CONTENTS

RODGERS CREEK AREA 6 - LOT 3

Road ‘G’, West Vancouver - Re-Submission DRC - January 10, 2019

SAUNDERS ARCHITECTURE

RWA ARCHITECTURE

DESIGN REVIEW COMMITTEE RECOMMENDATIONS

This application was presented to the Corportation of the District of West Vancouver's Design Review Committee on Nov. 1, 2018.

The Committee recommends the following revisions to the application before proceeding to Council:

1. *Consider a dedicated accessible pedestrian only path to the main entrance to the buildings.*
2. *Further develop storm water management to potentially include additional storage of water to be used for alternative purposes if necessary such as irrigation support, fire suppression and water features.*
3. *Encourage the planting of street trees consistent with the subdivision plans.*
4. *Further design development to explore ways to reduce the apparent length of the six-storey residential building.*
5. *Request staff to consider the long-term management and operation of the amenity building with a view to ensuring that community access continues in the long term.*

These recommendations have been integrated into the architectural and landscape design.

DESIGN RESPONSE

1. **Recommendation:**

   Consider a dedicated accessible pedestrian only path to the main entrance to the buildings.

   Response:

   A pedestrian only, accessible pathway connects the main building entrance with the front sidewalk on Road G. The pathway is integrated into an outdoor amenity area including planting and seating.

illustrating the location and integration of the accessible pathway into the overall landscape plan

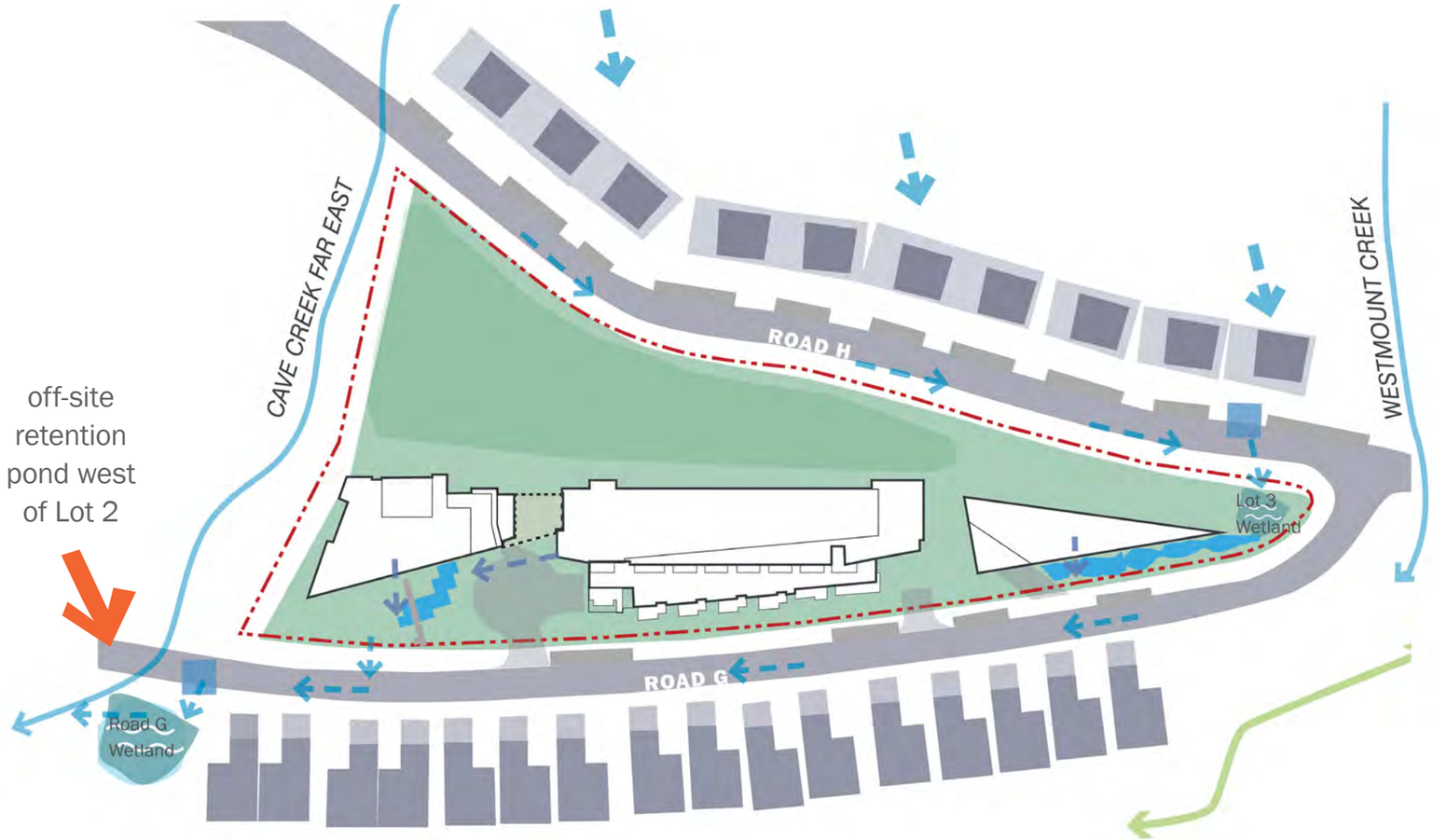
2. **Recommendation:**

Further develop storm water management to potentially include additional storage of water to be used for alternative purposes if necessary such as irrigation support, fire suppression and water features

Response:

The stormwater plan conforms to a larger “ecosystem of parts” in Area 6 that was approved in the Area DP. Retention of stormwater that does not percolate into the ground water via the bioswales at the front of lot 3, is handled by an off-site retention pond west of Lot 2.

BPP's experience indicates stratas choose to not operate on-site retention tanks. The landscape design includes temporary irrigation to support plant growth over the next 1-5 years which will prevent invasion of undersirable species. Once planting has been established, irrigation will no longer be necessary. Stormwater retention for firefighting was determined to be ineffective.



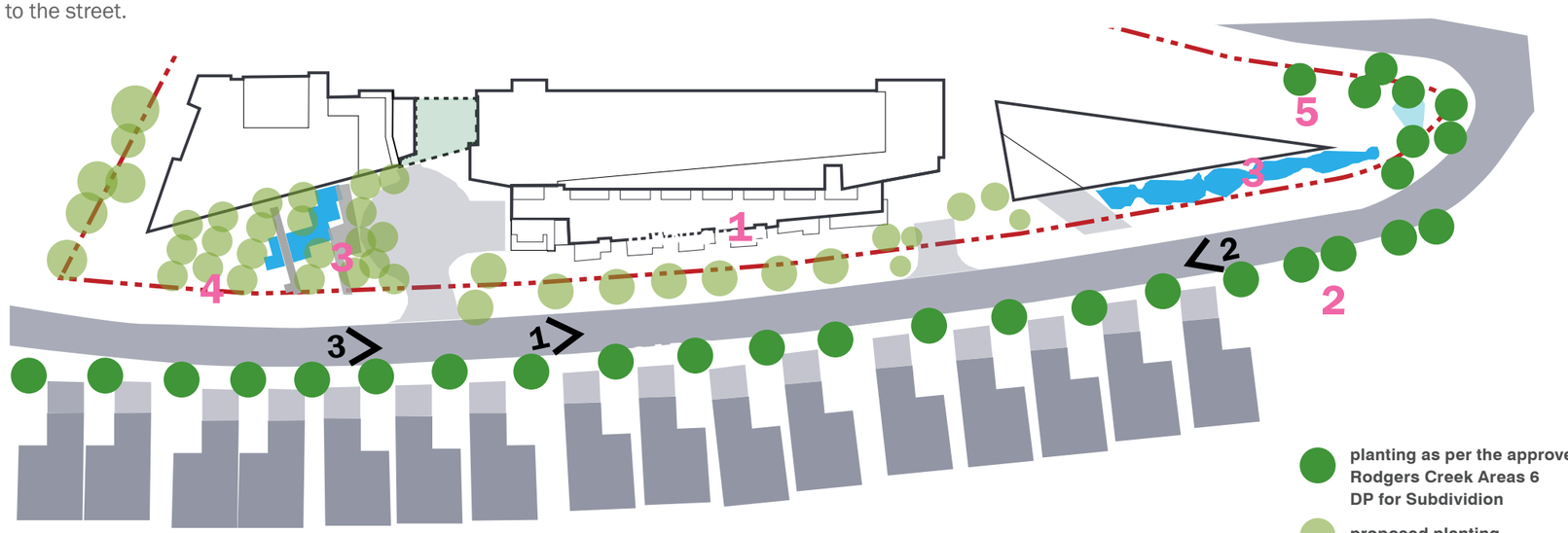
stormwater concept plan

3. **Recommendation:**

Encourage the planting of street trees consistent with the subdivision plans.

Response:

The Planting Plan within the approved Rodgers Creek Area 6 Submission DP (April 13, 2017) included street trees on the south side of Road G and bio-swales on the north side. This proposal has added a "row" of trees in the front yards of townhouses (1 below), continuing the residential pattern across Road G (2 below), without interfering with the stormwater function of the bioswales (3 below). A generous tree bosc is planning for the southwest area of the site (4 below) and a stand a trees in on the eastern edge (5 below) contributing to the developing "green" character of Road G. Please refer to Landscape Plan on the following page for a detailed description of landscaping adjacent to the street.



illustrating tree and bio-swale/stormwater location

views of trees framing Road G

FORMA DESIGN INC.
www.formadesign.ca

209-828 Harbourside Dr.
North Vancouver
British Columbia
Canada V7P 3R9
tel 604-986-9193
fax 604-986-7320

Revisions:

1. Issued for DRC, October 25, 2108
2. Issued for DP, December 19, 2108

Consultants:

RAMSAY WORDEN ARCHITECTS
355 Kingsway
Vancouver, B.C.
Canada, V5T 3J7
T: 604.736.8959
F: 604.736.89989
E: info@rwa.ca

BRITISH PACIFIC PROPERTIES

Project:

Area 6 Lot 3.
West Vancouver, BC

Title:

Planting Plan

Detailed Landcape Plan

DRC RECOMMENDATIONS AND DESIGN RESPONSES

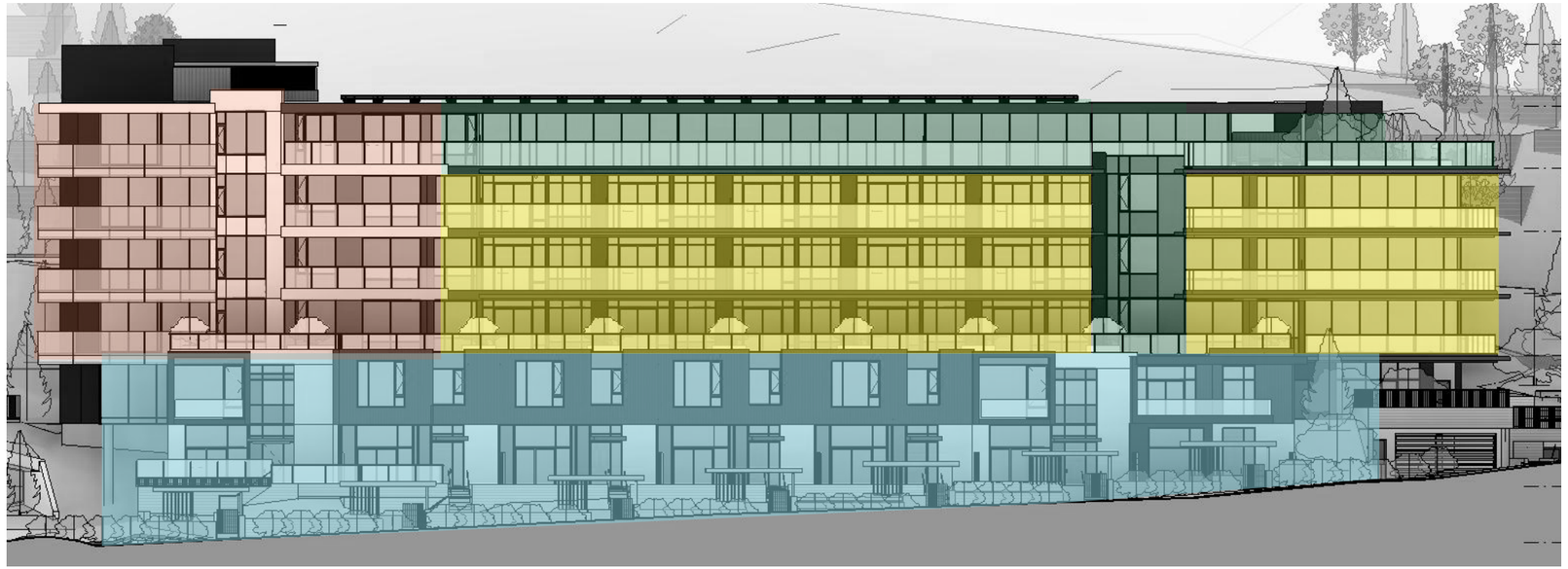
4. **Recommendation:**

Further design development to explore ways to reduce the apparent length of the six-storey residential building.

Response:

The 6 storey building has been revised to reduce the building's visual length including contrasting balcony treatments, contrasting areas with and without balconies, integrating planters into the balconies/terraces and vertical steps in the overall form. Refer to the diagrams below identifying the modulation of the north and south elevations.

north elevation



south elevation

5. **Recommendation:**

   Request staff to consider the long-term management and operation of the amenity building with a view to ensuring that community access continues in the long term.

   Response:

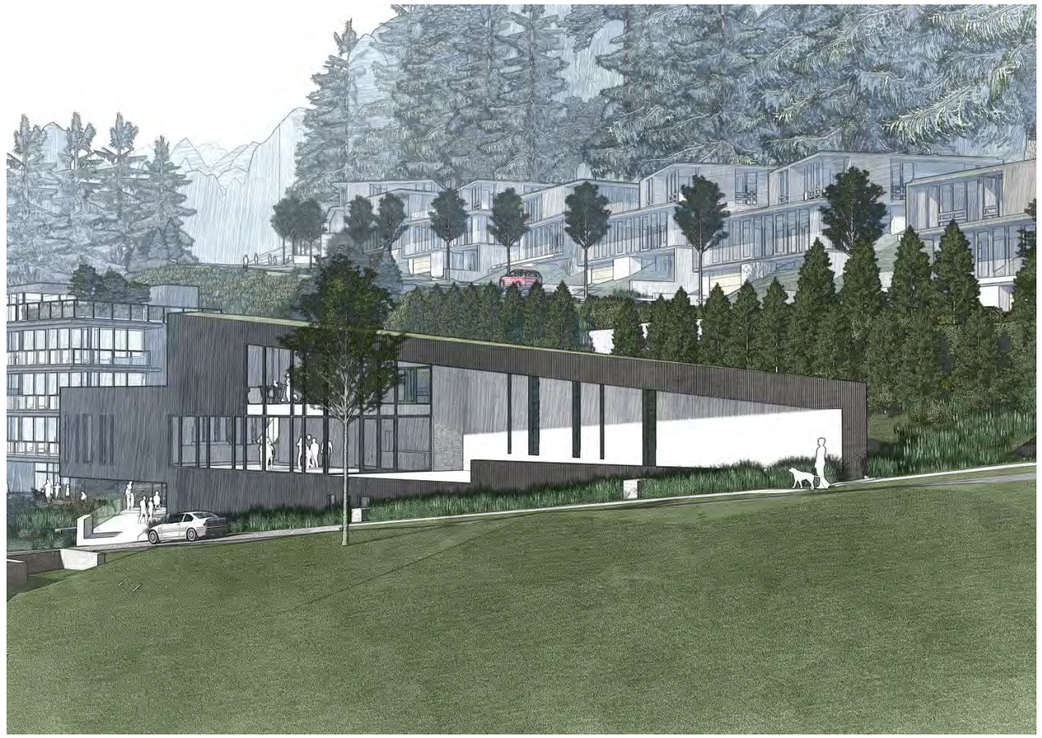
   BPP will operate the first 2 floors under a “Temporary Use Permit” as a Sales Centre for 3-10 years. The upper floor will be usable from opening day as a fitness centre amenity. BPP proposes the following:

1. The Amenity Building (and landscape) will be explored as a distinct air space parcel within the Lot 3 strata.
2. Access Easements will be placed over Lot 3 where required in favour of Lots 1-12
3. Covenants on Lots 1-12 will secure a percentage ownership of the company that owns the air space parcel on Lot 3 (the Amenity air space parcel). Ownership will be based on area per unit entitlement over the lots in Area 6. The covenant will also outline mandatory payment on a monthly basis collected by the individual strata councils, to deliver to the Community Ownership Company
4. The Community Ownership Company will be majority owned by the developer upon creation
5. The Community Ownership Company will execute a flexible 10 year lease for the first two floors that could be terminated earlier upon a certain number of units being added into the community or when BPP wants to vacate this sales centre
6. The Community Ownership Company will likely be 90-100% funded by BPP over the building of the first four lots in Area 6, but operating statements should be provided to each active strata while operating so the individual unit owners can budget for future costs. This will be disclosed by the developer in the disclosure statement.

   BPP will plan to subsidize the centre for the first few years and keep it running during reasonable operating hours and potentially provide an opportunity for the community to come in visit the operation and get a coffee.

   Users from the Road G will be able to access the centre at grade and walk up the stairs to the fitness centre.

   A lockable screen will divide the sales centre space after hours to the main stairwell.



PROJECT SUMMARY

CIVIC ADDRESS:	Road "G" West Vancouver
LOCATION:	Lot 3, Area 6 of Rodgers Creek
ZONING:	CD-3
FAR (PROPOSED):	0.78
SITE AREA:	2.66 Ac / 1.07 Ha
BUILDING HEIGHT:	10 Storeys
CONSTRUCTION:	Concrete
BUILDING AREA (FAR):	90690 sf
RESIDENTIAL UNITS:	64
BELOW GRADE PARKING:	111 Residential Stalls (includes 2 HC) 13 Visitor Stalls (includes 1 HC and 1 Carshare EV space) 8 Amenity Parking (including 1 HC stall)
BICYCLE PARKING:	128 Residential Spaces 13 Visitor Spaces

PLANNING CONTEXT AND OVERVIEW

This proposed development is part of the Rodgers Creek Area Plan: 215 acres of single and multi-family homes above the Upper Levels Highway, at the base of Hollyburn Mountain and the Cypress Mountain Ski Area.

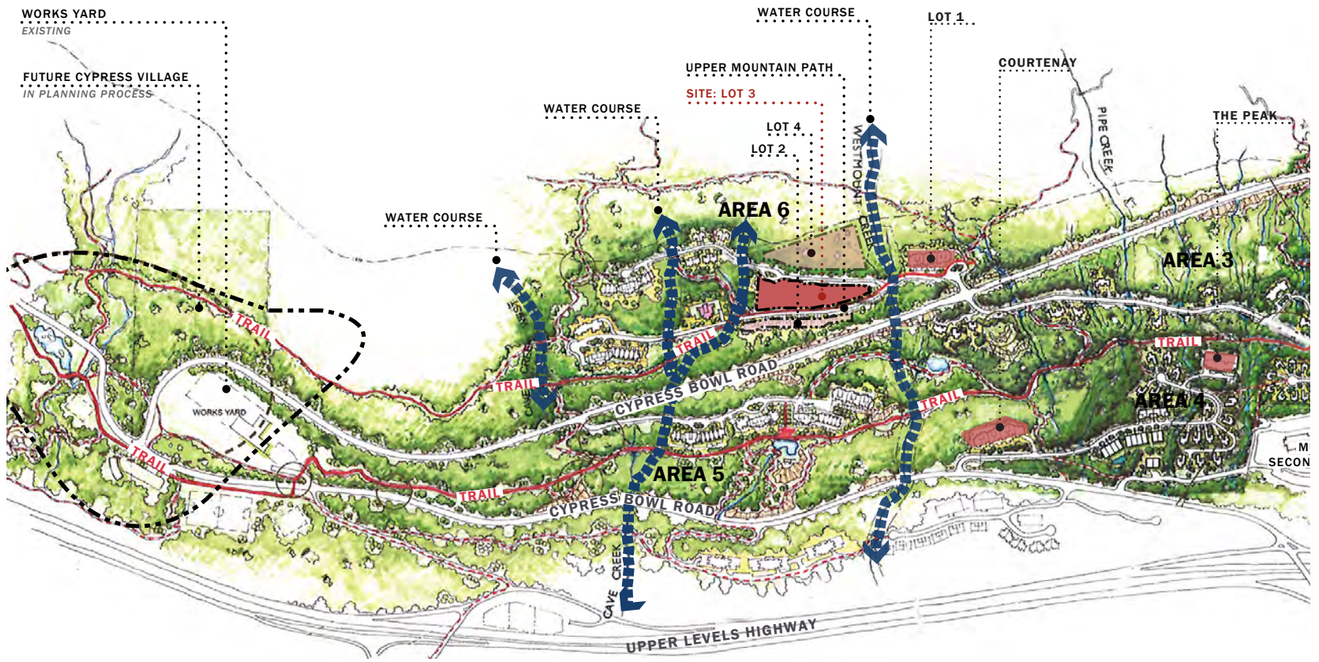
The area includes walking and cycling paths, public lookouts, wildlife conservation areas, playing fields and public amenities, including to commercial amenities of Cypress Village, which will be developed in a later phase.

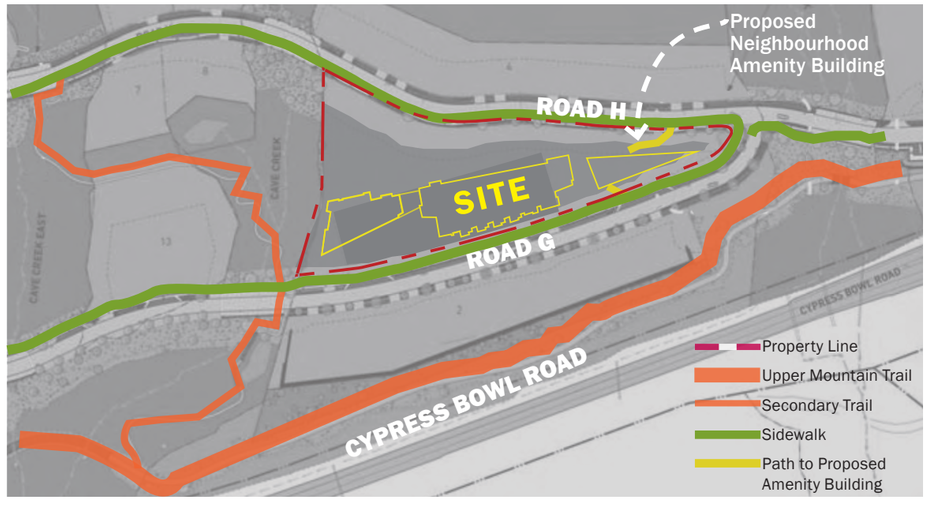
The proposed building site is part of a proposed enclave of residences North of the Upper Level Highway in Rodgers Creek Area 6. The new neighbourhood will include a range of unit types and sizes with a focus on smaller average unit sizes than previous phases of Rodgers Creek.

Cypress Bowl Road services the site, continuing to the East and up to Cypress Provincial Park located a short drive North. The mountainside between the Rodgers Creek Area and Cypress Provincial Park is undeveloped mature forest.

The site is located approximately half way between the proposed Cypress Village (currently in the planning stage) and Mulgrave School which is located within walking distance to the South-East. To the South, across Cypress Bowl Road, is Rodgers Creek Area 5, a future residential development site.

The proposed site connects to its surroundings and the future surrounding Cypress Village Neighbourhood, through a variety of routes as indicated on the diagram below. The proposed Neighbourhood Amenity Building includes pedestrian connections to Road G and Road H.





NEIGHBOURHOOD PRECEDENTS

'Rodgers Creek, Area 6 Lot 4' - (BBP) - Battersby Howat

'The Tree House, Rodgers Creek, Area 6, Lot 1'- British Pacific Properties (BPP) - Olson Kundig Architects (OKA) / RWA

'Rodgers Creek, Area 6, Lot 2' - Creekside

'The Courtenay, Rodgers Creek' - British Pacific Properties (BPP) - RWA

ARCHITECTURAL PRECEDENTS

'Gambier Island Retreat'- Battersby Howat

'Evelyn - Arthur Erickson Place, West Vancouver'

Since the 1940's, some of the most exciting architecture in Canada has been built in North and West Vancouver. Arthur Erickson, Fred Hollingsworth, Ron Thom and others developed a regional architecture combining local materials and simple forms into simple, modern interiors open to the natural environment. Our mild climate accommodated floor to ceiling glass, filling the interiors with natural light. The structures were primarily wood, which was inexpensive and abundant at the time. Wood, brick, stone, and glass were used in their natural state, combined with copper, brass, zinc, and exposed architectural concrete. Post and beam construction was common with horizontal proportions dominating the overall form.

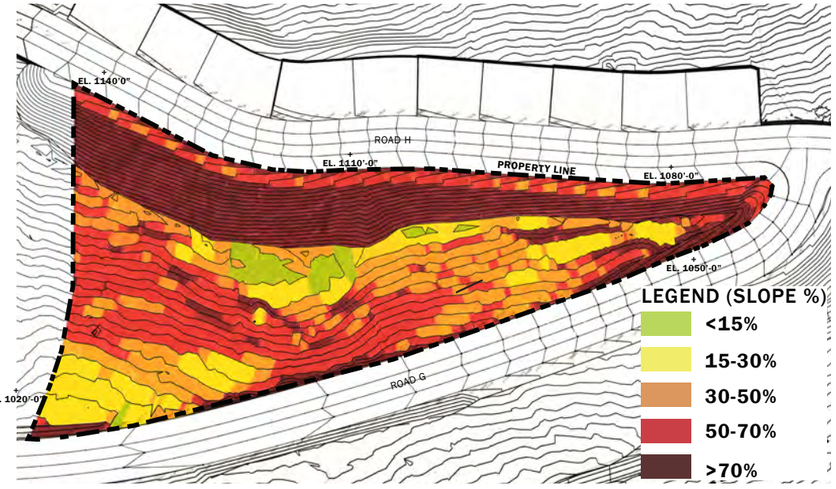
Arthur Erickson gained a reputation for skilfully integrating houses into steep, rocky sites often considered unbuildable. Masterpieces like the Smith and Graham Houses were knit into stands of trees, spanning stone outcroppings, often wedged between a shear drop into the sea and a vertical cliff-face behind. Erickson's later work moved away from wooden structures towards concrete which he called the "marble of our times". The first Eppich house is an outstanding example of terraced concrete forms knit elegantly into a challenging site.

Olsun Kundig

'Saunders House' - Todd Saunders Architecture

SITE CHARACTERISTICS

Lot 3 is characterized by steep topography, which is further constrained by a fill slope from the adjacent Road “H” construction, resulting in a zone along the Northern edge of the site, which is approximately a 100% slope. The preferred buildable envelope is a tight zone along the south edge, parallel to Road G. The proposed buildings are located to reduce impact on the existing topography and work with the challenges from road construction.



Site Analysis - Lot 3

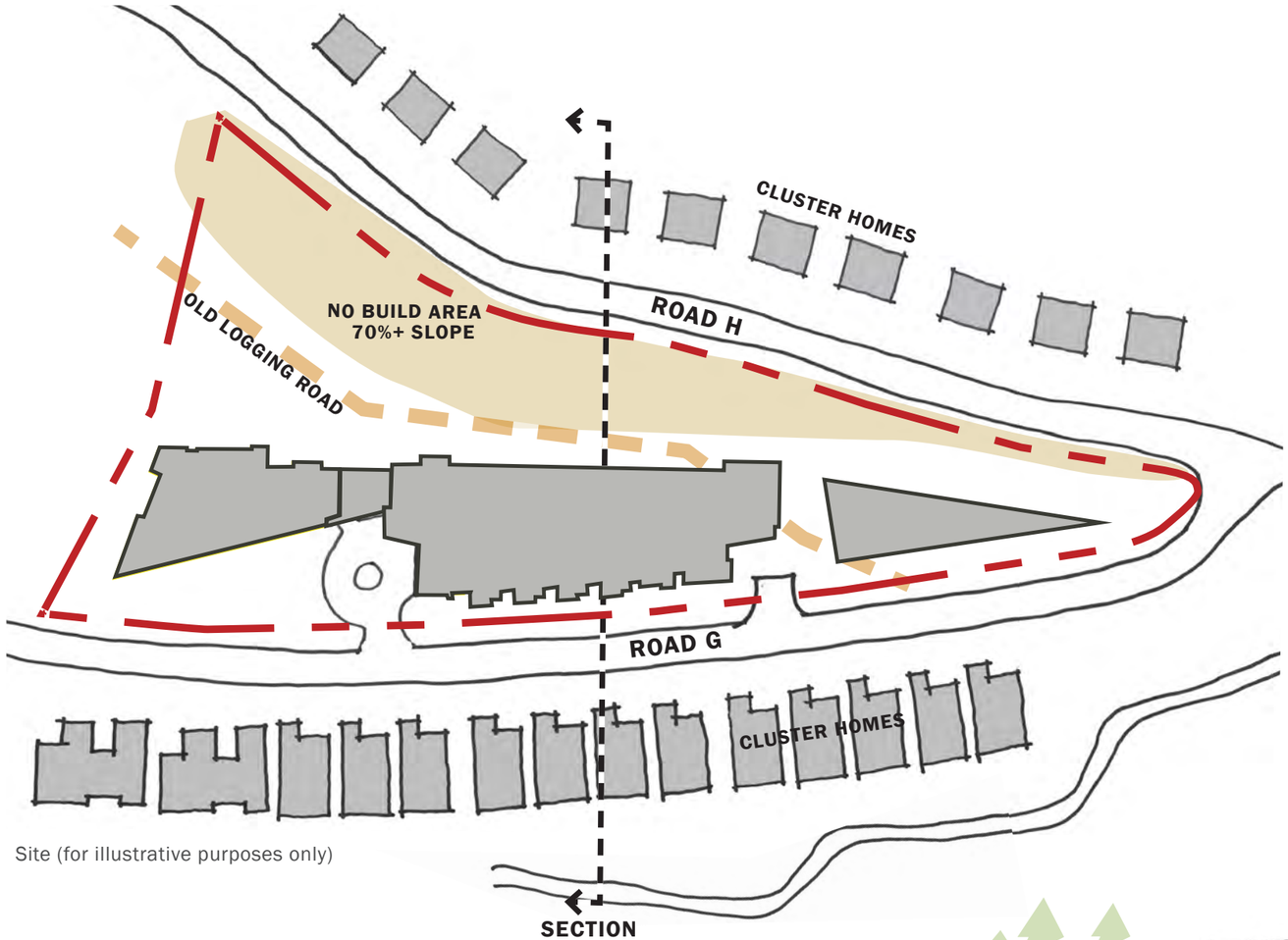

Existing view from Road 'G'

BUILDING SITING RATIONALE

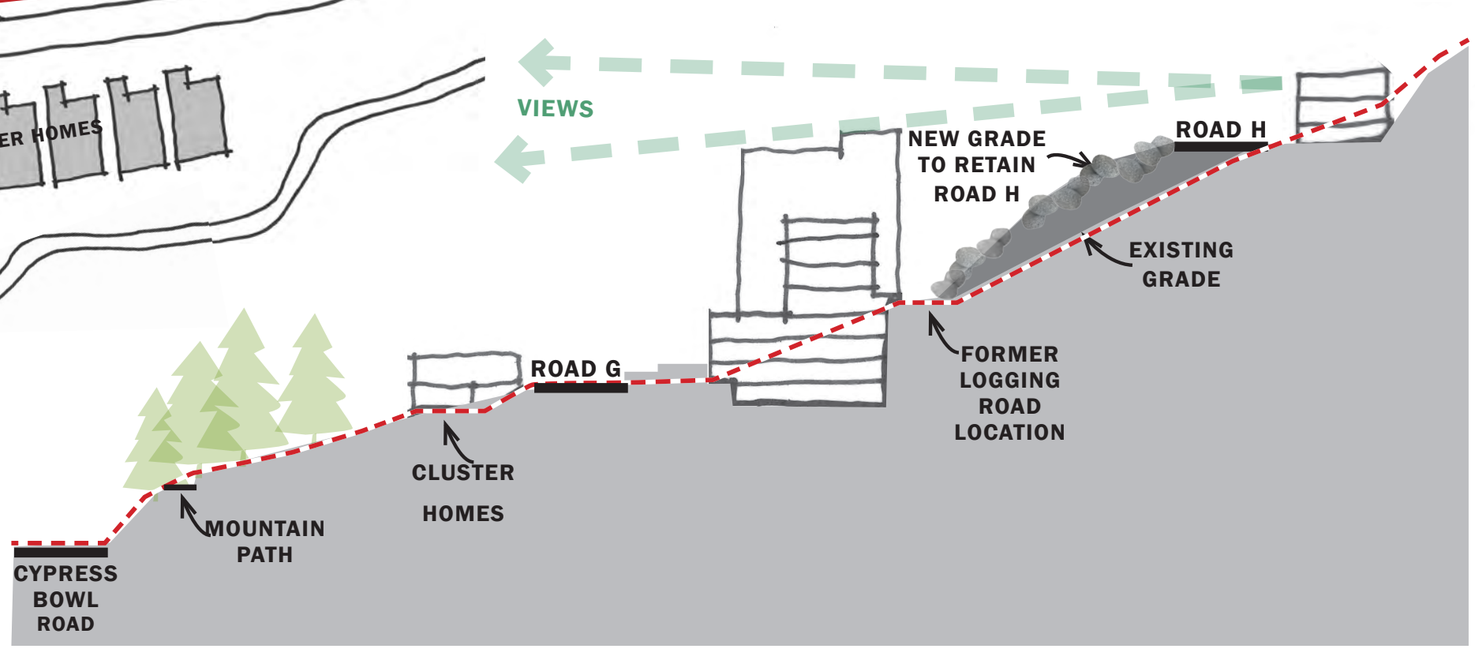
This proposal focuses on balancing minimal excavation and site disturbance with the development of livable units; a walkable, pedestrian scaled streetscape along Road ‘G’ and optimized views for neighbours along Road 'H'.

