

S2B ENGINEERING 2
RECLAD

200 UNIVERSITY AVE W, WATERLOO, ON

Title:

COVER SHEET

Date: April 3, 2024	Scale: As Noted
Project No. 0001	Drawn By: R.A, R.AH, Y.L, A.T

Drawing No.

A-000

S2B ENGINEERING 2 RECLAD

200 UNIVERSITY AVE W, WATERLOO, ON N2L 3G1

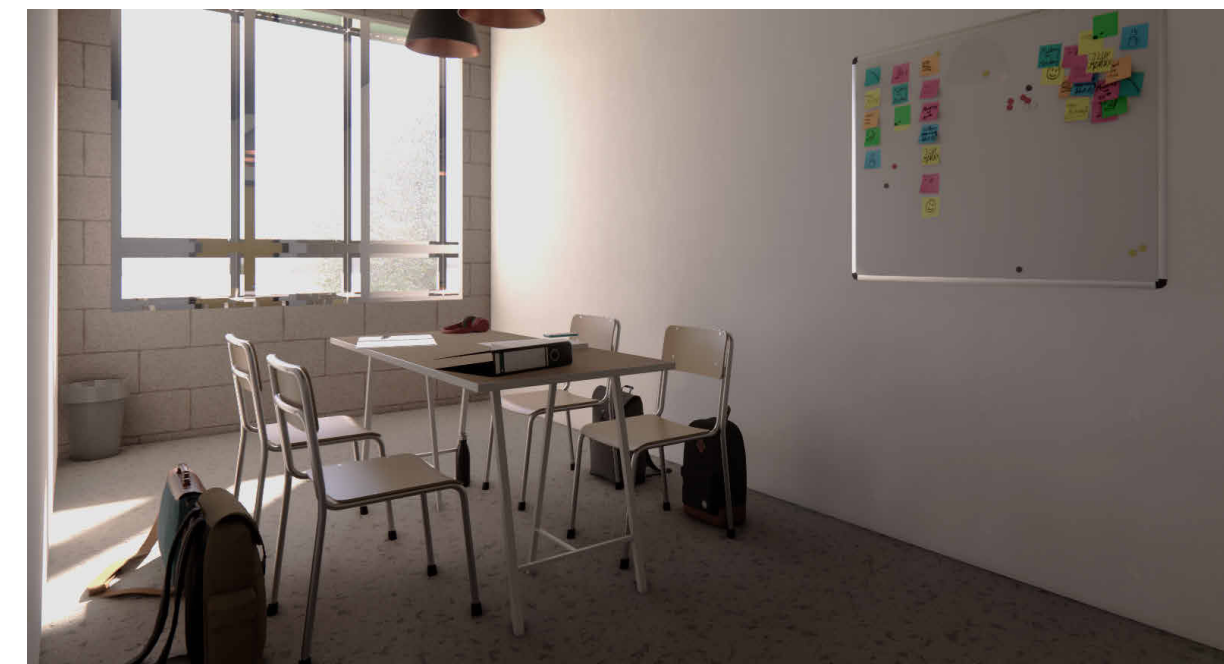
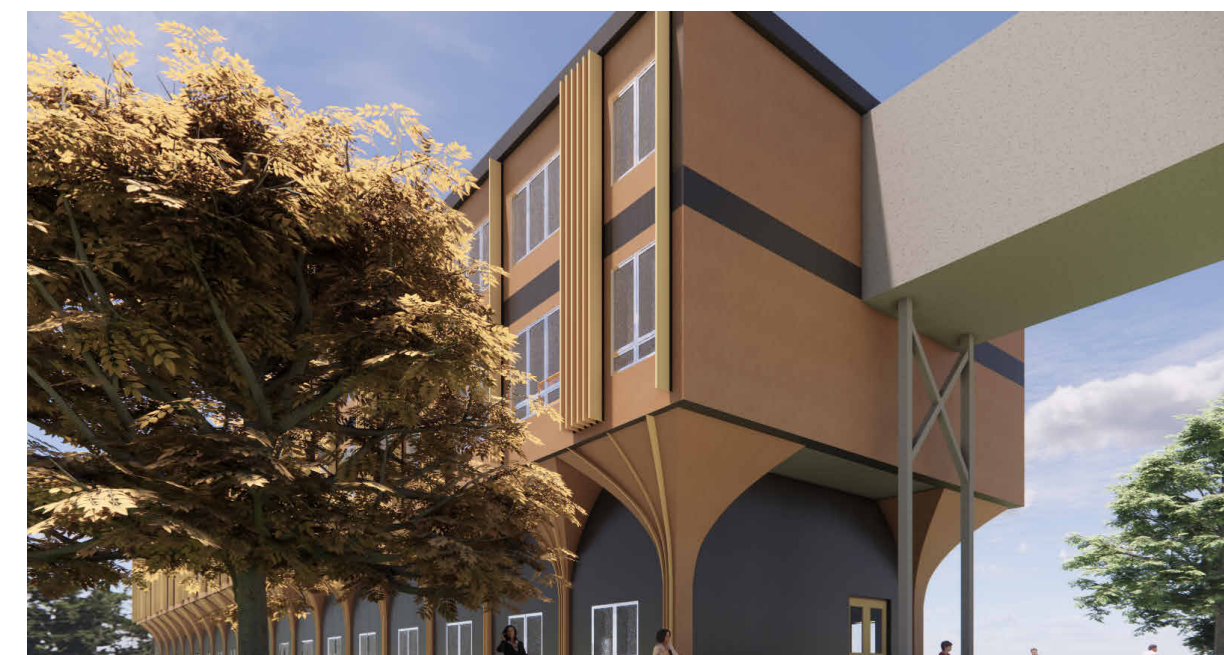
Rodaina Aboelela, Rania Abdul Halim, Yolanda Li, Annamaria Toma

Engineering 2 (E2) is one of the oldest engineering buildings on the University of Waterloo Campus, well-known for its distinctive mushrooms columns that act as substantial thermal bridges. With outdated architecture and an insufficient building envelope and energy performance, the structure is long overdue for a reclad. The recladding of the University of Waterloo’s E2 will improve occupant comfort and thermal performance whilst adhering to the university’s aspirations of future proofing their buildings. With that, comes the S2B Engineering 2 Reclad. S2B stands for spawn to bulk, a process which involves the increase in mass of an existing mushroom spore, thereby mirroring the evolution of the building’s design. Some notable features of the S2B Reclad include thermally broken windows and vertical shading devices that seamlessly integrate functionality and architectural design. The incorporation of stonewood and fire-resistant aluminum composite panels as well as polyurethane insulation provide an R34 value that meshes well with the overcladded, insulated mushroom columns.

The project is scheduled to be completed by December 2025, in time for the unveiling ceremony after the Fall 2025 school term ends. With it marks the beginning of a new era for the University of Waterloo and its steps towards meaningful progression.



<https://mycologynt.art/mushroom-cultivation/spawn-stage/>



PRECEDENTS

These precedents were looked at as a means of understanding differing materials and how they act in tandem with different textures and colours as well as their overall thermal performance and shading capabilities. Both [1] and [2] seamlessly incorporate shading devices into the design itself and thereby fulfill the Term of References' (TOR) objective of elevating occupant comfort. These shading devices do so by limiting glare in the early mornings and allowing for solar heat gain. [3] and [4] utilize complex materials such as aluminum composite panels and wood with a reasonable window to wall ratio to optimize thermal performance as per the TOR's objectives. In addition, [3] and [4] were also looked at as a means of understanding a corner connection between different cladding and how that would function in a real building. Finally, [5] was used to understand how to best incorporate windows in a way that best provides daylighting and thereby enhances occupant comfort as well.



