

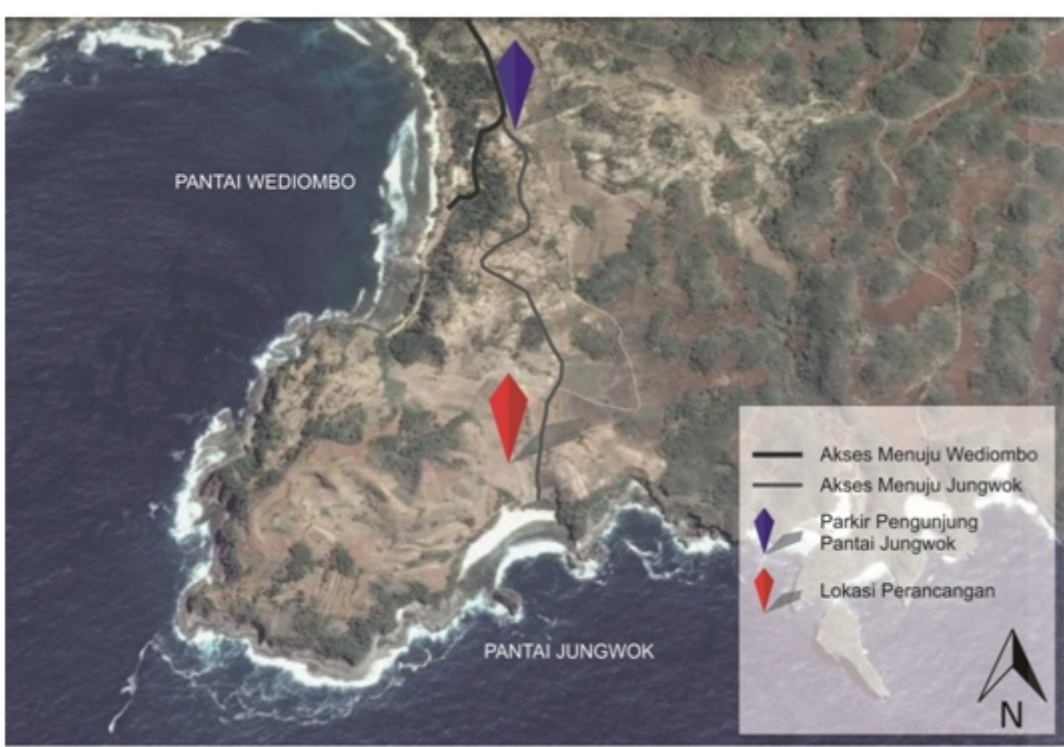
MAKET KAWASAN PUSAT PENELITIAN KARST



KARST RESEARCH CENTER IN JUNGWOK BEACH, GUNUNGGKIDUL DESIGN BASED ON SITE CHARACTERISTICS

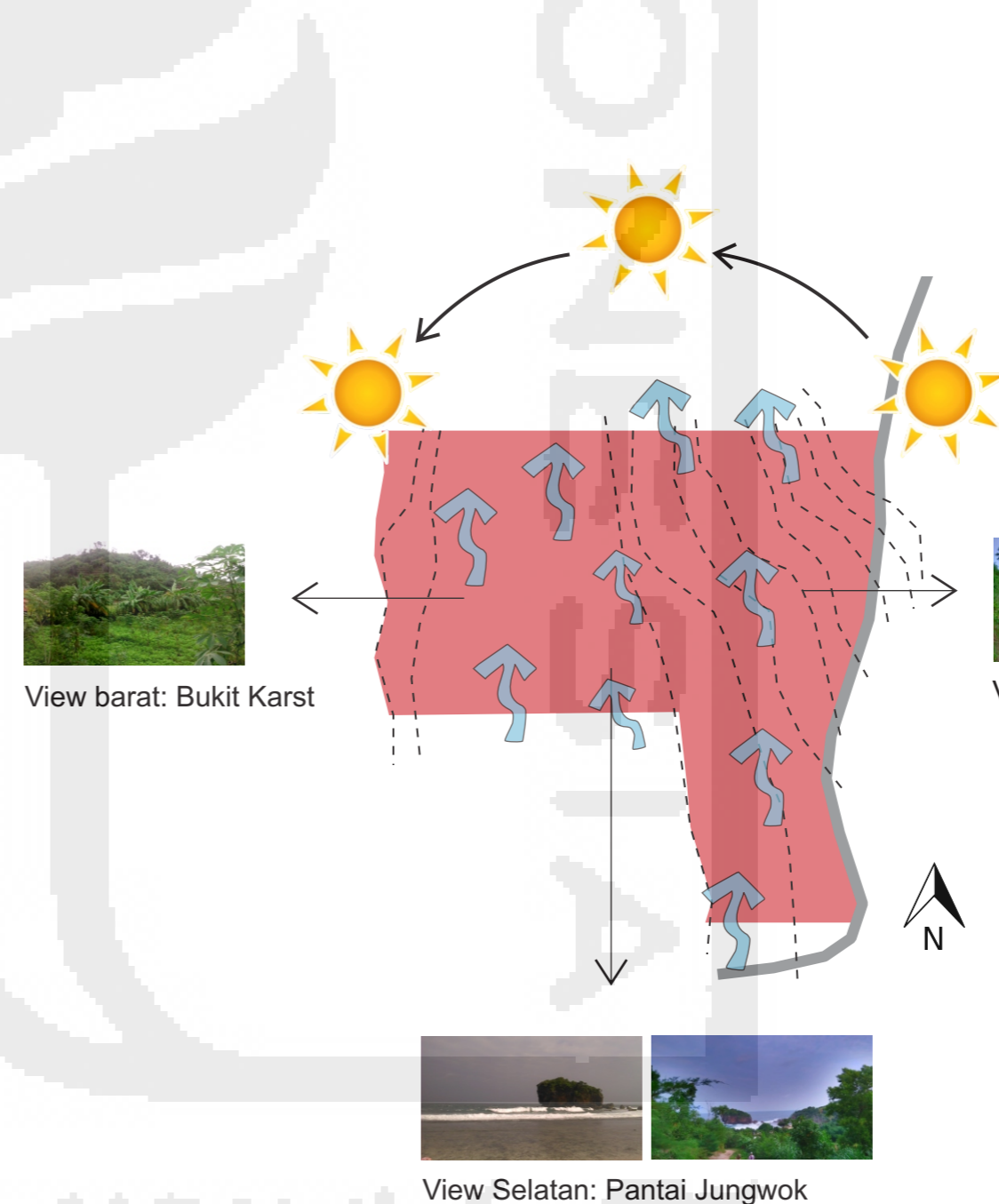
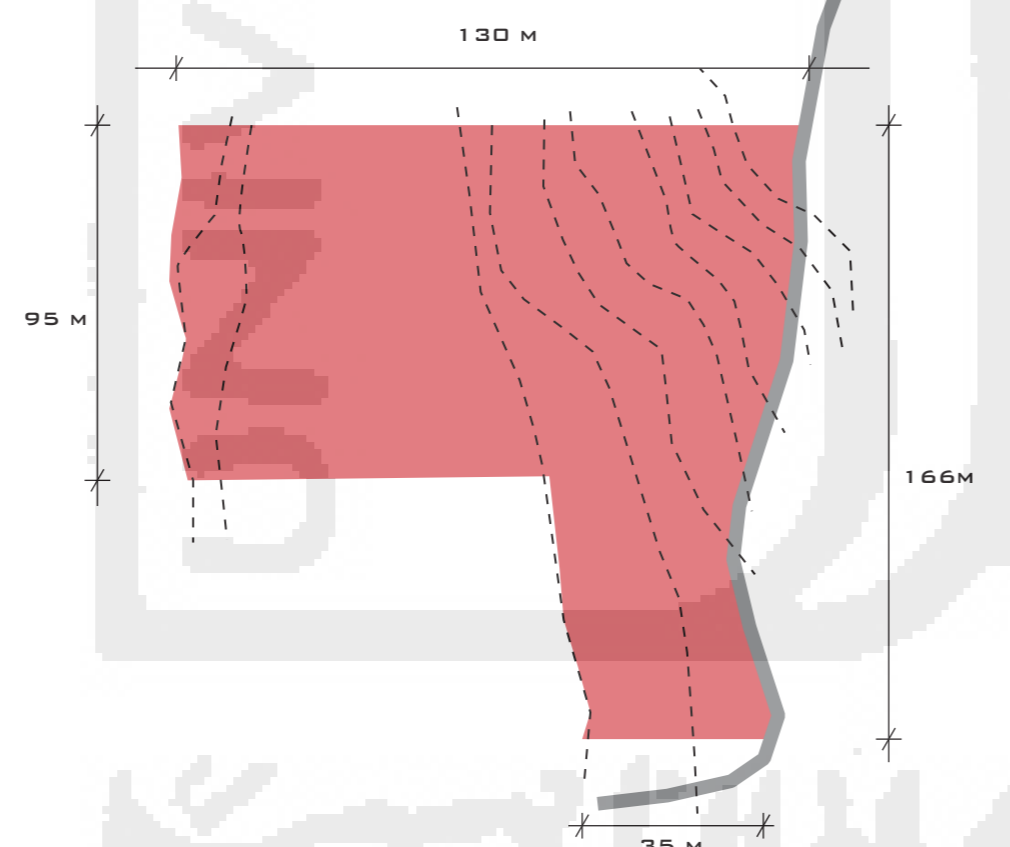


SITE DATA AND LOCATION



Lokasi : Pesisir Pantai Jungwok,
Kecamatan Jepitu,
Gunungkidul

Luas Site : 14, 835 m²



Lokasi merupakan bagian dari pegunungan karst Gunungsewu. Site juga berada di daerah dengan tingkat akuifer tanah rendah, rawan bencana gempa, serta angin ribut.

Site berada di pesisir dengan berbagai potensi alam seperti lingkungan alami dan view pantai. Topografi site yang berundak-undak juga menjadi salah satu potensi alam yang dapat dimanfaatkan dalam perancangan.

Batas site:

- Selatan : Pantai Jungwok
- Barat : Bukit karst
- Utara : Perkebunan dan ladang warga
- Timur : Jalan akses menuju Pantai Jungwok

BACKGROUND ISSUES

Terdapat beberapa issue yang melatarbelakangi pembuatan fasilitas Karst Research Center:

1

Karst sebagai bagian dari keanekaragaman bentang alam yang dilindungi dan perlu difasilitasi untuk konservasi dan edukasinya.

Di lapangan masih banyak terdapat penambangan karst liar baik secara kecil-kecilan dengan peralatan sederhana mau pun dengan peralatan berat. Kegiatan itu tentunya dapat merusak karst dan ekosistem di sekitarnya.



2

Karst sebagai laboratorium alam

Bentang alam yang unik ini terbentuk dari proses geologi yang panjang dan merekam berbagai informasi penting selama proses itu berlangsung. Hal itu menjadikan karst sebagai laboratorium alam bagi berbagai bidang keilmuan.

3

Lokasi jauh dari kota dan pemukiman warga

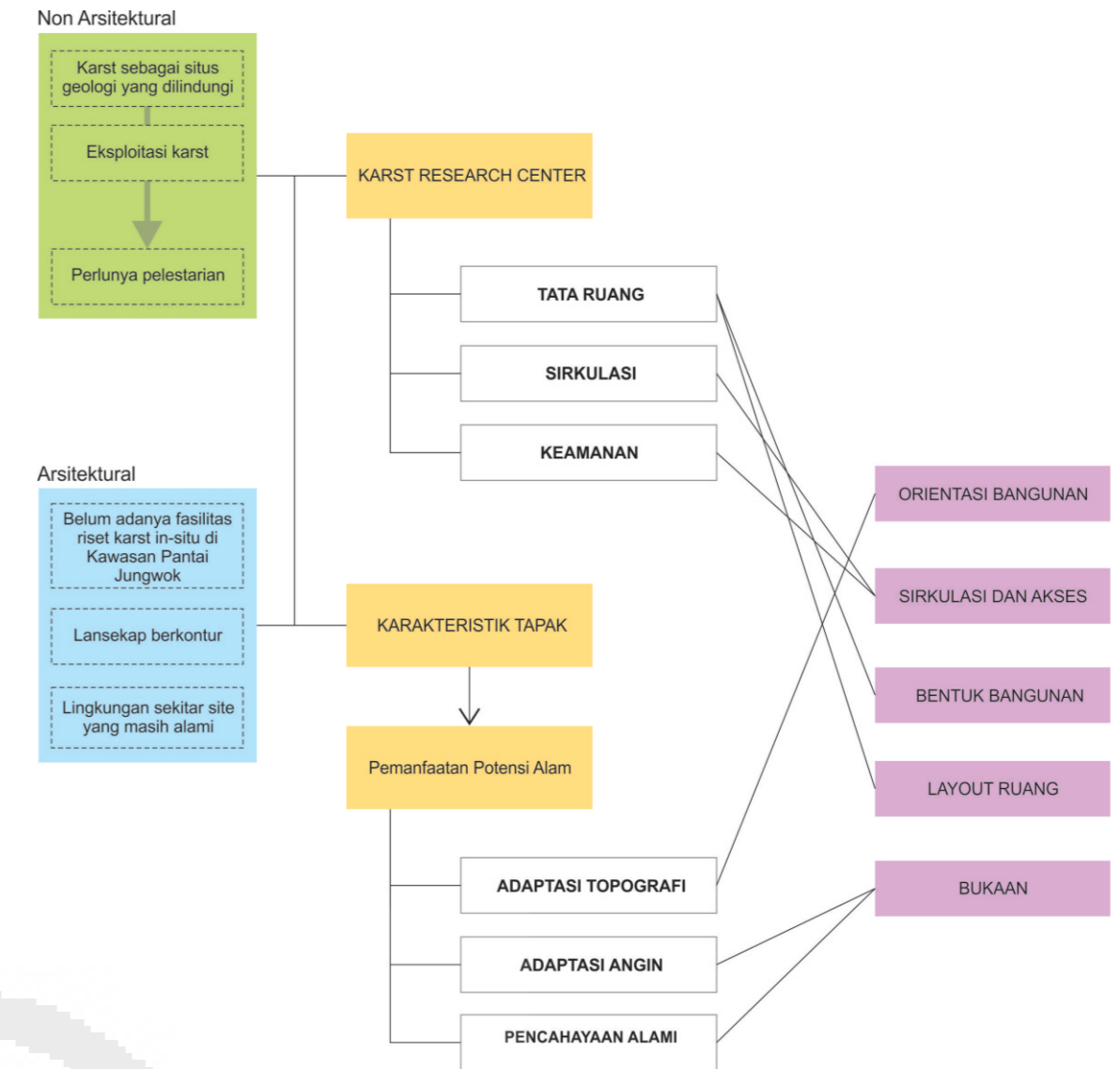
Lokasi yang berada di pesisir selatan Pulau Jawa tersebut masih belum begitu terbangun. Wilayah tersebut baru dimanfaatkan sebagai ladang pertanian warga. Jarak yang jauh dari kota dan medannya yang cukup sulit menjadikannya tantangan tersendiri bagi akademisi yang ingin mempelajari karst.

KARST RESEARCH CENTER IN JUNGWOK BEACH, GUNUNGGKIDUL DESIGN BASED ON SITE CHARACTERISTICS

PROBLEM ISSUES

Persoalan utama yang menjadi tantangan dalam perancangan Karst Research Center, yaitu:

- 1 Site perancangan berada di daerah pesisir dengan berbagai potensi bencana seperti angin ribut dan gempa
- 2 Site perancangan berada jauh dari pemukiman warga dan fasilitas umum
- 3 Site perancangan berada di daerah dengan berkontur dan berundak-undak karena sebelumnya digunakan sebagai ladang pertanian warga.



