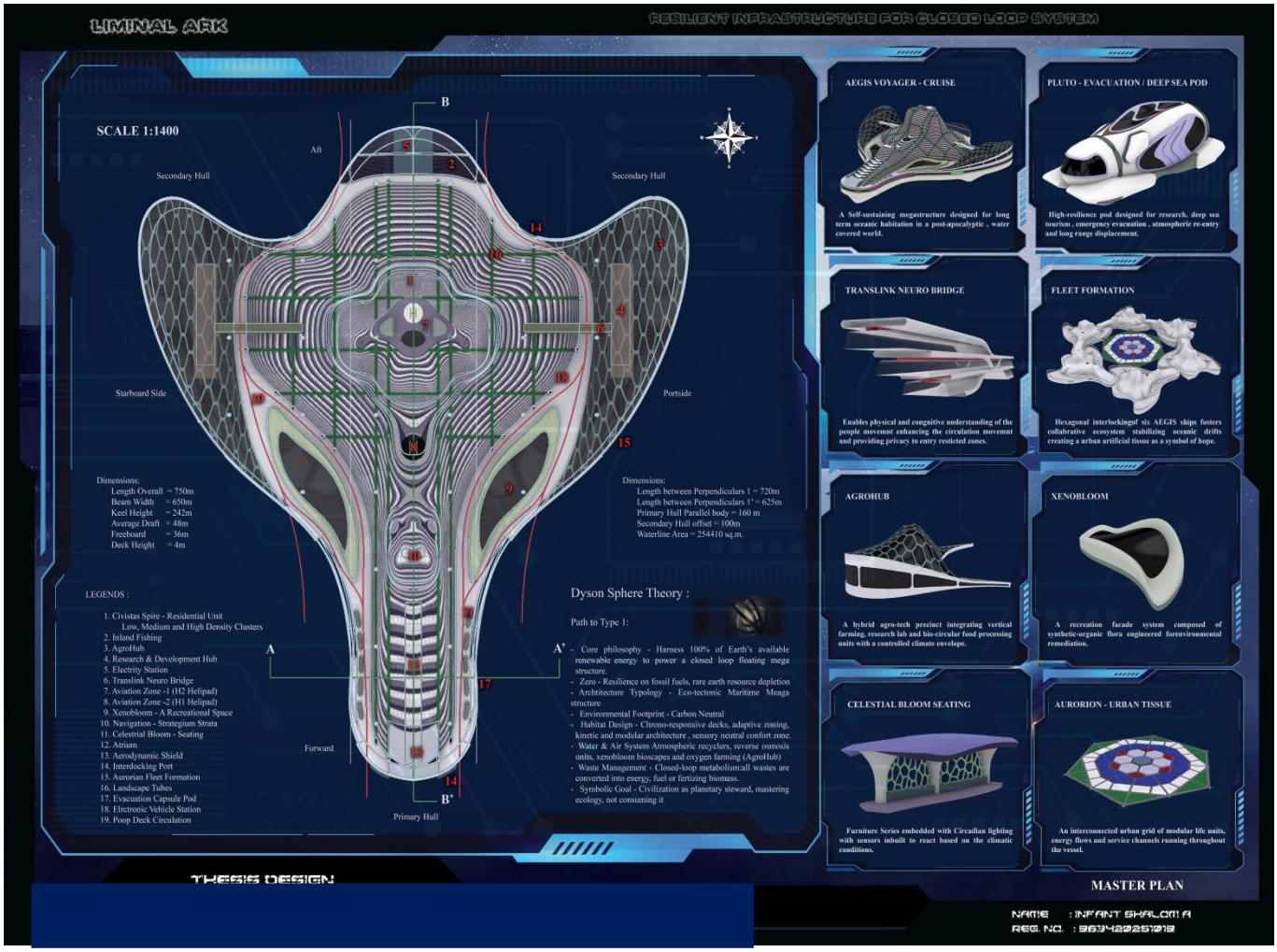
PORTFOLIO

The following sheets demonstrate the learning progression of the students until the tenth semester, illustrating their command of complex design brief, utilizing CAD/BIM tools



LIMINAL ARK

RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

FLOTATION CALCULATION BASED ON ARCHIMEDES PRINCIPLE :

Length Over All (LOA) = 750m
Beam Width = 650m
Keel Height = 242m
Draft Height = 48m

Material Used : Kevlar-Graphene Composite

Density of Sea Water = 1025kg/m³

Step 1: Displacement Volume :

D.V. = L x B x H (draft height)
= 750 x 650 x 48
= 2,34,00,000m³

Step 2 : Buoyant Force

B.F. = Density of Sea Water x Gravity x D.V.
(Density of Water = 1025kg/m³ , Gravity = 9.81m/s²)
= 1025 x 9.81 x 2,34,00,000
=235.29 GN (Giganewton)

Step 3: Estimating the Mass of AEGIS VOYAGER

Total Volume of the Ship = 750 x 650 x 242
=11,79,75,000m³

Density of Kevlar-Graphene Composite
Average Composite Density
Kevlar-1440kg/m3 , Graphene-2000-2200kg/m³
Estimated Composite Average -1600kg/m³

Since Ships are mostly hollow inside, assuming that the actual average Density as 10 percentage of the Estimated Density that is 125 - 300kg/m³.

Effective Average Density = 225kg/m³

Mass of the Ship = Average Density x Total volume of the Ship
= 225 x 11,79,75,000 = 22,46,06,25,000kg

Weight of the ship = 22.46 x 10⁹ x 9.81
= 2,20,33,26,00,000N = 265.44GN

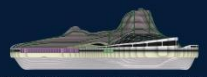
Comparing Buoyant Force with Weight of the Ship
Buoyant Force = 235.29 GN (Water Displacement)
Weight of the ship = 265.44GN

Ship as of now is heavier than the water displaces at 48m draft, which would cause it to sink.

Step 4 : Adjusting for Realistic Density

Max.mass = Buoyant Force / Gravity = 235.29 x 10⁹ / 9.81 = 23.98 x 10⁹kg
Max average density = Max.mass / Ship volume
= 23.98 x 10⁹/11.79 x 10⁸ = 203.30Kg/m³

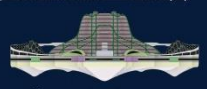
As the density of the material is reduced the reserve buoyancy is increased , the minimum density should be of 125kg/m3.



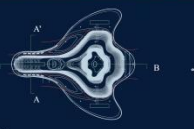
With 150 Kg/m3 we can achieve a reserve buoyancy of 5 million ton including both the live load and the dead load

Alternative Solution :

The Air Draught of the ship can be Reduced to 160 from 192 meters or the draft height has to be increased in order to maintain a reserve buoyancy

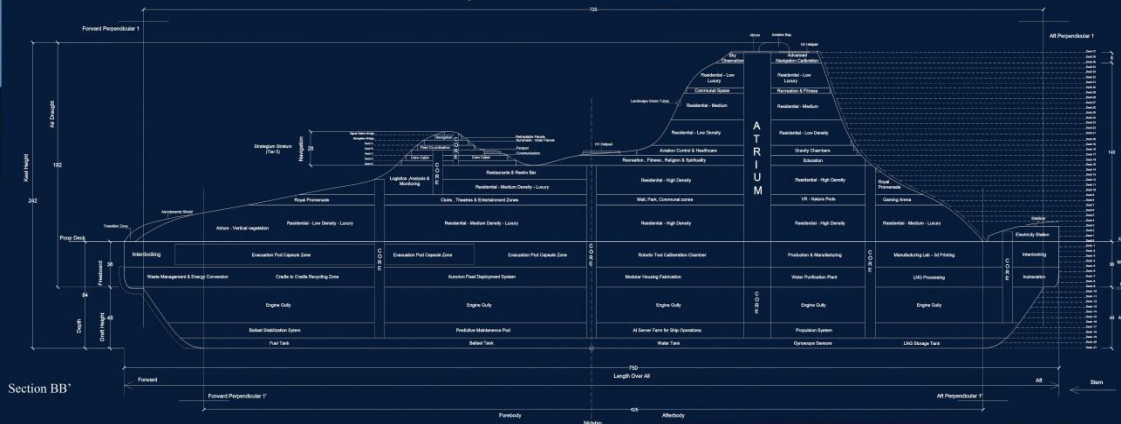


Key Plan



Section AA'

Section BB'



THESIS DESIGN

ALL UNITS ARE IN METRES
SCALE 1:1100

SECTIONS
CALCULATIONS

NAME : INFANT SHALOM A
REG. NO. : 963420251019

LIMINAL ARK

RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

Living on Sea

Living permanently on the sea is possible with the dystopian cruise ship design, especially in a water-dominated world. The ship is already planned to be a fully self-sustaining habitat addressing essential survival needs:

1. Food Production – A mix of hydroponics, aquaponics, vertical farming, algae cultivation and controlled seafood harvesting ensures a continuous food supply without needing land-based resources.

