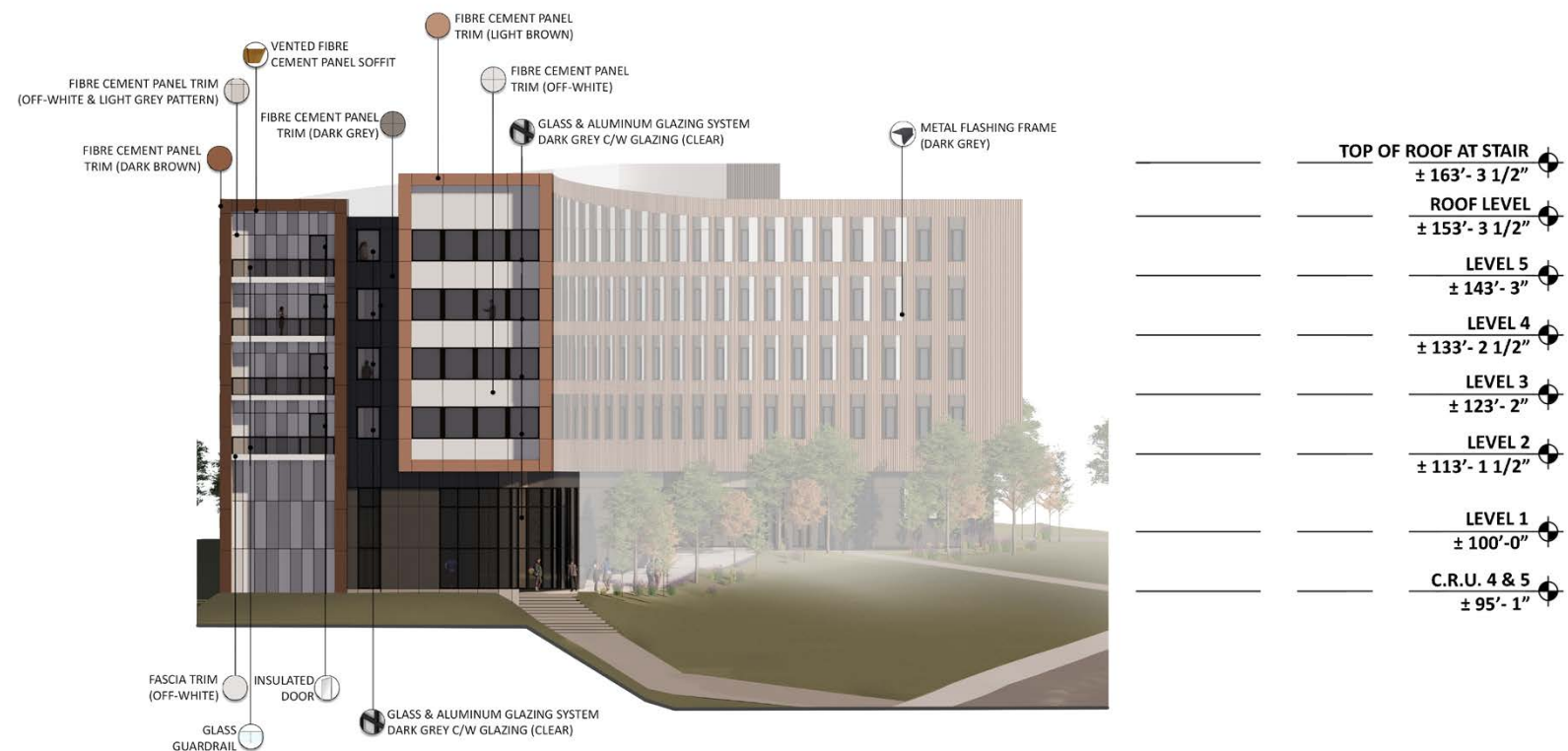


2 | **BUILDING 3 - SECTION 2**
34 | SCALE: 1/32" = 1'-0"



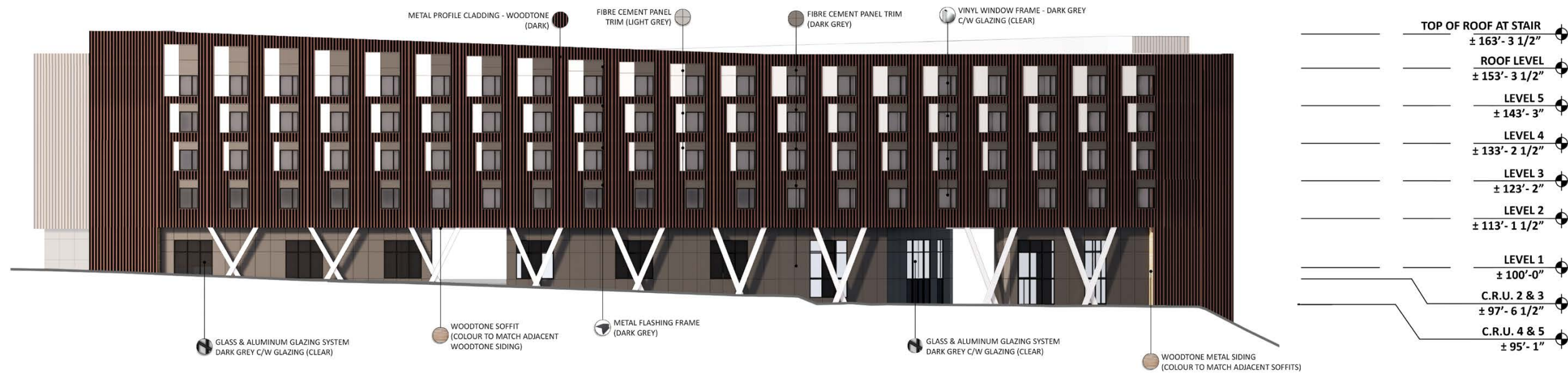
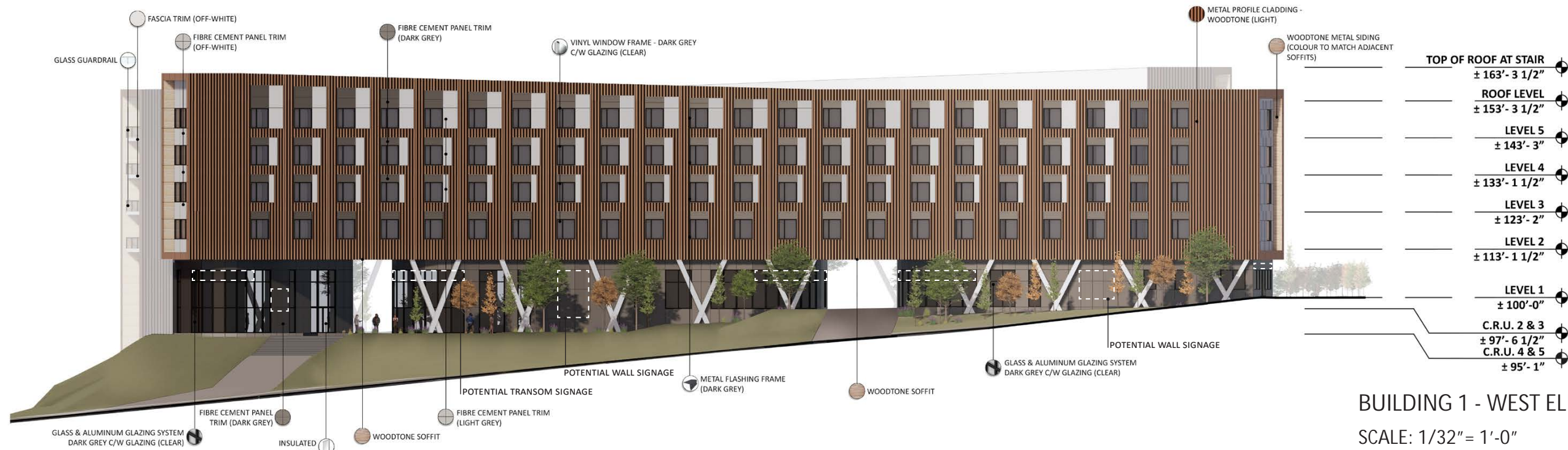
BUILDING 1 - SOUTH ELEVATION

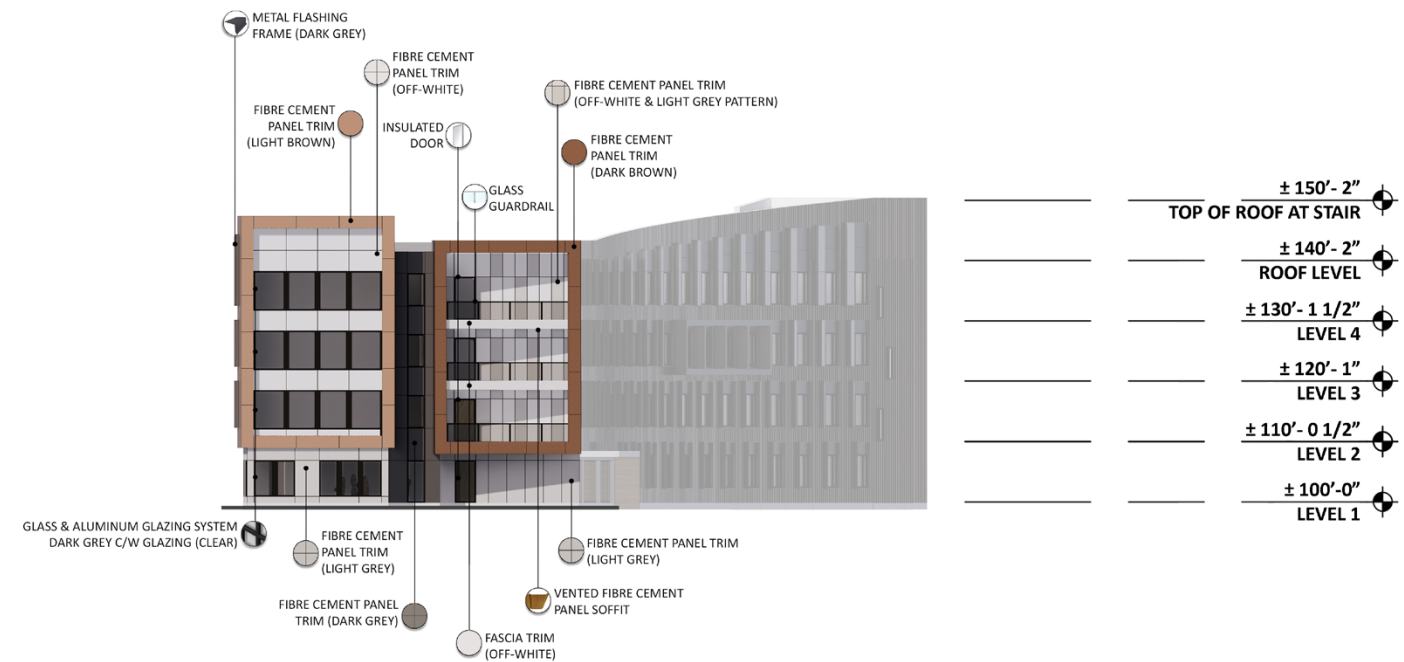
SCALE: 1/32" = 1'-0"



