



M'AKOLA
DEVELOPMENT
SERVICES

REQUEST FOR PROPOSAL:

Structural Engineering Services

Re: Sunshine Coast Community Services Society Development Project at
5638 Inlet Avenue, Sechelt, B.C.

Issue Date: Friday, October 9, 2020

Deadline for Questions: Wednesday, October 21, 2020 at 3:00 PM PST

Submission Deadline: Thursday, October 29, 2020 at 3:00 PM PST



Introduction

M'akola Development Services (MDS) is extending an invitation to prospective qualified proponents, on behalf of Sunshine Coast Community Services Society (SCCSS), to submit proposals for the provision of structural engineering services for the project described below.

This is a publicly funded project, with the following list of funders (including additional stipulated conditions that may apply to the project):

- BC Housing
 - BC Housing's Design Guidelines and Construction Standards will provide the standards and technical guidelines for this project. See BC Housing's website for most up-to-date *Design Guidelines* for this affordable housing project. Refer to section 5 for BC Housing design review process.
 - BC Housing's Design Guidelines for Women's Safe Homes, Transition Houses, Second Stage Housing and Long-Term Rental Housing will apply. See BC Housing's website for the most up-to-date Guidelines.

Project Description

The vision for this development is to be a mixed-use building with SCCSS services on the first two floors and affordable housing for women and children. The proposed development would be six storeys in height and provide 34 units of affordable housing for women and children. The proposed concept plan will have the 34 units over 4 floors and will have the following unit breakdown 7 studio, 12 one-bedroom, 9 two-bedroom, and 6 three-bedroom. The combined floor area of the residential space will total an estimated 2427m². The bottom two floors will be used for SCCSS programming and office space and will have an estimated floor area of 1400m².

This development will bring the majority of SCCSS programs located in Sechelt to one main location. This will reduce barriers to service and increase opportunities for individuals and families, particularly for those with complex challenges, to access a variety of services in one location. In addition to housing, the proposed project would include programming, administration space, and a commercial kitchen on the ground floor for SCCSS.

A BC Hydro Right of Way runs through much of the site. Within the ROW parking, a community garden and the existing storage building are proposed. Additionally, there is an archaeologist on the project team due to the high archaeological significance. Any land disturbance must involve the archaeologist.

See attachment A, B and C for the conceptual design, topographical survey and geotechnical study.



Site Description

Site Location: 5638 Inlet Avenue, Sechelt, B.C.

PID: 029-743-567

Legal Description: PARCEL A (BEING A CONSOLIDATION OF LOTS 12 AND 13, SEE CA4913451)
BLOCK P BLOCK 303 GROUP 1 NEW WESTMINSTER DISTRICT PLAN 14919

Project Schedule

This project is publicly funded and therefore subject to schedule change, M'akola Development Services will advise project team on significant schedule changes if they arise. The project will be split into phases:

- A. Phase 1: Schematic Design
- B. Phase 2: Design Development
- C. Phase 3: Construction Documents
- D. Phase 4: Tender
- E. Phase 5: Construction Phase Services
- F. Phase 6: Post-Construction and Warranty Period Services

The following are target milestone dates:

- Rezoning (Public Hearing): November 2020
- Development Permit Submission: February 2021
- Construction Start: September 2021

Sustainability

The [BC Energy Step Code](#) regulations – a part of the BC Building Code – was enacted in 2017 with the goal of making all buildings net-zero energy ready by 2032. BC Housing aligned their 2019 [Design Guidelines and Construction Standards](#) to meet upper steps of the Step Code as a requirement for BC Housing funded projects.

This new development requires an energy target of Step 4 based on BC Housing's [Sustainability Standards guide sheet](#) which provides an overview of the required sustainability measures.

An Energy Modelling Consultant has been procured to recommend the building specifications and confirm Step Code compliance. The architect and energy modelling consultant will work collaboratively through design development to ensure compliance with BCH's sustainability requirements.

Scope of Work

The successful firm shall perform a complete structural study and design of the entire site for the proposed development.



The scope of work should include but not be limited to:

- Review of existing site reports and materials
- Establish structure design criteria
- Provide structural input as required in the Architect's preparation of schematic designs
- Account for local factors in developing propose schematics such as labour, expertize and material availability
- Complete preliminary design and prepare design development documents, including preliminary structural framing plans and preliminary foundation plans that satisfy the requirements
- Prepare sketch drawings of typical areas showing possible alternate structural configurations for the project
- Prepare preliminary structural layout drawings of the selected systems in sufficient detail to enable the architect to incorporate the structural concept into the architect's Design Development Permitting drawings, for issuance to BC Housing and the Authority Having Jurisdiction.
- Design the primary structural system for the loads imposed by components designed by other disciplines such as architects, mechanical and electrical engineers.
- Prepare drawing packages for 50% review by BC Housing, incorporate relevant comments into design package.
- Prepare drawing packages for 95% review by BC Housing, incorporate relevant comments into design package.
- Prepare Contract Documents.
- Provide sealed construction documents and Letters of Assurance Schedule B for the Building Permit application, for issuance to the Authority Having Jurisdiction.
- Prepare Tender Documents for the Client to distribute to proponents.
- Respond to Contractor requests for clarification.
- Issue clarifications and/or addenda, as appropriate.
- Prepare IFC Documents to issue to the Contractor.
- Visit the site for field reviews as required
- Prepare site visit reports
- Provide interpretations and clarifications of the contract drawings related to the structural design.
- Provide supplementary details, instructions and field sketches as necessary.
- Review shop drawings related to primary structural system for general conformity to the project requirements
- Review shop drawings of secondary structural systems for their effects on the primary structural system
- Conduct a final review to determine level of completeness is in accordance with occupancy requirements, and supply a report identifying deficiencies for the Contractor to action if required
- Provide Letters of Assurance Schedule C upon completion of identified deficiencies that affect life safety
- Attend meetings when required



Evaluation

Each proposal will be scored out of 100 points based on the following criteria:

Evaluation Criteria	Possible Points
Proposal Presentation	10
Experience	15
Staff Resources	10
Scope of Work	15
Budgets & Fees	50
Score:	100

MDS' intent is to enter in a contract with the proponent who has the highest overall score.

Proponents Bear Own Costs and Waive Liability

Proponents are solely responsible for their own expenses in preparing a proposal. Neither MDS nor the Society will be liable, under any circumstances, for any claim arising out of the request for proposals process, including but not limited to costs of preparation of the proposal, loss of profits, loss of opportunity or for any other claim. By submitting a proposal, the proponent waives any right to or claim for any compensation of any kind whatsoever, including claims for costs of preparation of the proposal, loss of profits or loss of opportunity or for any other claim, by reason of MDS' or the Society's decision not to accept the proposal submitted by the proponent, to enter into a contract with any other proponent or to cancel this request for proposals process, and the proponent shall be deemed to have agreed to waive such right of claim.

For clarity, MDS and the Society reserve the right to cancel this request for proposals at any time and to reissue it for any reason whatsoever without incurring any liability and no proponent will have any claim against MDS or the Society as a consequence.

Conflict of Interest:

The Society and MDS may disqualify a proponent for any conduct, situation or circumstances, determined by MDS and the Society, in its sole and absolute discretion, to constitute a conflict of interest or a perceived conflict of interest, or where there is evidence of collusion.

Conclusion of Process and Debriefing

At the conclusion of the request for proposals process, all proponents who submitted will be notified of whether they were successful or not. Unsuccessful proponents may request a debriefing with MDS which may, at MDS' option, be conducted via telephone or email.



Contract Terms and Conditions

By submission of a proposal, the proponent agrees that, should its proposal be successful, the proponent will be engaged under the terms and conditions acceptable to the Client and BC Housing which are in line with any applicable supplementary general conditions (SGC) of BC Housing.

Confidentiality and Access to Information

This development is subject to BC Housing terms and conditions. As such, there shall be no announcement of the work or the development without prior written consent by BC Housing, Sunshine Coast Community Services Society and MDS.

The successful Proponent must agree to maintain security standards consistent with security policies of the Sunshine Coast Community Services Society. These may include, but not be limited to, strict control of access to data and maintaining confidentiality of information gained while carrying out their duties.

The contents of your proposal will not be released or divulged to any other proponent(s), however, your proposal may be released to BC Housing upon their request. BC Housing is subject to FOIPPA.

Submission Requirements

BC Housing has requested that all proposals include the following inclusion statement:

*“The attached proposal has been prepared for Sunshine Coast Community Services Society, **and for BC Housing Corporation as an intended user**” in response to the Request for Proposals regarding the Sunshine Coast Community Services Housing Development project located at 5638 Inlet Avenue, Sechelt, BC.*

Submissions should be no longer than **10 pages** (not including appendices). Resumes can be included in the Appendix) and must be received by **Thursday, October 29, 2020 at 3:00 PM PST** to be considered. Please note work will commence directly upon award.

Submissions must include:

1. Introduction – summarize any unique experience, skill sets, approaches, or understanding of the assignment that you think would be relevant.
2. Company profile – a brief profile including company history, size/resources.
3. Roles and résumés – list principals and senior staff who will have specific responsibilities for this project, including a short paragraph describing their relevant experience. Indicate which



individual will be project manager, primary designer, and main contact with the project design team.

4. Scope and method to complete work for each phase
5. Fee estimate, including disbursements - all disbursements are to be identified in the fee proposal.
6. Please provide fees broken down as follows:
 - A. Phase 1: Schematic Design
 - B. Phase 2: Design Development
 - C. Phase 3: Construction Documents
 - D. Phase 4: Tender
 - E. Phase 5: Construction Phase Services
 - F. Phase 6: Post-Construction & Warranty Period Services
 - a. The design and construction team ensure that deficiency items follow up, closeout documentations, commissioning activities and building handover tasks are taken into account. All project team members bear some responsibility for these activities.
7. Construction administration will include, but is not limited to the following:
 - Reimbursable expenses: Indicate reimbursements, if any.
 - Note: No mark-up is permitted on disbursements
 - Additional services: Provide a list of hourly rates for all billable staff.
 - Fee per trip: Indicate your fees for professional time and disbursements per site visit to 5638 Inlet Avenue, Sechelt, B.C. for integrated design planning meetings (schematic and design development phases – note most of these will be virtual meetings) and construction (construction document phase). Identify accommodation and meals as separate line items in the budget).
 - Post-Construction services: The design and construction team ensures that deficiency items follow up, closeout documentations, commissioning activities and building handover tasks are taken into account. Provide hourly estimate.

Note: No retainers will be permitted.

8. Outline assumptions and limitations of work
9. Professional qualifications and proof of liability insurance coverage to a minimum of \$2,000,000.



Submission Format

Please submit proposals electronically to:

Matt Notley, Project Planner, M'akola Development Services
Email: mnotley@makoladev.com

All proposals must be copied to:

Katy Fabris, Senior Project Manager, M'akola Development Services
Email: kfabris@makoladev.com

Submission Confirmation

You will receive confirmation of your submission within 48 hours.

Opening and Closing Dates

Proposals may be submitted from the date this request for proposals was issued until the submission deadline. Proposals must be received as set out by Thursday, October 29, 2020 at 3:00 PM PST. Proposals received after the closing date and time will not be accepted.

Withdrawal and Resubmission

A proposal may be withdrawn prior to the submission deadline with a written request sent via email to Matt Notley, Project Planner and Katy Fabris, Senior Project Manager. A withdrawn proposal may be resubmitted so long as it is received before the submission deadline.

A proposal may not be withdrawn after the submission deadline and shall remain open to acceptance by MDS and the Society until the earlier of the date the successful proponent enters into a contract with the Society, or 60 calendar days after the submission deadline.

Questions

All questions related to this request for proposals, including any requests for information and clarification, are to be directed, in writing, to:

Matt Notley, Project Planner
Email: mnotley@makoladev.com

Questions will be responded to as time permits. The deadline for submitting questions is Wednesday, October 21, 2020 at 3:00 PM PST. Questions and any responses will be recorded and may be distributed via addendum, at MDS' option, if the question requires an interpretation or modification of this request for proposals.



