



UBC Development Permit Application

UBC School of Biomedical Engineering

Feb 3 2021

Architectural

Patkau Architects Inc.
1564 West 6th Avenue,
Vancouver, BC V6J 1R2
t 604.683.7633
w patkau.ca
e info@patkau.ca

Architectural, Laboratory

Architecture|49
270-1075 West Georgia
Vancouver, BC V6E 3C9
t 604.736.5329
w architecture49.com
e vancouver@architecture49.com

Acoustic

BKL
301-3999 Henning Drive,
Burnaby, BC V5K 6P9
t 604.988.2508
w bkl.ca
e sound@bkl.ca

Air Quality

RWDI Consulting Engineers
280-1385 W 8th Avenue,
Vancouver, BC V6H 3V9
t 604.730.5688
w rwdi.com

Civil

InterCAD Services Ltd.
1111 West 8th Avenue,
Vancouver, BC V6H 1C5
t 604.739.7707
w intercad.bc.ca
e mail@intercad.bc.ca

Code

GHL Consultants Ltd.
950-409 Granville Street,
Vancouver, BC V6C 1T2
t 604.689.4449
w ghl.ca
e tech@ghl.ca

DES Consulting

AME Group
200 – 638 Smithe Street,
Vancouver, BC V6B 1E3
t 604.684.5993
w amegroup.ca

Commissioning

Kane Consulting Partnership
408-535 Thurlow Street,
Vancouver, BC V6E 3L2
t 604.924.0094
w kane-consulting.ca
e info@kane-consulting.ca

Electrical

AES Engineering
950-505 Burrard Street, Box 91
Vancouver, BC V7M 1M4
t 604.569.6500
w aesengr.com
e vancouver@aesengr.com

Elevator

APEX Elevator Consulting + Engineering
177-4644 Lougheed Highway,
Burnaby, BC V5C 5T5
t 604.534.4617
w apexelevator.com
e info@apexelevator.com

Envelope

Morrison Hersfield
310-4321 Still Creek Drive
Burnaby, BC V5C 6S7
t 604.454.0402
w morrisonhersfield.com
e vancouver@morrisonhershfield.com

Energy Modelling

reload Sustainable Design Inc.
115-119 West Pender Street,
Vancouver, BC V6B 1S5
t 778.861.5666
w reloadsustainable.com
e martina@reloadsustainable.com

Geotechnical

PNW Testing & Consulting
7525 Osler Street,
Vancouver, BC V6P 4C8
t 604.910.4605
w pnwtesting.ca
e info@pnwtesting.ca

Landscape

Hapa Collaborative
403-375 West 5th Avenue,
Vancouver, BC V5Y 1J6
t 604.909.4150
w hapacobo.com
e info@hapacobo.com

Mechanical, Sustainability/LEED

WSP
1000-840 Howe Street,
Vancouver, BC V6Z 2M1
t 604.685.9381
w wsp.com

Structural

Glottman Simpson
1661 West 5th Avenue,
Vancouver, BC V6J 1N5
t 604.734.8822
w glottmansimpson.com
e info@glottmansimpson.com



Looking North from South Courtyard



Looking South West from U. Blvd.



Looking North from South Courtyard

Urban Response

The SBME site is at the heart of the UBC campus, on University Boulevard, the principal entrance to campus. To the south lies the Health Sciences precinct, comprising primarily of medical learning and research facilities. To the north lies the University Boulevard precinct, with housing, services, and the campus bus loop. Being on the threshold between these two urban conditions is a key factor in the urban design of the building.

The Health Sciences precinct is characterized by human-scaled walks, courtyards, and landscape. Service spaces are carefully screened and separated. The existing courtyard south of the SBME site is well-defined by a beautiful row of London Plane trees. This tree-lined and sunny space has the potential to be a tremendous complement to the SBME and its broader community. The trees have been evaluated by an arbourist, who has found them healthy and having high retention value.

Our proposal for siting the SBME (and its future neighbour) therefore begins with redefining the Plane Courtyard with a quiet but definitive building face, reinforcing and enhancing the historic and well-used walks and courtyards that characterize the Health Sciences precinct.

University Boulevard is an active urban “high street” on campus. A key planning objective is a five-story street wall defining the edge of the boulevard. The SBME reinforces the street wall in its five-storey massing, as well as by providing generous weather protection for pedestrians, a commercial retail unit, and views into the active SBME design studios and maker spaces.

Adjacent to the commercial retail unit is a grand oak tree, which, in addition to new landscape planting, will form the basis of a pocket park ringed by retail in both the SBME and Strangway building.

Across University Boulevard, Athlete’s Way is a major pedestrian route connecting student residences, student services, recreation buildings, the bus loop, and other amenities. Extending Athlete’s Way across University Boulevard to the Plane Courtyard provides a valuable new connection enabling pedestrian movement between the University Boulevard Precinct and Medical Services Precinct. This extension creates a sensible partition between the SBME site and future development to the west. A large existing Atlas Cedar provides an urban marker to demarcate the new pedestrian route.

A natural consequence of the two-sided nature of the site is that there are two primary entrances to the building. The principal public entrance is on the corner of Athlete’s Way and University Boulevard, where it can connect to both major pedestrian routes. The south entrance connects to the Plane Courtyard and broader Heath Sciences community to which the SBME is strongly affiliated. Both entrances are characterized by generous overhangs to mediate the scale of the building and provide weather protection.

Servicing the SBME is through the service court on the east side of the building, which provides vehicular access to the SBME separated from pedestrians. The SBME massing, combined with landscape development, will further screen the service courts from the campus pedestrian ways.

The result of these strategies is an urban approach that reconciles the historic courtyard structure of the Health Science precinct with the newer, axial conditions of University Boulevard and Athlete’s Way.

Building Organization

The SBME program combines both research and learning functions within a single building. Key program components include laboratories, offices, administration, lecture halls, and an assortment of design-project related spaces.

The research functions are located in the upper floors of the building. The laboratories are located on the north side of the building, where they can benefit from diffuse north light, the ideal daylight condition for long research hours. From the exterior, this consolidated block of research space will have a strong presence on University Boulevard, representing the SBME to the broader community. Offices are located on the south side of the building, where they will benefit from the generous canopies of the London Plane trees and relate to the smaller scale of the Health Sciences precinct. For long-term flexibility, both office spaces and laboratory spaces have been planned modularly, with the labs following a 3.5m x 3.5m module and offices a 3.2m x 4.05m module.

Between the offices and laboratories is a toplit common space interconnecting the research floors and forming the social heart of the research area. Within this volume are open graduate workspaces along with various types of casual and formal meeting spaces. Generous daylit stairs at each end of the space provide vertical circulation between the research floors and to floors below. On the third floor, a lunchroom opens onto an outdoor terrace on the south side of the building, creating a place for informal meetings or larger gatherings. As the primary circulation route between offices, laboratories, and meeting places, the research common space will help engender the serendipitous interactions essential to academic community and research.

The second floor of the building, at the base of the research common space, has mixed functions including a teaching lab, shared research facilities, project rooms, and administration. The common space and adjacent project rooms work together to create a space for collaboration for graduate, undergraduate, and interdisciplinary research projects. The project rooms that line the common space are fully glazed, providing common space occupants with serene views of the Plane Tree canopy beyond.

The remaining learning functions are located in the lower floors of the building, allowing the larger undergraduate population to circulate to and from the building separately from the research areas above. At grade, the north and south building entrances open on to a two-story learning common space with a spectacular linear view of the Plane Trees and courtyard beyond. Opening directly onto this space at grade are design studios, maker spaces, and a classroom. Two lecture halls are below grade, where they can take full advantage of the generous adjacent floor area as a between-class foyer and informal gathering space. This two-storey common space, its grand stair, and the adjacent large rooms also provide the SBME with an ideal space for large-scale gatherings such as conferences or open-houses.

Service functions, including a vivarium, are located in the lower floors of the east wing of the project, where they have direct access to the both the exterior service court and the service elevator which interconnects all floors within a secure biosafety zone.

Exterior Envelope

As the principal visual interface between the broader community and the SBME, the building envelope plays a key role in the visual identity of the SBME. Its design must transcend function to communicate the spirit and vision of the new school.

The design approach seeks synergies with the natural and constructed environment while enhancing the experience of the building occupants.

A key goal of the north façade is to present the activities within the building to the broader community. This is accomplished with floor-to-ceiling glazing on all levels, providing visibility into the labs on the upper floors and the makerspaces and design studios at grade. The upper floors, including the mechanical penthouse are unified with 305 mm deep fins which carry from the top of the building, down the façade, and horizontally to the edge of the canopy. Constructed simply with curtain wall glazing caps, these fins will also protect the façade from the late afternoon sun, and will provide illuminated texture on the façade.

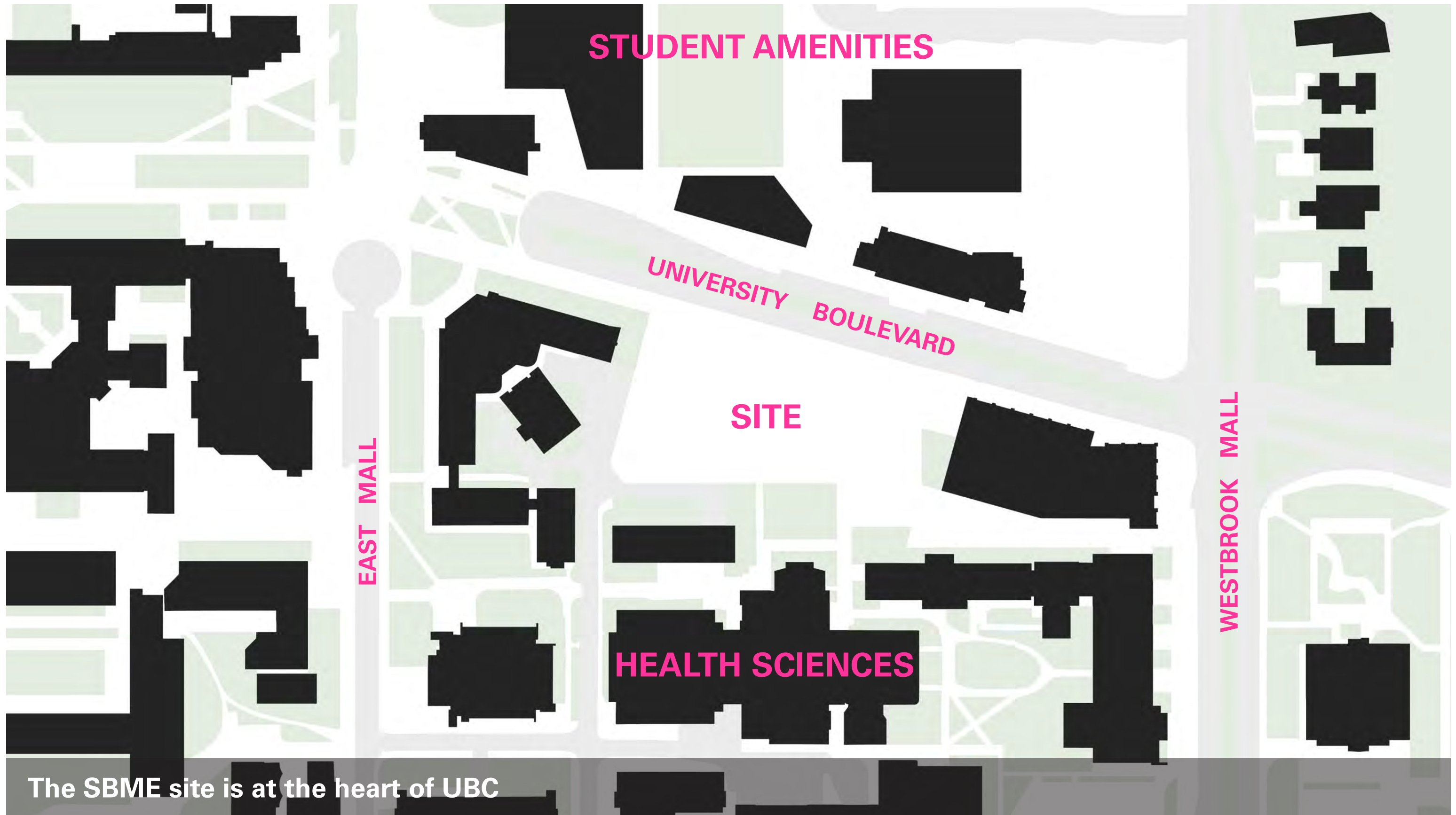
On the south façade, a layer of delicate screens brings lightness and elegance to the exterior. These filigree elements provide a neutral backdrop for the sinuous Plane Trees and a calm, coherent expression to the building. As filters to the sun, the screens assist with protecting the building from solar radiation and glare while bringing an atmosphere of delight with the unexpected interplay of dappled sunlight and shadow.

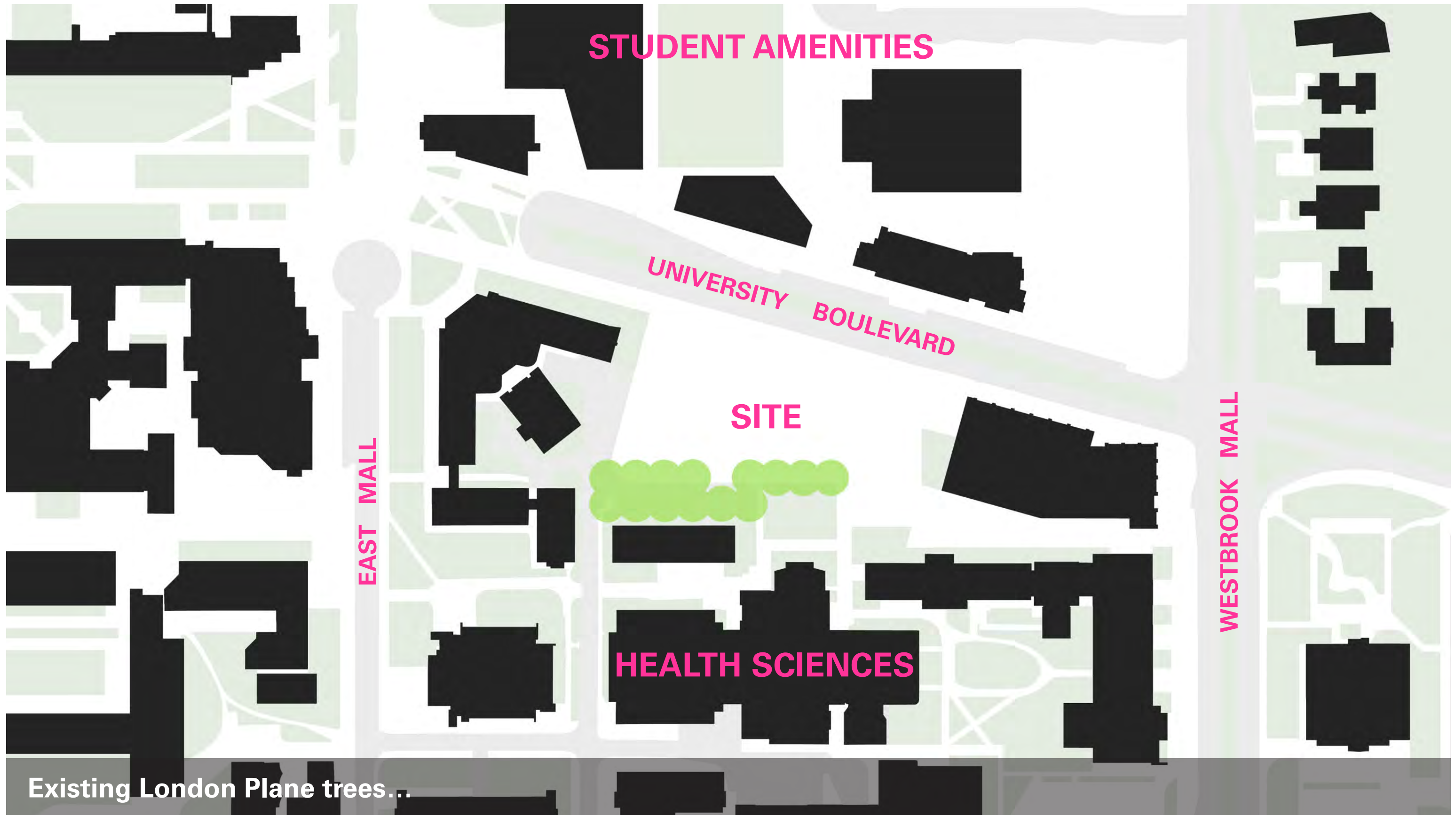
The remainder of the exterior is characterized by opaque walls with glazed openings. Opaque walls are ground-faced brick, a timeless and durable material that is consistent with the campus character.

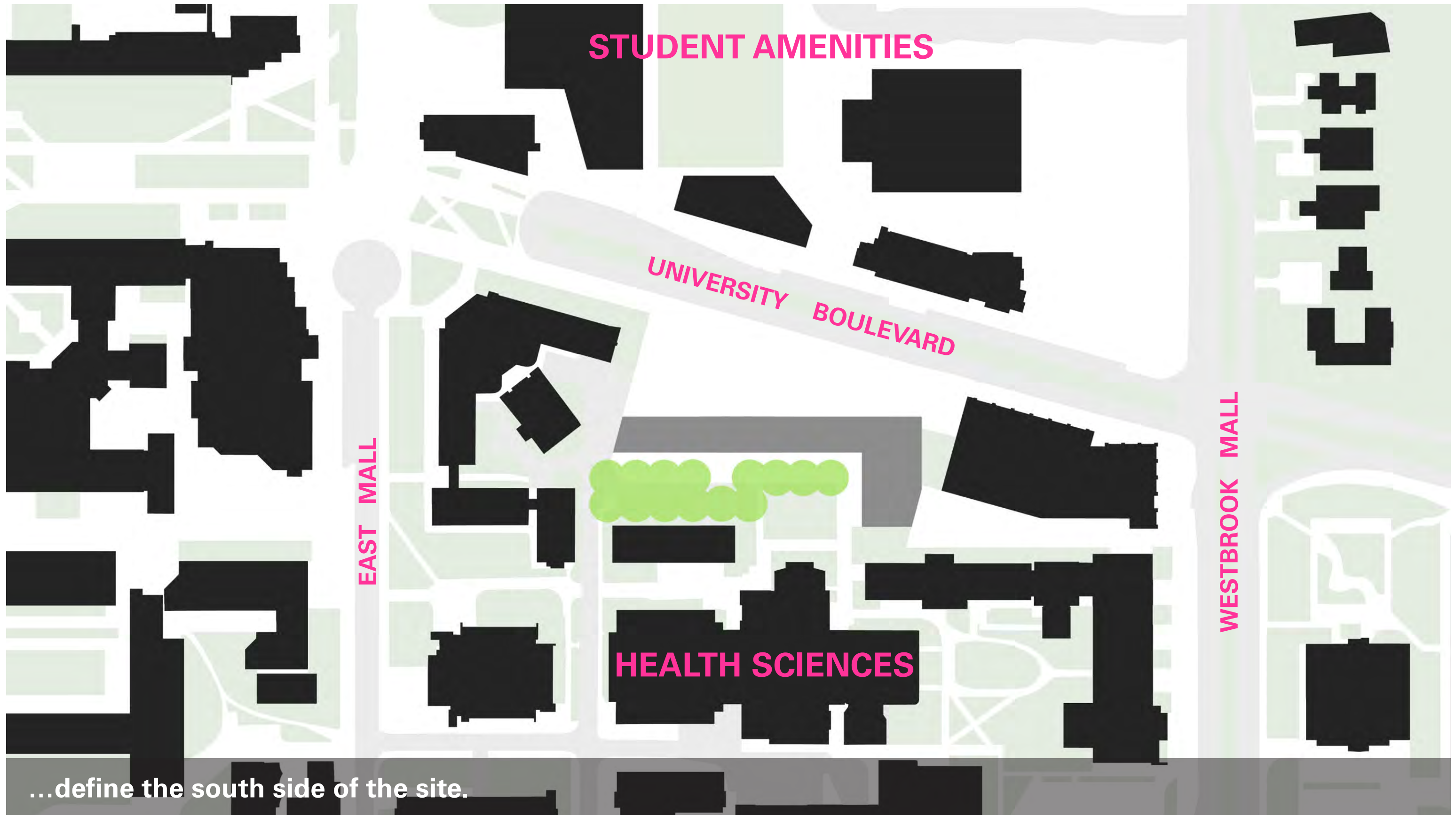
Crime Prevention Through Environmental Design

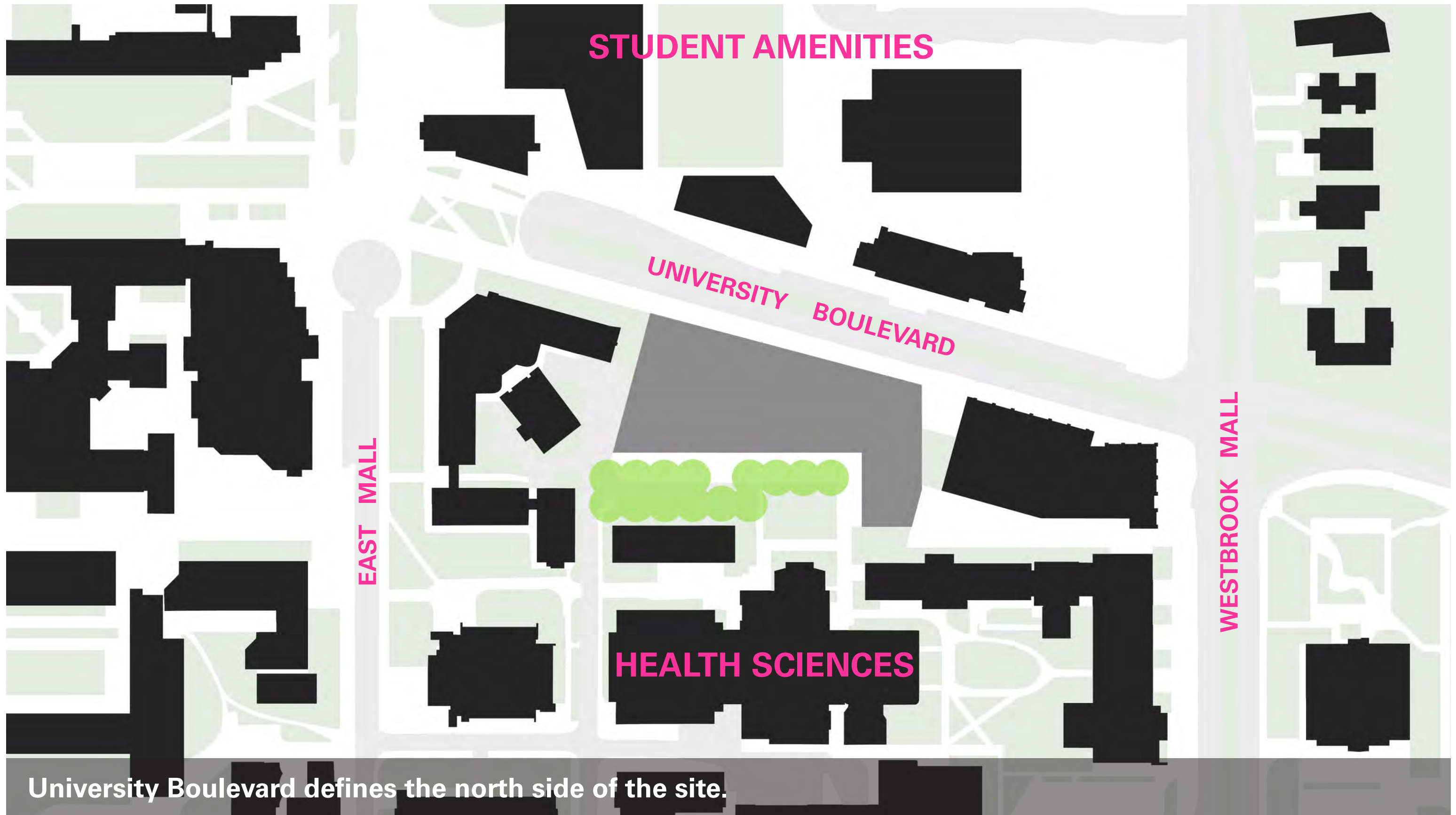
These Crime Prevention Through Environmental Design (CPTED) strategies have been employed in the design:

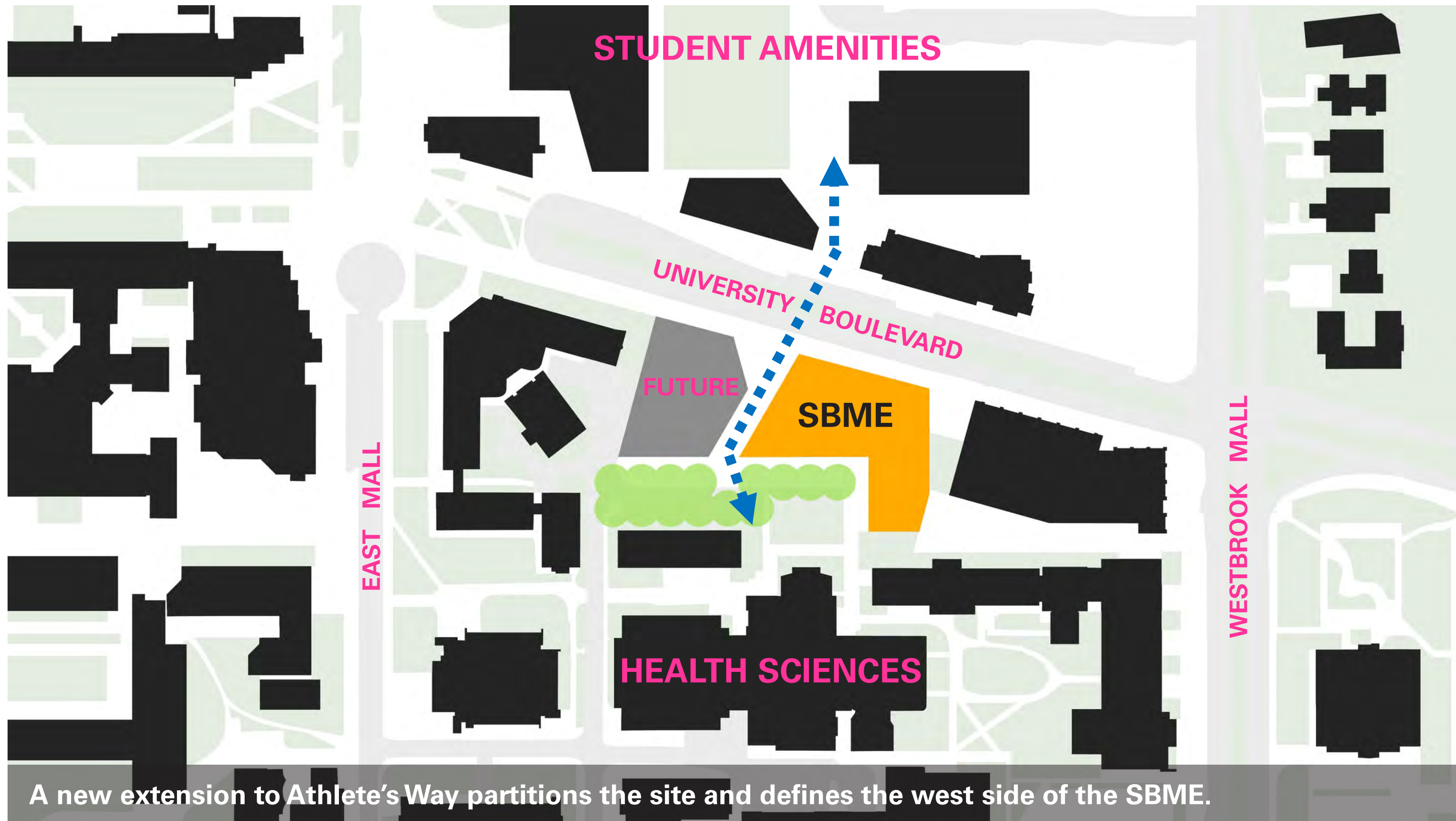
- The project is sited adjacent three major pedestrianways.
- There are large windows overlooking all sides of the building. In addition, the stairs provide views along the building to the north. This has the benefit of providing public eyes and a sense of security to the exterior.
- Outdoor areas on site are visible from either the interior of the building or from the adjacent pedestrianways creating an aura of natural surveillance.
- Outdoor locations are lit with pole lights, illuminated bollards, or soffit lighting. The generous exterior glazing of the building will also illuminate the exterior with spilled interior light.
- Walkways, lighting, and signage direct visitors to appropriate entrances.
- Except for the landscape screens blocking views from the public to service areas of the site, no fences or landscape barriers limit views into the site.
- There are no dead-end passageways on site.