Roadways have been engineered to minimize excavation and to balance the 'borrow and fill' along the roadways, as well as to anticipate earth removal from future development sites, to minimize quantities of earth which would otherwise need to be trucked away for disposal.

Roadway cut slopes are built to 1:1 slopes to minimize the impact of roadway footprints, while maintaining plantable fill slopes and minimal retaining wall.

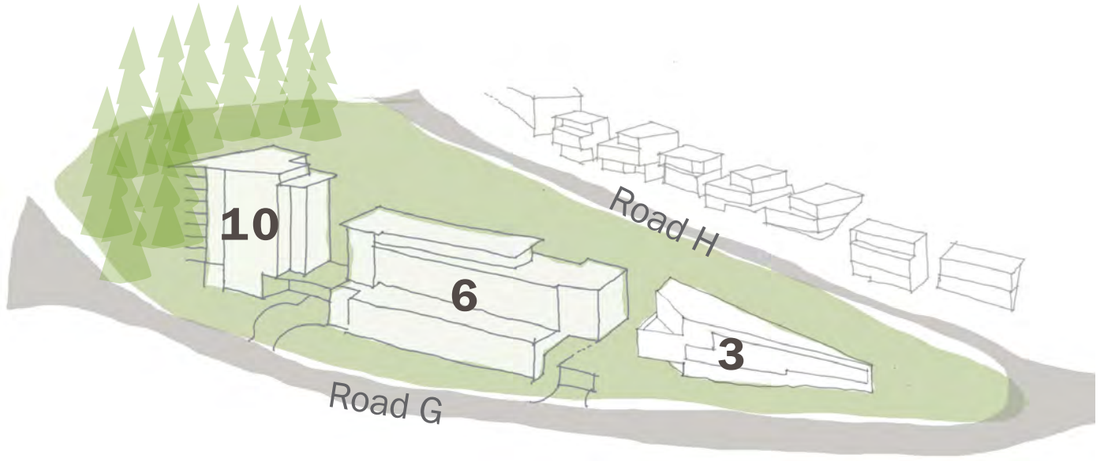


Site (for illustrative purposes only)

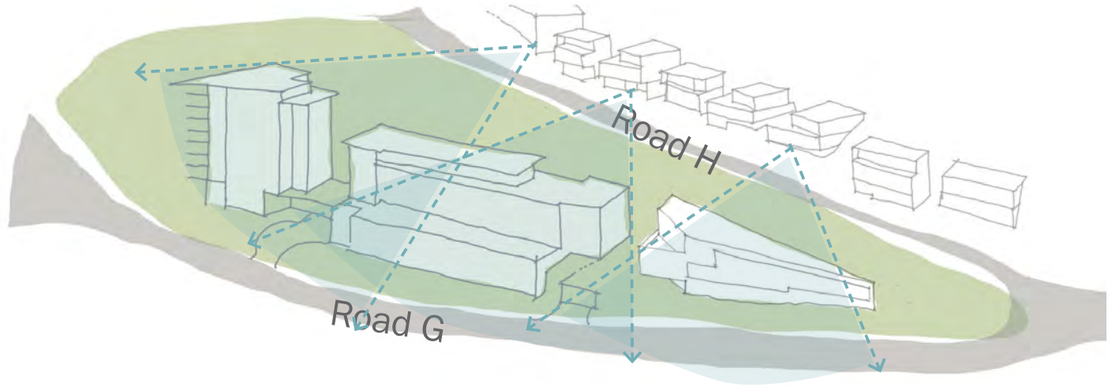


Site Section (for illustrative purposes only)

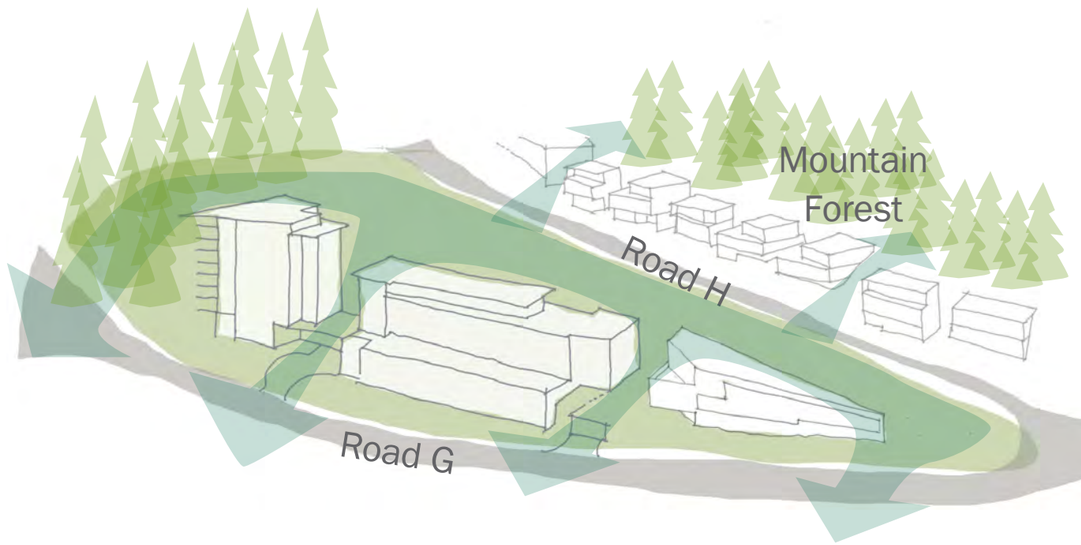
CONCEPT DEVELOPMENT



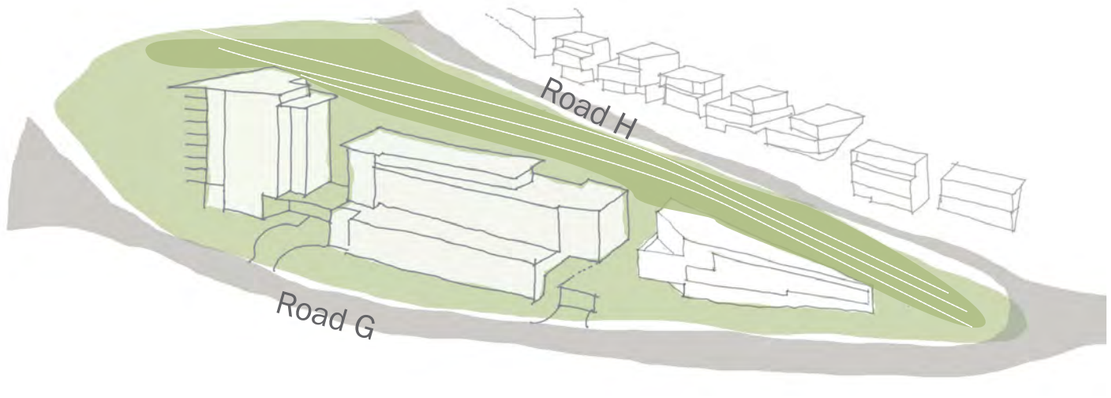
3 SEPARATE BUILDING FORMS FOLLOW THE GRADE ALONG ROAD ‘G’.
THE TOWER IS LOCATED BESIDE THE FORESTED RIPARIAN ZONE WHERE
THE TOPS OF THE TREES EXCEED THE BUILDING HEIGHT



BUILDING FORMS ARE STEPPED IN RESPONSE TO VIEW CONES
FROM CLUSTER HOMES ALONG ROAD H

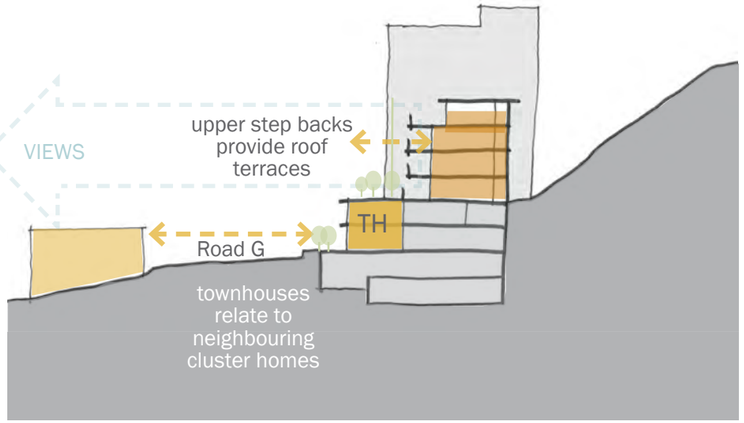


SPACES BETWEEN BUILDING ALLOW THE LANDSCAPE TO EXTEND
ACROSS ROAD G AND AROUND THE BUILDINGS

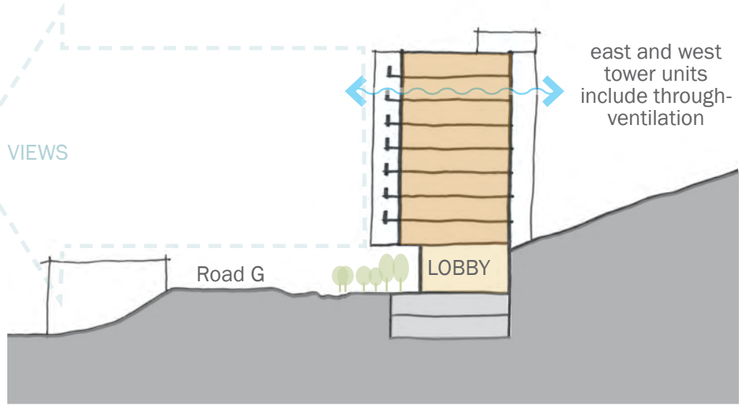


SHALLOW, WIDE FOOTPRINTS FOLLOW NATURAL CONTOURS AND
REDUCE BUILDING EXCAVATION AND SITE DISTURBANCE

Dynamic corner expression



Section



Section

Street view along Road 'G'

FORM AND MASSING

The form and massing responds to the steep topography combined with the spectacular North Shore environment. The development provides 64 units over 3 levels of underground parking. The parking fits into the topography to reduce additional slope retention.

The long and narrow building footprint, positioned along the south edge of the site, conforms to the existing topography, minimizing excavation and environmental disruption.

This development is sited for outstanding views of the city, ocean and distant Vancouver Island on the upper levels, and ‘peekaboo’ views for units on the lower levels. The building is orientated for optimal sun exposure, with roof top areas of solar panels, green roofs and terraces. Deep overhangs provide solar shading.

The development is comprised of three distinct forms: The gateway 3-storey Amenity building, and the 6-storey and 10-storey residential components connected by a ground level landscaped link. Upper levels step back to create generous balconies and terraces. Spaces between buildings allow the surrounding landscape to flow down the slope, through the development. Each component is “framed” by green, resulting in the appearance of three separate forms set into the landscape.

This area of West Vancouver is not typically "urban" but it is evolving with a mix of housing, and as the population grows, as will the benefits of providing walkable, pedestrian-friendly neighbourhood.

Road ‘G’ will develop with lower density cluster houses on the downhill side and this proposal along the uphill side. The Lot 3 townhomes incorporate entry elements along Road G, including gates, landscaping and clear identification of the townhouse front doors. Wood timbers, milled from the site, echo the design on Lot 2 across Road G. These elements relate to the neighbours in scale and contribute to a fine-grained, pesdestrian-scaled streetscape.

In this proposal, the ground level units in the 10-storey component are orientated to Road-G, setback to incorporate stormwater management and landscaping, in the foreground, developing a large buffer of mature planting between the tower and the road.

FORM AND MASSING

CONNECTION TO NATURE

Forested Riparian Zone

landscape flows around building

Green Finger

landscape flows under the building

Landscaped Link / Green Finger

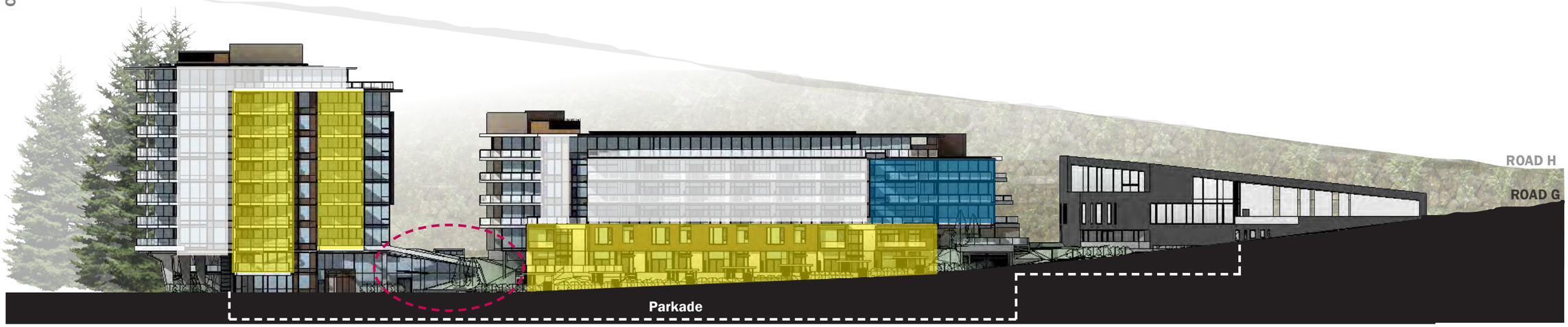
buildings connect at the ground by a Landscaped Link. Hillside vegetation flows over the building and extends from across the entire site.

Green Finger

landscape rolls over the parkade

Raingarden / Green Finger

rain infiltration zone for runoff from Road H, planting is selected for high tolerance, to saturation, and drought



FORM & MASSING

10 Storey Tower *(coloured for illustrative purposes only)*

- the tallest building form is adjacent to a forested riparian zone with trees exceeding the building height
- the overall form is expressed as a number of vertical balcony elements contrasting with flush, glazed portions of the building to create texture and variation
- portions of the building steps down towards the 6 storey neighbour and the ground plane is raised at the west edge to reveal the hillside

6 Storey Building *(refer to DRC Recommendations on page 6)*

- this building “steps down” in transition between the 10 storey tower and 3 storey Neighbour Amenity Building
- it is expressed as a mix of textures and proportions over a strong two storey townhouse base
- the townhouse base establishes a human scaled streetscape, sympathetic to neighbouring Lot 2
- the varied treatment of the building above, contrasting areas of simple glazing with columns of balconies, reduces the bulk and scale of development
- buildings connected by lobby and parkade
- podium materials similar in colour and dimension to Lot 2 and Lot 4

Neighbourhood Amenity Building *(See Page 27 and Appendix B)*

- this 3 storey Neighbourhood Amenity Building is designed by Todd Saunders Architecture and will function as a temporary sales centre for BPP
- materials and expression consistent with podium level of the 6 storey building massing.
- neighbourhood amenity with fitness area, event space, communal kitchen and temporary sales centre
- the sloped green roof is parallel to Road H above

ARCHITECTURAL RATIONALE

ARCHITECTURAL RATIONALE

The building proposes 64 units ranging from 61.59 sqm/663 sf one-bedroom apartments to a 166.57 sqm/1793 sf unit with 3-bedrooms and a Den. There are a variety of unit configurations, including six units with lock-off suites.

The design is inspired by West Coast Regional architecture and the emerging style of the Area 6 Neighbourhood *(refer to Architectural Precedents)*. Strategies for siting the building on the site and for developing glazing patterns and building forms were inspired by early West Coast architects. Flying balconies and generous overhangs respond to the rainy climate, consistent with mid-century west coast modern design.

From Road 'G', the driveway opens to a circular paved autocourt adjacent to the building lobby and access to the middle and lower parking levels.

The buildings are connected by a common lobby, with residential elevators on either end. All residences feature glass doors opening onto balconies or roof terraces, oriented to the sun and ocean views. The outdoor spaces are designed as extensions of the indoors, blurring the division between building and nature, consistent with West Coast architectural principles.

Parking for all units is provided below grade, and includes 13 visitor stalls.

The façade incorporates offset horizontal layers of balconies, roof and overhangs. The overall form is divided into two building, following the natural site contours and allowing the landscape to flow through breaks in the building massing, providing natural planted links from Lot 2 to the South to Lot 4 on the North. The lobby forms a below grade connection between the two wings. A two storey podium responds to the low scale Lot 2 cluster housing across the street. The upper floors of the 6 storey building are set back to reduce the apparent mass overlooking the street.

Dark materials and colours allow the buildings to recede into the landscape, while warmer natural materials punctuate spaces surrounding the outdoor living spaces.

MATERIAL AND COLOUR PALETTE

BOARD-FORMED CONCRETE
RETAINING WALLS

BLACK ANODIZED
ALUMINIUM

PAINTED CONCRETE

VARIEGATED
CEMENTITIOUS CLADDING

VARIEGATED
CEMENTITIOUS
FEATURE CLADDING

ENTRY SEQUENCE

1 *view looking west along Road G - Amenity Building in the foreground*

2 *landscape between building forms*

3 *townhouse and private entries*

4 *central lobby and drop off landscaped link*

5 *view of mountainside - landscaped link*

6 *view of the landmark corner treatment*

7 *view of the 10 storey component*

STREETSCAPE ELEMENTS

The street edge of Road ‘G’ will be characterized by unstructured landscaping, textured concrete retaining walls, private entrances to street oriented townhouses or ground level apartments and a landscaped autocourt with views through the development and up the mountain slope.

The majority of residents and visitors will travel to the development by car. The approach from Cypress Bowl Road and Road G provides an impressive view of the development harmoniously fitting into the mountainside.

The overall form responds to the monumental site and approach: dividing the development into 3 distinct forms with a variety of ground level uses, entry elements and landscape treatments.

The amenity building provides a gateway to the neighbourhood.

1. “Wedge shaped” neighbourhood amenity building, with a roof sloped to match, forms a gateway at the eastern approach, fitting into the landscape, providing a first “step” in the height transition moving west along Road G.

2. A generous green space brings the landscape down to the street level and provides a connection to a pedestrian pathway leading through and out of the site. Access to the underground parking is located on the edge of the green.

3. Two storey townhouses with individual entrances along the 6 storey portion of the development animate Road G, creating a fine grained, human scaled streetscape.

4. An autocourt/drop off and main lobby are located between the two residential buildings, orienting visitors and residents as they approach the building and providing views up the slope into the surrounding landscape.

5. The Landscape Link lobby and autocourt clearly designate the development’s front door adjacent to an opening with views up the slope, into the surrounding landscape adding “depth” to the streetscape.

6. The western edge of the development is marked by a dynamic stack of triangular balconies.

7. The 10-storey tower is set back from the road, and allows the forest to roll down and enclose the western edge of the building. The under storey of the adjacent forest slips under the western edge of the tower, integrating the building with the landscape.

view from above the Autocourt

view looking up to 6-storey building from Autocourt

OPEN SPACE + CIRCULATION CONCEPT

Accessible open space is limited on the site due to the steep topography.

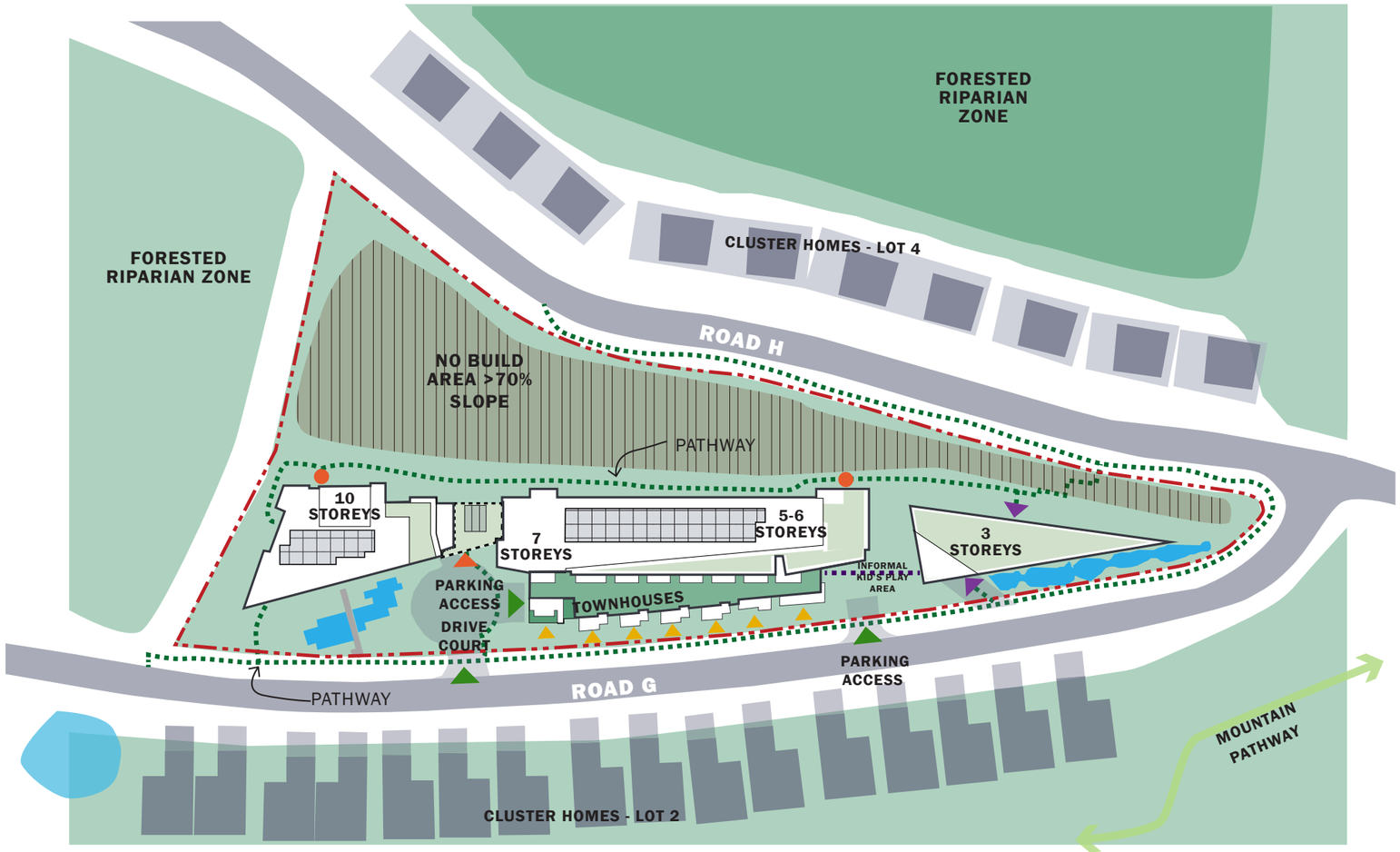
Rooftops are designed with areas of open space including private terraces. Townhouse entrances with front gates and gardens provide a human scale and relate to the single-family neighbours across Road G *(refer to Page 19 for Streetscapes).*

Limited areas of functional open space are balanced with generous areas of unstructured planting in keeping with the natural North Shore environment *(refer to Page 21 for Natural Systems).*

This proposal encourages walking by providing a variety of routes and “short cuts” through the site. Sidewalks along Road H and Road G will be connected by a new pathway with entries into the Neighbourhood Amenity Building and uphill side of the residential buildings.

Two driveways access underground parking, integrated into the site design to reduce interruptions in the sidewalk.

Covered play area for neighbourhood children is located at the eastern landscape finger, adjacent to the neighbourhood amenity building entrance.



property line

pedestrian pathway

shared cycle + pedestrian pathway

roof terrace

private garden

main building entry

secondary exit / fire exit

townhouse entry

amenity building access

parking access

SUSTAINABILITY AND NATURAL SYSTEMS

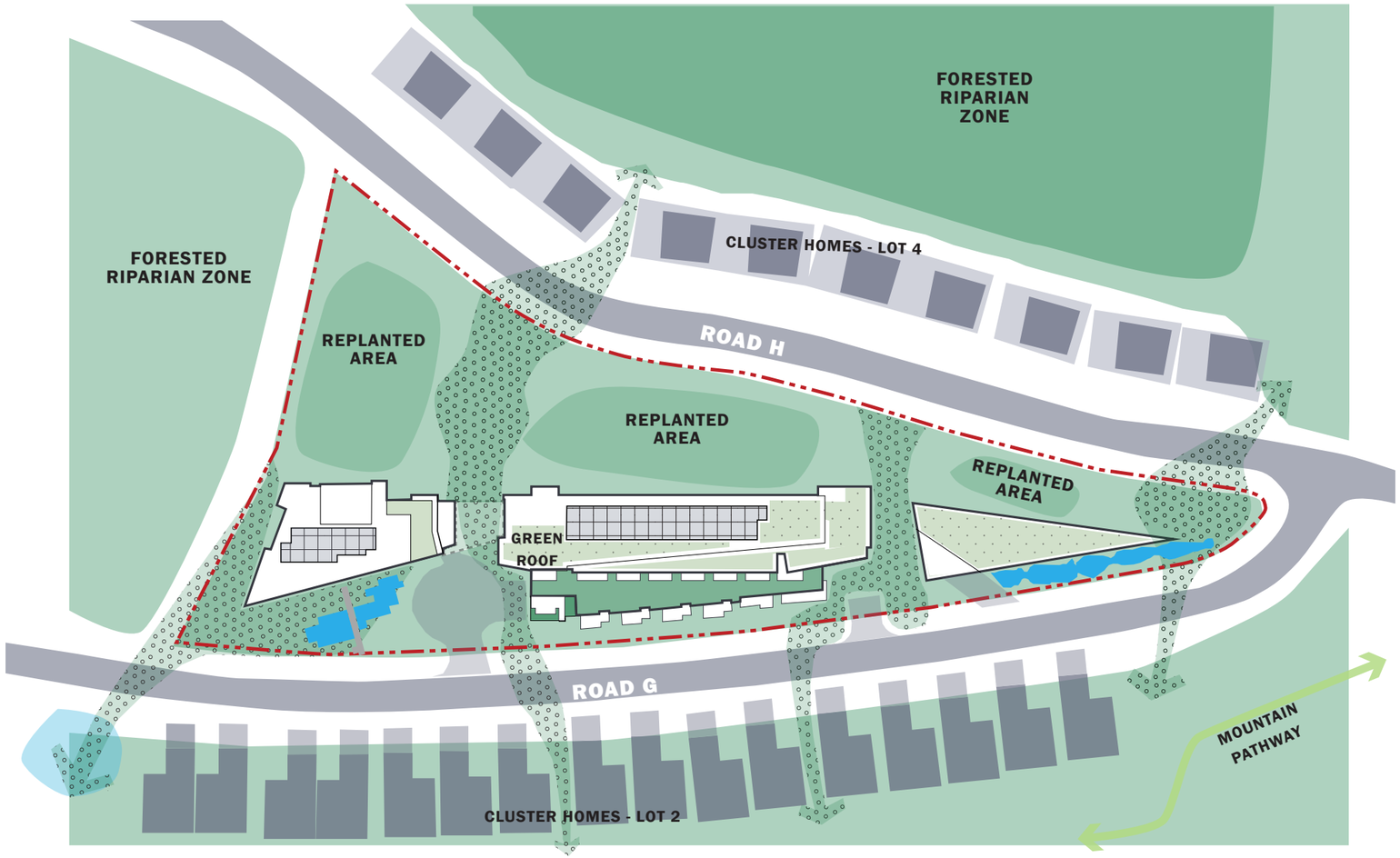
This proposal integrates a variety of strategies to reduce the development's carbon footprint, and in support of the site's natural systems, these include:

TREES AND PLANTING

- replanting trees affected by road and building construction
- connecting existing natural areas uphill and downhill of the site with naturally landscaped "green fingers" to maintain the natural character and enhance wildlife corridors and habitats

PHOTOVOLTAIC PANELS

- providing PV panels solar farm: on the roof, which is oriented for good solar exposure. The team is also investigating other roof areas for additional solar panels. The exact quantity of panels is being modelled to provide an optimized configuration. The panels are intended to supplement energy for corridor lighting and electric vehicle charging. The system is to be grid-tied.



property line

green roof

green finger

stormwater infiltration

solar panels

SUSTAINABILITY AND NATURAL SYSTEMS

STORMWATER MANAGEMENT

The topography combined with mountain rainfall requires careful management of stormwater through Low Impact Development (LID).

Runoff from Road H will be directed towards LID/Bio-retention trenches where rainwater can infiltrate into the ground and planting *(See Appendix H: Stormwater)*.