BUILDING 1 - NORTH ELEVATION

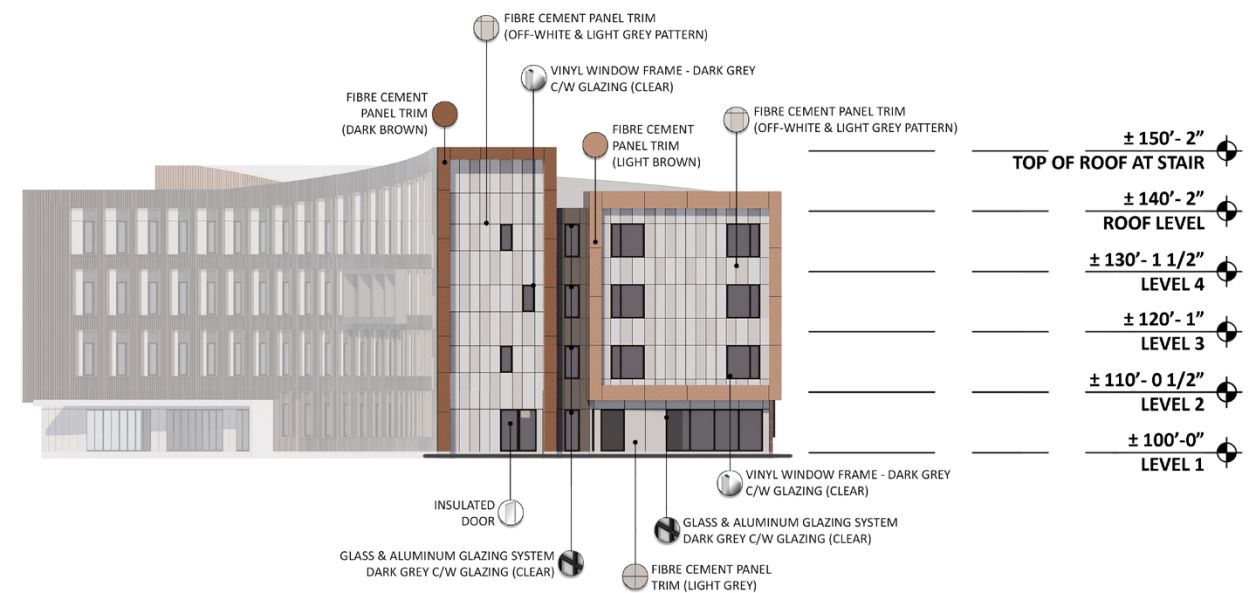
SCALE: 1/32" = 1'-0"





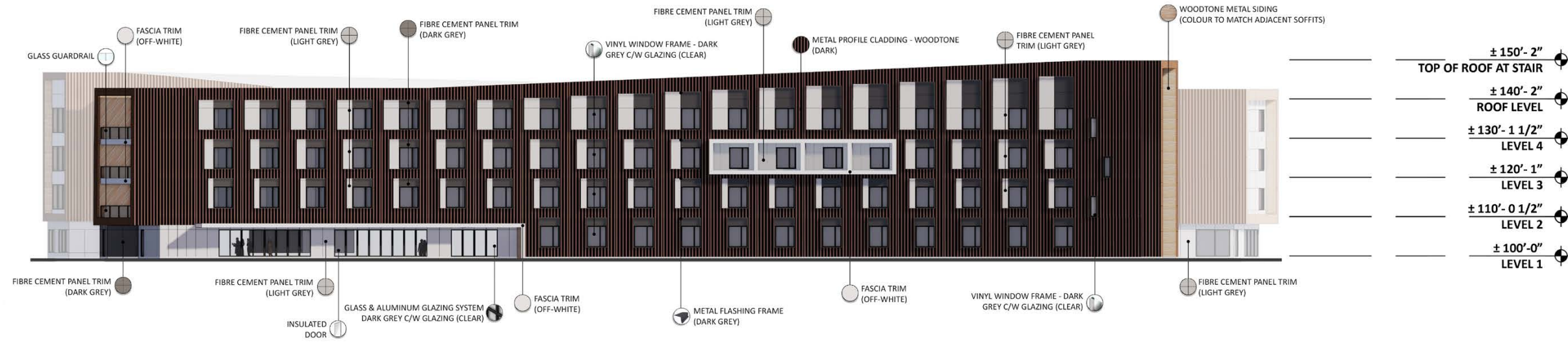
BUILDING 2 - EAST ELEVATION

SCALE: 1/32" = 1'-0"



BUILDING 2 - WEST ELEVATION

SCALE: 1/32" = 1'-0"



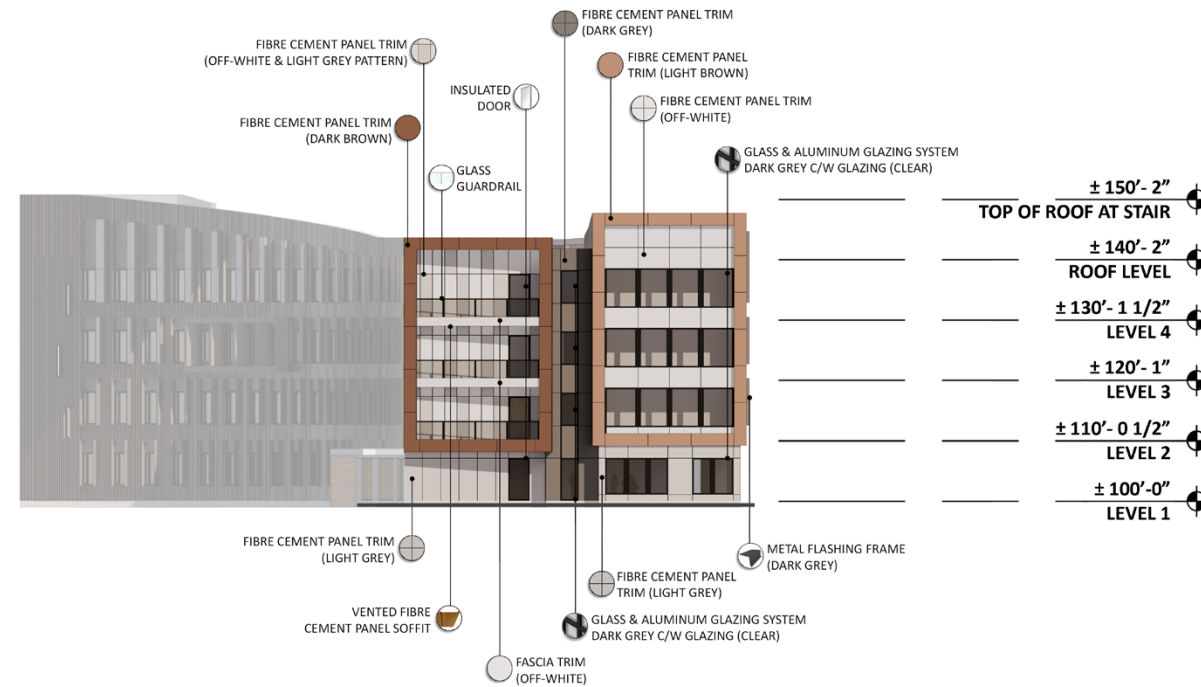
BUILDING 2 - NORTH ELEVATION

SCALE: 1/32" = 1'-0"



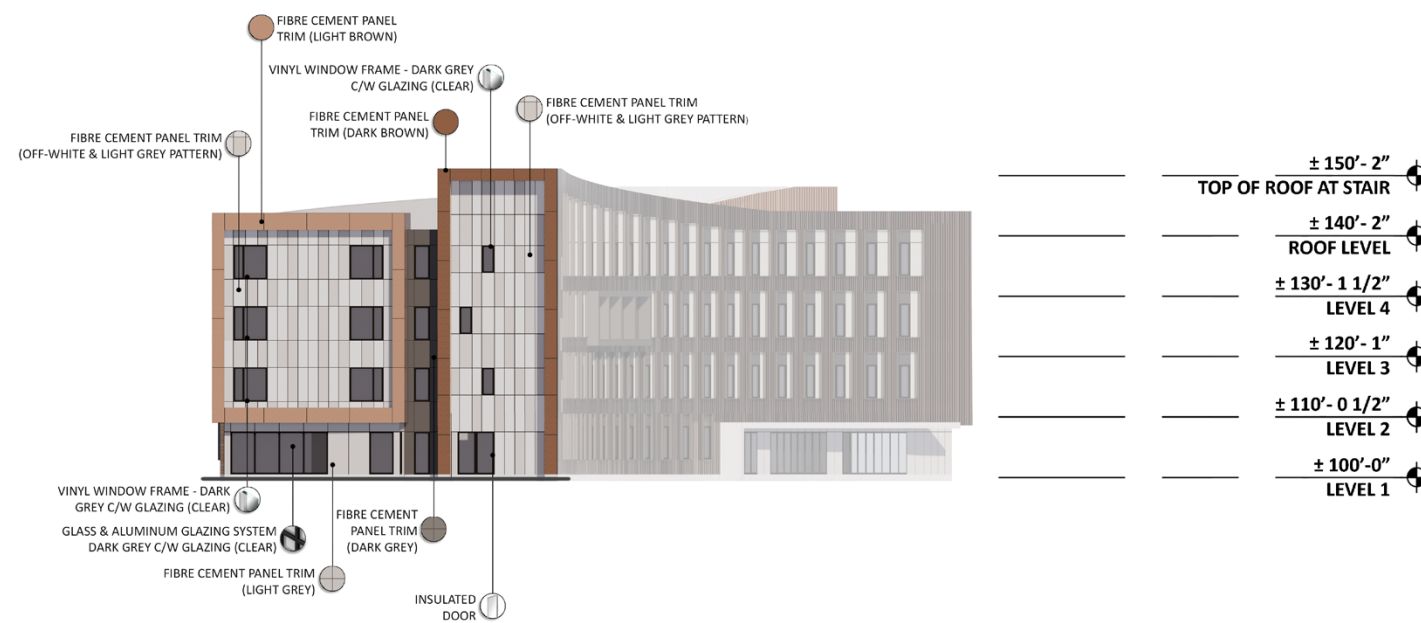
BUILDING 2 - SOUTH ELEVATION

SCALE: 1/32" = 1'-0"



BUILDING 3 - EAST ELEVATION

SCALE: 1/32" = 1'-0"



BUILDING 3 - WEST ELEVATION

SCALE: 1/32" = 1'-0"



BUILDING 3 - NORTH ELEVATION

SCALE: 1/32" = 1'-0"



BUILDING 3 - SOUTH ELEVATION

SCALE: 1/32" = 1'-0"

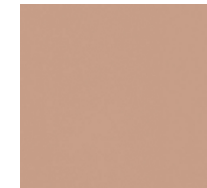
3.3 ARCHITECTURAL MATERIALS



FIBRE CEMENT PANEL (OFF-WHITE)



WOODTONE METAL PROFILE CLADDING (LIGHT)



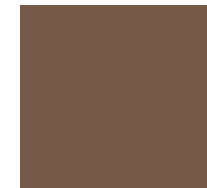
FIBRE CEMENT PANEL (LIGHT)



