Component 2: Three-Dimensional Design

Standard Mark: 54

Performance Levels 5: Confident and Assured

	AO1	AO2	AO3	AO4
Mark	13	13	14	14
Performance Level	5	5	5	5

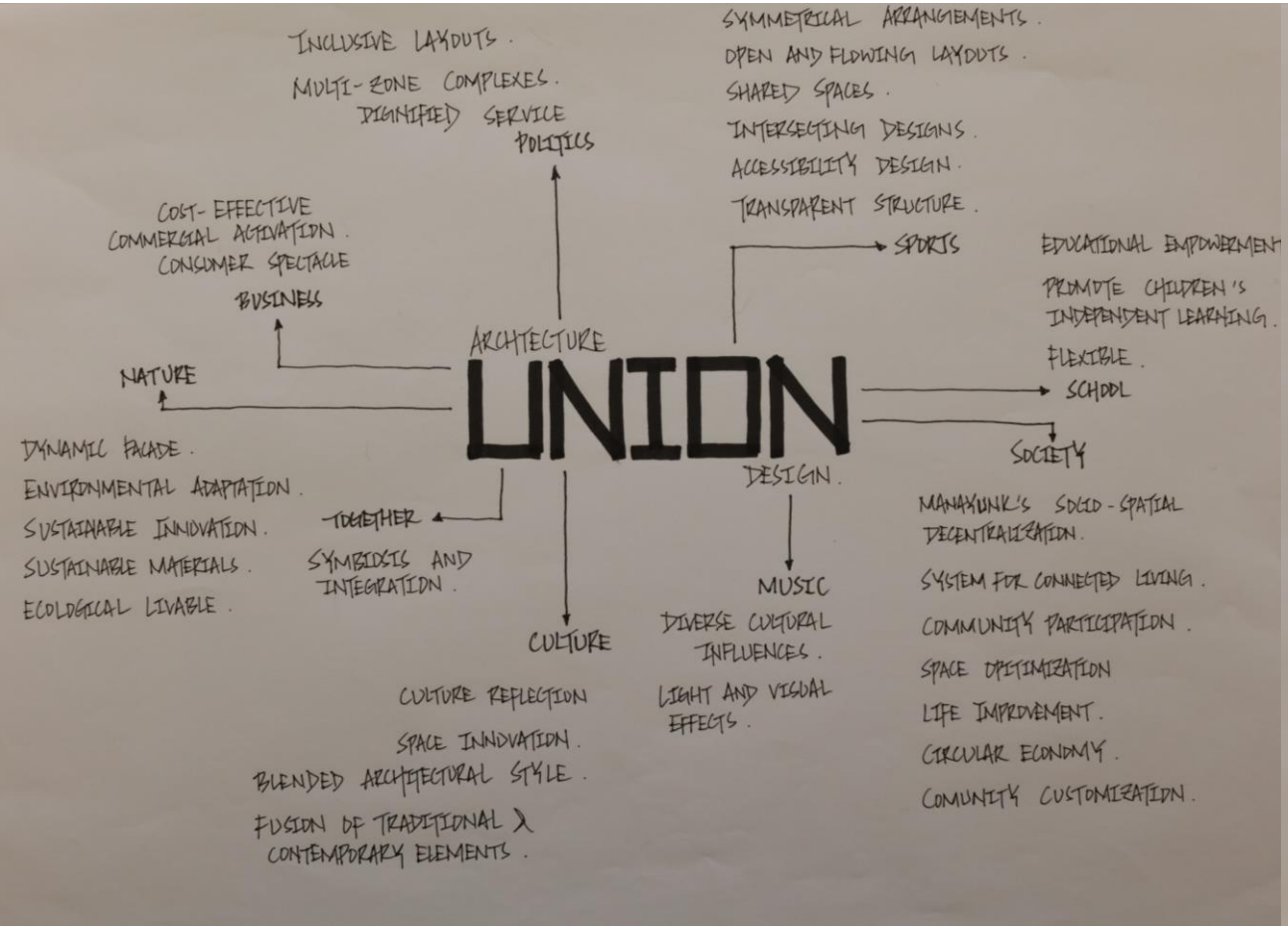
Moderator Commentary

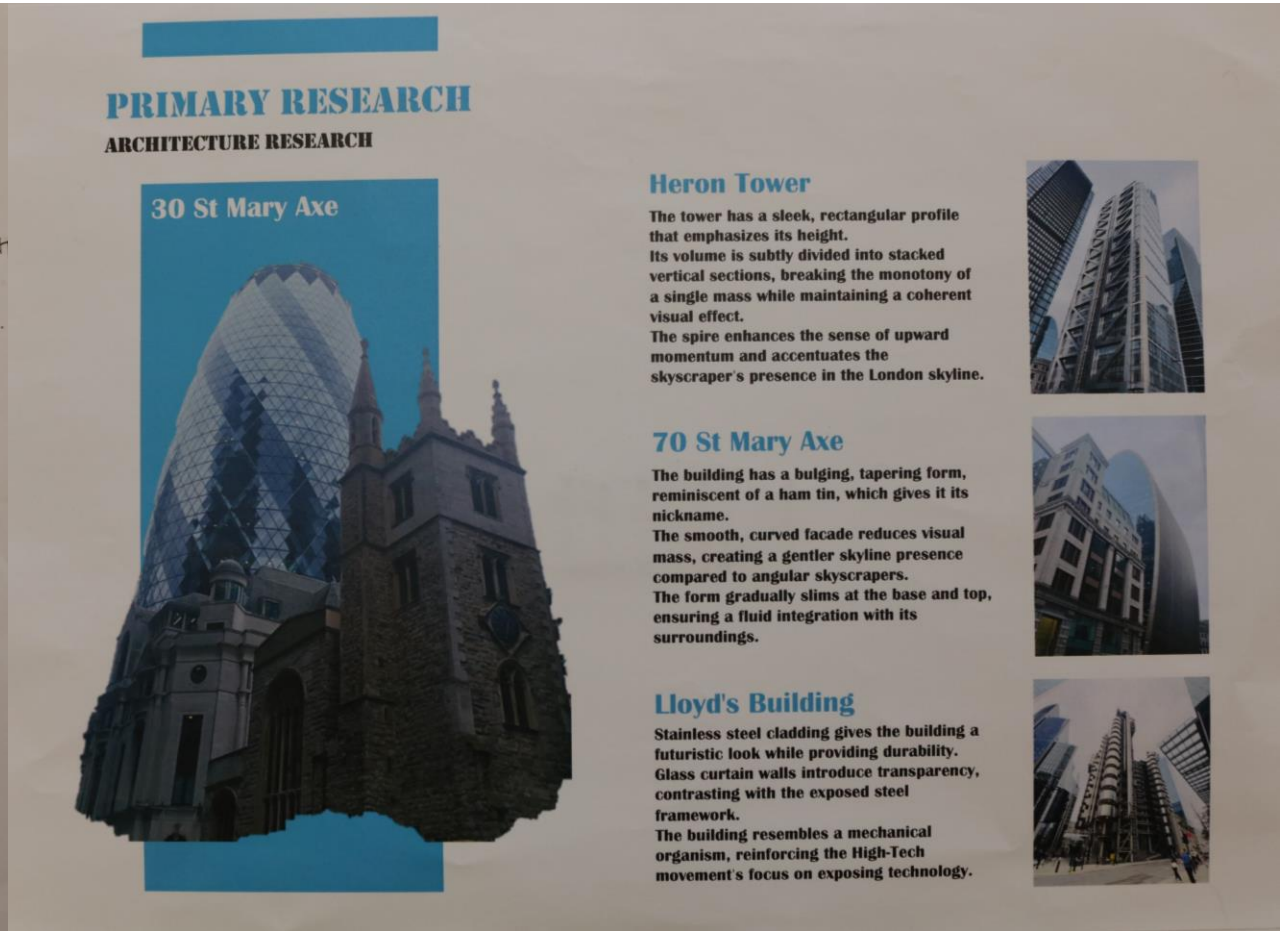
Lewis is working in Three-Dimensional Design for Component 2, exploring the theme of Union. His primary research focuses on iconic structures like the Lloyds Building and Heron Tower, and he produces a few intricate and detailed drawings of stacked and layered building for his initial ideas. He uses CAD modelling extensively to develop his concepts, exploring unusual, crooked shapes and the integration of negative space and greenery within urban areas. Some of his CAD work has a functional feel, almost like interior or furniture design, but this reflects his careful consideration of ergonomics and practical use. Ultimately, Lewis aims to create green spaces within urban housing complexes, combining innovation with sensitivity to both structure and function. The final concept is novel, visually striking, and beautifully executed for the chosen outcome.