[1] <https://0.wp.com/www.re-thinkingthefuture.com/wp-content/uploads/2021/02/A314-1-10-Examples-of-Unique-Wood-Facades-Image-14.jpg?w=999>



[2] <https://www.archdaily.com/285327/charmartin-real-estate-office-burgois-gimdo-arquitectos>



[3] <https://www.archdaily.com/491228/2014-u-s-wood-design-award-winners/53362d2ed7a80848000251-2014-u-s-wood-design-award-winners-image>



[4] https://marchitects.com/wp-content/uploads/2021/11/Gates-CSE_21-2000x1333.jpg



[5] <https://blackwell.ca/project/residence-for-the-sisters-of-st-joseph-of-toronto/>



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REV.	ISSUE	DATE
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PRECEDENT SHEET

Date: April 3, 2024

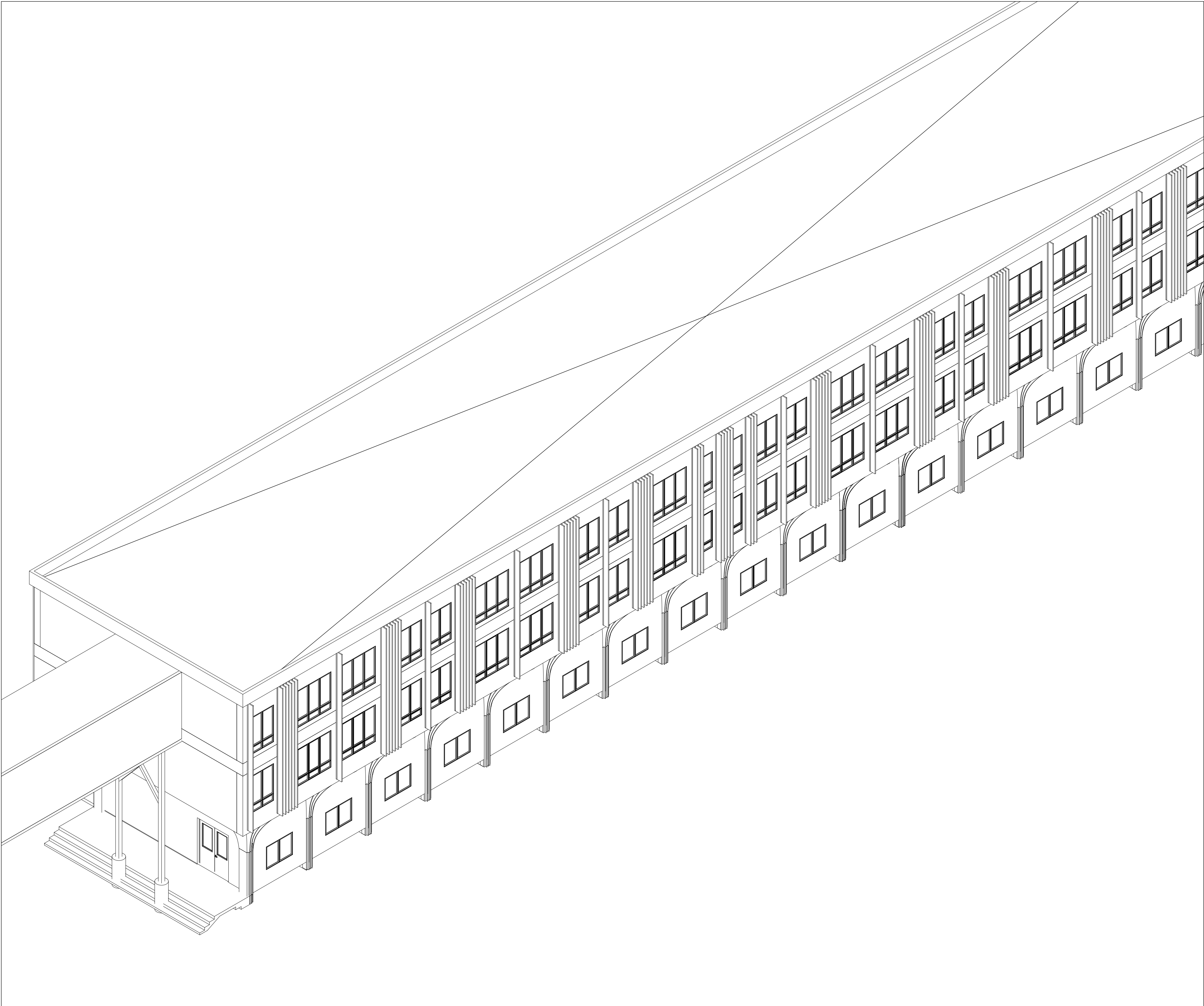
Project No. 0001

Scale: As Noted

Drawn By: R.A, R.AH, Y.L, A.T

Drawing No.

A-001



1 3D MODEL

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RECLAD

200 UNIVERSITY AVE W, WATERLOO, ON

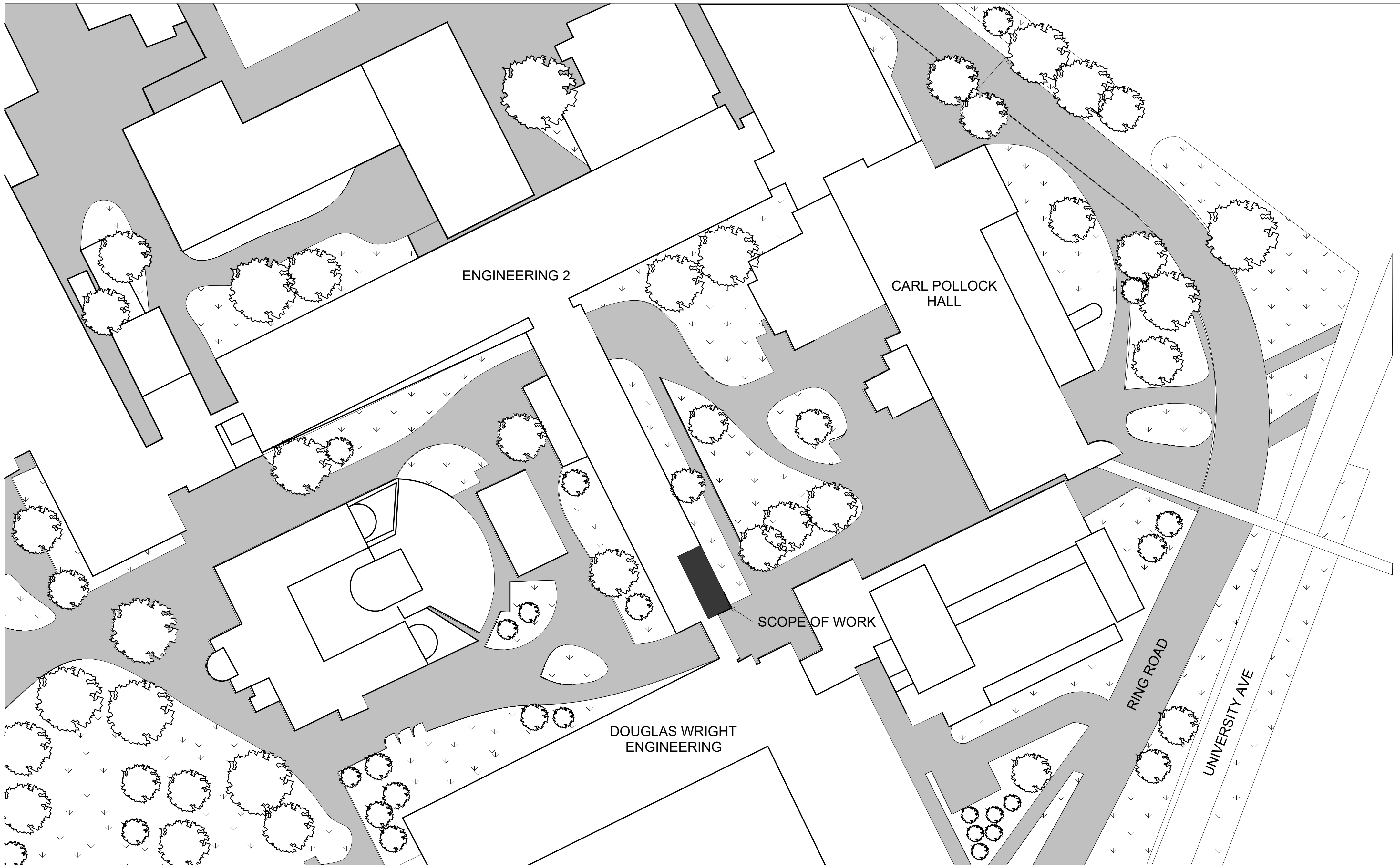
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3D MODEL

Date.	April 3, 2024	Scale.	As Noted
Project No.	0001	Drawn By.	R.A, R.AH, Y.L, A.T

Drawing No.