FIBRE CEMENT PANEL (LIGHT GREY)



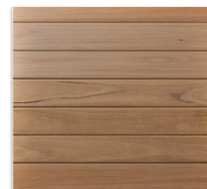
WOODTONE METAL PROFILE CLADDING (DARK)



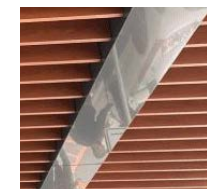
FIBRE CEMENT PANEL (DARK)



FIBRE CEMENT PANEL (GREY)



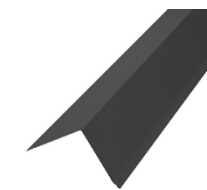
WOODTONE FIBRE CEMENT SIDING AND SOFFIT



OPEN JOINT SOFFIT (WOODTONE)
(BUILDING 1 - GROUND FLOOR CEILING)



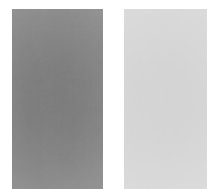
FIBRE CEMENT PANEL (DARK GREY)



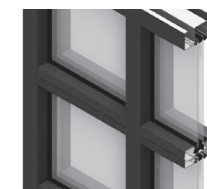
METAL FLASHING (DARK GREY)



VINYL WINDOW/DOOR - DARK GREY
FRAME CLEAR GLAZING



METAL DOOR (PAINT TO MATCH ADJACENT CLADDING)



GLASS & ALUMINUM GLAZING SYSTEM
- DARK GREY FRAME CLEAR GLAZING



3.4 CONCEPTUAL RENDERING







RENDERING IS AN ARTISTIC INTERPRETATION FOR ILLUSTRATIVE PURPOSES ONLY
VIEW FROM SITE ENTRY - SOUTH



RENDERING IS AN ARTISTIC INTERPRETATION FOR ILLUSTRATIVE PURPOSES ONLY
VIEW FROM ACADEMY WAY - NORTH



RENDERING IS AN ARTISTIC INTERPRETATION FOR ILLUSTRATIVE PURPOSES ONLY
VIEW FROM BUILDING 1 - NORTH



RENDERING IS AN ARTISTIC INTERPRETATION FOR ILLUSTRATIVE PURPOSES ONLY
AERIAL VIEW

4.0 DEVELOPMENT INFORMATION

4.1 PRELIMINARY DEVELOPMENT INFORMATION

CIVIC ADDRESS: 825 Academy Way
 LEGAL ADDRESS: Lot 2 Plan KAP86356
 CURRENT ZONING: VC1
 PROPOSED USE: Mixed Use - Student Residences / Retail
 ISSUED FOR: Development Permit



DEVELOPMENT INFORMATION

Number & Breakdown of Units:

Level	Building 1		Building 2		Building 3		Totals
	Micro Unit	3-Bedroom Unit	Micro Unit	3-Bedroom Unit	Micro Unit	3-Bedroom Unit	
1	+/- 0	+/- 0	+/- 23	+/- 0	+/- 24	+/- 0	
2	+/- 40	+/- 1	+/- 39	+/- 1	+/- 39	+/- 1	
3	+/- 40	+/- 1	+/- 39	+/- 1	+/- 39	+/- 1	
4	+/- 40	+/- 1	+/- 39	+/- 1	+/- 39	+/- 1	
5	+/- 40	+/- 1	+/- 0	+/- 0	+/- 0	+/- 0	
Micro Unit Total	+/- 160		+/- 140		+/- 141		+/- 441
3-Bedroom Unit Total		+/- 4		+/- 3		+/- 3	+/- 10
Building Unit Total	+/- 160	+/- 164	+/- 140	+/- 143	+/- 141	+/- 144	+/- 451
Micro Bed Total	+/- 160		+/- 140		+/- 141		+/- 441
3-Bedroom Bed Total		+/- 12		+/- 9		+/- 9	+/- 30
Bed Total	+/- 172		+/- 149		+/- 150		+/- 471

Floor Area:

Level	Units (ft2)	Amenity (ft2)	Commercial (ft2)	Circ/Service (ft2)	Gross (m2)	Gross (ft2)	Net (m2)*	Net (ft2)*
1	+/- 0	+/- 0	+/- 11,248	+/- 711	+/- 1,111	+/- 11,959	+/- 1,045	+/- 11,248
2	+/- 13,307	+/- 311	+/- 0	+/- 2,668	+/- 1,513	+/- 16,286	+/- 1,236	+/- 13,307
3	+/- 13,307	+/- 311	+/- 0	+/- 2,668	+/- 1,513	+/- 16,286	+/- 1,236	+/- 13,307
4	+/- 13,307	+/- 311	+/- 0	+/- 2,668	+/- 1,513	+/- 16,286	+/- 1,236	+/- 13,307
5	+/- 13,307	+/- 311	+/- 0	+/- 2,668	+/- 1,513	+/- 16,286	+/- 1,236	+/- 13,307
Subtotal	+/- 53,228	+/- 1,244	+/- 11,248	+/- 11,383	+/- 7,163	+/- 77,103	+/- 5,989	+/- 64,476

Building 2

Level	Units (ft2)	Amenity (ft2)	Commercial (ft2)	Circ/Service (ft2)	Gross (m2)	Gross (ft2)	Net (m2)*	Net (ft2)*
1	+/- 7,084	+/- 5,328	+/- 517	+/- 2,808	+/- 1,462	+/- 15,737	+/- 706	+/- 7,601
2	+/- 12,999	+/- 279	+/- 0	+/- 2,674	+/- 1,482	+/- 15,952	+/- 1,208	+/- 12,999
3	+/- 12,999	+/- 279	+/- 0	+/- 2,674	+/- 1,482	+/- 15,952	+/- 1,208	+/- 12,999
4	+/- 12,999	+/- 279	+/- 0	+/- 2,674	+/- 1,482	+/- 15,952	+/- 1,208	+/- 12,999
Subtotal	+/- 46,081	+/- 6,165	+/- 517	+/- 10,830	+/- 5,908	+/- 63,593	+/- 4,330	+/- 46,598

Building 3

Level	Units (ft2)	Amenity (ft2)	Commercial (ft2)	Circ/Service (ft2)	Gross (m2)	Gross (ft2)	Net (m2)*	Net (ft2)*
1	+/- 7,392	+/- 5,328	+/- 0	+/- 3,017	+/- 1,462	+/- 15,737	+/- 687	+/- 7,392
2	+/- 12,999	+/- 279	+/- 0	+/- 2,674	+/- 1,482	+/- 15,952	+/- 1,208	+/- 12,999
3	+/- 12,999	+/- 279	+/- 0	+/- 2,674	+/- 1,482	+/- 15,952	+/- 1,208	+/- 12,999
4	+/- 12,999	+/- 279	+/- 0	+/- 2,674	+/- 1,482	+/- 15,952	+/- 1,208	+/- 12,999
Subtotal	+/- 46,389	+/- 6,165	+/- 0	+/- 11,039	+/- 5,908	+/- 63,593	+/- 4,311	+/- 46,389
Total	+/- 145,698	+/- 13,574	+/- 11,765	+/- 33,252	+/- 18,979	+/- 204,289	+/- 14,630	+/- 157,463

Parkade

Level	Gross (m2)	Gross (ft2)
P1	+/- 5,907	+/- 63,585
Total (incl. Parkade)	+/- 24,886	+/- 267,874

* Net area as defined by the City of Kelowna Bylaw No. 12375

Setbacks

	Required			Proposed	
	(m)	(ft)		(m)	(ft)
Front (west)	3.0 m	9'-7"	+/-	23 m	+/- 75'-6"
Side (north)	3.0 m	9'-7"	+/-	9.0 m	+/- 29'-6"
Side (south)	3.0 m	9'-7"	+/-	6.0 m	+/- 19'-7"
Rear (east)	4.5 m	14'-9"	+/-	23.5 m	+/- 77'-0"

Building Height:	Maximum	Proposed
	18m	+/- 20.5m ¹

¹Variance Required. Highest point of sloping parapet for Building 1 (5 Storeys) is above adjacent grade by ± 2.5m above the bylaw height of 18m.

Floor Area Ratio:	Maximum	Proposed
	1.5*	+/- 0.81

*Based on City of Kelowna Land Use Bylaw No. 12375

Common & Private Amenity Space:

	CoK Rate /m ²	Required			Proposed	
		(m ²)	(ft ²)		(m ²)	(ft ²)
Bachelor Dwelling Unit	7.5	3,307.5	35,602	+/-	7,300	+/- 78,575.0
Per Unit > than 1-Bedroom	25	250.0	2,691			
Total Required		3,557.5	38,293			

Parking Stalls:

Use	CoK Rate	Required	Proposed
Residential	Micro ¹	0.9	+/- 397 +/- 170
	3-Bed Room ¹	1.4	+/- 14 +/- 170
Visitor ¹	0.14	+/- 64	+/- 23
Commercial ²	1.3 per 100m ²	+/- 15	+/- 15
Total		490	+/- 208

¹Variance Required. Proposed 0.35 stalls / bed per Bunt Parking Review study (Residential).

Proposed 0.05 stalls / unit per Bunt Parking Review study (Visitor).

²Commercial Parking Stall Count is in addition to the Visitor Parking Count per Bunt Parking Review study.

Bicycle Parking:

Long-Term	CoK Rate	Required	Proposed	
Apartment Housing	Micro	0.75	+/- 331 +/- 331	
	3-Bed Room	1	+/- 10 +/- 10	
Commercial	0.2	+/- 3	+/- 3	
Total		344	+/- 344	
Short-Term		CoK Rate	Required	Proposed
Apartment Housing	6	+/- 18	+/- 18	
Commercial	2	+/- 6	+/- 6	
Total		24	+/- 24	

Loading Spaces:

	CoK Rate	Required	Proposed
Commercial	1 per 1,900m ²	1	+/- 1

4.2 PARKING STUDY

TRANSPORTATION PLANNERS AND ENGINEERS



MEMO

DATE: June 4, 2024
PROJECT NO: 07-23-0005
PROJECT: 825 Academy Way
SUBJECT: Parking Study

TO: Ryan Cuddeford
Faction Projects Inc.

PREPARED BY: Erin Tattrie, RSE, ASCT
REVIEWED BY: Christephen Cheng, P.Eng.
APPROVED BY: Christephen Cheng, P.Eng.



1. INTRODUCTION

Watermark Group (Watermark) is proposing to develop the 825 Academy Way site into three purpose built student rental housing buildings with a central plaza. The buildings are intended to operate similarly to the VEDA Student Living Buildings, across the street from 825 Academy Way. The development is seeking a parking supply variance from the City of Kelowna's Zoning Bylaw requirements.

Bunt was retained to complete a parking study and provide input toward the parking variance. The focus of the study was to develop an understanding of the existing parking demand for similar buildings in order to assess what an adequate parking rate could be for the development. A component of the study was to assess the existing street parking supply on the development frontage to capture the full extent of the parking demand for the VEDA Buildings, including visitor parking demand.