Lewis - Component 2 Three-Dimensional Design Standard Mark 54

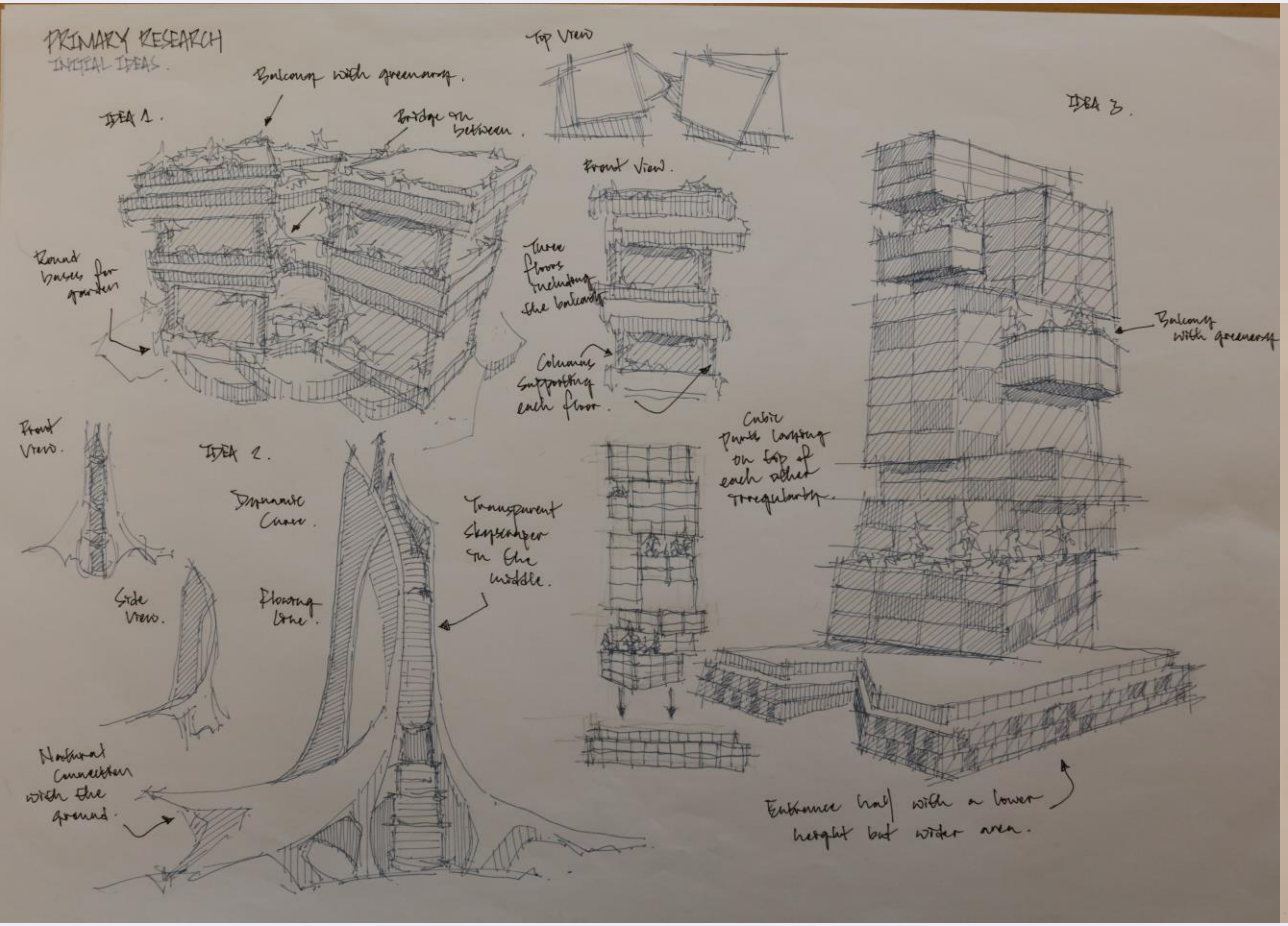
Performance Level 5: Confident & Assured

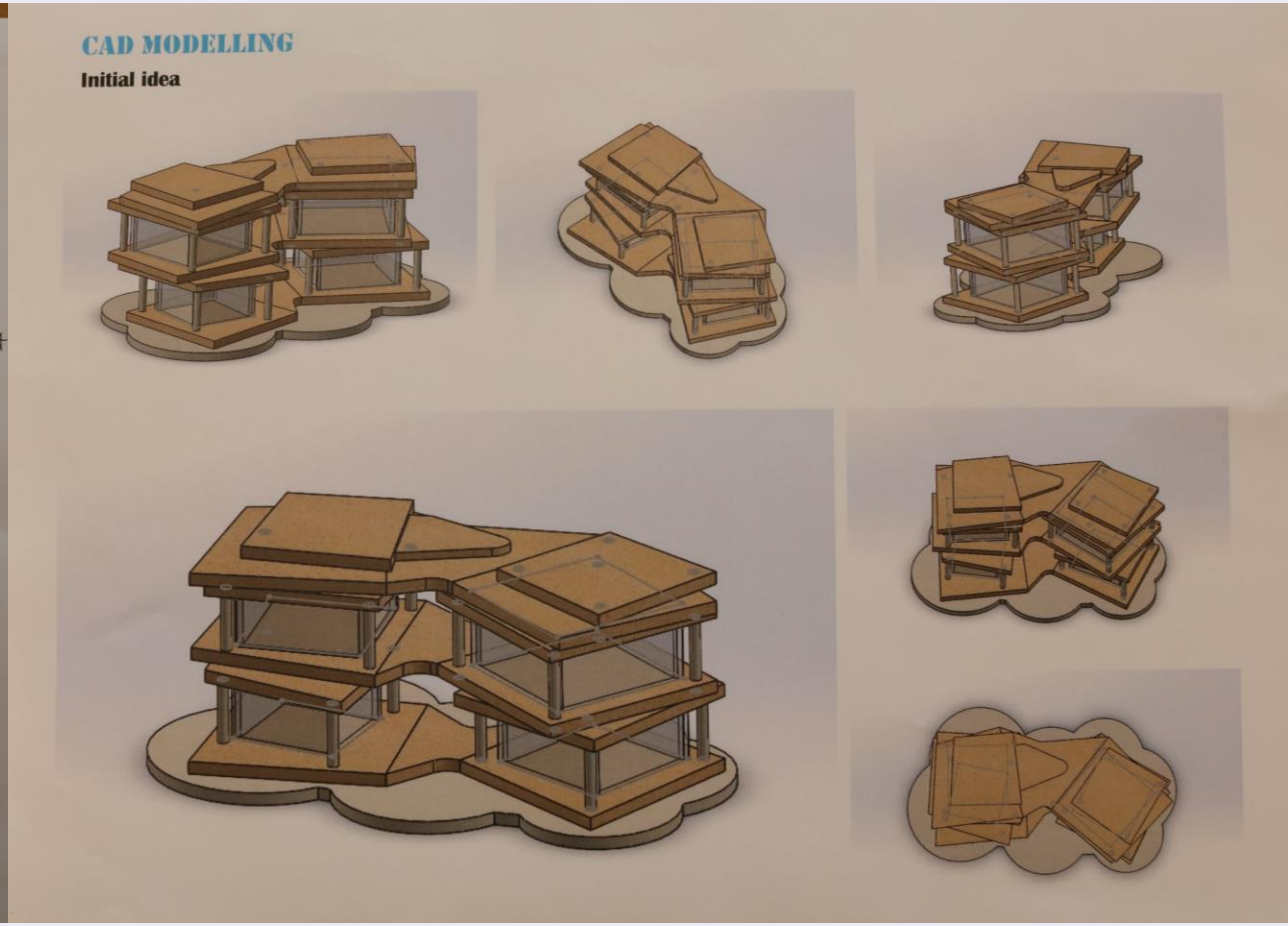
AO1	AO2	AO3	AO4		TOTAL
13	13	14	14		54





Component 2 Three-Dimensional Design





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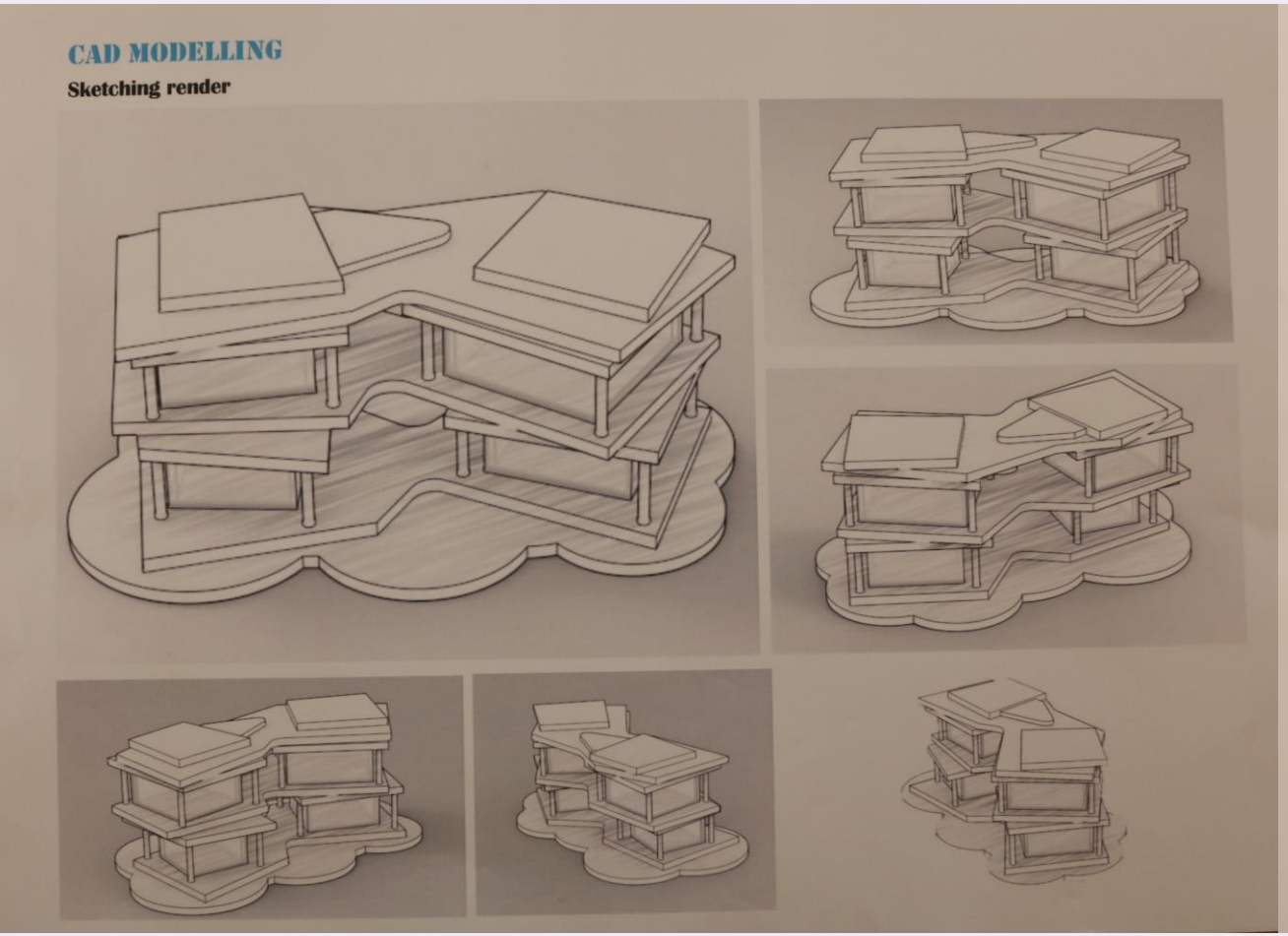