A-002



1 SITE PLAN
1 : 500



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200 UNIVERSITY AVE W, WATERLOO, ON

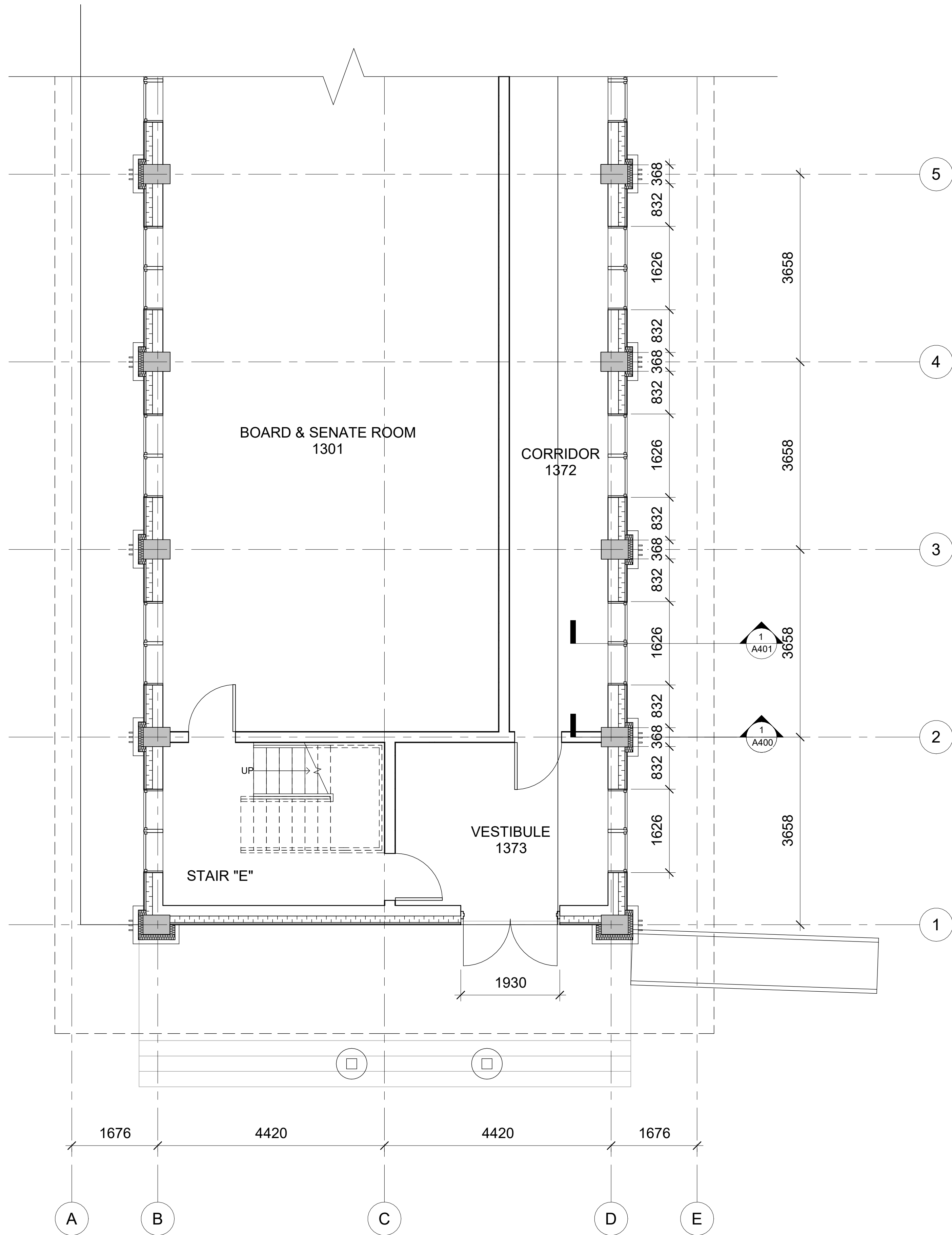
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SITE PLAN

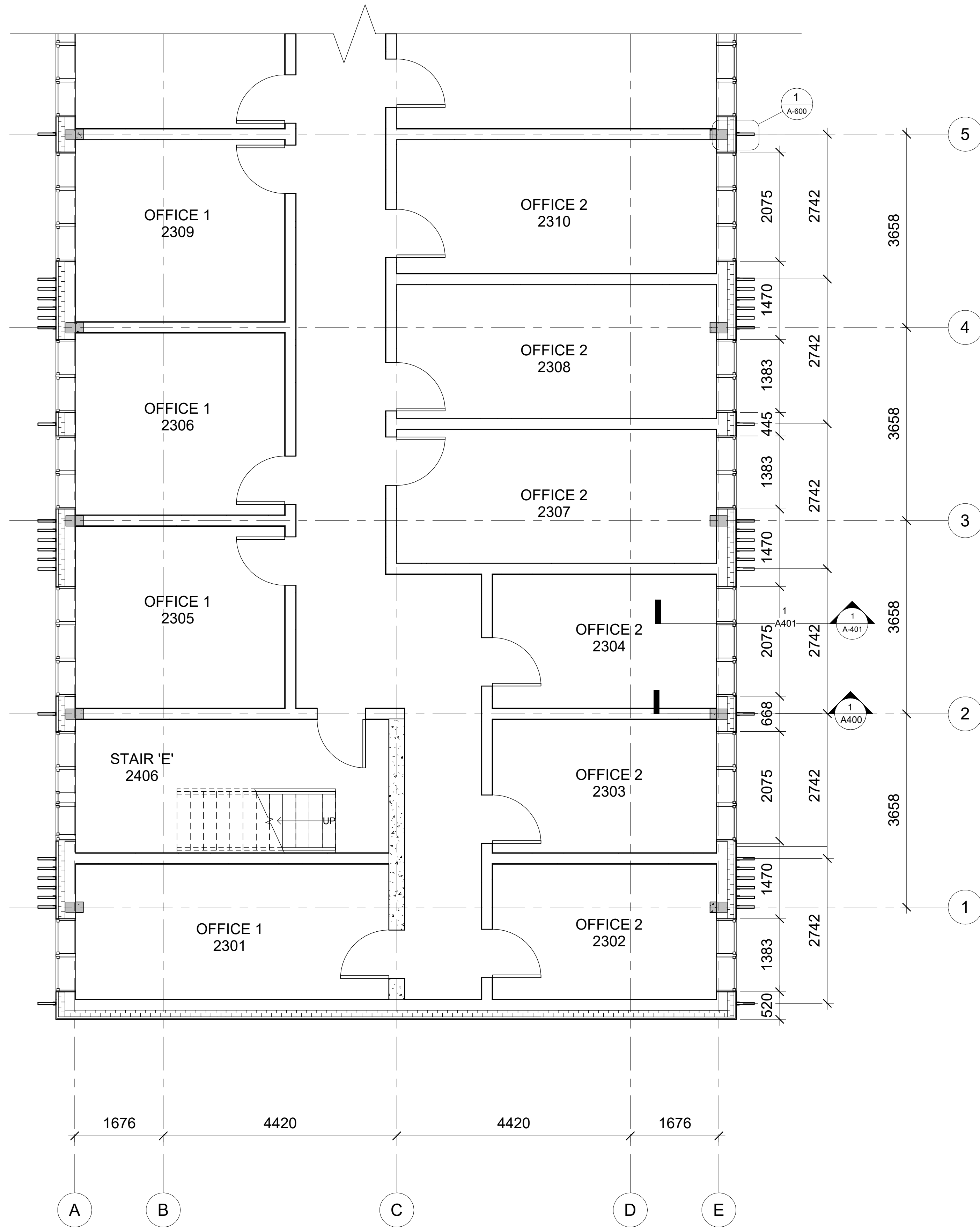
Date: April 3, 2024	Scale: As Noted
Project No. 0001	Drawn By: R.A, R.AH, Y.L, A.T

Drawing No.