DESIGN ANALYSIS & CONCEPT

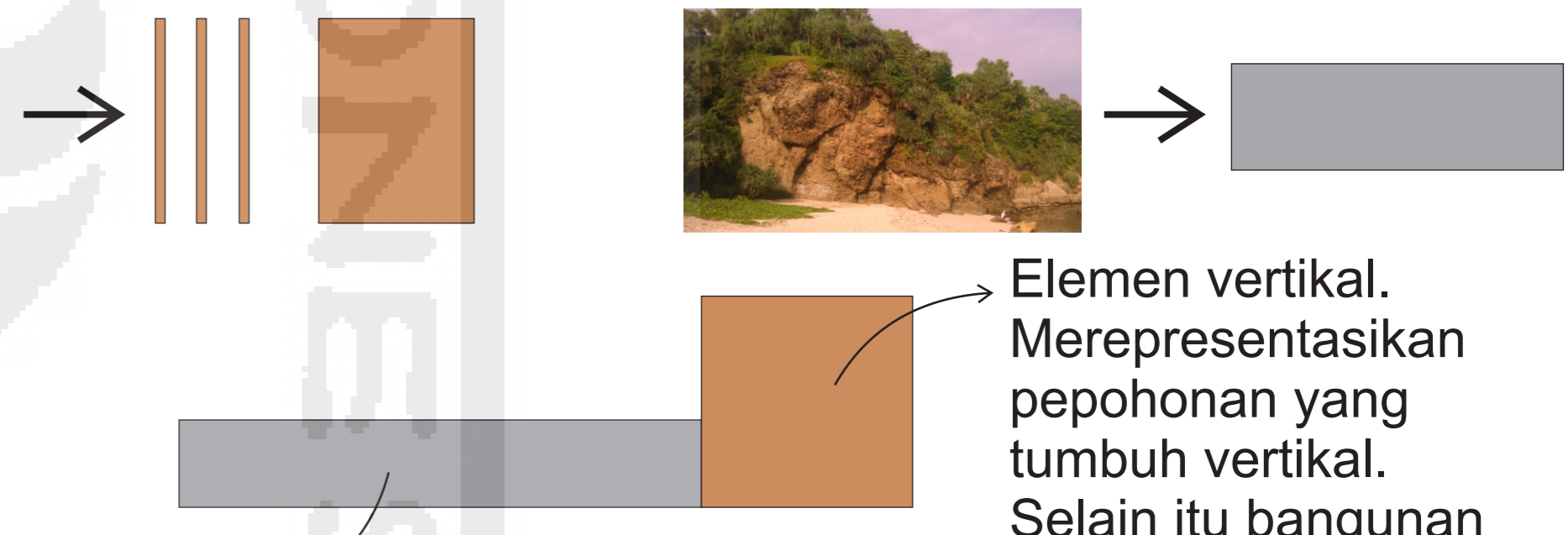
Konsep utama dari rancangan Karst Research Center, yaitu:



Rancangan ditujukan untuk memudahkan para peneliti untuk meneliti karst. Dengan menggunakan metode perancangan studi environmental issue, isu-isu lingkungan yang ada pada site diolah dengan konsep pendekatan rancangan yang alami. Perancangan melihat isu-isu seperti kondisi fisik/tapak, kontur, iklim, vegetasi, karst dan ekosistemnya, serta kaitan kebutuhan peneliti dalam kegiatannya dan lingkungan sekitar.

KONSEP UTAMA DAN GUBAHAN MASSA

Tujuan bangunan ini adalah sebagai fasilitas penelitian yang ditujukan kepada para peneliti karst. Karena lingkungan yang masih alami, bangunan memiliki konsep 'natural' berdasarkan karakteristik site. Gubahan massanya terinspirasi dari lingkungan sekitarnya yang masih berupa pepohonan serta areal karst.

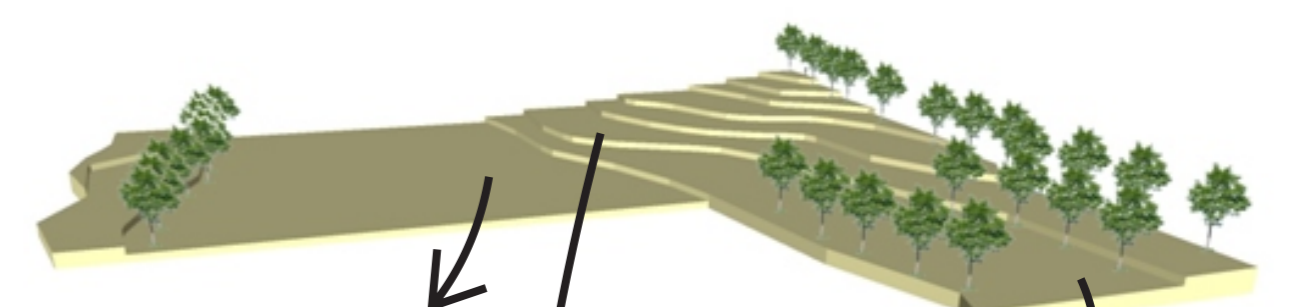
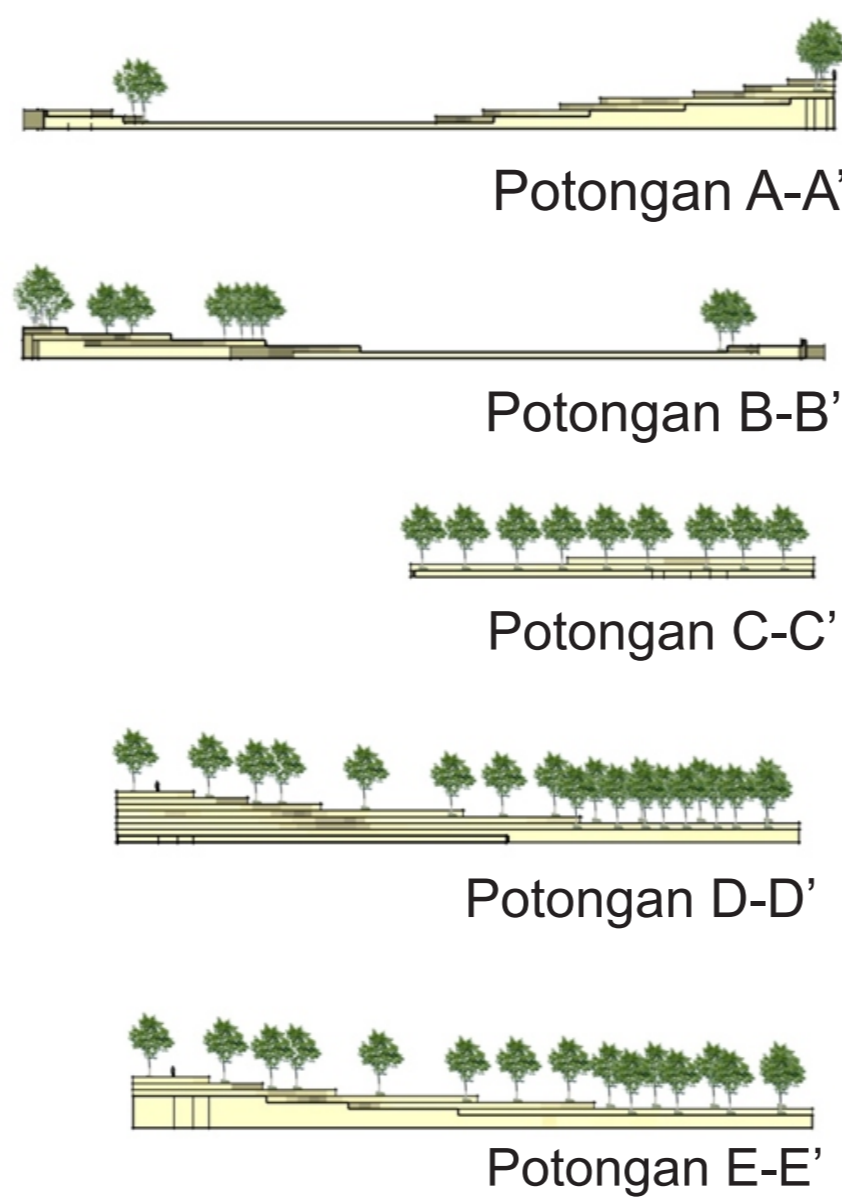
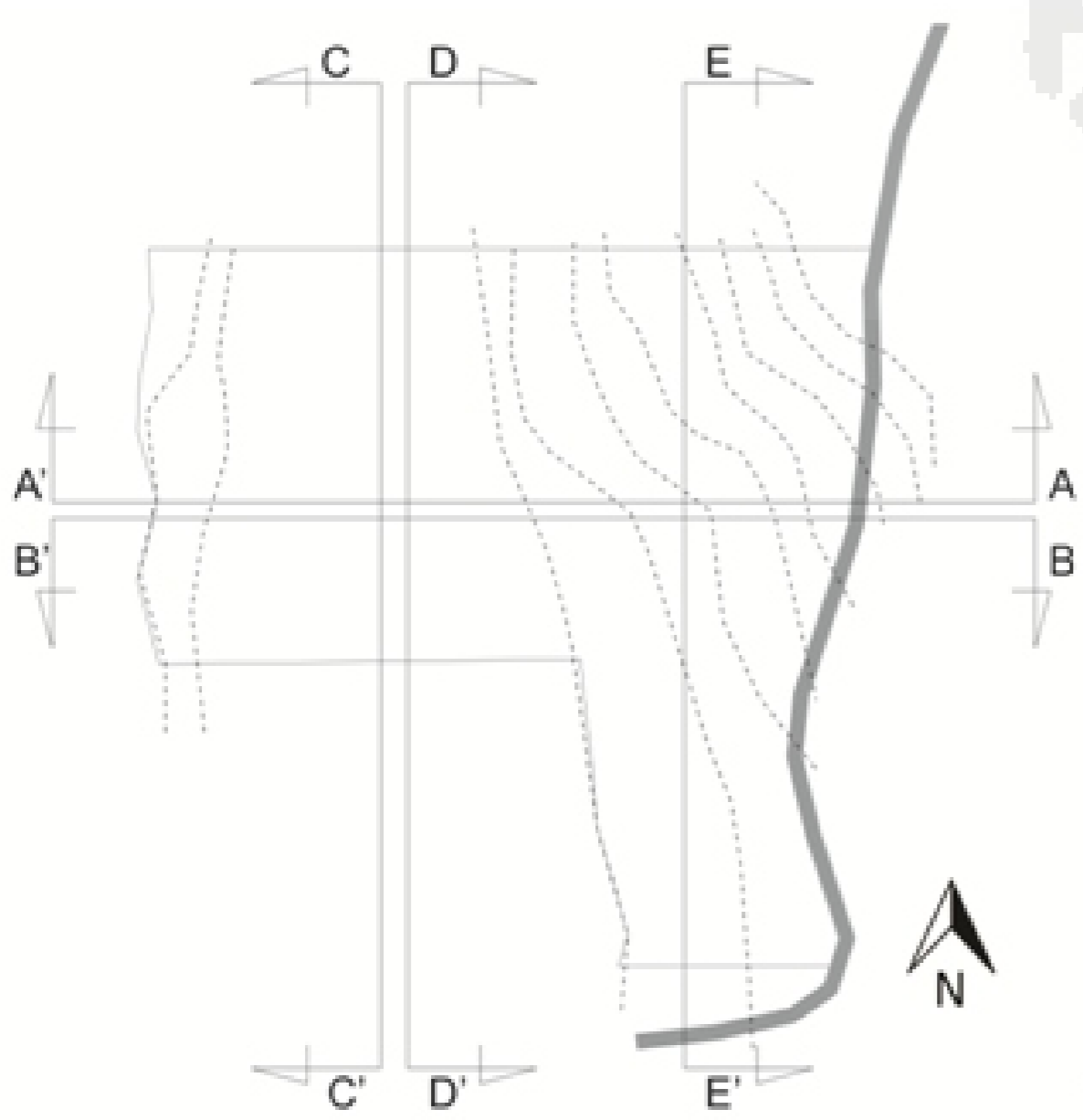


Elemen horizontal
Merepresentasikan lansekap batuan karst, memberi kesan kedekatan terhadap alam, lebih 'membumi'. Merupakan area khusus penelitian, didekatkan dengan shortcut menuju bukit karst dan pantai.

Elemen vertikal.
Merepresentasikan pepohonan yang tumbuh vertikal. Selain itu bangunan yang tinggi dan menonjol menjadikannya lebih visible dari arah entrance

ANALISIS & KONSEP SITE

Site berkontur menjadi permasalahan dan tantangan dalam perancangan. Kontur curam terdapat di sisi timur site.



Area terbangun berada di kontur datar untuk keamanan pengguna serta meminimalkan rekayasa kontur

Area entrance diletakkan di area yang tidak berkontur curam

Area terbangun yang ada di area berkontur dirancang memiliki perbedaan ketinggian mengikuti kontur yang lebih tinggi dengan melakukan fill pada kontur dan meminimalkan pemotongan kontur.

KARST RESEARCH CENTER IN JUNGWOK BEACH, GUNUNGKIDUL DESIGN BASED ON SITE CHARACTERISTICS

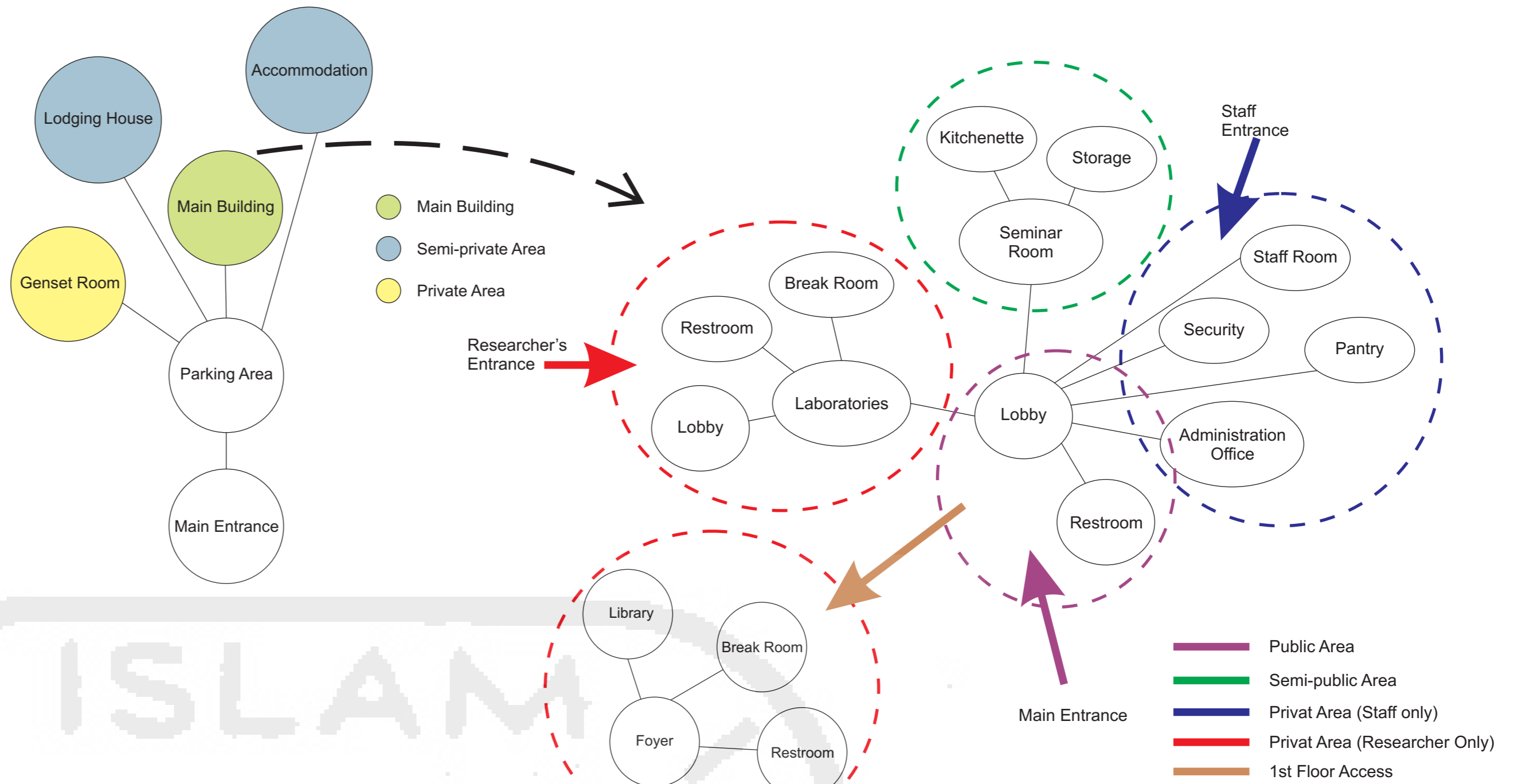
ANALISIS & KONSEP PROGRAM RUANG

Kebutuhan ruang untuk fasilitas laboratorium:

- . Entrance
- . Lobby
- . Reception
- . Office-workroom
- . Standard laboratory
- . Library
- . Seminar room
- . Storage
- . Equipment storage
- . WC/shower
- . Staff room
- . Administration Office
- . Pantry

Ditambah dengan fasilitas tambahan:

- . Mushola
- . Cafeteria
- . Lodging house
- . Health room
- . Minimarket
- . Staff house



FINAL DESIGN

Zona akomodasi diletakkan bagian belakang main building untuk memberi kesan privat. Lodging house diletakkan dekat dengan area laboratorium.

Shortcut menuju bukit karst, Pantai Jungwok dan Pantai Wediombo. Juga terhubung dengan jalur evakuasi bencana.

Utility Building: Area pendukung elektrikal dan gudang peralatan untuk pengambilan sampel. Diletakkan dengan area laboratorium dan shortcut.

Pohon pemecah angin untuk mengantisipasi angin kencang dari arah selatan/pantai

Area Inner court sebagai salah satu meeting point peneliti untuk saling berdiskusi dan bertukar pikiran

Main Building: Area laboratorium diletakkan pada kontur datar, dekat dengan shortcut menuju bukit karst dan pantai.