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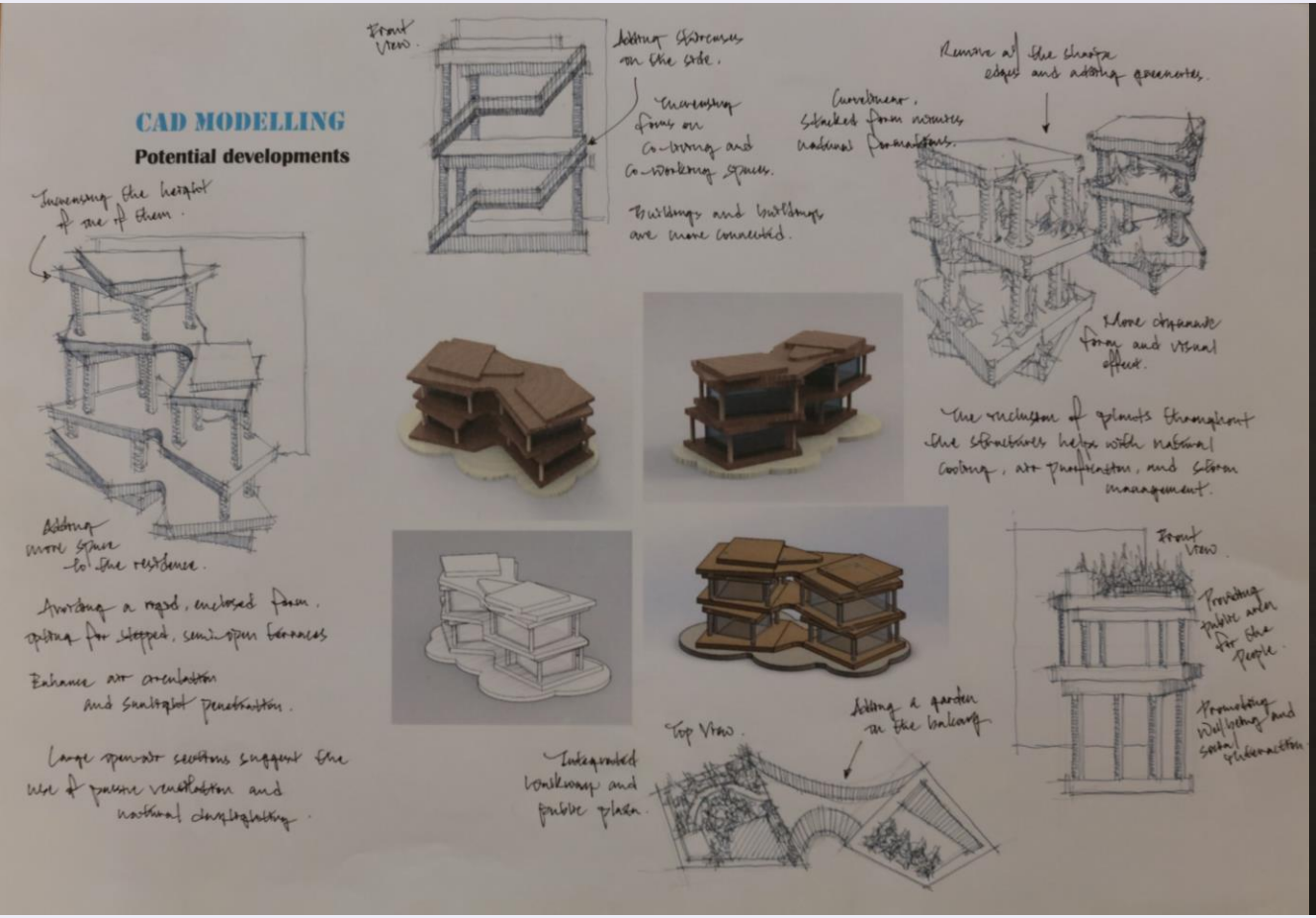

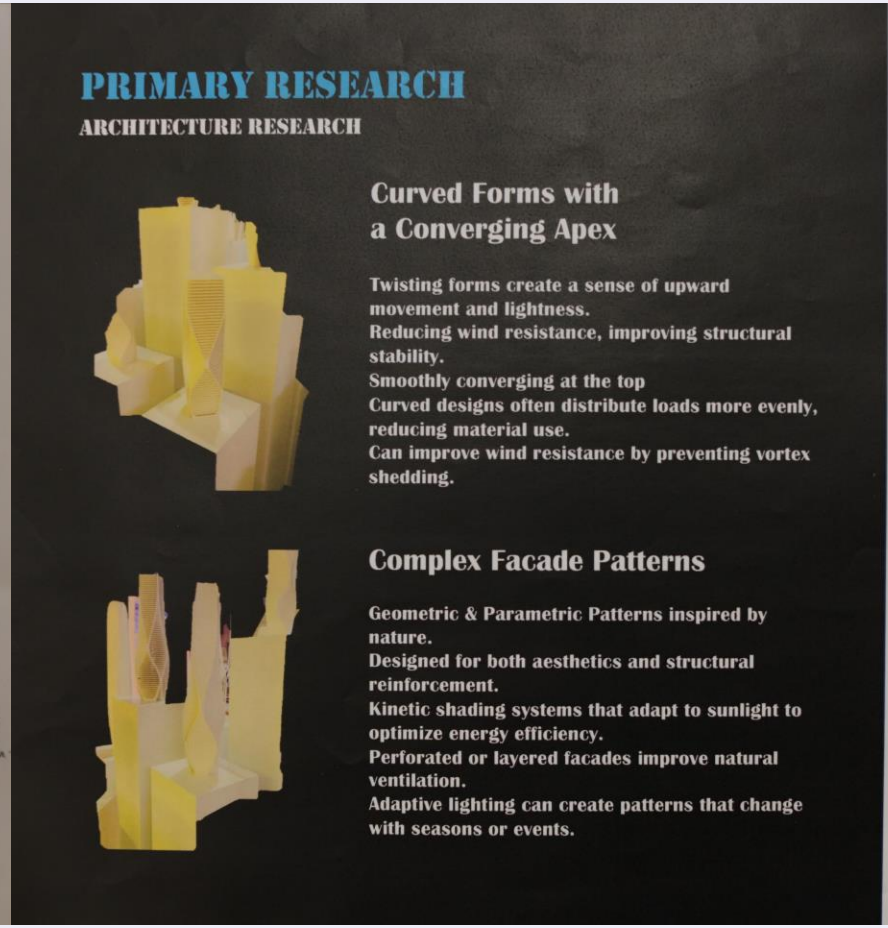

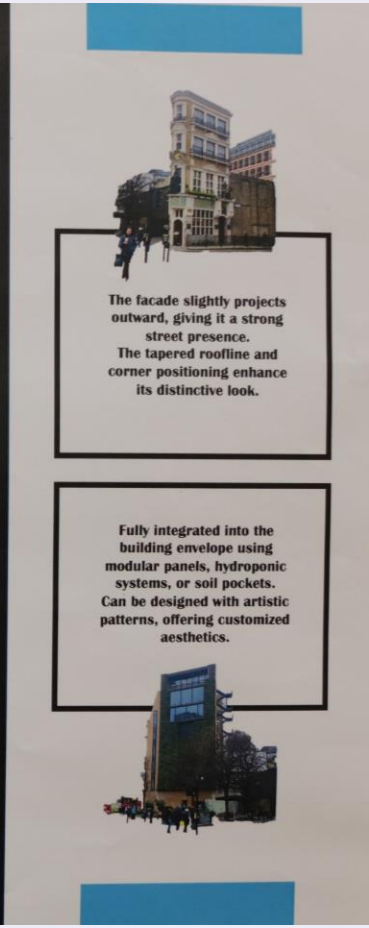

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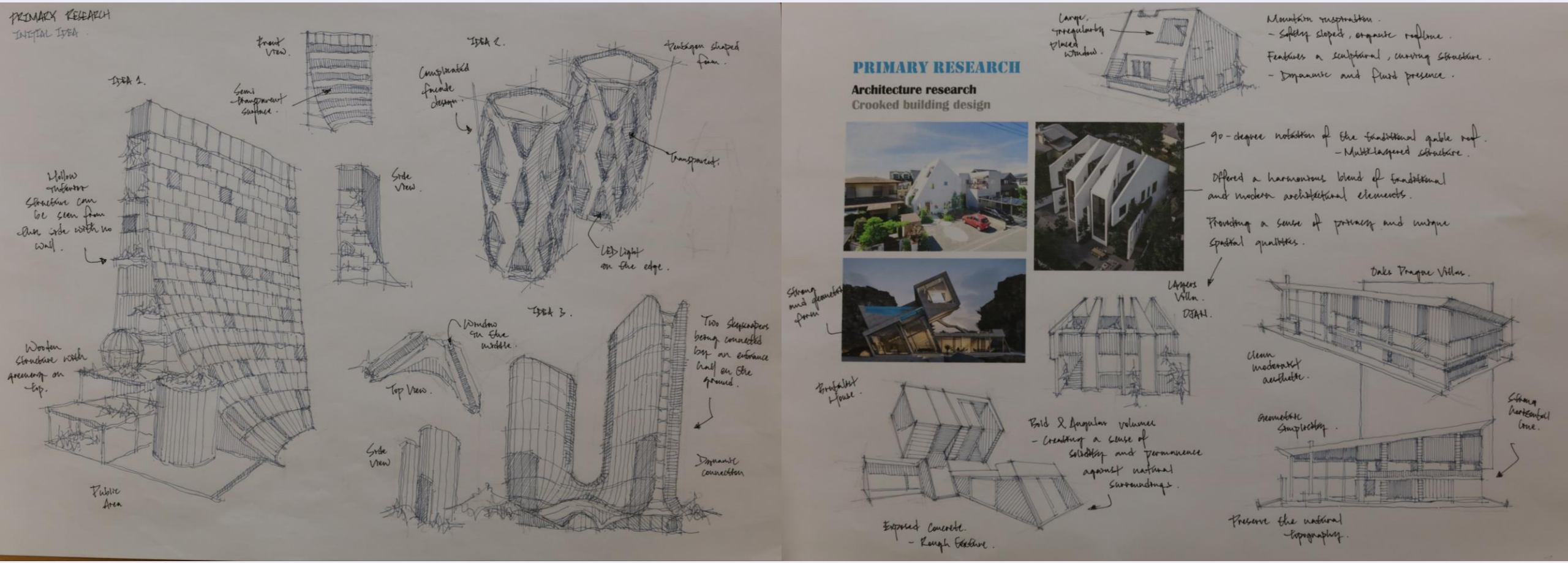

