5.3 FINAL DESIGN DEVELOPMENT

5.3.22 Exterior Visualisation

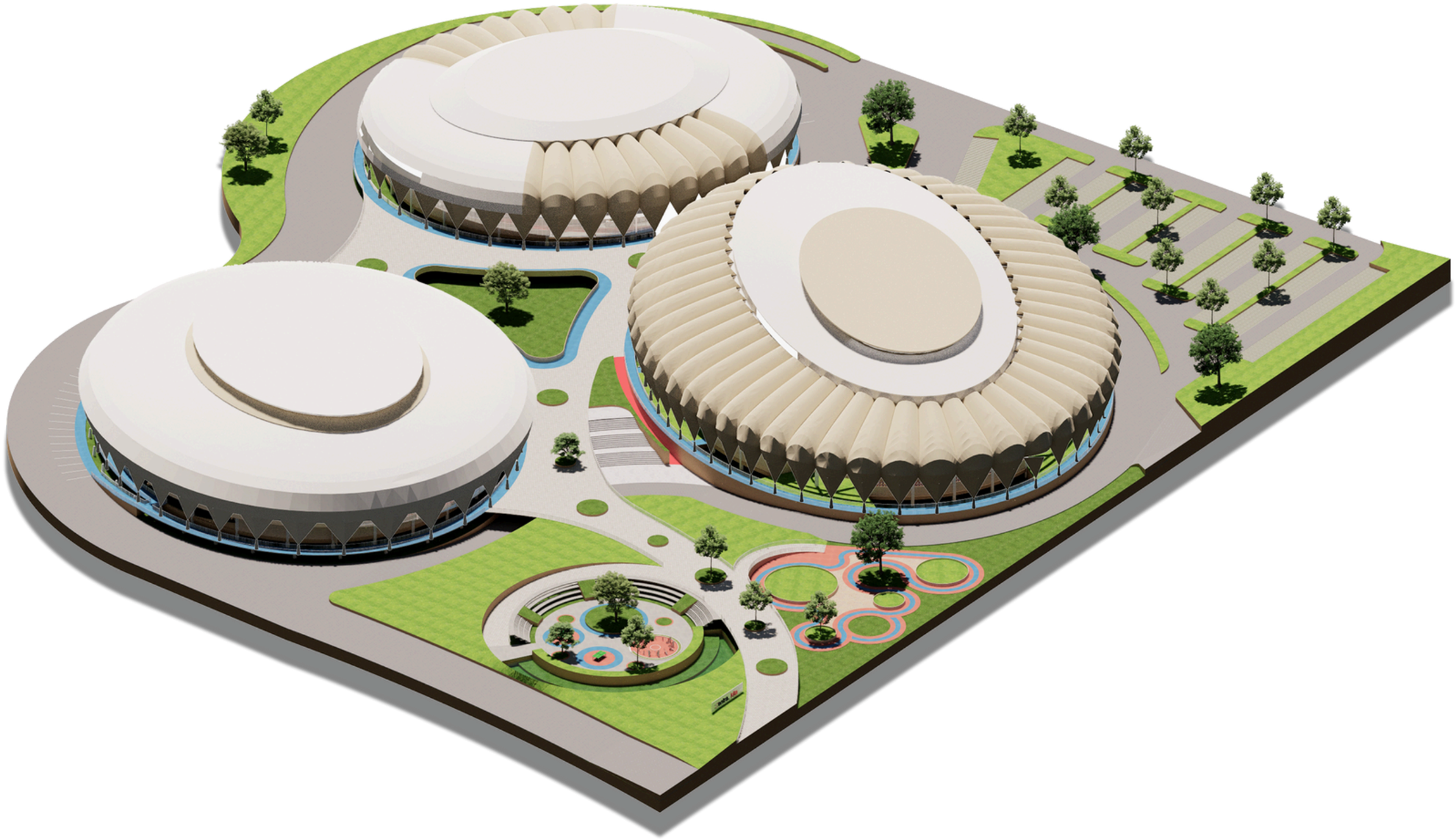


Figure 5.40 Building Axonometric Rendering
Source: *Author, 2025*

5.3 FINAL DESIGN DEVELOPMENT

5.3.22 Exterior Visualisation

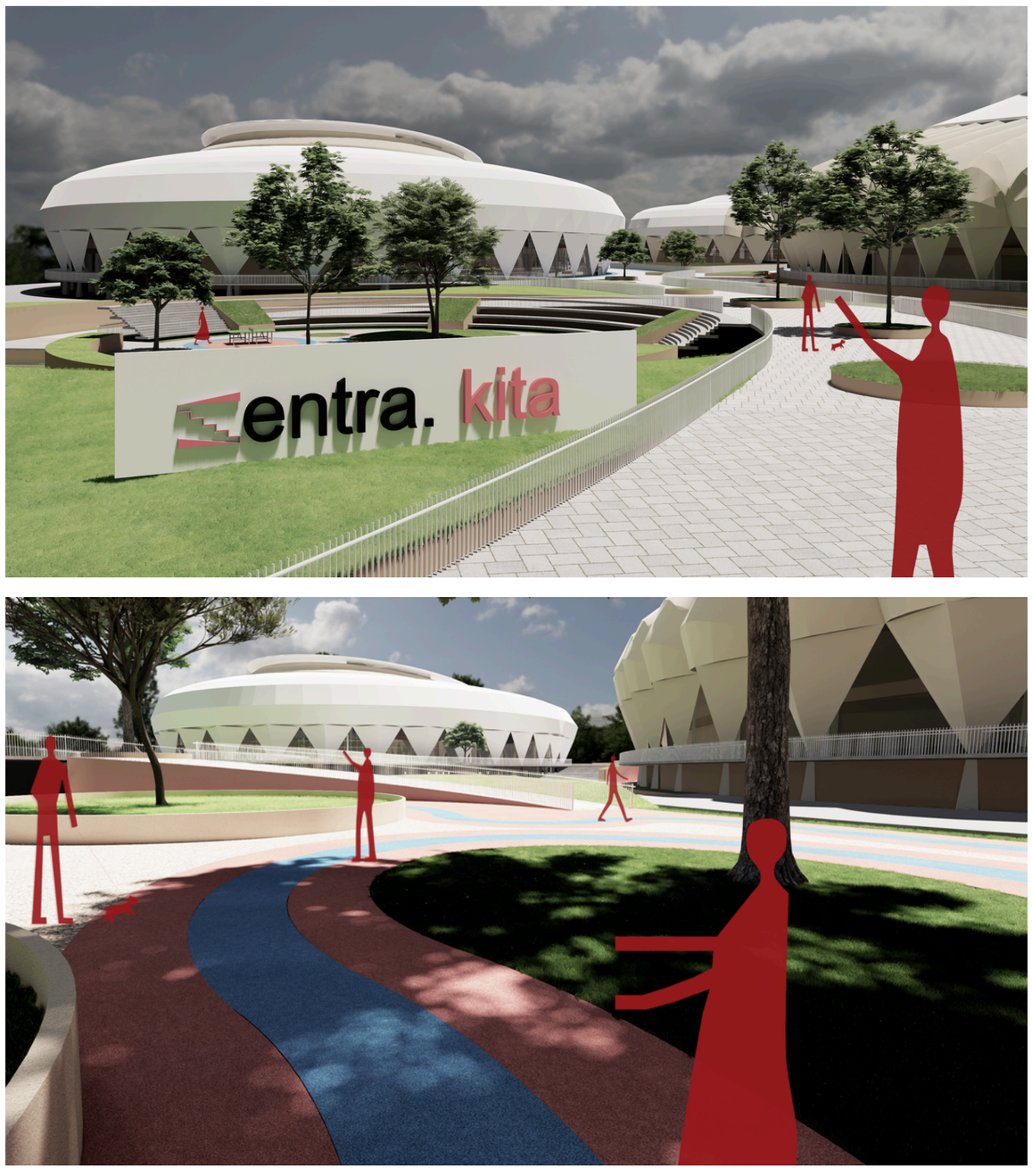
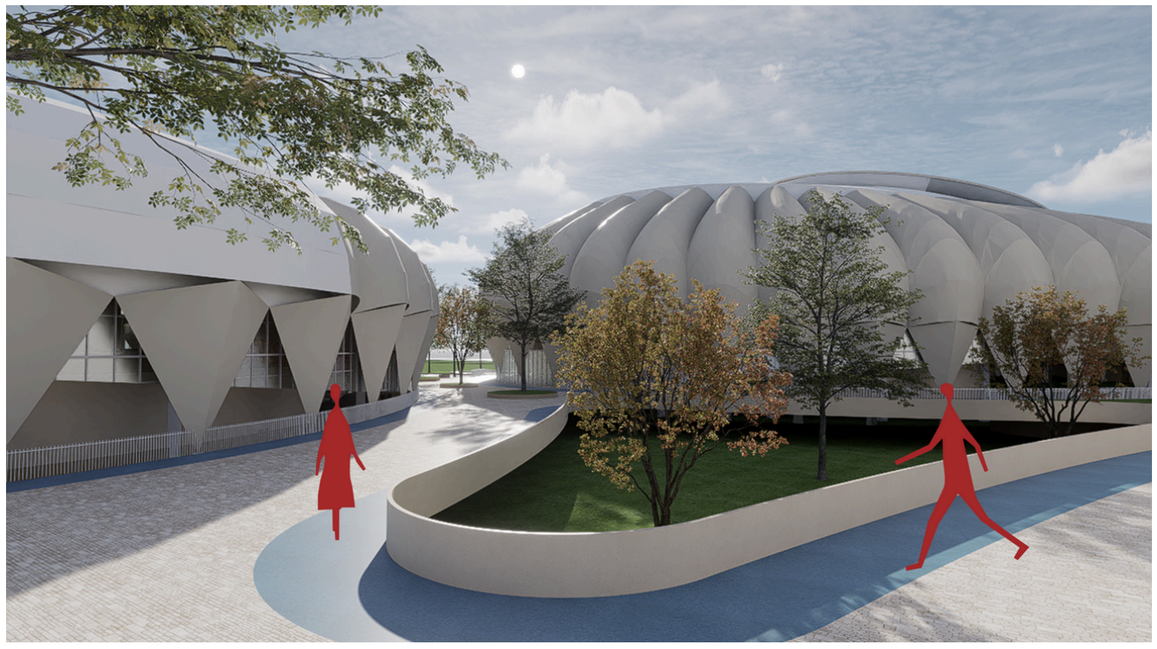




