

A VERTICAL HYBRID ECOLOGY

i_PLEXUS



AGE OF
MACHINES



AGE OF
INTELLIGENT ECOLOGIES

AD6 / AH6

ADAPTIVE HABITATS

Enveloped by, and located within an ever evolving 'ephemeral context', the **architectural object faces constant stress** due to the tangible and intangible shifts. Within this 'hyper flux' field, experienced more so in the contemporary urban agglomerations, **Adaptive Habitats 6 (AD6)** furthers the disciplinary quest concerned with architecture that 'adapts' to environment, to inhabitants, to objects within them; through human intervention or automated induction.

UNIT 01

TRANS_FORMER

Acknowledging a **temporal shift** that has been necessitated by the rise of the **ecological argument**, **Trans_Former Unit** aims to extend the analogy of machine, to 'adaptive' mechanisms, and places a pedagogical case for rethinking architectural assemblage as a Trans_Former. **Typologically Hybrid Networked Ecologies.**

i_PLEXUS is an archetype of a **transformable, adaptive accessibility hybrid**. It forms the larger agenda of Trans_former & Adaptive Habitats by keeping up with the modern culture of maximum flexibility and mobility. i_PLEXUS is an **AI driven hybrid ecology** that uses Golf Course Road's urban fabric for its successful functioning through numerous arteries. *The networking of intelligent and intuitive arteries is how access and integration of various programmes is achieved.*



i_PLEXUS

Intelligent & Intuitive_Network of nerves or vessels

As i_PLEXUS is the **product of the urban fabric** of the Golf Course Road, it caters to going back to its roots and accomplishes maximum efficiency by restoring a water body that further facilitates the step farming on site which bring us closer to Gurugram's culture of organic agriculture. *i_PLEXUS aims to advance and progress with simpler solutions for a creating a flexible vertical city made by its very own density - an Adaptive & Ecological Vertical Hybrid Ecology which works as a networked city and has a symbiotic relationship with its environment.*

TRANS_FORMER UNIT TRAJECTORY

Methodologically, Unit 01 seeks a speculative quest into an inclusive, symbiotic, more experiential, and healthier built habitat through careful observation, informed research and derivative extractions from study of nature, its systems, energies, resources and rhythms.

01 UNDERSTANDING THE PRECINCT (TOOLKIT)



1.1 The Aravalli Region

- Location
- Physical Characteristics
- Topography / Strata
- Vegetation / Flora
- Broad Climate
- Parameters Influencing Regional Climate
- Composite Climate

1.2 Golf Course Road (GCR) Microanalysis

- Location
- Physical Characteristics
- Grey Morphosis
- Green Morphosis
- Blue Morphosis
- Micro Climate
- Solar /Radiation Analysis
- Precipitation Analysis
- Wind Pattern Analysis
- Links
- Physical Accessibility Analysis
- Visual Accessibility Analysis
- Aural Accessibility Analysis
- Demographic Evolution
- Macro Demographics
- Micro Demographics GCR

Pandemic



02 VERTICAL HYBRID CITY (VHC) – an adaptive networked ecology

2.1 Ecological Argument

- Grey/Green/ Blue
- Case for Reinvigorating & Reinstating the Ecological Equilibrium – Grey / Blue / Green Balance
- Urban Compaction
- Vertical Massing

- Microclimate
- Climatically Appropriate Urban Structuring / Orientation
- Reductive Massing
- Sustainable

- ### 2.2 Network
- Argument for a compact Networked organisation
 - Economic Stratification

- ### Hybrid
- Demographic Multiplicity
 - Hybrid Program



03 TOOLKIT FOR THE VHC

3.1 Tool Kit

- Ecological Kit / Strategies

- Microclimate Strategies

- Linked Network/ Multiplicity

- Programmatic Hybrid

- Material Kit



04 EMERGENT HYBRIDS

4.1 Understanding Hybrid

- ### 4.2 Generators
- Systems
 - Accessibility Program
 - User Group
 - Energy Lines
 - Circulations
 - Space Syntax
 - Structure
 - Spatial Experience

4.3 HYBRID CATALOGUE



05 FORM DERIVATION

- ### 5.1 PARAMETRIC DERIVATION
- Methodology
 - Orientation + Position + Placement
 - Accessibility – Physical, Visual, Aural
 - Age + x-factor Program
 - Hybrid Integration
 - Natural System
 - Intuitive
 - Final Form



06 ARTICULATION OF VHC

6.1 Site Plan

6.2 Other Floor Plans

6.3 Details

07 TRANS_FORMER CONCLUSION



7.1 Elevations

7.2 Sections

7.3 Details



08 ADAPTIVE HABITATS AGENDA

Introduction

I_PLEXUS

Narrative - Spirit of time - Speculative & Future Argument W.R.T Ecological Discourse / Post pandemic Networked Hybrid Relevance

01 The Location & Program

DECODING GRC & ESTABLISHING THE HYBRID TYPOLOGY PROGRAM

Micro site selection/ Context Visuals

02 The Hybrid

HYBRID - INTROSPECTION/ ELABORATION

Hybrid Definition - Hybrid variants- Respective Hybrid evolution/ primary attributes - Programmatic Hybrid - Ecological Hybrid

03 The Form

FORM DERIVATION

Parametric derivation - Hybrid Integration - Ecological integration (Prototype - Envelope / Circulation/ Structural

04 The Building

HYBRID ARTICULATION

Site Plan - All Access level plans - Other floor plans

05 The Transformer

CONCLUSION

Sections - Elevations - Models

06 Adaptive Habitats - The Agenda



i_PLEXUS

INTRODUCTION

- Spirit of time
- Speculative & Future Argument
- Ecological Discourse
- Post pandemic Networked Hybrid Relevance
- Project Brief
- Aim & Aspirations

i_PLEXUS = INTELLIGENT & INTUITIVE + NETWORK (OF) NERVES OR VESSELS



The Covid-19 Pandemic is an event that has had and continues to have a huge global impact. We speculate that since our ecology is faltering, natural balances are getting disturbed - such events might be a lot more frequent in the future.



Hence, to survive such events we propose a vertical networked city, which is not only self-sufficient and has all city functions but also forms and sustains a mutually symbiotic relationship with its ecology.

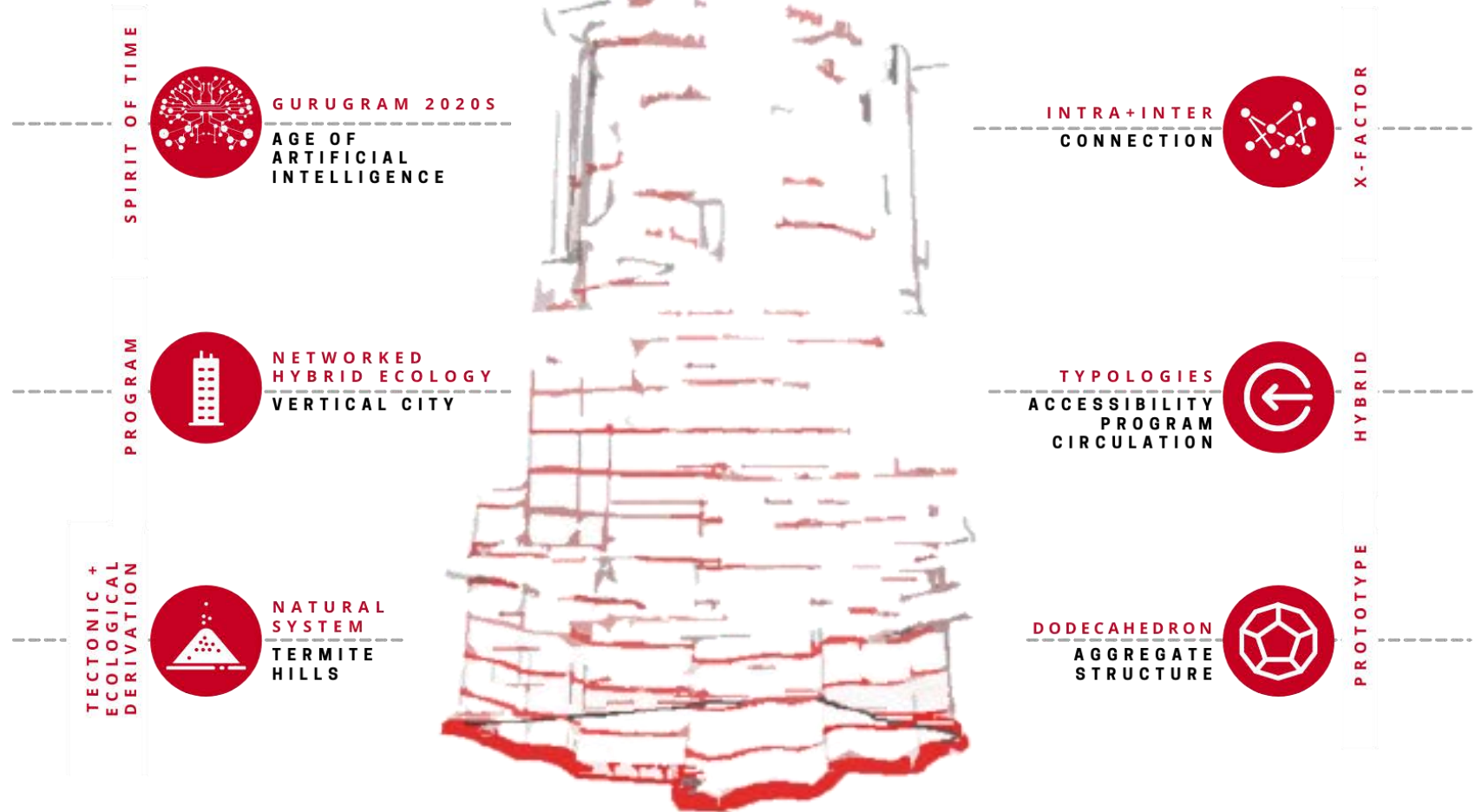


i_PLEXUS aspires to be a mutually symbiotic vertical hybrid ecological trans-former in the co-existence of habitats emerging programmatically from the urban fabric of golf course and tectonically + ecologically from termite hills in the age of artificial intelligence with a x-factor as connection.



i_PLEXUS aims to:

- Reinvigorate green grey blue balance by redeveloping a dried up water body
- Create an urban forest in the midst of the dense golf course road
- Create a futuristic AI driven hybrid typology on golf course road, in Gurugram with a strong connect to Gurgaon's agrarian roots



SECTOR 53, GOLF COURSE ROAD, GURUGRAM

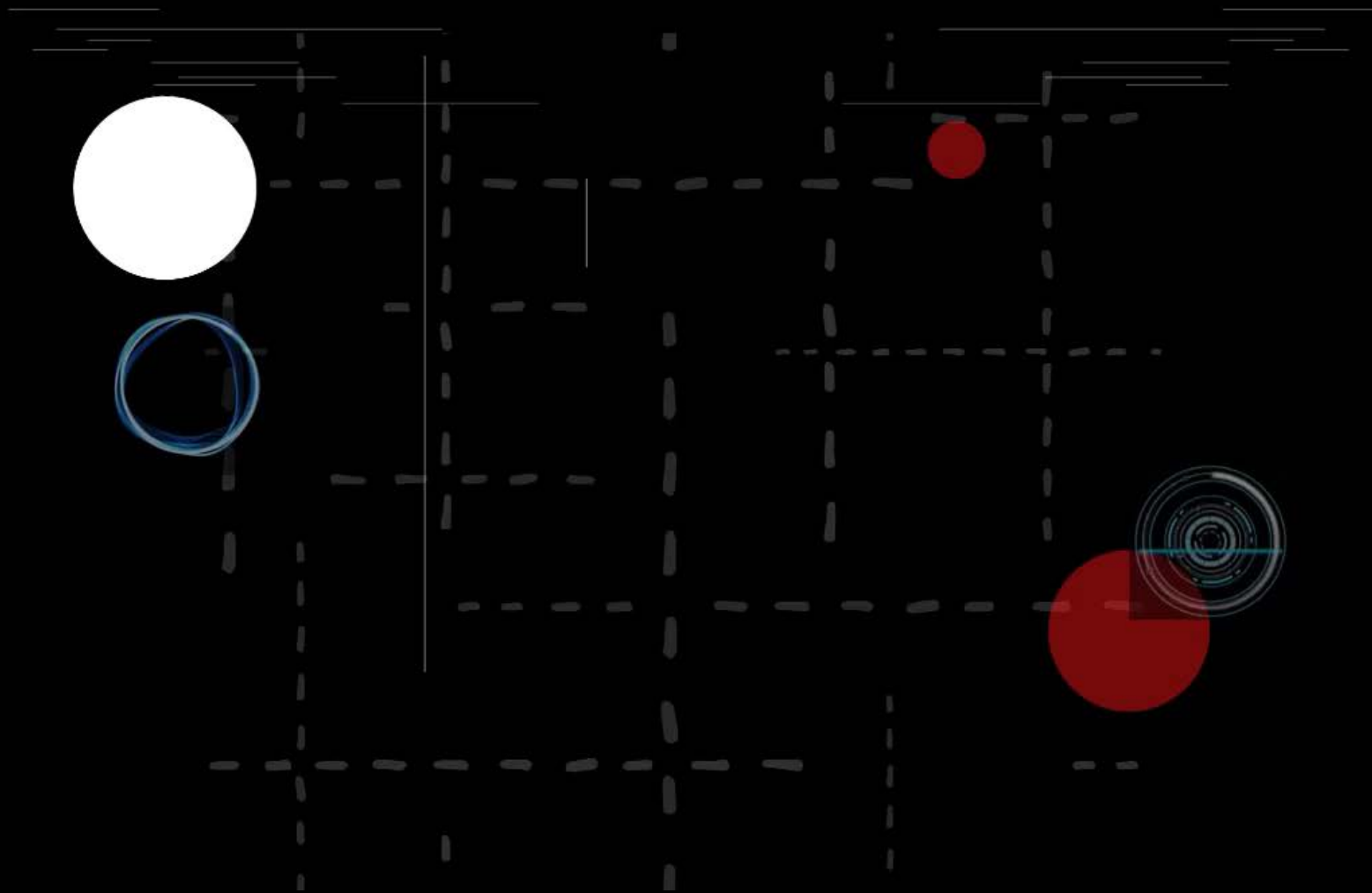


ILLUSTRATION – AGE OF ARTIFICIAL INTELLIGENCE

DEFINING THE SPIRIT OF TIME

An attempt is being made to test a derivative ecological prototype in an architectural construct. A program and a project is required for testing the prototype.

The spirit of time is defined and a program, derived and further defined from it for testing the ecological assembly in an architectural construct relevant to our times.



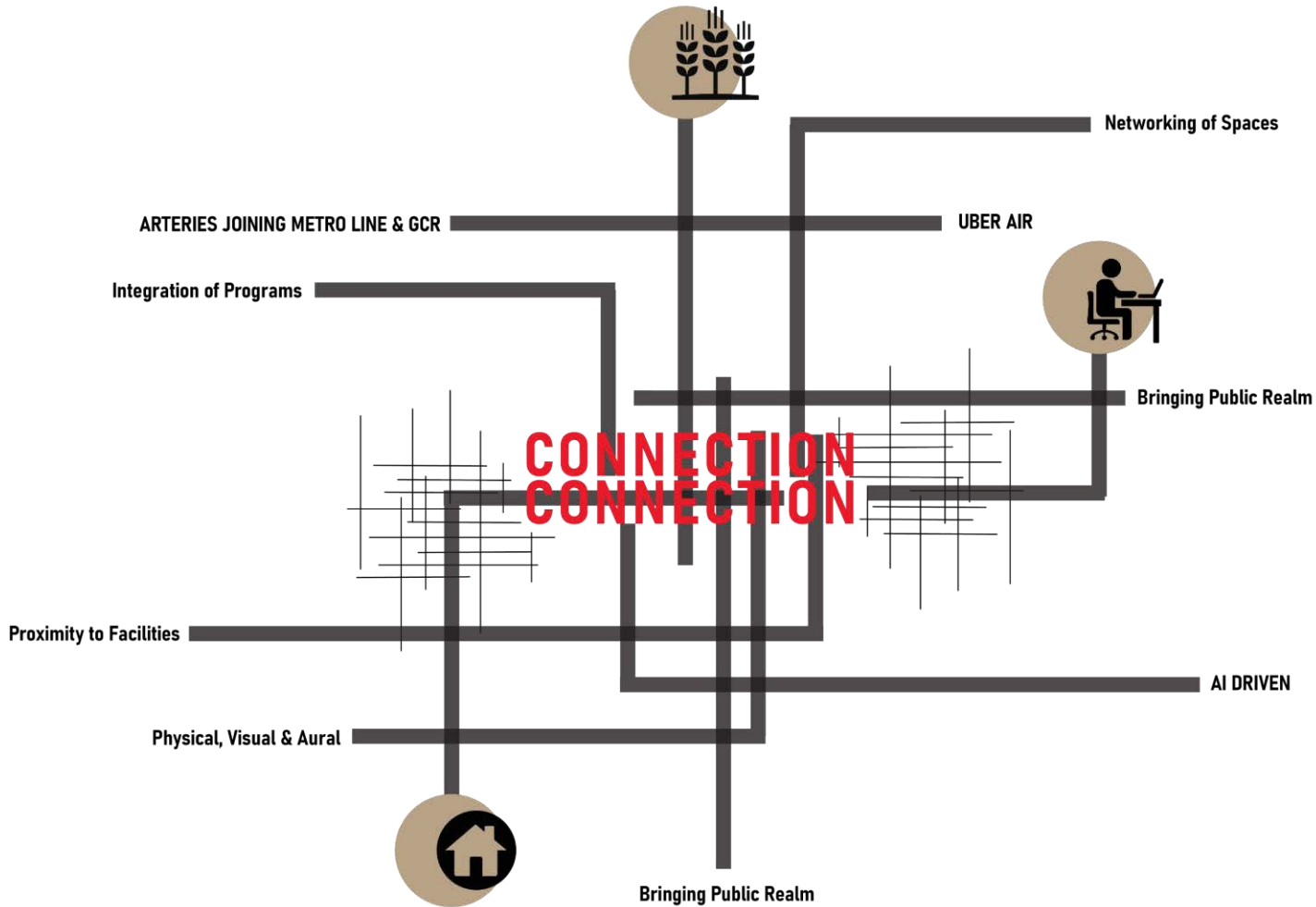


ILLUSTRATION - X-FACTOR CONNECTION

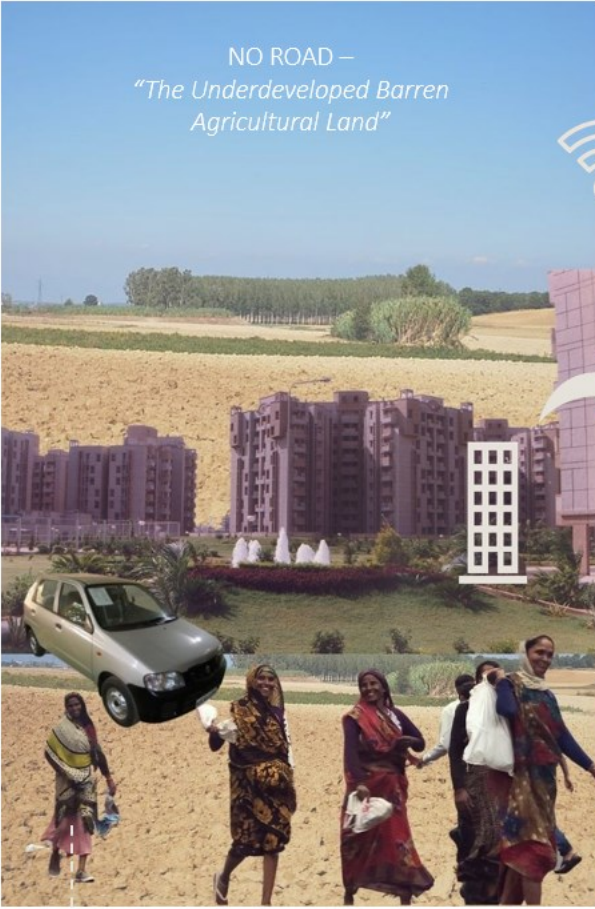
X-FACTOR

- X-Factor - a moderate complexity architectural program driven typological derived that has the notion of public.
- Using derivatives from precedent and antecedent to examine design constructs placed in an urban setting.
- A plug-in and the generator for a complex vertical 'hybrid'

INTER
X FACTOR
 CONNECTION
 INTRA

PROJECT BRIEF i_PLEXUS

PAST



← ● 1980s – 2000s

PRESENT



● 2000 – 2020

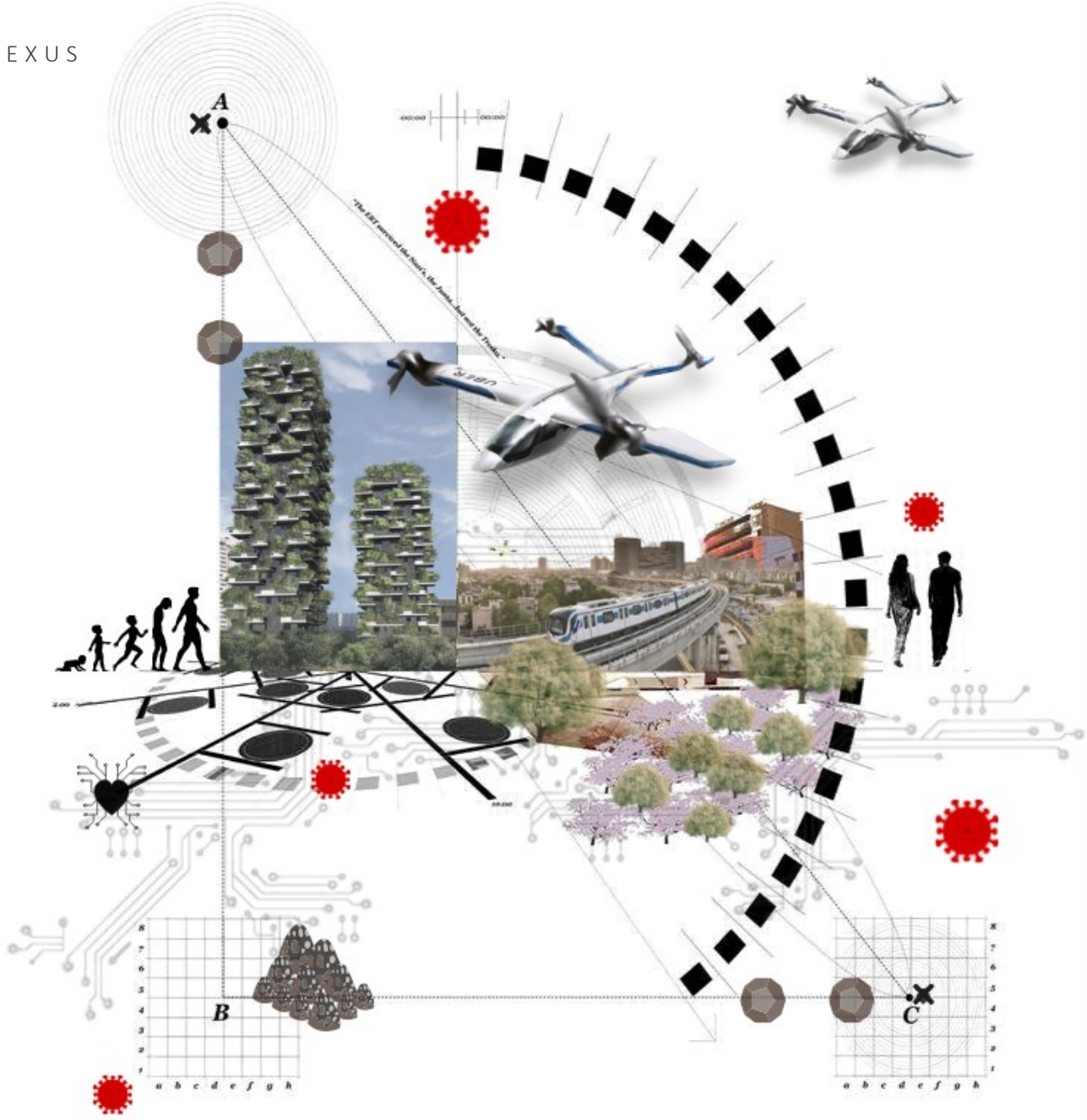
FUTURE



● 2020s – 2050s →

PANDEMIC

PROJECT BRIEF i_PLEXUS



PROJECT BRIEF i_PLEXUS

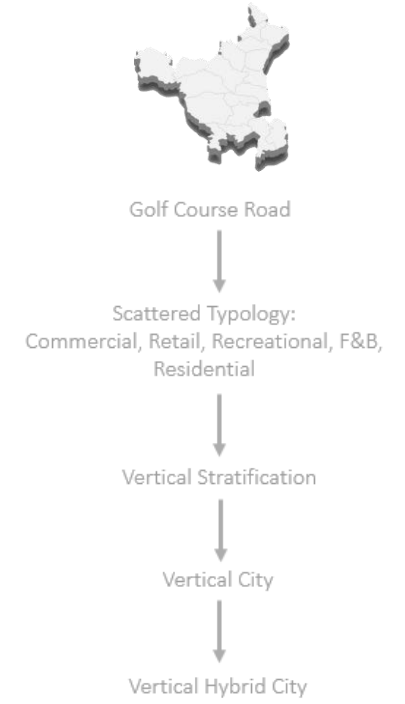


SITE CHOSEN FOR A PHYSICAL CONTEXTUALITY

01 THE LOCATION & PROGRAM

DECODING GRC & ESTABLISHING THE HYBRID TYPOLOGY PROGRAM

- Decode_Location Takeaways
- Micro Site Selection + Analysis



STRATIFICATION ■

From a scattered typology we vertical stratify functions and move to a vertical city typology and moreover a vertical hybrid city - so that even if such an event takes place we can get everything we need in our homes itself essentially

PHYSICAL CHARACTERISTICS



- Rich in Natural Resources
- Recharge Groundwater
- Combats Desertification
- Maintains Ecological Balance
- Illegal Mining & Construction
- Altered Drainage Pattern



REINVIGORATING BLUE BALANCE BY GREEN GREY WATER BODY AND WATERFRONT DEVELOPMENT AND URBAN FOREST

MICROCLIMATE



- 229m above sea level
- Local Steppe Climate
- Very little rainfall throughout the year
- The temperature averages 24.9 °C
- Precipitation - 670 mm per year

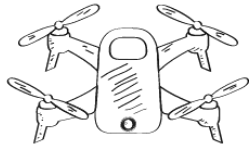


MICROCLIMATE CREATED BY PREDOMINANT WINDS, WATER BODY AND TREES FOR THE SOUTH SIDE PLAZA

ACCESSIBILITY



- Golf Course Road's emerged as a primary artery between 1990-2020
- Sub arteries and settlement was established because of the primary artery of Golf Course road

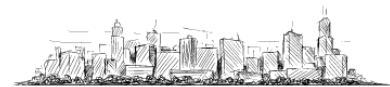


INTER + INTRA CONNECTIONS SUPPORTED AND NEW MEANS OF TRANSPORT (UBER AIR CAB) INCORPORATED

DEMOGRAPHICS

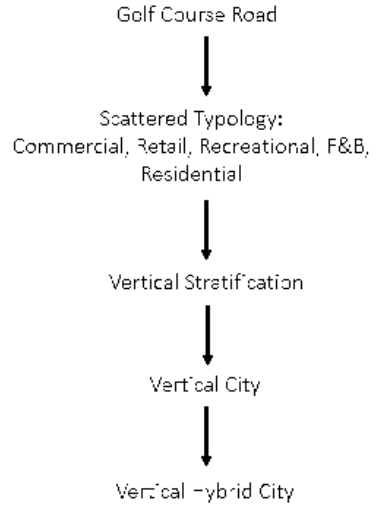


- Population density increased over the past few years as a result of urbanization
- Economy, religion, living status and politics drives the demographics of the GCR- from its daytime population to the kind of urban fabric that is built over time



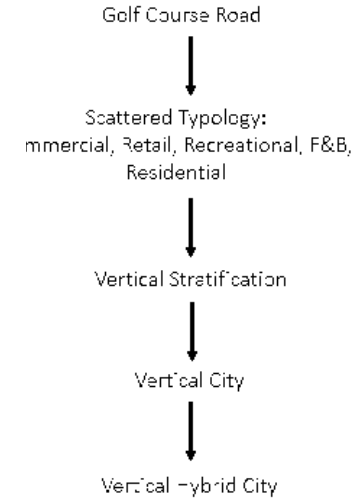
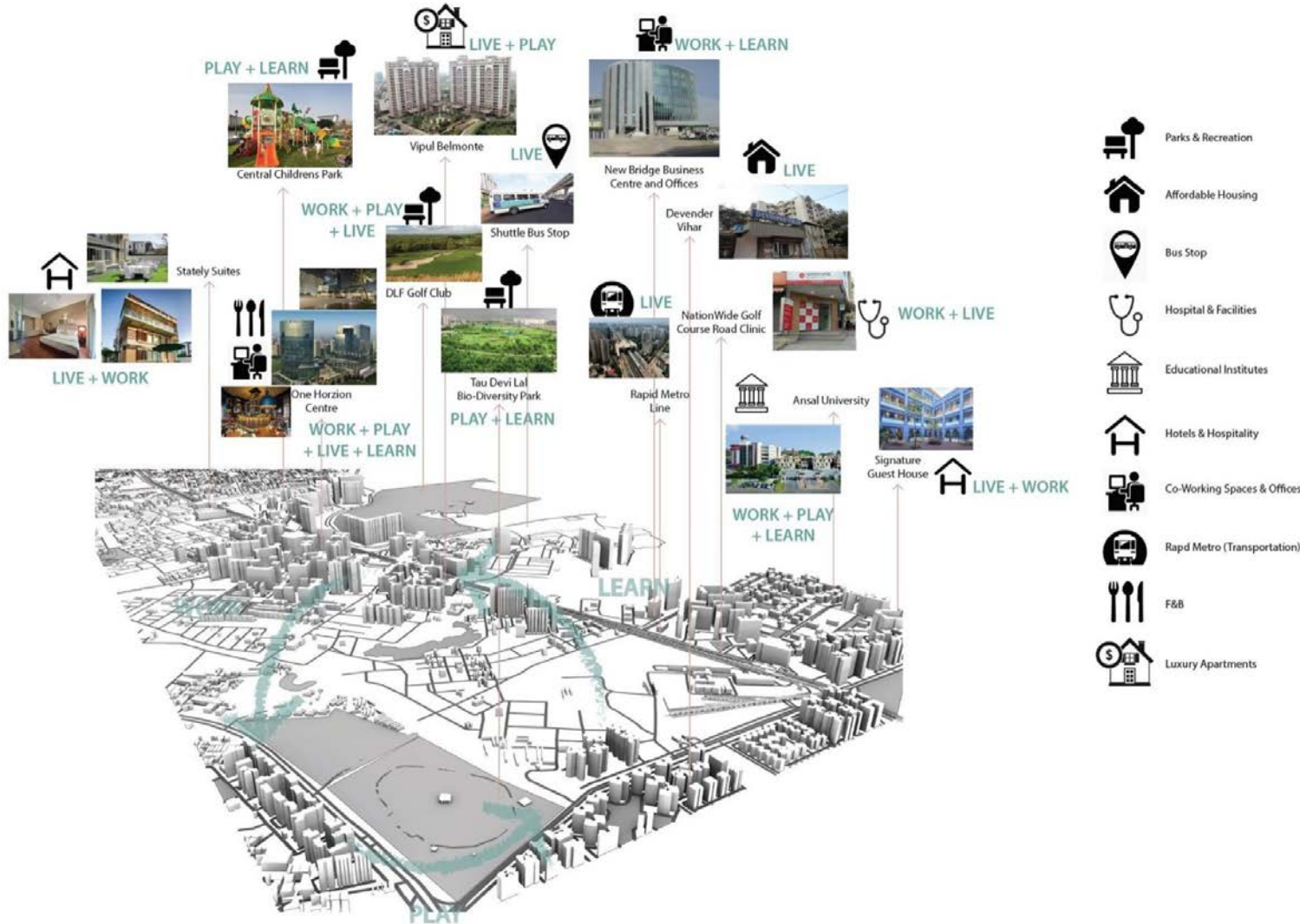
PROGRAM AND TYPOLOGY DERIVED FROM URBAN FABRIC OF GCR

- AGRANIAN ROOTS
- PAST + FUTURE
- PANDEMIC



STRATIFICATION ■

From a scattered typology we vertical stratify functions and move to a vertical city typology and moreover a vertical hybrid city - so that even if such an event takes place we can get everything we need in our homes itself essentially



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STRATIFICATION ■

Pandemic is an event that has had a huge global impact, it's something that happens once a century.

But we speculate that because our ecology is faltering, natural balances are getting disturbed - such events might be a lot more frequent in the future

Hence, to survive such events we propose to build a vertical city, which is self-sufficient and have all city functions.

Impact of the pandemic on the demographic patterns - socio-cultural and economic, redefinition of the physical space due to the real & virtual overlaps and emergent redundancies and hence the need for urban compactness and economy of activity distribution.

MICRO SITE ANALYSIS

SITE SELECTION + ANALYSIS SWOT + COORDINATES + PHOTOGRAPHIC MAPPING

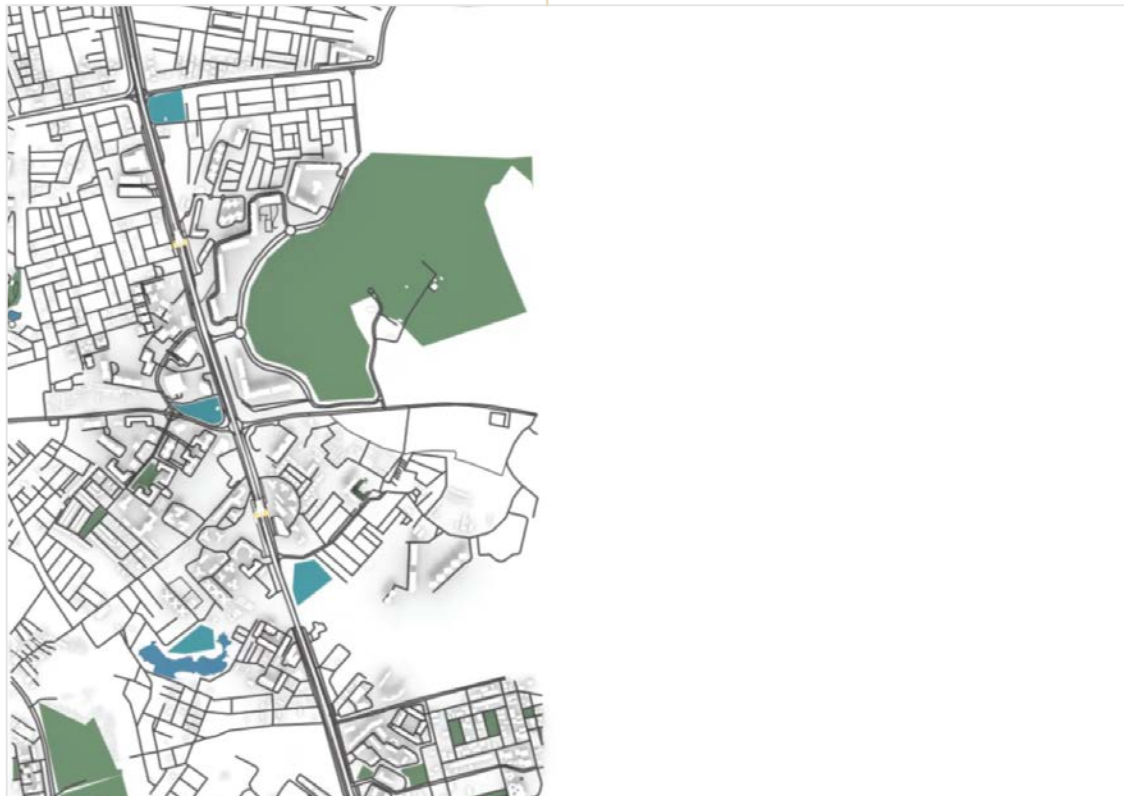
PROPOSED SITES

Site 1: Sunset Boulevard, Sector 42,
Golf Course Road
Total Site Area: 4.22 acres

Site 2: St. Thomas Marg, DLF Phase V,
Golf Course Road
Total Site Area: 3.25 acres

Site 3: Near Park Dr., DLF Phase V,
Sector 54, Golf Course Road
Total Site Area: 5.67 acres

Site 4: Behind Parasvnath Exotica,
Sector 53, Golf Course Road



MICRO ANALYSIS- SWOT TEST				
PARAMETERS	SITE 1	SITE 2	SITE 3	SITE 4
Near Metro-station	✓	✓	✓	✓
High Density	✓	✓	✓	✓
Developed/Constantly Developing Area	✓	✗	✗	✓
Transportation- Underpass/ Service Lanes	✓	✓	✓	✓
Retail and Commercial Opportunities	✗	✓	✗	✗
Match Skyline/ Creates Unique Identity	✓	✓	✓	✓
Provide more Connectivity	✓	✓	✓	✓
Physical and Visual Connections	✓	✓	✓	✓
Ease of Accessibility	✓	✓	✓	✓
Appropriate Land Use	✗	✗	✓	✓
Integration of Different Typologies of Spaces	✓	✓	✓	✓
No alteration to Existing Features (Natural + Built)	✓	✗	✓	✗
Site Area > 10,000sq. m.	✓	✓	✓	✓
Mixed Gentry	✓	✓	✓	✓
Wind Movement to Facilitate Ventilation	✓	✓	✗	✓
Permeable Boundaries	✗	✗	✓	✓



SELECTED SITE

Site 4: Behind Parasvnath Exotica,
Sector 53, Golf Course Road
Total Site Area: 4.12 Acre
Selected Site Area: 2.5 Acres

GLOBAL COORDINATES
Longitude - 2826'28.66"N
Latitude - 7705'53.43"E



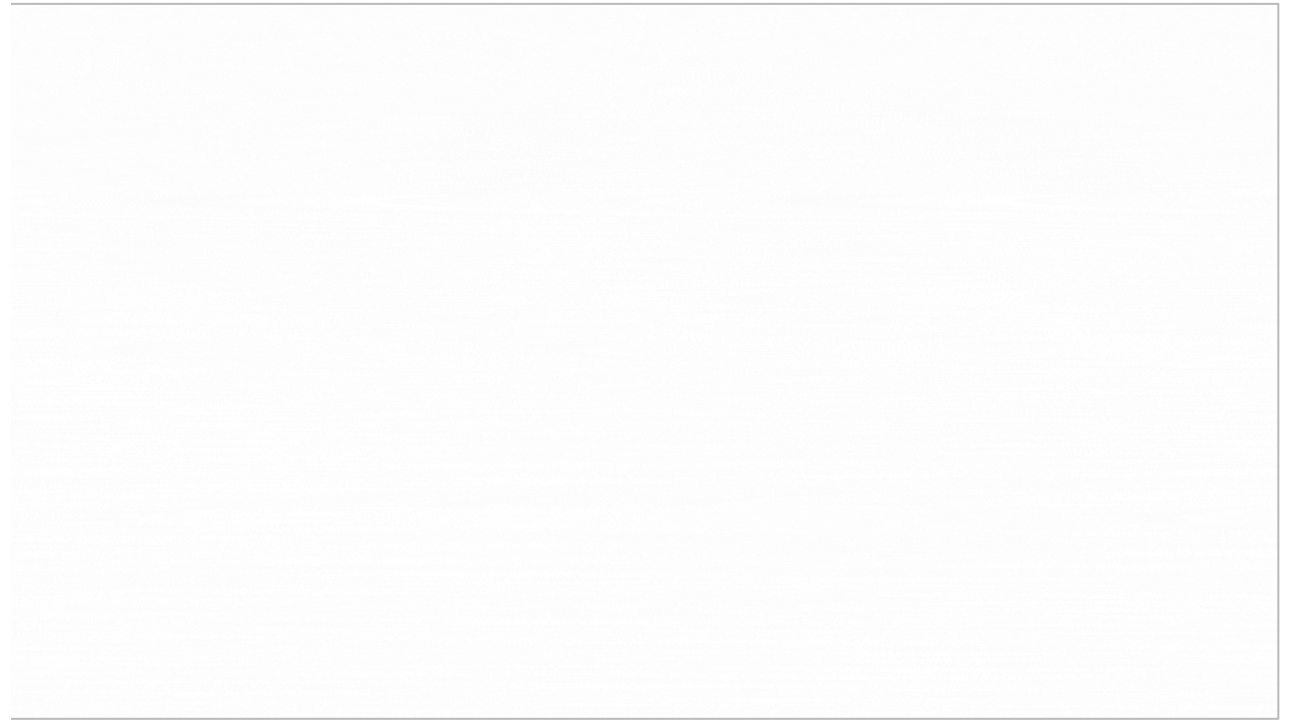
SITE SELECTION + ANALYSIS

PHOTOGRAPHIC MAPPING + VISUAL CONNECTIONS + ADJACENCIES

PHOTOGRAPHIC MAPPING + VISUAL CONNECTIONS

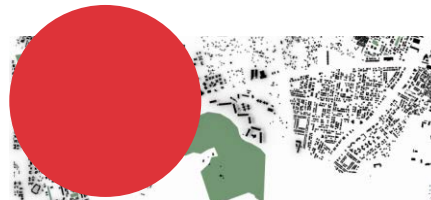


ADJACENCIES



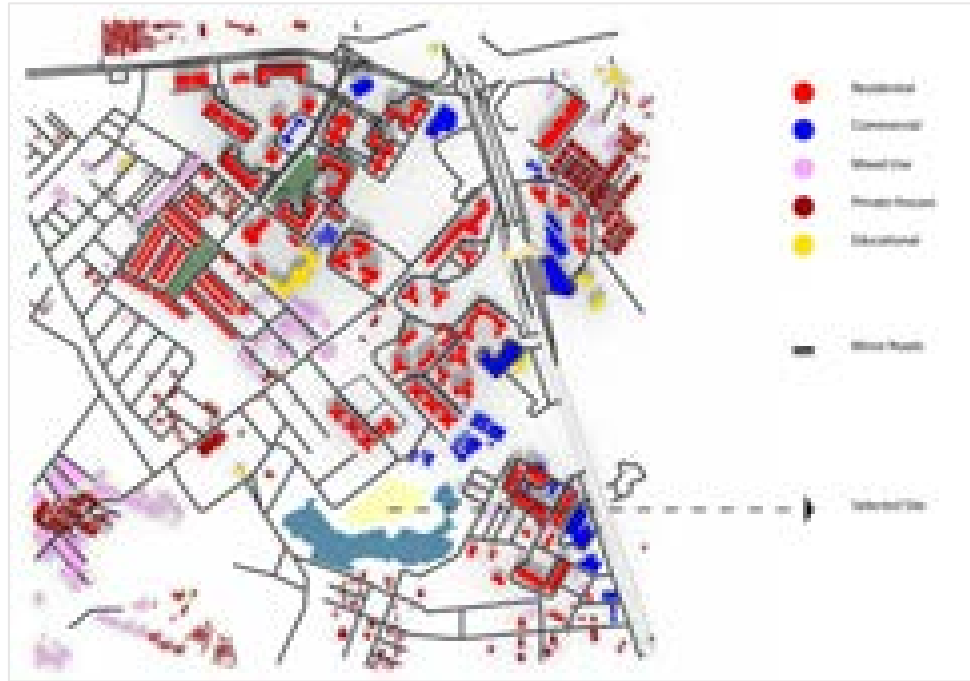
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MICRO SITE ANALYSIS

SITE ANALYSIS ACCESSIBILITY + CONNECTIONS + BUILT



Due to a very dense urban fabric of the Golf Course Road, the noise is also more as we go closer to the metro line. However, as the distance increases, the access to visual, aural and physical connections is reduced to more private spaces and residences

The networking on Site 4 is continuous and hence maintains interactions and activities on the road; also helps in commuting and movement of pedestrians.

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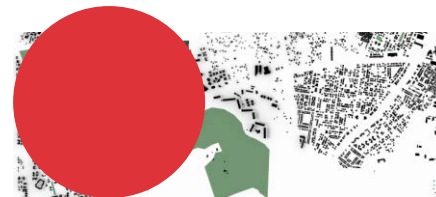


NOLLI MAP

The density of built spaces on Site 4 is lesser as compared to other sites as there is still development for upcoming projects and construction. Hence, built spaces are lesser and connecting roads and networks are more



Radius = 1.7 km



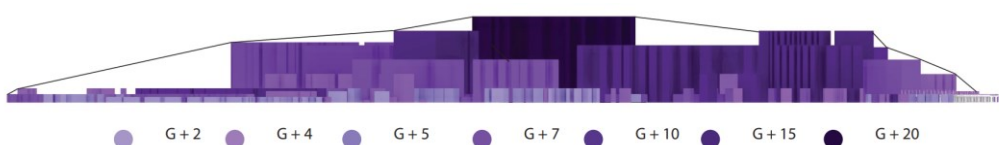
AURAL CONNECTIONS



ACCESS POINTS + PHYSICAL CONNECTIONS + PERMEABILITY + CIRCULATION

MICRO SITE ANALYSIS

SITE ANALYSIS BUILT + ACTIVITY MAPPING



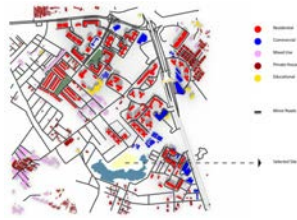
Public/ Semi-Public/ Private Spaces- Most of the spaces are public (retail/offices/restaurants) but there are also big gated communities which reduces the permeability of this 1.7 km stretch, which then results in restriction of activities and programs.

SELECTED SITE

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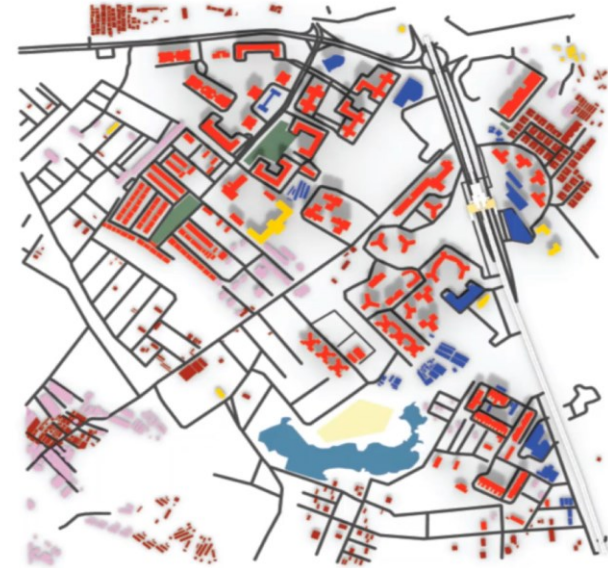
SKYLINE ANALYSIS



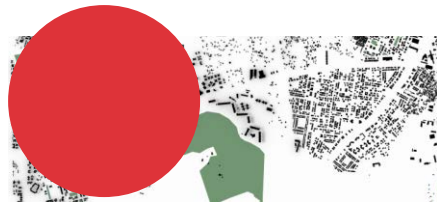
LAND USE + LANDMARKS



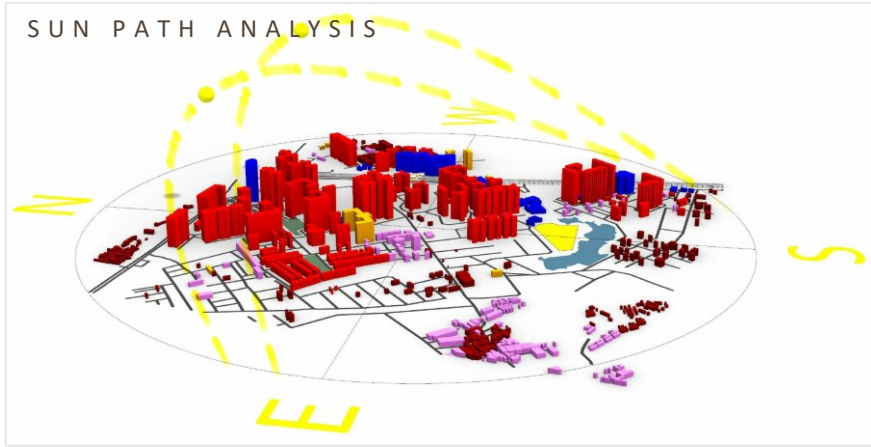
CONGESTION ANALYSIS



ACTIVITY MAPPING

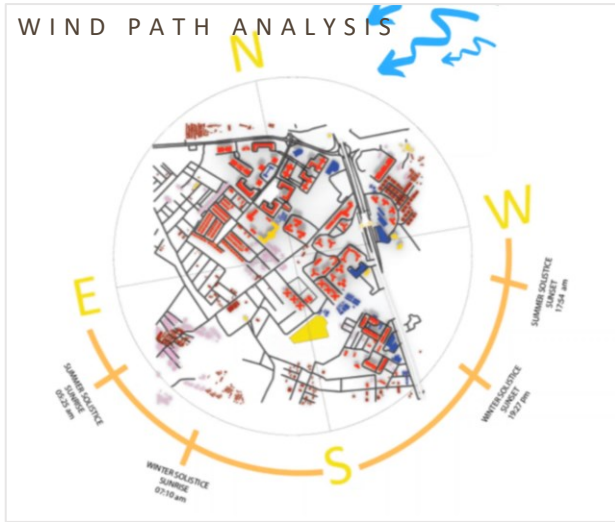


MICRO SITE ANALYSIS
SITE ANALYSIS MICROCLIMATE + PHYSICAL CHARACTERISTICS

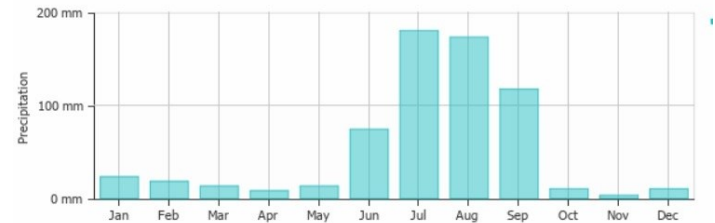


NO2	2.34 $\mu\text{g}/\text{m}^3$, AQI 2 Good
O3	82.13 $\mu\text{g}/\text{m}^3$, AQI 82 Satisfactory
PM2.5	33.4 $\mu\text{g}/\text{m}^3$, AQI 53 Satisfactory
SO2	10.91 $\mu\text{g}/\text{m}^3$, AQI 10 Good
Humidity	31.0 %
Barometric Pressure	1009.0 hPa

AIR QUALITY



Climate - The prevailing climate in Golf Course Road is known as a **Local Steppe Climate**
Rainfall - There is little rainfall throughout the year. This climate is considered to be BSh
Temperature - The average is 24.9 °C | 76.8 °F
Rainfall - Max.: **July**, Aug & Sept.
 Least: Jan, Feb, Mar, April, May, Oct, **Nov** & Dec.
 The avg. amount of annual precipitation is: 642.0 mm



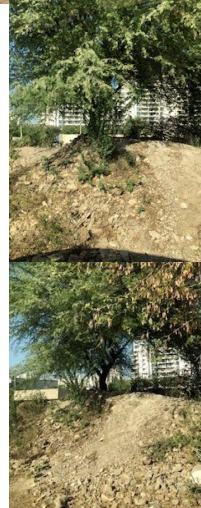
PRECIPITATION

VEGETATION

1. Neem (Azadirachta indica)
2. Dhau (Anogeissus latifolia)
3. Cuscuta

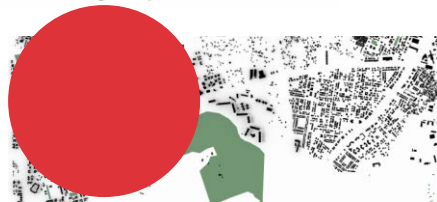
FLORA AND FAUNA

1. Brahmi (Bacopa Monnieri)
2. Gugal (Commiphora Wightii)
3. Dardpaat (Bryophyllum Pinnatum)
4. Agave



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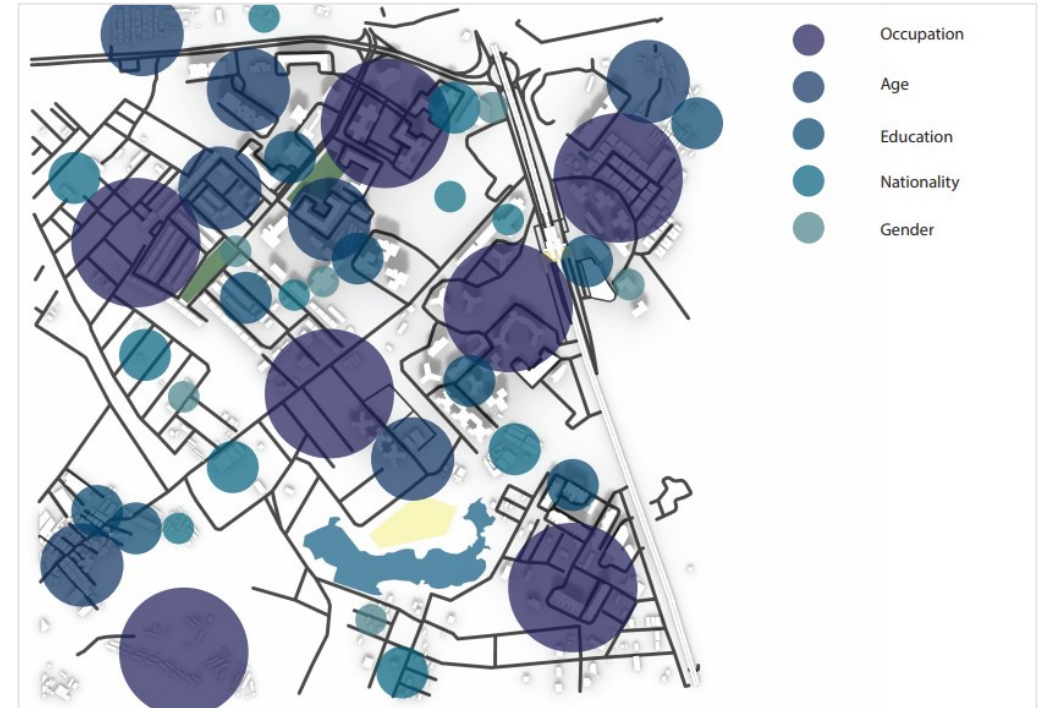
MICRO SITE ANALYSIS
SITE ANALYSIS DEMOGRAPHICS



POPULATION

POPULATION

It plays a very important role in the progress of an hybrid. Since, the denser the urban population, the more successful the hybrid functions vertically, which is also the case here



USER GROUP

USER GROUPS

drivers of horizontal space

The map shows the drivers that divide the spaces and population on the basis of these factors. Occupation is the biggest driver of this urban fabric



SYSTEMS IN NATURE

Nature's way is intriguingly unique. Natural habitat when observed closely, reveal that natural formations possess high levels of seamless integration and a relatively stable equilibrium, a homeostasis, between interdependent elements.

To understand a mutually symbiotic relationship, we identified – *Systems in Nature* and further studied a *System in Nature*.

ILLUSTRATION - TERMITE MOUNDS

ECOLOGY NATURAL SYSTEM - TERMITE HILLS

To understand a mutually symbiotic relationship, we identified – *Systems in Nature* and further studied a *System in Nature*.