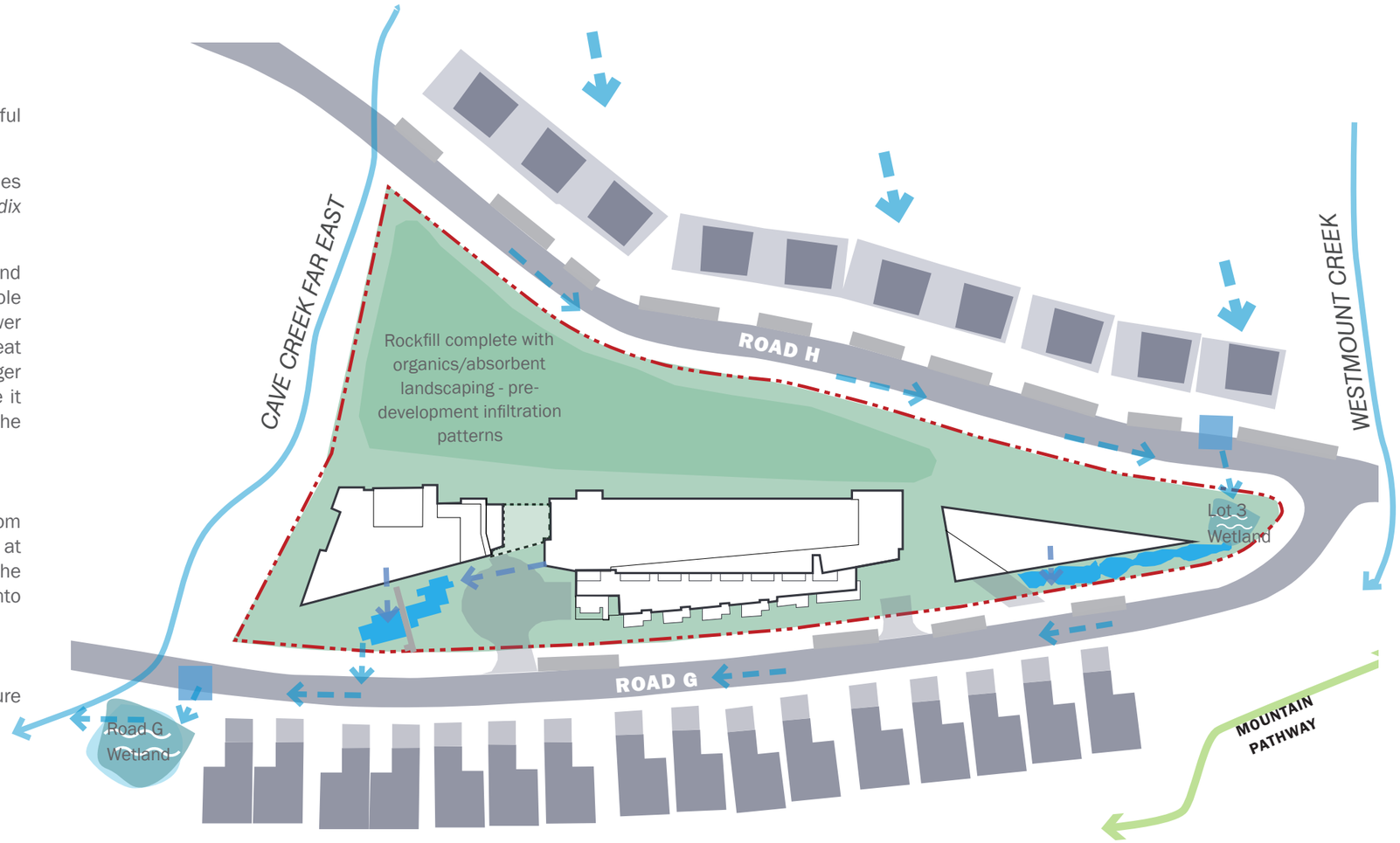
Low flow diversion manhole discharges low flows to Lot 3 wetland and higher flows to Westmount Creek. The wetland is fed by a low flow manhole on Road H. The outfall from the wetland will be directed to a storm sewer on Road G. A system of LID trenches will be installed along Road G to treat runoff from the property and Road G. Stormwater moves onto a larger wetland below Road G on the east side of Cave Creek Far East where it will be filtered and provide aquatic habitat for benthic invertebrates. The wetland will then discharge into Cave Creek Far East.

SITE SPECIFIC STORMWATER MANAGEMENT

The overall landscape plan will prioritize LID strategies. Run off from building roofs, driveway and autocourt will be directed to raingardens at the bottom of the slope along Road G. Stormwater can discharge into the LID trenches, and storm sewers below Road G with eventual discharge into Cave Creek Far East and the wetland below Road G.

VRF SYSTEM

Gas-free heating and cooling and domestic hot water is proposed to ensure a GHG-free project *(See Appendix F)*



property line

wetland

development runoff

on-site raingardens

stormwater flow

LID trench drain

low flow manhole



illustrating raingardens integrated into the landscape design

SUSTAINABLE DESIGN

Solar shading devices, roof overhangs and balcony projections shelter high summer sun, while allowing winter sun to penetrate

Solar shading devices, balcony projections and roof overhangs provide solar shading in summer, without excluding low-angle winter sun

SUSTAINABILITY STRATEGY

TARGET: BuiltGreen Silver *(See also Appendix E: BuiltGreen Checklist)*

SUSTAINABLE DESIGN

GOAL: Design a building which will have minimal impact on the local and global environment, and to meet the intent of the Green Building Strategy outlined in the Rodgers Creek Area Development Plan Overview Report, March 7, 2008.

ACTION: The building is designed to incorporate energy conserving features and system, as well as to reduce energy and resource use and reduce greenhouse gas emissions.

ACTION: Reduce impact of the forested conservation area, by building along side it.

ORIENTATION AND DESIGN

GOAL: Create an efficient and comfortable building through thoughtful building orientation and architectural design.

ACTION: The building is carefully oriented to take best advantage of the site, available sun exposure and prevailing breezes.

ACTION: Sustainable design strategies are incorporated to utilize passive solar and sun-shading design strategies.

action: South facades have higher glass ratios to capture views, while windows sizes are reduced on the north side, to reduce heat loss.

SOLAR SHADING

GOAL: Reduce impact of late-afternoon solar gain.

ACTION: Employ balconies, solar shading devices and roof overhangs to shade south-facing windows to prevent overheated spaces in summer, without restricting penetration of low angle sunlight in winter

NATURAL VENTILATION

GOAL: Encourage natural ventilation and to reduce energy-use related to mechanical cooling.

ACTION: The building is oriented to capitalize on prevailing ocean breezes in the summer to optimise cooling.

ACTION: Some units are double and triple-fronting, which allow improved natural cross-ventilation.

ENERGY CONSERVATION

GOAL: Minimize energy usage through building design and careful selection of materials, fixtures and appliances.

ACTION: Energy modelling is being incorporated to guide the envelope design, which will include high performance glazing and wall assemblies.

ACTION: Minimizing energy loss through the building envelope and utilizing passive solar design techniques is a key strategy to reducing energy consumption. The following will be incorporated into the design:

- Continuous, exterior-insulated walls will be incorporated on the north façade
- Continuous, high performance roof insulation will be used throughout
- Provide high-performance, thermally broken double-glazed low-e windows min. overall U=0.37 - *(See Appendix E: Preliminary Energy Model Summary)*

ACTION: Energy efficient heating and cooling will be provided using a VRF (Variable Refrigerant Flow system) - *(see Appendix F)*

ACTION: Specify Energy Star / Energy Efficient appliances

ACTION: Install Programmable thermostats

ACTION: Provide each unit with individual Heat Recovery Ventilation

ON-SITE ENERGY GENERATION

GOAL: To provide Solar Photovoltaic Panels (PV)

ACTION: Solar PV panels will provide energy to partially offset house load. *(See Appendix G)*

LIGHTING AND ELECTRICAL

GOAL: Conserve electricity

ACTION: Maximize daylight through extensive glazing and clerestories

ACTION: Energy efficient light fixtures – the developer is committed to installation of LED lighting in all suites

ACTION: Energy efficient lighting with motion activated control system in common areas and underground parking.

ACTION: Rough in for electric car charging for 50% of residential parking stalls and a strata EV share parking stall.

WATER CONSERVATION

GOAL: Minimize use of potable water by occupants and landscape irrigation.

ACTION: Water-efficient fixtures including dual flush toilets

ACTION: Water-efficient dishwashers and front-loading washing machines

ACTION: Drought tolerant landscaping materials

ACTION: Water-efficient irrigation systems only where necessary

INDOOR AIR QUALITY

GOAL: Improve occupant health and well-being through careful building design, and selection of materials and equipment.

ACTION: The building orientation capitalizes on the prevailing ocean breezes in summer. Some units are double and triple-fronting, which allow improved natural cross-ventilation.

ACTION: Heat Recovery Ventilators will provide tempered fresh air.

ACTION: Low or Zero formaldehyde insulation.

ACTION: Low VOC paints and adhesives.

ACTION: IAQ labelled carpet and underlay.

MATERIALS AND RESOURCES

GOAL: Materials to be selected from local sources where possible for longevity and minimal environmental impact.

ACTION: The use of durable, quality materials is a design priority including painted concrete, cementitious panel rainscreen.

ACTION: Use locally and regionally sourced materials, such as milled timbers from the site where possible.

ACTION: Select materials based on quality and long term durability

ACTION: Use recycled materials where available and where possible

ACTION: Re-use of site-generated rock for landscape features, retaining walls and structural fills.

ACTION: The site was rough excavated by the developer, in the site DP permit, and material generated was processed on-site and was utilized locally to construct road bases in advance, significantly reducing GHGs associated with trucking of materials.

EDUCATE

GOAL: To educate the occupants to understand the high performance features of the building, in order for the occupant to best utilize them.

ACTION: Provide an Owner's manual and educational walkthrough for purchasers.

ACTION: Provide a "Systems Manual" for building management.

GREEN ROOF

The green roof offers a range of sustainable benefits to the development including prolonged life of waterproofing membranes and HVAC systems, rainwater retention and filtration, providing wildlife habitat and visual integration of the roof form into the forest backdrop.

HOUSING MIX AND DIVERSITY

APARTMENT DISTRIBUTION SIZE

This application combines the requirements for apartment sizes for Lot 1 and Lot 3. However, all of the Lot 1 units are greater than 1001 sf. Lot 1 will provide 36 apartments of which 30%, or **11 units**, are required to be less than 1001 sf.

Lot 3 will provide 64 units: 57 apartments and 7 townhouses.

30% of the 57 apartments, or **17 units**, are required to be less than 1001 sf.

Lot 3 will provide 28 units less than 1001 sf: 11 (Lot 1) + 17 (Lot 3) = 28 units total

Lot 3 units less than 1001 sf = 28 apartments / 44%

Lot 3 units between 1001 - 2100 sf = 28 apartments + 7 townhouses = 35 units / 56%

Lot 3 units greater than 2100 sf = 0%

APARTMENT MIX

Lot 3 apartment Mix = 15 one bed / 33 two bed / 9 three bed

Lot 3 townhouses = 7 two bed

SAFERHOME STANDARDS UNITS - 20% OF UNIT MIX

A total of 12 units are designed to accommodate the SAFERhome standard for accessibility, children's safety, seniors and aging in place.

- Three (3) 1-Bedroom
- Seven (7) 2-Bedroom
- Two (2) 3 Bedroom

SAFERhome standards are defined into 3 categories: Structural & Design, Electrical & Telecom, and Plumbing. The 15-point SAFERhome standards are summarized below:

Structural & Design

1. All exterior thresholds are flush.
2. All interior thresholds meet minimal code constraints (i.e. shower entrance).
3. All doors and pinch points are a minimum of 34" but ideally 36" wide.
4. All hallways are a minimum of 40" but ideally 42" wide.
5. Reinforced with 2x12" solid lumber is all washroom tub, shower, and toilet locations.
6. At the top of all stairs, walls are reinforced with 2x12" solid lumber at 36" to centre.
7. Build all staircase(s) to a minimum width of 42".
8. Cabinets underneath each sink are easily removed.

Electrical & Telecom

9. All switches positioned at 42" to the centre of the electrical box from the finished floor.
10. All outlets positioned at 18" to the centre of the electrical box from the finished floor.
11. Electrical outlets placements to be located beside windows, bottom of staircases, beside the toilet, above external doors (inside), on front face of kitchen counter.
12. Four-plex outlet to be placed in master bedroom, home office, garage, utility room, and recreation room.

Plumbing

13. All bath and shower controls are offset from centre, roughly 1/2 way between the historic centre location and the outside edge of the shower or tub enclosure.
14. All water pipes are brought in no higher than 14" to the centre of the pipe from the floor level.
15. Pressure/Temperature control valves are installed on all shower faucets.

ADAPTABLE UNITS - 20% OF UNIT MIX

Additionally, if requested by purchasers, BPP is committed to adapting up to 20% of units to meet City of North Vancouver's Level 2 Adaptable Design Guidelines. These adaptable features are available for the above SAFERhome units.

LOCK-OFF SUITES

The following are units with lock-off suite features:

- Six (6) 2-Bedroom Lock-Off Suite (Type 2P)

The proposed lock-off suites are considered part of the main dwelling unit to which they belong. Each lock-off suite is designed to provide a door into the primary suite and with additional door into the public corridor. Lock-off suites are typically intended to serve as caretaker suite, nanny suite, in-law suite, rental suite etc.

NEIGHBOURHOOD AMENITY BUILDING

FUNCTION

The Amenity Building located on Lot 3 is designated to serve residents and guests of Area 6 at Rodgers Creek. The space is designed to be a bold yet simple expression of form and function. The clear-span open construction creates flexible and multi-use spaces that can evolve to meet the changing needs of the users. A large multi-storey circulation atrium creates a “wow moment” when entering the building. The vertical circulation can be seen from every level and encourages the guests to use the feature stair. Large windows on the upper floor allow natural sunlight to penetrate deep into the building and creates a lively play of light on the various angled surfaces. A secondary entry on the upper floor provides access to the fitness level directly from “Road H”.

(See Appendix B: Neighbourhood Amenity Building, Saunders Architecture)

illustrating variety of form, height and articulation

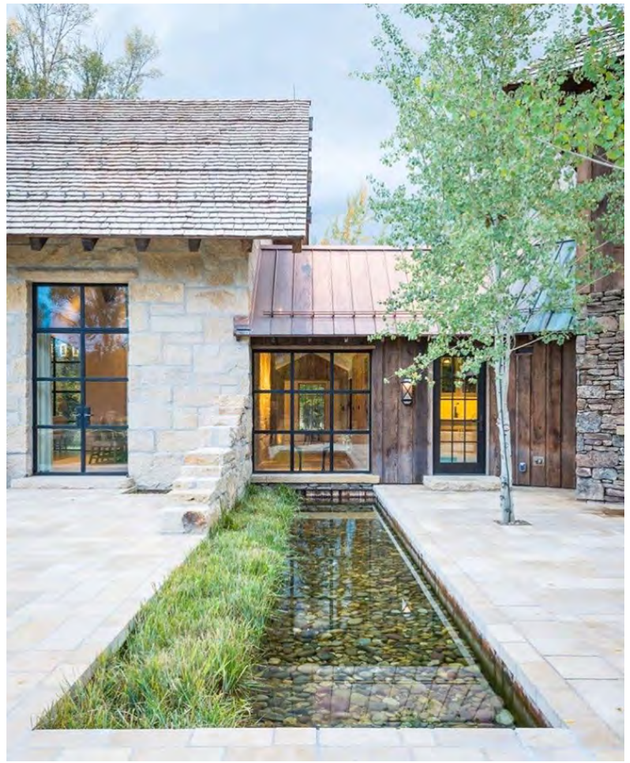
LANDSCAPE DESIGN

The landscape design concept for this project has been inspired by the mountainside context, the architectural expression and the street edges, both north and south. This development will act as a central gathering place for the Area 6 community. As one approaches the site from the east, the Amenity Building greets the visitor and resident with a dramatic architectural form wedged between the two flanking streets.

At the corner, an artful water feature attempts to embrace the rain water events and celebrates the storm water system spilling into a naturalized pond before flowing along the southern edge of the project. A sculpted bio-swale stepping down with concrete and stone blocks will carry the water to the west as well as help define the various entry points to the Amenity Building, the Townhomes and the Residential Tower with concrete bridges and large format paving slabs. At the entry to the Amenity Building, a small play area is being considered with an oversized swing element suspended beneath the building overhang.

A stylized bosque of trees announces the entry of the project at the easterly corner and is repeated as a bookend on the westerly end by the tower. Flowing through the site and down the westerly edge, two forested fingers retained with vegetated MSE walls connect the projects visually and physically to the north and south. Behind the townhome building and tower, a linear playground with a timber theme is envisioned backed by a dramatic rock face cut excavated during the site preparation. Gabion rock stacked walls and vegetated MSE walls will be placed to retain adequate soil volumes to support a robust coniferous and deciduous tree planting scheme augmented with native ground covers mix. The steep vegetated slope to the north between the forested fingers will be hydro-seeded with a native grass and pre-germinated shrub mix and will be applied yearly and maintained until well established void of invasive species. Night lighting of this rock face is seen as a dramatic feature for the residences as they enter their homes from the north side of the building. Green roof/sedum and/or faux turf applications with solar panel installations have been incorporated into the design for all the buildings.

Entry to the residential tower is reflective of the strong angular architectural expression and reinforced with a bosque of trees, linear paving and an extensive formalized water feature (which collects rainwater from the tower). From the interior of the tower lobby, the view to the west out an exit opening will focus on a waterfall feature as the forested landscape wraps down the westerly edge and under the large building overhang.



LANDSCAPE SUSTAINABILITY STRATEGY

Note: Credits identified below refer to *Appendix E: BuiltGreen Checklist.*

1. Permeable paving materials have been specified for all the driveways and walkways (more than 70% of the hardscape area). (6.2.1 credit 3)
2. Minimize the hardscape along with green wall systems instead of c.i.p. concrete retaining walls. The use of swales along all the retaining walls (6.2.2 credit 1)
3. Min. 8 inches of topsoil or composted yard waste as finish grading throughout site. (6.2.3 credit 2)
4. Install drought tolerant plants and provide a list of the plants to the building managers. (6.2.4 credit 1)
5. Minimal lawn area has been specified. (6.2.5 credit 1)
6. Permeable landscaping that is water efficient and the xeriscaped species occupies more than 50% of the landscape area. (6.2.6 credit 1)
7. The irrigation system will use efficient irrigation technology. (6.2.7 credit 3)

APPENDIX A

ARCHITECTURAL DRAWINGS - RWA

Drawing List

A001	Cover
A002	Project Statistics
A101	Site Plan
A201	Level 00/P3
A202	Level 01/P2
A203	Level 02/P1
A204	Level 3
A205	Level 4
A206	Level 5
A207	Level 6
A208	Level 7
A209	Level 8 (Typ.) Level 10
A300	South Elevation Bldg and Amenity
A301	South Elevation
A302	Elevations
A401	Cross Section A-A
A402	Cross Section B-B
A403	Section C-C

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T: 604.736.8959
E: info@rwa.ca
W: www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2019.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Cover

DATE: 2019-01-10 4:04:18 PM
DRAWN BY: Author
JOB NO: 1712
REVISION: -

SHEET NO.
A001

1712 – BPP Area 6, Lot 3

2019.01.09

Regulations

Zoning Bylaw No. 4662, 2010 District of West Vancouver

CD3 Zoning

Set backs

	Allowed	Proposed (Resid.)	Proposed (Amen.)
Front Set Back	19'-8 1/2" (6m)	20'-5" (6.24m)	16'-4" (5m)
Rear Set Back	25'-0" (7.6m)	54'-3" (16.53m)	40'-6" (12.3m)
Side Set Back	19'-8" (6m)	19'-8" (6m)	

Building Area & Height

	Allowed	Proposed	Proposed (Amen.)
Max Height: Geodetic:		1148'-6" to top of Elevator Overrun	
	122'-0" (37.19m)	111'-4" (33.93m)	45'-0" (13.7m)

Parking

Required Parking (CD3 Zoning)

Residential Stalls 1.0 stalls per unit <70sm (753sf)

1.5 stalls per unit >70sm (753sf)

Required: 15 units x 1.0 =15 stalls

49 units x 1.5 = 73.5 stalls

Max. 30% small car stalls=27 stalls

Res. Visitor Stalls 20% of total number of dwelling units

Required: 64 UNITS x 20% =12.8 stalls

=101.3 stalls

Accessible Stalls refer to 601.08 Off Street Parking

Between 76-125 req'd stalls, **2 required to be accessible**

Provided Parking:

- Residential stalls = 111
  (including 1 HC)
  Visitor parking = 13
  (Including 1 HC and 1 Carshare EV space)
  Amenity = 08
  (including 1 HC)
  Total = 132
- **Currently Providing 132 Stalls**

Standards for Parking Stalls

Stall Depth	19'-0" (5.8m)
Stall Width	8'-10 1/2" (2.7m)
Stall Width	10'-10" with barrier on both sides
Stall Width	9'10" with barrier on one side
Vertical Clearance	6'-11" (2.1m)
Drive Aisle Width (min.)	18'-0" (5.5m) (see 142.04(4)
Maneuvering Aisle W.	22'-0" (6.7m) (see 142.04 for other options)

Small Car Allowance (Parking Bylaw-142.04(2))

Max. 30% of required stalls.

Stall Depth	16'-1" (4.9m)
Stall Width	7'-11" (2.4m)

Standards for Disability Parking Stalls (Parking Bylaw-142.09)

Single Disability Stall width 3.70m (12'-2")

Required Bicycle Parking Stalls (CD3 Zoning)

2/unit

64 Units with 2 stalls = 128

Visitor parking

64 Units @0.2 = 13

Garbage and Recycling Handling Facilities (Bylaw 603.10)

Common facility for garbage and recycling containers

Garbage Container (3.1 Cu.m.): 1/20 units	= 3
Recycling cart: 1/10 units	=6
Cardboard Container (3.1 Cu.m.) 1/40 units	=1

PROJECT SUMMARY 2019.01.09
PROJECT NUMBER: 1712

RODGERS CREEK - AREA 6 - LOT 3

Site Area: 115671.5 sf | 2.65 acres | 10746 sm | 1.07 ha

FSR Summary

	Total Gross SF	SF (for FSR)	FSR
Residential		90690 sf	TARGET: 83,388sf
Total	112995 sf	90690 sf	0.78

Density Summary

Total Units	64
UPA	24.10
UPH	59.58

Parking Area

LEVEL	Parking		
P3	23848 sf	88	
P2	15718 sf	36	
P1	12646 sf	28	**Includes 5 Amenity Bike stalls
Total	52212 sf	132	395.5 sf/stall

Residential Area — Exclusions

LEVEL	Service	Storage	Garbage	Lobby(incl. parcel rm)	Open to Below	Circ./-Excluded	Circulation (incl. util closet)	Residential (Excluded)	Residential	Fitness and Amenity (Excluded)	GFA*	Unit Count		FSR	Efficiency
00/P3	796 sf					1346 sf					2142 sf		2142 sf	sf	
01/P2	2139 sf		421 sf	2249 sf		1850 sf			1242 sf		7892 sf	1	6650 sf	1247 sf	15.7%
02/P1	127 sf				2249 sf	1750 sf			5854 sf		9980 sf	8	4126 sf	5848 sf	58.7%
3	62 sf	8252 sf					1894 sf		9401 sf	662 sf	20531 sf	3	9266 sf	11265 sf	45.8%
4	64 sf						2859 sf		11749 sf		14672 sf	12	64 sf	14608 sf	80.1%
5	57 sf						3011 sf		11866 sf		14834 sf	12	57 sf	14877 sf	79.5%
6							3083 sf		11959 sf		15022 sf	12	sf	15022 sf	79.8%
7							2891 sf		9832 sf		12633 sf	8	sf	12633 sf	77.8%
8							837 sf		4613 sf		5450 sf	3	sf	5450 sf	84.6%
9							841 sf		4428 sf		5269 sf	3	sf	5269 sf	84.0%
10							866 sf		3594 sf		4460 sf	3	sf	4460 sf	80.6%
Total	3236 sf	8252 sf	421 sf	2249 sf	2249 sf	4946 sf	16142 sf (21088 sf)		74548 sf	952 sf	112995 sf	64	22305 sf	90690 sf	86.0%

Residential Unit Summary

Unit Type	UNIT-1C	UNIT-2D	UNIT-2G	UNIT-2H	UNIT-2J	UNIT-2K	UNIT-2M	UNIT-2N	UNIT-2P	UNIT 2Q	UNIT-3L	UNIT-PH-A	TH-D	TH-E	TH-F	Totals
SAFER HOME (TBD)																
Unit Configuration	1Bd	2Bd	2Bd	2Bd	2Bd	2Bd	2Bd+Den	2Bd+Den	2Bd(Lockoff)	2Bd+Den	3Bd+Uno	2Bd+Family	2Bd	2Bd	2Bd	
Unit Area	666 sf	999 sf	998 sf	1029 sf	995 sf	1090 sf	1283 sf	Varies-1345, 1443, 1532	996 sf	1197 sf	Varies-1767, 1786	1807 sf	1388 sf	1389 sf	1322 sf	
(**Indicates Averaged area)							**		**				**			
00/P3																0
01/P2							1									1
02/P1							1						5	1	1	8
3							1	1		1						3
4	5	1	1				1	1	2	1						12
5	5	1	1				1	1	2	1						12
6	5	1	1				1	1	2	1						12
7		1		1	1	1	1	1		1						6
8							1	1		1						3
9							1	1		1						3
10										1		1				
Total	15	4	3	1	1	1	9	7	6	1	8	1	5	1	1	64
% by type	23.4%	6.3%	4.7%	1.6%	1.6%	1.6%	14.1%	10.9%	9.4%	1.6%	12.5%	1.6%	7.8%	1.6%	1.6%	

Parking Summary

Parking/Unit	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Parking Unit Type	15	8	6	2	2	2	18	14	12	2	16	2	10	2	2	113
Visitor																13
																126 (Minimum)
PROVIDED:	Visitor	Regular	Small	H/C	Amenity	Total										
Levels 0,1, 2	13 (*Includes 1 H/C)	103	7	1	8 (*Includes 1 H/C)	132										
Total Stalls	13 stalls	103 stalls	7 stalls	1 stalls	8 stalls	132 stalls										

* GFA includes Service, Storage, Garbage, Open to Below, Amenity, Lobby, Circulation and Residential area

** Average

Parking Schedule:

Parking Schedule-Residential		
Level	Type Mark	Count
LEVEL 00/P3	Regular	66
LEVEL 00/P3	Small	2
		68
LEVEL 01/P2	Regular	21
LEVEL 01/P2	Small	2
		23
LEVEL 02/P1	HC	1
LEVEL 02/P1	Regular	16
LEVEL 02/P1	Small	3
		20
Grand total: 111		111

Parking Schedule-Amenity		
Level	Type Mark	Count
LEVEL 02/P1	Amenity	7
LEVEL 02/P1	Amenity HC	1
		8
Grand total: 8		8

Parking Schedule-Visitor		
Level	Type Mark	Count
LEVEL 01/P2	Visitor	12
LEVEL 01/P2	Visitor-HC	1
		13
Grand total: 13		13

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway Vancouver BC Canada V5T 3J7
T. 604.736.8859
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3
3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Project Statistics

DATE: 2019-01-10 3:04:03 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A002

PROJECT SUMMARY 2019.01.09
PROJECT NUMBER: 1712

RODGERS CREEK - AREA 6 - LOT 3

Site Area	115671.5 sf	2.66 acres	
	10746 sm	1.07 ha	

FSR Summary

	Total Gross SF	SF (for FSR)	FSR
Residential		90690 sf	TARGET: 85,306sf
Total	112995 sf	90690 sf	0.78

Density Summary

Total Units	64
UPA	24.10
UPH	59.56

Parking Area

LEVEL	Parking		
P3	23848 sf	68	
P2	15718 sf	36	
P1	12646 sf	28	**Includes 8 Amenity Bldg. stalls
Total	52212 sf	132	395.5 sf/stall

Residential Area

Exclusions

LEVEL	Service	Storage	Garbage	Lobby(incl. parcel rm)	Open to Below	Circ.-Excluded	Circulation (incl. util closet)	Residential (Excluded)	Residential	Fitness and Amenity (Excluded)	GFA*	Unit Count		FSR	Efficiency
00/P3	796 sf					1346 sf					2142 sf		2142 sf	sf	
01/P2	2130 sf		421 sf	2249 sf		1850 sf			1242 sf		7892 sf	1	6650 sf	1242 sf	15.7%
02/P1	127 sf				2249 sf	1750 sf			5864 sf		9990 sf	8	4126 sf	5864 sf	58.7%
3	62 sf	8252 sf					1864 sf		9401 sf	952 sf	20531 sf	3	9266 sf	11265 sf	45.8%
4	64 sf						2859 sf		11749 sf		14672 sf	12	64 sf	14608 sf	80.1%
5	57 sf						3011 sf		11866 sf		14934 sf	12	57 sf	14877 sf	79.5%
6							3063 sf		11959 sf		15022 sf	12	sf	15022 sf	79.6%
7							2801 sf		9832 sf		12633 sf	8	sf	12633 sf	77.8%
8							837 sf		4613 sf		5450 sf	3	sf	5450 sf	84.6%
9							841 sf		4428 sf		5269 sf	3	sf	5269 sf	84.0%
10							866 sf		3594 sf		4460 sf	2	sf	4460 sf	80.6%
Total	3236 sf	8252 sf	421 sf	2249 sf	2249 sf	4946 sf	16142 sf		74548 sf	952 sf	112995 sf	64	22305 sf	90690 sf	66.0%
							21088 sf								

Residential Unit Summary

Unit Type	UNIT-1C	UNIT-2D	UNIT-2G	UNIT-2H	UNIT-2J	UNIT-2K	UNIT-2M	UNIT-2N	UNIT-2P	UNIT 2Q	UNIT-3L	UNIT-PH-A	TH-D	TH-E	TH-F	Totals
SAFER HOME (TBD)																
Unit Configuration	1Bd	2Bd	2Bd	2Bd	2Bd	2Bd	2Bd+Den	2Bd+Den	2Bd(Lockoff)	2Bd+Den	3Bd+Den	2Bd+Family	2Bd	2Bd	2Bd	
Unit Area	666 sf	999 sf	998 sf	1029 sf	995 sf	1090 sf	1283 sf	Varies-1345, 1443, 1532	996 sf	1197 sf	Varies-1767, 1786	1807 sf	1386 sf	1369 sf	1322 sf	
(**Indicates Averaged area)	**	**	**				**		**				**			
00/P3																0
01/P2							1									1
02/P1							1						5	1	1	8
3							1	1			1					3
4	5	1	1				1	1	2		1					12
5	5	1	1				1	1	2		1					12
6	5	1	1				1	1	2		1					12
7		1		1	1	1	1	1		1	1					8
8							1	1			1					3
9							1	1			1					3
10											1	1				
Total	15	4	3	1	1	1	9	7	6	1	8	1	5	1	1	64
% by type	23.4%	6.3%	4.7%	1.6%	1.6%	1.6%	14.1%	10.9%	9.4%	1.6%	12.5%	1.6%	7.8%	1.6%	1.6%	

Parking Summary

Parking/Unit	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Parking/Unit Type	15	8	6	2	2	2	18	14	12	2	16	2	10	2	2	113
Visitor																13
																126 (Minimum)

PROVIDED:	Visitor	Regular	Small	H/C	Amenity	Total
Levels 0,1, 2	13 (*includes 1 H/C)	103	7	1	8 (*includes 1 H/C)	132
Total Stalls	13 stalls	103 stalls	7 stalls	1 stalls	8 stalls	132 stalls

* GFA includes Service, Storage, Garbage, Open to Below, Amenity, Lobby, Circulation and Residential area