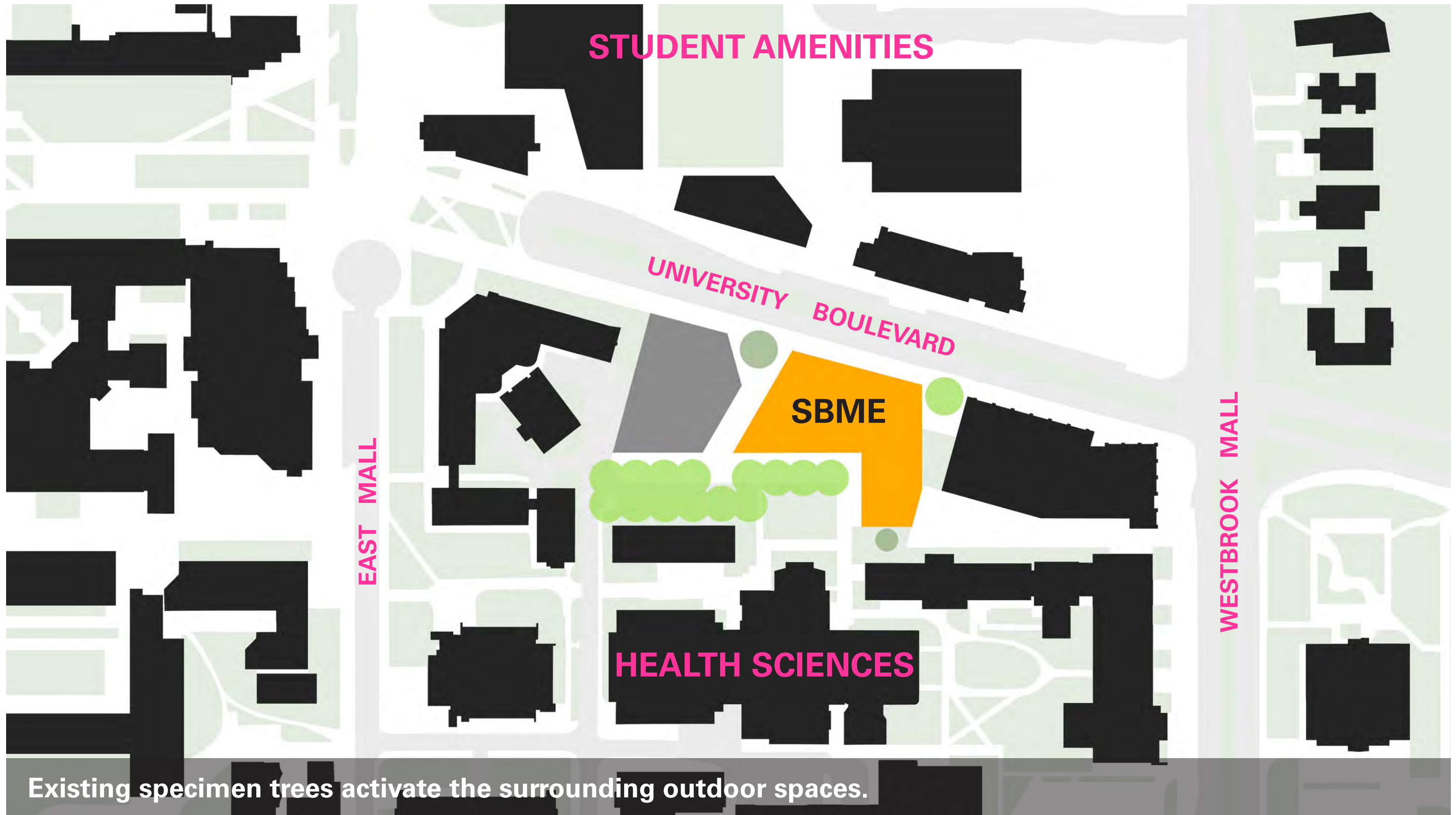




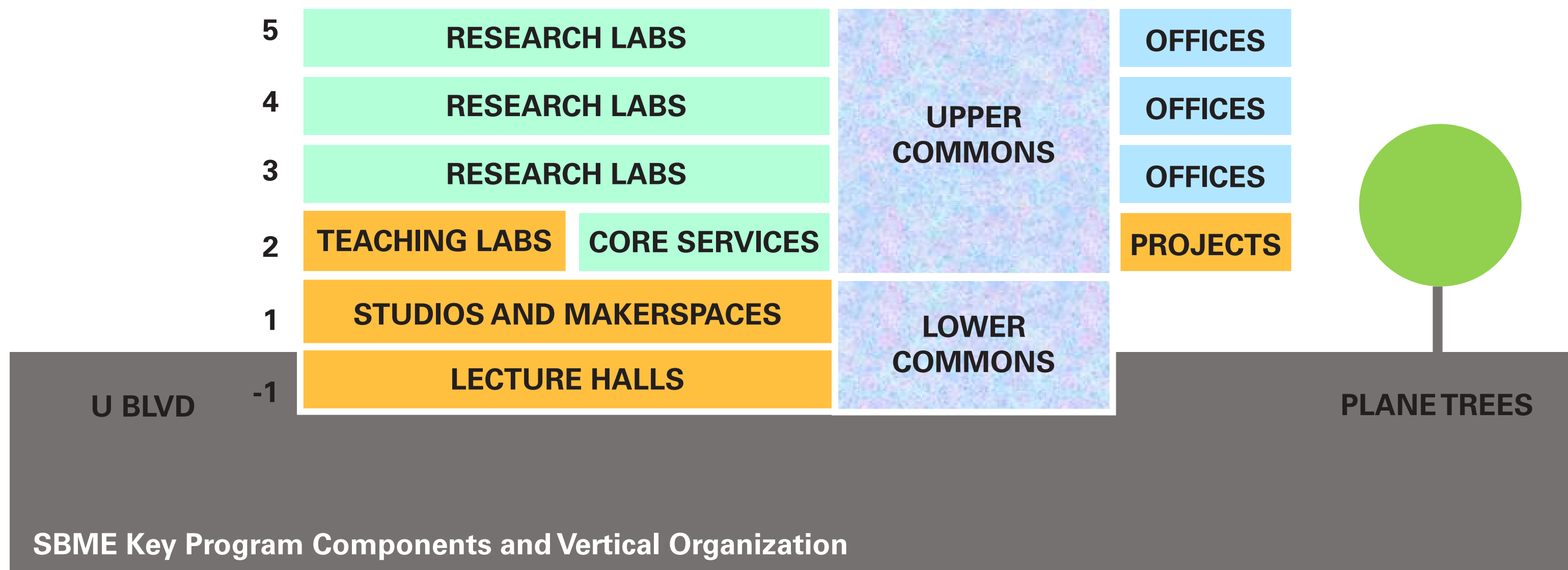


A new extension to Athlete's Way partitions the site and defines the west side of the SBME.





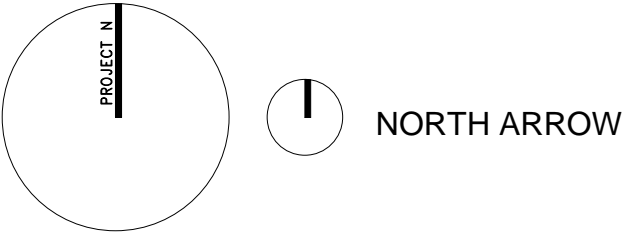
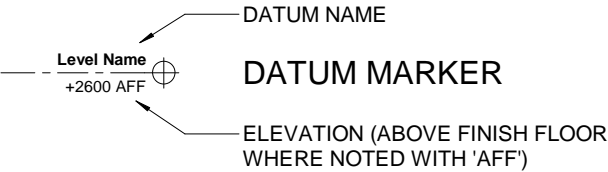
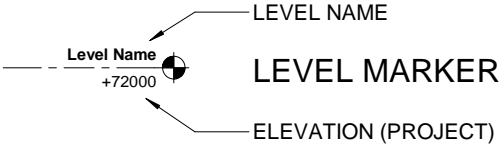
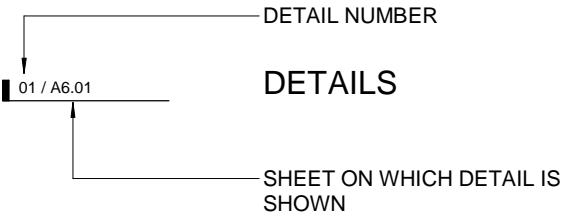
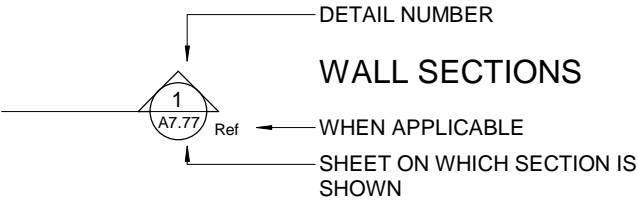
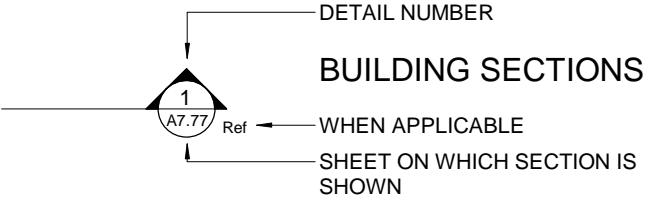
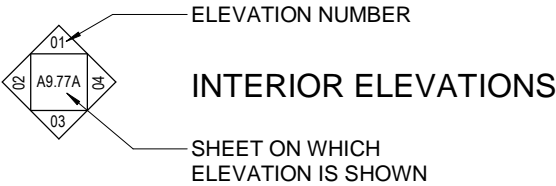
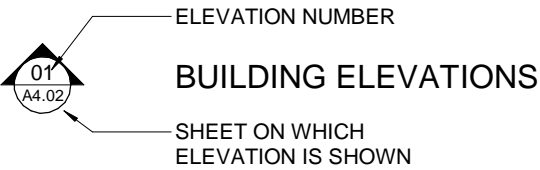
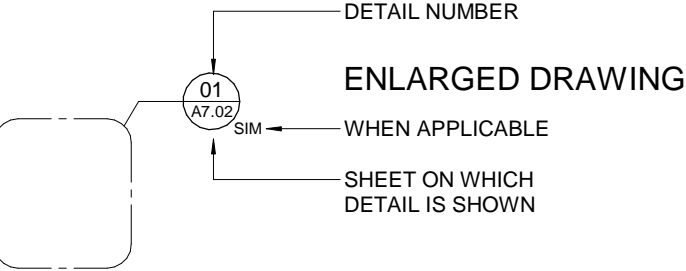
Together these spaces form the learning and research core of the SBME!



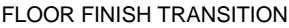
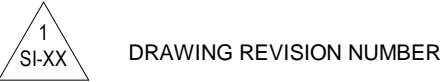
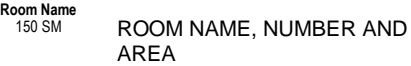
PROJECT NAME	UBC School of Biomedical Engineering
PROJECT ADDRESS	6088 University Boulevard
CLIENT	UBC Properties Trust
PROJECT STATUS	DEVELOPMENT PERMIT
TOTAL SITE AREA	9121.29 m²
SITE COVERAGE	36.58%
PARKING	
1	VEHICLE PARKING SPACES (BUILDING OPERATIONS)
1	LOADING SPACE
44	BICYCLE PARKING EXTERIOR SPACES
20	BICYCLE PARKING INTERIOR SPACES
DWELLING UNITS	
0	TOTAL NUMBER OF DWELLING UNITS
1	CRU - 86.93 m²
BUILDING HEIGHT - 32.3m	
FLOOR SPACE RATIO	
N/A	
AREAS	
GROSS BUILDING AREA	14,530 SQM
OFFICE NET AREA	7,700 SQM
RETAIL NET AREA	90 SQM
ASSEMBLY NET AREA	2,400SQM
VARIANCES REQUESTED	
NONE	

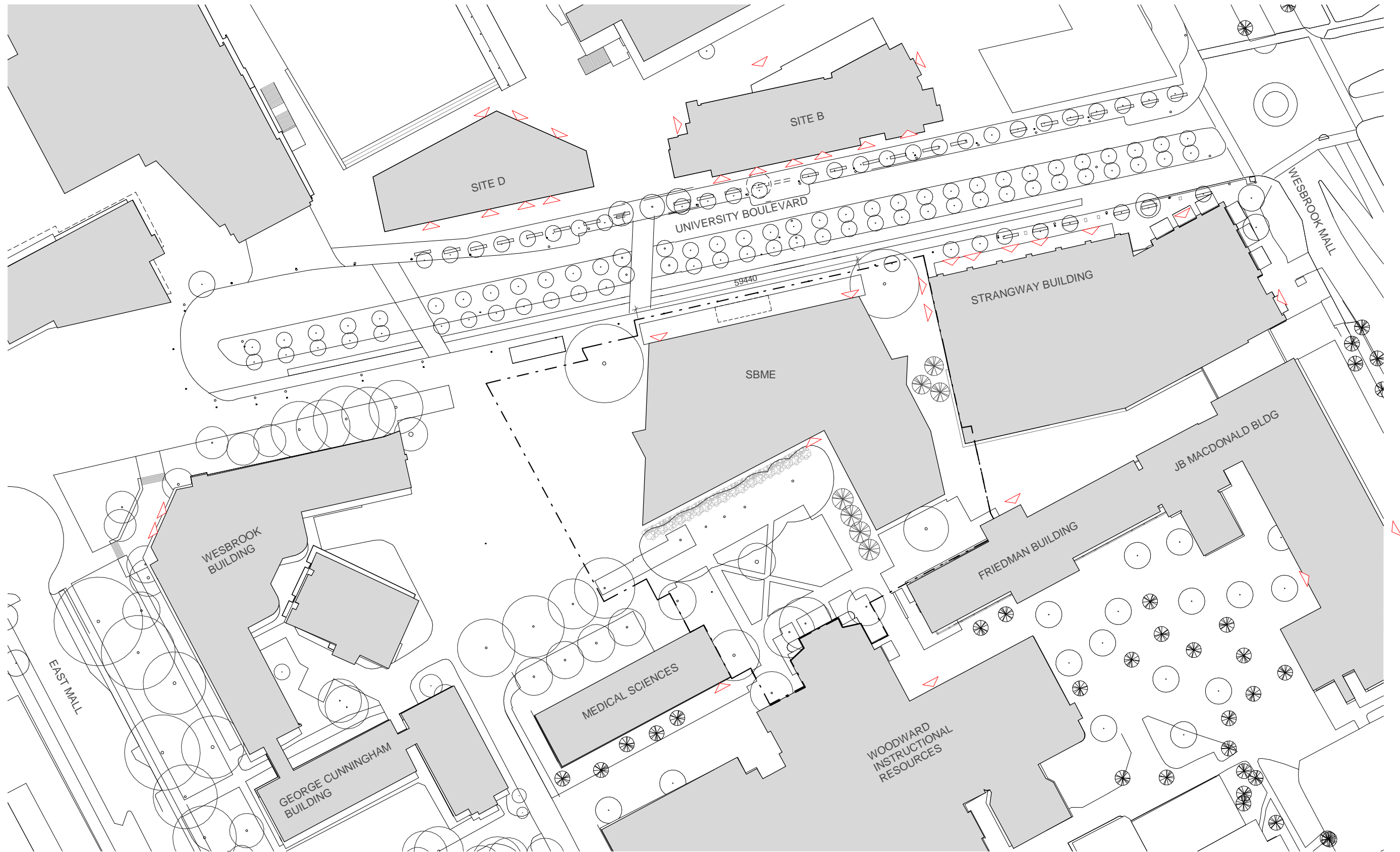


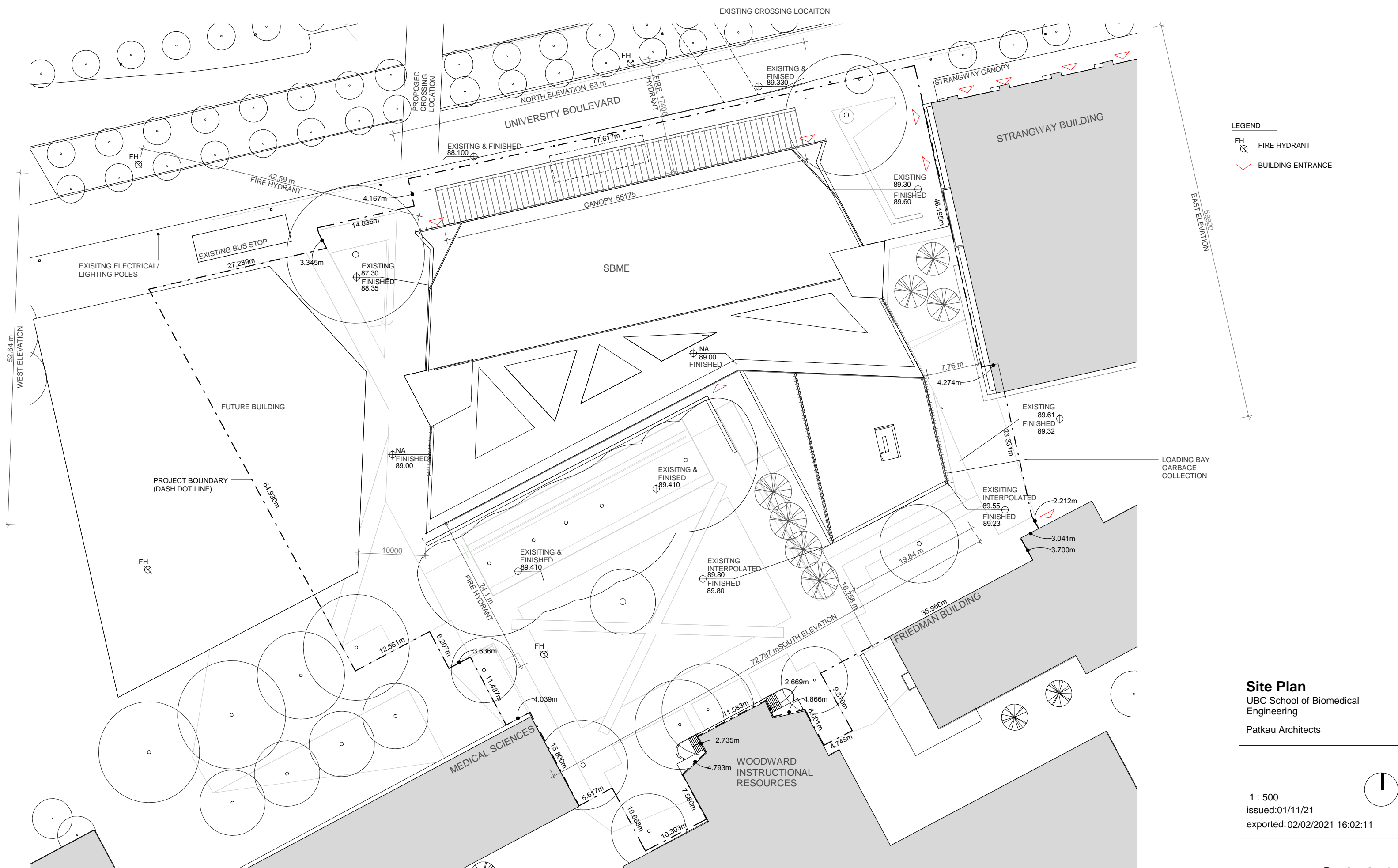
SYMBOLS



ANNOTATION TAGS



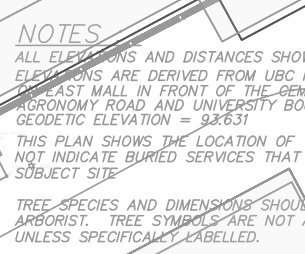




- LEGEND
- FH FIRE HYDRANT
 - BUILDING ENTRANCE

Site Plan
UBC School of Biomedical Engineering
Patkau Architects

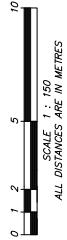
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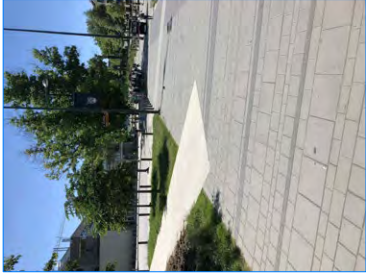
Page #
1 of 1

Drawing title: Tree Management Plan
Project address: 6088 University Boulevard - SBME
Client: UBCPT

SKETCH SHOWING TOPOGRAPHIC SURVEY
OVER A PORTION OF
DISTRICT LOT 3044, GROUP 1,
NEW WESTMINSTER DISTRICT
UNIVERSITY OF BRITISH COLUMBIA



PICTURE #1



PICTURE #2



PICTURE #3



PICTURE #4



PICTURE #5



PICTURE #6

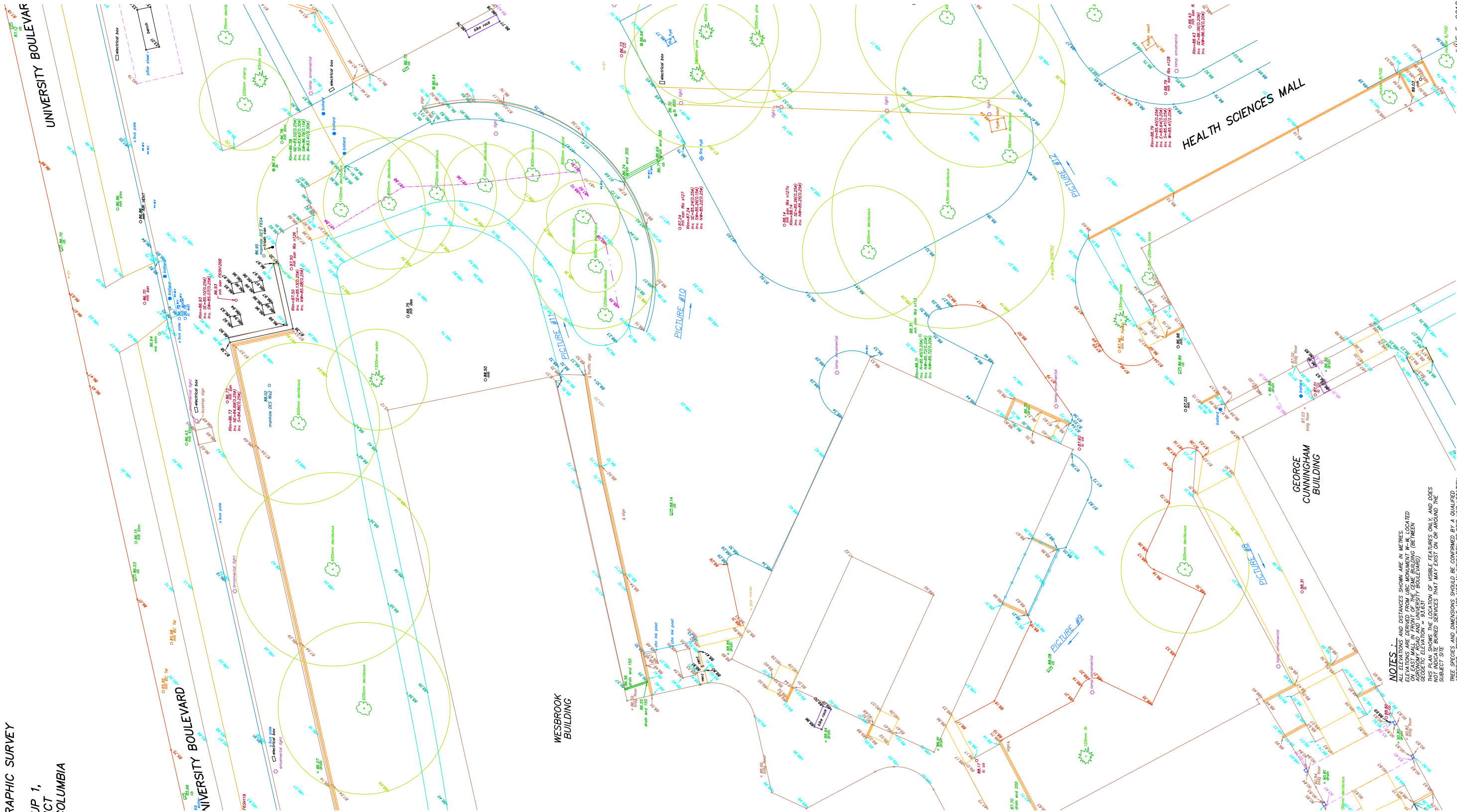
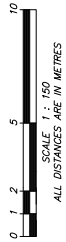


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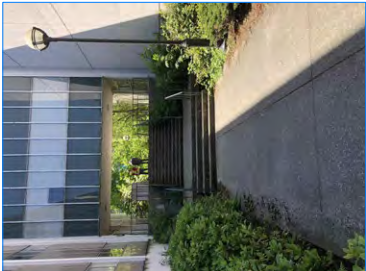
NOTES:
ALL ELEVATIONS AND DISTANCES SHOWN ARE IN METRES.
ALL DIMENSIONS SHOWN ARE UNLESS OTHERWISE NOTED.
ON EAST MALL IN FRONT OF THE CGM BUILDING (BETWEEN
DISTRICT LOT 3044 AND DISTRICT LOT 3045)
GEODETIC ELEVATION = 145.81
THIS PLAN SHOWS THE LOCATION OF VISIBLE FEATURES ONLY, AND DOES
NOT INDICATE BURIED SERVICES THAT MAY EXIST ON OR AROUND THE
SUBJECT SITE.
TREE SPECIES AND DIMENSIONS SHOULD BE CONFIRMED BY A QUALIFIED
ARBORETRIST. DIMENSIONS SHOWN ARE NOT AN INDICATION OF DWP LINE LOCATION
UNLESS SPECIFICALLY LABELLED.



SKETCH SHOWING TOPOGRAPHIC SURVEY
OVER A PORTION OF
DISTRICT LOT 3044, GROUP 1,
NEW WESTMINSTER DISTRICT
UNIVERSITY OF BRITISH COLUMBIA



NOTES:
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PICTURE #8



PICTURE #9



PICTURE #10



PICTURE #11



PICTURE #12

MURRAY & ASSOCIATES
PROFESSIONAL LAND SURVEYORS
201-1588 BAYVIEW AVENUE
SUITE 101 VANICU
(604) 597-9189

SCALE 1 : 150
ALL DISTANCES ARE IN METRES

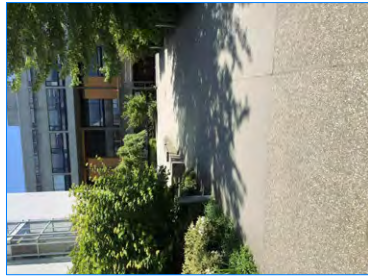


AGRONOMY ROAD AND UNIVERSITY BOULEVARD)
 GEODETIC ELEVATION = 93.65ft
 THIS PLAN SHOWS THE LOCATION OF VISIBLE FEATURES ONLY, AND DOES
 NOT INDICATE BURIED SERVICES THAT MAY EXIST ON OR AROUND THE
 SUBJECT SITE
 TREE SPECIES AND DIMENSIONS SHOULD BE CONFIRMED BY A QUALIFIED
 ARBORIST. TREE SYMBOLS ARE NOT AN INDICATION OF DRIP LINE LOCATION
 UNLESS SPECIFICALLY LABELLED.

