

The background of the page is a vibrant red. It is decorated with several abstract, geometric shapes in blue, green, and white. In the top right, there is a white circle with a blue border, partially overlapping a dark blue rectangular area. In the top left, there is a green curved shape. In the bottom left, there is a blue shape with a white circle inside, and a larger blue shape with a white circle inside. In the bottom right, there is a large green curved shape and a red curved shape with a white border. The text is positioned in the upper left quadrant of the red background.

Appendix P
UCD Bus Interchange –
Plaza Shelters

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1 - Introduction

1.1 - Summary of Proposed Development

Steven Holl Architects and University College Dublin are very pleased to submit this Preliminary Design Report for the UCD Interchange Shelter Building: Appendix to Bray City Centre CBC preliminary design report as part of the 'BusConnects Dublin Core Bus Corridor Infrastructure Works.

We have been fully engaged with the National Transport Authority and their consultants in the design of the UCD Interchange to create an iconic, functional interchange that meets the following aims:

Provide enhanced bus service - Deliver infrastructure that supports a more efficient, reliable and better bus system for more people, with increased capacity and quality

Enable future growth at UCD – The UCD Interchange will facilitate sustainable growth on Campus

Support UCD's Travel Plan – Encourage sustainable travel by supporting improved modal share – improved bus, cycling and walking facilities.
Reducing % car travel from 25% in 2016 to 19% by 2026

Deliver connectivity and integration – Create a safe and attractive travel experience for all users.

Placemaking excellence – Integrate urban realm, landscape and architecture for an uplifting atmosphere, enhancing the special landscape of this Place.

UCD BUS INTERCHANGE SHELTER BUILDING

The waiting Shelter is designed as a pair of pavilions, each adjacent to stops on each side of the island. This arrangement allows for open circulation between the pavilions for more direct user access to the buses. It reduces the scale of the architectural elements so that the landscape is heightened. The semi-enclosed portion of the Shelter provides protected waiting areas. The Shelter's large canopy provides generous covered area for the users.

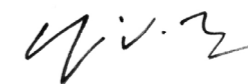
Steven Holl's concept for the architecture of the Shelter was inspired by a passage from Ulysses describing a traveler on the road "equipped with a scented handkerchief (not for show only). Handkerchief-like folded canopies float on rectangular glass enclosures. The canopies are made of pre-weathered Rheinzink, the same material used for the exterior of the adjacent Centre for Creativity. Their organic, faceted geometry is complementary to the prismatic, geologically-inspired geometry of the Centre for Creativity. The cladding conceals the structure and services for unified appearance. Quotes by James Joyce and other esteemed UCD graduates are inscribed into the sandblasted top portion of the shelter's glass walls.

The unique design will create a recognizable landmark along the Bray to City Centre Core Bus Corridor. It aims to create a sense of place particular to UCD, orienting all passengers with an uplifting atmosphere.

Sincerely,



Steven Holl



Chris McVoy

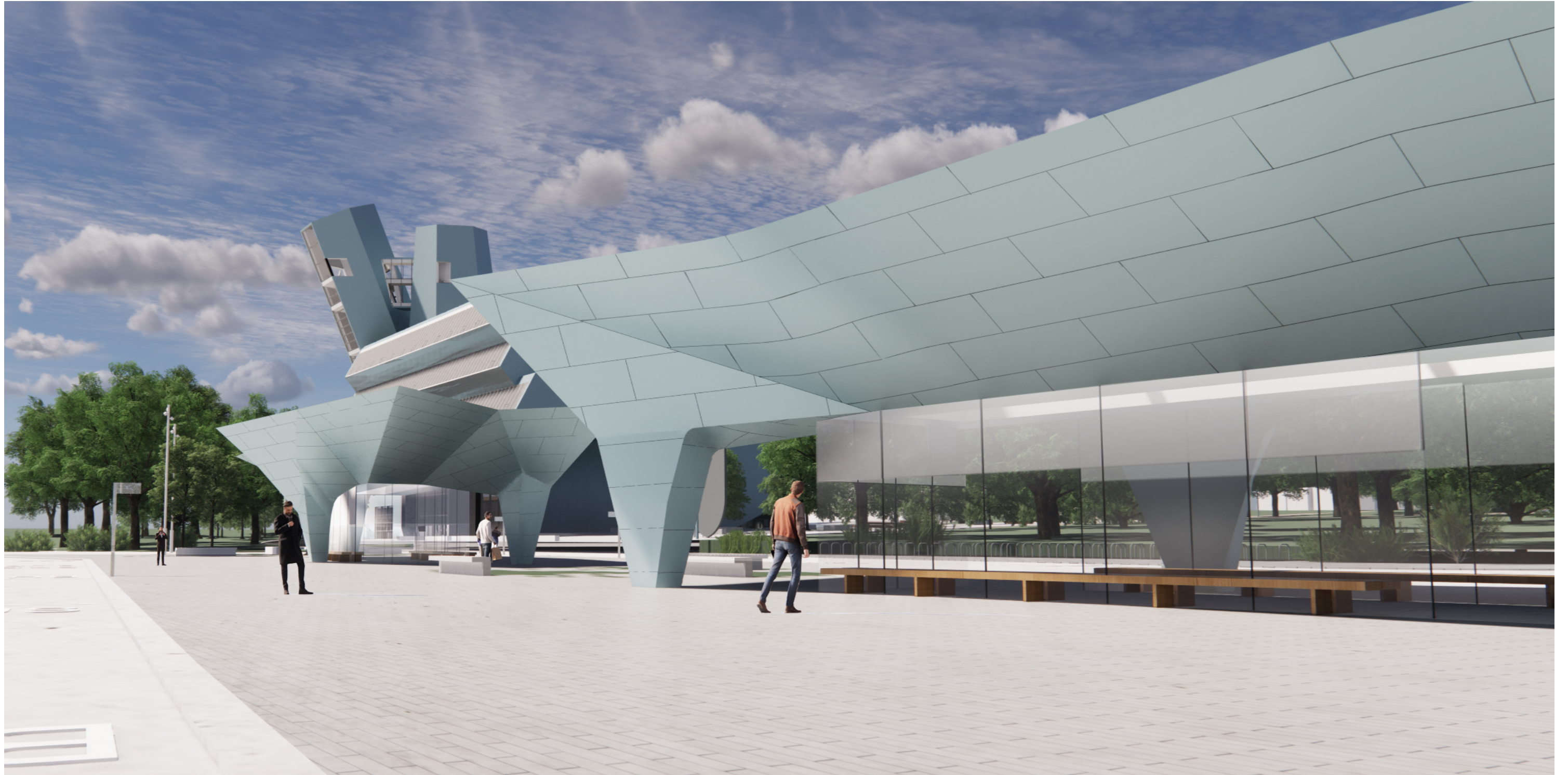
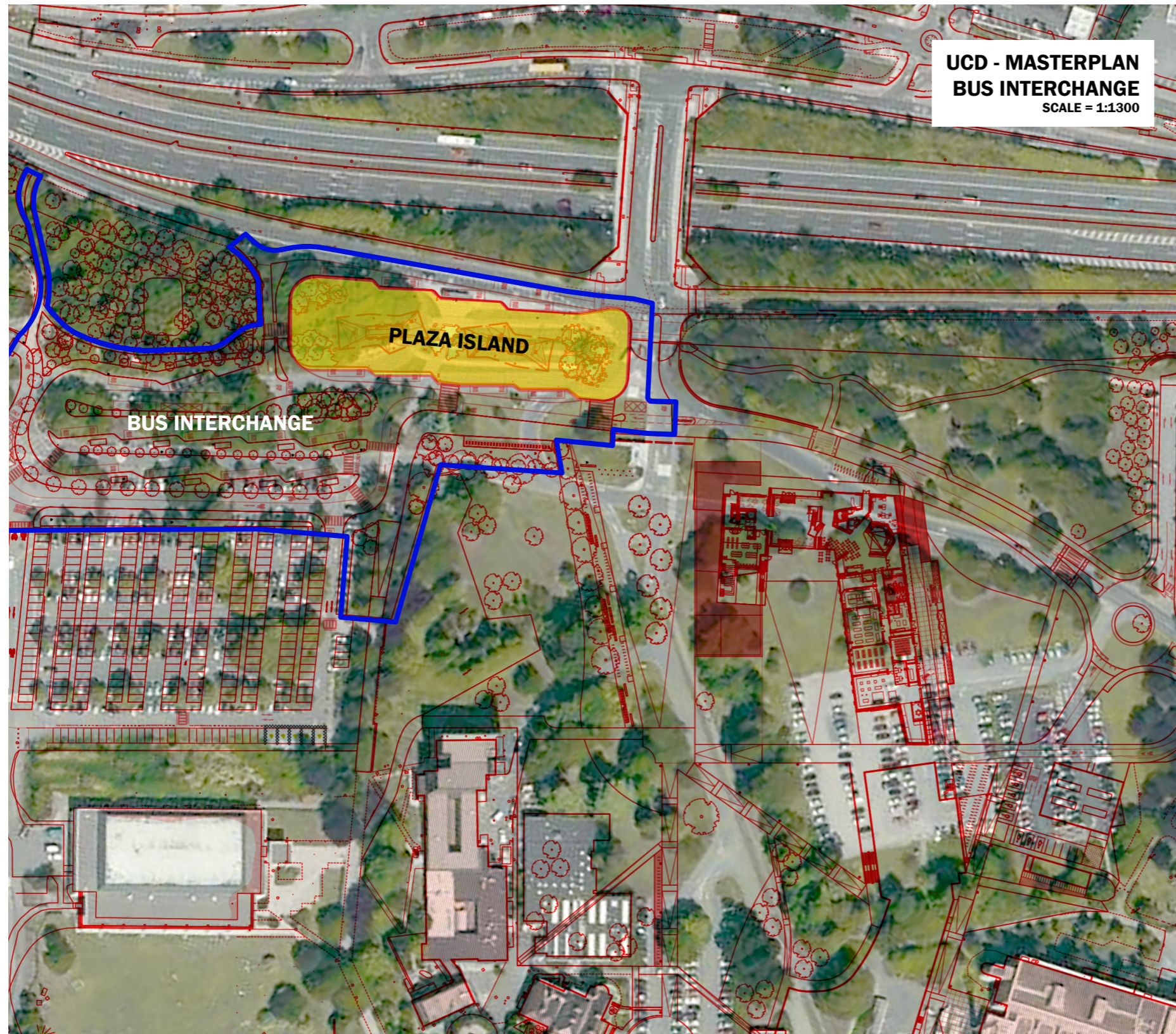


Figure 1.1 - View from Bus Interchange Shelter to the new UCD Centre for Creativity

2 - Site Context

2.1 - Bus Interchange Location



BUS INTERCHANGE LOCATION IN RELATION TO FUTURE CAMPUS

Since commencing the masterplan for UCD's Future Campus in 2018, UCD has planned for an improved bus interchange at the proposed location.

The UCD Future Campus Phase 1, currently being realized, has been designed to elevate the campus arrival experience. The Bus Interchange is a key component of the new campus entry.

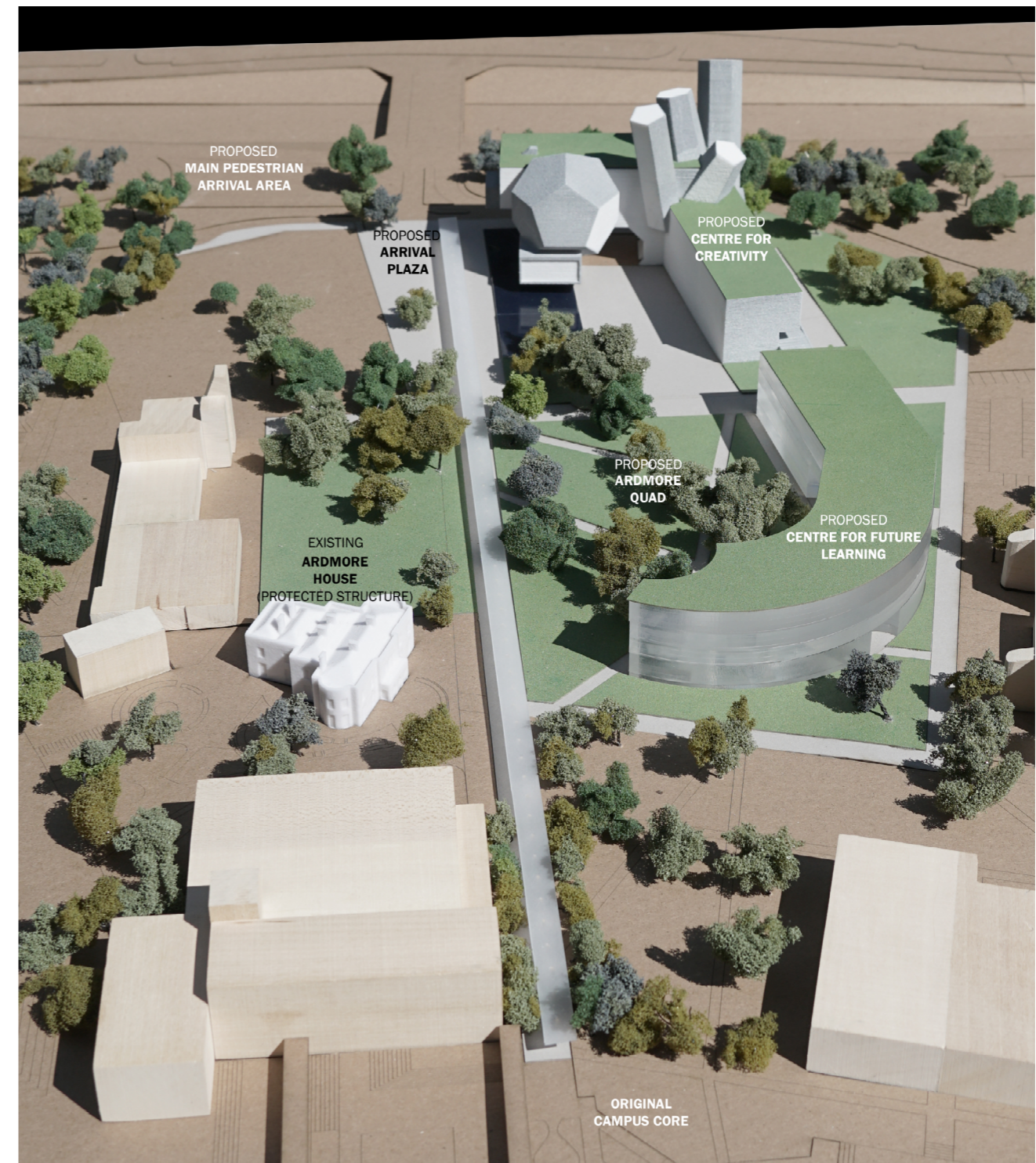
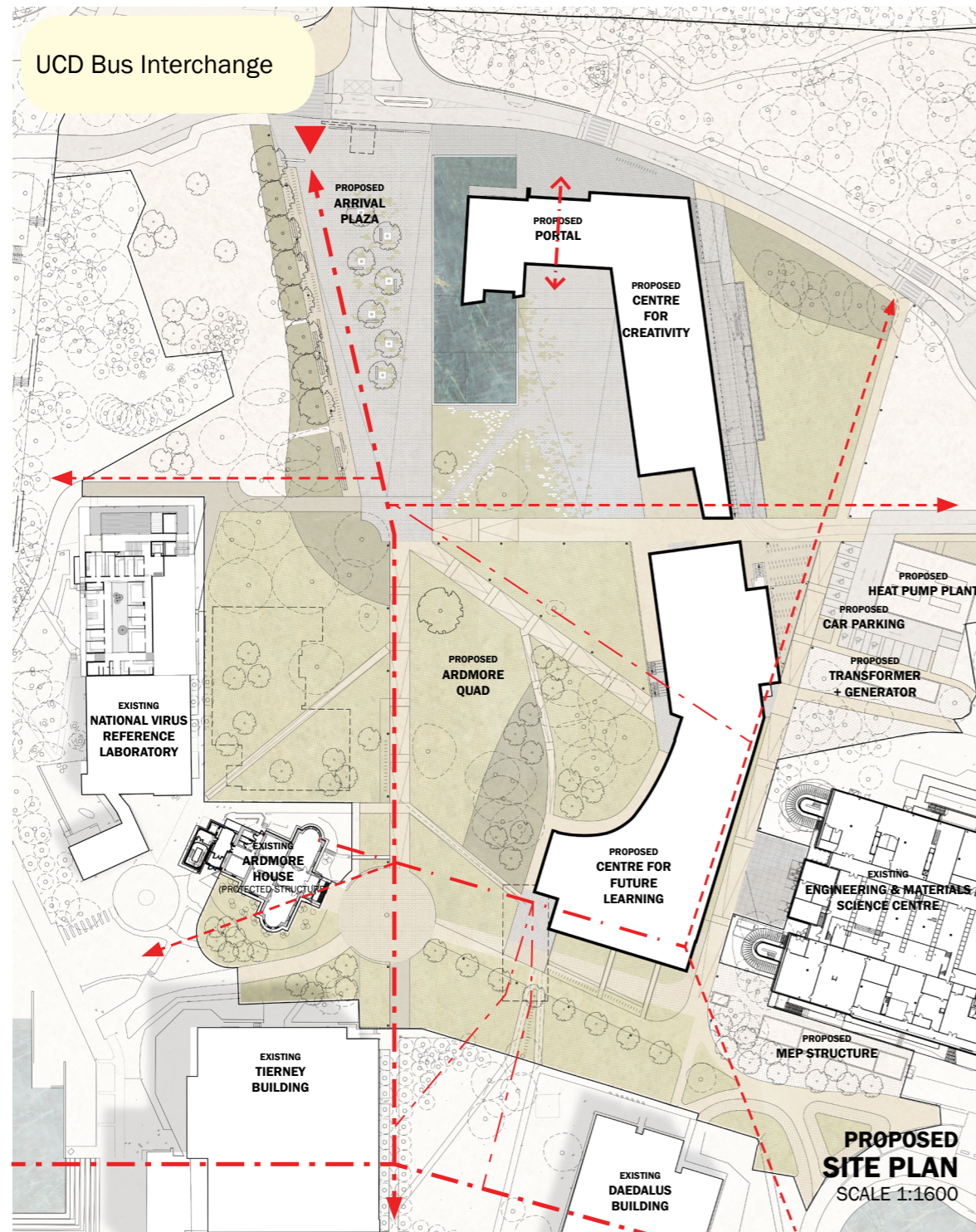
Figure 2.1.1 - UCD bus interchange location in context. UCD Future Campus Phase 1 shown in red lines.