Figure 5.41 Landscaping & Entrance Rendering
Source: *Author, 2025*

5.3 FINAL DESIGN DEVELOPMENT

5.3.22 Exterior Visualisation





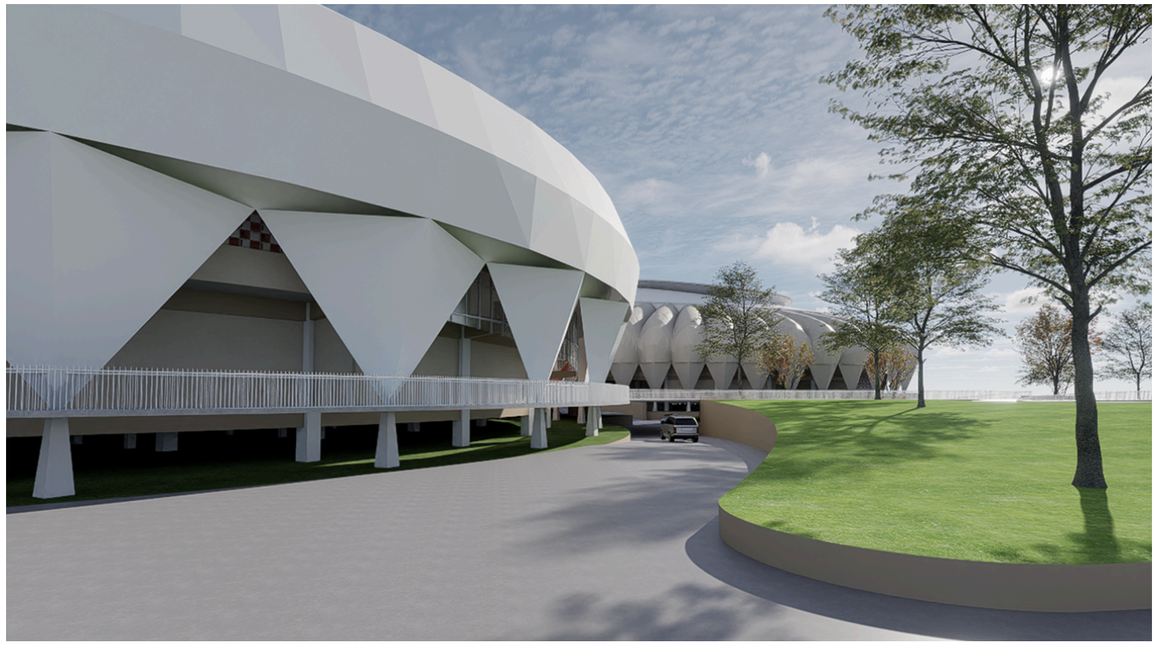




Figure 5.42 Landscaping & Vehicle Entrance Rendering
Source: *Author, 2025*

5.3 FINAL DESIGN DEVELOPMENT

5.3.23 Interior Visualisation







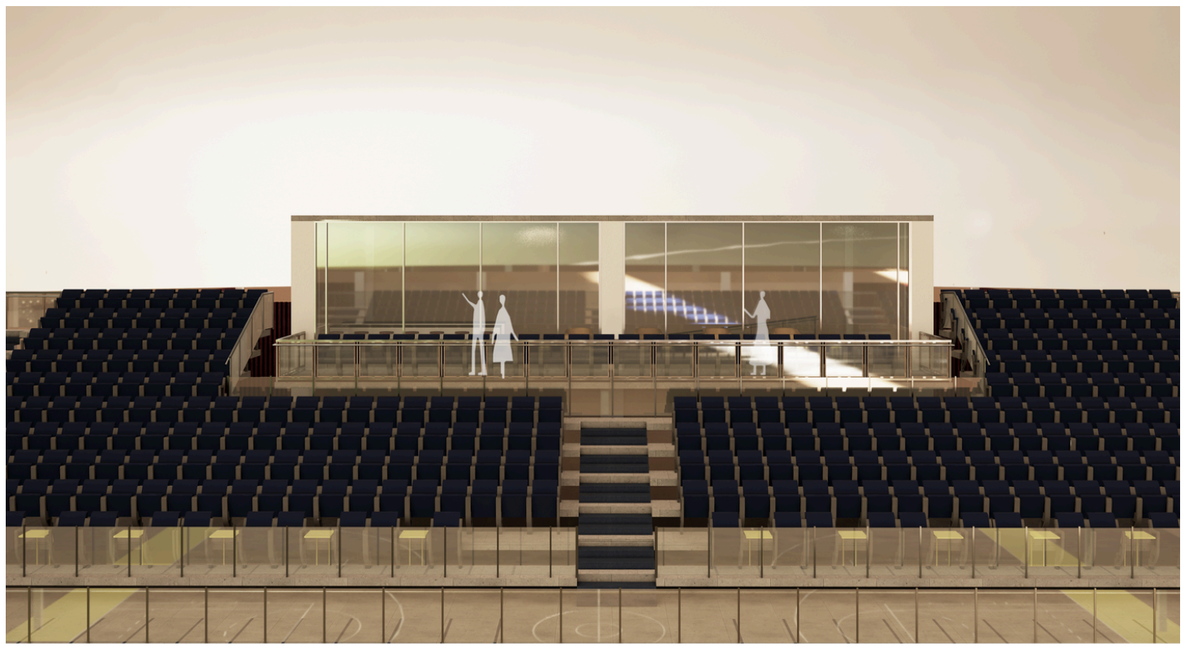


Figure 5.43 Basketball Field, VIP Room, Snack Bar Lounge & Tribune Rendering
Source: *Author, 2025*

5.3 FINAL DESIGN DEVELOPMENT

5.3.24 Interior Visualisation





Figure 5.44 Boccia Field, VIP Room, Ticketing Area, & Ramp Access Rendering
Source: *Author, 2025*

REFERENCES

Altan, H., Hajibandeh, M., Tabet Aoul, K. A., & Deep, A. (2016). Passive design. In Springer Tracts in Civil Engineering (pp.209–236). Springer. https://doi.org/10.1007/978-3-319-31967-4_8

Antara News. (2024, Januari 10). Daftar 20 cabang olahraga dalam Peparnas 2024. Antara News.https://www.antaranews.com/berita/4354819/daftar-20-cabang-olahraga-dalam peparnas-2024

Apipah, A. N. (2021). PENERAPAN BIOPHILIC PADA RANCANGAN SPORT CENTER DI CIPONDOH KOTA TANGERANG. Jurnal Arsitektur ZONASI, 4(2), 295–306. https://doi.org/10.17509/jaz.v4i2.31851

Baldinger Architectural Studio. (n.d.). Sport and fitness center for disabled people. ArchDaily. Retrieved from https://www.archdaily.com/587732/sport-and-fitness-center-for-disabled-people-baldinger-architectural-studio

Cassi, R. (2023). Architecture, Design and Conservation Danish Portal for Artistic and Scientific Research Aarhus School of Architecture // Design School Kolding // Royal Danish Academy Disability, Experience and Architecture.

FIDE. (n.d.). Standards of chess equipment and tournament venue. Retrieved from https://www.fide.com/FIDE/handbook/Standards_of_Chess_Equipment_and_tournament_venue.pdf

Hayyu Sujalmo, A. (2022). Psychological Well Being in Atlhletes Disabilities Pscyhological Well Being pada Atlet Difabel. Jurnal Psikologi Teori Dan Terapan, 2023(3), 279–289.

Innocent Emmanuel, J. (2023). ENHANCING INTERNAL ILLUMINATION IN A SPORTS COMPLEX USING PASSIVE ARCHITECTURAL DESIGN APPROACH. www.globalscientificjournal.com

International Wheelchair Basketball Federation. (2023). Official wheelchair basketball rules 2023 (Ver. 2). IWBF. https://iwbf.org

Kasus, S., Prodi, G., Universitas, A., Nurhaiza1, M., & Lisa2, N. P. (2016). Optimalisasi Pencahayaan Alami pada Ruang. In Jurnal Arsitekno (Vol. 7, Issue 7).

Leong, S. K., & Meng, S. (2021). Technical Guidelines for Energy Efficiency and Conservation in Commercial Buildings.