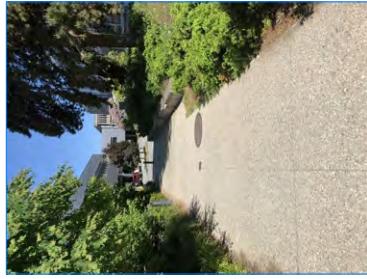
SKETCH SHOWING TOPOGRAPHIC SURVEY
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UNIVERSITY OF BRITISH COLUMBIA



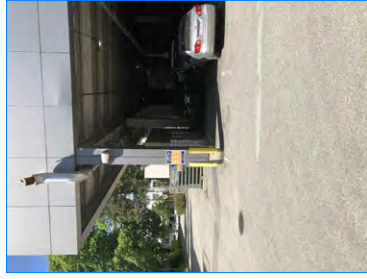
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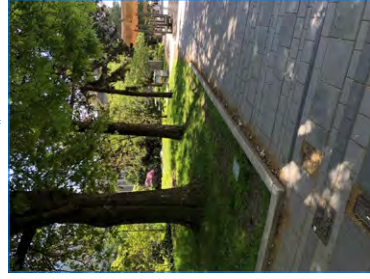
PICTURE #18



PICTURE #19



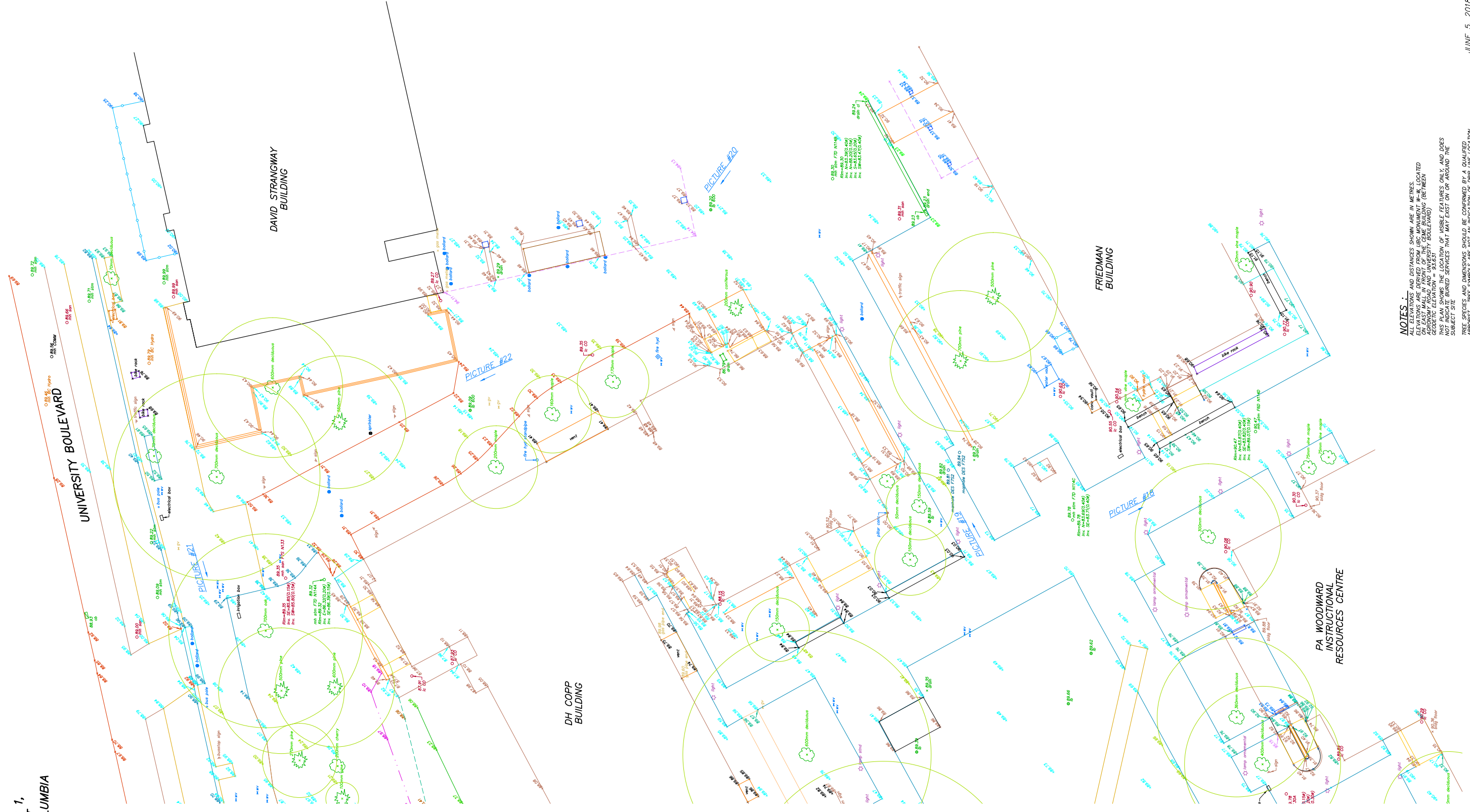
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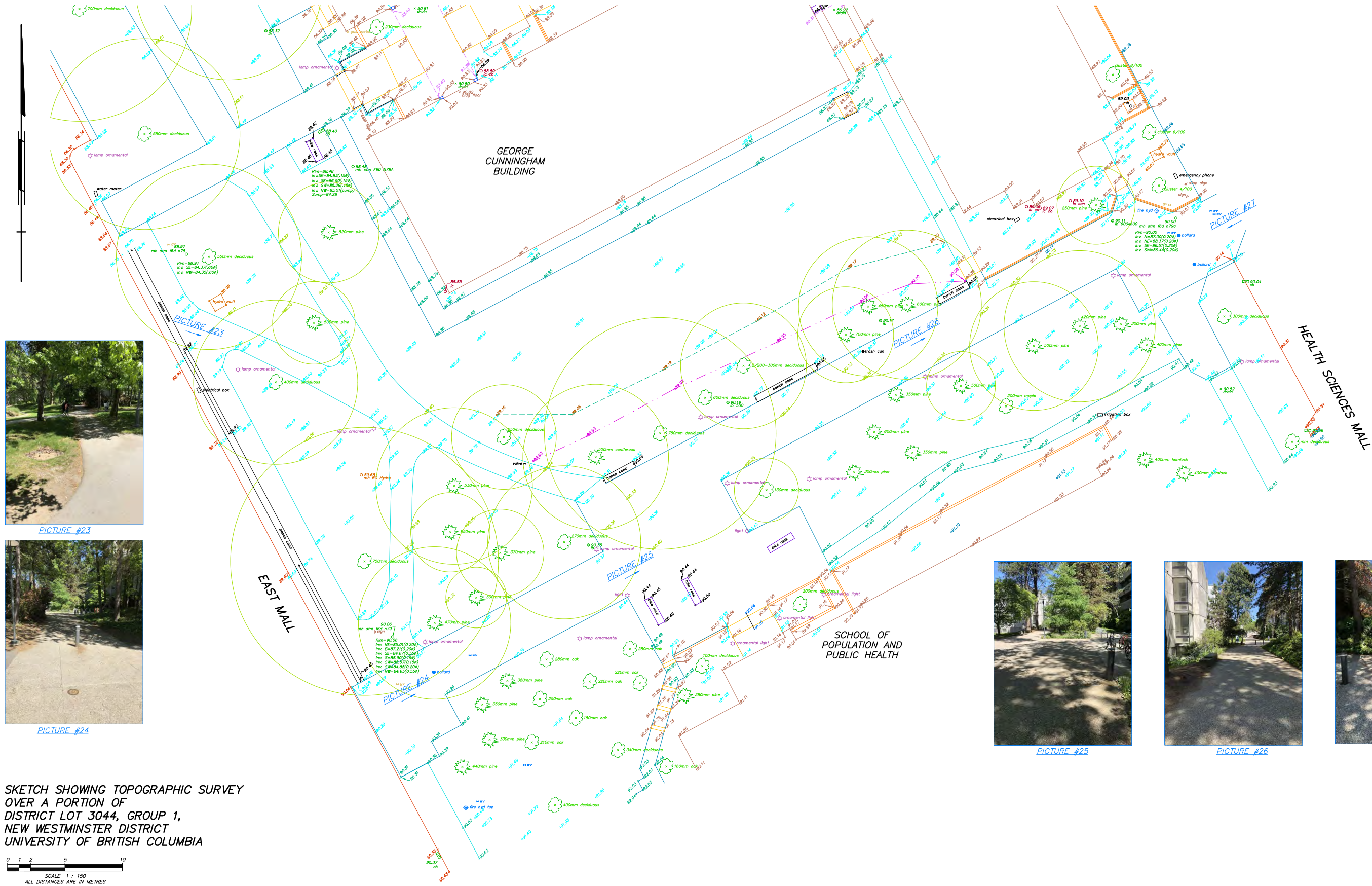
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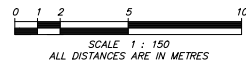
PICTURE #22



NOTES:
ALL ELEVATIONS AND DISTANCES SHOWN ARE IN METRES.
ELEVATIONS ARE DERIVED FROM UBC MONUMENT W-M, LOCATED AT THE INTERSECTION OF UNIVERSITY BOULEVARD AND AGRODOME ROAD AND UNIVERSITY BOULEVARD.
GEODETIC ELEVATION = 83.631
THE SURVEYOR'S LOCATION OF VISIBLE FEATURES ONLY, AND DOES NOT INDICATE THE LOCATION OF SERVICES THAT MAY EXIST ON OR AROUND THE SUBJECT SITE.
TREE SPECIES AND DIMENSIONS SHOULD BE CONFIRMED BY A QUALIFIED ARBORIST. TREE SYMBOLS ARE NOT AN INDICATION OF DRP LINE LOCATION UNLESS SPECIFICALLY LABELLED.



SKETCH SHOWING TOPOGRAPHIC SURVEY
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UNIVERSITY OF BRITISH COLUMBIA

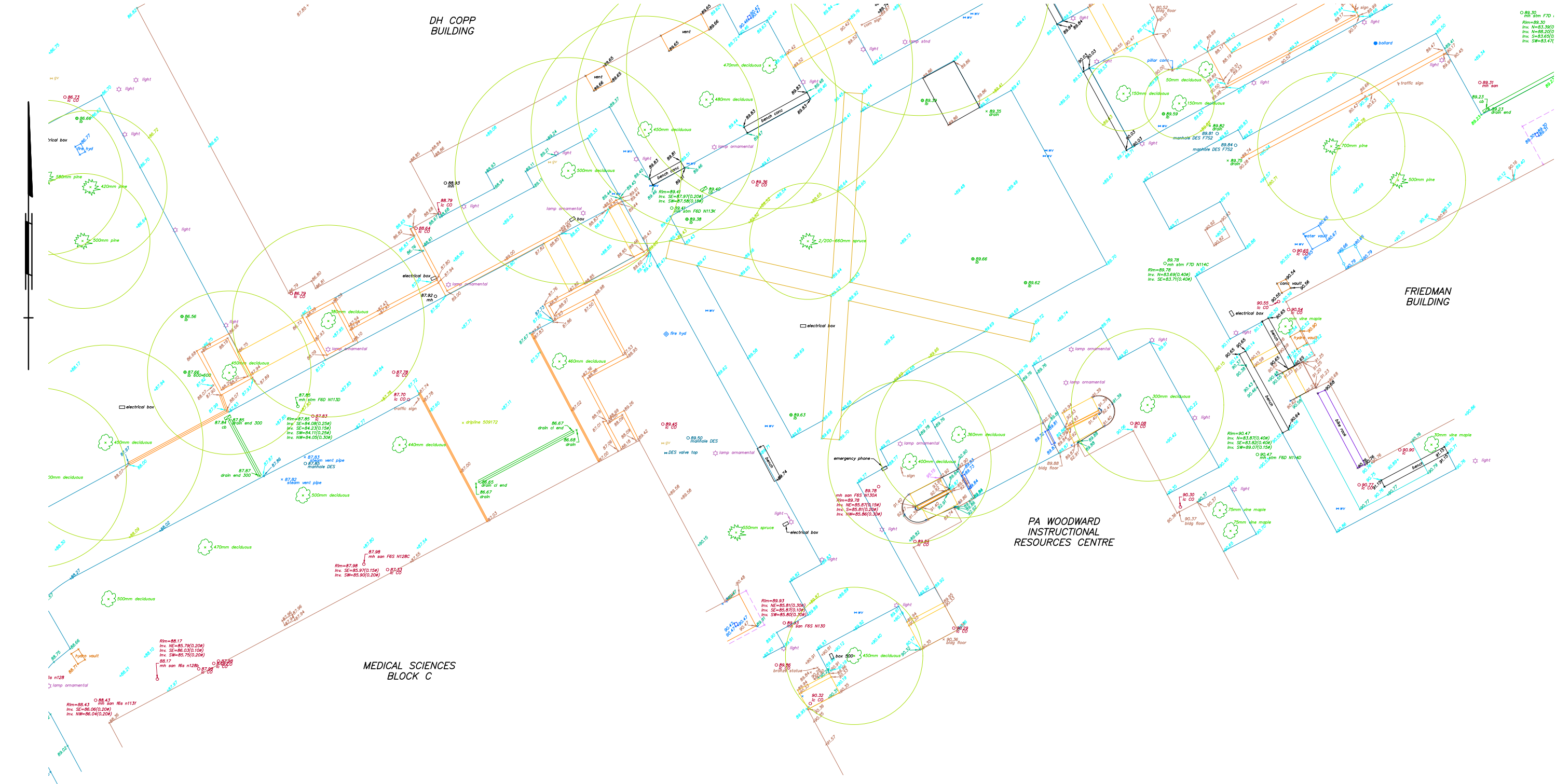
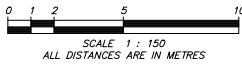


MURRAY & ASSOCIATES
PROFESSIONAL LAND SURVEYORS
201-12448 82nd AVENUE
SURREY, BC V3W 3E9
(604) 597-9189

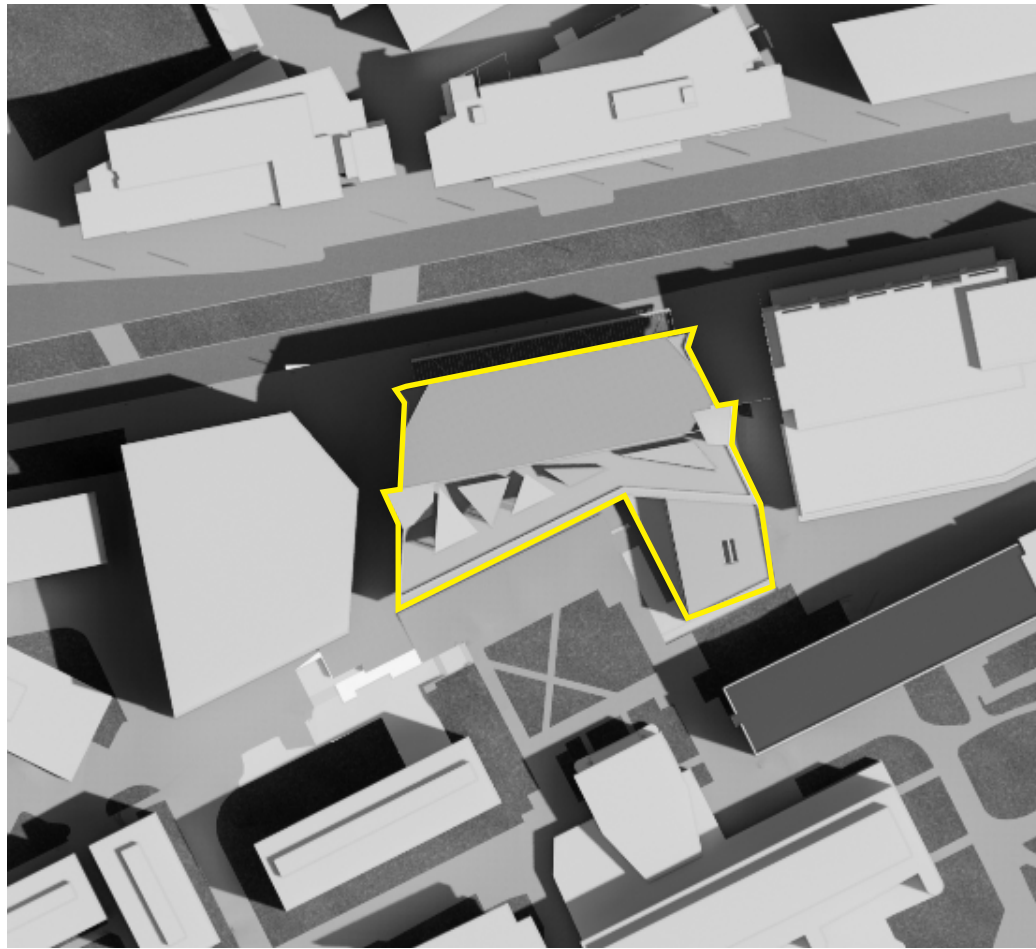
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ALL ELEVATIONS AND DISTANCES SHOWN ARE IN METRES.
ELEVATIONS ARE DERIVED FROM UBC MONUMENT W-W, LOCATED
ON EAST MALL IN FRONT OF THE GEM BUILDING (BETWEEN
AGRONOMY ROAD AND UNIVERSITY BOULEVARD)
GEODETIC ELEVATION = 93.631
THIS PLAN SHOWS THE LOCATION OF VISIBLE FEATURES ONLY, AND DOES
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UNLESS SPECIFICALLY LABELLED.

JUNE 5, 2018
FILE 8613HG-35/LAYOUT5

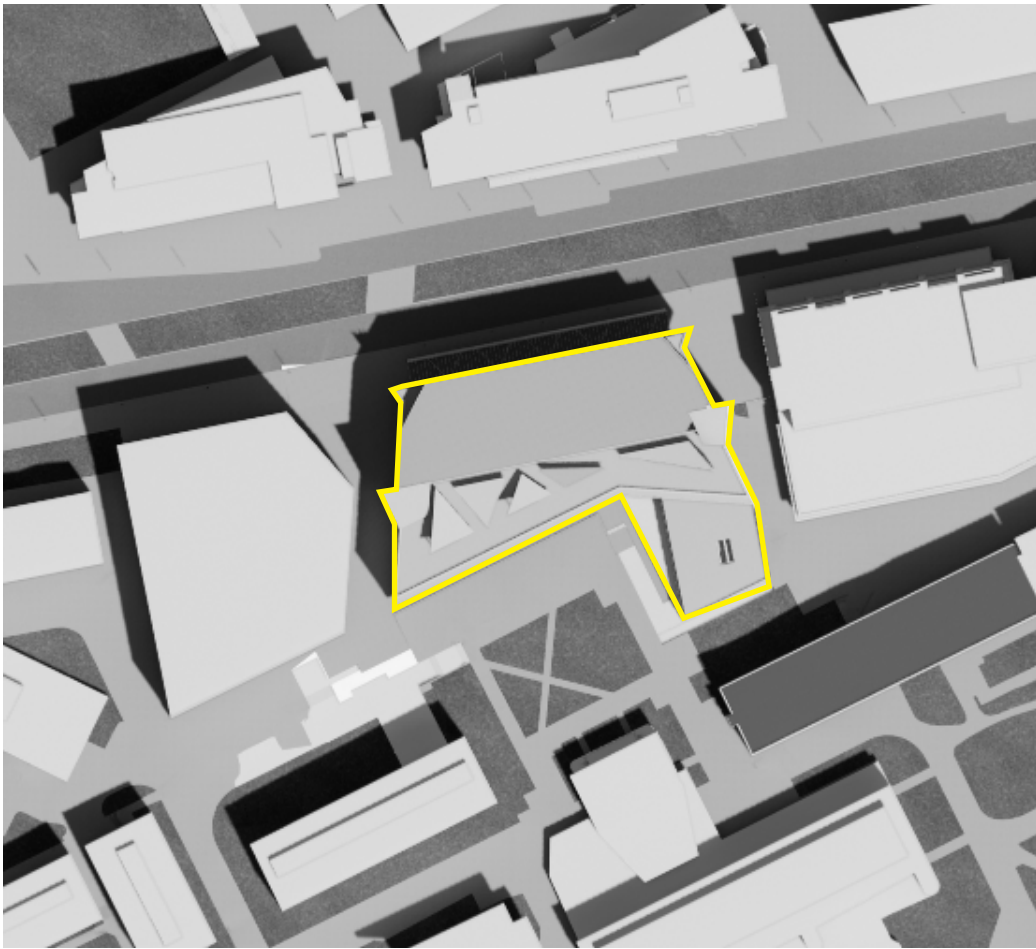
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UNIVERSITY OF BRITISH COLUMBIA



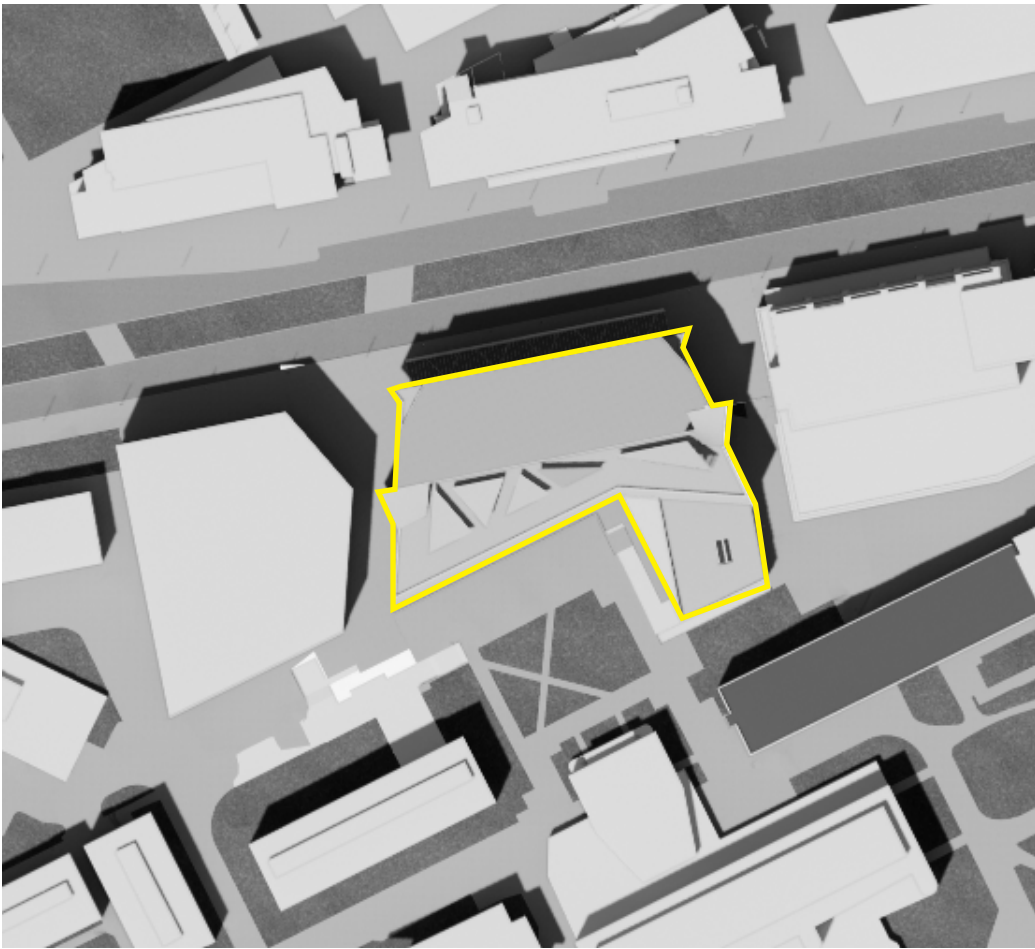
NOTES :
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ELEVATIONS ARE DERIVED FROM UBC MONUMENT W-W, LOCATED
ON EAST WALL IN FRONT OF THE CEME BUILDING (BETWEEN
AGRONOMY ROAD AND UNIVERSITY BOULEVARD)
GEODETIC ELEVATION = 93.631
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ARBORIST. TREE SYMBOLS ARE NOT AN INDICATION OF DRIP LINE LOCATION
UNLESS SPECIFICALLY LABELLED.