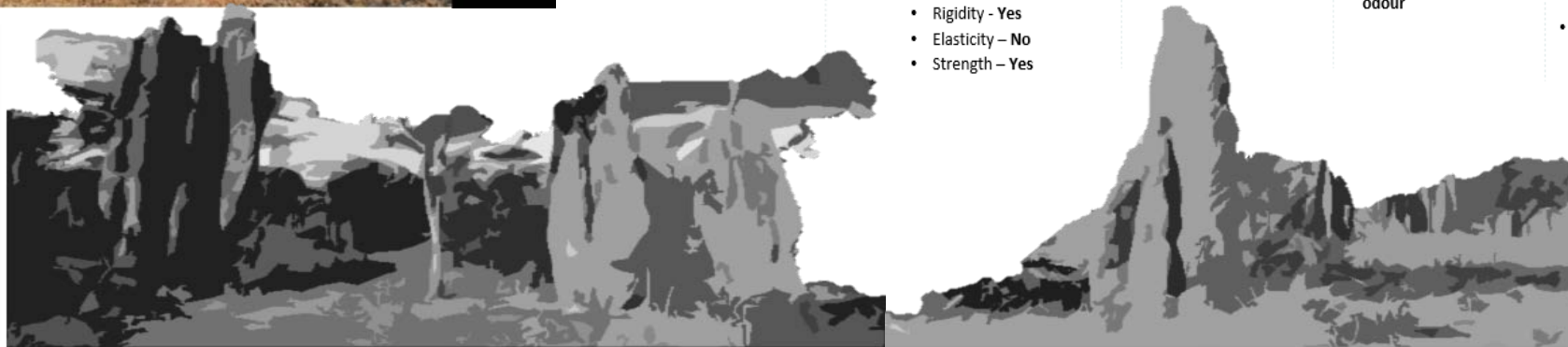
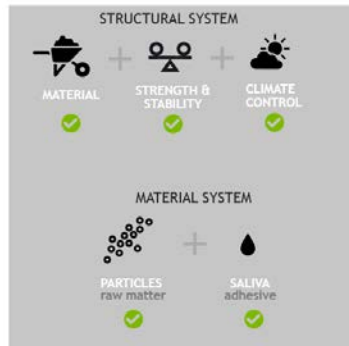
- Tectonic and computational integrations embedded into intrinsic systemic structure
- Adaptation and alignment to the ecological catalysts
- Adherence to the mimesis of the natural systems, that are not only consumerist in occupation of the habitat but also are producers that allows a mutually inclusive relationship to emerge.

PRIMARY GENERATIVE ARCHITECTURAL SYSTEM = STRUCTURE & MATERIAL SYSTEM >>> NATURAL ENTITY CONTIGUOUS WITH THE DEFINITIONS OF THE SYSTEM = TERMITE MOUNDS

TERMITE MOUNDS ARE THE RESULT OF THE COLLECTIVE BEHAVIOR OF TERMITES WORKING TO MODIFY THEIR PHYSICAL ENVIRONMENT, WHICH IN TURN AFFECTS THEIR BEHAVIOR. MOVE A FOURTH OF A METRIC TON OF DIRT TO BUILD MOUNDS THAT CAN REACH 5 M AND HIGHER.



Termite Hill



COMPOSITIONAL – FORM-AL & MORPHOLOGICAL



FORM

Geometric Attributes

- Shape – Tall; Thin; Wedged; Titled
- Mass/ Volume- 1.5 g to 22.1 g
- Scale/Proportions – 0.5 m to 9.1 m
- Colour – Brown; Beige; Red



MORPHOLOGY PRINCIPLES

Compositional Attributes

- Material - Aggregates (sand + faeces) + Adhesive (saliva + moisture)
- Colour – Brown; Beige; Red
- Texture – Smooth + Compact

Tectonic Attributes

- Malleability - No
- Flexibility - Yes
- Rigidity - Yes
- Elasticity – No
- Strength – Yes

TOPOLOGICAL



ORDER

- Organisation Logic – Mechanism for Cooling (Cellar to Chimney)
- Analytical Understanding – Ventilation & Ecology



MATHEMATICS

Algorithm for design of the morphological construct – Derivation results in proving that the height of the mound and the radius of its base depend on the volumetric flux of odour

ECOLOGICAL



ECOLOGICAL FACTORS

Ecological Performance

- Food and Nutrition - Influenced by various atmospheric factors
- Colony Organization - Highly organized and integrated unit
- Colony Formation & Development - associated with high atmospheric humidity
- Ventilation - Termites use transients. The temperature outside the mound is oscillating, they have a method to harness that to ventilate their mounds.
- Increase fertility and plant growth, improve soil quality, provide habitation space to many other organisms.

THE i_PLEXUS ECOLOGY AGGREGATE STRUCTURES

TAKEAWAYS FROM TERMITE HILLS - FORM (TECTONICS) + FUNCTION (ECOLOGICAL)

FORM → AGGREGATE STRUCTURES



- Structures made from reusable aggregates requiring no binding agent.
- Aggregates are omnipresent in the concrete production industry, yet are rarely deployed in an unbound form.
- Aggregate architectures are made from designed injection-molded granulates which self-solidify.
- It is a ground-breaking construction method uses the potential of loose, designed granulates that can interlock and consequently require no additional binding agent.
- They are fully recyclable and adaptable to almost any site constraints.



AR. ACHIM MENGES



AGGREGATE STRUCTURES

An architectural prototype building and a showcase for the current developments in computational design and robotic fabrication for lightweight timber construction.

The newly developed timber construction with beech plywood plates offers not only innovative architectural possibilities; it is also highly resource efficient, with the load bearing plate structure being just 50mm thin.

ROBOTICALLY FABRICATED LIGHTWEIGHT TIMBER SHELL

- PROTOTYPICAL ARCHITECTURE – how one components was developed and then repeated multiple times to form the structure/ envelope.
- AGGREGATION of one – hexagonal plate – to form the entire structure.
- COMPUTATIONAL DESIGN & ROBOTIC FABRICATION of each component (plate) and its assembly on site.
- MATHEMATICS & ORGANISATION of the hexagonal plates.
- MATERIAL (beech plywood plates) & JOINERIES (finger Joint) used and developed robotically – making the structure lightweight yet cable of taking load and acting as a shear wall system.

SOURCE: www.architecturaldigest.com; www.achimmenges.net

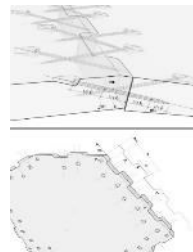
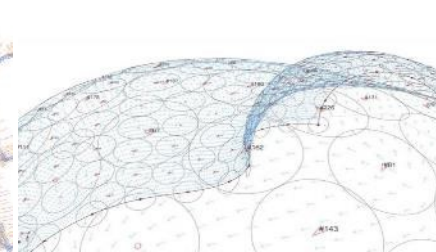
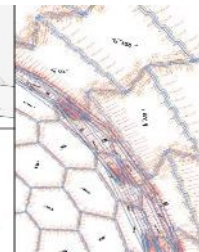
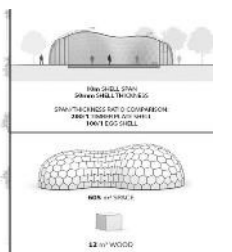
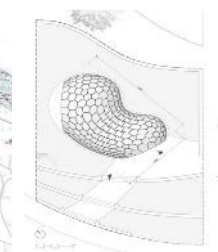


Plate Parameters and tool path generation



Computational Design Process



THE i_PLEXUS

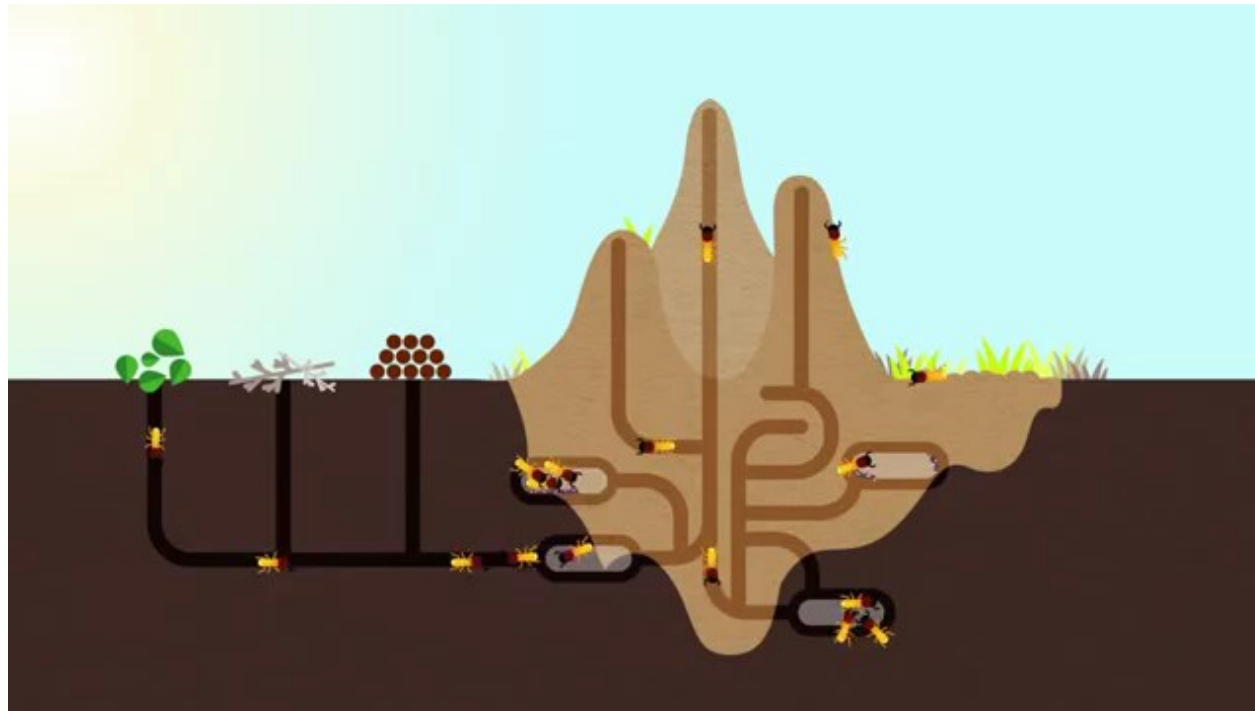
ECOLOGY AGGREGATE STRUCTURES

TAKEAWAYS FROM TERMITE HILLS - FORM (TECTONICS) + FUNCTION (ECOLOGICAL)

ECOLOGICAL FUNCTION



- Climate control
- Treatment of organic waste
- Supporting life (biotic & abiotic)



VIDEO: HOW TERMITES ENRICH THE ECOSYSTEM

PROTOTYPE = TO SUSTAIN THE MUTUALLY SYMBIOTIC RELATIONSHIP



HEIGHT



VELOCITY



ODOUR



COMPOSITION
CHEMICAL

REFERENCE 1 - Derivation For Relationship Between Height & Radius Of Termite Mounds As Well As Their Correlation With Odor Inside it.

Since, $\Phi \sim R^2 \phi_c$

Hence, $J = R^2 \phi_c D_0 / h$

Where,

Φ - is the total amount of odor within the mound wall
 J - is the volumetric flux of odor generation inside the mound
 D_0/h - is the characteristic speed at which this odor escapes through the wall
 R^2 - is the mound radius
 ϕ_c - the odor threshold
 h - height

Therefore, $R_c \sim \sqrt{\frac{Jh}{D_0 \phi_c}}$ --- 1st RELATIONSHIP

Where, R_c - mature mound radius at steady-state

SOURCE: *Morphogenesis of termite mounds/pnas.org*

Where,

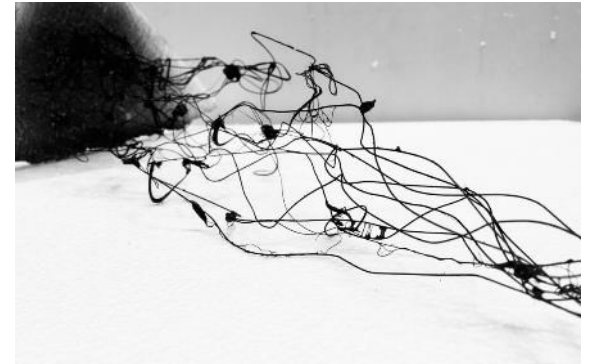
$t_c \sim \frac{R^2}{D_T \tau} \sim Bi^{-2}$ --- 2nd RELATIONSHIP

Peclet number (Pe) - is a dimensionless group representing the ratio of heat transfer by motion of a fluid to heat transfer by thermal conduction
 L_c - is the thermal diffusion length
 R_c^2/D_T - this represents the time at which L_c matches the steady-state mound radius
 L_c - is the thermal diffusion length
 t_c - is the dimensionless construction time
 Bi - is the biot number

The mound aspect ratio is H/R
 When $Pe = 0$, gives rise to hemispherical mound with 1:1 aspect ratio
 If, there is any deviation in the aspect ratio

Then, $\frac{H}{R} \sim 1 + Pe^2$ --- 3rd RELATIONSHIP

PROTOTYPING AGGREGATE STRUCTURES USING TECTONIC REFERENCES FROM NATURAL SYSTEM



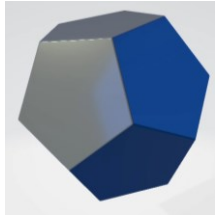
Derived using all References – ANALOG MODEL



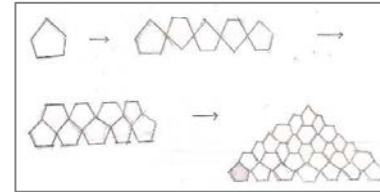
Derived using Aggregate Structure Study – ANALOG MODEL

PROTOTYPE 1.0

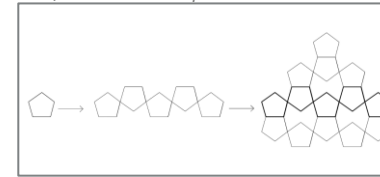
PROTOTYPE 2.0



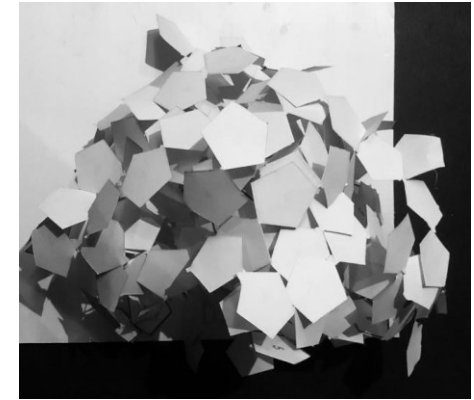
FINAL AGGREGATE FOR PROTOTYPE



2-D, hand drawn exploration

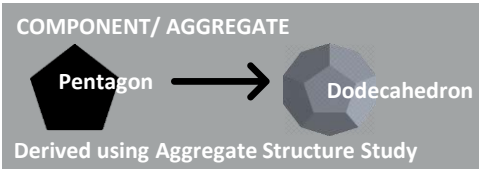


2-D, digital exploration

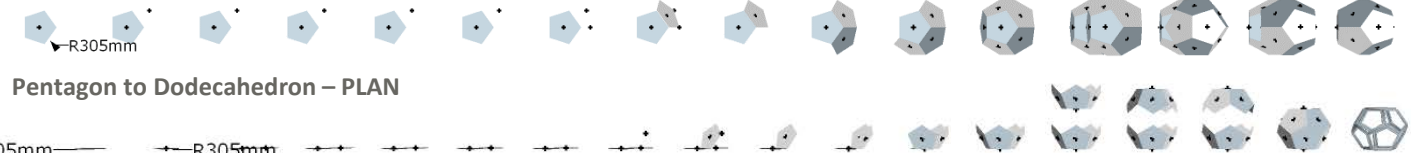


PROTOTYPE 2.1

PROTOTYPE 2.2



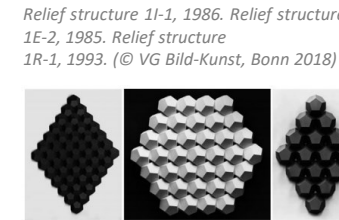
DODECAHEDRON
 12 PENTAGONAL FACES
 30 EDGES
 20 VERTICES



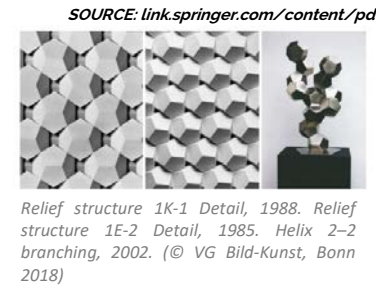
Pentagon to Dodecahedron – ELEVATION



Three types of topological interlocking of dodecahedra, TI 1, TI 2, TI 3. (© Vera Viana)

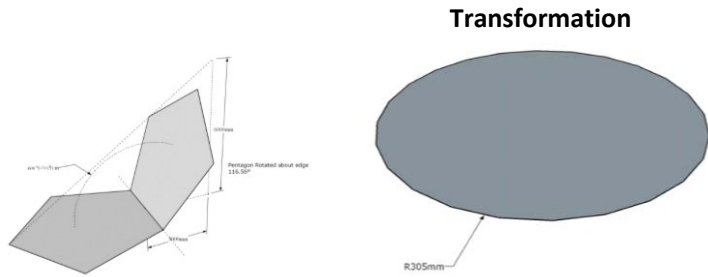


Relief structure 1I-1, 1986. Relief structure 1E-2, 1985. Relief structure 1R-1, 1993. (© VG Bild-Kunst, Bonn 2018)



SOURCE: link.springer.com/content/pdf

Relief structure 1K-1 Detail, 1988. Relief structure 1E-2 Detail, 1985. Helix 2-2 branching, 2002. (© VG Bild-Kunst, Bonn 2018)



PENTAGON - DODECAHEDRON

Angle of Rotations:
 $\cos^{-1}(-\frac{1}{\sqrt{5}})$ m = 116.56
 degrees

• STACKING/ AGGREGATION OF DODECAHEDRONS

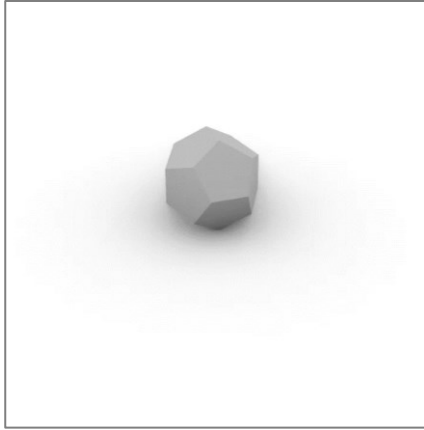
12 regular pentagons form the dodecahedron, which is one of the 5 Platonic solids. These are built using congruent regular polygons so that the same number of polygons abut each vertex.

• Cosmic meaning - dodecahedron – universe.

• PROPERTIES & CONSTRUCTION

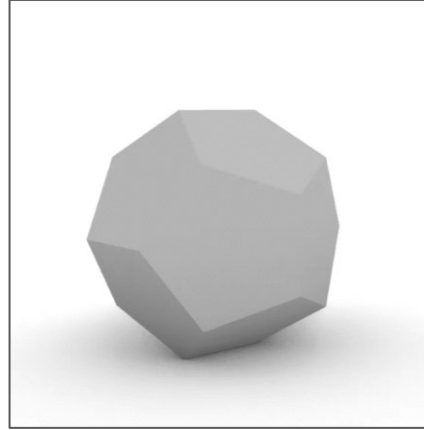
Regular tessellations of space possible only for cubes. *Dodecahedrons stack but do not pack densely.*

PROTOTYPE 2.2



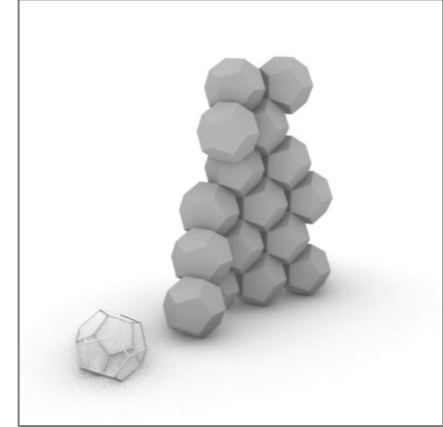
PROTOTYPE 2.2.1

STACKING ON FACES/ SURFACES



PROTOTYPE 2.2.2

STACKING ON EDGES



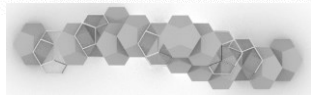
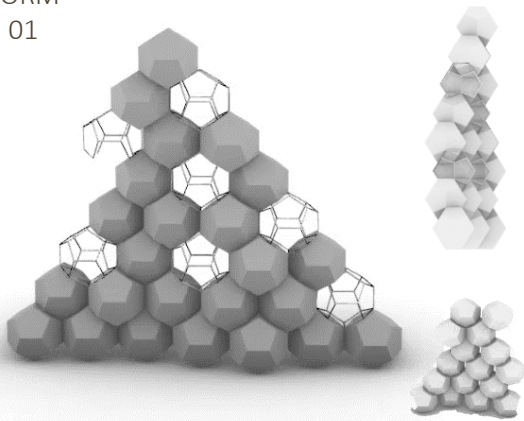
PROTOTYPE 2.2.1

modification

USING WIRE FRAMED DODECAHEDRONS

FORM 01

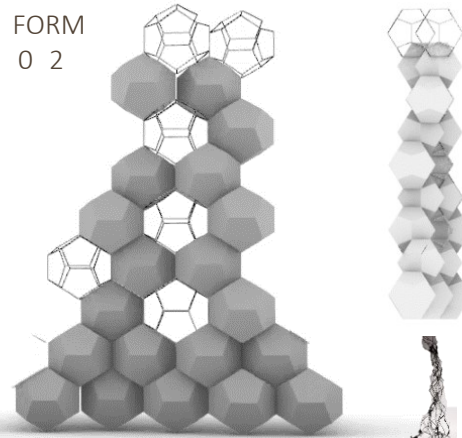
Derived From: Prototype 2.2.1



ORGANIC

FORM 02

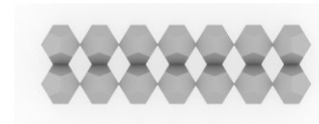
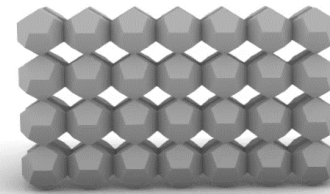
Derived From: Prototype 1.0



ORGANIC

FORM 03

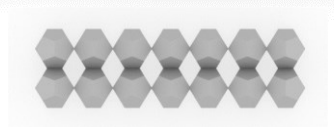
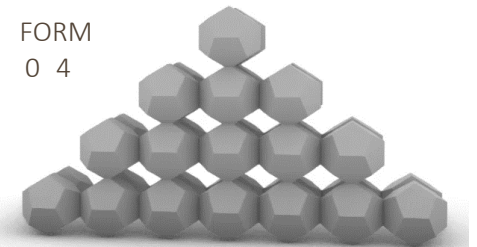
Derived From: Prototype 2.2.2



GEOMETRIC

FORM 04

Derived From: Prototype 2.2.2



GEOMETRIC

MATHEMATICS

Properties of the
DODECAHEDRON
 Faces: 12 pentagons
 Vertices: 20, each with 3 edges meeting
 Edges: 30
 Dihedral angle: 116°34'



SURFACE AREA

SURFACE AREA OF (1) PENTAGON
 $A = (5/2) \times s \times a$

DODECAHEDRON = 12 PENTAGONS
 = SURFACE OF AREA OF (1) PENTAGON X 12
 = $(5/2) \times s \times a \times 12$
 = $5 \times s \times a \times 6$
 = $30 \times s \times a$

SO, SURFACE AREA OF (1) DODECAHEDRON = SURFACE OF AREA OF (1) PENTAGON X 12

$apothem = \frac{s}{2 \tan(\frac{180}{n})}$


VOLUME

DODECAHEDRON = 12 PYRAMIDS w/ PENTAGON as their base

HEIGHT OF PYRAMID Using Pythagoras theorem,
 Height = $\sqrt{R^2 - r^2}$, where R is the radius of the dodecahedron and r is the radius of each pentagon.

VOLUME OF (1) PYRAMID = (Base Area x Height) / 3

SO, VOULME OF (1) DODECAHEDRON = VOLUME OF (1) PYRAMID X 12
 = [(Base Area x Height)/3] x 12
 = 4 (Base Area x Height)



PROTOTYPE

Type 1: DODECAHEDRON OF SIDE = 134 mm
 Type 2: DODECAHEDRON OF SIDE = 268 mm

SURFACE AREA

Type 1: DODECAHEDRON OF SIDE = 134 mm
 = SURFACE OF AREA OF (1) PENTAGON X 12
 = $(5/2) \times s \times a \times 12$
 = $5 \times s \times a \times 6$
 = $30 \times 134 \text{ mm} \times 8.6 \text{ mm}$
 = 34, 750 sq. mm
 = **3.47 sq. cm**

Type 2: DODECAHEDRON OF SIDE = 268 mm
 = SURFACE OF AREA OF (1) PENTAGON X 12
 = $(5/2) \times s \times a \times 12$
 = $5 \times s \times a \times 6$
 = $30 \times 268 \text{ mm} \times 34.5 \text{ mm}$
 = 2, 78, 028 sq. mm
 = **27.8 sq. cm**

VOLUME





Type 1: DODECAHEDRON OF SIDE = 134 mm
 Full Volume = 18.44 cu. Cm
 Hollow Space Inside = 13.92 cu. Cm

Type 2: DODECAHEDRON OF SIDE = 268 mm
 Full Volume = 147.5 cu. Cm
 Hollow Space Inside = 119.74 cu. Cm

SCALE & PROPORTION






TOTAL HT. = 4.2 m | WIDTH assumed as 3 m

DODECAHEDRONS

			
HOLLOW – TYPE 1 SIDE = 134 mm NO. = 300	WIREFRAME – TYPE 1 SIDE = 134 mm NO. = 8	HOLLOW – TYPE 2 SIDE = 268 mm NO. = 15	WIREFRAME – TYPE 2 SIDE = 268 mm NO. = 5
RIGID	RIGID	DYNAMIC	DYNAMIC

Dimensions: 300 mm (height of wireframe), 600 mm (width of wireframe)





MATERIALITY

				
TIMBER	METAL	GLASS	ACTIVATED SOLAR FACADE	SAB SKIN
TYPE = PINE (6 MM THK.) + PLYWOOD PLATES (3 MM THK.)	TYPE = STAINLESS STEEL MENDING PLATES + SCREWS	TYPE = TOUGHNED GLASS (8-10 MM THK.)	TYPE = METTALIC	TYPE = ETFE + ALGAE

JOINERIES

				
PENTAGON TO DODECAHEDRON	DODECAHEDRON TO DODECAHEDRON	WIREFRAME DODECAHEDRON	SS MENDING PLATES	GLASS TO DODECAHEDRON
PLYWOOD PLATES + METAL	DOWELS	MITRE TENON	SCREWS	GROOVES

RULE OF GROWTH AND DEPTH

GROWTH		X 3000	DEPTH		X 5
		X 30			X 1

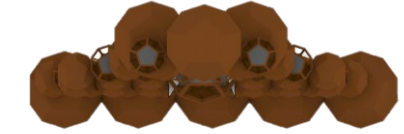
MATHEMATICS; SCALE PROPORTION; MATERIALITY; RULE OF GROWTH AND DEPTH; JOINERIES, RIGID/ DYNAMIC

THE i_PLEXUS
ECOLOGY

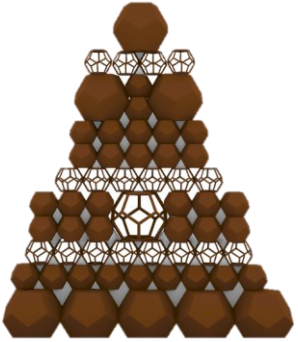
FINAL PROTOTYPE - ITERATIONS



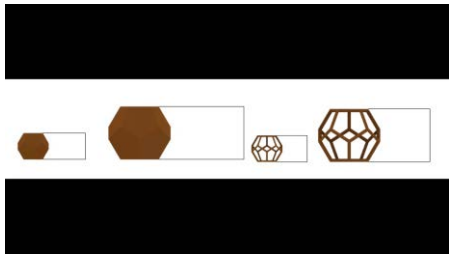
ITERATION 1



PLAN



PERSPECTIVE VIEW



DEVELOPMENT

STRUCTURAL SYSTEM
 MATERIAL SYSTEM

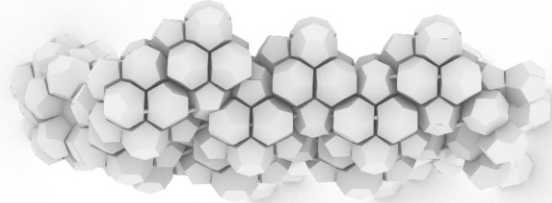
COMPONENTS

-  X 300
-  X 15
-  X 8
-  X 5

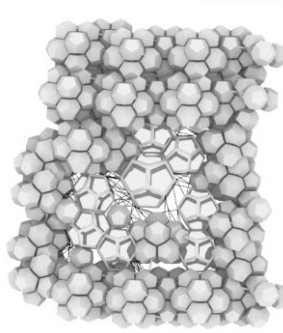
ITERATION 2 - FINAL PROTOTYPE



VIDEO: AGGREGATION PROCESS



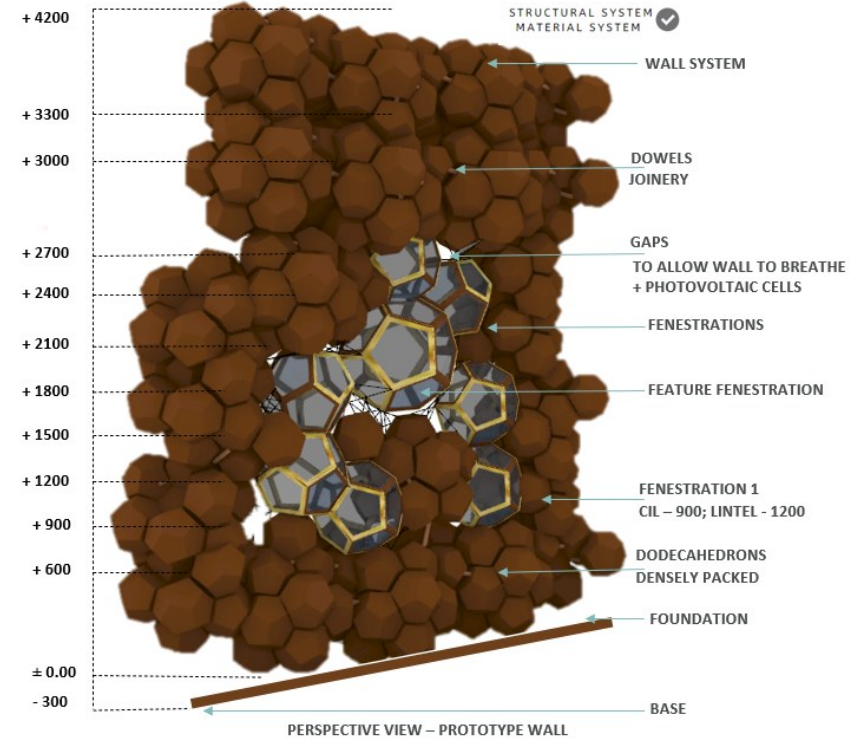
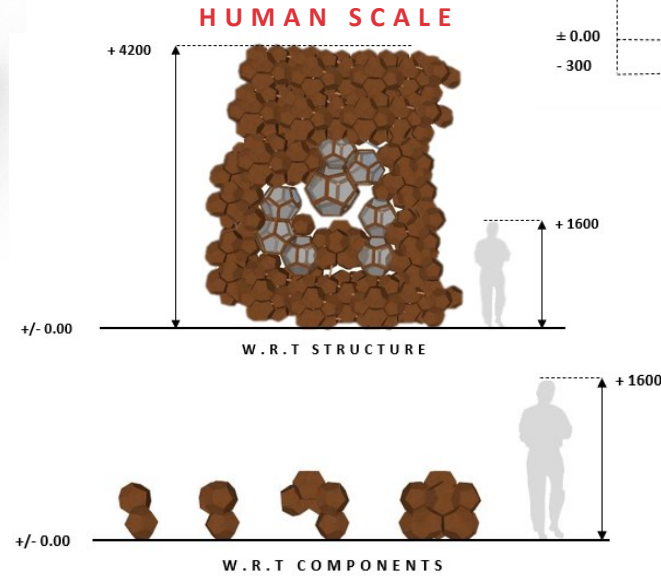
PLAN



FRONT ELEVATION

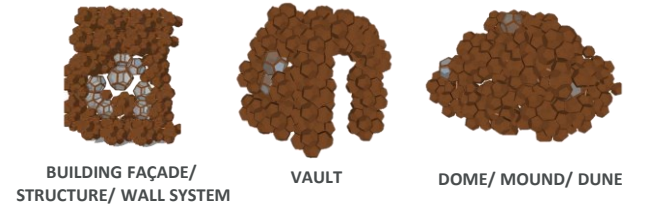


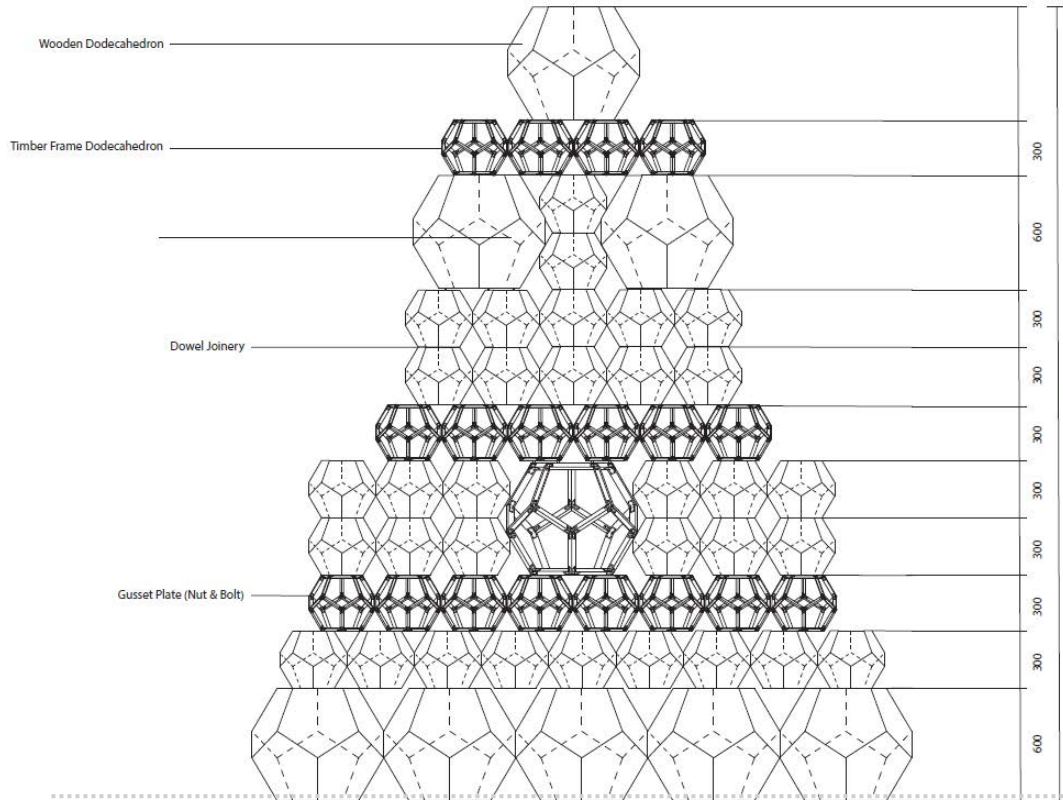
SIDE ELEVATION



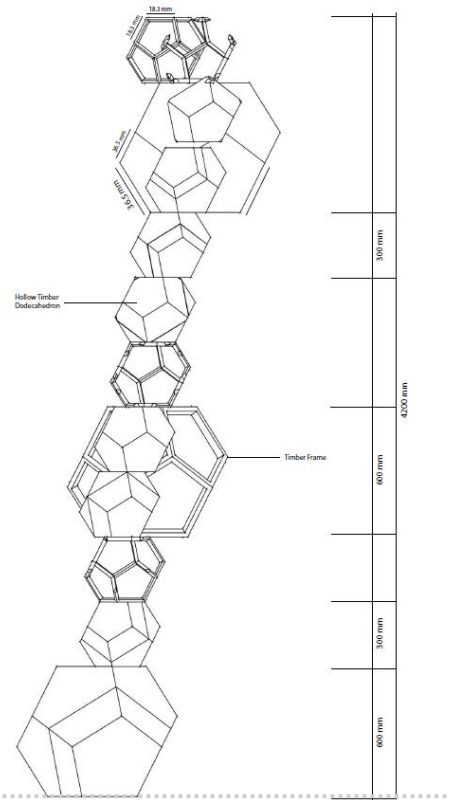
FORM-AL ITERATIONS

POSSIBLE ARCHITECTURAL FORMS MODULAR PROTOTYPE

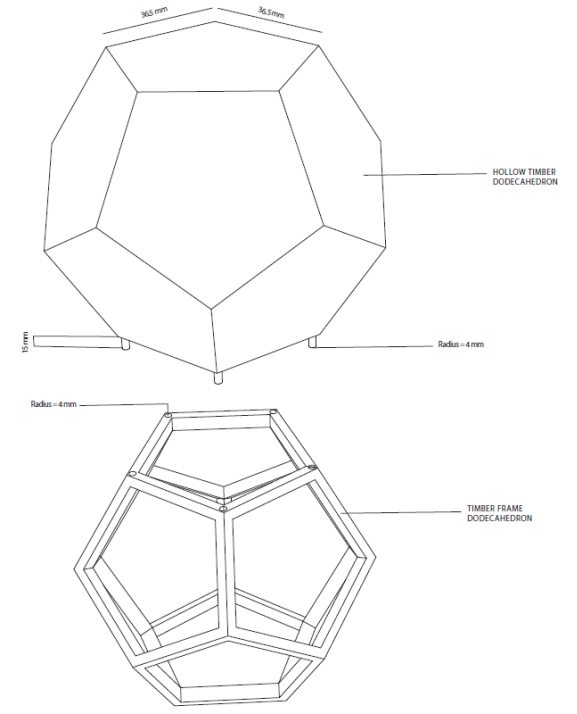




ELEVATION

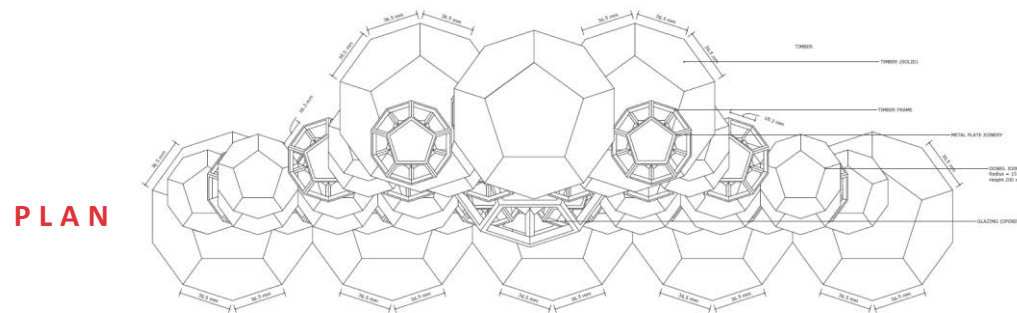


SECTION

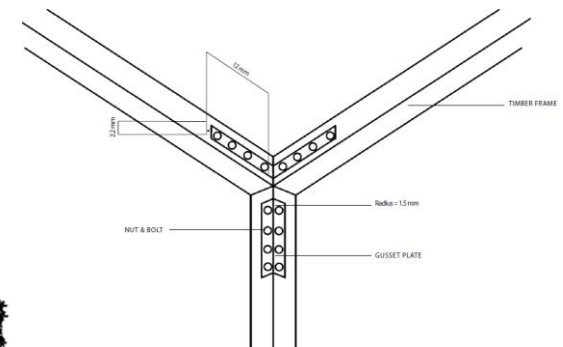


DETAIL 1

HOLLOW DODECAHEDRON TO WIREFRAME DODECAHEDRON - CONNECTION DETAIL



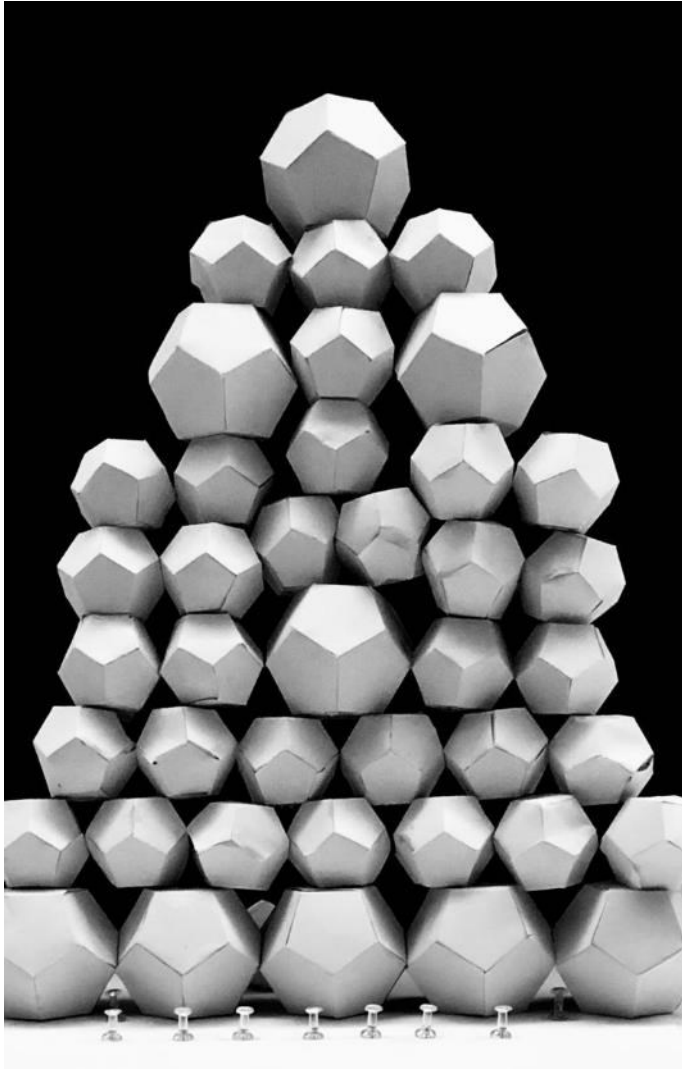
PLAN



DETAIL 2

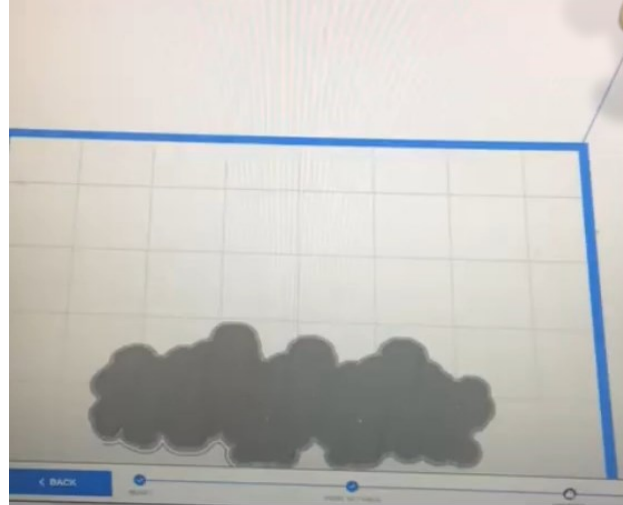
GUSSET PLATE CONNECTION

THE i_PLEXUS
ECOLOGY PHYSICAL PROTOTYPING

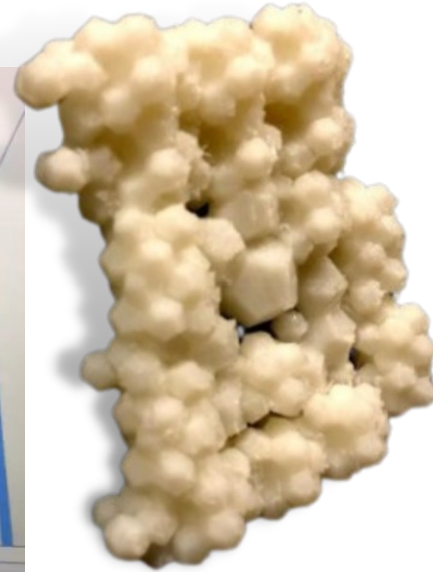


STRUCTURAL SYSTEM ✓ MATERIAL - IVORY
 MATERIAL SYSTEM ✓ SCALE - 1:20

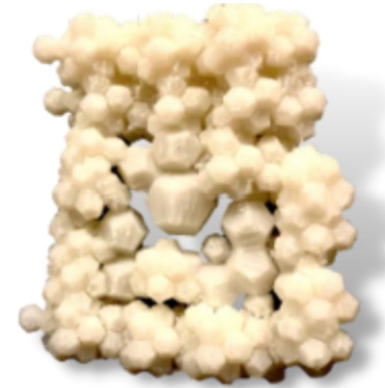
PHYSICAL PROTOTYPING USING DODECAHEDRONS AS
 AGGREGATE - analog



PROCESS



STRUCTURAL SYSTEM ✓
 MATERIAL SYSTEM ✓

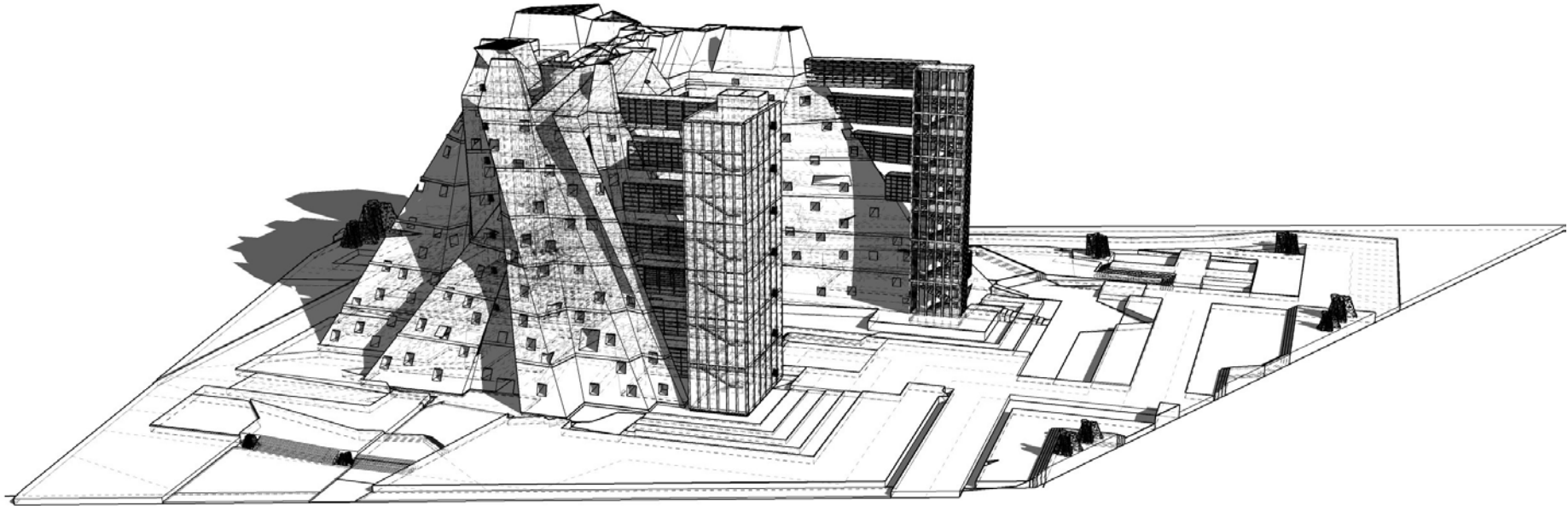


MATERIAL - ABS
 (ACRYLONITRILE
 BUTADIENE
 STYRENE)

TECHNIQUE - 3D
 PRINTING

SCALE - 1:20

PHYSICAL PROTOTYPING USING DODECAHEDRONS AS
 AGGREGATE - 3D print



THE TACH TILE

THE TERMITE HILL DERIVED ARTIFICIALLY INTELLIGENT CONNECTIVITY HUB TILE (AGGREGATE STRUCTURE)



AN ECOLOGICAL MACHINE

ECOLOGICAL MACHINE was an interrogation to test the capacity of an architectural construct to be 'productive' and mutually symbiotic.

The TACH_TILE aspired to be an ecological machine, mutually symbiotic in the co-existence of habitats. It was a test project to interrogate the natural system mimesis, aggregate structure prototype, programmatic components and physical contextuality that has been now evolved further and tested on a larger scale, context and program in the form of i_PLEXUS.



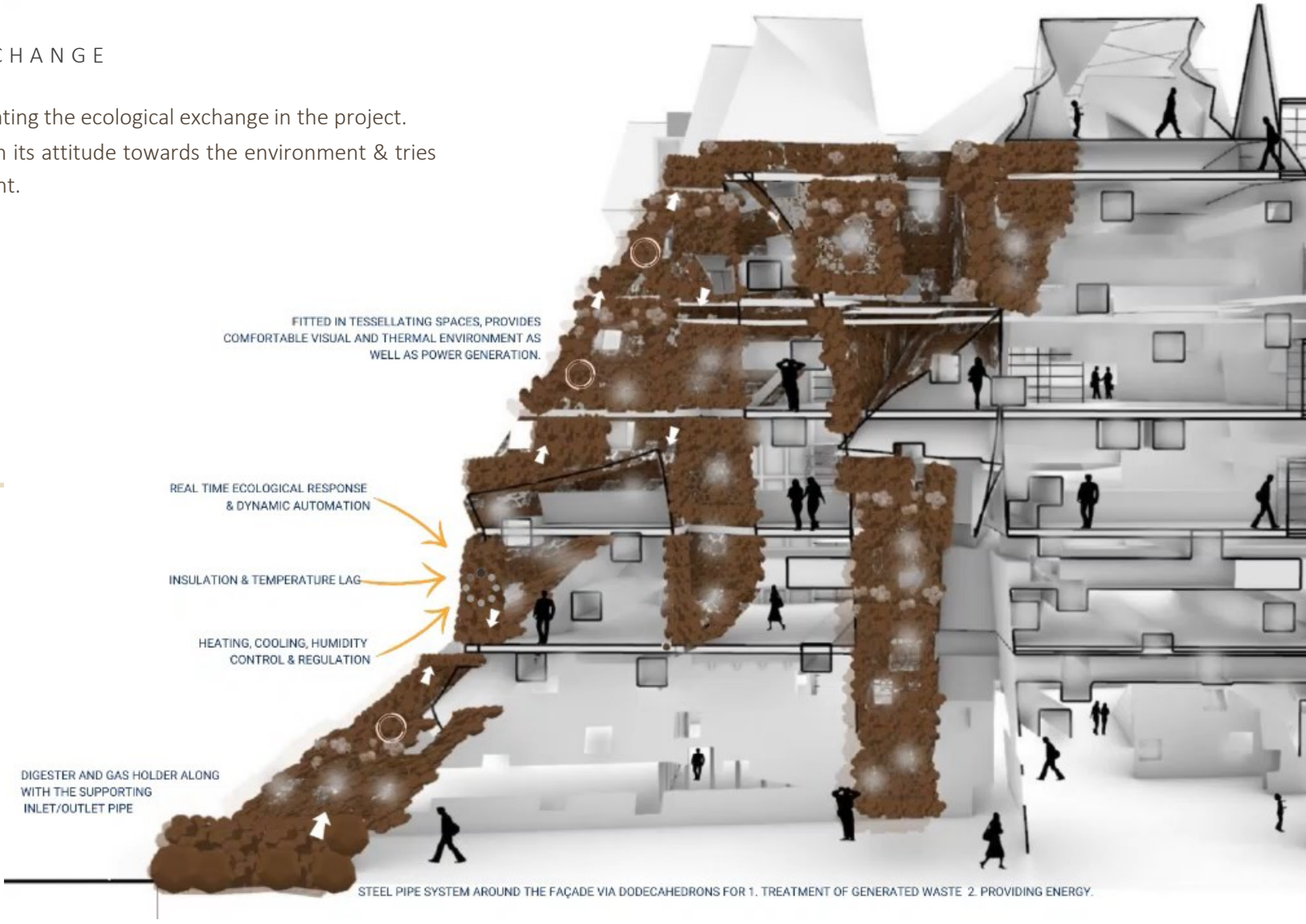
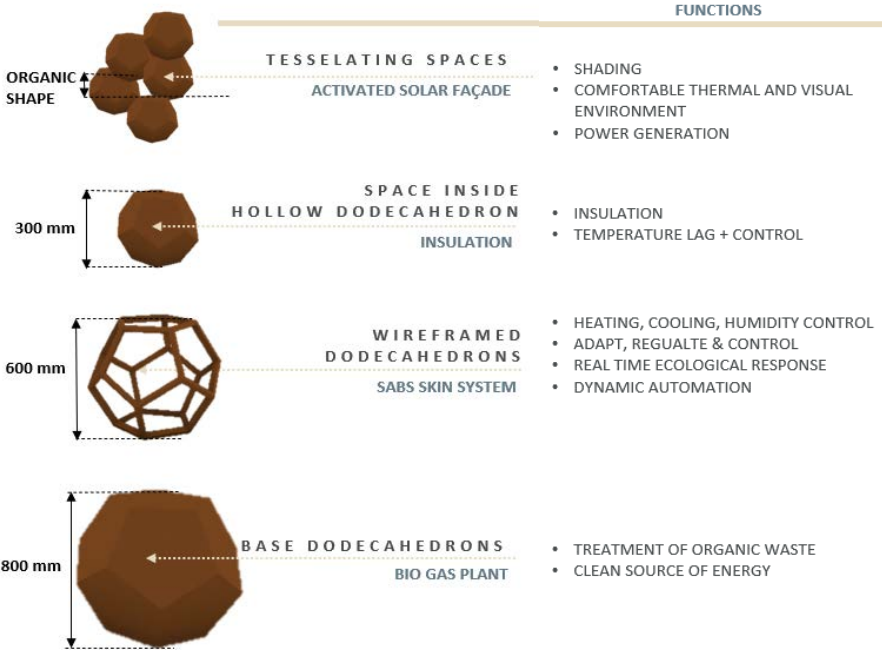
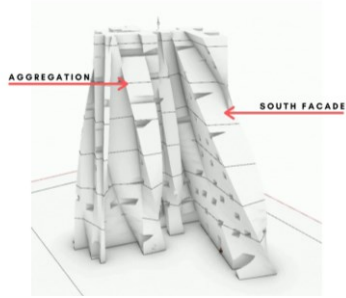
The TACH_TILE is a proposed ecological machine in the age of artificial intelligence, planted in the millennial city of Gurugram and aiming to serve as a metaphor of transit in the form of a mixed-use transit hub increasing connectivity and integration. Tectonically and ecologically derived from a termite hill system it stands as symbol of transit, connection, integration and aspires to be an ecological machine which is mutually symbiotic and 'productive' in the co-existence of habitats.

THE TACH_TILE

 AN ECOLOGICAL MACHINE

THE i_PLEXUS
ECOLOGY PROTOTYPE – ECOLOGICAL EXCHANGE

The interrogation for testing out the prototype was done through articulating the ecological exchange in the project. The **AGGREGATE STRUCTURE PROTOTYPE** tried to be mutually inclusive in its attitude towards the environment & tries to establish an equal consumer-producer relationship with its environment.





02 THE HYBRID

- INTROSPECTION

- Definition
- Variants
- Evolution
- Attributes

EMERGENT HYBRIDS

DEFINITION + VARIANTS + EVOLUTION + ATTRIBUTES

HYBRID COMPONENTS

“(VERTICAL) HYBRIDS ARE (TALL) BUILDINGS WHICH HAVE THE MIXED-USE GENE IN ITS GENE CODE, THAT REVITALIZES THE URBAN SCENE AND SAVES SPACE” – STEVEN HOLL

WHAT IS A HYBRID BUILDING?

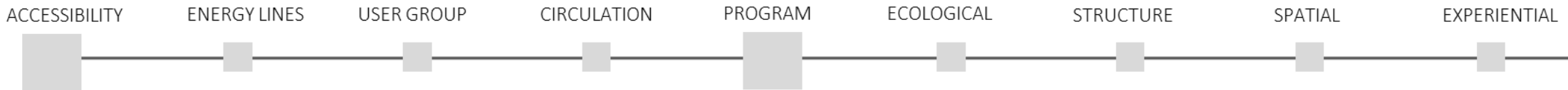
A hybrid is the most effective way to bring different types of activity to spaces at all times throughout the day. It is achieved by mixing different functions within the same building—the mixed-use building, where multiple uses are not only mixed together, but interact with each other and enrich each other.