Move United. (2023). 2023 Move United Para Powerlifting Rules. Move United. https://moveunitedsport.org/app/uploads/2023/02/2023-Move-United-Para-Powerlifting Rules.pdf

Muhibban. (2023). Muhibban Hak dan Kewajiban Difabel dalam Islam (Studi Kesetaraan Sosial dalam Pendidikan dan Muamalah) Muhibban. In JOURNAL OF DISABILITY STUDIES AND RESEARCH (Vol. 2023, Issue 1). JDSR.

n-Sport. (n.d.). Boccia – Intervention support material & guides. https://in-sport.eu/intervention-support-material-guides/boccia/

Peraturan Daerah Kota Palembang Nomor 13 Tahun 2004 tentang Pembinaan dan Retribusi Perizinan Bangunan [PDF]. (n.d.). Scribd. https://www.scribd.com/doc/88869109/Peraturan-Daerah-Kota-Palembang

Syafira, F. H., Mufida, E., & Hady, M. (2022). Seminar Karya & Pameran Arsitektur Indonesia 2022 Design Computation for Sustainable Architecture & Urbanism PENGHAWAAN ALAMI UNTUK KENYAMANAN TERMAL PADA KASUS BANGUNAN GOR BAMBU RUNCING DI TEMANGGUNG.

Tempo.co. (n.d.). Fasilitas di sirkuit atletik Stadion Mandala Krida ramah difabel. Retrieved February 23, 2025, from https://www.tempo.co/politik/fasilitas-di-sirkuit-atletik-stadion-mandala-krida-ramah-difabel-780011

Waspiah, W., Arifin, R., Putri, N. M., Safarin, M. H. A. F., & Putri, D. D. P. (2022). Student Edited Law Journals: Strengthening the Creativity of Law Students in a Challenging Era. Journal of Creativity Student, 7(2), 133–154. https://doi.org/10.15294/jcs.v7i2.38493

Yaman, M. (2021). Different Façade Types and Building Integration in Energy Efficient Building Design Strategies. International Journal of Built Environment and Sustainability, 8(2), 49–61. https://doi.org/10.11113/ijbes.v8.n2.732

Chapter 06

Design Evaluation

design development
conclusion.



In general, the implementation of the concept and design is appropriate in answering design issues. However, there are details that need to be added to clarify the design results. This is especially true for the roof of the building, which is a key point in the design.

01

Prof. Noor Cholis Idham, S.T., M. Arch., Ph.D., IAI
Notes:

It is necessary to provide details of the roof, especially the connection between the space frame structure and the diagrid structure.

02

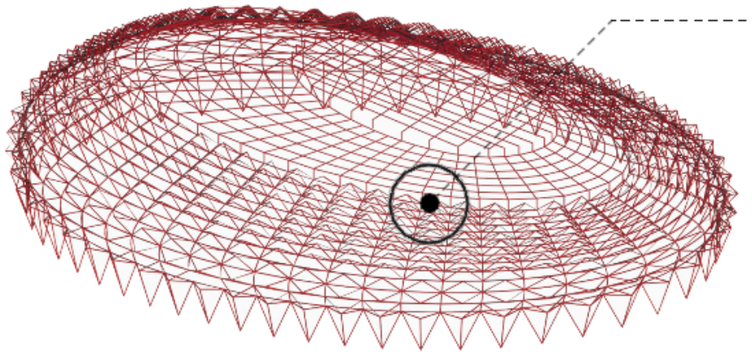
Johanita Anggia Rini, S.T., M.T., Ph.D.
Notes:

Need to provide details of roof joinery materials, such as ACP connections to space frame and PVC connections to space frame on the facade. The parking area requirements need to be recalculated to ensure they meet standards.

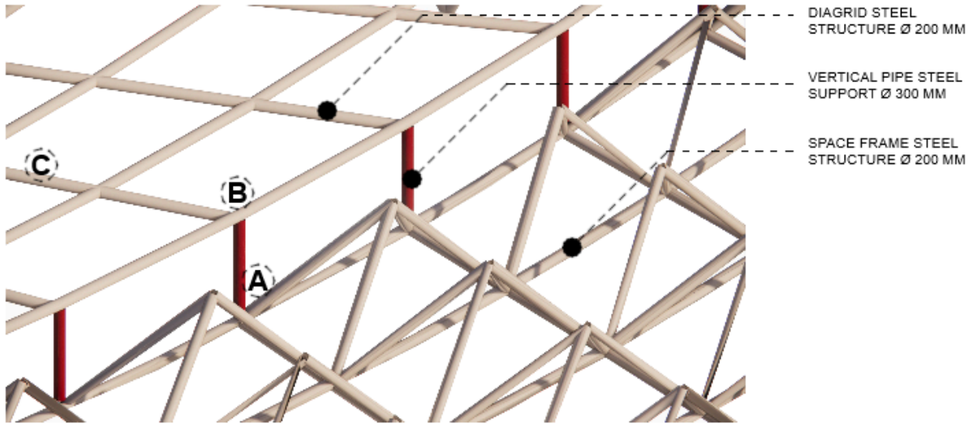
03

Ir. Hanif Budiman, M.T., Ph.D.
Notes:

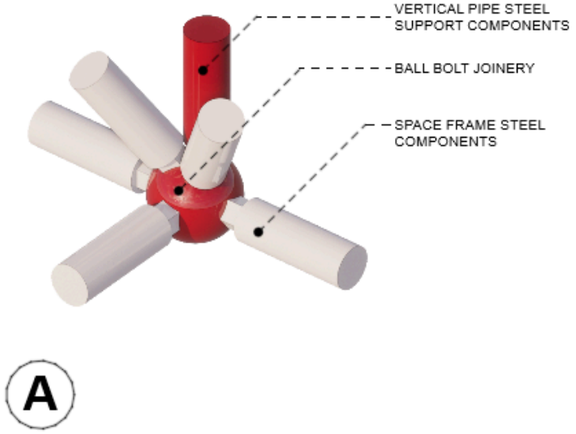
Clarify the narrative of implementation in the design, such as where inclusive architecture is implemented in the form of a tactical guide. Then, the narrative related to the impact of the building landscape on the surrounding area.



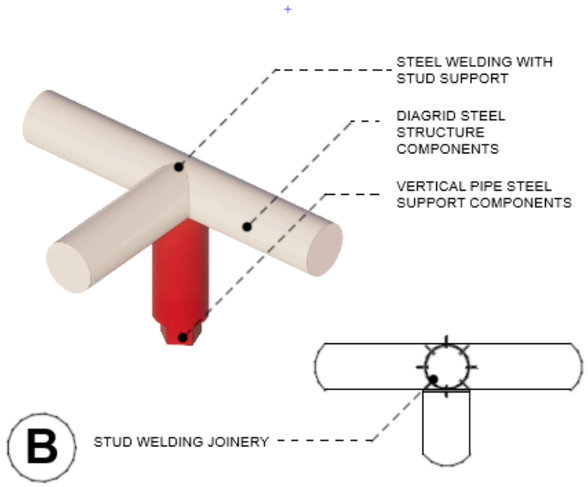
ROOF STRUCTURE AXONOMETRIC
SCALE: n.d



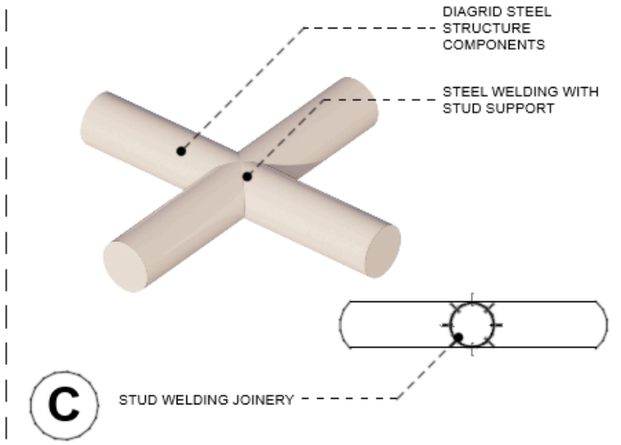
STRUCTURE DETAIL CONNECTION
SCALE: n.d



SPACE FRAME JOINERY TO VERTICAL COMPONENT
SCALE: n.d



VERTICAL COMPONENT JOINERY TO DIAGRID COMPONENT
SCALE: n.d



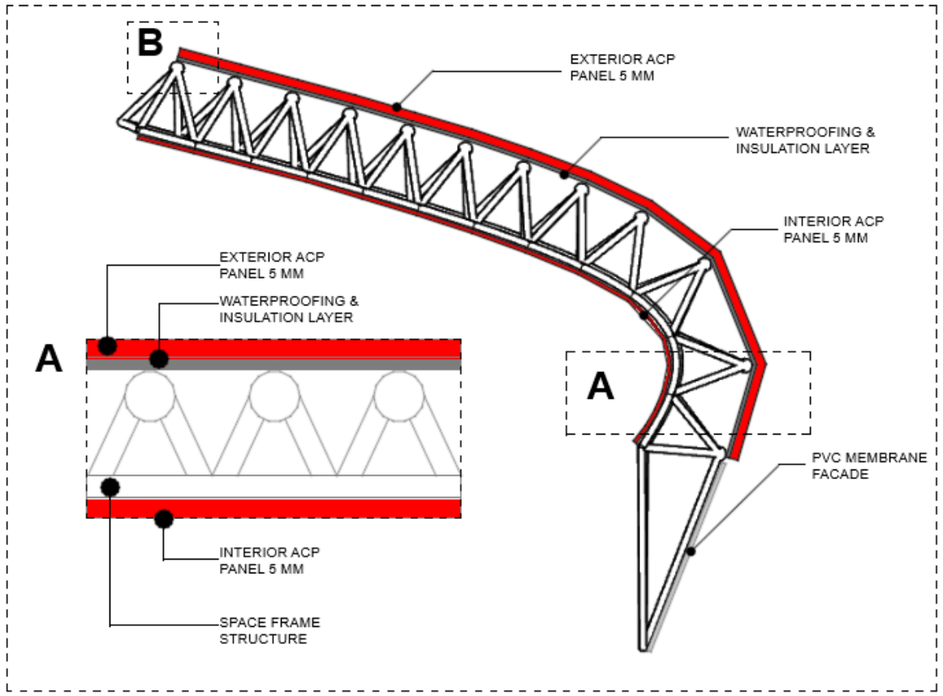
DIAGRID WELDING JOINERY DETAIL
SCALE: n.d