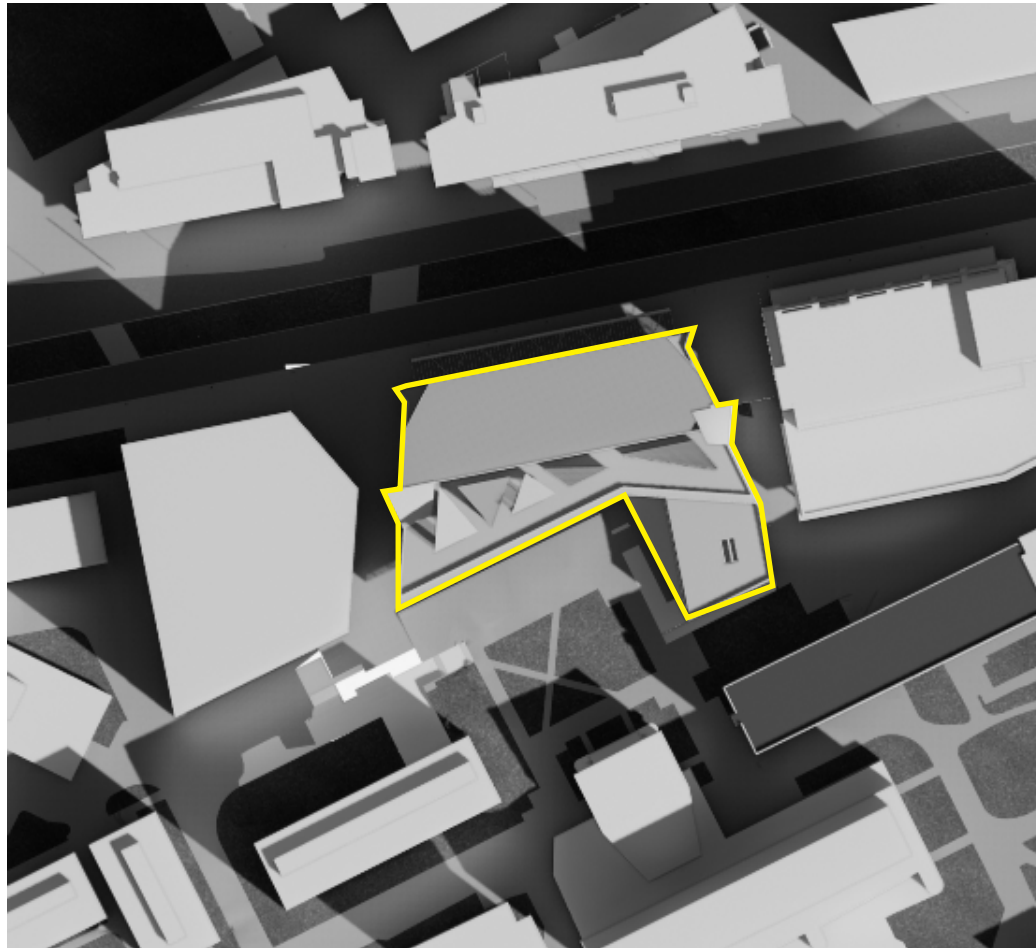
Summer Solstice 10am (PST - GMT -7)



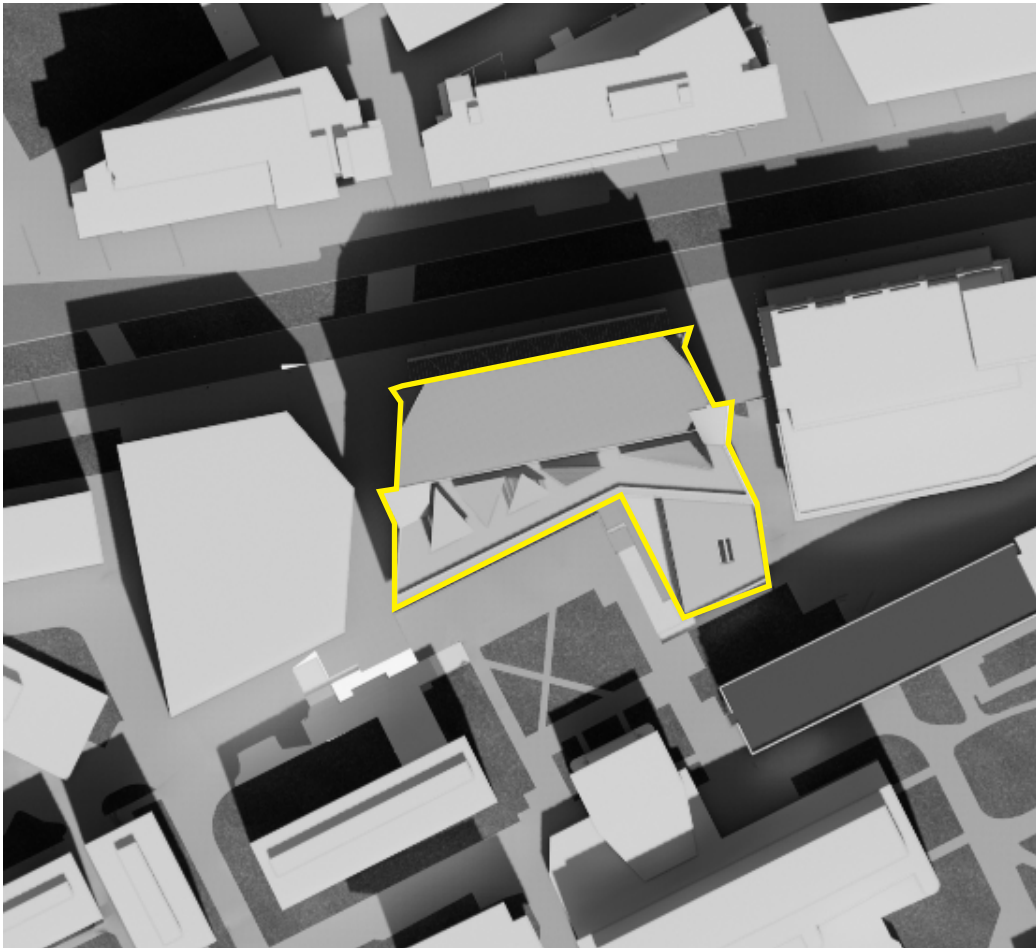
Summer Solstice Midday



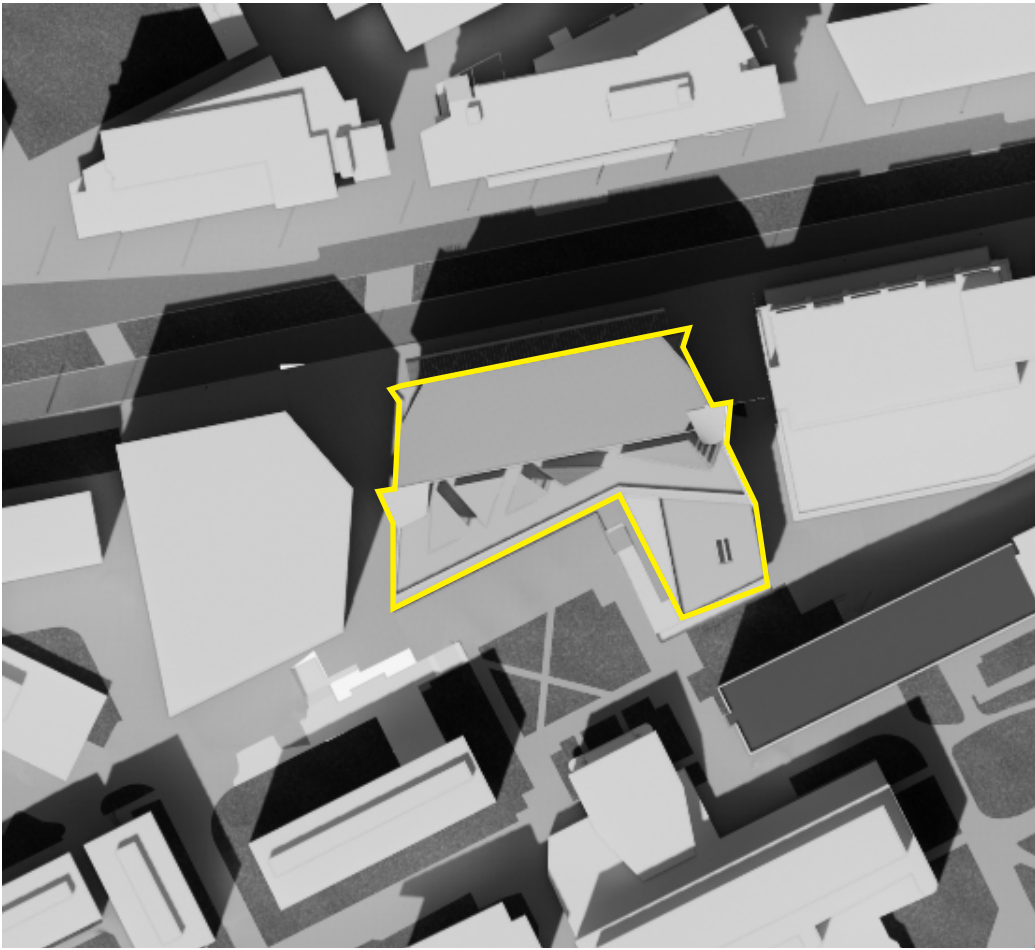
Summer Solstice 2pm



Fall Equinox 10am (PST - GMT -7)

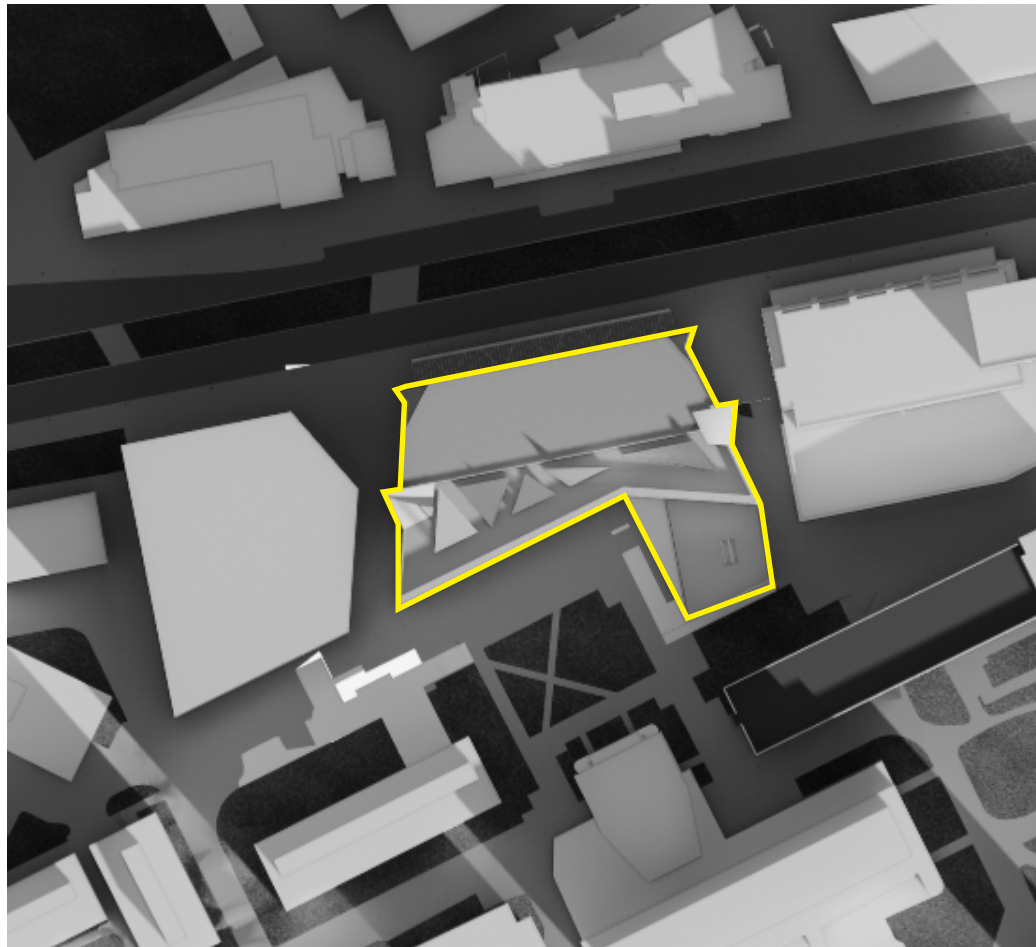


Fall Equinox Midday

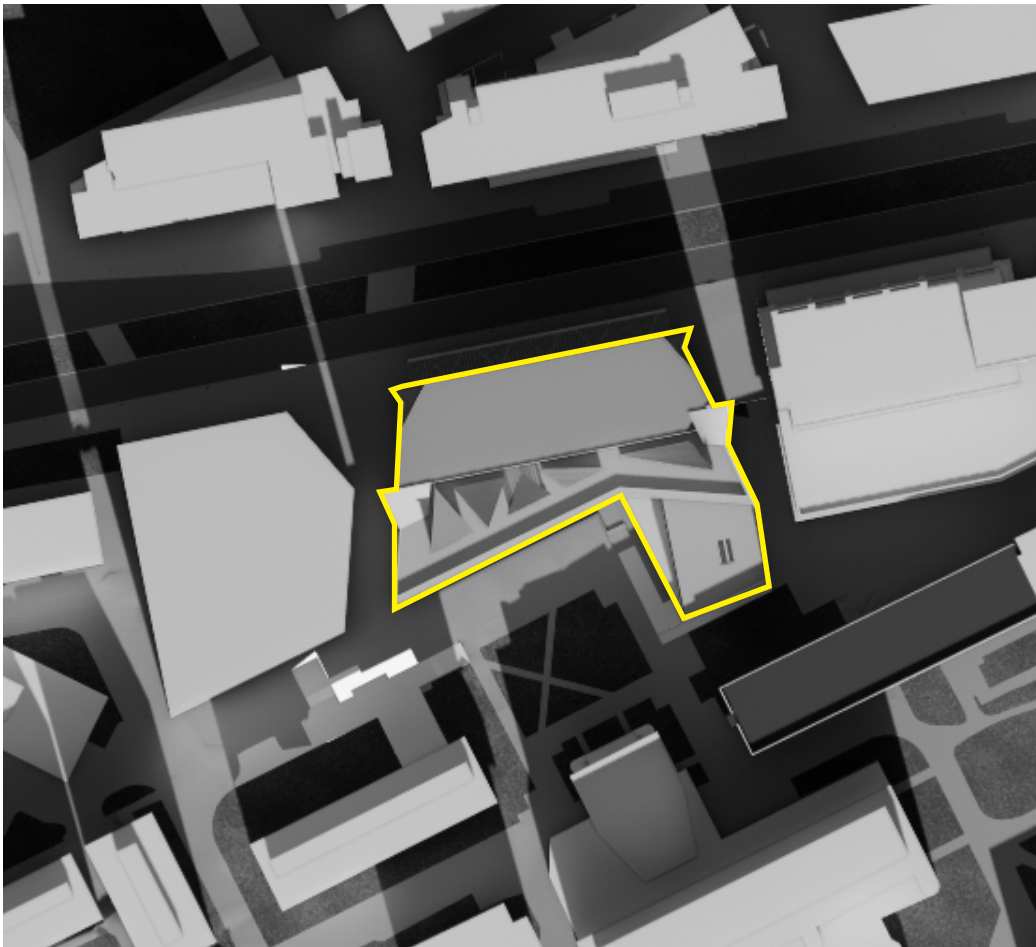


Fall Equinox 2pm

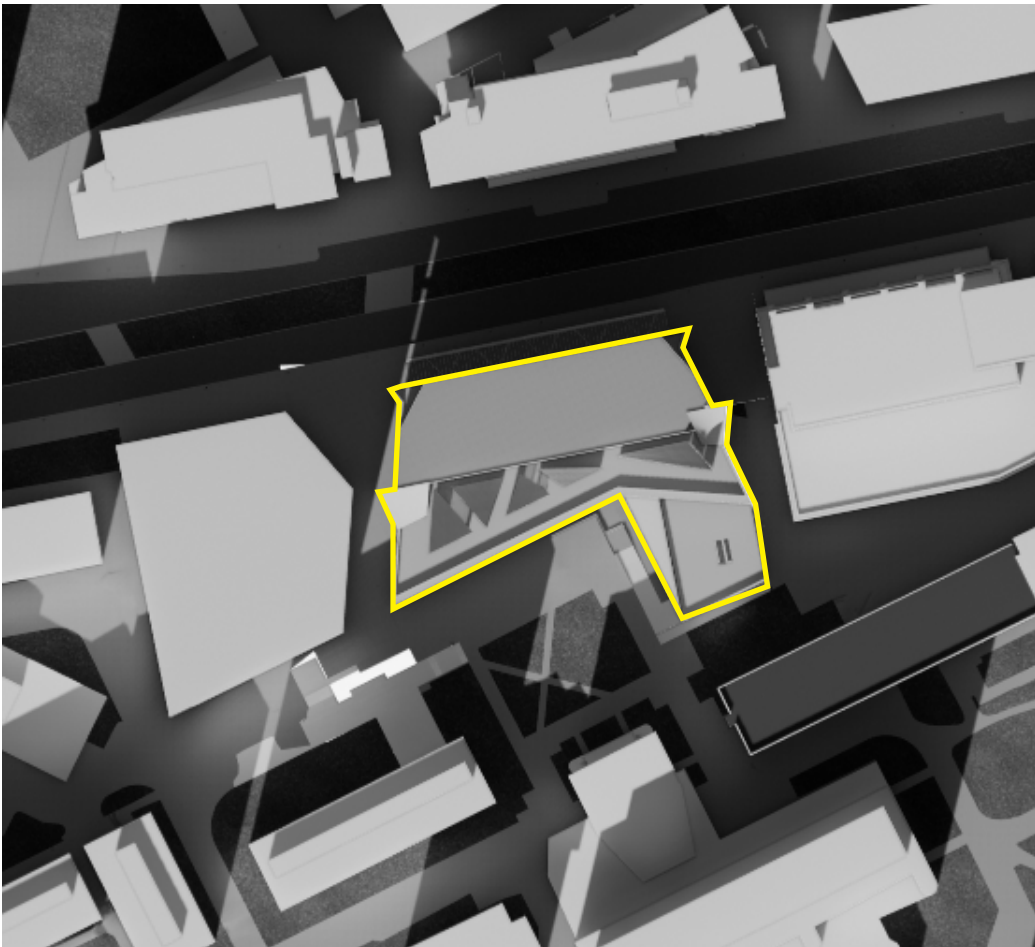




Winter Solstice 10am (PST - GMT -8)



Winter Solstice Midday



Winter Solstice 2pm



0 5m 10m

A

C

B

B

A

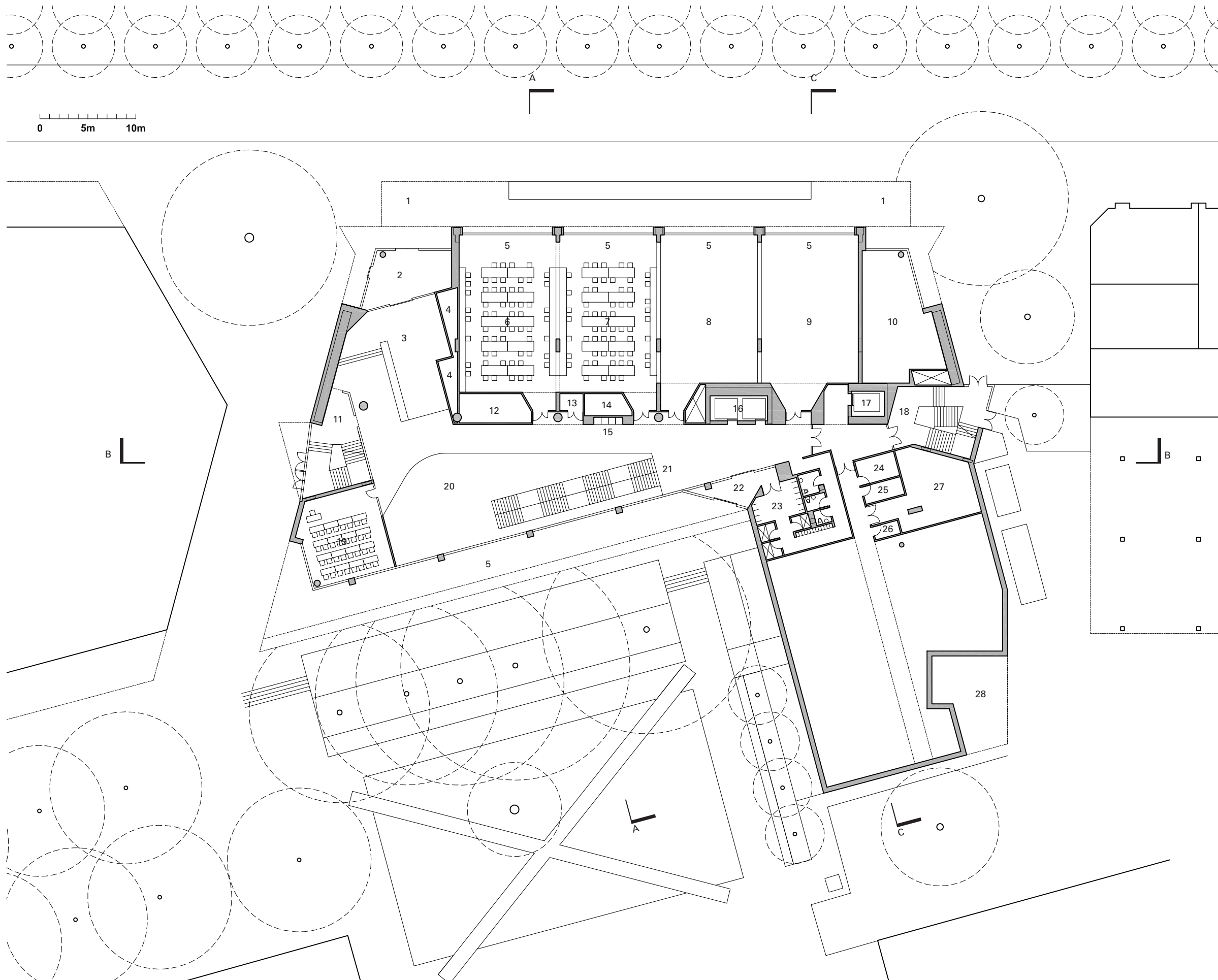
C

Key

1. Corridor
2. 250-Seat Theatre
3. Accessible Corridor
4. Storage or AV
5. 120-Seat Theatre
6. Water Entry / District Energy
7. Corridor
8. Vestibule
9. Vestibule
10. Projector Room
11. Vestibule (126b)
12. Projector Room
13. Control Room
14. Vestibule
15. Passenger Elevators
16. Control Room
17. Vestibule
18. Service Elevator
19. Exit / Convenience Stair
20. Common Space
21. Convenience Stair
22. Waste Alcove
23. Bar / Reception Servery
24. Exit / Convenience Stair
25. Custodian
26. Electrical
27. Storage
28. Communications
29. Catering Back of House

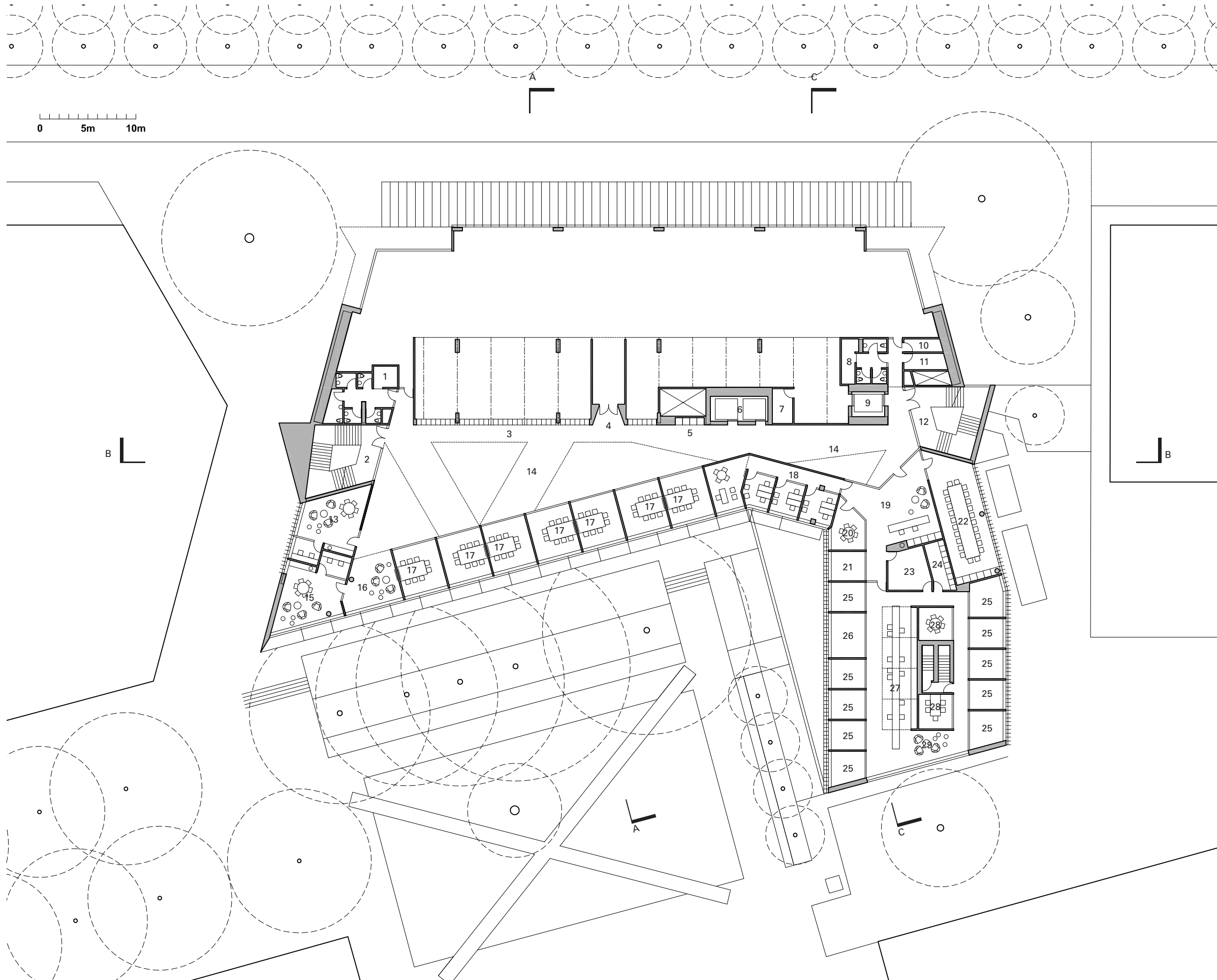
Vivarium Zone:
See A49 detailed plans for more info.





- Key
- 1. Canopy
 - 2. Vestibule
 - 3. Lobby
 - 4. TBD
 - 5. Outreach Zone
 - 6. Design Team Studio
 - 7. Capstone Studio
 - 7. Dirty Makerspace
 - 9. Clean Makerspace
 - 10. Retail
 - 11. Exit / Convenience Stair
 - 12. Storage
 - 13. Electrical
 - 14. Storage
 - 15. Waste Alcove
 - 16. Passenger Elevator
 - 17. Service Elevator
 - 18. Exit / Convenience Stair
 - 19. 30-Seat Classroom
 - 20. Open to Below
 - 21. Convenience Stair
 - 22. Vestibule
 - 23. End-of-Trip Facilities
 - 24. Communications
 - 25. Fire Alarm
 - 26. Life Safety
 - 27. Electrical
 - 28. Loading Bay
- Back of House Zone:
See A49 detailed plans for more info.

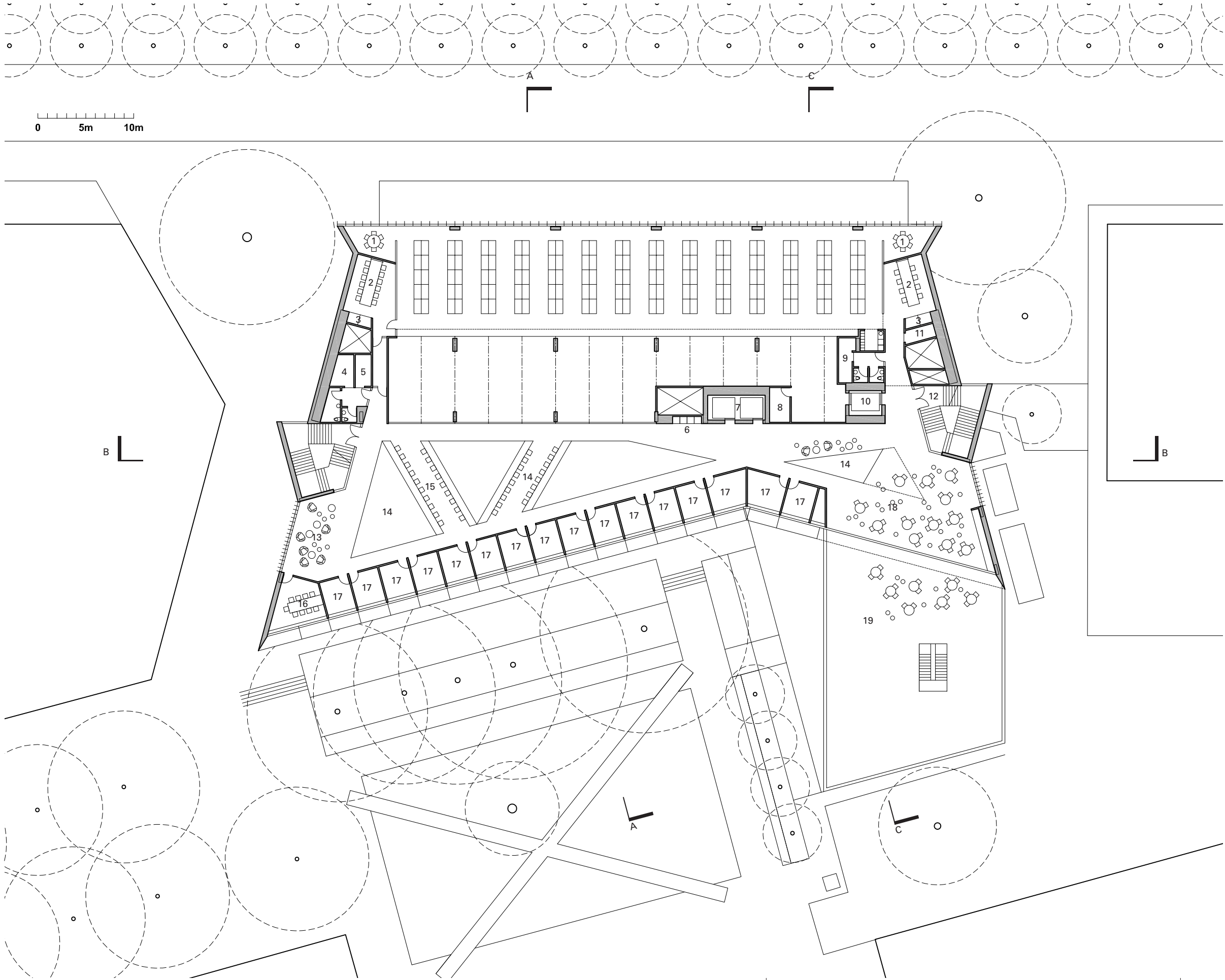




- Key**
1. Electrical
 2. Exit / Convenience Stair
 3. Lockers
 4. Entrance to Teaching Labs / Core Services
 5. Waste Alcove
 6. Passenger Elevator
 7. Communications
 8. Electrical
 9. Service Elevator
 10. Electrical
 11. Custodian
 12. Exit / Convenience Stair
 13. Undergrad Club Room / Office
 14. Common Space
 15. Grad Club Room / Office
 16. Project Alcove
 17. Project Rooms
 18. Student Services
 19. Adminstration Lobby
 20. 6-Seat Meeting Room
 21. Sanctuary
 22. 24-Seat Meeting Room
 23. Printing / Kitchenette / Mail
 24. File Storage
 25. Office (10)
 26. Director's Office
 27. Long Table (alt: 4 offices)
 28. 6-Seat Meeting Room
 29. Informal Meeting Area

Teaching Lab / Core Services Zone:
See A49 detailed plans for more info.