2. Water Supply Large-scale desalination plants, rainwater harvesting and advanced recycl ing systems provide fresh water for drinking, hygiene, and farming.

3. Energy Generation – A combination of solar, wind, biofuel and oceanic energy systems (wave and thermal energy) sustains power needs indefinitely.

4. Waste Management – Advanced waste recycling, composting, and biofuel conversion eliminate reliance on land-based disposal.

5. Resource Extraction & Trade – Deep-sea mining, oceanic foraging (kelp, plankton) and potential trade with other surviving ships or floating settlements ensure access to rare materials.

6. Psychological & Social Stability – Community spaces, green zones, entertainment and adaptable living environments prevent isolation and maintain mental well-being.

Issues on Life at sea

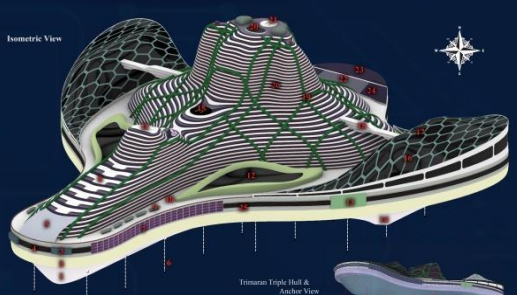
Body Pressure Changes & Circulatory Issues:
Solution Strategies
- Artificial Gravity Chambers: Dedicated spaces with centrifugal force to simulate gravity & enhance circulation.
- Compression Gear & Anti-DVT Exercises: Compression socks & daily mobility drills to encourage blood flow.

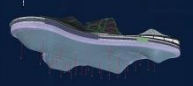
Musculoskeletal Weakness & Bone Density Loss:
Solution Strategies
- High-Impact Exercise Zones: Weighted vests, resistance training, jump-based exercises.
- Specialized Flooring: Shock-absorbing surfaces to reduce joint strain.

Sensory & Neurological Adaptation Challenges:
- AI-Controlled Stabilization Systems: Reducing micro-movements inside habitable zones.
- Adaptation Exercises & VR Conditioning: Virtual terrain-based horizon training to recalibrate balance.

Respiratory & Air Quality Challenges:
- Bioengineered Air Purification: Algae-based CO_2 filtration & oxygen renewalAI-Monitored Air Quality
- Sensors: Microbial & toxin control.

Isometric View





Trimaran Triple Hull & Anchor View

Legends :

1. Tier 1 (Primary Hull) -Abyssal Crucible
2. Tier 2B - Machina Stratum
3. Tier 3 - Xenogrove Nexus
4. Mooring Tyre
5. Aerodynamic Shielding
6. Anchor drops
7. Evacuation pod Cubicle
8. Atrium
9. Celestrial Bloom -Seating
10. Poop Deck
11. Tier 4 - Strategium Strata
12. Xenobloom
13. Deployment & Entry gangway
14. Secondary Hull
15. Aviation Zone 2 (H1 Helipad)
16. AgroHub
17. Research Development & Food processing
18. Tramlink Neuro Bridge
19. Landscape Tube
20. Vertical Stratification Atrium
21. Tier 6 Aviation Zone 1(H2 Helipad)
22. Electricity Station
23. Aerodynamic Stabilizer
24. Inland Fishing
25. Tier 2A - Machina Strata
26. Tier 4 - Civitas Spire - Residential clusters

Circulation Core Spaces & Retractable Atrium

Engine Requirement Calculation:

Step 1 :Understanding the power requirements.
Ship weight = 270GN
Assuming cruising Speed :12-18knots
Required propulsion power Estimate:
Power(MW) = (Displacement)$^{2/3}$x constant
Estimated Minimum propulsion = 500-800 MW

Step 2 : Engine Specification: Wärtsilä RT-flex96C
Max Engine Type - 14-cylinder(14RT-flex96C)
Horsepower per Engine - 107390hp(80MW)
Weight per Engine - 2300 tonnes
Fuel - HFO / LNG / dual Fuel
Length = 27 m
Height = 13.5

Step 3 : Number of Engines Required
To produce - 800MW of propulsion
1 Engine = 80MW
800MW/80MW = 10 Engines
So 10 Wärtsilä RT- flex96C engines of 14 cylinders each is required

Anchor Layout

Total number of Anchors = 32 , Grid - 90m x 90m

Engine Layout

Total number of Engines = 20 (Reserve Engine - 8)
Generators = 6

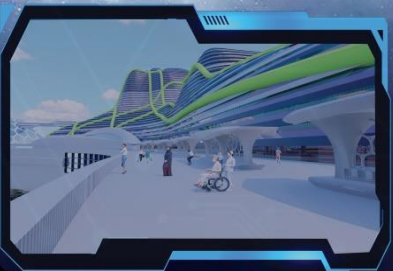
Utilization Strategies for Key Waste Types

A. Organic Waste → Energy & Agriculture
- Biogas Digesters: Convert food and human waste into methane, powering ship systems.
- Composting Stations: Produce high-quality soil additives for hydroponic farms.
- Blackwater Treatment: Extracts water for reuse, with remaining sludge turned into biochar.

B. Plastic & Synthetic Waste → Fuel & Building Materials
- Plastic Pyrolysis: Converts plastics into synthetic fuel.
- 3D Printing with Recycled Plastic: Creates spare parts, tools and modular components.
- Fiber Recycling: Old textiles reprocessed into insulation or composites.

C. Metal & Glass Waste → Repurposed Materials
- Metals: Re-smelted to manufacture ship parts or tools.
- Glass: Crushed and re-melted for insulation, construction materials or reflective panels.

D. Electronic & Hazardous Waste → Component Recovery & Safe Disposal.
- E-Waste Extraction: Valuable metals (gold, lithium, copper) are recovered from old electronics.
- Medical & Chemical Waste Neutralization: Incinerated safely or neutralized in chemical treatment plants.



THESIS DESIGN

Views & Engine Calculation

NAME : INFANT SHALOM A
REG. NO. : 963420251019

LIMINAL ARK

RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

PLUTO - A deep sea capsule for Survival, Science and Discovery.

Typology :
- Autonomous, modular Evacuation, Deep sea Research and Tourism pod
- Designed for rapid deployment from AEGIS VOYAGER for both dependent and independent operations

Core Functions :
- Deep Sea reasarch, Tourism, Emergency evacuation, distant replacement and atmospheric re-entry

Form Envelope :
- Hydrodynamic pressurized outer shell
- Transparent viewing retractable panels with smart glass and AR projection membrane

Mobility system :
- Multidirectional Thrusters for lateral and vertival movement
- Ballast control buoyance system with gyroscopic stabilizers for deep sea currents along with pressure point to inflate and re-enter the atmosphere

Rear View and Front View

Spatial Configuration :
- Internal Zoning
  - Pilot cockpit for Navigation, Modular Crew Hatch for Research, Tourism and Emergency, Decompression zone, Spaces for heavy machinaries to power the ship.
- Fuel Type : LNG, Electrical
- External Interface
  - Thrusters , Entrance , Oxygen conversion gill and water treatment ring.