This memorandum summarizes Bunt's findings from the parking study and is composed of the following sections:

- **Section 2:** Site Context
- **Section 3:** Data Collection
- **Section 4:** Parking Analysis
- **Section 5:** Parking Supply Rates For Other Affordable Rental Buildings
- **Section 6:** Recommendations

Bunt & Associates Engineering Ltd.
Suite 106, 460 Doyle Ave, Kelowna, BC V1Y 0C2 Tel 778 738 3940
Calgary Edmonton Kelowna Vancouver Victoria www.bunteng.com

TRANSPORTATION PLANNERS AND ENGINEERS

bunt & associates

2. SITE CONTEXT

The proposed development is in the Hill Top Village Center within the City of Kelowna's University Village Master Plan. **Exhibit 2.1** shows the proposed development site in the context of the local street network, including destinations within a 1,200m (15-min) walking distance of the site.

The site is bounded by the following major road connections:

- John Hindle Drive to the north;
- Sexsmith Road to the south;
- Highway 97 to the east; and,
- Glenmore Road N to the west.

2.1 Public Transit Network

There is a bus stop for the #4 Route by the southwest corner of the site. Additional buses are located within a 15-minute walk at the UBCO bus loop (#23, #97, #8, #6, #4, #90 & #13).

Exhibit 2.2 shows all of the transit amenities available within a 15-minute walk of the site.

2.2 Active Transportation Network

The University of British Columbia Okanagan (UBCO) is located within a 15-minute walk from the development site. The campus is well connected to the site by the John Hindle Drive pedestrian Overpass.

The development site has several bike lanes or shared-use pathways nearby along Academy Way, John Hindle Drive, and the Rail Trail.

Exhibit 2.3 shows the active transportation network available within a 15-minute walk of the site.