** Average

1 / A301 .Site Plan

1" = 30'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE

355 Kingsway
Vancouver BC
Canada V5T 3J7

T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

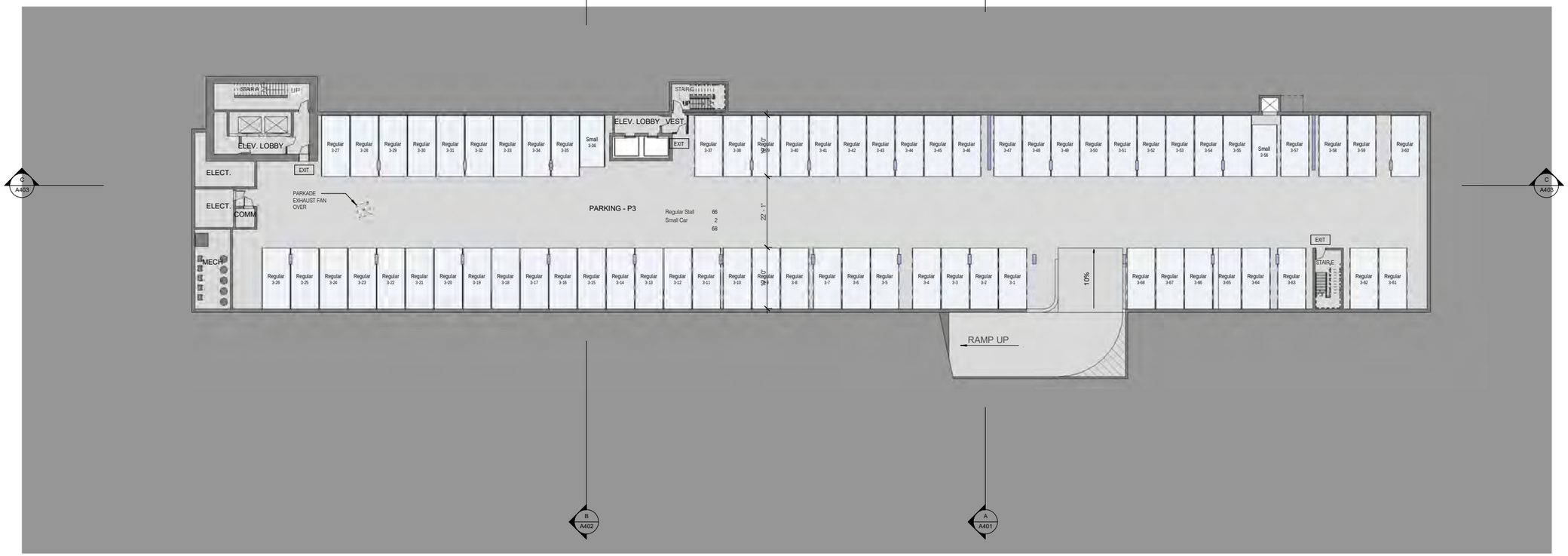
PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Site Plan

DATE: 2019-01-10 3:04:12 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A101



1 Level00/P3
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

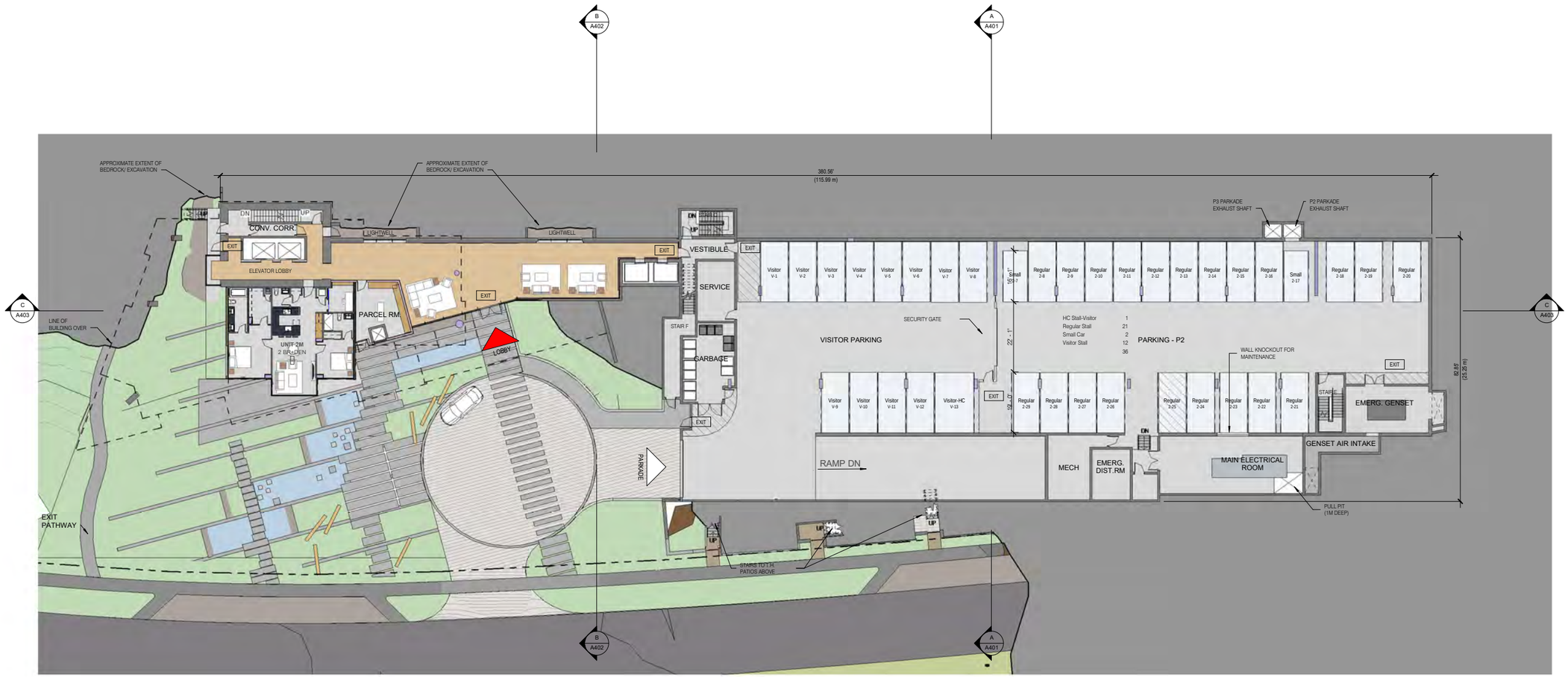
PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 00/P3

DATE : 2019-01-10 3:04:15 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A201



1 Level01/P2
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway Vancouver BC Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

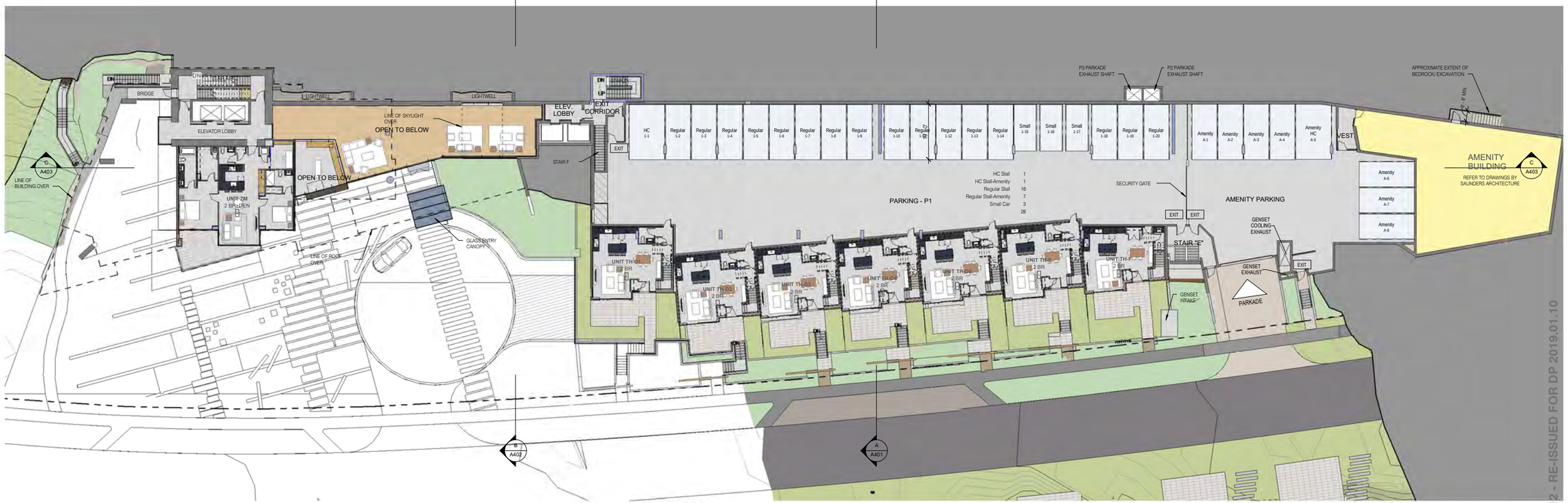
CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3
3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 01/P2

DATE: 2019-01-10 3:04:19 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A202



1712 - RE-ISSUED FOR DP 2019.01.10

1 Level02/P1
1/16" = 1'-0"

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway Vancouver BC Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

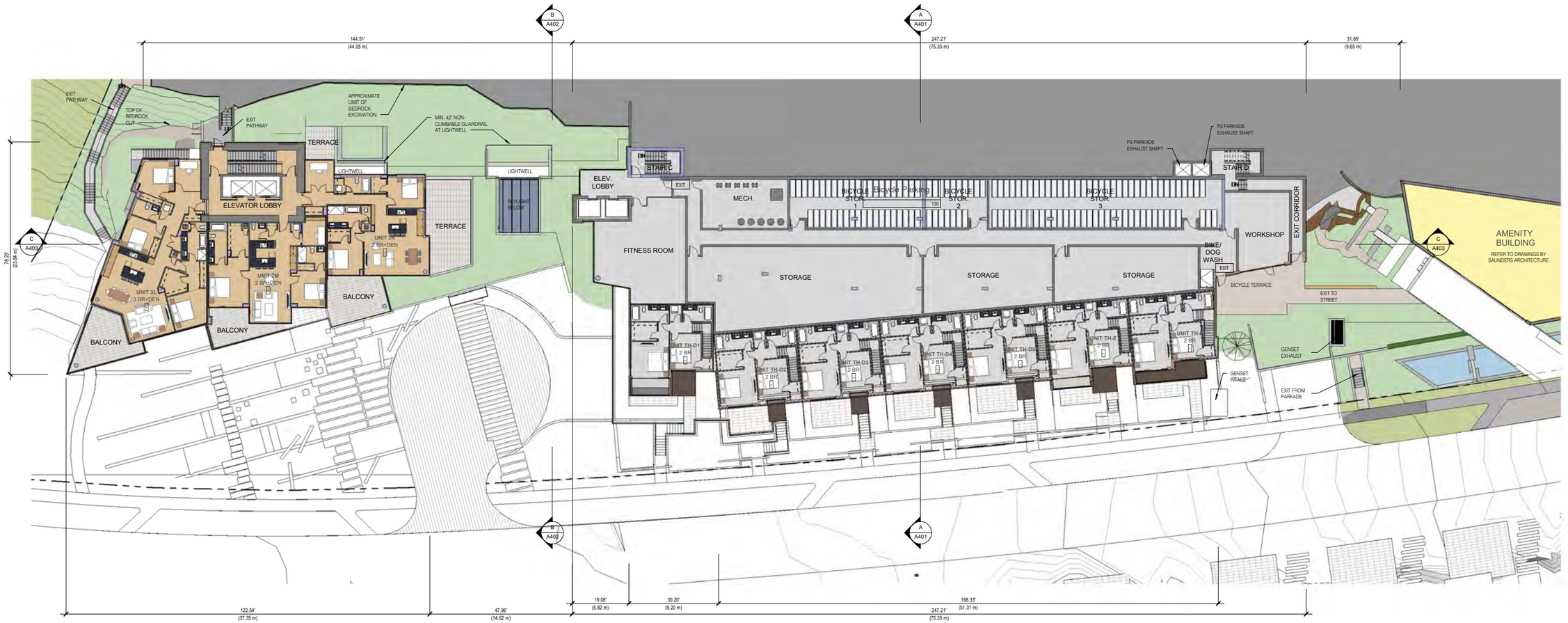
PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 02/P1

DATE 2019-01-10 3:04:24 PM
DRAWN BY: Author
JOB NO: 1712
REVISION -

SHEET NO.
A203



1 Level03
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3
3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 3

NORTH

DATE: 2019-01-10 3:04:30 PM
DRAWN BY: Author
JOB NO: 1712
REVISION: .

SHEET NO.
A204

C / - Level04
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 4

DATE: 2019-01-10 3:04:35 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A205

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 5

DATE : 2019-01-10 3:04:39 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A206

1 Level06
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

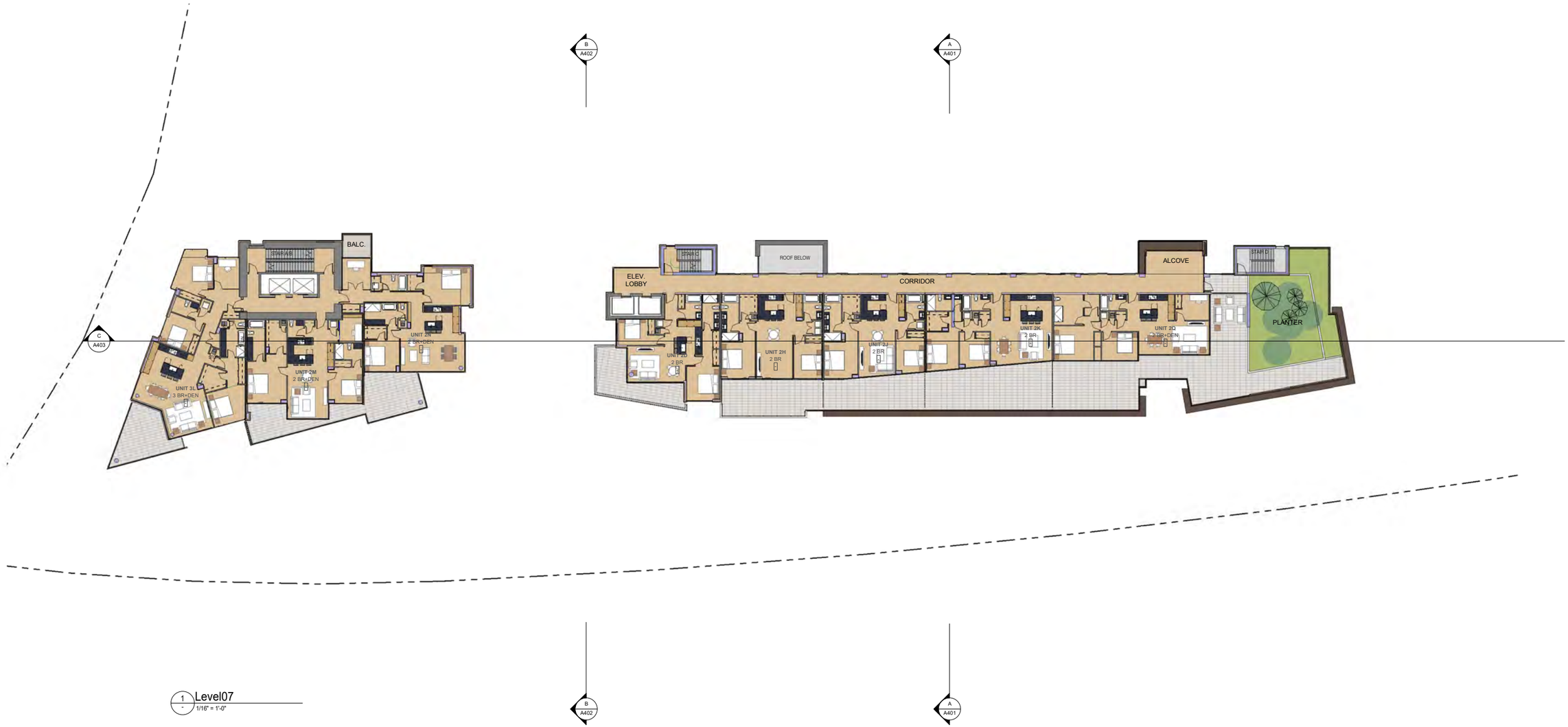
PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 6

DATE: 2019-01-10 3:04:44 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A207



1 Level07
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 7

DATE : 2019-01-10 3:04:48 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A208

1 - Level 08 (Typical Floor)
1/16" = 1'-0"

3 - Level 10 - Penthouse
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Level 8 (Typ.)
Level 10

DATE: 2019-01-10 3:04:52 PM
DRAWN BY: Author
JOB NO: 1712
REVISION:

SHEET NO.
A209

1712 - RE-ISSUED FOR DP 2019.01.10

1 Overall South Elevation
3/64" = 1'-0"

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3
3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
South Elevation
Bldg and Amenity

DATE: 2019-01-10 3:05:14 PM
DRAWN BY: Author
JOB NO: 1712
REVISION:

SHEET NO.
A300

1 Apartment South Elevation
1/16" = 1'-0"

KEYNOTE LEGEND

1.1	ARCHITECTURAL CONCRETE - BOARDFORMED
1.2	ARCHITECTURAL CONCRETE - PAINTED
1.3	ARCHITECTURAL CONCRETE COLUMN - LIGHT SANDBLAST
1.4	SUSPENDED CONCRETE WALKWAY C/W. GLASS GUARDRAILS (MIN. 42")
2.1	CEMENTITIOUS PANEL CLADDING
2.2	CEMENTITIOUS CLADDING OKOSKIN
3.1	ALUMINUM CURTAIN WALL - DOUBLE GLAZED
3.4	ALUMINUM WINDOW WALL - DOUBLE GLAZED
4.2	DOOR - WOOD FINISH
4.3	OVERHEAD GARAGE DOOR
5.1	ALUMINUM + GLASS GUARDRAIL (52")
5.7	PRE-FINISHED METAL GATE
5.8	PRE-FINISHED METAL BREAKSHAPE
5.9	METAL LOUVER - VERT.2"X10" PRE-FINISHED METAL PICKETS
7.2	MECHANICAL ENCLOSURE
8.1	SOLAR VOLTAIC ARRAY
9.2	VEGETATED GREEN WALL - SEE LS
9.5	SUSPENDED CONCRETE BRIDGE C/W. TEMPERED GLASS GUARDRAILS
9.6	EXIT PATH/STAIR

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway Vancouver BC Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
South Elevation

DATE 2019-01-10 3:05:41 PM
DRAWN BY: Author
JOB NO: 1712
REVISION -

SHEET NO.
A301

1 - North Elevation
1/16" = 1'-0"

2 - Tower East Elevation
1/16" = 1'-0"

3 - West Elevation
1/16" = 1'-0"

KEYNOTE LEGEND

1.1	ARCHITECTURAL CONCRETE - BOARDFORMED
1.2	ARCHITECTURAL CONCRETE - PAINTED
1.3	ARCHITECTURAL CONCRETE COLUMN - LIGHT SANDBLAST
1.4	SUSPENDED CONCRETE WALKWAY C/W. GLASS GUARDRAILS (MIN. 42")
2.1	CEMENTITIOUS PANEL CLADDING
2.2	CEMENTITIOUS CLADDING OKOSKIN
3.1	ALUMINUM CURTAIN WALL - DOUBLE GLAZED
3.4	ALUMINUM WINDOW WALL - DOUBLE GLAZED
4.2	DOOR - WOOD FINISH
4.3	OVERHEAD GARAGE DOOR
5.1	ALUMINUM + GLASS GUARDRAIL (52")
5.7	PRE-FINISHED METAL GATE
5.8	PRE-FINISHED METAL BREAKSHAPE
5.9	METAL LOUVER - VERT.2"X10" PRE-FINISHED METAL PICKETS
7.2	MECHANICAL ENCLOSURE
8.1	SOLAR VOLTAIC ARRAY
9.2	VEGETATED GREEN WALL - SEE LS
9.5	SUSPENDED CONCRETE BRIDGE C/W. TEMPERED GLASS GUARDRAILS
9.6	EXIT PATH/STAIR

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3
3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Elevations

DATE: 2019-01-10 3:44:04 PM
DRAWN BY: Author
JOB NO: 1712
REVISION

SHEET NO.
A302

A - Section A-A
1/8" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:
RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Cross Section A-A

DATE: 2019-01-10 3:06:20 PM
DRAWN BY: Author
JOB NO: 1712
REVISION: -

SHEET NO.
A401

B
-
Section B-B
1/8" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Cross Section B-B

DATE: 2019-01-10 3:06:23 PM
DRAWN BY: Author
JOB NO: 1712
REVISION: -

SHEET NO.
A402

C - Section C-C
1/16" = 1'-0"

1712 - RE-ISSUED FOR DP 2019.01.10

ARCHITECT:

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

NO.	DESCRIPTION	DATE	BY
1.	PRELIMINARY DP SUBMISSION	2018.08.08	.
2.	ISSUED FOR DRC	2018.10.25	.
3.	RE-ISSUED FOR DP	2019.01.10	.

NO.	DESCRIPTION	DATE	BY
.	.	.	.
.	.	.	.
.	.	.	.

CLIENT:
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, B.C., V7T 1A2

PROJECT TITLE:
BPP Area 6, Lot 3

3271/3281 Uplands Place,
West Vancouver, B.C.

DRAWING TITLE:
Section C-C

DATE: 2019-01-10 3:06:28 PM
DRAWN BY: Author
JOB NO: 1712
REVISION: -

SHEET NO.
A403

APPENDIX B

ARCHITECTURAL DRAWINGS - SAUNDERS ARCHITECTURE

SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

Rodgers Creek, Area 6
West Vancouver, BC
Canada

COVER

1' = 1'-0"

12/11/2018

A0.00

SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

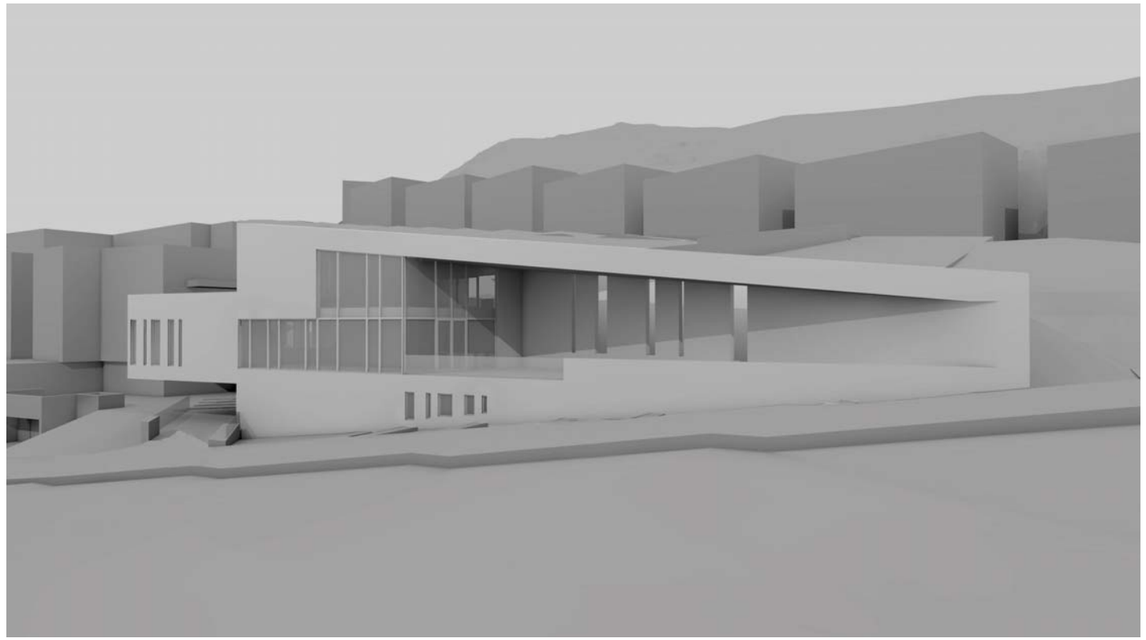
Rodgers Creek, Area 6
West Vancouver, BC
Canada

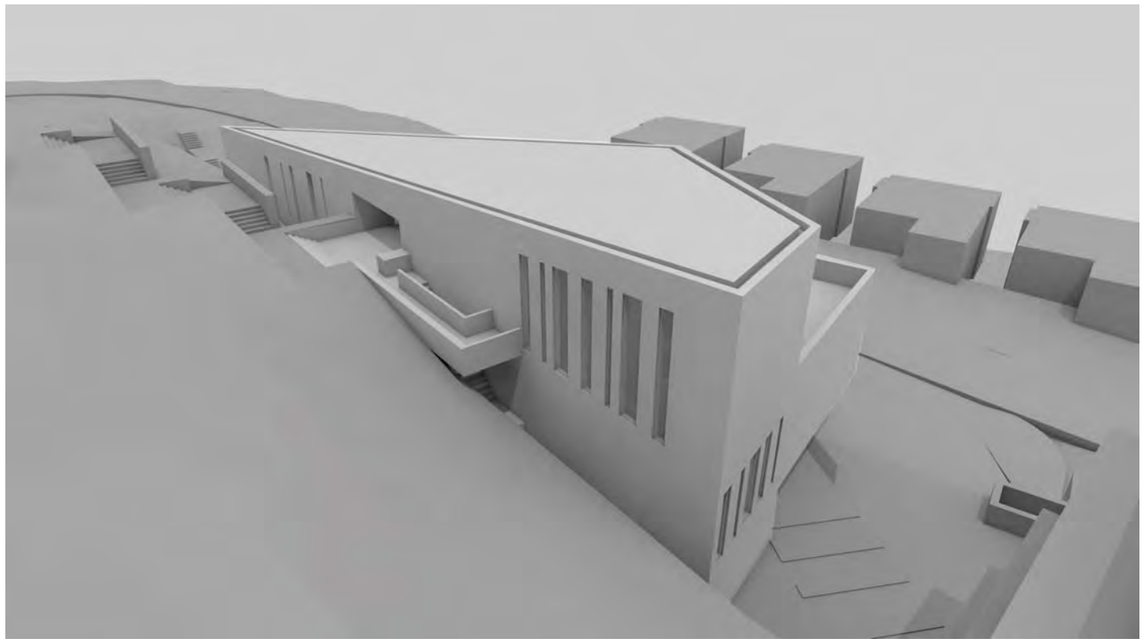
RENDERING

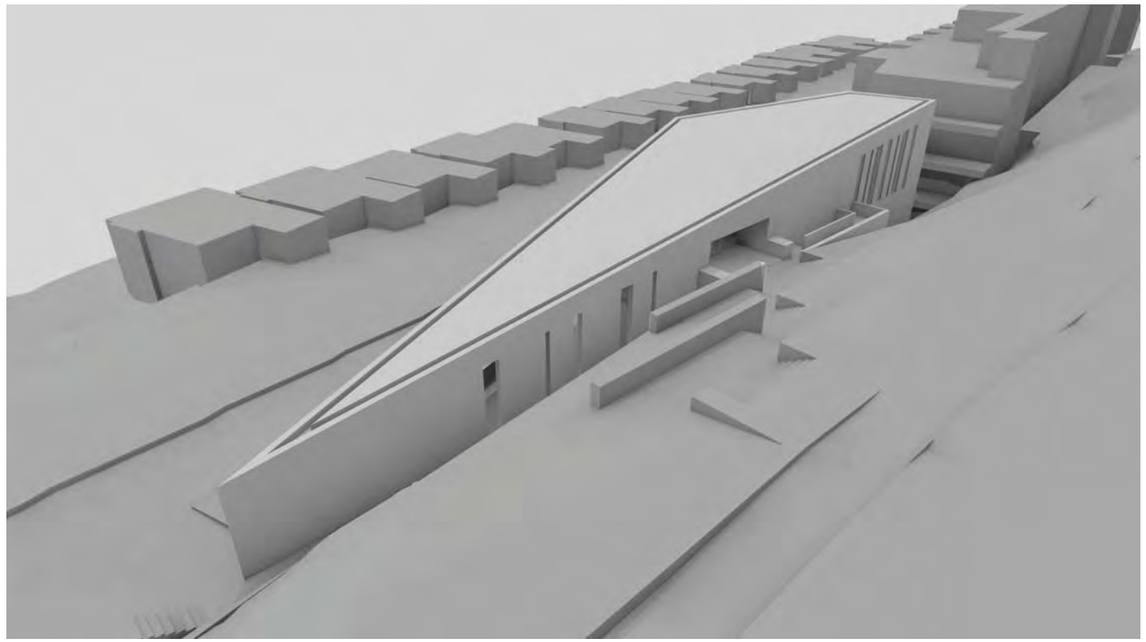
1' = 1'-0"

12/11/2018

A0.01







SAUNDERS ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

Rodgers Creek, Area 6
West Vancouver, BC
Canada

RENDERINGS

1:2

12/11/2018

A0.02

DRAWING LIST

OVERVIEW

REGULATIONS
Zoning Bylaw No. 4662, 2010 District of West Vancouver
CD3 Zoning

SETBACKS

Front Setback	19'-8"	(6m)
Proposed Front Setback	16'-4"	(5m)
Rear Setback	24'-7"	(7.5m)
Proposed Rear Setback	40'-6"	(12.3m)

BUILDING HEIGHT

Max Height	120'-0"	(36.5m)
Proposed Height	45'-0"	(13.7m)

AREAS

Site Coverage	4,761 sf	(442m^2)
Level 1	3,906 sf	
Level 2	3,167 sf	
Level 3	1,953 sf	
TOTAL	9,026 sf	(839m^2)

AVERAGE FINISHED GRADE

Grade 1	Grade 2	Average	Length	Product
A 1,041.00	B 1,041.00	1,041.00	48.75	50,748.75
B 1,041.00	C 1,041.00	1,041.00	21.17	22,037.97
C 1,041.00	D 1,053.00	1,047.00	180.00	188,460.00
D 1,053.00	A 1,041.00	1,047.00	136.67	143,093.49
		TOTAL	386.59	404,340.21

Average Finished Grade
Feet: 1,045.91
Meters: 318.79

SAUNDERS ARCHITECTURE
Wernersholmvegen 31
5232 Paradis
Norway
www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

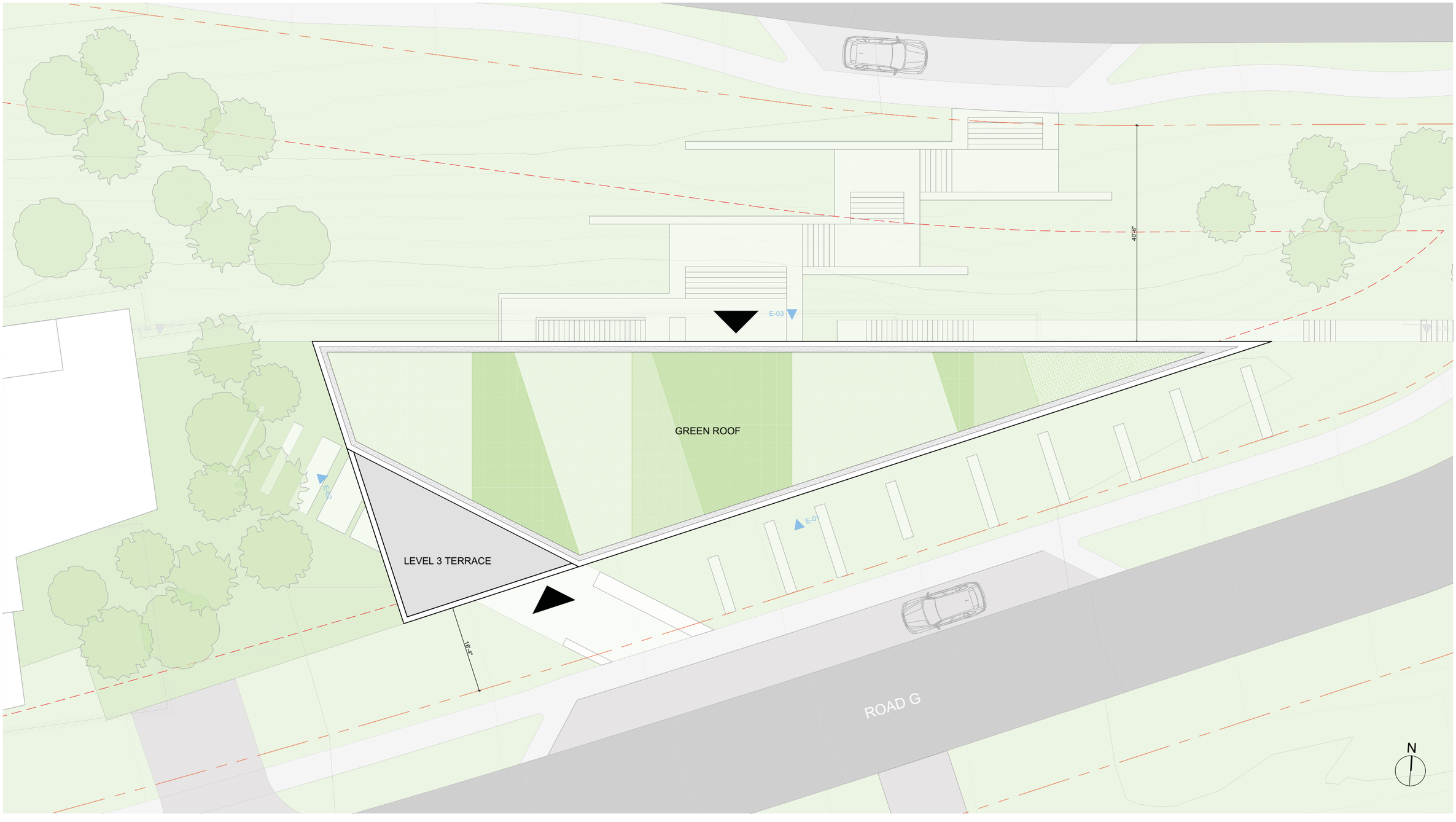
British Pacific Properties
1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building
Rodgers Creek, Area 6
West Vancouver, BC
Canada