THESIS DESIGN

Isometric Views

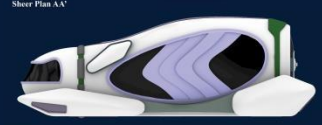
Key Plan :

60% of Deck "-8" is dedicated to the Evacuation pod and deployments

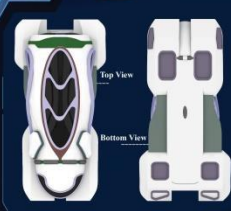
LEGENDS :

1. Windshield
2. Sideways Thrusters
3. Water Desalination Ring
4. Oxygen Conversion Gill
5. Stabilizing Buoy
6. FRP Framework
7. FRP- Fibre Reinforced Polymer
8. Water-Tight Bulkhead
9. Entrance
10. Decompression Belt
11. Forward Thrusters
12. Upward Thrusters
13. Gyroscopic Sensors
14. Pressure Point
15. Distance Scanning & Signal Buoy

Sheer Plan AA'



Materiality :
Outer wall : Kevlar- Graphene Composite with self healing polymer.
Inner wall : Vacuum insulated mysellum - core sandwich panels with anti-radiation and pressure tolerant lining.
Surface Coating : Nano-reactive thermal regulation skin.



Energy & Power System system:
- LNG Fuel cells & Magnetic wave energy convertors
-Solar energy on entering atmosphere
- Energy buffer bank off grid (96 - 120hours)

Life safety and Survival:
- Emergency Life Support : 10 to 15 days
- Autonomous Navigatoin & recall system
- Internal Cryo rest (optional)

Sensory & Display systems:
- 360° panoramic interface with transparent OLED overlays.
- AR/Vr immersive marine visualization & Drone verification prior navigation

EVACUATION POD - PLUTO

NAME : INFANT SHALOM A
REG. NO. : 963142225012

LIMINAL ARK

RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

AURORION - FLEET FORMATION - The Eternal Hex

"Aurorion" - combines "Aurora" (dawn, renewal) with "Orion" (Cosmic exploration and guardianship), symbolizing:

"The New Dawn of Civilization Rising from the Ocean"

In Architecture terms:
Aurora evokes light, rebirth and ecological awakening . Orion references navigation, protection and celestial order.

A modular, interlocking hexagonal arrangement of six AEGIS vessels forming a superstructure ecosystem on the ocean surface.

Geometric Formation :
- Hexagonal Interlock : Six ships form a hexagonal ring with precise docking geometry.
- Central Nexus Core: The center becomes a shared ecosystem and governance zone linking all ships.
- Function: Post-apocalyptic urban clustering.

Docking Architecture :
- Tessellated Locking Ports: Precision-aligned mechanical ports allow safe lateral docking during calm and high-sea states.
- Articulated Kinetic Arms: Flexible connectors absorb dynamic wave motion, maintaining integrity.
- Magneto mechanical Fasteners: Stabilizes ships during formation with shock absorption.

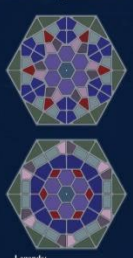
Structural Interlinking :
- Extendable steel titanium docking bridges with compression gaskets.
- Active magnetic couplings & tension-bearing braces, redundant connection failsafes for rough-sea decoupling and flex joint stabilizers for swell absorption.

Spatial Typologies Within Formation :
- Interior ships: Research, housing, cultural cores , Central void: Site for artificial landmass and ecosystem.

Environmental Logic :
- Fleet forms a stable hydrodynamic base to resist drift, Mutual shielding from oceanic turbulence. Collective power generation via wave, wind and solar fields.

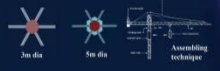
Fleet Formation

Urban Tissue Zoning of the AURORION



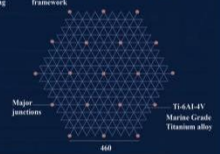
AURORION initial framework (Based on the centre of mass , gravity and meta centric height)

Legends:
- Civic Governance Hub
- Recreation ,Communal space
- Energy Core
- Public & Civic - Residential
- Research & Environmental Monitoring
- Desalination zone
- Agro Eco-logical zone



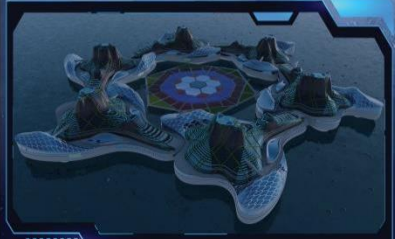
3m dia buoy at minor junctions of the structural frame work of the AURORION

5m dia buoy at major junctions of the framework



Magnetic Triangulated Panel Deployment zone (For Archifitial Landmass)

Interdocking Ports :



THESIS DESIGN

AURORIAN - ARTIFICIAL LANDMASS - "The Living Core"

A self-grown, engineered floating terrain developed in the central void of the fleet for food systems, biodiversity, cultural exchange and micro-habitat stabilization.

Landmass Foundation
- Modular Seabed Extractors: Extendable arms that extract silt mineral-rich sediments and geothermal sludge to construct the base.
- Carbon-Reinforced Bioconcrete Cells: 3D-printed structures mixed with bio-additives that self-heal and form a firm marine crust.
- Hydraulic Balancing Platforms: Maintain sea-level adjustment through ballast-based control.

Material & Construction
-Biopolymer foam base for buoyancy, Graphene-reinforced soil mesh.
-Modular hex raft plates (expandable in all directions).

Conceptual Narrative

"The Artificial Landmass is Earth reborn - a conscious biome at the center of the Eternal Fleet, where nature is preserved, propagated, and protected amidst the oceanic void."

Collective Infrastructure :