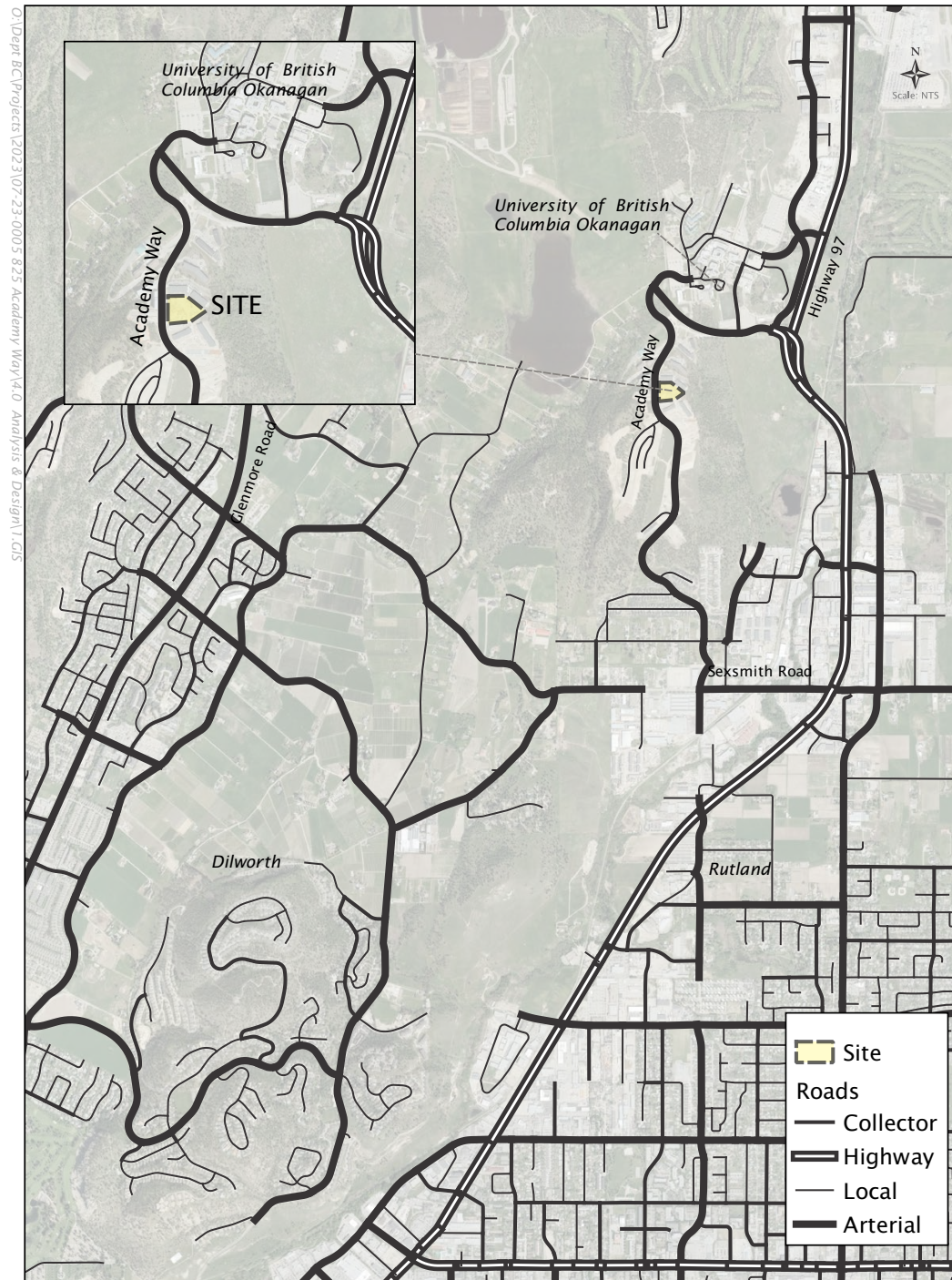


Exhibit 2.1
Site Location

07-23-0005 825 Academy Way
November 2023

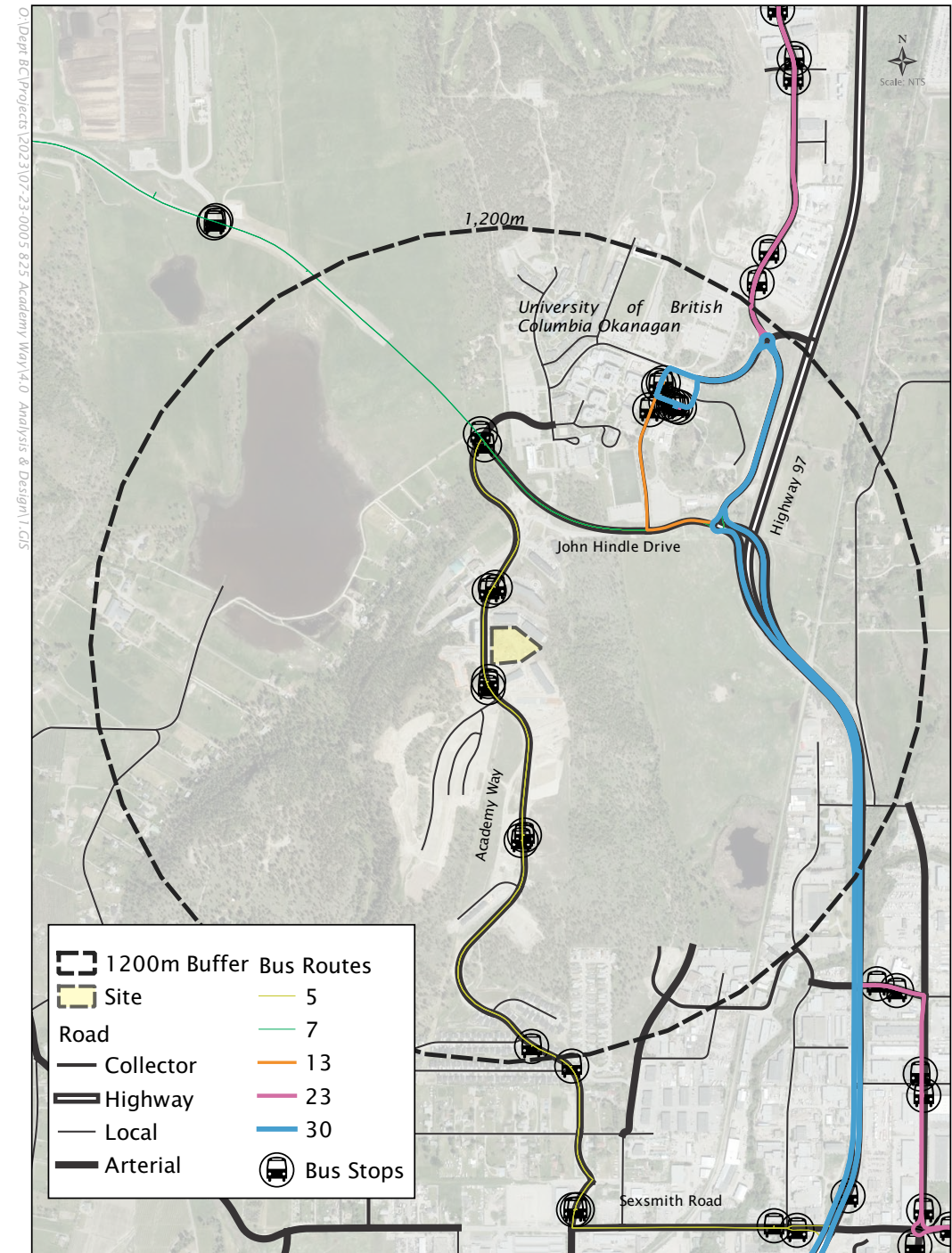


Exhibit 2.2
Transit Network

07-23-0005 825 Academy Way
November 2023



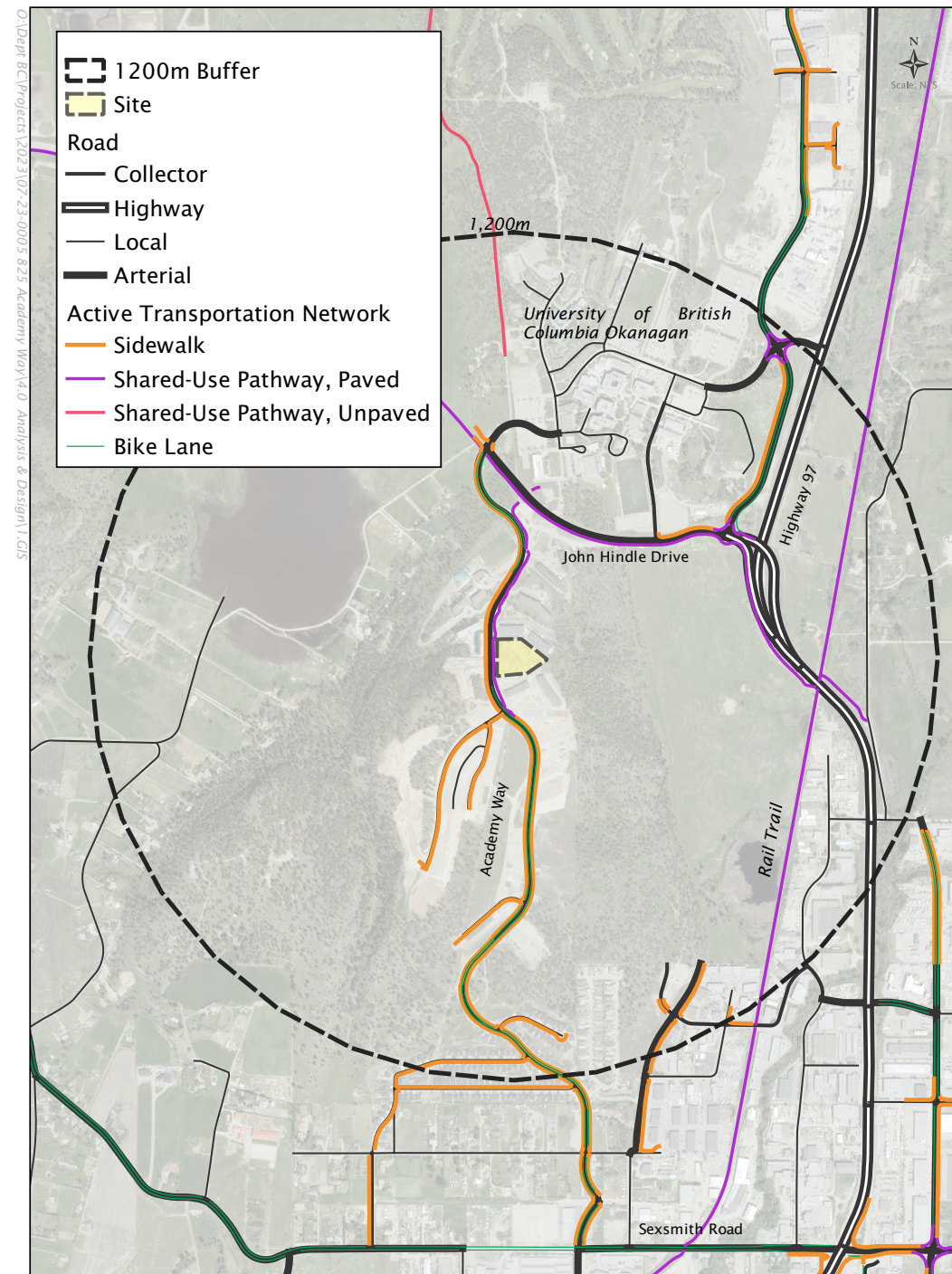


Exhibit 2.3
Active Transportation

07-23-0005 825 Academy Way
February 2024



3. DATA COLLECTION

3.1 Site selection & Parking Demand Surveys

3.1.1 Site Selection

Through discussions with Faction, the Veda Student Living Buildings located at 842, 840, 802, and 800 Academy Way were selected as Faction believes 825 Academy Way will function similarly to the buildings. Additionally, the Veda Buildings are located directly across the street from where the 825 development is occurring so the observed demand will be reflective of the neighbourhood and proximity to UBCO.

A second set of buildings was considered, the Ivy Homes buildings located at 755, and 805 Academy Way. These buildings are located in the same neighbourhood, but they are not student only rental buildings. The Ivy buildings represent typical residential rental buildings in the area. The Ivy Holmes buildings were not observed by Bunt. However, Mission Group did provide Bunt with their supply numbers, and number of occupied spots. Bunt was unable to attribute the data to a time of date but did calculate a peak demand rate per unit based on the numbers provided.

3.1.2 Demand Surveys

Parking demand surveys were conducted on September 22, 2023, at the VEDA Student Living Buildings from 6PM to 8PM, and at 11PM. The time frame was chosen as most residents are home in the late evening with visitor activity typically happening in the early evening. The observation period occurs outside of typical UBCO day section course hours (typically scheduled courses begin by 8AM and ending by 5PM) but within the UBCO evening section course hours (5PM -10PM). Evening section courses are assumed to be less frequent and less likely to have students parking along Academy Way and walking to campus. Any students that parked along Academy Way and walked to campus are assumed to have departed by 11PM.

Parking occupancy counts were conducted every 30 minutes. During the parking demand survey, the street parking in front of the buildings was generally captured through the overall number of parked vehicles on the street during the same observation period as the parking demand survey. However, the street parking data captured at the time did not capture if the parked vehicles were visitors of Veda, residents of Veda, residents of nearby buildings, visitors of other buildings or UBCO students parking for free and walking to campus.

To better capture the street parking, a street parking demand survey was conducted on October 24, 2023, from 6PM to 12AM. The on-street parking demand was captured in half-hour intervals using a partial license plate to track vehicles. For this study, Bunt has assumed all the long-term street parking vehicles are associated with the Veda buildings and all short-stay street parking vehicles are considered non-Veda residents. A long-term vehicle is a vehicle that is still parked on the street at

the end of the observation period. A short-stay vehicle is any vehicle that has departed before the final observation period.

Both parking surveys were undertaken during the fall, which is the peak season of the UBCO. The peak season means most of the students are still in the City and attending UBCO.

Table 3.1 summarizes the Veda and Ivy Building units and parking statistics.

Table 3.1: Veda and Ivy Building Unit and Parking Statistics

	VEDA BUILDINGS					IVY BUILDINGS		
	842 Academy Way	840 Academy Way	802 Academy Way	800 Academy Way	Overall	755 Academy Way	805 Academy Way	Overall
Number of Units	131	120	188	128	567	108	63	171
Red Zone, or Obstructed	2	3	2	3	10	-	-	-
Observed Parking Supply*	92	37	117	39	285	92	58	150
Visitor Parking Supply	9		10		19	15	4	19
Cost to Rent a Parking Space	\$260 / 4-month term (Equates to \$65 / month)					\$ 65 / month for underground & \$55 / month for surface parking		

Note(s): * The Veda parking supply reported is the net supply as our parking observations indicated some spaces had been obstructed or were considered red zone. Red Zone parking spaces are available to accommodate someone who finds someone else parked in their designated spot and the resident must report the unauthorized use of their stall.

Bunt notes the parking supply observed at the Veda Buildings included spaces designated as 'Red Zone' and spaces that were obstructed. 'Red Zone' spaces are to accommodate someone if they find an unauthorized user parked in their designated spot. For the purposes of this study Bunt removed the 'Red Zone' spaces and any obstructed spaces, thus creating an Observed Parking Supply (shown in Table 3.1).

4. PARKING ANALYSIS

Bunt used the data collected to understand the parking demand during the observed period and to establish observed parking rates. The observed parking data can be found in **Appendix A**.

4.1 Equivalent Site Parking Demand

4.1.1 Veda Buildings

Figures 4.1 and Figure 4.2 show the peak parking demand by building, as a group, and the visitor parking demand.

Figure 4.1: Veda Residential Parking Demand

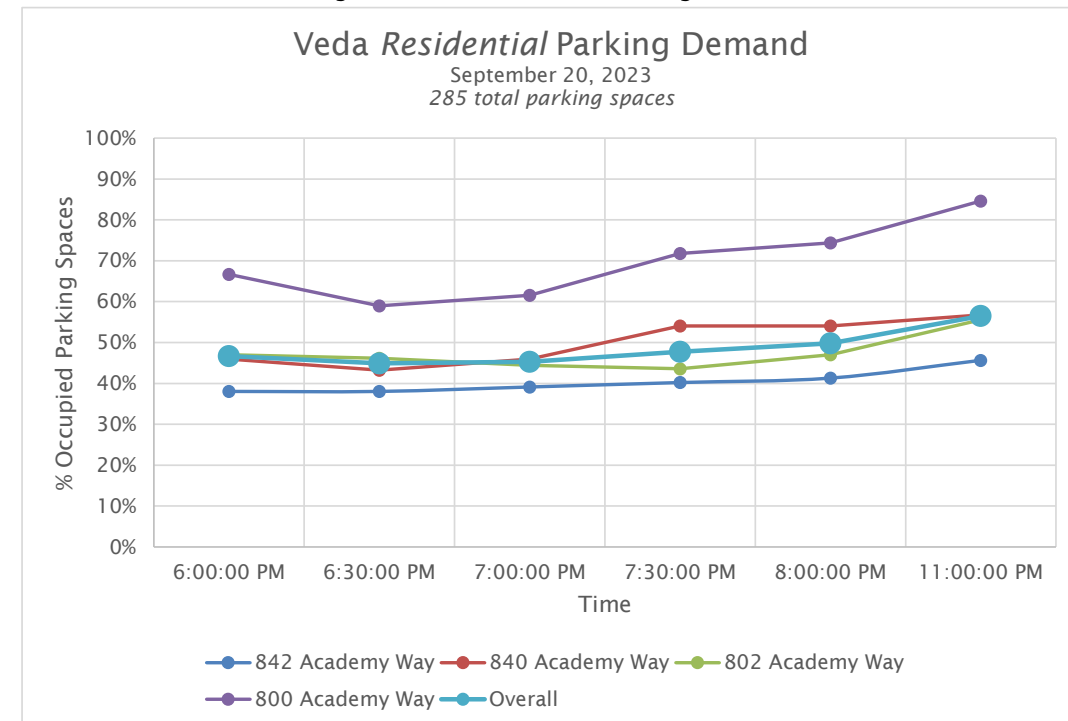
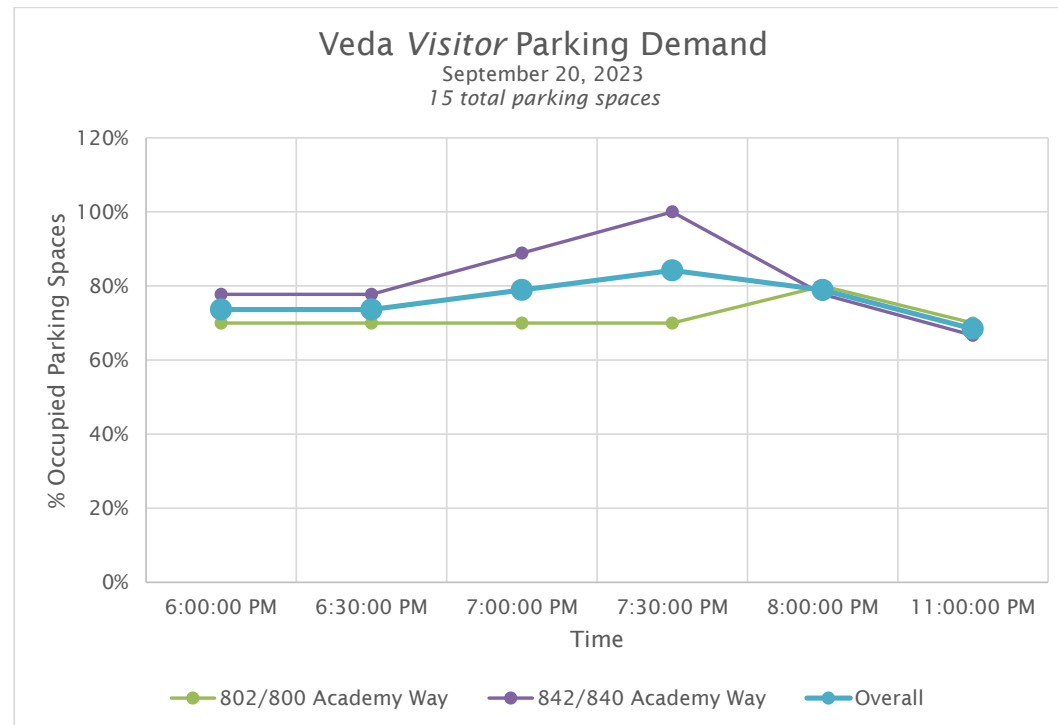


Figure 4.2: Veda Visitor Parking Demand



As shown in Figures 4.1 and 4.2, the peak residential parking demand occurs at 11PM and the peak visitor parking occurs at 7:30PM. The Veda Buildings peak parking demand ranged from 21 spaces occupied to 42 spaces occupied when looking at the buildings individually. When observing the buildings as a group the peak demand was 161 spaces.