ACCESSIBILITY HYBRID

- A hybrid building also provides a lot of scope for access - visual or physical, that keeps the users connected vertically and horizontally with the urban fabric.
- The accessibility hybrid controls how permeable or porous a building is by keeping private and public access limited.
- It also strategically adapts to the ever-changing ecology and offers various ecological functions as well.
- Increase of access points leads to an increase of public space, more interaction and ‘networking’ in the building.
- Redefinition of public, semi-public and private spaces as well as circulation throughout the building.



FACTORS THAT GENERATE HYBRIDS



ACCESSIBILITY AND PROGRAM will stay as *constants* in the hybrid systems, others are *variables*. These act as an approach in design where processes of form-generation are directly informed by the combination of material properties, environmental and other functional constraints.



Project Scale



Urban Density



Urban Relevance



Urban Connectivity



Programme Diversity



Programme Scale



Integrated Public Realm



Programme Relationship



Flexibility

EMERGENT HYBRIDS HYBRID MATRIX + GENERATING MECHANISM

SYSTEM = S
 ACCESSIBILITY = A
 CODE for Hybrid = AS

LEVELS

Ground = G
 Mid = M
 Top = T

DIRECTIONS

North = w
 East = x
 South = y
 West = z

HYBRID ITERATIONS

AS1GwMwTw
 AS1GxMxTx
 AS1GyMyTy
 AS1GzMzTz

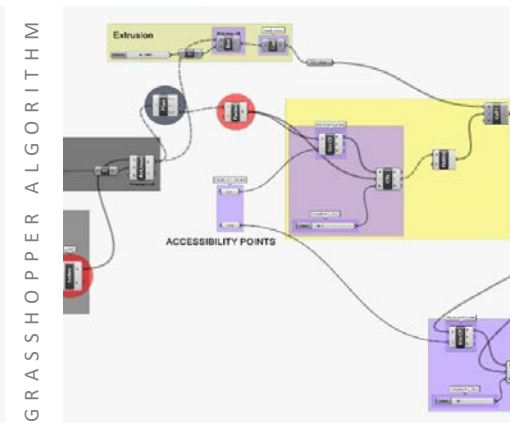
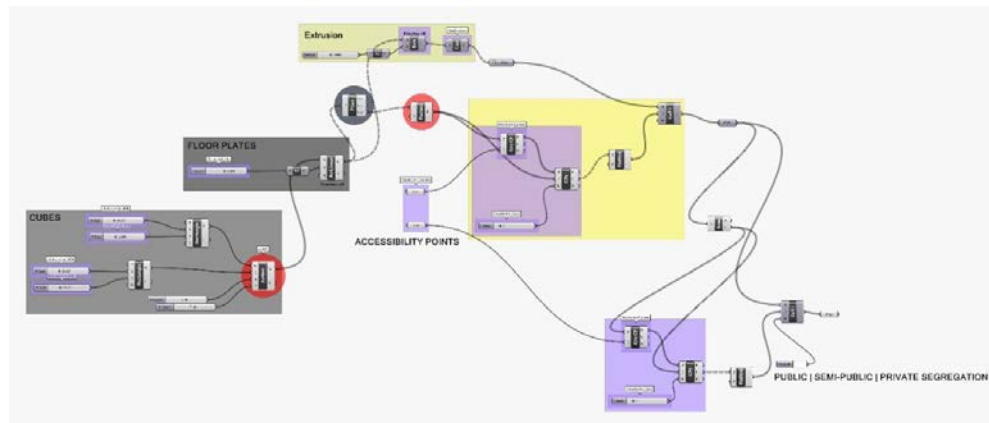
COMBINATIONS Access from _ points	NUMBER OF POSSIBLE ITERATION S	SAMPLE CODE
2 Points	66	AS1GwMx
3 Points	220	AS1GwMxTy
4 Points	495	AS1GwGxMxTy
5 Points	792	AS1GwGxGyMxTy
6 Points	924	AS1GwGxGyGzMxTy
7 Points	792	AS1GwGxGyGzMxMyTy
8 Points	495	AS1GwGxGyGzMxMyMzTy
9 Points	220	AS1GwGxGyGzMwMxMyMzTy
10 Points	66	AS1GwGxGyGzMwMxMyMzTyTz
11 Points	12	AS1GwGxGyGzMwMxMyMzTxTyTz
12 Points	1	AS1GwGxGyGzMwMxMyMzTwTxTyTz

ACCESS POINTS NO.S	ITERATION CODE	ACCESS POINTS NO.S	ITERATION CODE
4	ASGwGxGyGz	2	ASGwM
4	ASTwTxTyTz	5	ASGyGzMwTx
4	ASMwMxMyMz	6	ASGwGxGyGzMwTw
12	ASGwGxGyGzMwMxMyMzTwTxTyTz	5	ASGwTwTxTyTz
6	ASGwGyMwMyTwTy	5	ASGwMwMxMyMz
4	ASGwGyTwTy	8	ASGwGxGyGzTwTxTyTz
9	ASGwGxGyGzMwTwTxTyTz	6	ASGyMwMzTxTyTz
5	ASGwGzMwTwTx	9	ASGwGyMxMyMzTwTxTyTz
4	ASGwGzMwTw	9	ASGwGxGyGzMxMyMzTyTz
3	ASGwMxTy	7	ASGwGxGyGzMwMyTx
7	ASGxGyGzMwMxTyTz	3	ASGzMxTz
8	ASGxGyGzMwMyTxTyTz	10	ASGwGxGyGzMxMyMzTwTxTz
10	ASGwGxGyGzMxMzTwTxTyTz	6	ASGxGzMwMyTxTz
11	ASGxGyGzMwMxMyMzTwTxTyTz	4	ASGyMwMyTy

LOGIC / METHODOLOGY :

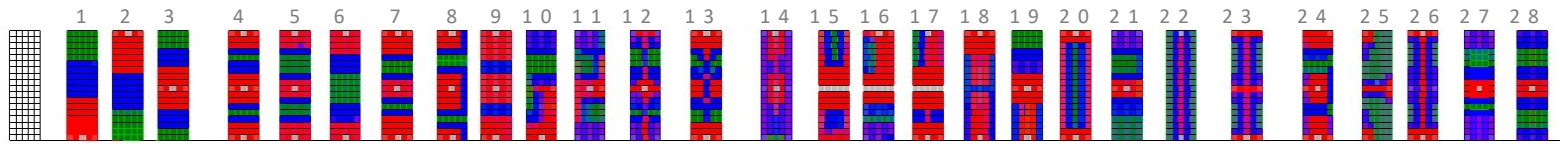
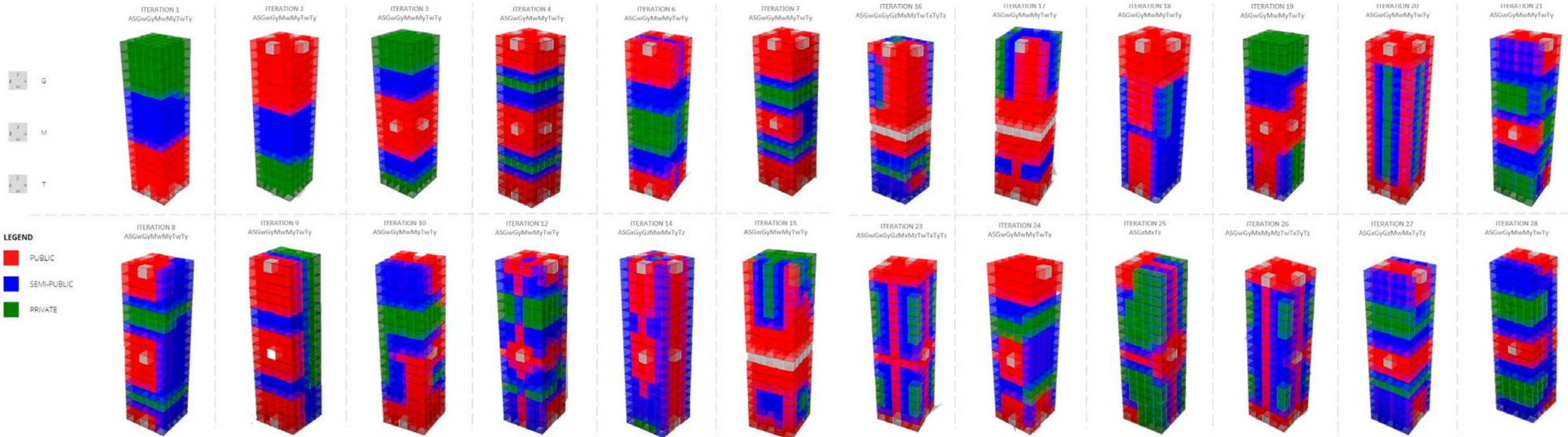
Manipulation in the number of access points in a building at three planes (ground, mid, top) and four directions (w, x, y, z). Redefinition of public, semi-public and private spaces on the basis of access points – their location as well as no.s.

SCRIPT : Script generated on Grasshopper using formulated code and matrix – culling cubes (for making the hybrid tower); attractor point (for setting up access points) & colour swatches (for public, semi-public, private segregation).

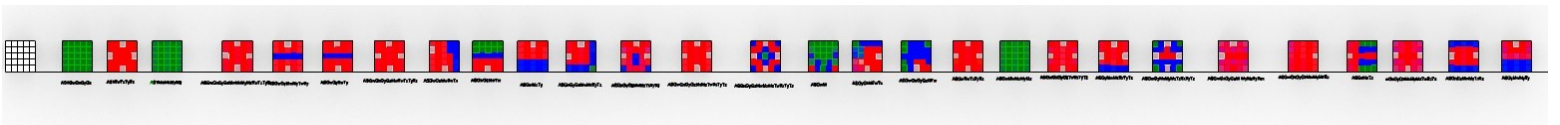


GRASSHOPPER ALGORITHM

EMERGENT HYBRIDS ITERATIONS



SIDE VIEW



TOP VIEW

ACCESSIBILITY HYBRID ITERATIONS

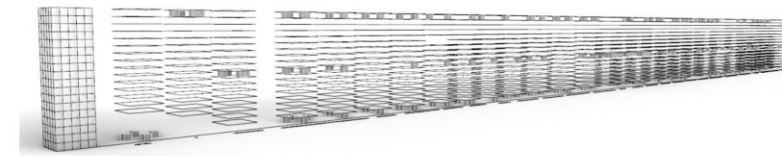
HYBRID ITERATION 01 - HYBRID ITERATION 28

ACCESS POINTS
No. 8: 2-12



LEGEND

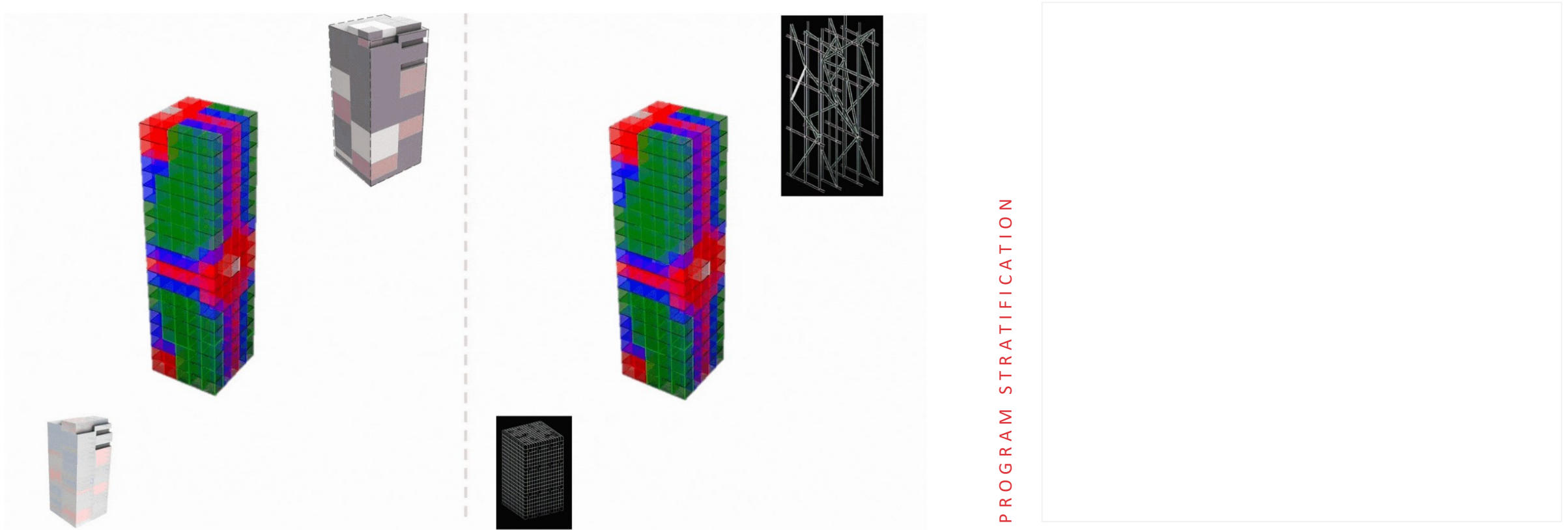
- PUBLIC
- SEMI-PUBLIC
- PRIVATE



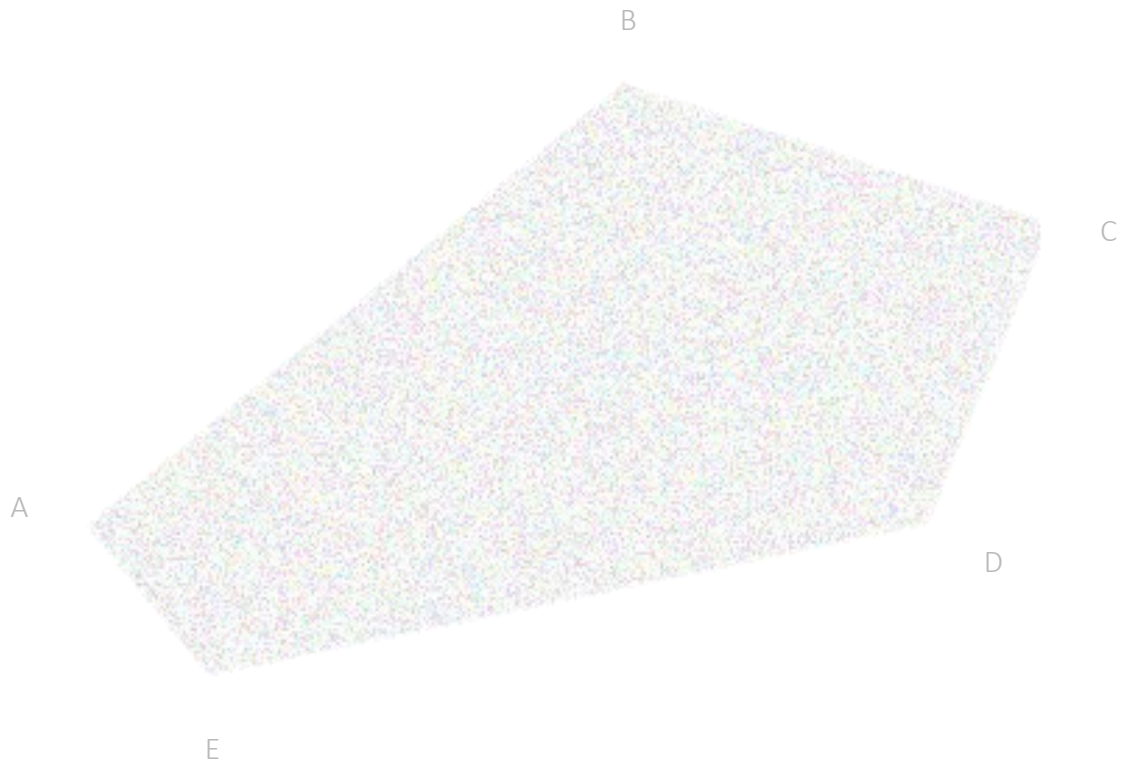
EMERGENT HYBRIDS TAKEAWAYS

i_PLEXUS is an accessibility hybrid that integrates its flexible programmes with the help of the **networking** of the spaces through the **circulation** that it offers. It is merely a product of creating better opportunities for the public realm to interact and communicate through the **AI DRIVEN HYBRID**. It responds to changing **social, technological and ecological urban condition** that are experienced in an urban intensity within the building through its connections. The Golf Course is an artery that caters to a civilized movement of pedestrians as well as the transportation and hence, i_PLEXUS aims to achieve that within its **verticality**.

HYBRID (OF) I_PLEXUS = ACCESSIBILITY + PROGRAM + CIRCULATION.....+ (STRUCTURE + MATERIAL + SERVICES + EXPERIENCE + USER GROUP + ECOLOGICAL)



ACCESSIBILITY HYBRID // PROGRAM + CIRCULATION



PROJECT RULE BOOK

MICRO SITE ANALYSIS

PROJECT RULE BOOK

PROJECT	=	i_PLEXUS
LOCATION	=	Sector 53, Golf Course Road, Gurugram, Haryana
AREA	=	2.5 ACRES (10,117 SQ M)
BUILT UP	=	45,000 SQ M
G.C.	=	MAX. 30% (2500 SQ M)
BLUE	=	70% of SITE AREA
FLOORS	=	G + 24, BASEMENT
HEIGHT	=	107 M

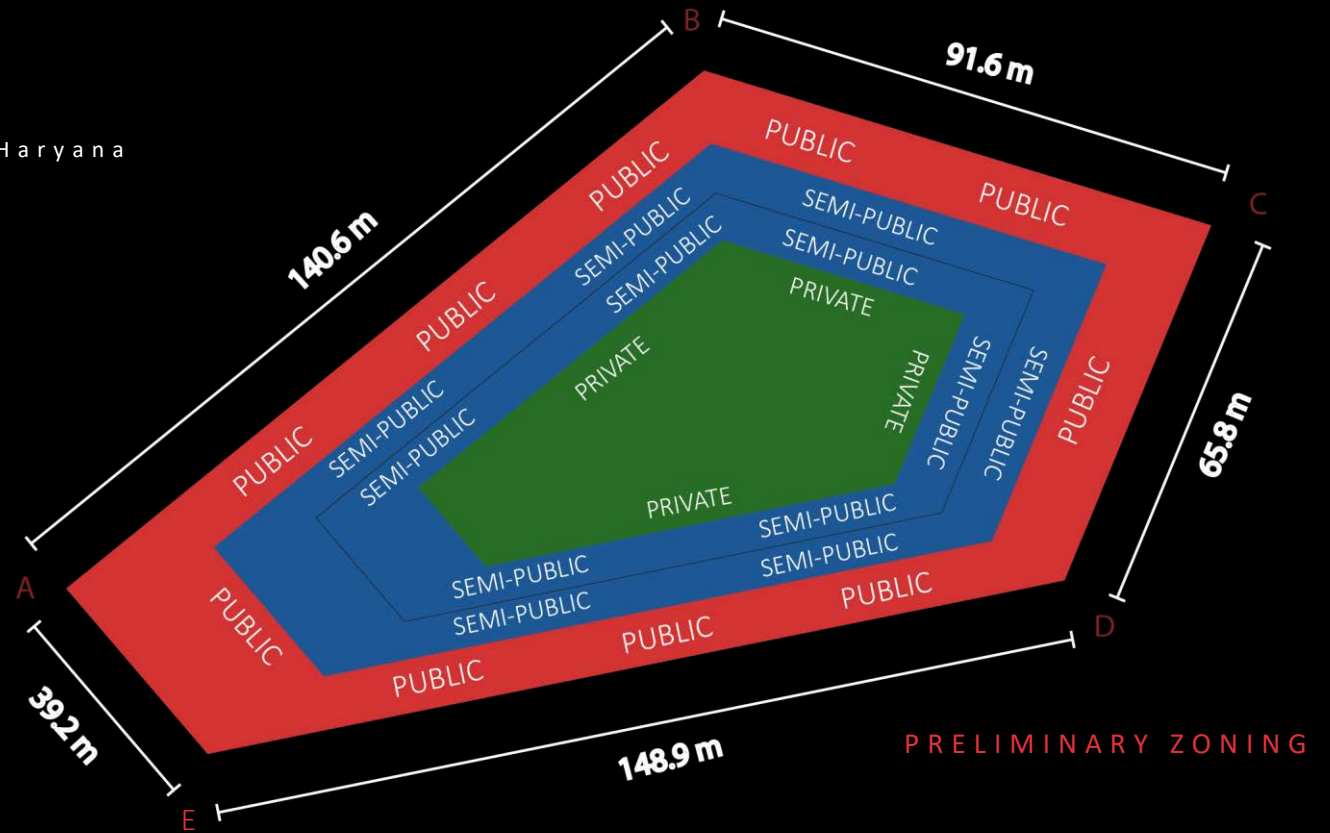
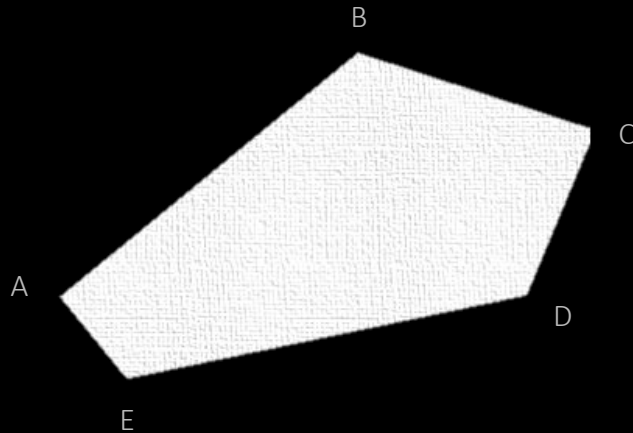
SITE DIMENSIONS:-

- A to B = 140.6 M
- B to C = 91.68 M
- C to D = 65.81 M
- D to E = 148.98 M
- E to A = 39.24 M

SETBACKS:-

- AB; BC = 12 M
- CD; DE; EA = 9 M

ORIENTATION = N-S



SERVICES

ELECTRICAL SHAFT		
PLUMBING SHAFT		
A/C SHAFT		
FIRE SHAFT	CORES	NO.S = 2
STP	PASSENGER LIFTS	NO.S = 8 (2X3 M; 15 PASSENGER EACH) - 4/CORE
AHU	SEVICE LIFTS	NO.S = 2 (2X3M)
MECHANICAL TRANSFER FLOOR	STAIRCASES	RADIUS OF 21.5 M (NEED NOT BE CONTINUOUS)
REFUGE FLOOR	FIRE STAIRCASES	CONTINUOUS FROM GF TO 20TH F (PRESSURISED)
SEWORAGE	CORRIDORS	DOUBLY LOADED - 1.8/ 2 M
WATER SUPPLY	ENTRY/ EXIT	SITE - 1 VEHICULAR ENTRY + EXIT & 2 PEDESTRIAN ENTRY + EXIT
ELECTRIC SUBSTATION		BUILDING - 1 FROM PORCH & 2 FROM PLAZA

ECOLOGY

- Reinvigorating GREEN-BLUE-GREY balance by restoring dried water body, providing a stepped terrace plantation and creating a mini urban forest through planting of native flora of the region.
- Embedding ecological aggregate structure prototype into the built.



In nature, forms are the result of the intersections of system parameters and environmental constraints contiguous to their location . Form is merely a by-product, a derivative of natural behavioral formation. It emerges as an effect exclusive to its particular ecological template.

FORM DERIVATION

03 THE FORM

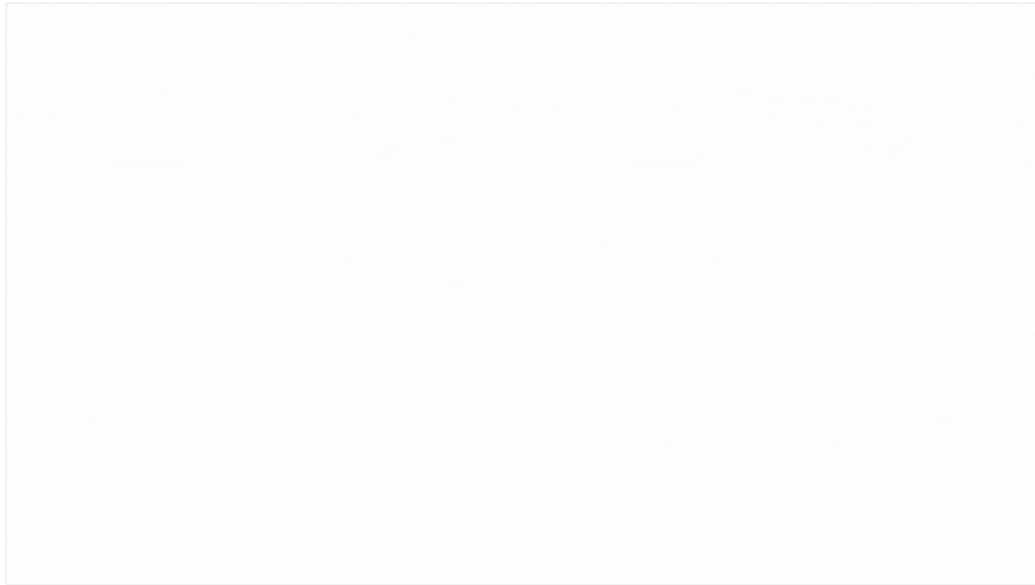
- Parametric Voxel Form Derivation
- Age X-factor Integration
- Programmatic Accessibility Integration
- Hybrid Integration Circulation
- Natural System
- i_PLEXUS Ecosystem

FORM DERIVATION

MASS MORPHING

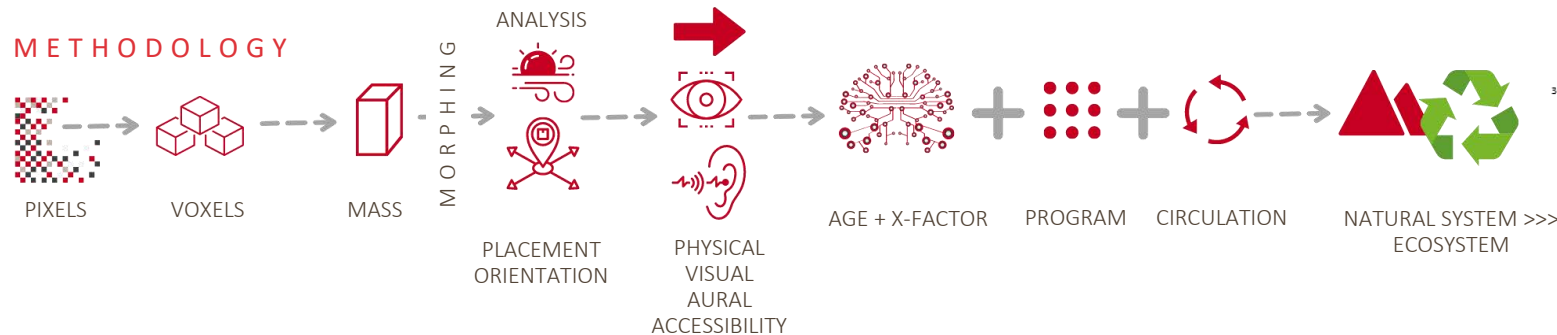
Introduction + Methodology + Parametric Lines Matrix

For evolving and testing out our ecological interrogation on a larger scale i.e., a skyscraper, **FORM DERIVATION** was done through a *pixel/voxel approach morphed using parametric lines derived from site analysis* and then **integrated** with our *programmatic + accessibility + circulation hybrid generators, natural system of termite hills* as well as *overlayed with ecological aspirations* which helped formulate **OUR I_PLEXUS BUILDING FORM, PROGRAMMATIC COMPONENTS and THE I_PLEXUS ECOSYSTEM.**



Floor Plate = 48 x 48 m
 1 Pixel = 3 x 3 m
 Height of 1 floor = 4.5 m
 Height of 1 Pixel = 4.5 m
 Total no. of Pixels (per floor) = 256
 Total no. of Pixels (Massing) = 5120

METHODOLOGY



S. No.	Parameter (P)	Line (UCode (PL))	Address (Co-ordinates)	Dimension (m)	Direction	Level (m)	Primary	Secondary	Tertiary	
1	P1.1 Access From Golf Course Road	L1 P1.111	Latitude: 28°26'26.83" N Longitude: 77°53'53.15" E	485	NW to SE	0	Diameter = 7 m Removes 8 voxels			
		L2 P1.112	Latitude: 28°26'26.33" N Longitude: 77°51'33" E	250	NE to SW	3	Diameter = 7 m Removes 8 voxels			
		L3 P1.113	Latitude: 28°26'26.72" N Longitude: 77°54'16" E	446	E to W	60	Diameter = 7 m Removes 8 voxels			
	P1.2 Access From Other Points	L4 P1.214	Latitude: 28°26'24.22" N Longitude: 77°52'01" E	400	NE to SW	0	Diameter = 7 m Removes 8 voxels			
		L5 P1.215	Latitude: 28°26'25.13" N Longitude: 77°52'08" E	265	NW to SE	0	Diameter = 7 m Removes 8 voxels			
		L6 P1.216	Latitude: 28°26'27.83" N Longitude: 77°52'21" E	1,455	NE to SW	0	Diameter = 7 m Removes 8 voxels		Diameter = 3 m Removes 1 voxel	
		L7 P2.117	Latitude: 28°26'38" N Longitude: 77°52'05" E	490	NW to SE	9	Diameter = 7 m Removes 8 voxels			
	2	P2.1 Visual Access From Site	L8 P2.118	Latitude: 28°26'28" N Longitude: 77°51'11" E	390	E to W	54	Diameter = 5 m Removes 4 voxels		
			L9 P2.119	Latitude: 28°26'26" N Longitude: 77°50'07" E	270	SW to NE	9	Diameter = 5 m Removes 4 voxels		
		P2.2 Visual access Towards Site	L10 P2.110	Latitude: 28°26'23" N Longitude: 77°50'07" E	460	NE to SW	8	Diameter = 5 m Removes 4 voxels		
L11 P2.111			Latitude: 28°26'23" N Longitude: 77°50'07" E	445	NW to SE					
L12 P2.112			Latitude: 28°26'16" N Longitude: 77°54'44" E	573	NE to SW					
L13 P2.113			Latitude: 28°26'22" N Longitude: 77°54'44" E	345	NE to SW					
L14 P2.114			Latitude: 28°26'20" N Longitude: 77°53'35" E	580	SE to NW					
L15 P2.215			Latitude: 28°26'23" N Longitude: 77°54'06" E	240	NW to SE					
L16 P2.216			Latitude: 28°26'23" N Longitude: 77°50'06" E	860	S to N					
L17 P2.217			Latitude: 28°26'25" N Longitude: 77°50'03" E	1,230	E to W	12	Diameter = 7 m Removes 8 voxels			
3	Aural Lines	L18 P2.218	Latitude: 28°26'21" N Longitude: 77°50'11" E	1,430	SE to NW	45	Diameter = 5 m Removes 4 voxels			
		L19 P2.219	Latitude: 28°26'27" N Longitude: 77°51'21" E	420	W to E					
	P2.2 Visual access Towards Site	L20 P2.210	Latitude: 28°26'25" N Longitude: 77°50'11" E	570	E to W					
		L21 P2.211	Latitude: 28°26'31" N Longitude: 77°54'47" E	280	NE to SW	48	Diameter = 3 m Removes 1 voxel			
		L22 P2.212	Latitude: 28°26'29" N Longitude: 77°54'09" E	230	NE to SW					
		L23 P2.213	Latitude: 28°26'31" N Longitude: 77°54'07" E	350	SE to NW					
		L24 P2.214	Latitude: 28°26'33" N Longitude: 77°54'45" E	1,300	NE to SW	36	Diameter = 5 m Removes 4 voxels			
		L25 P2.215	Latitude: 28°26'26.85" N Longitude: 77°53'15" E	1,245	NE to SW					
		L26 P2.216	Latitude: 28°26'26.33" N Longitude: 77°51'33" E	450	NE to SW					
		L27 P2.217	Latitude: 28°26'26.72" N Longitude: 77°54'16" E	450	SE to NW					
3	Aural Lines	L28 P3L28	Latitude: 28°26'32" N Longitude: 77°54'47" E	95-120	NW to SE	3	Diameter = 7 m Removes 8 voxels			
		L29 P3L29	Latitude: 28°26'34" N Longitude: 77°54'48" E	0-30	N to S	9	Diameter = 5 m Removes 4 voxels			
	P3L30	L30 P3L30	Latitude: 28°26'37" N Longitude: 77°54'49" E	50-95	NW to SE	15	Diameter = 5 m Removes 4 voxels			
		L31 P3L31	Latitude: 28°26'50" N Longitude: 77°54'50" E	60-95	NW to SE	15				
		L32 P3L32	Latitude: 28°26'50" N Longitude: 77°54'51" E	95-120	NE to SW	21				
		L33 P3L33	Latitude: 28°26'35" N Longitude: 77°51'11" E	0-30	E to W	27	Diameter = 3 m Removes 1 voxel			
		L34 P3L34	Latitude: 28°26'35" N Longitude: 77°50'03" E	60-95	E to W	33	Diameter = 3 m Removes 1 voxel			
		L35 P3L35	Latitude: 28°26'16" N Longitude: 77°51'11" E	95-120	N to S	39	Diameter = 3 m Removes 1 voxel			
		L36 P3L36	Latitude: 28°26'15" N Longitude: 77°53'33" E	0-30	S to N	45	Diameter = 3 m Removes 1 voxel			
		L37 P3L37	Latitude: 28°26'20" N Longitude: 77°54'54" E	60-95	SE to NW	54	Diameter = 3 m Removes 1 voxel			
L38 P3L38	Latitude: 28°26'25" N Longitude: 77°53'33" E	95-120	W to E	57	Diameter = 3 m Removes 1 voxel					

PARAMETRIC LINES MATRIX

FORM DERIVATION

MASS MORPHING

 POSITION + PLACEMENT + ORIENTATION

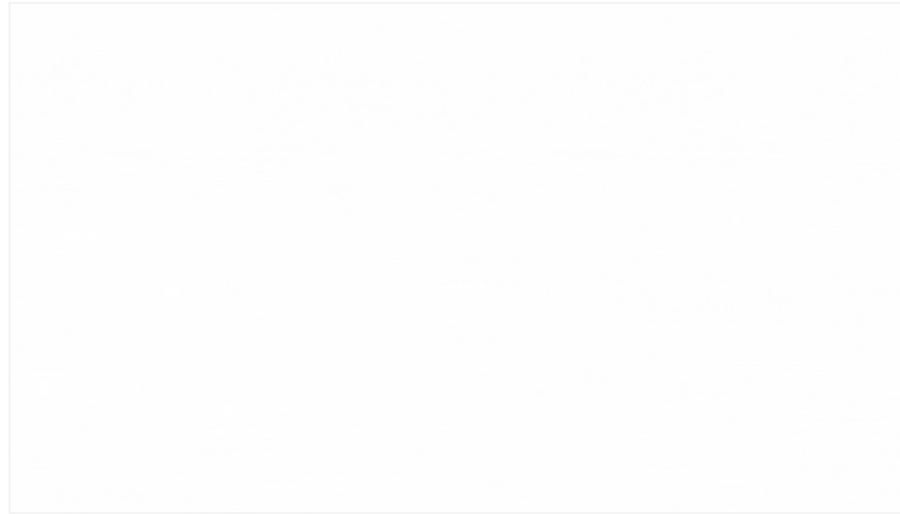
SUN ANALYSIS

Sun Direction: 126.18° SE ↑
 Sun Altitude: 54.02°
 Sun Distance: 149.484 million km
 Next Solstice: 21 Jun 2021 09:02 (Summer)
 Sunrise: 06:12 ↑ 84° East
 Sunset: 18:39 ↑ 276° West

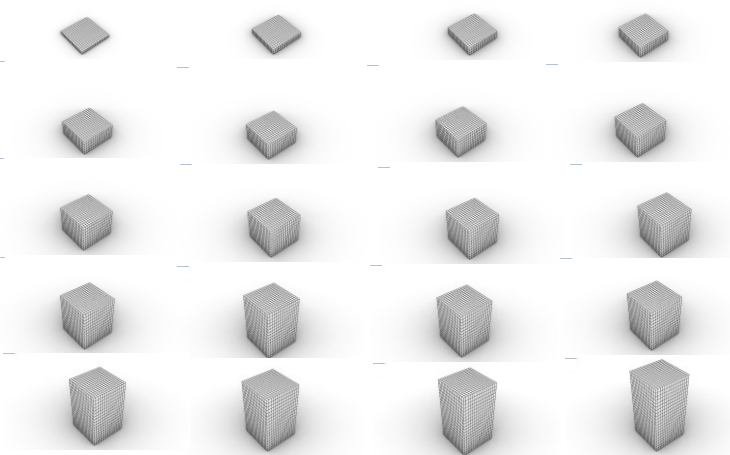
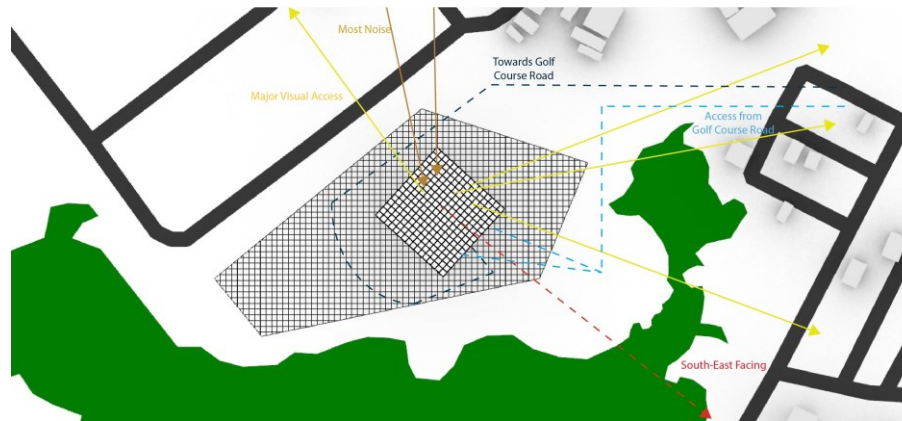
WIND ANALYSIS

Speed: 5 m/s
 Direction: Northwest
 Temperature: +31 °C
 Average Weather: Clear sky

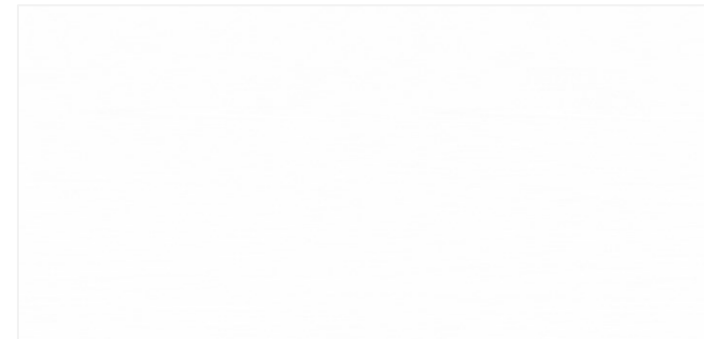
ORIENTATION The building faces in southeast direction towards the golf course Road. The entrance and exit is from the same side. Most noise comes from the North & Northwest direction and then ranges in a spiral form. Visual access from the building (level 17, 18, 19 & 20) is of most importance as it gives a clear view of the DLF Golf Club.



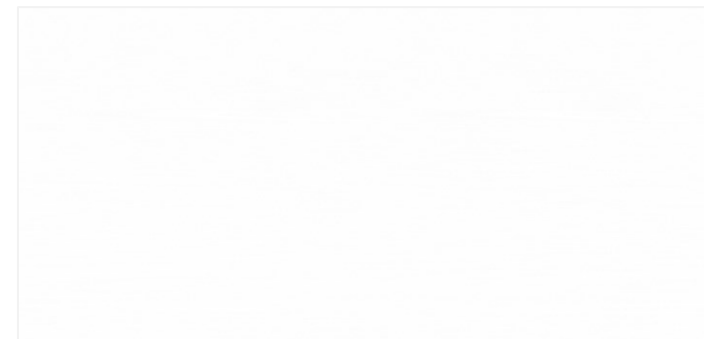
POSITION & PLACEMENT: South-East facing, Wind Impact from all sides- need for chamfering corners



ACCESSIBILITY: Lines of accessibility intersecting on site



VISUAL ACCESS: Lines of visual access intersecting



AURAL ACCESS: Waves of different frequencies

FORM DERIVATION

MASS MORPHING ACCESSIBILITY PVA physical visual aural

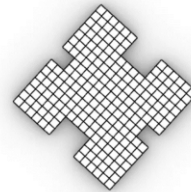
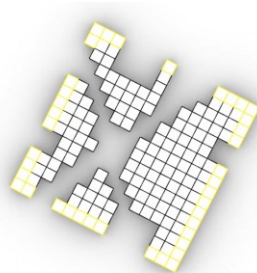
WIND HARNESS: Rotating every 3 floors at 15 degree angle to avoid strong winds coming from North-West direction to tackle the problem of corners losing mass

S. No.	Level (n)	Side 1 (S1)	Side 2 (S2)	Side 3 (S3)	Side 4 (S4)	Side 5 (S5)	Side 6 (S6)	Side 7 (S7)	Side 8 (S8)	Angle of Torsion
1	Level 00	18	18	21	21	18	18	21	21	15 degrees
2	Level 01	21	15	24	18	21	15	24	18	15 degrees
3	Level 02	24	12	27	15	24	12	27	15	15 degrees
4	Level 03	27	9	30	12	27	9	30	12	30 degrees
5	Level 04	30	6	33	9	30	6	33	9	30 degrees
6	Level 05	33	3	36	6	33	3	36	6	30 degrees
7	Level 06	36	0	39	3	36	0	39	3	45 degrees
8	Level 07	0	33	0	30	0	33	0	30	45 degrees
9	Level 08	3	39	3	39	3	39	3	39	45 degrees
10	Level 09	6	36	6	36	6	36	6	36	60 degrees
11	Level 10	9	33	9	33	9	33	9	33	60 degrees
12	Level 11	12	30	12	30	12	30	12	30	60 degrees
13	Level 12	15	27	15	27	15	27	15	27	75 degrees
14	Level 13	18	24	18	24	18	24	18	24	75 degrees
15	Level 14	21	21	21	21	21	21	21	21	75 degrees
16	Level 15	24	18	24	18	24	18	24	18	90 degrees
17	Level 16	27	15	27	15	27	15	27	15	90 degrees
18	Level 17	30	12	30	12	30	12	30	12	90 degrees
19	Level 18	33	9	33	9	33	9	33	9	105 degrees
20	Level 19	36	6	36	6	36	6	36	6	105 degrees
21	Level 20	39	3	39	3	39	3	39	3	105 degrees

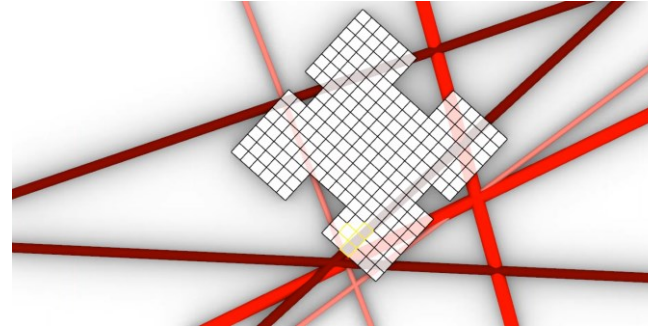
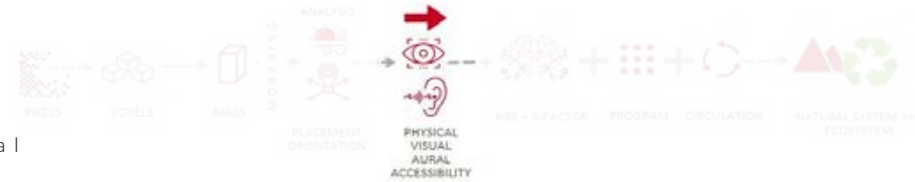
All dimensions in m

BROAD TO NARROW: The structure grows level-wise and certain no. of voxels are removed on the basis of the form For eg.

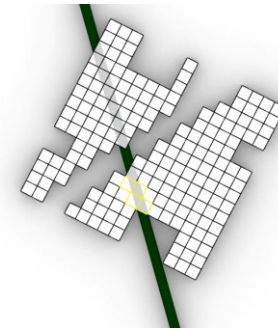
The voxels on level 00, 01, 02 are not removed, voxels on level 03, 04, 05 are removed in bands of 6 m and then 9 m and then back to 3 m



AURAL ACCESS: Displacement and removal of voxels on the basis of aural spiral



ACCESSIBILITY: Removal of Voxels



VISUAL ACCESS: Displacement of Voxels

ACCESS

There is an entrance provided at the SE direction. Access for metro provided at levels 3 and 4. Access for uber air on the terrace

VISUAL ACCESS

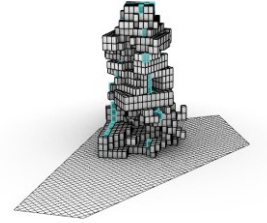
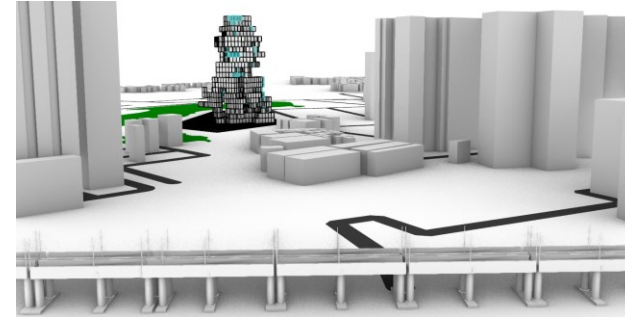
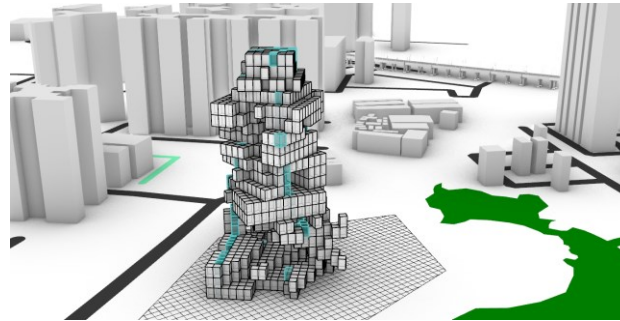
Visual access from Golf Course Road is given more importance on ground level and the 20th level as it provides the view of the whole golf course road and the DLF Golf Club

AURAL ACCESS

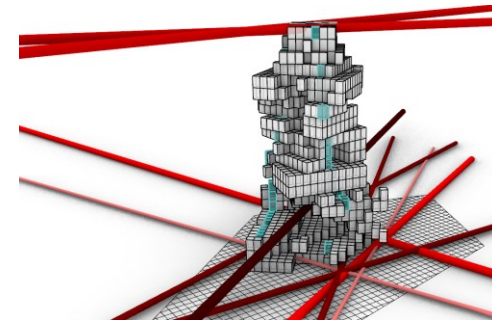
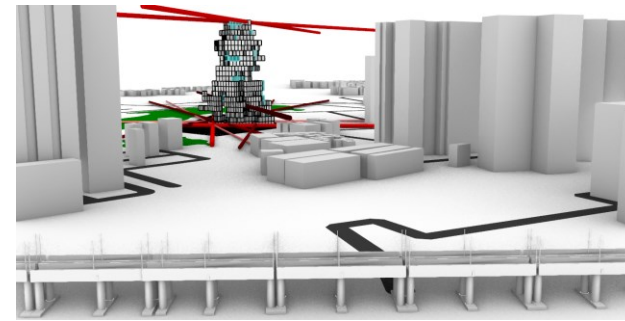
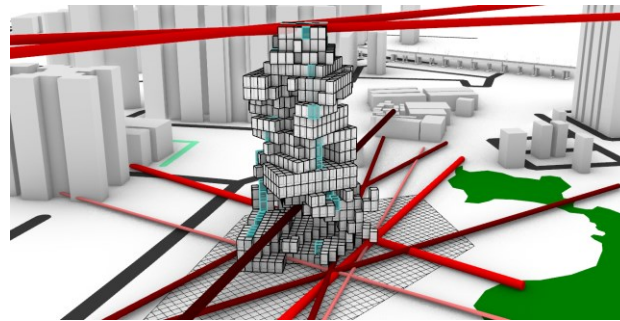
The noise analysis for the site shows that in 1 km radius, the noise keeps ranging from high to low to medium and then high again

FORM DERIVATION

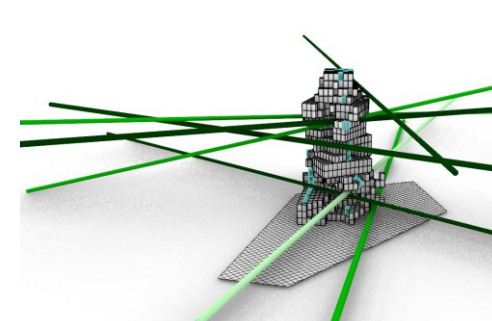
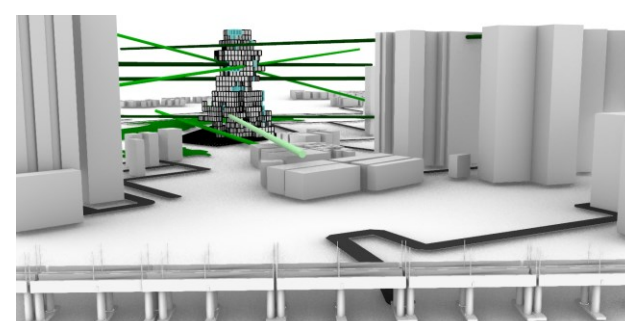
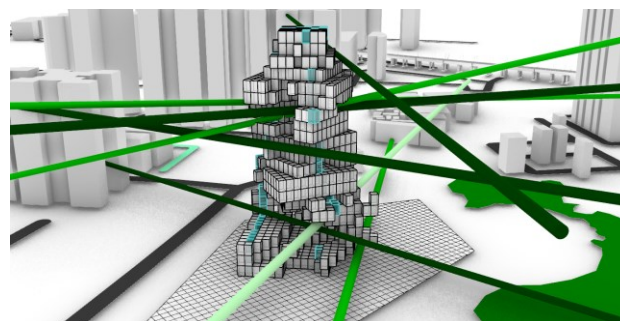
MASS MORPHING ACCESSIBILITY PVA physical visual aural



MORPH 1: ORIENTATION POSITION PLACEMENT



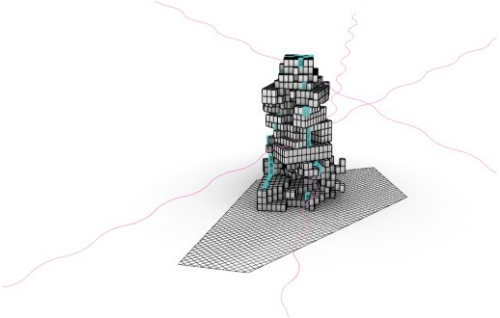
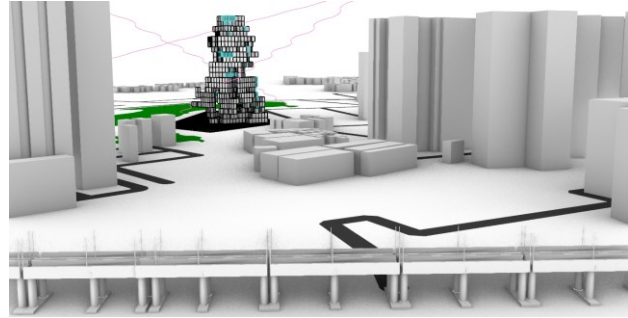
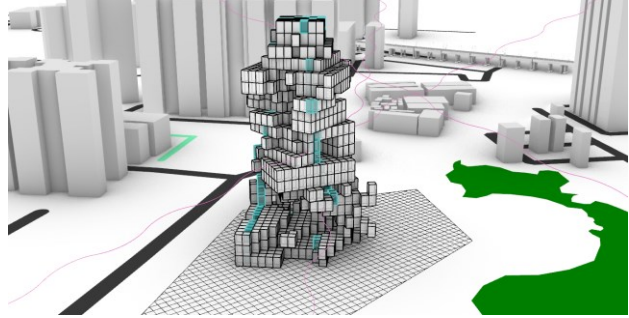
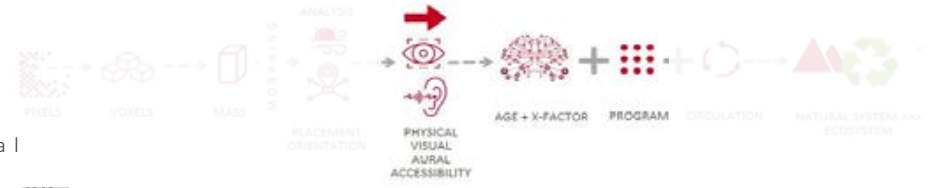
MORPH 2.1: PVA PHYSICAL ACCESSIBILITY



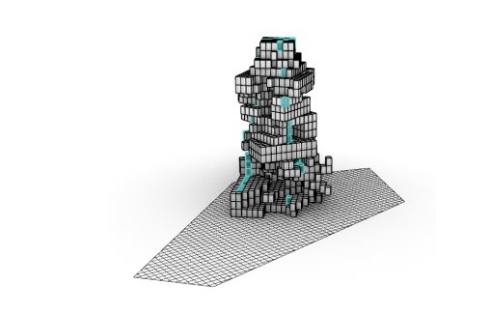
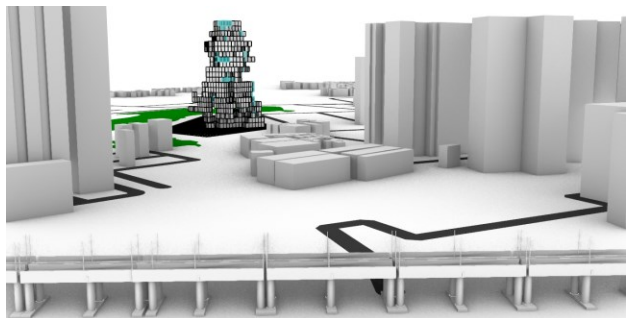
MORPH 2.2: PVA VISUAL ACCESSIBILITY

FORM DERIVATION

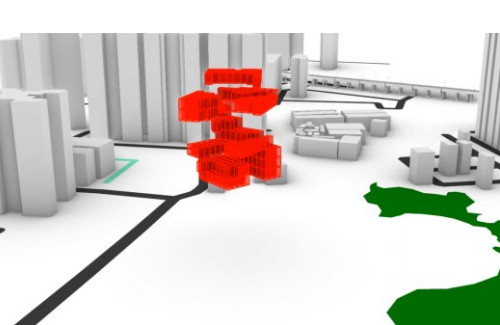
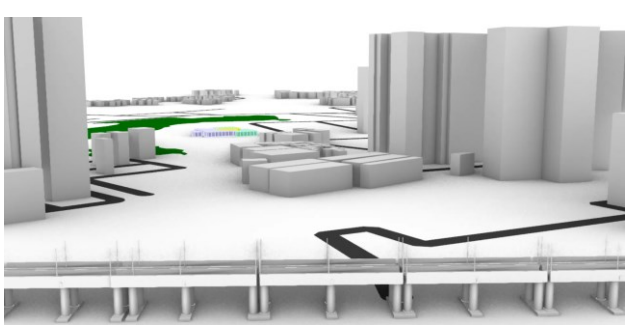
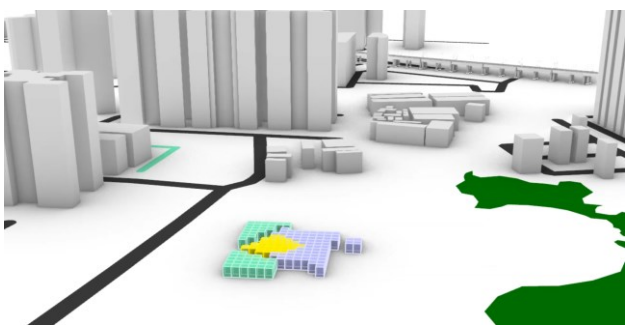
MASS MORPHING ACCESSIBILITY PVA physical visual aural