DRAWING LIST & OVERVIEW

12/11/2018

A0.03



SAUNDERS ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

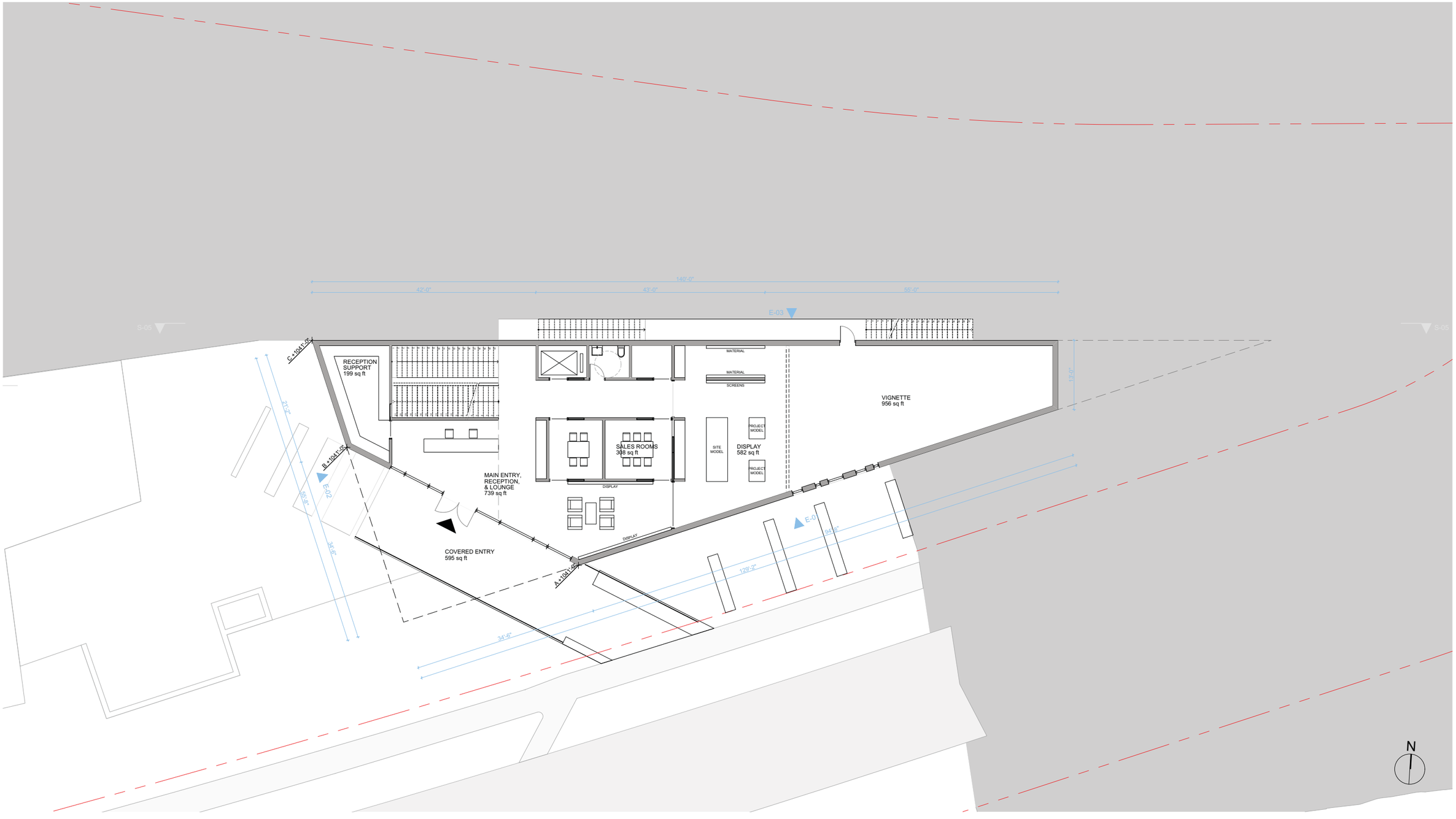
Rodgers Creek, Area 6
West Vancouver, BC
Canada

SITE PLAN

1/8" = 1'-0"

12/11/2018

A1.01



SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE

355 Kingsway
Vancouver BC
Canada V5T 3J7

T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

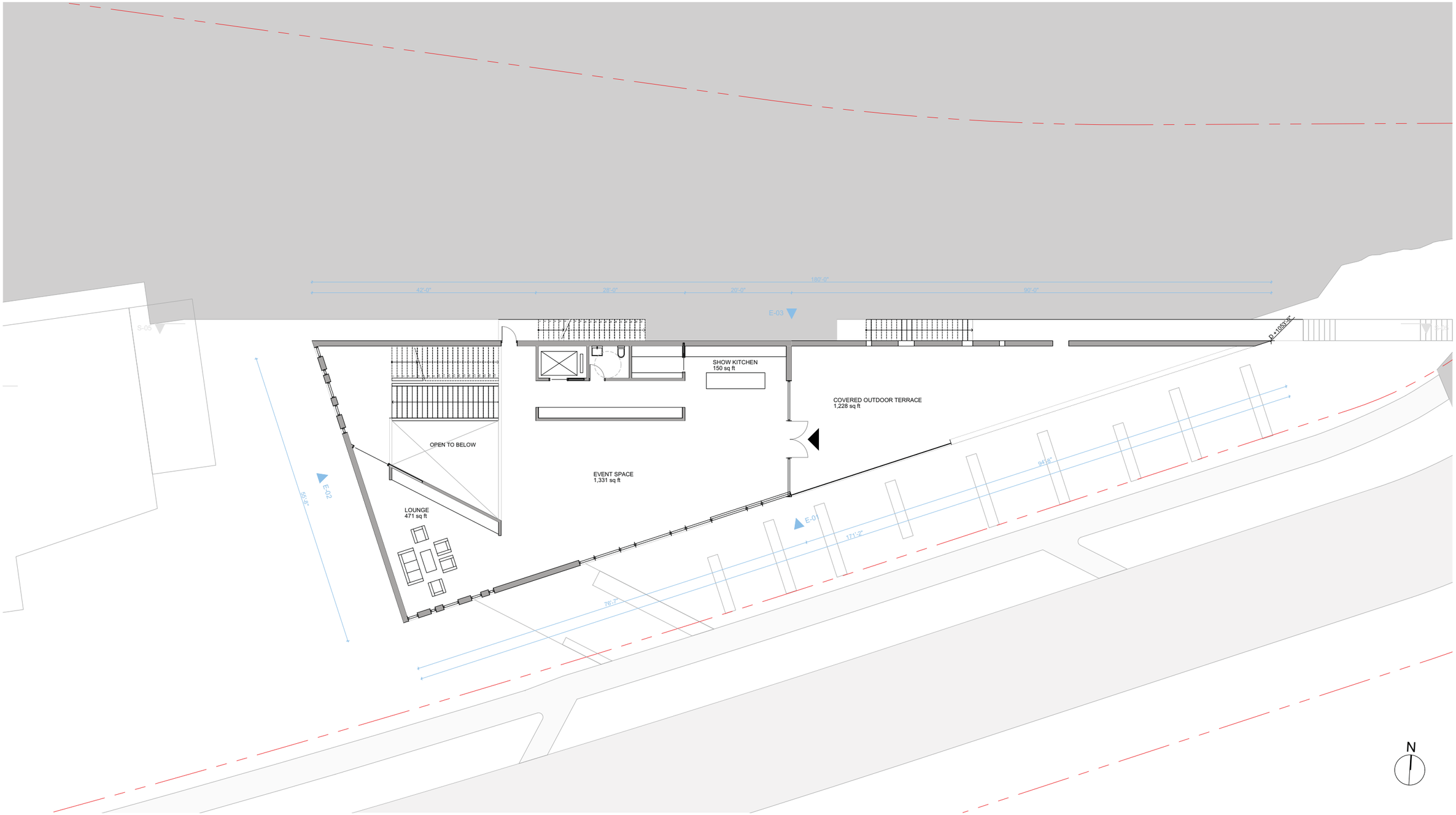
Rodgers Creek, Area 6
West Vancouver, BC
Canada

FLOOR 1

1/8" = 1'-0"

12/11/2018

A2.01



SAUNDERS ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

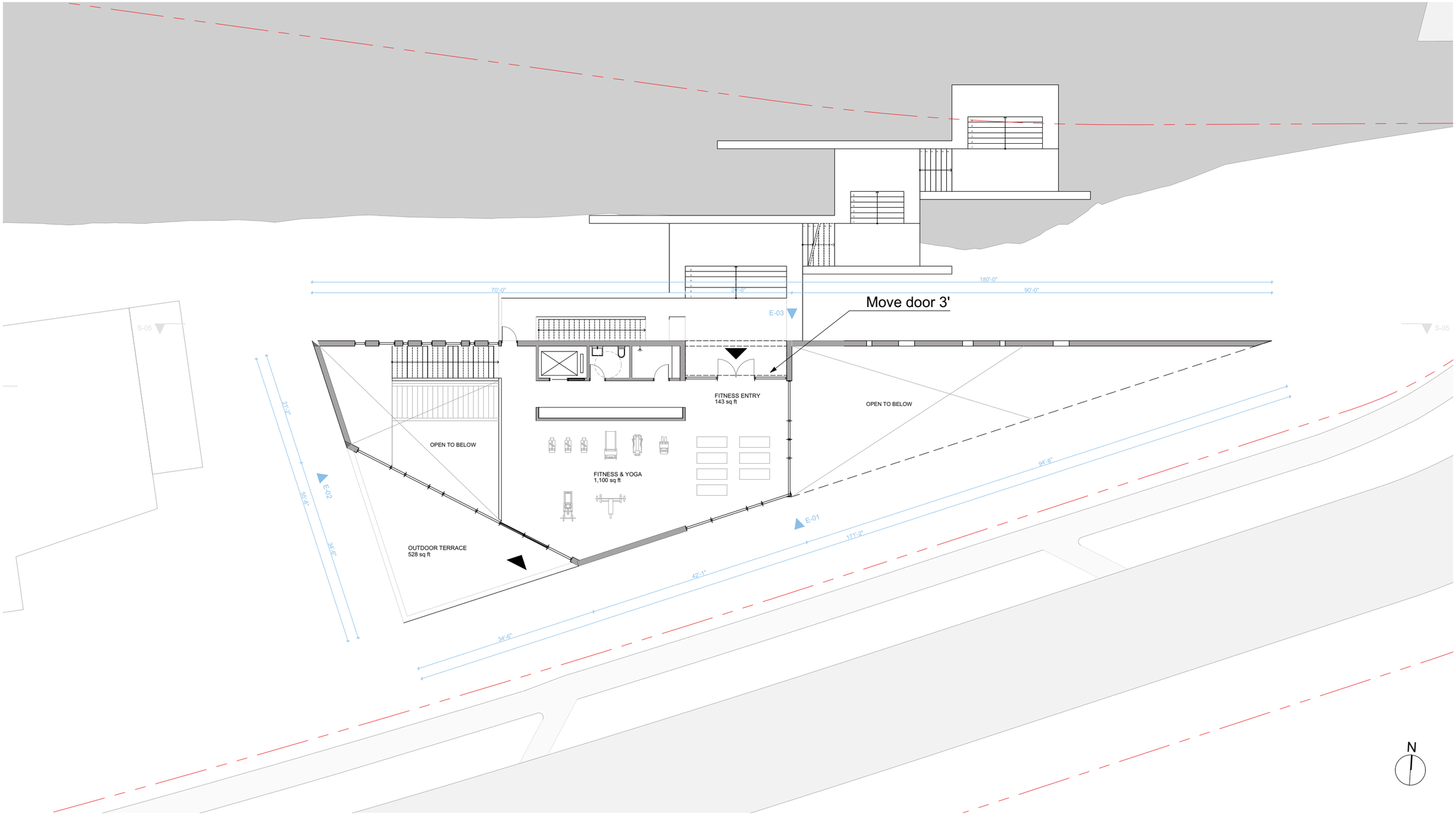
Rodgers Creek, Area 6
West Vancouver, BC
Canada

FLOOR 2

1/8" = 1'-0"

12/11/2018

A2.02



SAUNDERS ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

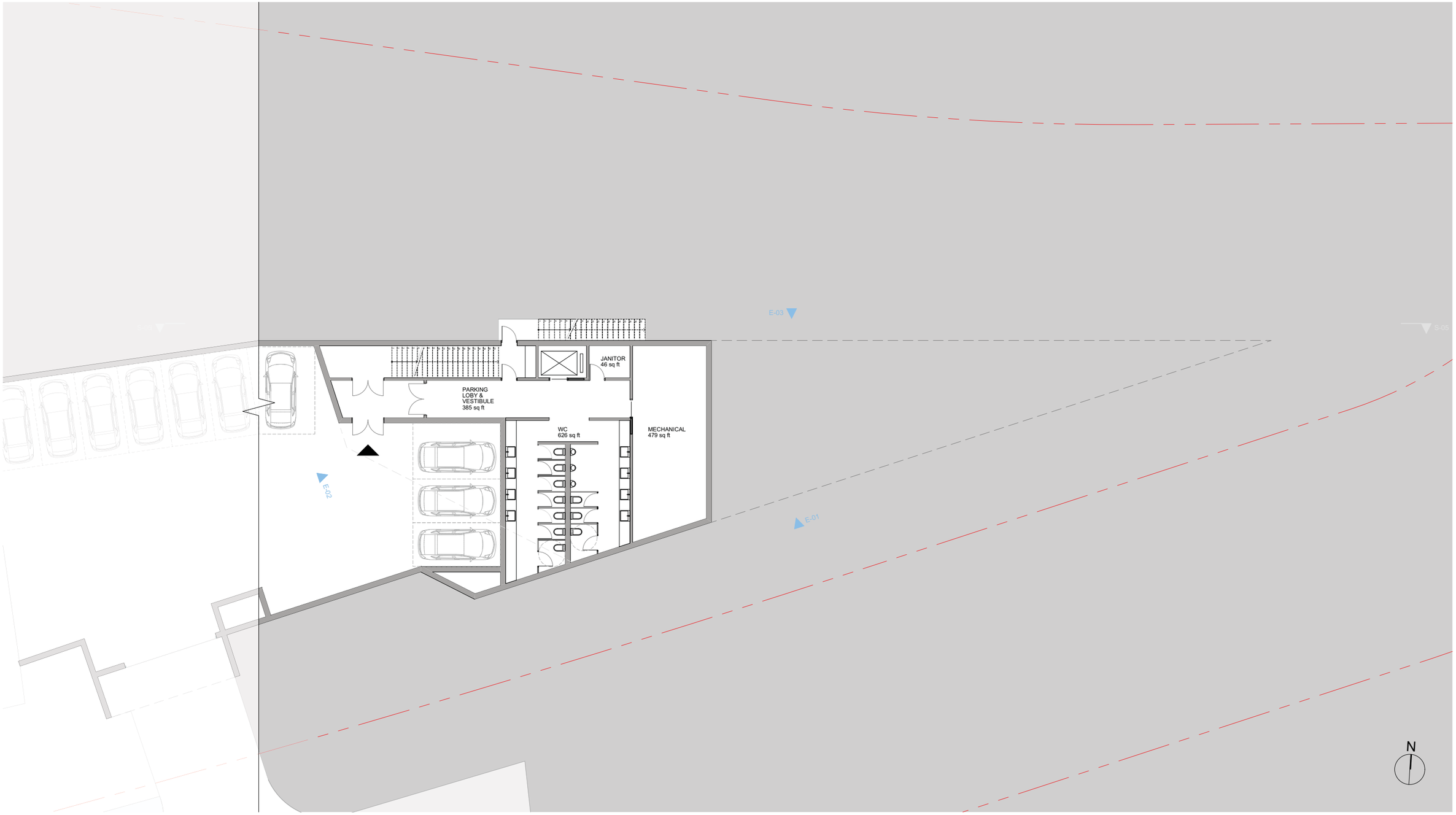
Rodgers Creek, Area 6
West Vancouver, BC
Canada

FLOOR 3

1/8" = 1'-0"

12/11/2018

A2.03



SAUNDERS ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T: 604.736.8959
E: info@rwa.ca
W: www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

Rodgers Creek, Area 6
West Vancouver, BC
Canada

FLOOR 0 PARKING

1/8" = 1'-0"

12/11/2018

A2.04

SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T: 604.736.6959
E: info@rwa.ca
W: www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

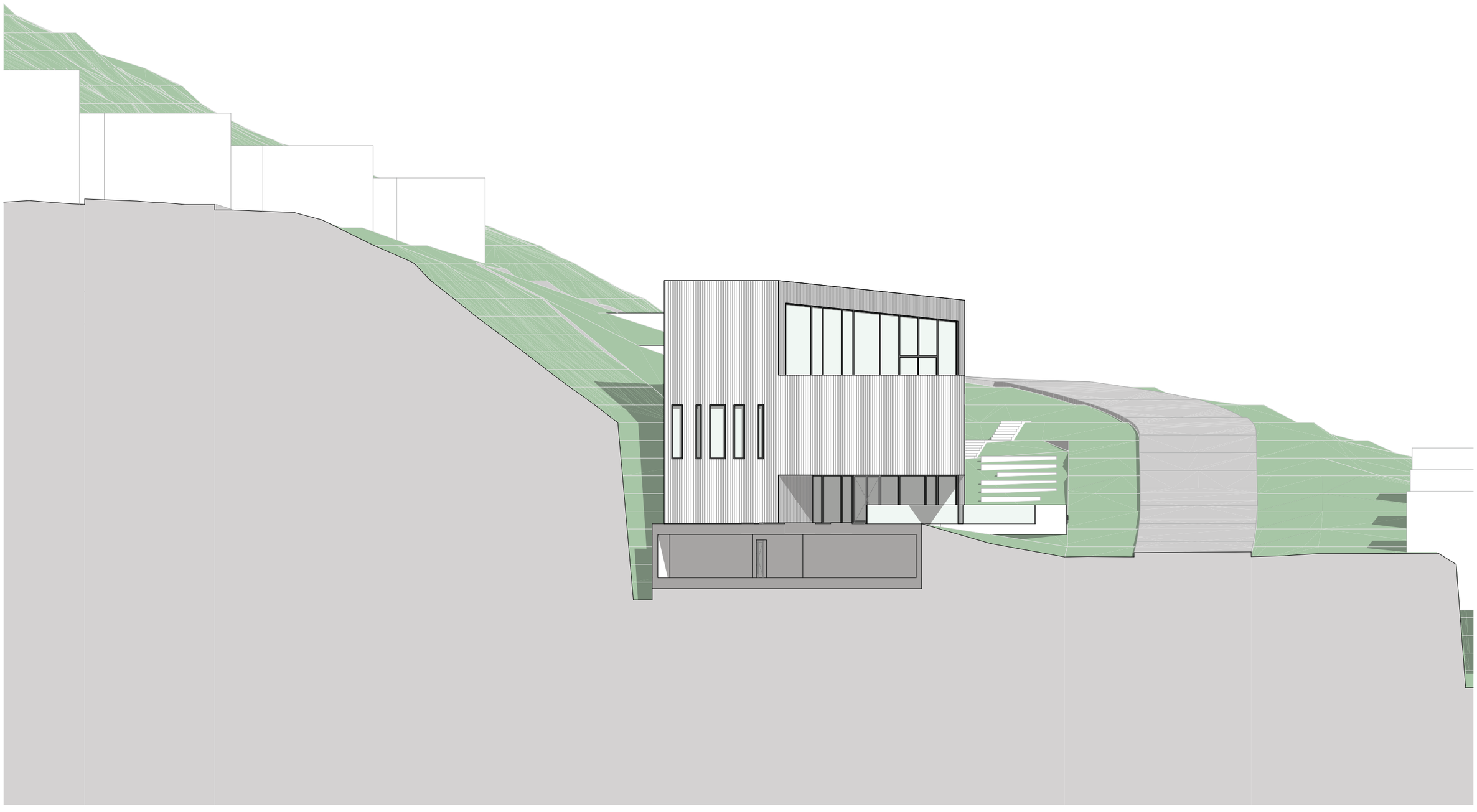
Rodgers Creek, Area 6
West Vancouver, BC
Canada

ELEVATION SOUTH

1/8" = 1'-0"

12/11/2018

A3.01



SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.6959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

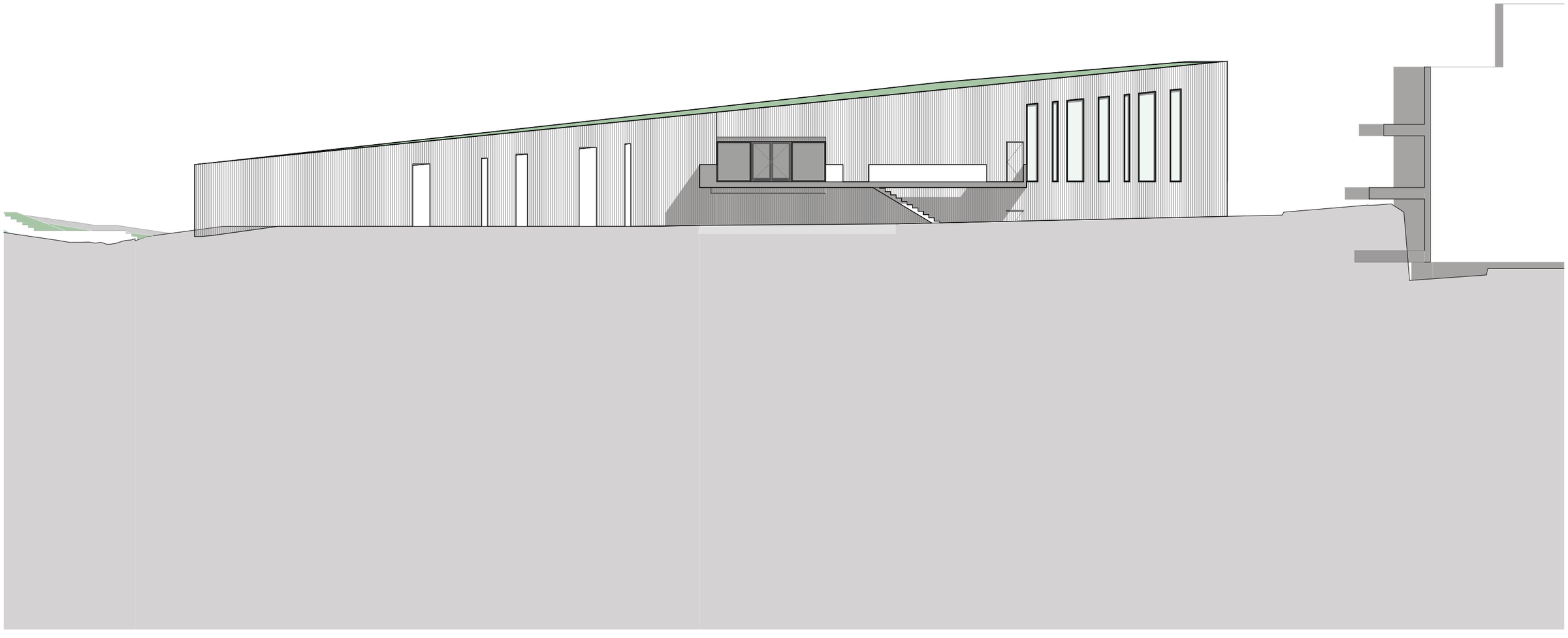
Rodgers Creek, Area 6
West Vancouver, BC
Canada

ELEVATION WEST

1/8" = 1'-0"

12/11/2018

A3.02



SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

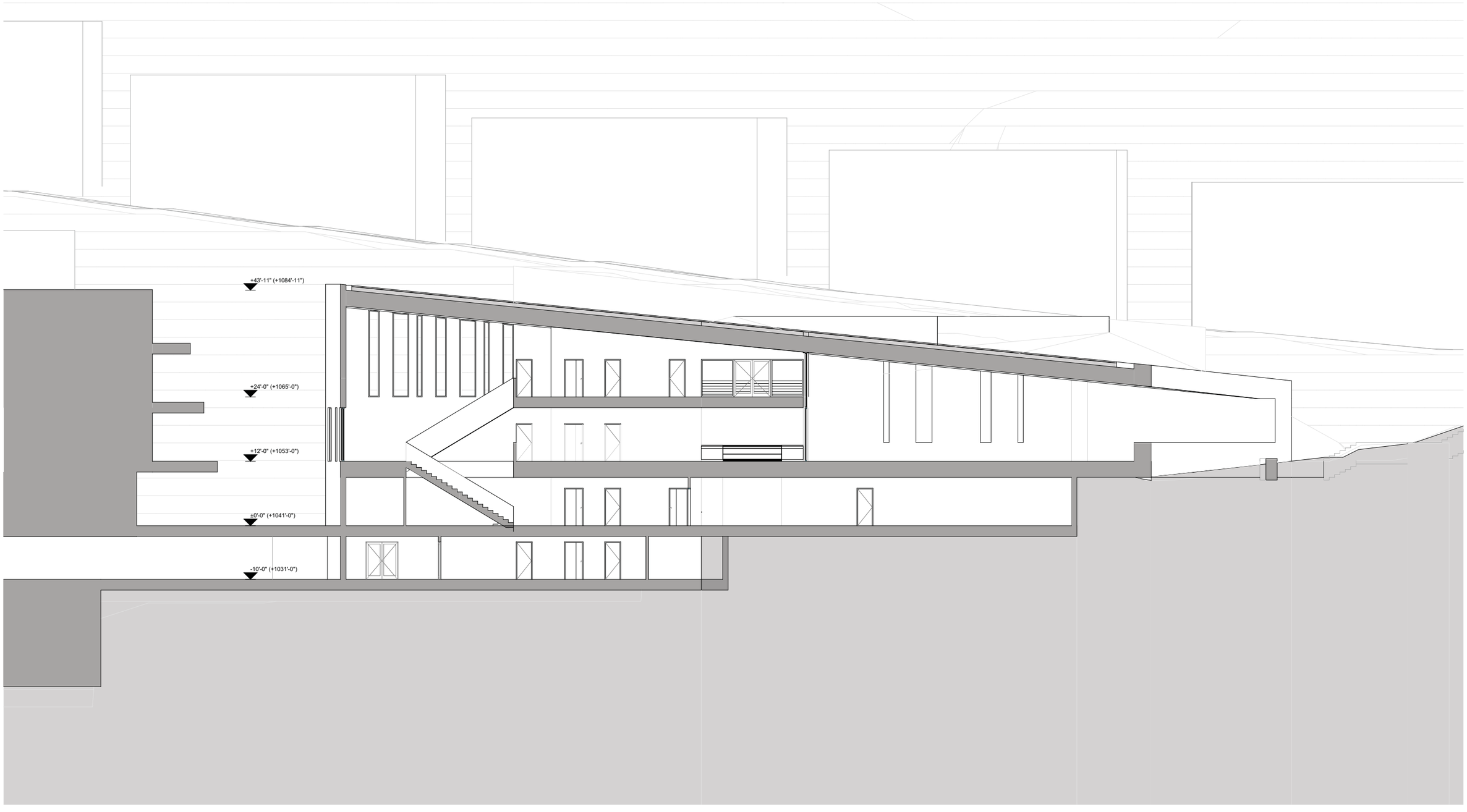
Rodgers Creek, Area 6
West Vancouver, BC
Canada

ELEVATION NORTH

1/8" = 1'-0"

12/11/2018

A3.03



SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T: 604.736.8959
E: info@rwa.ca
W: www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

Rodgers Creek, Area 6
West Vancouver, BC
Canada

SECTION AA

1/8" = 1'-0"

12/11/2018

A4.01

SAUNDERS
ARCHITECTURE

Wernersholmvegen 31
5232 Paradis
Norway

www.saunders.no

RWA ARCHITECTURE
355 Kingsway
Vancouver BC
Canada V5T 3J7
T. 604.736.8959
E. info@rwa.ca
W. www.rwa.ca

British Pacific Properties

1001 - 100 Park Royal South,
West Vancouver, BC, V7T 1A2
Canada

Neighbourhood Amenity Building

Rodgers Creek, Area 6
West Vancouver, BC
Canada

SECTION BB

1/8" = 1'-0"

12/11/2018

A4.02

APPENDIX C
LANDSCAPE DRAWINGS

existing 1:1 rock slope to be vegetated/hydroseeded typ.

mse vegetated walls to create planting pockets on slope typ.

shotcrete wall, see arch details

linear entry turnaround pavers typ.

accent paving for pedestrian access path typ.

unit 8

unit 7

unit 6

unit 5

unit 4

Lot 4

unit 3

unit 2

unit 1

pedestrian access

mse vegetated walls typ.

decorative headwall channels water from culvert under road to raingarden and bioswale

ROAD H

Amenity Building Green Roof

Green Roof

Green Roof

Level 7 Terrace

Green Roof

Green Roof

Level 10 Terrace

Water Feature Concept

decorative bioswale steps with grade

lay-by parking typ. -see civil for details

cip concrete bridge crosses raingarden

ROAD G

playground

Lot 2

pedestrian entry arbour typ.

boulevard planting typ. -see InterCad eng. for details and PWL for planting species and quantities

cip concrete entry slabs (reflect hardscape materials across the street) typ.

concrete pavers typ.

N

FORMA DESIGN INC.
www.formadesign.ca

209-828 Harbourside Dr.
North Vancouver
British Columbia
Canada V7P 3R9
tel 604-986-9193
fax 604-986-7320

Revisions:
1. Issued for DRC, October 25, 2108
Issued for DP, December 19, 2108

Consultants:

RAMSAY WORDEN ARCHITECTS
205 Kingsway
Vancouver, B.C.
Canada, V5T 3J7
T: 604 736 8979
F: 604 736 8859
E: info@rwa.ca

BRITISH PACIFIC PROPERTIES

Project:
Area 6 Lot 3.
West Vancouver, BC

Title:
Site/Context Plan

Drawn: RS
Checked: BH
Date: Sept 2018

Scale: 1:300

Project No: 18.014

Sheet No: L1 of 4

existing 1:1 rock slope to be vegetated/hydroseeded typ.

mse vegetated walls to create planting pockets on slope typ.

shotcrete wall, see arch details

linear entry turnaround pavers typ.

accent paving for pedestrian access path typ.

pedestrian access

mse vegetated walls typ.

decorative headwall channels water from culvert under road H to raingarden and bioswale

Lot 4

ROAD H

decorative bioswale steps with grade

lay-by parking typ. -see civil for details

cip concrete bridge crosses raingarden

playground

Water Feature Concept

ROAD G

Lot 2

pedestrian entry arbour typ.

boulevard planting typ. -see InterCad eng. for details and PWL for planting species and quantities

cip concrete entry slabs (reflect hardscape materials across the street) typ.

concrete pavers typ.