Table 4.1 summarizes the parking demand and parking rates.

Table 4.1: Veda Residential Parking Demand

	VEDA BUILDINGS				Overall
	842 Academy Way	840 Academy Way	802 Academy Way	800 Academy Way	
Number of Units	131	120	188	128	567
Observed Parking Supply*	92	37	117	39	285
Peak Demand (11PM)	42	21	65	33	161
Peak Parking Utilization (%)	46%	57%	56%	85%	56%
Peak Demand per unit	0.32	0.18	0.35	0.26	0.28

Note(s): * The Veda parking supply reported is the net supply as our parking observations indicated some spaces had been replaced with storage lockers, were blocked, or were considered red zone. Red Zone parking spaces are available to accommodate someone who finds someone else parked in their designated spot and the resident must report the unauthorized use of their stall.

The peak residential demand translates to a parking rate range of approximately 0.2 to 0.35 per unit.

Table 4.2: Veda Visitor Parking Demand

	VEDA BUILDINGS				Overall
	842 Academy Way	840 Academy Way	802 Academy Way	800 Academy Way	
Number of Units	131	120	188	128	567
Visitor Parking Supply*	9	10	10	10	19
Peak Demand (7:30PM)	9	7	7	7	16
Peak Parking Utilization (%)	100%	70%	70%	70%	84%
Peak Demand per unit	0.04	0.03	0.03	0.03	0.03

The peak visitor demand ranged from 7 to 9 spaces occupied which translated to a visitor parking rate range of 0.03 to 0.04 per unit.

Additionally, Veda provided Bunt with information about the number of spots rented per month from September 2018 to August 2023 for the 802 Academy Way and 800 Academy Way buildings combined. Table 4.3 summarizes the average utilization of the parkade by month.

Table 4.3: 800 & 802Veda Average Monthly Parking Demand

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Number of Units	316											
Average Number of Spaces Rented	111	125	121	128	99	120	114	105	110	124	123	127
Average Utilization (%)*	68%	77%	75%	79%	61%	74%	70%	65%	67%	76%	76%	76%
Average Demand Rate (spaces rented per unit)	0.35	0.39	0.38	0.40	.031	0.38	0.36	0.33	0.35	0.39	0.39	0.40

Note(s): *The Utilization average is based on parkade occupancy % numbers Veda provided.

Based on the average demand from September 2018 to August 2023, a residential parking rate range of 0.31 to 0.40 was observed.

4.1.2 Ivy Homes

Mission Group provided Bunt with the number of units each building has, the parking supply and the number of occupied stalls. Mission group indicated their residential parking supply for the buildings is completely occupied. The information is summarized in Table 4.4.

Table 4.4: Ivy Holmes Parking Data

	RESIDENTIAL			VISITOR		
	755 Academy Way	805 Academy Way	Overall	755 Academy Way	805 Academy Way	Overall
Total Number of Units	108	63	171	108	63	171
Number of Units Occupied	104	62	166	104	62	166
Parking Supply*	92	58	150	15	4	19
Peak Demand	92	58	150	15	4	19
Peak Parking Utilization (%)	100%	100%	100%	100%	100%	100%
Peak Demand per unit	0.88	0.94	0.90	0.14	0.07	0.11

4.2 Street Parking

The street parking area observed is shown in Figure 4.1.

Figure 4.1: Street Parking Observed



The data collection observed indicates an estimated parking supply range of 35-36 vehicles. The number of spaces available is dependent on the size of vehicles, the parking habits of drivers, and whether the space used is legal or not. For the purposes of this study Bunt has assumed an average vehicle length of 6m to be conservative. Table 4.5 summarizes the street parking observations.

For the October data collection, Bunt tracked vehicle arrivals and departures using a partial license plate. Bunt acknowledges the street parking may be attributed to multi-family buildings nearby on Academy Way..

Table 4.5: Academy Way Street Parking Data

	ACADEMY WAY	
	September Observation	October Observation
Estimated Street Parking Supply Available	36	35
Peak ½ Hour	6PM & 7:30PM	10PM & 11:30PM
Peak Residential Demand	31	33
Residential Utilization (%)	86%	95%

Bunt’s observations of the Academy Way Street indicate the street parking is well utilized but it appears that street parking utilization is more a matter of convenience vs available off-street supply.

Table 4.6 summarizes the overall observed parking demand.

Table 4.6: Overall Observed Parking Demand

	VEDA BUILDINGS				STREET PARKING	OVERALL
	842 Academy Way	840 Academy Way	802 Academy Way	800 Academy Way		
Number of Units	131	120	188	128	-	567
Observed Parking Supply*	92		37		35	194
Peak Demand (11PM)	42		21		32	95
Peak Parking Utilization (%)	46%		57%		92%	49%
Peak Demand per unit	0.32		0.18		-	0.34
Visitor Parking Supply*	9		10		35	54
Peak Demand (7:30PM)	9		7		-	23
Peak Parking Utilization (%)	100%		70%		-	43%
Peak Demand per unit	0.04		0.03		-	0.04

Based on the above analysis, if people are unable to park on the street then a parking supply rate of 0.35 per unit for residents would be appropriate.

4.3 Results

Bunt’s observations of the Academy Way Street indicate the street parking is well utilized but it appears that street parking utilization is more a matter of convenience vs available off-street

supply. If in the future there is a desire to increase turnover, applying controls could be employed as a deterrent for long-term street parking use. Based on the proposed on-site parking layout for 825 Academy Way, it is anticipated that the project will not require street parking to meet its parking demand.

Based on the observed parking demand rates, average monthly demand rates, and street parking demand, a residential parking supply ratio no lower than 0.40 per unit (0.35 per unit for residents + 0.05 per unit for visitors)

Faction, informed Bunt that the Veda buildings are primarily micro-suites. Therefore, for the purposes of this study and the above per unit parking rates provided will be interpreted as a per bed rate.

4.4 Additional Considerations

Street parking could be managed through the establishment of street parking restrictions with City enforcement such as time-restricted parking, or parking for residents with permit only or making the street parking pay parking.

5. PARKING SUPPLY RATES FOR OTHER AFFORDABLE RENTAL BUILDINGS

Faction previously developed another affordable rental housing project that are catered to post secondary students in Prince George, BC. The project was approved with a parking supply of 78 spaces with 205 units. The equivalent parking supply ratio was 0.38 spaces per unit.

In developing the proposed parking rate for the site at Prince George, Bunt obtained information from 11 affordable rental housing sites through the Greater Victoria Housing Society and the Capital Region Housing Corporation. The sites are summarized in **Table 5.1** below.

Table 5.1: Vehicle Ownership Rates for Affordable Buildings

COMPLEX NAME	LOCATION	SUBSIDIZED	NUMBER OF UNITS	PARKING SPACES OCCUPIED BY TENANT	PARKING DEMAND RATE
Colwood Lodge	85 Belmont Road	YES	50	24	0.48
Constance Court	1325 Esquimalt Road	YES	52	18	0.35
Grafton Lodge	506 Crofton Street	YES	29	17	0.59
Townley Lodge	1780 Townley Street	NO	39	13	0.33
Esquimalt Lions Lodge	874 Fleming Street	NO	77	21	0.27
Amberlea	3330 Glasgow Avenue	YES	44	22	0.50
The Birches	1466 Hillside Avenue	YES	49	8	0.16
Leblond Place	390 Waterfront Crescent	YES	53	23	0.43
Rosewood	1827 McKenzie Avenue	YES	44	15	0.34
Springtide	270 Russell Street	YES	48	19	0.40
The Heathers	3169 Tillicum Road	YES	26	11	0.42
Weighted Average					0.37

Note(s): Since this project was approved some of the above sites may have been redeveloped or be in the process of redevelopment.