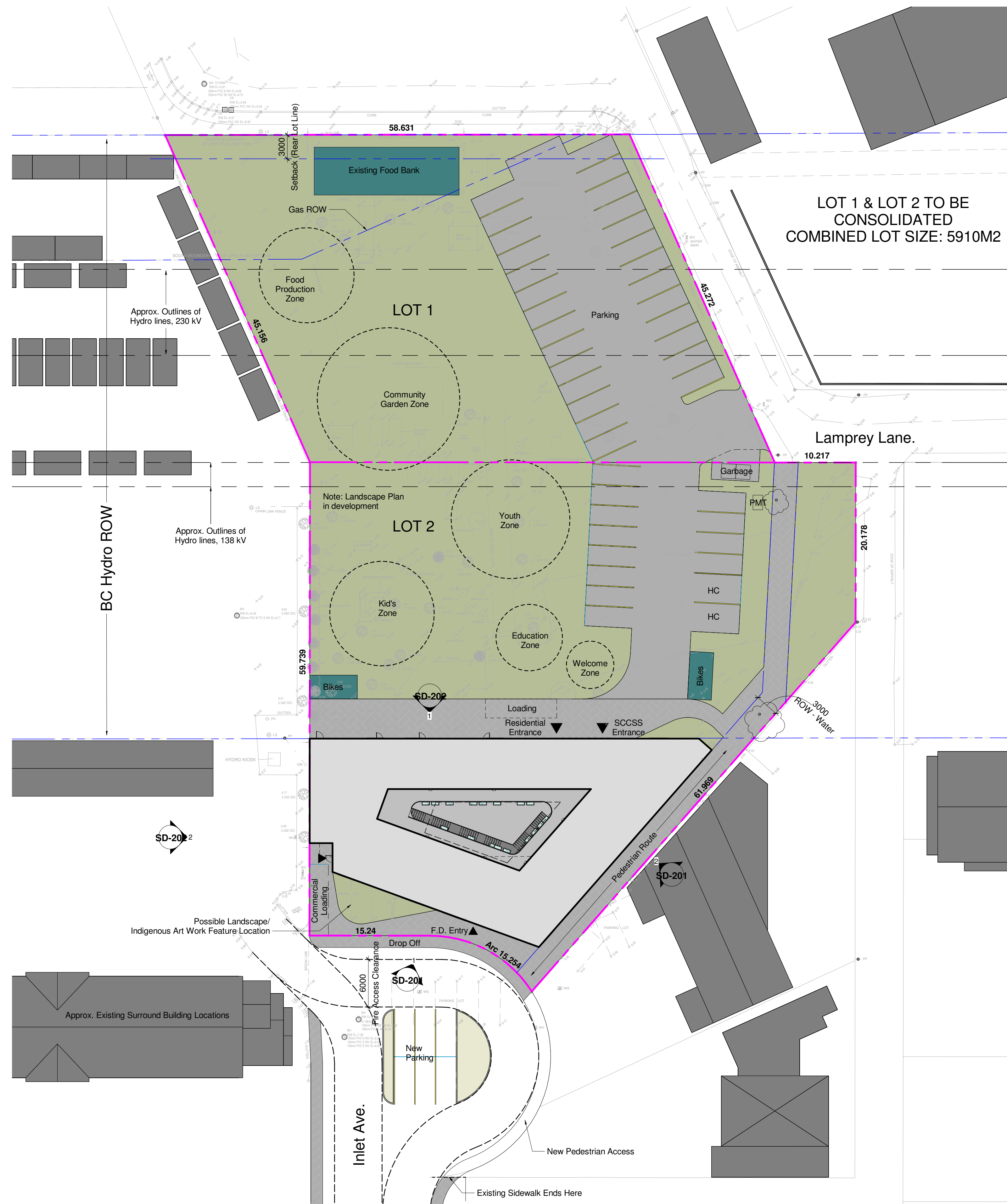
MAKOLA
DEVELOPMENT
SERVICES

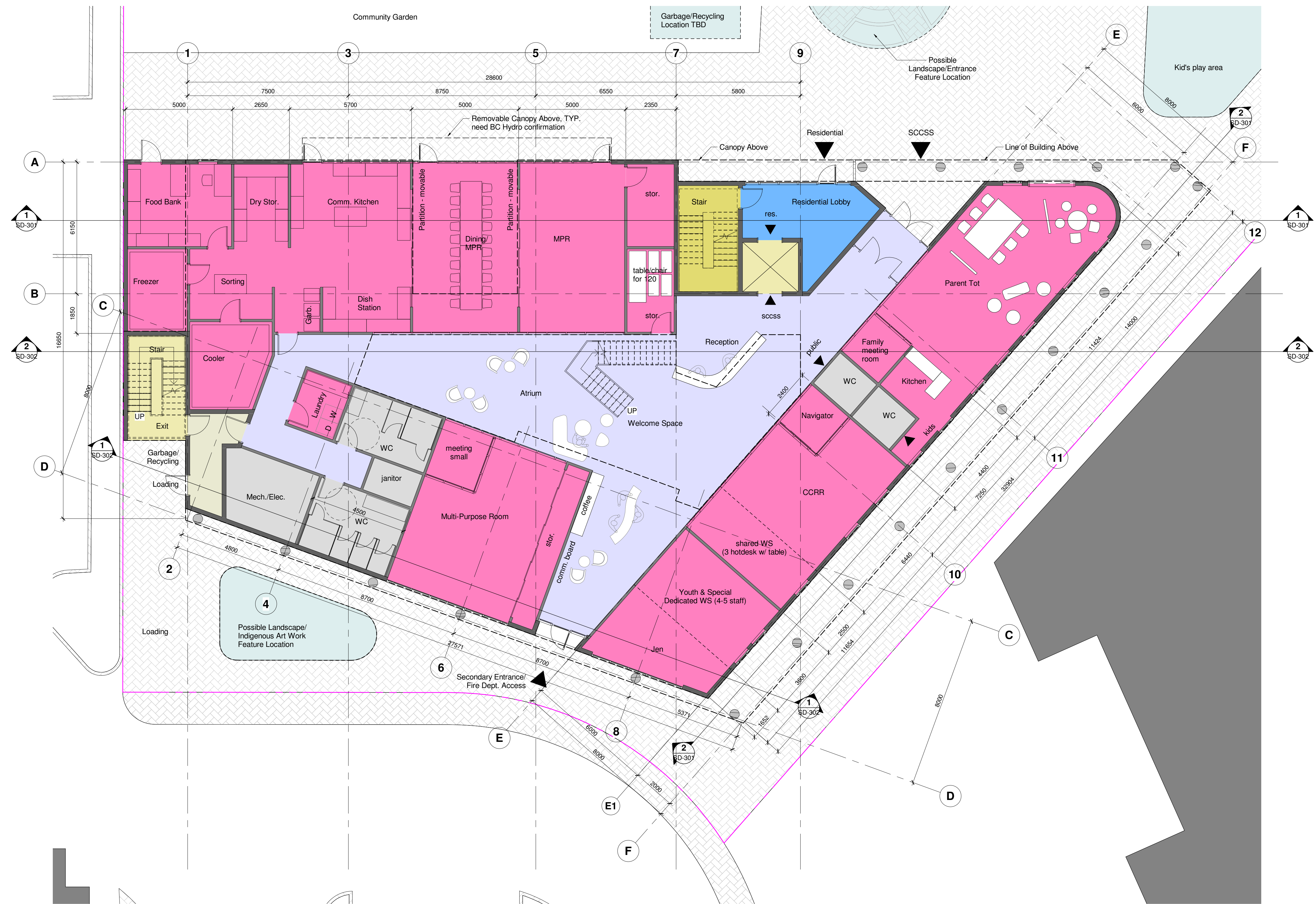
Appendices

Appendix A – Conceptual Design and Site Plan

Appendix B – Topographical Survey

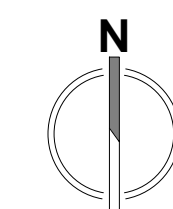
Appendix C – Geotechnical Report

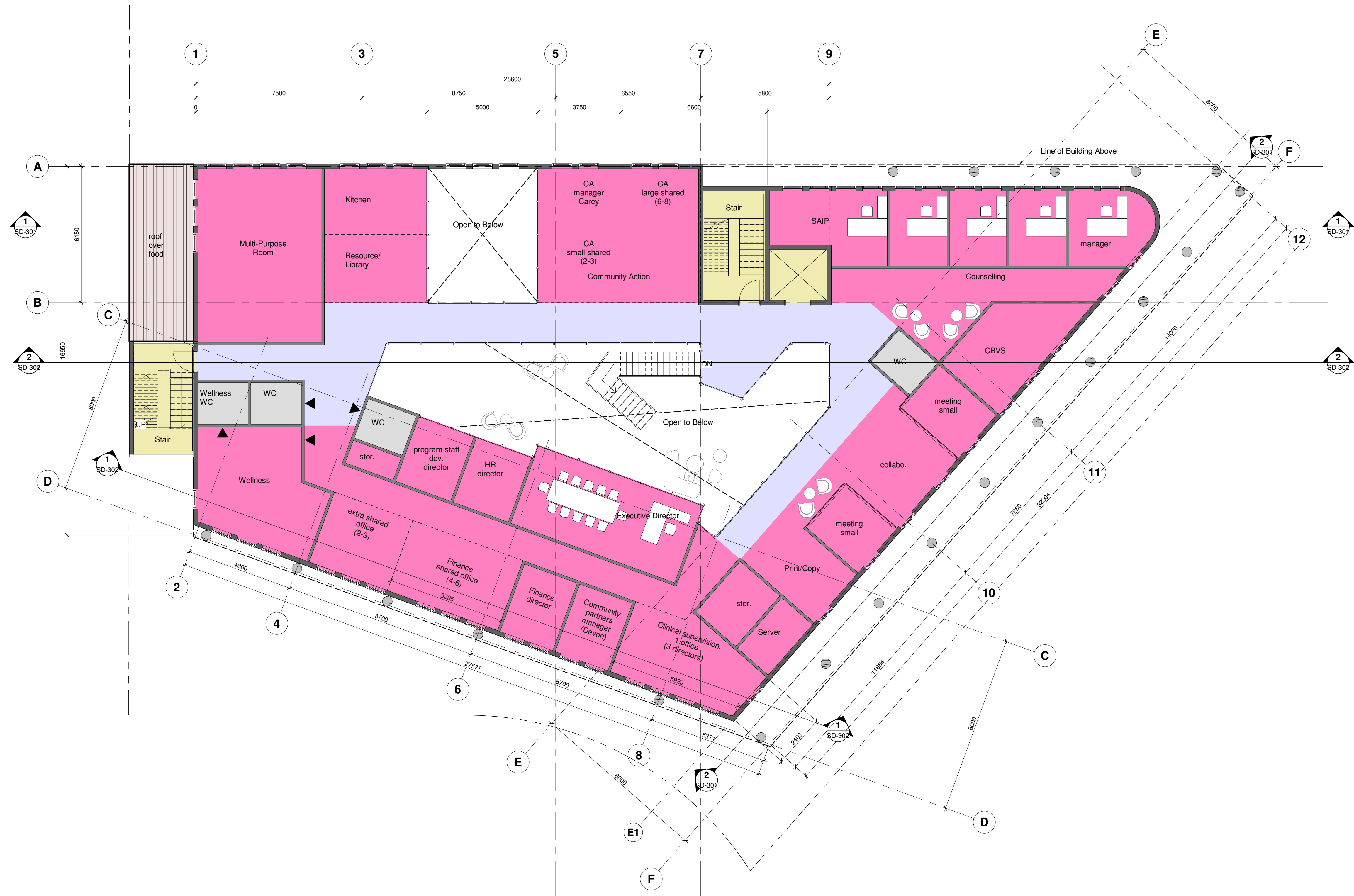




LEVEL 1		
NUMBER	NAME	AREA
100	SCCSS	705.53 m ²
101	Res. Lobby	19.51 m ²
102	Elev.	7.00 m ²
103	Stair	15.45 m ²
104	Outdoor Stair	14.50 m ²
105	Corridor	9.71 m ²
		771.70 m ²

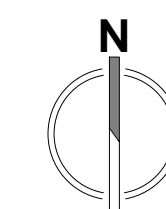
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SCALE 1:100 m





LEVEL 2		
NUMBER	NAME	AREA
200	SOCSS	591.41 m ²
201	Elev.	7.00 m ²
202	Stair	15.45 m ²
203	Outdoor Stair	14.50 m ²
		628.36 m ²

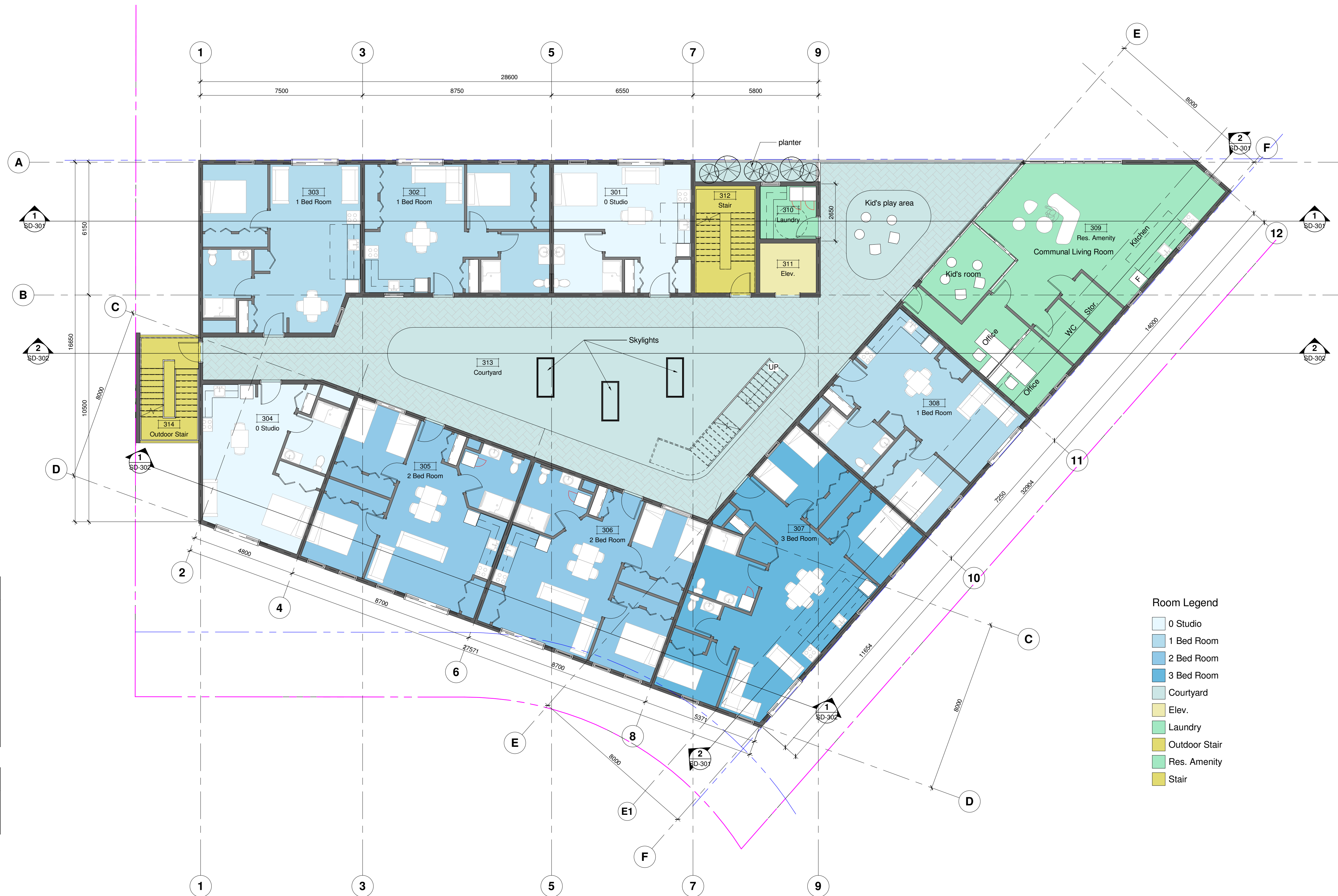
1 0 1 2 3 4 5
SCALE 1:100 m



LEVEL 3		
NUMBER	NAME	AREA
301	0 Studio	40.28 m ²
302	1 Bed Room	53.81 m ²
303	1 Bed Room	58.08 m ²
304	0 Studio	44.30 m ²
305	2 Bed Room	69.60 m ²
306	2 Bed Room	69.60 m ²
307	3 Bed Room	92.42 m ²
308	1 Bed Room	58.00 m ²
309	Res. Amenity	96.40 m ²
310	Laundry	7.42 m ²
311	Elev.	7.00 m ²
312	Stair	15.45 m ²
		612.36 m ²

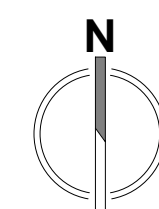
LEVEL 3 OUTDOOR		
NUMBER	NAME	AREA
313	Courtyard	237.58 m ²
314	Outdoor Stair	14.50 m ²
		252.08 m ²

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SCALE 1:100 m



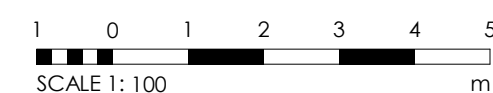
Room Legend

- 0 Studio
- 1 Bed Room
- 2 Bed Room
- 3 Bed Room
- Courtyard
- Elev.
- Laundry
- Outdoor Stair
- Res. Amenity
- Stair



LEVEL 4		
NUMBER	NAME	AREA
401	0 Studio	40.28 m ²
402	1 Bed Room	53.81 m ²
403	1 Bed Room	58.08 m ²
404	0 Studio	44.30 m ²
405	2 Bed Room	69.60 m ²
406	2 Bed Room	69.60 m ²
407	3 Bed Room	92.42 m ²
408	1 Bed Room	58.00 m ²
409	3 Bed Room	96.40 m ²
410	Laundry	7.42 m ²
411	Elev.	7.00 m ²
412	Stair	15.45 m ²
		612.36 m ²

LEVEL 4 OUTDOOR		
Number	Name	Area
413	Outdoor Corridor	127.25 m ²
414	Outdoor Stair	14.50 m ²
		141.75 m ²



- Room Legend
- 0 Studio
 - 1 Bed Room
 - 2 Bed Room
 - 3 Bed Room
 - Elev.
 - Laundry
 - Outdoor Corridor
 - Outdoor Stair
 - Stair

LEVEL 5		
NUMBER	NAME	AREA
501	0 Studio	40.28 m ²
502	1 Bed Room	53.81 m ²
503	1 Bed Room	58.08 m ²
504	0 Studio	44.30 m ²
505	2 Bed Room	69.60 m ²
506	2 Bed Room	69.60 m ²
507	3 Bed Room	92.42 m ²
508	1 Bed Room	58.00 m ²
509	3 Bed Room	96.40 m ²
510	Laundry	7.42 m ²
511	Elev.	7.00 m ²
512	Stair	15.45 m ²
		612.36 m ²

LEVEL 5 OUTDOOR		
NUMBER	NAME	AREA
513	Outdoor Corridor	127.25 m ²
514	Outdoor Stair	14.50 m ²
		141.75 m ²