A-100



1 1ST FLOOR PLAN
1 : 50



2 2ND FLOOR PLAN
1 : 50



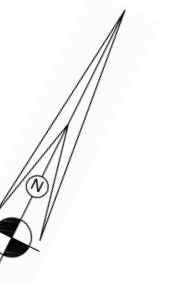
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200 UNIVERSITY AVE W, WATERLOO, ON

Title:

FLOOR PLANS

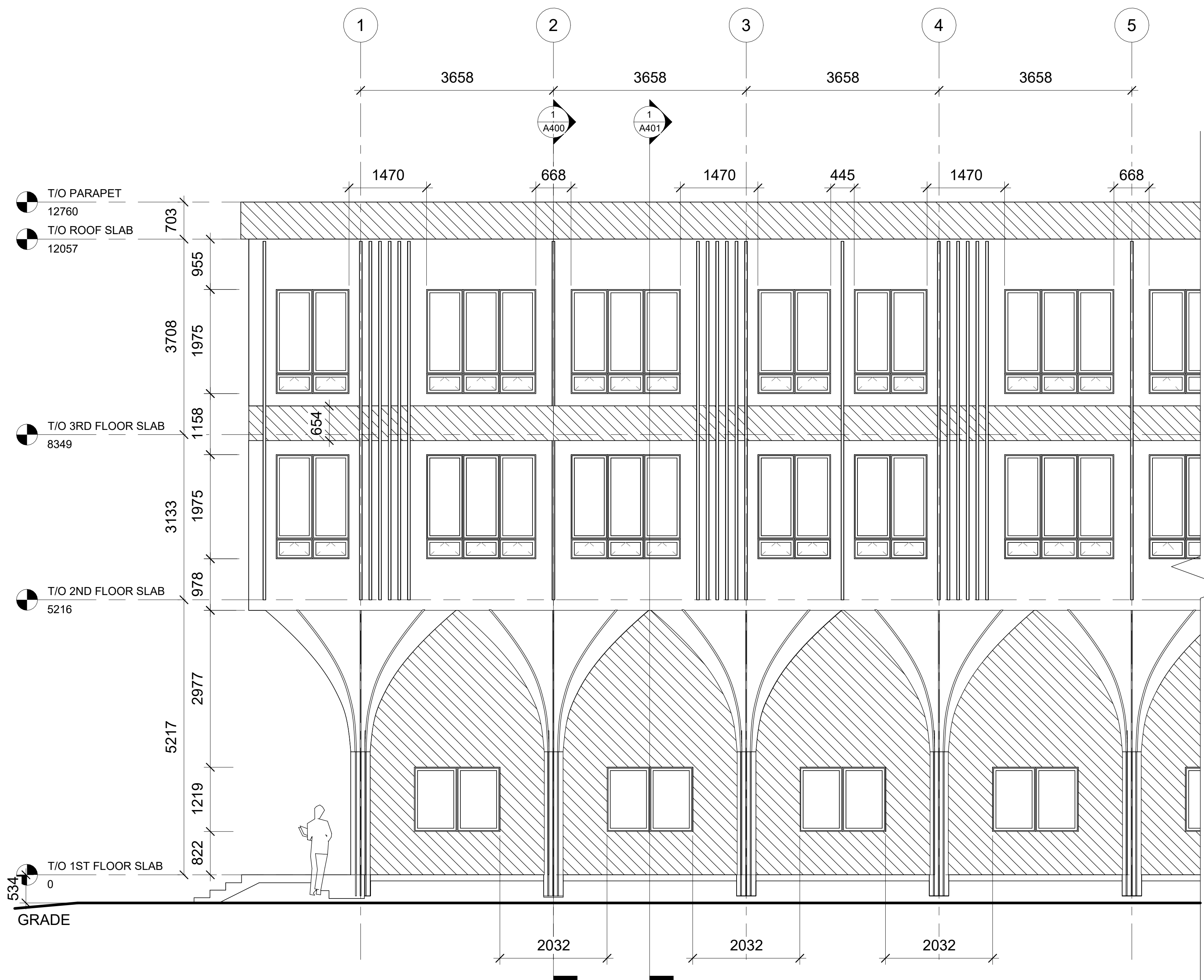
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Project No. 0001 Scale: As Noted

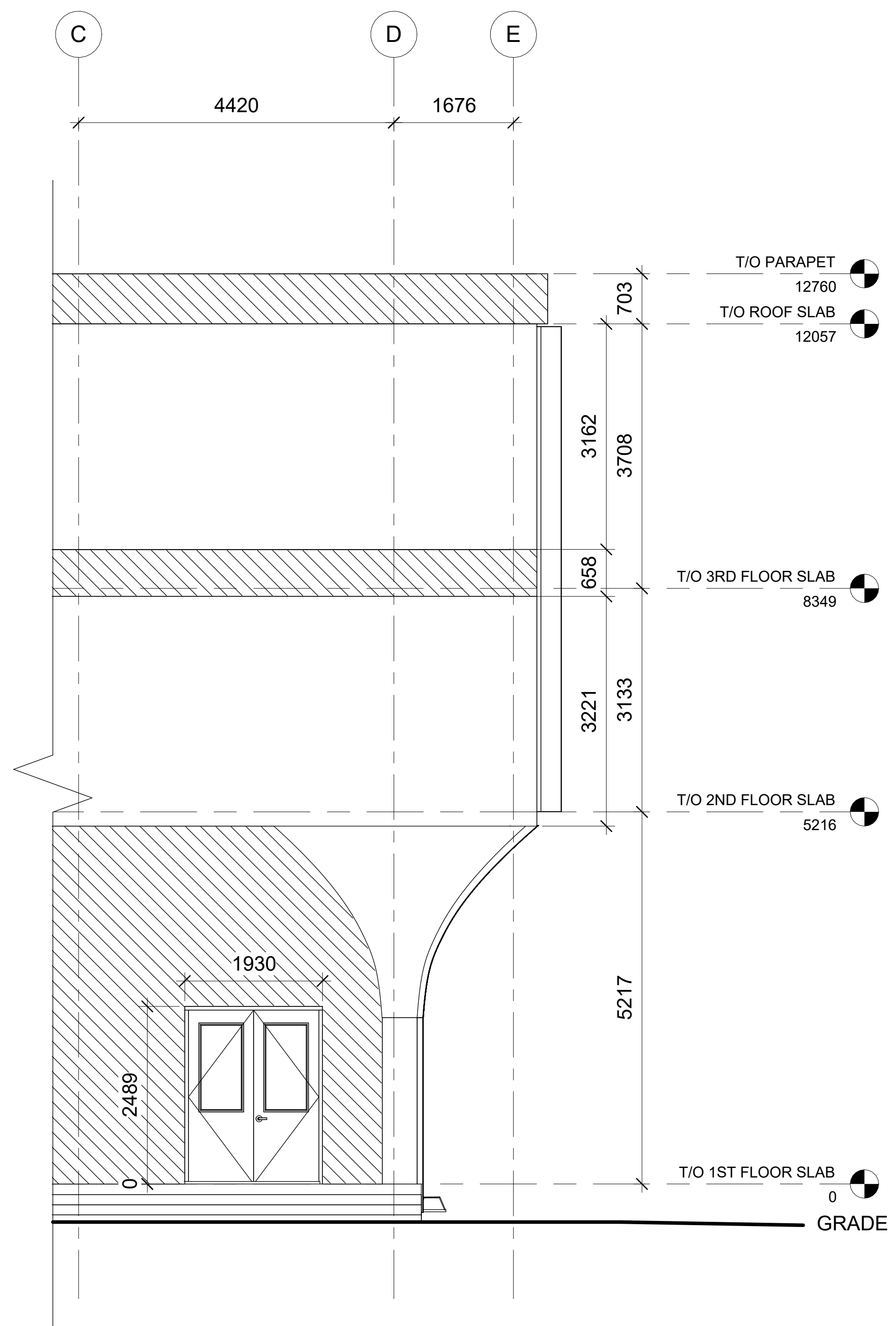
Drawn By: R.A, R.AH, Y.L, A.T

Drawing No.