MORPH 2.3: PVA AURAL ACCESSIBILITY



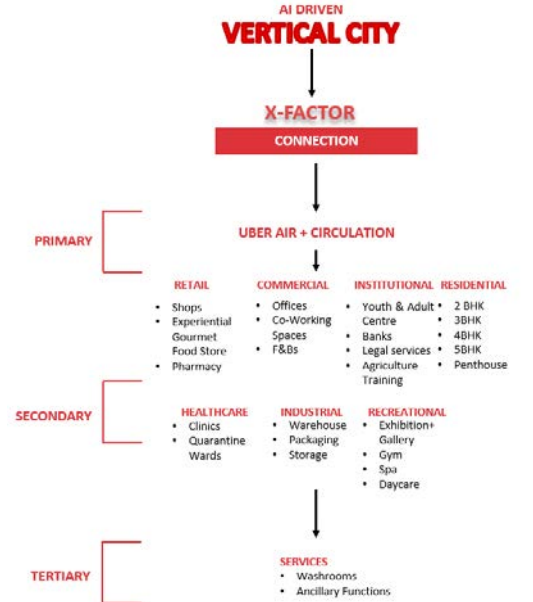
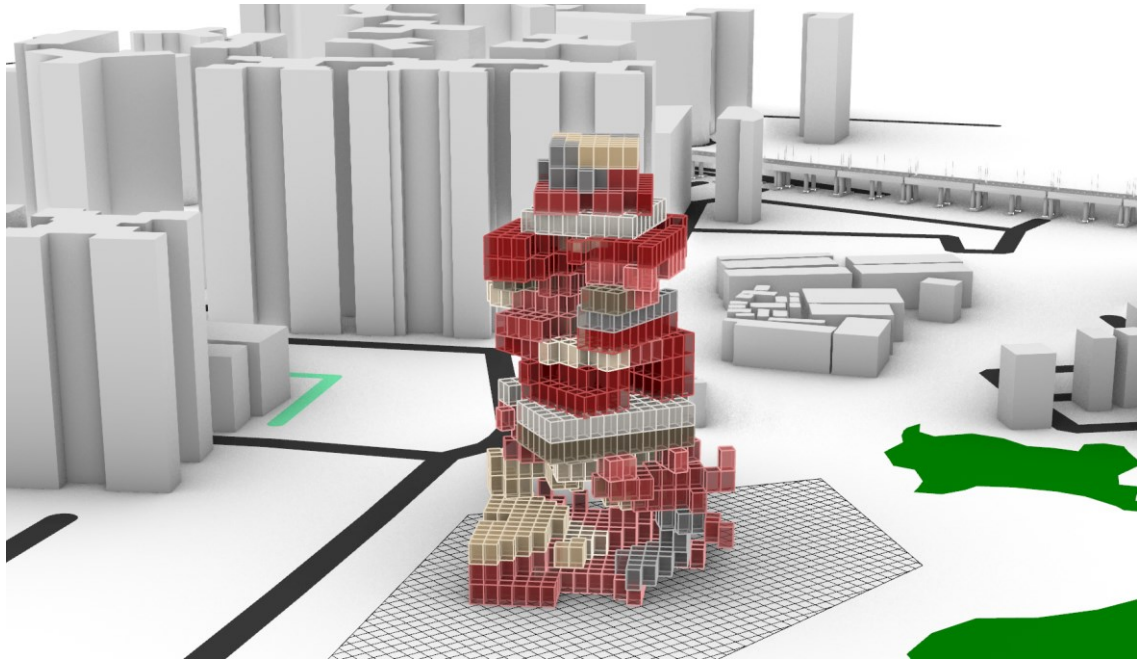
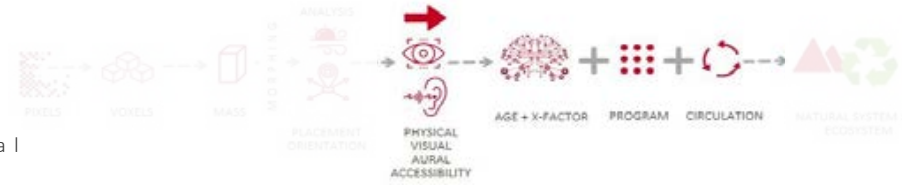
MORPH 3.1 + 3.2: AGE (OF ARTIFICIAL INTELLIGENCE) + X-FACTOR (CONNECTION)



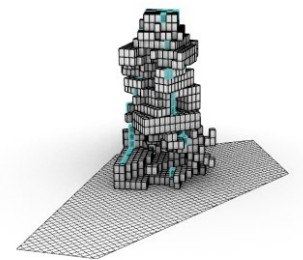
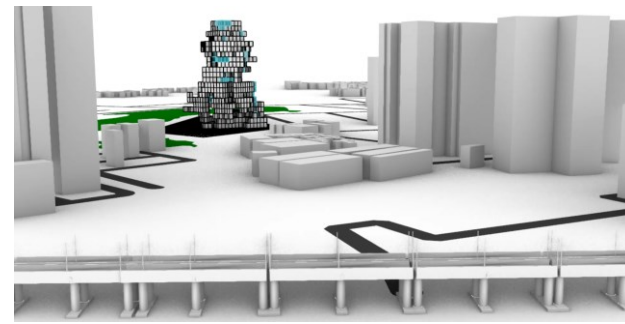
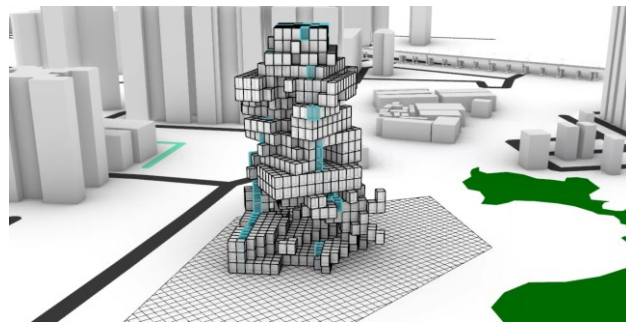
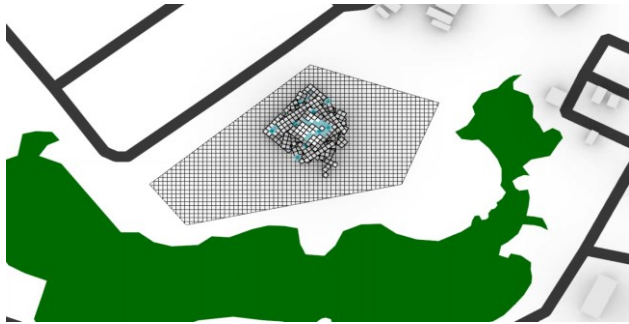
MORPH 4: PROGRAMMATIC

FORM DERIVATION

MASS MORPHING ACCESSIBILITY PVA physical visual aural

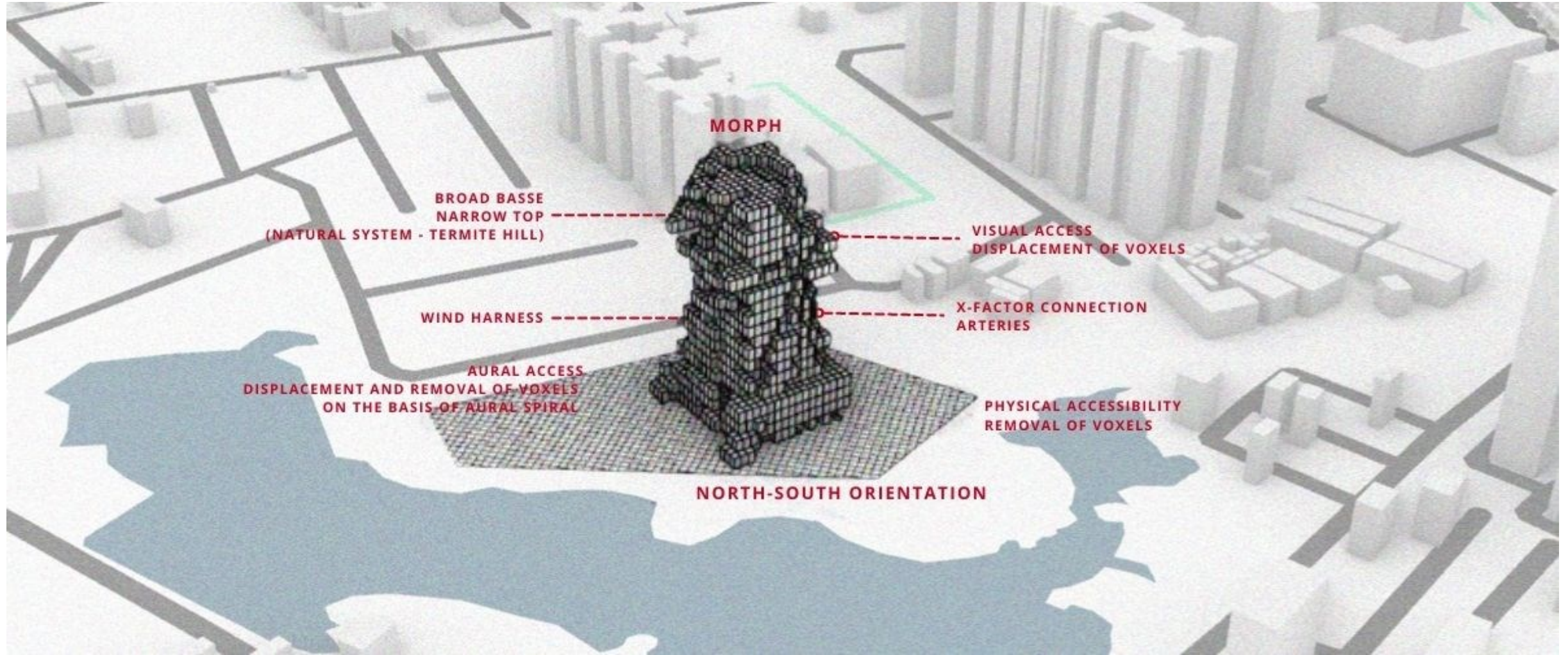
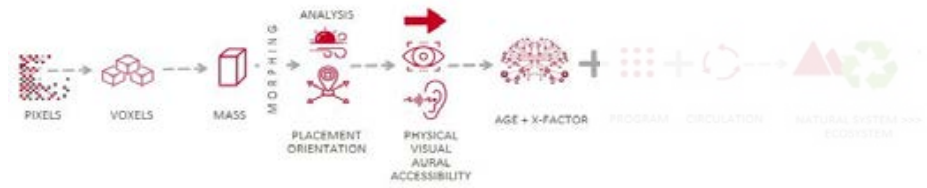


MORPH 4: PROGRAMMATIC



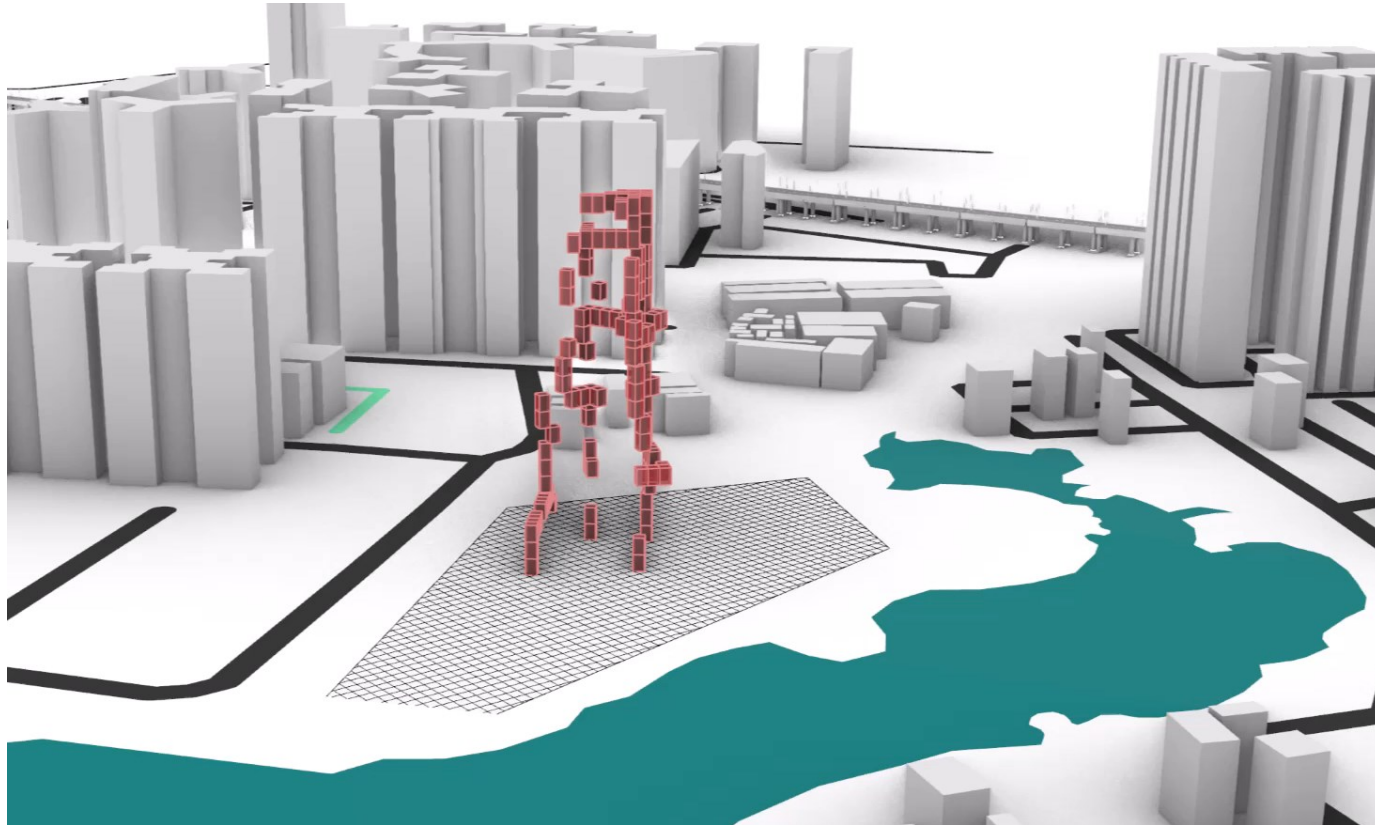
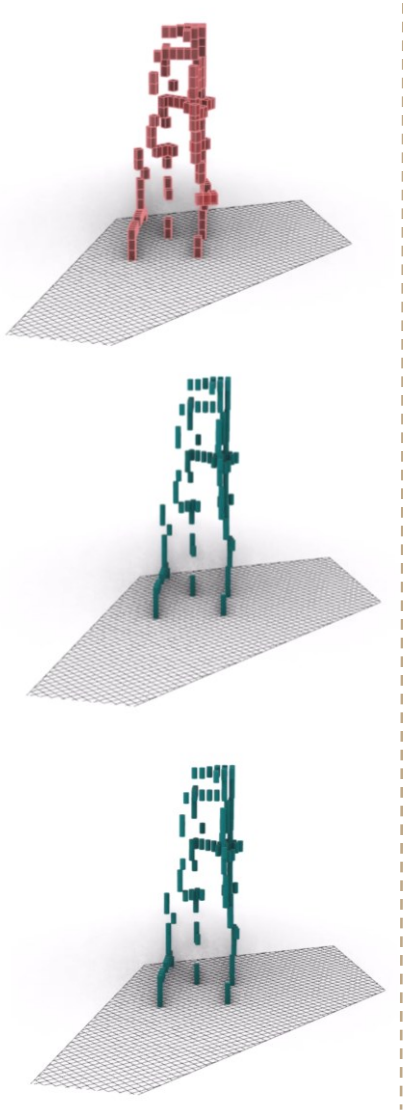
MORPH 5: HYBRID INTEGRATION CIRCULATION

MASS MORPHING



MASS MORPHING

HYBRID SYSTEM INTEGRATION – CIRCULATION + ARTERIES



VOXELS

The voxels are removed as the artery is created which creates space for movement and circulation

VOLUME

Each voxel has a volume of 40.5 cubic meter
Total volume provided for circulation = 810 sq. m.

TUBES

Each tube represents the main circulation artery of on each level and further connects with each artery for movement

PLEXUS OF ARTERIES

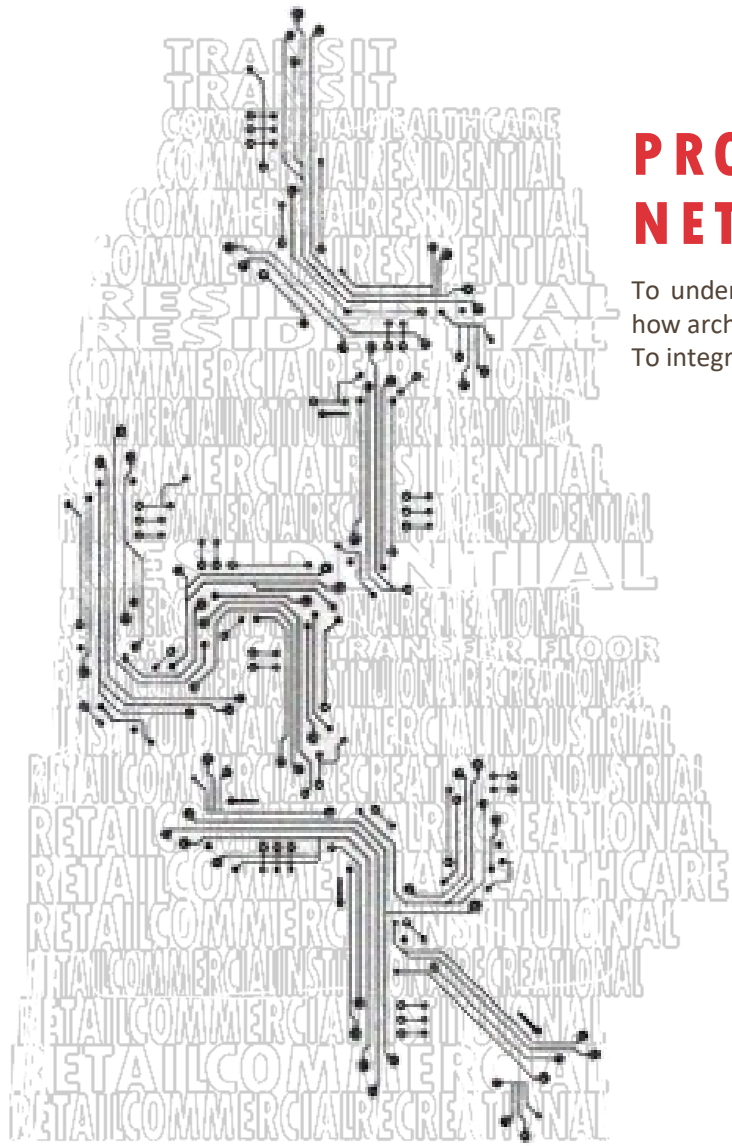
The networking and integration in the hybrid is happening through intuitive arteries that help in the circulation of the building

INTEGRATION OF PROGRAMMES

Through the artery, the programmes are integrated throughout the building, building connections and spaces to access these different programmes
It also restricts the access whether visual or aural or physical access to control the permeability of the hybrid

HEART OF THE HYBRID

Through the plexus of these circulating nerves, they have become the heart of the hybrid which not only helps in adapting to weather conditions inside the building but also provides the networking for each Programme. The programmes are like flexible arrays that can then shift according to the situations that arise

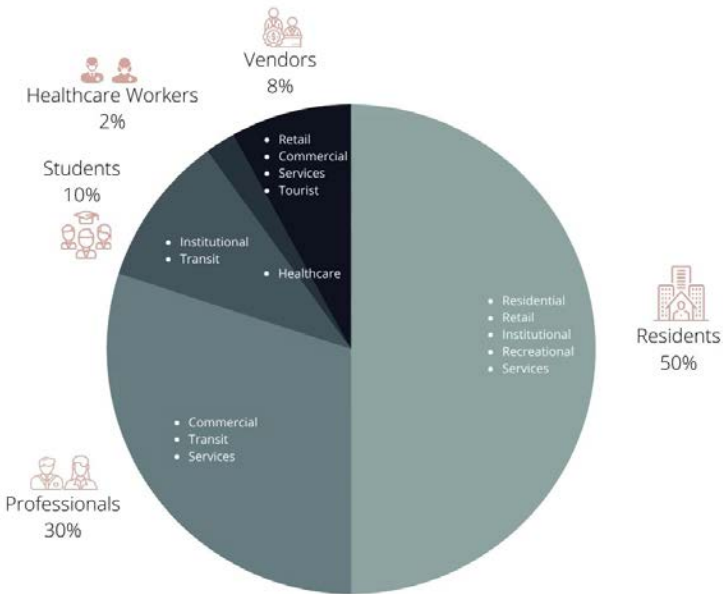


PROGRAM DELINEATION & NETWORK

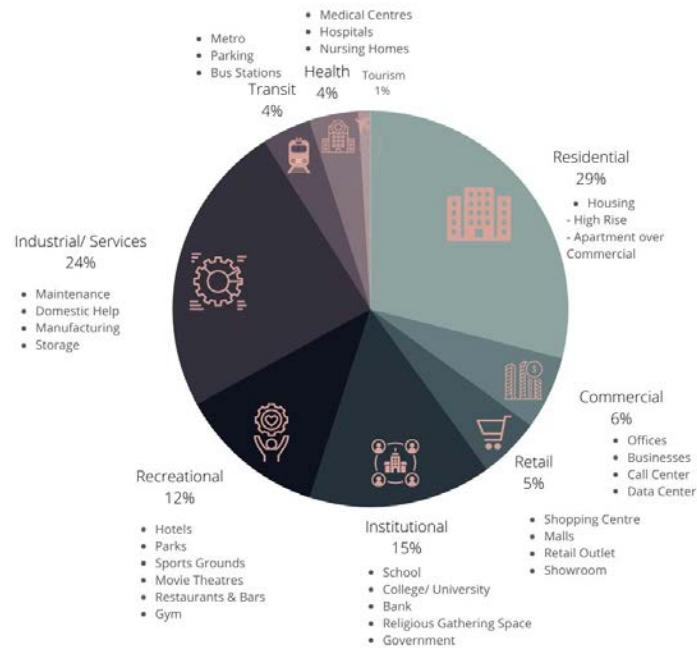
To understand the program and its programmatic components in depth and how architectural programs function.
To integrate tested programmatic components in the evolved test project.

ILLUSTRATION - PROGRAM STRATIFICATION
CONNECTION + ARTIFICIAL INTELLIGENCE

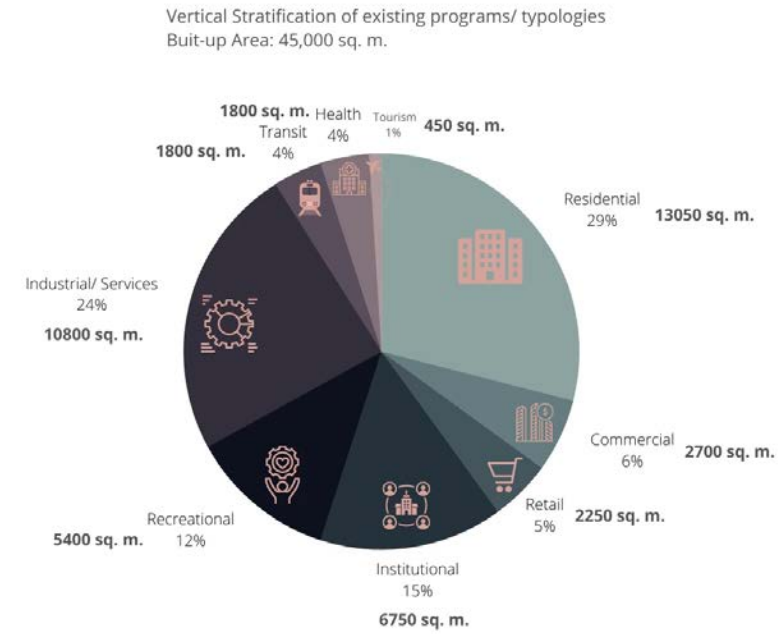
% of Users on GOLF COURSE ROAD



% of Programs/ Typologies on GOLF COURSE ROAD



% + Areas of Programs/ Typologies in NETWORK HYBRID VERTICAL CITY



PRECEDENCE STUDY 1

EPICURIA FOR PROGRAM + SPATIAL ORGANISATION

ARCHITECT: STUDIO XP
 DEVELOPER: TDI INFRATECH
 SITE AREA: 8,000 SQ M
 FAR: 2
 BUILT UP AREA: 4,000 SQ M
 GROUND COVERAGE: 50%



FRONT FAÇADE OF THE BUILDING

RELEVANCE:
 SUCCESSFUL MODEL OF A TRANSIT HUB, ALMOST THE SAME SCALE.
 SIMILAR PROGRAMMATIC COMPONENTS, HELPS IN UNDERSTANDING CIRCULATION, ORGANIZATION AND NETWORKING OF SPACES.
 PRESENCE OF ECOLOGICAL COURTYARDS.



Strategically located in the commercial Hub of South Delhi, right next to Outer Ring Road.

Arc of outer ring road, well connected and easily accessible by all modes of transport

High, medium and low density industrial, residential and public & semi-public uses

Beautifully landscaped; Spread over 2 levels; Ample parking + storage

Addition to the existing metro property at Nehru place

IT, retail shops and restaurants



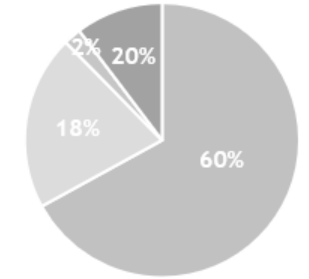
- 2 Main pedestrian **entrances** along the length + 1 Main one **axis** for vehicular movement
- **Definite visual nodes**
- **Congregation spaces** - well landscaped sunken courtyards
- The building is organised and spread more **horizontally**.
- **Pedestrian activity** is promoted by the humanising scale.
- The open space are organised in such a way that they lead to the indoor spaces.
- The **facade is linear and straight** however, the **planning and spatial organisation is staggered** and helps maintain an element of surprise.

NEHRU PLACE, NEW DELHI

BUILDING PROGRAM

- Main Component/ Primary - **CONNECTION** (parking areas + direct walking connection from the metro station)
- Secondary – Retail + Recreational spaces (F&B)
- Tertiary - Sunken Courtyards + Landscaped Walkways and Gardens + Services + Surface & Basement Parking

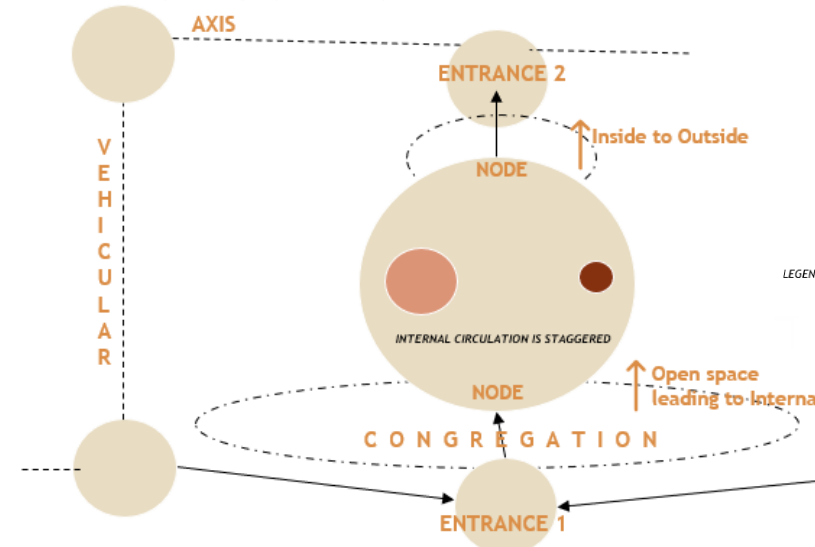
PROGRAMMATIC COMPONENTS



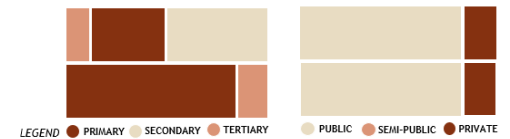
■ F&B ■ RETAIL ■ NIGHTCLUBS ■ CIRCULATION & CONGREGATION

SPATIAL ORGANISATION

SPATIAL ORGANISATION - NETWORKING



LEGEND ● PUBLIC ● SEMI-PUBLIC ● PRIVATE → PEDESTRIAN - - - VEHICULAR ○ CIRCULATION + CONGREGATION



LEGEND ● PRIMARY ● SECONDARY ● TERTIARY ● PUBLIC ● SEMI-PUBLIC ● PRIVATE

SPATIAL ORGANISATION - VERTICAL

- Entry level floor - Retail and a few F&B outlets
- Lower floor beneath - F&B

→ VERTICAL ZONING

PRECEDENCE STUDY 2

CYBER HUB FOR PROGRAM + SPATIAL ORGANISATION

ARCHITECT: HAFEEZ CONTRACTOR
 DEVELOPER: DLF
 SITE AREA: 10.6 Ha FAR: 3.75
 BUILT UP AREA: 4,00, 136 SQ M
 GROUND COVERAGE: 39, 332 SQ M



SOURCE: DLFCyberCity.com/ architecthafeezcontractor.com



LOCATION

Food + Retail + Entertainment area

Located on the main artery connecting Gurgaon to Delhi. NH-8. Cyber Hub is located at a prime corner of Cyber City.

Long & Linear site with multiple entrances + 3 levels + Footfall of overall 25,000

Also hosts art & cultural shows, media launches & displays

Rapid Metro runs around & connects to the DMRC. Access by public bus service is inadequate in comparison to metro, rickshaw and private vehicles.



GROUND FLOOR PLAN

RELEVANCE:

- LOCATED NEARBY TO THE SITE
- SIMILAR CONCEPT OF A TRANSIT HUB
- SAME PROGRAMMATIC COMPONENTS
- HELPS GAIN IDEA OF ORGANIZATION AND HIERARCHY OF SPACES.



DIAGRAMMATIC CROSS SECTION



SCHEMATIC CROSS SECTION

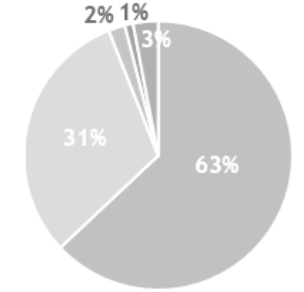
- Multiple entrances (3) along the length
- Definite **visual nodes** are created for visitor orientation and collection
- The **excitement of the Store fronts** - Organic growth pattern to the site, (rigor of a well-planned night-time urban environment with the flavours of a local souk or bazaar).
- The **street flanked by F&Bs** is vibrant with pedestrian activity which is promoted by the humanising scale and appropriate treatment of the walkways with seating available at multiple intervals.
- Staggered facade keeps the pedestrian interested. However, as the path ends abruptly, the commercial activity at the end is lesser.

GURUGRAM, HARYANA

BUILDING PROGRAM

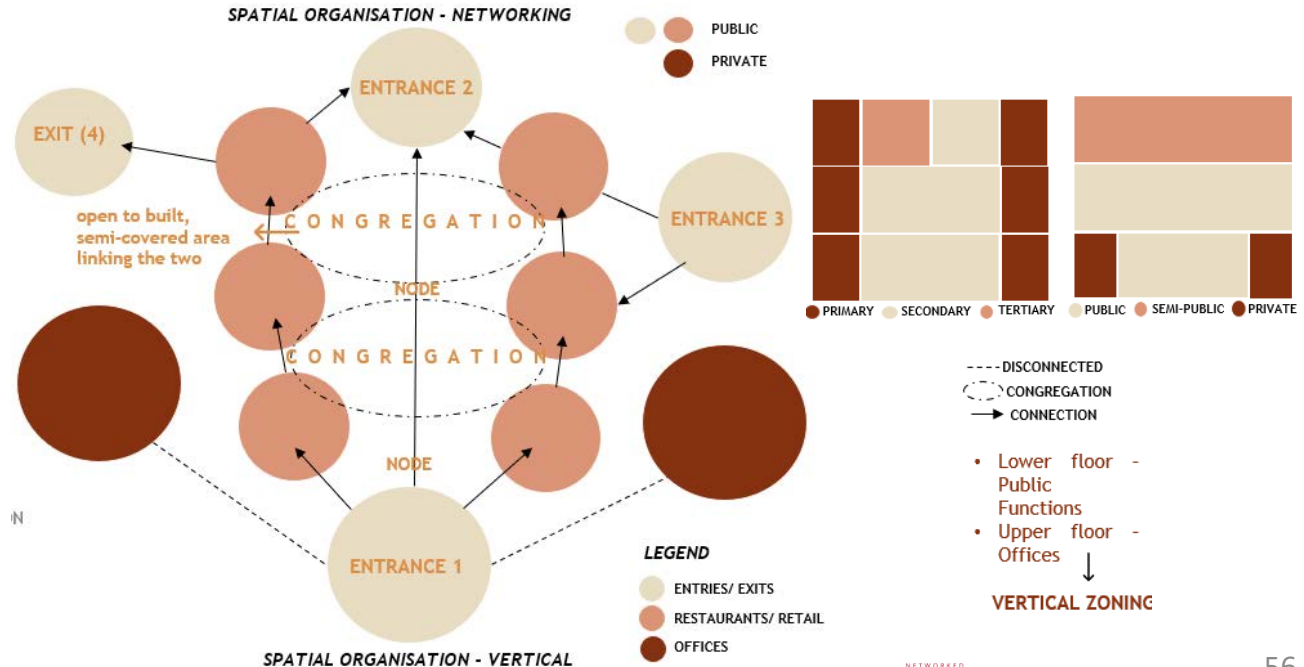
- Main Component/ Primary** – OFFICES of top IT and Fortune 500 companies
- Secondary** - Congregation and Circulation space (–Exhibit Area + Amphitheatre) + Commercial activity (F&B + Retail)
- Tertiary** – Open terraces + Services + Parking (Surface + Basement)

PROGRAMMATIC COMPONENTS



■ F&B ■ RETAIL ■ NIGHTCLUBS ■ CONGRUATION & CONGRUATION

SPATIAL ORGANISATION



FORM DERIVATION

MASS MORPHING PROGRAMMATIC - AREA STATEMENT + AREA ANALYSIS



S. NO.	CODE	PROGRAMME	FUNCTION CODE	FUNCTION	NO. OF VOXELS	NO. OF SPACES	AREA PROVIDED	AREAS PER UNIT (APPROX.)	VOLUME ANALYSIS	NO. OF OCCUPANTS	REMARKS	PUBLIC	SEMI-PUBLIC	PRIVATE	PRIMARY	SECONDARY	TERTIARY		
1	p1	RETAIL	p1.1	SMALL SHOP	66	22	616	28 (per shop)	891	14	far								
			p1.2	BIG SHOP (WITH TRIAL ROOMS)	44	11	396	36 (per shop)	445.5	18	far								
			p1.3	BIG SHOP (DOUBLE FLOOR)	48	6	432	72 (per shop)	486	36	far								
			p1.4	GROCERY STORE	24	1	222	111 (per floor)	972	75	far								
2.1	p2.1	COMMERCIAL (OFFICE & ADMIN)	p2.1.1	CABIN	74	37	740	20 (per cabin)	2,997	10	far								
			p2.1.2	MEETING ROOM	20	10	200	20 (per room)	810	10	far								
			p2.1.3	CONFERENCE ROOM	32	8	320	40 (per room)	1,296	20	far								
			p2.1.4	CO-WORKING SPACE	22	2	200	100 (per space)	891	50	far								
			p2.1.5	BREAK ROOM	2	2	18	9 (per room)	81	5	far								
2.2	p2.2	COMMERCIAL (F&B OUTLETS)	p2.2.1	CAFÉ	21	7	245	35	851	15	far								
			p2.2.2	BAR	10	2	80	40	405	15	far								
			p2.2.3	RESTAURANT	24	2	222	111	972	50	far								
			p2.2.4	FOOD COURT	15	1	140	140	608	70	far								
3	p3	RECREATIONAL SPACE	p3.1	EXHIBITION SPACE	19	1	174	174	776	36	far								
			p3.2	YOUTH & ADULT CENTER	17	1	153	153	689	102	far								
			p3.3	RELIGIOUS GATHERING SPACE	14	1	126	126	567	50	far								
			p3.4	THEATRE	14	1	125	125	567	75 SEATINGS	far								
			p3.5	GYMNASIUM	20	1	180	180	810	35	far								
			p3.6	EXPERIENTIAL GOURMET FOOD SUPERSTORE	23	1	207	207	927	100	far								
4	p4	RESIDENTIAL	p4.1	2 bhk	100	1	900	90	4,050	6 per residence	far								
			p4.2	3 bhk	26	2	240	120	1,053	8 per residence	far								
			p4.3	4 bhk	72	4	648	162	2,916	10 per residence	far								
			p4.4	5 bhk	60	3	540	180	2,430	12 per residence	far								
			p4.5	PENT HOUSE	25	1	225	225	1,013	12 per residence	far								
5.2	p5.2	TRANSIT (UBER AIR)	p5.2.1	UBER AIR	25	1	250	250	1,013	far									
6	p6	INDUSTRIAL	p6.1	SMALL WAREHOUSE	12	1	108	108	486	100	far								
			p6.2	BIG WAREHOUSE	40	1	360	360	1,620	200	far								
			p6.3	PACKAGING	20	1	180	180	810	50	far								
			p6.4	SMALL STORAGE	7	1	63	63	284	35	far								
			p6.5	BIG STORAGE	15	1	135	135	608	50	far								
			p6.6	BIG STORAGE	15	1	135	135	608	50	far								
7.1	p7.1	SERVICES (RECREATION + REFECTORY)	p7.1.1	KITCHEN FACILITIES	104	13	936	72	4,212	25	far								
			p7.1.2	CAFETERIA	16	2	150	75	648	40	far								
			p7.1.3	PANTRY	3	3	27	9	122	5	far								
7.2	p7.2	SERVICES (ANCILLIARY FUNCTIONS)	p7.2.1	MEDICAL ASSISTANCE ROOM	3	1	27	27	122	8	far								
			p7.2.2	CONTROL ROOM	6	2	116	58	244	15	far								
			p7.3.1	WASHROOM (M)	80	20	720	36	3,240	10	far								
			p7.3.2	WASHROOM (F)	80	20	720	36	3,240	10	far								
			p7.3.3	HANDICAPPED WASHROOM	20	20	180	9	810	1	far								
7.3	p7.3	SERVICES (UTILITIES)	p7.3.4	MOTOR VEHICULAR PARKING	n/a	n/a	750	750											
			p7.3.5	NON-MOTOR VEHICULAR PARKING	n/a	n/a	400	400											
7.4	p7.4	SERVICES YARDS	p7.4.1	ELECTRICAL SERVICES	n/a	n/a	100	100											
			p7.4.2	MECHANICAL SERVICES	n/a	n/a	100	100											
			p7.4.3	PLUMBING SERVICES	n/a	n/a	100	100											
			p7.4.4	stp	n/a	n/a	100	100											

AREA ANALYSIS

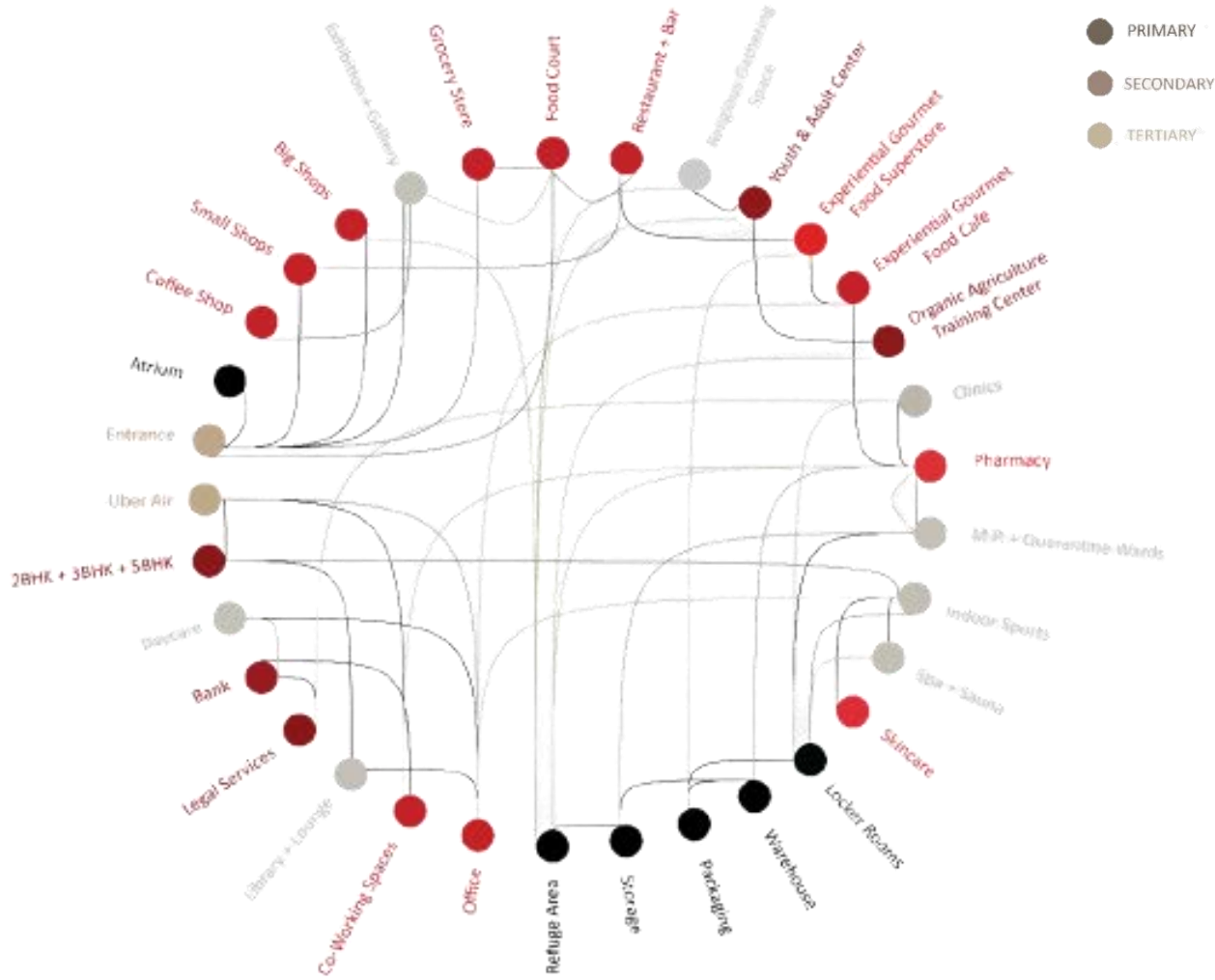
LEGEND

= 50 SQ.M = 20 SQ.M

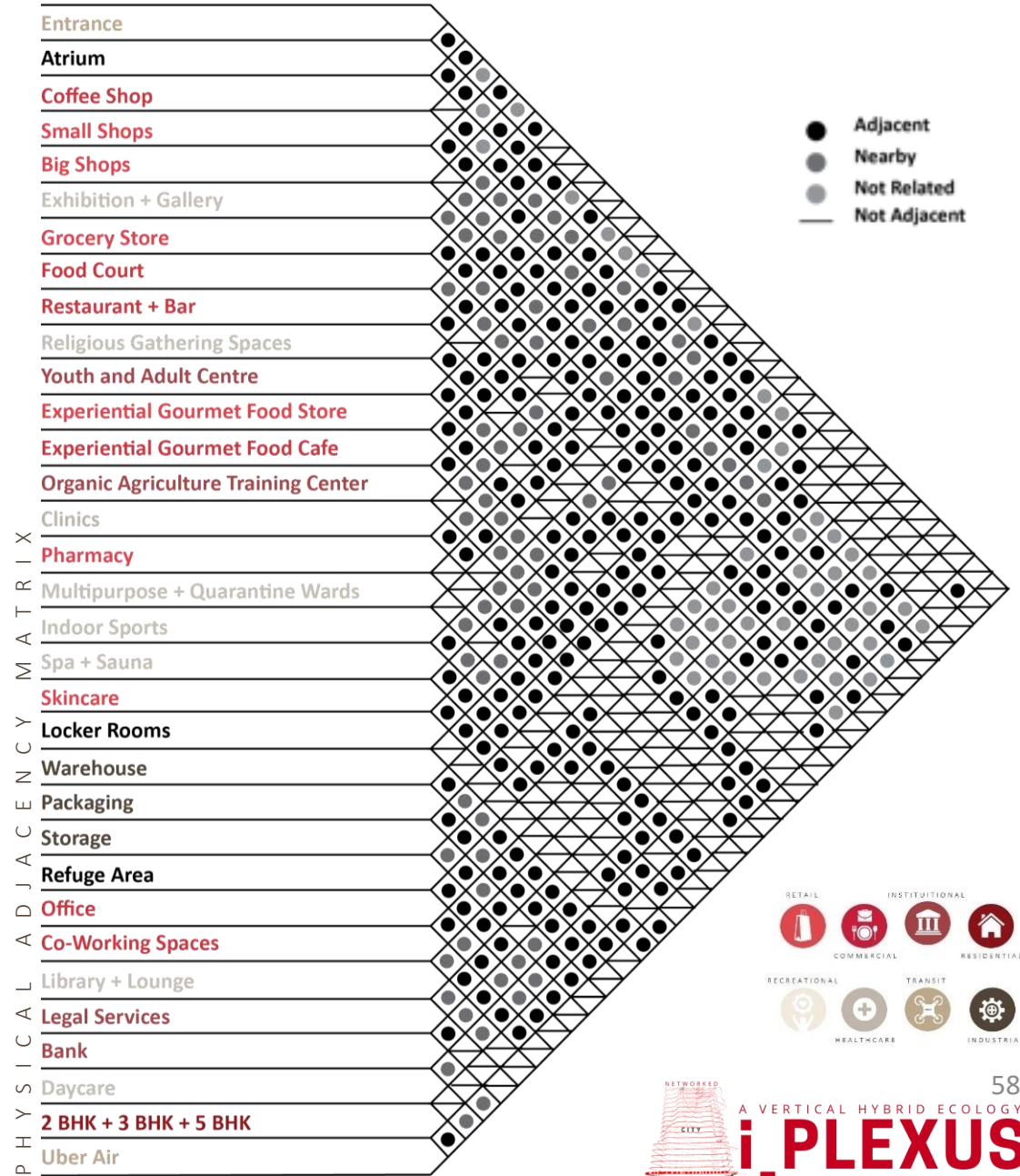
PRIMARY	Functions	Descriptions	PROGRAMMES BREF & AREA STATEMENT			Total area to be provided
			Area Analysis	Area per unit (Approx.)	Total area to be provided	
PRIMARY	Connectivity	Metro- Concourse	██████████	600 sq. m.	600 sq. m.	
		Metro- Entry + Security	██████████	200 sq. m.	200 sq. m.	
		Metro- Information Booth	██████████	30 sq. m.	60 sq. m.	
		Metro- Ticketing	██████████	5 sq. m.	30 sq. m.	
TERTIARY	Recreation + Refectory	Kitchen Facilities	██████████	80 sq. m.	400 sq. m.	
		Cafeteria	██████████	75 sq. m.	75 sq. m.	
		Pantry	██████████	8 sq. m.	8 sq. m.	
	Ancillary Functions	Warehouse/Storage Facilities	██████████	100 sq. m.	100 sq. m.	
		Medical Assistance Room	██████████	30 sq. m.	30 sq. m.	
		Control Room	██████████	58 sq. m.	58 sq. m.	
	Utilities	Washroom (F)	Washroom (F)	██████████	30 sq. m.	90 sq. m.
			Washroom (M)	██████████	30 sq. m.	90 sq. m.
		Handicapped Washroom	Handicapped Washroom	██████████	5 sq. m.	30 sq. m.
			Motor Vehicular Parking	██████████	750 sq. m.	750 sq. m.
SECONDARY	Service Yards	Non-Motor Vehicular Parking	██████████	400 sq. m.	400 sq. m.	
		Electrical Services	██████████	100 sq. m.	100 sq. m.	
	Mechanical Services	Mechanical Services	██████████	100 sq. m.	100 sq. m.	
		Plumbing Services	██████████	100 sq. m.	100 sq. m.	
	Entrance	STP	██████████	100 sq. m.	100 sq. m.	
		Entrance Foyer	██████████	200 sq. m.	200 sq. m.	
Reception		██████████	20 sq. m.	20 sq. m.		
Information Booth		██████████	10 sq. m.	10 sq. m.		
RETAIL	Ticketing	Ticketing	██████████	9 sq. m.	9 sq. m.	
		Security	██████████	7.5 sq. m.	7.5 sq. m.	
	Small Shops	Small Shops	██████████	28 sq. m.	448 sq. m.	
		Big Shops (with Trial Rooms)	██████████	84 sq. m.	252 sq. m.	
	Grocery Store	Grocery Store	██████████	111 sq. m.	111 sq. m.	
		Pharmacy	██████████	82 sq. m.	82 sq. m.	
		Restaurant	██████████	111 sq. m.	222 sq. m.	
		Food Court	██████████	140 sq. m.	140 sq. m.	
F&B Outlets	Cafe	██████████	38 sq. m.	76 sq. m.		
	Bar	██████████	40 sq. m.	40 sq. m.		
	Building Maintenance Services (BMS)	██████████	20 sq. m.	20 sq. m.		
	Conference Room	██████████	40 sq. m.	40 sq. m.		
	Meeting Room	██████████	20 sq. m.	20 sq. m.		
	Co-Working Spaces	██████████	100 sq. m.	100 sq. m.		
Administration and Offices	Cabins	██████████	20 sq. m.	20 sq. m.		