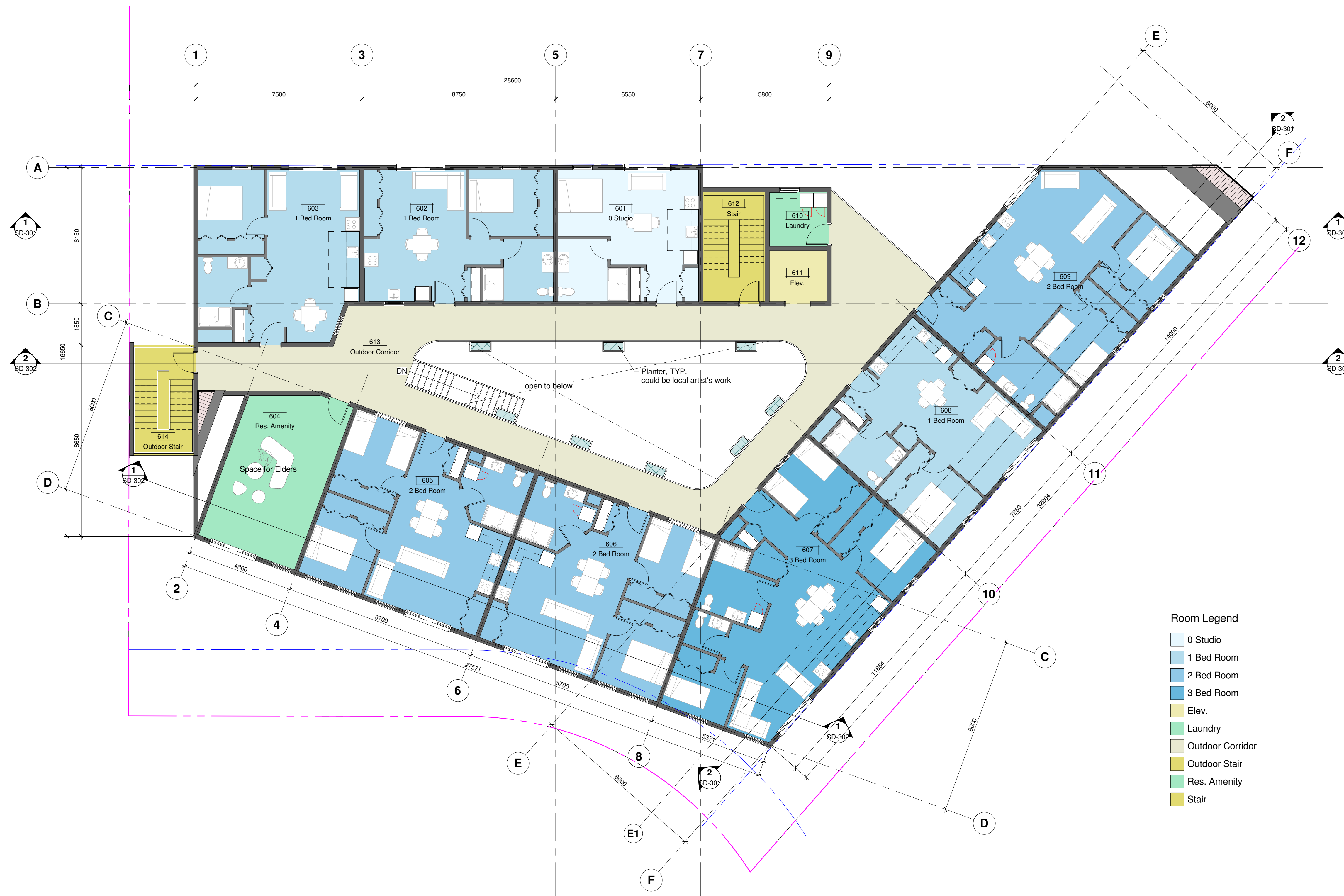
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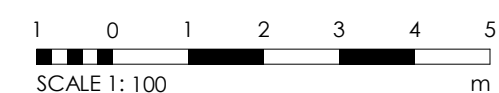
LEVEL 6		
NUMBER	NAME	AREA
601	0 Studio	40.28 m ²
602	1 Bed Room	53.81 m ²
603	1 Bed Room	58.08 m ²
604	Res. Amenity	36.69 m ²
605	2 Bed Room	69.60 m ²
606	2 Bed Room	69.60 m ²
607	3 Bed Room	92.42 m ²
608	1 Bed Room	58.00 m ²
609	2 Bed Room	81.68 m ²
610	Laundry	7.42 m ²
611	Elev.	7.00 m ²
612	Stair	15.45 m ²
		590.04 m ²

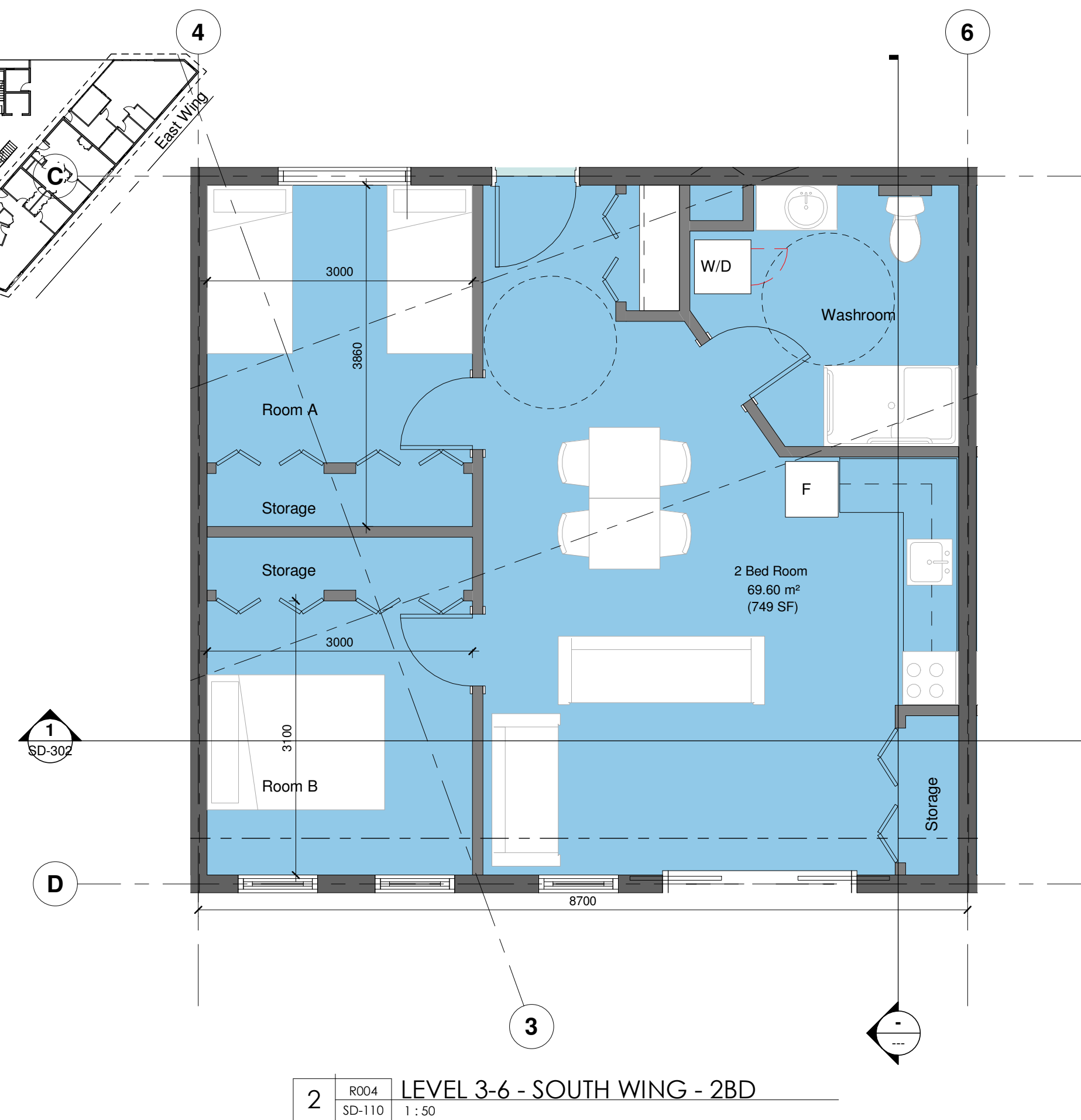