Figure 6.1 Space Truss Connection Detail
Source: *Author, 2025*

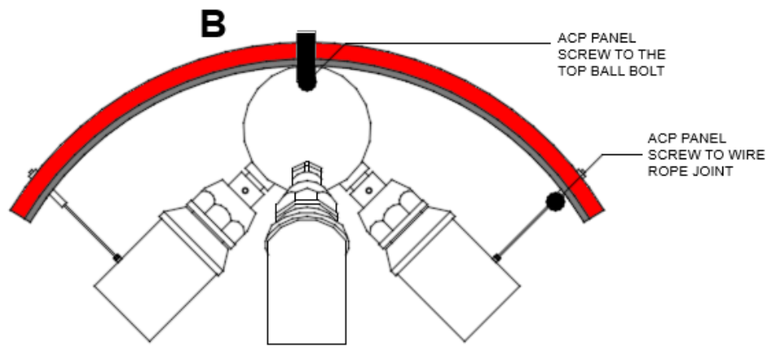
01

Space truss connection to diagrid structure

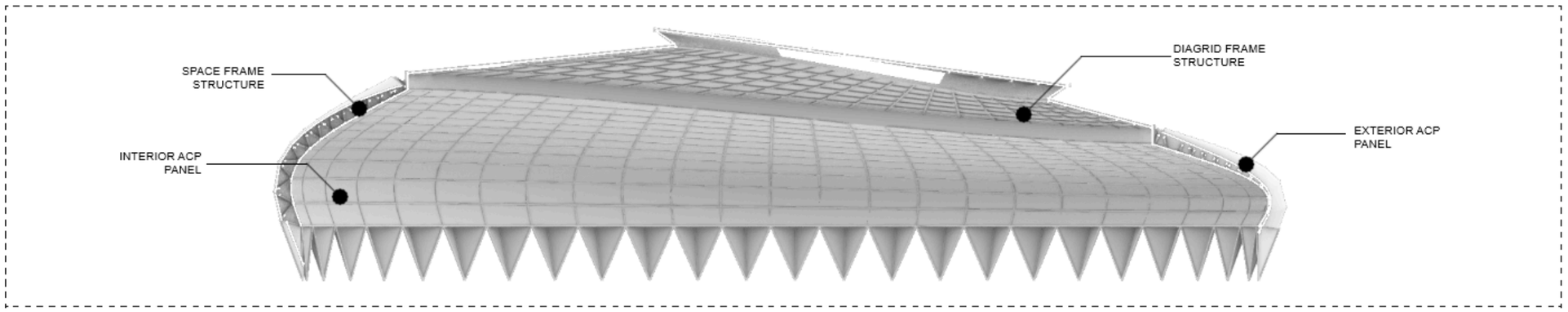
The roof structure is divided into two types of structures, with a space frame structure at the bottom and a diagrid structure at the top. To connect the space frame to the diagrid structure, vertical components are required to support the diagrid structure. Therefore, the lower part of the vertical components is connected to ball bolts, as shown in Figure A. To connect the vertical components in the diagrid structure, welding is used with stud supports, as shown in Figure B. Finally, to connect the diagrid structures, the same method is used, which is welding.



SPACE FRAME SPATIAL SECTION DETAIL
SCALE: n.d



ACP CONNECTION TO SPACE FRAME DETAIL
SCALE: n.d



ROOF SECTION
SCALE: n.d

Figure 6.2 ACP Connection Detail
Source: *Author, 2025*

02

ACP material connection to space frame

The use of ACP material as the main covering material on roofs where a waterproof layer was previously installed to prevent leaks inside the buildings. The installation of ACP material on the space frame is done by screwing the ACP to the ball bolt, then to create a curved effect on the roof, joinery wire rope is attached to the steel pipe so that it pulls the ACP material. Therefore, in general, the installation of ACP to the structure uses the screw method.

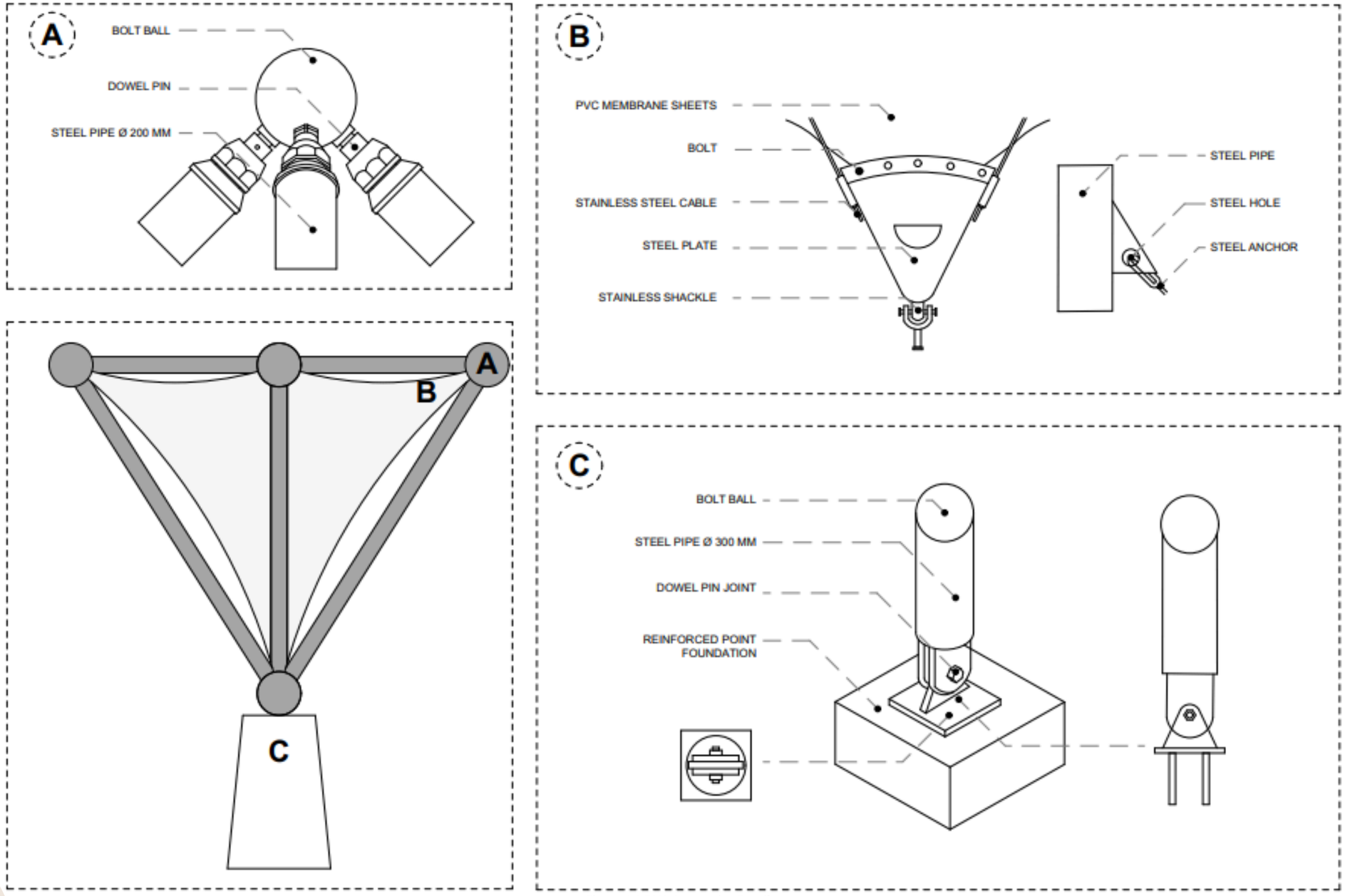


Figure 6.3 PVC Connection Detail
Source: *Author, 2025*

02

PVC material connection to space frame

PVC material is used in the space frame only on the facade/lower roof part. The PVC material is clipped onto a steel plate, which is then attached to a steel pipe. The difference in the use of PVC material for the lower roof section is because this area requires a large area for air to enter and does not require 100% coverage to protect against rainwater, unlike the upper roof section.

According to Regulation

According to PERDA Palembang City No. 13 of 2004, Regarding the Development and Retribution of Building Permits. Article 81 paragraph 1, Point 9: Indoor/ outdoor sports facilities need one parking space for every 15 spectators, and the need for motorcycle parking is 25% of the car parking area

Table 6.1 Table of Difable Car Parking Needs
Source: *PERMEN PU NO: 30/PRT/M/2006*

JUMLAH TEMPAT PARKIR YANG TERSEDIA	JUMLAH TEMPAT PARKIR YANG AKSESIBEL
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1000	2% dari total
1001-dst	20 (+1 untuk setiap ratusan)

However in Palembang there is no specific requirement for difable parking, therefore the regulation is taken from national regulation. According to PERMEN PU NO: 30/PRT/M/2006, regarding Technical Guidelines for Facilities and Accessibility in Buildings and the Environment. The ratio of difable parking spaces required based on the table on the left:

Calculation Need According to Regulation

To calculate parking space requirements, it is necessary to calculate the number of users in the building. The number of users is calculated based on the capacity of the tribune seating in the spectator area.