N

FORMA DESIGN INC.
www.formadesign.ca

209-828 Harbourside Dr.
North Vancouver
British Columbia
Canada V7P 3R9
tel 604-986-9193
fax 604-986-7320

Revisions:

1. Issued for DRC, October 25, 2108
2. Issued for DP, December 19, 2108

Consultants:

RAMSAY WORDEN ARCHITECTS
205 Kingsway
Vancouver, B.C.
Canada, V5T 3J7
T: 604.736.8979
F: 604.736.8899
E: info@rwa.ca

BRITISH PACIFIC PROPERTIES

Project:

Area 6 Lot 3.
West Vancouver, BC

Title:

Layout & Grading Plan

Drawn: RS
Checked: BH
Date: Sept 2018

Scale: 1:300

Project No: 18.014

Sheet No: L2 of 4

PLANT LIST - ON SITE					
ID	Latin Name	Common Name	Quantity	Scheduled Size	Notes
TREES					
AC	Acer circinatum	Vine Maple	43	2.5m ht.	
CN	Cornus nuttallii 'Eddie's White Wonder'	'Eddie's White Wonder' Dogwood	24	3.0m ht.	
CRD	Crataegus douglasii	Black Hawthorn	1	#3 pot	
GBA	Ginkgo biloba 'Autumn Gold'	Autumn Gold Maidenhair Tree	6	5cm cal.	
GSM	Gleditsia triacanthos var. inermis 'Shadema	Shademaster Honeylocust	24	5cm cal.	
POM	Picea omorika	Serbian Spruce	78	3.0m	
PIF	Pinus flexilis 'Vanderwolf's Pyramid'	Vanderwolf's Pyramid Limber Pine	30	3.0m	
PT	Populus tremula 'Erecta'	Columnar Swedish Aspen	9	3.0m ht.	
TP	Thuja plicata	Western Red Cedar	4	3.0m	
SHRUBS					
Cht	Choisya ternata	Mexican Orange Blossom	342	#5 pot	
Txh	Taxus x media 'Hicksii'	Hick`s Yew	160	#3 pot	
PERENNIALS & GROUNDCOVER					
je	Juncus effusus	Soft Common Rush	469	#1 pot	
lim	Liriope muscari	Big Blue Lily Turf	1442	#1 pot	
ORN. GRASSES & BAMBOO					
cab	Carex buchananii	Fox Red Curly Sedge	1387	#1 pot	
msg	Miscanthus sinensis 'Gracillimus'	Maiden Grass	4952	#1 pot	

N

FORMA DESIGN INC.
www.formadesign.ca

209-828 Harbourside Dr.
North Vancouver
British Columbia
Canada V7P 3R9
tel 604-986-9193
fax 604-986-7320

Revisions:

1. Issued for DRC, October 25, 2108
2. Issued for DP, December 19, 2108

Consultants:

RAMSAY WORDEN ARCHITECTS
205 Kingsway
Vancouver, B.C.
Canada, V5T 3J7
T: 604 736 8555
F: 604 736 8556
E: info@rwa.ca

BRITISH PACIFIC PROPERTIES

Project:

Area 6 Lot 3.
West Vancouver, BC

Title:

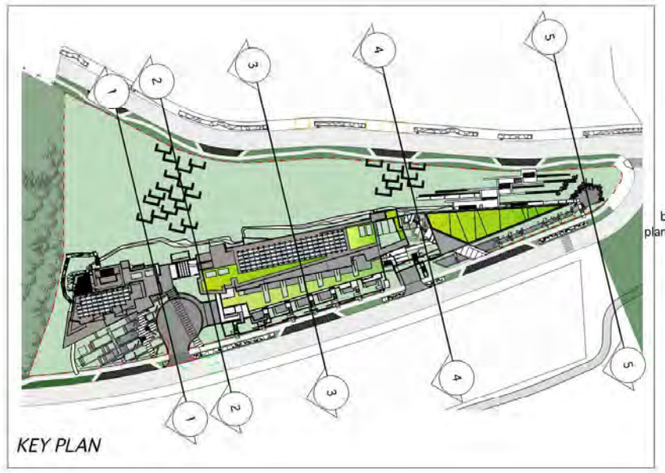
Planting Plan

Drawn: RS
Checked: Bill
Date: Sept 2018

Scale: 1:300

Project No: 18.014

Sheet No: L3 of 4



1 Section 1
Scale: 1:250

2 Section 2
Scale: 1:250

3 Section 3
Scale: 1:250

4 Section 4
Scale: 1:250

5 Section 5
Scale: 1:250

N

FORMA DESIGN INC.
www.formadesign.ca

208-828 Harbourside Dr.
North Vancouver
British Columbia
Canada V7P 3R9
tel 604-986-9193
fax 604-986-7320

Revisions:
1. Issued for DRC, October 25, 2108
2. Issued for DP, December 19, 2108

Consultants:

RAMSAY WORDEN
LANDSCAPE ARCHITECTS
205 Kingsway
Vancouver B.C.
Canada, V5T 3J7
T: 604.736.9959
F: 604.736.9909
E: info@rwla.ca

BRITISH PACIFIC PROPERTIES

Project:
Area 6 Lot 3.
West Vancouver, BC

Title:
Sections

Drawn: RS
Checked: BM
Date: Sept 2018

Scale: 1:250

Project No: 18.014
Sheet No: L4 of 4

APPENDIX D
BACKGROUND INFORMATION

APPENDIX D: RODGERS CREEK AREA DEVELOPMENT PLAN - GREEN BUILDING STRATEGY

RODGERS CREEK AREA DEVELOPMENT PLAN

The Rodgers Creek Development Plan (RCADP) was written in 2008, with the intention of creating a progressive set of principles and strategy for development of the area. The Plan incorporated a thorough Sieve Analysis through which strategies for development were established. One strategy identifies the progressive direction intended by the plan:

> *"On-going review of new sustainability standards, technologies and strategies including exploring avenues for "future proofing" buildings to allow for the future installation of new technologies at the Development Permit Stage."*

GREEN BUILDING STRATEGIES

Some of the key green building strategies are addressed in The Rodgers Creek Area Development Plan *(RCADP, 2008, Appendix D)* are identified below in bold , followed by proposed actions:

> GREEN BUILDING STANDARDS

PRINCIPLE: Commitment to a minimum of BuiltGreen High Density (HD)

ACTION: The project will be accredited under BuiltGreen High Density (HD) with a target of Silver

> ENERGY CONSERVATION

PRINCIPLE: Passive Solar design, natural ventilation and daylighting.

ACTION: The suites are oriented to take advantage of solar gain in winter, and incorporate large overhangs to control solar heat gain in summer. Some suites have 2 or 3-sided exposure to allow operable windows to be opened up to provide natural cross ventilation. South facing windows are large to promote penetration of daylight.

PRINCIPLE: Min R40 roof, R20 walls, R20 floors over unheated parkades, Energy Efficient Windows, Light Fixtures

ACTION: Rather than relying on prescriptive performance values, the energy modellers have developed an energy model to better calculate and compare insulation values against sustainability factors and construction implications. The best solution will be a combination of optimized insulation, high performance glazing and mechanical systems, and thoughtful design and detailing, which will meet the current building code requirements, and exceed the energy performance targets set out in the 2008 plan. *(See Appendix E: Preliminary Energy Model Summary)*

PRINCIPLE: Energy Efficient Heating and Cooling systems

ACTION: A Variable Refrigerant Flow (VRF) system is proposed for this project. A VRF system is a technology introduced as a system to minimize efficiency losses found in conventional HVAC systems and to provide sustainable energy benefits. A VRF system has the lowest life cycle cost of any system on the market today.

The heating and cooling load of a building is always changing throughout the day and year by factors such as ambient temperature, solar heat gain, occupancy level, etc., yet the majority of the time the building load is only at a partial load condition. VRF technology is able to dynamically modulate the system's capacity to meet the actual load of the building. Thus, only the necessary amount of energy is consumed. VRF systems are 20% to 30% more efficient than conventional HVAC systems due to partial load operation, speed modulation, zoning capabilities, and heat-recovery technology.

VRF is powered entirely by electricity, so no greenhouse gasses are produced for heating and cooling. *(See Appendix F: HVAC System Narrative)*

PRINCIPLE: Energy Star labelled programmable thermostats

ACTION: Energy Star programmable thermostats or equivalent will be specified. *(See Appendix E: GreenBuilt Checklist)*

PRINCIPLE: LED lighting in apartment buildings

ACTION: All common areas will incorporate LED lighting. Fixed lighting within the suites will also incorporate LED fixtures and bulbs.

PRINCIPLE: Reduced light pollution

ACTION: Occupancy sensors will dim lights when spaces are inactive, and landscape lighting will be designed to meet "Dark Sky" standards.

PRINCIPLE: Consider Heat Recovery systems (HRV)

ACTION: HRV's are installed in each residence.

> WATER CONSERVATION

PRINCIPLE: Individual water metering

ACTION: The design team has considered other options to reduce water consumption. The cost of installing individual meters was analysed by the design team which concluded that those financial resources would be more effective if applied to other sustainability targets.

PRINCIPLE: Water Efficient landscape

ACTION: See *Landscape Design*

PRINCIPLE: Temporary irrigation or automatically controlled with rain or soil sensors and a pressure regulator.

ACTION: See *Landscape Design*

> GREEN ROOFS & TERRACES

PRINCIPLE: Energy Star compliant reflective or high emissivity roofing for 75% or the roof surface

ACTION: High emissivity roofing will be incorporated where roof surfaces are not green roofs.

PRINCIPLE: Green roofs

ACTION: Green roofs are incorporated in the design.

> INDOOR ENVIRONMENTAL QUALITY

PRINCIPLE: Low-emitting finishes, adhesives, sealants and coatings

ACTION: Low-VOC materials will be selected.

> UNIVERSAL DESIGN & ACCESSIBILITY

PRINCIPLE: 100% of units to have 'basic' accessibility features

ACTION: The BCBC imposes a minimum requirement for accessibility to all units, which is being met in this design.

PRINCIPLE: Up to 20% of units to have optional upgrade to Level 2 accessible features, fixtures and finishes during presale processes

ACTION: See *Housing Diversity*

PRINCIPLE: 20% of all units to meet SAFERhome standards

ACTION: See *Housing Diversity*

PRINCIPLE: Projects to be reviewed by CPTED practitioner

ACTION: A CPTED practitioner is an active member of the design team.

> SUSTAINABLE DESIGN

PRINCIPLE: At least 1 LEED accredited professional on the team

ACTION: The accredited professionals retained are specialists in the BuiltGreen High Density (HD) system. *(See Appendix E: BuiltGreen)*

PRINCIPLE: IDP meeting at beginning of project

ACTION: The design team has been selected, and the design is a result of design meetings and close collaboration between the team members.

> GREEN INFRASTRUCTURE:

>> ALTERNATIVE TRANSPORTATION CHOICES

PRINCIPLE: Co-op cars or car sharing in multi-family buildings

ACTION: 1 shared EV car will be shared by the strata.

>> ALTERNATIVE ENERGY SOURCES & ENERGY CONSERVATION

PRINCIPLE: Committed to Ground Source Heating & Cooling for all concrete buildings

ACTION: A highly efficient air source system has been selected, due to challenging subsurface conditions.

PRINCIPLE: Passive measures for cooling

ACTION: Balconies and broad roof overhangs provide shading from direct summer sun. All units will have large operable windows, and some upper units are double fronting, providing opportunities for natural cross ventilation.

PRINCIPLE: Solar and wind power

ACTION: A bank of solar panels is proposed. The energy production estimates are being analysed as part of the energy modelling. *(See Appendix G: Solar Photovoltaic Panel Design Report)*

PRINCIPLE: Heat recovery from sanitary sewer

ACTION: Given the number of units, the design team is targeting other heat recovery systems such as HRV.

>> INTEGRATED STORMWATER MANAGEMENT

PRINCIPLE: Stormwater runoff to be managed on a lot, a neighbourhood and a watershed level

ACTION: The objective of the proposed Stormwater Management Plan is to mitigate changes in quantity and quality of discharging stormwater due to development of the site, and to safely convey the minor and major storm events away from the proposed building to natural watercourses or the municipal system. Stormwater quantity will be addressed by runoff volume reduction measures such as absorbent soils and infiltration trenches. These point-source low impact development (LID) measures will promote on-site capture and retention of stormwater. These measures also function to address the quality aspect as well where absorbent soil and infiltration trenches provide removal of suspended soils and the plants and vegetation provide nutrient uptake. *(See Appendix H: Stormwater Management Plan)*

These measures also encourage groundwater recharge to promote base flows in local creeks and other watercourses supporting the health of the local environment.

ACTION: Incorporate permeable driveway and walkway paving materials.

> SOLID WASTE MANAGEMENT STRATEGY

PRINCIPLE: Construction waste management plan that diverts a minimum of 75% (by weight) of construction, demolition and land clearing waste from landfill.

ACTION: Project to target a minimum of 75% (by weight) of waste materials collected from construction site to be diverted from waste stream. *(See Appendix E: BuiltGreen Checklist)*

PRINCIPLE: Recycling Facilities

ACTION: Facilities for separation and collection of recyclable materials will be provided within units and buildings.

PRINCIPLE: Re-use of site generated rock for retaining walls and landscaping.

ACTION: Landscape walls and features will be constructed using local site generated rock.

PRINCIPLE: Use of recycled materials in new home construction.

ACTION: Recycling of waste materials during construction, with verification that min. 10% of materials from site have been recycled except where higher targets are mandated by BuiltGreen HD.

APPENDIX D: POLICY & GUIDELINE OVERVIEW

In acknowledging the Official Community Plan (OCP) and the Area Development Plan (ADP), the following pages outline the design responses to the policy and guidelines.

The OCP consists of sixteen Policy Sections, each addressing different subject areas and includes the amendment of the guideline to include the Rodgers Creek Area Guideline. Below is an excerpt describing the relationship of the Overview Report to the Area Development Plan.

> *The Overview Report was prepared to provide a summary of the proposed Area Development Plan in a succinct and highly graphic form. Since its initial first draft in October 2007, it has been amended to reflect changes and new information that have resulted from community input and from guidance of the Working Group and supporting work by District staff, the landowners and their consultants. Contents of the Overview Report formed the display material at the two Public Open Houses and were refined in later drafts to reflect public input.*
>
> *The Council of the District of West Vancouver will receive the overall report, consider it, and then direct District staff, as Council considers appropriate to prepare the regulatory documents that will amend the Official Community*

OFFICIAL COMMUNITY PLAN DISTRICT OF WEST VANCOUVER

The proposed building, sited within Rodgers Creek Area of the Upper Lands, aims to respond to the Policy Sections 3 and 7 of the OCP and its Amendment Bylaw (No. 4567, 2008).

POLICY SECTION 3 | HOUSING (H)

H6: Encourage a variety of housing types in the future neighbourhoods in Upper Lands. *(See UL 1: Principle 3)*

> **ACTION:** The proposed project to provide 20% of units to incorporate design elements that allow units to be converted to adaptable units. *(See also Architectural Design: Housing Mix and Diversity pg 26)*

Housing policies stated in OCP aim to meet community housing needs based on a set of objectives (OCP, p. 49). Selected objective which this project respond to include:

> **HARMONY/CHARACTER:** Developing in harmony with landscape, surrounding uses and desired neighbourhood and character, where required provide sensitive transitions in form and density between existing and new development.
>
> **CHOICE:** Encourage a variety of housing types, forms, tenures, sizes and densities that meet diverse needs.
>
> **ACCESSIBILITY/ADAPTABILITY:** Support accessible and adaptable housing to meet the needs of people with physical disabilities or other special needs.

POLICY SECTION 7 | UPPER LANDS (UL)

UL 1: The OCP sets out four community building principles to guide all actions in the Upper Lands (OCP, p. 96). The specifics of these principles are elaborated in the Rodgers Creek Area Development Plan (RCADP, p. 12-13). Many of the principles have been incorporated into the design of the overall area development, as well as into this design:

> **PRINCIPLE 1:** Establish a Sensitivity and Connection to the Natural Environment and Mountain Qualities.
>
> 1.04 Employ site sensitive built forms (RCADP, p.12)
>
> **ACTION:** Building is designed to step into the terrain and use materials and colours that harmonize with the forest setting.

PRINCIPLE 2: Create a Strong Community.

> 2.10 Ensure all residential buildings are integrated into the landscape and have easy access to the mountain pathway. (RCADP, p.13)
>
> **ACTION:** The project proposes a direct access to the existing trail for residents of the building.

PRINCIPLE 3: Encourage a Diverse Community

> Diverse Housing - Lock-Off Suites provide a diverse range of housing for changing family needs. The lock-off suite can be open to the main unit or locked off for extended family, an in-home nanny, care worker, or as a rental suite (RCADP, p. 54)
>
> **ACTION:** Six lock-off suites are included in the unit mix for the proposed building.

PRINCIPLE 4: Focus on Environmental and Economic Sustainability.

> 4.04 Native Vegetation is retained.
>
> **ACTION:** On the northern portion of the built site, the use of native conifers have been specified to blend with the existing forest tree species. *(See also Landscape Concept Statement)*

UL 8.1 outlines specific criteria for development within Rodgers Creek Area. (OCP, p. 111.2 for full list). The proposed project, which falls within the Rodgers Creek Area plan will:

- Include 30% apartment units of 1001 sf or less in size. This percentage includes provision for Area 6 - Lot 1 and Lot 3 combined.
- Ensure housing diversity to include apartment units with adaptable design elements.
- Contribute to the density and the high-density built forms like apartments as prescribed for west end of Rodgers Creek Area.
- Strive for innovative, green buildings and infrastructure; that is, buildings and infrastructure with lower energy and water consumption, lower greenhouse gas emissions, and that enhance sustainability and create a healthy living environment

RODGERS CREEK GUIDELINES (SCHEDULE 6)

The proposed project follows the guidelines outlined in Schedule 6 of OCP Amendment Bylaw No. 4567, which apply to the Rodgers Creek Area of the Upper lands, as defined on the Rodgers Creek Area Development Permit Area Designation Map UL 8.1. The following responds to the three major headings of the guideline.

CONTEXT AND SITE DESIGN:

The proposed project is designed to fit with the topography and landscape of Upper Lands. The built form complements the terrain and integrates with natural features of the existing site. The proposed development will integrate with area-wide stormwater management strategies as outlined in *Appendix H: Stormwater Management Plan.*

APPENDIX E

BUILTGREEN PROJECT CHECKLIST / ENERGY MODEL DATA

MEMORANDUM

MORRISON HERSHFIELD

TO:	Allan Seppanen, RWA Jason Wexler, BPP	ACTION BY:	n/a
FROM:	Voytek Gretka, P.Eng., M.Eng., CEM Alex Blue, P.Eng., LEEP AP BD+C, BEMP	FOR INFO OF:	Design Team
PLEASE RESPOND BY:	n/a	PROJECT No.:	180281900
RE:	Rodgers Creek (BPP Area 6, Lot 3) - Preliminary Energy Model Summary	DATE:	October 16, 2018

P:\2018\11\80281900-RODGERS CREEK AREA 6 LOT 3 - EM SRV\12. DELIVERABLES\BPP AREA 6 LOT 3 – ROGERS CREEK – PRELIMINARY MODELING MEMO.PDF

Morrison Hershfield has created an energy model for the residential portion of the Rodgers Creek (BPP Area 6, Lot 3) project in West Vancouver, BC. The intent of this memo is to outline the preliminary results of the analysis, which were performed in accordance with the BC Energy Step Code. This memo excludes the amenity building located on the same site.

The project is approximately 14,930 m^2, consisting of residential units, townhouses, corridors, storage, fitness room, lobby, workshop, mechanical rooms, and a below-grade parkade. The attached amenity building is currently undergoing design changes and is excluded from the scope of this analysis. The design information available at the time of conducting the analysis included preliminary architectural drawings dated September 18, 2018.

The District of West Vancouver has required a Step 2 level of performance, whose targets are:

- Maximum Thermal Energy Demand Intensity (TEDI) of 45 kWh/m^2/yr
- Maximum Total Energy Use Intensity (TEUI) of 130 kWh/m^2/yr

Following discussions with the design team, one set of envelope, lighting, and mechanical design parameters was chosen to illustrate compliance with the target, as shown in Table 1. The final result of the energy modeling analysis is:

- TEDI = 35.7 kWh/m^2/yr
- TEUI = 95.2 kWh/m^2/yr

A breakdown of energy consumption is summarized in Figures 1 and 2.

Photovoltaic (PV) Array

As a design feasibility exercise, MH modeled a 55 kW PV system on the main roofs of the project. Model simulations concluded that the array would generate approximately 254 GJ annually, representing roughly 6% of the total energy use (EUI reduction of 7.1 kWh/m^2/yr). This is an approximate benchmark that the design team can use going forward since energy scales linearly with size of the array; for example, a 27.5kW array would offset roughly 3% of annual energy use (EUI reduction of 3.5 kWh/m^2/yr). Actual performance characteristics need to be confirmed with the PV designer as performance is dependent on several variables (for assumptions see Table 1).

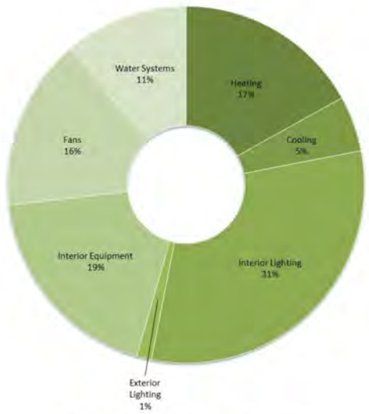


Figure 1: Energy Consumption Breakdown

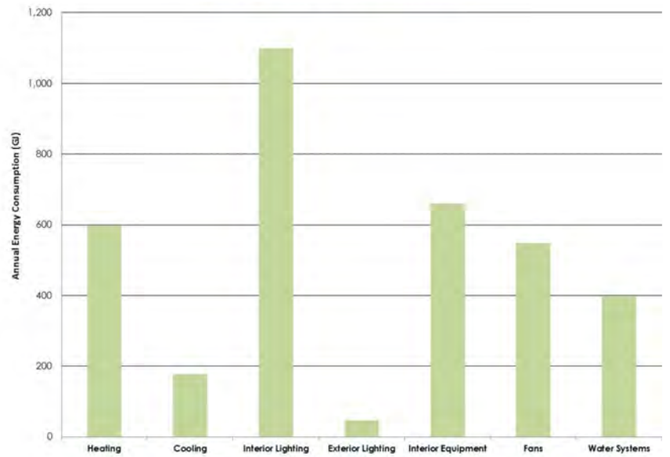


Figure 2: Energy Consumption by End-Use

APPENDIX E: PRELIMINARY ENERGY MODEL SUMMARY

Model Inputs

The information used to develop the energy model was based on preliminary design information and is detailed below in Table 1. R-values shown below for the assemblies account for all thermal bridging effects in the project (Appendix A1) per Energy Step Code requirements.

Table 1 – Inputs Used in the Energy Model

Conditioned Building Area	9,961 m^2
Infiltration	0.2 L/s/m^2 of vertical envelope area
Operating Hours	NECB 2011 Schedule G (multi-unit residential), C (lobbies), B (fitness), H (mechanical, parkade), A (workshop), and E (storage, parcel) building profiles for occupancy, lighting, domestic water, and plug loads. Lighting always on in corridors, lobbies, parkades, and stairs.
Occupancy	2 occupants per 1-bedroom suite; 3 occupants per 2-bedroom suite; 4 occupants per 3-bedroom suite; NECB occupant densities for all other spaces
Plug loads	NECB 2011 Receptacle Loads: 5 W/m^2 suites, 10 W/m^2 workshop, 1 W/m^2 common/storage/mechanical/lobbies
Wall R-Value (Effective)	R-5.1 (calculations and assemblies per Appendix A1)
Roof R-Value (Effective)	R-20 4" polyisocyanurate + 2% slope package
Suspended Floor R-Value (Effective)	R-16 4" Monoglass on underside of suspended slab
Glazed Fenestration	U-value: 2.1 W/m^2K Solar Heat Gain Coefficient (SHGC): 0.35
Interior Lighting	NECB 2011 Lighting Power Densities (LPDs): 5 W/m^2 suites, 8.4 W/m^2 corridors, 7.4 W/m^2 stairs, 17.1 W/m^2 workshop, 6.8 W/m^2 storage, 11.9 W/m^2 office, 13.4 W/m^2 mechanical, 6.9 W/m^2 lobby, 2.7 W/m^2 parkade. **20% LPD savings applied to all areas except within suites**
HVAC Systems	Central make-up air units with electric heating and two-stage cooling (low speed COP = 4.5; high speed COP = 3.0) supplying VRF systems (heating COP = 3.4; cooling COP = 3.3); Suites with VRF systems per above;
	60% effective heat recovery in suites; 58.5% heat recovery in corridors; Outdoor air rates per ASHRAE 62.1-2010
DHW Heater	VRF-integrated DHW heating (COP ~2.6)
Fans	VRF fans @ 297 Pa, 70% efficiency MUA fans @ 1482 Pa, 70% efficiency
PV Array	221 panels (each 250W nominal output,1.6m × 1.0m, and 30° tilt) 2.0m row spacing, 88% cell surface area, 16.8% cell efficiency, 96% inverter efficiency

Based on the information included herein, the project meets the targets for TEDI and TEUI based on modeling performed in accordance with the appropriate energy modeling guidelines.

Please do not hesitate to contact the undersigned if you require further information.

Regards,

Voytek Gretka, P.Eng., M.Eng., CEM
Energy & Building Science Consultant
Building Performance Analysis Group

APPENDIX E: PRELIMINARY ENERGY MODEL SUMMARY

BUILT GREEN® Checklist:

High Density (HD) New Construction

Effective January 1, 2018

To select checklist points, click and select point values from the drop-down list for each item

Builder	British Pacific Homes
Address	Area 6 Lot 3

Summary

1 - Energy and Envelope:	30 points
2 - Materials and Methods:	33 points
3 - Indoor Air Quality:	17 points
4 - Ventilation:	8 points
5 - Waste Management:	11 points
6 - Water Conservation:	16 points
7 - Business Practices:	19 points
TOTAL POINTS:	134 points (SILVER) OK!

I. ENERGY AND ENVELOPE

This section awards points for construction methods and types of products that contribute to lower energy consumption, as well as alternative heating and electrical systems.

Minimum Energy Modelling 25 Points required for Bronze, 30 points for Silver, 35 points for Gold, and 40 points for Platinum.

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing our online Product Catalogue: www.builtgreencanada.ca/i-envelope-and-energy-systems

		Relative cost	Points per item
I.0: Energy Modelling	ASHRAE ← Select modelling method here		
	15.00 ← Input % energy savings here		
1.0	Energy modelling is a requirement for Section I (Energy and Envelope). Model the performance of your HD Project with any approved government software, such as EE4, eQuest, or CanQuest. Points will be awarded for efficiency gains noted above the reference codes. A building achieving greater than 100% efficiency is net-positive and can earn bonus points for generating more energy than it consumes. The energy requirement for each certification level is based on the percent improvement. In other words, the energy model rating must meet the required percent improvement over the reference building. Input the modelling method and the % improvement. The checklist will automatically calculate the points earned. Over NECB 2011: Bronze certification: building rating meets the code and earns 25 points. Silver certification: building rating is 10% improvement and earns 30 points. Gold certification: building rating is 20% improvement and earns 35 points. Platinum certification: building rating is 30% improvement and earns 40 points. Over ASHRAE 90.1 2010 Bronze certification: building rating is 5% improvement and earns 25 points. Silver certification: building rating is 15% improvement and earns 30 points. Gold certification: building rating is 25% improvement and earns 35 points. Platinum certification: building rating is 35% improvement and earns 40 points. Note: future versions of this checklist will reference the updated NECB/ASHRAE standards, after the industry has adapted more fully to their use. The remaining action items and points hereafter in Section I may be used for additional points to be earned in your overall score; however, these points will not impact the earned energy points determined by the % improvement over reference building.	30	$$ - $$$$$	0 to 150
I.1: Building Envelope			
1.1.1	Window to wall ratio does not exceed 40%.		NC	2
1.1.2	Install additional roof insulation above amounts already required by building code: (i) +R5 (for 1 point); (ii) +R10 (2 points); or (iii) +R15 (3 points).		$ - $$$	1, 2 or 3
1.1.3	Install additional insulation on exterior of above grade walls, above insulation amounts already required by building code: (i) +R5 for 2 point; or (ii) +R10 for 4 points.		$ - $$$	2 or 4
1.1.4	Install additional insulation on exterior of foundation system, above code required amounts for interior insulation: (i) +R7.5 (for 1 point); (ii) +R10 (2 points); or (iii) +R15 (3 points).		$$$	1, 2 or 3
1.1.5	Install insulation under the entire basement slab above amounts already required by code: (i) +R5 (for 1 point); (ii) +R8 (2 points); or (iii) +R12 (3 points).		$$ - $$$	1, 2 or 3
1.1.6	Attached garage or parking structure walls are insulated to minimum R12, and ceilings are insulated to minimum R35.		$ - $$$	1
1.1.7	Attached garage, parking, and/or loading dock overhead doors are insulated with R8 to R12 (for 1 point) or greater than R12 (for 2 points).		$ - $$$	1 or 2
1.1.8	Structural design eliminates the need for headers, or use insulated headers with minimum insulation value of R10.		$ - $$	1
1.1.9	Structural design eliminates the need for *rim*/band joists, or use manufactured rim/band joists insulated to minimum R10.		$ - $$	2
1.1.10	Install weather-stripped and insulated (R20 minimum for 1 point and R28 for 2 points) manufactured interior attic hatch, or have no interior attic access.		NC - $	1 or 2
1.1.11	Install opaque doors that are a minimum R6, and any glazed sliding or swing doors at minimum R4 (for 1 point).		$$	1
1.1.12	All decks or balconies are thermally broken from the building envelope by: (i) Minimum R10 (for 1 point); OR (ii) Are fully separated (for 3 points); OR (iii) There are no decks or balconies (for 3 points).		$ - $$	1 or 3
1.1.13	Windows are rated for high performance: (i) Windows are ENERGY STAR labelled at greater than 90% of all windows (3 points); OR (ii) All windows have U value of less than 2.2 W/m2k (1 point); less than 2.0 W/m2k (2 points); or less than 1.8 W/m2K (3 points).		$ - $$$	1, 2 or 3
1.1.14	Window systems are installed to be air tight: (i) Non-HCFC expanding foam or backer rod and caulking around all windows, door openings, and exterior wall penetrations (2 points); AND/OR (ii) All sill plates are sealed with foam gaskets or a continuous bead of acoustical sealant (1 point); OR (iii) The building has a contiguous window-wall or curtain-wall (3 points).		$ - $$$	1, 2 or 3
1.1.15	All electrical back-boxes in exterior walls and ceilings are air tight (e.g. molded plastic).		NC - $	1
1.1.16	Design all fire separations to be air tight, effectively sealing adjacent units from one another and from common space.		$ - $$	2
1.1.17	Building includes passive solar shading, the benefits of which are demonstrated through an energy model: (i) exterior or interstitial solar shading devices for glazing (2 points); OR (ii) exterior operational shading devices (4 points), with automated control (1 additional point).		$$ - $$$$	2, 4 or 5
1.1.18	Use roofing material with a high solar reflectance index (SRI) of ≥78 (for roof slopes ≤ 2:12), or ≥29 (for roof slopes > 2:12). Roof areas that are covered by energy generation appliances (e.g. solar panels or wind turbines) or by vegetation (e.g. green roofing materials) are exempt.		$$ - $$$$	1
1.1.19	Builder utilizes a certified building envelope engineer for the design of the building envelope (1 point).		$$$	1
I.2: Mechanical Systems				