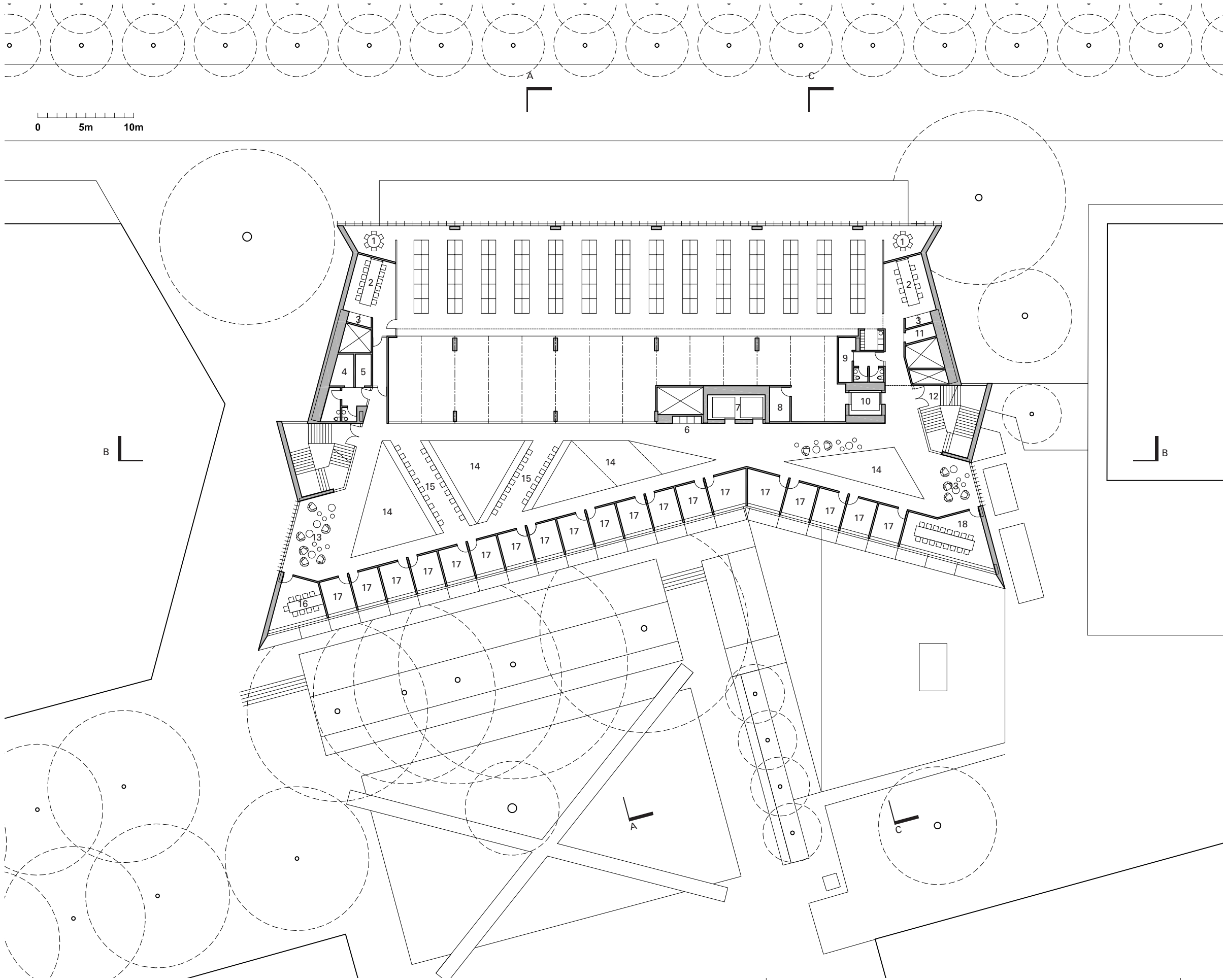




- Key
- 1. 6-seat Breakout Space
 - 2. 8-Seat Work / 12-Seat Meeting Space
 - 3. Chair Storage
 - 4. Custodian
 - 5. Electrical
 - 6. Waste Alcove
 - 7. Passenger Elevator
 - 8. Communications
 - 9. Electrical
 - 10. Service Elevator
 - 11. Electrical
 - 12. Exit / Convenience Stair
 - 13. Informal Working Area
 - 14. Open to Below
 - 15. Grad Student Bridge (19 spaces)
 - 16. 9-Seat Meeting Room
 - 17. Office (16)
 - 18. Lunch Area
 - 19. Roof Terrace

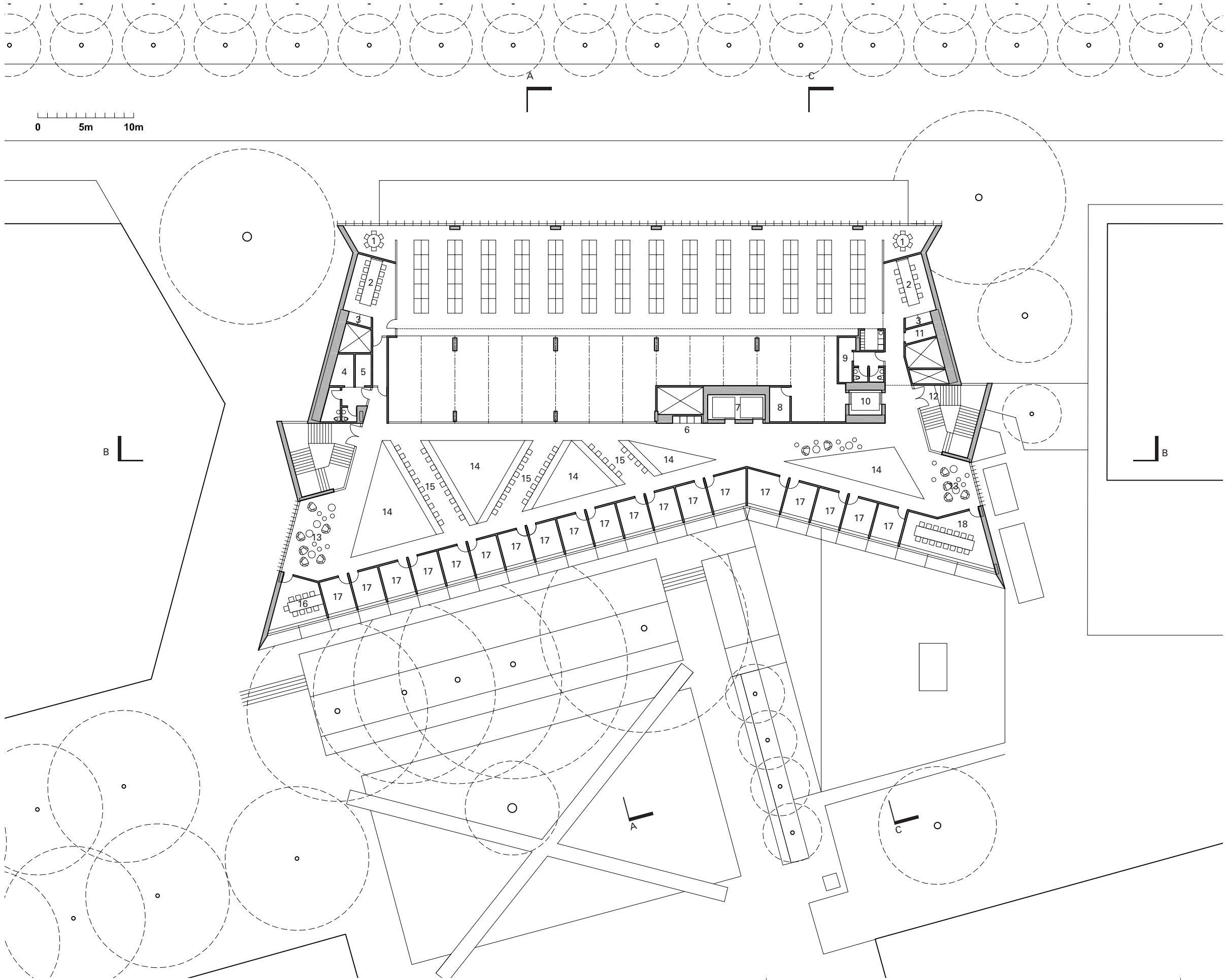
Research Zone:
See A49 detailed plans for more info.





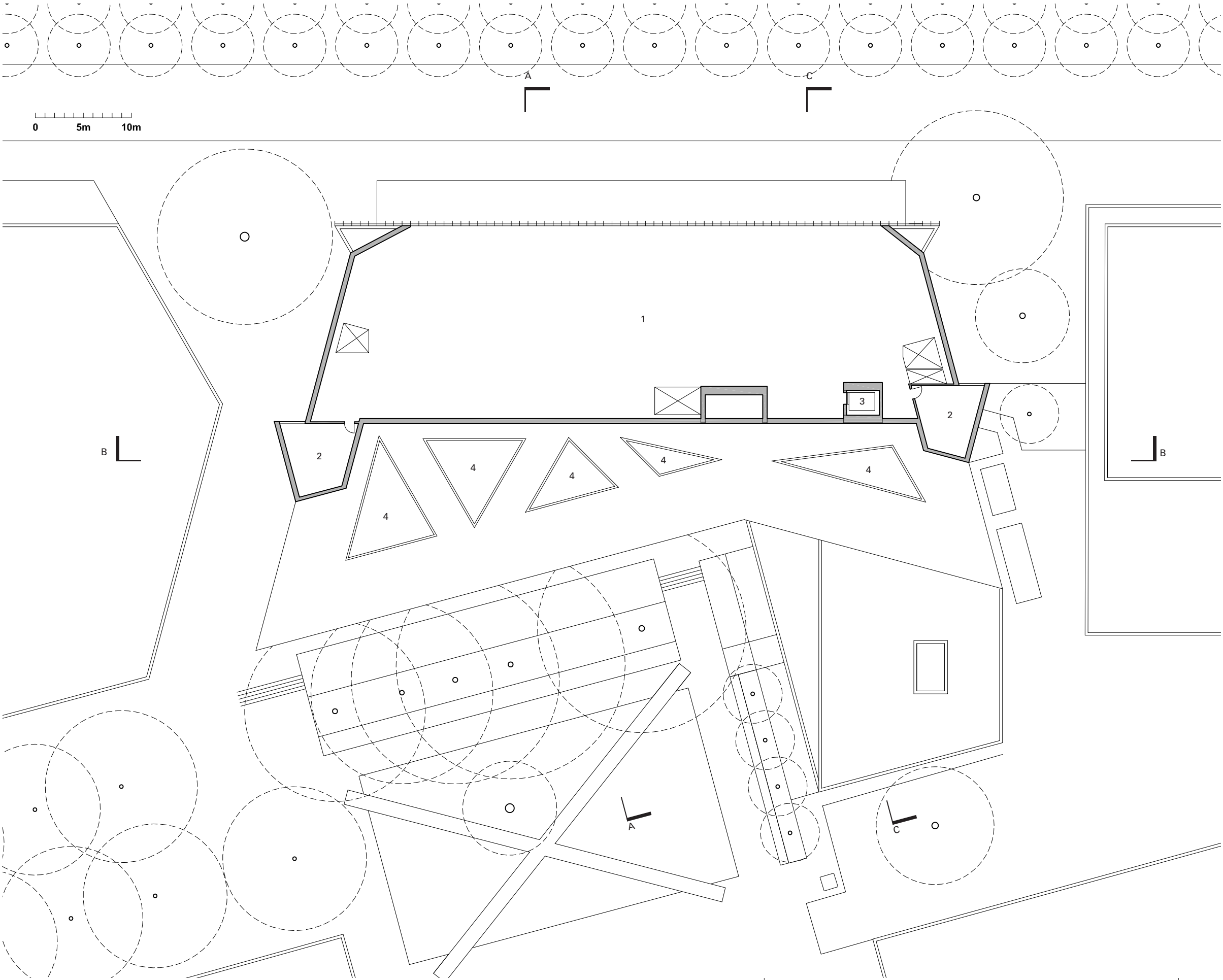
- Key
- 1. 6-seat Breakout Space
 - 2. 8-Seat Work / 12-Seat Meeting Space
 - 3. Chair Storage
 - 4. Custodian
 - 5. Electrical
 - 6. Waste Alcove
 - 7. Passenger Elevator
 - 8. Communications
 - 9. Electrical
 - 10. Service Elevator
 - 11. Electrical
 - 12. Exit / Convenience Stair
 - 13. Informal Working Area
 - 14. Open to Below
 - 15. Grad Student Bridge (33 spaces)
 - 16. 9-Seat Meeting Room
 - 17. Office (19)
 - 18. 16-seat Meeting Room
- Research Zone:
See A49 detailed plans for more info.





- Key
- 1. 6-seat Breakout Space
 - 2. 8-Seat Work / 12-Seat Meeting Space
 - 3. Chair Storage
 - 4. Custodian
 - 5. Electrical
 - 6. Waste Alcove
 - 7. Passenger Elevator
 - 8. Communications
 - 9. Electrical
 - 10. Service Elevator
 - 11. Electrical
 - 12. Exit / Convenience Stair
 - 13. Informal Working Area
 - 14. Open to Below
 - 15. Grad Student Bridge (42 spaces)
 - 16. 9-Seat Meeting Room
 - 17. Office (19)
 - 18. 16-seat Meeting Room
- Research Zone:
See A49 detailed plans for more info.





- Key
- 1. Mechanical Penhouse
 - 2. Exit / Access Stair
 - 3. Service Elevator
 - 4. Roof Monitor

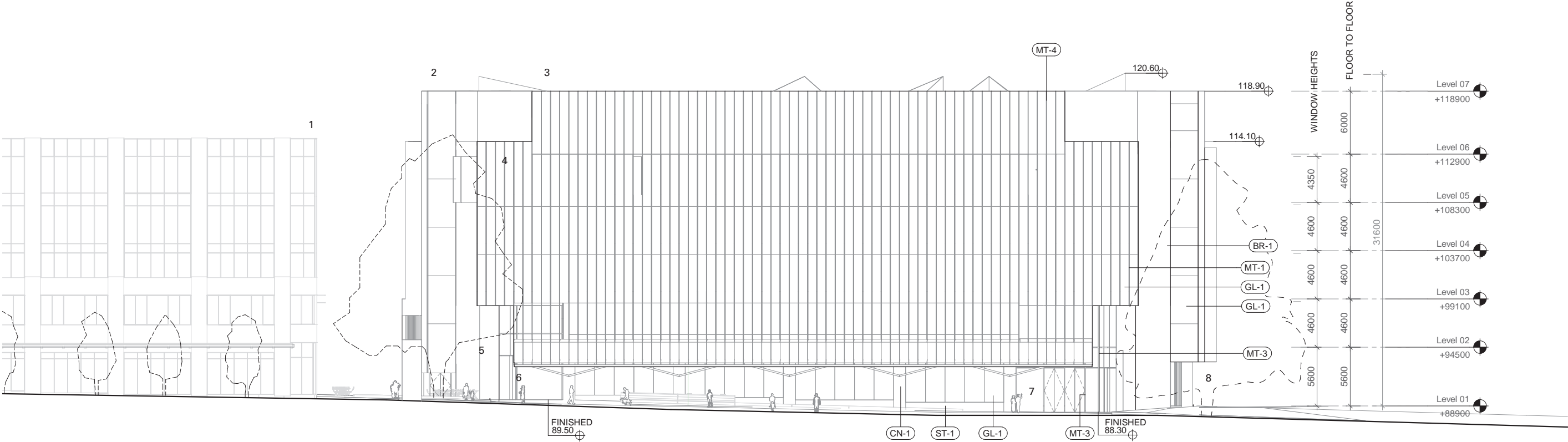


Materials Key

BR-1	Brick White
CN-1	Exposed Concrete Finish
GL-1	Glazing Clear
GL-2	Glass Fronted Spandrel Panel
MT-1	White Powder Coated Aluminium Mullion Caps
MT-3	Black Powder Coated Aluminium Mullions
MT-4	White Powder Coated Aluminium Louvres
ST-1	Black Granite Panels

Key

1. Strangway Building
2. New SBME
3. Roof monitors beyond
4. Metal fin facade
5. Metal fin canopy
6. Commercial retail unit
7. SBME Entrance
8. Atlas Cedar



North Elevation

School of Biomedical Engineering / University of British Columbia
Patkau Architects

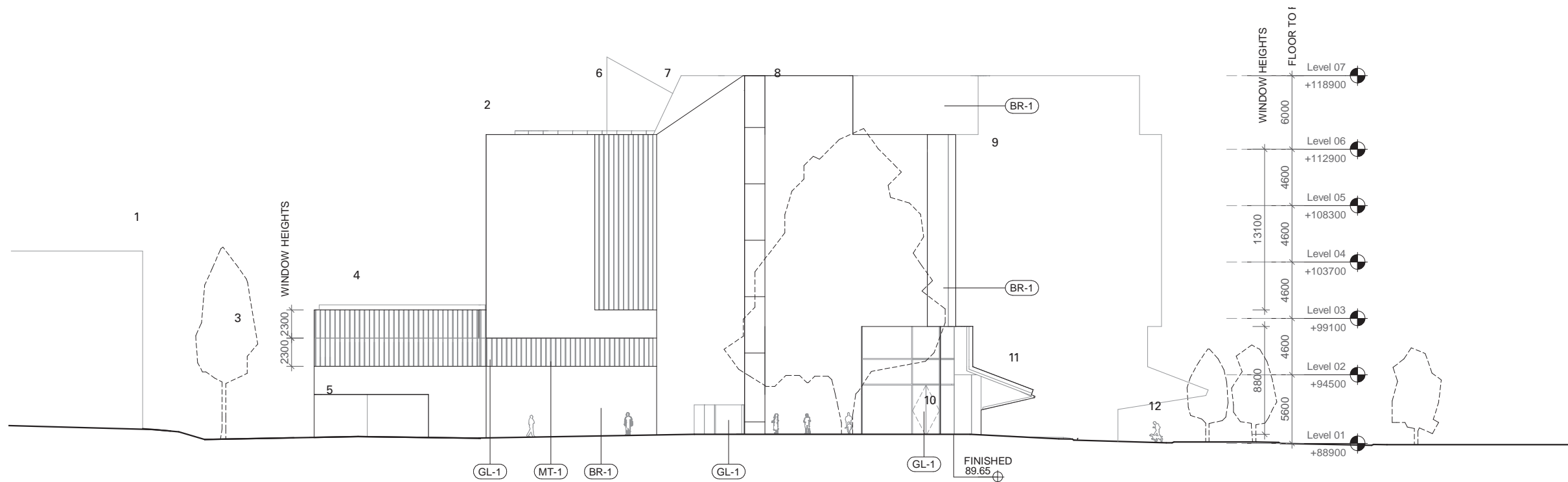
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issued: 2021-02-03

Materials Key

BR-1	Brick White
CN-1	Exposed Concrete Finish
GL-1	Glazing Clear
GL-2	Glass Fronted Spandrel Panel
MT-1	White Powder Coated Aluminium Mullion Caps
MT-3	Black Powder Coated Aluminium Mullions
MT-4	White Powder Coated Aluminium Louvres
ST-1	Black Granite Panels

Key

1. Friedman Building
2. New SBME
3. Existing Pine Tree
4. Roof terrace
5. Loading bay
6. Roof monitor
7. Internal staircase
8. Mechanical penthouse
9. Metal fin canopy
10. Commercial retail unit
11. Metal fin canopy
12. University Boulevard



East Elevation

School of Biomedical Engineering / University of British Columbia
Patkau Architects

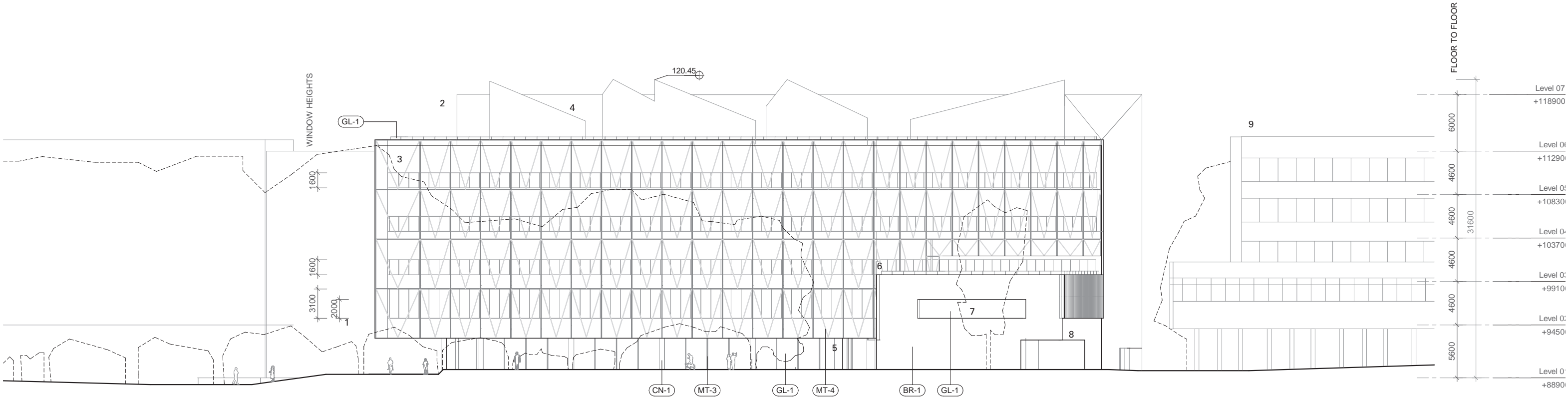
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issued: 2021-02-03

Materials Key

BR-1	Brick White
CN-1	Exposed Concrete Finish
GL-1	Glazing Clear
GL-2	Glass Fronted Spandrel Panel
MT-1	White Powder Coated Aluminium Mullion Caps
MT-3	Black Powder Coated Aluminium Mullions
MT-4	White Powder Coated Aluminium Louvres
ST-1	Black Granite Panels

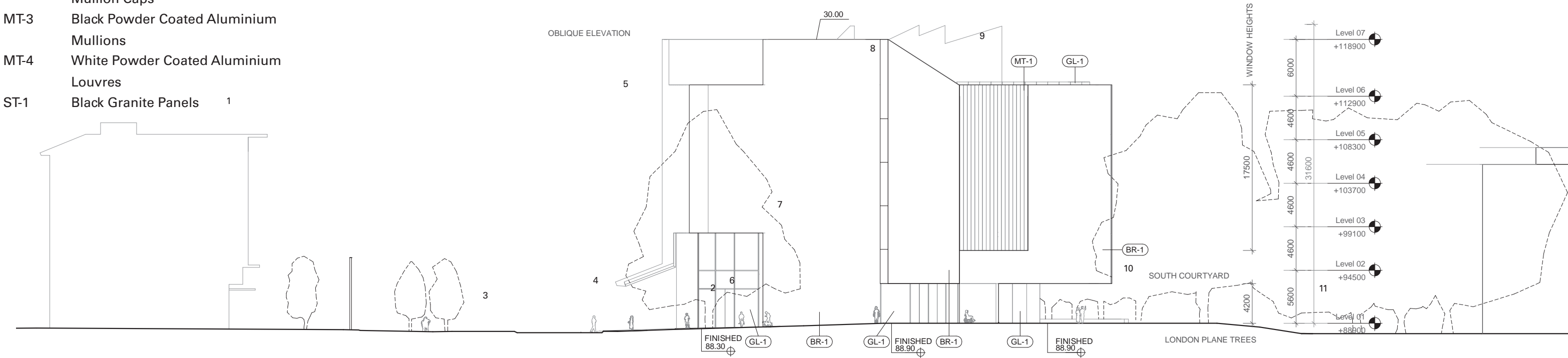
Key

- 1. Existing London Plane Trees
- 2. New SBME
- 3. Aluminium mesh screen
- 4. Roof monitors
- 5. SBME south entrance
- 6. SBME south wing
- 7. Existing Pine Tree
- 8. Deliveries bay
- 9. Strangway building



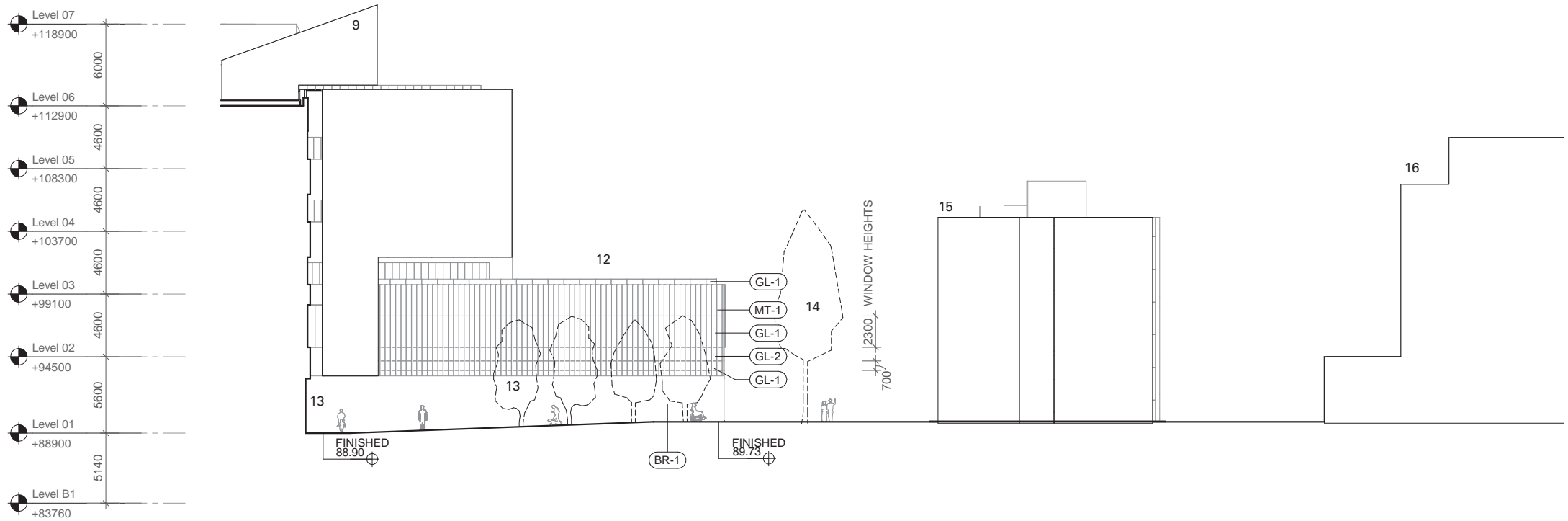
Materials Key

- BR-1 Brick White
- CN-1 Exposed Concrete Finish
- GL-1 Glazing Clear
- GL-2 Glass Fronted Spandrel Panel
- MT-1 White Powder Coated Aluminium Mullion Caps
- MT-3 Black Powder Coated Aluminium Mullions
- MT-4 White Powder Coated Aluminium Louvres
- ST-1 Black Granite Panels



Key

- 1. Rental Housing
- 2. New SBME
- 3. University Boulevard
- 4. Metal fin canopy
- 5. Metal fin facade
- 6. SBME entrance
- 7. Existing Atlas Cedar
- 8. Internal Staircase
- 9. Roof monitors beyond
- 10. Existing London Plane trees
- 11. South Courtyard
- 12. Accessible roof terrace
- 13. SBME south courtyard entrance
- 14. Existing pine tree
- 15. Friedman building
- 16. Woodward Instructional Institute



- Key
1. Rental Housing

2. University Boulevard

3. Glass and steel fin canopy

4. Metal Fins

5. Mechanical Penthouse

6. Labs

7. Teaching labs

8. Design studio

9. 250 seat lecture theatre

10. Vivarium staff

11. Lower atrium

12. Upper atrium

13. Project rooms

14. Staff offices

15. Grad student work space

16. Roof monitors

17. Existing London Plane Tree

18. Roof terrace

19. South wing

20. Existing pine tree

21. Freidman Building

22. Strangway Building Height



Key

1.