A-200



1 EAST ELEVATION
1 : 50



2 SOUTH ELEVATION
1 : 50



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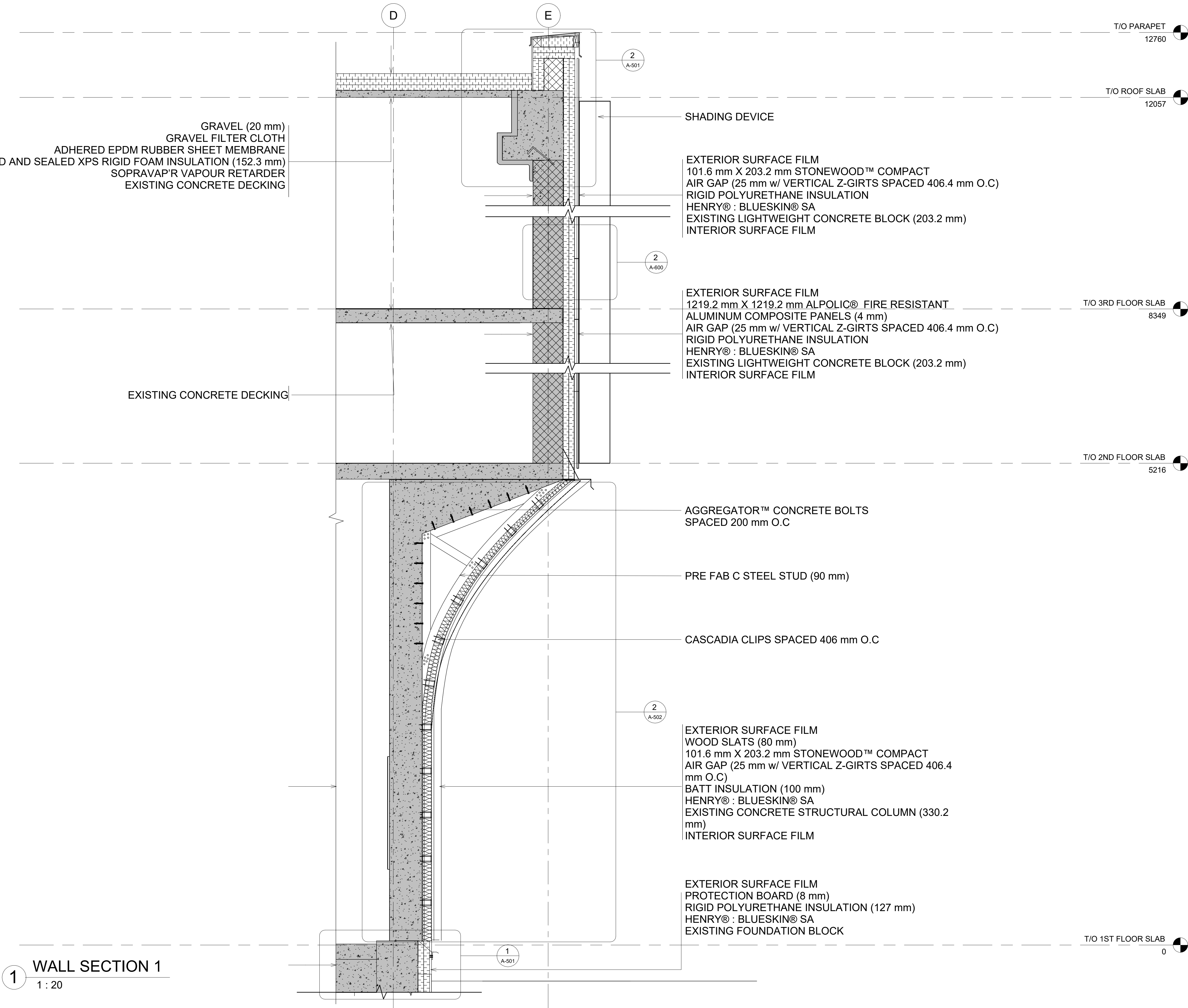
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ELEVATIONS

Date.	April 3, 2024
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Drawn By.	R.A, R.AH, Y.L, A.T

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A-300



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S2B ENGINEERING 2 RECLAD

200 UNIVERSITY AVE W, WATERLOO, ON

Title:

WALL SECTION 1

Date: April 3, 2024

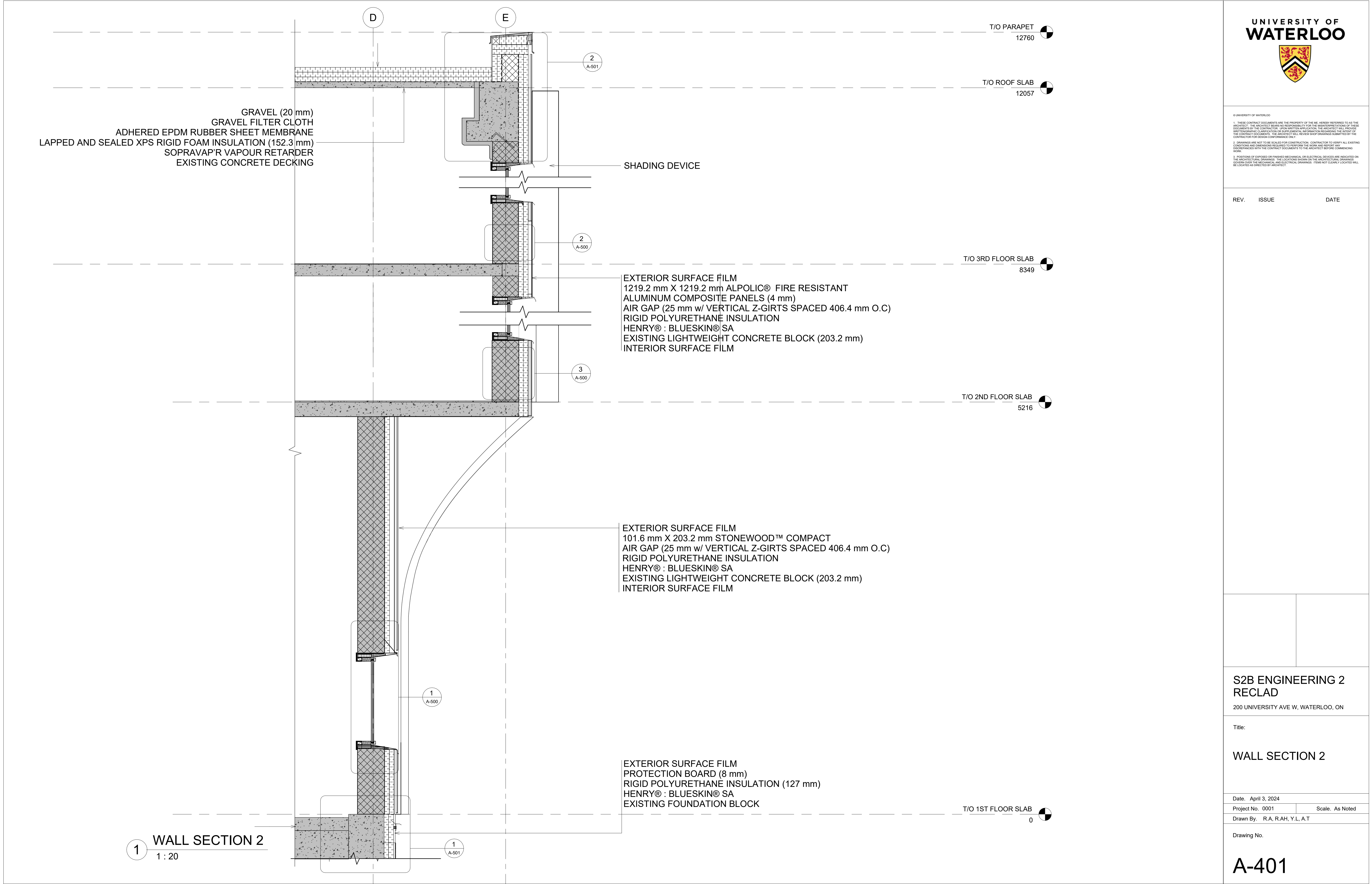
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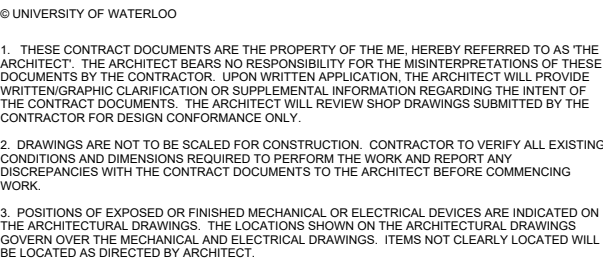
Scale: As Noted

Drawn By: R.A, R.A.H, Y.L, A.T

Drawing No.