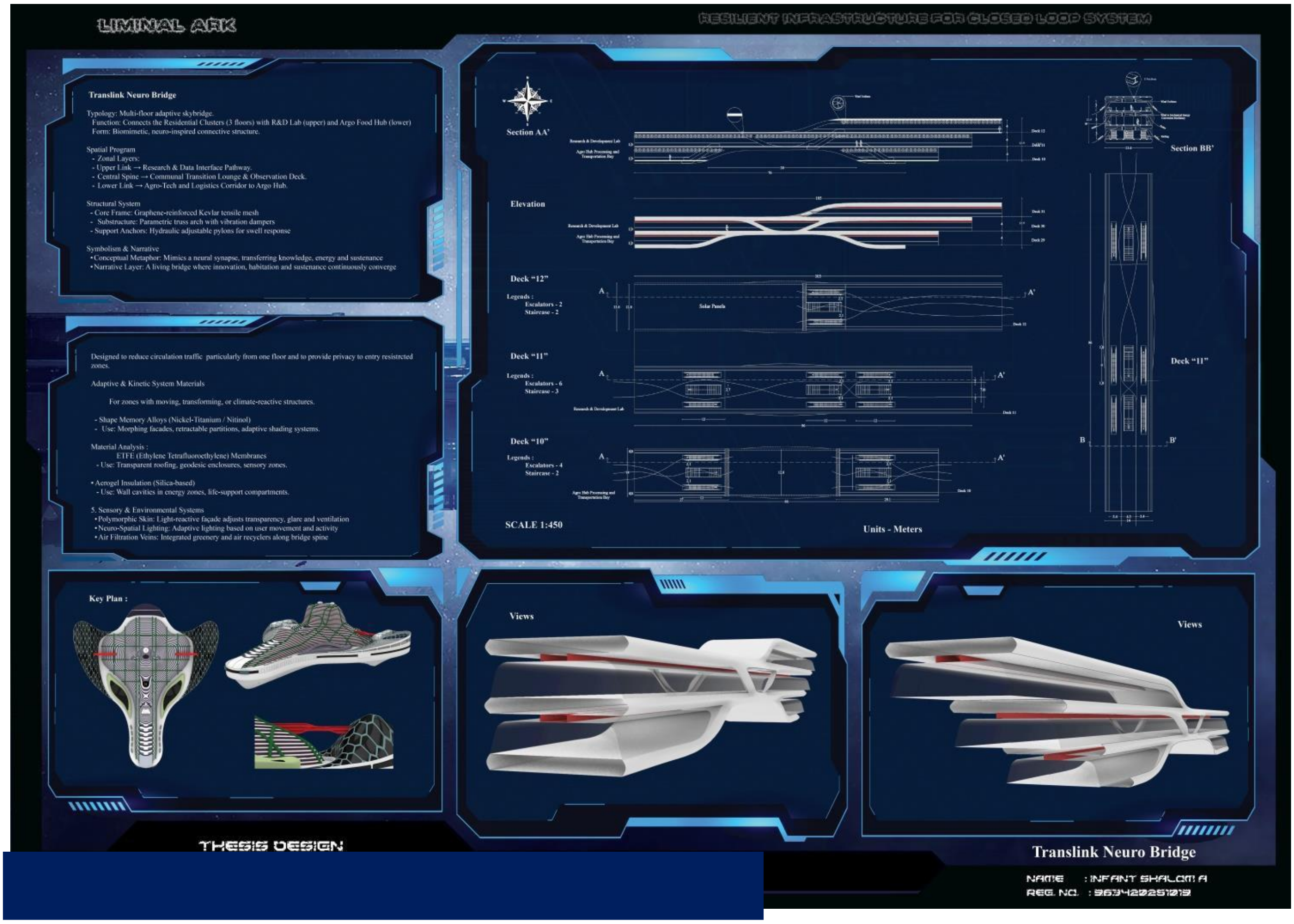
- Shared Energy Pool: Combined solar, wave and wind energy networks balance loads and redundancy.
- Multi-Vessel Waste Recycling Network: Waste and greywater are distributed and processed across ships.
- Cross-Vessel Urban Continuity: Social, cultural and economic spaces spill across ships to form a floating metropolitan expanse.

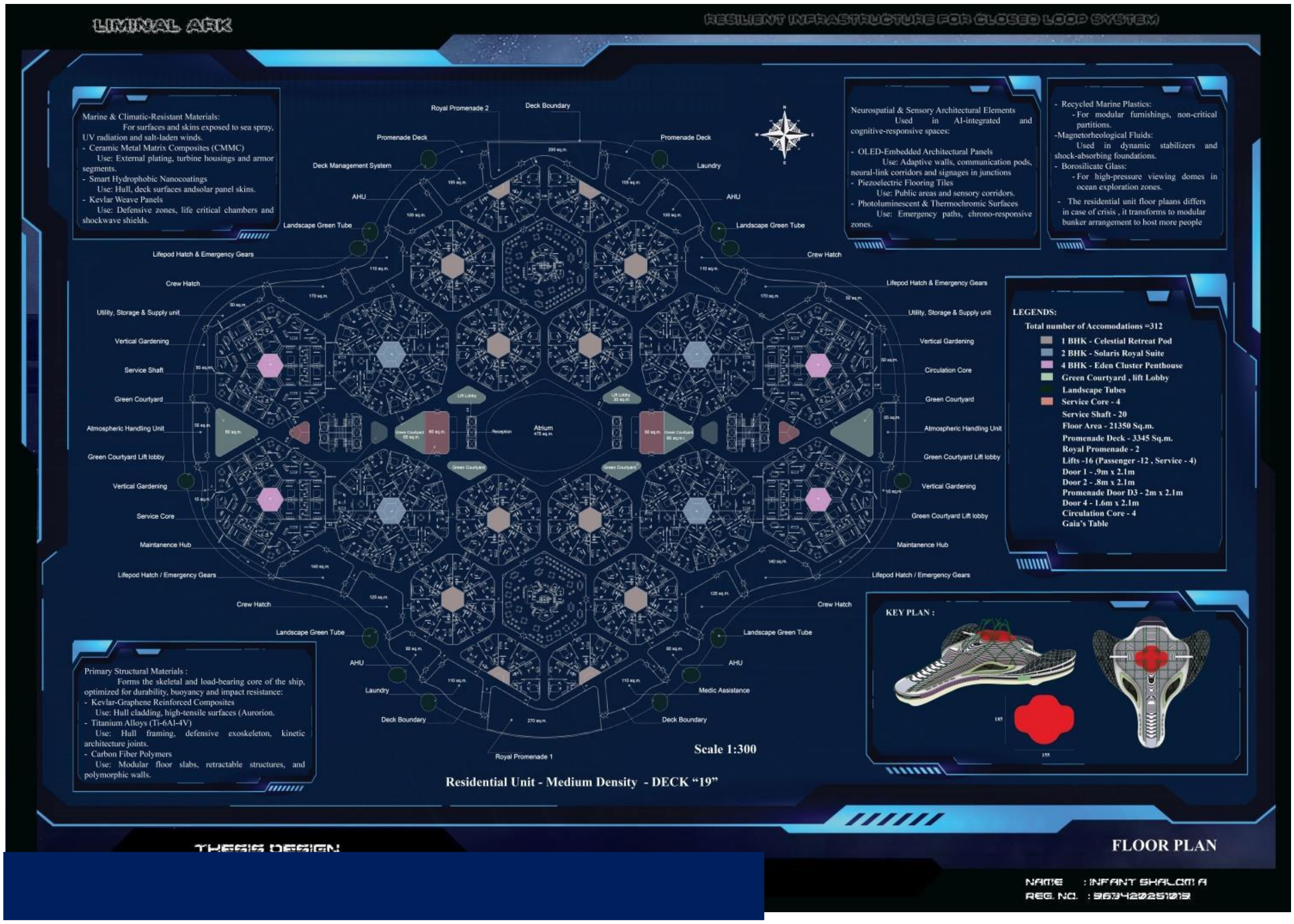
Adaptive Reconfiguration:
- Dynamic Detachment Systems: Each ship can disengage rapidly and autonomously in emergencies.
- Fleet AI Coordination: Predictive spatial reformation based on weather, threat zones and environmental shifts.

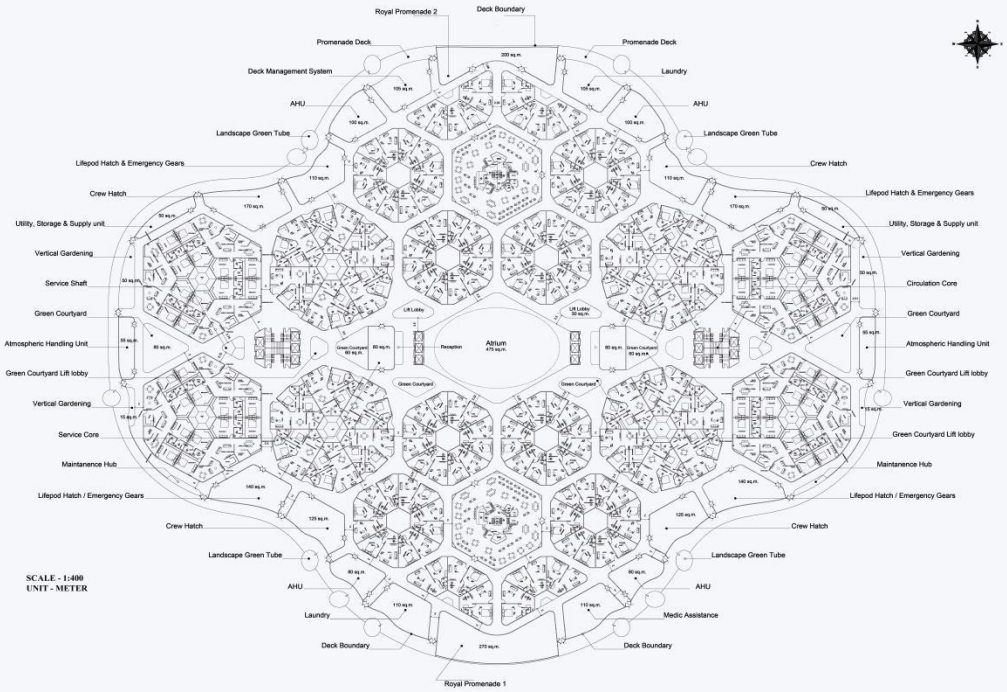
Core Objective :
- To create a semi-permanent, biologically active landmass in the center of the hexagonal fleet for community, ecology and bioengineering.