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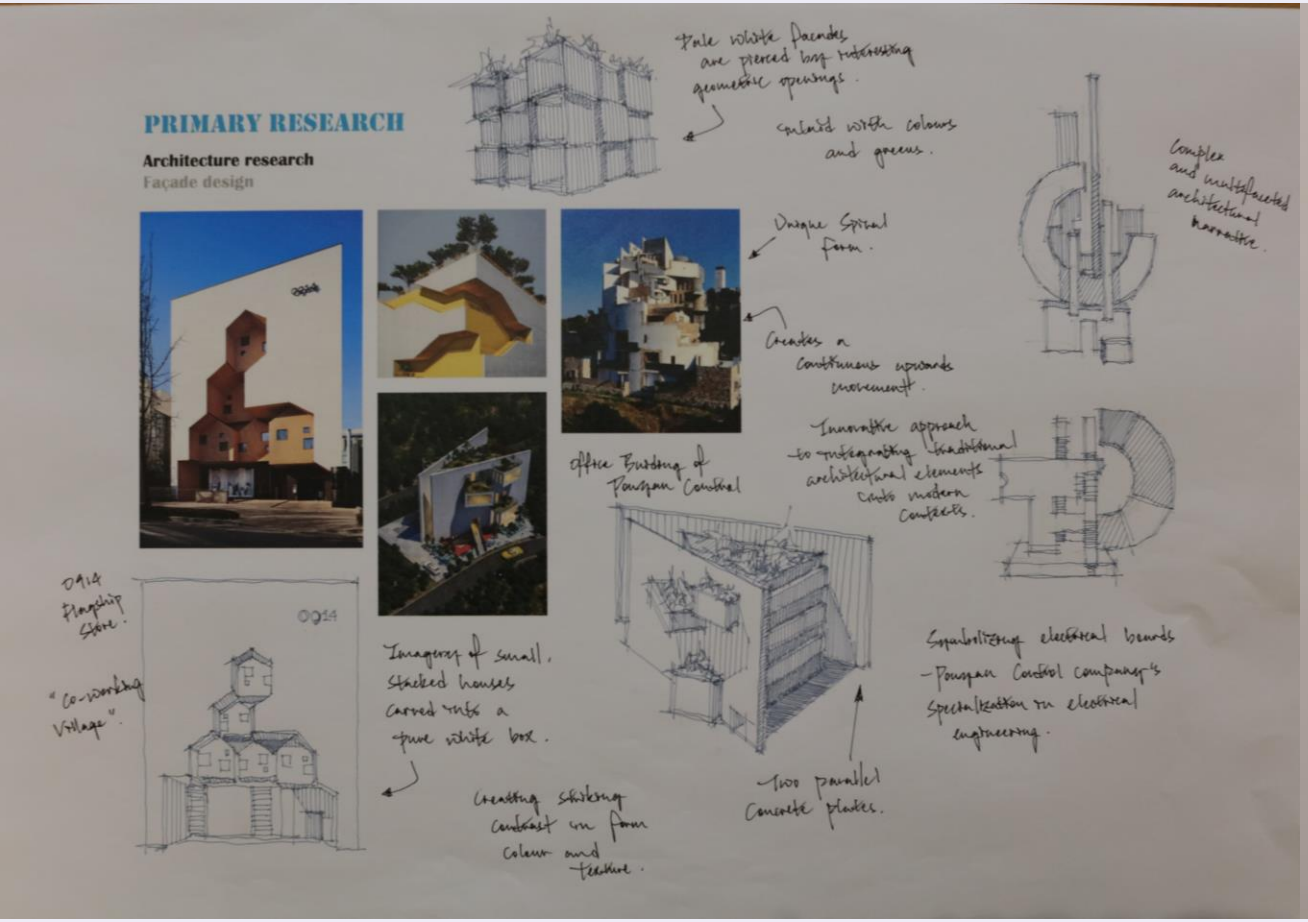