A-400





MATERIAL	THICKNESS (m)	CONDUCTIVITY (W/mk)	RSI (m ² K/W)	R-P (ft ² h/BTU)
EXTERIOR SURFACE FILM	N/A	N/A	0.03	0.17
STONEWOOD™ COMPACT LAMINATE PANELS BY FIBERESIN	0.019	0.03	0.06	0.34
AIR GAP (W/ VERTICAL Z GIRTS)	0.025	N/A	0.18	1.02
RIGID POLYURETHANE INSULATION	0.127	N/A	5.28	30
HENRY®: BLUESKIN® SA	negligible	negligible	0	0
LIGHTWEIGHT CONCRETE BLOCK	0.2032	0.6	0.34	1.93
INTERIOR SURFACE FILM	N/A	N/A	0.12	0.68
TOTAL			6.01	34.14

2 FIRE RESISTANT ALUMINUM COMPOSITE PANELS WALL DETAIL
1 : 10

3 STONEWOOD PANELS WALL DETAIL
1 : 10



SECTION 1		
MATERIAL	AREA (m ²)	RSI (m ² K/W)
STONEWOOD™ COMPACT LAMINATE PANELS BY FIBERESIN WALL	11.18	6.01
FIRE RESISTANT ALUMINUM COMPOSITE PANELS WALL	1.69	5.95
TRIPLE GLAZE LOW-E ALUMINUM FRAME WINDOW W/ CAVITY INSULATION WINDOW	4.10	1.21
TOTAL	16.97	3.07

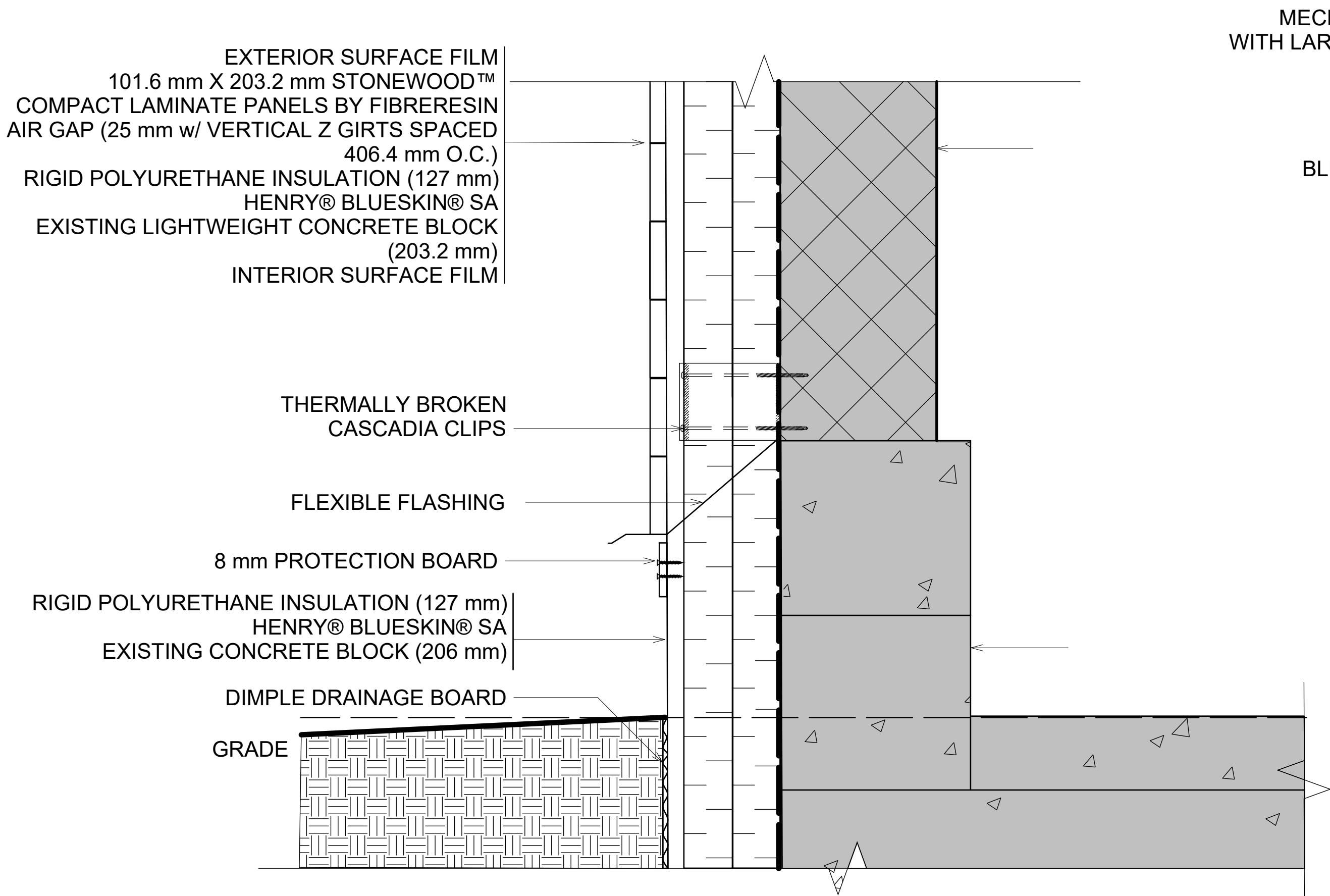
SECTION 3		
MATERIAL	AREA (m ²)	RSI (m ² K/W)
STONEWOOD™ COMPACT LAMINATE PANELS BY FIBERESIN WALL	16.37	6.01
FIRE RESISTANT ALUMINUM COMPOSITE PANELS WALL	1.69	5.95
TRIPLE GLAZE LOW-E ALUMINUM FRAME WINDOW W/ CAVITY INSULATION WINDOW	4.10	1.21
TOTAL	22.16	3.47