AREA STATEMENT

NETWORKING PHYSICAL + VISUAL ADJACENCY MATRIX



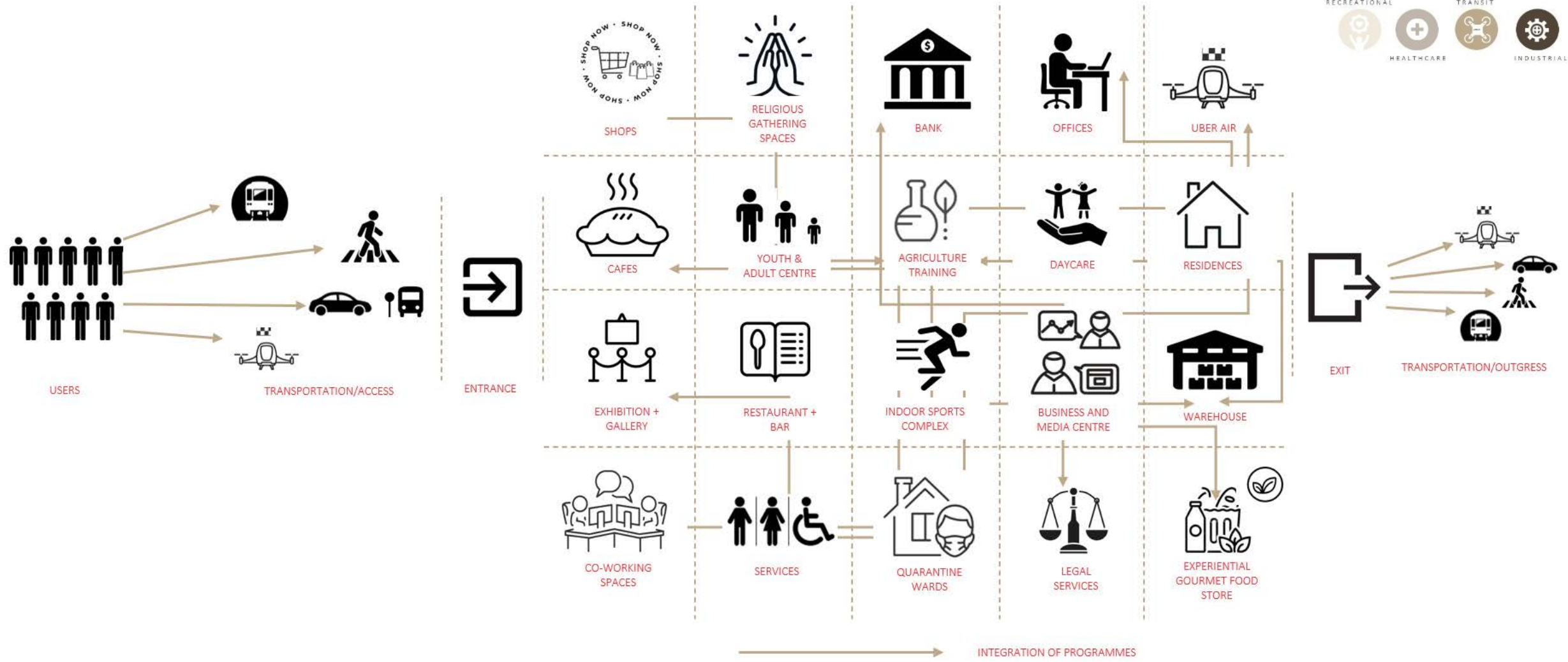
VISUAL ADJACENCY MATRIX



RETAIL COMMERCIAL INSTITUTIONAL RESIDENTIAL RECREATIONAL HEALTHCARE TRANSIT INDUSTRIAL

NETWORKING

USER NETWORK DIAGRAM



Legend for programmatic zones:

- RETAIL:** Shopping bag icon
- COMMERCIAL:** Restaurant/food icon
- INSTITUTIONAL:** Bank/building icon
- RESIDENTIAL:** House icon
- RECREATIONAL:** Person with gear icon
- HEALTHCARE:** Medical cross icon
- TRANSIT:** Drone/air icon
- INDUSTRIAL:** Gear icon

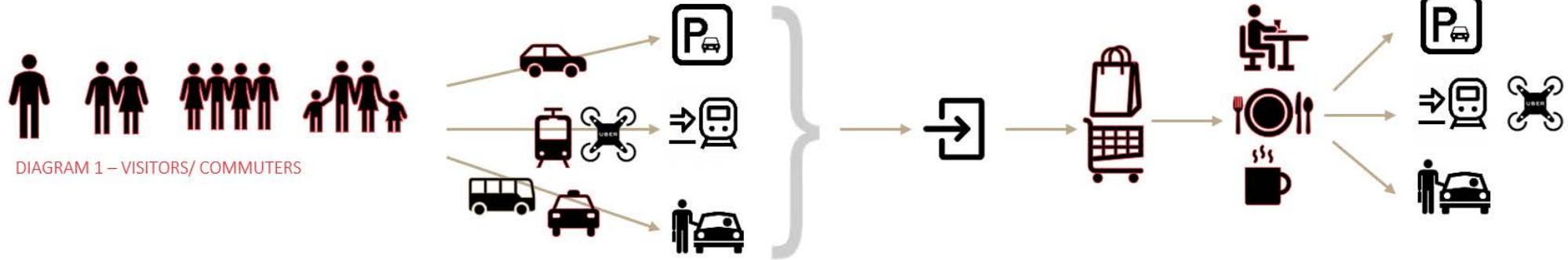


DIAGRAM 1 – VISITORS/ COMMUTERS



DIAGRAM 2 – OFFICE EMPLOYEES

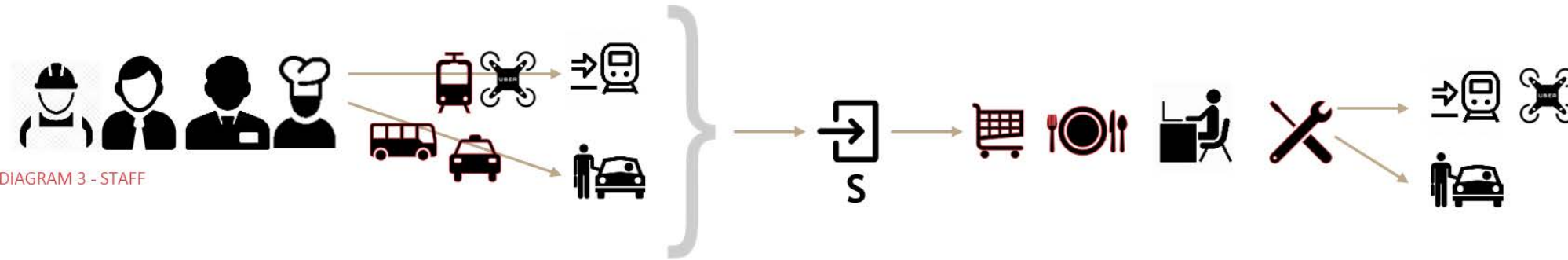
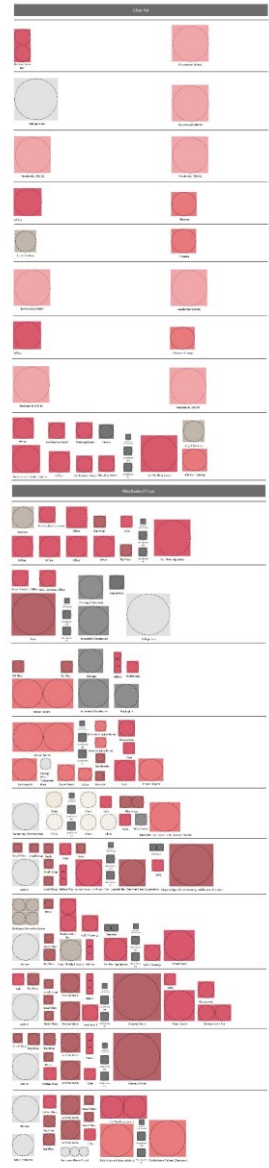
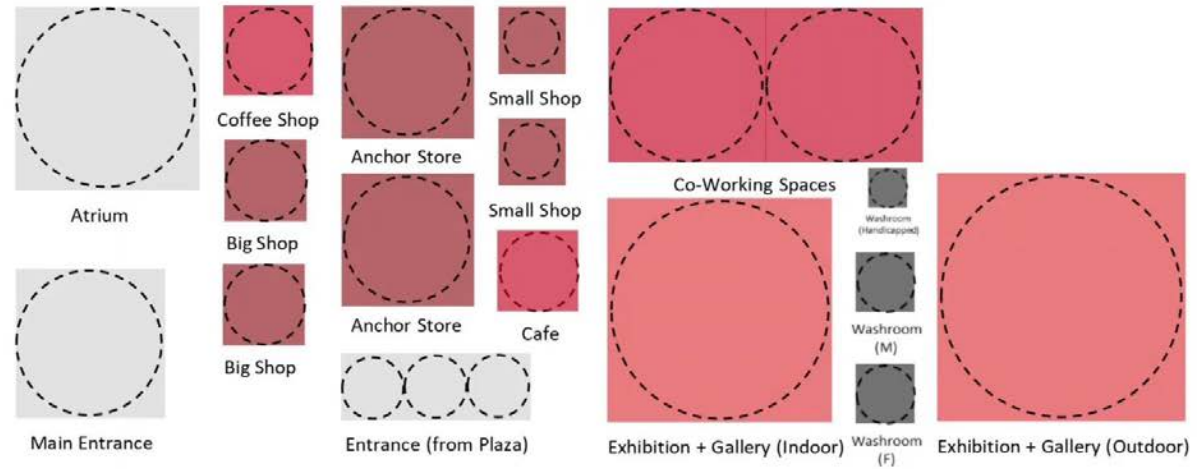
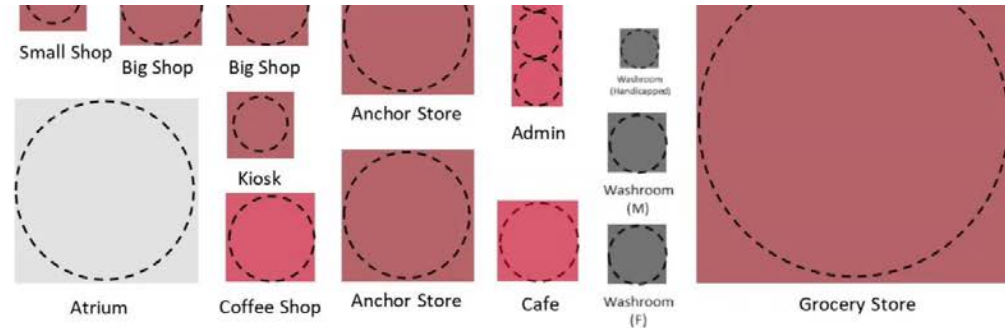
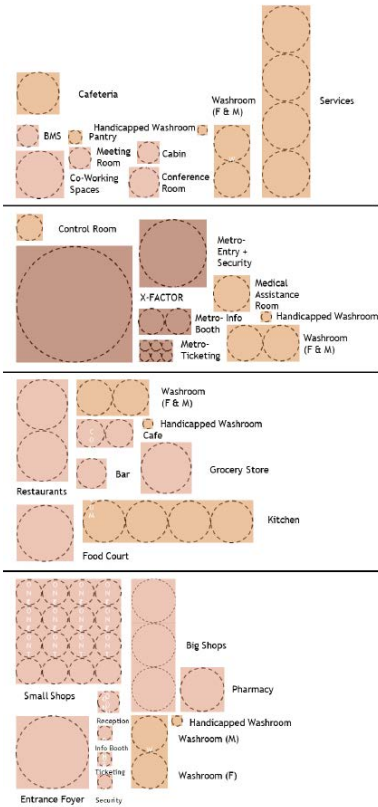


DIAGRAM 3 - STAFF



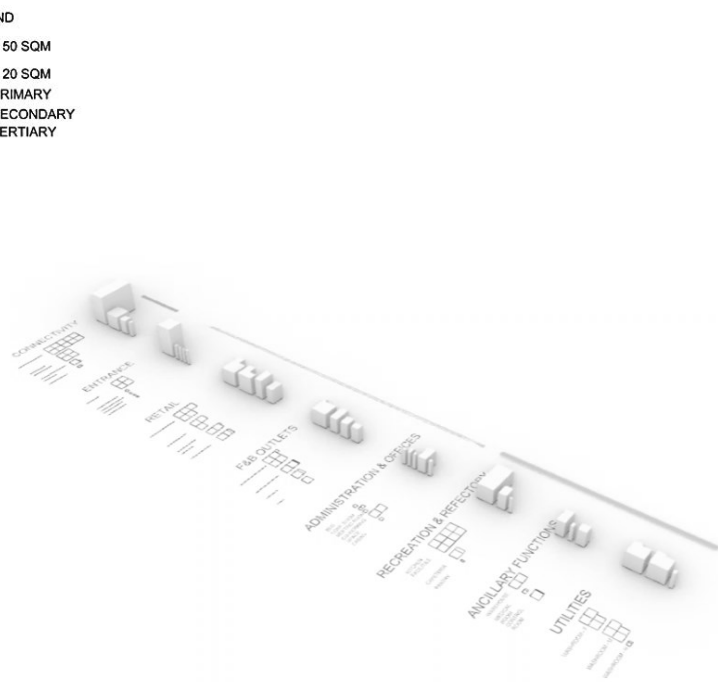
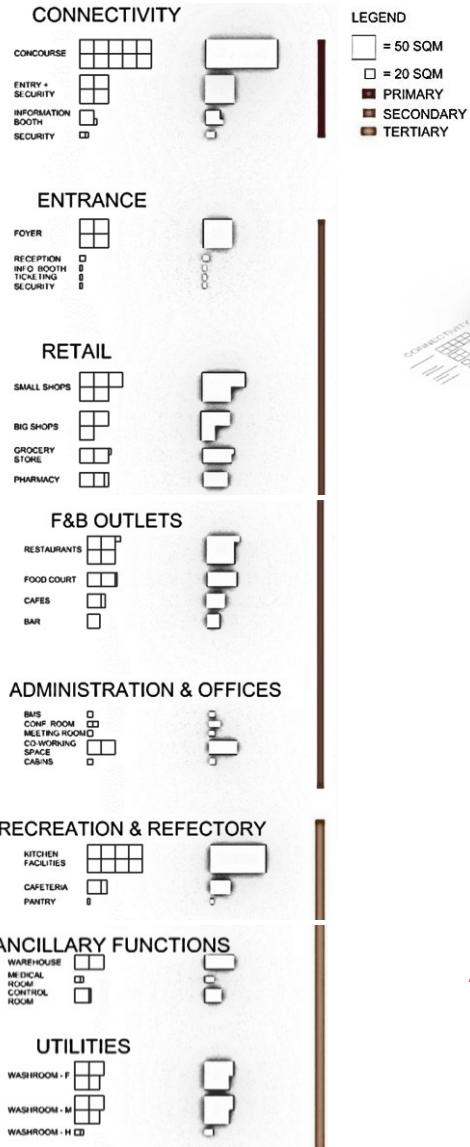
i_PLEXUS - VHC NETWORKING

HIERARCHY OF PROGRAMS



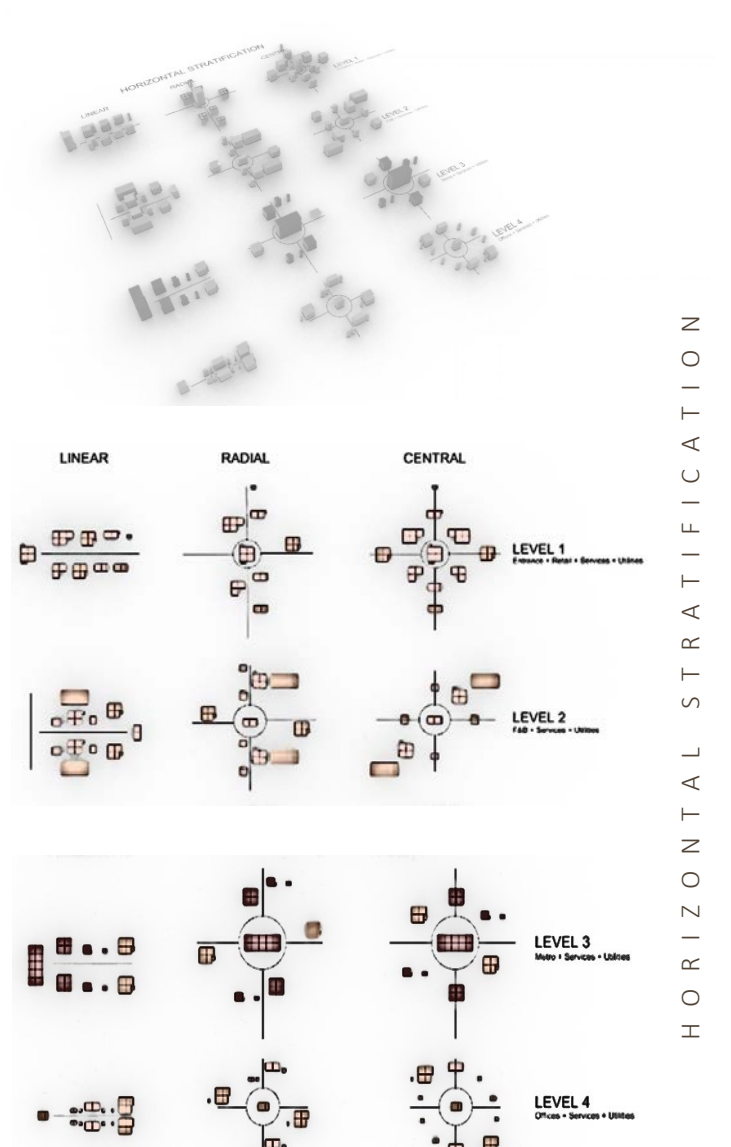
PROGRAMMATIC NETWORK LINEAR HIERARCHY
SCALE + PROPORTION | PRIMARY SECONDARY TERTIARY | HIERARCHY

NETWORKING DIMENSIONALITY + SCALE EVALUATION



AREA + VOLUMETRIC ANALYSIS

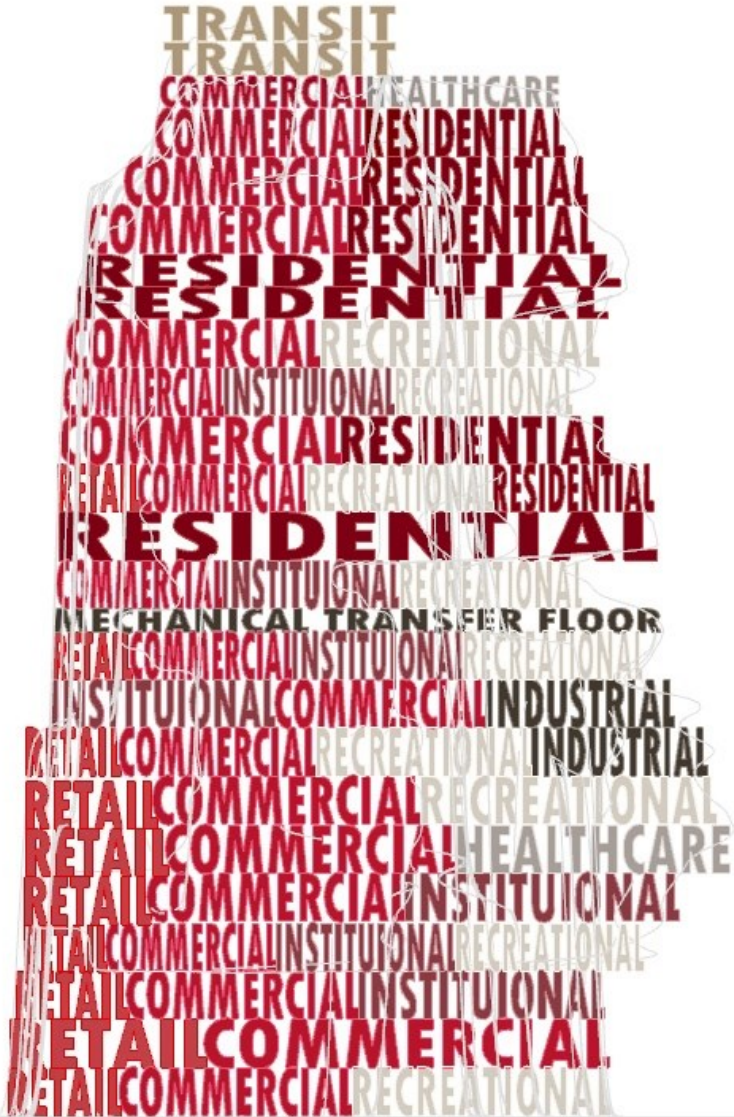
PROGRAMMATIC FUNCTIONS



VERTICAL STRATIFICATION

NETWORKING PROGRAM + FUNCTION STRATIFICATION

PROGRAM STRATIFICATION

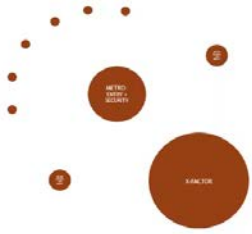


FUNCTION STRATIFICATION

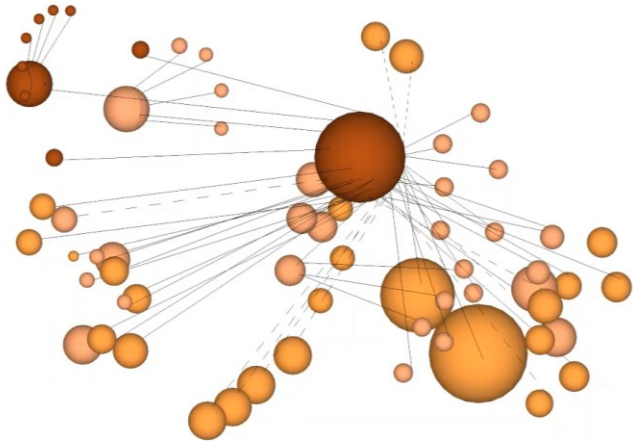


i_PLEXUS - VHC

NETWORKING 2D & 3D BUBBLE DIAGRAM

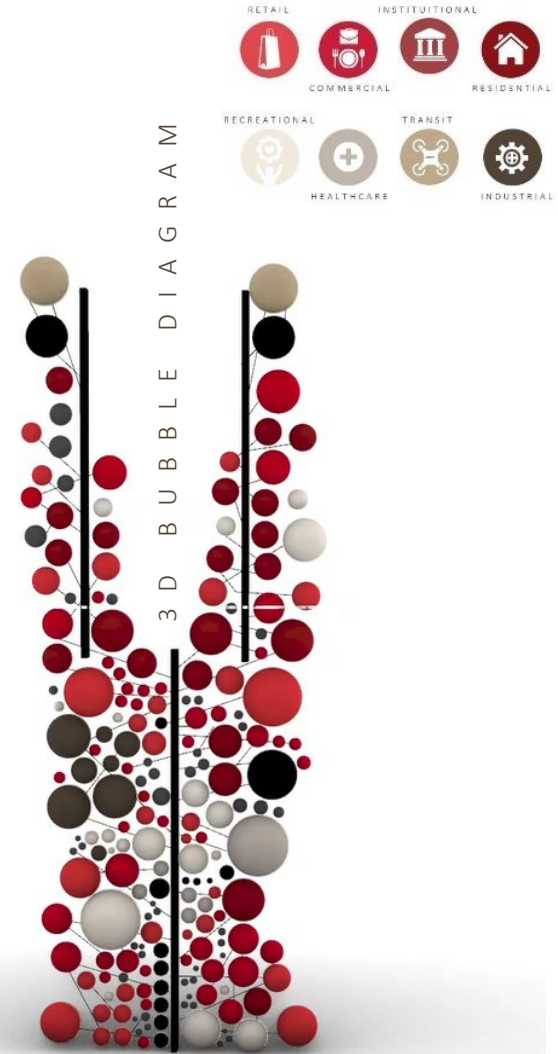


2 D SCALE + PROPORTION | PRIMARY SECONDARY TERTIARY | PUBLIC PRIVATE SEMI-PUBLIC | CONNECTIONS



3 D SCALE + PROPORTION | PRIMARY SECONDARY TERTIARY | PUBLIC PRIVATE SEMI-PUBLIC | CONNECTIONS | VOLUME OF SPACES

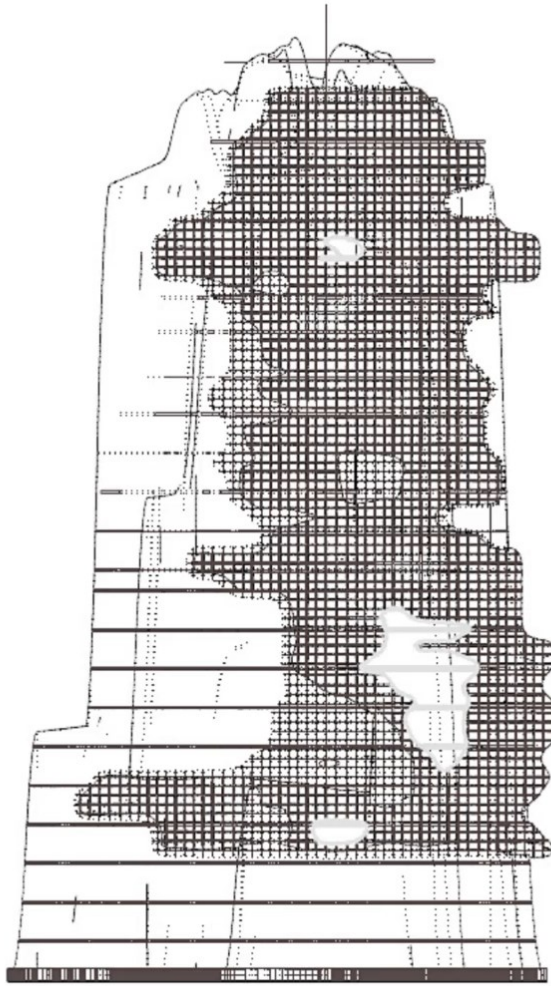
- TRANSIT
- RETAIL
- COMMERCIAL
- RECREATIONAL
- RESIDENTIAL
- HEALTHCARE
- INSTITUTIONAL
- INDUSTRIAL
- SERVICES



FORM DERIVATION

MASS MORPHING

MORPH 6.0 NATURAL SYSTEM + INTUITIVE TECTONICS



TECTONIC VALUES

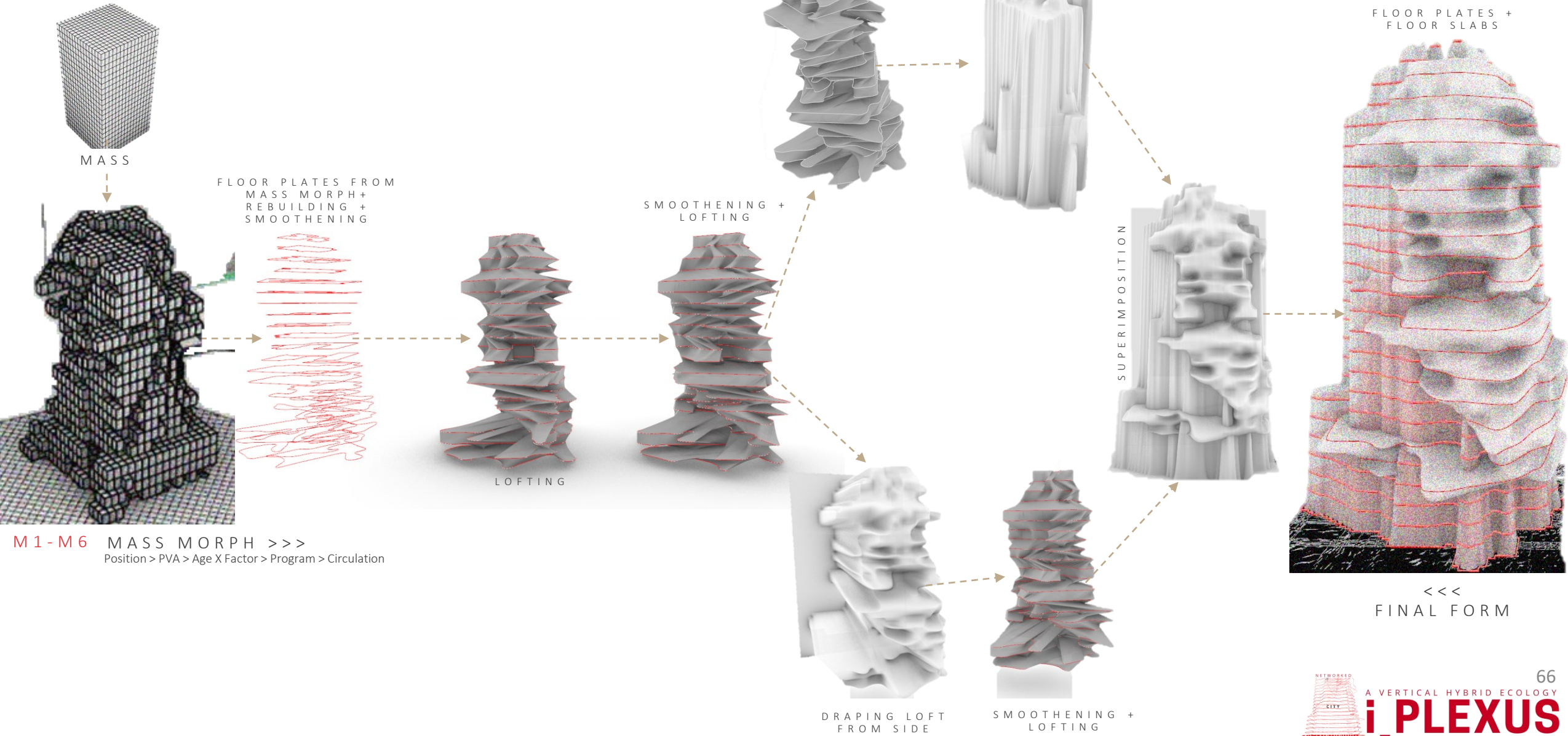
NATURAL SYSTEM – TERMITE HILLS

- Broad Base Narrow Top - Conical
- Clusters of Hills tectonically abstracted
- Organic Undulations of landform and hills
- Void for air and ventilation

AGE OF ARTIFICIAL INTELLIGENCE X-FACTOR CONNECTION

- Transition
- Mobility
- Movement
- Integration
- Connection
- Automation
- Aggregates
- Parts
- Superimposition

THE FORM FORM DERIVATION



M1-M6 MASS MORPH >>>
 Position > PVA > Age X Factor > Program > Circulation

ARTICULATION

THE FORM

FLOOR PLATES + BUILDING COMPONENTS + FLOOR SLABS

FLOOR SLABS = 300 MM THICK
(EXOSKELETON STRUCTURAL SYSTEM)

G+24

TOTAL HEIGHT: 107 M

FLOOR TO FLOOR HEIGHT: 45 M



FORM

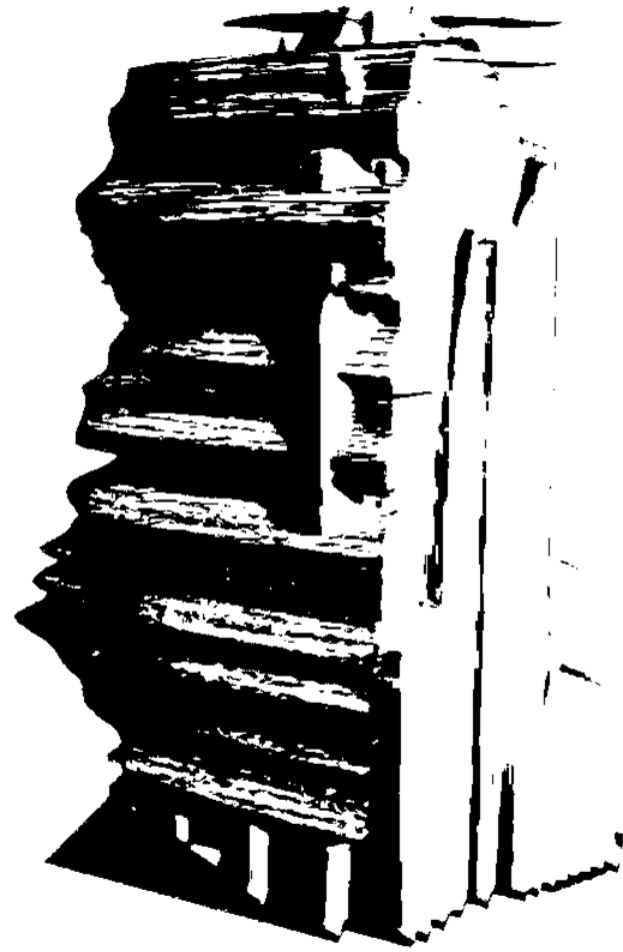


FLOOR PLATE GENERATION



FORM WITH FLOOR PLATES

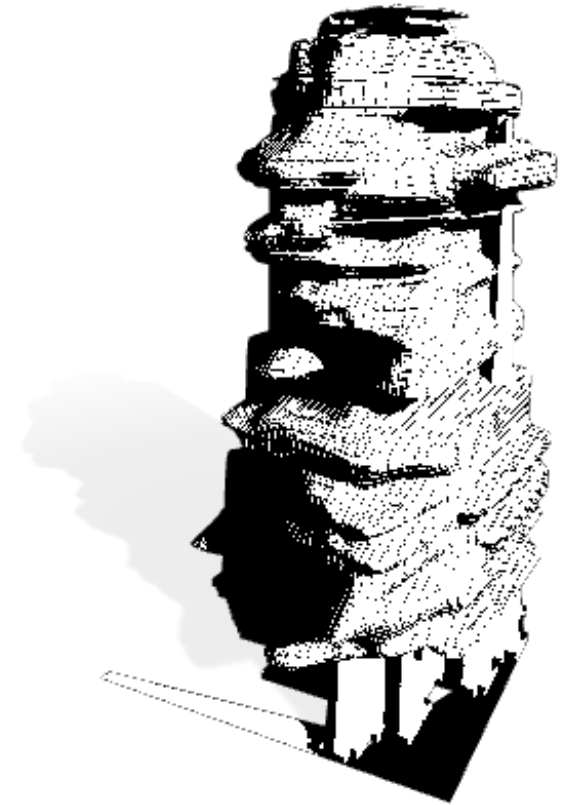
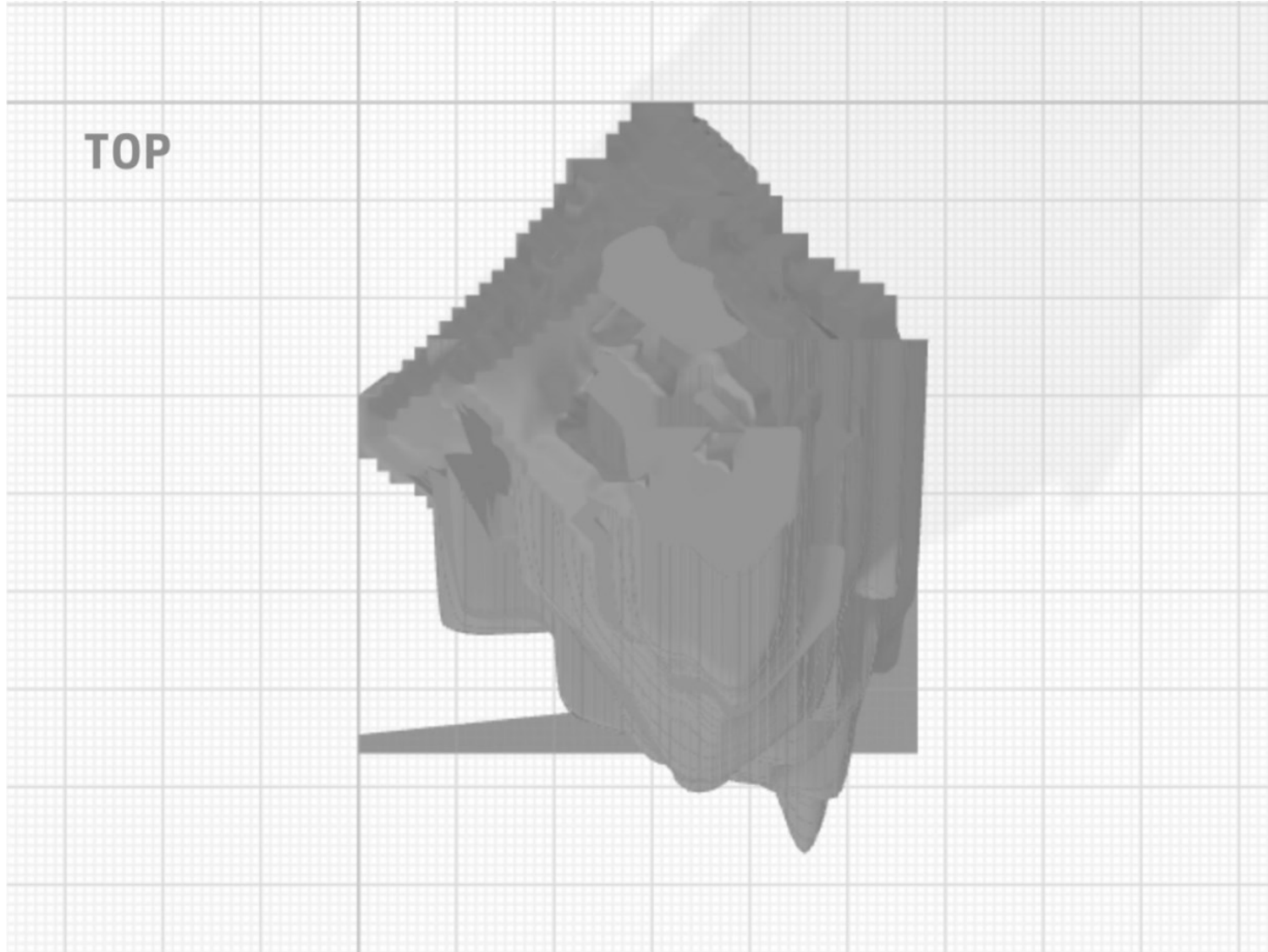
i_PLEXUS



THE FORM



FORM DERIVATION
THE FORM i_PLEXUS



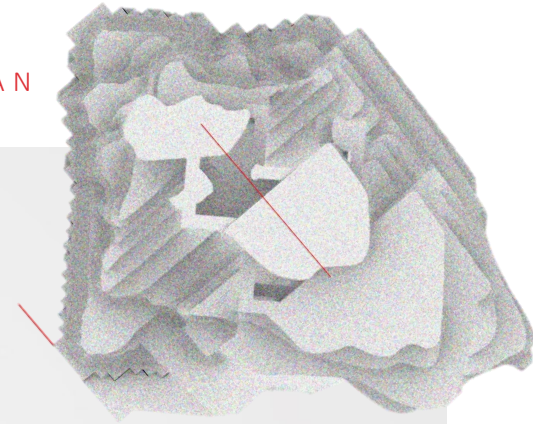
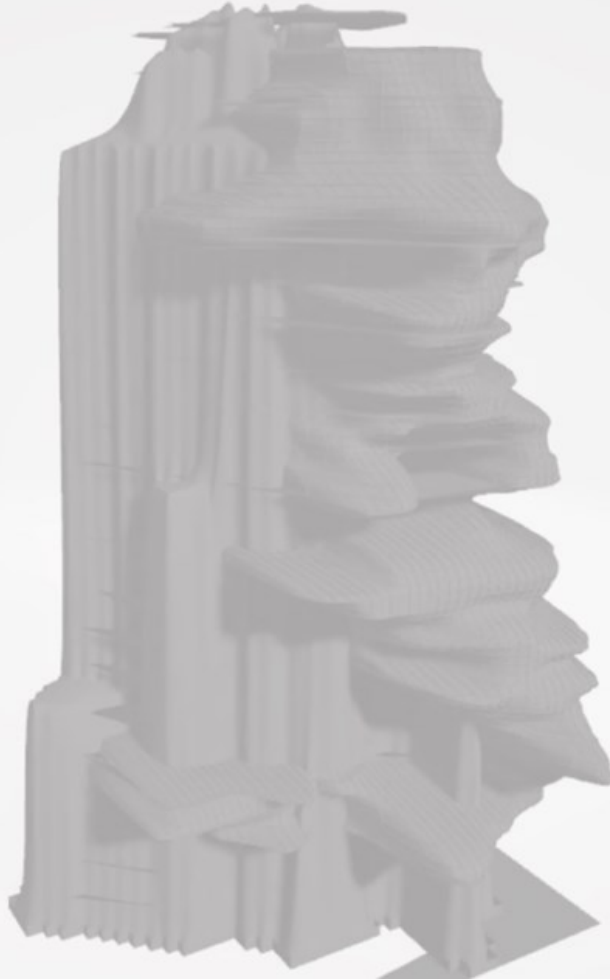


THE i_PLEXUS

THE FORM

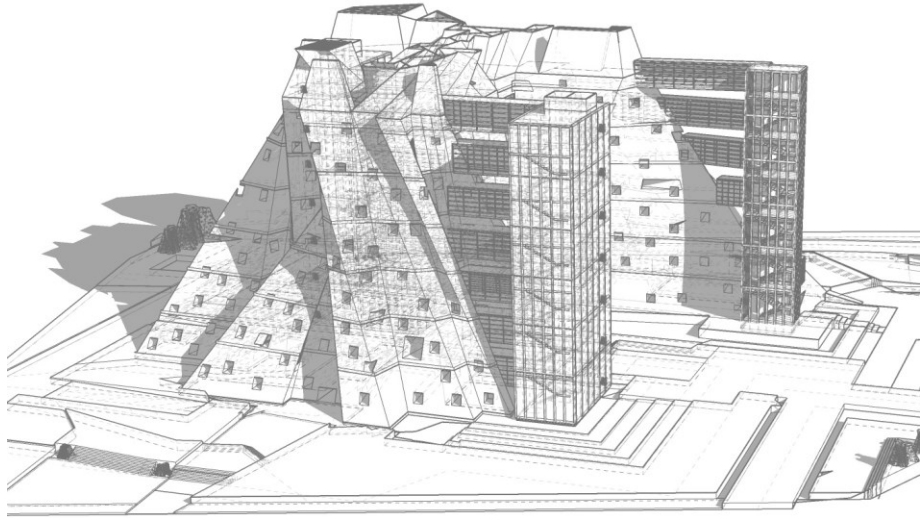
SHADE AND SHADOW

KEY PLAN



THE i_PLEXUS

THE TACH_TILE >>> TRANSFORMS >>> i_PLEXUS



TEST PROJECT 1 – AI DRIVEN TRANSIT HUB
INTEGRATING RETAIL & COMMERCIAL FUNCTIONS AS
WELL AS METRO CONNECTIVITY

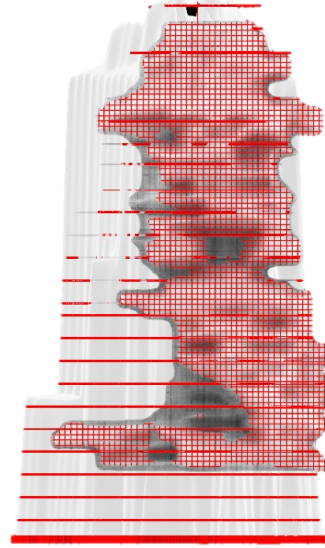
SITE AREA: 8,000 SQ M
BUILT UP AREA: 5,000 SQ M
G+5 & TERRACE
TOTAL HEIGHT: 28.5 M



THE TACH_TILE

FENESTRATIONS TRANSLATED TO
FRAMEWORK

i_PLEXUS

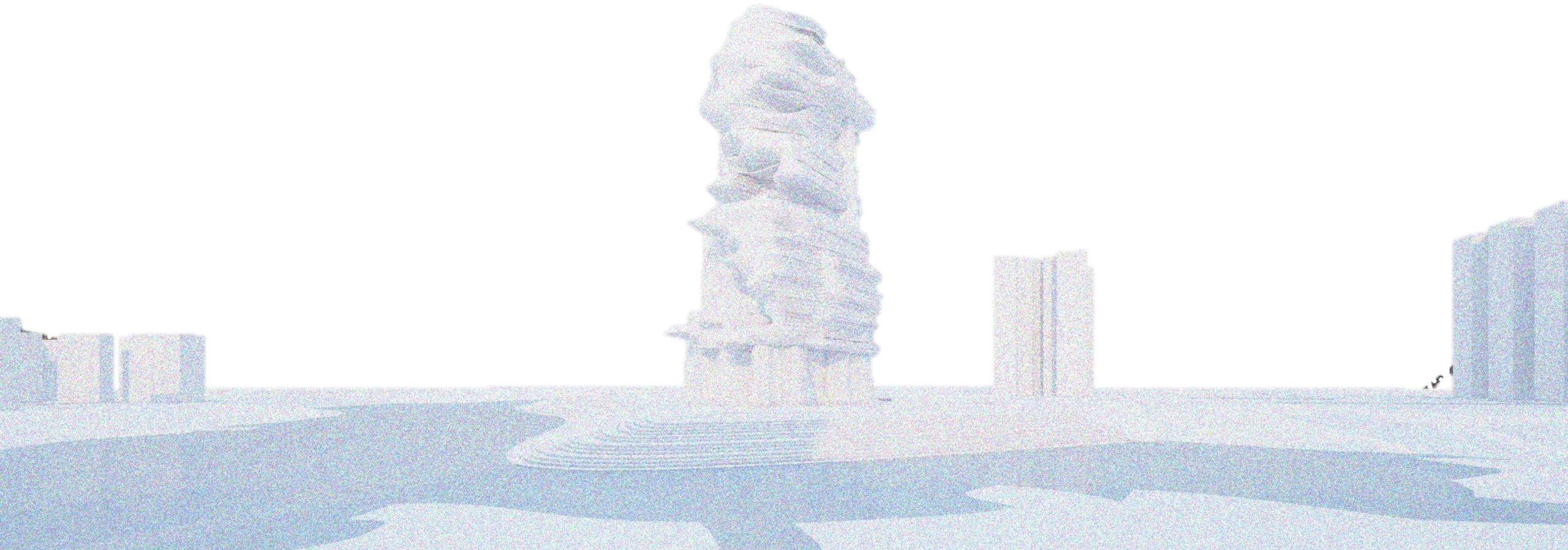


TEST PROJECT 2 – AI DRIVEN VERTICAL HYBRID
ECOLOGY – ADAPTIVE NETWORKED CITY INTEGRATING
ALL CITY FUNCTIONS AS WELL AS UBER AIR CAB
CONNECTIVITY

SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M
G+24
TOTAL HEIGHT: 107 M

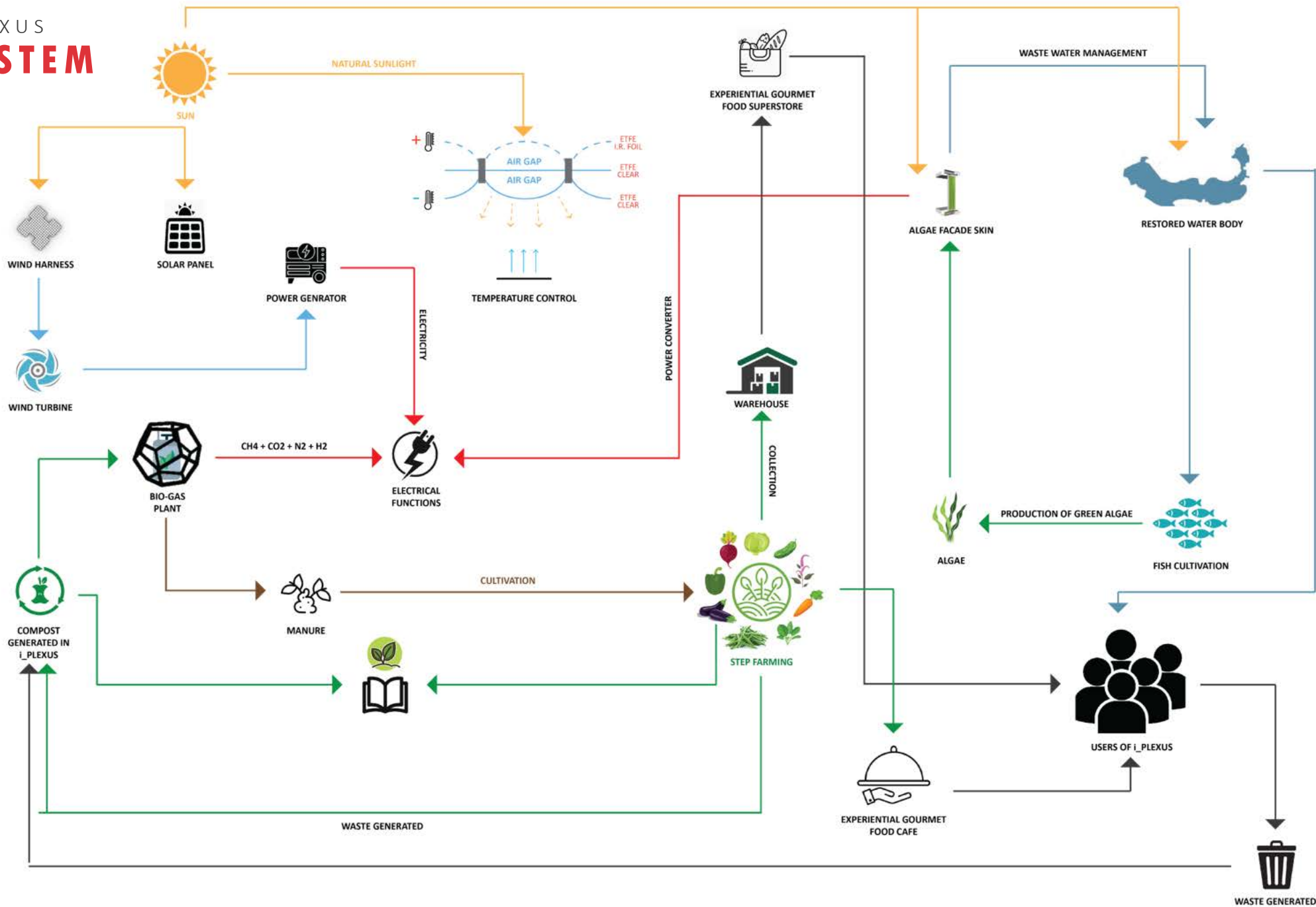


THE i_PLEXUS
ECOSYSTEM



Reinvigorating GREY GREEN BLUE BALANCE
Creating a MINI URBAN FOREST
Mutually Symbiotic TRANS_FORMER
Co-existence of HABITATS

THE i_PLEXUS ECOSYSTEM



ECOLOGICAL SYSTEM & FUNCTIONING

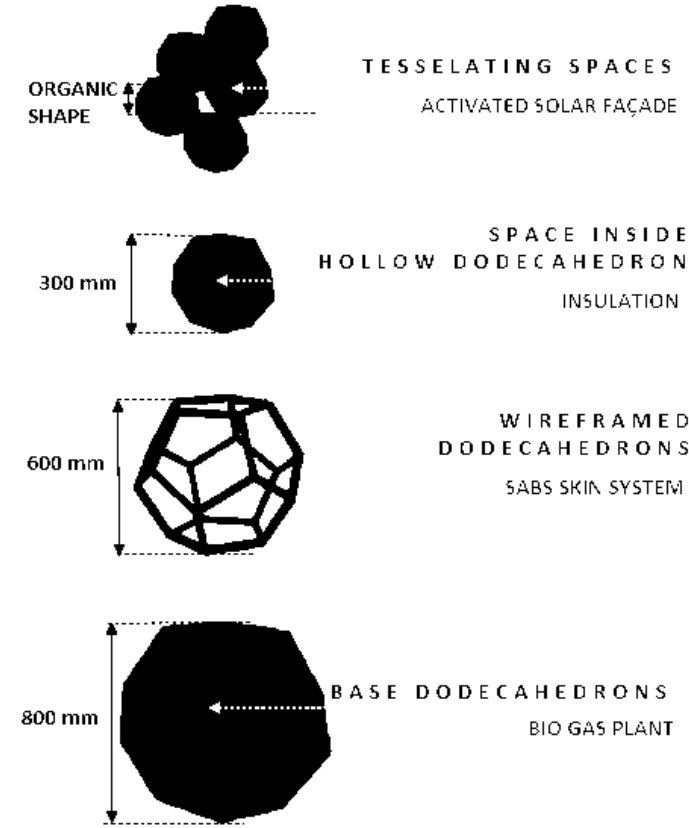
THE i_PLEXUS

ECOSYSTEM ECOLOGICAL SYSTEM & FUNCTIONING

Even before any ecological layering, the prototype's individual aggregate has an ecological function of its own.

The hollowness of the timber + etfe dodecahedrons provide:

- A degree of insulation - Temperature Lag - Induce Temperature Control
- Due to the space inside the dodecahedron.



ACTUATORS

Sunlight (natural)
Reqd. Inside building through A



FUNCTIONS

- SHADING
- COMFORTABLE THERMAL AND VISUAL ENVIRONMENT
- POWER GENERATION

No low space

- INSULATION
- TEMPERATURE LAG + CONTROL

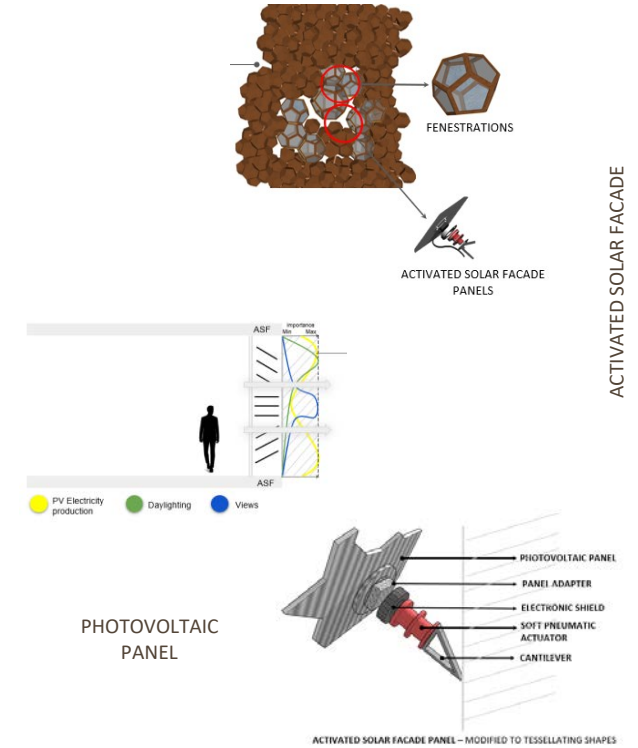
Sunlight & humidity (natural)
Internal temp. Concitions through AI
Faster growth of algae using energy from ASF

- HEATING, COOLING, HUMIDITY CONTROL
- ADAPT, REGUALTE & CONTROL
- REAL TIME ECOLOGICAL RESPONSE
- DYNAMIC AUTOMATION

Organic waste
Waste from the entire building

- TREATMENT OF ORGANIC WASTE
- CLEAN SOURCE OF ENERGY

ASF = ACTIVATED SOLAR FAÇADE
SABS = SELF ACTIVE BIOCLIMATIC STRATEGY

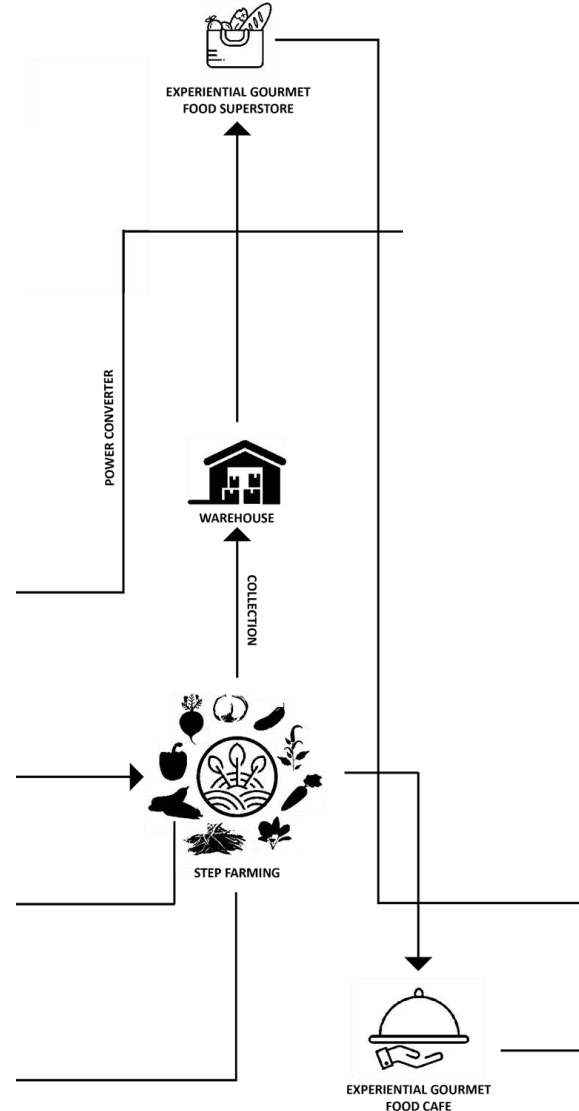


Restoring dried up WATER BODY which 1. Reinvigorates GREY GREEN BLUE BALANCE 2. Creates a MICROCLIMATE for the entire site and especially the SOUTH side plaza 3. Fish Cultivation 4. Algae which supports prototype

Creating a MINI URBAN FOREST by 1. Plating native flora on and around site 2. Stepped Terrae from Water body to Site Level with plantations 3. Waste Recycling and Power Generation

ECOSYSTEM – PLANTING PALETTE

PLANT FAMILY	PLANT	SOIL TEMPERATURE (c)	COLD CLIMATE	WARM CLIMATE	DAYS TO HARVEST
LEGUMES					
	Peas	10+	Oct-Jan	Aug-Feb	30-60
	Broad Beans	10+	Mar-Aug	April-July	60-120
	Beans	12+	Oct-Jan	Sept-Feb	60-100
BRASSICAS + GREEN					
	Broccoli	10+	Year Round	Year Round	120-140
	Sprouts	10+	Oct-Feb	Dec-Mar	100-140
	Kale	10+	Year Round	Year Round	50-160
	Spinach	10+	Feb-Aug	Feb-Aug	40-60
	Cabbage	12+	July-Mar	July-Mar	100-160
	Cauliflower	12+	Nov-June	Nov-June	130-170
	Lettuce	12+	Year Round	Year Round	50-80
	Beet Root	12+	Aug-Feb	July-Mar	60-300
SOLANACEAE					
	Tomatoes	15+	Late Oct-Dec	Aug-Dec	120-150
	Peppers	15+	Late Oct-Dec	Aug-Dec	120-150
	Chillies	15+	Late Oct-Dec	Aug-Dec	90-130
	Eggplant	15+	Late Oct-Dec	Aug-Dec	120-140
ALLIUMS					
	Onions	10+	July-Sep	July-Sep	100-120
	Leeks	10+	Sept-Mar	Aug-April	120-160
	Garlic	10+	June-Sept	June-Sept	150-230
ROOTS + UMBELS					
	Carrots	12+	Sept-Feb	Aug-Mar	60-130
	Beets	12+	Sept-Feb	Aug-Mar	150-300
	Fennel	12+	Sept-Feb	Aug-Mar	90-120
	Potatoes	12+	Sept-Feb	Aug-Mar	80-130
CUCURBIT					
	Cucumber	15+	Late Oct-Dec	Sept-Dec	60-80
	Pumpkin	15+	Late Oct-Dec	Sept-Dec	60-120
OTHER					
	Corn	15+	Oct-Dec	Sept-Jan	80-100
	Basil	18+	Late Oct-Jan	Sept-Jan	60
	Melons	18+	Late Oct-Jan	Sept-Dec	90-140





STRUCTURE + MATERIAL

i_PLEXUS

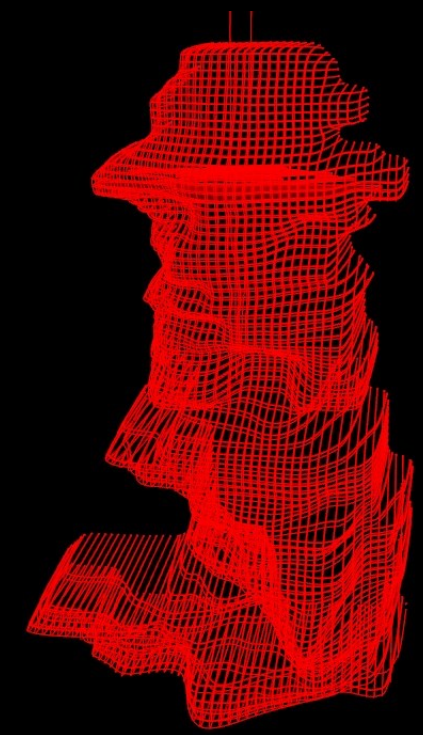
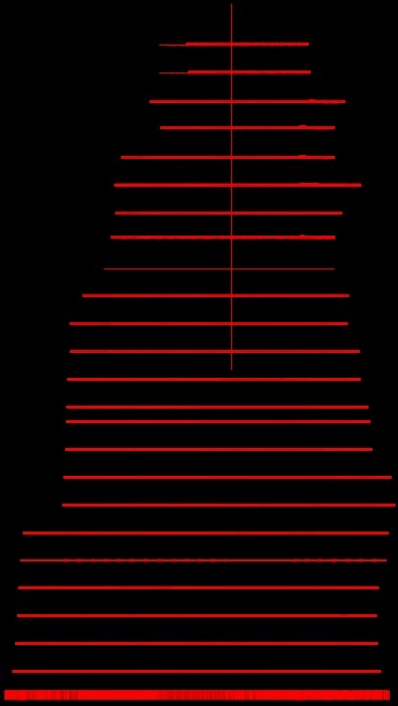
STRUCTURAL DEVELOPMENT

EXOSKELETON STRUCTURAL SYSTEM
WITH PRIMARY MATERIALS – TIMBER STEEL GLASS

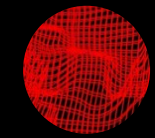
FLOOR SLABS = 300 MM THICK
(EXOSKELETON STRUCTURAL SYSTEM)

G+24
TOTAL HEIGHT: 107 M
FLOOR TO FLOOR HEIGHT: 45 M

FLOOR PLATES + SLABS



FRAMEWORK FOR AGGREGATE
STRUCTURE PROTOTYPE



STEEL PIPE MESH



DODECAHEDRON AGGREGATE
PROTOTYPE FITTED ON STEEL
MESH



i_PLEXUS

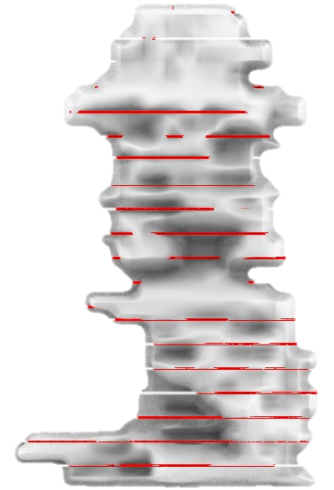
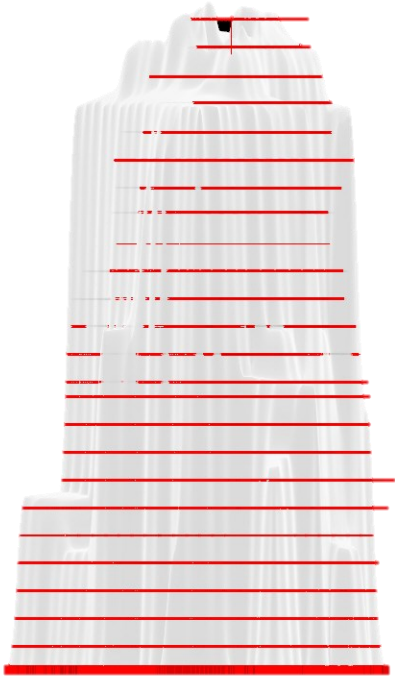
STRUCTURAL DEVELOPMENT

EXOSKELETON STRUCTURAL SYSTEM
WITH PRIMARY MATERIALS – TIMBER STEEL GLASS

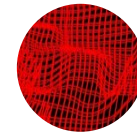
FLOOR SLABS = 300 MM THICK
(EXOSKELETON STRUCTURAL SYSTEM)

G+24
TOTAL HEIGHT: 107 M
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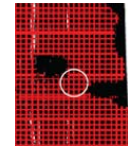
CURTAIN WALL + FLOOR PLATES + SLABS



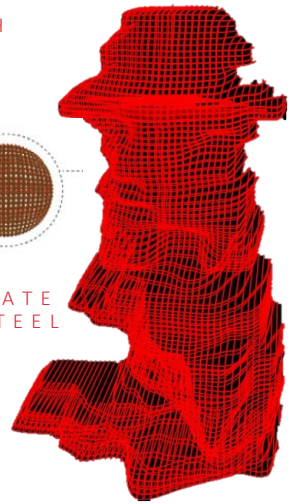
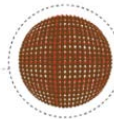
ETFE SURFACE FOR AGGREGATE
STRUCTURE PROTOTYPE



STEEL PIPE MESH



DODECAHEDRON AGGREGATE
PROTOTYPE FITTED ON STEEL
MESH



FRAMEWORK FOR AGGREGATE
STRUCTURE PROTOTYPE



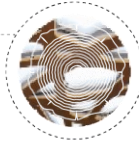
78
A VERTICAL HYBRID ECOLOGY

i_PLEXUS

STRUCTURE / MATERIAL / ECOLOGICAL HYBRID

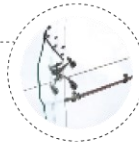
ETFE & TIMBER ROOFING

The ETFE supporting roof is formed from glulam timber beams which are bolted together with nuts to form rectangular bays



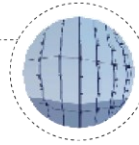
SMART GLASS ELEVATOR

Glazing with light transmission properties altered when voltage, light or heat is applied



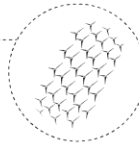
CURTAIN WALL

Toughened Glass (Vision): Triple glazed, with low-e or reflective coatings. Framing of aluminum. Resistance to air and water



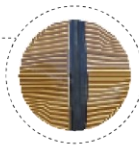
WIND HARNESS + TURBINES

To facilitate and avoid cracks on corners due to strong winds. Wind turbines made of steel, fiberglass, cast iron & aluminum



ACTIVATED SOLAR FACADE

Fitted in tessellating spaces, provides comfortable visual & thermal environment as well as power generation



BIO-GAS PLANT

Timber dodecahedron treated for building a digester & gas holder along with supporting components – inlet/outlet pipe etc.