Staff Housing: Rumah tinggal untuk kepala laboratorium. Diletakkan di 'area belakang' yang memberi kesan privat.

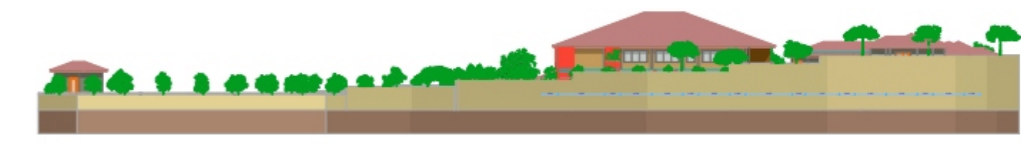
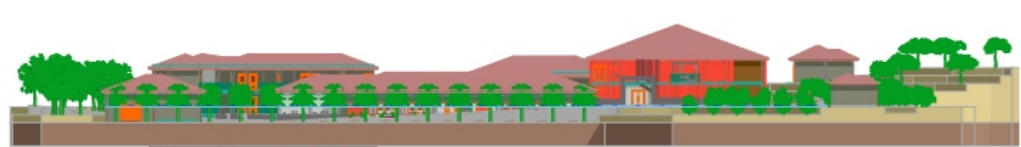
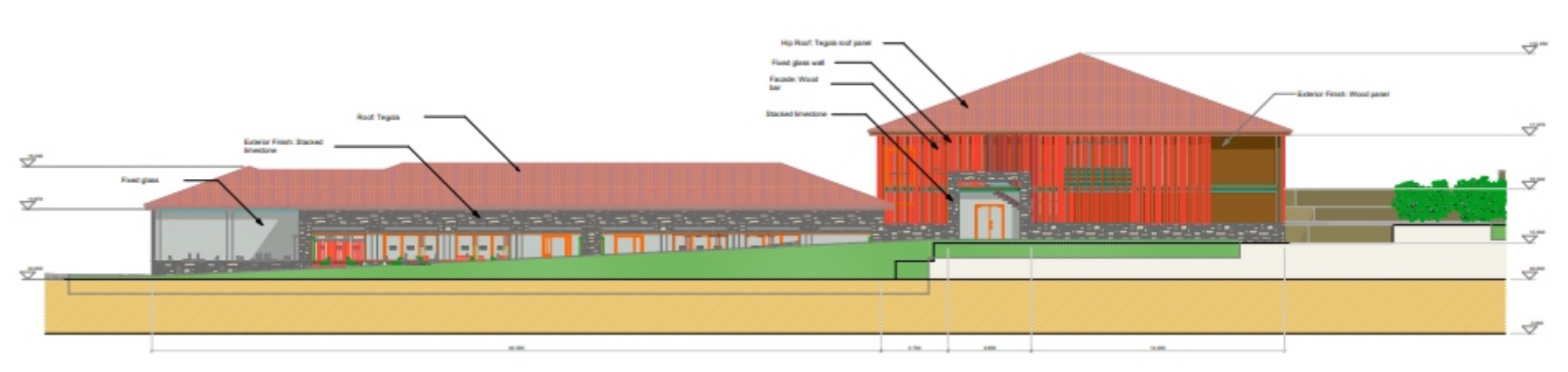
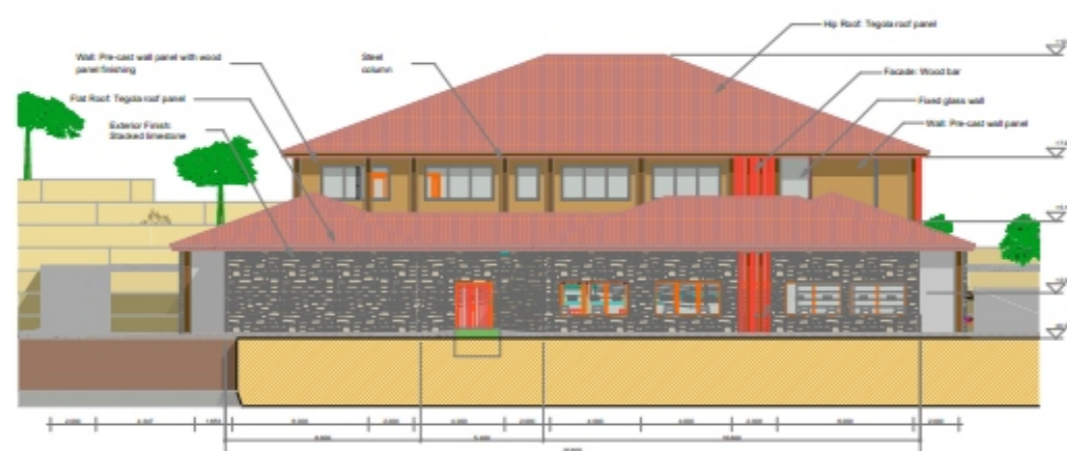
Main Building: Area publik dan semi-publik berada di bagian berkontur tinggi dengan gubahan massa vertikal yang sengaja ditonjolkan untuk mengarahkan pengunjung menuju area tersebut.

Area hijau, menjaga kondisi alami karst, sekaligus sebagai pembatas ruang terbuka antara area publik dan area privat (staff housing)

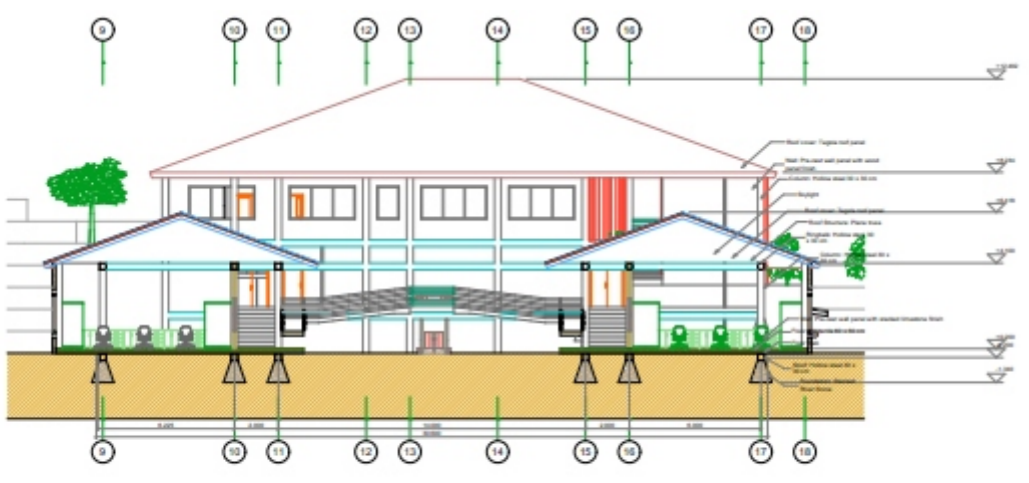
Pengunjung yang datang memarkirkan kendaraan dan berjalan kaki menuju bangunan

Pos keamanan untuk mengawasi keluar masuknya pengunjung

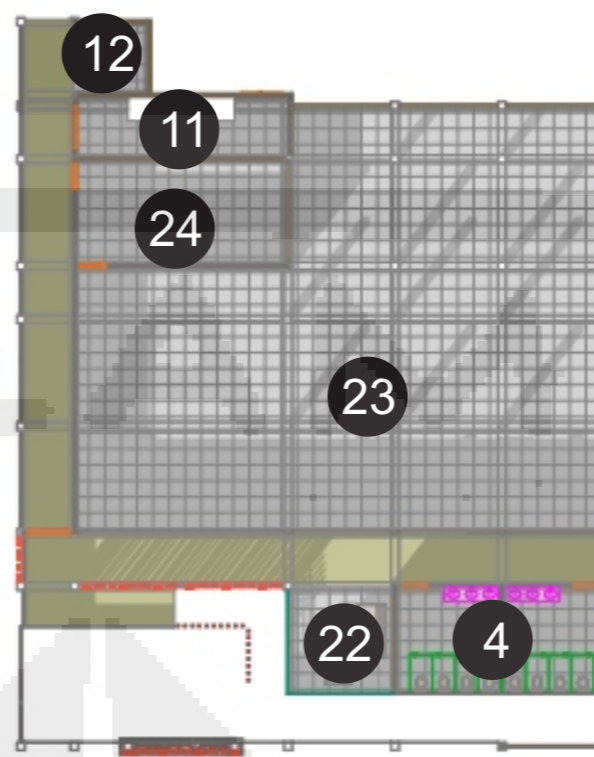
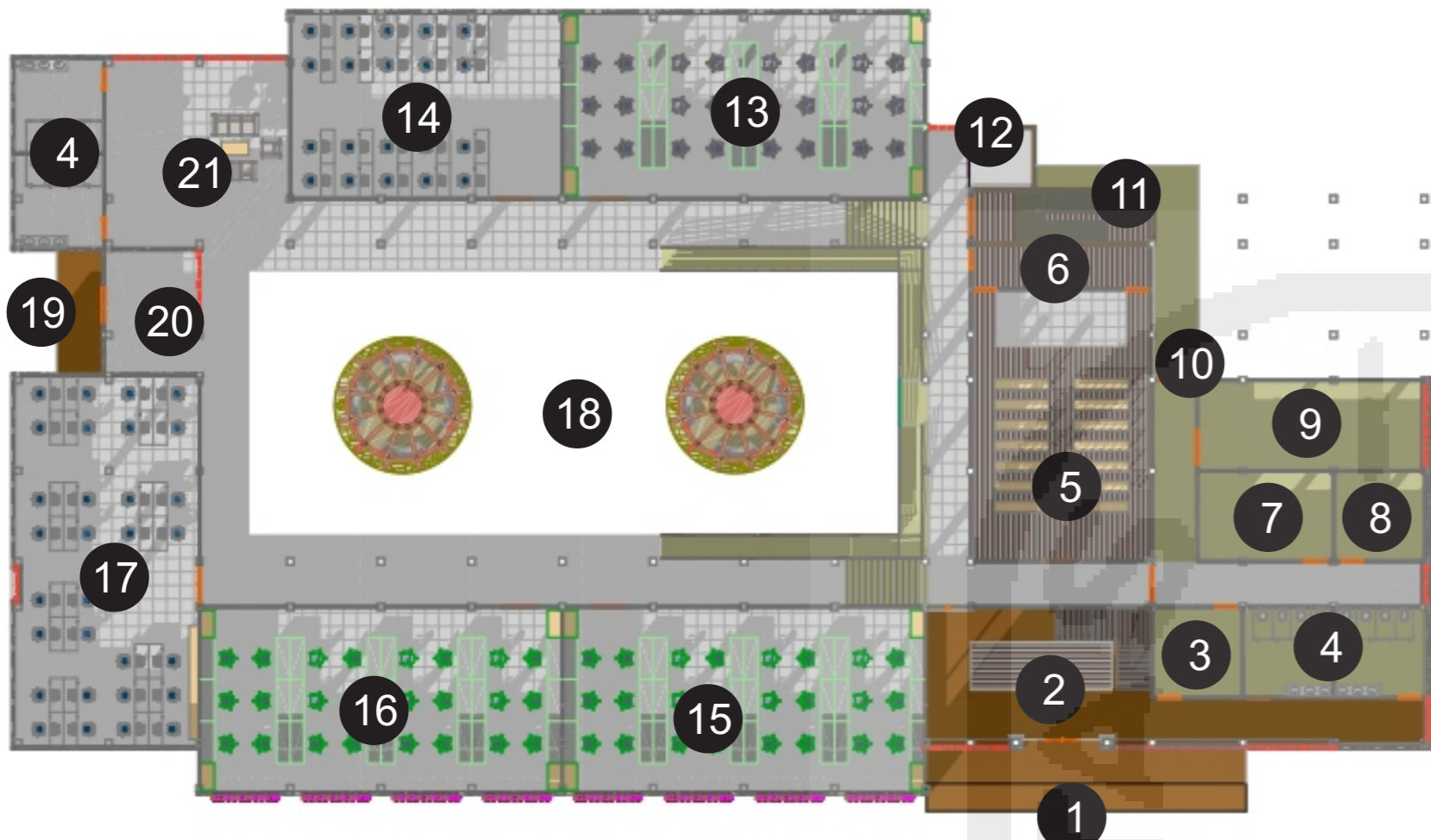
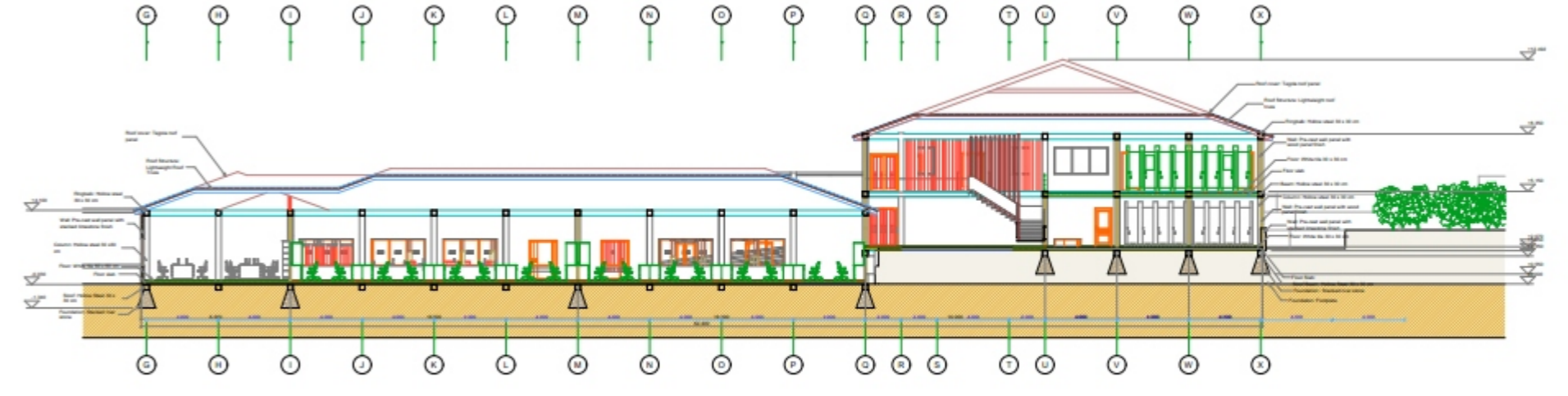
Main entrance menuju kawasan Karst Research Center



KARST RESEARCH CENTER IN JUNGWOK BEACH, GUNUNGKIDUL DESIGN BASED ON SITE CHARACTERISTICS



- Material utama bangunan:
- Atap: baja ringan
 - Penutup atap: tegola
 - Rangka: baja
 - Dinding: panel dinding pre-cast
 - Lantai: keramik
 - Finishing: wood panel, limestone stack

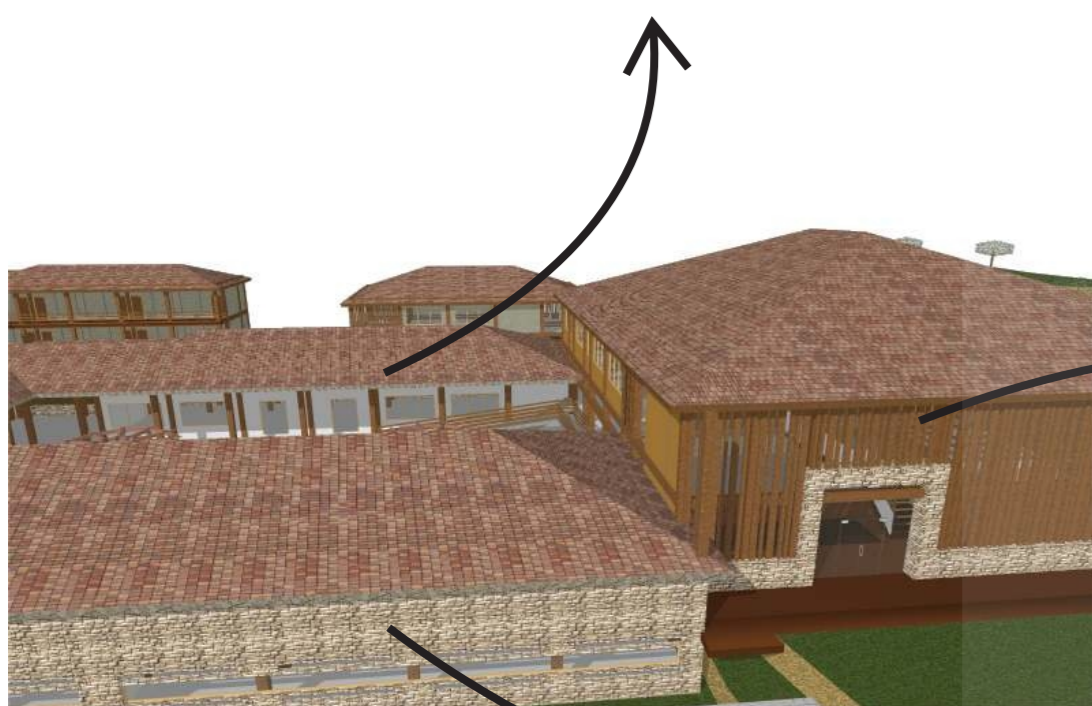


- | | | |
|---------------------------|----------------------|--------------------------|
| 1 Main Entrance | 8 Pantry | 15 Sedimentology Lab. |
| 2 Lobby | 9 Staffs' Room | 16 Geomorphology Lab. |
| 3 Management Office | 10 Staffs' Entrance | 17 Researchers' Office |
| 4 Restroom | 11 Emergency exit | 18 Inner Court |
| 5 Seminar Room | 12 Freight Elevator | 19 Researchers' Entrance |
| 6 Kitchenette and Storage | 13 Geodynamic Lab. | 20 Researchers' Lobby |
| 7 Security Office | 14 Geokomputasi Lab. | 21 Break Room |

- | |
|---------------------|
| 4 Restroom |
| 11 Emergency Stair |
| 12 Freight Elevator |
| 22 Lounge |
| 23 Library |
| 24 Librarian Office |



Atap miring sebagai respon terhadap curah hujan. Menggunakan material atap lembaran yang dibaut sebagai antisipasi jika terjadi gempa dan angin ribut. Material yang ringan



Bukaan ke arah inner court berfungsi untuk pencahayaan



Pengaplikasian elemen vertikal pada fasad dengan batang-batang kayu memberi kesan alami, ditambah dengan penggunaan material kaca pada bagian dalam semakin memberi kesan menyatu dengan alam.