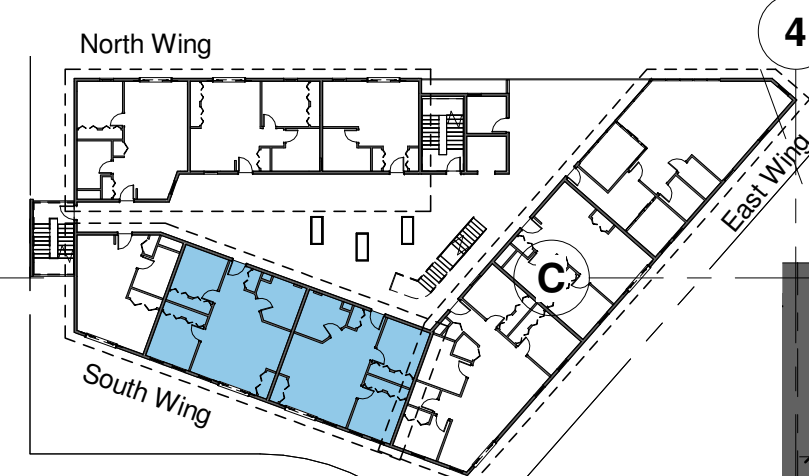
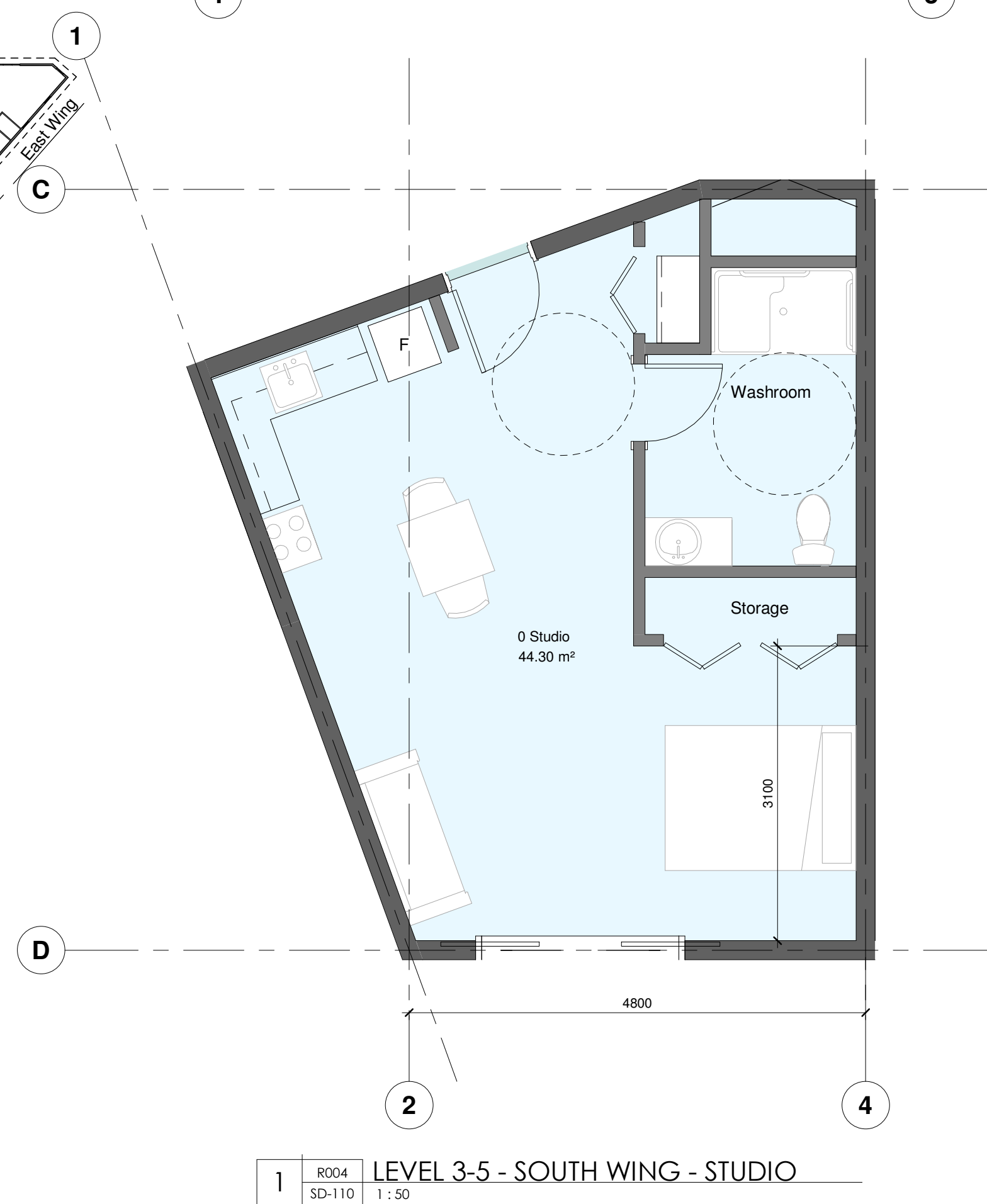
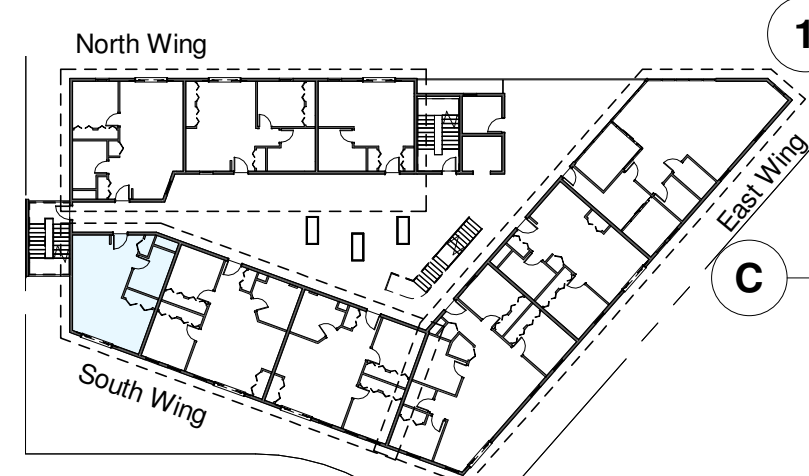
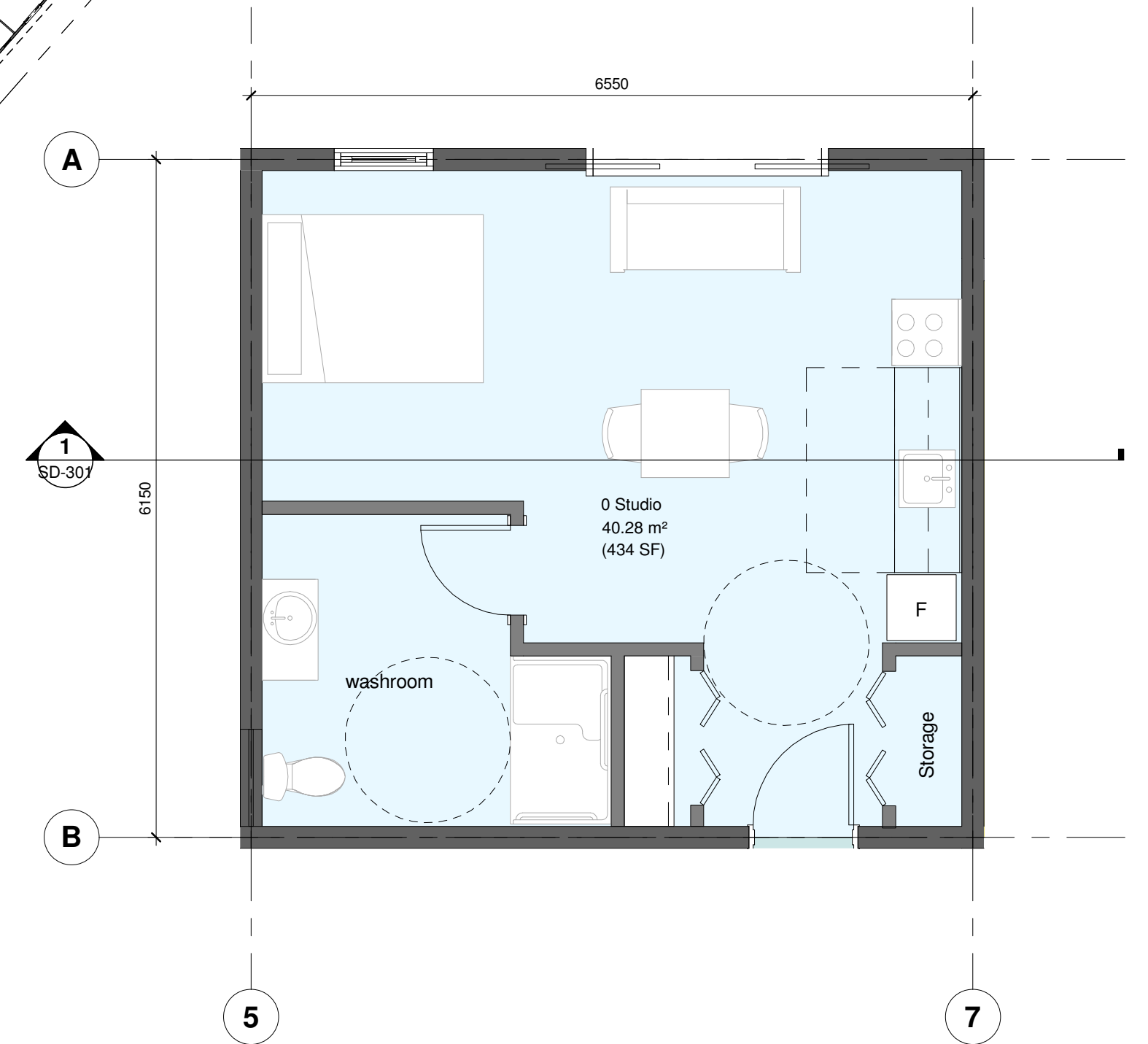
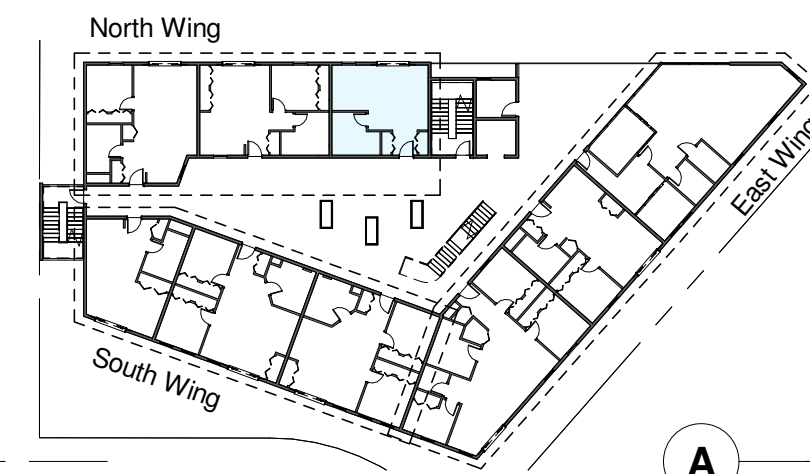
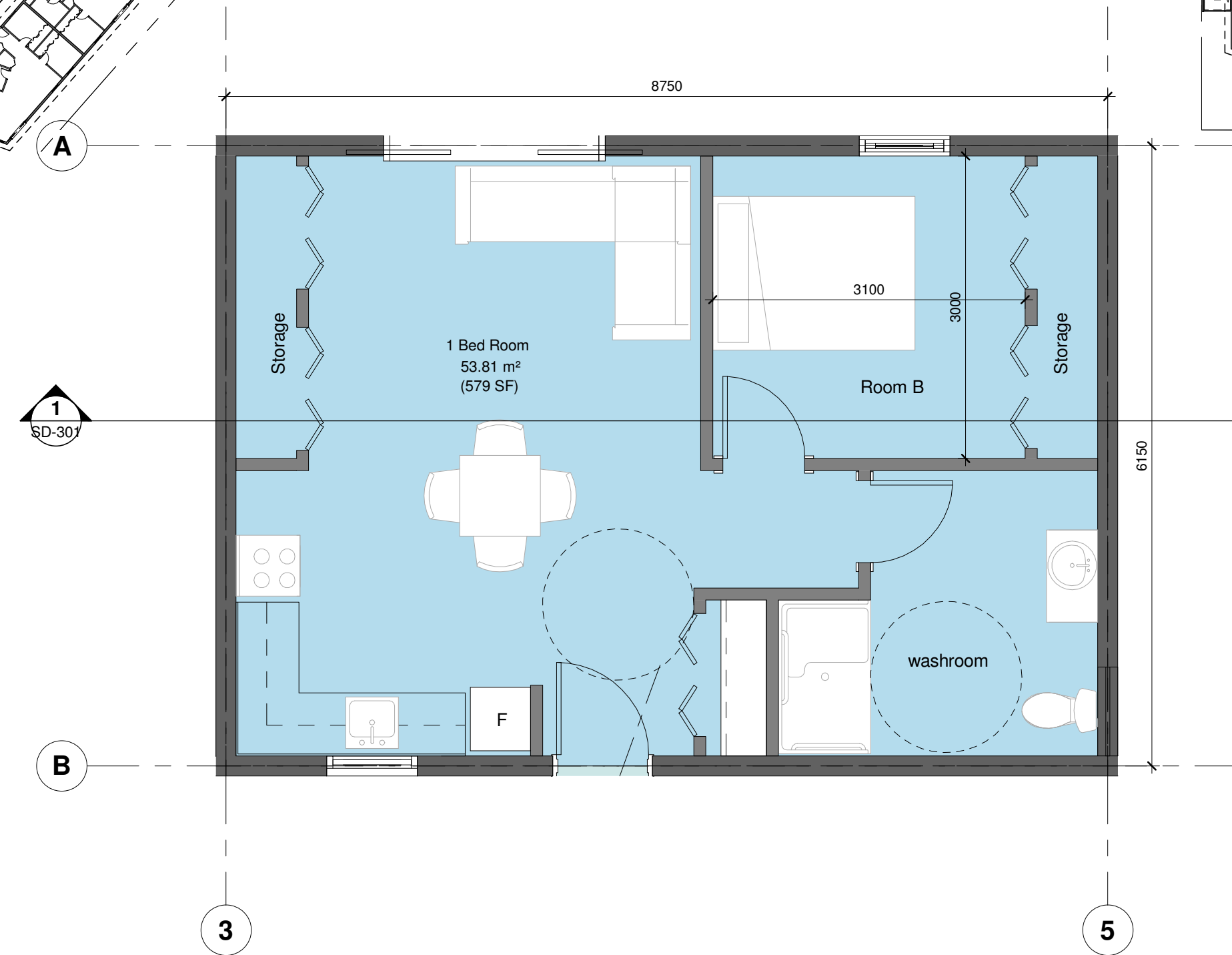
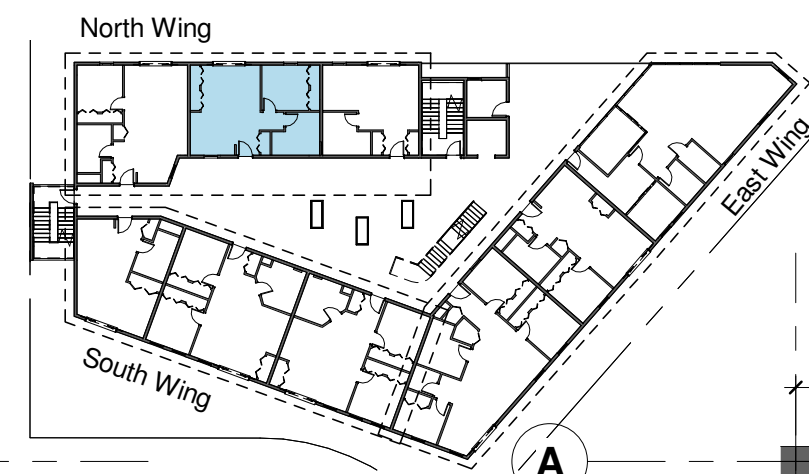
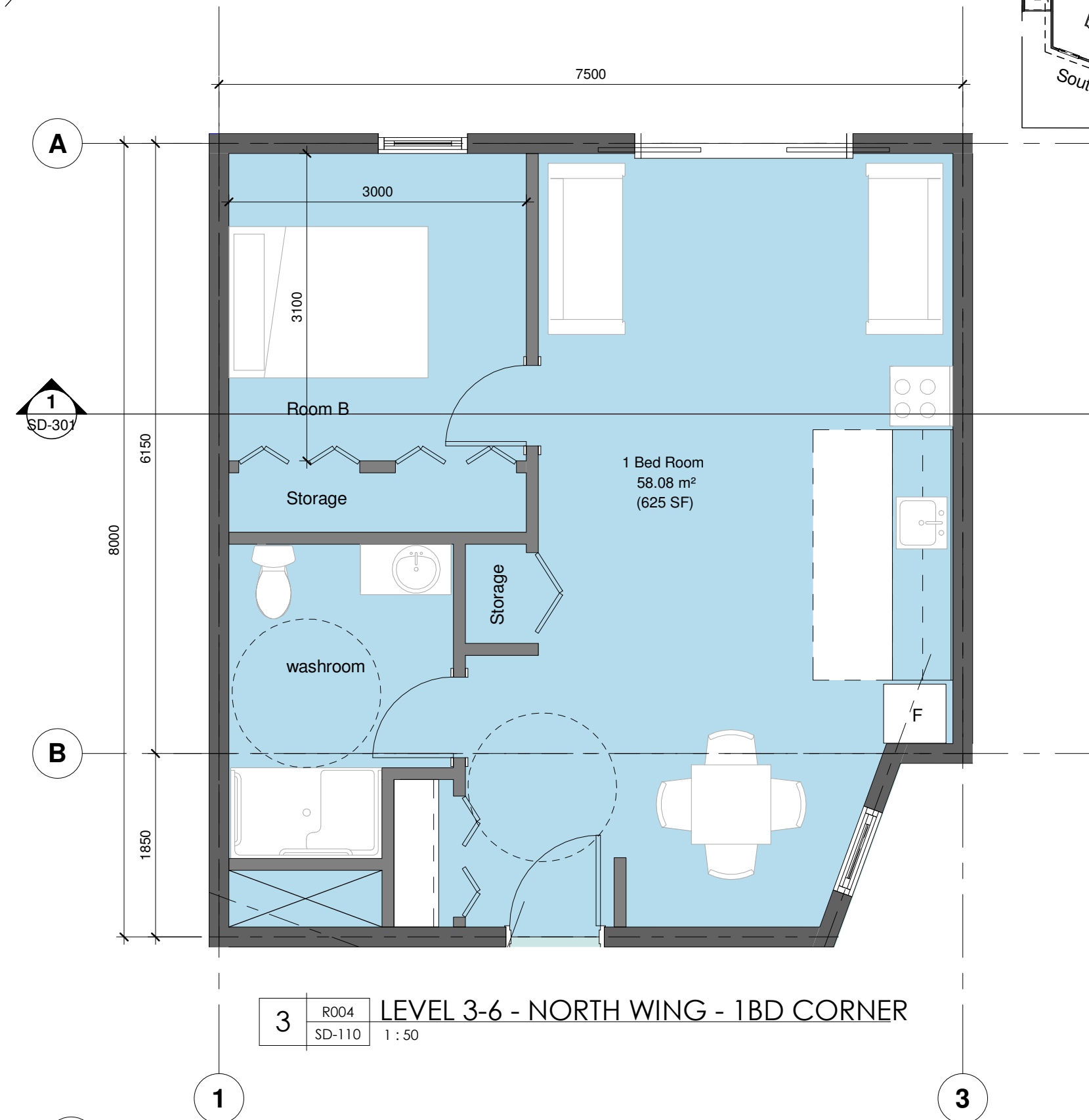
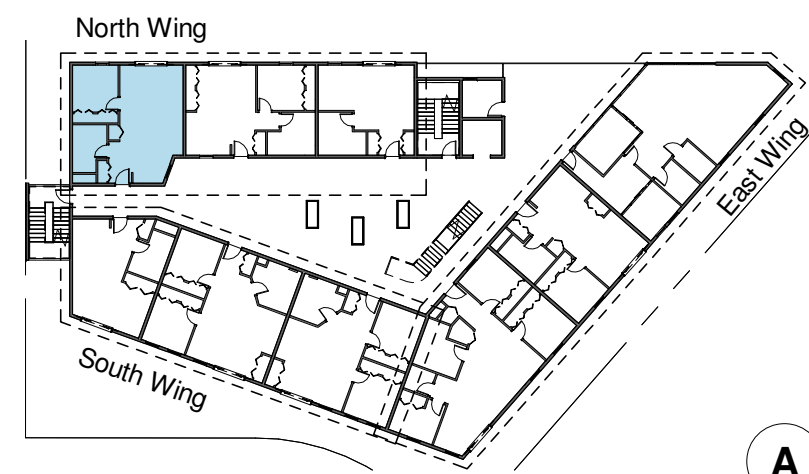
LEVEL 6 OUTDOOR		
NUMBER	NAME	AREA
613	Outdoor Corridor	126.94 m ²
614	Outdoor Stair	14.50 m ²
		141.44 m ²