Figure 2.1.2 - Current plaza island site

BUS INTERCHANGE LOCATION IN RELATION TO FUTURE CAMPUS

The Bus Interchange has been located at the campus entry, adjacent to Route 138 flyover. The Future Campus Phase 1 will create a new Arrival Plaza directly connecting to the Bus Interchange. The campus entry has been designed to greatly improve, and safely orchestrate, the multiple circulation flows of pedestrians, bicycles, vehicles, and buses. The campus entry will be marked by the new 13,000 M2 Centre for Creativity, an iconic, state-of-the-art work of architecture that signal's UCD commitment to creativity's central role in the future of education. The bus interchange is strategically placed adjacent to the arrival plaza to facilitate the UCD masterplan and its focused campus entry.



Figures 2.1.3 & 2.1.4 - Future Campus Phase 1 Arrival axis and plaza connect the original and Future Campus directly to the Bus Interchange campus entry

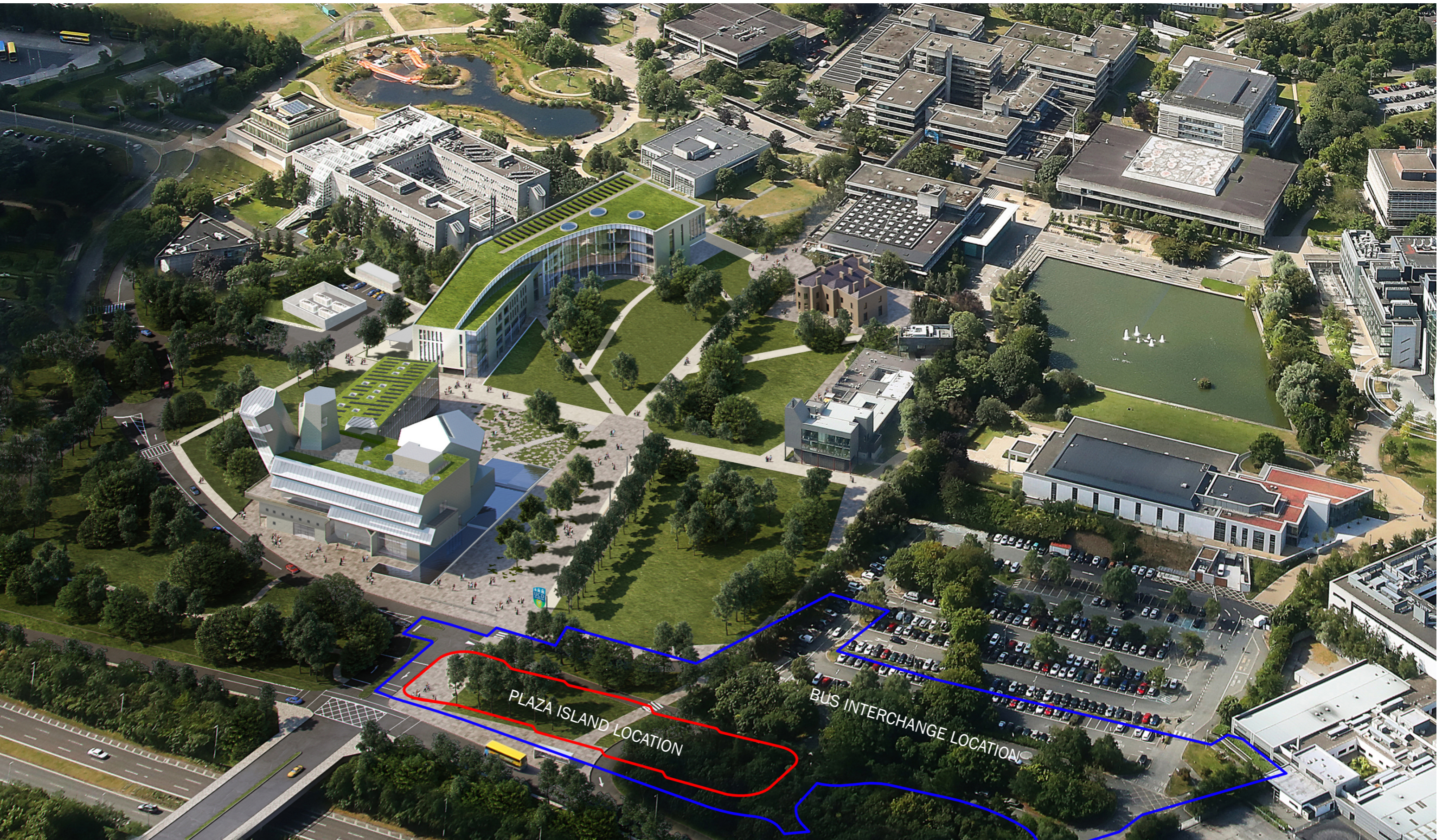


Figure 2.1.5 - Future Campus Phase 1 rendering in context showing the Centre for Creativity and new Arrival Plaza next to Bus Interchange Site

2.2 - Bus Interchange Location: UCD Bus Interchange Design Overview



Design Overview:

- Bus Interchange - Main Interchange Area

Figures 2.2.1 - Site location diagram

Figures 2.2.2 - Plaza Island

Plaza Island & Bus Interchange Location

- Integrate bus stops, waiting areas and woodland walkway with key pedestrian and cyclist desire lines
- Integrates, creates, caters, and ties in as high quality public realm sympathetic to Future Precinct
- Cater for priority bus movements while retaining capacity for vehicular traffic
- Tie-in with proposals on R138 as required – connectivity for R138 southbound bus stops and Woodbine residents
- 12 dedicated stops allowing for forecast bus services
- Cater for local, peak hour, intercity and coach services
- Provide high level of segregation between bus movements and other modes
- Caters for pedestrian and cyclist desire lines
- New shared path connecting to R138



Figures 2.2.3 - Bus Interchange Location

3 - Concept Design Principles

3.1 - Design Philosophy



Figure 3.1.1 - Concept watercolor

Steven Holl's concept for the architecture of the waiting shelters was inspired by a passage from Ulysses (Figure 3.2). The canopy is made of pre-weathered Rheinzink, the same material used for the exterior of the adjacent Centre for Creativity. The handkerchief-like folded cladding of the canopy is complementary to the prismatic, geologically-inspired geometry of the Centre for Creativity. The cladding conceals the structure and services for unified appearance. Quotes by James Joyce and other esteemed UCD graduates are inscribed into the sandblasted top portion of the shelter's glass walls.

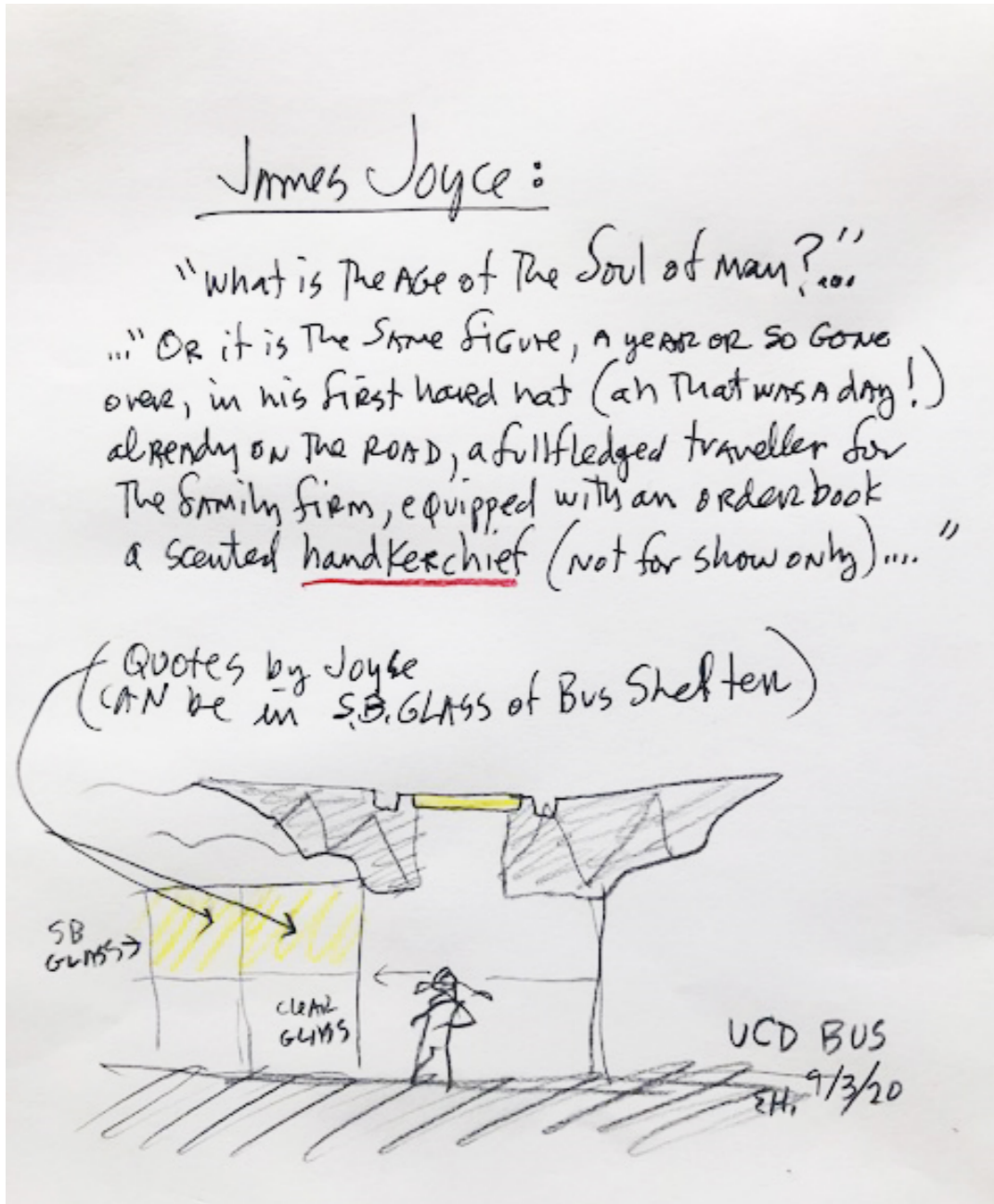


Figure 3.1.2 - Ulysses passage Inspiration

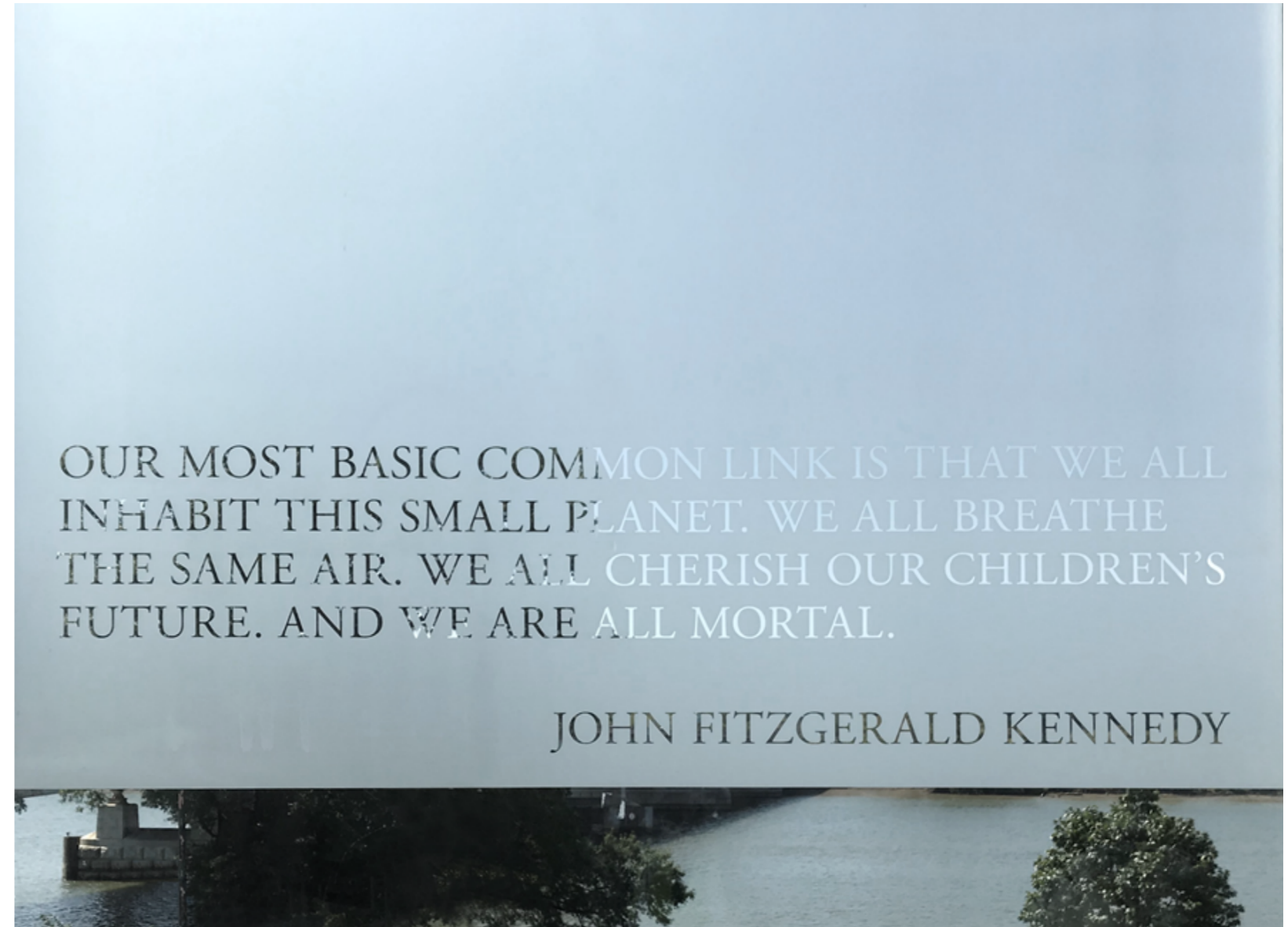


Figure 3.1.3 - Quotes from Important UCD Alumni would be inscribed in the shelter sandblasted glass, as was done with JFK quotes at The Reach expansion of the Kennedy Center For The Performing Arts. Washington D.C., USA 2019, Steven Holl Architects

3.1.1 - Interchange Layout Proposal



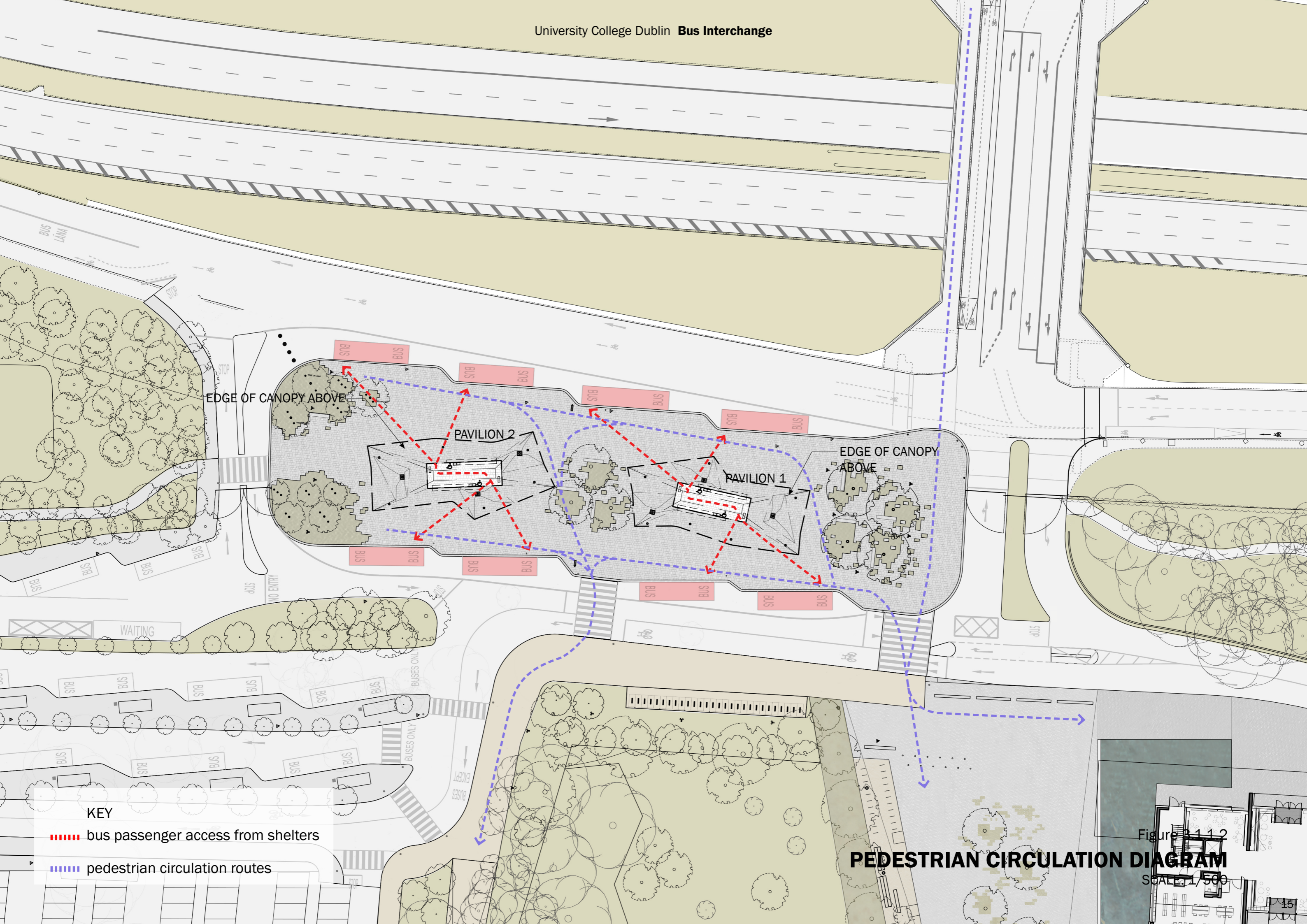
Figure 3.1.1.1 - View from R138/ Stillorgan Rd. Flyover to Bus Interchange Shelter and Campus Entry

The Bus Interchange has been designed to greatly improve, and safely orchestrate, the multiple circulation flows of pedestrians, bicycles, vehicles, and buses. The pedestrian route from the N 138 flyover crosses in-line to the islands, and then directly in line to a wide crossing to the new Arrival Plaza.