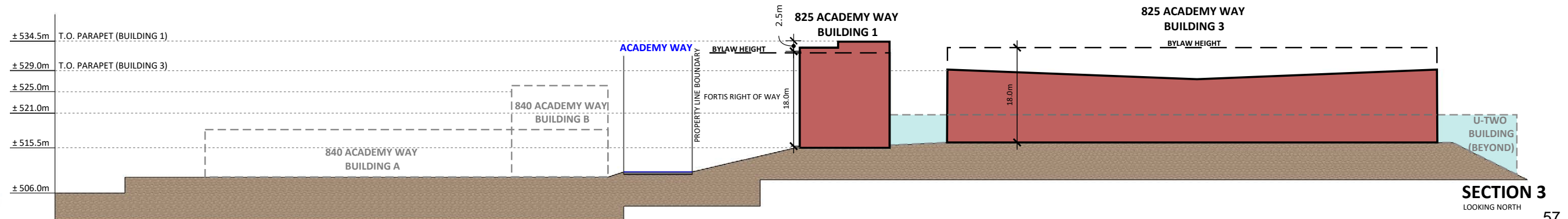
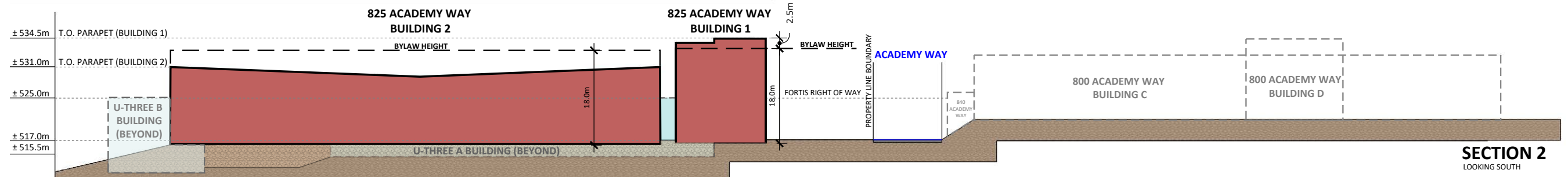
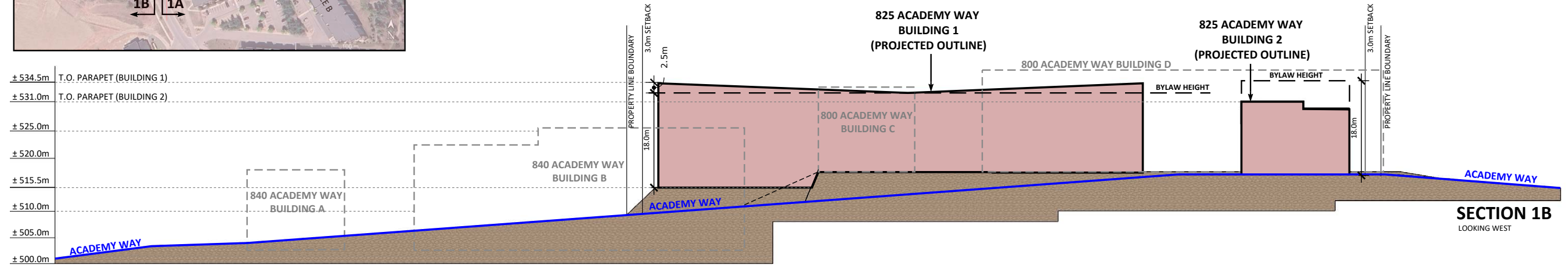
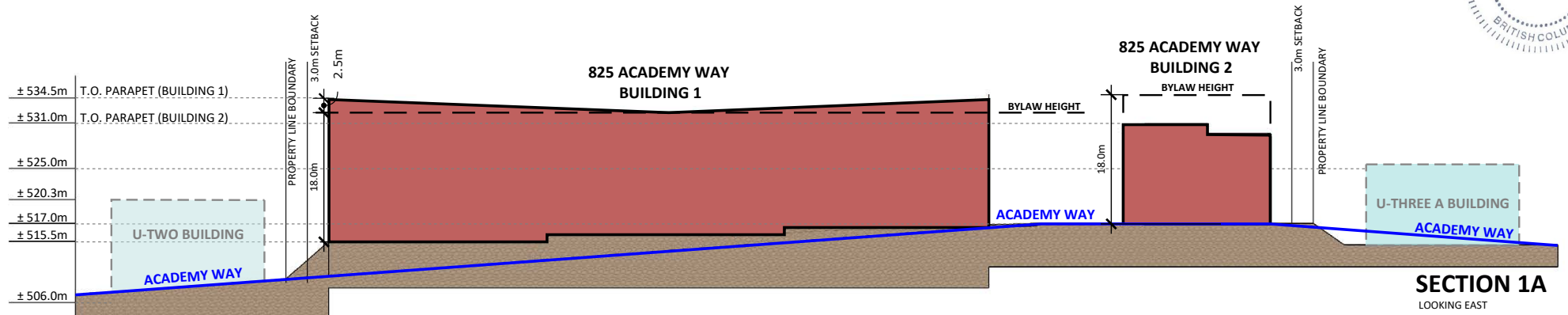
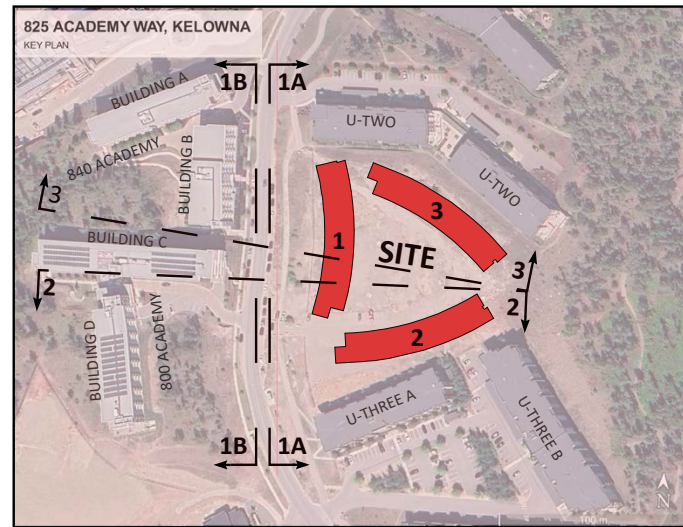
While these sites are mainly catered for seniors and people with accessible needs, the City of Prince George did consider them to be appropriate proxies to support the proposed parking rates for the Prince George development.

6. RECOMMENDATIONS

Bunt recommends a parking rate of no less than 0.4 per bed (0.35 per bed for residents + 0.05 per bed for visitors).

cc:

4.3 CONTEXTUAL BUILDING HEIGHTS STUDY



5.0 APPENDICES

A - GEOTECHNICAL REPORT



Watermark Developments Ltd.
101-1865 Dilworth Drive,
Kelowna, BC V1Y 9T1

Attention: Christian Holzhey

**Re: Preliminary Geotechnical Investigation Report – Proposed Residential Development
825 Academy Way, Kelowna, BC**

geopacific.ca
1340 St. Paul Street
Kelowna, BC V1Y 2E1

June 14th, 2022
File #: 21401

1.0 INTRODUCTION

As requested, GeoPacific Consultants Ltd. (GeoPacific) has carried out a geotechnical investigation for the proposed residential development at the above noted location. At time of this report architectural drawings were not provided and we understand that the project is in its conceptual design stage. We anticipate that the proposed development will consist of multi-family apartment buildings with 4 to 6 storeys of wood frame construction with 1 level of underground parking.

This report presents the results of our field investigation and provides preliminary geotechnical recommendations for the design and construction of the proposed development. This report has been prepared exclusively for Watermark Developments Ltd. for their use, and for the use of others within their design and construction team. We assume that the City of Kelowna would rely on the report during their development review process.

2.0 SITE DESCRIPTION

The site is located near the University of British Columbia- Okanagan campus, which is in the north end of Kelowna, BC. The site is bounded by Academy Way to the west, residential developments to the north, south, and northeast, and forested undeveloped parcels to the east. The site is presently unimproved and surfaced with sand and gravel for use of parking. The site has an average geodetic elevation of 514.0 m according to the Regional District of Central Okanagan Geographic Information System mapping tool.

The site is relatively flat with a gradual slope downwards to the north. Small slopes exist along the north and south property line as part of the placement of the engineered fill. Along the eastern corner of the property, a significant slope of approximately 1.9(H):1(V) to 2.2(H):1(V) exists which continues down into the neighbouring lot. Bedrock outcrops are noted along this eastern facing slope and is surfaced with small shrubs and trees throughout.

The site dimensions are approximately 130 m north-south and 150 m east-west. The location of the site and surrounding lands are shown on the attached Drawing 21401-01.

3.0 SITE INVESTIGATION

The proposed development site was investigated by GeoPacific on June 10th, 2022. At that time, a total of six solid stem auger test holes were advanced up to a maximum depth of 1.5 m below the existing site grades where bedrock refusal was encountered. The test holes were drilled using a track mounted rig supplied and operated by On Track Drilling of Langley, BC. Six Dynamic Cone Penetration Tests (DCPT),

which provide an indication of the in-situ density of the strata, were conducted. One DCPT was conducted at each test hole location.

The DCPT is comprised of a 55 mm blunt nosed cone that is driven into the soil with a 63.5 kg drop hammer from a controlled height of 760 mm and yields results similar to the Standard Penetration Test

Prior to our investigation, a BC One Call was placed, and a subcontracted utility locate technician from 4Life Utility Locates scanned the test hole locations to clear them of any buried services or infrastructure. All test holes were backfilled and sealed in accordance with provincial regulations once the investigation was complete.

The test hole log is shown in Appendix A, and the approximate location of the test holes are shown on our drawing 21401-01 following the text of this report.

4.0 SOIL AND GROUNDWATER CONDITIONS

4.1 Soil Conditions

The general surficial geology of the region under investigation, according to the Surficial Geology Map from the Government of Canada, consists of a till veneer with bedrock outcrops.

Generally, the existing soil profile at the site consists of approximately 0.2 to 1.4 meters of compact sand and gravel fill with some silt, overlying a dense, glacial till consisting of silty sand and gravel over bedrock.

The sand and gravel fill is characterized as containing fine to medium grained sand and being brown-grey and slightly moist. The sand and gravel fill is more silty and loose to compact throughout the first 0.9 m of the east end of the site, with DCPT below counts of approximately 8-12 blows per 0.3m of penetration. The sand and gravel fill is generally compact to dense throughout the rest of the depth of the east end of the site and the throughout the remainder of the site, as it is less silty, with DCPT blow counts of between 16 to 75 blows per 0.3 m of penetration.

The glacial till is characterized as containing fine to medium grained sand and being slightly moist. The glacial till is very dense, causing refusal on the DCPT soundings and augers at depths ranging between 1.0 to 1.7 m below existing grades. Throughout the test holes, the colour of the till-like silty sand and gravel was observed to be rust-brown to grey-brown.

Based on drilling performed, bedrock is anticipated underlying the dense glacial till. Bedrock outcrops were noted along the eastern property line.

For a more detailed description of the subsurface conditions including DCPT counts refer to the test hole logs in Appendix A.

4.2 Groundwater Conditions

The static groundwater table was not encountered during our investigation and is likely well below the proposed development grades. Although not encountered during our investigation, perched groundwater may form during wetter periods within any permeable soils overlying siltier deposits.

5.0 DISCUSSION

5.1 General Comments

As indicated above, it is anticipated that the proposed residential development will consist of multi-family apartment buildings with 4 to 6 storeys constructed at grade and 1 level of underground parking. The average net ground stress for the development described are anticipated to be in the range of about 25 to 35 kPa.

Based upon our test holes and the anticipated footing depth it is expected that the buildings would be supported by conventional pad and strip footings placed on the dense to very dense glacial till, or sound bedrock.

The soils on-site are not considered liquefiable when subjected to the 2018 British Columbia Building Code (BCBC) design earthquake.

From a geotechnical perspective, the site is considered suitable for development provided the recommendations noted in Section 6.0 are implemented.

5.2 Slope Stability

Along the eastern corner of the site, the existing slopes vary between approximately 1.9(H):1(V) to 2.2(H):1(V) which continues down into the neighbouring lot, based on the City of Kelowna GIS service. We have completed a preliminary slope stability assessment in accordance with the BC Building Code (BCBC) 2018 and City of Kelowna requirements. The BCBC 2018 requires slopes to be analyzed under a design earthquake equivalent to a 2 percent in 50 year probability of exceedance. The City of Kelowna has also adopted a level of safety for the probability of a landslide occurrence of less than 2% in 50 years (ie:1:2,475 years). These requirements were addressed using the "Guidelines for Legislated Landslide Assessments for Proposed Residential Developments in BC" (Revised May 2010).

The results of our slope stability analyses indicate acceptable factors of safety in accordance with 2018 BCBC and City of Kelowna requirements, based on grading that was assumed to approximately follow the existing site grades including the observed bedrock outcrops. Final development and grading plans must be provided for our review and comment to advise if a slope setback, slope armoring, or other form of reinforcement of the existing slopes is required. From a preliminary design perspective we recommend that a minimum offset of the greater of 3 m offset from the crest of the slope or 2H:1V projection from the toe of the slope is considered for buildings.

6.0 DESIGN RECOMMENDATIONS

6.1 Site Preparation for Buildings

Prior to construction of foundations or floor slabs all asphalt, organic material, fills, debris, and loose or otherwise disturbed soils must be removed from the construction areas to expose a subgrade of compact to dense sand and gravel fill, very dense silty sand glacial till or sound bedrock. It is anticipated that stripping depths will be governed by the footing burial depth required for frost protection.

Any grade reinstatement beneath floor slabs or footings must be completed using engineered fill. In the context of this report "engineered fill" is defined as clean sand to sand and gravel fill, compacted in 300

mm loose lifts to a minimum standard of 95% of its Modified Proctor Maximum Dry Density (ASTM D1557) while at a moisture content that is within 2% of its optimum for compaction.

The geotechnical engineer shall be contacted for the review of stripping and engineered fill placement and compaction.