Future chemistry building
2.

Athlete's Walk
3.

Exit and Convenience Stair
4.

Roof monitors
5.

Grad workspace
6.

Lightwell
7.

Common space/Informal learning
8.

Lower atrium
9.

250 seat lecture theatre beyond
10.

Common space/Informal learning
11.

Elevator
12.

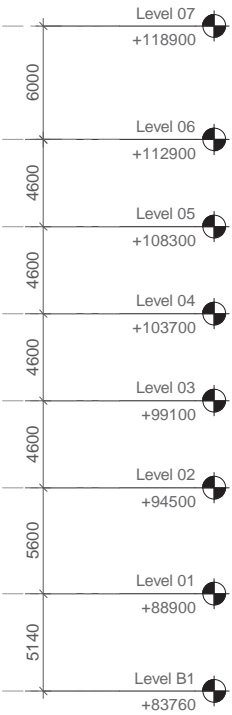
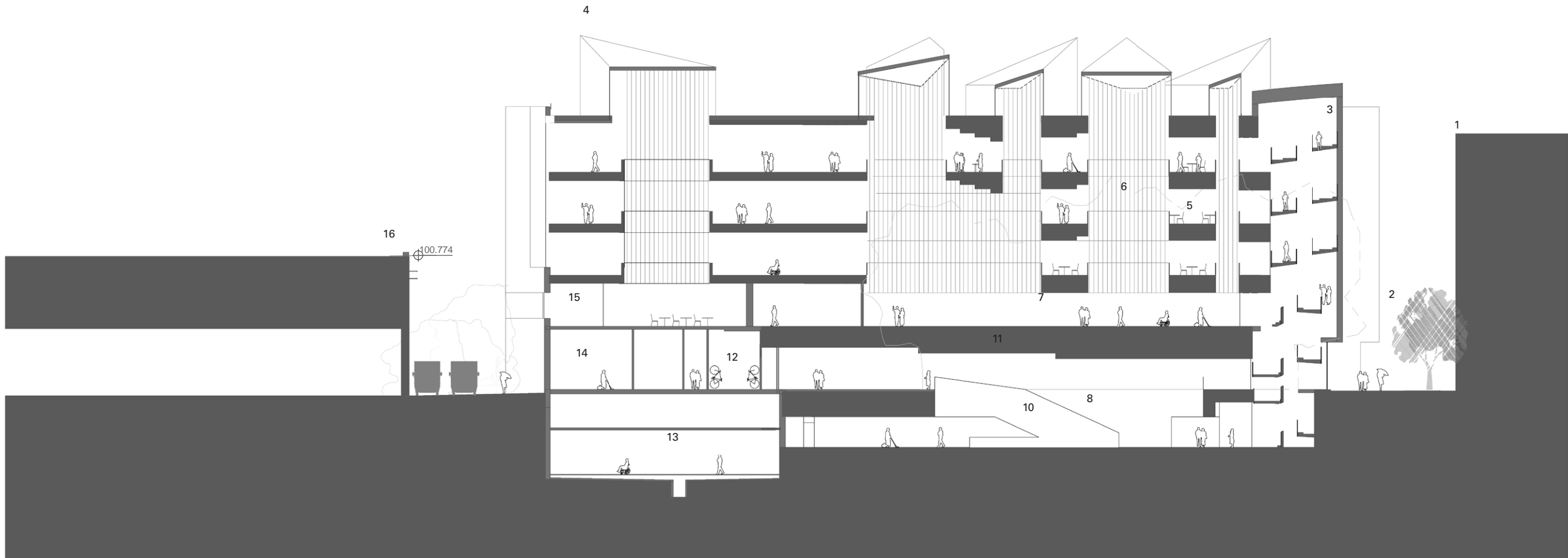
End of trip
13.

Vivarium
14.

Back of house
15.

Meeting room
16.

Strangway Building



- Key
1. Rental Housing

2. University Boulevard

3. Glass and steel fin canopy

4. Metal Fins

5. Mechanical Penthouse

6. Labs

7. Teaching labs

8. Design studio

9. Mechanical Space

10. Vivarium

11. Vivarium Interstitial Space

12. Upper atrium

13. Meeting room

14. Lunch space

15. Office

16. Roof monitors

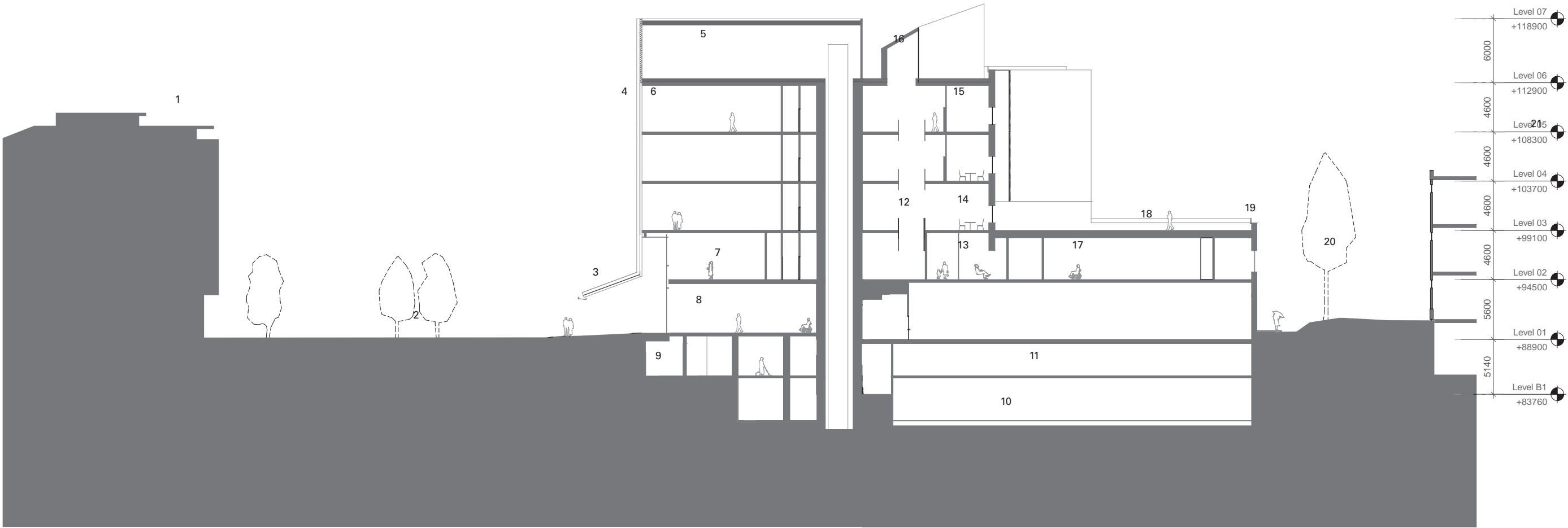
17. Admin workspace

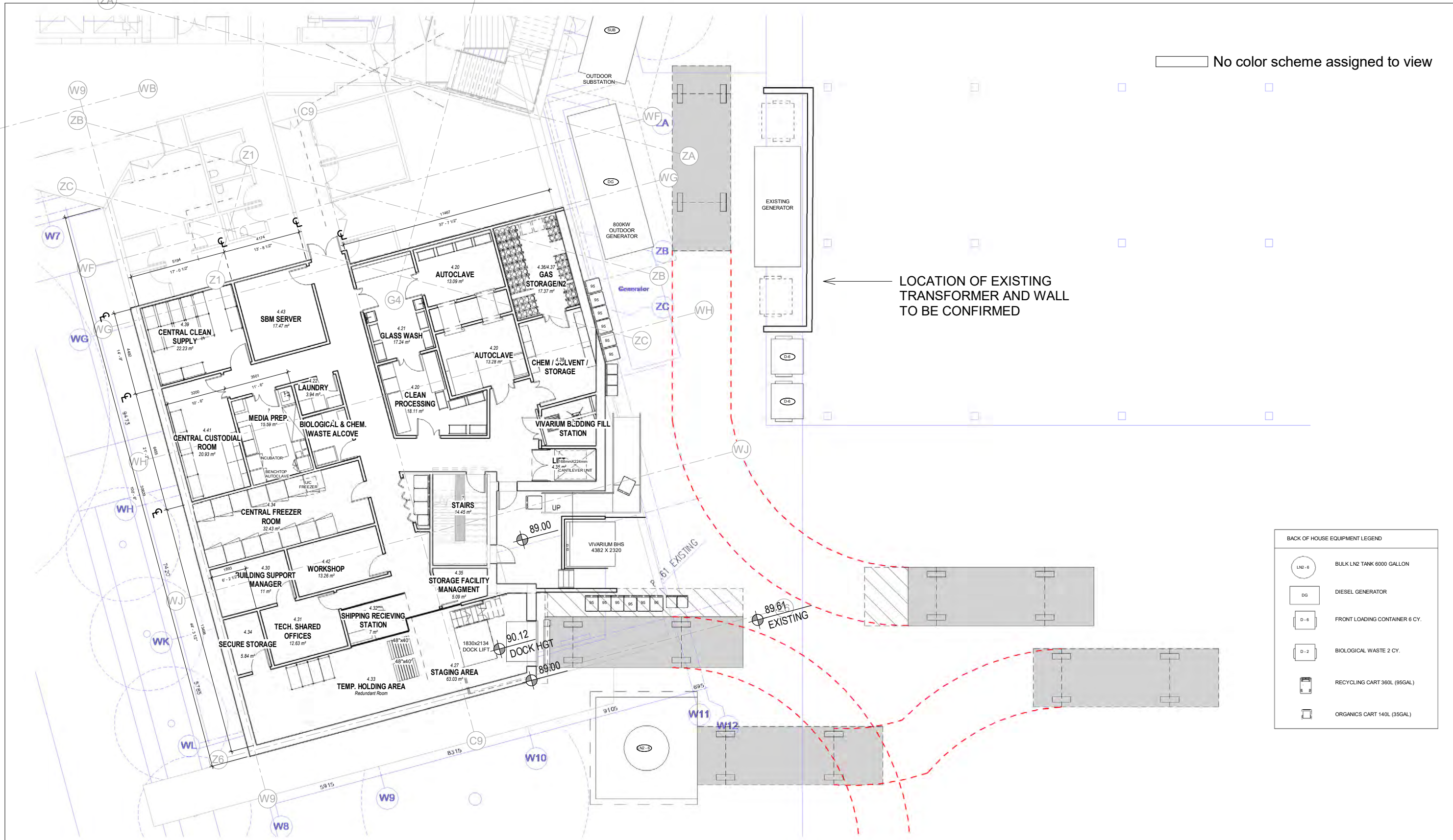
18. Roof terrace

19. South wing

20. Existing pine tree

21. Freidman Building





SCHOOL OF BIOMEDICAL ENGINEERING

University Boulevard, Vancouver, BC

Issued for Development Permit - February 3rd, 2021

LANDSCAPE DRAWING LIST

L0.00	COVER SHEET
L0.01	URBAN DESIGN RATIONALE
L0.02	LANDSCAPE RATIONALE
L1.01	TREE MANAGEMENT PLAN
L1.10	CONCEPT PLAN
L1.11	MATERIALS, LAYOUT & GRADING PLAN - GROUND LEVEL
L1.12	MATERIALS, LAYOUT & GRADING PLAN - TERRACE LEVEL 3
L1.40	PLANTING SCHEDULE - GROUND LEVEL
L1.41	PLANTING PLAN - GROUND LEVEL
L1.42	PLANTING PLAN - TERRACE LEVEL 3
L1.61	LIGHTING PLAN
L2.11	SECTIONS
L3.10	PAVING DETAILS
L3.30	DECKING DETAILS
L3.31	DECKING DETAILS 2
L3.40	FURNISHING DETAILS
L3.50	PLANTING DETAILS

3	Issued for Partial DD	Feb. 05/21
2	Issued for DP	Feb. 03/21
1	Issued for SD	Nov. 06/20

No.	Description	Date
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School of Biomedical
Engineering
University Boulevard

Cover Sheet

Date	Feb. 03/21	Drawing Number
Project No.	2034	L0.00
Scale	N/A	
Drawn/Checked	TN / JF	



CIRCULATION AND FLOW

Connect the site to the existing circulation network to strengthen accessible pedestrian routes and facilitate student movement and accessibility.



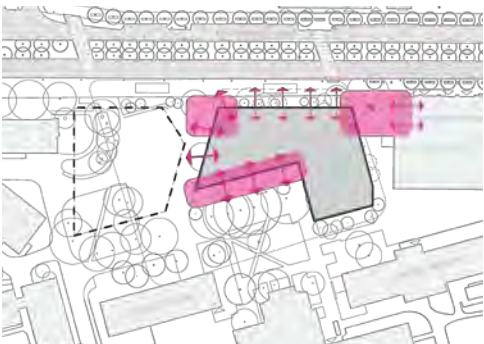
INDIGENOUS AND POST-SETTLEMENT LANDSCAPE

Recognize SBME's role in supporting U Blvd's mission to layer nuanced indigenous storytelling in a cultural landscape representative of both indigenous and post-settlement histories at the gateway of campus.



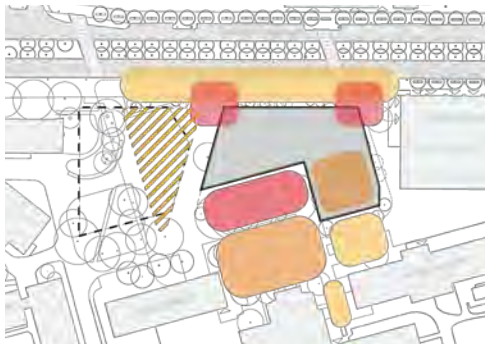
PLEAT AND PLANE

Mould landscape terrain to answer grading constraints, creating an accessible environment for all.



INDOOR AND OUTDOOR

Foster fluid and flexible movement from inside to outside, particularly around CRUs and building entrances. As well as, have moments that punctuate the space and allow for visual and physical transitions vertically and horizontally.



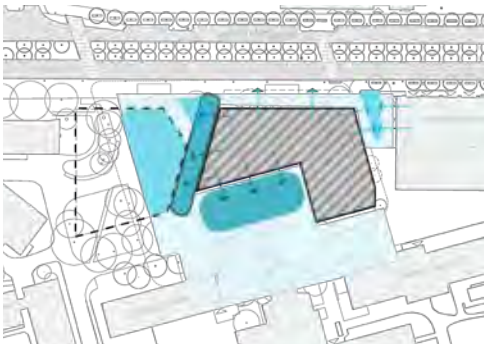
FIXED AND FLEXIBLE PROGRAMME

Create both permanent and flexible spaces that take future development into consideration.



PORCH AND BACKYARD

Seamlessly integrate streetscape landscape design into the existing landscape treatment at University Boulevard's formal gateway entry, while creating a more informal social space in the "backyard" of SBME.



STORMWATER

Collect and filter stormwater by directing run-off to permeable surfaces for plant use.



PROTECT AND ENHANCE TREES

Protect mature existing trees and integrate them into a new overall design.

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1	Issued for SD	Nov. 06/20

No.	Description	Date
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School of Biomedical Engineering
University Boulevard

Urban Design
Rationale

Date	Feb. 03/21	Drawing Number
Project No.	2034	L0.01
Scale	N/A	
Drawn/Checked	TN / JF	



ENHANCE EXISTING CONDITIONS

Introduce new planting below the London Plane trees and mega benches around them to enhance existing mature trees and give the existing lawn a new meaning as an extension of the proposed mega bench.



COMFORT

Provide a range of seating and lounging options sheltered from the elements, in the sun and shade and at varying scales that invite people to linger.



CLARITY

Provide legible and clear connections across campus through a defined hierarchy of paths that makes the public space easy to identify and memorable.



INVITATION

Animate the public realm by accommodating visible activities that attract people (food, performances, special events).



GATEWAY

Design a signature gateway landscape that incorporates nuanced indigenous storytelling through native planting, Musqueam woodworking details, colors, and lighting.



ACCESSIBILITY

Pleat the landscape terrain to answer grading constraints, creating an accessible environment for all.

3	Issued for Partial DD	Feb. 05/21
2	Issued for DP	Feb. 03/21
1	Issued for SD	Nov. 06/20

No.	Description	Date
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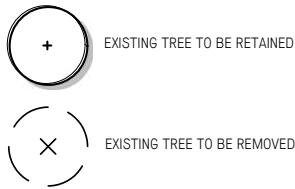
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**School of Biomedical
Engineering**
University Boulevard

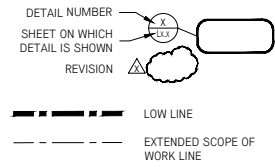
**Landscape
Rationale**

Date	Feb. 03/21	Drawing Number
Project No.	2034	L0.02
Scale	N/A	
Drawn/Checked	TN / JF	

TREE MANAGEMENT LEGEND



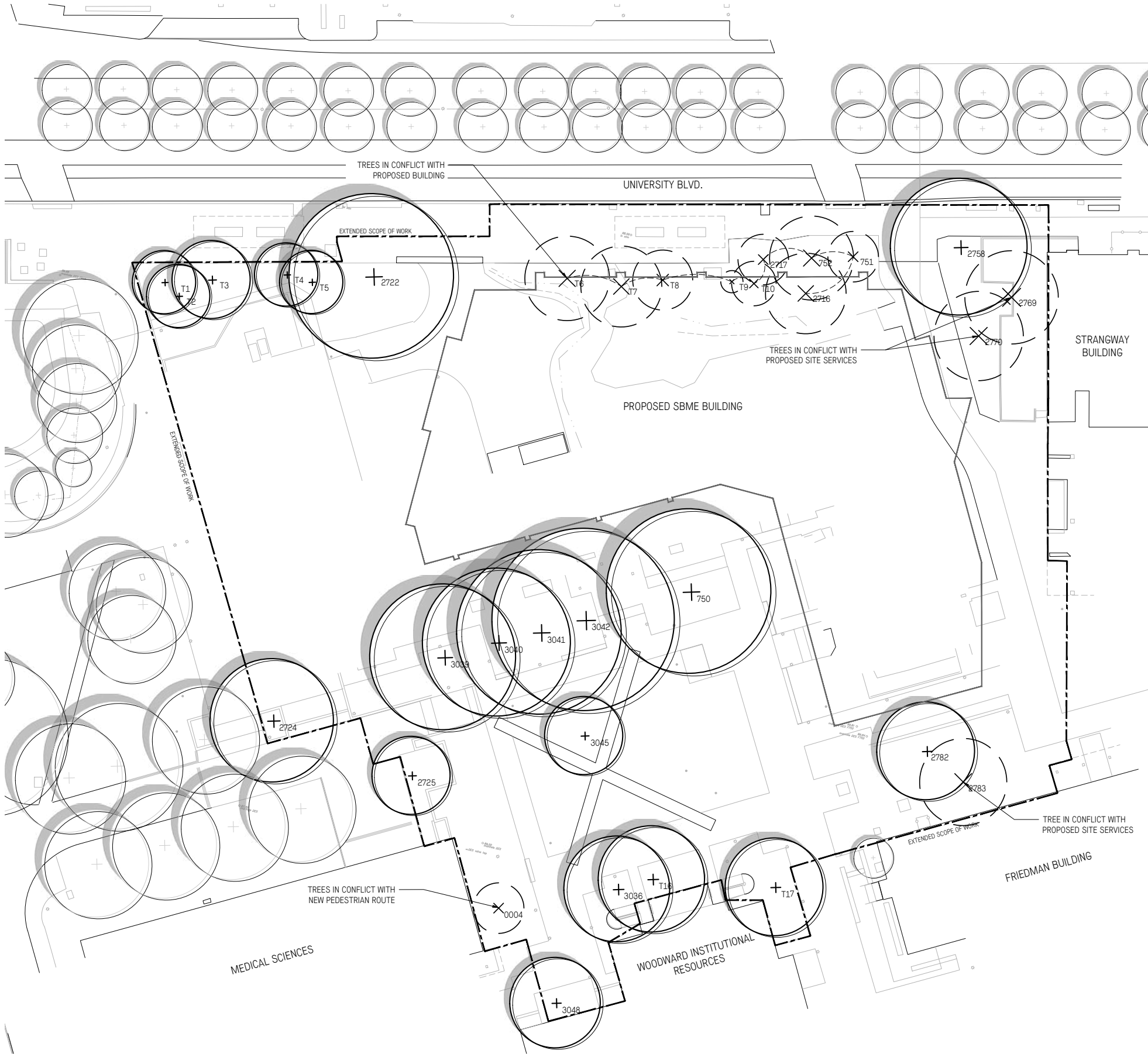
GENERAL LEGEND



TREE MANAGEMENT PLAN NOTES

1. REFER TO ARBORIST'S INVENTORY/ASSESSMENT REPORT PREPARED BY PROJECT ARBORIST FOR TREE SPECIES AND GENERAL CONDITIONS;
2. ROOT PROTECTION ZONES ARE AS NOTED BY PROJECT ARBORIST;
3. TRENCHING FOR UTILITY CONNECTIONS TO BE COORDINATED WITH ENGINEERING TO ENSURE SAFE ROOT ZONES OF RETAINED TREES.
4. LIMIT OF WORK IS AN ESTIMATE ONLY, FINAL LIMIT OF WORK TO BE CONFIRMED BY THE UNIVERSITY OF BRITISH COLUMBIA.

TREE MANAGEMENT	
TOTAL TREES TO BE RETAINED	20
TOTAL TREES TO BE REMOVED	14



3	Issued for Partial DD	Feb. 05/21
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1	Issued for SD	Nov. 06/20

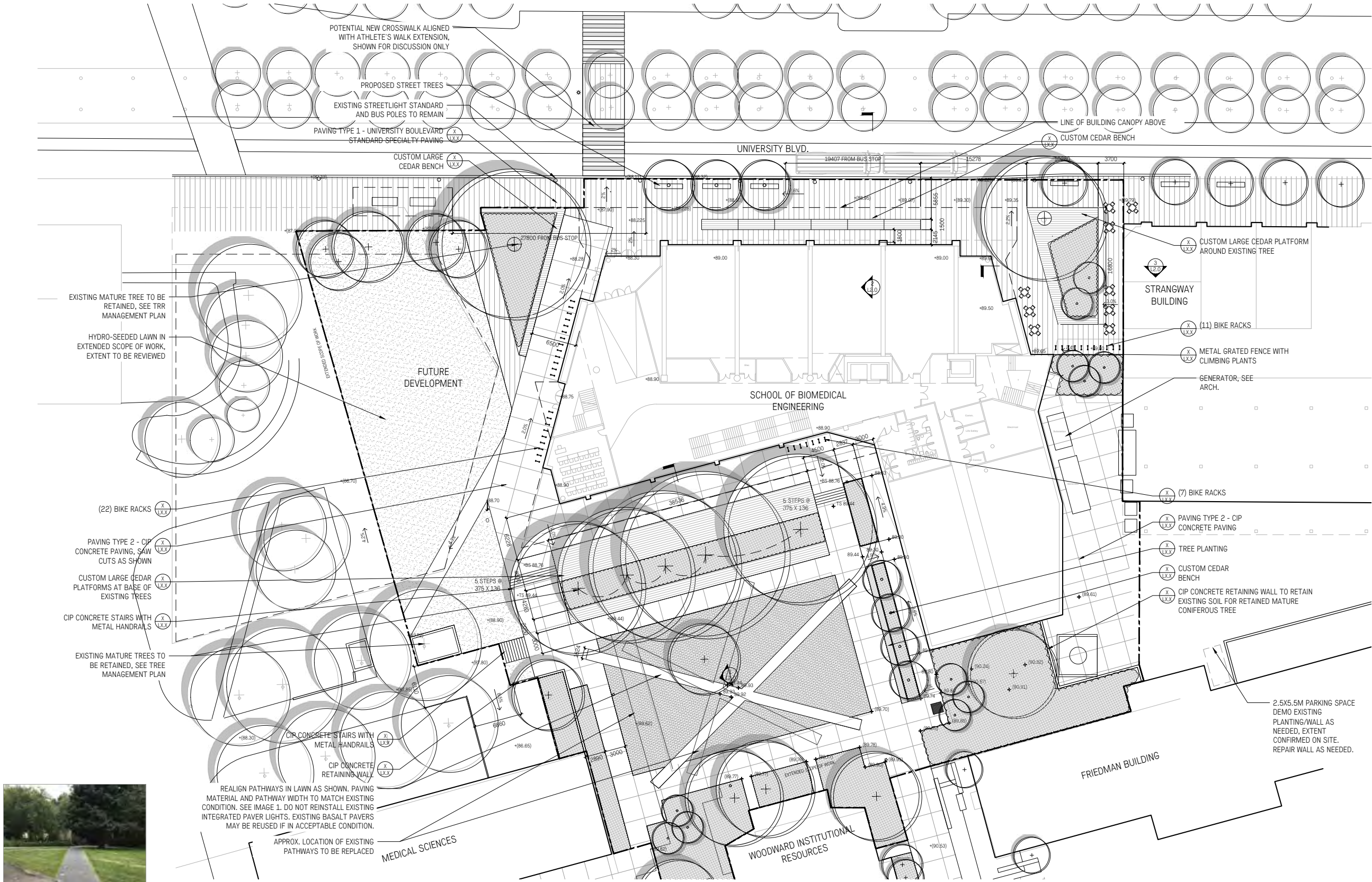
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School of Biomedical Engineering
University Boulevard

Concept Plan

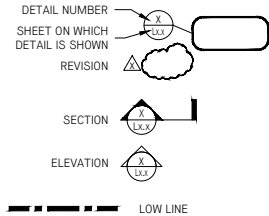
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Project No.	2034	L1.10
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Drawn/Checked	TN / JF	



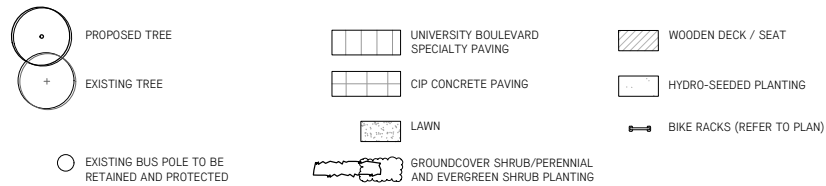


EXISTING PATHWAY THROUGH LAWN
[IMAGE 1]