Several shelter configurations were studied; it was determined that a pair of shelters, each serving 2 stops on each side of the island, provided the best passenger circulation and visibility. The shelters are positioned on the island central to the stops they serve. The space between them connects to a 2nd pedestrian crossing leading to a path connecting to O'Reilly Hall.

The shelter's cantilevered canopies provide large covered areas of waiting, supplementing the semi-enclosed waiting rooms. 87 Linear Meters of seating is provided, enough for 40% of the estimated 350 peak bus patrons.

The canopies' organic geometry, and informal, non-parallel layout references the woodland trees' canopies. Extensive landscape on the Interchange island extends UCD's lush woodlands to enhance the bus user's experience. The existing 'Woodlands Path' connects via a crossing to the island's west side.



EDGE OF CANOPY ABOVE

PAVILION 2

PAVILION 1

EDGE OF CANOPY ABOVE

KEY

----- bus passenger access from shelters

----- pedestrian circulation routes

PEDESTRIAN CIRCULATION DIAGRAM

SCALE 1/500

Figure 2-11-2

Bus Interchange Shelter Covered Area & Seating

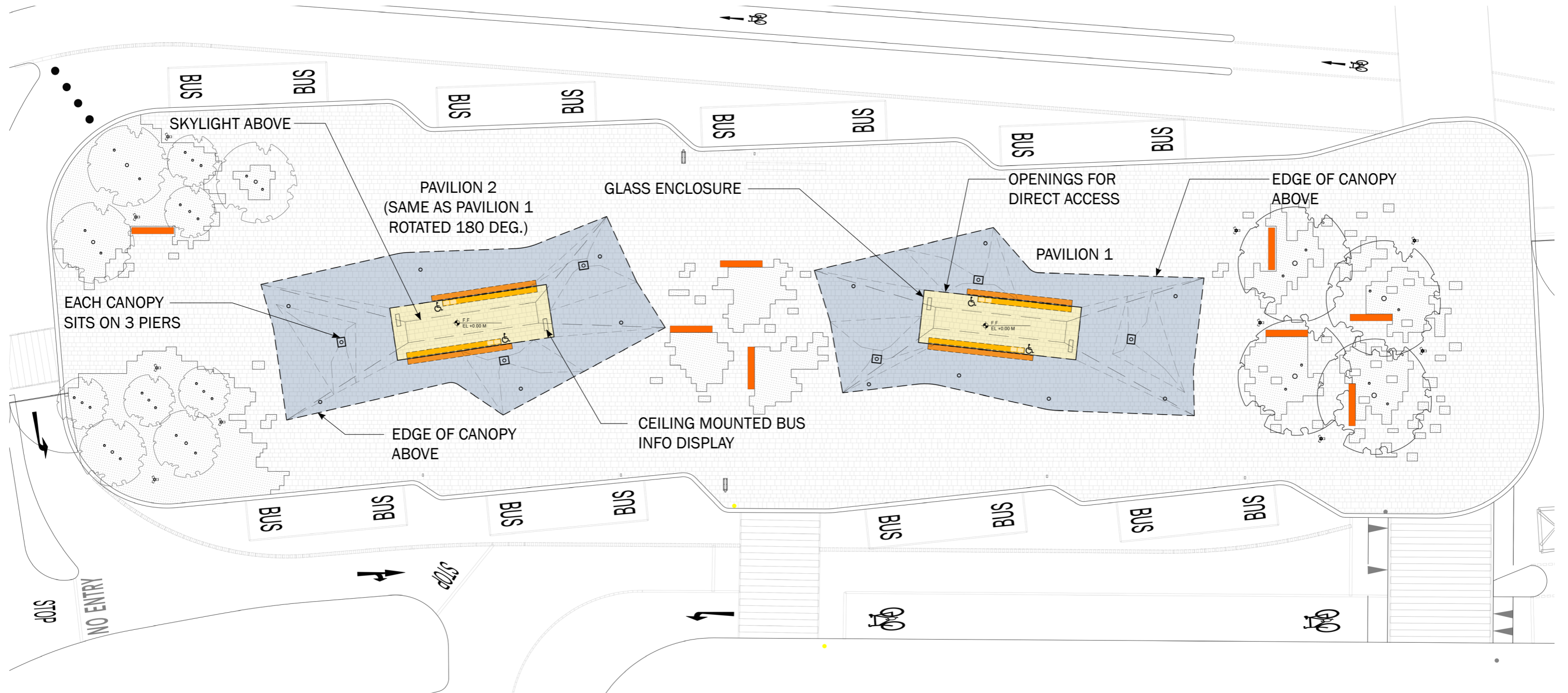


Figure 3.1.1.4
PLAN, SCALE=1/300

- KEY**
- semi enclosed area
 - covered area
 - enclosed seating
 - covered seating
 - uncovered seating

96m² semi enclosed area
496m² covered area
total 592m² enclosed & covered area

30LM semi enclosed seating
30LM covered seating
23LM uncovered seating
total 87LM seating = 141 seats, 40% of 350 peak bus patrons

3.1.2 - Sheltered Public Waiting Area

A pair of 12M x 4M semi-enclosed pavilions provide generous waiting areas. These are formed by glass walls on all sides. An entry opening on each long side faces the two stops served by the opening. This offset opening configuration provides the most direct access to the stops and acts as a wind-break. Wooden benches line the long sides of the shelter on the inside and the outside, providing semi-enclosed and covered options for seating facing the stops.

The shelters feature a central skylight with deep throat for pleasing indirect daylighting of the space. At night the translucent portion of the skylight is lit to provide indirect light to the space. The glass walls of the shelter are clear up to 1880mm for visibility, and translucent above that height. In the translucent portions, inspiring quotes from UCD alumni are written in clear letters. At night these translucent areas are lit providing an inviting glow to the inside and adjacent outside seating areas.

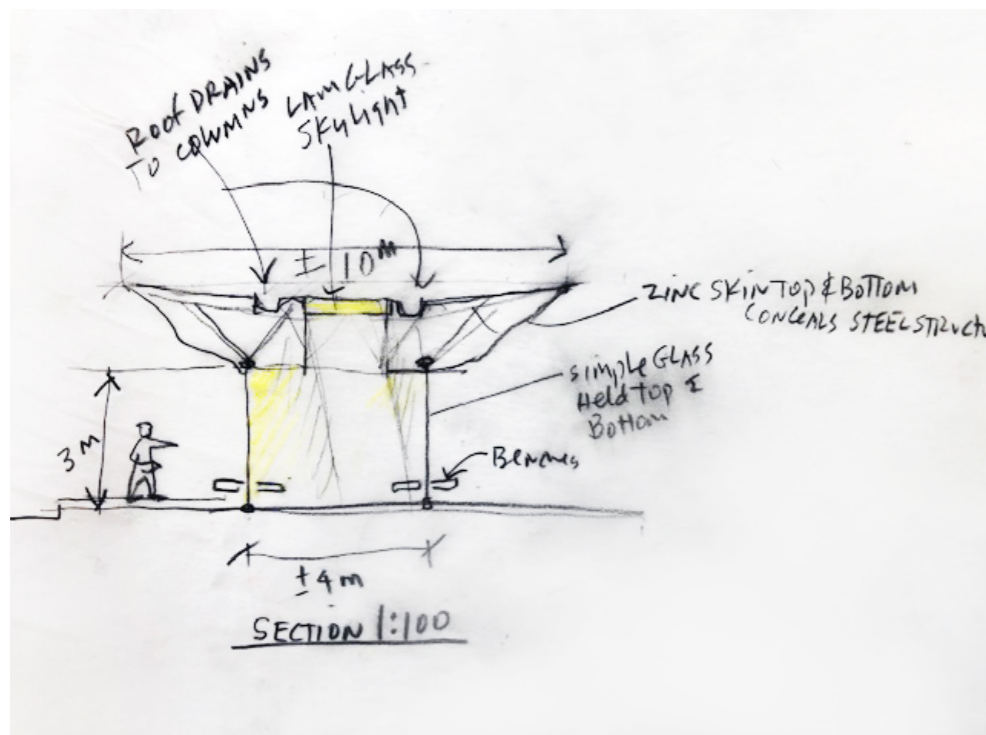


Figure 3.1.2.1 - Structural sketch

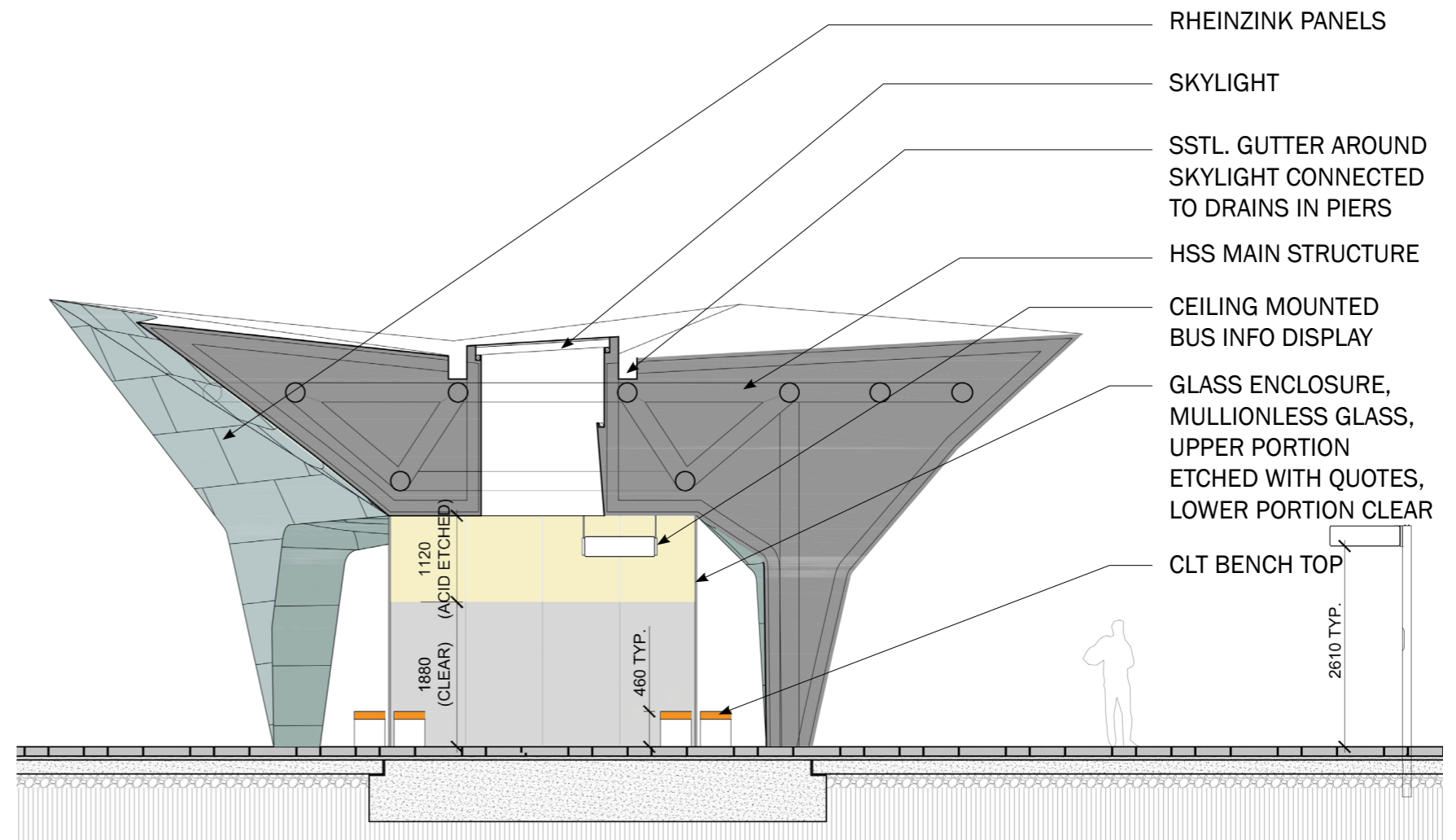


Figure 3.1.2.2 - **Diagram Section, SCALE=1/80**

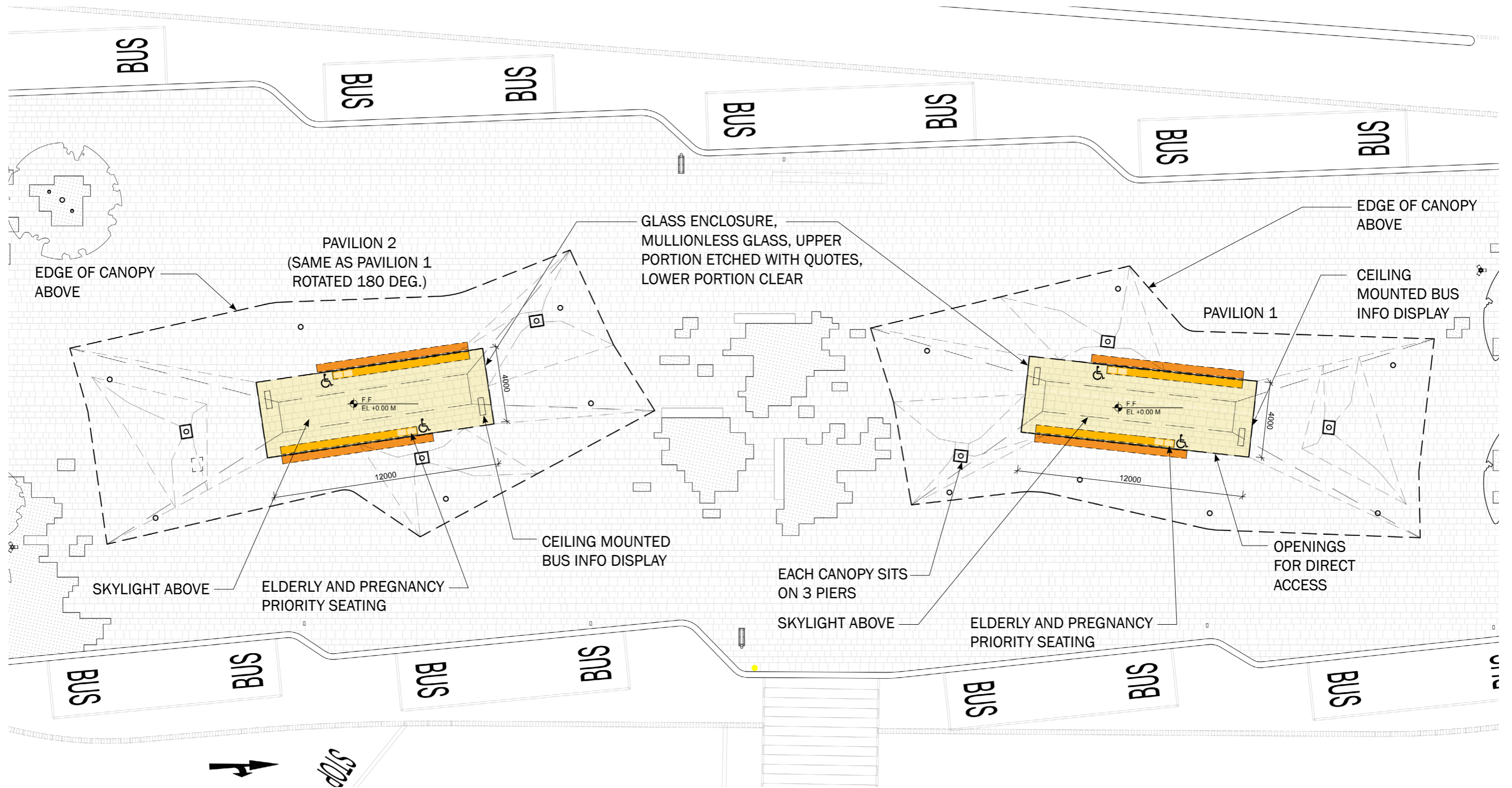


Figure 3.1.2.3 - **PLAN**, SCALE=1/200

KEY

- semi enclosed area
- CLT wood bench

3.1.3 - Canopy Design

The large canopies extend out from the pavilions to provide generous covered waiting areas. They are clad in Rhienzink panels, concealing an efficient steel structure and roof drainage piping. Supported on three legs, rising to a thin edge, they appear to 'float' over the bus interchange island. The canopies' organic geometry, and informal, non-parallel layout references the woodland trees' canopies.