AURORION Fleet Formation

NAME : INFANT SHALOM A
REG. NO. : 963142225012


LIMINAL ARK
RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM
Translink Neuro Bridge
Typology: Multi-floor adaptive skybridge.
Function: Connects the Residential Clusters (3 floors) with R&D Lab (upper) and Argo Food Hub (lower)
Form: Biomimetic, neuro-inspired connective structure.
Spatial Program
- Zonal Layers:
- Upper Link → Research & Data Interface Pathway.
- Central Spine → Communal Transition Lounge & Observation Deck.
- Lower Link → Agro-Tech and Logistics Corridor to Argo Hub.
Structural System
- Core Frame: Graphene-reinforced Kevlar tensile mesh
- Substructure: Parametric truss arch with vibration dampers
- Support Anchors: Hydraulic adjustable pylons for swell response
Symbolism & Narrative
•Conceptual Metaphor: Mimics a neural synapse, transferring knowledge, energy and sustenance
•Narrative Layer: A living bridge where innovation, habitation and sustenance continuously converge
Designed to reduce circulation traffic particularly from one floor and to provide privacy to entry resistricted zones.
Adaptive & Kinetic System Materials
For zones with moving, transforming, or climate-reactive structures.
- Shape Memory Alloys (Nickel-Titanium / Nitinol)
- Use: Morphing facades, retractable partitions, adaptive shading systems.
Material Analysis :
ETFE (Ethylene Tetrafluoroethylene) Membranes
- Use: Transparent roofing, geodesic enclosures, sensory zones.
• Aerogel Insulation (Silica-based)
- Use: Wall cavities in energy zones, life-support compartments.
5. Sensory & Environmental Systems
•Polymorphic Skin: Light-reactive façade adjusts transparency, glare and ventilation
•Neuro-Spatial Lighting: Adaptive lighting based on user movement and activity
•Air Filtration Veins: Integrated greenery and air recyclers along bridge spine
Section AA'
Elevation
Deck "12"
Legends :
Escalators - 2
Staircase - 2
Solar Panels
Deck "11"
Legends :
Escalators - 6
Staircase - 3
Deck "10"
Legends :
Escalators - 4
Staircase - 2
SCALE 1:450
Units - Meters
Section BB'
Deck "11"
Key Plan :
Views
Views
THESIS DESIGN
Translink Neuro Bridge
NAME : INFANT SHALOM A
REG. NO. : 963420251019


LIMINAL ARK
RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM
Marine & Climatic-Resistant Materials:
For surfaces and skins exposed to sea spray, UV radiation and salt-laden winds.
- Ceramic Metal Matrix Composites (CMMC)
Use: External plating, turbine housings and armor segments.
- Smart Hydrophobic Nanocoatings
Use: Hull, deck surfaces andsolar panel skins.
- Kevlar Weave Panels
Use: Defensive zones, life critical chambers and shockwave shields.
Royal Promenade 2
Deck Boundary
Promenade Deck
Deck Management System
Laundry
AHU
Landscape Green Tube
Lifepod Hatch & Emergency Gears
Crew Hatch
Utility, Storage & Supply unit
Vertical Gardening
Service Shaft
Circulation Core
Green Courtyard
Atmospheric Handling Unit
Green Courtyard Lift lobby
Service Core
Maintanence Hub
Lifepod Hatch / Emergency Gears
Medic Assistance
Royal Promenade 1
Atrium
Reception
Neurospatial & Sensory Architectural Elements
Used in AI-integrated and cognitive-responsive spaces:
- OLED-Embedded Architectural Panels
Use: Adaptive walls, communication pods, neural-link corridors and signages in junctions
- Piezoelectric Flooring Tiles
Use: Public areas and sensory corridors.
- Photoluminescent & Thermochromic Surfaces
Use: Emergency paths, chrono-responsive zones.
- Recycled Marine Plastics:
- For modular furnishings, non-critical partitions.
-Magnetorheological Fluids:
Used in dynamic stabilizers and shock-absorbing foundations.
- Borosilicate Glass:
- For high-pressure viewing domes in ocean exploration zones.
- The residential unit floor plaans differs in case of crisis , it transforms to modular bunker arrangement to host more people
LEGENDS:
Total number of Accomodations =312
1 BHK - Celestial Retreat Pod
2 BHK - Solaris Royal Suite
4 BHK - Eden Cluster Penthouse
Green Courtyard , lift Lobby
Landscape Tubes
Service Core - 4
Service Shaft - 20
Floor Area - 21350 Sq.m.
Promenade Deck - 3345 Sq.m.
Royal Promenade - 2
Lifts -16 (Passenger -12 , Service - 4)
Door 1 - .9m x 2.1m
Door 2 - .8m x 2.1m
Promenade Door D3 - 2m x 2.1m
Door 4 - 1.6m x 2.1m
Circulation Core - 4
Gaia's Table
KEY PLAN :
Primary Structural Materials :
Forms the skeletal and load-bearing core of the ship, optimized for durability, buoyancy and impact resistance:
- Kevlar-Graphene Reinforced Composites
Use: Hull cladding, high-tensile surfaces (Aurorion.
- Titanium Alloys (Ti-6Al-4V)
Use: Hull framing, defensive exoskeleton, kinetic architecture joints.
- Carbon Fiber Polymers
Use: Modular floor slabs, retractable structures, and polymorphic walls.
Scale 1:300
Residential Unit - Medium Density - DECK "19"
THESIS DESIGN
FLOOR PLAN
NAME : INFANT SHALOM A
REG. NO. : 963420251019



SCALE - 1:400
UNIT - METER

RESIDENTIAL UNIT - MEDIUM HOUSING - Deck - "19"

Legends:

Total number of Accomodations =312
1 BHK - Celestial Retreat Pod
2 BHK - Solaris Royal Suite
4 BHK - Eden Cluster Penthouse
Green Courtyard , lift Lobby
Landscape Tubes
Service Core - 4
Service Shaft - 20
Floor Area - 21350 Sq.m.
Promenade Deck - 3345 Sq.m.
Royal Promenade - 2
Lifts -16 (Passenger -12 , Service - 4)
Door 1 - .9m x 2.1m
Door 2 - .8m x 2.1m
Promenade Door D3 - 2m x 2.1m
Door 4 - 1.6m x 2.1m
Circulation Core - 4
Gaia's Table

THESIS DESIGN

Scale - 1:300 Units - Metres

NAME : INFANT SHALOM A
REG. NO. : 963422025019

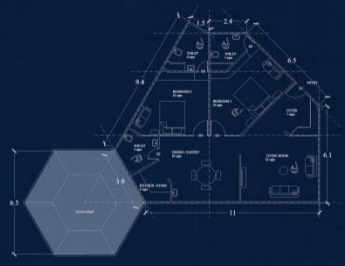
LIMINAL ARK
RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