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SCALE 1:100 m

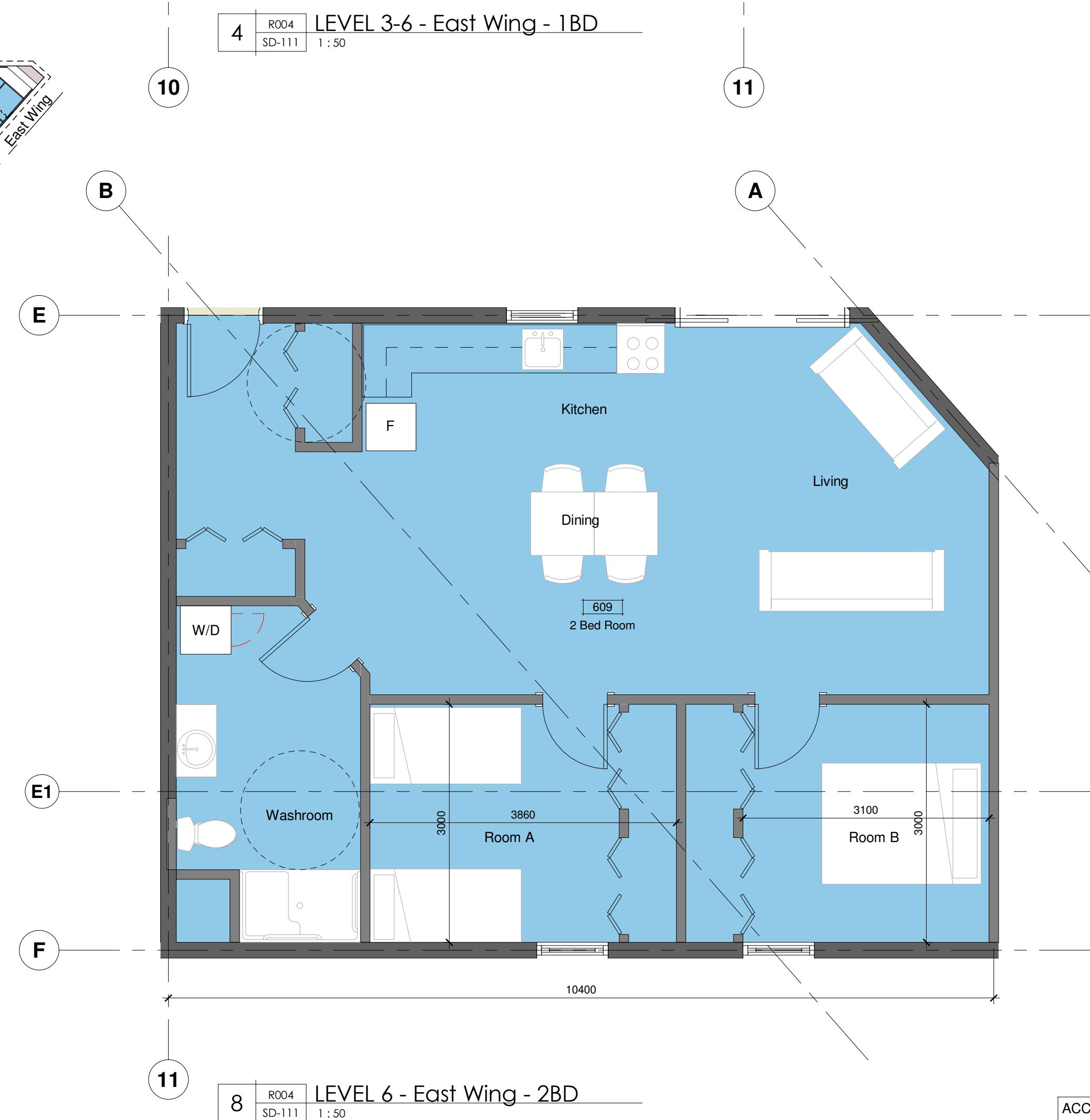
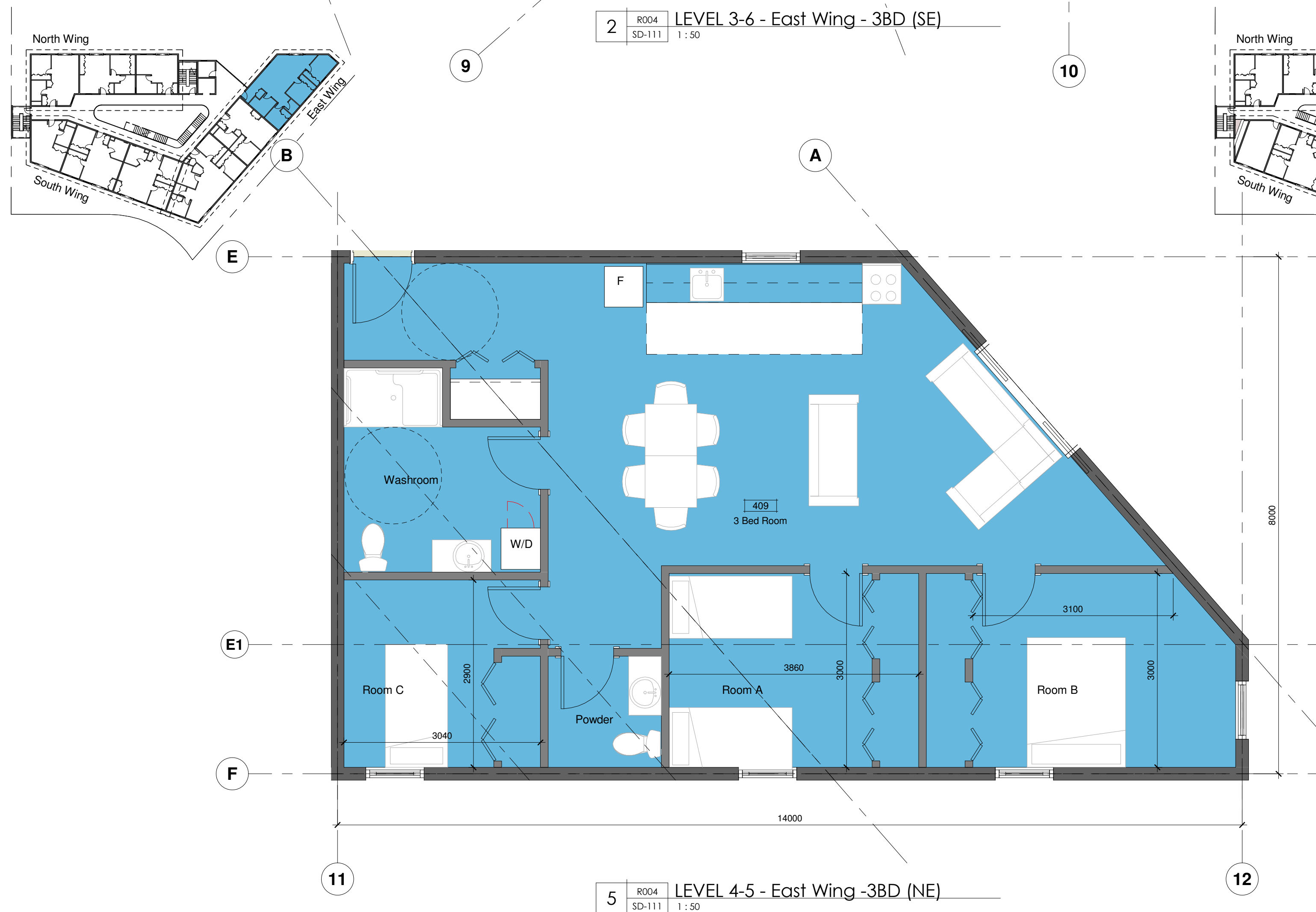
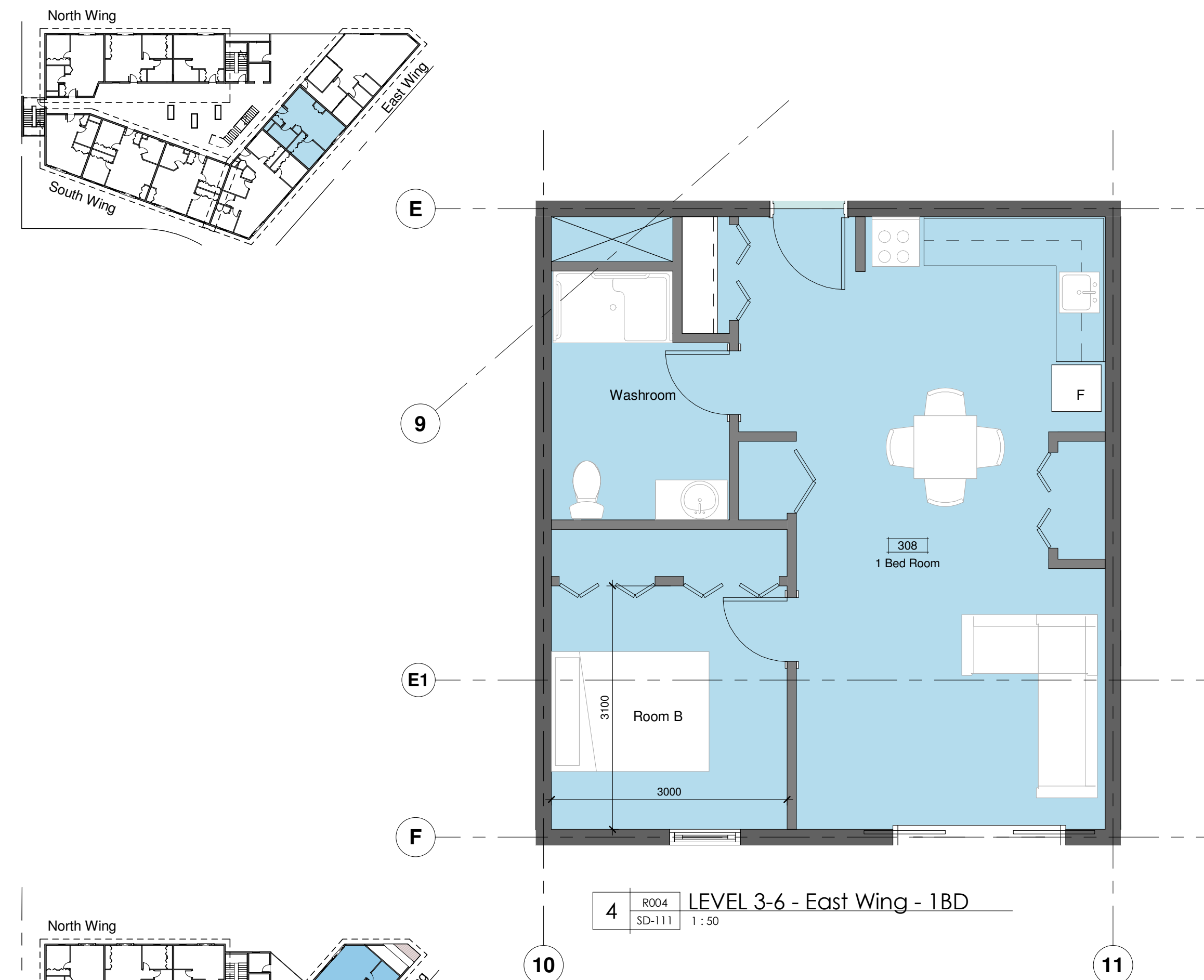
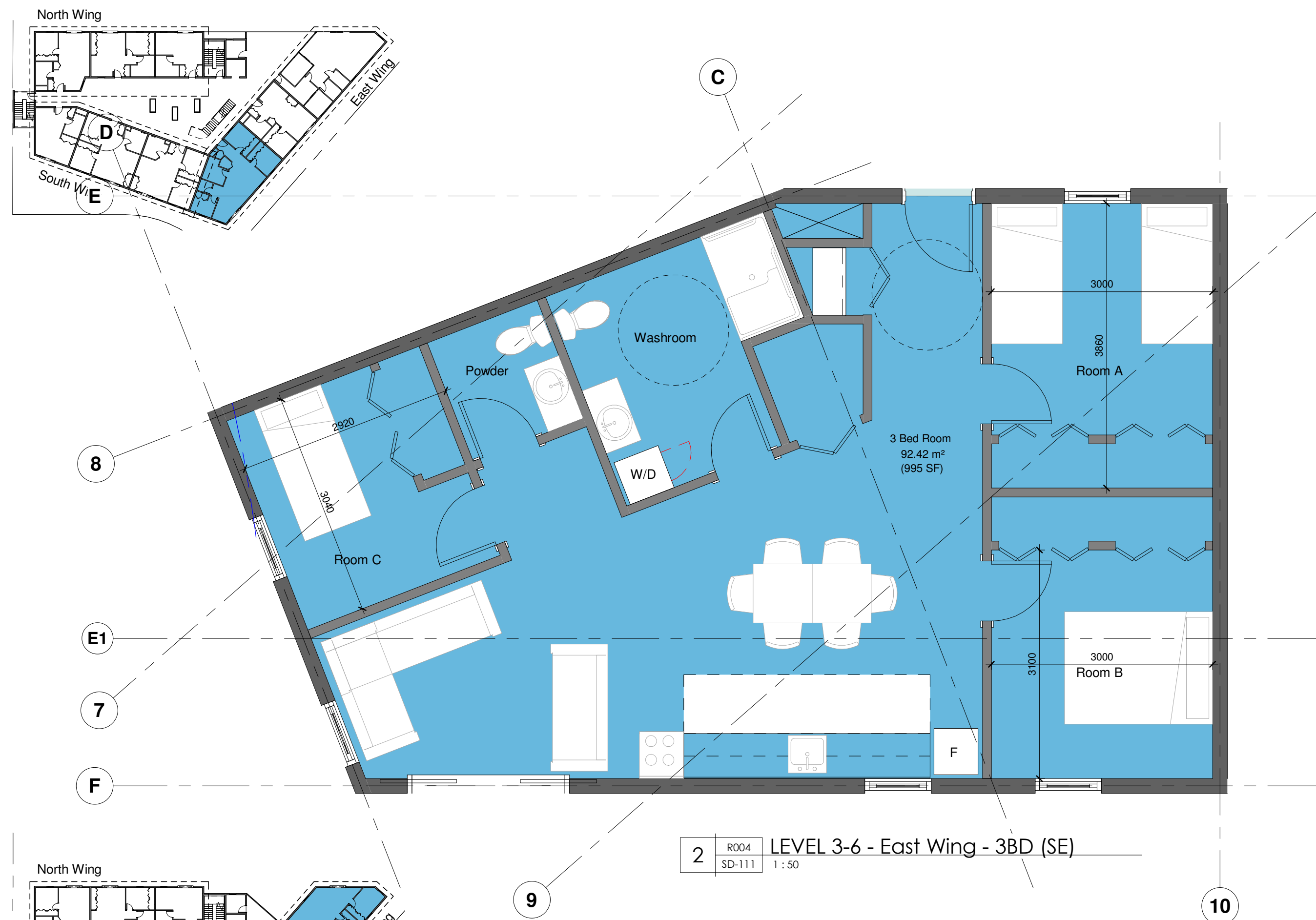


Room Legend	
	0 Studio
	1 Bed Room
	2 Bed Room
	3 Bed Room
	Elev.
	Laundry
	Outdoor Corridor
	Outdoor Stair
	Res. Amenity
	Stair





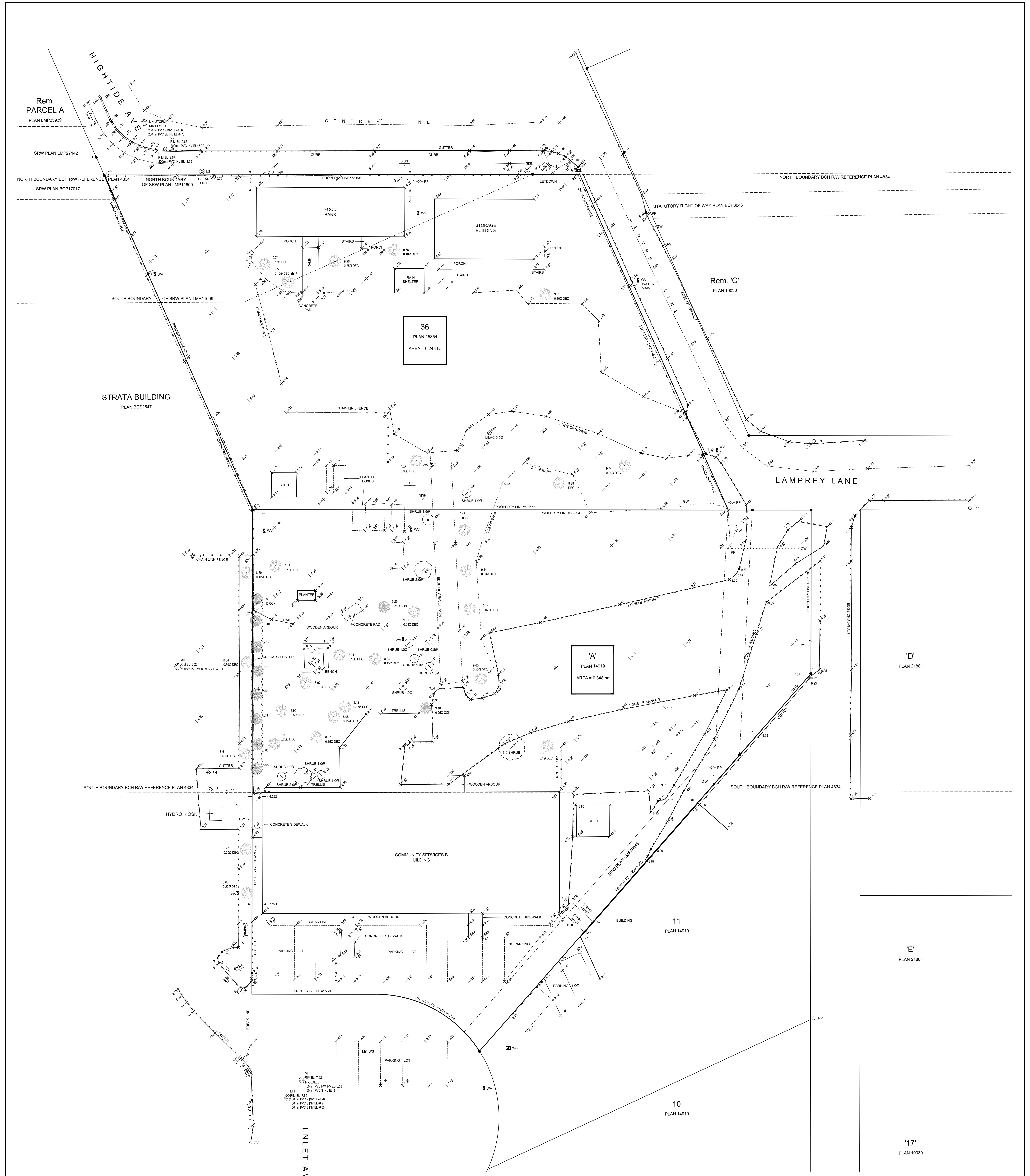
ACCESSIBILITY STATEMENT
* 100% of units will be designed to meet CMHC adaptability standards.



ACCESSIBILITY STATEMENT
 * 100% of units will be designed to meet CMHC adaptability standards.







**TOPOGRAPHIC SURVEY PLAN OF LOT 36
Bk G DISTRIC LOTS 303 AND 304 PLAN 15854
& PARCEL 'A' (BEING A CONSOLIDATION
OF LOTS 12 AND 13, SEE CA4913451)
Bk 'P' Bk 303 G 1 NWD PLAN 14919**

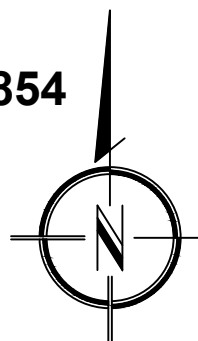
SECHLT
CIVIC ADDRESS: 5657 LAMPREY LANE
& 5638 INLET AVENUE
PID: 007-614-454 / 029-743-567



DATE:
AUGUST 30, 2019
SEPT. 12, 2019 - REVISED BCH SOUTH BOY

BY:
ES
ES

REVISION:



SCALE 1:150

ALL DISTANCES ARE IN METRES AND DECIMALS THEREOF.

- LEGEND:**
- - DENOTES STANDARD IRON POST FOUND
 - U - DENOTES UNREGISTERED
 - PP - DENOTES POWER POLE
 - GW - DENOTES GUY WIRE
 - SIGN - DENOTES STREET SIGN
 - MH - DENOTES MANHOLE
 - CB - DENOTES CATCH BASIN
 - WV - DENOTES WATER VALVE
 - LS - DENOTES LAMP STANDARD
 - FH - DENOTES FIRE HYDRANT
 - OV - DENOTES WATER SERVICE
 - GV - DENOTES GAS VALVE
 - B - DENOTES BOLLARD
 - - DENOTES SPOT ELEVATION

- 9.29 1.00 DEC - DENOTES 1.0m@ DECIDUOUS TREE WITH A GROUND ELEVATION OF 9.29m.
- 9.25 0.200 CON - DENOTES 0.25m@ CONIFEROUS TREE WITH A GROUND ELEVATION OF 9.25m.

DATUM:

ELEVATIONS ARE GEODETIC AND REFER TO SMARTNET REFERENCE STATION BC86 (RTM_REF_4021).

PROPERTY:

PROPERTY DIMENSIONS SHOWN ARE DERIVED FROM PLAN 15854 & PLAN 14919. OFFSETS TO PROPERTY LINES ARE NOT TO BE USED TO DEFINE BOUNDARIES. REFER TO CURRENT CERTIFICATE(S) OF TITLE FOR ADDITIONAL, EXISTING OR PENDING CHARGES.

GENERAL:

THIS PLAN SHOWS THE LOCATION OF VISIBLE FEATURES ONLY, AND DOES NOT INDICATE BURIED SERVICES THAT MAY EXIST ON OR AROUND THE SUBJECT SITE. FEATURES SHOWN WITHOUT DIMENSIONS SHOULD BE CONFIRMED WITH BENNETT LAND SURVEYING LTD. TREE SPECIES AND DIMENSIONS SHOULD BE CONFIRMED BY A QUALIFIED ARBORIST. SHADDED AREA IS NOT AN INDICATION OF DRIP LINE LOCATION UNLESS SPECIFICALLY LABELED. BUILDING LOCATION BASED ON SURVEY TIES TO VISIBLE EXTERIOR SURFACES UNLESS OTHERWISE NOTED.