Figure 3.1.3.1 - Zinc clad handkerchief geometry enables surreally floating geometry concealing rational and efficient steel structure



Figure 3.1.3.2 - View of Bus Interchange Shelter with the new UCD Centre for Creativity beyond

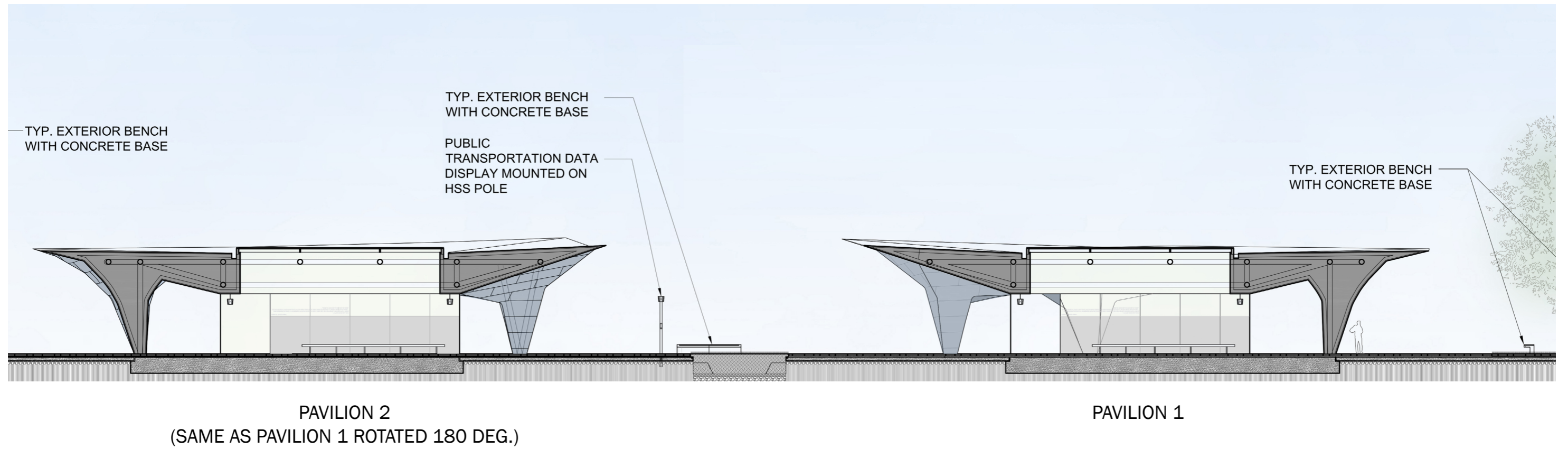


Figure 3.1.3.3 - **BUS INTERCHANGE ISLAND SECTION, SCALE=1/200**



Figure 3.1.3.4 - View from Bus Interchange Shelter to the new UCD Centre for Creativity

3.2 - Shelter Building Use

The waiting Shelter is designed as a pair of semi-enclosed pavilions, each one positioned between stops on each side of the island. This arrangement allows for open circulation on the plaza island between and around the pavilions for direct access to the buses.

The pavilions are positioned close to the buses they serve. The openings on each side of each pavilion face the buses and are staggered to buffer wind. The pavilions provide protected waiting areas with wooden seating. The pavilion enclosure is entirely glass for maximum visibility to arriving buses. Above head height the glass is translucent to reduce glare.

Each pavilion has a large canopy extending out to provide generous covered areas for waiting. Seating under the canopy is provided around the perimeter of each pavilion. Each pavilion's canopy comes to the ground on only 3 legs to maximize open paved area. Given the large area of the canopy, skylights are provided in the pavilions to maintain excellent daylighting. The canopies are up lit at night providing visibility to passengers and reflecting light down to the plaza area.

Each pavilion includes data display signage above each door opening providing bus information. Data displays at each stop provide information for that stop.

The unique design will create a recognizable landmark along the Bray to City Centre Core Bus Corridor. It aims to create a sense of place particular to UCD, orienting all passengers with an uplifting atmosphere.

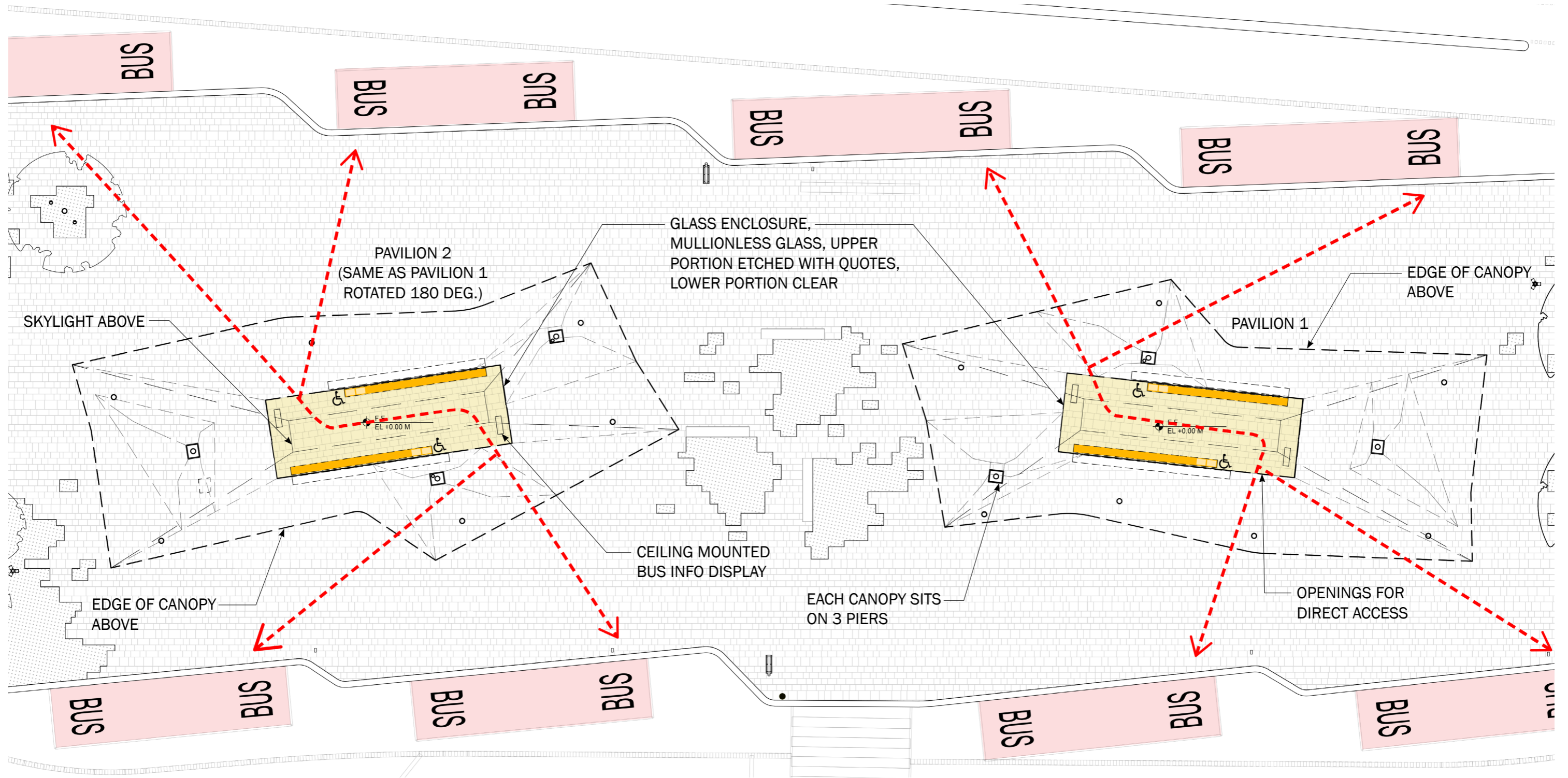


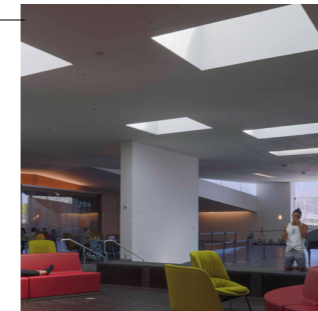
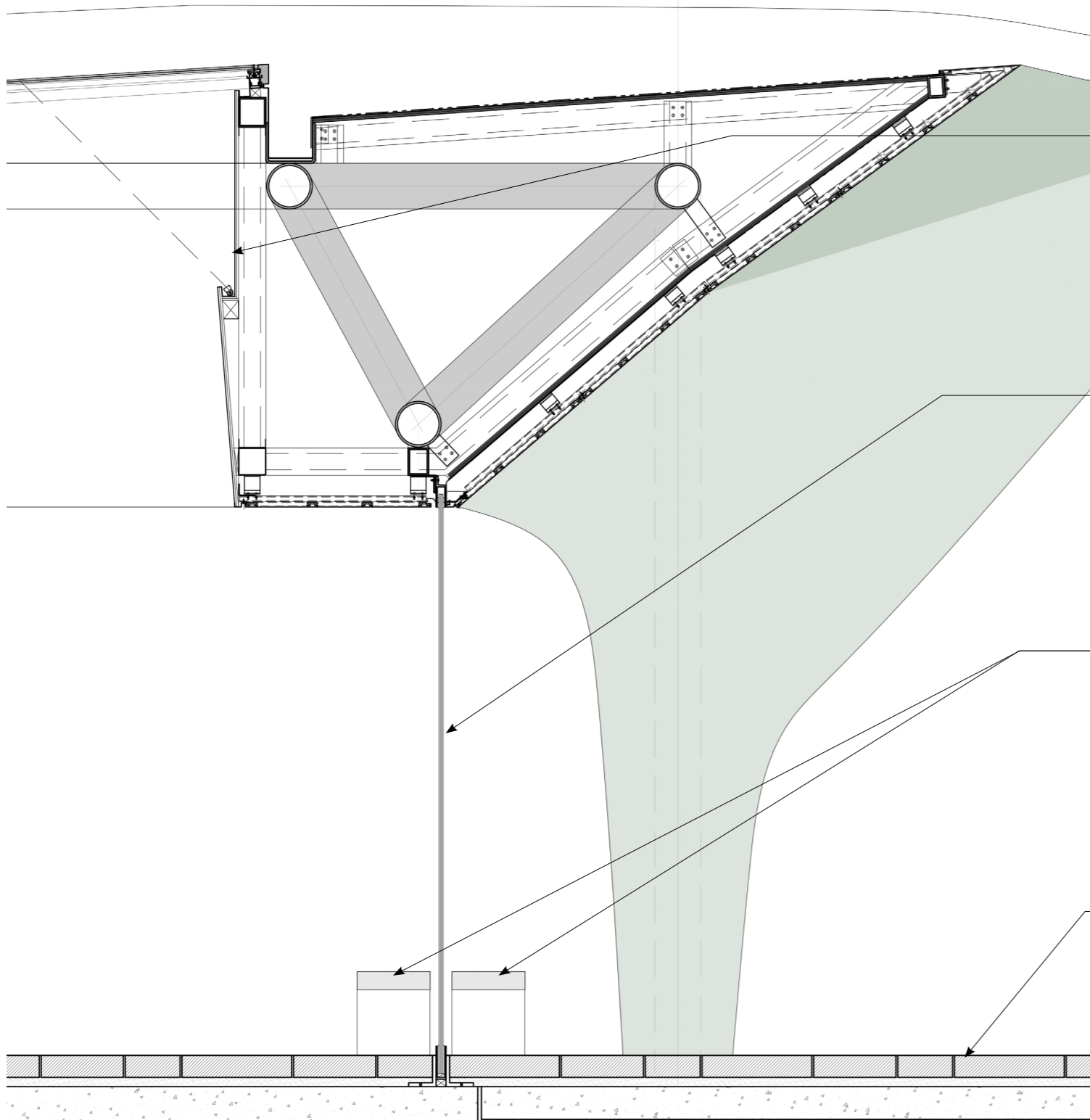
Figure 3.2.1 - **PLAN**, SCALE=1/200

- KEY
- ▬▬▬▬▬ bus passenger access from shelters
 - semi enclosed area
 - CLT wood bench

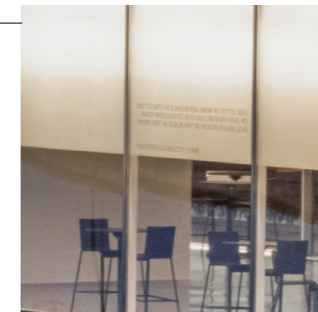
3.3 - Materials

3.3.1 - Sheltered Public Waiting Area

Materials are durable and easy to maintain. Granite paving extends from the island into the sheltered areas. Thick laminated-glass walls provide visibility. Durable CLT wood benches provide an inviting warm palette.



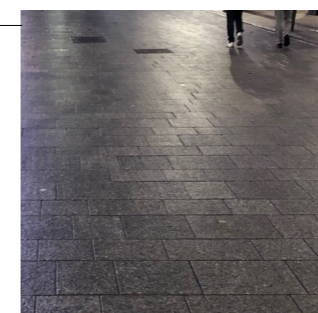
Gypsum Board at Skylight Throats



Mullionless Glass, Upper Portion Etched with Quotes in Translucent Glass & Lower Portion with Clear Glass

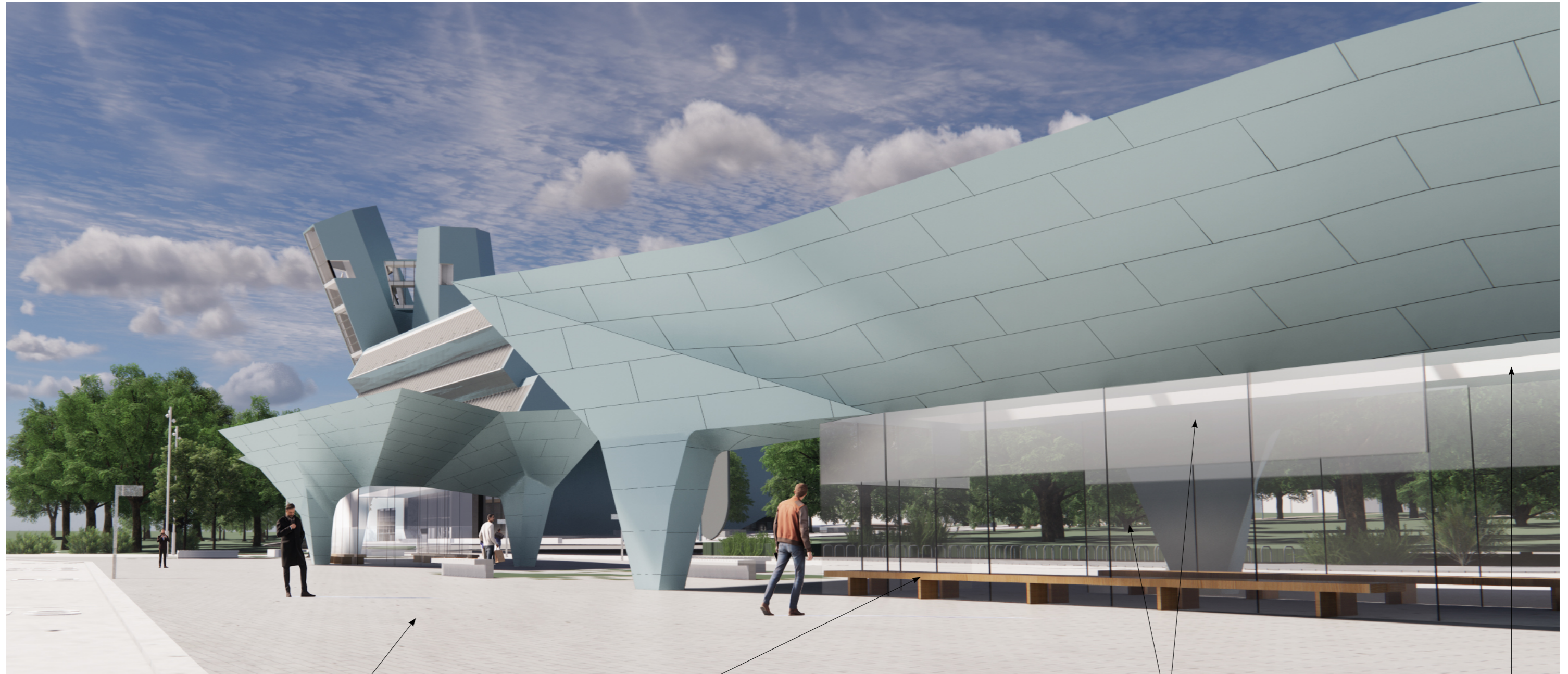


Cross Laminated Timber Oblong



Granite Paving
Grafton Street
Dublin, Ireland

Figure 3.3.1.1 - **TYP. WALL SECTION, SCALE=1/30**



Granite Paving
Grafton Street
Dublin, Ireland

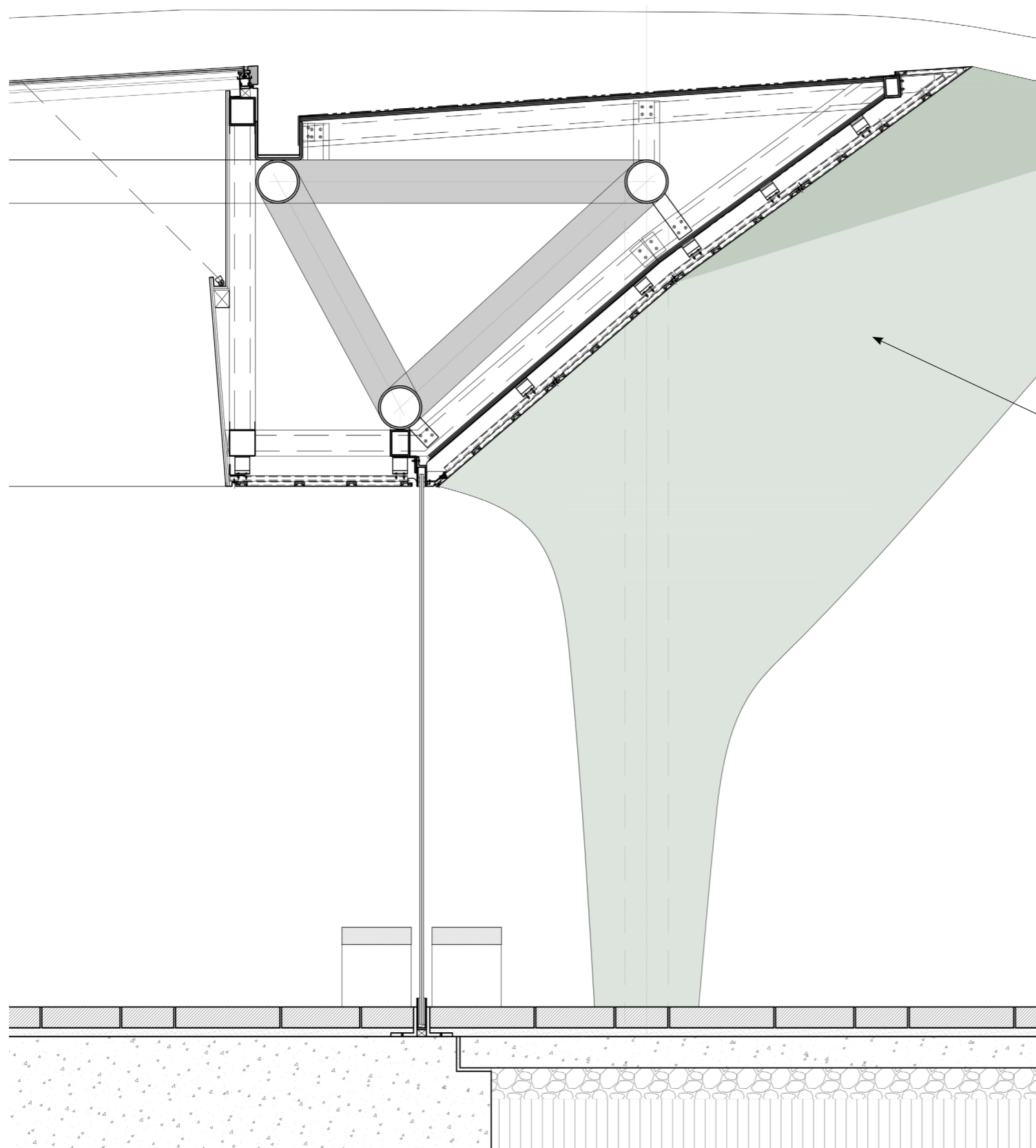
Cross Laminated Timber
Oblong

Mullionless Glass, Upper Portion Etched
with Quotes in Translucent Glass & Lower
Portion with Clear Glass