TOTAL RSI (m²K/W): 3.60
TOTAL R-IP (ft²Fh/BTU): 20.44

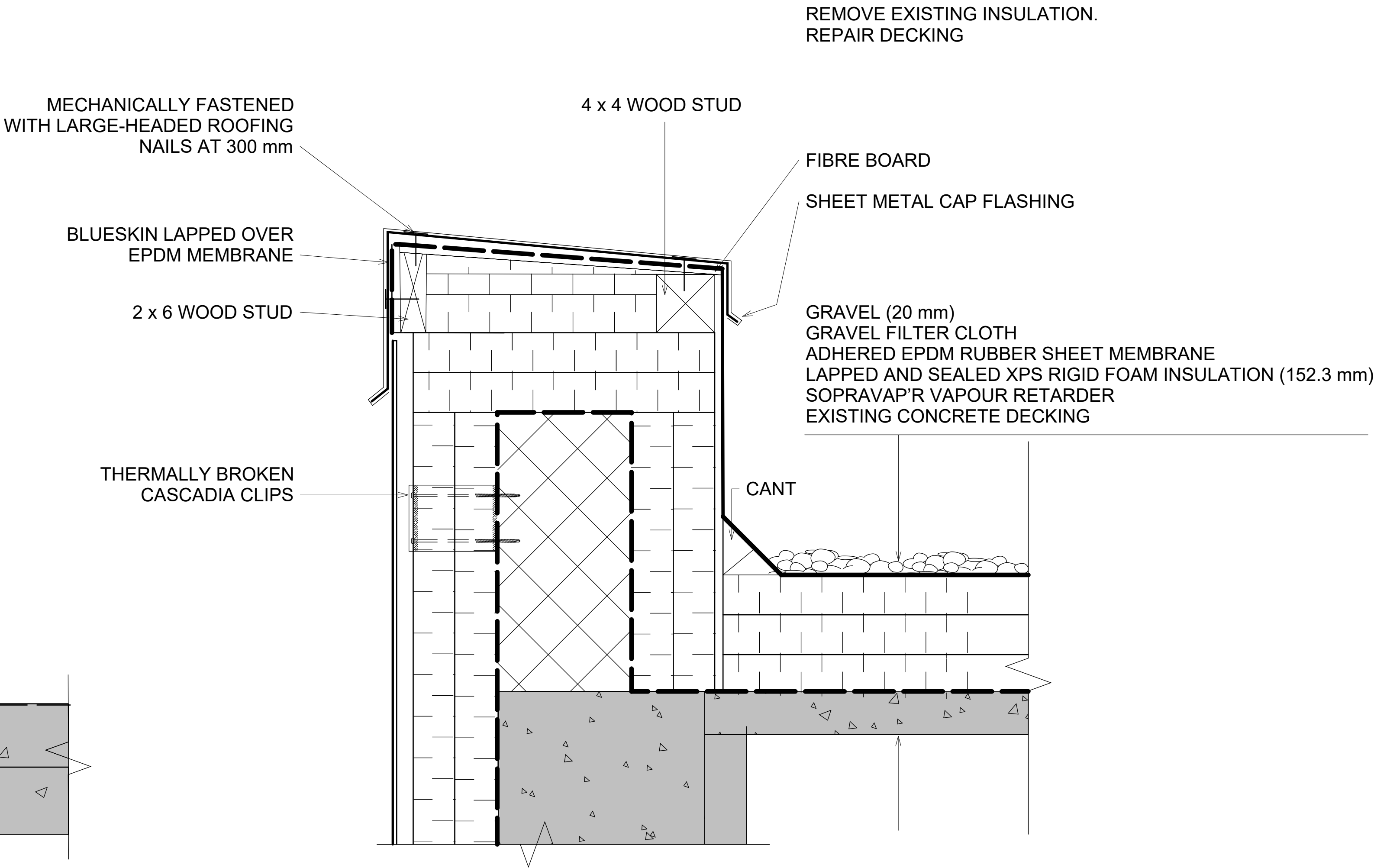
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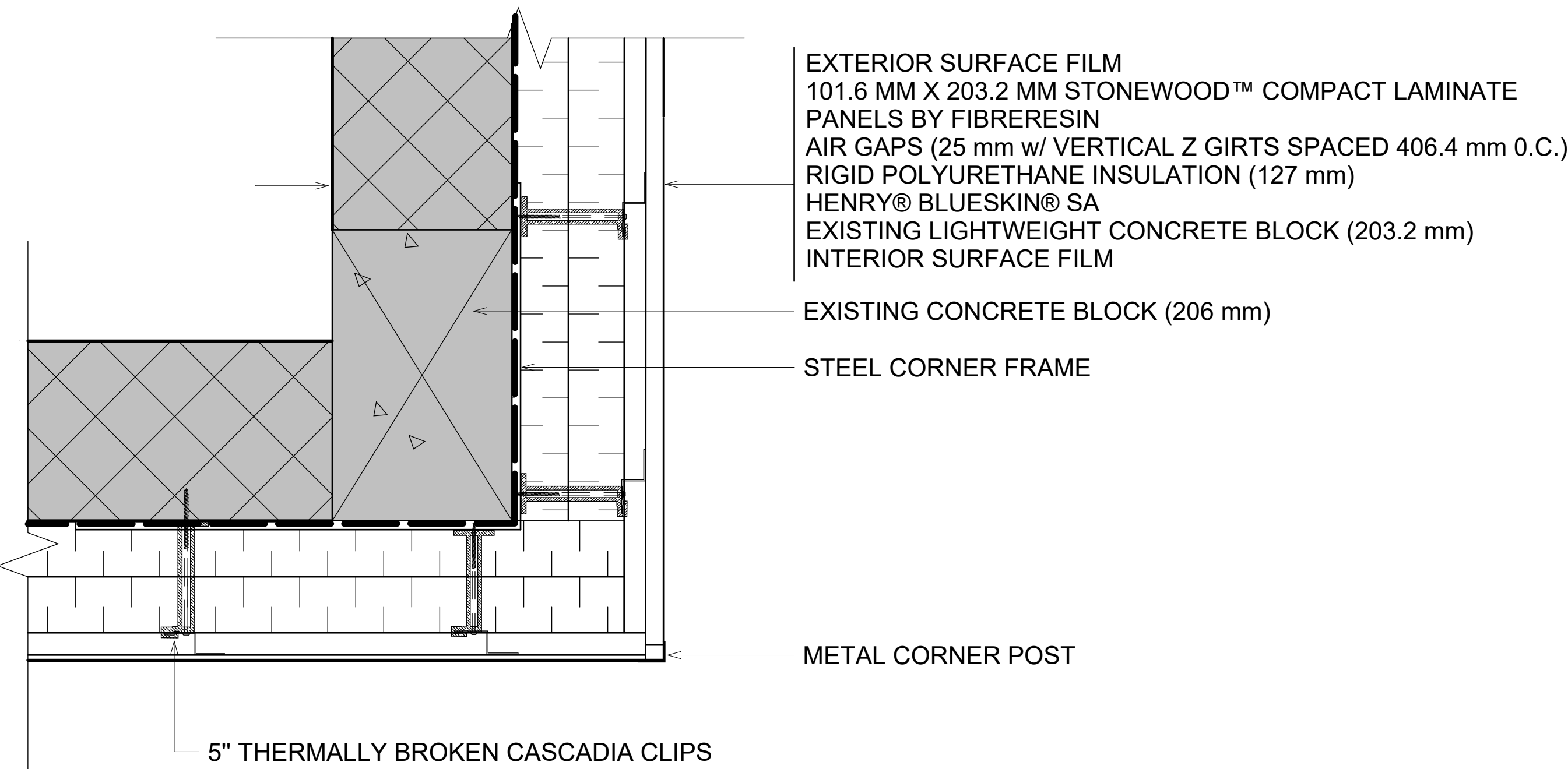
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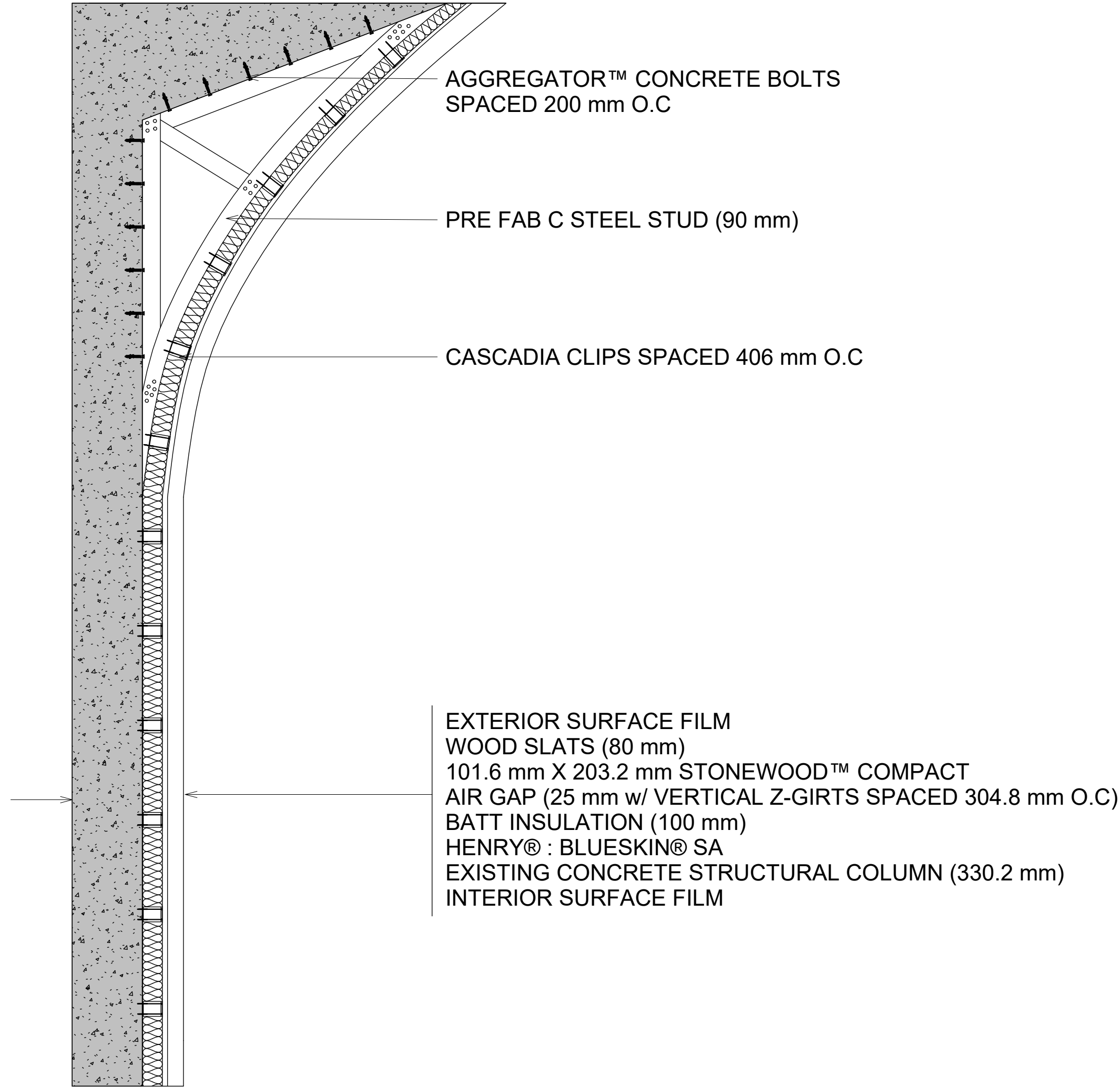
1 FOUNDATION DETAIL
1 : 5