THIS PLAN HAS BEEN PREPARED FOR CONSTRUCTION PURPOSES ONLY AND IS FOR THE EXCLUSIVE USE OF OUR CLIENT. ALL RIGHTS RESERVED. NO PERSON MAY COPY, REPRODUCE, TRANSMIT OR ALTER THIS DOCUMENT IN WHOLE OR IN PART WITHOUT THE CONSENT OF BENNETT LAND SURVEYING LTD. BENNETT LAND SURVEYING LTD. ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR ANY DAMAGES THAT MAY BE SUFFERED BY A THIRD PARTY AS A RESULT OF ANY DECISIONS MADE, OR ACTIONS TAKEN BASED ON THIS DOCUMENT.

CERTIFIED CORRECT
THIS _____ DAY OF _____, 2019.

JAVIER SUI, B.C.L.S.

FIELD SURVEY COMPLETED ON AUGUST 29, 2019.
THIS DOCUMENT IS NOT VALID UNLESS ORIGINALLY SIGNED AND SEALED.

February 24, 2020
Project No.: WF32601

M'akola Development Services
102-550 Goldstream Ave
Victoria, B.C., V9B 2W7

Attention: Jordan Brietzke, Project Planner
t: 778.265.7489 e: jbrietzke@makoladev.com

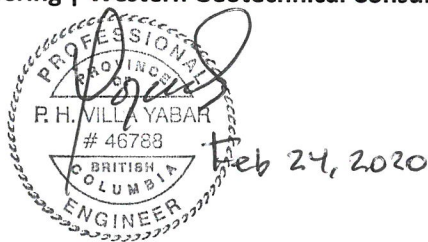
Re: Geotechnical Investigation Report – Sunshine Coast Community Services Society – Housing Development
5638 Inlet Avenue, Sechelt, British Columbia.

Metro Testing + Engineering | Western Geotechnical Consultants Ltd. (Western Geo) is pleased to present this geotechnical investigation report related to the above listed property. The intent of this document is to provide the client and other key stakeholders with the information required for the successful development of a mixed-use building with SCCSS services and affordable housing for women and children.

We trust this report contains the relevant information required for design and construction at this time. Should you require further information, please do not hesitate to contact our office.

Sincerely,
Metro Testing + Engineering | Western Geotechnical Consultants Ltd.

Percy Villa, P. Eng.
Geotechnical Engineer



British Columbia Locations:
Abbotsford (Head Office), Burnaby,
and Squamish.

Alberta Locations:
Calgary



February 24, 2020
Project No.: WF32601

M'akola Development Services
102-550 Goldstream Ave
Victoria, B.C., V9B 2W7

Attention: Jordan Brietzke, Project Planner
t: 778.265.7489 e: jbrietzke@makoladev.com

GEOTECHNICAL INVESTIGATION REPORT

5638 Inlet Avenue, Sechelt, British Columbia

Submitted By: Percy Villa, P. Eng.

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and Squamish.

Alberta Locations:
Calgary



GEOTECHNICAL

GEOLOGICAL

GEOENVIRONMENTAL

Contact: #20-3275 McCallum Road, Abbotsford, BC V2S 7W8 | t. 604.385.4244 | www.metrotesting.ca



SUMMARY

Based on the findings of this investigation report, and provided that all of the recommendations presented herein are implemented, there are no reasonably conceivable geotechnical issues that would preclude the safe development of the proposed building on the subject site. The soils underlain the site consist of compact to dense, well graded SAND and gravel, competent to support expected loads induced by the proposed development.

Conventional concrete strip or pad footings are the recommended foundation type for the proposed single residence. Strip footings should be sized with a minimum width of 450 mm. A minimum width of 600 mm should be used where isolated column footings are needed. All footings should be placed a minimum of 450 mm below surface for frost protection. Footings should be seated on compact to dense, native SAND and gravel. Footings seated on sand can be designed for an allowable bearing pressure of 150 kPa Serviceability Limit State (SLS).

Bearing capacities provided in this report are based on correlations from Standard Penetration Testing (SPT 'N' values) per ASTM D1586 using methods developed by Meyerhof (1965) and Teng (1962). Further, the derivation of bearing capacity values uses typical dimensions of strip footings for assessment. Due to the dense nature of the sandy soils underlain the site, the proposed development is not susceptible to liquefaction.

In addition, the subject site does **not** fall within any of the District of Sechelt's Development Permit Areas (DPA). Finally, during construction, Western Geo must be provided the opportunity to review the site after initial grading and excavation has occurred to assess subsurface conditions with respect to recommendations in this investigation report.



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1.0 INTRODUCTION

The purpose of this geotechnical investigation report was to identify geotechnical parameters necessary to guide the proposed housing development for the Sunshine Coast Community Services Society (SCCSS)-Housing Development at 5638 Inlet Avenue in Sechelt, British Columbia.

This report has been prepared in accordance with geotechnical engineering practices and principles in British Columbia and with the District of Sechelt's building bylaws and development permit standards.

All services performed for this project conform to Western Geo Organizational Quality Management Plan currently registered with the Engineers and Geoscientists of British Columbia (EGBC), formerly the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC).

2.0 SCOPE

The scope of work for this project included:

1. A desktop study including the review of available background information such as published geology maps, satellite imagery, and online survey information;
2. A subsurface investigation consisting of drilling four (4) borings in general accordance with ASTM D1586 that obtained split spoon samples and Standard Penetration Test (SPT 'N') values for use in bearing capacity correlations;
3. Observations of existing structures, local topography, surficial soil/geology, and site drainage conditions;
4. Evaluation and geotechnical engineering analysis of collected data; and,
5. Preparation of this summary geotechnical report to present the findings and conclusions, along with recommendations for the geotechnical aspects of this project.

Our investigation did not include any review pertaining to other engineering disciplines involved in this project. Environmental assessment was carried out by TRI Environmental Consultants.

3.0 SITE DESCRIPTION

3.1 Site Layout

The site is located at 5638 Inlet Avenue in the neighborhood of Sechelt downtown in Sechelt, British Columbia. The site is irregular in shape, covering an area of approximately 3,500 m². The site is bounded by Inlet Avenue to the south, a residential development and storage to the east, a municipal lane to the north, and by Lamprey Lane and a Home Care Services building to the east. Access to the site is via Inlet Avenue and Lamprey Lane. The site is relatively flat. The location of the site is illustrated in the Vicinity Map and Property Report provided in Appendix A.

3.2 Existing Structures and Proposed Development

An existing one-storey building (SCCSS building) is located at the south side of the site, a community garden with green houses at the west of the site, storage and food bank buildings at the north, and parking lot spaces at the east side of the site (Figures 1 to 3). We understand that the existing SCCSS



building along with the two small buildings at the north will be demolished and the new mixed-use building will be constructed at the south portion of the site.

Although architectural drawings were not available at the time of writing this report, a concept plan shows a six-storey building with one underground storage. The building will provide approximately 30 – 35 transitional units of affordable housing for women and children. Concept plan is provided in Appendix A.



Fig 1: Existing SCCSS building



Fig 2: Existing community garden



Fig 3: Existing food bank building to be demolished

4.0 FIELD INVESTIGATION

Western Geo conducted a site investigation consisting of drilling four (4) solid stem auger test holes to depths of up to 7.6 m using a track mounted drill rig on January 9, 2020. The drill equipment was supplied and operated by Van Mars Drilling Ltd. of Abbotsford, BC. Monitoring wells were installed by TRI Environmental at the time of drilling.

Standard penetration tests (SPT) were advanced at all test hole locations to investigate the relative density of the underlying soils. All test holes were logged in the field by an engineer of our office and backfilled immediately upon completion of testing and logging. The approximate locations of the test holes Geotech # 1 to #4 are shown on our drawing in Appendix B.

5.0 SUBSURFACE CONDITIONS

5.1 Soil Conditions

A surficial geology map of the area (McCammon, 1977) indicates the site is underlain by Capilano Sediments: marine and glacio-marine deposits: varied gravelly, sandy, stoney, clay, and clay veneer, normally over till. However, given the material recovered during investigation, it is likely soils at the site are comprised of alluvial sediments.

In general, the site is underlain by medium to coarse grained SAND, some gravel classified as SW (well graded sands, gravelly sands, little or no fines) as per the Unified Soil Classification System. SPT average value of 23 blows per foot indicates a compact relative density at 1.0 m below grade. At 3.0 m below grade the relative density becomes dense, with a SPT value of 38 blows per foot. The sand stratum extends to the bottom of the test holes, 7.6 m below grade.

For a more detailed description of the sub-surface soil conditions, refer to the test hole logs and SPT values in Appendix B.



5.2 Groundwater Conditions

Groundwater was encountered at 6.9 metres to 7.1 metres below existing ground surface. Rainfall and seasonal variations are expected to cause fluctuations in water level.

6.0 GEOHAZARD ASSESSMENT

Geohazard susceptibility at the subject site was screened using the 1993 paper Hazard Acceptability Thresholds for Development Approvals by Local Government by Dr. Peter W. Cave (Cave Report), acknowledged throughout British Columbia as a defining document in hazard assessment. The subject site did not present evidence for susceptibility of any of the eight geotechnical hazards identified in the Cave Report. The eight hazards have been summarized in Table 1 below.

Table 1: Relevant geotechnical hazards.

Hazard	Definition
Inundation by Flood Waters	Characterized by an unusually large volume of water flowing in a channel, a portion of which may flow overbank. Floods are associated with other hazards such as channel erosion and avulsion.
Mountain Stream Erosion and Avulsion	Characterized by the lateral migration of a stream channel (erosion) and/or the abandonment of the channel course to occupy a different position on the alluvial fan (avulsion). This type of hazard may be associated with large flow events.
Debris Flows and Debris Torrents	A rapid, channelized, fluid transport of water saturated debris. A debris flow path can be divided into an initiation zone, a transport and erosion zone, and a deposition zone. Transport often initiates within steep gullies and is conveyed downslope at high velocity which can damage forests and human development.
Debris Floods	A large flood event associated with an unusually high amount of sediment movement consisting of coarse bed load material and organic material such as trees and logs.
Landslides, Small-Scale, Localized	The sudden and rapid or gradual and incremental downslope movement of soil, rock, and other weathered materials.
Snow Avalanche	The sudden and rapid downslope movement of snow and ice. Avalanches develop large amounts of kinetic energy, damaging anything in its path.
Rock Fall	The detachment of individual rock fragments from a steep slope and their gravitational downslope transport.
Landslides, Massive, Catastrophic	The sudden and rapid movement of unusually large amounts of soil, rock and other weathered materials.

Additionally, the subject site is not situated within any of the District of Sechelt's Development Permit Areas.



7.0 DISCUSSION AND RECOMMENDATIONS

7.1 General Comments

As noted above, the proposed development will consist of a six-storey building with one underground storage. We expect loading induced by the proposed development to be moderately heavy. We expect that the proposed structures may be founded on conventional strip and pad foundations on the compact to dense sand and gravel stratum observed at our test hole locations. Our foundation recommendations are provided in Section 7.3.

We anticipate due to the depth of excavation of about 3.5 m for the underground storage that slope cuts and/or shoring will be required. Our recommendations for temporary excavations and shoring are provided in Section 7.7.

Following our review, we are of the opinion that the proposed development is feasible from a geotechnical standpoint provided that the recommendations outlined in the following sections are incorporated into the overall design and construction.

7.2 Site Preparation

Prior to site development all loose, saturated, deleterious, organic material, brush, trees, and inorganic material, including the existing housing, their foundations, asphalt pavement, concrete, metal, piping, and other structures must be removed from the site in the proposed housing footprint. We expect that the depth of the proposed foundations will exceed our minimum stripping requirements.

Subgrade for foundations should be blinded and protected with 3" of clear crush gravel. In addition, Western Geo should be provided with the opportunity to conduct a site observation after initial excavation and grading to observe in-situ subsurface material.

7.3 Footing Foundations and Slab-On-Grade

Continuous concrete strip and spread footings are considered suitable for the proposed building. Strip footings and column footings should be designed to accommodate factored structural loads and effectively transfer these loads to competent bearing ground. Strip footings should be designed with a minimum width of 450 mm and column footings should be designed with a minimum width of 600 mm.

Footings should be seated on dense sand and gravel stratum and designed for Serviceability Limit State (SLS) bearing pressures of 150 kPa with the factored Ultimate Limit State (ULS) taken as 1.5 x the SLS bearing pressure.

For footings designed to the recommended soil bearing pressures, post-construction total settlement is estimated to be less than 25 mm. The corresponding differential settlement is estimated to be less than 20 mm differential over a 10 m span.



To decrease the chance of undesirable floor wetness, any imported fill beneath all non-structural, interior slab-on-grade components should consist of a minimum of 150 mm thick, 19 mm free-draining gravel to serve as a capillary barrier between the subgrade material and the slab. An impermeable membrane should be placed over the gravel such as 7 mil polypropylene sheeting or an approved equivalent.

Any fill placed under the slab should be “engineered fill”, generally defined as clean sand to sand and gravel containing silt and clay less than 5% by weight, compacted in 300 mm loose lifts to a minimum of 95% of the Modified Proctor (ASTM D1557) maximum dry density at a moisture content that is within 2% of optimum for compaction

In addition to the recommendations above, all foundations shall be constructed in accordance with requirements in the British Columbia Building Code 2018 (BCBC 2018).

7.4 Seismic Design of Foundations

According to the 2018 BC Building Code, Table 4.1.8.4.A, the anticipated soil conditions observed, and the available surficial geology information, Site Class “D” – Stiff soil, is the most appropriate site classification. As interpolated from the 2015 National Building Code Seismic Hazard Calculation, the following criteria applies for this location (Latitude 49.4765 North, Longitude -123.7561 West):

Table 2: Spectral Acceleration Response Values

$S_a(0.2)$	$S_a(0.5)$	$S_a(1.0)$	$S_a(2.0)$	PGA (g)	$F_a = F(0.2)$	$F_v = F(1.0)$
0.814	0.734	0.426	0.261	0.356	0.96	1.27

7.5 Liquefaction Potential

Soil liquefaction can occur when saturated or partially saturated soils lose strength as a result of loading, seismicity, or shaking caused by site development. Soils in these conditions will act as a liquid and thus have the potential to be displaced in a manner that could cause settlement of potential structural collapse.

The site is in general underlain by dense, (SPT=23 at 1.0 m and 38 at 3.0 m), well graded sands and gravel, unsaturated the top 7 m, thus it can be inferred that the potential for liquefaction for this site is negligible and no further detailed liquefaction analysis is necessary. No measures to mitigate liquefaction potential are required.

7.6 Foundation Drainage

A perimeter drainage system will be required for the underground structures to prevent the development of water pressure on the foundation walls and basement floor slabs. The drain configuration should consist of a minimum 100 mm diameter perforated drain pipe, embedded in 19 mm clean, open-graded drain rock. The entire drain rock/pipe unit should be wrapped in an approved non-woven, polyester geotextile. In addition, the drainage trench should have a minimum width of 300 mm and the drain rock and fabric should extend to within 300 mm of the finished grade. The entire drainage



system should also be sloped at a minimum gradient of 2% and should be conveyed to an approved discharge facility.

7.7 Excavation and Temporary Shoring

As noted above, slope cuts and/or shoring will likely be required to construct the proposed underground storage structure. Depending on the final architectural drawings, some part of the excavations could be sloped, since it is typically more economical to do so. We would expect that slope cuts of 1 horizontal to 1 vertical (1H: 1V) can be constructed in the compact to dense sand and gravel. Slope cuts should be covered with poly sheeting for erosion protection during below ground works.

If shoring is required due to space restrictions, vertical cuts can be supported by a shotcrete wall with grouted tie-back anchors. Based on our site investigation observations, the natural soils are sufficiently strong to obtain acceptable grout-soil bond.

The geotechnical engineer shall be contacted for the review of shoring installation and temporary excavations.

All excavations and trenches must conform to WorkSafe BC guidelines for stable excavations if excavation is required in depths of excess of 1.2 m. The geotechnical engineer responsible should be notified in advance to review the excavation plan if WorkSafe BC guidelines cannot be followed as a result of site restrictions.

7.8 Earth Pressures on Foundation Walls

We recommend that foundation walls be designed for static and seismic earth pressures. Walls can be designed for a static pressure distribution of $5.5H$ (kPa) triangular, where H is the height of the wall in metres. Dynamic loading induced by the design earthquake should be added to the static loads and should be taken as $4.0H$ (kPa) inverted triangular. The preceding loading recommendations assume that the backfill is a clean, free draining sand and gravel, the backfill is level behind the wall, and the wall is frictionless.

Our calculations assume that a back-of-wall drainage system will be installed to prevent the build up of any water pressure behind the walls. Any additional surcharge loads located near the foundation walls should be added to the earth pressures given.