Table 6.2 Table of Car Parking Calculation
Source: *Author, 2025*

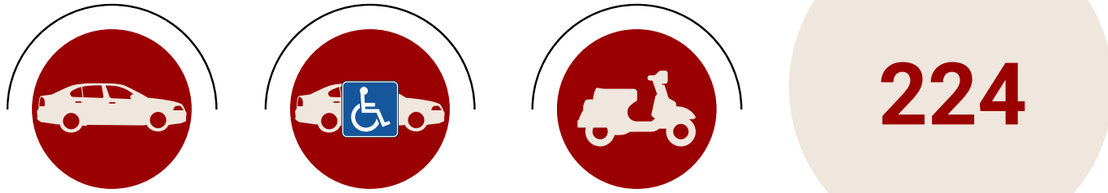
Sport Branch	Type of Tribune Seating				Total
	Difable Seating	Visually Impaired Seating	Ordinary Seating	VIP	
Wheelchair Basketball	72	48	890	23	1033
Boccia	42	24	338	4	408
Blind Chess	29	28	135	-	192
Powerlifting Paralympic	16	16	133	-	165
Blind Judo	39	25	244	4	312
			2110		

PARKING AMOUNTS NEED

15 Person for 1 Car Parking Unit	25% From Car Parking Units for Motorcycle Parking	Difable Parking Need
141	35	5

Design Existing

The design includes 163 parking spaces for cars and 61 spaces for motorcycles.



Data Comparasion

	Regulation Needs	At Design	
Car Parking	141 Units	121 Units	✗
Difable Car Parking	5 Units	42 Units	✓
Motorcycle Parking	35 Units	61 Units	✓

Diagram 6.1 Diagram of Parking Area in Design
Source: *Author, 2025*

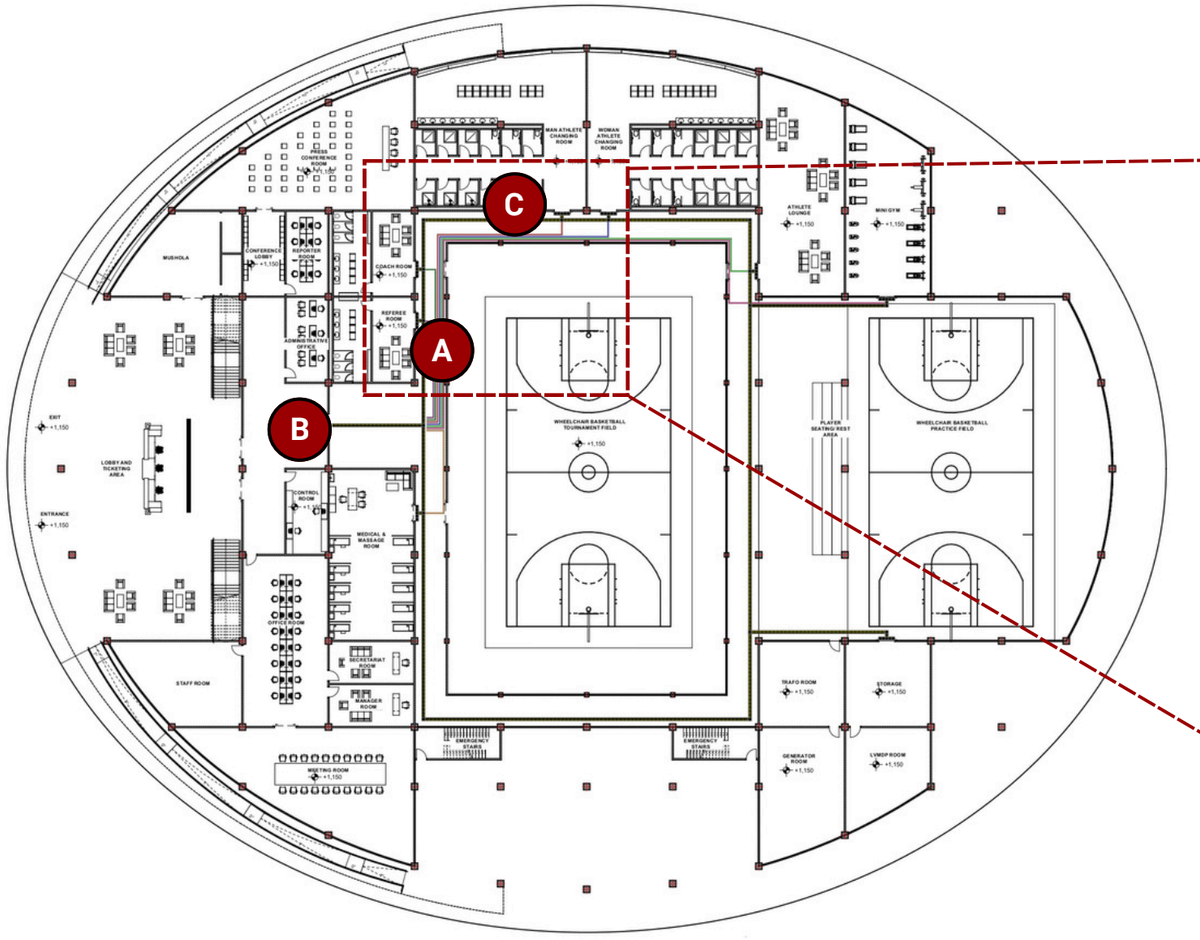
02

Parking area calculation according to regulation

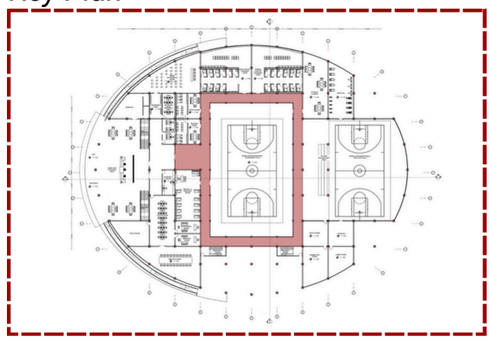
Based on recalculations of parking space requirements, the design meets the requirements for difable parking spaces and motorcycle parking spaces. However, in terms of car parking spaces, the design does not meet the requirements, which need 20 units more to fulfill the requirement.

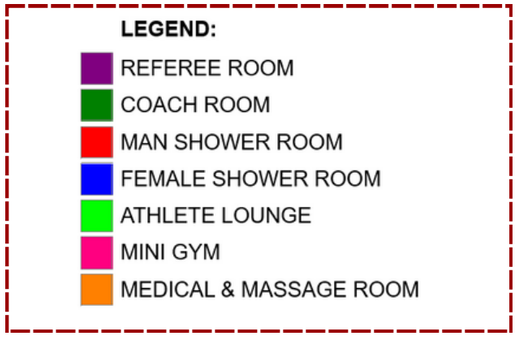
Regardless of that, the design emphasizes for difable users; therefore the difable parking areas have more units than it minimum needs.

It can be concluded that 20 additional parking spaces are needed to fulfill the need for car parking requirement.



Key Plan







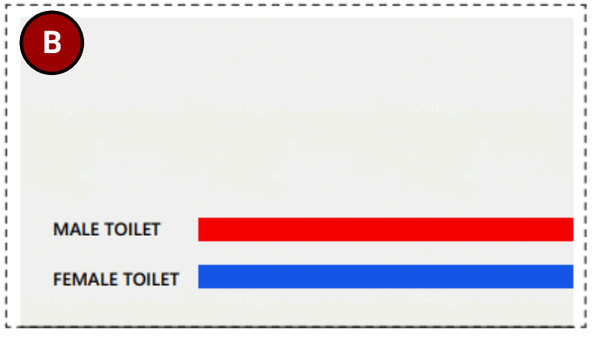


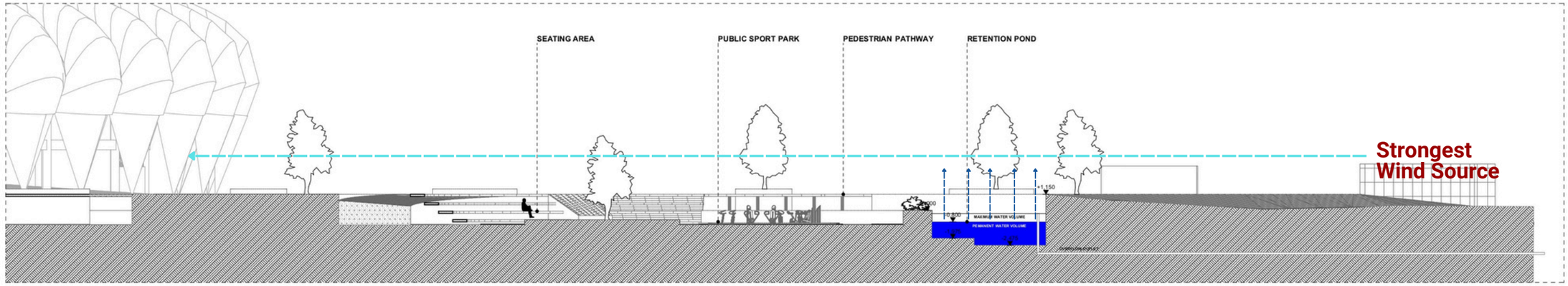
Figure 6.4 Color Guide Placement Detail
Source: *Author, 2025*