Gypsum Board at Skylight Throats

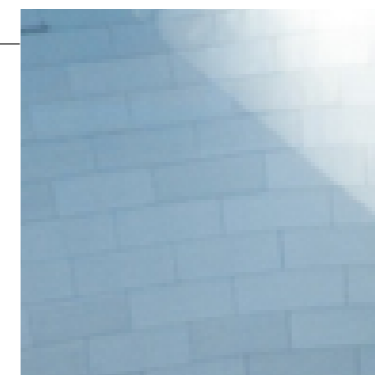
Figure 3.3.1.2 - View of Bus Interchange Shelter to the new UCD Centre for Creativity

3.3.2 - Canopy Design



The canopies are clad in pre-weathered Rheinzink panels, the same material used for the adjacent Centre of Creativity, unifying the campus entry on each side of the Arrival Plaza.

The 'folded handkerchief' surfaces will be formed in panels of CNC-fabricated frames. The complex geometry will be modeled in 3D fabrication software, and then directly output to digitally cut the frames, as was done for the Steven Holl Architects-designed Institute for Contemporary Art in Richmond, Virginia



Pre-weathered
Rheinzink Panel

Figure 3.3.2.1 - **TYP. WALL SECTION**, SCALE=1/30

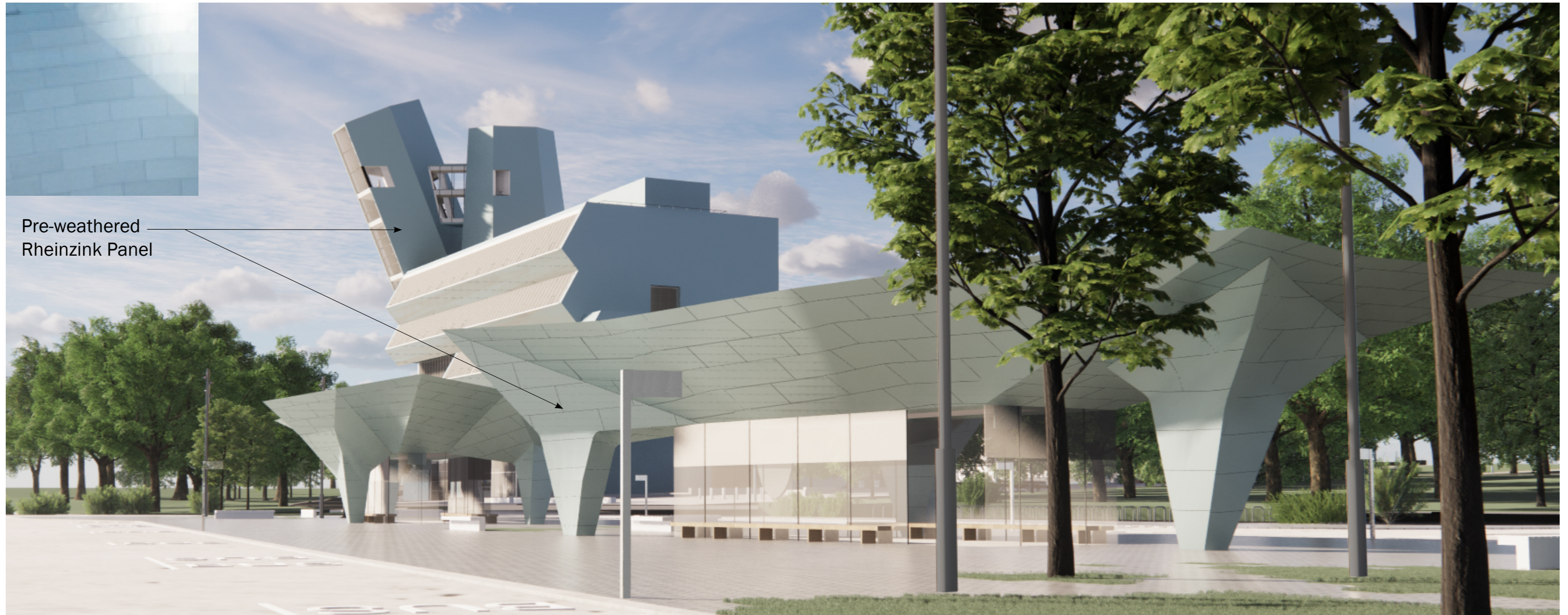


Figure 3.3.2.2 - View of Bus Interchange Shelter with the new UCD Centre for Creativity behind

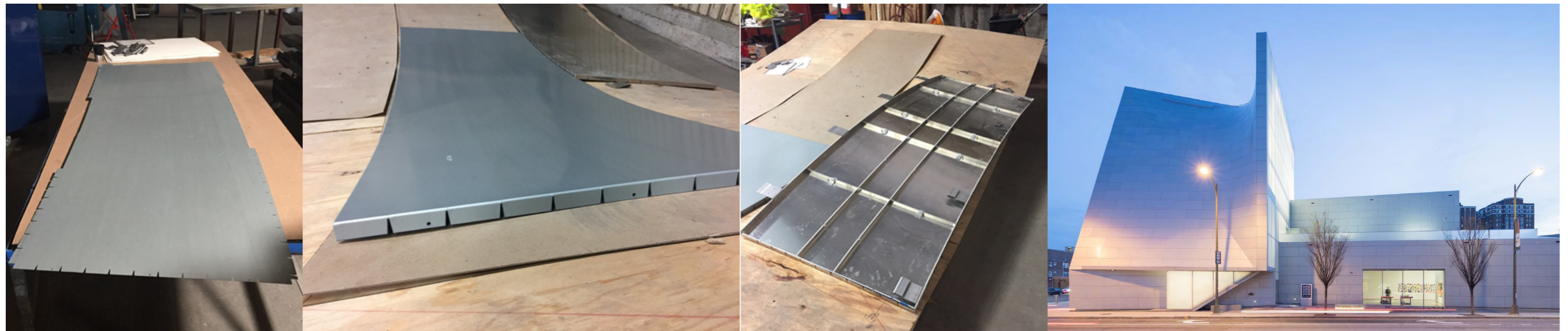


Figure 3.3.2.3 - Digitally fabricated rheinzink panels for Institute for Contemporary Art, Virginia





Figure 3.3.2.4 - Conceptual view from R138/ Stillorgan Rd. Flyover to Bus Interchange Shelter and Campus Entry

3.4 - Structure Design Principles

Sheltered Public Waiting Area & Canopy Design

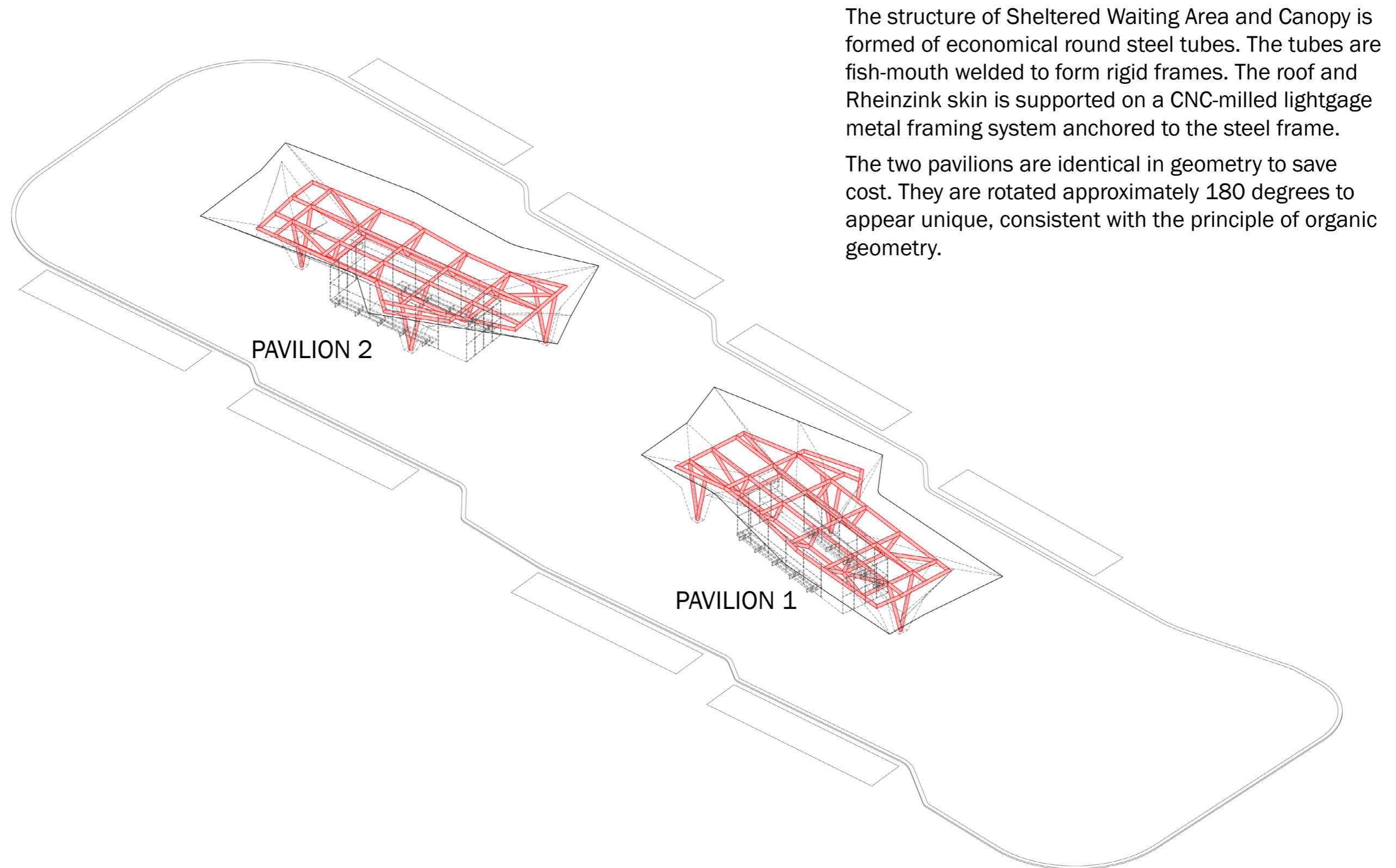


Figure 3.4.1 - **Primary Steel Framing Isometric, NTS**

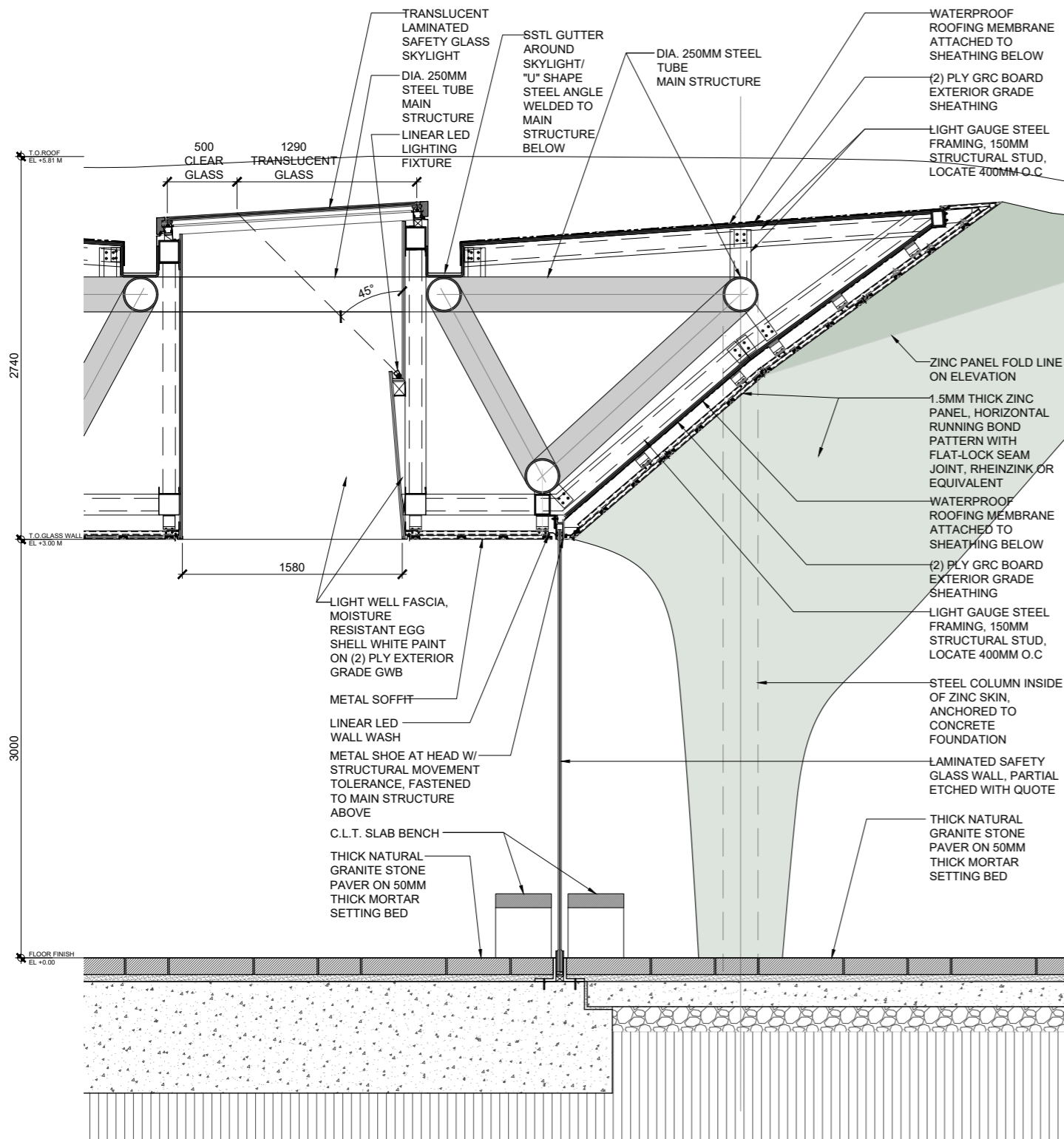


Figure 3.4.2 - **TYP. WALL SECTION, SCALE=1/40**



Figure 3.4.3 - Rheinzink supported on secondary framing which is anchored to primary steel tube frame