Bukaan di sisi selatan, memaksimalkan pencahayaan alami siang hari (indirect daylighting). Terdapat pula bukaan untuk ventilasi.

Inner court sebagai tempat berdiskusi dan bertukar pikiran

Barrier free design dengan ramp, menghubungkan area dengan ketinggian lebih tinggi ke area yang lebih rendah

Struktur bangunan menggunakan sistem truss dari kolom dan balok baja. Pondasi menggunakan pondasi batu kali dan pondasi footplate. Sedangkan atap menggunakan rangka baja ringan.





BACHELOR FINAL PROJECT

PROJECT TITLE

KARST RESEARCH CENTER IN JUNGWOK BEACH, GUNUNGKIDUL

Design Concept Based on Site Characteristics

DESIGNED BY

MASITHA RIZQIA NURANNISA

STUDENT ID NUMBER

10512219

STUDIO MASTER

IR. RINI DARMAWATI, M.T

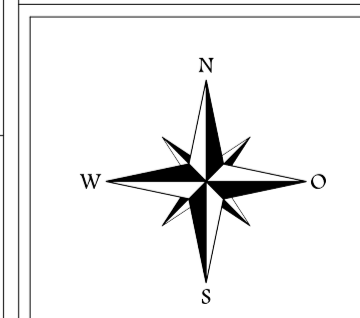
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GROUND FLOOR PLAN

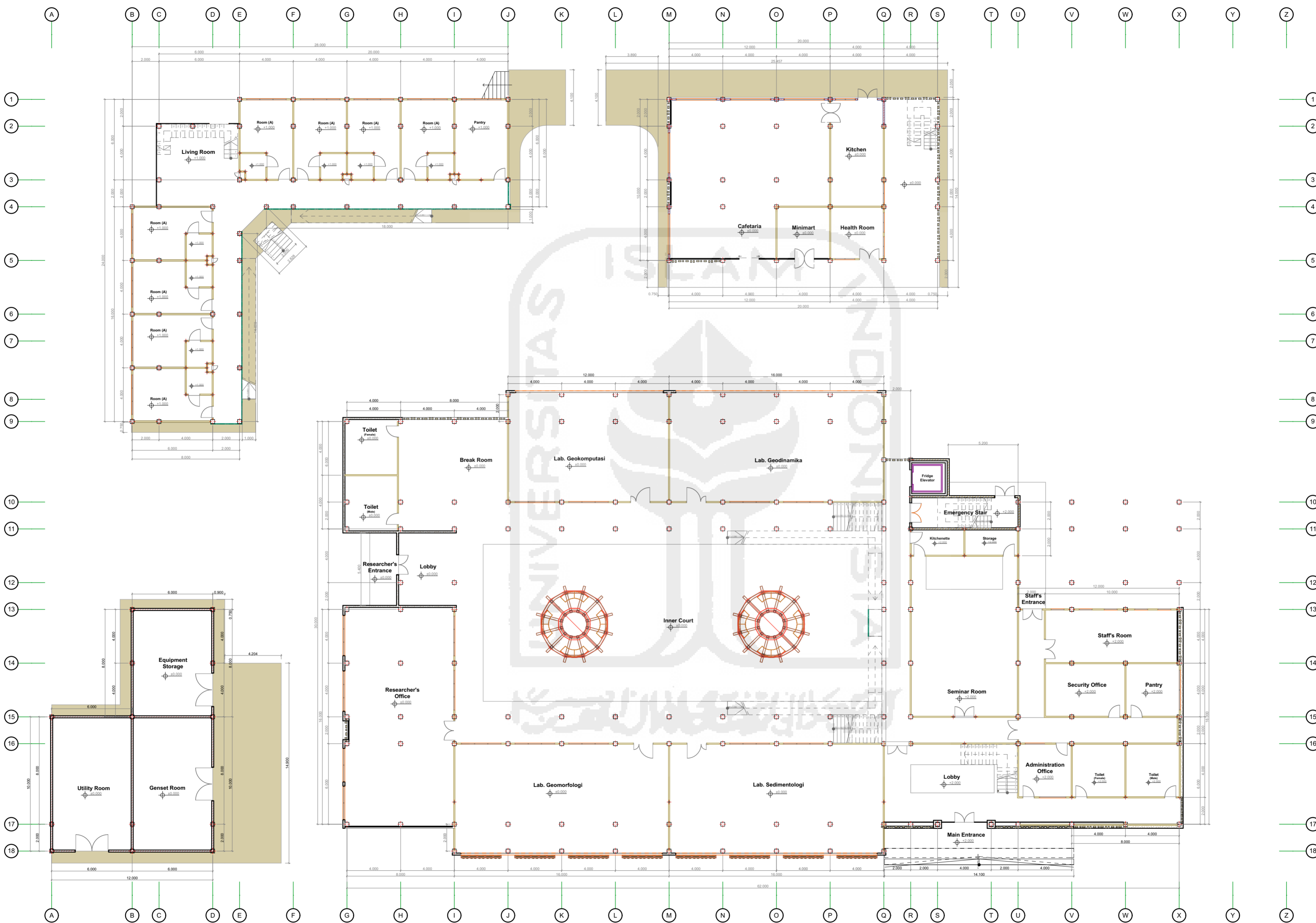
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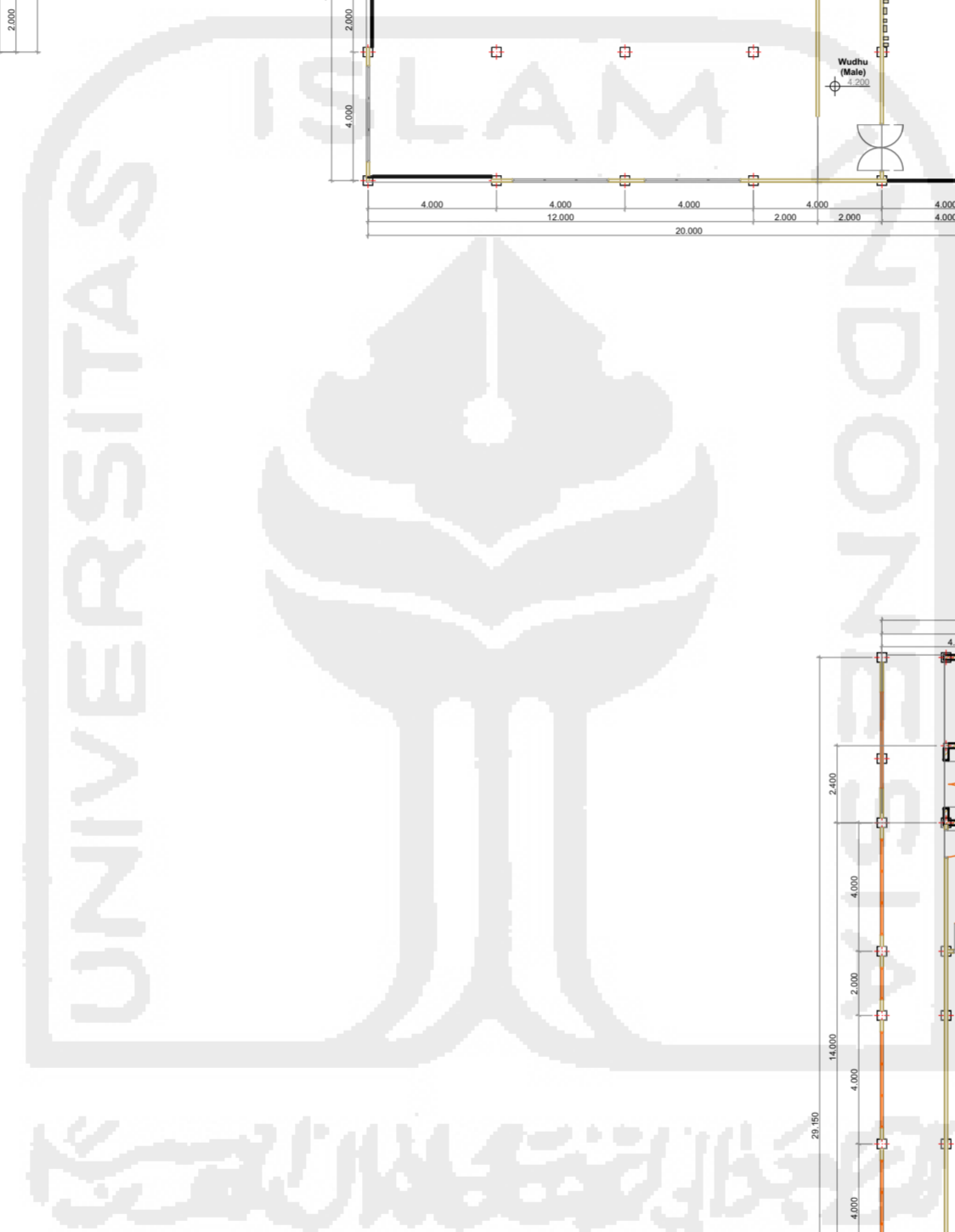
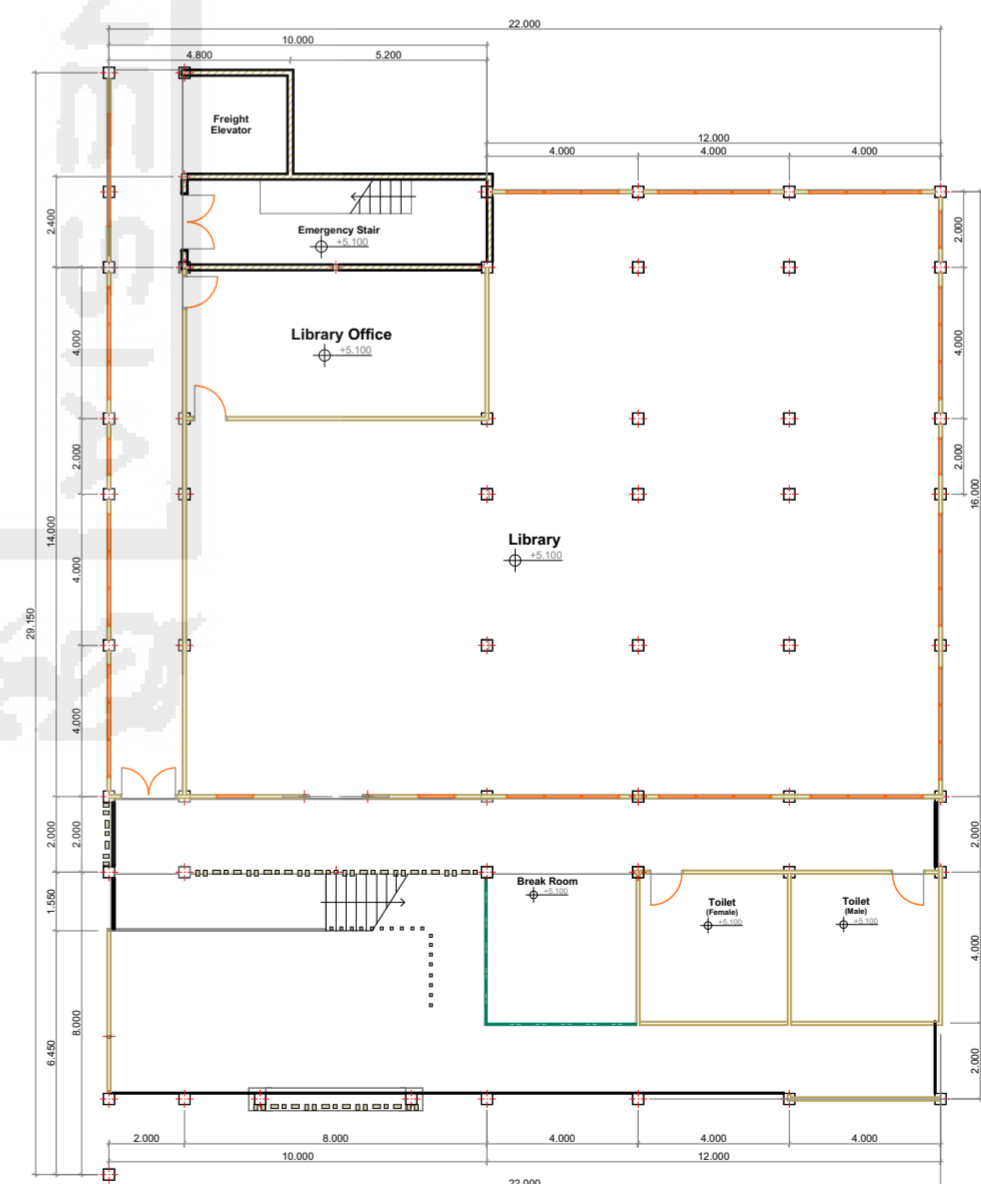
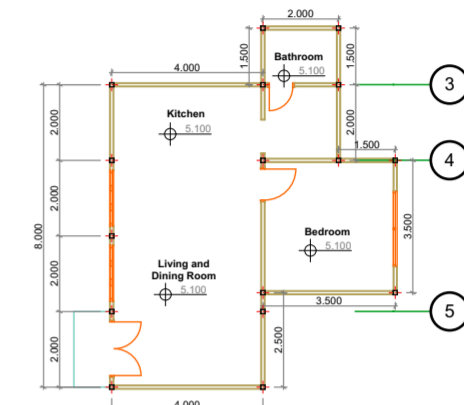
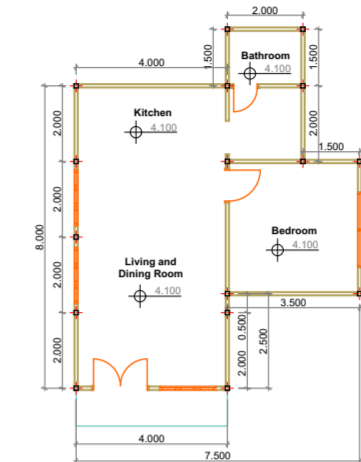
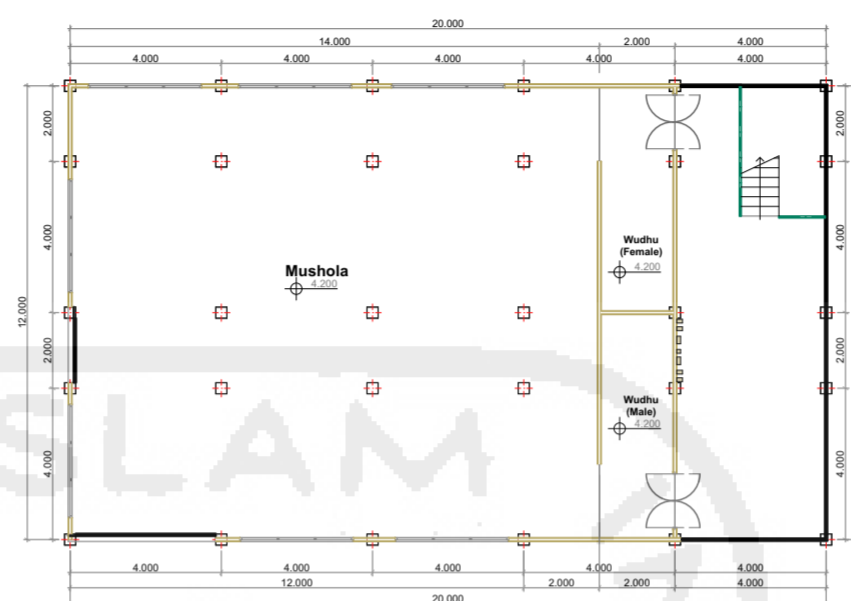
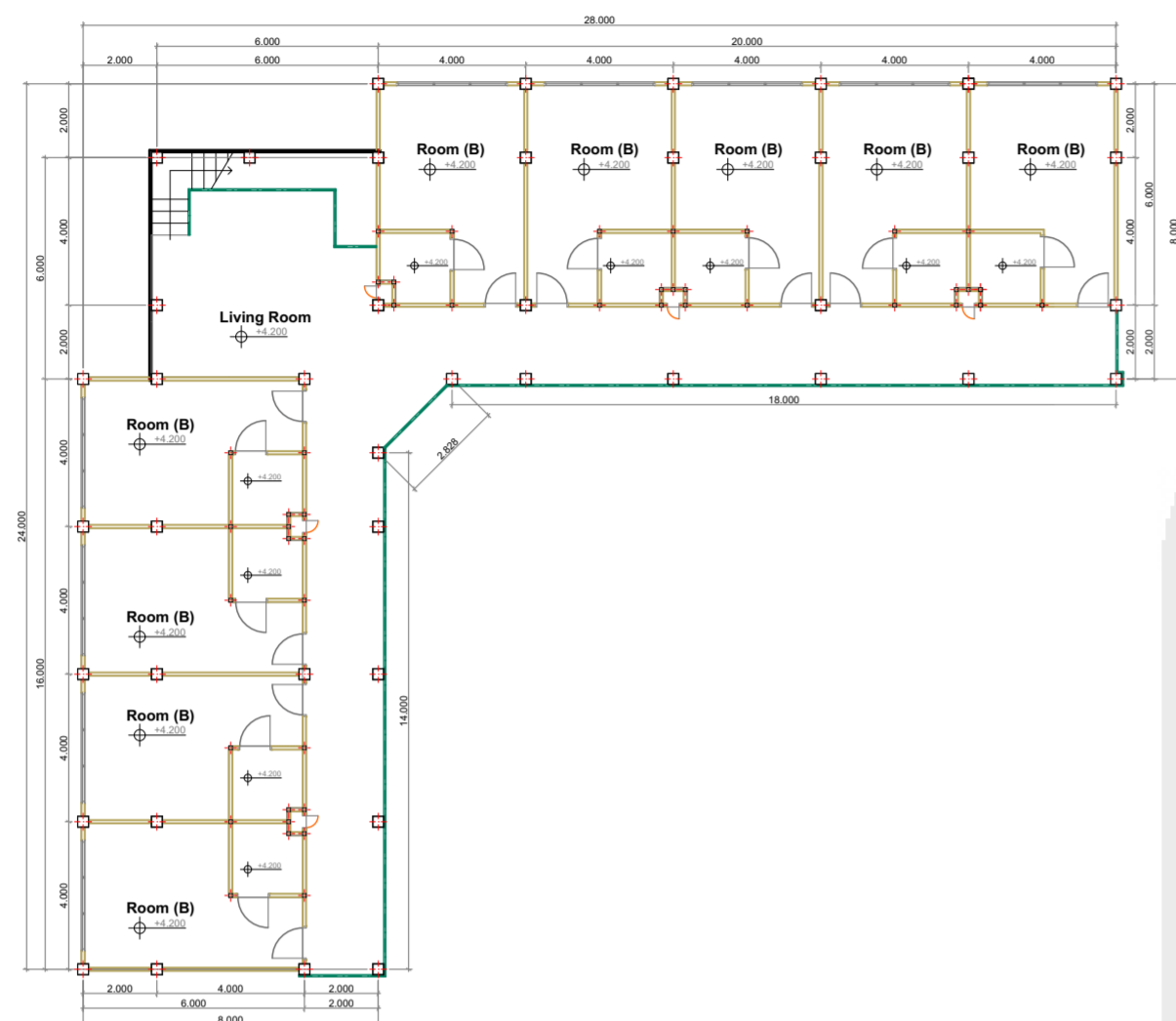
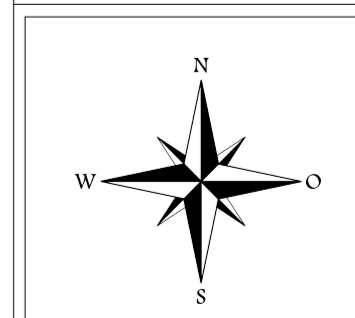
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LEGENDS