03

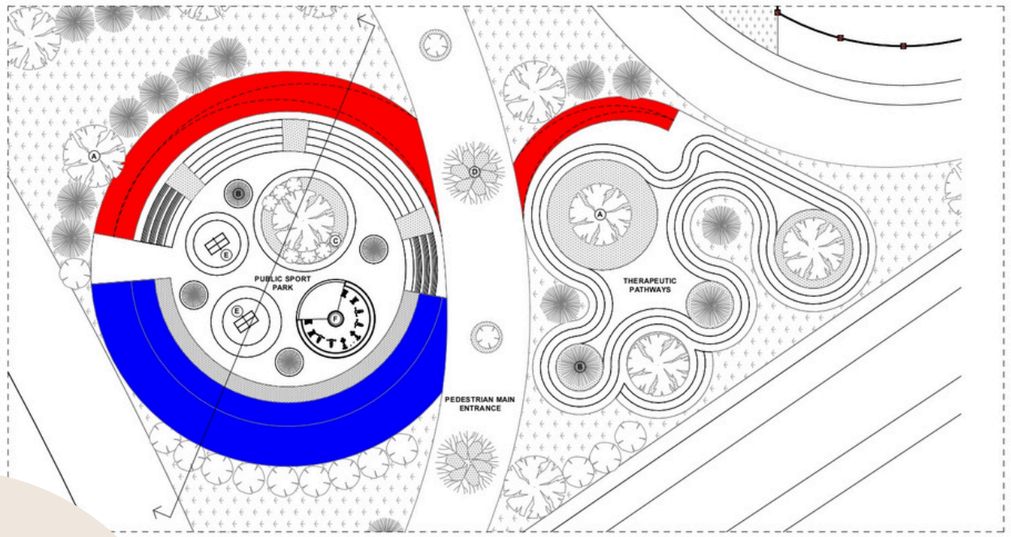
Color Guide as Inclusive architecture ornament placement

The use of color guides in the design is only implemented in the athlete area, especially in the corridors. This is intended to provide easy access for athletes to each room. Since the rooms in this area have many different functions, color guides are implemented from the athlete entrance area to make it easier for athletes to find the room they are looking for.

It can be seen from the key plan that the area marked in red is where the color guide is placed.



LANDSCAPE SECTION
SCALE: 1:200



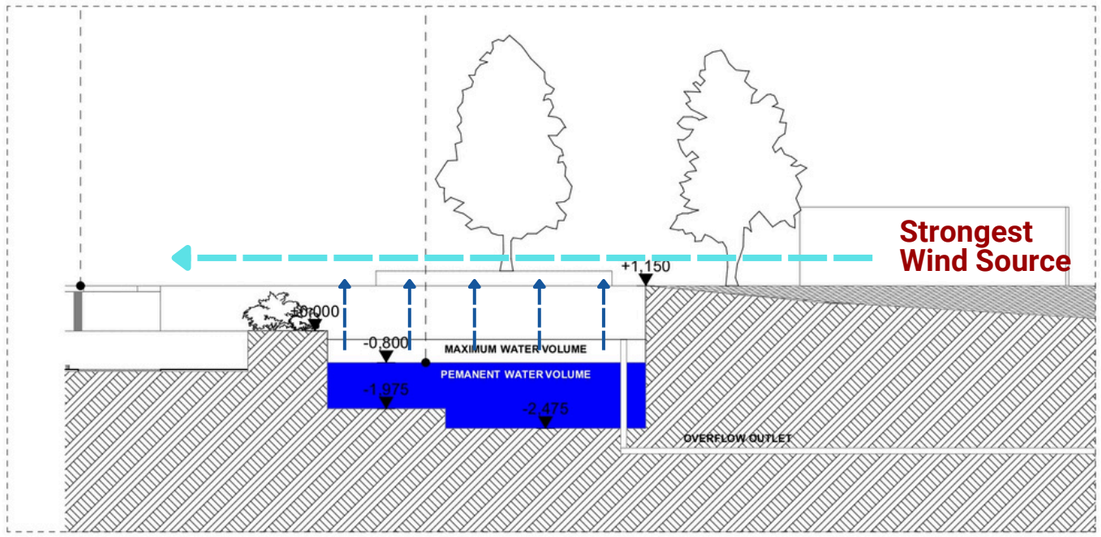


Figure 6.5 Landscape Section Detail
Source: *Author, 2025*

03

Landscape design aspect to the surroundings

The retention pond located in the south has a purpose and impact on the surroundings. It is located in the south which is the corner of the site to collect excess rainwater. Therefore, the retention pond is combined with an open green area with a public sports park where there is sufficient space for the construction of a retention pond. In addition to collecting rainwater, the effect of its location in the south has the benefit of passive cooling, especially in the public sports park itself and slightly towards the building.

Chapter 07

Product Attachment

plagiarism check letter.

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W. library.uii.ac.id

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Nomor: 2732829476/Perpus./10/Dir.Perpus/VII/2025

Bismillaahirrahmaanirrahiim

Assalamualaikum Wr. Wb.

Dengan ini, menerangkan Bahwa:

Nama	: Kirana Zhafirah Maheswari
Nomor Mahasiswa	: 21512187
Pembimbing	: Prof. Noor Cholis Idham, S.T., M. Arch., Ph.D., IAI,
Fakultas / Prodi	: Teknik Sipil dan Perencanaan/ Arsitektur
Judul Karya Ilmiah	: Arsitektur Pusat Olahraga Atlet Difabel di Palembang dengan Pendekatan Passive Design untuk Mewujudkan Fasilitas Berkinerja Tinggi

Karya ilmiah yang bersangkutan di atas telah melalui proses cek plagiasi menggunakan **Turnitin** dengan hasil kemiripan (*similarity*) sebesar **6 (Enam) %.**

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Wassalamualaikum Wr. Wb.

Yogyakarta, 8/21/2025
Direktur

UNIVERSITAS ISLAM INDONESIA
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YOGYAKARTA

Muhammad Jamil, SIP.



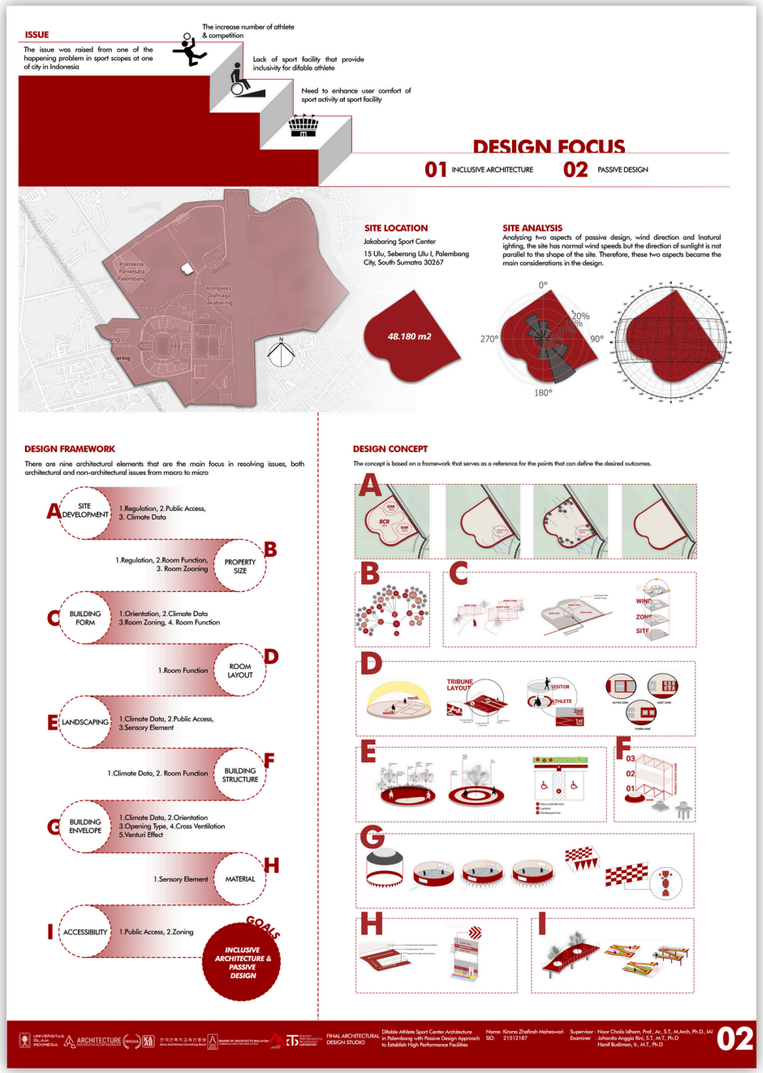
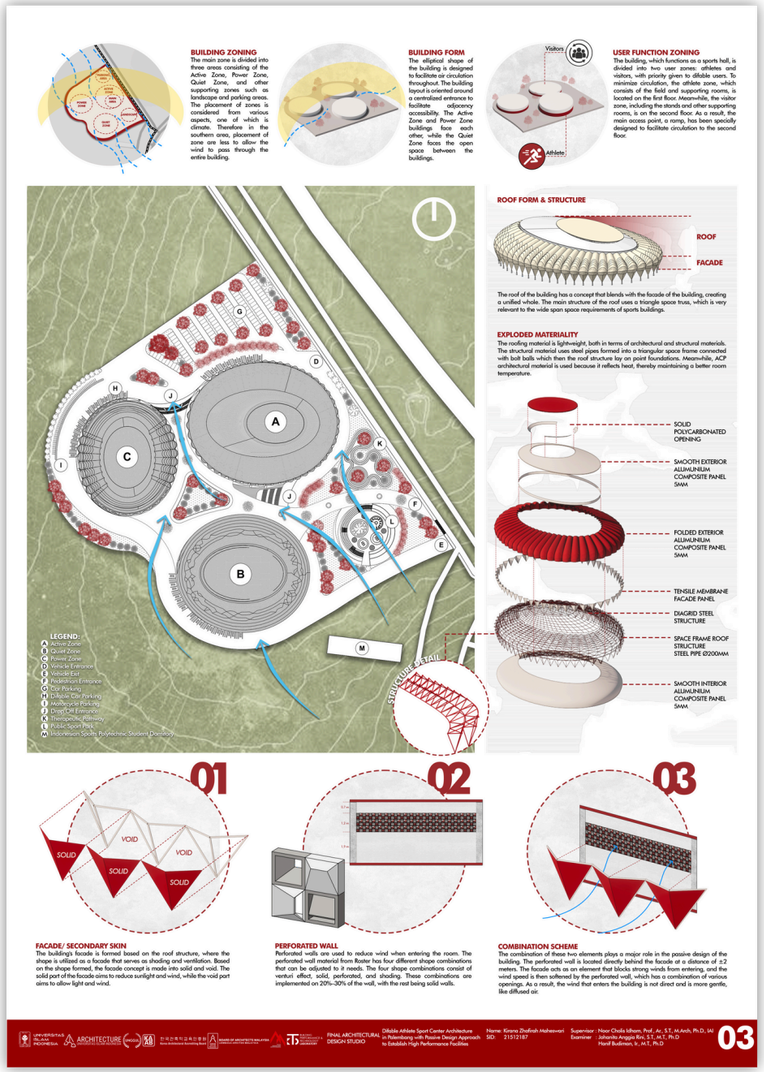