GENERAL LEGEND



MATERIALS LEGEND



HAPA COLLABORATIVE

604 909 4150
hapa.co

403 - 375 West Fifth Avenue
Vancouver BC, V5Y 1J6

Landscape Architecture
Urban Design

3	Issued for Partial DD	Feb. 05/21
2	Issued for DP	Feb. 03/21
1	Issued for SD	Nov. 06/20

No.	Description	Date
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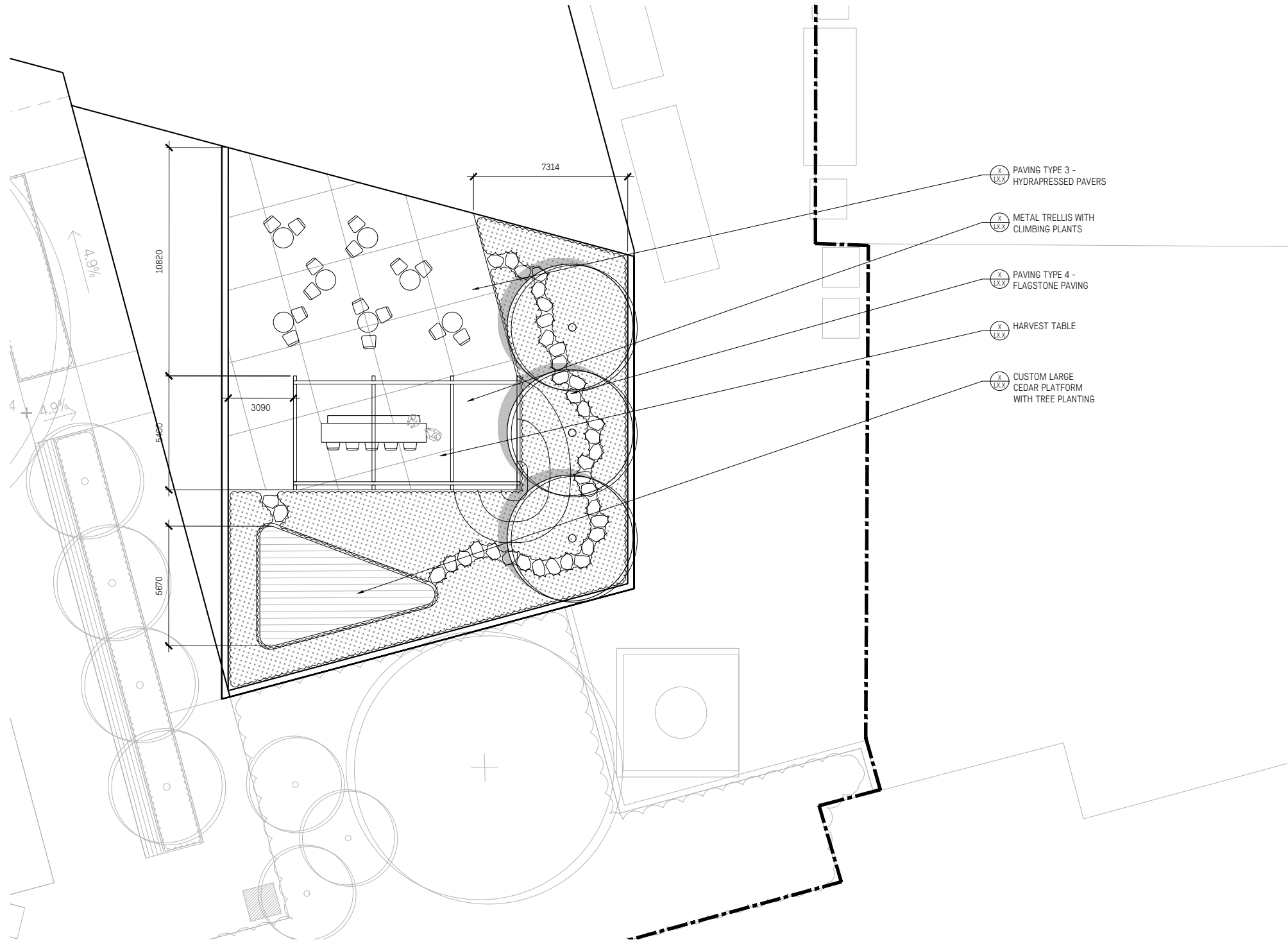
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School of Biomedical Engineering
University Boulevard

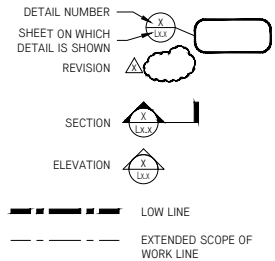
Ground Level

Materials, Layout, and Grading Plan

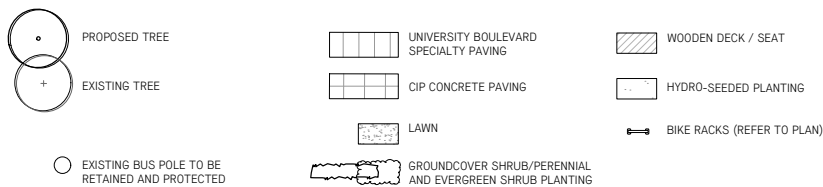
Date	Feb. 03/21	Drawing Number
Project No.	2034	L1.11
Scale	1:250	
Drawn/checked	TN JF	



GENERAL LEGEND



MATERIALS LEGEND



3	Issued for Partial DD	Feb. 05/21
2	Issued for DP	Feb. 03/21
1	Issued for SD	Nov. 06/20

No.	Description	Date
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**School of Biomedical
Engineering**
University Boulevard

Level 03

Materials, Layout,
and Grading Plan

Date	Feb. 03/21	Drawing Number
Project No.	2034	L1.12
Scale	1:100	
Drawn/Checked	TN / JF	

TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING	COMMENTS	REMARKS
	AC	11	Acer circinatum / Vine Maple	2.4m ht	As Shown	B&B, Multi-Stemmed, Dense Tree	
	PA	4	Prunus amanogawa / Cherry	8cm cal.	As Shown	B&B, Specimen, Densely Branched	
	ST	3	Street Tree / Street Tree	4.0m ht.	As Shown	B&B, Straight Trunk, Uniform Branching, 1.5m std.	Species to be determined.

PLANT SCHEDULE - GROUND LEVEL

SHRUB AREAS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING	REMARKS
		618.5 m²	PLANTING AREA 1			
	Bs	1 607	Blechnum spicant / Deer Fern	#2 Pot	40cm	
	Gs	2 143	Gaultheria shallon / Salal	#2 Pot	30cm	
	Sa	268	Symphoricarpos albus / Common White Snowberry	#3 Pot	60cm	
	Vp	268	Vaccinium parvifolium / Red Huckleberry	#3 Pot	60cm	
		210.4 m²	PLANTING AREA 2			
	Gs2	684	Gaultheria shallon / Salal	#2 Pot	40cm	
	Mn	684	Mahonia nervosa / Oregon Grape	#2 Pot	40cm	
		271.5 m²	PLANTING AREA 3			
	Lp	1 764	Lonicera pileata / Privet Honeysuckle	#2 Pot	40cm	
		1 766 m²	PLANTING AREA 4 - LAWN			
		1 766 m²	-			

PLANTING NOTES

1.

ALL PLANT MATERIAL TO CLNA STANDARDS. REFER TO THE BCSLA LANDSCAPE STANDARD, LATEST EDITION;
2.

AREA OF SEARCH FOR PLANT MATERIAL: PACIFIC NORTHWEST INCLUDING BRITISH COLUMBIA, WASHINGTON AND OREGON;
3.

REFER TO SPECIFICATION FOR GENERAL CONDITIONS, MATERIALS AND INSTALLATION REQUIREMENTS;
4.

ALL ONSITE PLANTED AREAS TO HAVE AUTOMATIC IRRIGATION.
5.

FINAL LOCATION, QUANTITY, TREE SPECIES TO THE SATISFACTION OF THE GENERAL MANAGER OF ENGINEERING. NEW TREE MUST BE OF GOOD STANDARD, MINIMUM 6 CM CALLIPER AND INSTALLED WITH APPROVED ROOT BARRIERS, TREE GUARDS AND APPROPRIATE SOIL. ROOT BARRIERS SHALL BE 8 FEET LONG AND 18 INCHES DEEP. PLANTING DEPTH OF ROOT BALL MUST BE BELOW SIDEWALK GRADE. NEW STREET TREES TO BE CONFIRMED PRIOR TO ISSUANCE OF THE BUILDING PERMIT. CALL PARK BOARD AT 311 FOR TREE SPECIES SELECTION AND PLANTING REQUIREMENTS. PARK BOARD TO INSPECT AND APPROVE AFTER TREE PLANTING COMPLETION.

PLANTING PRECEDENTS



PRUNUS 'AMANOGAWA'



ACER CIRCINATUM



VACCINIUM PARVIFOLIUM



LONICERA PILEATA



BLECHNUM SPICANT



MAHONIA AQUIFOLIUM



GAULTHERIA SHALLON

3	Issued for Partial DD	Feb. 05/21
2	Issued for DP	Feb. 03/21
1	Issued for SD	Nov. 06/20

No.	Description	Date
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Engineering
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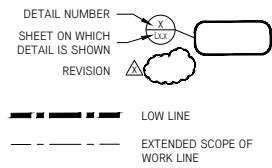
Ground Level

Plant Schedule

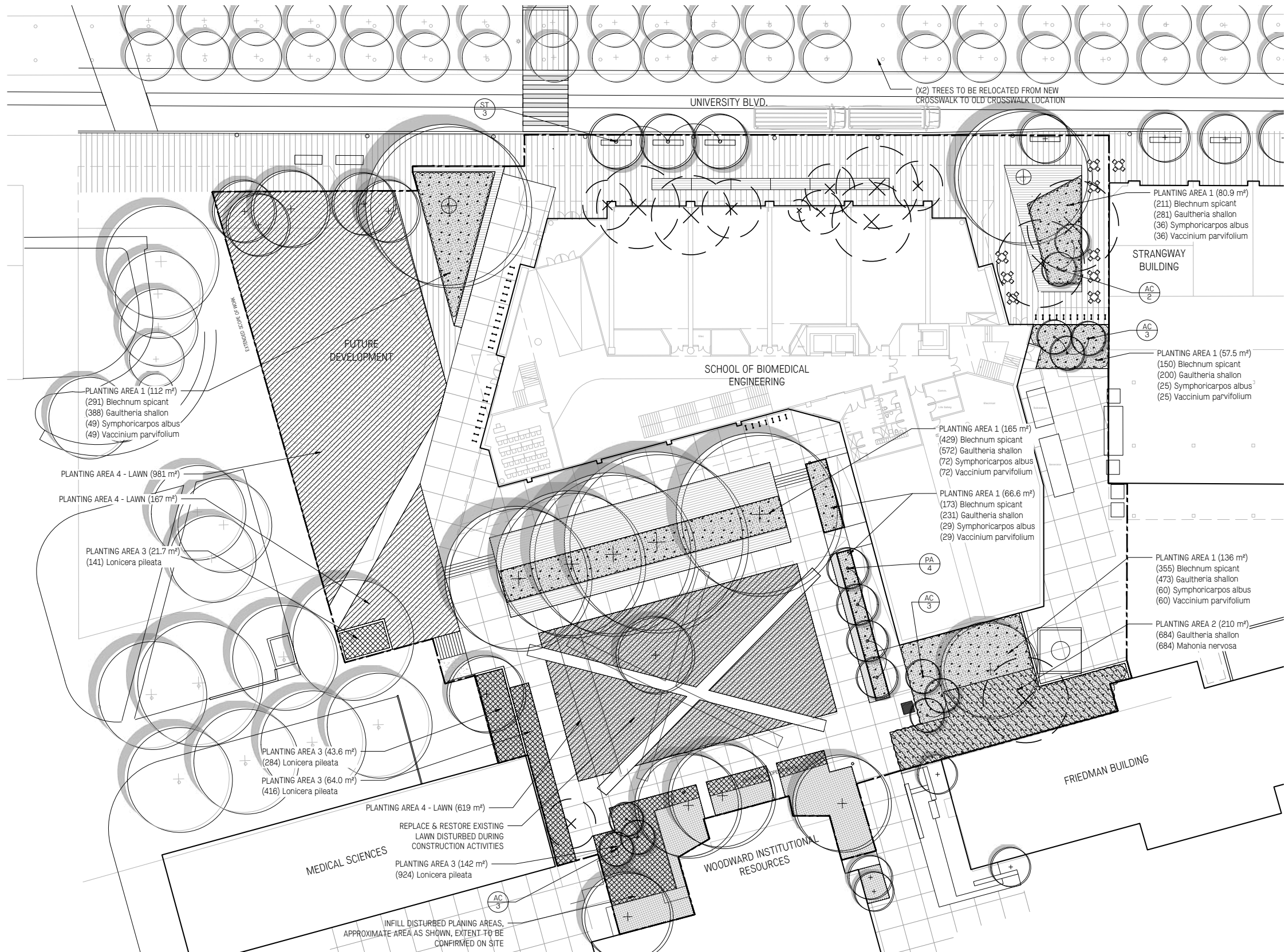
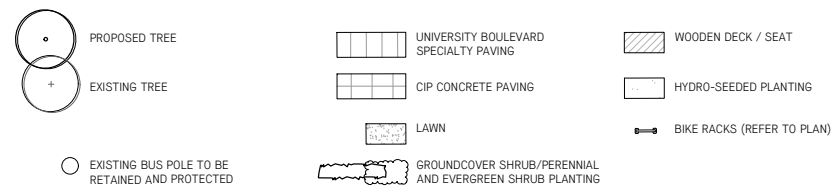
Date	Feb. 03/21	Drawing Number
Project No.	2034	
Scale	N/A	
Drawn/Checked	TN / JF	

L1.40

GENERAL LEGEND



MATERIALS LEGEND



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Ground Level

Planting Plan

Date	Feb. 03/21	Drawing Number
Project No.	2034	L1.41
Scale	1:250	
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GENERAL LEGEND

DETAIL NUMBER

1

001

SHEET ON WHICH

DETAIL IS SHOWN

REVISION

LOW LINE

EXTENDED SCOPE OF WORK LINE

TREES

AC

3

Acer circinatum / Vine Maple

2.4m ht

As Shown

B&B, Multi-Stemmed, Dense Tree

SHRUB AREAS

Bs

144.2 m²

PLANTING AREA 1

6s

375

Blechnum spicant / Deer Fern

Sa

500

Gaultheria shallon / Salal

Vp

63

Symphoricarpos albus / Common White Snowberry

63

Vaccinium parvifolium / Red Huckleberry

#2 Pot

40cm

#2 Pot

30cm

#3 Pot

60cm

#3 Pot

60cm

PLANTING PRECEDENTS

BLECHNUM SPICANT

ACER CIRCINATUM

VACCINIUM PARVIFOLIUM

GAUTHERIA SHALLON

PLANTING SCHEDULE

TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING	COMMENTS	REMARKS
	AC	3	Acer circinatum / Vine Maple	2.4m ht	As Shown	B&B, Multi-Stemmed, Dense Tree	

SHRUB AREAS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	SPACING	COMMENTS	REMARKS
	Bs	144.2 m²	PLANTING AREA 1				
	6s	375	Blechnum spicant / Deer Fern	#2 Pot	40cm		
	Sa	500	Gaultheria shallon / Salal	#2 Pot	30cm		
	Vp	63	Symphoricarpos albus / Common White Snowberry	#3 Pot	60cm		
		63	Vaccinium parvifolium / Red Huckleberry	#3 Pot	60cm		

PLANTING NOTES

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PLANTING PRECEDENTS

BLECHNUM SPICANT

ACER CIRCINATUM

VACCINIUM PARVIFOLIUM

GAUTHERIA SHALLON

PLANTING AREA 1 (144 m²)

(375) Blechnum spicant
(500) Gaultheria shallon
(63) Symphoricarpos albus
(63) Vaccinium parvifolium

AC
3

Level 03

Planting Plan

Date

Feb. 03/21

Drawing Number

Project No.

2034

Scale

1:100

Drawn/Checked

TN / JF

L1.42

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LIGHTING LEGEND

○

EXISTING STREETLIGHT TO REMAIN

☆

EXISTING PATHWAY LIGHT TO REMAIN

★

EXISTING BOLLARD LIGHT TO REMAIN

○

EXISTING THEATER LIGHT TO REMAIN

●

PROPOSED FEATURE TREE LIGHT

★

PROPOSED PATHWAY LIGHT

★

PROPOSED PATHWAY LIGHT

●

PROPOSED FLOOD LIGHT

LIGHTING NOTES

1.

LIGHTING PLAN IS SCHEMATIC AND WILL BE COORDINATED WITH ELECTRICAL;

2.

PROPOSED LIGHT FIXTURES MAY BE NEW OR REUSED FROM THE SITE;

3.

ALL DIMENSIONS ARE TO CENTER OF LIGHT;

4.

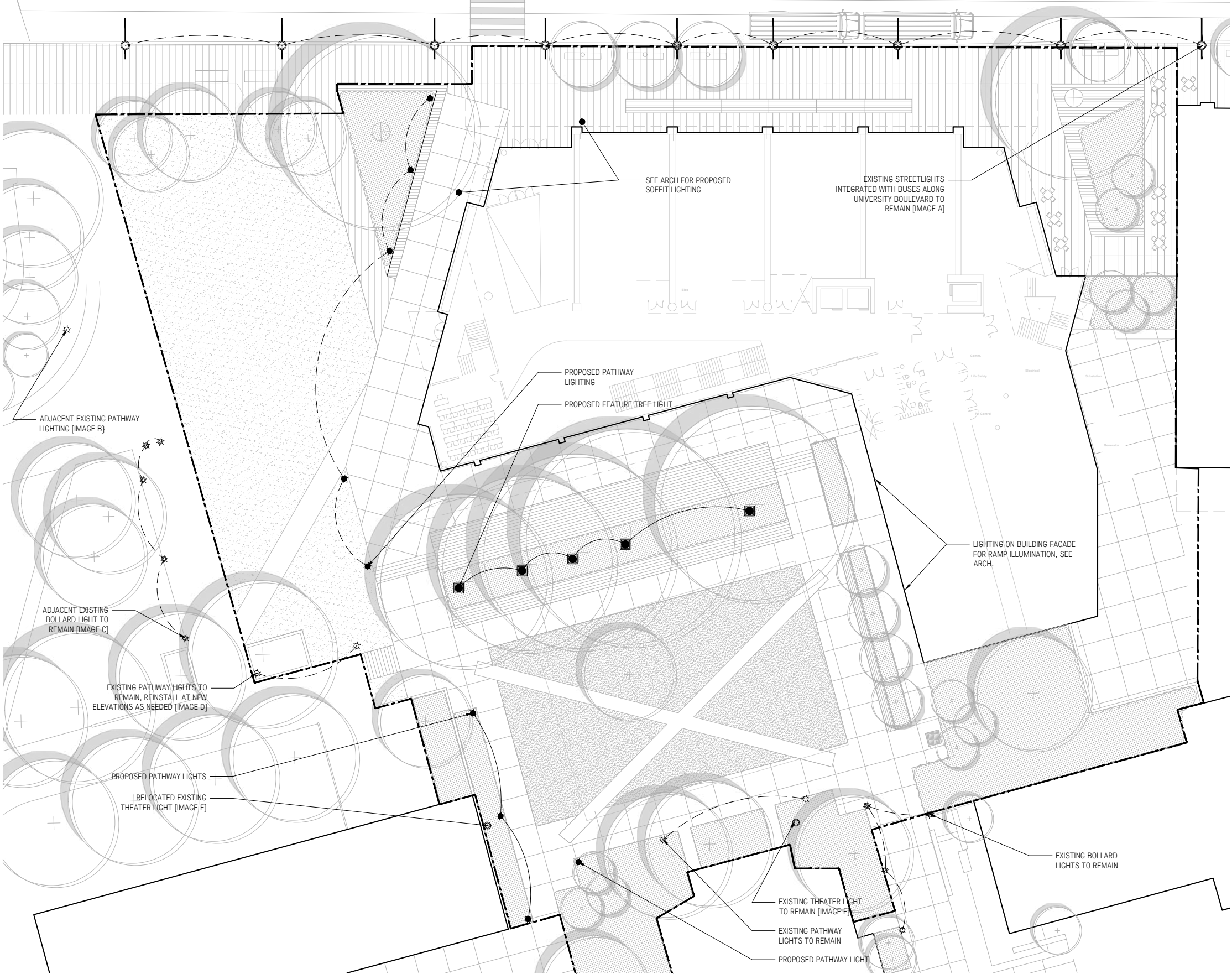
CONFIRM ALL LIGHT LOCATIONS ONSITE WITH LANDSCAPE ARCHITECT;

5.

ALL LIGHT FIXTURES AND LIGHT LEVELS TO MEET UBC DESIGN GUIDELINES AND UBC TECHNICAL GUIDELINES.

6.

SEE ARCH. DRAWINGS FOR SOFFIT LIGHTS ON BUILDING CANOPY.



EXISTING STREET LIGHTS ALONG UNIVERSITY BOULEVARD [IMAGE A]



EXISTING ADJACENT PATHWAY LIGHTING [IMAGE B]



EXISTING BOLLARD LIGHTS TO REMAIN [IMAGE C]



EXISTING PATHWAY LIGHTS [IMAGE D]



EXISTING FLOOD LIGHTS ON SOUTH AND WEST EDGE OF COURTYARD LAWN [IMAGE E]

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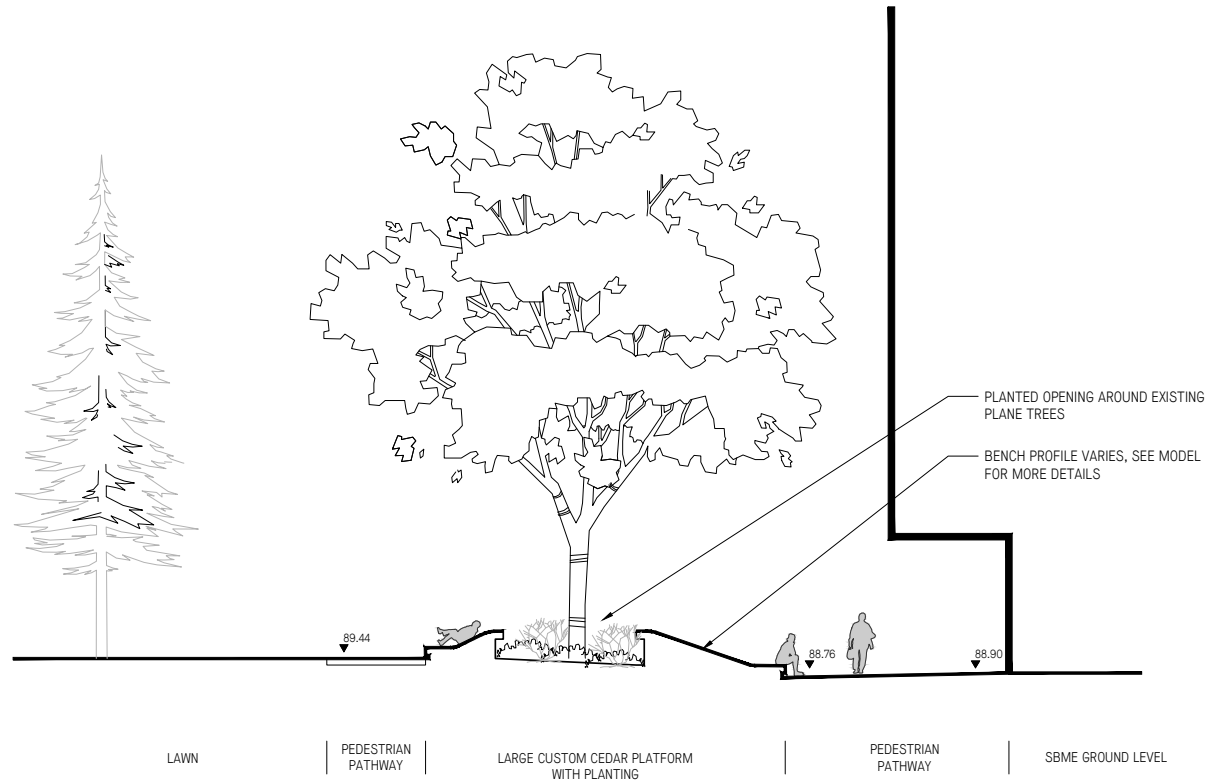
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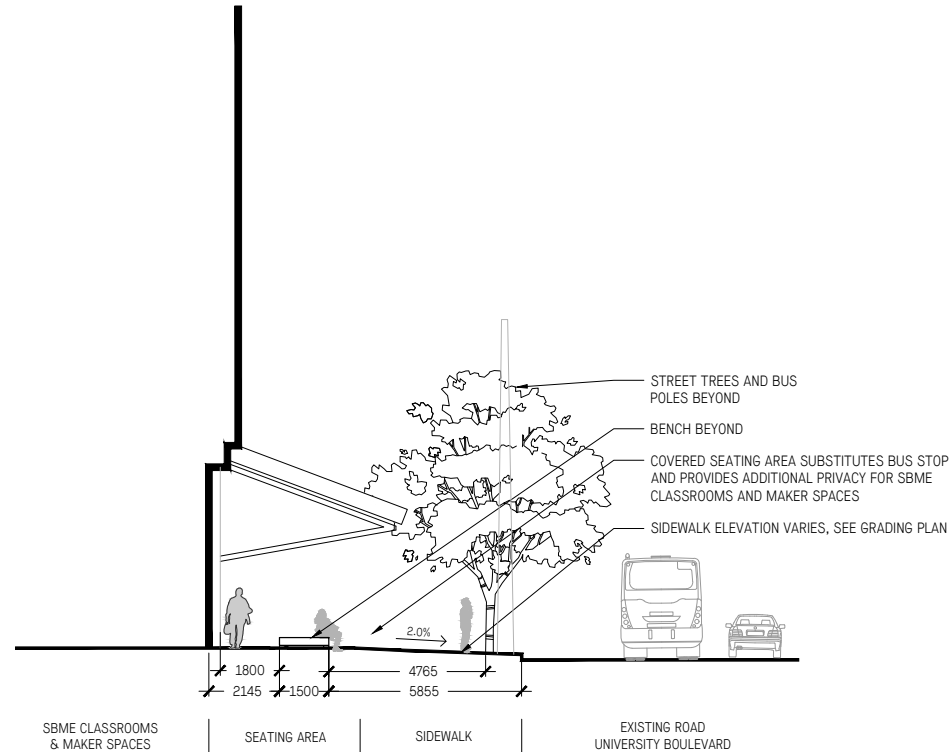
Lighting Plan