APPENDIX E: BUILTGREEN CHECKLIST

1.2.1	Calculate design heat loss and properly size HVAC equipment using CSA F280-12 or ASHRAE/ACCA Standard 183.		$ - $$	2
1.2.2	Centrally locate HVAC systems inside the building's heated envelope and reduce duct length.		NC	1
1.2.3	District Energy used for primary space conditioning (heating and cooling): (i) The building is designed for, and ready to connect to, a district heating system within one year of opening (1 point); (ii) The building will be connected to a district heating system from occupancy (1 additional point); (iii) The district energy system will also provide cooling (1 additional point).		NC - $$	1, 2 or 3
1.2.4	Install high efficiency heating systems for all units and systems serving common areas (minimum 90% AFUE gas furnace; minimum 85% AFUE oil furnace; or minimum 85% AFUE oil/gas boiler).		$ - $$	3
1.2.5	Implement a boiler management system to match the system operation to building loads and optimize controls for maximum energy savings.		$ - $$	2
1.2.6	Install high efficiency cooling systems for all units and systems serving common areas (minimum 14 SEER central A/C; or minimum ENERGY STAR individual appliance for each unit).		NC - $$	1
1.2.7	Install heat pumps to supply majority of space heating and cooling loads: - ground/water with minimum COP of 4 and SEER 15; OR - air source heat pump (ASHP) meeting minimum requirements: for split-system minimum 8.5 HSPF and minimum SEER 15. Or for single package system minimum 8.2 HSPF minimum and minimum SEER 15.		$$ - $$$$$	10
1.2.8	Install a centralized high efficiency domestic hot water heating system with minimum 85% AFUE boiler; minimum 0.67 EF gas water heater; or instantaneous tankless systems in each unit (3 points). For commercial boiler, the minimum thermal efficiency is 90 E_t for oil and 95 E_t for gas.		$ - $$	3
1.2.9	Install heat pump-based DHW heating system (ground-, water-, or air-sourced, EF of 1.5 for 2 points; EF of 2 for 3 points) to supply a minimum of 35% of the peak DHW heating load and 70% of the total DHW energy load.		$$ - $$$$$	2 or 3
1.2.10	Where domestic hot water heating is provided within each suite, install high-efficiency electrical domestic hot water system (standby loss in watts: 5% better than NECB 2011 for 2 points; 10% better for 3 points).		$	2 or 3
1.2.11	Hot water storage tanks insulated by manufacturer to a minimum R-12.5.		$	2
1.2.12	Insulate DHW piping: CASE 1: Where dwelling units contain independent DHW systems: (i) insulate the first three feet of the water lines from the hot water tank (1 point); OR (ii) insulate all hot water lines to all locations (2 points) CASE 2: Where DHW systems are common among multiple units. (i) Insulate all hot water lines (including traps) for the first six feet from the central hot water tank (1 point); OR (ii) insulate all hot water lines to all locations (2 points).		$ - $$$	1 or 2
1.2.13	Install ENERGY STAR labelled bathroom exhaust fans for each unit.		$	1
1.2.14	Fireplaces are all electric (2 points) or gas with sealed combustion and electronic ignition (2 points), or are EPA or CSA certified high-efficiency wood stove or pellet stove with a minimum efficiency of 72% (1 point) or 85% (2 points).		$ - $$	1 or 2
1.2.15	All fireplaces, wherever installed, include a fan kit to circulate warm air into the room (2 points).		$- $$	2
1.2.16	Engage an independent Commissioning Engineer to review the owner's HVAC and lighting system requirements, and perform a review of drawings and specifications (approx. 90% working drawings for 2 points); AND Verify installation and operation of HVAC and lighting systems (3 points); AND/OR Carry out a follow-up onsite review of HVAC and lighting warranty items including comfort, controls, and energy efficiency (1 point).		$$ - $$$	2 to 6

I.3: Metering and Controls

1.3.1	Provide electricity (1 point) and/or natural gas (1 point) direct metering for each unit.		$ - $$	1 or 2
1.3.2	Provide programmable thermostats in each individual unit capable of managing at least two different daily schedules per week (e.g. weekday and weekend settings) (2 points total for all units).		$ - $$	2
1.3.3	Parkade/garage heating setpoint is no higher than 4 degrees C, or garage/parkade is unheated.		$ - $$	2
1.3.4	Units contain multiple heating/cooling zones with independent programmable thermostat control for each zone (2 zones = 2 points; 3 zones = 3 points; 4 zones = 4 points).		$ - $$$$	2, 3 or 4
1.3.5	Install premium efficiency pump drive motors on all motors 1 hp or greater.		$	1
1.3.6	Install HVAC systems with variable speed drives on all motors where there is a variable flow requirement.		NC - $$	3

I.4: Re-Use or Recovery of Waste Energy

1.4.1	Install and balance ventilation energy recovery systems: (i) individually controlled active Heat/Energy Recovery Ventilator (HRV/ERV) for each dwelling unit (4 points); AND/OR (ii) solar/geo fresh air pre-heating for each unit (3 points); AND/OR (iii) same for all common areas (2 points).		$ - $$$$	2 to 9
1.4.2	Install drain water heat recovery (DWHR) units on the main drain stack to recover heat from shower drain water. DWHR units must be CSA certified to B55.1 and B55.2: (i) 1 point for units less than 42% efficient; (ii) 2 points for units greater than or equal to 42% efficient; (iii) 1 additional point for units that are fully insulated. DWHR units may be installed centrally or by dwelling unit, but must collect heat from a minimum of 90% of the showers in the building complex.		$$ - $$$	1, 2 or 3
1.4.3	Install a properly supported and wired ceiling fan in every dwelling unit.		$	1

I.5: Appliances

1.5.1	Electric ranges are induction based, or are otherwise certified to use below 480 kWh/year on the EnerGuide Rating System.	1	$ - $$	1
1.5.2	Refrigerators are ENERGY STAR labelled products.	2	$ - $$	2
1.5.3	Dishwashers are ENERGY STAR labelled products.	1	$ - $$	1
1.5.4	Clothes washer or combo washer-dryers are ENERGY STAR labelled products.	1	$ - $$	1
1.5.5	Provide energy efficient clothes drying facilities for each unit (1 point each, maximum 2 points total): (i) Clothes dryers are ENERGY STAR labelled; (ii) Clothes dryers have an "auto sense" dry setting that utilizes a humidity sensor for efficiency; (iii) Each dwelling unit is provided outdoor clothes drying facilities (e.g. clothes lines).	2	$ - $$	1 or 2
1.5.6	All other eligible appliances supplied by the builder are ENERGY STAR rated (i.e. TV, LCDs).	1	$ - $$	1

I.6: On-Site Energy Generation

1.6.1	Building is built "Solar Ready" following the guidelines from either Natural Resources Canada (NRCan) or the Canadian Solar Industries Association (CanSIA): (i) Minimum 10% of the total roof area is designed to support future solar collectors, is not shaded by other structures, and is structurally capable of supporting solar panels; (ii) A suitably sized conduit/chaseway is provided for routing solar energy conductors (wires and/or fluid lines) from the roof to the mechanical room (6 inches for a central shared solar system, or 4 inches conduit per dwelling unit); (iii) The purchaser of the unit is given information upon sale showing them where future solar panels would be installed (e.g. building drawings with a clearly indicated location for future solar panels).		NC - $$	1
1.6.2	Install active solar hot water heating system. Sized for 30% of DHW load (5 points), 50% (6 points), 80% (8 points).		$$ - $$$$	5, 6 or 8
1.6.3	Install on-site wind or solar (PV) electrical generation that supplies a portion of the designed electrical load (other than heat) in private dwelling areas: 10% for 4 pts, 25% for 8 pts, 50% for 12 pts, 75% for 16 pts, and 100% for 20 pts.		$ - $$$$$	4, 8, 12, 16 or 20
1.6.4	Install on-site wind or solar (PV) electrical generation that supplies 50% (2 point) or 100% (4 points) of electrical needs for the common areas. This does not include electric heat.		$ - $$	2 or 4
1.6.5	Any exposed exterior accessibility ramps are heated with renewable energy or waste heat.		$$	2
1.6.6	Buildings are built ready for plug-in electric vehicles for minimum 5% of allocated parking spaces: 1 point for 240V plugs in the vehicle parking area, 2 points for certified charging stations.		$ - $$	1 or 2

I.7: Lighting and Automation

1.7.1	Exterior lighting follows IESNA illuminance requirements for recommended practice manual: Lighting for Exterior Environments.	2	NC - $	2
1.7.2	All exit signage is photo-luminescent or LED based.	2	NC - $	2

APPENDIX E: BUILTGREEN CHECKLIST

1.7.3	Common areas are illuminated with high efficiency (ENERGY STAR or LED) lighting.	1	NC - $	1
1.7.4	Dwelling units are illuminated with high efficiency (ENERGY STAR or LED) lighting throughout: minimum 25% of all lighting (2 points); 50% (3 points); 75% (4 points); or 100% (5 points).	4	$ - $$	2 to 5
1.7.5	Insulated ceilings have no recessed lights, or advanced air-sealing methods are employed to ensure that recessed lights are fully air-tight (e.g. air tight and insulation contact rated recessed lights).	1	$	1
1.7.6	Install interior motion sensor light switches in over 25% (1 point), 50% (2 points) or 75% (3 points) of all common interior spaces, including hallways/corridors, stairwells, laundry, garage, etc.	1	$ - $$	1, 2 or 3
1.7.7	Install interior motion sensor light switches in each dwelling unit. 1 point per switch, to a maximum of 3 points (averaged across all dwelling units).	1	$ - $$	1, 2 or 3
1.7.8	In all garages/parkades, provide automatic lighting system (2 points) and/or ventilation system (2 points) triggered by movement or CO levels.	4	$$ - $$$	2 or 4
1.7.9	Paint interior exposed surfaces of parkade (including walls, columns, and ceilings) semi-gloss white to reduce number of required lighting fixtures.	1	NC - $$	1
1.7.10	Install a master "all-off" switch in each dwelling unit that disables all non-essential electrical loads in the home.		$$	2
1.7.11	Install a home automation system in each dwelling unit that is capable of monitoring and adjusting: (i) heating, cooling, and humidity (2 points); (ii) lighting greater than 4 locations/rooms (1 point); (iii) if system can be controlled through a Wi-Fi, a smart phone, or app (1 additional point); (iv) all lighting and/or blinds to adjust to hourly sun schedule (1 point) (v) Domestic Hot Water (does not apply when there is a central system in the building) (1 point); (vi) and a "vacation or away" mode that can turn off all non-essential electrical loads (1 point).		$$ - $$$$	1 to 4
1.7.12	Install home energy monitoring system that monitors and reports use and consumption patterns of all energy (gas, electricity, oil) in the home (1 point). An additional 1 point may be gained if the system is integrated with onsite renewable energy generation and storage technology.		$$$ - $$$$	1 or 2
	TOTAL SECTION POINTS	30		

II. MATERIALS AND METHODS

This section rewards the use of environmentally preferred materials and building construction methods: recycled/reclaimed content, materials from renewable or sustainably managed sources, alternatives to dimensional lumber, more durable construction methods, and reducing the overall amount of material used.

Minimum 20 Points Required

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing our online Product Catalogue: www.builtgreencanada.ca/ii-materials-and-methods

			Relative cost	Points per item
2.1: Material Efficient Framing				
2.1.1	Use Insulated Concrete Forms (ICF) or other systems that eliminate the need for traditional formwork: 3 points for below grade, and/or 4 points for 75% of above grade.	3	$$$$	3 to 7
2.1.2	Use Optimum Value Engineering (OVE) for framing design:			
	(i) Exterior and interior wall stud spacing at minimum 19.2 inches on-center.		NC	1
	(ii) Elimination of headers at non-bearing interior and exterior walls.	1	NC	1
	(iii) Use of header hangers instead of jack studs.		$	1
	(iv) Elimination of cripples on hung windows.		NC	1
	(v) Elimination of double plates, using single plates with connectors by lining up roof framing with wall and floor		NC	1
	OR Use concrete floors and roof with cambering of slabs to reduce slab thickness and column sizes with a total project concrete savings of at least 8%.		NC	5
2.1.3	Walls and roof designed on 24 inch modules to reduce waste.		NC	2
2.1.4	Reduce dimensional lumber use by using engineered stud material for minimum 10% of structural stud wall framing.		$ - $$$	1
2.1.5	Finger-jointed plate material and/or engineered plate material used for all framing plates.		$ - $$$	1
2.1.6	Structural insulated panel system (SIPS) or other panelized construction systems are used for walls (3 points) and/or roofs (2 points).		$$ - $$$$	2, 3, or 5
2.1.7	Use insulating sheathing on the exterior of steel studs, or with corresponding structural bracing (metal fasteners) instead of non-insulated exterior wood sheathing.	2	NC - $$	2
2.2: Environmentally Preferable Materials				
2.2.1	Use environmentally engineered flooring system, such as reclaimed/recycled/rapidly renewable wood waste, cross-laminated timber, concrete with minimum 30% fly ash or other SCM, or minimum 75% recycled steel (1 point) from third-party certified, sustainably harvested sources (CSA, SFI, or FSC for 2 points). The use of third-party certified subfloor sheathing for 1 extra point.		NC - $$$	1, 2, 3 or 4
2.2.2	Use environmentally engineered products for all load-bearing beams, such as reclaimed/recycled/rapidly renewable wood waste, concrete with minimum 30% fly ash or other SCM, or minimum 75% recycled steel.		$$ - $$$$	2
2.2.3	Use environmentally engineered products for all exterior window and door headers, such as reclaimed/recycled/rapidly renewable wood waste, concrete with minimum 30% fly ash or other SCM, or minimum 75% recycled steel.		$ - $$$	1
2.2.4	Deck, balcony, or veranda surfaces (1 point) and/or structure (1 point) made from a third-party certified, sustainably harvested wood source (CSA, SFI, or FSC) or third-party certified sustainable concrete.		$$$	1 or 2
2.2.5	Dimensional lumber from a third-party certified sustainably harvested source (CSA, SFI, or FSC) used for floor framing (1 point), wall framing (2 points), and/or roof framing (1 point).		$ - $$	1 to 4
2.2.6	Finger-jointed studs for minimum 90% of non-structural (1 point) and/or minimum 90% of structural (1 point) wall framing.		$ - $$$	1 or 2
2.2.7	Steel studs made from minimum 75% recycled steel are used for interior walls (1 point) and exterior walls (1 additional point).	1	$	1 or 2
2.2.8	Recycled and/or recovered content gypsum wallboard, minimum of 40% post-consumer recycled content.	1	$$	1
2.2.9	Recycled content exterior wall sheathing (minimum 50% pre- or post-consumer).		$$$	2
2.2.10	Concrete used in the building has a minimum supplementary cementitious material of 25% (1 point), 30% (2 points), or 40% (4 points) within the scope of proper engineering practices.		$ - $$$	1, 2 or 4
2.2.11	Insulation used in walls, roofs, and exposed floors (cantilevers) is certified by a third-party to contain a minimum recycled content: 25% (1 point) or 50% (2 points).	1	$$ - $$$	1 or 2
2.2.12	Overhead garage door is made of 75% or greater recycled material.		$$ - $$$	1
2.2.13	Floor Coverings:			
	(i) Install carpet that has a minimum of 50% recycled content or 30% renewable content.		NC - $	1
	(ii) Natural or 100% recycled-content carpet pad (e.g. made from textile, carpet cushion, or tire waste, rebond qualifies).	1	NC - $$	1
	(iii) Save materials by eliminating carpet: have minimum of 20% concrete floor finished (e.g. stamped, acid-etched, etc.) and left exposed.		NC - $$	3
	(iv) Install ecologically preferred bamboo, cork, or hardwood flooring in each dwelling unit (1 point); more than 40% of all indoor floors (2 points) or more than 80% of all indoor floors (3 points). Products must be third-party certified from sustainably managed forests or certified sustainable sources (e.g. Rainforest Alliance, FSC, CSA, or SFI).		$ - $$$	1 to 3
	(v) All ceramic tile installed in any dwelling unit has a minimum of 25% recycled content.		$$$	2
2.2.14	Paints or finishes are manufactured with minimum 20% recycled content.		$ - $$	1
2.2.15	Shelving made from 100% agricultural waste or 100% recycled wood particle board, including shelving inside cabinets.		$ - $$$	2
2.2.16	Doors:			
	(i) Exterior doors contain minimum 15% recycled and/or recovered content.	1	$	1
	(ii) Interior doors contain minimum 25% recycled and/or recovered content.		$	1
	(iii) Minimum 50% of interior doors made from third-party certified, sustainably harvested wood (CSA, SFI, or FSC).		NC - $$	2
	(iv) Minimum 50% of interior doors have been salvaged from another project.		NC - $$	3
2.2.17	Windows:			
	(i) Exterior window frames contain minimum 10% recycled or reclaimed content.	1	$$	1
	(i) Exterior window frames made from third-party certified, sustainably harvested wood (CSA, SFI, or FSC).		$$$	3
2.2.18	Parapets (2 points) or fascia and soffit (1 point each) made from minimum 50% recycled and/or recovered content (pre- or post-consumer).		$	1 or 2
2.2.19	Exterior cladding materials contain a minimum of 50% recycled and/or recovered content for 25% of the building's exterior (1 point); or more than 50% of exterior (2 points); or more than 75% of the exterior (3 points); or more than 90% of the exterior (4 points).		$ - $$$	1 to 4

APPENDIX E: BUILTGREEN CHECKLIST

2.2.20	Exterior trim materials include at minimum 50% recycled and/or recovered content. This should include window, door, corner, and deck trim complete with any associated flashing.		$ - $$$	3
2.2.21	Exterior trim materials are manufactured from OSB, which must have no added formaldehyde.		$ - $$$	1
2.2.22	MDF and/or finger-jointed casing and baseboard used throughout (1 point), and in all jambs (1 point).	2	$$	1 to 2
2.2.23	Solid hardwood from third-party certified, sustainably harvested sources (CSA, SFI, or FSC) used for millwork and/or cabinets in all kitchens (2 points) and/or all bathrooms (2 points) in all dwelling units and common areas.		$ - $$$	2 or 4
2.2.24	More than 90% of all wood used for flooring, cabinets, and millwork is from: (i) domestic (i.e. North American) sources (4 points), (ii) recovered or re-milled sources (5 points), (iii) salvaged or re-used (6 points).		$$$ - $$$$	4, 5, or 6
2.2.25	Minimum 25% recycled-content roofing system, including underlay and finish for 2 points, 50% recycled content for 4 points.		NC - $$	2 or 4
2.2.26	Provide a green roof over 50% (3 points), 75% (5 points), or 100% of total roof area (7 points), excluding any roof area used for energy generation (e.g. wind turbines or solar panels).		$$	3, 5, or 7
2.2.27	Use of miscellaneous salvaged materials derived from local sources for any building assembly or component not otherwise listed above (1 point for each different product used, to a maximum of 3).		$ - $$$$	1 to 3
2.3: Durable Construction				
2.3.1	Minimum 30-year manufacturer warranty roofing material (2 points plus 1 point for each additional 5 years). "Lifetime" warranties have terms/conditions that ultimately have a limit in real years, and will not be considered unless clarified. Inspection by certified roofing inspector or an envelope engineer for 1 point.		NC - $$$$$	2 to 7
2.3.2	Low-VOC water- or damp-proofing on foundation walls. (SCAQMD Rule 1113, 2004 VOC limits. Waterproofing sealers <=250 g/L / Waterproofing Concrete or Masonry Sealers: <=400 g/L).	1	$ - $$	1
2.3.3	Use a rain screen system to separate cladding from the wall sheathing with a drainage plane (2 points), made from 60% or more recycled content (additional 1 point). Integrate windows into drainage plane by angling bottom sills slightly down towards the exterior, and install window flashing to direct moisture out towards the drainage plane (additional 1 point).	2	$ - $$$	2 to 4
2.3.4	All exterior doors and windows manufactured from fiberglass (1 point for windows and/or 1 point for doors).		NC - $$	1 or 2
2.3.5	Natural cementitious stone/stucco/brick, metal cladding, or fiber cement siding, or combination thereof for 25% of exterior cladding (1 point), 50% (2 points), 75% (3 points) or more than 90% (4 points).	4	$$$	1 to 4
2.3.6	Fascia and/or soffit made from fiber cement (1 point each).	2	$$$ - $$$$	1 or 2
2.3.7	Exterior trim materials made from alternatives to solid lumber.		$ - $$$$	1
2.3.8	All exterior trim is clad with pre-finished metal (1 point over wood backings, 2 points without wood backings).	2	$$$	1 or 2
2.3.9	Deck, veranda, and balcony surfaces made from environmentally preferable low-maintenance materials (e.g. stone, concrete, tile, composites, etc.) that do not need maintenance of any kind, including painting, for a minimum of 5 years.	2	$ - $$$	2
2.3.10	Install durable flooring (e.g. laminate, finished concrete, tile, hardwood, etc.) in all high traffic areas (halls, kitchen, living space) (1 point); more than 30% of all indoor flooring (2 points); more than 60% of all indoor flooring (3 points); or more than 90% of all indoor flooring (4 points).	1	$$ - $$$$	1 to 4
2.3.11	Solid countertops are made from durable materials such as granite, concrete, glass, metal, or local natural stone, for all kitchen counters (2 points), or all other countertop areas (1 point), or both (3 points total). Countertops have 30% or higher recycled content (1 additional point).	3	$$ - $$$	1 to 4
2.3.12	Lifetime finish on all faucets.	1	NC - $	1
2.3.13	Lifetime finish on all door hardware.	1	NC - $	1
2.3.14	Install only Type 1 or 2 grade door hardware with lifetime mechanical warranty.		$ - $$$	2
	TOTAL SECTION POINTS	33		

III. INDOOR AIR QUALITY

This section focuses on the quality of the air within the finished building. Products listed here include materials that are low in VOCs, products made from all natural materials as well as various air cleaning and ventilation systems.

Minimum 15 Points Required

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing our online Product Catalogue: www.builtgreencanada.ca/iii-indoor-air-quality

			Relative cost	Points per item
3.1: Air Treatment				
3.1.1	Install air filtration on all air handling systems: (i) pleated media filter with minimum MERV rating of 7 (1 point) or 12 (2 points); OR (ii) an electrostatic air cleaner (2 points); OR (iii) an electronic air cleaner (3 points); OR (iv) a HEPA filtration system (6 points).	1	NC - $$$	1, 2, 3 or 6
3.1.2	Install ultraviolet air purification in air handling systems.		$$$	2
3.1.3	Provide thermostats in each dwelling unit or zone that indicates the need for the air filter to be changed or cleaned.	1	$	1
3.1.4	The HVAC design includes humidity control within each dwelling unit, zone and/or common area.		$	2
3.2: Contaminant Source Elimination				
3.2.1	All combustion space and water heating equipment located within building are sealed with no possibility of backdraft.	1	$ - $$	1
3.2.2	Provide soil gas/radon protection: (i) either verify that radon gas levels are within government-approved safe limits at the site, or provide passive sub-slab ventilation (1 point); OR (ii) actively depressurizing the sub-slab (i.e. add a fan for 2 points).		$	1 or 2
3.2.3	Seal all permanent ductwork upon installation, removing seals once all phases of construction are complete.		NC - $	1
3.2.4	Prior to occupancy, but after all interior construction is substantially complete and all finishes have been installed, perform a full flush of the air within the building by running the air handler (on maximum speed if a variable speed device) for a minimum of 48 hours (combined over not more than 4 sessions), and provide new filters in the air handler after the flush is complete.		$	2
3.2.5	Central vacuum system exhausted outside conditioned space.		$ - $$	1
3.2.6	Insulation used is third-party certified to have zero or ultra-low formaldehyde (less than 0.008 ppm).	2	$	2
3.2.7	Low-formaldehyde sub-floor sheathing (third-party certified to less than 0.18 ppm) or sub-floor made from substance material that is formaldehyde-free, such as concrete.		$ - $$$	2
3.2.8	Low-formaldehyde underlayment is used throughout (third-party certified to less than 0.18 ppm).		$	1
3.2.9	Low-formaldehyde particle board/MDF used for cabinets: less than 0.18 ppm for 1 point, or zero formaldehyde for 2 points.	1	$ - $$	1 or 2
3.2.10	Low-formaldehyde particle board/MDF used for shelving: more than 0.18 ppm for 1 point, or zero formaldehyde for 2 points.	1	$ - $$	1 or 2
3.2.11	All interior wire shelving is factory coated with low VOC/no off gassing coatings.		$ - $$	2
3.2.12	All hardwood floors are site-finished with water-based urethane finishes, or are factory finished.	2	$ - $$	2
3.2.13	Water-based lacquer or paints are used on all site-built and installed millwork, including doors, casing, and baseboards (less than 200 grams/litre of VOCs for 2 points or less than 50 grams/litre for 3 points).	2	$$	2 or 3
3.2.14	Interior paints used have low VOC content (less than 200 grams/litre of VOCs for 1 point or less than 50 grams/litre for 2 points).	1	NC - $	1 or 2
3.2.15	Interior paints have no VOCs in base paint prior to tint (1 point) or in tint (2 additional points). Alternatively, for a full 3 points, use natural finishes such as lime plasters (NOTE: If taking points in 3.2.15, then also take point in 3.2.14).		$$$	1 to 3
3.2.16	All ceramic tiles are installed with low VOC adhesives (less than 65 grams/litre) and plasticizer-free grout.	1	$$	1
3.2.17	All vinyl flooring is replaced with natural linoleum installed with low VOC adhesives, or other hard-surface flooring.		$$ - $$$$	2
3.2.18	All flooring is installed with low VOC (less than 60 grams/litre) adhesives (for 1 point), or with zero VOC adhesive (2 points), or no adhesive (2 points).	1	$$ - $$$$	1 or 2

APPENDIX E: BUILTGREEN CHECKLIST

3.2.19	Carpet and Rug Institute (CRI) Green Label Plus on all carpet used. Gemeinschaft umweltfreundlicher Teppichboden's (GUT) production information system PRODIS is also recognized.	2	NC - $$	2
3.2.20	Carpet and Rug Institute (CRI) Green Label Plus on all underlay used. Gemeinschaft umweltfreundlicher Teppichboden's (GUT) production information system PRODIS is also recognized.	1	NC - $$	1
3.2.21	Natural material-based carpet (e.g. wool) in all living areas (for minimum 150 ft2).		$$$	2
3.2.22	Carpet-free design: all flooring surfaces are hard (including stairs).		$ - $$$$	2
3.2.23	For all permanent or significant entryways leading from outdoors, install an entryway system of at least 10 feet in length to captures dirt and particulates (i.e. grates/grills/slotted systems or roll-out mats that are maintained weekly by a service organization).		$ - $$	2

TOTAL SECTION POINTS 17

IV. VENTILATION

This section covers the mechanical ventilation systems in the building, including air filtration and heat recovery.

Minimum 5 Points Required
Platinum Level Note: Platinum level homes must use item 4.1.

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing our online Product Catalogue: www.builtgreencanada.ca/iv-ventilation

			Relative cost	Points per item
4.1	Ventilation system is designed and installed according to CSA Standard F326 or ASHRAE 62.1.		$ - $$$	4
4.2	All ductwork thoroughly sealed along all seams, joints, connections, penetrations, etc., in accordance with local prevailing code and industry best practice (2 points) or test/verify duct leakage to be less than 8 cfm (at 25 Pa) per 100 ft^2 of conditioned floor area (2 additional points).	2	NC - $$	2 or 4
4.3	Install in-line ventilation fan with programmable timer (separate switch from lighting) in each unit.		$	1
4.4	Install motorized damper on all bathroom/exhaust fans.		$$	2
4.5	All bath fans have a noise level of 1 sone or less.	2	NC - $$	2
4.6	Provide local bathroom exhaust fan controls in each unit using either an occupancy sensor, automatic humidistat controller, automatic timer, or continuously operating exhaust fan.		$ - $$	1
4.7	Install timer switches, occupancy sensors or central BAS controls on all local exhaust fans outside of individual units (i.e. laundry, recreation, storage areas, etc.).		$ - $$	1
4.8	Install passive Heat Recovery Ventilator (HRV, for 2 points) or an active Heat Recovery Ventilator/Energy Recovery Ventilator (HRV or ERV, 4 points) either centrally or in each unit.	4	$ - $$$	2 or 4
4.9	Install permanent (de)humidification control in each unit (ERVs are considered acceptable).		$ - $$	1
4.10	For indoor pool areas, install a designated dehumidification system designed by a consulting engineer or qualified contractor to match the water and air temperatures maintained in the area.		$ - $$	1

TOTAL SECTION POINTS 8

V. WASTE MANAGEMENT

This section deals with the handling of waste materials on the construction site and encourages recycling.

Minimum 7 Points Required

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing our online Product Catalogue: www.builtgreencanada.ca/v-waste-management

			Relative cost	Points per item
5.1	Comprehensive recycling program during construction for building site including education, site signage, and bins.	2	$	2
5.2	Implement a recycling program: collection of waste materials from site by a waste management company that is a current member of a provincial recycling council or equivalent association and verifies that a minimum of 25% of the materials collected from the construction site have been recycled.	4	$ - $$	4
5.3	Suppliers and trades recycle their own waste, including leftover material and packaging (1 point per trade—maximum 4 points).	1	$	1 to 4
5.4	Minimum 25% (1 point), 50% (2 points), 75% (3 points), or 90% (4 points) by weight or volume of waste materials collected from construction site is diverted from waste stream.	3	$ - $$$	1 to 4
	OR			
5.5	Waste reduction for remote projects: for projects occurring in regions that are minimum 100km away from the nearest population center with minimum 30,000 residents, the project may earn 1 point if the total amount of waste produced on the construction site is less than 4 lbs/ft^2, 2 points are available for less than 3 lbs/ft^2, and 3 points for less than 2 lbs/ft^2, and 4 points less than 1 lbs/ft^2		$ - $$$	1 to 4
5.6	Metal or engineered durable form systems used for concrete foundation walls (1 point) and for footings (1 point)		NC - $$	1 or 2
5.7	Install permanent recycling center in each residential unit with two or more 26L bins (1 point), or four or more 26L bins (2 points), located in, or conveniently close to, the kitchen. Multiple bins are intended to facilitate sorting of different recyclables, potentially including compost. Equivalent bin configurations will be accepted where aligned with local recycling program requirements.	1	$ - $$$	1 or 2
5.8	Provide a central recycling center for the housing project including, as a minimum, separate bins for paper, glass, and metal (1 point), and/or install a trash compactor (1 point).		$ - $$$	1 or 2
5.9	Existing dwellings onsite from prior to construction are recycled (greater than 50% diverted from landfill for 3 points) or relocated (6 points) rather than demolished.		$$$$ - $$$$$	3 or 6

TOTAL SECTION POINTS 11

VI. WATER CONSERVATION

This section encourages a reduction in the amount of water used in the building.