Figure 7.1 APREB Pages 1-2
Source: *Author, 2025*



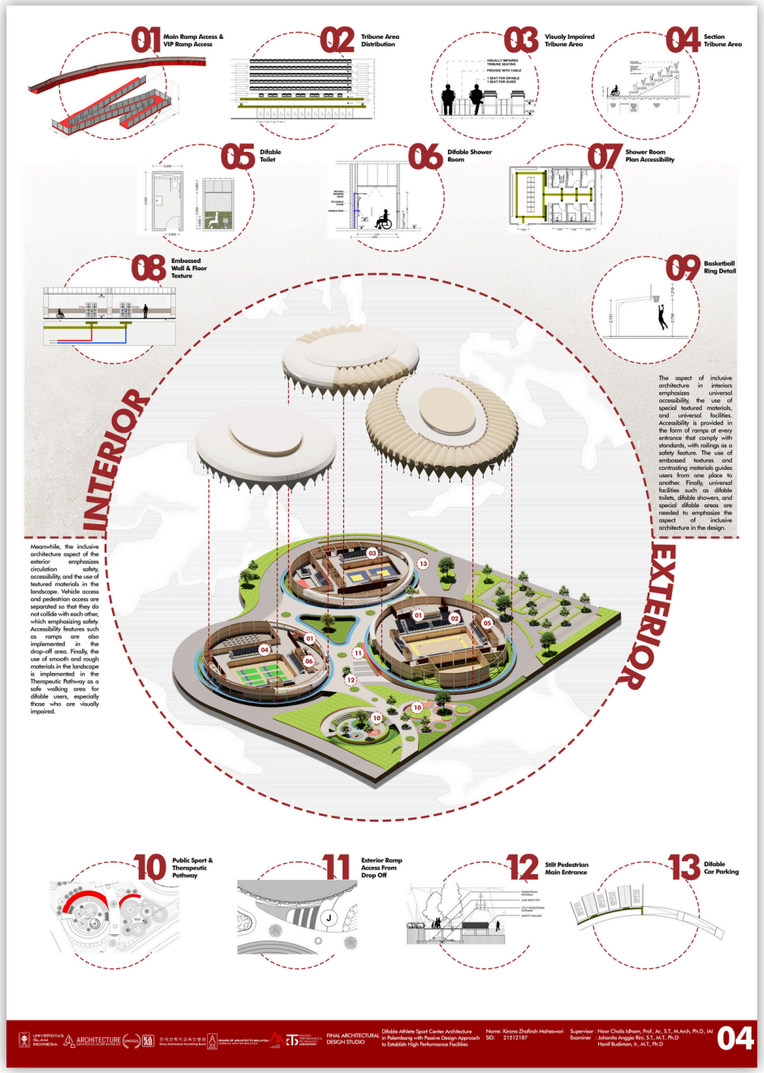




Figure 7.2 APREB Pages 3-5
Source: *Author, 2025*

maquette.

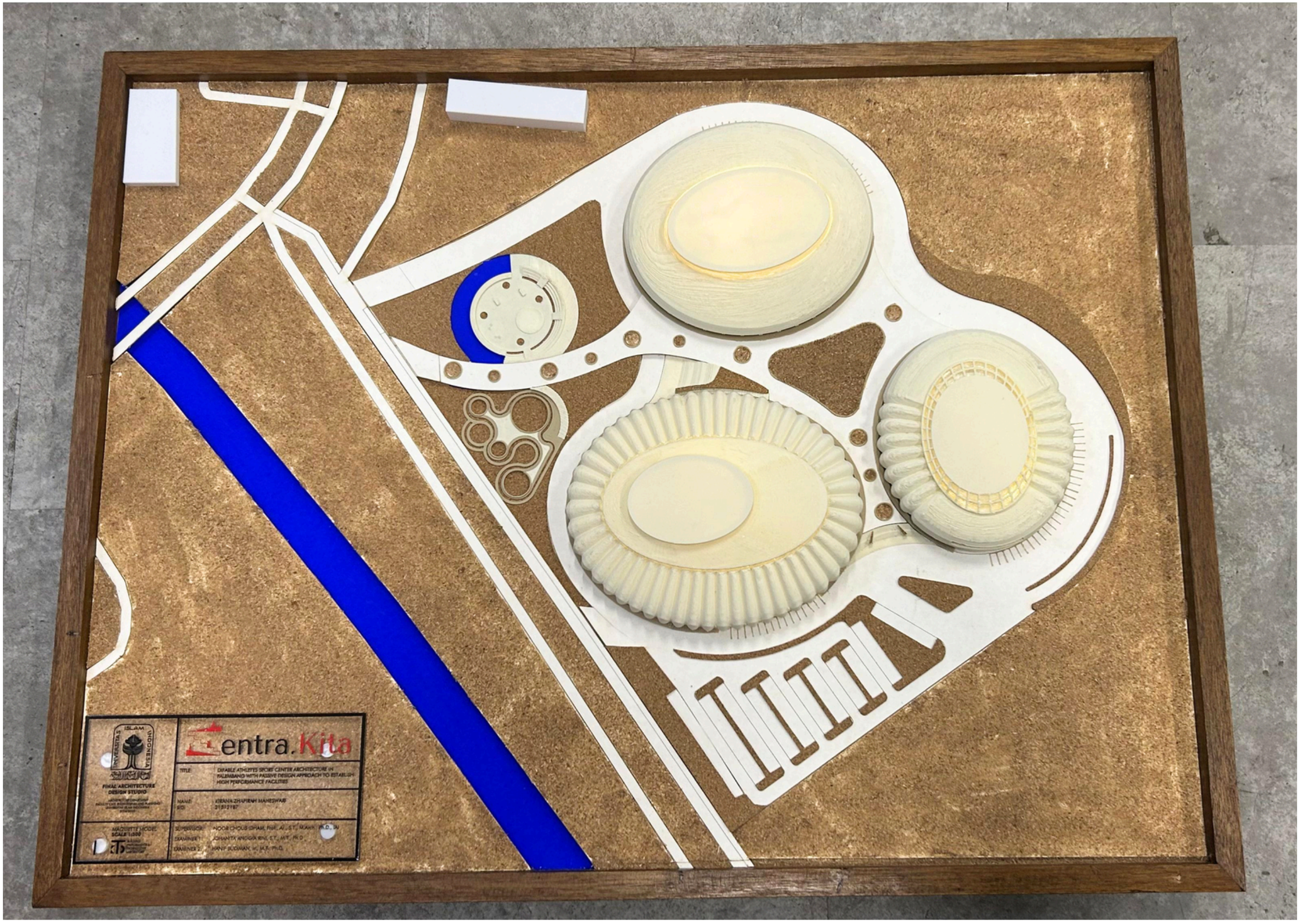


Figure 7.3 Maquette Model
Source: *Author, 2025*

maquette.