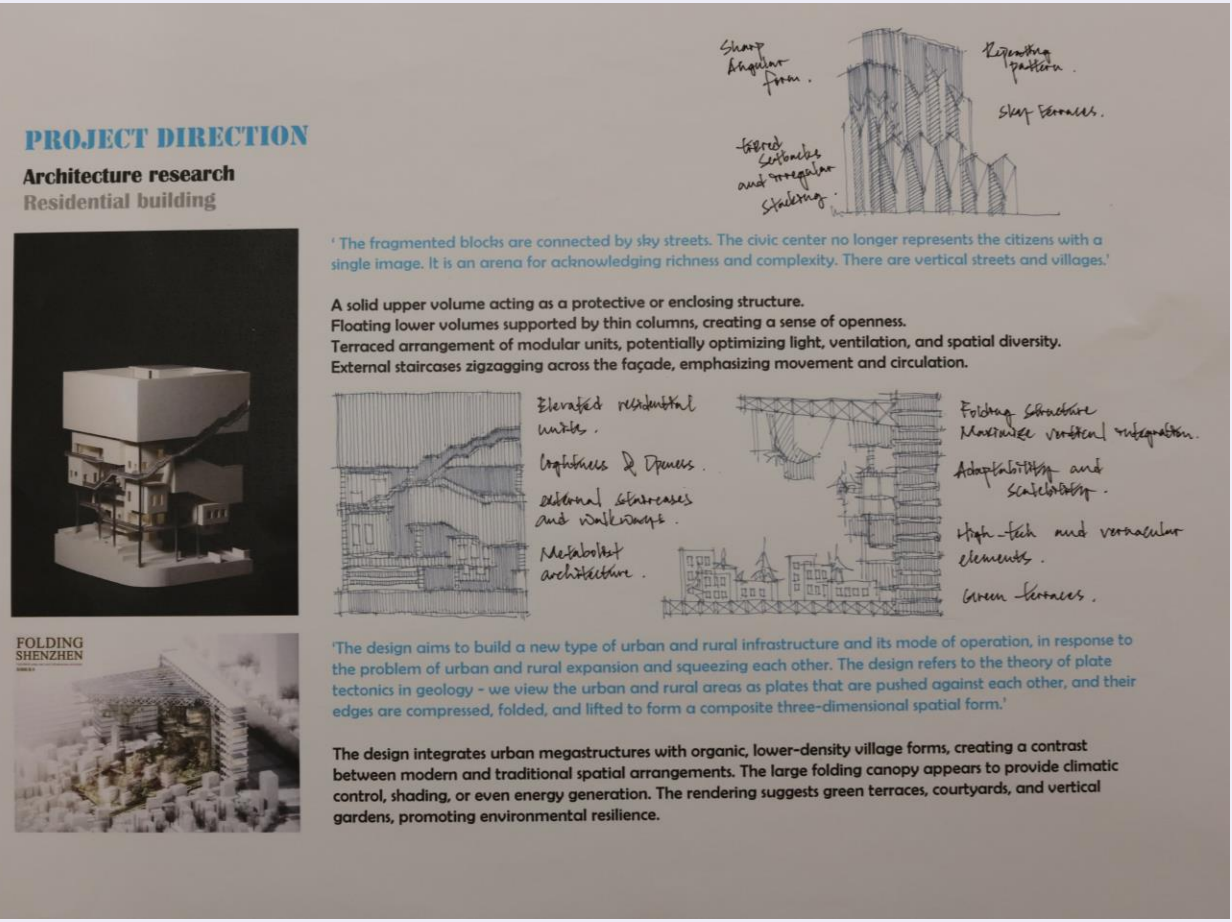

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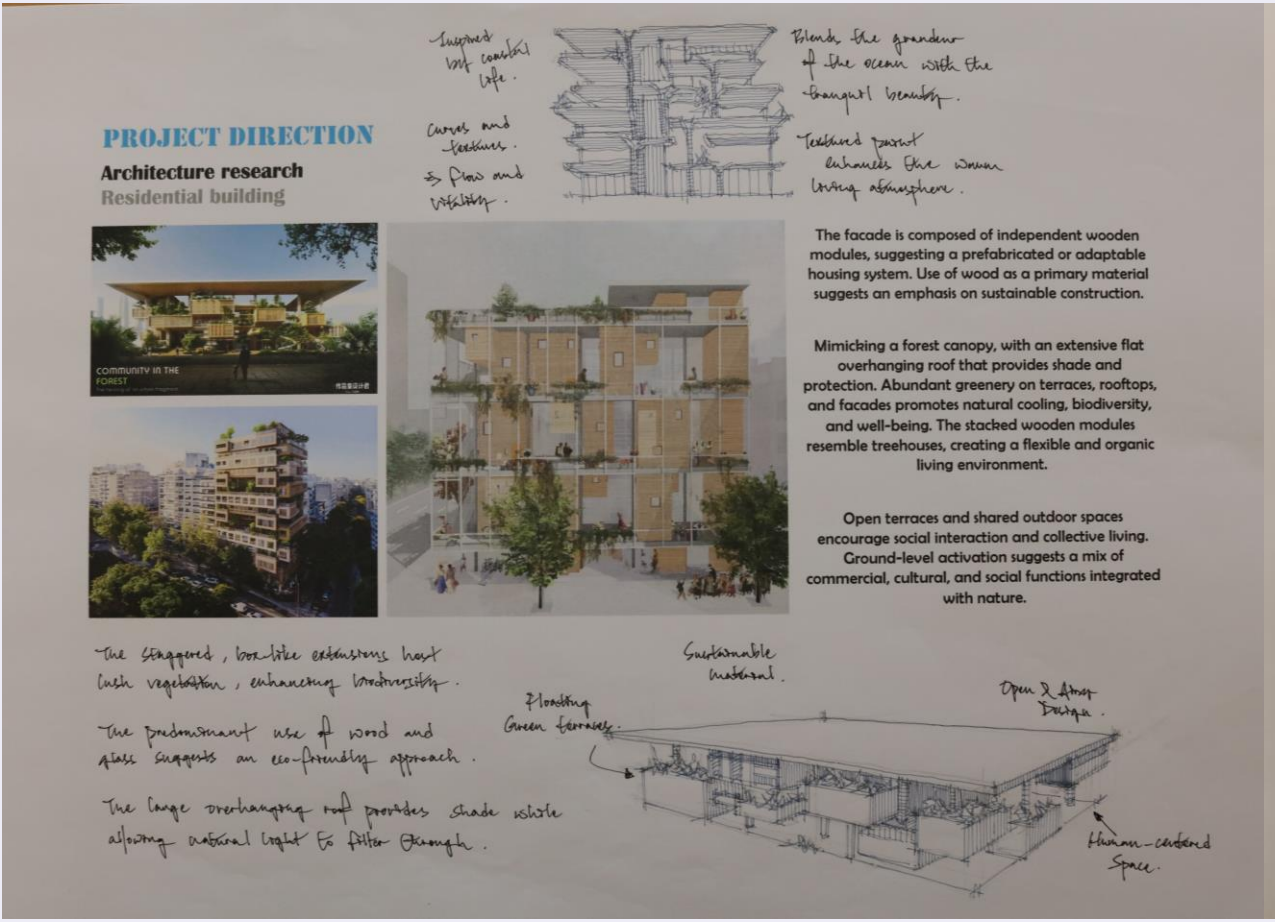

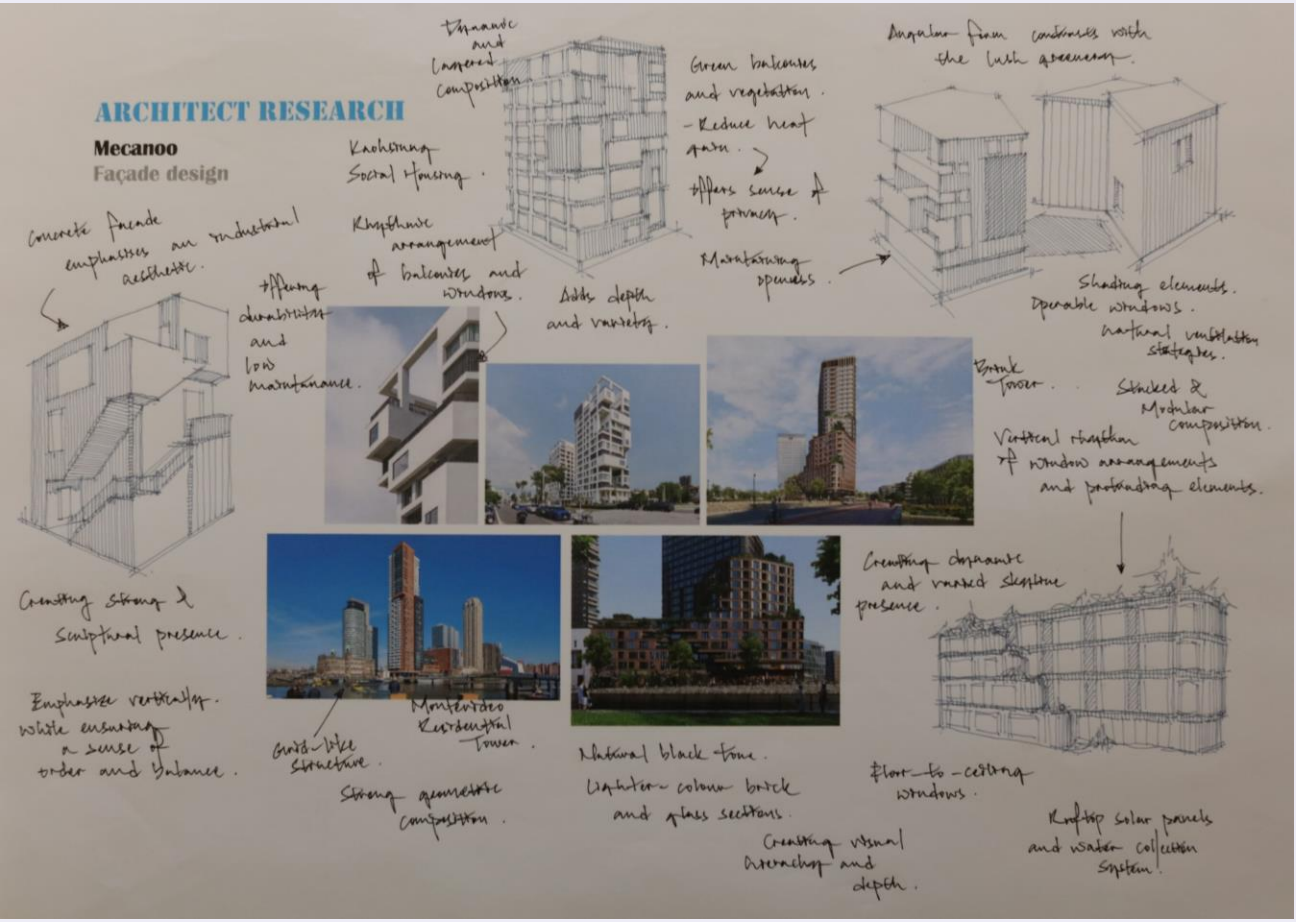

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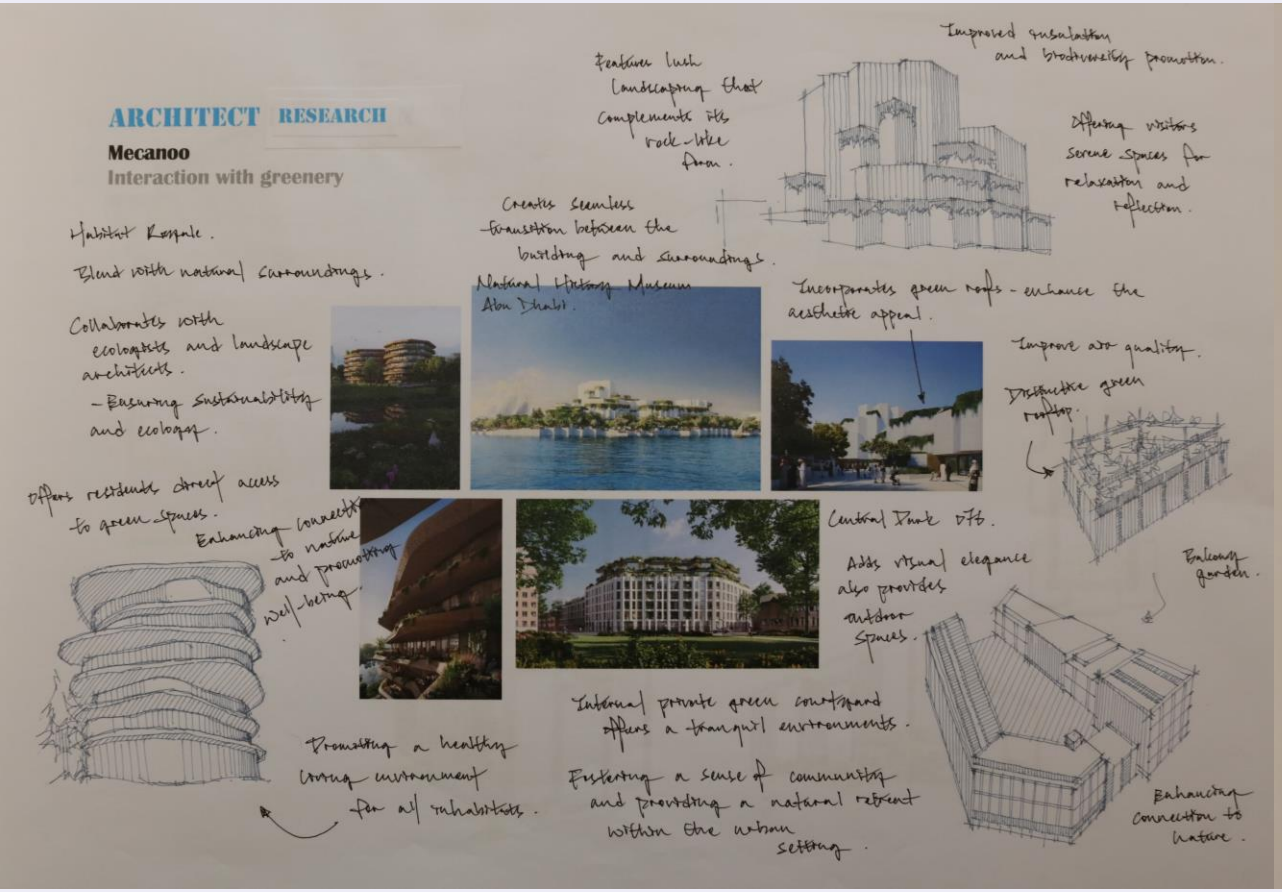