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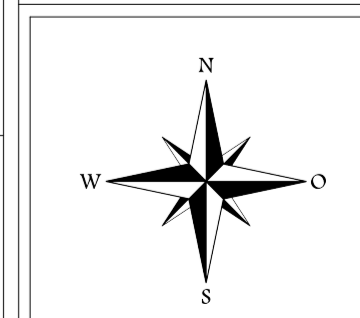
DRAWING TITLE

SEMI-BASEMENT FLOOR PLAN

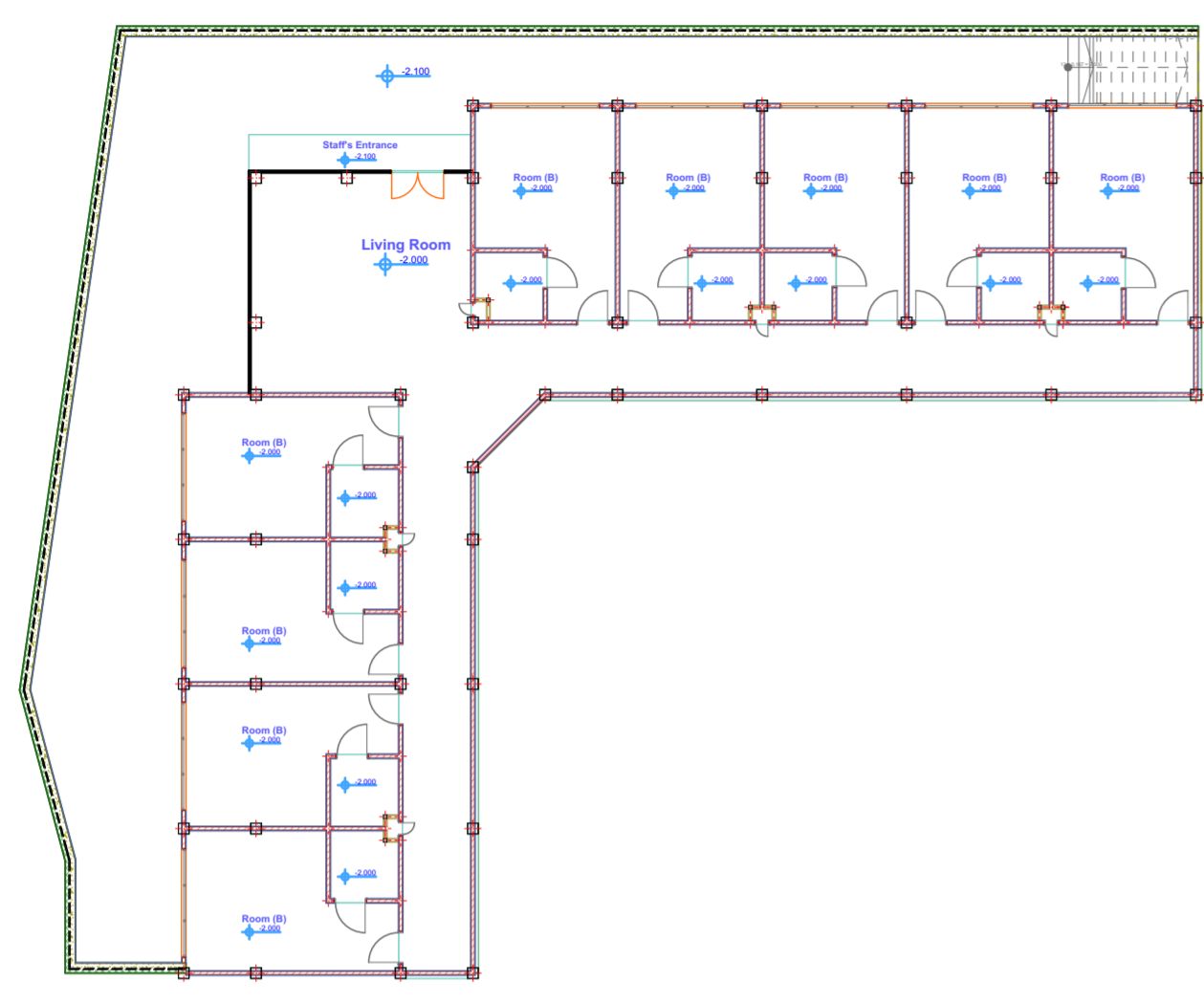
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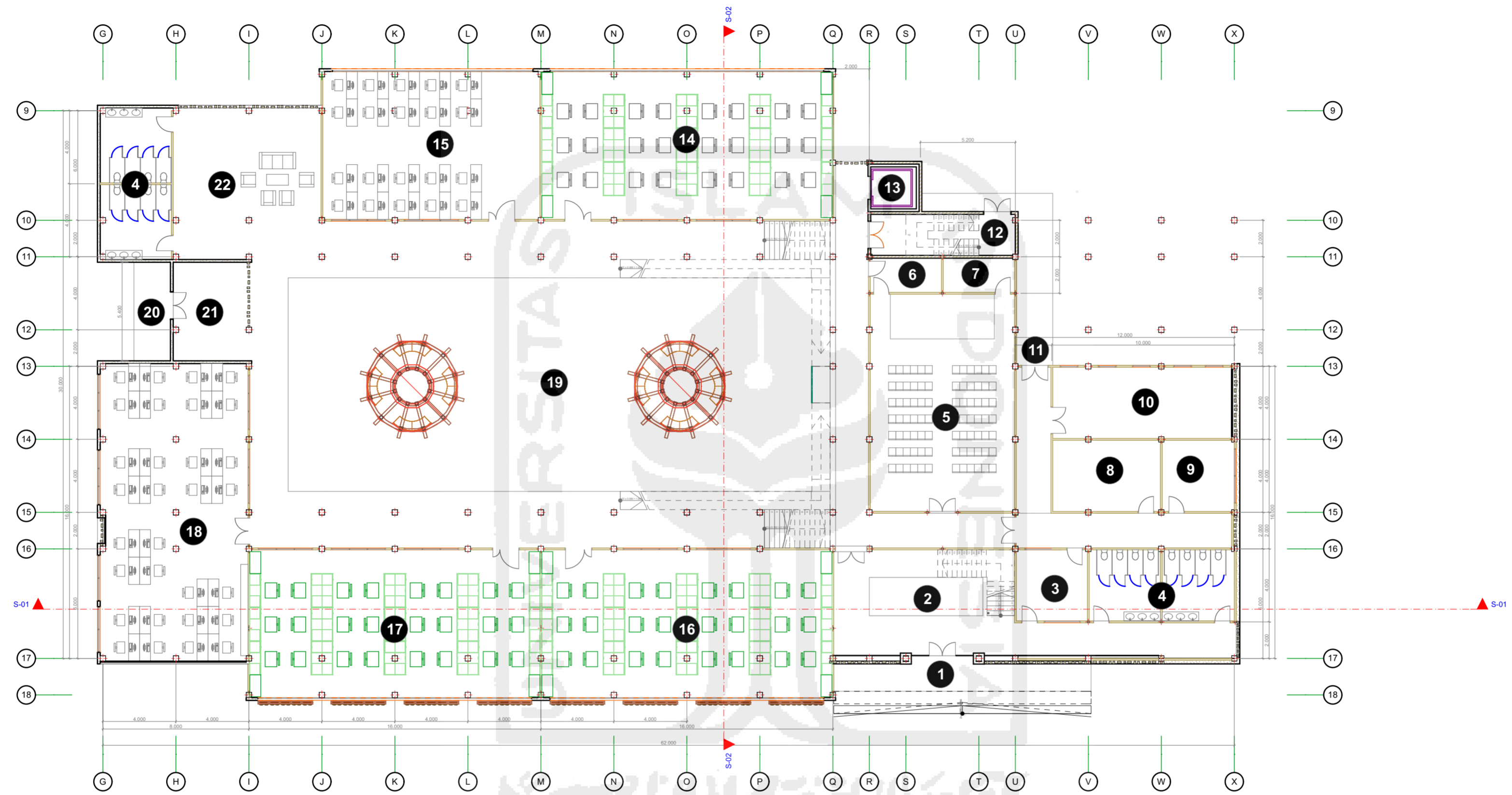
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LEGENDS



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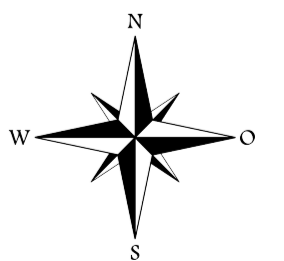


0.

Ground Floor

1:200

- | | | | |
|----|-------------------|----|--------------------------|
| 1 | Main Entrance | 12 | Emergency Stair |
| 2 | Lobby | 13 | Freight Elevator |
| 3 | Managerial Office | 14 | Geodynamic Laboratory |
| 4 | Restroom | 15 | Geokomputasi Laboratory |
| 5 | Seminar Room | 16 | Sedimentology Laboratory |
| 6 | Kitchenette | 17 | Geomorphology Laboratory |
| 7 | Storage | 18 | Researchers' Office |
| 8 | Security Office | 19 | Inner Court |
| 9 | Pantry | 20 | Researchers' Entrance |
| 10 | Staff's Room | 21 | Researchers' Lobby |
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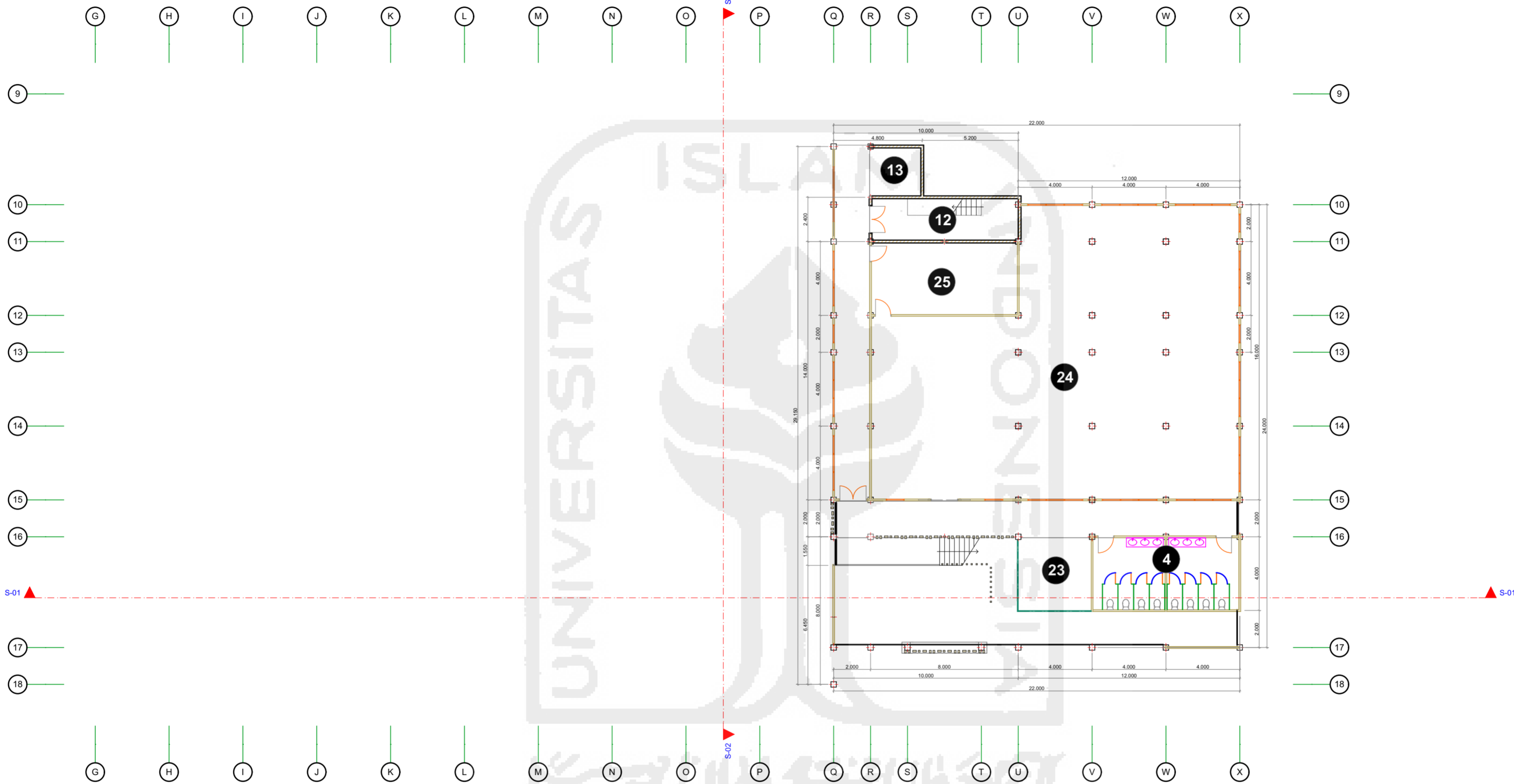
DRAWING TITLE

PARTIAL FLOOR PLAN:
MAIN BUILDING 1st FLOOR PLAN

SCALE

1:200

LEGENDS

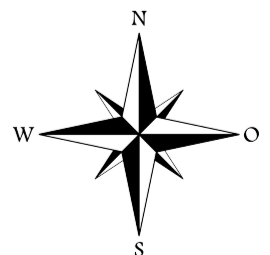


1.