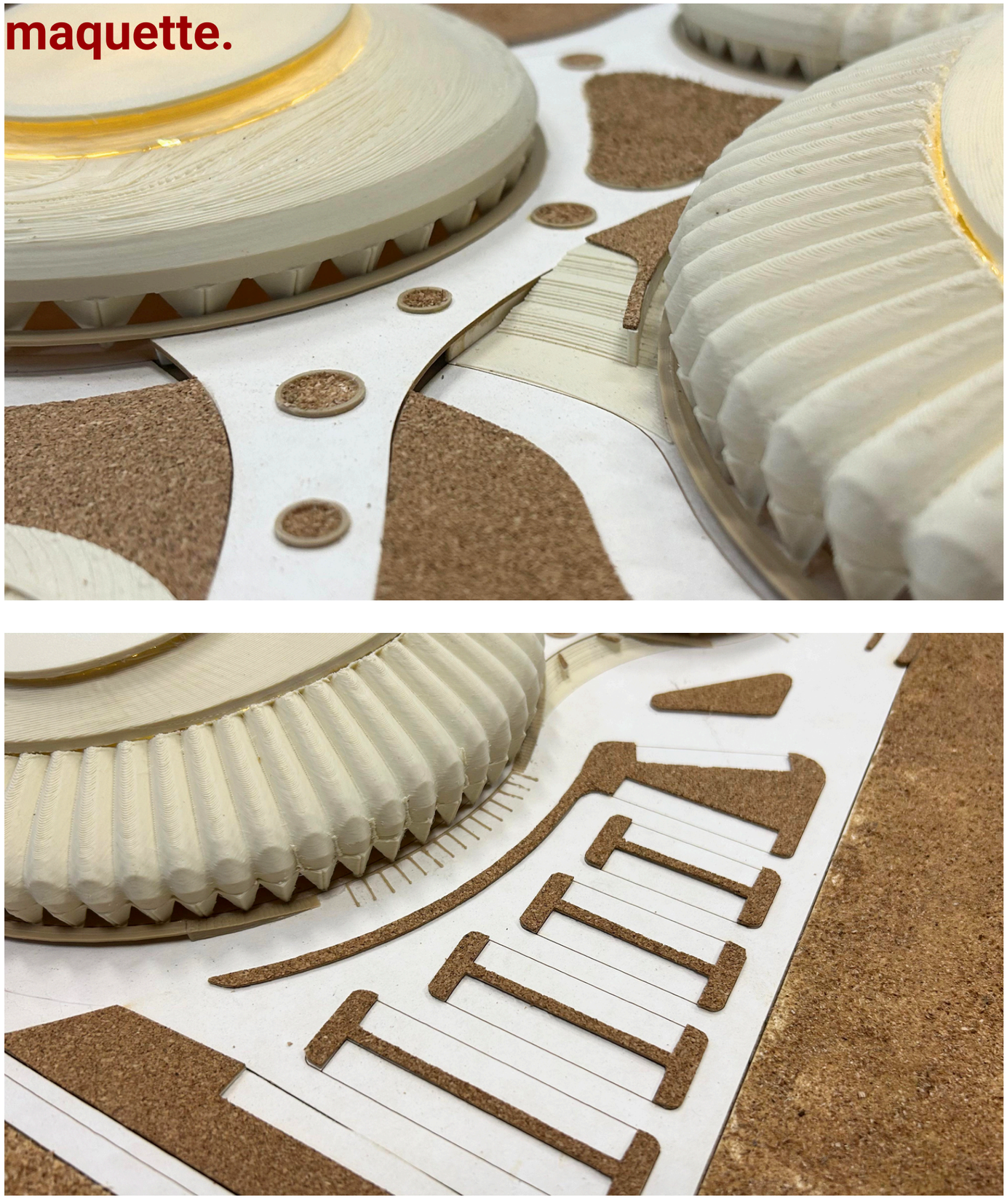




Figure 7.4 Maquette Model Detail
Source: *Author, 2025*



Figure 7.5 Maquette Model Detail 2
Source: *Author, 2025*





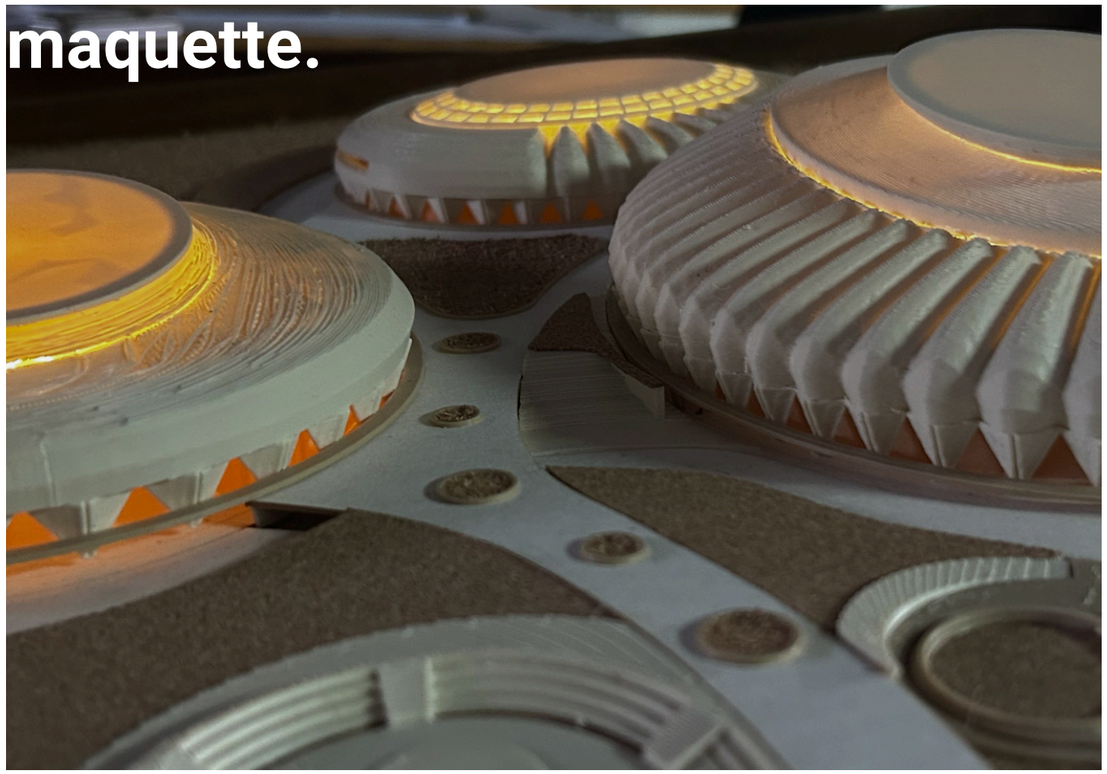
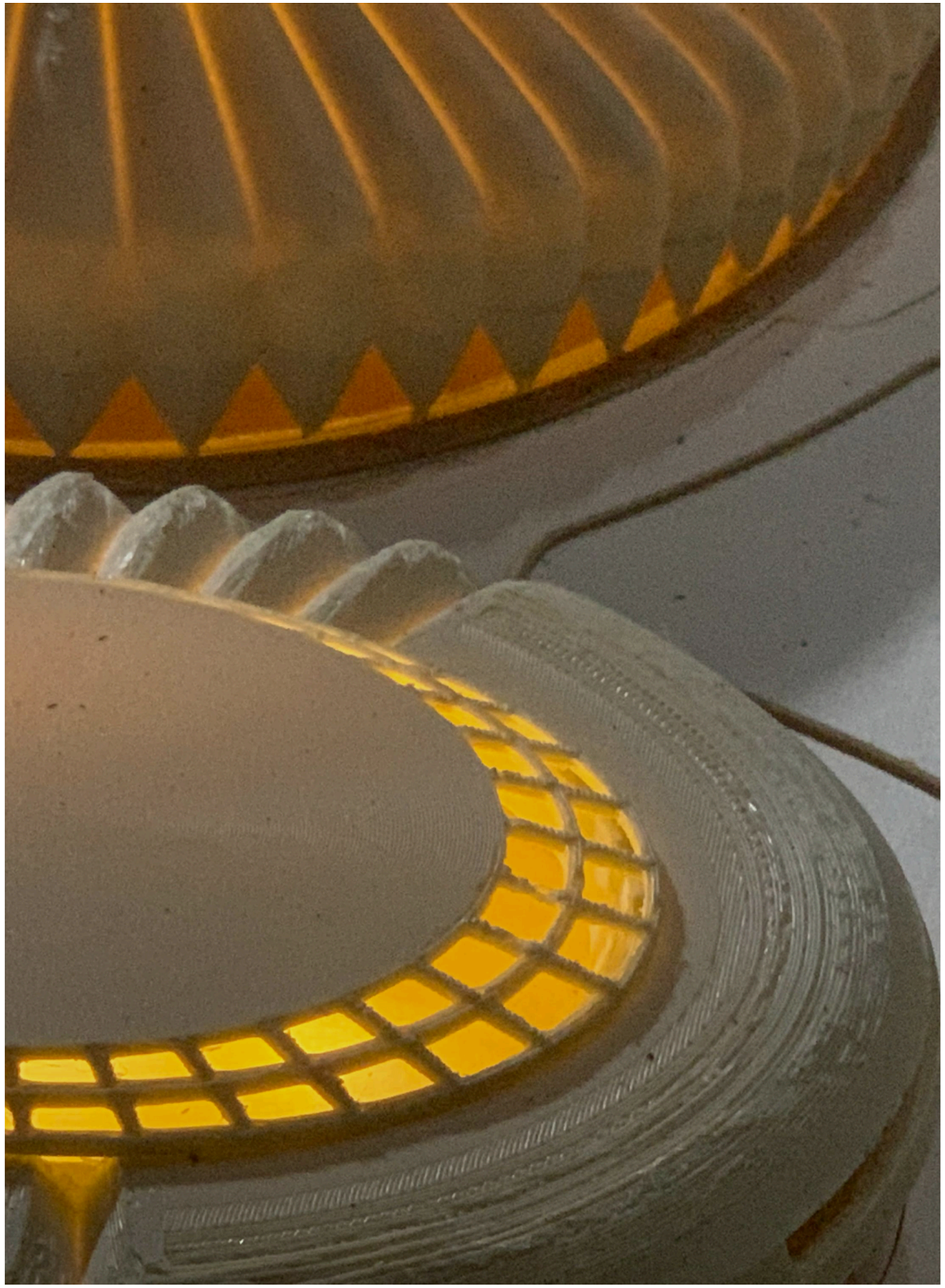




Figure 7.6 Maquette Model Detail With Lamp
Source: *Author, 2025*



design document.

Figure 7.7 Design Document QR Code
Source: *Author, 2025*

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