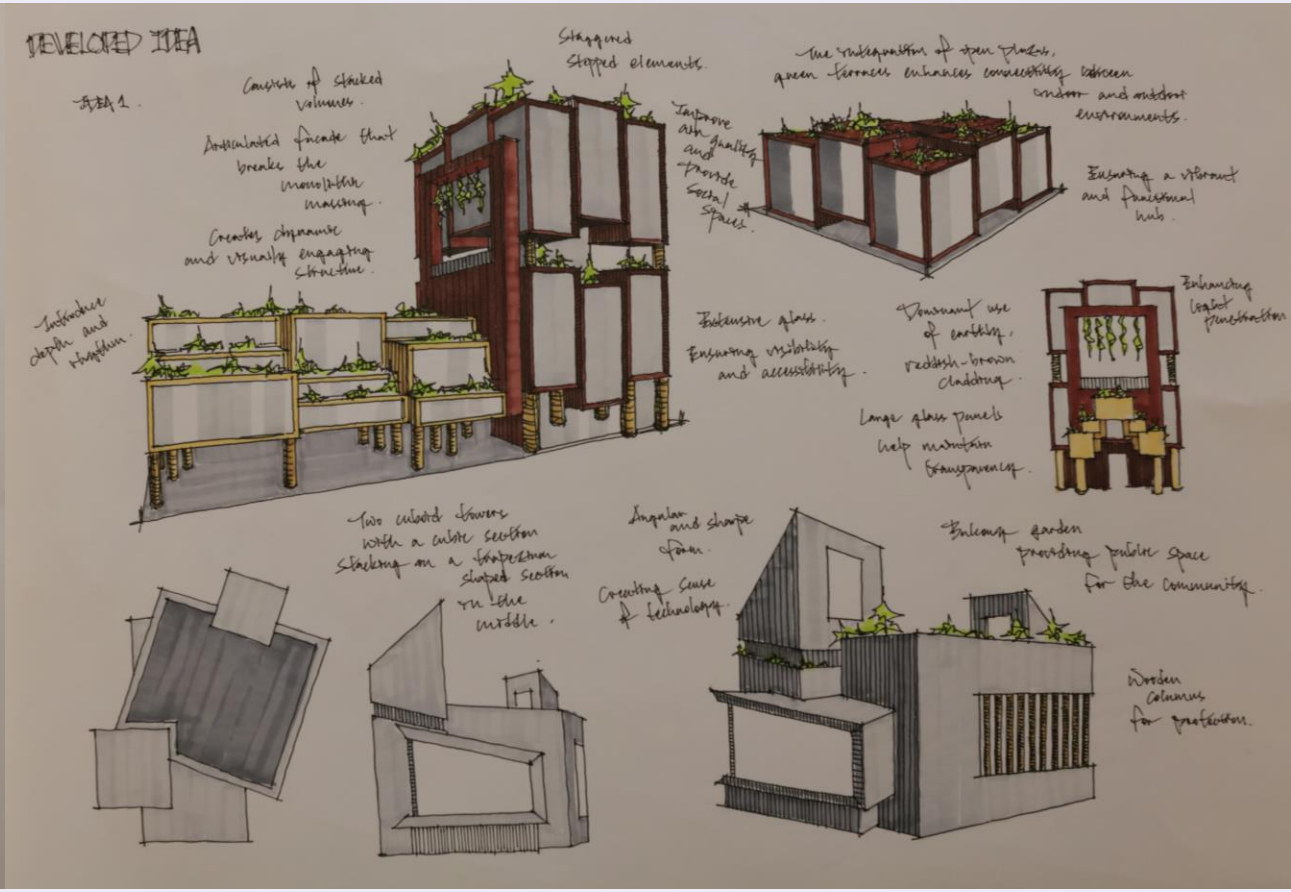

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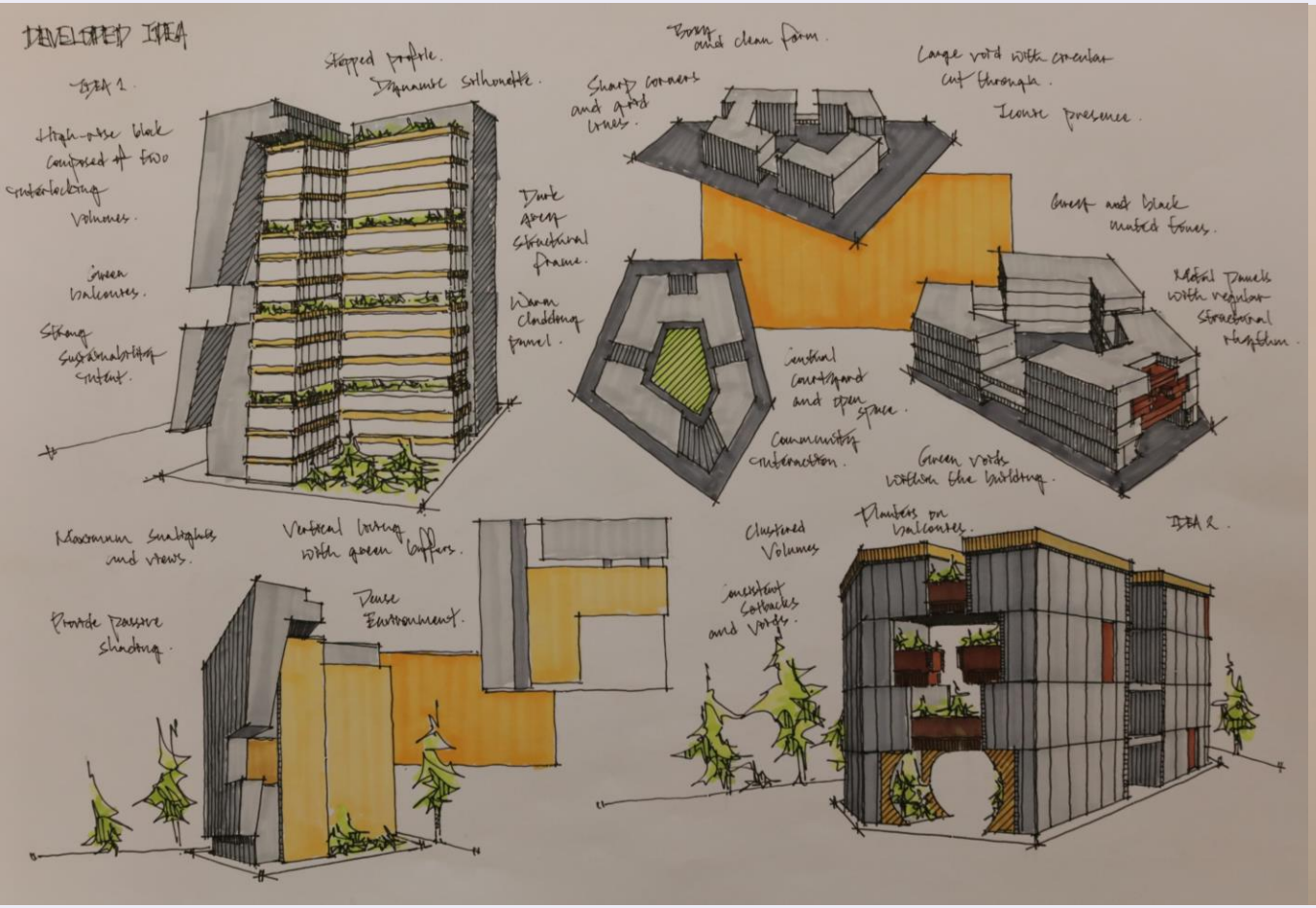