Story

1:200

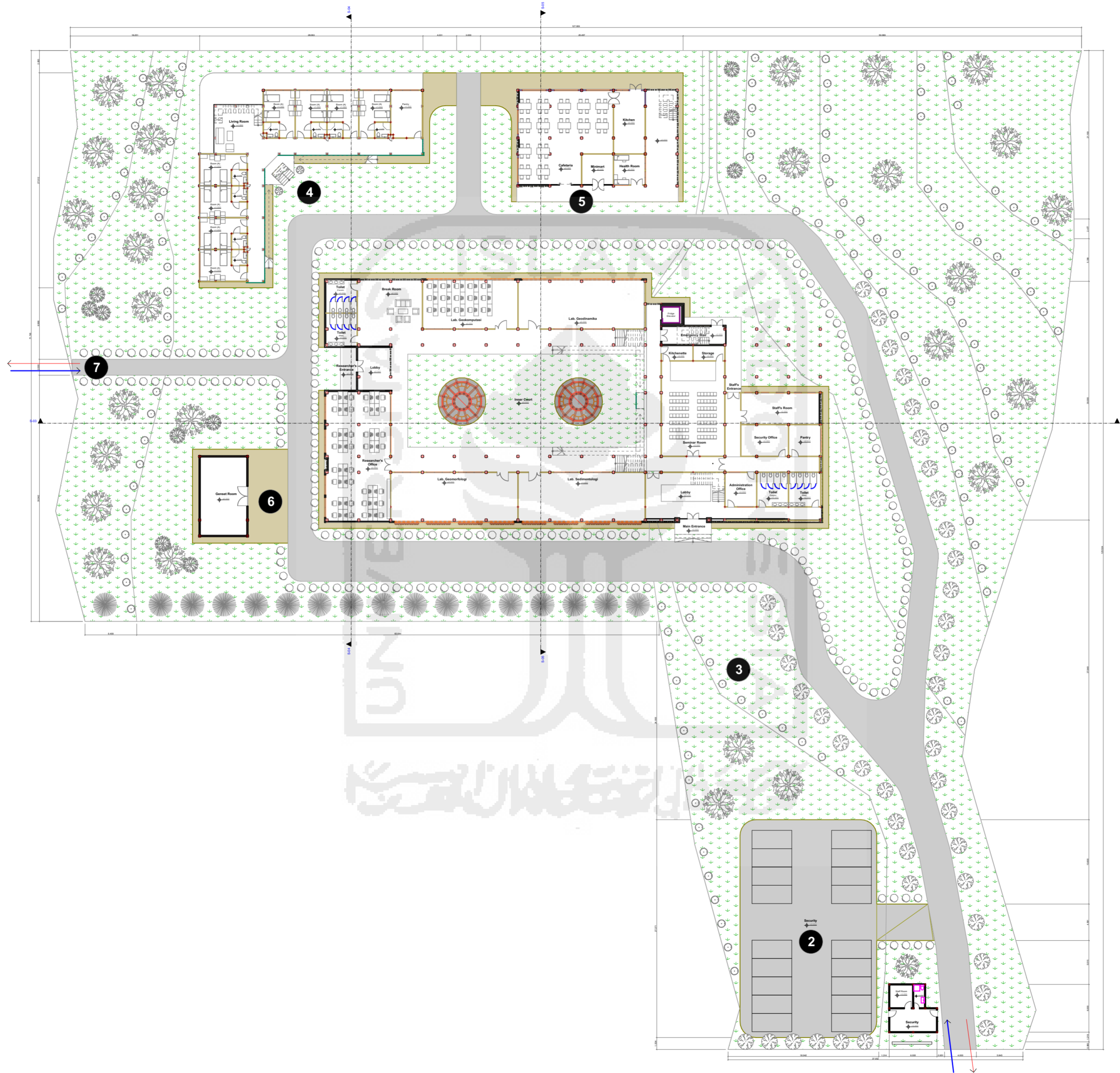
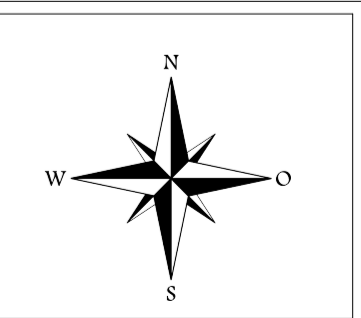
- 4** Restroom
- 12** Emergency Exit
- 13** Freight Elevator
- 23** Lounge
- 24** Library
- 25** Librarian Office



APPROVED STAMP	NO. OF PAGE	PAGE

- 1** Main Entrance
- 2** Parking Area
- 3** Research Center Main Building
- 4** Lodging House
- 5** Accommodation Building
- 6** Genset Room
- 7** Route to Karst Hill

-  Paving Pathway
-  Grass Cover
-  Gravel Cover
-  Stone Cover
-  Pandan Duri
-  Mahagoni
-  Pandan Duri
-  Kemuning
-  Pucuk Merah





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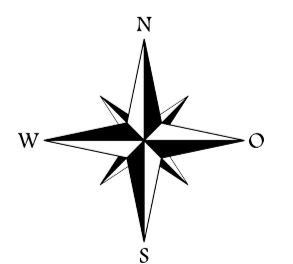
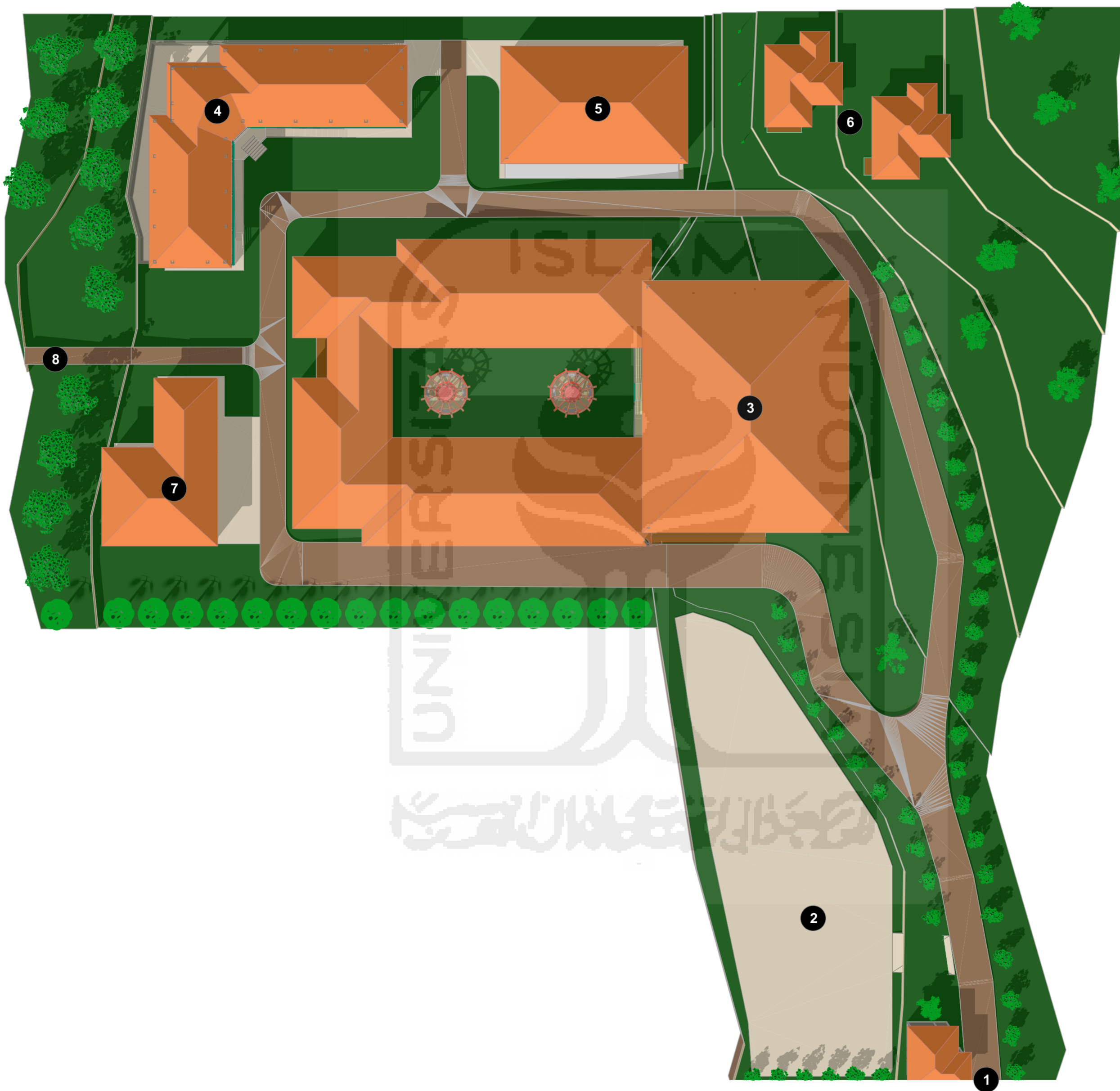
SITUATION PLAN

SCALE

1:400

LEGENDS

- 1** Main Entrance
- 2** Parking Area
- 3** Research Center Main Building
- 4** Lodging House
- 5** Accommodation Building
- 6** Staff's Housing
- 7** Utility Building
- 8** Shortcut to Karst Hill, Jungwok Beach, and Wediombo Beach



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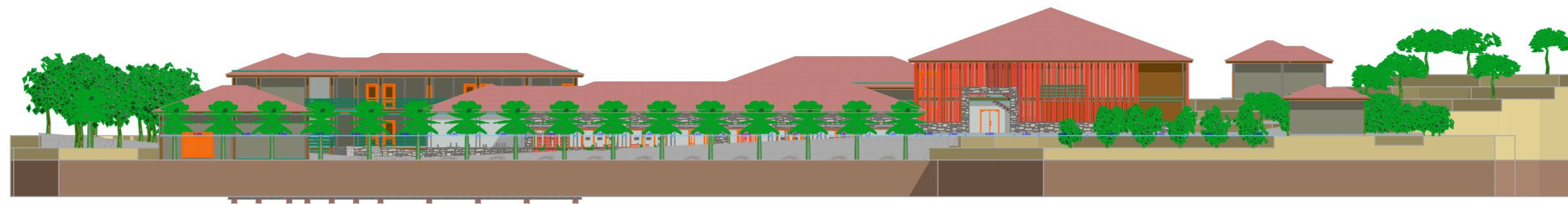
DRAWING TITLE

RESEARCH CENTER - SITE ELEVATION

SCALE

1:400

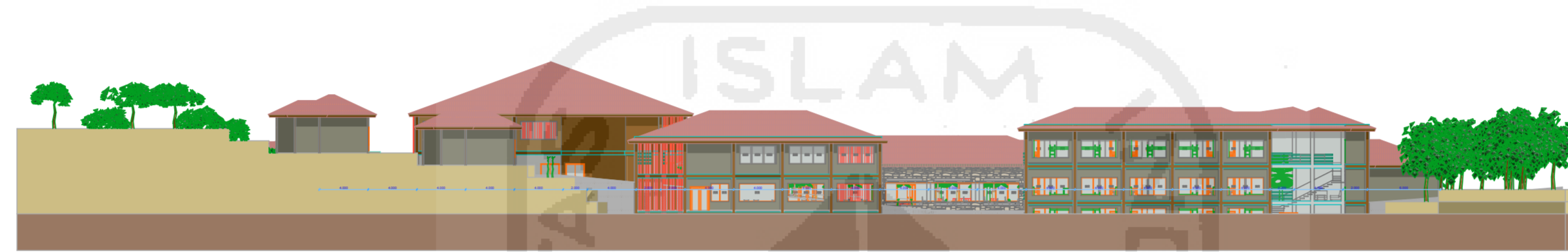
LEGENDS



E-01

South Elevation

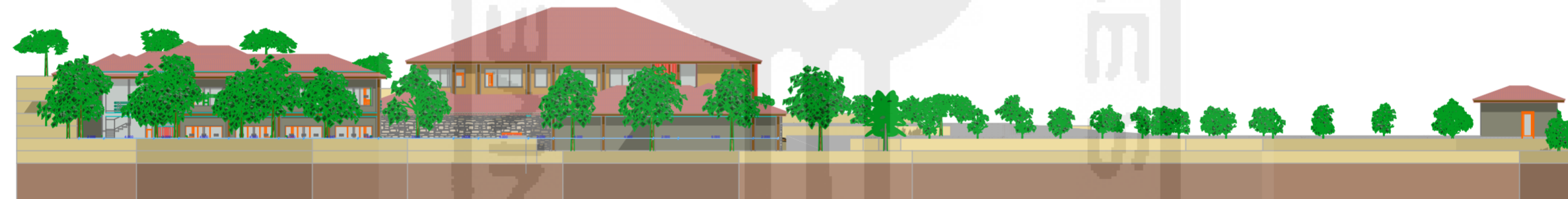
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E-02

North Elevation

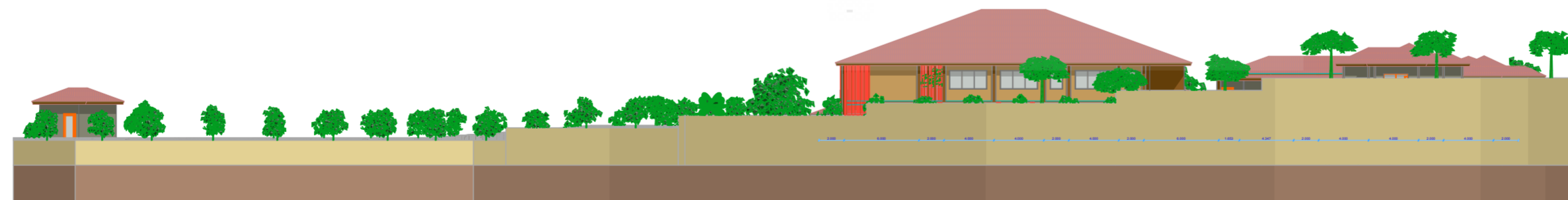
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E-03

West Elevation

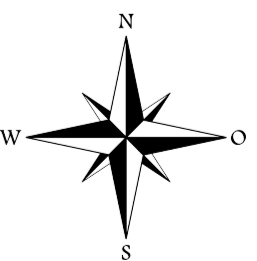
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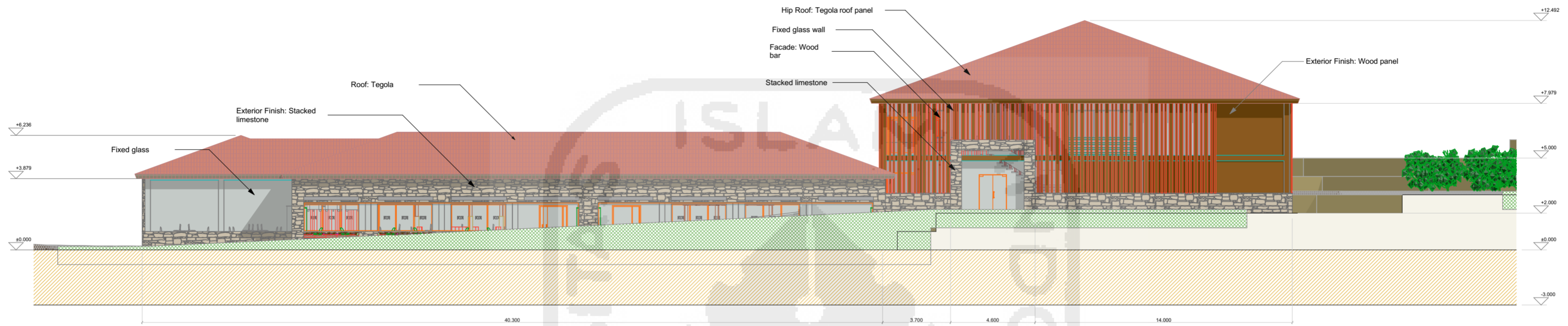
E-04