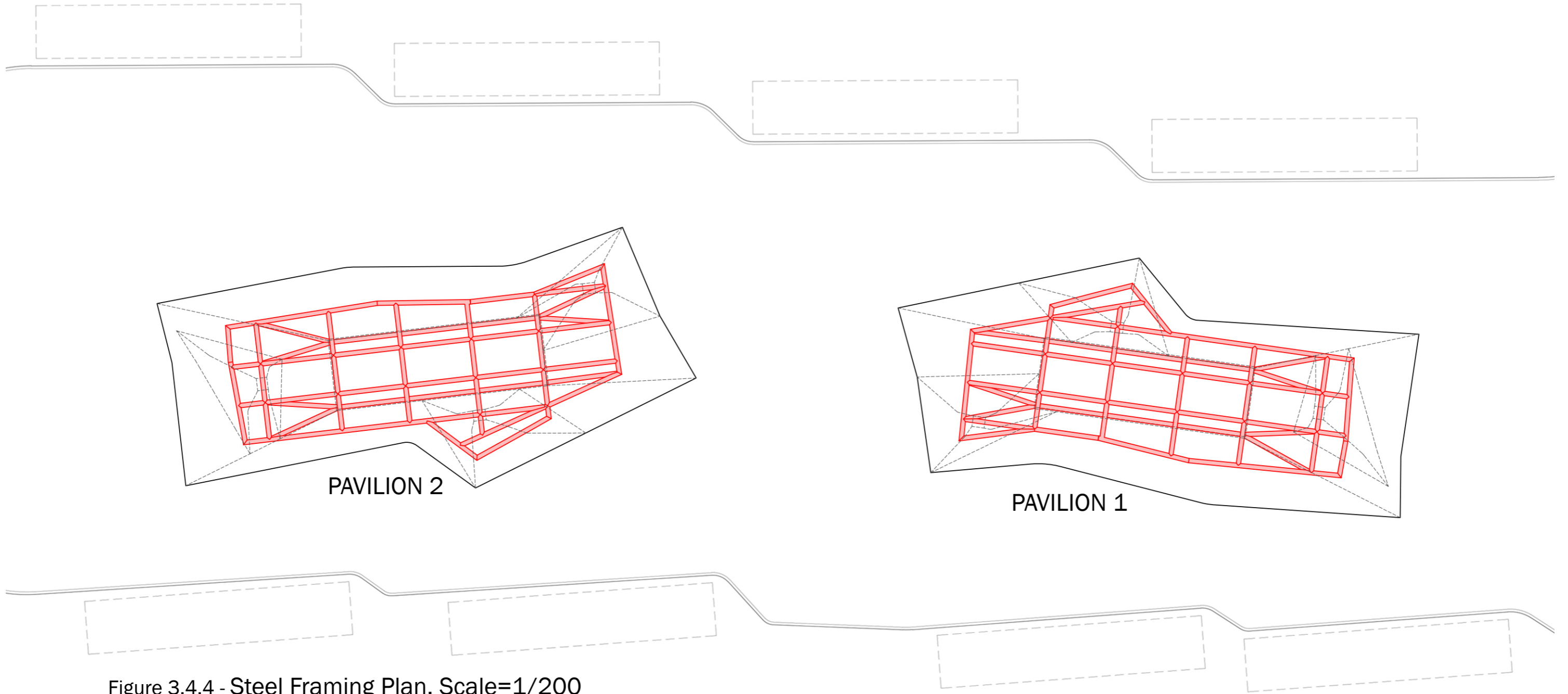


Figure 3.4.4 - Steel Framing Plan, Scale=1/200

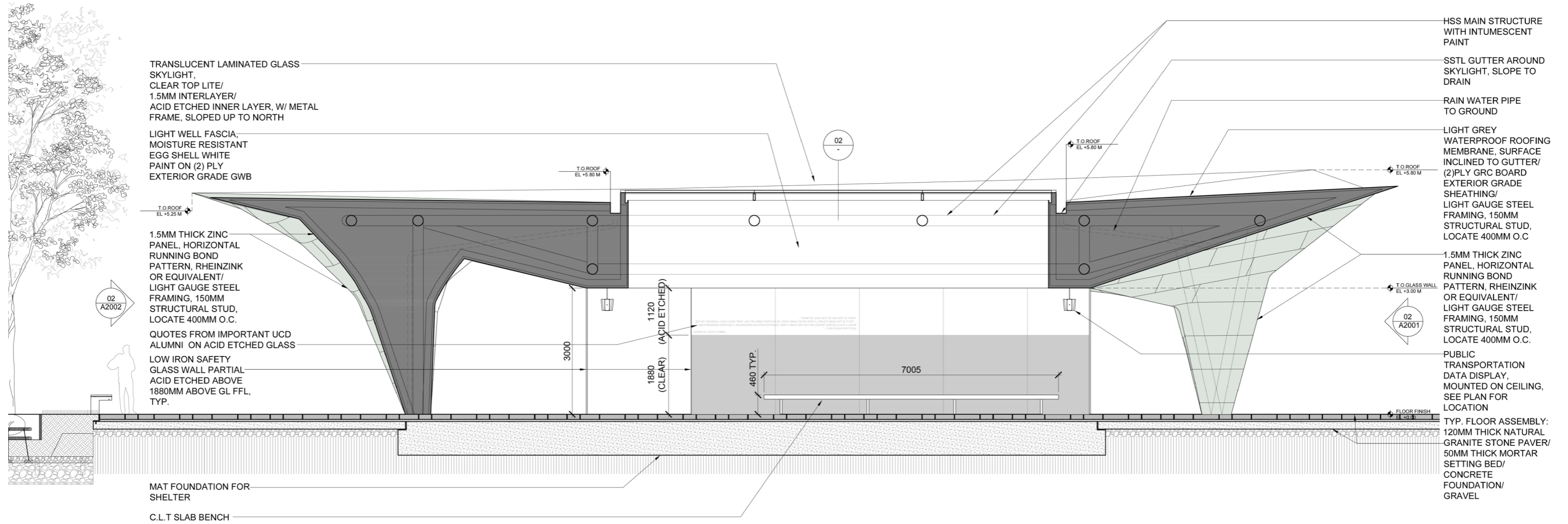
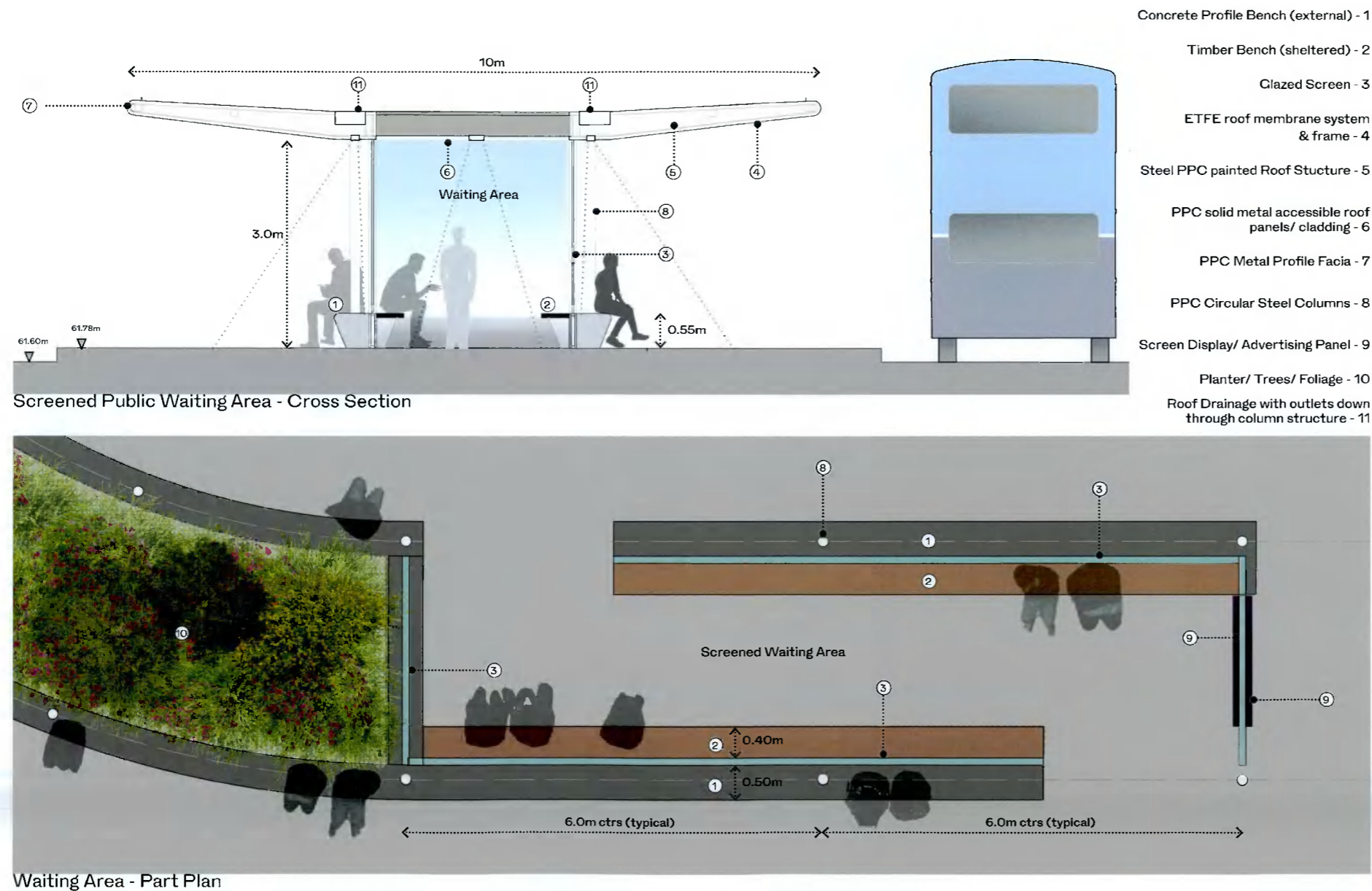


Figure 3.4.5 - **BUS INTERCHANGE SHELTER LONG SECTION, SCALE=1/100**

4 - Precedent



The Liffey Valley and Tallaght Bus Interchange designs provided valuable reference. We adopted a similar 'pavilion' approach for the UCD Bus Interchange. The UCD waiting area is similar to Liffey Valley's, with openings staggered either side and benches along the inside and outside of the long sides.

At the UCD Bus Interchange, the bus service is more frequent, and the passengers use the service more regularly, than at these examples. We anticipate shorter waiting times on the island than these precedents. In addition, current bus stop usage shows that the majority of students prefer standing to sitting while waiting. Therefore we provide a higher ratio of unenclosed, covered area to semi-enclosed area than these precedents to provide more standing waiting area.

Figure 4.1 - Liffey Valley (seating and canopy)
Henry J Lyons



Figure 4.2 - Tallaght Bus interchange plan
AECOM

5 - Visuals



Figure 5.1 - View from R138/ Stillorgan Rd. Flyover to Bus Interchange Shelter and Campus Entry



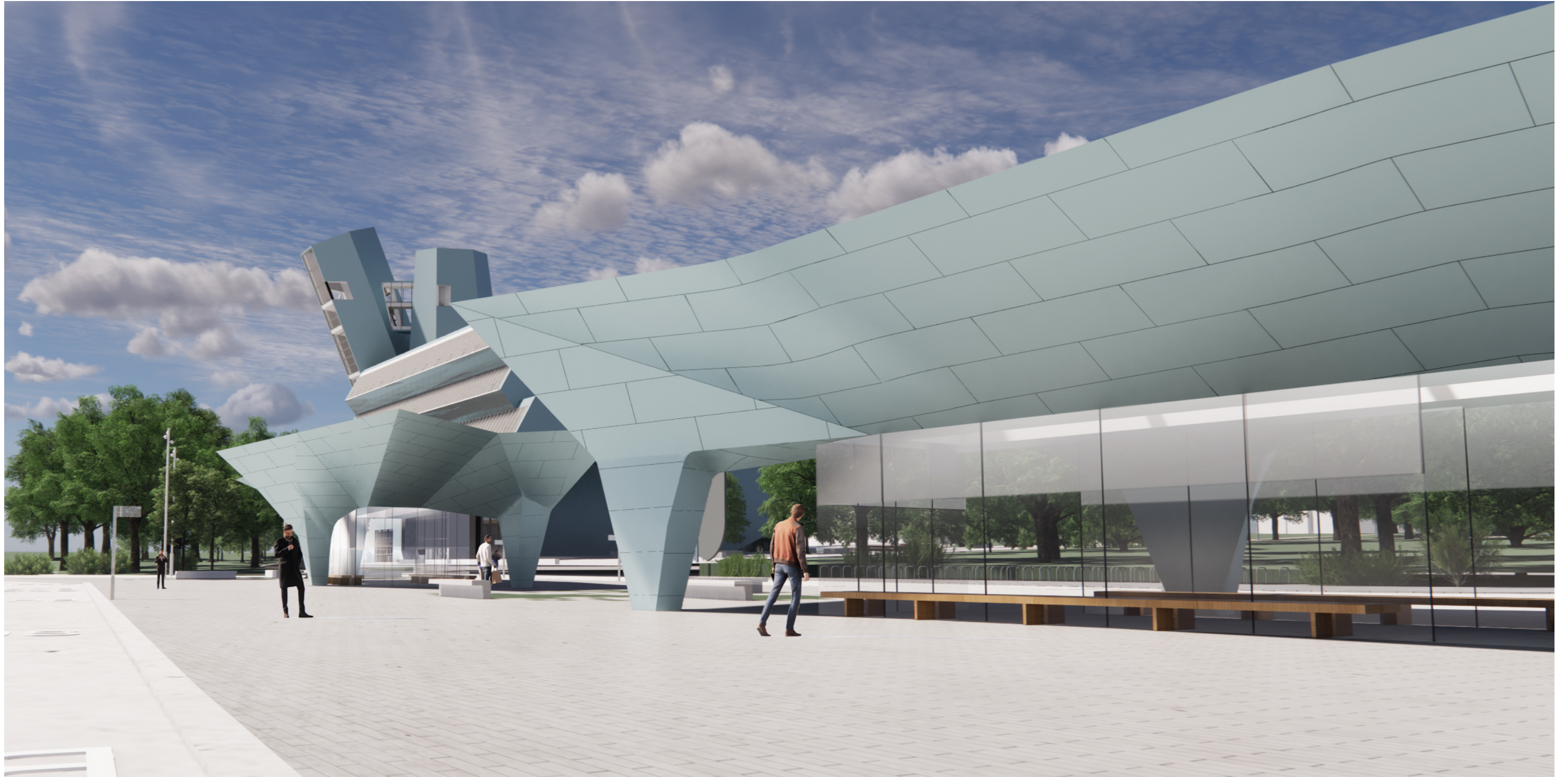


Figure 5.2 - View of Bus Interchange Shelter with the new UCD Centre for Creativity behind



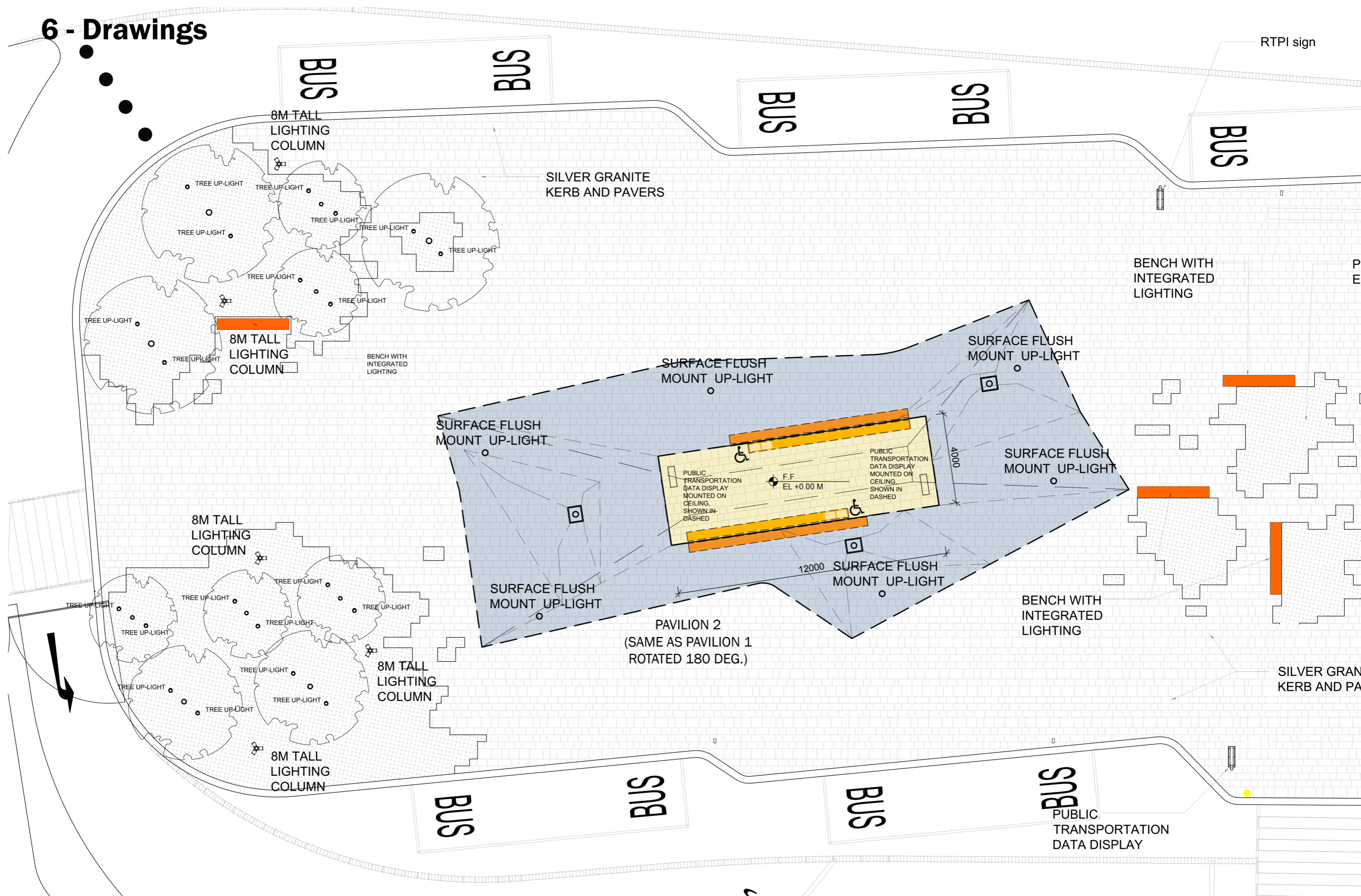
Figure 5.3 - View from Bus Interchange Shelter to the new UCD Centre for Creativity





Figure 5.4 - View from Bus Interchange Shelter to the new UCD Centre for Creativity