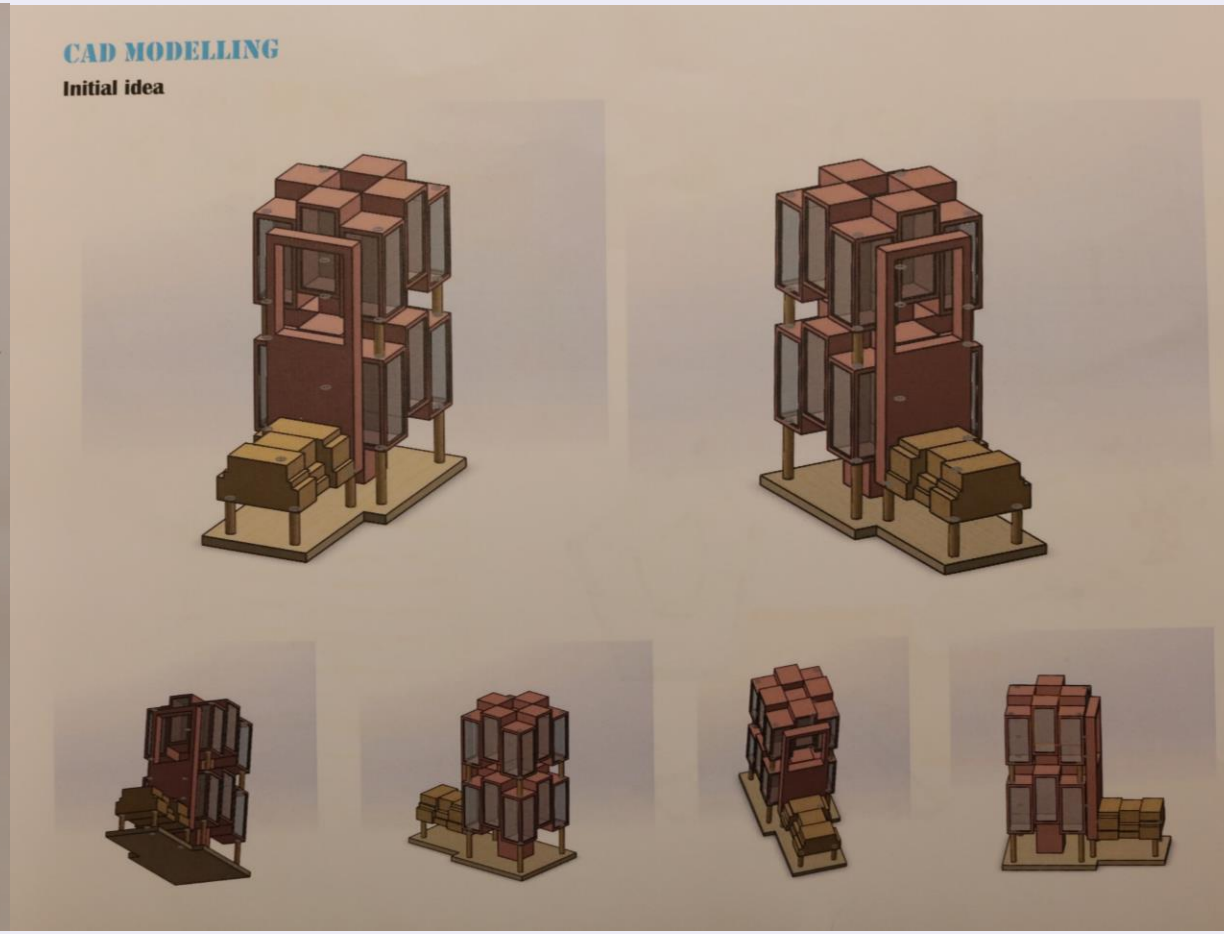

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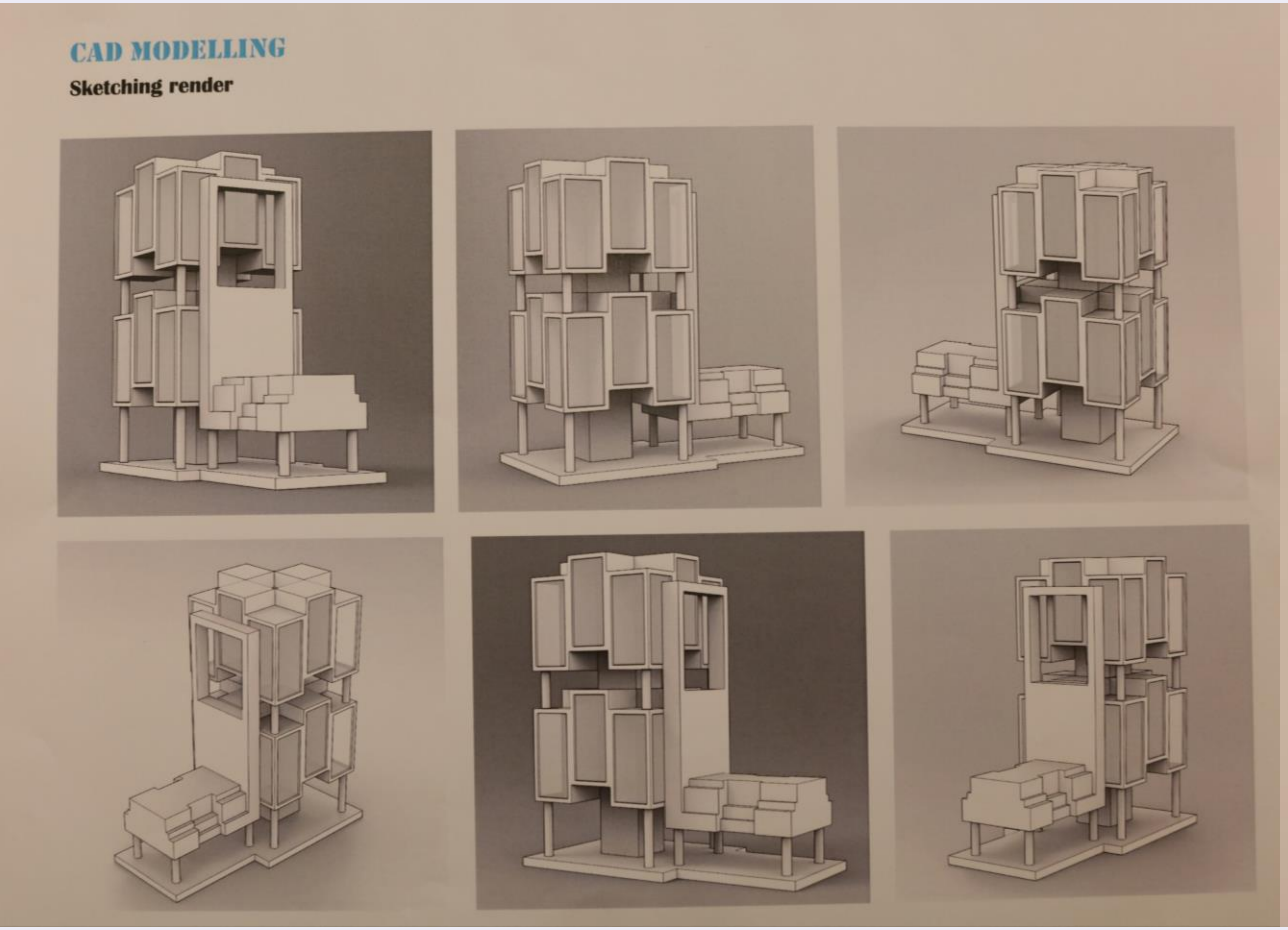