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

7.9 Pavement

For on-site pavements, the sand underlying the site will provide a suitable subgrade for paving sections that will generally be lighter duty, and should consist of:



Recommended Minimum Pavement Structure for On-Site Parking and Drive Aisle.	
Material	Thickness (mm)
Asphaltic Concrete (Placed in two layers)	85
19 mm Minus Crushed Gravel Base Course	100
75 mm Minus, Well-Graded Clean, Sand and Gravel Sub-Base Course	200

All base and subbase fills should be compacted to a minimum 95% Modified Proctor dry density with a moisture content within 2% optimum for compaction.

7.10 Re-Use of Excavated Material as Engineered Fill

We expect that part of the excavated material would be suitable as backfill. The geotechnical engineer shall review and approve this material.

8.0 FIELD REVIEWS

The conclusions and recommendations presented in this report are given with the understanding that this office will be retained to provide any required design consultations and to review the geotechnical engineering aspects of the final project plans, including architectural, structural, and site drainage installation plans that take into account Western Geo's recommendations to ensure compliance prior to the issuance of the plans for construction. In addition, for the conditions in this report to be considered accurate, our office must be provided the opportunity to provide field inspections during construction, including, but not limited to:

- Site clearing, site preparation, and grading;
- Footings subgrade review;
- Compaction of fill and backfill review (if required); and,
- Drainage installation and permanent site dewatering (if required).

Field reviews should be requested by the client or client's representative at least 2 days before each review is required. A Schedule C-B will not be issued if field reviews are not conducted.

9.0 CONSTRAINTS AND LIMITATIONS

The recommendations in this report are provided on the assumption that the contractor will be suitably qualified and experienced. In the event of report revisions, additional funds may be required. Stratigraphic variations in ground conditions are expected due to its depositional nature. As such, all explorations involve an inherent risk that some conditions will not be detected.

No other warranty, expressed or implied, is made. If the project does not start within two years of the report date, the report may become invalid and further review may be required. This report has been prepared for the exclusive use of M'akola Development Services and its "Approved Users". Western Geo and its employees accept no responsibility to any other party for loss or liability incurred as a result of use of this report. Any use of this report for purposes other than the intended should be approved in writing by Western Geo. Contractors should rely upon their own explorations for costing purposes.



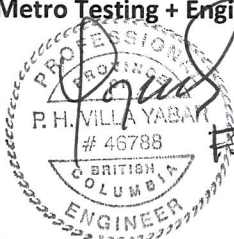
This report is based on the information provided by the client and/or the client's consultant. Western Geo cannot accept responsibility for inaccuracies, misstatements, omissions and/or deficiencies in this report resulting from the sources of this information.

10.0 CLOSURE

We trust that the information provided in this report meets the project requirements at this time, and we appreciate the opportunity to be of service on this project. If you have any questions, concerns or comments regarding this report, please feel free to contact our office at your earliest convenience.

Sincerely,

Metro Testing + Engineering | Western Geotechnical Consultants Ltd.



Feb 24, 2020

Percy Villa, P. Eng.

Senior Geotechnical Engineer



11.0 REFERENCES

- Becker, D. E. (1996). Eighteenth Canadian Geotechnical Colloquium: Limit States Design for Foundations. Part I. An overview of the foundation design process. *Canadian Geotechnical Journal*, 956-983.
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APPENDIX A

Site Location and Concept Plan Drawings



SCRD Maps

Property Report

5638 INLET AVE

2/24/2020

Folio: 570.00096.181 **PID:** 029-743-567

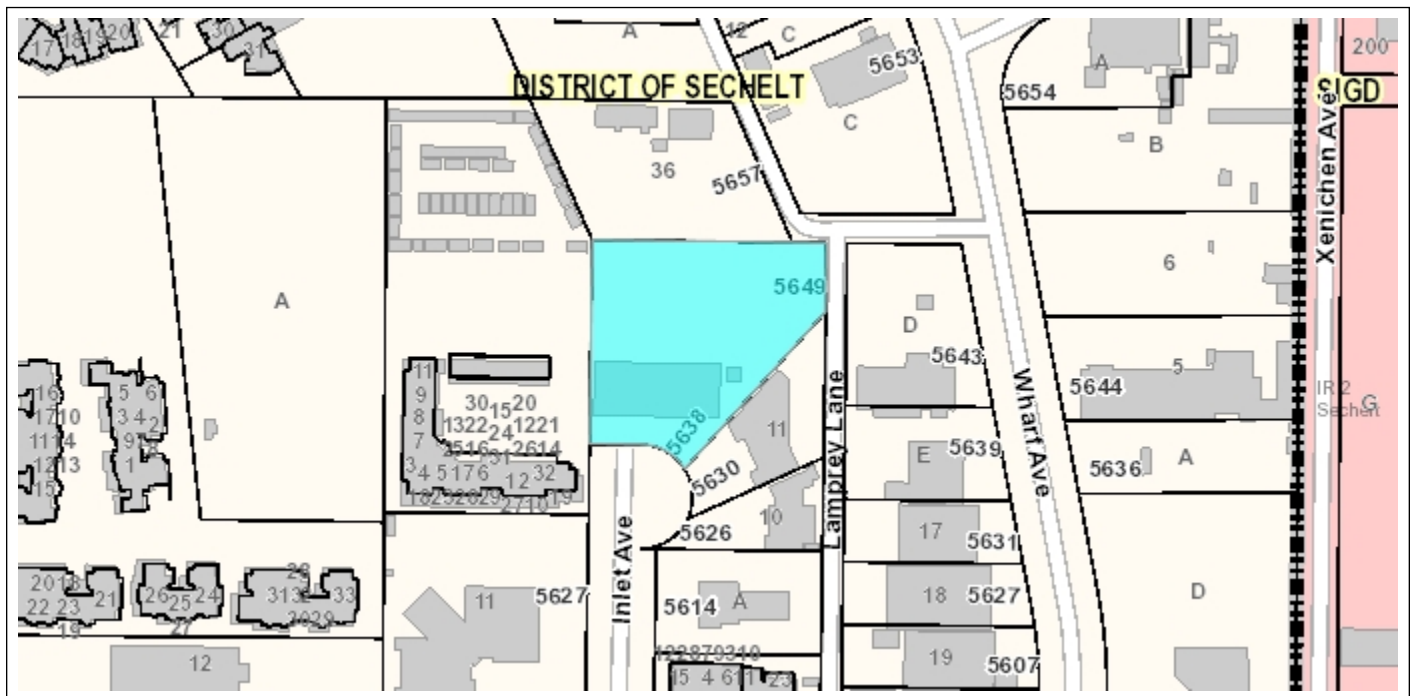
Address: 5638 INLET AVE

Jurisdiction: Sechelt

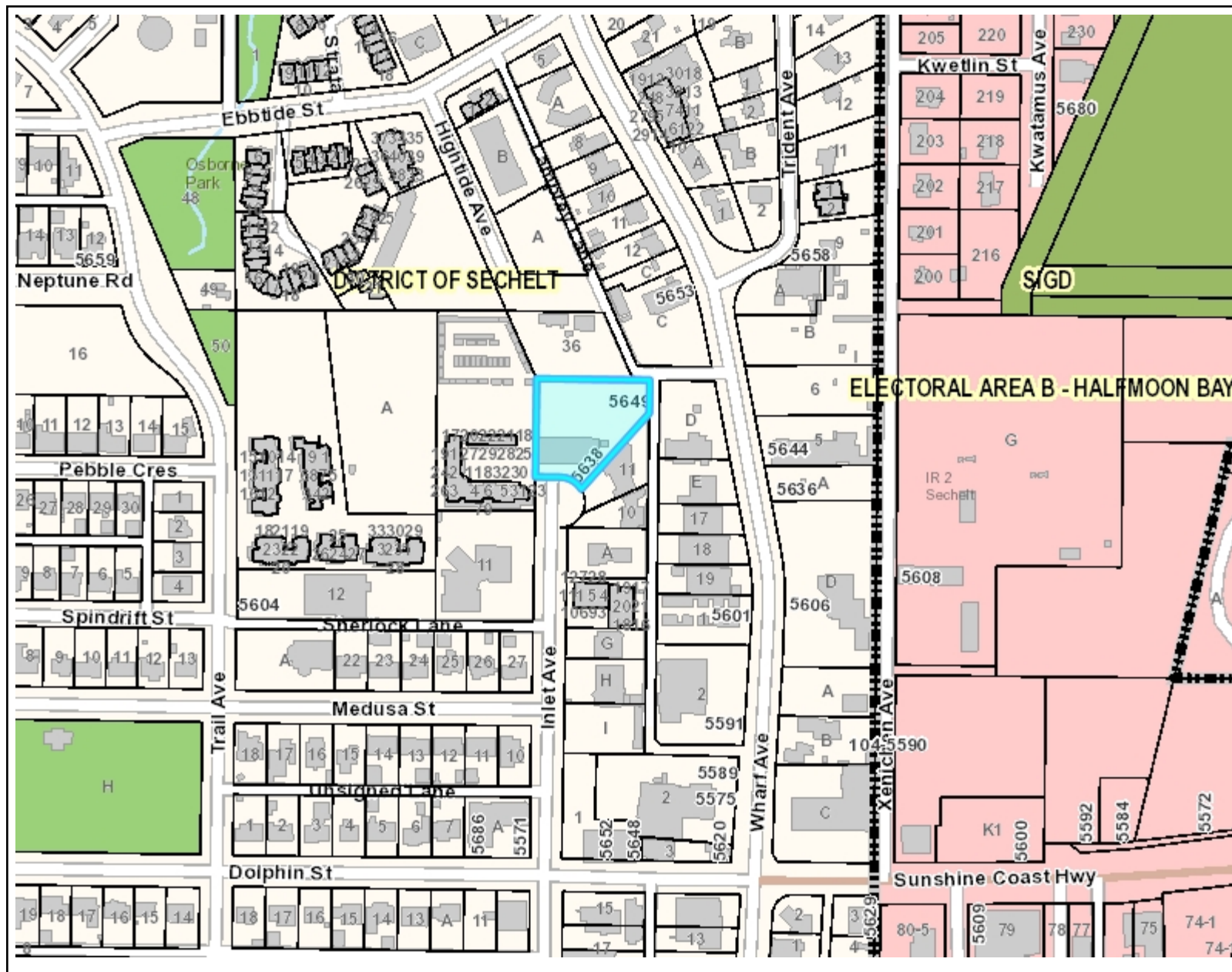
Lot: **Block:** P **Plan:** VAP14919 **District Lot:** 303

2020 Assessed Value: 1126000 **Land Value:** 769000 **Improvement Value:** 357000

Approximate Lot Size (BC Assessment): .866 ACRES



5638 Inlet Avenue, Sechelt, BC Vicinity Map



Legend

- Parcel Boundaries
- Jurisdiction
- Unconstructed Roads
- Golf Courses
- Parks**
 - SCRD Park
 - Recreation Site
 - Municipal Park
 - Provincial Park
- Wharf
- Cemetery
- Band Lands

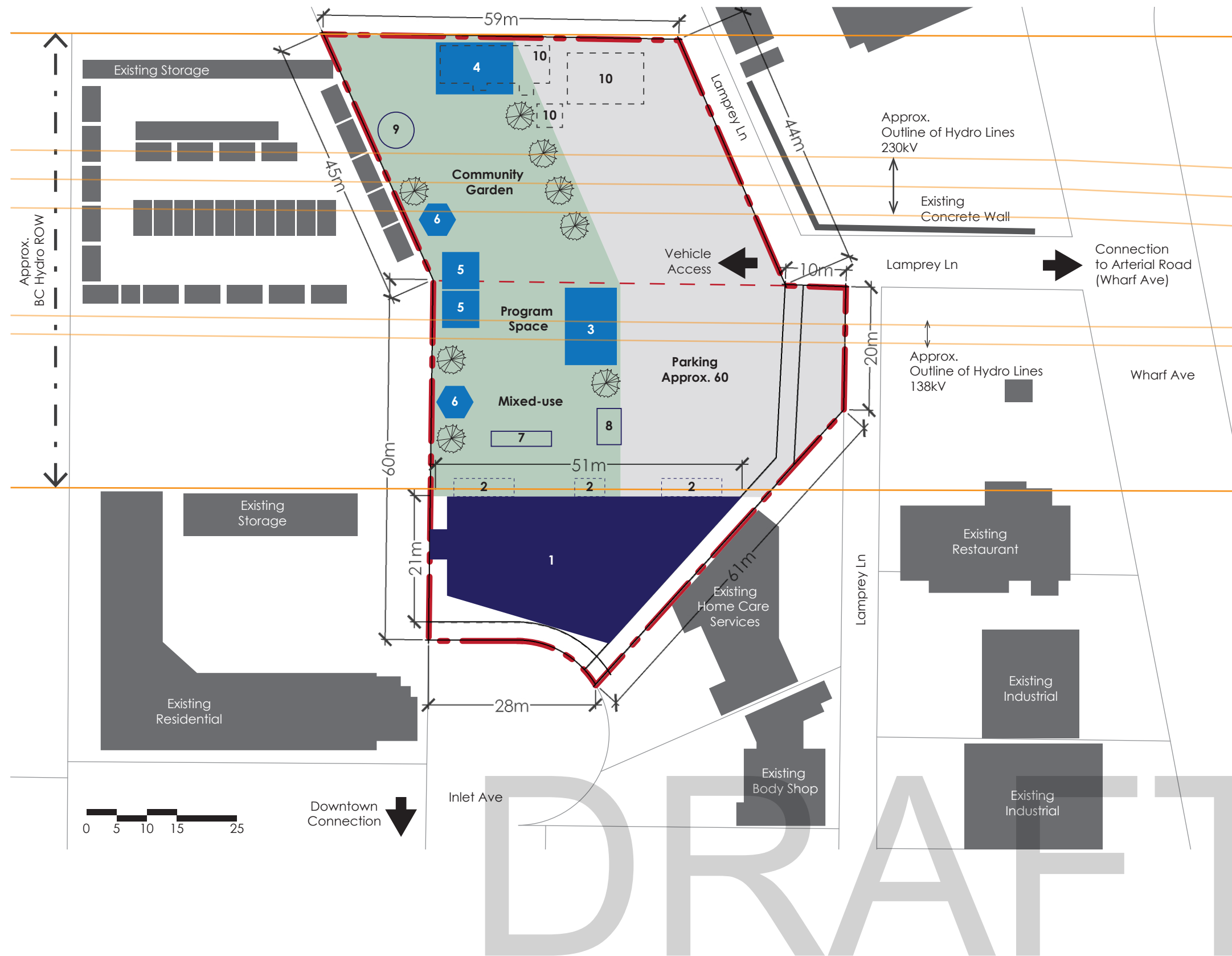


277.1 0 138.54 277.1 Meters

This information has been compiled by the Sunshine Coast Regional District (SCRD) using data derived from a number of sources with varying levels of accuracy. The SCRD disclaims all responsibility for the accuracy or completeness of this information.