6 - Drawings



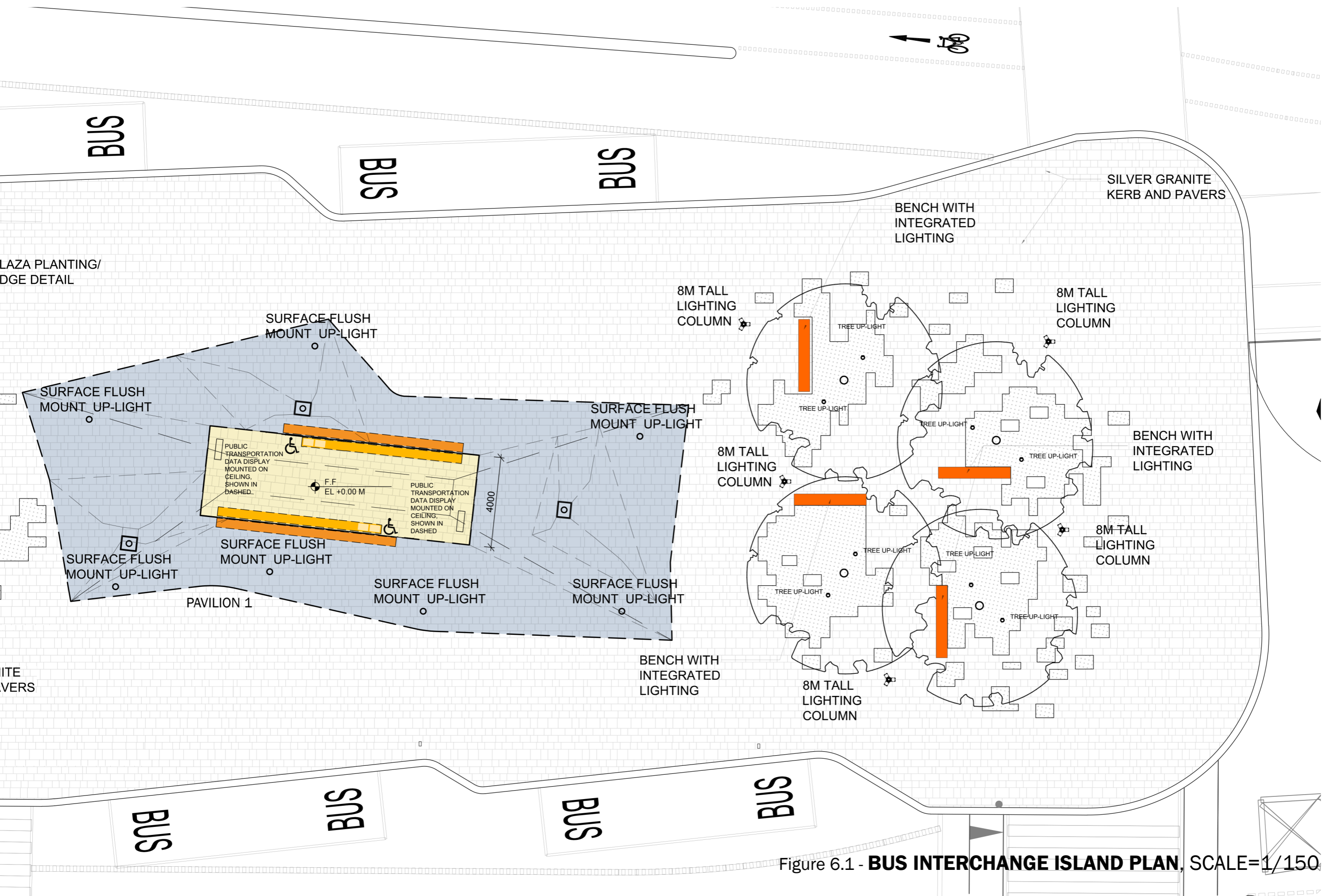
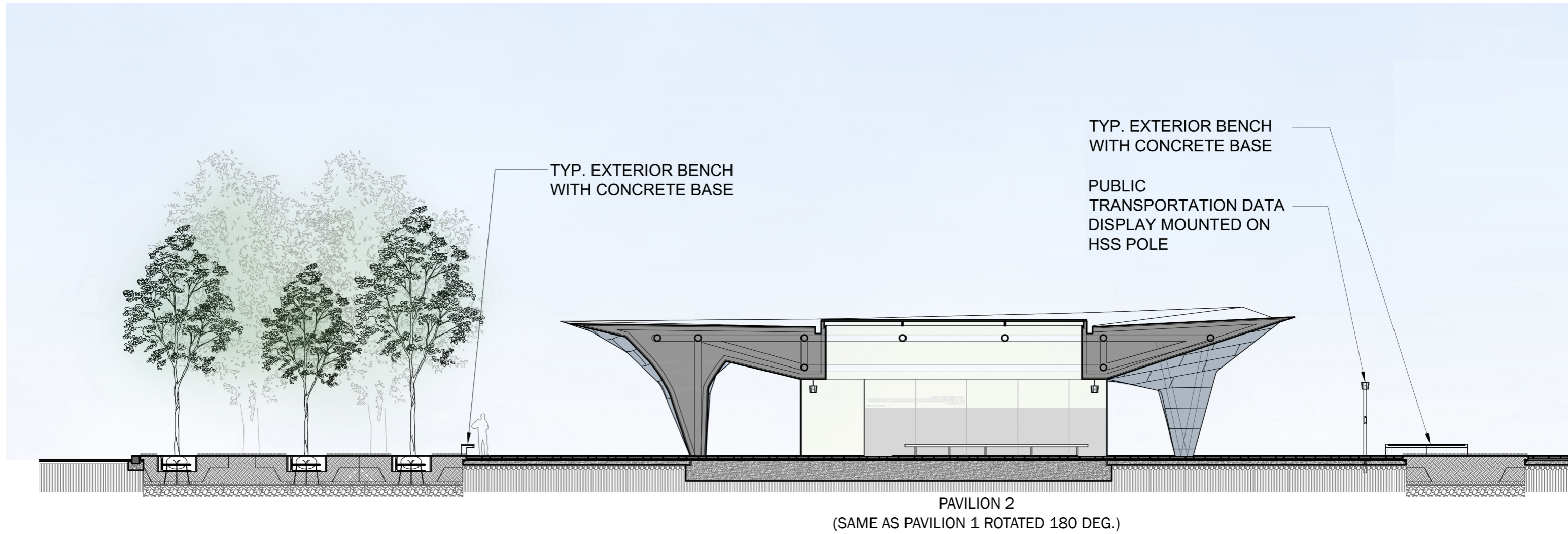