2 ROOF DETAIL
1 : 5



1 CORNER DETAIL
1 : 5



2 MUSHROOM COLUMN DETAIL
1 : 20

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S2B ENGINEERING 2
RECLAD

200 UNIVERSITY AVE W, WATERLOO, ON

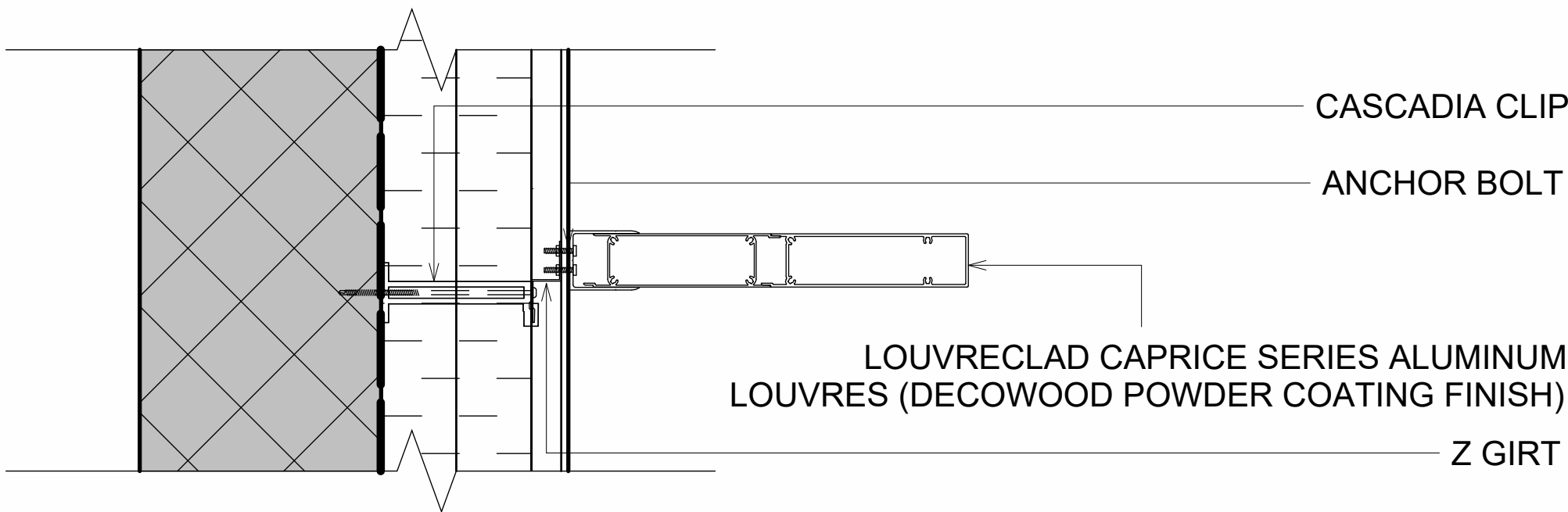
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SHADING DEVICE

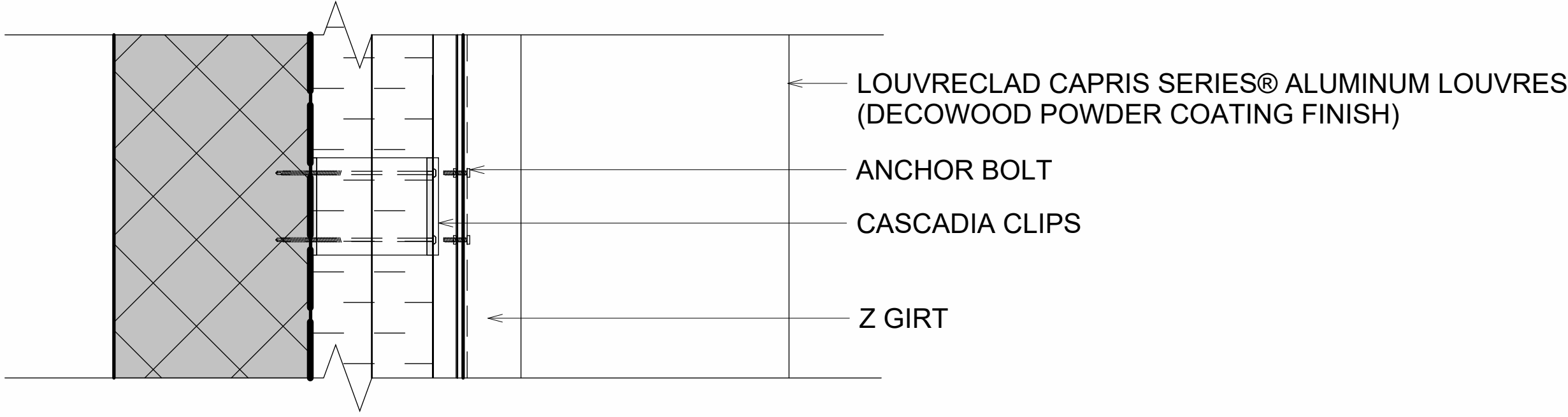
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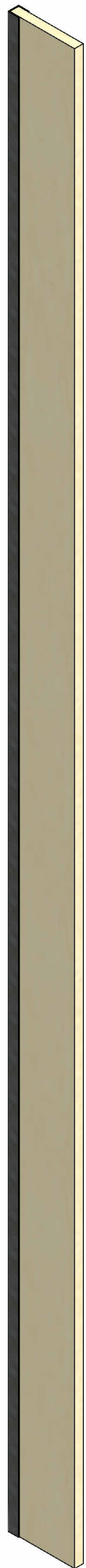
A-600



1 SHADING DEVICE DETAIL TOP VIEW
1 : 5



2 SHADING DEVICE DETAIL SIDE VIEW
1 : 5



3 3D SHADING DEVICE



4 SUN ANALYSIS
NTS