2/24/2020
1:5,454



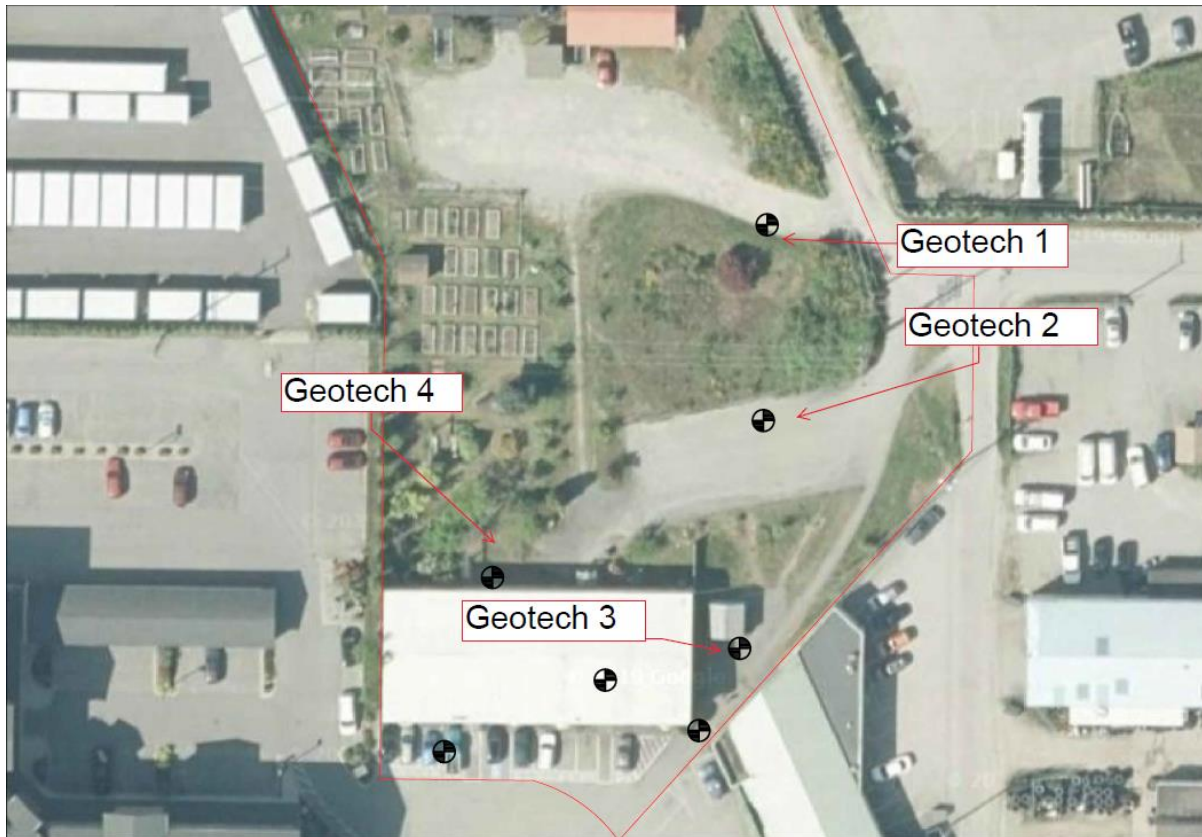
- Proposed Building Footprint
- Modular Buildings on Site (movable)

- Proposed Building Footprint
 - Balconies/Canopies
 - Youth Centre, 100m²,
 - wood frame with non-metallic roof
 - Free Store/Storage, 100m²
 - wood frame with non-metallic roof
 - Green House, 72m²(2@36m²)
 - metal frame with glass/plastic roof
 - Gazebos
 - wood frame with non-metallic roof
 - Outdoor cooking station
 - Garbage/Recycling
 - Cisterns for water collecting
 - Existing Food Bank Buildings to be demolished, Program will be relocated
- This plan shows the conceptual layout of the site. As the project moves forward, it will contain more information such as the location of outdoor lighting, furniture, equipment, bike parking, etc.



APPENDIX B

Boring Location Plan and Boring Logs



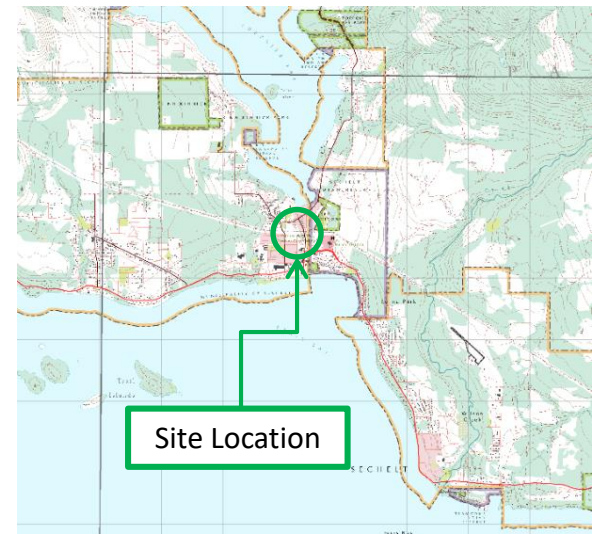
Geotech 4

Geotech 1

Geotech 2

Geotech 3

Source: Google Maps



Site Location

Source: GeoBC Ministry of Forests, Lands and Natural Resource Operations



Client: M'akola Development Services

Auger Hole Location Plan
5638 Inlet Avenue &, Sechelt, BC

Project Number: WF32601
Number: Figure 1
Drawing Date: 01/14/2020

Drawn By: Jordan Johl
Reviewed By: Percy Villa
Scale: NTS

Legend:



Auger Hole Location (approximate)

SOIL LOG

Geotech #1

CLIENT Sunshine Coast Community Services Society

PROJECT No WF32601

PROJECT Housing Development at 5638 Inlet Ave, Sechelt, BC

DATUM

NORTHING ---

LOCATION 5638 Inlet Ave, Sechelt, BC

ELEVATION 9 m

EASTING ---

DATE TESTED January 9, 2020

METHOD Track-mounted Solid Stem Auger

DEPTH (m)	CLASSIFICATION	SOIL SYMBOL	MATERIAL DESCRIPTION	SAMPLE TYPE	ELEVATION	SPT (N)	MOISTURE CONTENT & ATTERBERG LIMITS	POCKET ▲ PENTROMETER (kPa)	□ SPT N VALUE	DEPTH (ft)
0			Sand and gravel, brownish grey, compact, moist				WP 20 40 60 80 W WL	100 175 250 325		0
1			Sand some gravel, grey, compact, moist	SPT	8	21				5
2										
3										10
4			Sand trace gravel, brownish grey, compact, moist to wet							15
5										
6										20
7										25
8			End of hole at 7.6 m.							

Sample Type: GS- Grab Sample SPT- Standard Penetration Test
ST- Shelby Tube PT- Piston Tube VT- Shear Vane Test

LOGGED BY:
JJ



Western Geotechnical Consultants Ltd.
4 - 1877 Field Road
Sechelt, B.C. V0N 3A1
T: 604.740.0920
TF: 1.877.853.5436

SOIL LOG

Geotech #2

CLIENT Sunshine Coast Community Services Society

PROJECT No WF32601

PROJECT Housing Development at 5638 Inlet Ave, Sechelt, BC

DATUM _____

NORTHING ---

LOCATION 5638 Inlet Ave, Sechelt, BC

ELEVATION 9 m

EASTING ---


DATE TESTED January 9, 2020

METHOD Track-mounted Solid Stem Auger

DEPTH (m)	CLASSIFICATION	SOIL SYMBOL	MATERIAL DESCRIPTION	SAMPLE TYPE	ELEVATION	SPT (N)	MOISTURE CONTENT & ATTERBERG LIMITS		POCKET ▲ PENTROMETER (kPa)		DEPTH (ft)
							WP	WL	100	175	
0			Asphalt 95mm thickness								0
			Sand and gravel, brown, moist, compact								
			Sand some gravel, brown, moist, compact								
1				SPT	8	40					5
2											
3											10
4			Sand some gravel, grey, compact, moist								15
5											
6											20
7											25
8			End of hole at 7.6 m.								

Sample Type: GS- Grab Sample SPT- Standard Penetration Test
ST- Shelby Tube PT- Piston Tube VT- Shear Vane Test

LOGGED BY:
JJ



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SOIL LOG PERCYSECHELITFIRST.GPJ METRO TESTING LAB.GDT 2/22/20

SOIL LOG

Geotech #3

CLIENT Sunshine Coast Community Services Society

PROJECT No WF32601

PROJECT Housing Development at 5638 Inlet Ave, Sechelt, BC

DATUM _____

NORTHING ---

LOCATION 5638 Inlet Ave, Sechelt, BC

ELEVATION 9 m

EASTING ---

DATE TESTED January 9, 2020


METHOD Track-mounted Solid Stem Auger

SOIL LOG PERCYSECHELITFIRST.GPJ METRO TESTING LAB.GDT 2/22/20

DEPTH (m)	CLASSIFICATION	SOIL SYMBOL	MATERIAL DESCRIPTION	SAMPLE TYPE	ELEVATION	SPT (N)	MOISTURE CONTENT & ATTERBERG LIMITS		POCKET ▲ PENTROMETER (kPa)		SPT N VALUE	DEPTH (ft)
							WP	WL	100	175		
0			Sand some gravel, orangish brown, compact, moist									0
			Sand some gravel, grey, compact, moist									
1				SPT	8	11						5
2												
3												10
4			Sand trace gravel, brownish grey, compact, moist to wet									15
5												
6												20
7												25
8			End of hole at 7.6 m.									

Sample Type: GS- Grab Sample SPT- Standard Penetration Test
ST- Shelby Tube PT- Piston Tube VT- Shear Vane Test

LOGGED BY: JJ



Western Geotechnical Consultants Ltd.
4 - 1877 Field Road
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SOIL LOG

Geotech #4

CLIENT Sunshine Coast Community Services Society

PROJECT No WF32601

PROJECT Housing Development at 5638 Inlet Ave, Sechelt, BC

DATUM

NORTHING ---

LOCATION 5638 Inlet Ave, Sechelt, BC

ELEVATION 9 m

EASTING ---

DATE TESTED January 9, 2020


METHOD Track-mounted Solid Stem Auger

SOIL LOG PERCYSECHELIT.FIRST.GPJ METRO TESTING LAB.GDT 2/22/20

DEPTH (m)	CLASSIFICATION	SOIL SYMBOL	MATERIAL DESCRIPTION	SAMPLE TYPE	ELEVATION	SPT (N)	MOISTURE CONTENT & ATTERBERG LIMITS		POCKET ▲ PENTROMETER (kPa)		SPT N VALUE	DEPTH (ft)
							WP	WL	100	175		
0			Asphalt 85mm thickness									0
			Sand some gravel, orangish brown, compact, moist									
			Sand some gravel, brownish grey, compact, moist									
1				SPT	8	21						5
2												
3				SPT	6	38						10
4			Sand some gravel, grey, compact, moist									15
5												
6												20
7												25
8			End of hole at 7.6 m.									

Sample Type: GS- Grab Sample SPT- Standard Penetration Test
ST- Shelby Tube PT- Piston Tube VT- Shear Vane Test

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APPENDIX C

Standard Limitations

STANDARD LIMITATIONS

1. **General:** *Metro Testing + Engineering | Western Geotechnical Consultants Ltd. (WESTERNGEO)* shall render the Services, as specified in the attached Scope of Services, to the client for this Project in accordance with the following terms of engagement. WESTERNGEO may, at its discretion and at any stage, engage sub-consultants to perform all or any part of the Services.
2. **Representatives:** Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.
3. **Authorization to Proceed:** Ordering of work over the telephone or by written instructions will serve as authorization for WESTERNGEO to proceed with the services called for in this proposal and agreement with the terms. This Agreement, including attachments incorporated herein by reference, represents the entire agreement between WESTERNGEO and Client. This Agreement may be altered only by written instrument signed by authorized representatives of both Client and WESTERNGEO.
4. **Extent of Agreement:** Work beyond the scope of services or redoing any part of the project through no fault of WESTERNGEO, shall constitute extra work and shall be paid for on a time-and-materials basis in addition to any other payment provided for in this Agreement. If, during the course of performance of this Agreement, conditions or circumstances are discovered which were not contemplated by WESTERNGEO at the commencement of this Agreement, WESTERNGEO shall notify Client in writing of the newly discovered conditions or circumstances, and Client and WESTERNGEO shall renegotiate, in good faith, the terms and conditions of this Agreement.
5. **Compensation:** Charges for the Services rendered will be made in accordance with WESTERNGEO Schedule of Fees and Disbursements in effect from time the services are rendered. WESTERNGEO Schedule of Fees and Disbursements are included in WESTERNGEO Budget Estimate. All charges will be payable in Canadian Dollars. WESTERNGEO shall invoice the Client on a monthly basis for the services performed under this Agreement and shall provide a monthly summary of costs to date. The Client shall pay such invoice upon receipt. Invoices not paid within thirty (30) days of the invoice date shall be subject to a late payment charge of 1.5 percent per month (18% per annum) from date of billing until paid. The invoice amounts shall be presumed to be correct unless Client notifies WESTERNGEO in writing within fourteen (14) days of receipt. Overdue accounts over 90 days will be forwarded to a collections agency.
6. **Probable Costs:** WESTERNGEO does not guarantee the accuracy of probable costs for providing Engineering Services. Such probable costs represent only WESTERNGEO judgment as a Professional and are supplied only for the general guidance of the Client.
7. **Standard of Care:** WESTERNGEO shall perform its services in a manner consistent with the standard of care and skill ordinarily exercised by members of the profession practicing under similar conditions in the geographic vicinity and at the time the services are performed. This Agreement neither makes nor intends a warranty or guarantee, expressed or implied.
8. **Indemnity:** Client waives any claim against WESTERNGEO, its officers, employees and agents and agrees to defend, indemnify, protect and hold harmless WESTERNGEO and its officers, employees and agents from any and all claims, liabilities, damages or expenses, including but not limited to delay of the project, reduction of property value, fear of or actual exposure to or release of toxic or hazardous substances, and any consequential damages of whatever nature, which may arise directly or indirectly, to any party, as a result of the services provided by WESTERNGEO under this Agreement, unless such injury or loss is caused by the sole negligence of WESTERNGEO.
9. **Limitation of Liability:** Client agrees to limit WESTERNGEO and its officers, employees, and agents liability due to professional negligence and to any liability arising out of or relating to this Agreement to Fifty Thousand Dollars (\$50,000) or the amount of WESTERNGEO fee, whichever is less. This limit applies to all services on this project, whether provided under this or subsequent agreements, unless modified in writing, agreed to and signed by authorized representatives of the parties. No claims may be brought against WESTERNGEO in contract or tort more than two (2) years after Services were completed or terminated under this engagement. Note: WESTERNGEO will not be responsible for water ingress related problems as our insurance policy contains an Absolute Water Ingress Exclusion.
10. **Additional Limits:** For special projects, higher liability limits are available from our underwriter for an additional fee.
11. **Insurance:** WESTERNGEO warrants it is protected by WorkSafe BC Insurance, General Liability Insurance, Professional Errors and Omissions Insurance, and Automobile Liability Insurance. Certificates for such policies of insurance shall be provided to the Client upon request.
12. **Responsibility:** WESTERNGEO is not responsible for the completion or quality of work that is dependent upon or performed by the Client or third parties not under the direct control of WESTERNGEO, nor is WESTERNGEO responsible for their acts or omissions or for any damages resulting therefrom. WESTERNGEO shall not be responsible for:
 - a. The failure of a contractor, retained by the Client, to perform the work required for the Project in accordance with the applicable contract documents;
 - b. The design of or defects in equipment supplied or provided by the Client for incorporation into the Project
 - c. Any cross-contamination resulting from subsurface investigations;
 - d. Any damage to subsurface structures and utilities which were identified and located by the Client;
 - e. Any Project decisions made by the Client if the decisions were made without consultation of WESTERNGEO or contrary to or inconsistent with WESTERNGEO recommendations;
 - f. Any consequential loss, injury, or damages suffered by the Client, including but not limited to loss of use, earnings, and business interruption; and,

STANDARD LIMITATIONS

- g. The unauthorized distribution of any document or report prepared by or on behalf of WESTERN GEO for the exclusive use of the Client.
13. **Exclusive Use:** Services provided under this Agreement, including all reports, information or recommendations prepared or issued by WESTERN GEO, are instruments of service for the execution of the Project. WESTERN GEO retains the property and copyright in these documents, whether the Project is executed or not. No other use of these documents is authorized under this Agreement without the prior written agreement of WESTERN GEO.
 14. **Samples:** All non-consumed samples shall remain the property of the Client, and Client shall be responsible for and promptly pay for the removal and lawful disposal of samples, cuttings and hazardous materials, unless otherwise agreed in writing. If appropriate, WESTERN GEO shall preserve samples obtained for the project for not longer than thirty (30) days after the issuance of any document that includes the data obtained from those samples.
 15. **Environmental:** WESTERN GEO's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of air, soil and/or groundwater, unless otherwise specifically listed in the attached Scope of Services. WESTERN GEO will co-operate with the Client's environmental consultant during field work phase of the investigation.
 16. **Field Services:** Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of WESTERN GEO, to review whether the work of a contractor retained by the client is being carried out in general conformity with the intent of the Services. Any reduction from the level of services recommended will result in WESTERN GEO not providing qualified certifications for the work.
 17. **Termination:** This Agreement may be terminated by either party upon ten (10) days written notice to the other. In the event of a termination, the Client shall pay for all reasonable charges for work performed and demobilization by WESTERN GEO to the date of notice of termination. The limitation of liability and indemnity obligations of this Agreement shall be binding notwithstanding any termination of this Agreement.
 18. **Dispute Resolution:** If requested in writing by either the Client or WESTERN GEO, the Client and WESTERN GEO shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured, non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by arbitration under the rules of British Columbia or by an arbitrator appointed by agreement of the parties or by reference to a Judge of the Supreme Court of British Columbia.
 19. **Governing Law:** This Agreement is governed by the law British Columbia, and any litigation shall be brought and tried in, the judicial jurisdiction of the WESTERN GEO office that entered this Agreement, as stated herein.
 20. **Non-Solicitation:** The Client agrees they shall not recruit for employment or hire any WESTERN GEO employees who provide services pursuant to this Agreement during the term of this Agreement and for a period of one (1) year following its termination.