Figure 6.1 - **BUS INTERCHANGE ISLAND PLAN**, SCALE=1/150



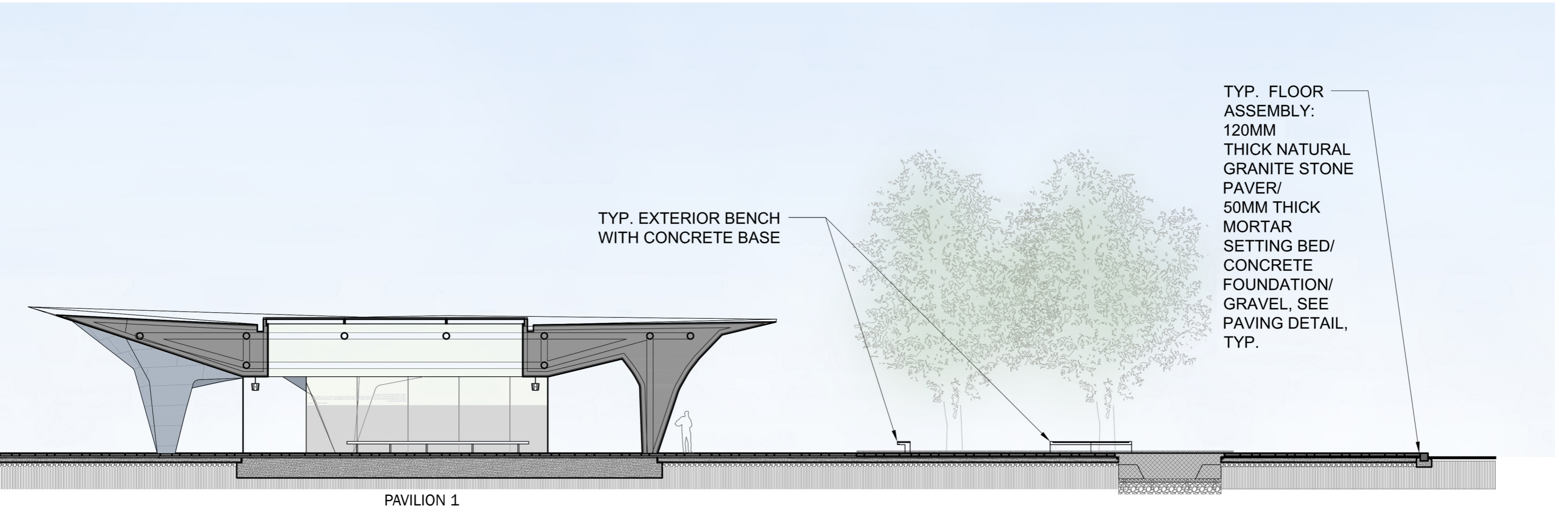


Figure 6.2 - **BUS INTERCHANGE ISLAND SECTION**, SCALE=1/150

University College Dublin **Bus Interchange**

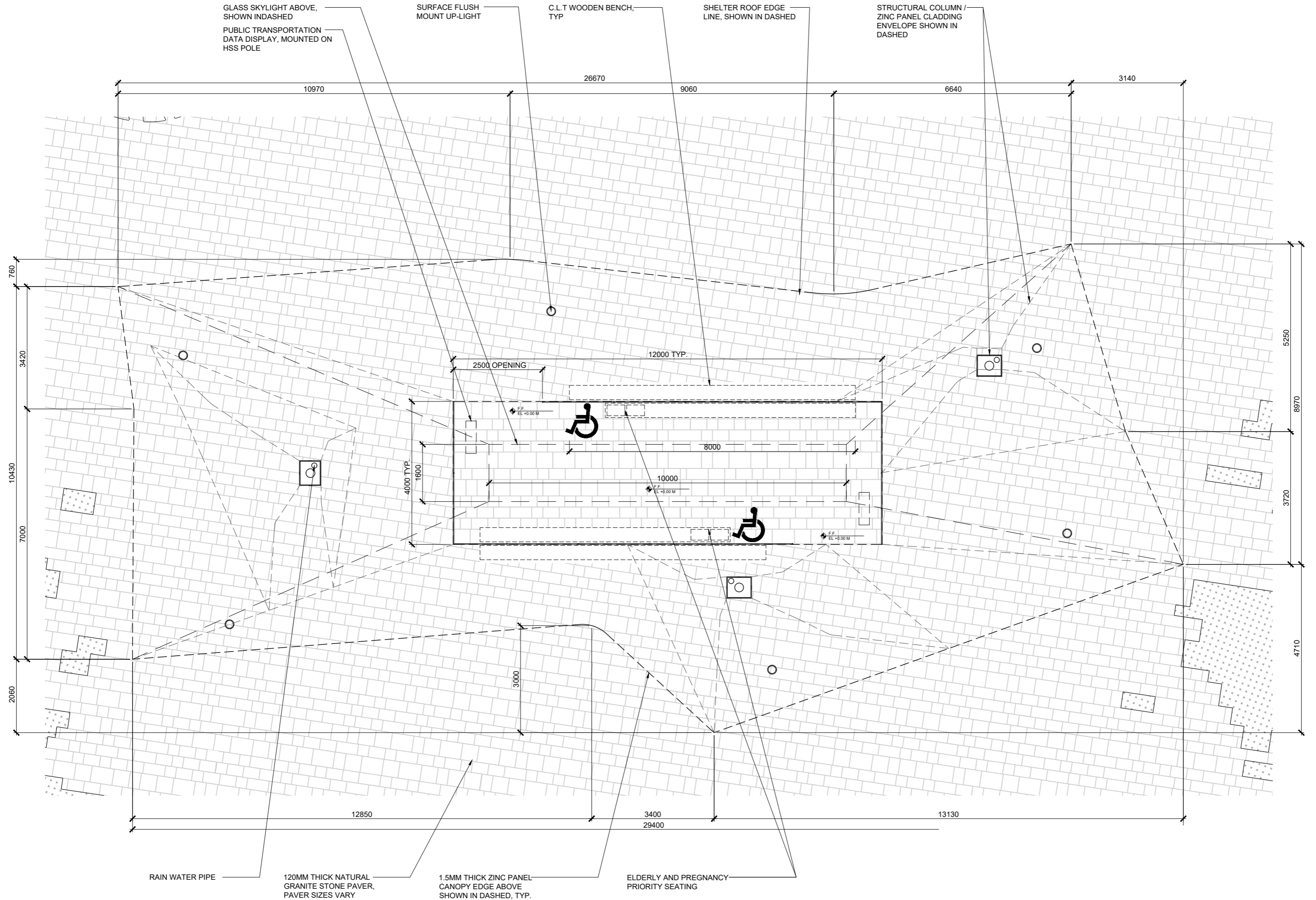


Figure 6.3 - **BUS INTERCHANGE PAVILION 2 PLAN, SCALE=1/100**

University College Dublin **Bus Interchange**

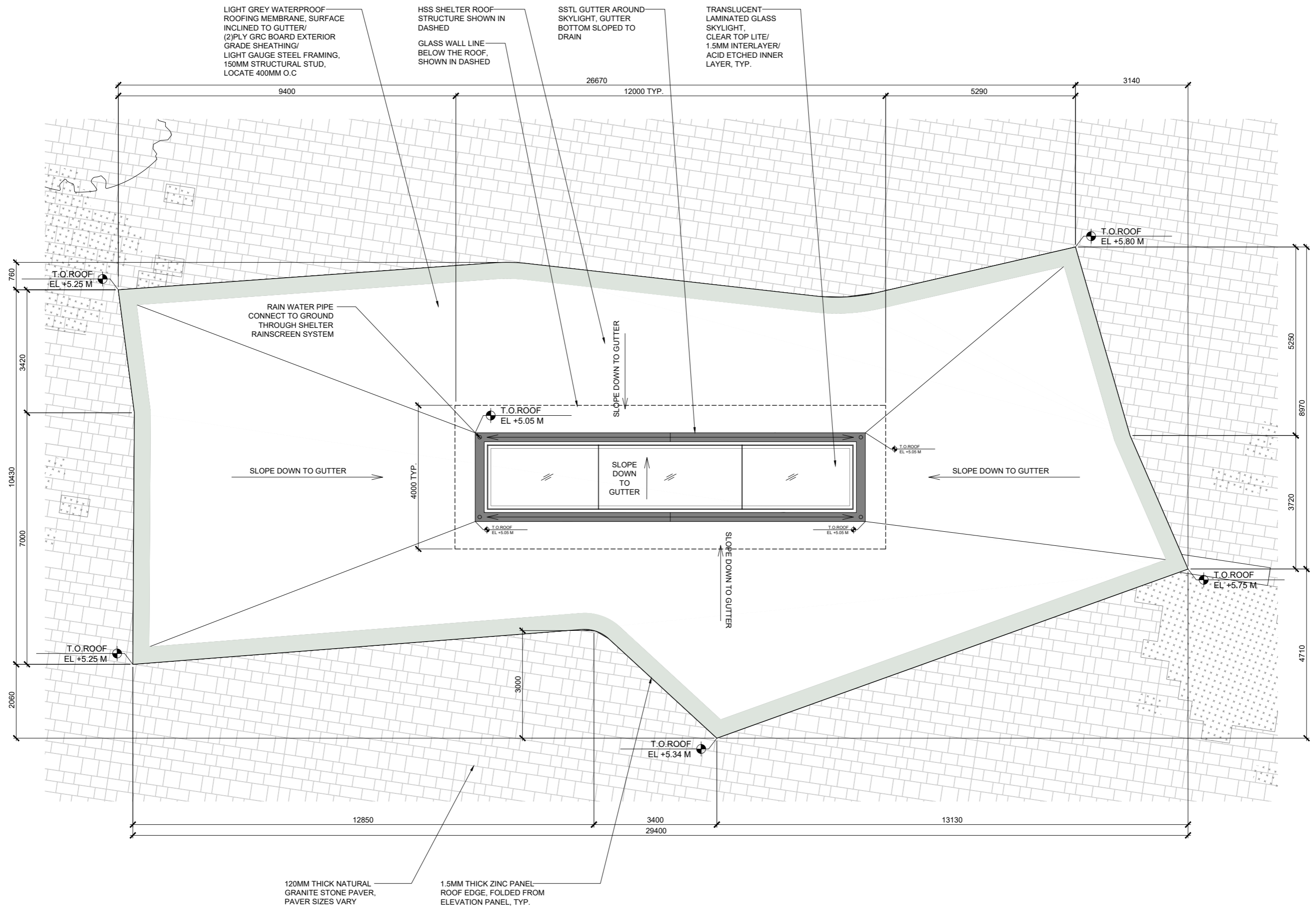


Figure 6.4 - **BUS INTERCHANGE PAVILION 2 ROOF PLAN, SCALE=1/100**

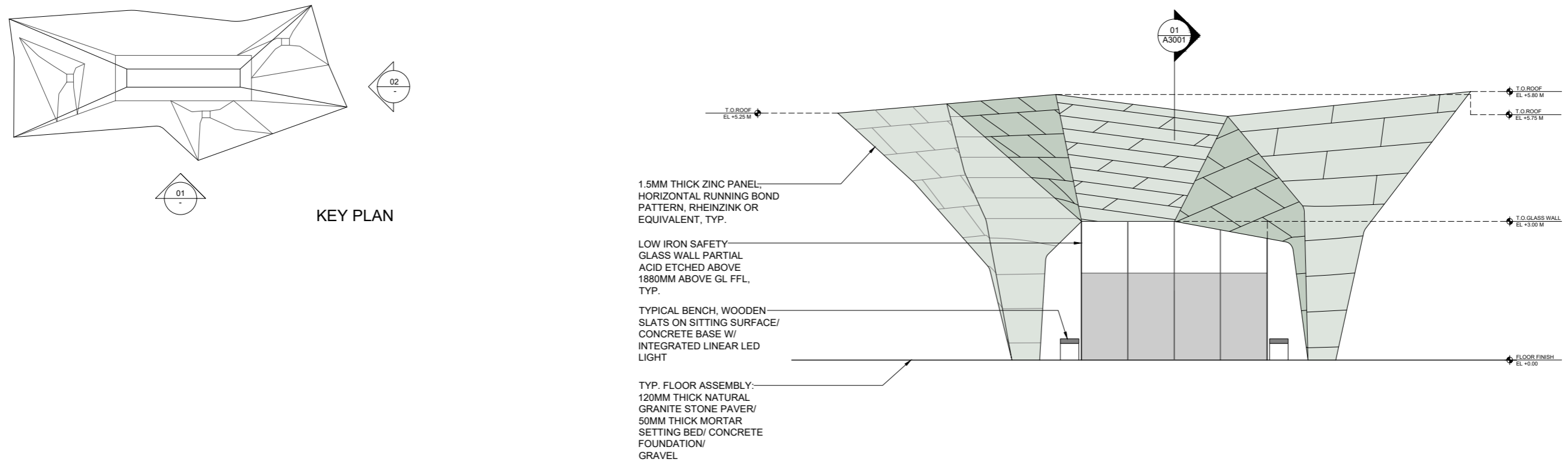


Figure 6.5 - **BUS INTERCHANGE W. SHELTER ELEVATION, SCALE=1/100**

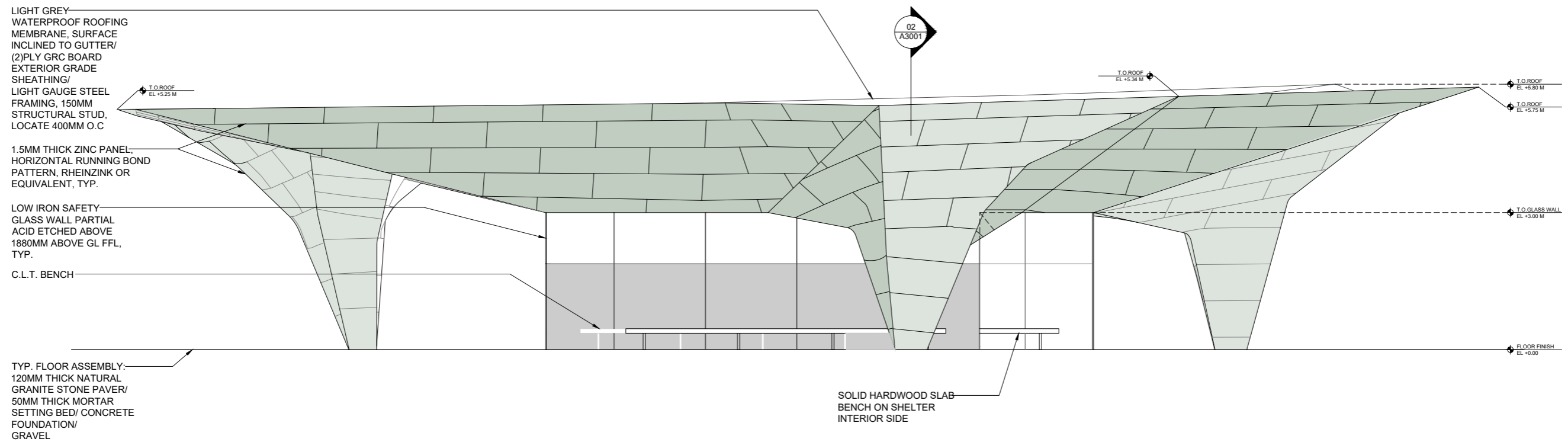


Figure 6.6 - **BUS INTERCHANGE W. SHELTER ELEVATION, SCALE=1/100**

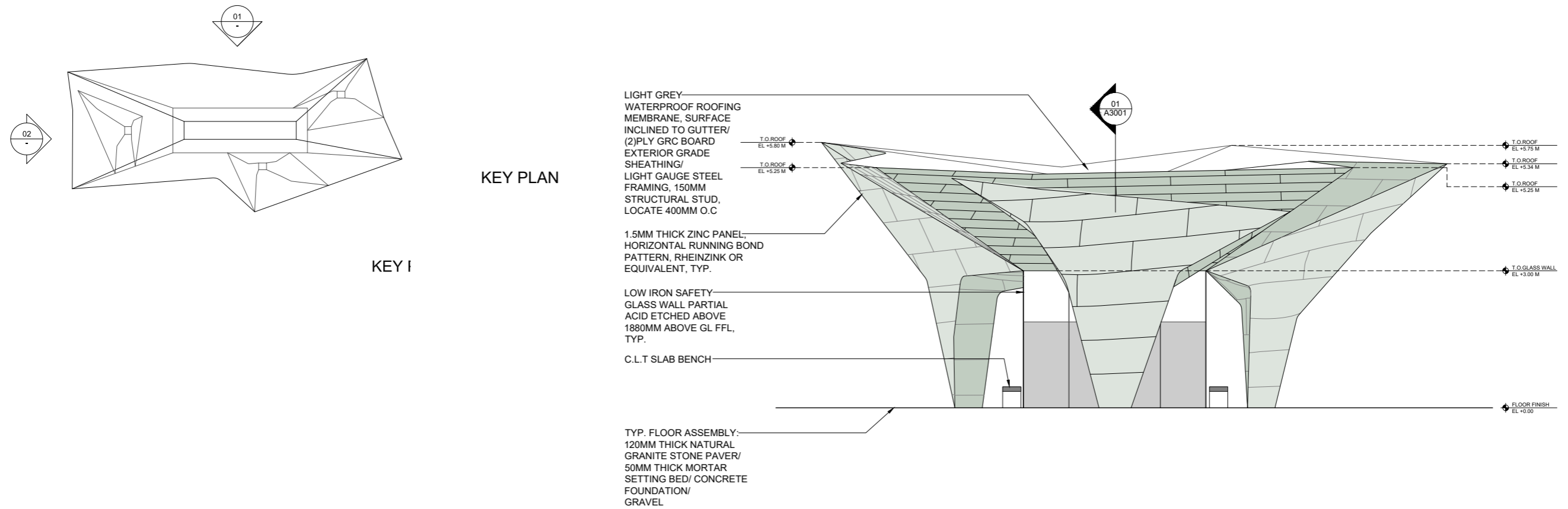


Figure 6.7 - **BUS INTERCHANGE E. SHELTER ELEVATION, SCALE=1/100**

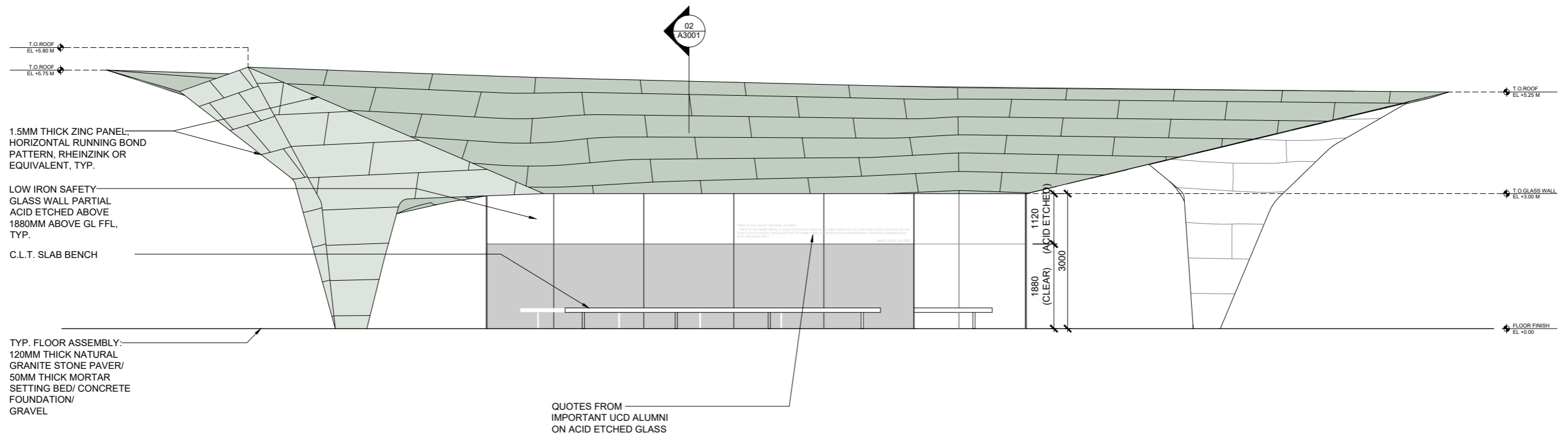


Figure 6.8 - **BUS INTERCHANGE E. SHELTER ELEVATION, SCALE=1/100**

University College Dublin **Bus Interchange**

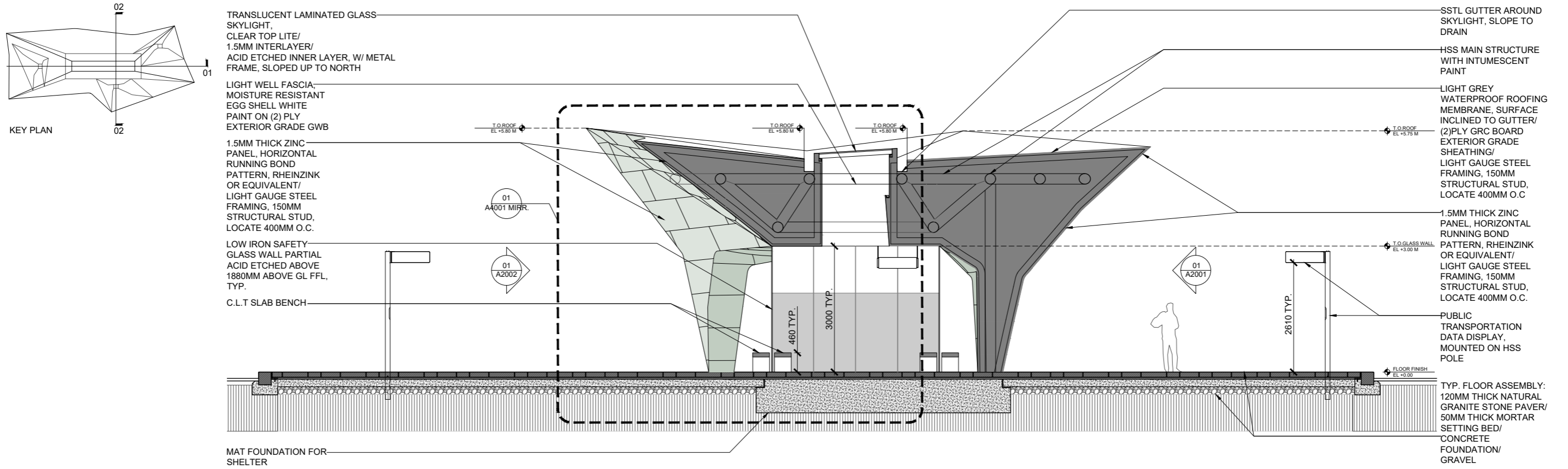


Figure 6.9 - **BUS INTERCHANGE SHELTER SHORT SECTION, SCALE=1/100**

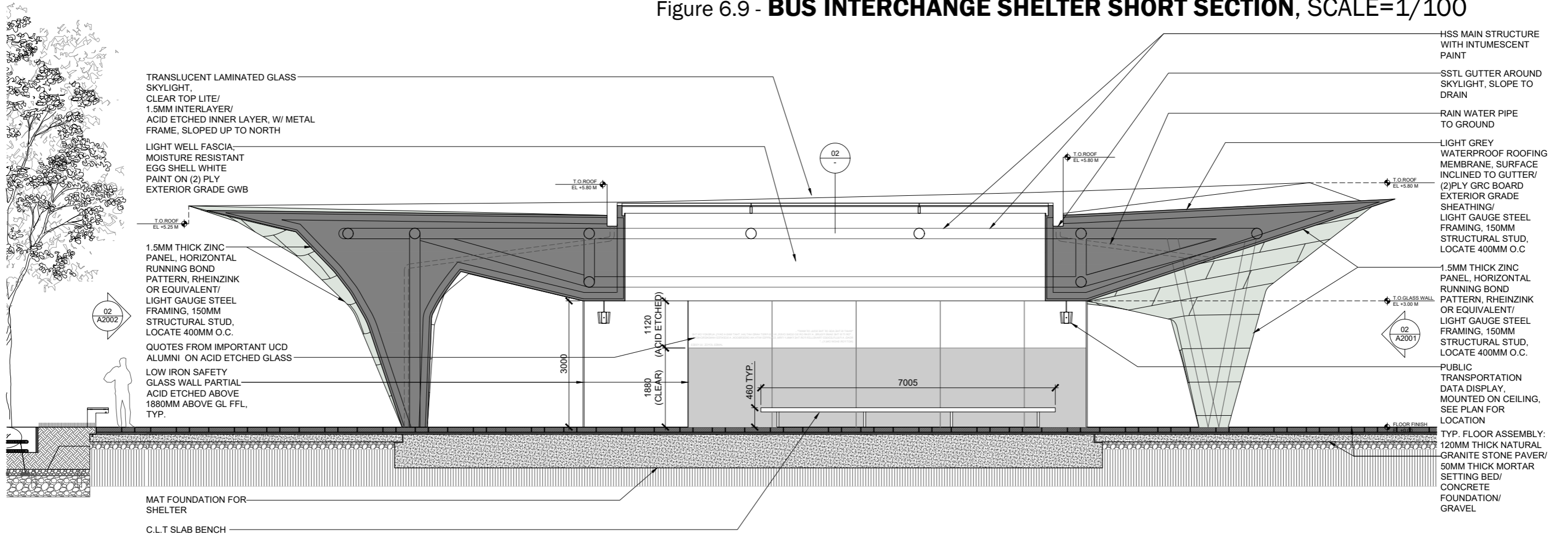


Figure 6.10 - **BUS INTERCHANGE SHELTER LONG SECTION, SCALE=1/100**

University College Dublin **Bus Interchange**

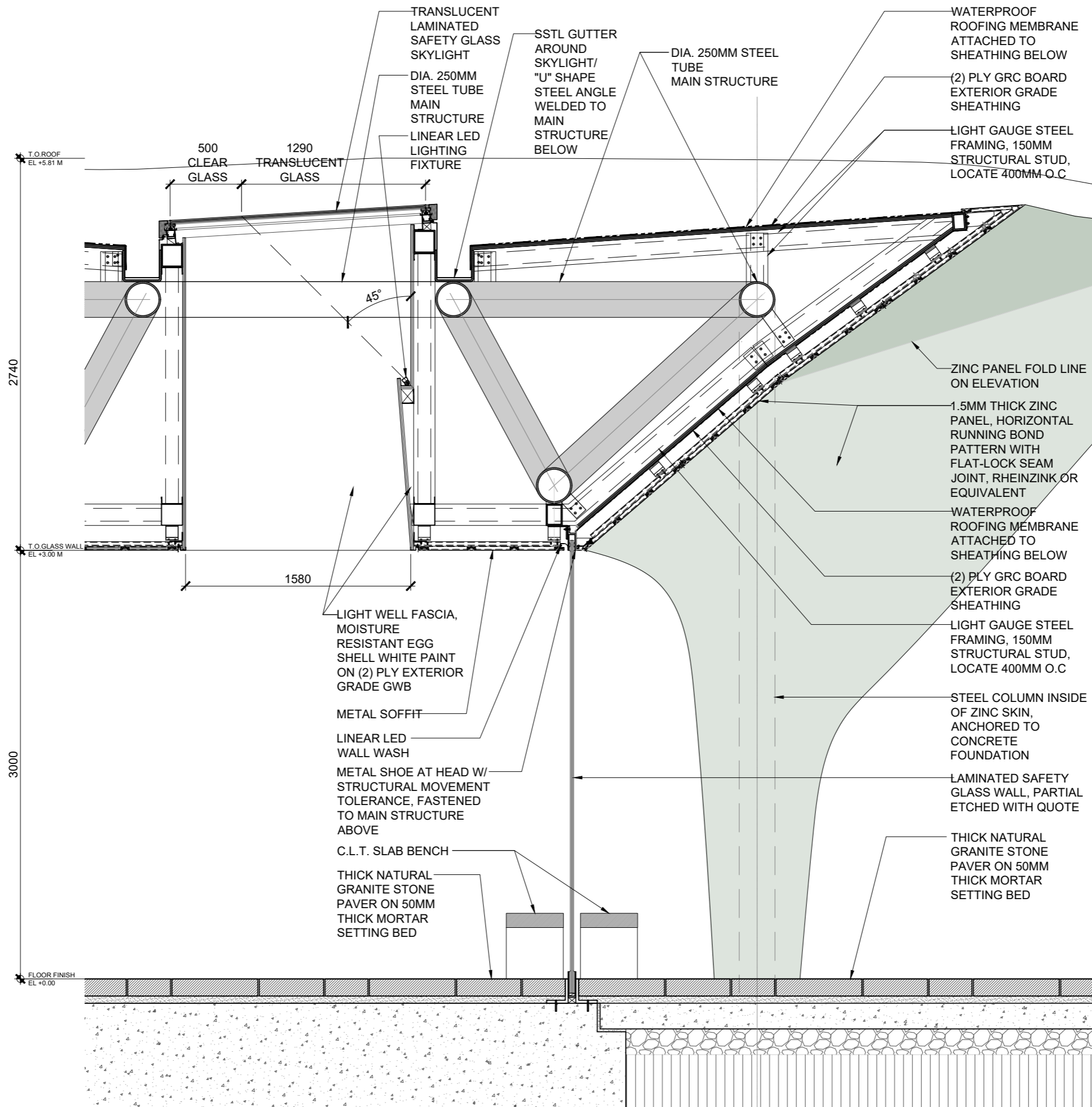


Figure 6.11 - **TYP. WALL SECTION, SCALE=1/30**