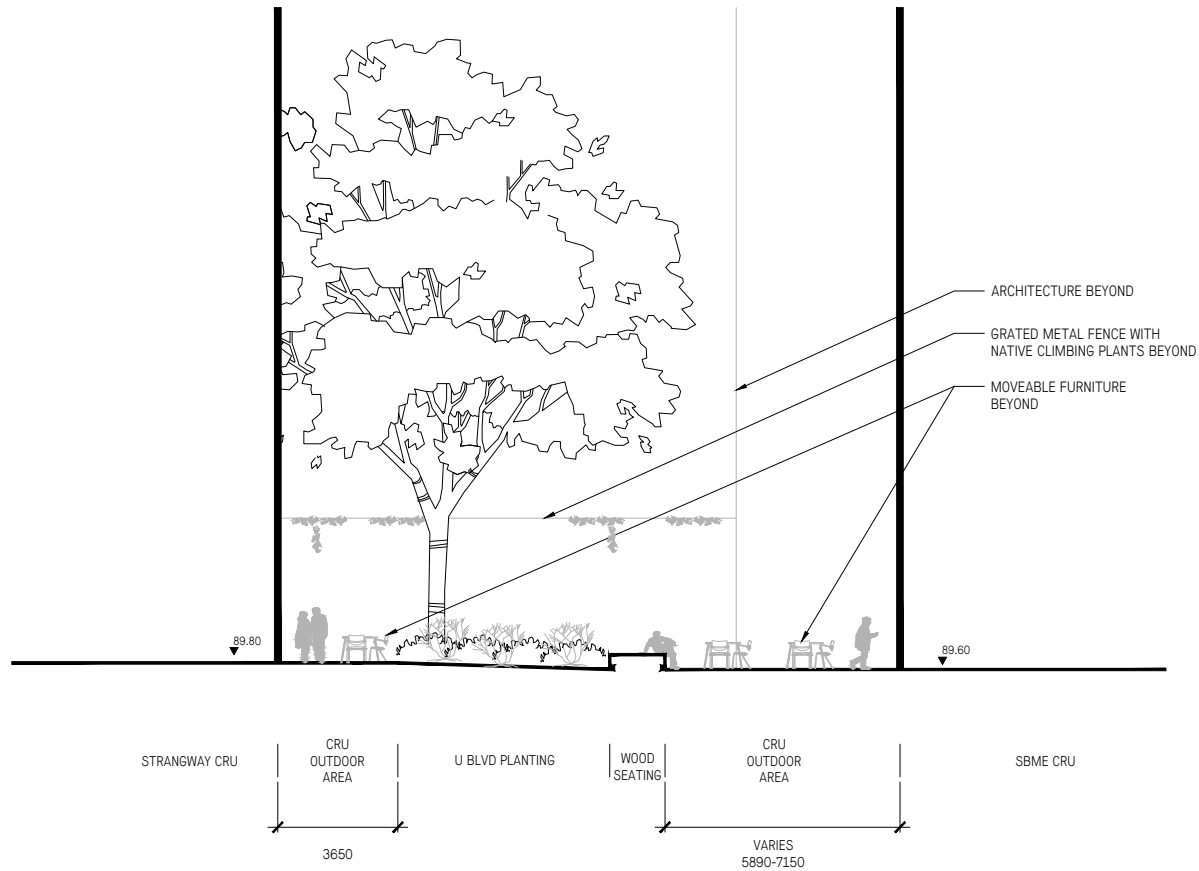
Date	Feb. 03/21	Drawing Number
Project No.	2034	L1.61
Scale	1:200	
Drawn/checked	TN I JF	



1 SOUTH COURTYARD SECTION
L2.11 1:100



2 BUILDING ENTRANCE SECTION
L2.11 1:100



3 CRU COURTYARD SECTION
L2.11 1:100



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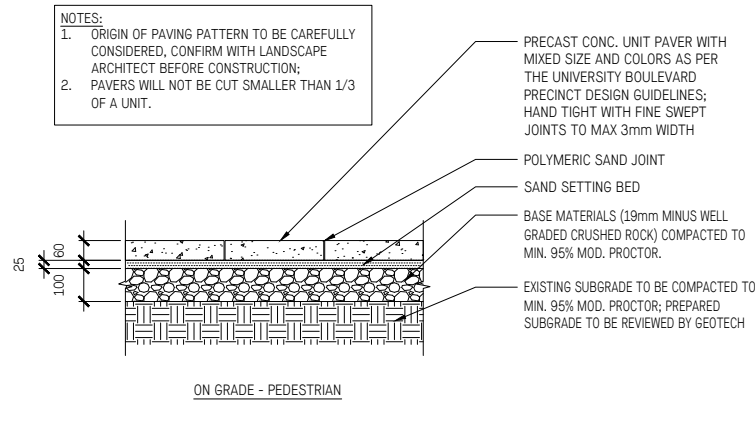
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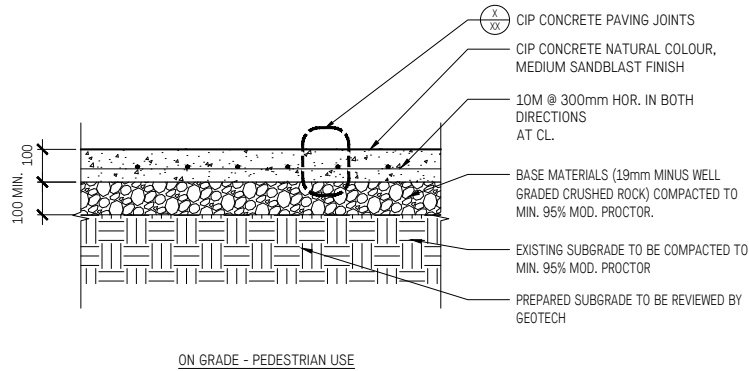
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Landscape Sections

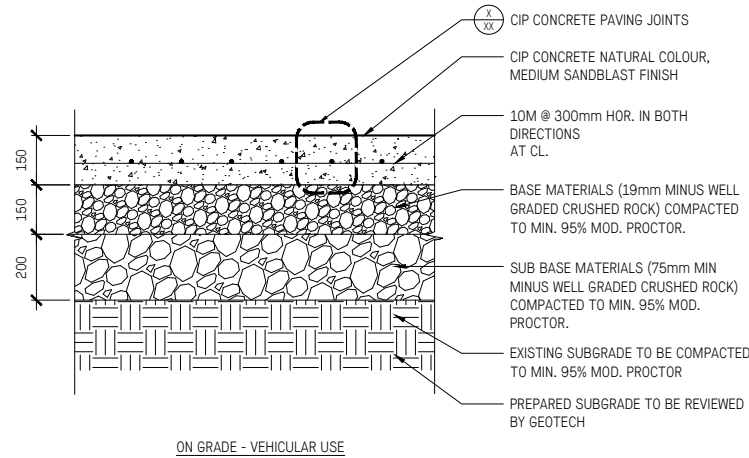
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Project No.	2034	L2.11
Scale	As Noted	
Drawn/Checked	TN I JF	



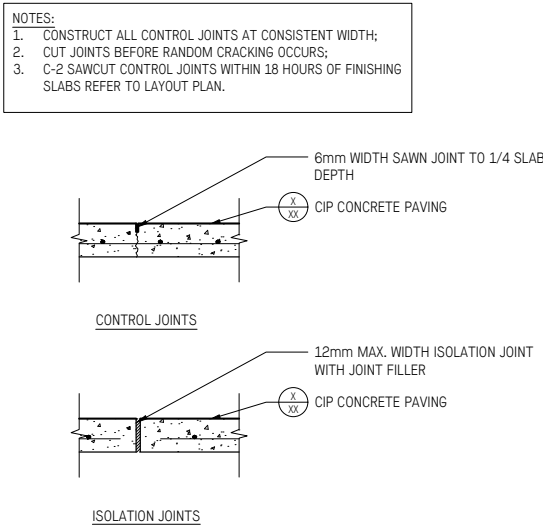
1 PAVING TYPE 1 - UNIT PAVER ON GRADE - PEDESTRIAN
1:10



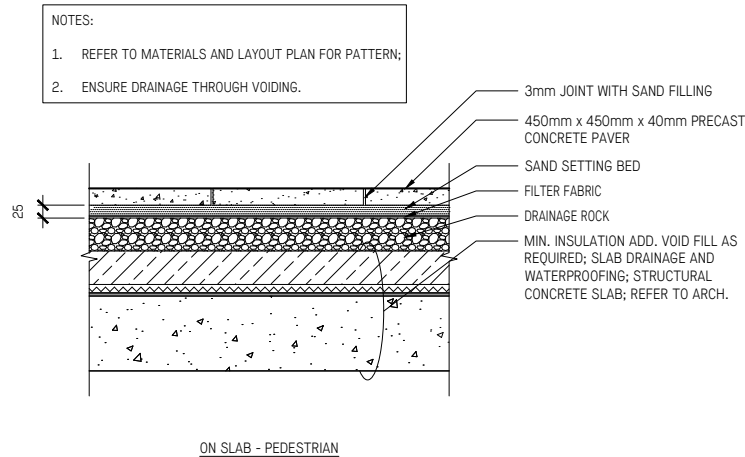
2 PAVING TYPE 2 - CIP CONCRETE ON GRADE
1:10



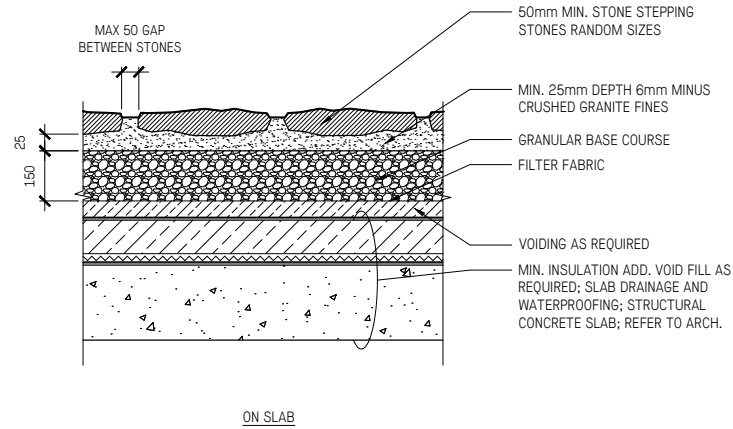
3 PAVING TYPE 2 - CIP CONCRETE ON GRADE
1:10



4 CIP CONCRETE PAVING JOINTS
1:10



5 PAVING TYPE 3 - PRECAST HYDRAPRESSED SLAB PAVING
1:10



6 PAVING TYPE 4 - FLAGSTONE PAVING
1:10

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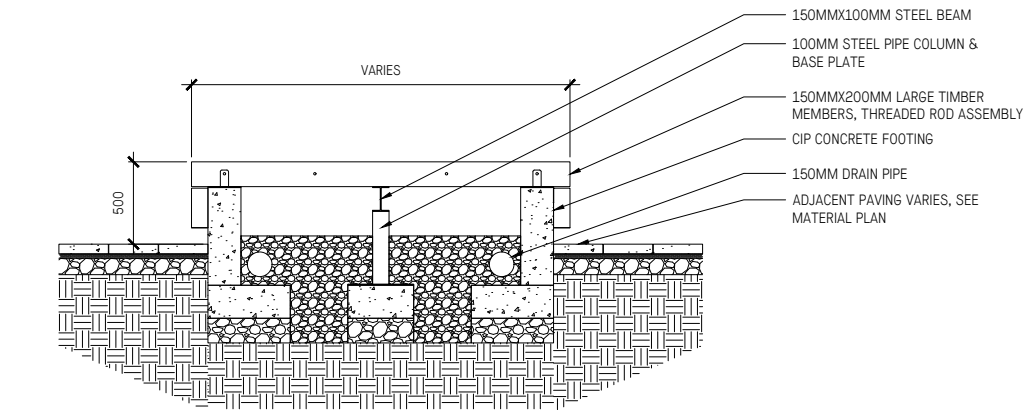
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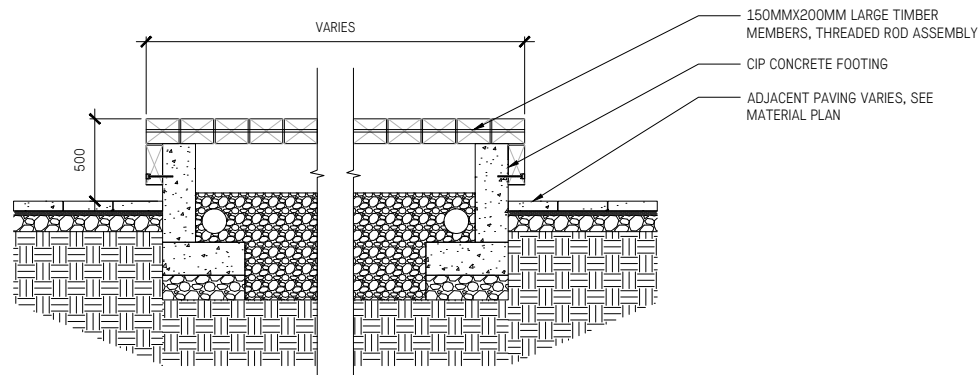
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Paving Details

Date	Feb. 03/21	Drawing Number
Project No.	2034	L3.11
Scale	As Noted	
Drawn/Checked	TN I JF	



1 SEATING ISLAND
L3.31 1:20



1 SEATING ISLAND
L3.31 1:20



CIRCULAR OPENING FOR
EXISTING OAK TREE

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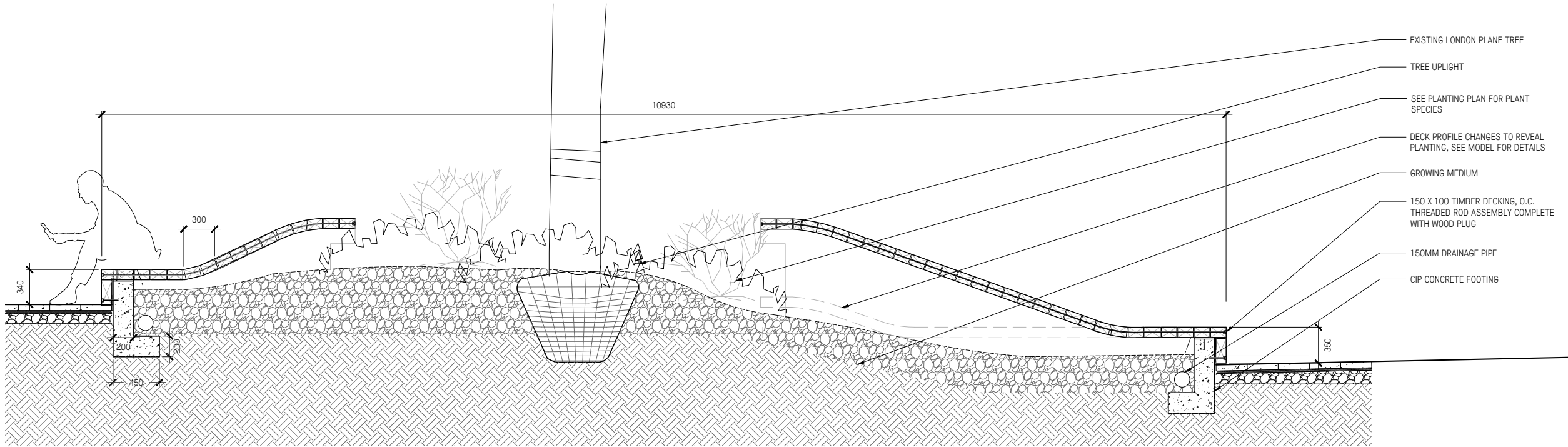
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Decking Details

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1 SEATING ISLAND
L3.31 1:20



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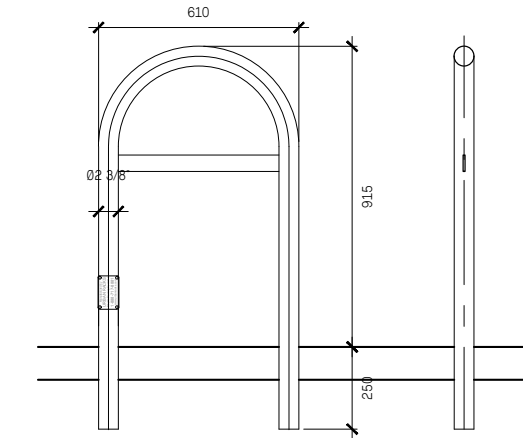
No.	Description	Date
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Decking Details 2

Date	Feb. 03/21	Drawing Number
Project No.	2034	L3.31
Scale	As Noted	
Drawn/Checked	TN / JF	



NOTES:

MODEL: UB1000-USX
MATERIAL: 2" SCHEDULE
40 STEEL PIPE WITH FLAT
HORIZONTAL CROSS BAR
MOUNT: EMBEDDED INTO
CONCRETE WITH 10" BELOW
GRADE. INSTALL PER
MANUFACTURER'S
INSTRUCTION.
FINISH: HOT-DIPPED
GALVANIZED

SUPPLIER: URBAN RACKS
1-888-717-8881
WWW.URBANRACKS.COM

1
L3.41 BIKE RACK
1:10

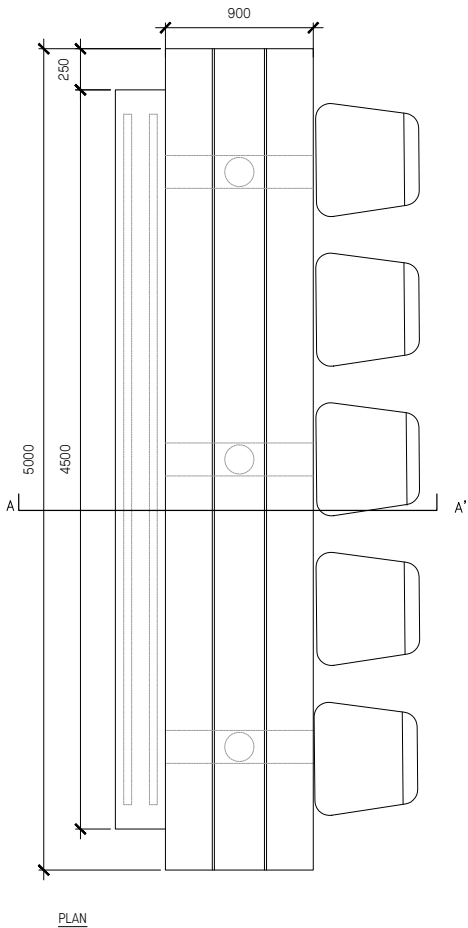


2
L3.41 WOOD ENTRANCE SEAT
1:10



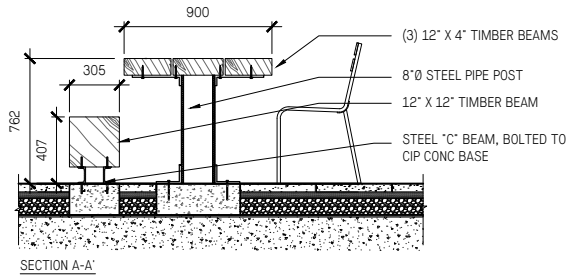
250MMX250MM LARGE TIMBER
MEMBERS, THREADED ROD
ASSEMBLY

CIP CONCRETE FOOTING



POTTING TABLE + BENCH NOTES:

1. PROVIDE SIGNED AND SEALED ENGINEERED SHOP DRAWINGS FOR ALL BENCH AND TABLE CONSTRUCTION;
2. USE GALVANIZED STEEL FOR ALL HIDDEN HARDWARE UNLESS OTHERWISE NOTED;
3. USE STAINLESS STEEL FOR ALL EXPOSED HARDWARE;
4. CONTRACTOR RESPONSIBLE FOR REINFORCEMENT AND FOOTING DIMENSIONS;
5. CONTRACTOR TO PROVIDE MOUNTING BRACKETS TO BE REVIEWED BY LA;
6. ENSURE NO SHARP EDGES.



4
L3.41 HARVEST TABLE
1:20



250MMX250MM LARGE TIMBER
MEMBERS, THREADED ROD ASSEMBLY

CIP CONCRETE FOOTING

ADJACENT PAVING VARIES, SEE
MATERIAL PLAN

ADJACENT PLANTER WITH METAL
EDGER

3
L3.41 CONCRETE AND WOOD BENCH WITH BACK PLANTER
1:10

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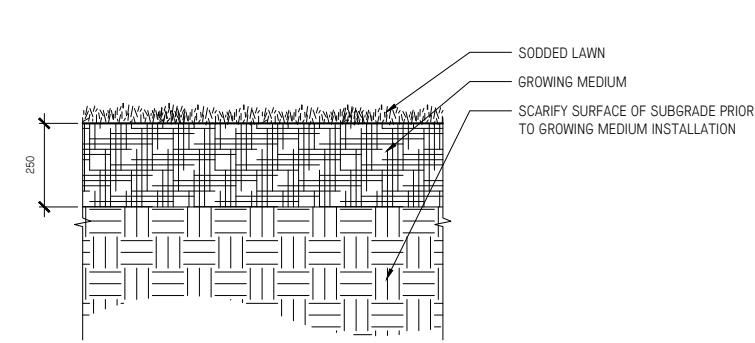
No.	Description	Date
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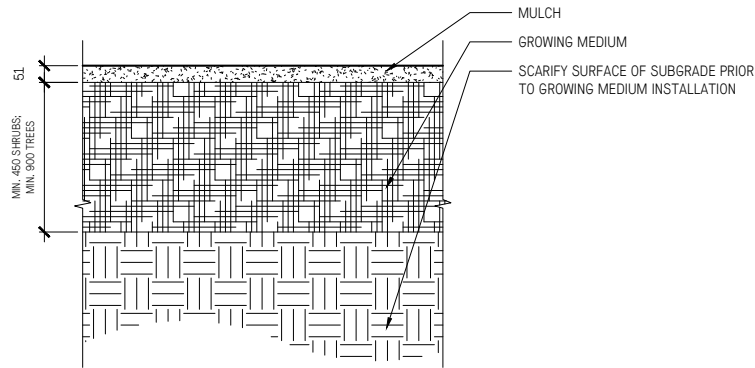
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Furnishing Details

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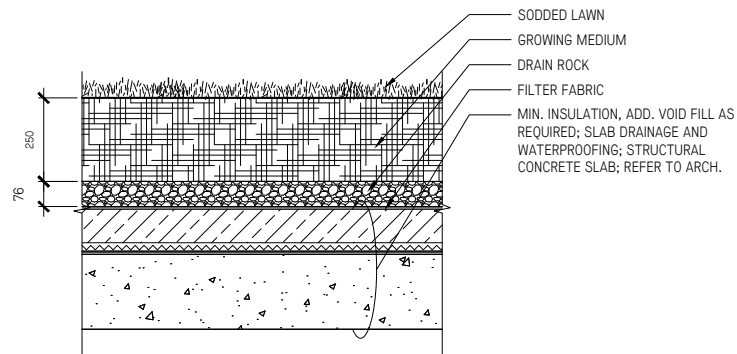


LAWN PLANTING

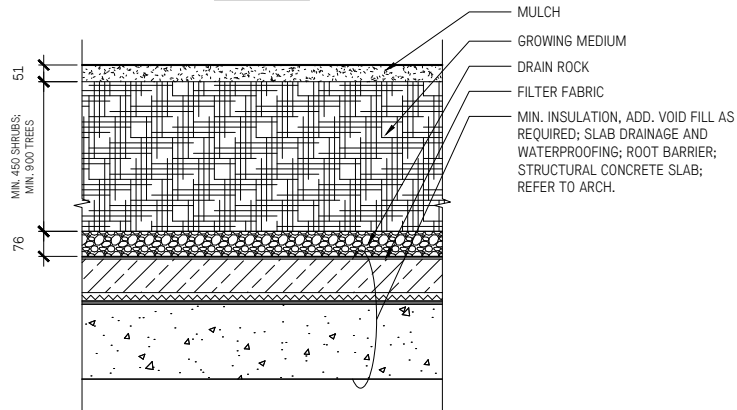


SHRUB/TREE PLANTING

1 SOIL PROFILES ON GRADE
L3.51 1:10

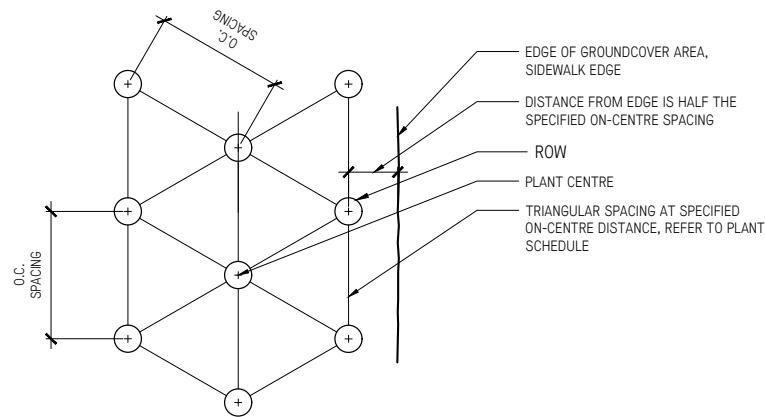


LAWN PLANTING

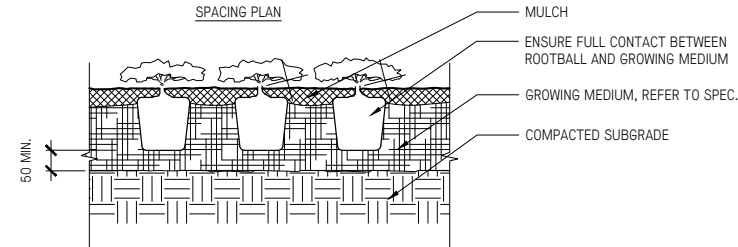


SHRUB/TREE PLANTING

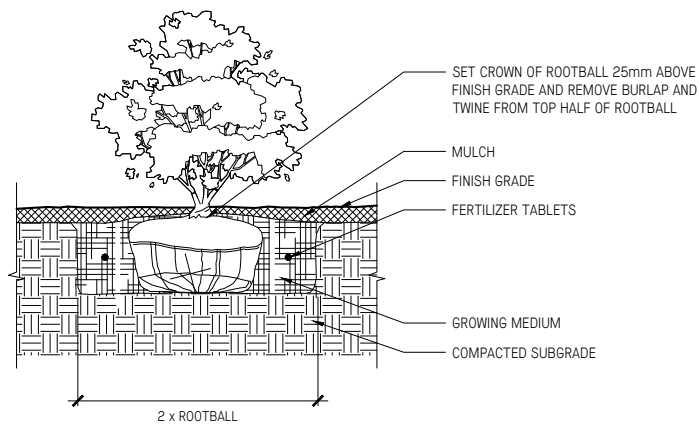
2 SOIL PROFILES ON SLAB
L3.51 1:10



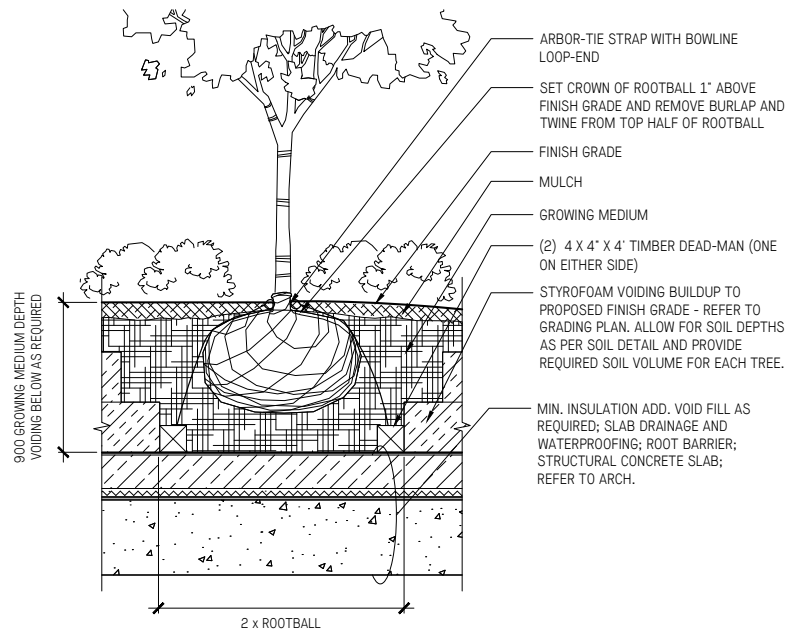
SPACING PLAN



3 GROUND COVER PLANTING
L3.51 1:10



4 SHRUB PLANTING
L3.51 1:10



5 TREE PLANTING - ON SLAB
L3.51 1:10

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Planting Details

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North Elevation looking
South West from North
Side of Univeristy Blvd.



CRU looking South from
University Blvd.



North Elevation Looking
East



SBME Canopy looking East

SBME Entrance looking South





SBME entrance from
North Side of University
Blvd.





Materials



White metal fins



White brick



White Powder Coated Metal Grating (Sample shown is unpainted)



Glass and Curtain Wall System