East Elevation

1:400



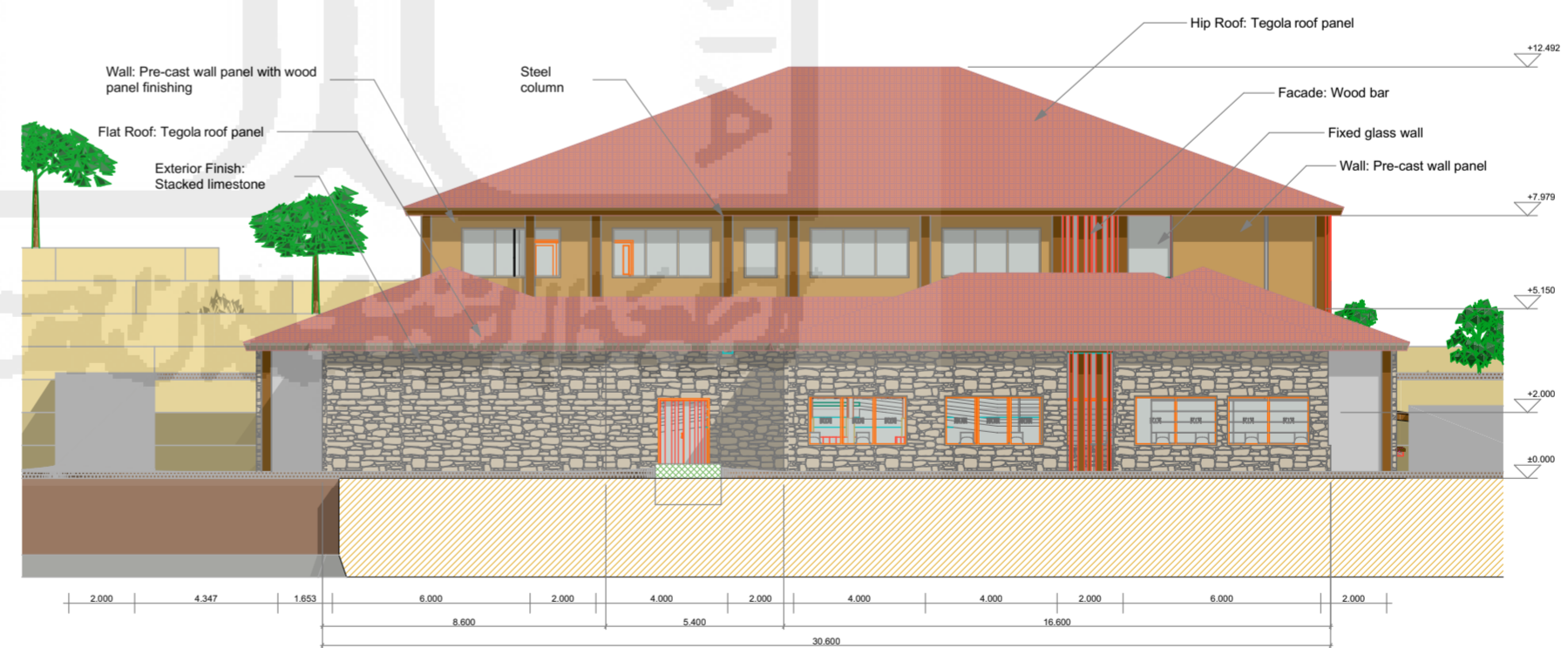
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E-05

South Elevation

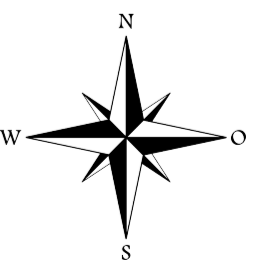
1:200



E-06

West Elevation

1:200





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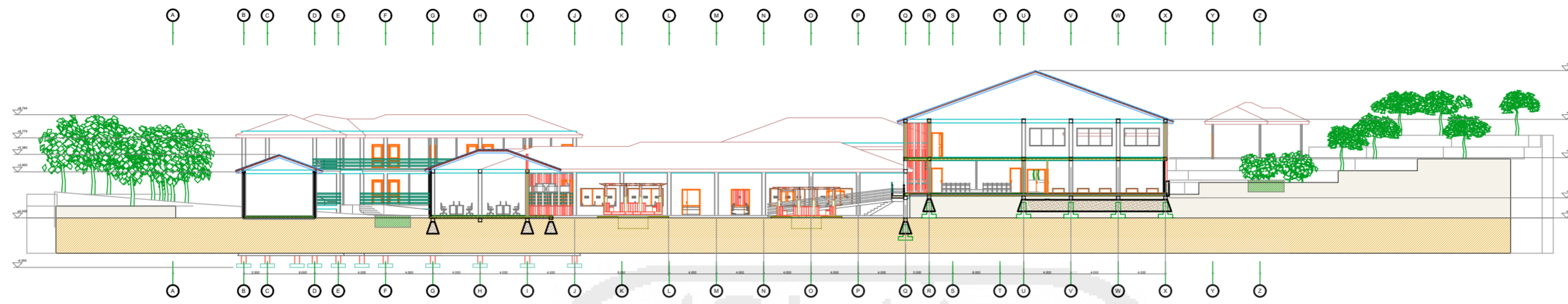
DRAWING TITLE

PARTIAL SECTION:
MAIN BUILDING

SCALE

1:400

LEGENDS



S-03

Building Section

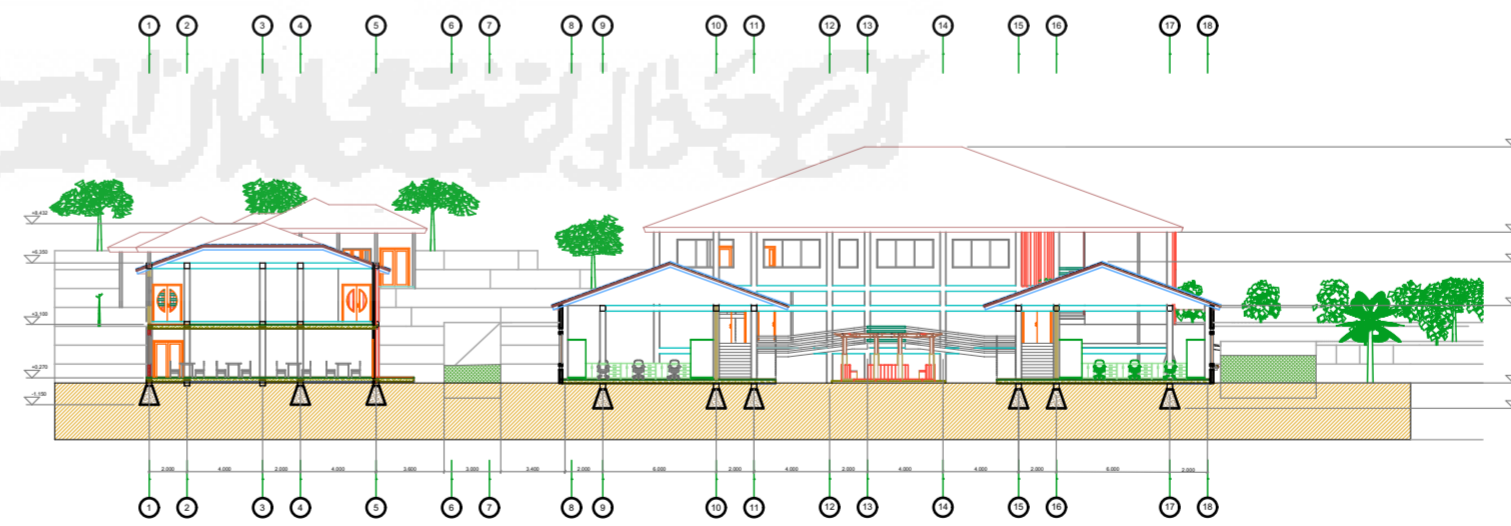
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S-04

Building Section

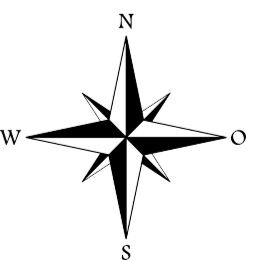
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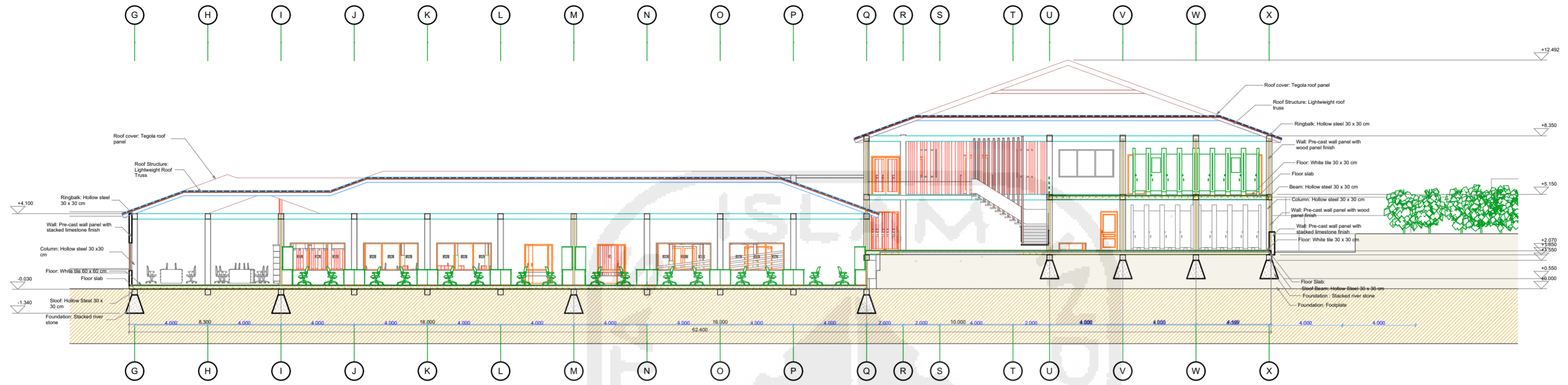
S-05

Building Section

1:400



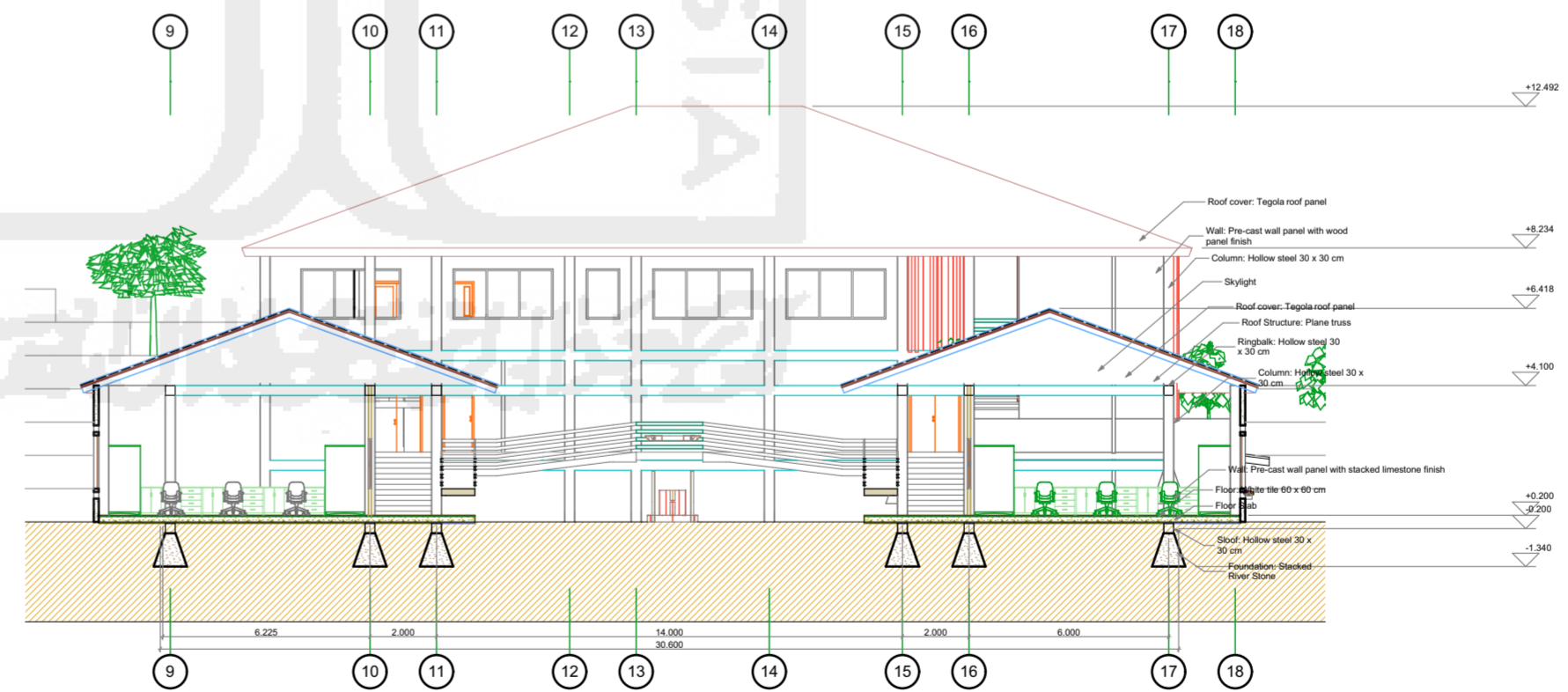
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S-01

Building Section

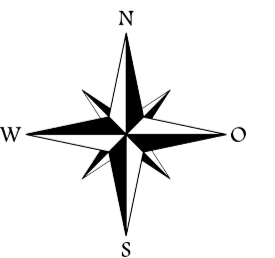
1:200



S-02

Building Section

1:200



Structure system used: Truss system



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STUDENT ID NUMBER

10512219

STUDIO MASTER

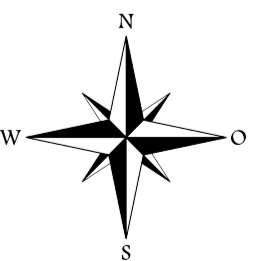
IR. RINI DARMAWATI, M.T

DRAWING TITLE

SCHEMES: BUILDING STRUCTURE

SCALE

LEGENDS



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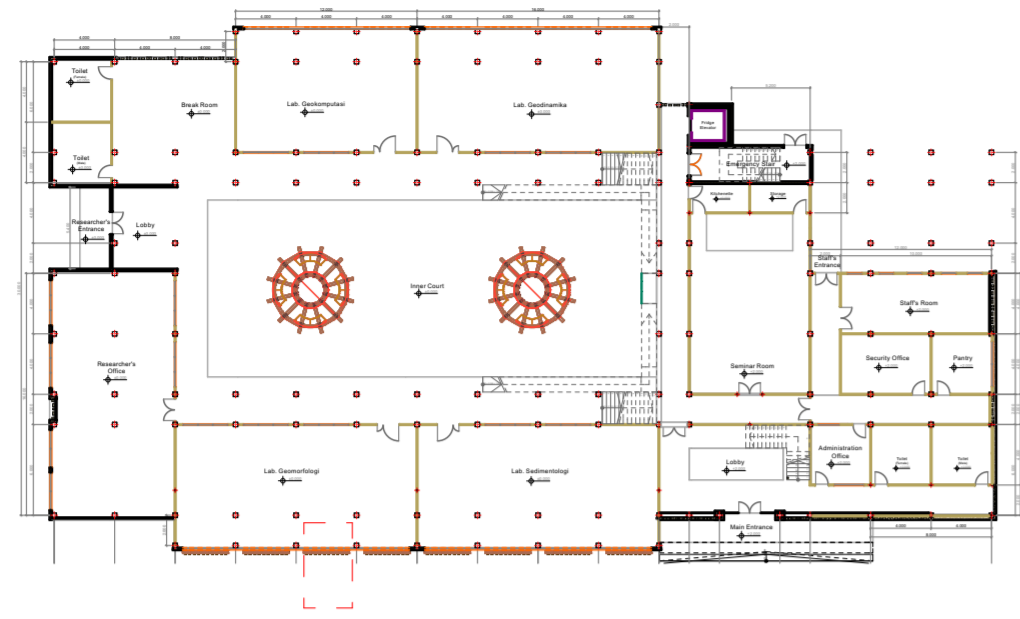
DRAWING TITLE