Minimum 10 Points Required

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing our online Product Catalogue: www.builtgreencanada.ca/vi-water-conservation

			Relative cost	Points per item
6.1: Indoor Water Conservation				
6.1.1	Install a calibrated water meter in every unit.		$$ - $$$	3
6.1.2	Install ultra-efficient toilets with average flow rates less than or equal to 3L/flush (0.8 GPF) for 2 points each (up to 6 points).		$$ - $$$	2, 4 or 6
6.1.3	Install efficient toilets, or dual-flush toilets, with average flow rates less than or equal to 4.8L/flush (1.27 GPF) for 1 point each (up to 3 points).	2	$$ - $$$	1 to 3
6.1.4	Install waterless urinals in all public washrooms for men.		$ - $$	1
6.1.5	Install hot water recirculation system with all hot water lines insulated (2 points) with local activation/call switches installed at all points of use (additional 2 points), or point-of-use instant DHW system (1 point each, maximum 4).	2	$$$ - $$$$$	1 to 4
6.1.6	Install low-flow faucets for all lavatories (less than 5.7 lpm) for 2 points, and all showers and tub/showers (less than 7.6 lpm) for 1 additional point.	2	$$	2 or 3
6.1.7	Provide ENERGY STAR labelled clothes washers: front loading (3 points), top loading or laundry centre (combo washer/dryer) (2 points), or combo ventless (4 points). Alternatively, the integrated water factor (IWF) can be calculated, and if it's below the maximum IWF, 3 points will be awarded. - Front loading >2.5 cu ft capacity, maximum IWF of 3.7; - Top loading >2.5 cu ft capacity, maximum IWF of 4.3; - Washers <2.5 cu ft capacity, maximum IWF of 4.2.	3	$ - $$$	2, 3 or 4
6.1.8	Install water-saving dishwasher that uses equal to or less than 13.25 L of water per cycle (3.5 US gallons/cycle).	1	$ - $$	1
6.2: Outdoor Water Conservation				
6.2.1	Install permeable paving materials for all driveways and walkways (minimum 70% of hardscaped area).		$$$ - $$$$$	3
6.2.2	Design all impermeable hardscape surfaces to direct rainwater to on-site infiltration features (i.e. vegetated swale, rain garden, cistern, etc.), a natural drain source such as an approved stream, river, lake, culvert, etc. or to an approved municipal connection (where volume of rainwater exceeds on-site filtration capacity).	1	NC - $$	1

APPENDIX E: BUILTGREEN CHECKLIST

6.2.3	Provide a minimum of 8 inches of topsoil or composted yard waste as finish grading throughout site.	2	$$$ - $$$$$	2
6.2.4	Provide a list of drought-tolerant plants and a copy of the local municipality water usage guide to building manager(s)/occupants with closing package.	1	NC - $$	1
6.2.5	Reduce lawn/turf to 50% of landscaped area.	1	NC - $$	1
6.2.6	Provide permeable landscaping that is water efficient (for 1 point), xeriscaped (50% of landscaping for 2 points, 100% for 4 points), or is 100% plant-free landscaping (4 points). **OR**		$ - $$$$	1, 2 or 4
6.2.7	Install efficient irrigation technology including (for 1 point each, to maximum 3 points): (i) has head-to-head coverage; (ii) uses high efficiency spray heads with distribution uniformity of 0.7 or greater; (iii) uses square spray patterns to increase efficiency and reduce overspray onto non-permeable surfaces; (iv) uses drip irrigation for minimum 50% of planting bed area, including all larger shrub bed areas; (v) includes a flow sensor, central shut-off valve, and sub meter; (vi) has a pressure regulating device; (vii) includes a moisture sensor/rain delay controller; (viii) pre-set irrigation systems to account for weather.	1	$ - $$$	1 to 3

6.3: Water Re-Use

6.3.1	Provide one rain barrel per unit, complete with insect screen, drain, and overflow spouts, and connect to building downspout (1 point) or centralized rainwater collection and reuse system (captures at least 50% of rainwater) (3 points). **OR**		NC - $$	1 or 3
6.3.2	Provide a central rainwater collection cistern (minimum 50L per unit) to offset domestic water usage either indoors (e.g. atrium water, toilet flushing) or outdoor (e.g. irrigation for atria or gardens) (3 points for above grade, 5 points for below grade).		$$ - $$$$$	3 or 5
6.3.3	Grey water: rough-in a system for collecting waste water from sinks, showers, and/or kitchens to capture and treat for use in toilets or irrigation (3 points), or complete the system by installing greywater treatment equipment (6 points).		$$$ - $$$$$	3 or 6
6.3.4	Install on-site black water treatment system or engineered wetland for reprocessing local sewage (8 points).		$$$$$	8

TOTAL SECTION POINTS 16

VII. BUSINESS PRACTICES

This section deals more with manufacturer and builder office and business practices.

Minimum 8 Points Required

Find BUILT GREEN® Approved products that help earn your build points towards certification by viewing out online Product Catalogue: www.builtgreencanada.ca/vii-business-practices

			Relative cost	Points per item
7.1: Builder's Internal Policies				
7.1.1	Builder has a written environmental policy defining their commitment (must include an office recycling program, a staff education program, appropriate signage in the builder's offices and onsite, and energy efficient lighting). The policy must be signed by a senior executive and published on the company website.	1	NC	1
7.1.2	Builder's environmental policy includes and prioritizes milestones for future net zero housing developments.		$$$$$	1
7.1.3	Manufacturer and/or supplier has a written environmental policy with defined environmental commitments (must include an office recycling program and energy efficient lighting). (1 point per manufacturer/supplier—maximum of 2 points).	1	$$$$$	1 or 2
7.1.4	Products used for the building are manufactured within 800 km of build site (1 point for each 2 products—maximum 5 points).	4	$	1 to 5
7.1.5	Builder (office and show homes) offsets their carbon footprint by purchasing up to 50% (1 point) or 100% (2 points) of their electrical use in renewable energy certificates.		$$	1 or 2
7.1.6	Manufacturers and/or suppliers purchase 50% or more of their power needs from solar, wind, or renewable electricity (1 point per supplier to a maximum of 3).		NC	1 to 3

APPENDIX E: BUILTGREEN CHECKLIST

7.1.7	50% (2 points) or 100% (4 points) of electricity used during construction of the project is generated by wind power or equivalent green power certificate. Usage from a typical 6 month construction period or a recent similar project can be used to determine the monthly average.		$$$	2 or 4
7.1.8	50% (2 points) or 100% (4 points) of electricity used by occupants during first year of occupancy is generated by wind power or an equivalent renewable energy supply (prepaid by builder).		$ - $$$	2 or 4
7.1.9	When building in winter, builder uses best-practice cold-construction techniques to minimize energy wasted during construction (e.g. no propane heaters with tarps; consider radiant heaters, manufacturing components indoors, etc.).		NC	1
7.1.10	The builder conducts an air-tightness inspection at the mid-construction stage (1 point), with optional blower door test (additional 1 point). This will allow the Energy Advisor to identify areas of air leakage before completion. At completion, additional points for final Air Change per Hour levels: less than 3 ACH (1 point), less than 2 ACH (3 points), and less than 1 ACH (5 points).		$	1 to 7
7.1.11	Builder's show home(s) or presentation centres (i.e. the building(s) incorporating model suites) incorporate permeable landscaping, which is water efficient or xeriscaped (50% of lawn for 2 points, 100% for 4 points).		$$ - $$$$	2 or 4
7.1.12	The builder integrates innovative sustainable building practices above and beyond what is contained within the checklist section and provides supporting documentation. The innovation must apply to the project and will be reviewed by the Technical Standards Committee at the time of submission.		NC - $$$	1 to 5
7.2: Community Development & Transportation				
7.2.1	Implement a Construction Traffic/Truck Management Plan to avoid high congestion areas during construction by (as a minimum): (i) identifying potentially sensitive neighbours; (ii) ensuring that all vehicles can manoeuvre and park efficiently; (iii) avoiding vehicle idling; (iv) scheduling vehicle movements appropriately.	1	NC	1
7.2.2	Builder has a professional Sediment & Erosion (S&E) Control Plan prepared by an engineer, landscape architect, certified environmental monitor, or experienced individual. Builder enacts all five items (3 points), or builder enacts any of the items for 1 point each to a maximum of two points. (i) All dirt piles are fully covered and not able to wash into the street or off the property. (ii) All site water has to be filtered to be free of sediment prior to entering into the storm system. This can be done passively by making a containment pond that can filter as it's reabsorbed into ground water, or actively pumped from a sump to the storm system as long as the sump has filter fabric to keep out all sediment. (iii) All downwards storm basins are covered and maintained with filter fabric or commercially available bags to filter all water prior to entering the storm system. (iv) All disturbed downward slopes and site/work boundaries are protected with filtration measures (i.e. silt fences or straw bales) to prevent sediment flow beyond site. (v) All vehicles that leave the site need to be cleaned prior to exiting to make sure that no sediment can enter the storm system. Provide designated delivery area where truck wheels are washed / treated during construction. (vi) Any dirt or site debris is cleaned up immediately if it is able to wash into the storm system. This component is considered a constant monitoring program and is in place to prevent the contractors from waiting until the end of the day to clean up the surroundings.		NC - $$	1 to 3
7.2.3	Builder's company vehicles are electric, hybrid, or bio-diesel vehicles (1 point per vehicle—maximum of 3 points).		NC - $$	1 to 3
7.2.4	Development site provides community amenity space for not-for-profit (NFP) community services.		NC - $$$$	2
7.2.5	Development site provides for Publicly Accessible Private Space.		NC	1
7.2.6	Protect trees and natural features on site during construction. Point not available where there is nothing to protect.	1	NC	1
7.2.7	Development includes a diversity of housing types, including minimum 20% live/work units (2 points) and/or minimum 25% mixed-use facilities (2 points).		NC	2 or 4
7.2.8	Masterplan to encourage shared transportation: (i) Provide minimum one parking stall for a car-sharing vehicle (1 point); AND/OR (ii) Provide a shared vehicle as an asset owned by the condominium association (3 points); AND/OR (iii) Provide permanent bicycle storage on site that is convenient, secure, and sheltered (1 point).		$ - $$$$$	1 to 5
7.3: Staff / Trades Training & Homeowner Education				
7.3.1	Builder provides BUILT GREEN® building owner manual, completed BUILT GREEN® checklist, and educational walkthrough for building manager(s)/owner(s) upon closing.	3	$ - $$	3
7.3.2	Contracted trades, suppliers, and/or supporting design professionals have successfully taken and maintained BUILT GREEN® Training: Program Fundamentals, Module 1, or Building Science Training endorsed by Built Green Canada (e.g. Construction Technology for BUILT GREEN®, NRCan's Energy Advisor or R-2000 courses, or related formal schooling). BUILT GREEN® training must be updated every two years. (1 point per trade organization—maximum 5).	1	$	1 to 5
7.3.3	Builder's site superintendent has successfully taken and maintained BUILT GREEN® Training: Program Fundamentals, Module 1 (1 point), and/or Building Science Training endorsed by Built Green Canada (e.g. Construction Technology for BUILT GREEN®, NRCan's Energy Advisor or R-2000 courses, or related formal schooling) (2 additional points). BUILT GREEN® training must be updated every two years.	1	$	1 to 3
7.4: BUILT GREEN® Promotion				
7.4.1	Builder's construction site and sales office signage clearly display the BUILT GREEN® logo and promote that the project is enrolled for BUILT GREEN® certification.	1	$	1
7.4.2	Builder's primary place of business (i.e. office) is certified via a recognized third-party best practice program.		$$	3
7.4.3	Builder agrees to BUILT GREEN® certify a minimum of 50% of all applicable projects each calendar year (3 points for 50%, 5 points for 100%).	5	$ - $$	3 or 5

TOTAL SECTION POINTS 19

TOTAL CHECKLIST POINTS 134

APPENDIX E: BUILTGREEN CHECKLIST

APPENDIX F

HVAC SYSTEM NARRATIVE (VRF)

October 1, 2018
File: VRF System Narrative
for Area 6 Lot 3 docx

VRF full heat recovery System description

Objective:

Provide Air Conditioning and Heating and domestic hot water heating system dedicated to residential buildings, based on air-cooled VRF full heat recovery technology.

Benefits:

Variable Refrigerant Flow (VRF) is a technology introduced as a system to minimize efficiency losses found in conventional HVAC systems and provide sustainable energy benefits. An air source VRF system is engineered to minimize the use of ductwork as a saving; also minimize the cost of large distribution fans, multiple water pumps operation, and water piping. Energy efficient and easy to install and maintain. A VRF system has the lowest life-cycle cost of any system on the market today.

The heating and cooling load of a building is always changing throughout the day and year by factors such as ambient temperature, solar heat gain, occupancy level, etc. Yet the majority of the time the building load is only at a partial load condition. VRF technology is to dynamically modulate the system's capacity which always meets the actual load of the building. Thus, only the necessary amount of energy is consumed and makes the VRF system a much more energy-efficient system than traditional fixed speed systems.

Domestic Hydro Kit will be provided to supply domestic hot water to the building. The Hydro Kit works by extracting heat from the Heat Recovery system to provide domestic hot water. The Hydro Kit complies with refrigerant to refrigerant heat exchanger, compressor, and refrigerant to water heat exchanger. In the cooling mode, the Hydro Kit recovers the waste heat generated from the cooling system to provide domestic hot water heating. The Hydro Kit achieves the energy saving by reducing the operation of the VRF outdoor units to reject the hot condenser air.

Each VRF indoor unit is part of the user-friendly zone control system which operates independently to provide personalized comfort that meets the needs of each and every single zone. All individual indoor units can start, stop or change their operation as needed, thus adjusting the capacity throughout the day, improving the system's efficiency and maximizing the energy conservation.

Air Cool Outdoor units:

VRF Outdoor Units (OU) located on a designated area. Dedicated shafts will be used to bring refrigerant piping from the OU to the Heat Recovery Boxes placed in each floor.

A group of three pipes coming from the OU will come down in the shaft and branch out at every floor. On every floor, the pipes will be traveling horizontally to the Heat Recovery Boxes (HRB) and from them to the ceiling concealed, exposed fan coil units or floor mounted air handlers inside each suite.

The HRBs will be located in the ceiling space in the proximity of the suites served or corridor. In heat-recovery systems as design, the HRBs can take the heat recovered from the cooling zone and use it to warm up the room in heating mode. This way, the compressor cooling or heating requirements are reduced, which saves energy.

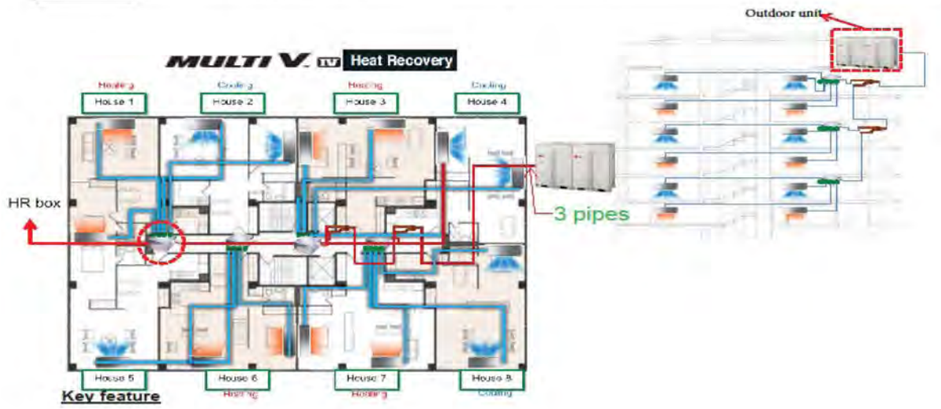
VRF systems use R-410A refrigerant as the heat-transfer fluid and the working fluid, achieving a very high energy efficiency ratio (EER) of 15 to 20 and integrated energy efficiency ratio (IEER) of 17 to 25. They are 20% to 30% more efficient than conventional HVAC systems due to partial load operation, speed modulation, zoning capabilities, and heat-recovery technology.

The heat recovery or simultaneous mode systems provide both heating and cooling from the same outdoor unit and thus exploit this technology most effectively. They offer considerable potential for energy savings in many applications.

The 3 pipe heat recovery system has a liquid line, a hot gas line and a suction line (reclaim) from the outdoor unit. Each indoor unit is branched off from the 3 pipes using solenoid valves inside the HRBs. An indoor unit requiring cooling will open its liquid line and suction line valves and act as an evaporator. An indoor unit requiring heating will open its hot gas and liquid line valves and will act as a condenser.

APPENDIX F: HVAC SYSTEM NARRATIVE (VRF)

. Proposed system (High rise & High volume apartment)



Indoor air handlers:

Each pair of pipes coming from the HRBs will feed one air handler.

The air handler can be floor mounted at the corner of the storage area where the condensate drain can be easily disposed. Alternative to this equipment, ceiling mounted fan coil units or ceiling cassettes can be installed.

Simultaneous Cooling and Heating mode:

3 refrigerant pipes will be routed from the condensers on the roof, into each HRB and 2 pipes from the HRBs to each fan coil unit.

When cooling is required the expansion valve on the air handler will be open and cool refrigerant will be pushed through the coil and room air blown across the coil and cooled down, a similar operation will take place in heating mode. The local Thermostats in each suite will mandate the mode of the fan coil (cooling or heating) and the solenoid valves inside the HRB will route the refrigerant at the proper temperature to satisfy the demand, sending hot refrigerant coming from rejected heat when the unit is in cooling to a space which is in demand for heating.

APPENDIX F: HVAC SYSTEM NARRATIVE (VRF)

When the refrigerant temperature is not sufficient to fulfill the demand, the inverter compressors in the condensing units will start to satisfy the demand. The condensing units will work to provide heating or cooling and will change over automatically.

Domestic Heating System

A high-temperature Hydro Kit will be used in conjunction with the air-cooled VRF Heat Recovery system to produce hot water.

The High-temperature heating model uses a 2-stage cascade heating system. The first stage heat is extracted from the VRF refrigerant piping system and transferred to the Hydro Kits second stage refrigerant circuit. Energy is then transferred to/from the Hydro kit water circuit. The water heat exchanger is a stainless steel refrigerant to water plate type heat exchanger.

The Hydro Kit includes an integrated microprocessor controller capable of performing functions necessary to control Hydro Kit operations based on the leaving water and/or hot water tank temperature set-point. A factory provided remote (wall-mounted) Hydro Kit Unit Controller and a hot water tank sensor/well are included for field installation.

Energy Management and Controls

An AC Smart control touch panel will be installed in an area where the maintenance crew can have daily access.

All thermostats will be recorded in the AC Smart. The maintenance person will be able to command the individual thermostat in case of emergency or if the tenant has left the building for a long period without turning off the air conditioning system in the unit.

All data available in the AC Smart will be also displayed in one or more computers located where considered useful, for example at the property manager office

Power Distribution Indicator

Watt meters will be installed on site, directly connected to each group of OU.

Power distribution indicator panels will be connected to the control bus. These panels will take the power consumption for the OUs and distribute it to the IU in a proportional way to their usage.

The algorithm in the PDI panel will determine what proportion of the OU is distributed to every IU based on real time operation, electronic expansion valve positioning and fan speed.

The AC Smart module will generate an excel file with the information pertaining to every single IU. That information can be rearranged in groups of IUs, periods of time, for example one month, etc. This could be used as an indication to each owner/ tenant for the air conditioning and heating usage.

APPENDIX F: HVAC SYSTEM NARRATIVE (VRF)

APPENDIX G

SOLAR PV DESIGN REPORT

Design 1 BPP Area 6, Lot 3, Rogers Creek, West Vancouver BC

Report

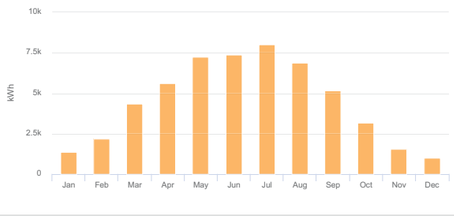
Project Name	BPP Area 6, Lot 3
Project Address	Rogers Creek, West Vancouver BC
Prepared By	S. Fleenor scott@terratek.ca

System Metrics

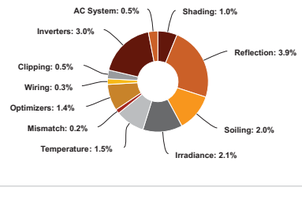
Design	Design 1
Module DC Nameplate	49.3 kW
Inverter AC Nameplate	43.2 kW Load Ratio: 1.14
Annual Production	53.83 MWh
Performance Ratio	84.7%
kWh/kWp	1,091.2
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)
Simulator Version	02438dc84d-15065d270a-ca63df14a5-d5d7833a30

Project Location

Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,191.3	
	POA Irradiance	1,288.8	8.2%
	Shaded Irradiance	1,275.6	-1.0%
	Irradiance after Reflection	1,225.6	-3.9%
	Irradiance after Soiling	1,201.1	-2.0%
	Total Collector Irradiance	**1,201.1**	**0.0%**
Energy (kWh)	Nameplate	59,274.0	
	Output at Irradiance Levels	58,034.9	-2.1%
	Output at Cell Temperature Derate	57,138.0	-1.5%
	Output After Mismatch	57,007.5	-0.2%
	Optimizer Output	56,209.2	-1.4%
	Optimal DC Output	56,043.2	-0.3%
	Constrained DC Output	55,783.7	-0.5%
	Inverter Output	54,103.9	-3.0%
	Energy to Grid	**53,833.4**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		10.9 °C
	Avg. Operating Cell Temp		18.3 °C
Simulation Metrics			
	Operating Hours		4577
	Solved Hours		4577

Condition Set

Description	Condition Set 1			
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)			
Solar Angle Location	Meteo Lat/Lng			
Transposition Model	Perez Model			
Temperature Model	Sandia Model			
Temperature Model Parameters	Rack Type	a	b	Temperature Delta
	Fixed Tilt	-3.56	-0.075	3°C
	Flush Mount	-2.81	-0.0455	0°C
Soiling (%)	J F M A M J J A S O N D			
	2 2 2 2 2 2 2 2 2 2 2 2			
Irradiation Variance	5%			
Cell Temperature Spread	4° C			
Module Binning Range	-2.5% to 2.5%			
AC System Derate	0.50%			
Module Characterizations	Module	Characterization		
	CS3U-345P (Canadian Solar Inc.)	CS3U-345P_MIX_CSI_EXT_V6_64_2017Q4.PAN, PAN		
	CS3U-345P 1500V (Canadian Solar Inc.)	CS3U-345P_MIX_CSI_EXT_V6_64_1500V_2017Q4.PAN, PAN		
Component Characterizations	Device	Characterization		
	SE14.4KUS (SolarEdge)	CEC		
	P800S (SolarEdge)	Mfg Spec Sheet		

Components

Component	Name	Count
Inverters	SE14.4KUS (SolarEdge)	3 (43.2 kW)
Strings	10 AWG (Copper)	8 (1,804.2 ft)
Optimizers	P800S (SolarEdge)	72 (57.6 kW)
Module	Canadian Solar Inc., CS3U-345P 1500V (345W)	43 (14.8 kW)
Module	Canadian Solar Inc., CS3U-345P (345W)	100 (34.5 kW)

Wiring Zones

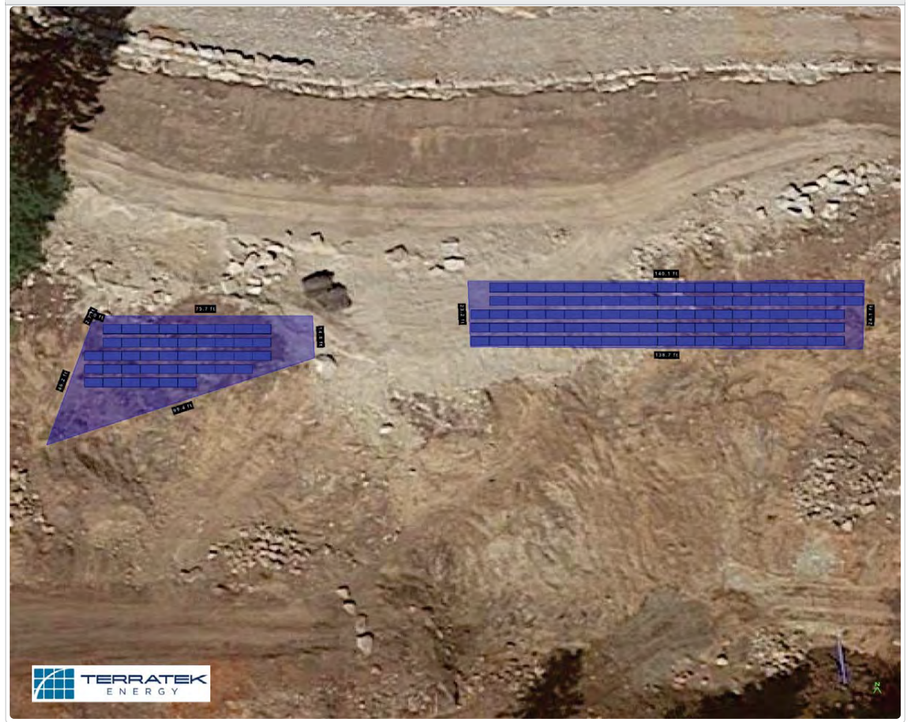
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	12	7-18	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Landscape (Horizontal)	10°	180°	1.5 ft	1x1	59	43	14.8 kW
Field Segment 2	Fixed Tilt	Landscape (Horizontal)	10°	180°	1.5 ft	1x1	104	100	34.5 kW

APPENDIX G: SOLAR PHOTOVOLTAIC PANELS DESIGN REPORT

Detailed Layout



APPENDIX G: SOLAR PHOTOVOLTAIC PANELS DESIGN REPORT

APPENDIX H

STORMWATER

1.0 Introduction

The intention is to integrate the Lot 3 storm water management design with the overall Area 6 storm water management plan, and to incorporate Low Impact Development techniques wherever practicable.

Low Impact Development is intended to:

- provide an alternative to the traditional approach of capturing storm water and immediately directing it to the storm sewer system;
- reduce the load on the natural creek systems, from intense runoff events, and create a development that provides hydrology that mimics the pre-development condition;
- be beneficial to aquatic habitat and reduces system operating costs;
- provide opportunities to infiltrate runoff back into the ground;
- Cleanse 'first-flush' contaminants from roadways, roofs, driveways etc.;

Area 6 will incorporate an integrated system of bio-retention trenches and wetlands.

2.1 Lot 3 – On Lot Storm Water Management Features

The on-lot storm water management will be coordinated with the landscape design as that design develops. The intent is to integrate the Lot 3 design into a holistic system with the other features in Area 6. In addition to the above, additional low-impact features will be incorporated into the on-lot design, wherever practical. These measures are anticipated to be designed and approved as part of the Building Permit process.

However, typical features that we will consider including are:

- Absorbent Landscaping – for example, the northern half of the lot won't be impacted by the building construction and will comprise a landscaped, fill slope that supports Road H above. Road H has been constructed using bulk rock fill that should typically absorb rainfall;
- Rock Pits;
- Permeable paving;
- Lot 3 Wetland – see section 3.2 below.

3.0 Area 6 Storm Water Management around Lot 3

3.1 Road H

- Runoff from Lot 4 will be treated by incorporating on lot measures, as practical, within Lot 4. Flow will then be directed to LID trenches or the Road H storm sewers;
- Road runoff from Road H will be directed towards LID/Bio-retention trenches;
- LID/Bioretention trenches filter run off from Lots and roads. Rainwater will be given an opportunity to infiltrate into the ground, be filtered, and be absorbed by planting;
- LID/Bioretention trenches help to cleanse contaminants from roadways, roofs, driveways etc.;
- Low flow diversion manhole discharges low flows to Lot 3 wetland – higher flows bypass and discharge to Westmount Creek.

3.2 Lot 3 Wetland

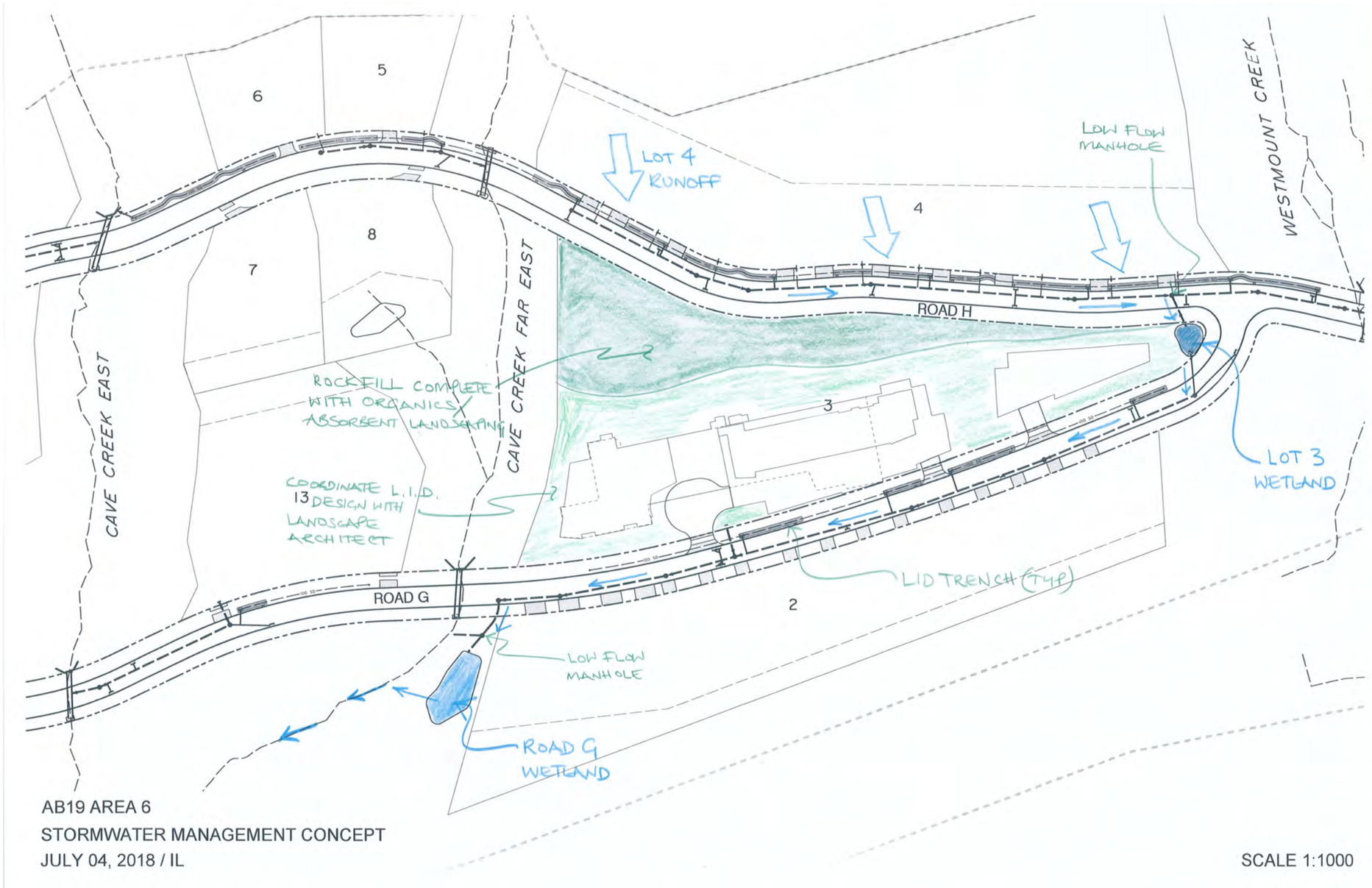
- Wetland receive road runoff from Road H and will from the lots north of Road H;
- The wetland will be fed by splitting low flow at a storm sewer manhole;
- The outfall from this wetland will be directed back to a storm sewer on Road G;
- Water will be directed toward the larger Road G wetland.

3.3 Road G

- Similar to Road H, a system of LID trenches will be constructed to treat run off from Lot 3 and Road G.

3.4 Road G Wetland

- The proposed design includes a large wetland on the east side of Cave Creek Far East. This wetland will receive road runoff from Road G storm sewers. The wetland will filter the water, similar to the LID trenches. It will also provide additional aquatic habitat. The wetland will discharge into Cave Creek Far East.


6
5
8
7
4
3
2
LOT 4
RUNOFF
LOW FLOW
MANHOLE
WESTMOUNT CREEK
ROAD H
CAVE CREEK FAR EAST
CAVE CREEK EAST
ROCKFILL COMPLETE
WITH ORGANICS/
ABSORBENT LANDSCAPING
COORDINATE L.I.D.
13 DESIGN WITH
LANDSCAPE
ARCHITECT
LOT 3
WETLAND
LID TRENCH (TYP)
ROAD G
LOW FLOW
MANHOLE
ROAD G
WETLAND
AB19 AREA 6
STORMWATER MANAGEMENT CONCEPT
JULY 04, 2018 / IL
SCALE 1:1000