EDEN CLUSTER PENTHOUSE

LEGENDS :

Unit Area - 220 Sq.m.
Door 1 - 1m x 2.1m
Emergency Door - 1m x 2.1m
Service Shaft - 34 sq.m.
Door 2 - .8m x 2.1m

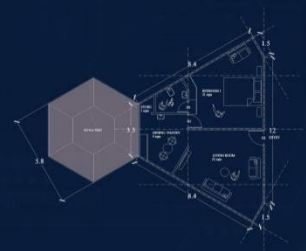
SOLARIS ROYAL SUITE



LEGENDS :

Floor Area - 110 Sq.m.
Door 1 - 1m x 2.1m
Service Shaft - 36 sq.m.
Door 2 - .8m x 2.1m

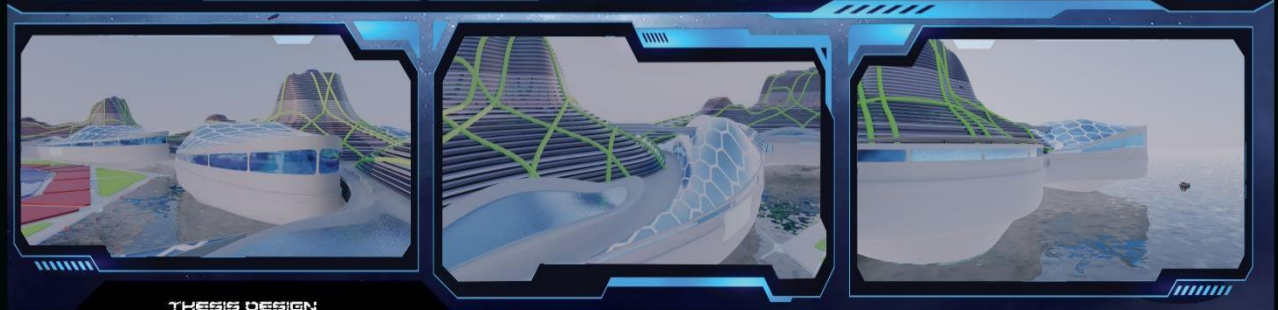
CELESTIAL RETREAT POD



LEGENDS :

Floor Area - 60 Sq.m.
Door 1 - 1m x 2.1m
Service Shaft - 26 sq.m.
Door 2 - .8m x 2.1m

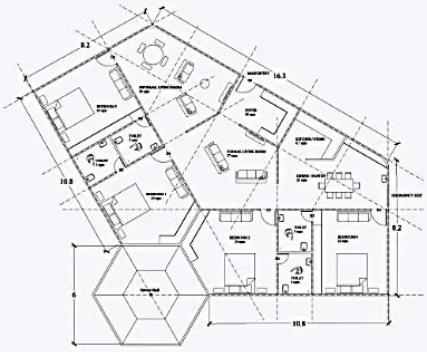
Scale : 1:100 Units : Metres



THESIS DESIGN

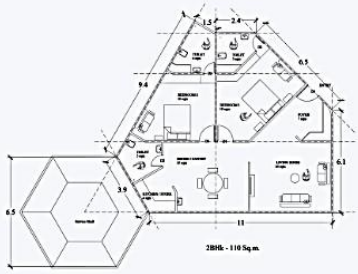
NAME : INFANT SHALOM A
REG. NO. : 963422025019

EDEN CLUSTER PENTHOUSE



Legends:
Unit Area - 220sq.m.
Door 1 -1m x 2.1m
Emergency Door - 1mx 2.1m
Service Shaft - 34sq.m.
Door 2 - .8m x 2.1m

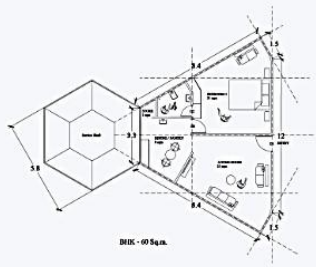
SOLARIS ROYAL SUITE



2BHK - 110 Sq.m

Legends:
Unit Area - 110sq.m.
Door 1 -1m x 2.1m
Service Shaft - 36sq.m.
Door 2 - .8m x 2.1m

CELESTIAL RETREAT POD



BHK - 60 Sq.m.

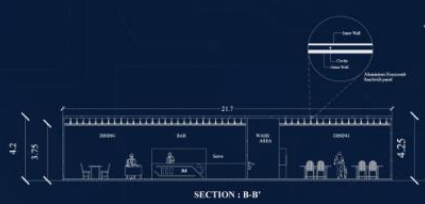
Legends:
Unit Area - 60sq.m.
Door 1 - 1m x 2.1m
Service Shaft - 34sq.m.
Door 2 - .8m x 2.1m

SCALE - 1:100
UNIT - METER

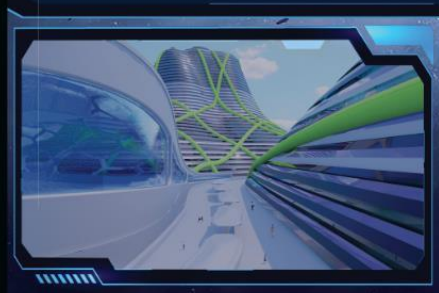
THESIS DESIGN
GAIA's TABLE

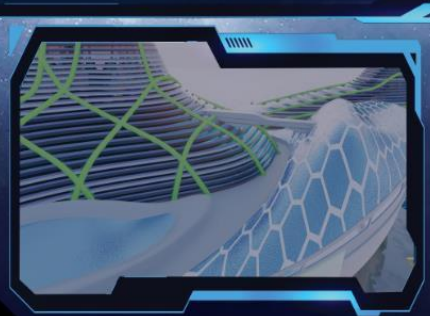
NAME : INFANT SHALOM A
REG. NO. : 963420225019

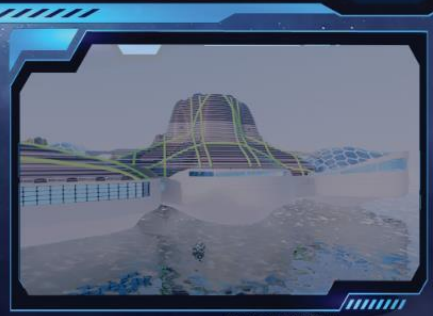
LIMINAL ARK
RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM



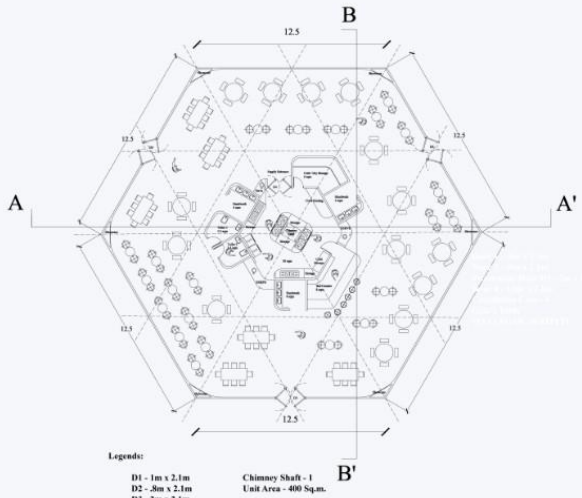
Legends:
D1- 1m x 2.1m
D2- 0.8m X 2.1m
D3- 2m X 2.1m
Chimney Shaft - 1
Floor Area - 400 Sq.m.