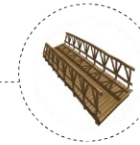
TIMBER ORGANIC SKYPORTS

The ETFE supporting roof is formed from glulam timber beams which are bolted together with nuts to form rectangular bays



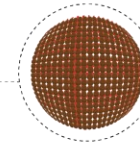
SKY BRIDGES

The tensile membrane structure is used for movement of pedestrians. It is constructed in timber, as well as the walkways



PROTOTYPE SKIN

Aggregate structure made from timber dodecahedrons having own stacking ability reinforced by timber dowels. Tessellating spaces fitted with Activated Solar Façade Panels



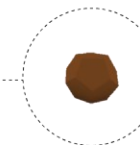
S. A. B. SKIN

Self Activated Bio-Climatic Strategy Skin provides Heating, Cooling, humidity control & regulation. Real time ecological response

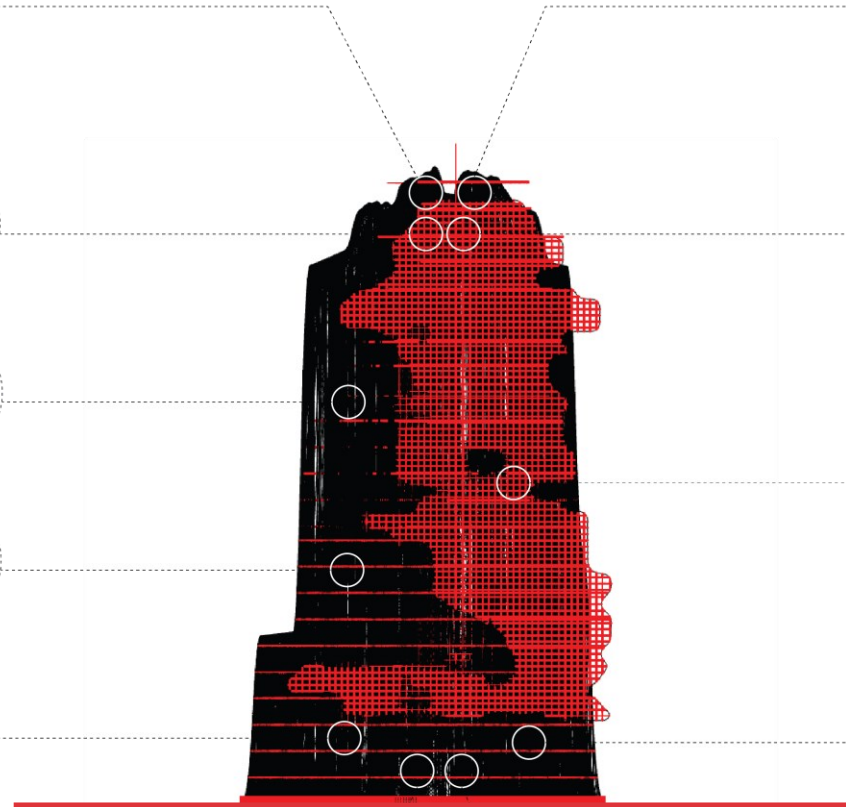


HOLLOW DODECAHEDRONS

Provide 1. Insulation, 2. Temperature lag & control due to hollowness



CONCRETE MAT FOUNDATION



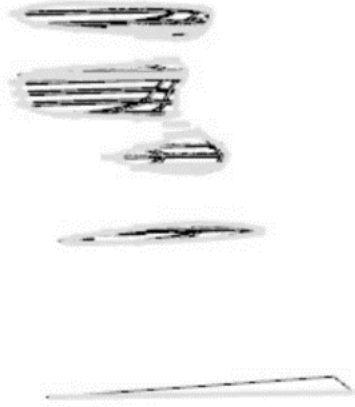
i_PLEXUS

DEVELOPMENT

G+24

TOTAL HEIGHT: 107 M

FLOOR TO FLOOR HEIGHT: 45 M



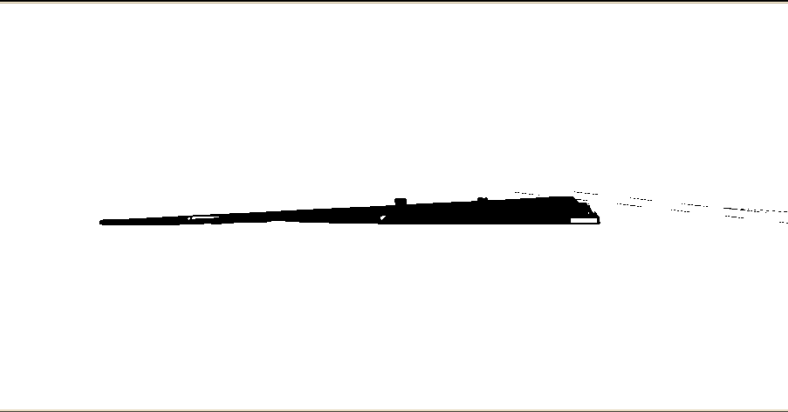
i_PLEXUS

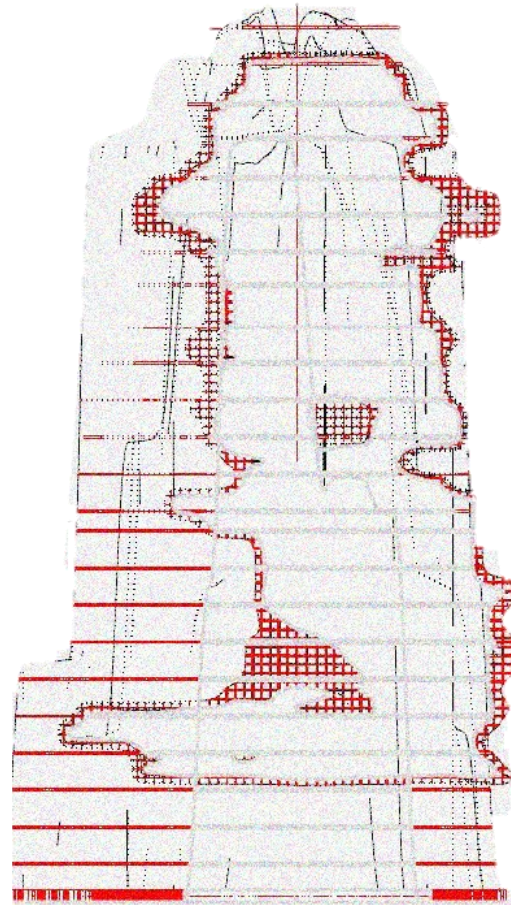
DEVELOPMENT

G+24

TOTAL HEIGHT: 107 M

FLOOR TO FLOOR HEIGHT: 45 M





HYBRID ARTICULATION

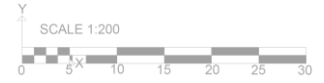
04 THE BUILDING

- Site Plan
- All Access level plans
- Other floor plans

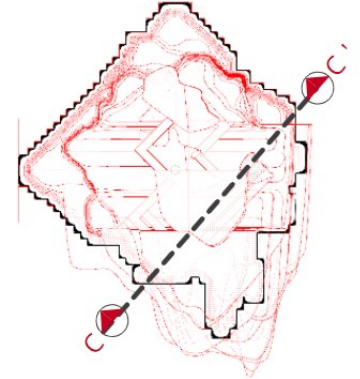
i_PLEXUS – DESIGN ARTICULATION

PROGRAMMATIC HYBRID SECTION CC'

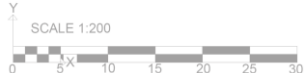
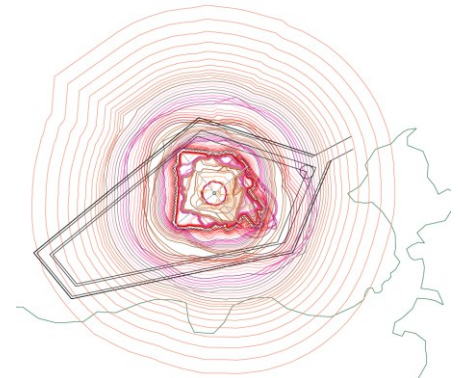
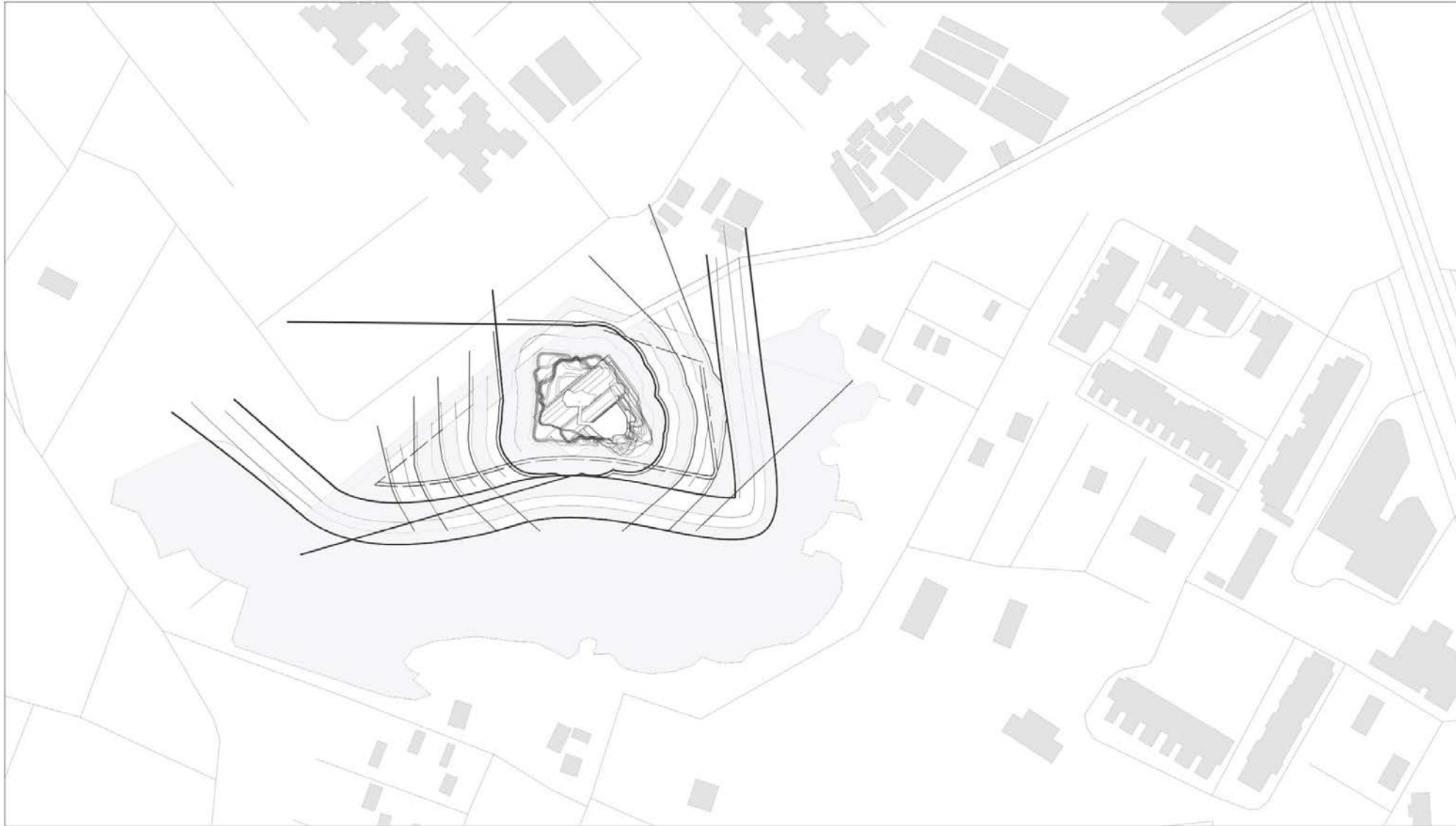
SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M
G + 24
TOTAL HEIGHT: 107 M



KEY PLAN



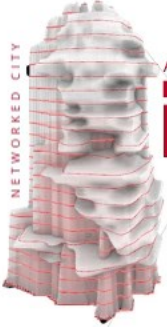
GENERATING LINES ON SITE



SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M

G+24
TOTAL HEIGHT: 107 M

NETWORKED CITY



A VERTICAL HYBRID ECOLOGY

i_PLEXUS URBAN FOREST

SITE AREA: 2.5 ACRES

BUILT UP: 45000 SQ M

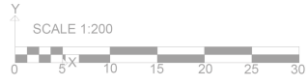
GROUND COVERAGE: 2500 SQ M



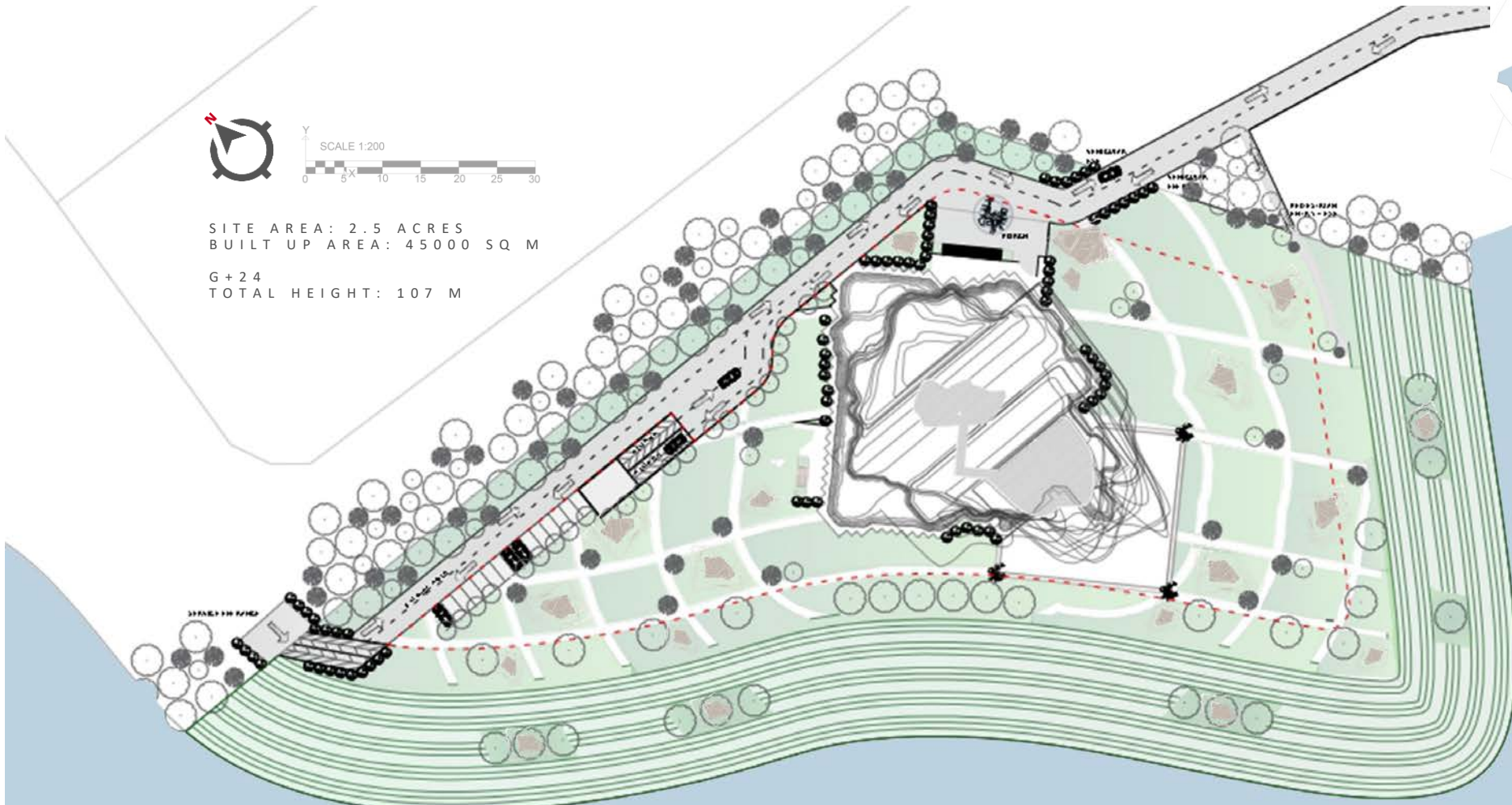
WATERFRONT DEVELOPMENT WITH STEPPED PLAZA



i_PLEXUS - ARTICULATION
SITE PLAN WITH ROOF PLAN



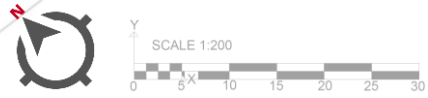
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M



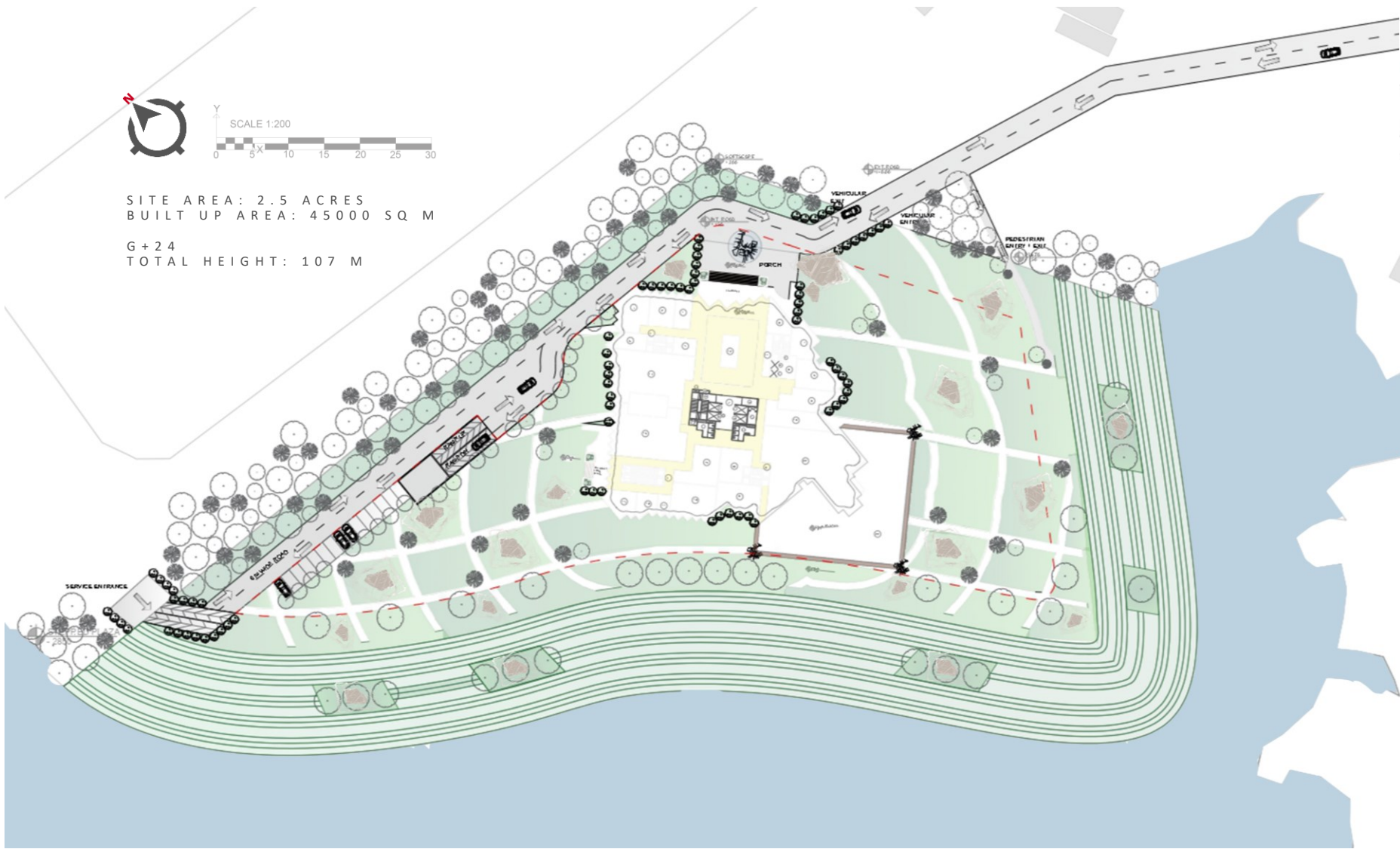
KEY PLAN –
 CONNECTION TO
 GOLF COURSE ROAD

- SOFTSCAPE / PLAZA
- STEPPED PLAZA
- WATER BODY
- SITE SURROUNDINGS
- HARDSCAPE / ROAD
- HARDSCAPE / PLAZA
- TREES + SHRUBS
- SCULPTURES
- BASEMENT LINE

i_PLEXUS - ARTICULATION
SITE PLAN WITH GROUND FLOOR PLAN



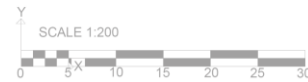
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M



KEY PLAN –
 CONNECTION TO
 GOLF COURSE ROAD

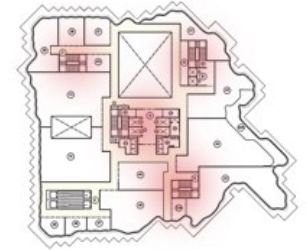
- SOFTSCAPE / PLAZA
- STEPPED PLAZA
- WATER BODY
- SITE SURROUNDINGS
- HARDSCAPE/ ROAD
- HARDSCAPE/ PLAZA
- TREES + SHRUBS
- SCULPTURES
- BASEMENT LINE

i_PLEXUS - ARTICULATION
PLANS LEVEL 00 - LEVEL 24



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- C STAIRCASE
- D STAIRCASE
- E ESCALATORS



KEY PLAN

KEY PROGRAMMATIC PLAN

- A SERVICE CORE
 - A1 - 4 LIFT
 - A5 STAIRCASE
 - A6 PRESSURISATION SHAFT
 - A7 FHC
 - A8 ELECTRICAL ROOM + SHAFT
 - A9 AHU ROOM + HVAC SHAFT
 - A10 HANDICAPPED WASHROOM
 - A11 FEMALE WASHROOM + SHAFT
 - A12 MALE WASHROOM + SHAFT
- B RESIDENTIAL SERVICE CORE
 - B1 - 2 LIFT
 - B3 STAIRCASE
- C STAIRCASE
- D STAIRCASE
- E ESCALATORS

PROGRAMMATIC LEGEND

i_PLEXUS - ARTICULATION

GROUND FLOOR LEVEL 00

1-11; 15-17; 20	SHOPS
12	COFFEE SHOP
13 + 14	ANCHOR STORES LVL 1
18 + 21	CO-WORKING
19	CAFÉ
22	EXHIBITION + GALLERY

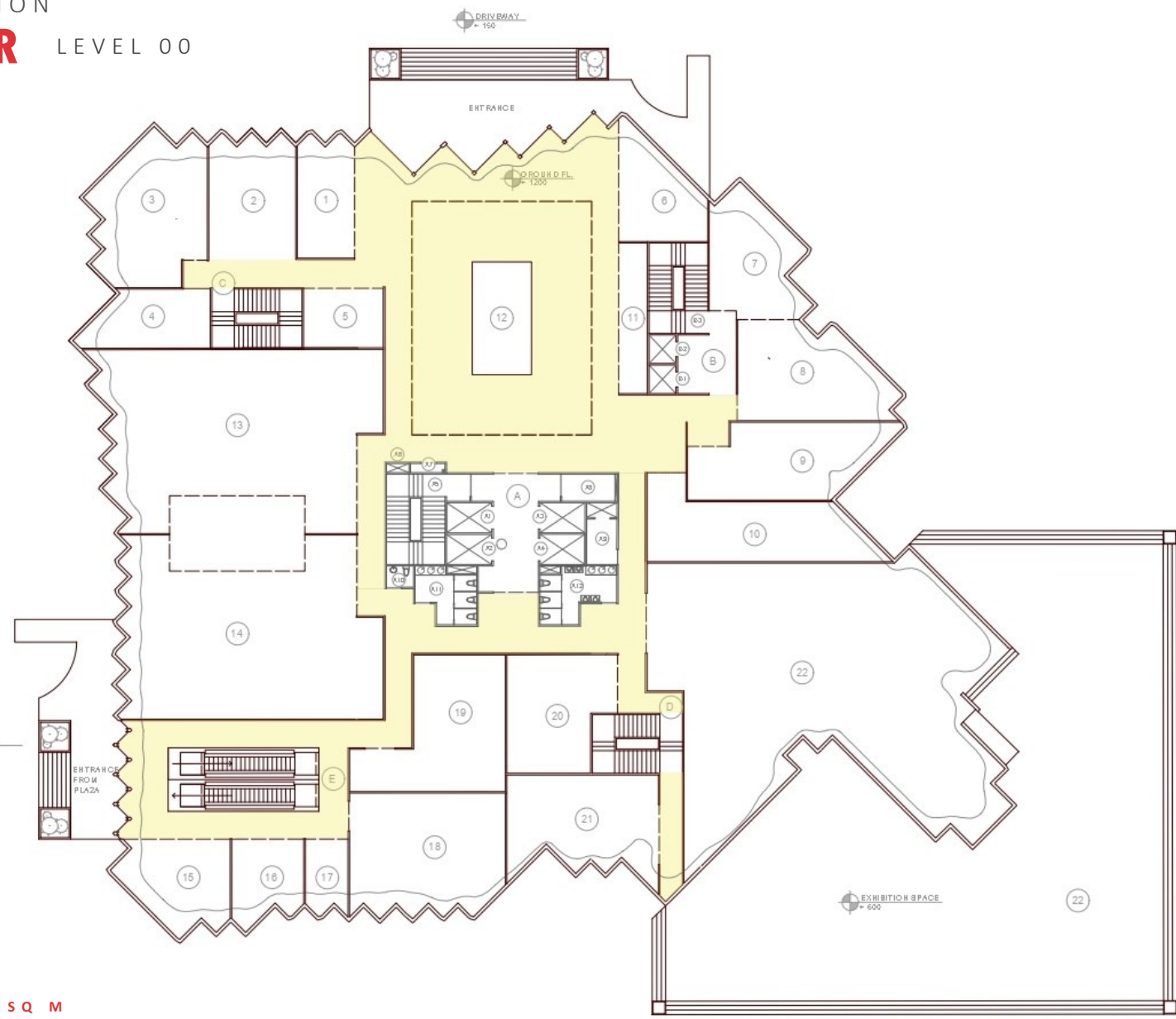
- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- C STAIRCASE
- D STAIRCASE
- E ESCALATORS

PROGRAMMATIC LEGEND

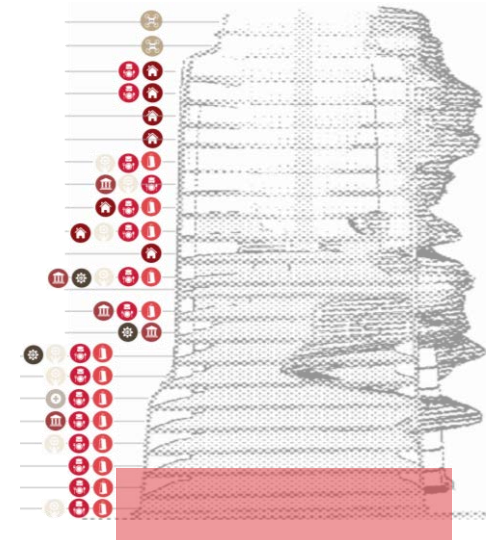
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL

SCALE 1:200

SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M
GROUND FLOOR AREA = 2528 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION
FIRST FLOOR LEVEL 01

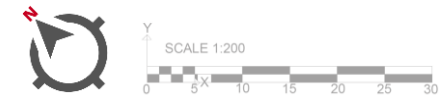
23 - 31	SHOPS
32	ADMIN
13 + 14	ANCHOR STORES LVL 2
33 + 33A	GROCERY STORE LVL. 1 + STORAGE
34 + 34A	RESTAURANT + ECO. TERRACE
35	KIOSK
36	CAFE

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- C STAIRCASE
- D STAIRCASE
- E ESCALATORS

PROGRAMMATIC LEGEND

RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL

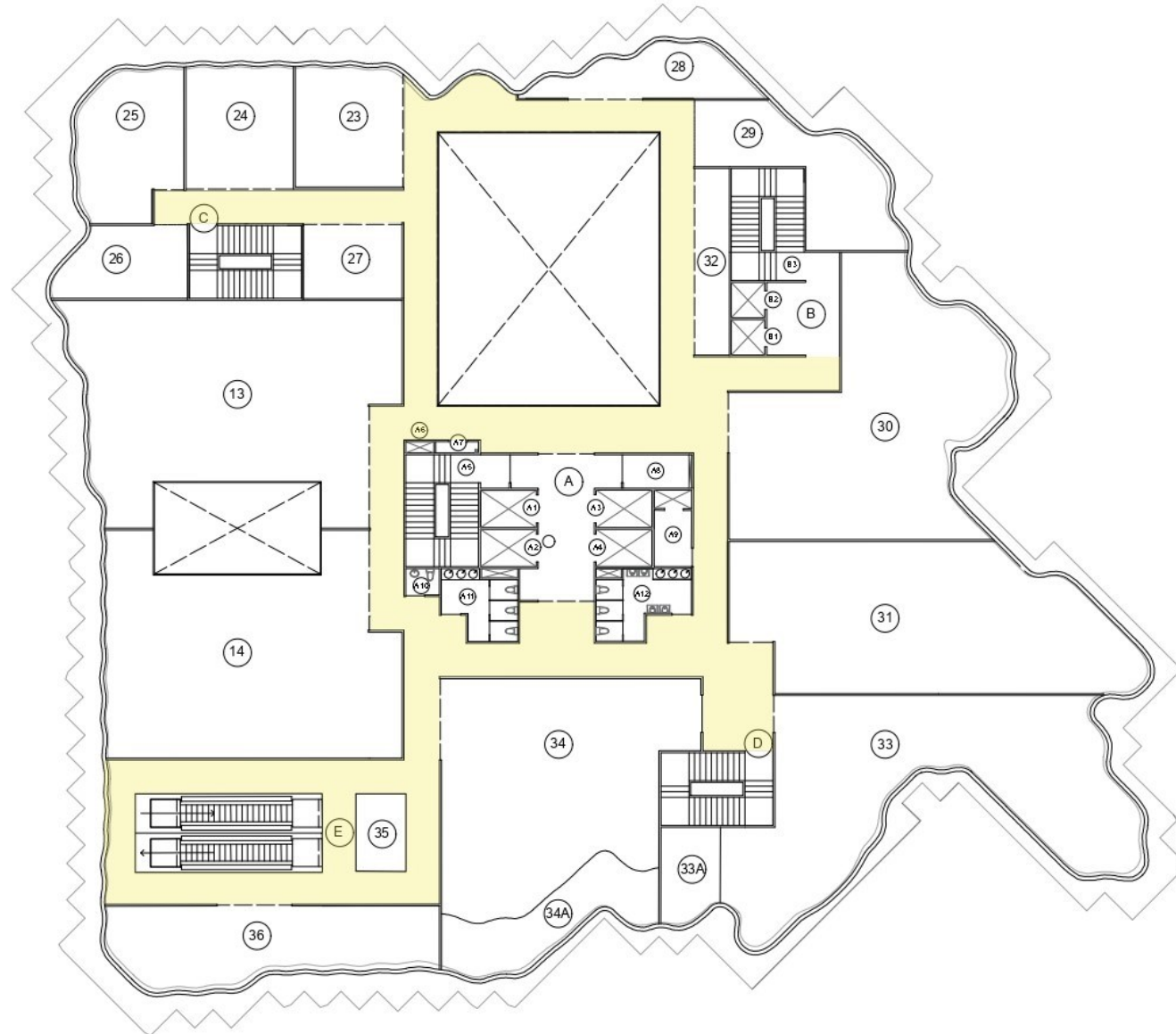
PROGRAMMATIC LEGEND



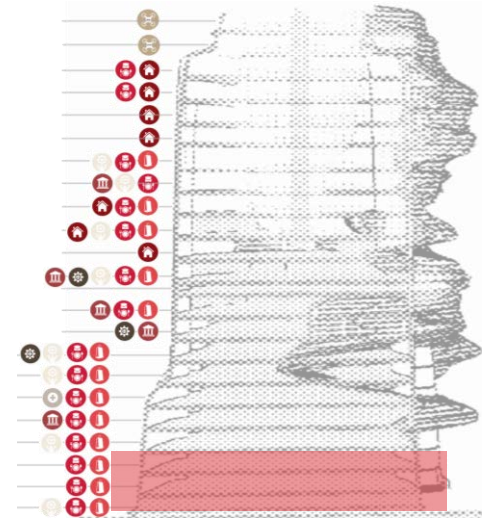
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G+5 & TERRACE
 TOTAL HEIGHT: 28.5 M

FIRST FLOOR AREA = 2274 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

SECOND FLOOR LEVEL 02

37 - 39	RESTAURANT
40 + 41	CAFE
13 + 14	ANCHOR STORES LVL 3
42	ADMIN
43	RESTAURANT + BAR
44 + 44A	FOOD COURT LVL. 1 + ECO. TERRACE
33	GROCERY STORE LVL. 2 + STORAGE
45	RESTAURANT
46	RESTAURANT + BAR
47 - 49	SHOPS

A SERVICE CORE
B RESIDENTIAL SERVICE CORE
C STAIRCASE

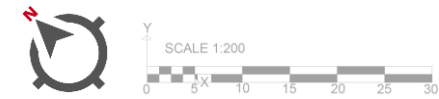
RETAIL INSTITUTIONAL

 COMMERCIAL RESIDENTIAL

RECREATIONAL TRANSIT

 HEALTHCARE INDUSTRIAL

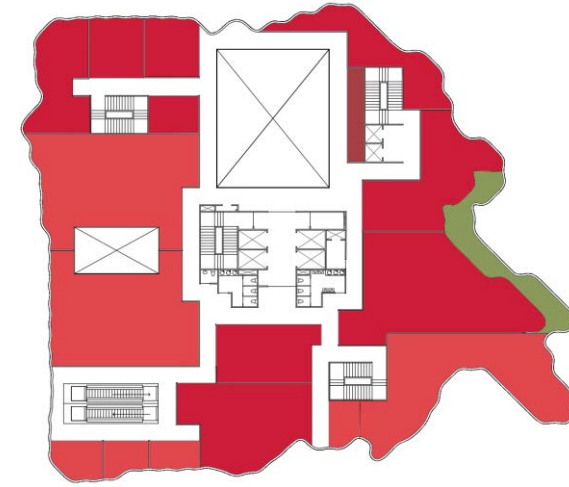
PROGRAMMATIC LEGEND



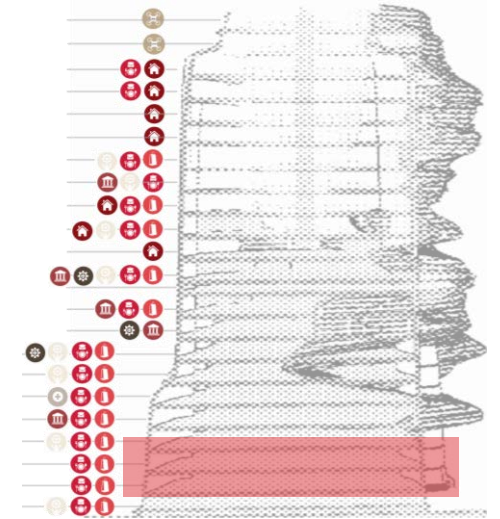
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 2 4
 TOTAL HEIGHT: 107 M

SECOND FLOOR AREA = 2203 SQ M



KEY PROGRAMMATIC PLAN

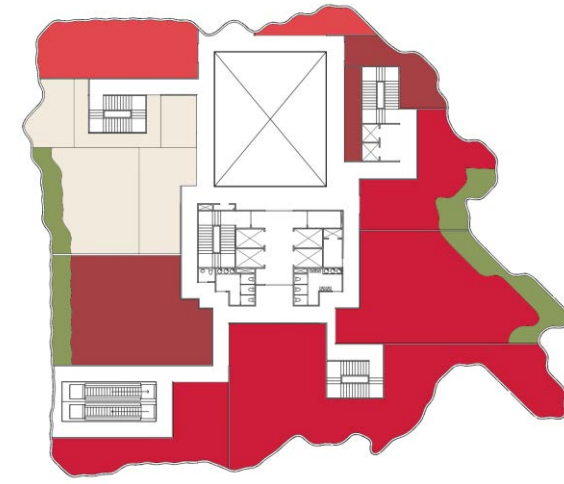
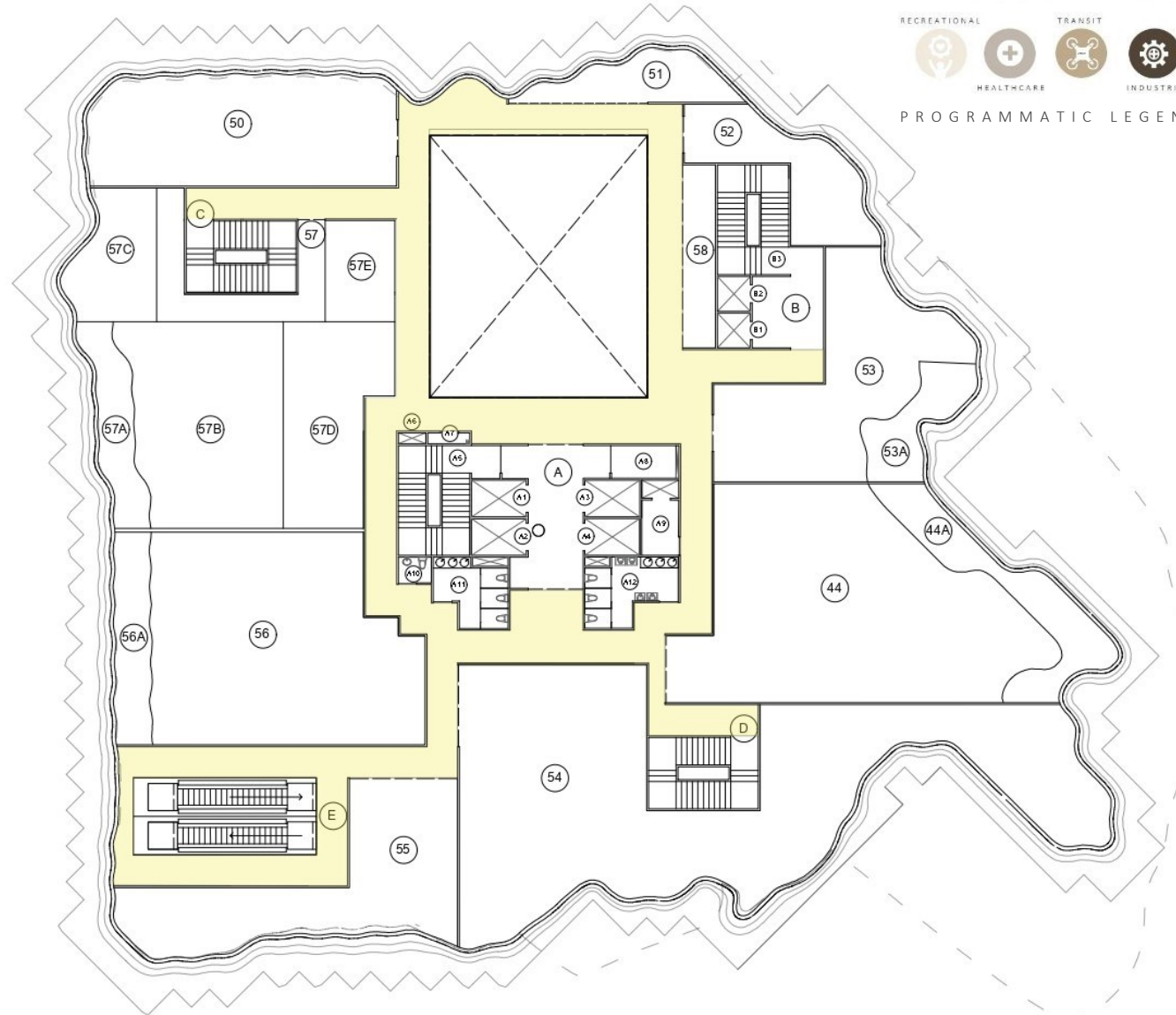


KEY PROGRAMMATIC SECTION

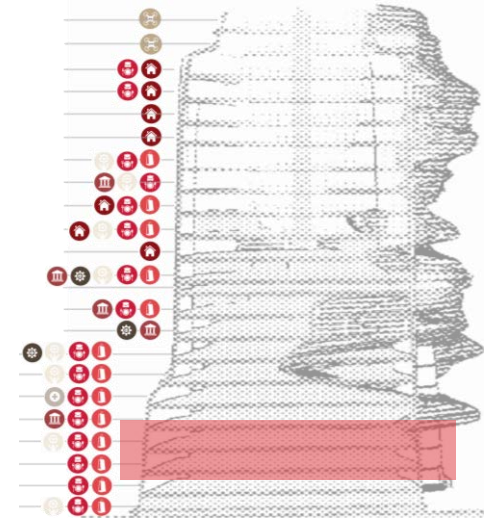
i_PLEXUS - ARTICULATION
THIRD FLOOR LEVEL 03

50 + 51	SHOPS
52	ADMIN
53 + 53A	CAFÉ & LOUNGE + ECO. TERRACE
44 + 44A	FOOD COURT LVL. 2 + ECO. TERRACE
54	RESTAURANT + BAR
55	CO-WORKING SPACE
56 + 56A	YOUTH & ADULT CENTER + ECO. TERRACE
57 + 57A – 57E	RELIGIOUS GATHERING SPACE (HINDU; MUSLIM; SIKH; CHRISTIAN) + ECO. TERRACE
58	SERVICES

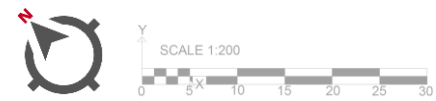
- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- C STAIRCASE
- D STAIRCASE
- E ESCALATORS



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

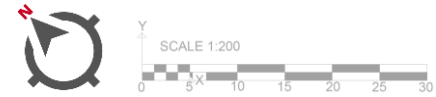
G + 24
 TOTAL HEIGHT: 107 M

THIRD FLOOR AREA = 2147 SQ M

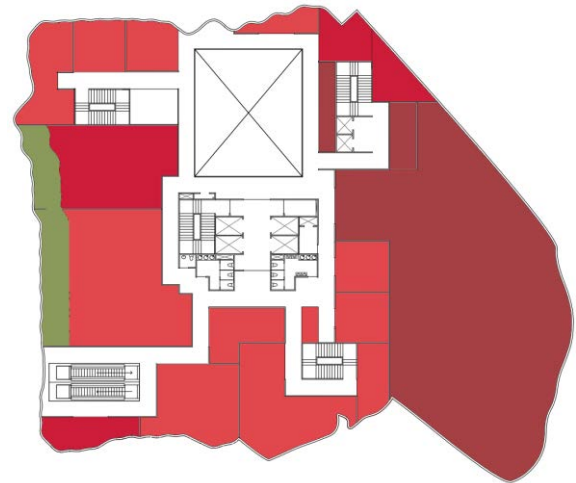
i_PLEXUS - ARTICULATION
FOURTH FLOOR LEVEL 04

59 - 63	SHOPS
64 + 64A	CAFÉ
65 + 65A	ORGANIC AGRICULTURE TRAINING AND RESEARCH CENTRE + STORAGE
66 - 71	SHOPS
72	CAFÉ
73 + 73A	EXPERIENTIAL GOURMET FOOD SUPERSTORE + ECO. TERRACE
74 + 74A	EXPERIENTIAL GOURMET FOOD CAFÉ + ECO. TERRACE
75	ADMIN
76	KIOSK

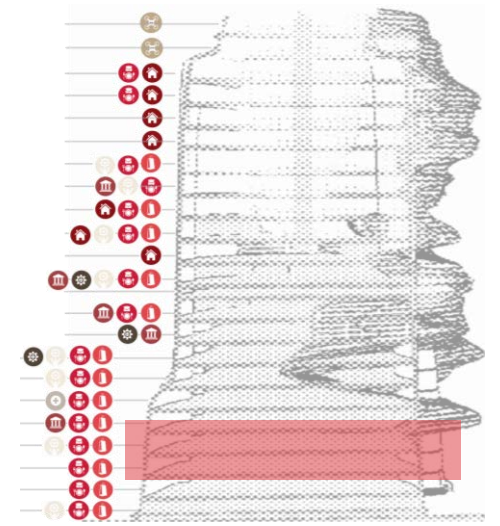
- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- C STAIRCASE
- D STAIRCASE
- E ESCALATORS



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M
FOURTH FLOOR AREA = 2491 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

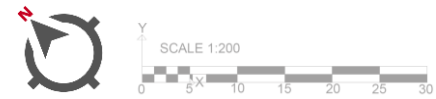
i_PLEXUS - ARTICULATION
FIFTH FLOOR LEVEL 05

77 - 78	RECEPTION & WAITING AREA
79 - 83	CLINICS
84 + 84A	MULTI-PURPOSE ADAPTIVE SPACE + ISOLATION WARD FOR QUARANTINE
85	PHARMACY
86	WAREHOUSE
87	CAFÉ

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- C STAIRCASE
- D STAIRCASE

PROGRAMMATIC LEGEND

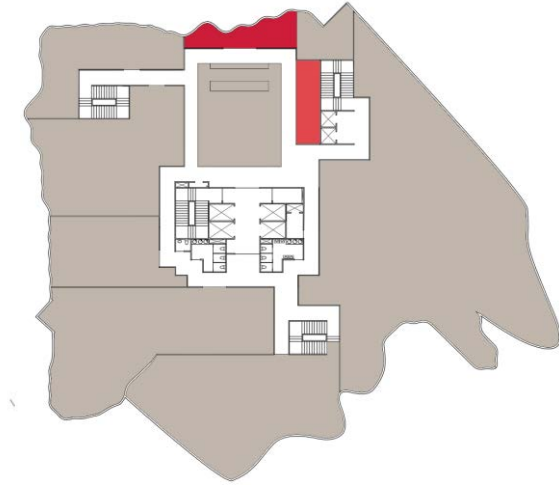
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL



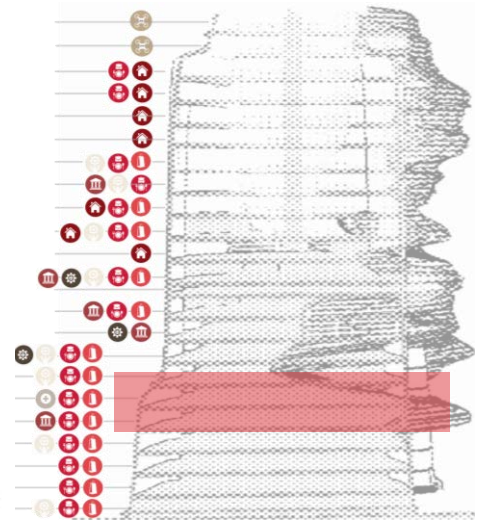
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

FIFTH FLOOR AREA = 2466 SQ M



KEY PROGRAMMATIC PLAN

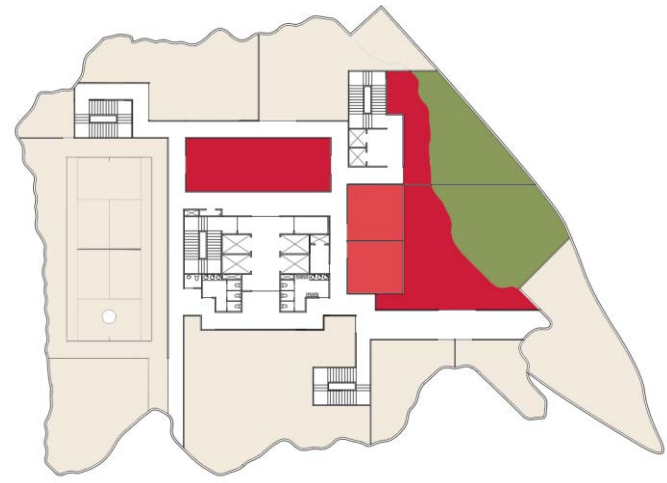


KEY PROGRAMMATIC SECTION

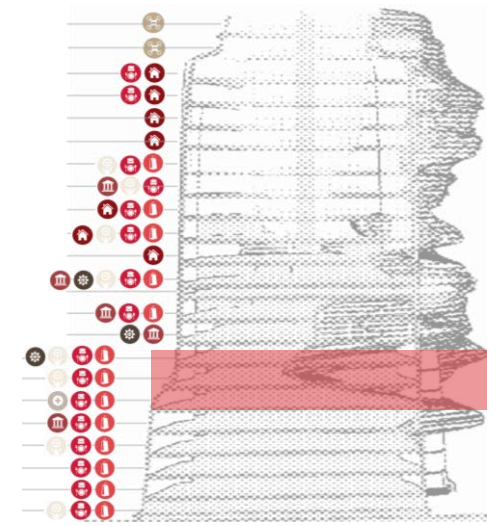
i_PLEXUS - ARTICULATION
SIXTH FLOOR LEVEL 06

88	CAFÉ
89	SPA & SAUNA
90 + 90A + 90B	INDOOR TENNIS PLAY AREA + WATER/ EQUIPMENT + CHANGING ROOM
91	GYM
92	LOCKER ROOM FEMALE
93	LOCKER ROOM MALE
94	INDOOR SWIMMING POOL
95 + 95A	RESTAURANT + ECO. TERRACE
96	SKINCARE SHOP
97	SPORTSWEAR SHOP
98	CAFÉ
99 + 99A	SALON + ECO. TERRACE

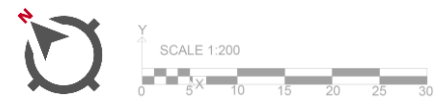
A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE
C	STAIRCASE
D	STAIRCASE



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

SIXTH FLOOR AREA = 2269 SQ M

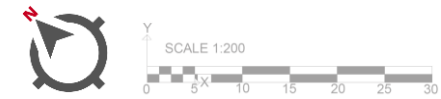
i_PLEXUS - ARTICULATION
SEVENTH FLOOR LEVEL 07

100	INDUSTRIAL WAREHOUSE LVL 1
101	INDOOR SPORTS AREA BALL
102	INDOOR SPORTS AREA RACQUET
103	STORAGE SPACE
104 + 104A - C	OFFICE + MANAGER ROOM + CONTROLLER ROOM + SUPERVISOR ROOM
105 + 105A	STAFF ROOM + ECO. TERRACE
106 + 107	SHOPS
108	PACKAGING

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- D STAIRCASE

PROGRAMMATIC LEGEND

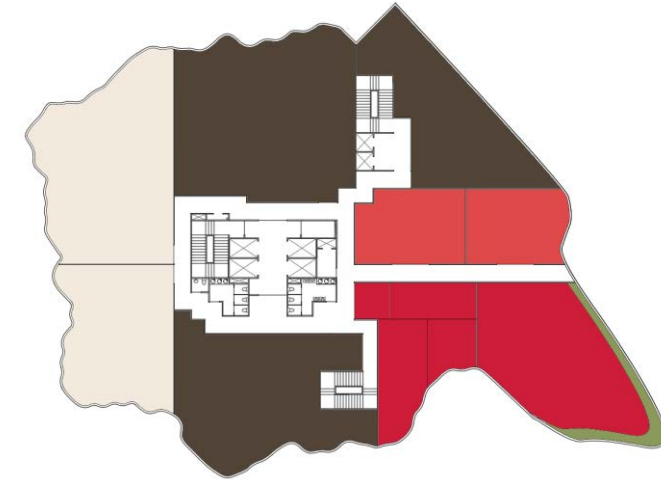
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL



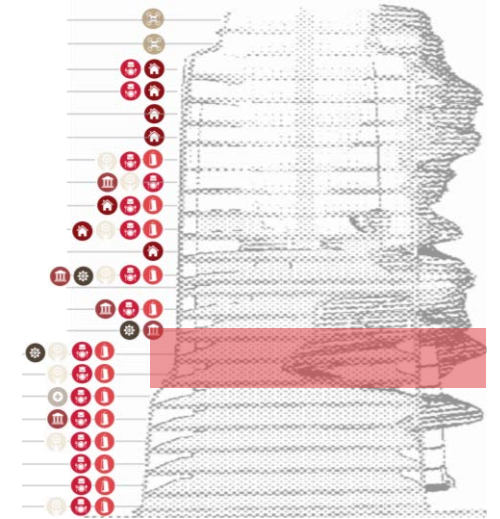
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

SEVENTH FLOOR AREA = 2193 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

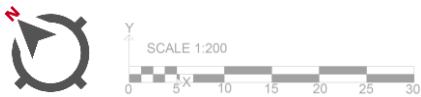
i_PLEXUS - ARTICULATION
EIGHTH FLOOR LEVEL 08

100	INDUSTRIAL WAREHOUSE LVL 2
109	STORAGE SPACE
110	BANK
111	PICKING OF PRODUCTS
112	REFUGE AREA
113	EQUIPMENT ROOM
114	SUPERVISOR BOOTH
115 + 115A + 116	GOVERNMENT SERVICES OFFICE + ECO. TERRACE

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- D STAIRCASE

PROGRAMMATIC LEGEND

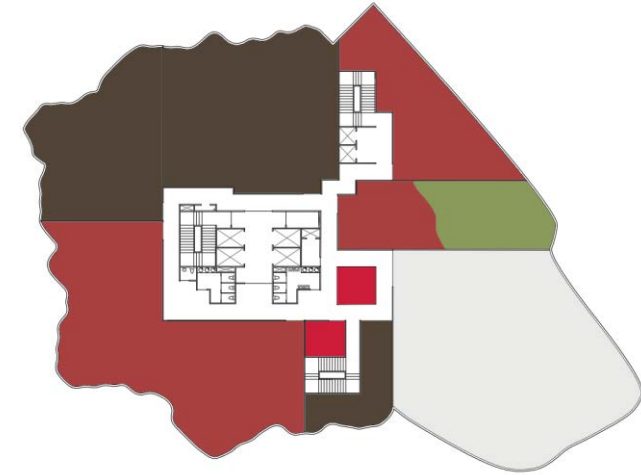
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	HEALTHCARE
TRANSIT	INDUSTRIAL



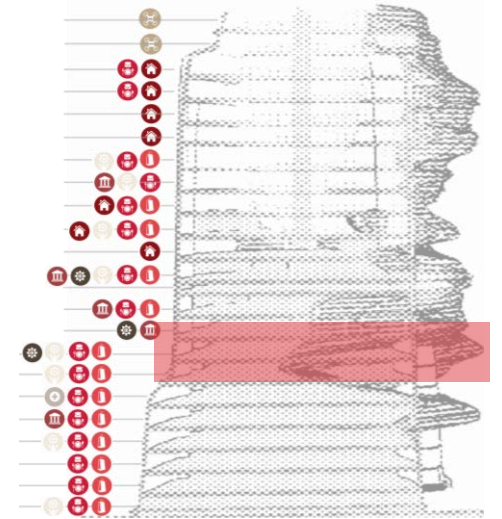
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

EIGHTH FLOOR AREA = 2287 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

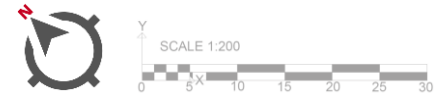
i_PLEXUS - ARTICULATION
NINTH FLOOR LEVEL 09

117 - 119	OFFICES
120 - 121	SHOPS
122 + 122A	OFFICE + ECO. TERRACE
123	CAFÉ
124 + 124A	OFFICE + ECO. TERRACE
125	CYBER CAFÉ / CO-WORKING SPACE
126	FACILITY MANAGEMENT
127	DAY CARE FACILITY

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- D STAIRCASE



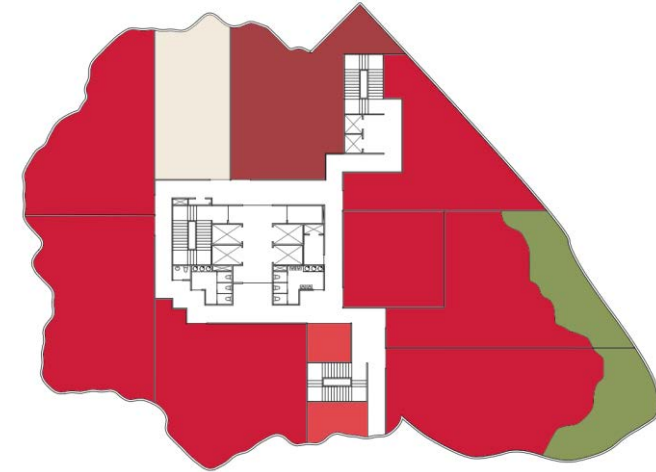
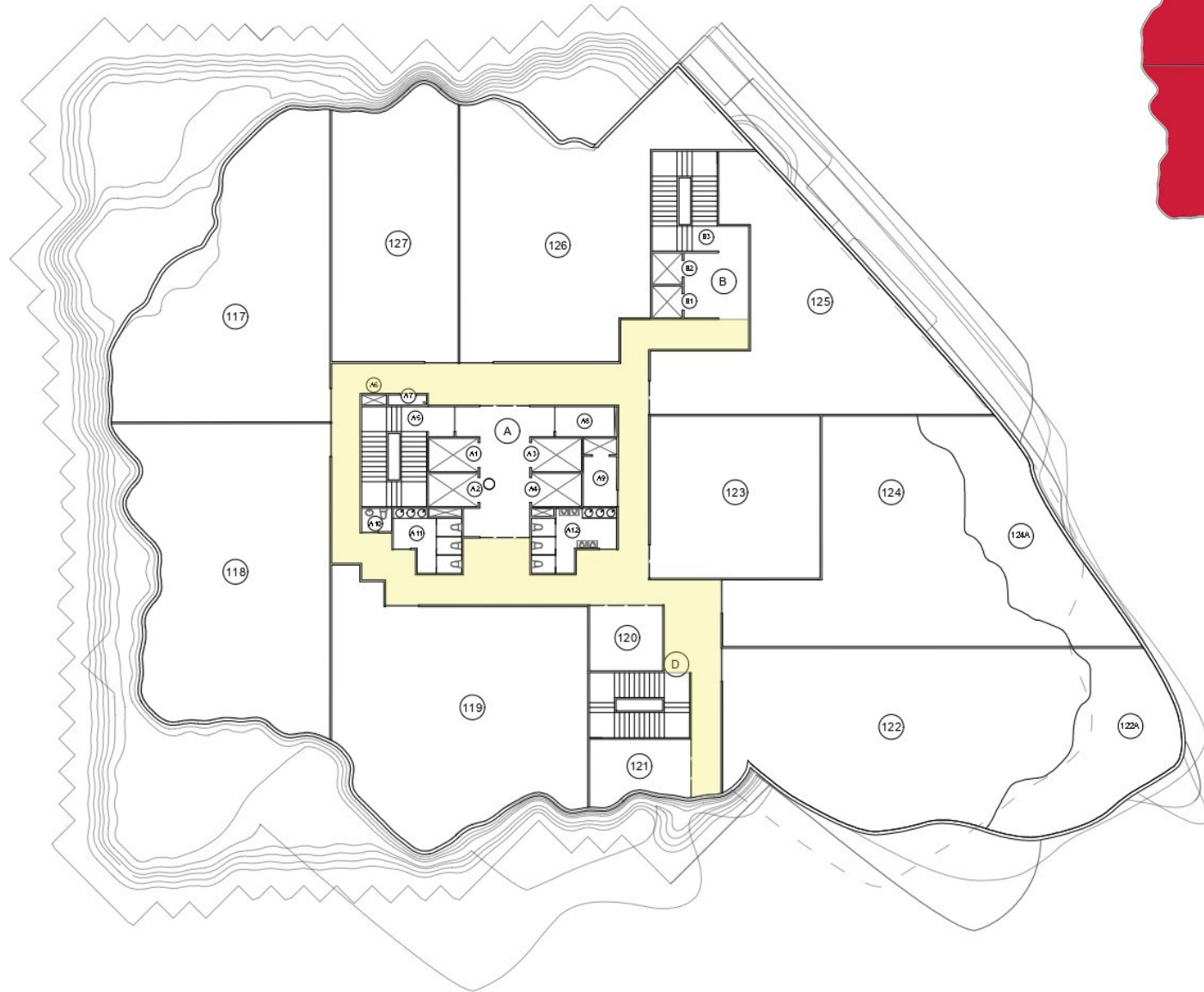
PROGRAMMATIC LEGEND



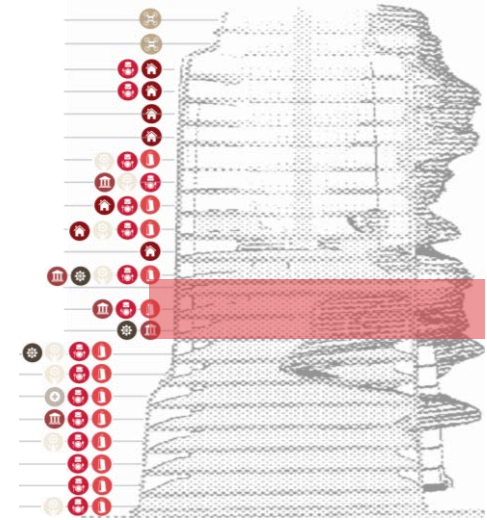
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

NINTH FLOOR AREA = 2089 SQ M



KEY PROGRAMMATIC PLAN



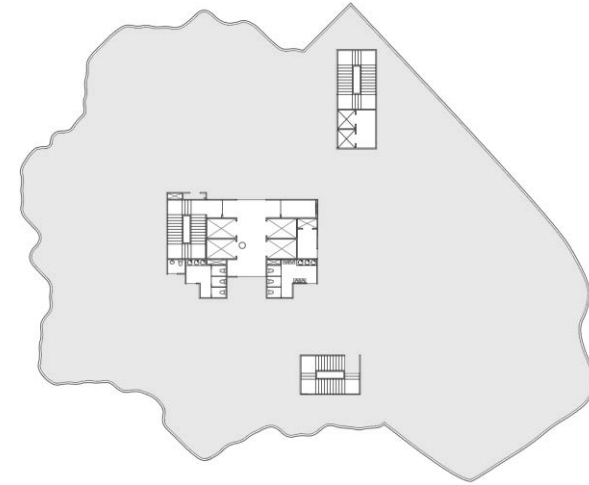
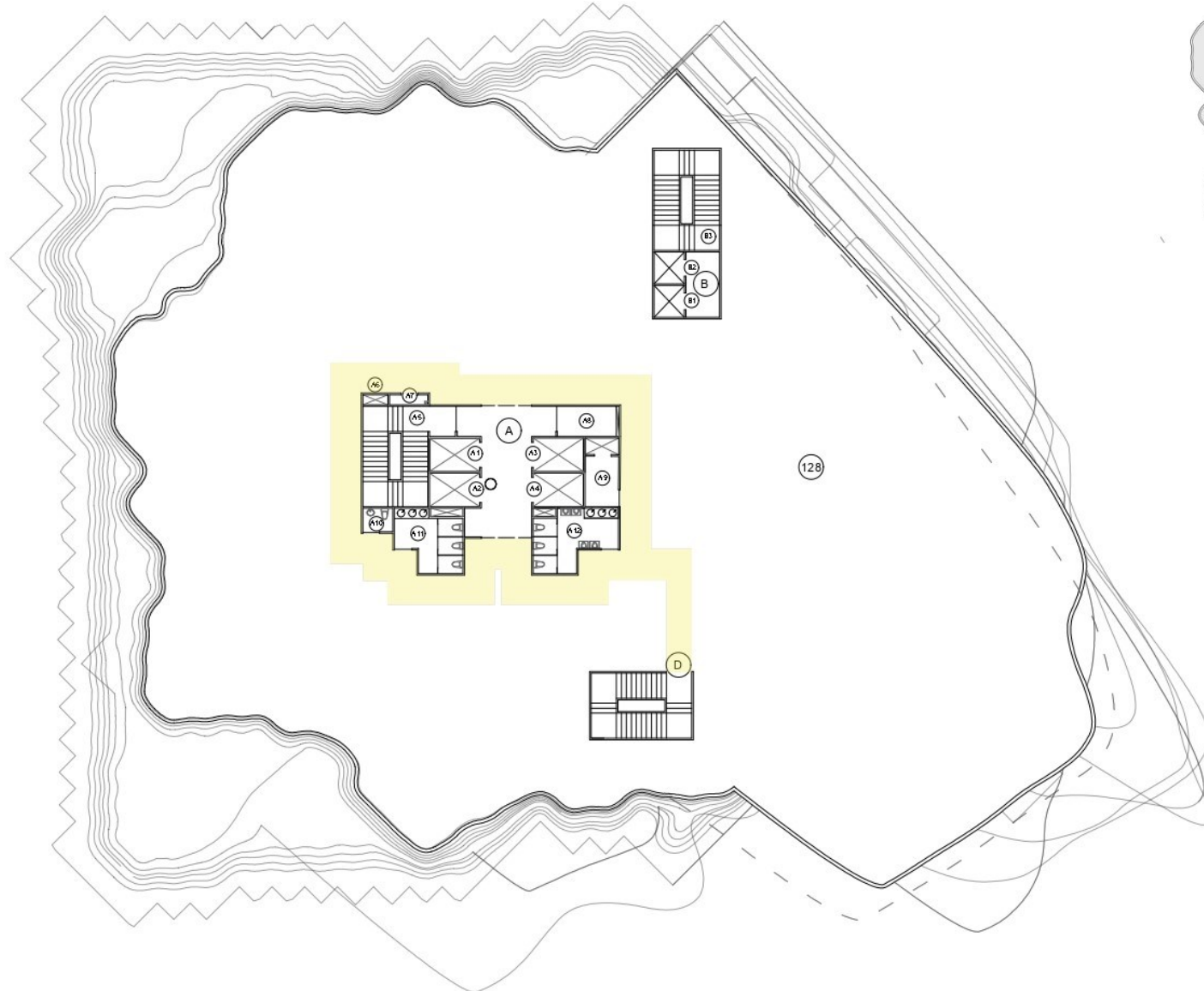
KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION
TENTH FLOOR LEVEL 10

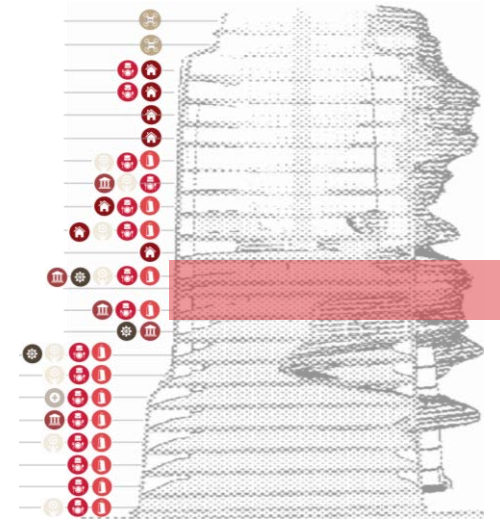
- 128 MECHANICAL TRANSFER FLOOR
- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- D STAIRCASE



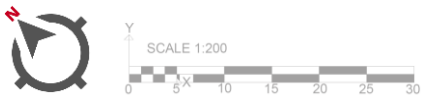
PROGRAMMATIC LEGEND



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

TENTH FLOOR AREA = 2017 SQ M

i_PLEXUS - ARTICULATION

ELEVENTH FLOOR

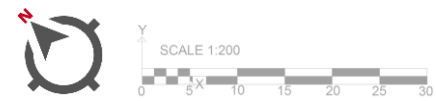
LEVEL 11

129 - 130	OFFICES
131	BUSINESS & MEDIA CENTER
132	OFFICE
133	SHOP
134 + 134A	LIBRARY + LOUNGE
135 + 135A	LEGAL SERVICES
136 + 136A	CYBER CAFÉ / CO-WORKING SPACE
137 + 137A	OFFICE + STORAGE
138 - 139	MEETING ROOM
140	PANTRY

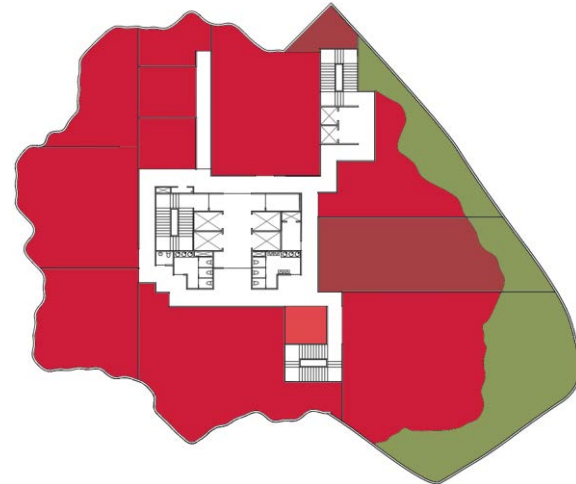
- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE
- D STAIRCASE

PROGRAMMATIC LEGEND

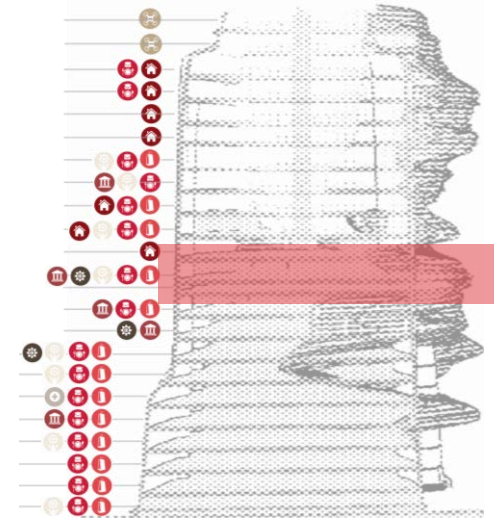
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M
ELEVENTH FLOOR AREA = 2001 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

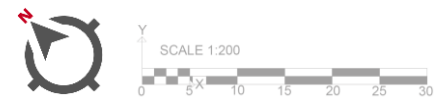
i_PLEXUS - ARTICULATION
TWELFTH FLOOR LEVEL 12

141	3 BHK APARTMENT
142	2 BHK + STUDY APARTMENT
143	5 BHK APARTMENT
144	5 BHK APARTMENT
145	3 BHK APARTMENT

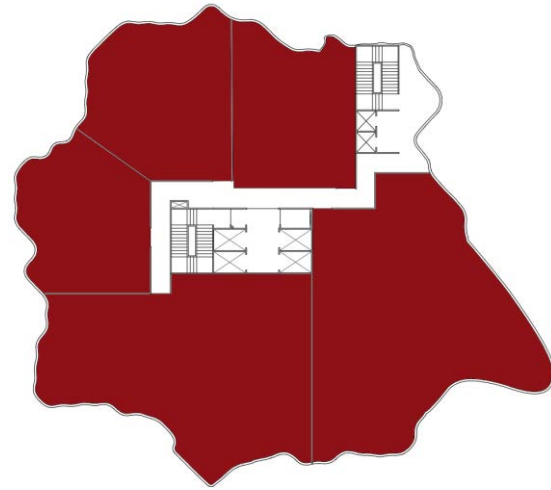
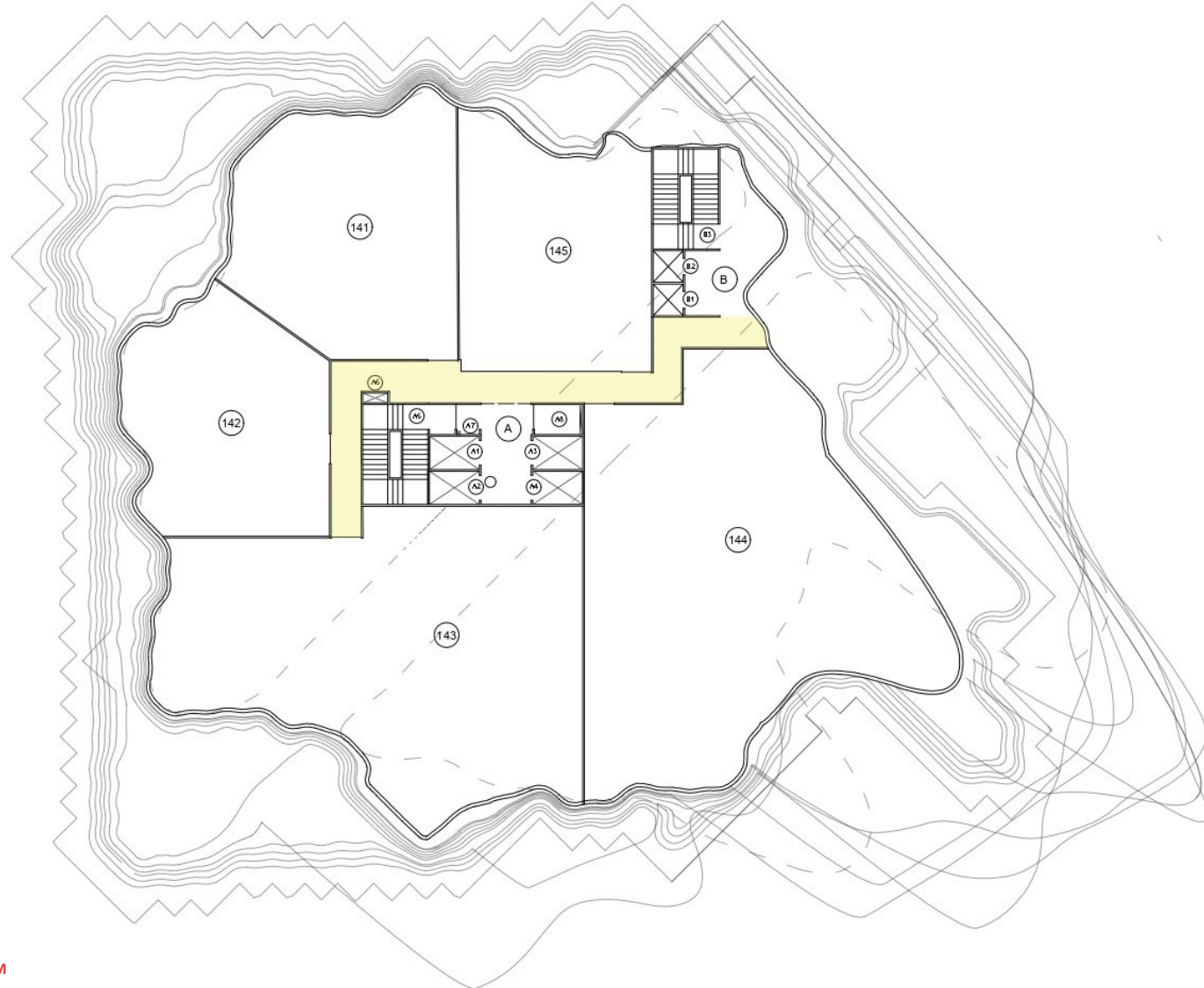
A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE

PROGRAMMATIC LEGEND

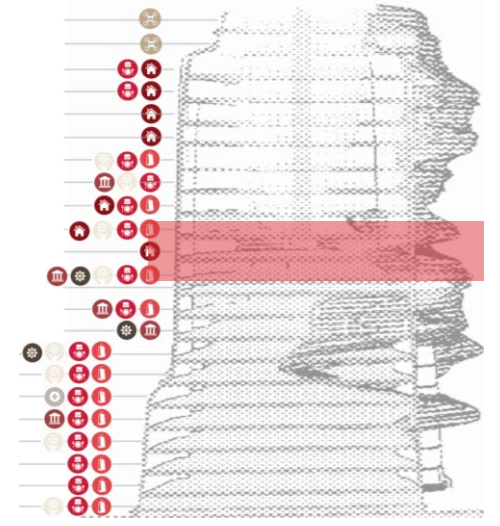
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL



SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M
 G + 24
 TOTAL HEIGHT: 107 M
TWELFTH FLOOR AREA = 1519 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION THIRTEENTH FLOOR

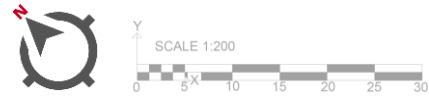
LEVEL 13

146	SHOP
147	OFFICE
148	MEETING ROOM
149	LIBRARY + LOUNGE
150	OFFICE
151	4 BHK APARTMENT

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE



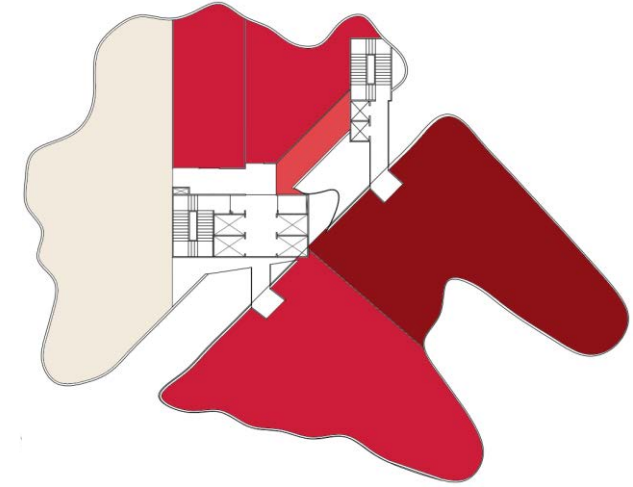
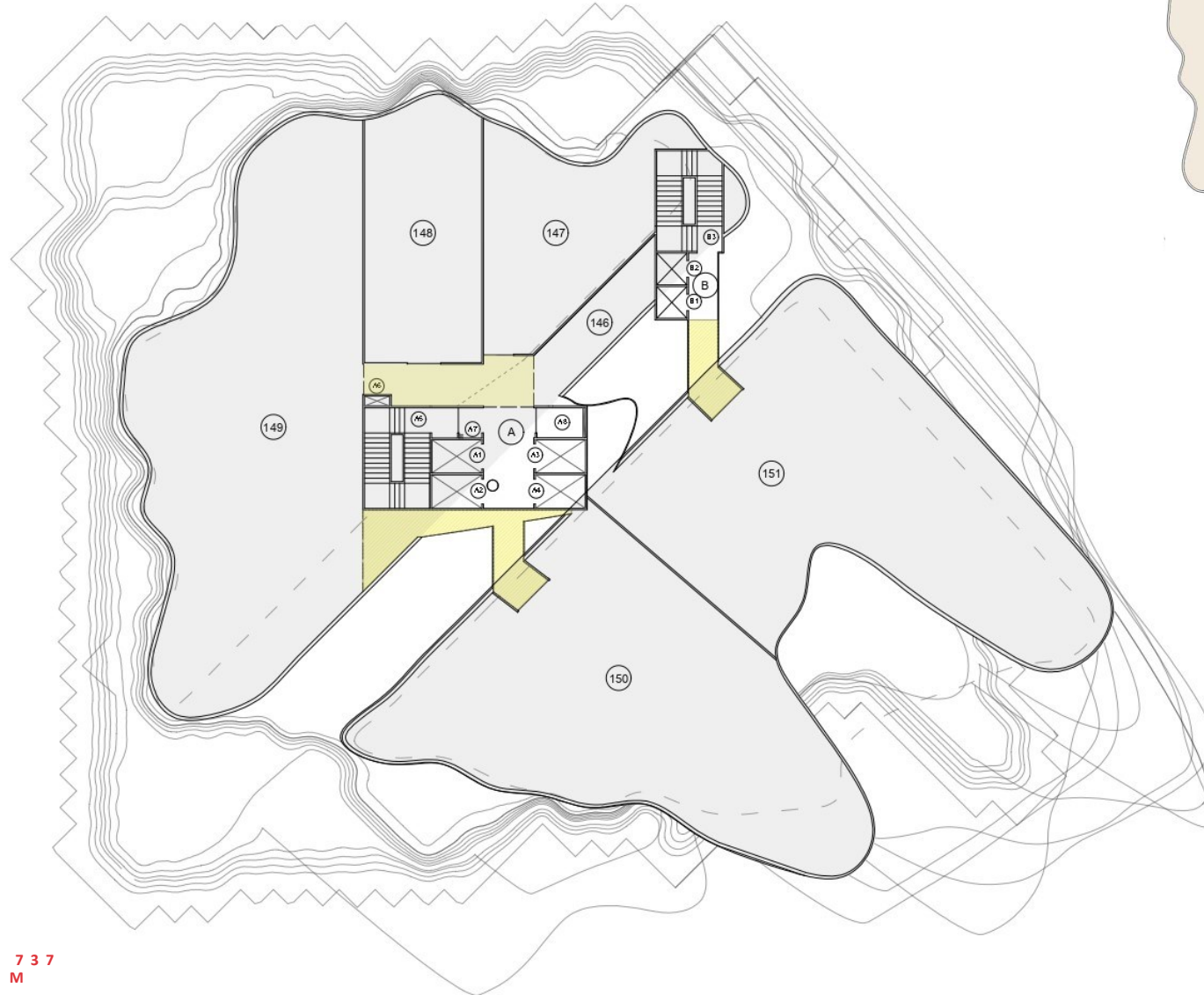
PROGRAMMATIC LEGEND



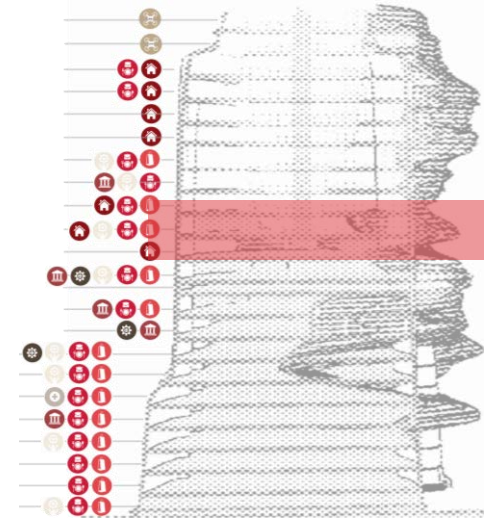
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

THIRTEENTH FLOOR AREA = 753 + 737 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

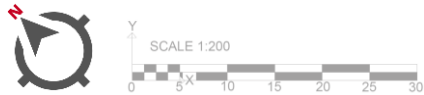
FOURTEENTH FLOOR LEVEL 14

152	OFFICE
153	2 BHK APARTMENT
154	2 BHK APARTMENT
155	2 BHK + STUDY APARTMENT
156	4 BHK APARTMENT
157	4 BHK APARTMENT

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE



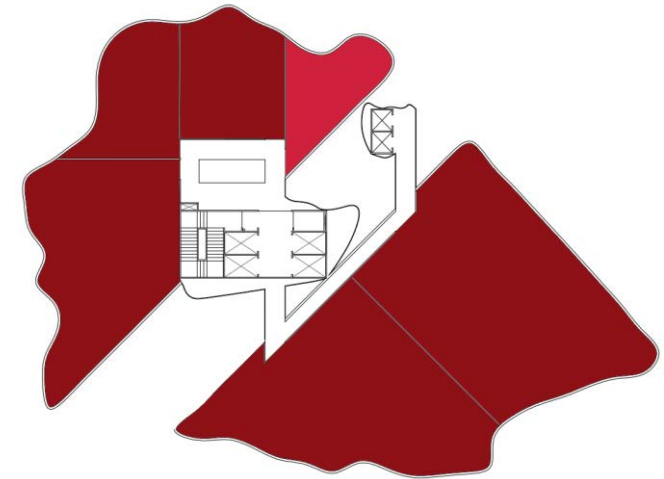
PROGRAMMATIC LEGEND



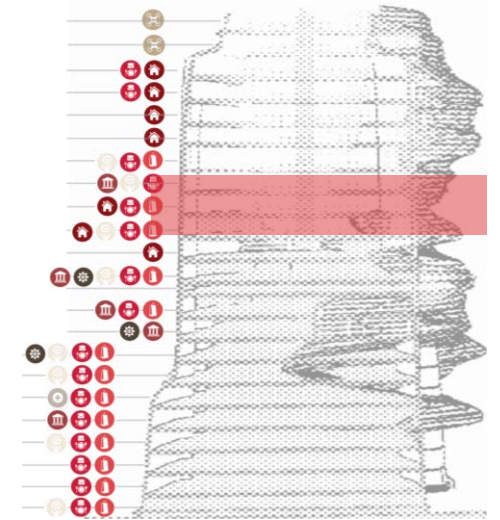
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

FOURTEENTH FLOOR AREA = 586 + 693 SQ M



KEY PROGRAMMATIC PLAN

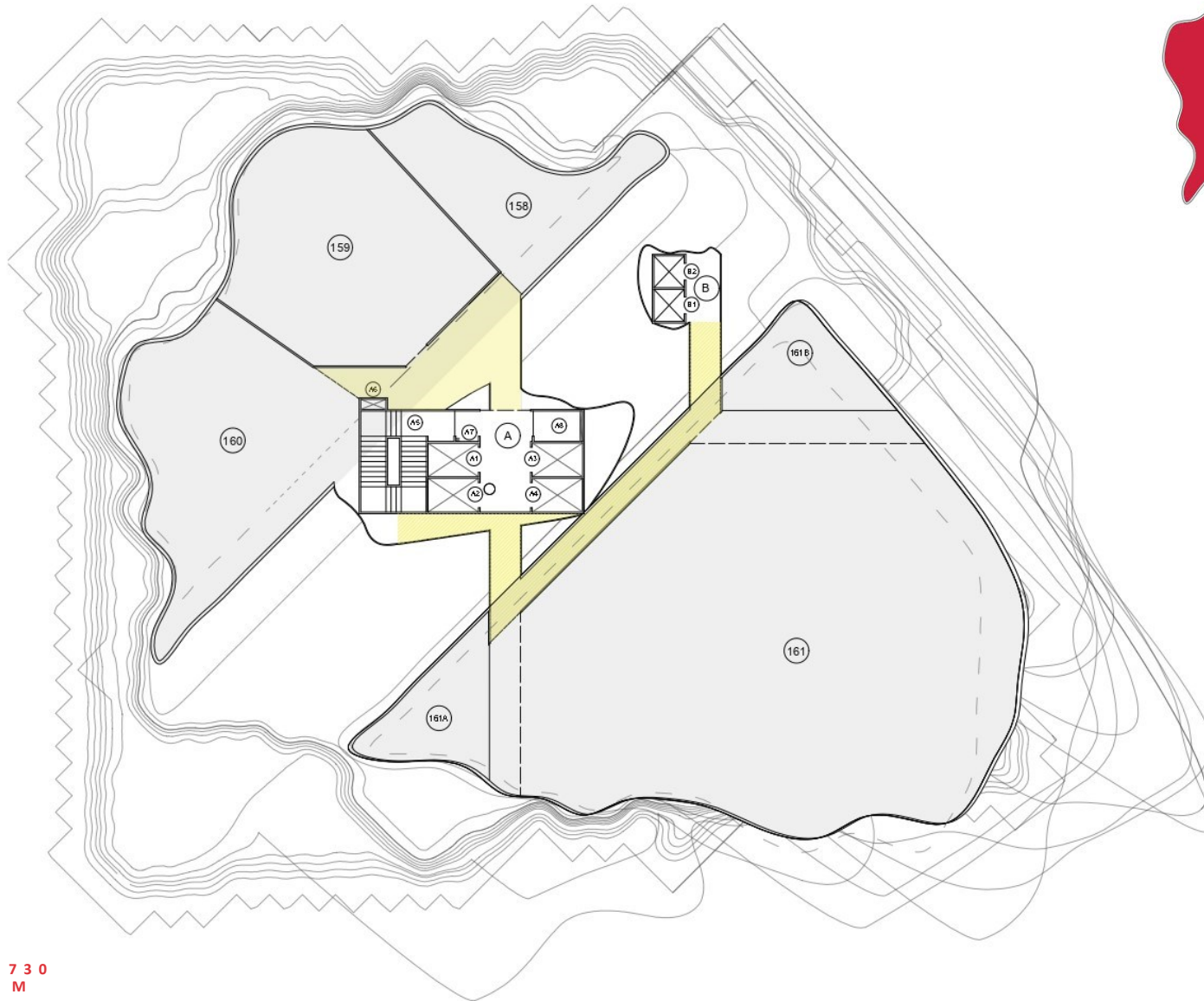


KEY PROGRAMMATIC SECTION

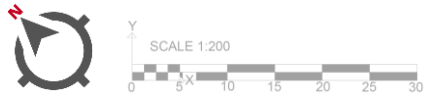
i_PLEXUS - ARTICULATION
FIFTEENTH FLOOR LEVEL 15

158	OFFICE
159	LEGAL SERVICES
158	OFFICE
161 + 161A + 161 B	THEATRE LVL 1 + CONCESSION STANDS

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE



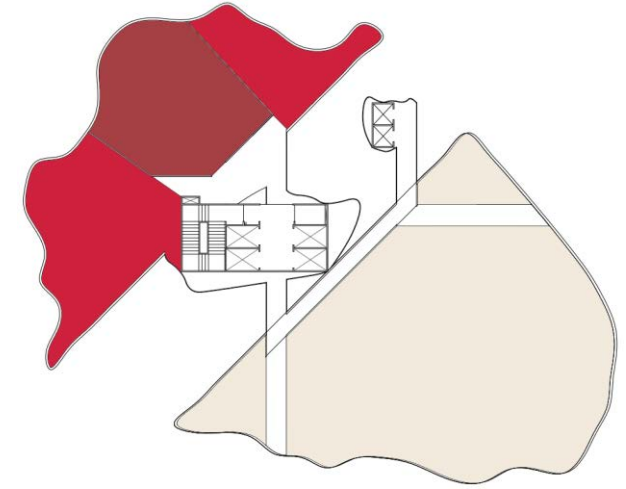
PROGRAMMATIC LEGEND



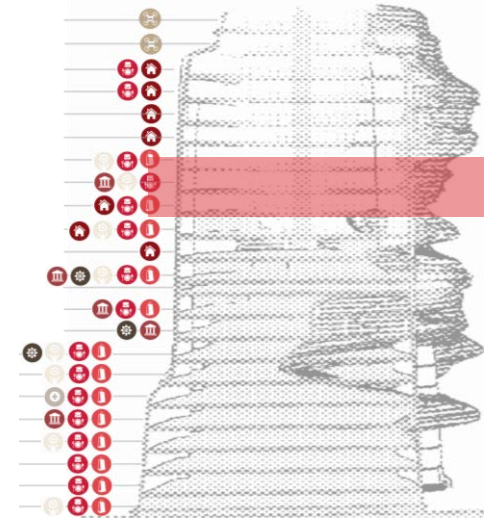
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

FIFTEENTH FLOOR AREA = 459 + 730 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION
SIXTEENTH FLOOR

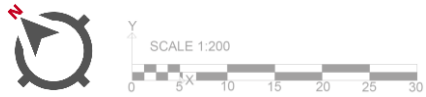
LEVEL 16

162	OFFICE
163	OFFICE
161	THEATRE LVL 2

A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE



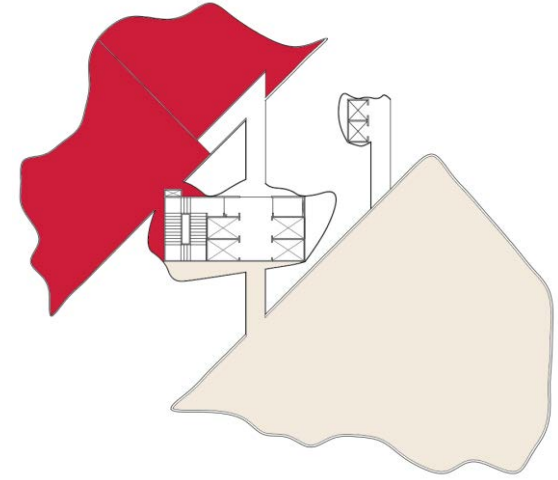
PROGRAMMATIC LEGEND



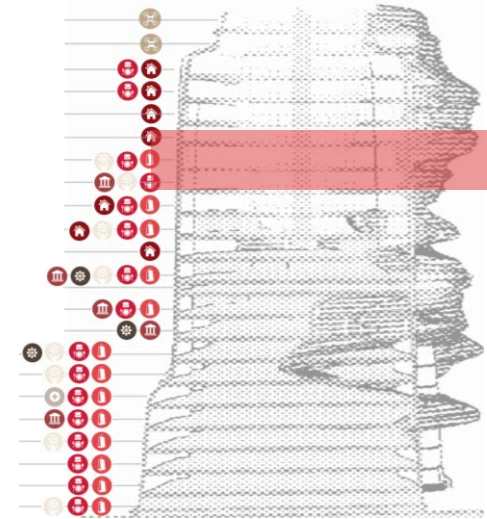
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

SIXTEENTH FLOOR AREA = 367 + 632
 SQ M



KEY PROGRAMMATIC PLAN

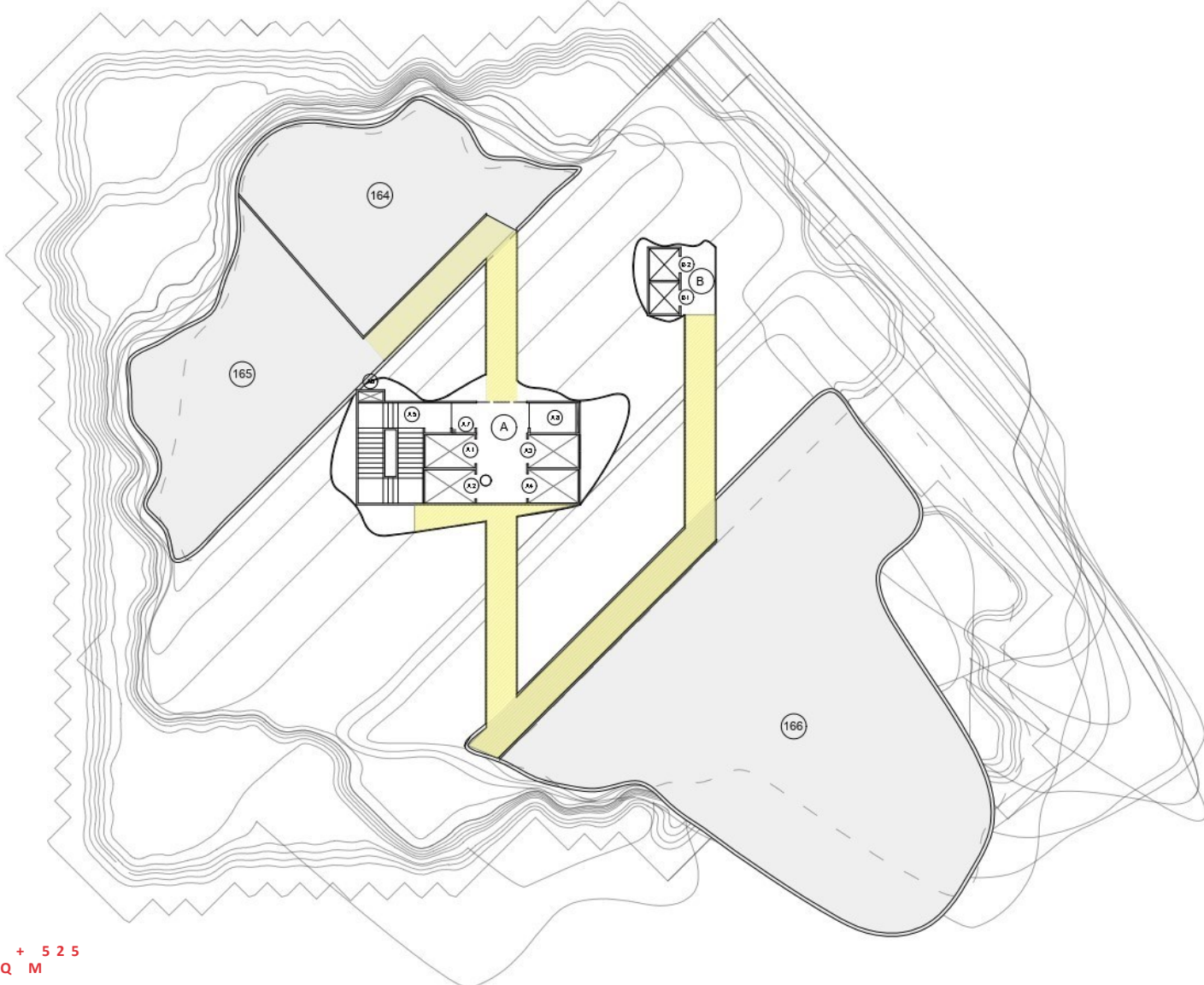


KEY PROGRAMMATIC SECTION

SEVENTEENTH FLOOR LEVEL 17

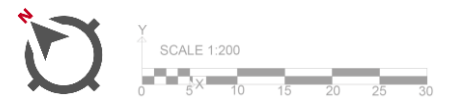
164	3 BHK APARTMENT
165	3 BHK APARTMENT

166	REFUGE AREA
A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE



PROGRAMMATIC LEGEND

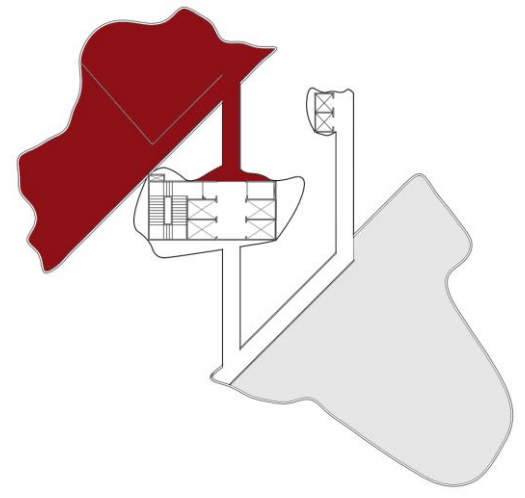
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	HEALTHCARE
TRANSIT	INDUSTRIAL



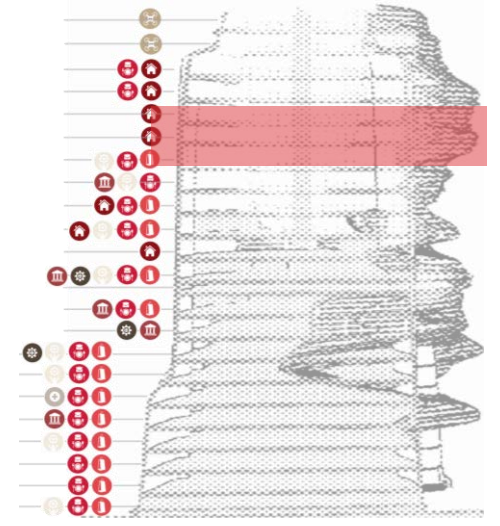
SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M

G + 24
TOTAL HEIGHT: 107 M

SEVENTEENTH FLOOR AREA = 333 + 525 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION

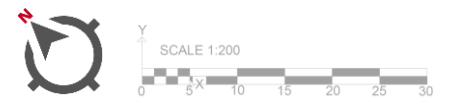
EIGHTEENTH FLOOR LEVEL 18

167	4 BHK APARTMENT
168	PENTHOUSE LVL 1

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE

PROGRAMMATIC LEGEND

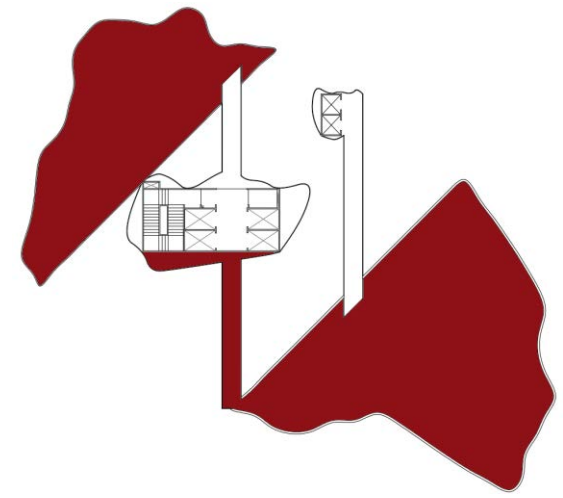
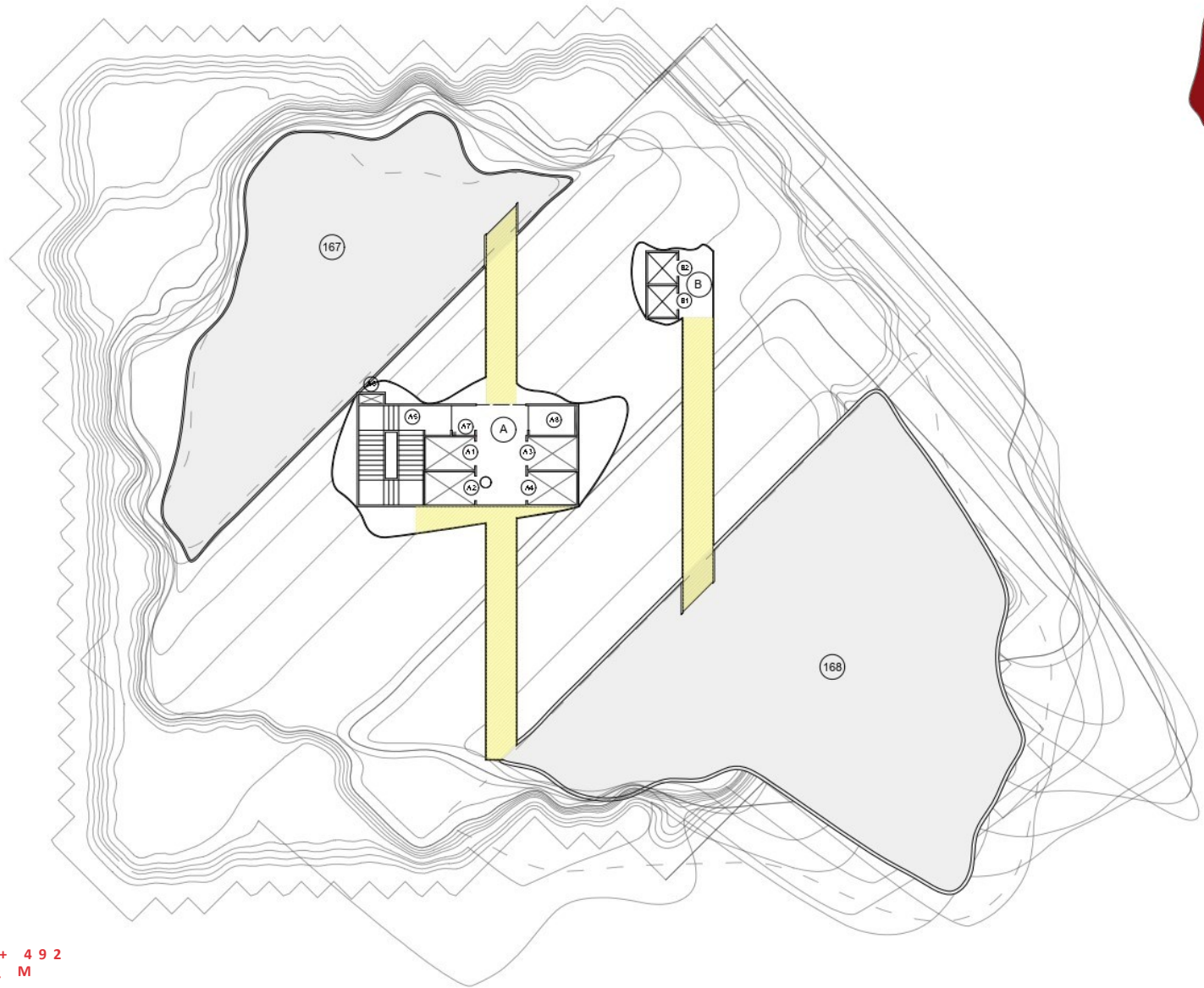
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	HEALTHCARE
TRANSIT	INDUSTRIAL



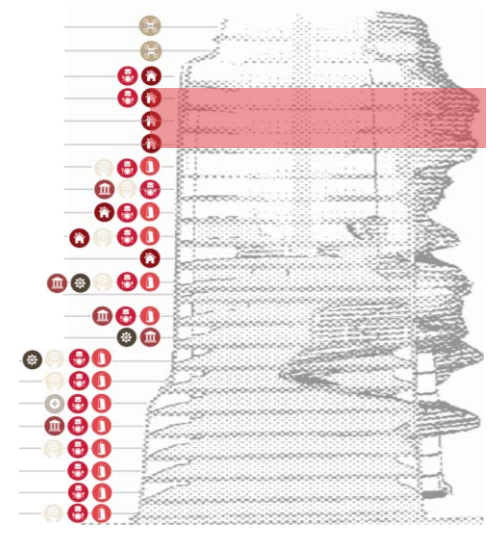
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

EIGHTEENTH FLOOR AREA = 292 + 492 SQ M



KEY PROGRAMMATIC PLAN



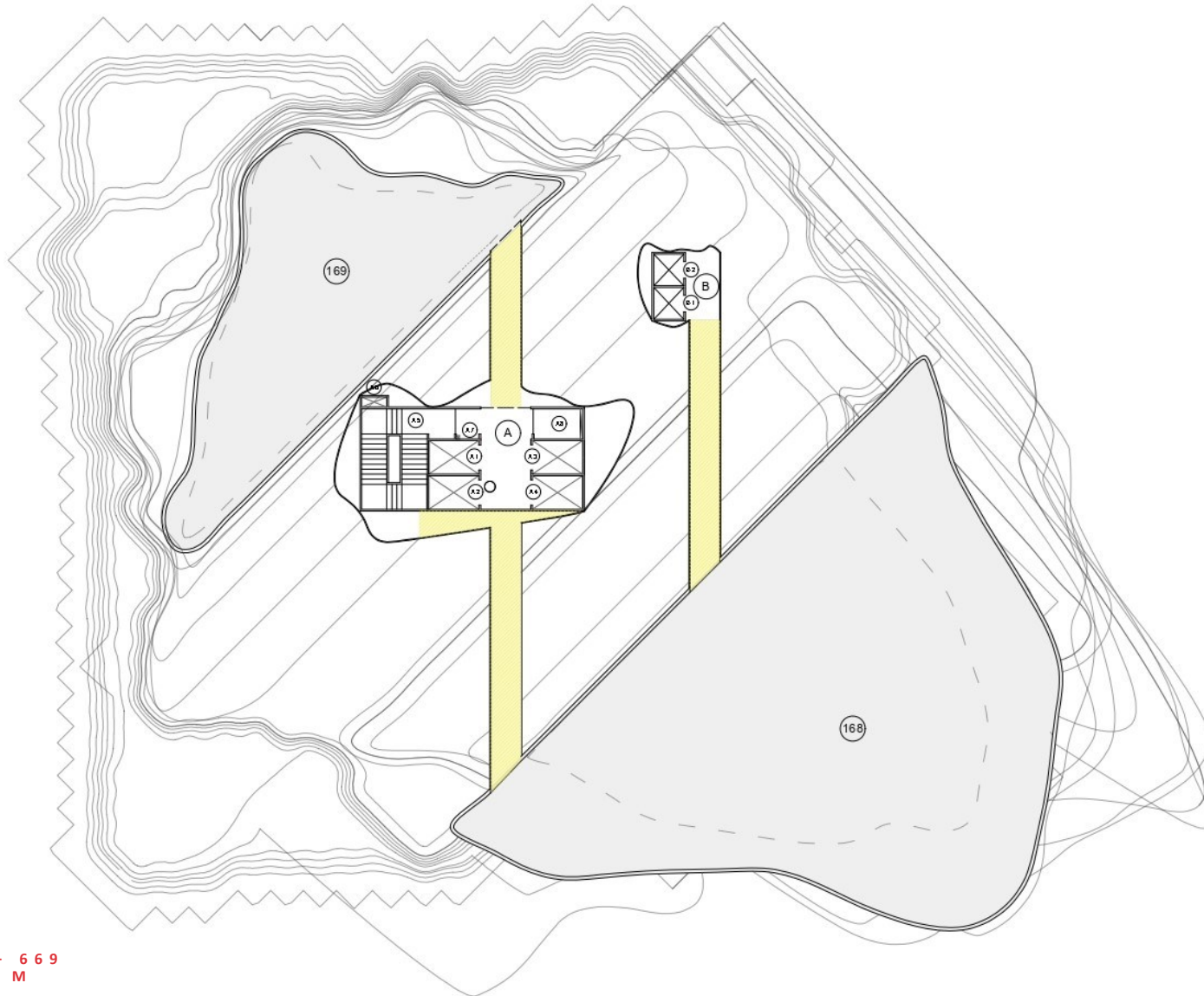
KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION
NINETEENTH FLOOR