6.2 Spread Foundations

Foundations constructed on the compact to dense till can be designed for a SLS bearing pressure of 300 kPa and factored ULS bearing pressure of 500 kPa. Conventional foundation elements constructed on sound bedrock may be designed with an SLS bearing pressure of 800 kPa and a factored ULS of 1.5 mpa. If the footings are placed on engineered fill then SLS and ULS bearing pressure of 120 kPa and 180 kPa should be used.

Post construction settlement should be less than 25 mm and differential settlements should be less than 1:500 at the recommended bearing pressures.

Footings should not be less than 450 and 600 mm in width for strip footings and pads, respectively. The exterior foundations should be buried at least 600 mm below finish grades for frost protection. Footings placed in interior heated areas can be buried only nominally.

All foundation subgrades must be reviewed by the geotechnical engineer.

6.3 Slab-On-Grade Floors

In order to provide suitable support for slab-on-grade floors we recommend that any fill placed under the slab should be granular and essentially "clean" with not more than 5% passing the #200 sieve. In addition, this granular fill must be compacted to the minimum requirements outlined in section 6.1.

Floor slabs should be underlain by a minimum of 150 mm of 19 mm clear crushed gravel. A moisture barrier should underlie the slab directly above the free draining granular material.

Compaction of the slab-on-grade fill must be reviewed by the geotechnical engineer.

6.4 Foundation Drainage Systems

A perimeter drain system should be provided for all below grade interior spaces (parkades, basement, crawl spaces, etc) in accordance with the 2018 BC Building Code. It is recommended that any drain tile be covered with 150 mm of drain rock. The drain tile should be wrapped in filter cloth to prevent migration of fines and resulting impedance of drainage. The drains should discharge to the City storm system.

Areas with no below grade building spaces and with a top of slab elevation 150 mm above surrounding finish grades do not require a perimeter drainage system. Exterior finished grades should be sloped away from the building at a minimum of 2%.

6.5 Radon

We recommend that site preparation for the floor slabs include a rough-in for a subfloor depressurization system to protect from soil gas ingress (radon) unless the associated testing is provided and indicates a radon

abatement system is not required. Should radon testing not be completed or an abatement system is required, the abatement system is described in detail in Section 9.13.4. of the 2018 BCBC. Accordingly, the 150 mm thick layer of underslab fill required per Section 6.3 of this report can be utilized as part of the abatement system and access through the slab should be provided to allow for depressurization for all contiguous areas. A vapour barrier should be placed between the granular fill and the concrete slab to inhibit the migration of moisture and gas through the slab.

6.6 Seismic Design of Foundations

The site is considered at depth to be generally underlain by bedrock which can be considered as Site Class B, in accordance with Table 4.1.8.4.A. of the 2018 British Columbia Building Code (BCBC). Peak ground accelerations on firm ground for the approximate site location is 0.064g (National Resource Canada, Site Coordinates: 49.93315°N 119.40033°W).

6.7 Temporary Excavations

Based on the anticipated at grade construction, it is expected that any excavations for stripping, footing placement, or utility installation works could be achieved with the use of cut slopes made in the compact to dense sand and gravel fill. Cut slopes in the sand and gravel should not exceed a grade of 1H:1V and may require reduction should groundwater or clean rounded or loose soils be encountered. All temporary cut slopes should be covered in poly sheeting to prevent erosion and soil movement. It is expected that any water that accumulates in the excavation can be removed by sump and pump.

Excavations greater than 1.2m in depth must be reviewed by a professional geotechnical engineer prior to worker entry in accordance with WorkSafe BC requirements.

6.8 Earth Pressure on Foundation Walls

Foundation walls constructed below-grade will be subject to both static and seismic earth pressures. We anticipate that foundation walls will be comparatively rigid and backfilled with compacted sand. Earth pressures are significantly lower where a normal active pressure distribution can be achieved compared with an at rest condition or a full compaction pressure condition. Assuming a partially sloped excavation backfilled with lightly tamped sand we would expect an earth pressure approximately equivalent to a full active condition and recommend the following earth pressures be used:

- Static: 5.0H kPa triangular soil pressure where H is the total height of the wall in metres.
- Seismic: 0.5H kPa inverted triangular soil pressure where H is the total height of the wall in metres. Seismic loads should be added to the static loads.

Any additional surcharge loads located near the foundation walls should be added to the earth pressures given. The provided loads are calculated based on unfactored soil parameters. Therefore, the loads should be assumed to be unfactored as well.

The geotechnical engineer should be contacted for the review of all backfill materials and procedures.

6.9 New Onsite Roads and Parking

Following the recommended site preparation, it is our opinion that the minimum asphalt pavement structure, provided in Table 1 below. The design should be based on a subgrade CBR value between 5 and 10. Therefore, the pavement structure should be as follows:

Material	Thickness (mm)	CBR
Asphaltic Concrete	75	N/A
19 mm minus crushed gravel base course	100	80
75 mm minus, well graded, clean, sand and gravel subbase course	200	20

Asphalt thickness may be decreased to 65 mm in parking areas to be occupied by automobiles and light trucks only.

Additionally, off-site roads should be designed following the thicknesses outlined in the City of West Kelowna's Standard Pavement Structures guideline, based on a subgrade CBR value of between 5 and 10. The design should be completed to the designated road classification, as determined by the City or Civil Consultant.

The sub-base and base course materials shall be compacted to 95% Modified Proctor Dry Density (MPDD) as determined by ASTM D1557. Compaction should occur with moisture content within 2% of optimum. Density testing should be conducted on the base and sub-base materials to confirm that they have been compacted to the required standard.

Pavement structure fill materials and compaction should be reviewed by the geotechnical engineer.

7.0 FIELD REVIEWS

As required by the 2018 BC Building Code "Letters of Assurance", GeoPacific Consultants Ltd. will carry out sufficient field reviews during construction to ensure that the geotechnical design recommendations contained within this report have been adequately communicated to the design team and to the contractors implementing the design. These field reviews are not carried out for the benefit of the contractors and therefore do not in any way effect the contractor's obligations to perform under the terms of his/her contract.

It is the contractors' responsibility to advise GeoPacific Consultants Ltd. (a minimum of 48 hours in advance) that a field review is required. Field reviews are normally required at the time of the following activities:

- 1. Stripping – Review of stripping depth and subgrade
- 2. Subgrade – Review of subgrade soils prior to foundation construction
- 3. Excavation – Review of slope cuts and excavations greater than 1.2 m deep requiring worker entry
- 4. Slab-on-Grade – Review of slab-on-grade subgrade and fill material

5. Engineered Fill – Review of fill material and compaction

It is critical that these reviews are carried out to ensure that our intentions have been adequately communicated. It is also critical that contractors working on the site view this report in advance of any work being carried out so that they become familiarized with the sensitive aspects of the works proposed. It is the responsibility of the developer and/or contractor to notify GeoPacific when conditions that differ from those described in this report are encountered.

8.0 CLOSURE

This report has been prepared exclusively for Watermark Developments Ltd, for the purpose of providing preliminary geotechnical recommendations for the design and construction of the proposed development. The report remains the property of GeoPacific Consultants Ltd. and unauthorized use of, or duplication of, this report is prohibited.


We are pleased to be of assistance to you on this project and we trust that our recommendations are both helpful and sufficient for your current purposes. If you would like further details or require clarification of the above, please do not hesitate to contact the undersigned.

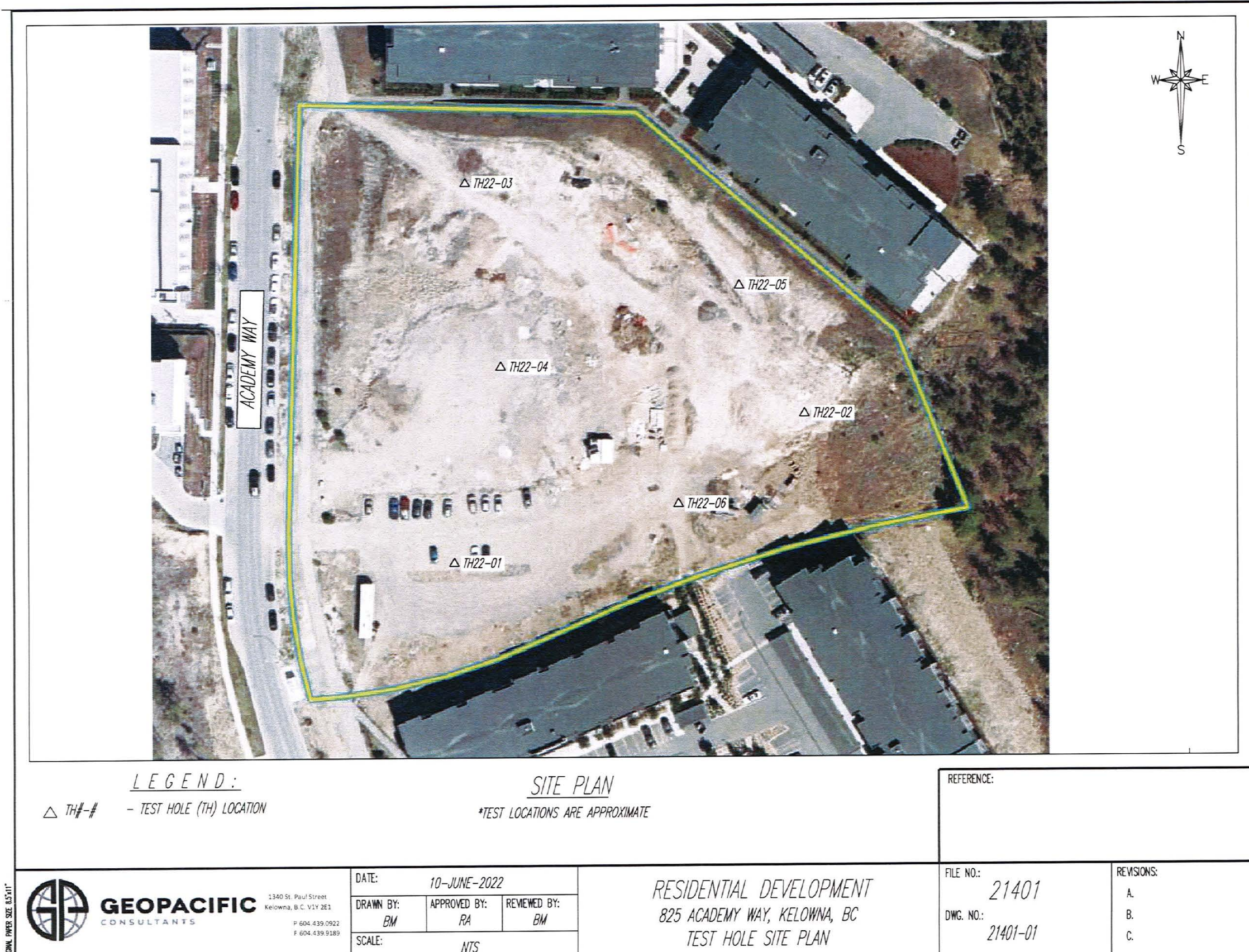
Sincerely,
GeoPacific Consultants Ltd.



Beth Millan, B.A.Sc., EIT
Engineer In Training

Reviewed by:
JUN 24 2022
Permit to Practice EGBC
1000782
Roberto Ayendano, B.Eng., P.Eng.,
Principal





APPENDIX A – TEST HOLE LOGS