SCHEMATIC: NATURAL VENTILATION
AND DAYLIGHTING

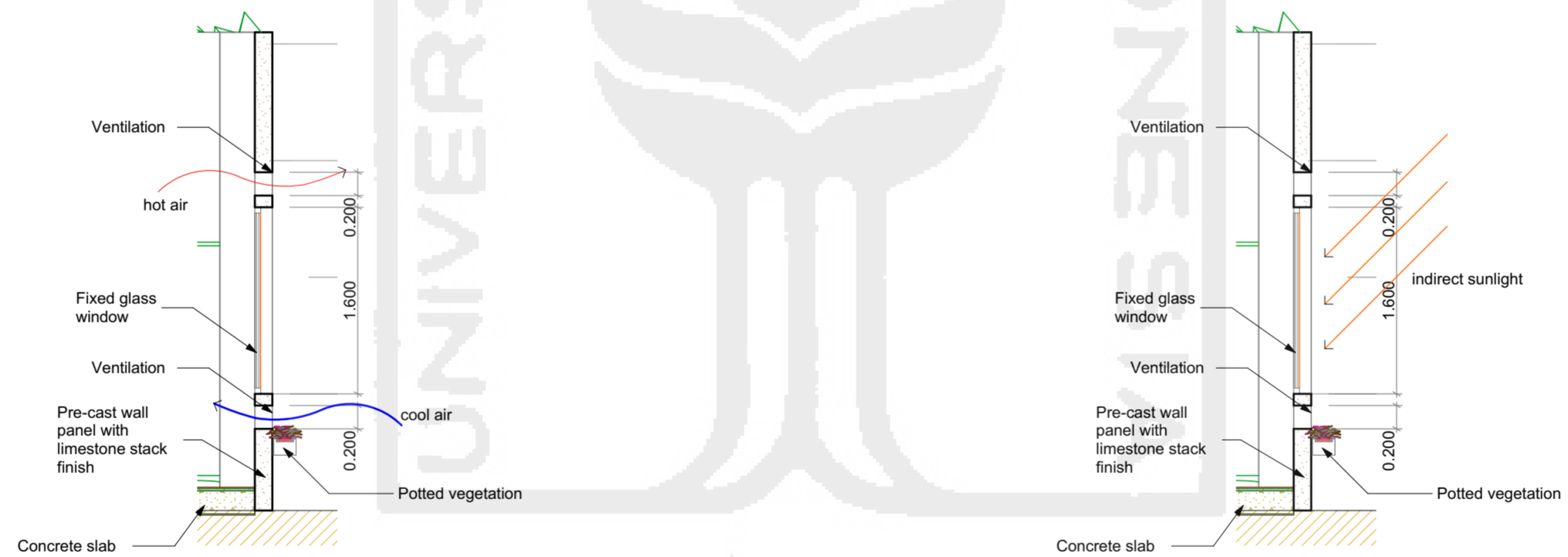
SCALE

1:50

LEGENDS

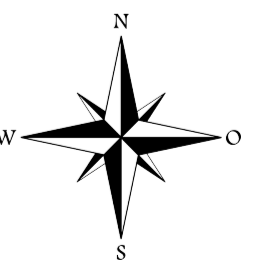


0. Keyplan 1:500



D-04 Natural Ventilation 1:50

D-04 Natural Daylighting 1:50



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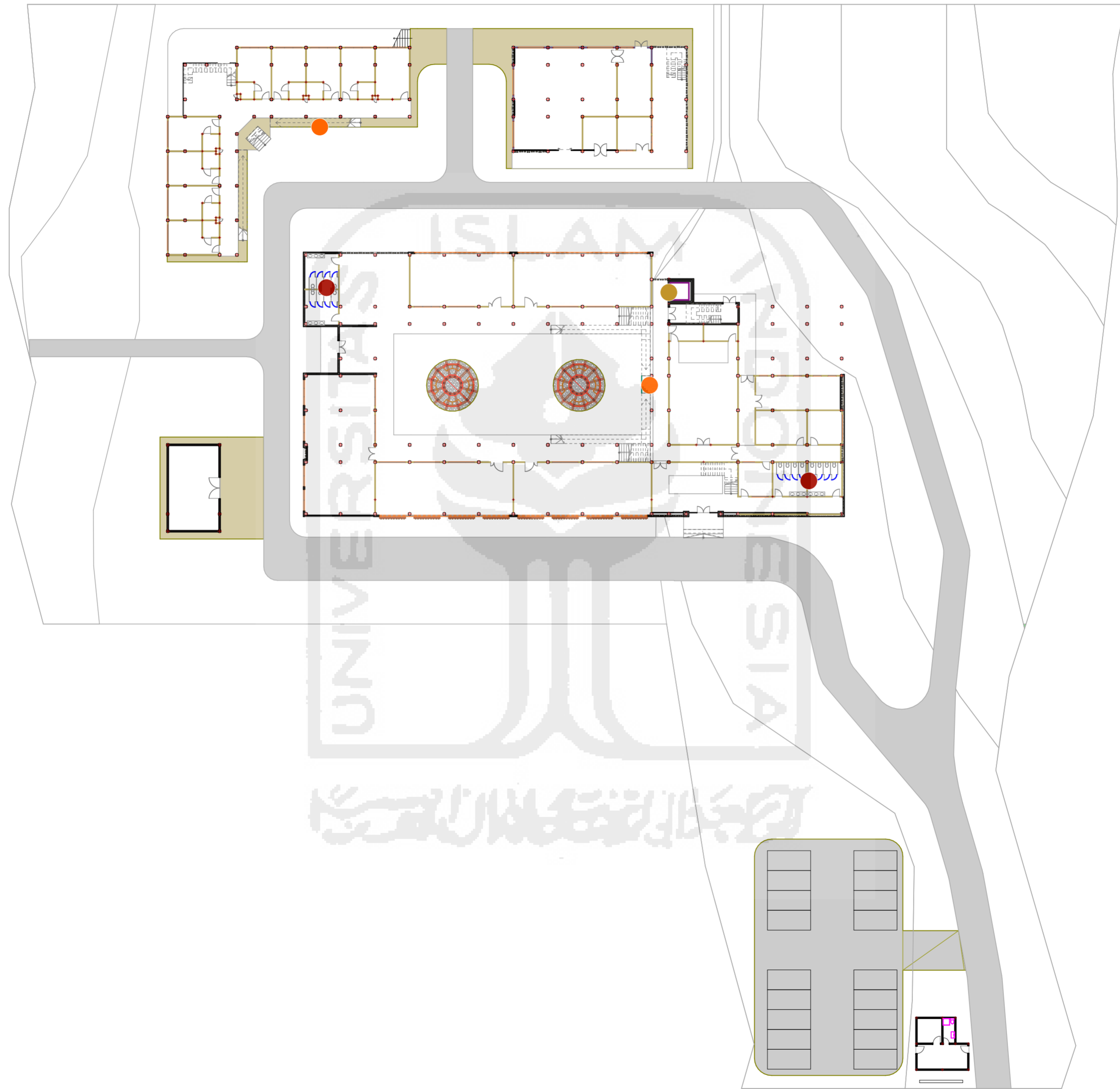
SCHEME: BARRIER FREE DESIGN

SCALE

1:400

LEGENDS

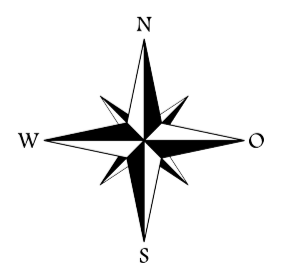
-  Ramp
-  Freight elevator (can be used for handicapped person)
-  Disabled toilet (1 cubicle in every restroom)



0.

Ground Floor

1:400



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DRAWING TITLE

SCHEME: VERTICAL TRANSPORTATION

SCALE

1:200

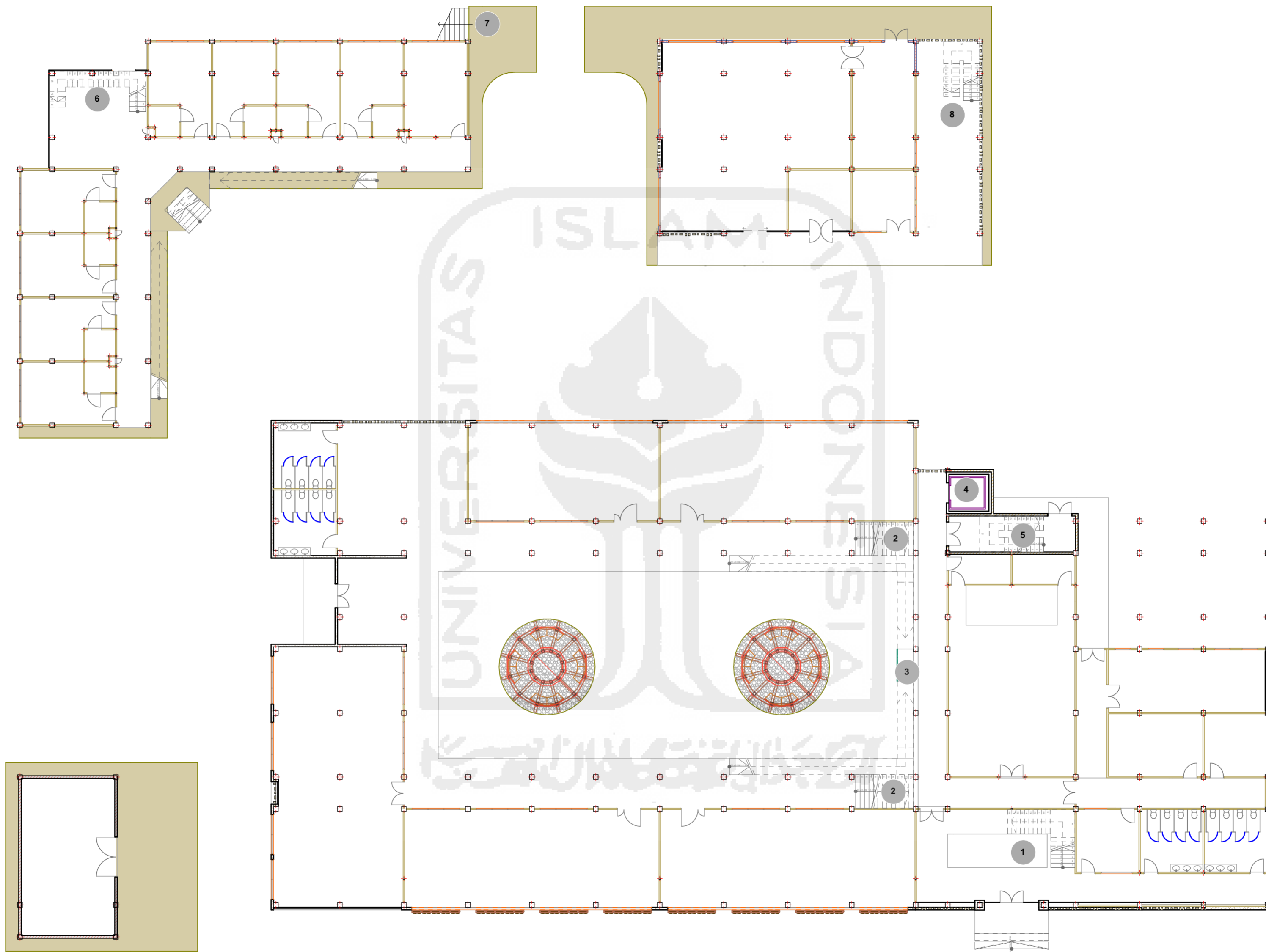
LEGENDS

Main Building

- 1 Main stair to 1st floor
- 2 Stair connecting main area (+ 2.000) with research area (± 0.000)
- 3 Ramp connecting main area (+ 2.000) with research area (± 0.000)
- 4 Freight Elevator
- 5 Emergency stair

Supporting Building

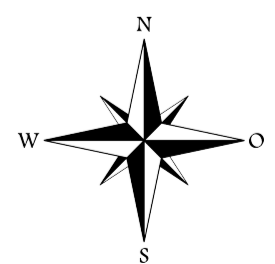
- 6 Main stair in lodging house, connecting to 1st floor area
- 7 Stair to semi-basement area (- 2.000 level)
- 8 Main stair in accommodation building, connecting to mushala in 1st floor



0.

Ground Floor

1:200



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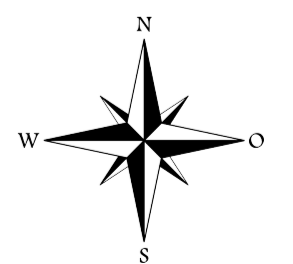
SCHEME: FIRE PROTECTION

SCALE

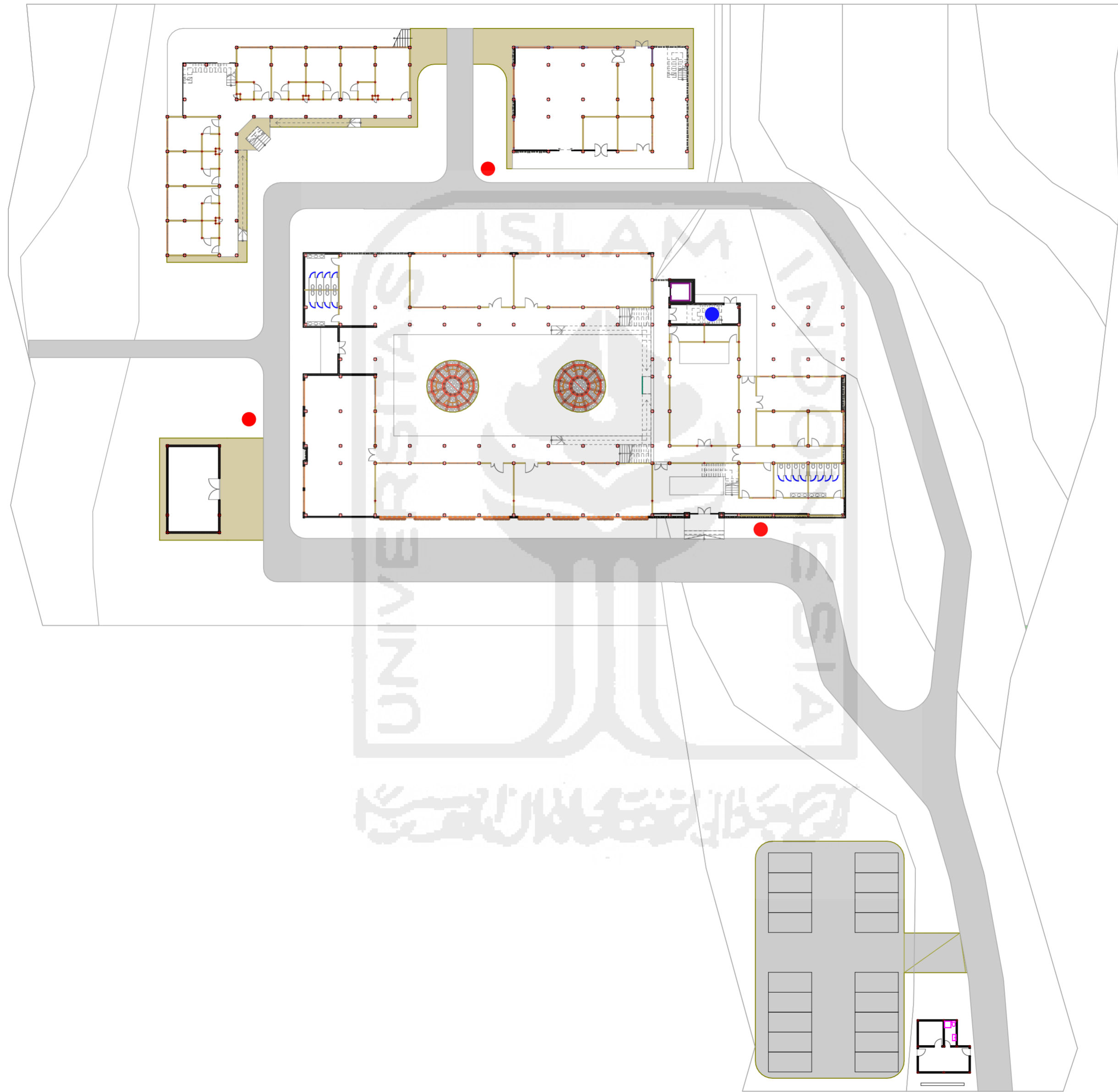
1:400

LEGENDS

- Hydrant
- Emergency Stair
- Meeting Point



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0.

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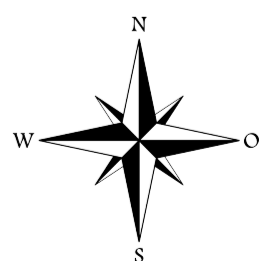
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DRAWING TITLE

PERSPECTIVE: EXTERIOR

SCALE

LEGENDS



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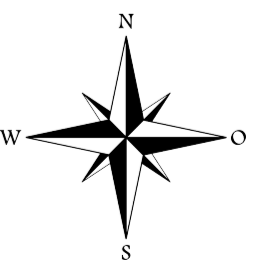
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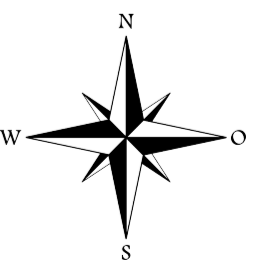
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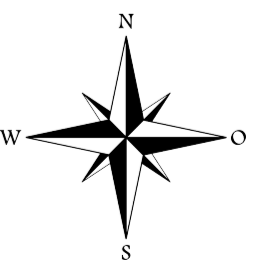
IR. RINI DARMAWATI, M.T

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PERSPECTIVE: INTERIOR

SCALE

LEGENDS



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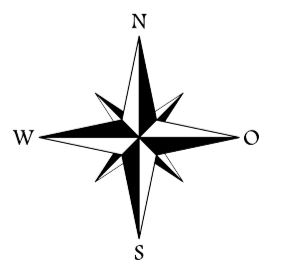
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DRAWING TITLE

PERSPECTIVE: INTERIOR

SCALE

LEGENDS



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