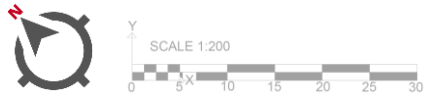
LEVEL 19

169	RESTAURANT & BAR LVL 1
168	PENTHOUSE LVL 2

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE



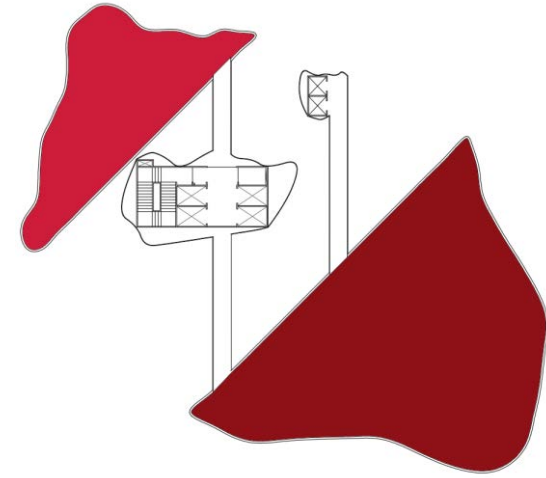
PROGRAMMATIC LEGEND



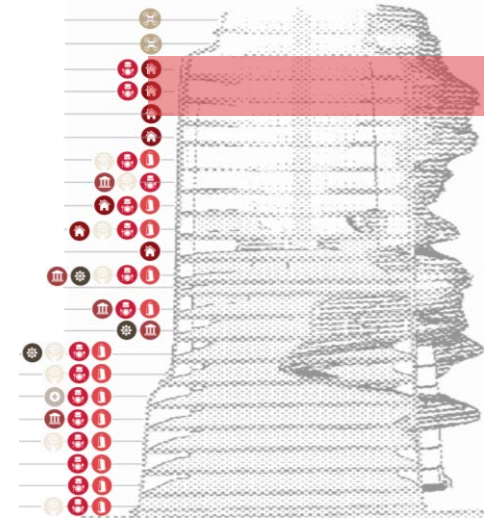
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

**NINETEENTH FLOOR AREA = 239 + 669
 SQ M**



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION
TWENTIETH FLOOR LEVEL 20

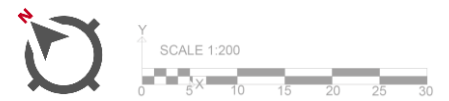
169	RESTAURANT & BAR LVL 2
170	PENTHOUSE LVL 1

A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE



PROGRAMMATIC LEGEND

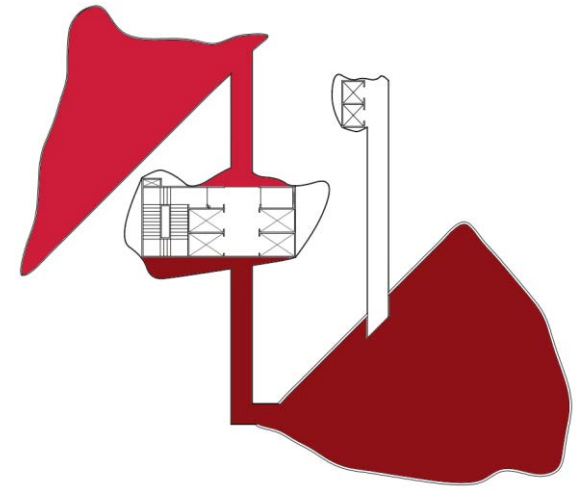
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	HEALTHCARE
TRANSIT	INDUSTRIAL



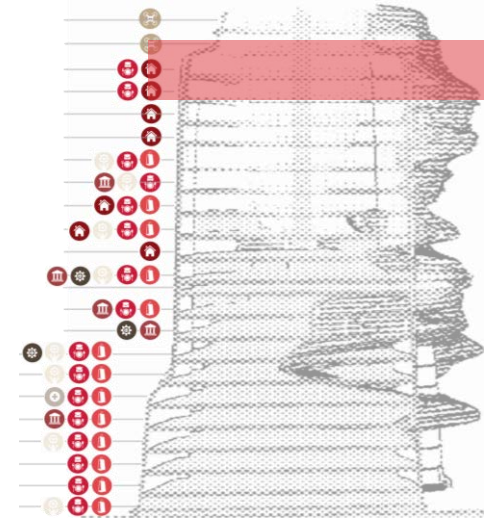
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

TWENTIETH FLOOR AREA = 193 + 380 SQ M



KEY PROGRAMMATIC PLAN



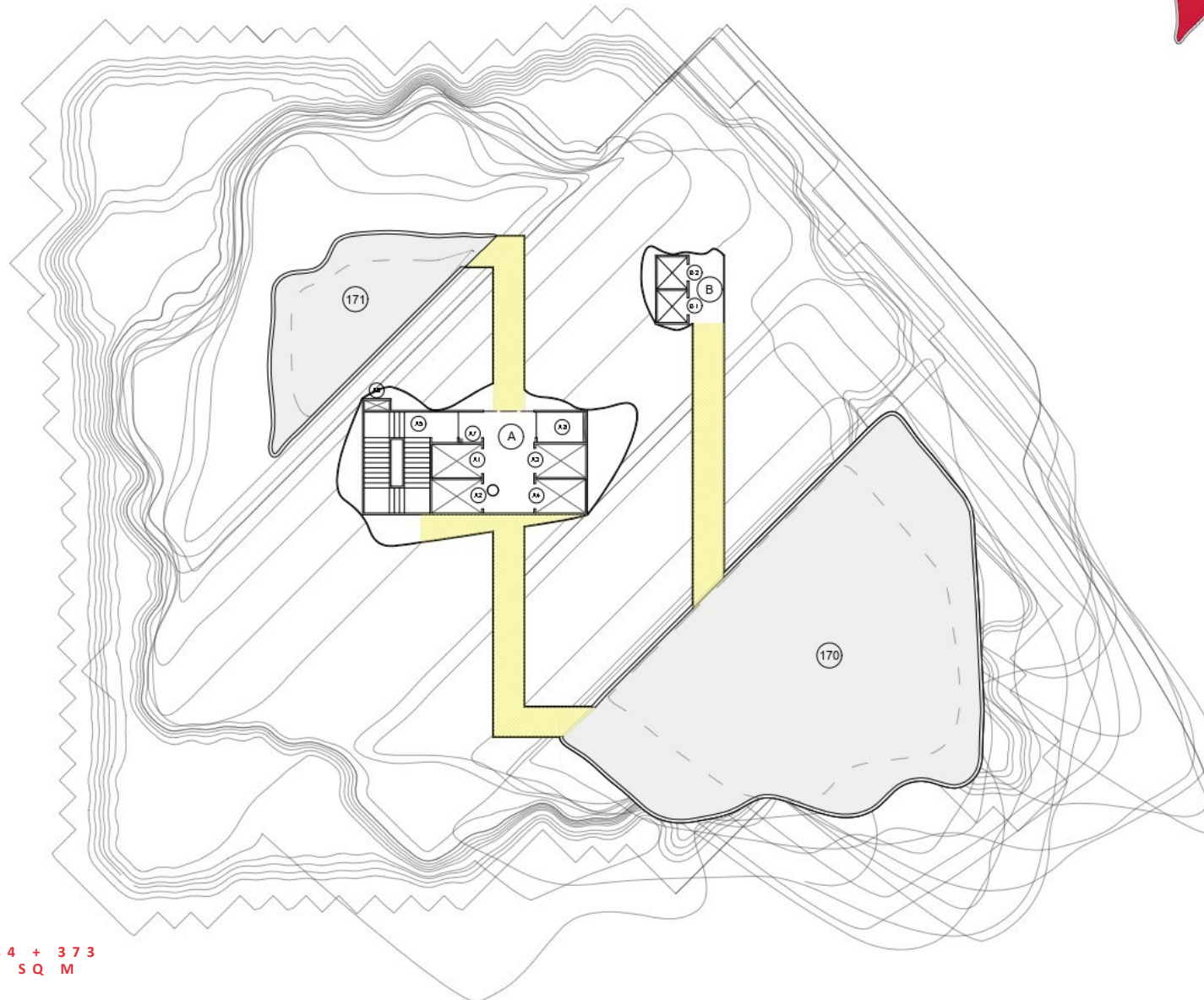
KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION

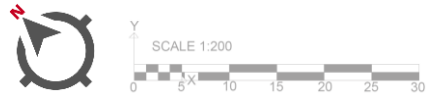
TWENTY FIRST FLOOR LEVEL 21

171	OFFICE
170	PENTHOUSE LVL. 2

A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE



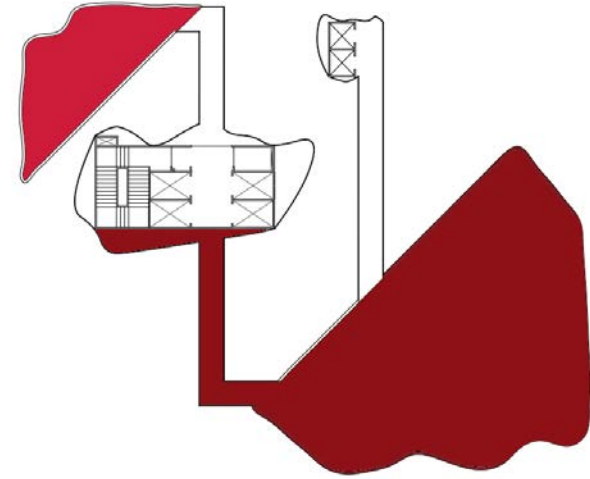
PROGRAMMATIC LEGEND



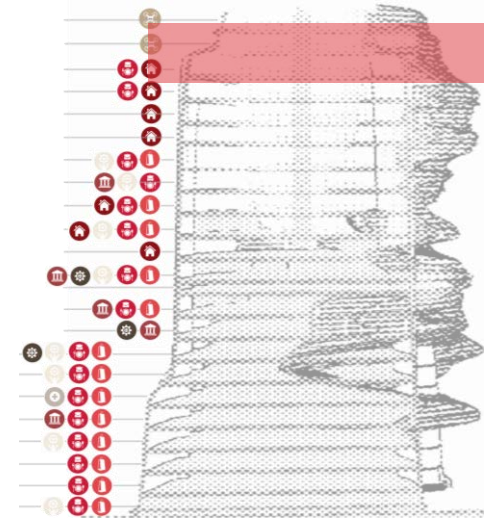
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

TWENTY FIRST FLOOR AREA = 84 + 373
 SQ M



KEY PROGRAMMATIC PLAN

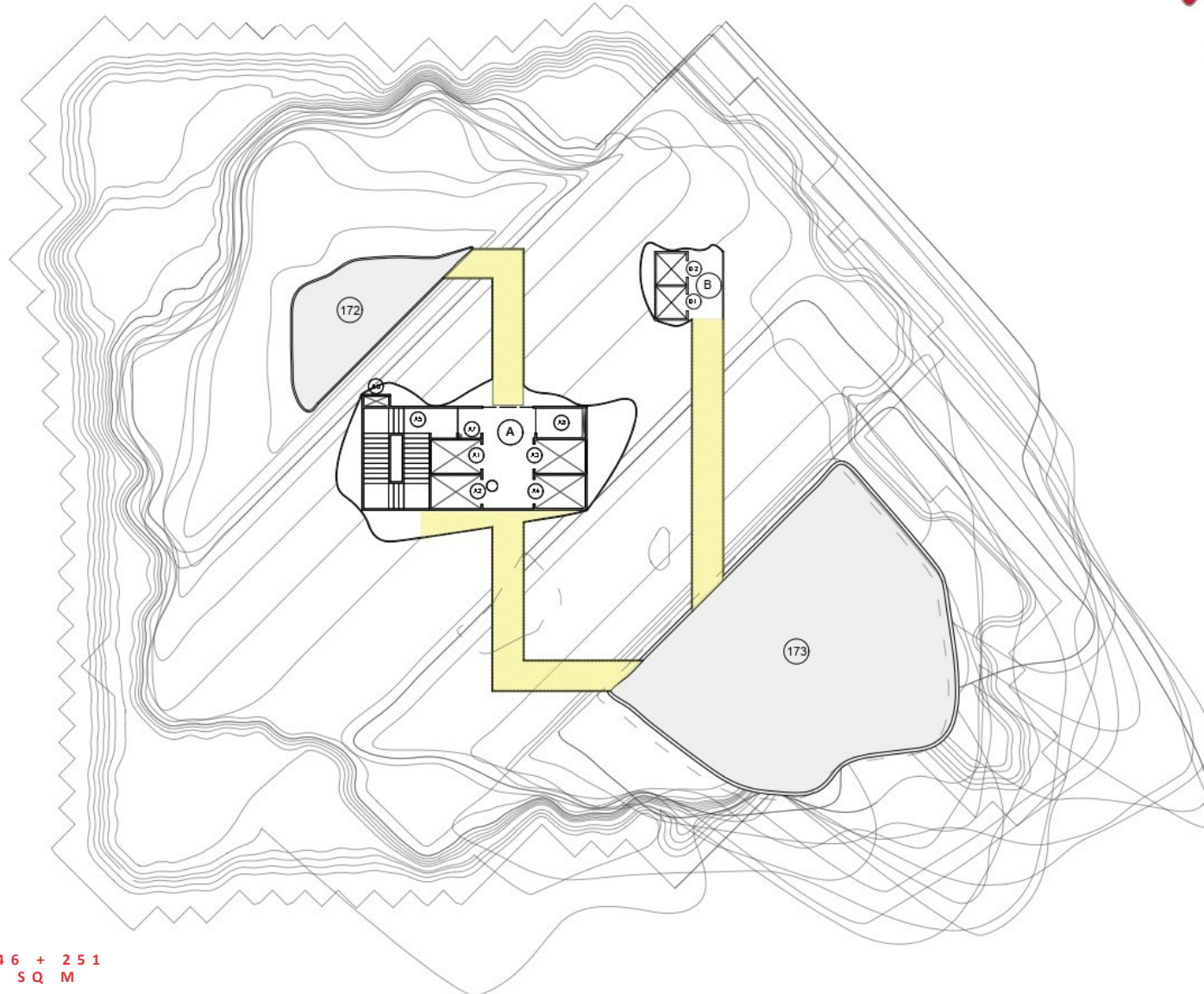


KEY PROGRAMMATIC SECTION

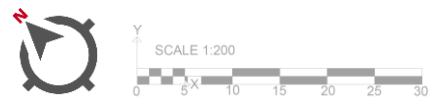
TWENTY SECOND FLOOR LEVEL 22

172	OFFICE
173	QUARANTINE FACILITY

- A SERVICE CORE
- B RESIDENTIAL SERVICE CORE



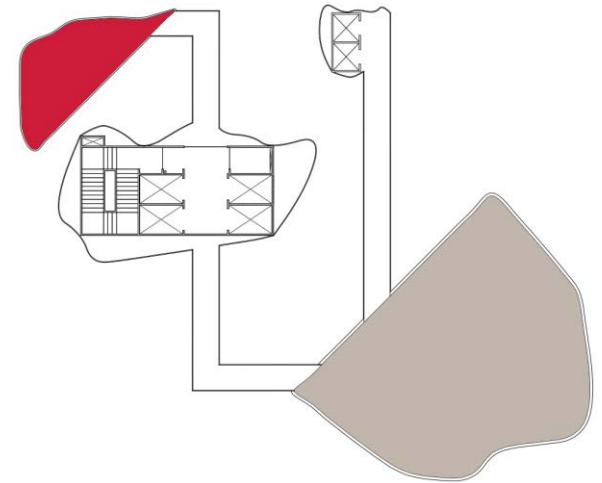
PROGRAMMATIC LEGEND



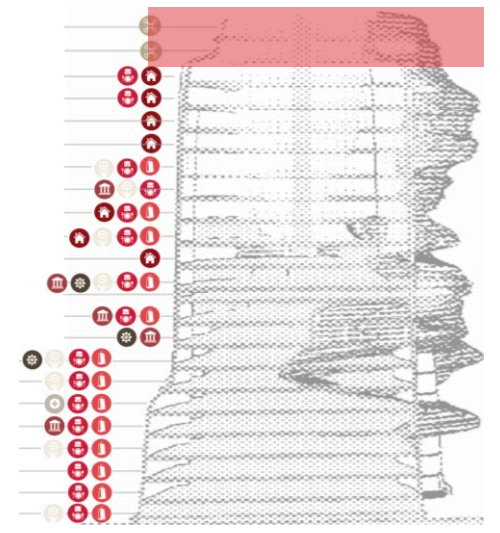
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ M

G + 24
 TOTAL HEIGHT: 107 M

TWENTY SECOND FLOOR AREA = 46 + 251 SQ M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION

TWENTY THIRD FLOOR

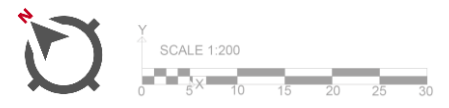
LEVEL 23

174	ENTRY + SECURITY
175	TICKETING + ANCILLARY FUNCTIONS

A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE

PROGRAMMATIC LEGEND

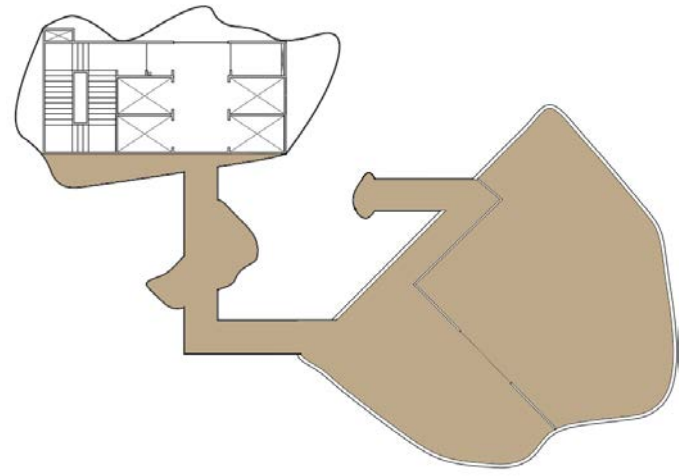
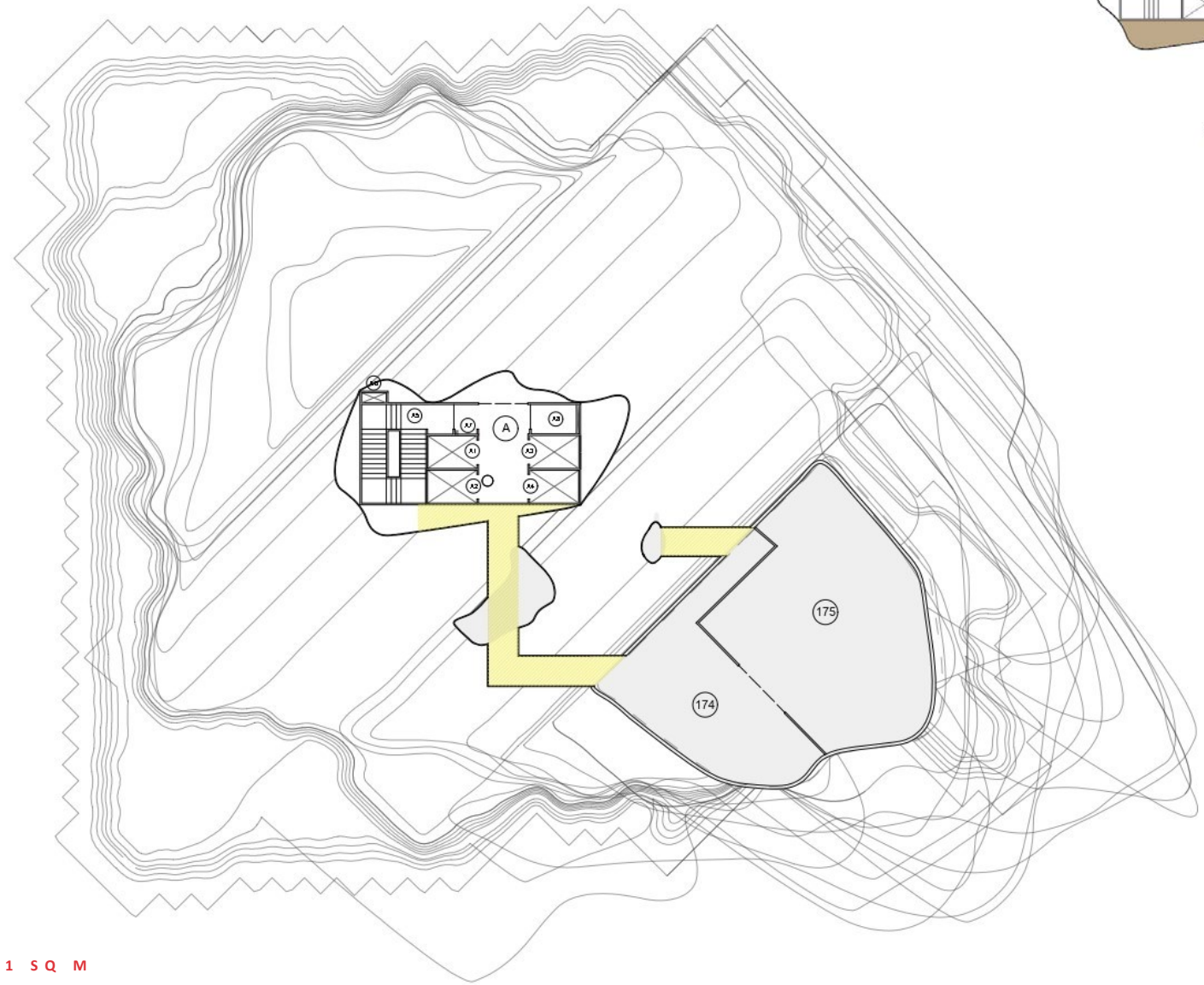
RETAIL	INSTITUTIONAL
COMMERCIAL	RESIDENTIAL
RECREATIONAL	TRANSIT
HEALTHCARE	INDUSTRIAL



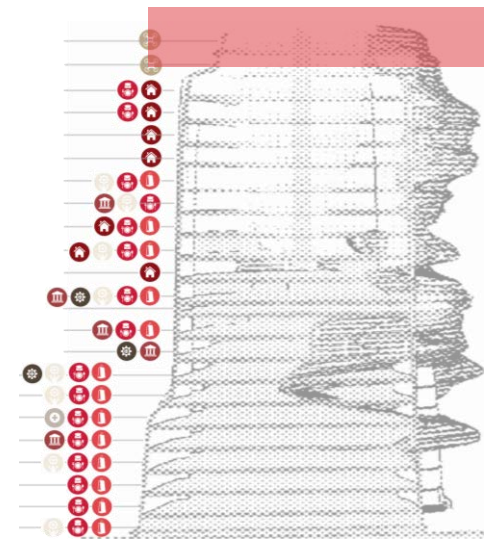
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ. M

G + 24
 TOTAL HEIGHT: 107 M

TWENTY THIRD FLOOR AREA = 251 SQ. M



KEY PROGRAMMATIC PLAN



KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION

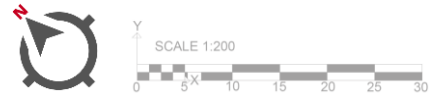
TWENTY FOURTH FLOOR LEVEL 24

176	CONCOURSE
177	UBER AIR CAB LANDING

A	SERVICE CORE
B	RESIDENTIAL SERVICE CORE



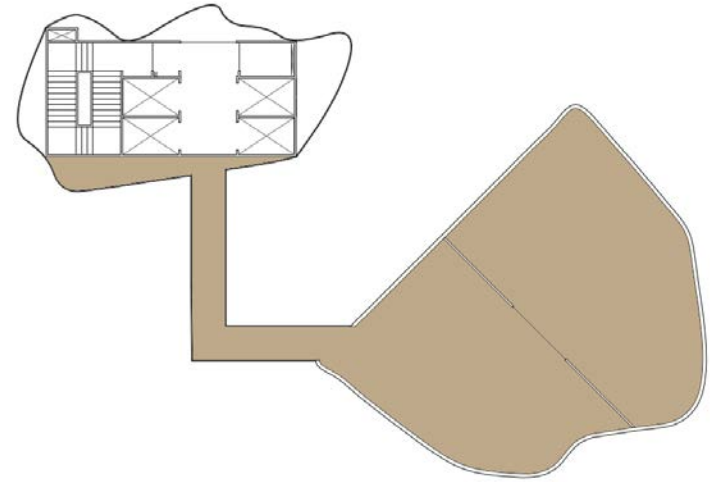
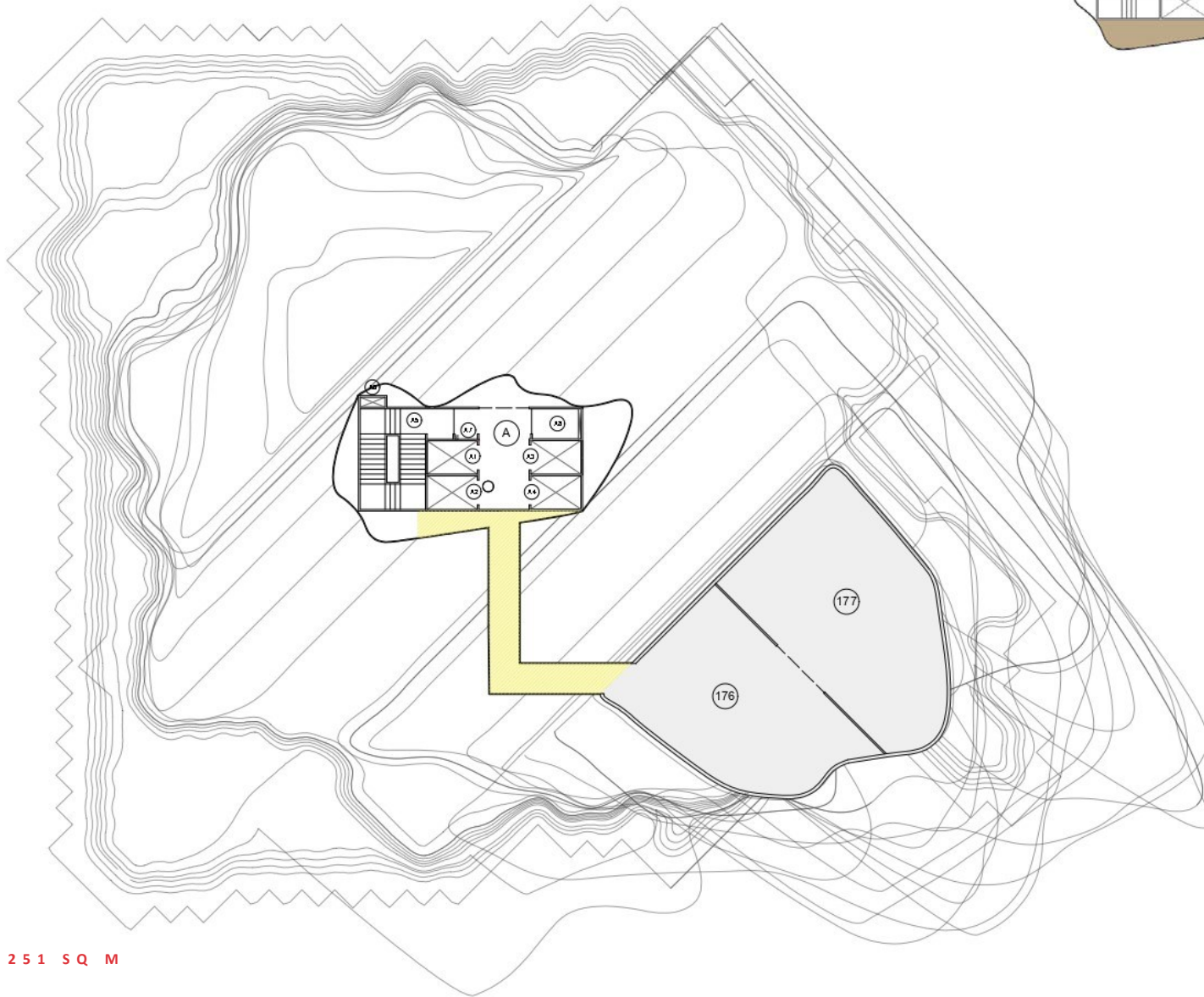
PROGRAMMATIC LEGEND



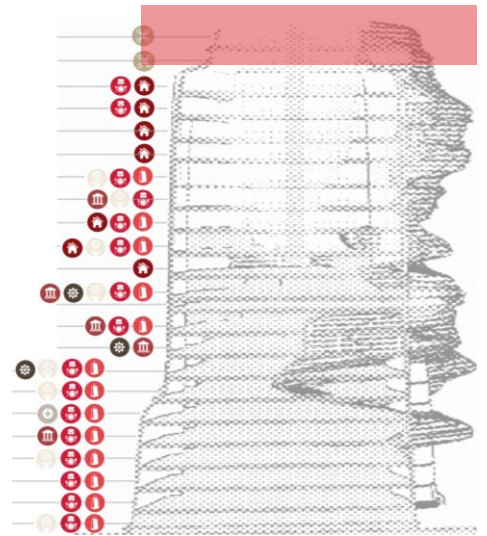
SITE AREA: 2.5 ACRES
 BUILT UP AREA: 45000 SQ. M

G + 24
 TOTAL HEIGHT: 107 M

TWENTY FOURTH FLOOR AREA = 251 SQ. M



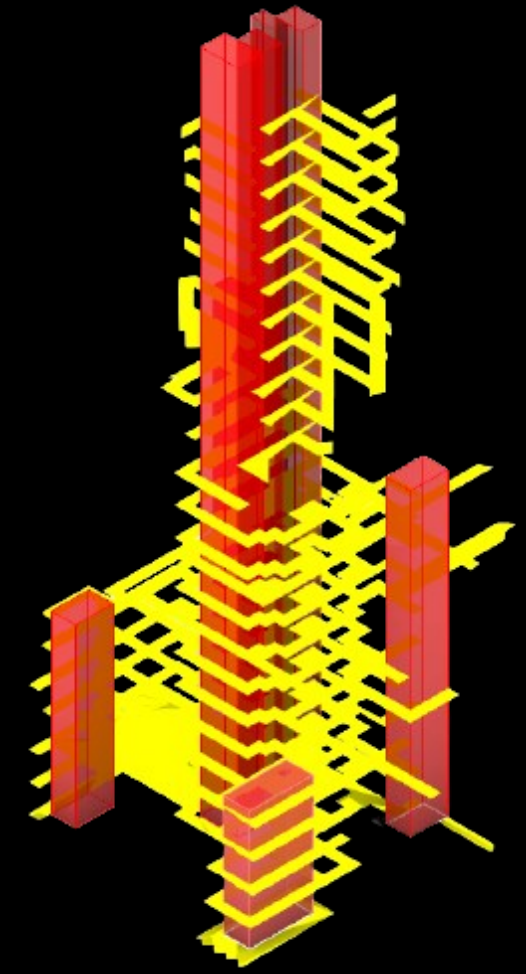
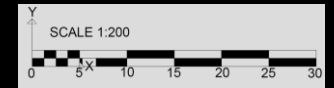
KEY PROGRAMMATIC PLAN

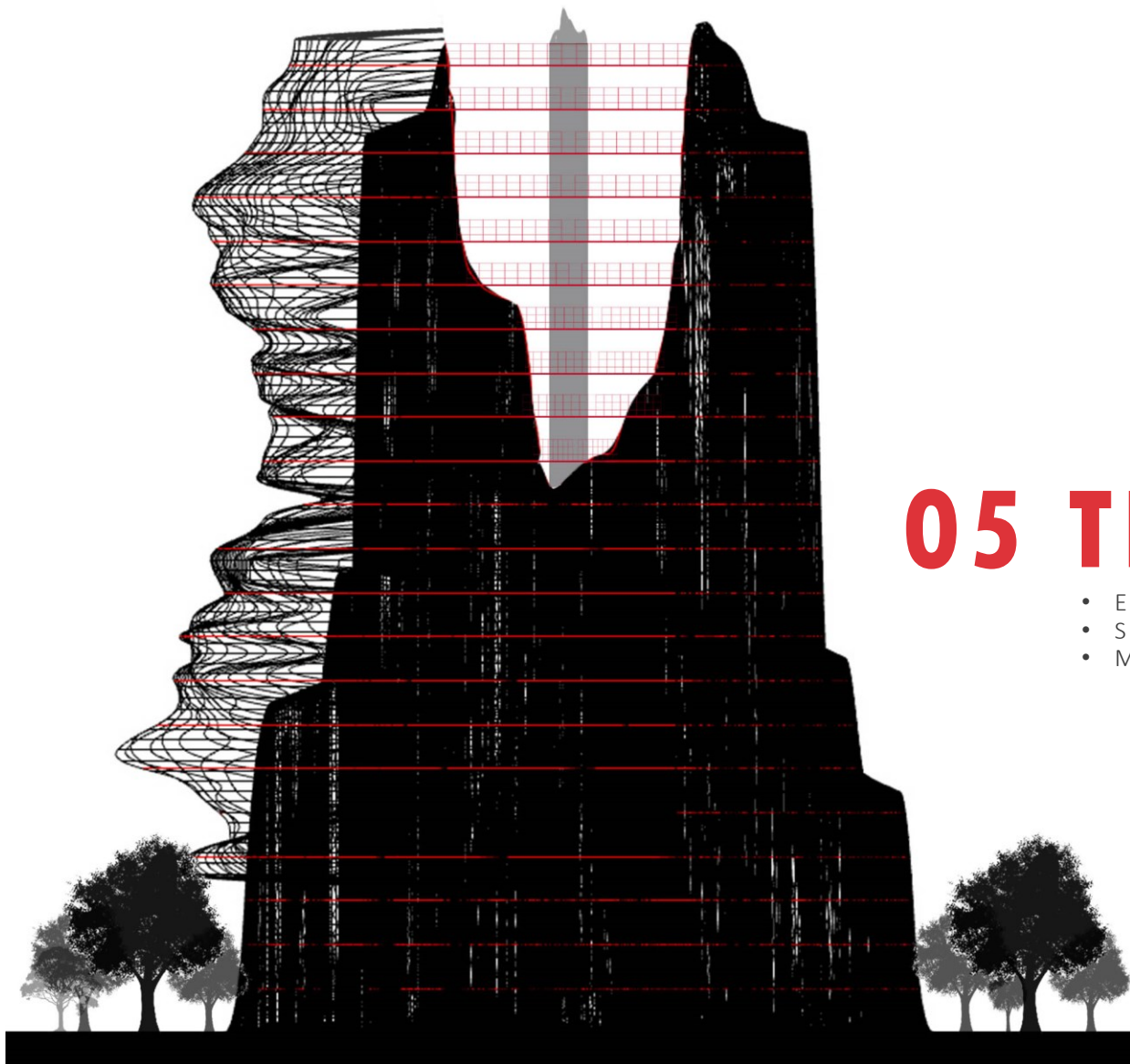


KEY PROGRAMMATIC SECTION

i_PLEXUS - ARTICULATION
CIRCULATION DIAGRAM ISOMETRIC

SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ. M
G + 2.4
TOTAL HEIGHT: 107 M





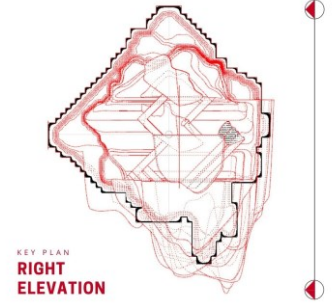
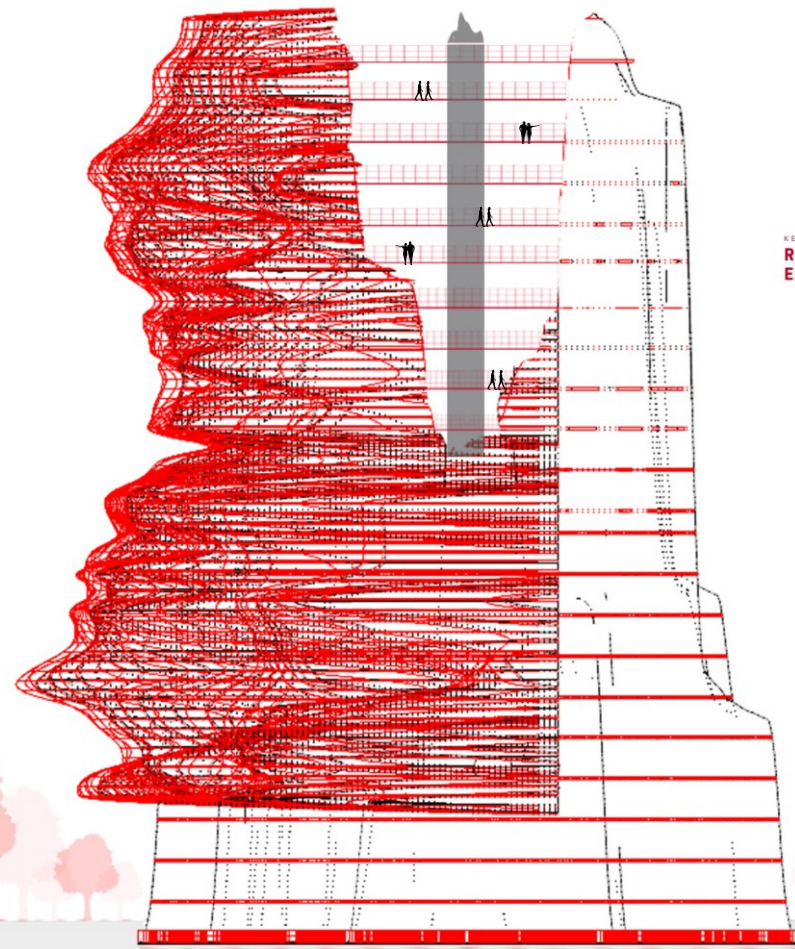
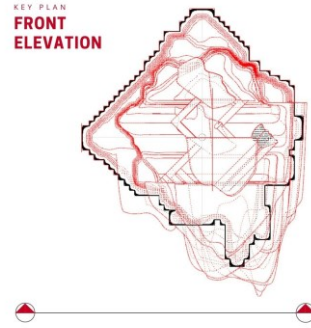
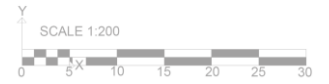
CONCLUSION

05 THE TRANS_FORMER

- Elevations
- Sections
- Model

THE TRANSFORMER i_PLEXUS - CONCLUSION
ELEVATIONS ELEVATION - FRONT + RIGHT

SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M
G+24
TOTAL HEIGHT: 107 M

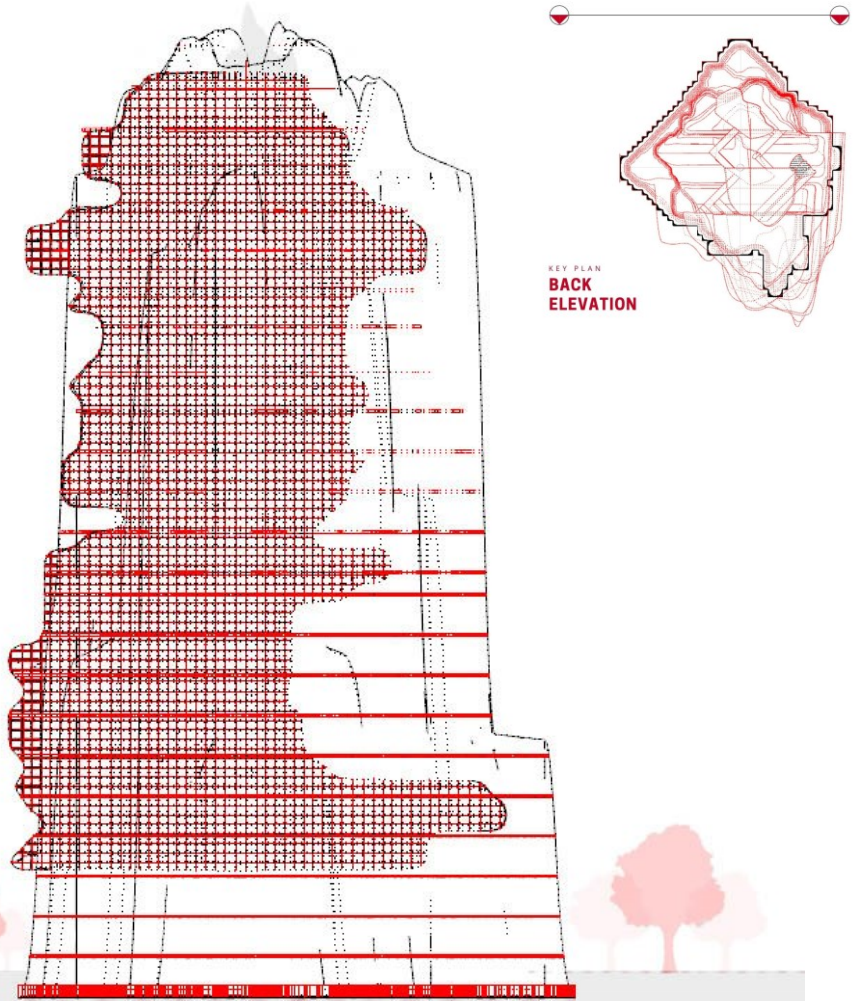
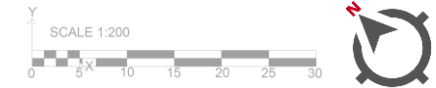


FRONT ELEVATION

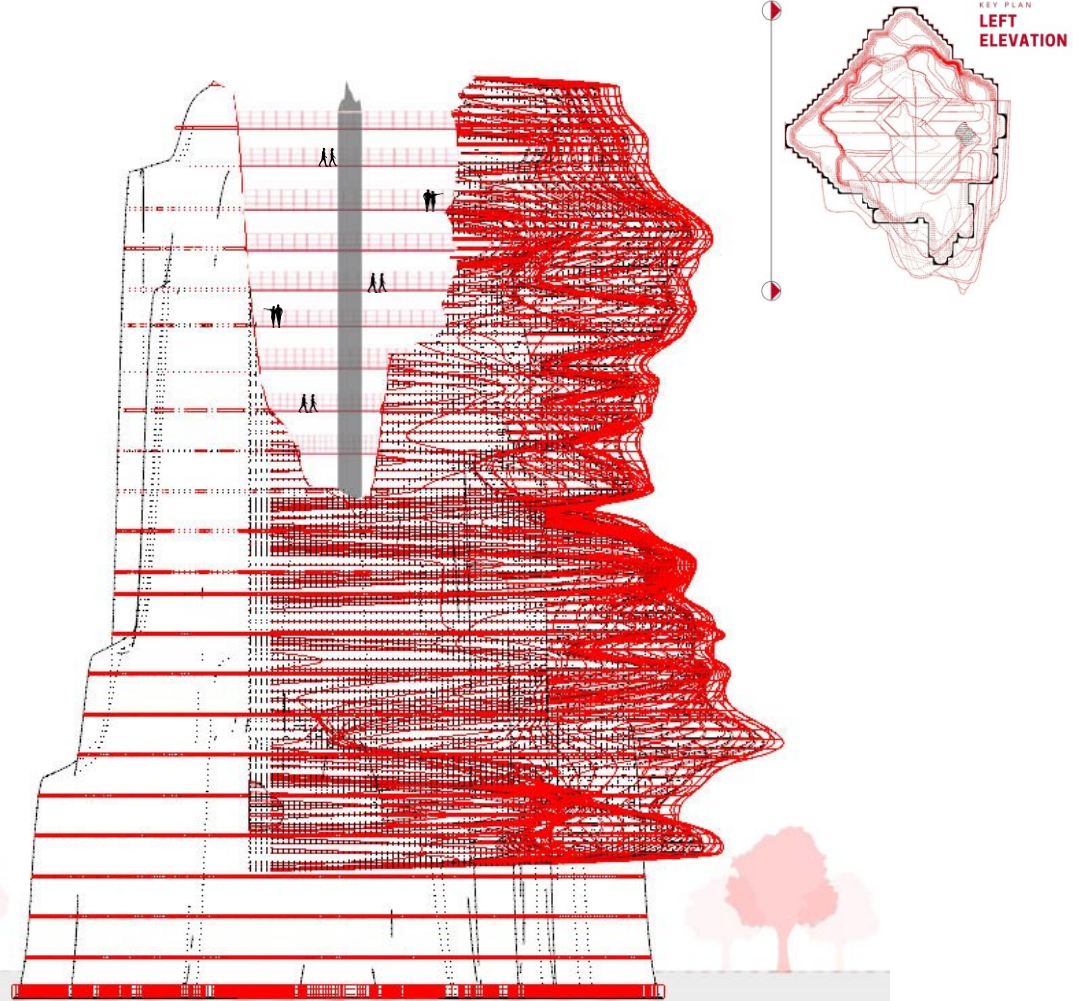
RIGHT ELEVATION

THE TRANSFORMER i_PLEXUS - CONCLUSION
ELEVATIONS ELEVATION - BACK + LEFT

SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M
G + 24
TOTAL HEIGHT: 107 M



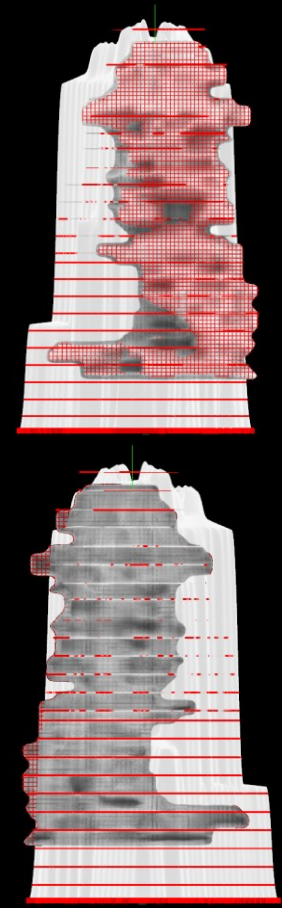
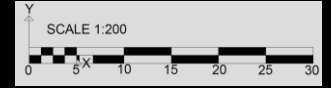
BACK ELEVATION



LEFT ELEVATION

THE TRANSFORMER i_PLEXUS - CONCLUSION
ELEVATION FRONT

SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ. M
G + 2.4
TOTAL HEIGHT: 107 M

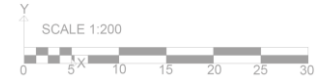


THE TRANSFORMER i_PLEXUS - CONCLUSION

SECTIONS SECTION AA'

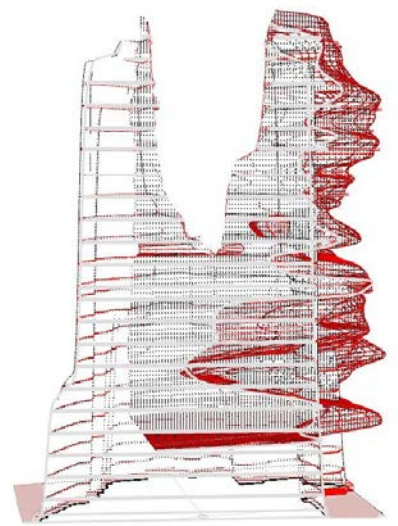
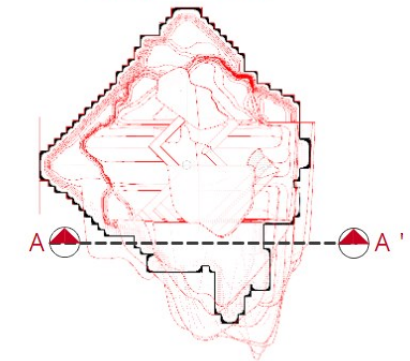
SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ M

G + 24
TOTAL HEIGHT: 107 M



- ▶ TWENTY FOURTH FL. + 103800
- ▶ TWENTY THIRD FL. + 99300
- ▶ TWENTY SECOND FL. + 94800
- ▶ TWENTY FIRST FL. + 90300
- ▶ TWENTIETH FL. + 85800
- ▶ NINETEENTH FL. + 81300
- ▶ EIGHTEENTH FL. + 76800
- ▶ SEVENTEENTH FL. + 72300
- ▶ SIXTEENTH FL. + 67800
- ▶ FIFTEENTH FL. + 63300
- ▶ FOURTEENTH FL. + 58800
- ▶ THIRTEENTH FL. + 54300
- ▶ TWELFTH FL. + 49800
- ▶ ELEVENTH FL. + 45300
- ▶ TENTH FL. + 40800
- ▶ NINTH FL. + 38400
- ▶ EIGHTH FL. + 33900
- ▶ SEVENTH FL. + 29400
- ▶ SIXTH FL. + 24900
- ▶ FIFTH FL. + 20400
- ▶ FOURTH FL. + 15900
- ▶ THIRD FL. + 11400
- ▶ SECOND FL. + 6900
- ▶ FIRST FL. + 5700
- ▶ GROUND FL. + 1200
- ▶ BASEMENT - 4000

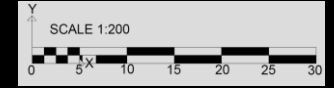
KEY PLAN



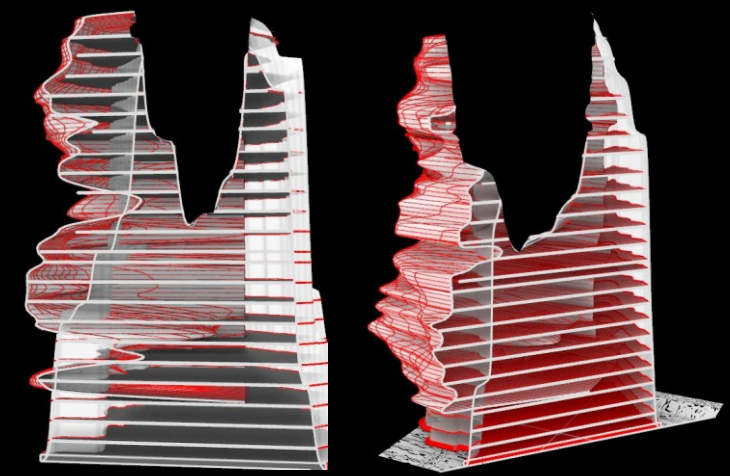
SECTION AA'

THE TRANSFORMER i_PLEXUS - CONCLUSION
SECTIONS SECTION BB'

SITE AREA: 2.5 ACRES
BUILT UP AREA: 45000 SQ. M
G + 24
TOTAL HEIGHT: 107 M



KEY PLAN





A VERTICAL HYBRID ECOLOGY

i_PLEXUS





A VERTICAL HYBRID ECOLOGY

i_PLEXUS









ADAPTIVE HABITATS

06 THE EVOLUTION

THE TRANSFORMER i_PLEXUS - EVOLUTION

ECOLOGICAL EXCHANGE ECOLOGICAL WALL SECTION

The i_PLEXUS is *indeed tries to be mutually inclusive* in its attitude towards the environment & tries to establish an equal consumer-producer relationship with its environment.



A VERTICAL HYBRID ECOLOGY

i_PLEXUS

INTELLIGENT & INTUITIVE_NETWORK
OF NERVES OR VESSELS

GOLF COURSE ROAD, GURUGRAM

i_PLEXUS is an AI driven hybrid ecology that uses Golf Course Road's urban fabric for its successful functioning through numerous arteries. It aims to advance and progress with simpler solutions for a creating a flexible vertical city - an Adaptive & Ecological Vertical Hybrid Ecology which works as a networked city. A speculative quest into an archetype of a TRANSFORMABLE, ADAPTIVE NETWORKED HYBRID which is ecologically mutually symbiotic and 'productive' in the co-existence of habitats and programmatically a self-sufficient and sustainable vertical city.

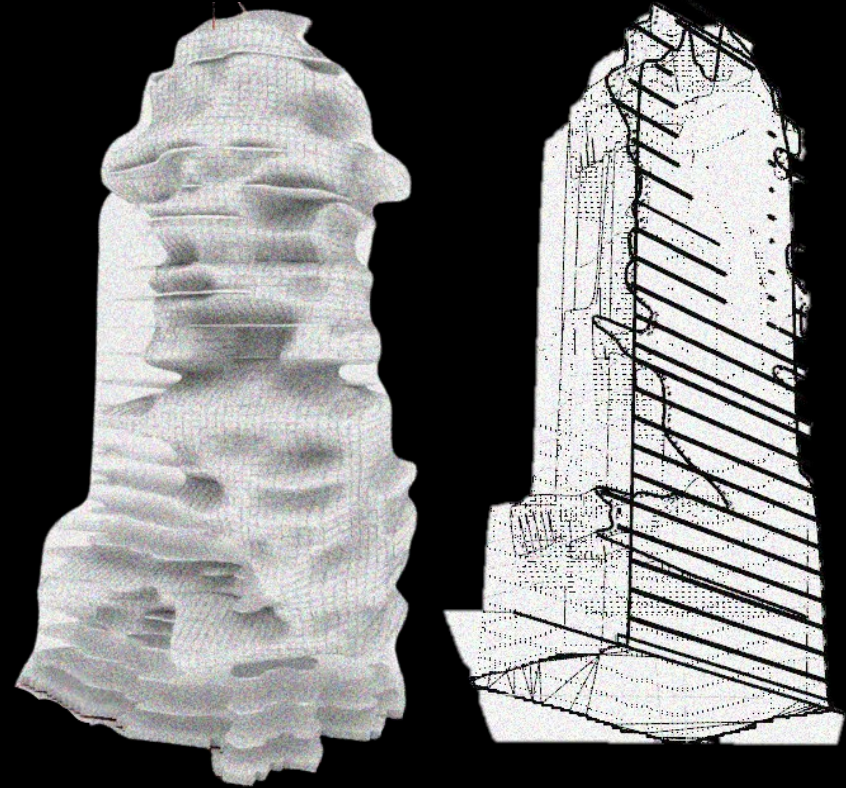


REINVIGORATED GREEN BLUE GREY BALANCE // MINI URBAN FOREST

AN ADAPTIVE TRANSFORMER

ADAPTIVE HABITATS STUDIO

- Interrogated and built an understanding of the role of the elements in influencing and informing design - form & order, program, movement, structure, material, services and technique.
- Tested Generative capacities of the elements in derivation of prototypical models that could possibly reflect on built habitat's interactions with the environment.
- Evolved 'alternate' forms of architectural sensibility and aesthetic that strengthened our understanding of the elements.
- Inculcated an ability to rethink emergent architectural and urban formations of our time so as to further speculate re-generative and resilient constructs capable of transforming an existing situation (**THE PANDEMIC**), adaptable to future change (**SIMILAR EVENTS**) and able to incorporate technological inventions and innovations that aims to revolutionize our current social patterns and our relationship with ecological surroundings: its biodiversity, resources, sprawl, agility and flexibility.
- Expanded the field of possibilities by exploiting speculative thought as a catalyst to synchronize the digital and material worlds.
- EXPLORED THE **FULL COMPLEXITY OF A COMPREHENSIVE ARCHITECTURAL ASSEMBLY IN AN URBAN ENVIRONMENT** that is mutually symbiotic and 'productive' in the co-existence of habitats.





THANK YOU