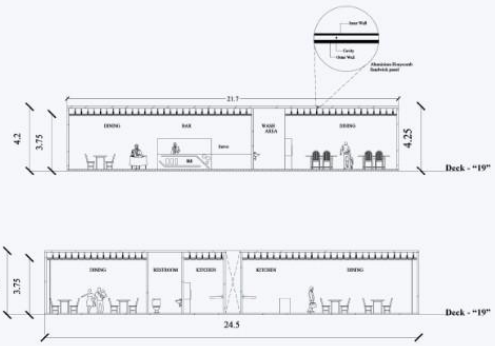






THESIS DESIGN
GAIA's TABLE
NAME : INFANT SHALOM A
REG. NO. : 963420225019





THESIS DESIGN

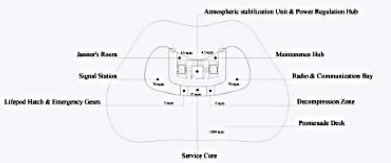
SCALE - 1:100 UNIT - METER

NAME : INFANT SHALOM A
REG. NO. : 963422251212

LIMINAL ARK
RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

NAVIGATION DECK

Signal Station Bridge

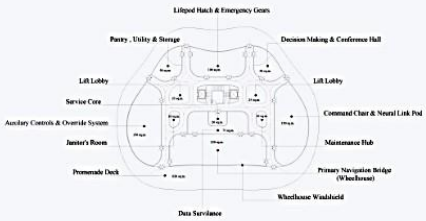


LEGENDS :

Circulation Core - 1
Promenade Door - 2m x 2.1m
Floor Area - 1425 Sq.m.
Lift - 1 (Passenger - 1 , Service - 1)

Service Core - 1
Door - 1.6m x 2.1m
Staircase - 1

Navigation Bridge

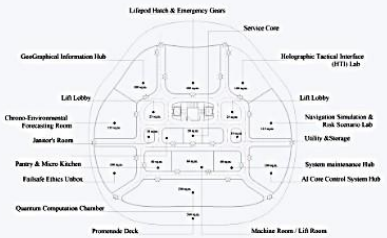


LEGENDS :

Circulation Core - 1
Promenade Door - 2m x 2.1m
Floor Area - 1650 Sq.m.
Lift - 2 (Passenger - 1 , Service - 1)

Service Core - 1
Door - 1.6m x 2.1m
Staircase - 1

A Deck



LEGENDS :

Circulation Core - 1
Promenade Door - 2m x 2.1m
Floor Area - 1935 Sq.m.
Lift - 2 (Passenger - 1 , Service - 1)

Service Core - 1
Door - 1.6m x 2.1m
Staircase - 1

THESIS DESIGN

Scale - 1:450 Units - Metres

NAME : INFANT SHALOM A
REG. NO. : 963422251212

NAVIGATION DECK (TIER 5) - STRATEGIUM STARTUM

All Units are in Metres

DECK "B"

LEGENDS :

Circulation Core - 2
Promenade Door - 2m x 2.1m
Floor Area - 4650 Sq.m.
Lift - 6 (Passenger - 5 , Service - 1)

Service Core - 2
Door - 1.6m x 2.1m
Staircase - 2

DECK "C"

LEGENDS :

Circulation Core - 2
Promenade Door - 2m x 2.1m
Floor Area - 4900 Sq.m.
Lift - 6 (Passenger - 5 , Service - 1)

Service Core - 2
Door - 1.6m x 2.1m
Staircase - 2

DECK "D"

LEGENDS :

Circulation Core - 2
Promenade Door - 2m x 2.1m
Floor Area - 5300 Sq.m.
Lift - 6 (Passenger - 5 , Service - 1)

Service Core - 2
Door - 1.6m x 2.1m
Staircase - 2

SCALE : 1:450

1.Long Distance Scanning and Signal Reception Bay : Receives deep sea sonar pings , unidentified frequencies .

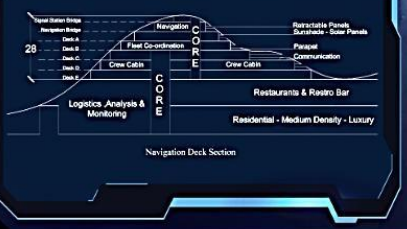
2.Microfabrication and circuitry repair cell : Contains nano-assembly arms and 3d printers for emergency rebuilding of broken navigation circuits or drone chips .

3.Bio-Rhythm Calibration Pod : A climate- and light-controlled pod that syncs crew circadian rhythms for optimal alertness across shifts.

4. Fleet Coordination & Docking Sync Control : Manages interface, spatial alignment, and AI communications between six interlocking AEGIS vessels or drone flocks.

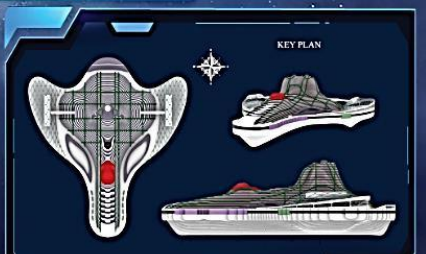
5. Orbital Link Station : Handles communication with high-altitude drones or satellite-like relays.

6. Shielding & Diffraction Relay Control Room : Monitors and directs the electromagnetic field shielding and sonar-diffraction mesh.



Navigation Deck Section

KEY PLAN



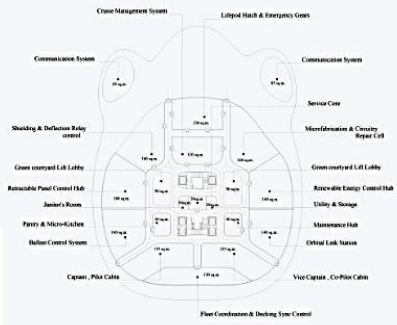
THESIS DESIGN

NAME : INFANT SHALOM A
REG. NO. : 962422621212

LIMINAL ARK

RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM

B Deck

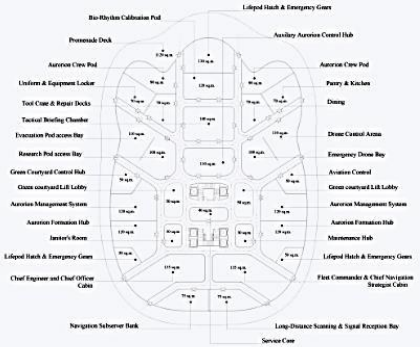


LEGENDS :

Circulation Core - 2
Promenade Door - 2m x 2.1m
Floor Area - 4650 Sq.m.
Lift - 6 (Passenger - 5 , Service - 1)

Service Core - 2
Door - 1.6m x 2.1m
Staircase - 2

C Deck

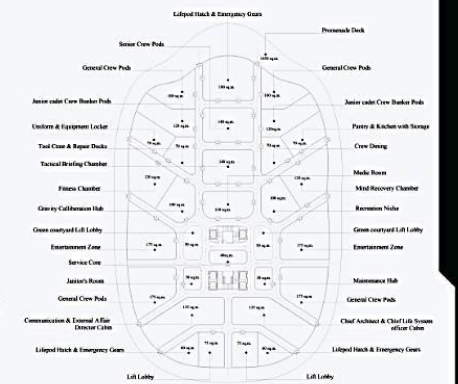


LEGENDS :

Circulation Core - 2
Promenade Door - 2m x 2.1m
Floor Area - 4900 Sq.m.
Lift - 6 (Passenger - 5 , Service - 1)

Service Core - 2
Door - 1.6m x 2.1m
Staircase - 2

D Deck



LEGENDS :

Circulation Core - 2
Promenade Door - 2m x 2.1m
Floor Area - 5300 Sq.m.
Lift - 6 (Passenger - 5 , Service - 1)

Service Core - 2
Door - 1.6m x 2.1m
Staircase - 2

Scale -1:450 Units - Metres

THESIS DESIGN

NAME : INFANT SHALOM A
REG. NO. : 962422621212

LIMINAL ARK

The Xenobloom is a living architectural system embedded at the heart of AEGIS VOYAGER, merging biotechnology, parametric form and ecological intelligence. It mimics a floral biome both symbolically and functionally acting as a breathing, growing and adaptive spatial organism.

Architectural Features

- Biomorphic Envelope:
A kinetic petal like structure formed using bio-responsive tensile membranes that open and close in response to light, humidity or crowd density.

- Botanical Selection:
Hosts xeno-compatible flora, including engineered salt-tolerant, low-gravity, or medicinal plants with resilience to oceanic microclimates.

- Circulation Integration:
The Xenobloom's central shaft intersects vertical and radial circulation cores — making it an environmental and navigational anchor within the megastructure.

- Multi-sensory Interface Zones:
Includes aromatherapy pods, breathable moss seating, tactile foliage walls and AI-guided biome interaction points.

The Xenobloom plays a major role in maintaining the physical health of the voyagers as it has walking jogging tracks and and creates a communal space for the people gathered in the ship .

The ship has a retractable roofing and modular walls that are capable of acting accordding to the environment.

The sensory forest maintains the purest form of oxygen enabling people to experience the feel of land.

The parametric roofing supports the aerodynamic flow of the structure devisting the heavy winds .

During Storm and other rough situation the entire ship is designed to be closed like a shell providing an alternative environment for the inhabitants.

AEGIS is divided into 6 tiers tthe lower tier Each designated to hold individual functions.

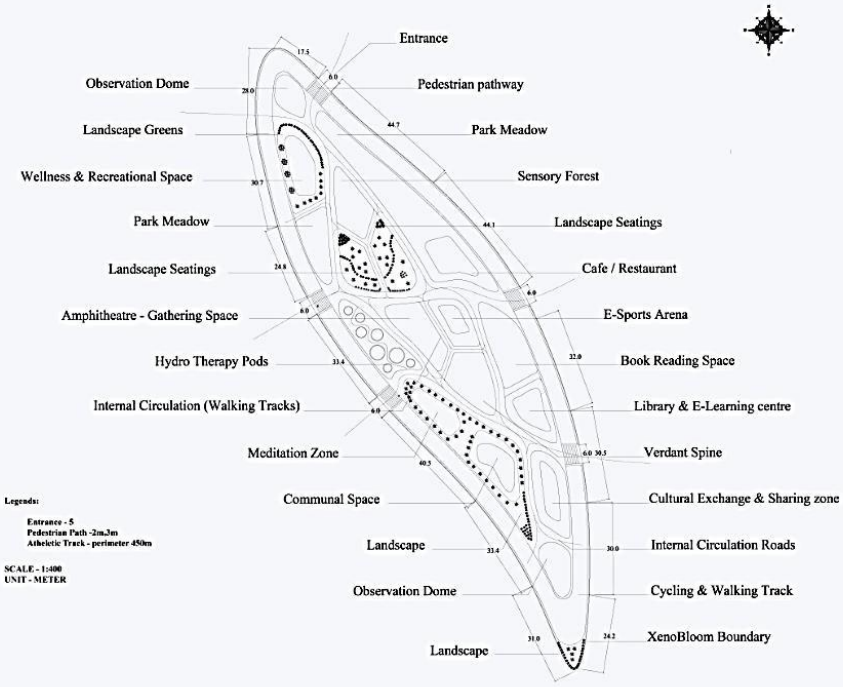
Key Plan :

THESIS DESIGN

NAME : INFANT SHALOM A
REG. NO. : 962422261012

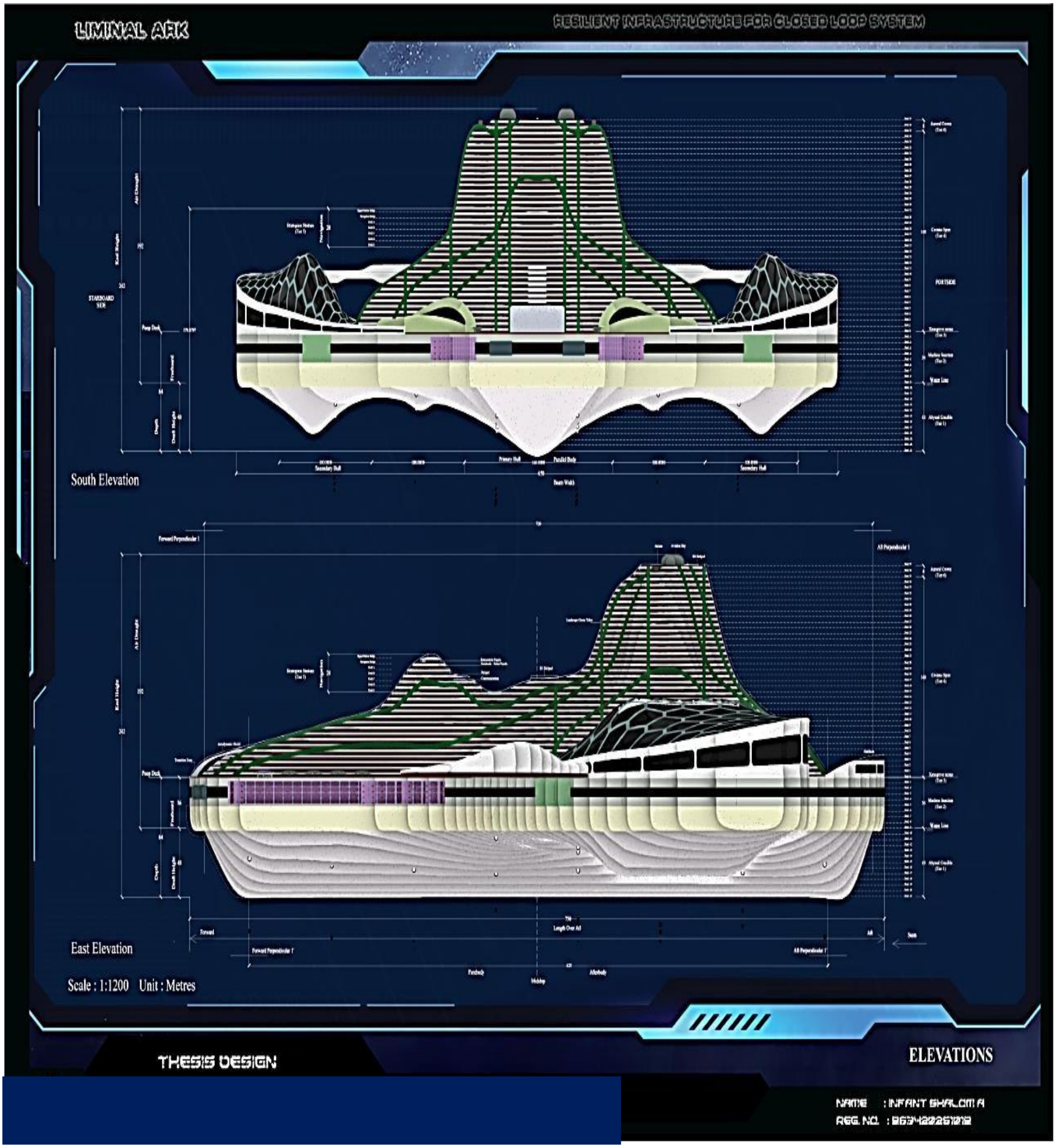
LIMINAL ARK

RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM



THESIS DESIGN

NAME : INFANT SHALOM A
REG. NO. : 962422261012


LIMINAL ARK
RESILIENT INFRASTRUCTURE FOR CLOSED LOOP SYSTEM
South Elevation
East Elevation
Scale : 1:1200 Unit : Metres
THESIS DESIGN
ELEVATIONS
NAME : INFANT SHALOM A
REG. NO.