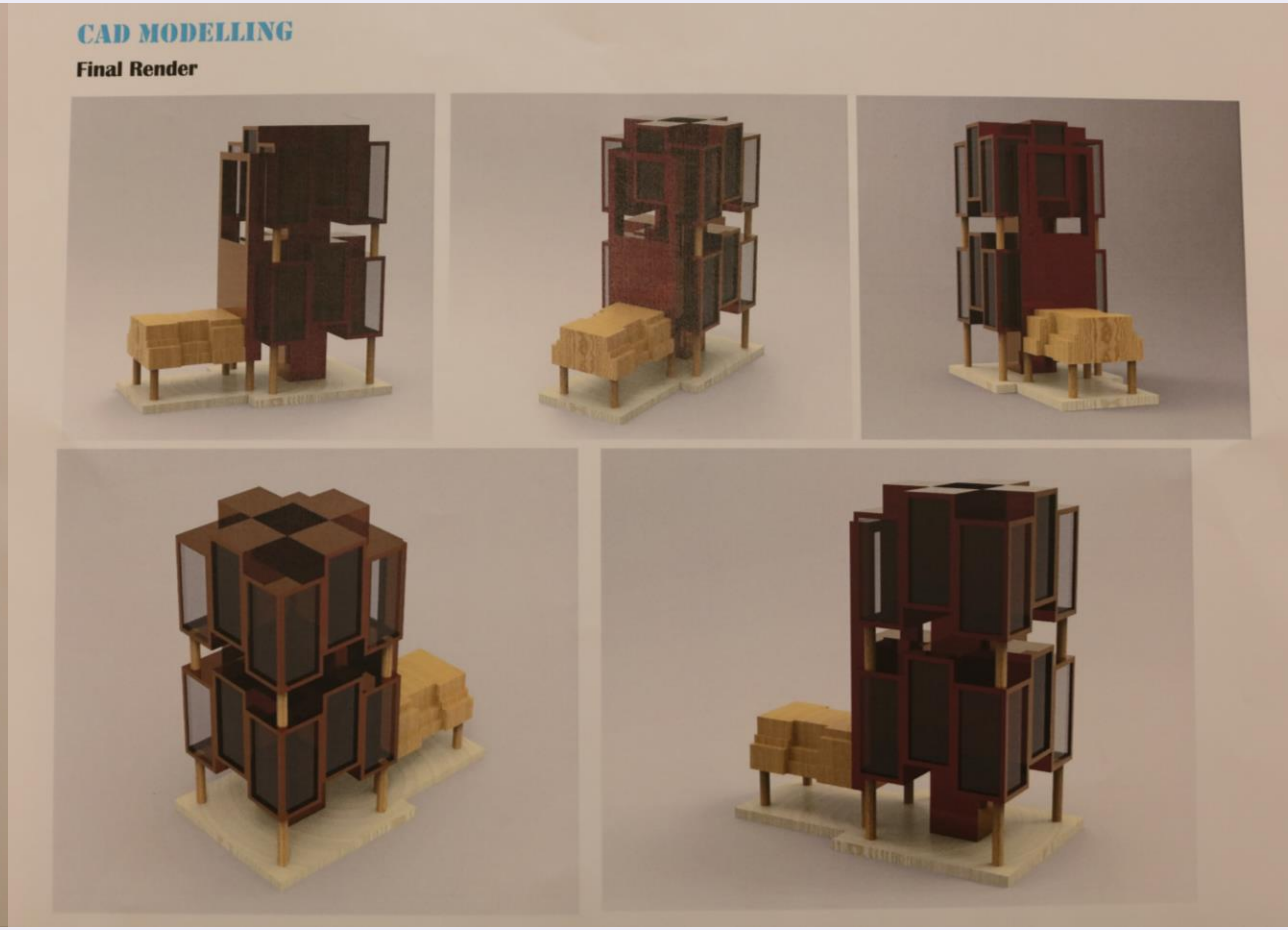

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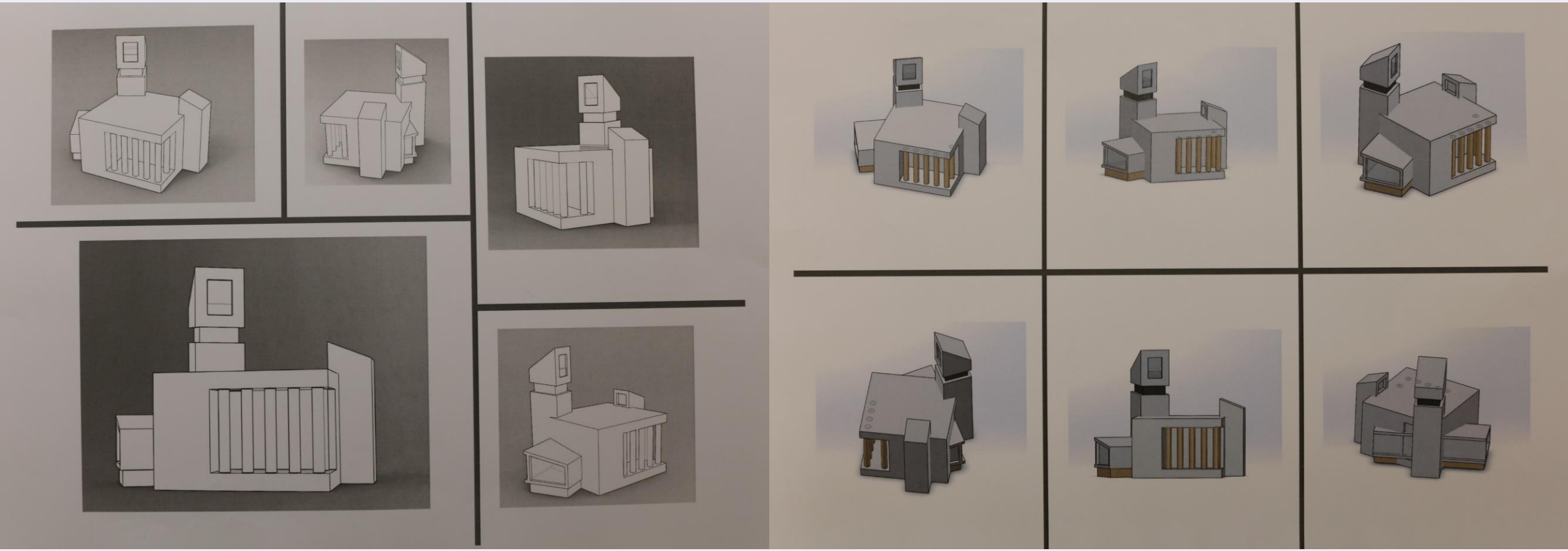

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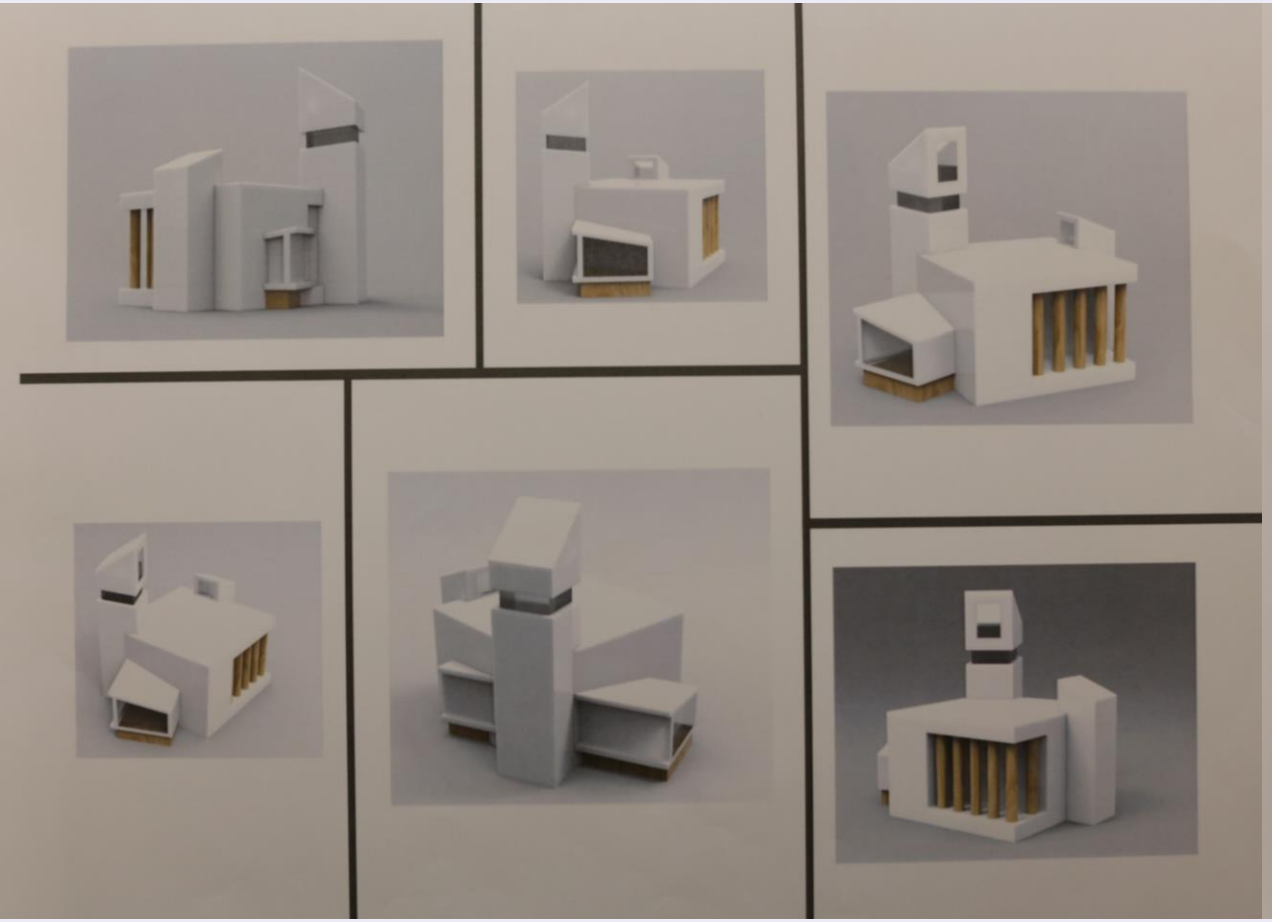

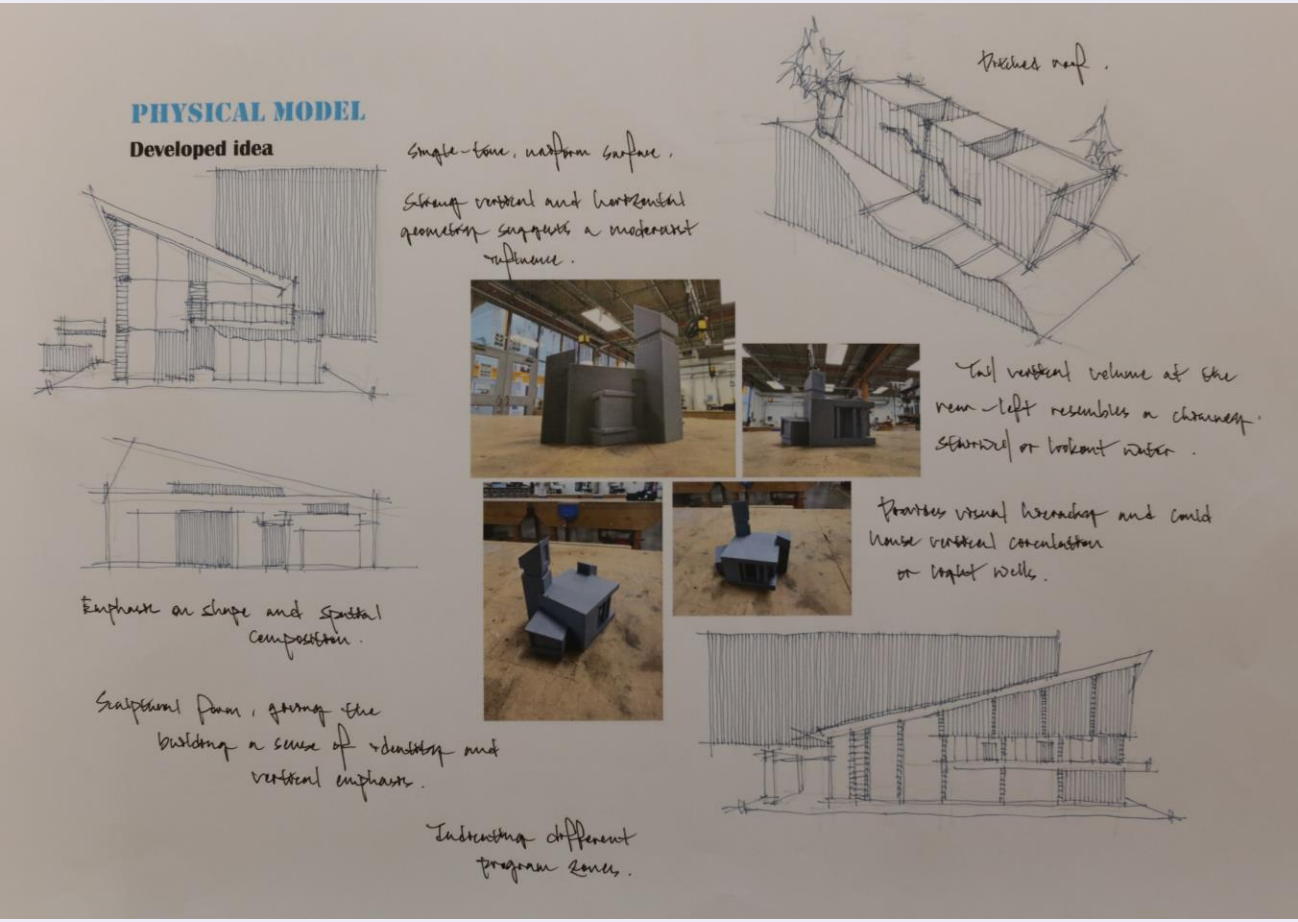

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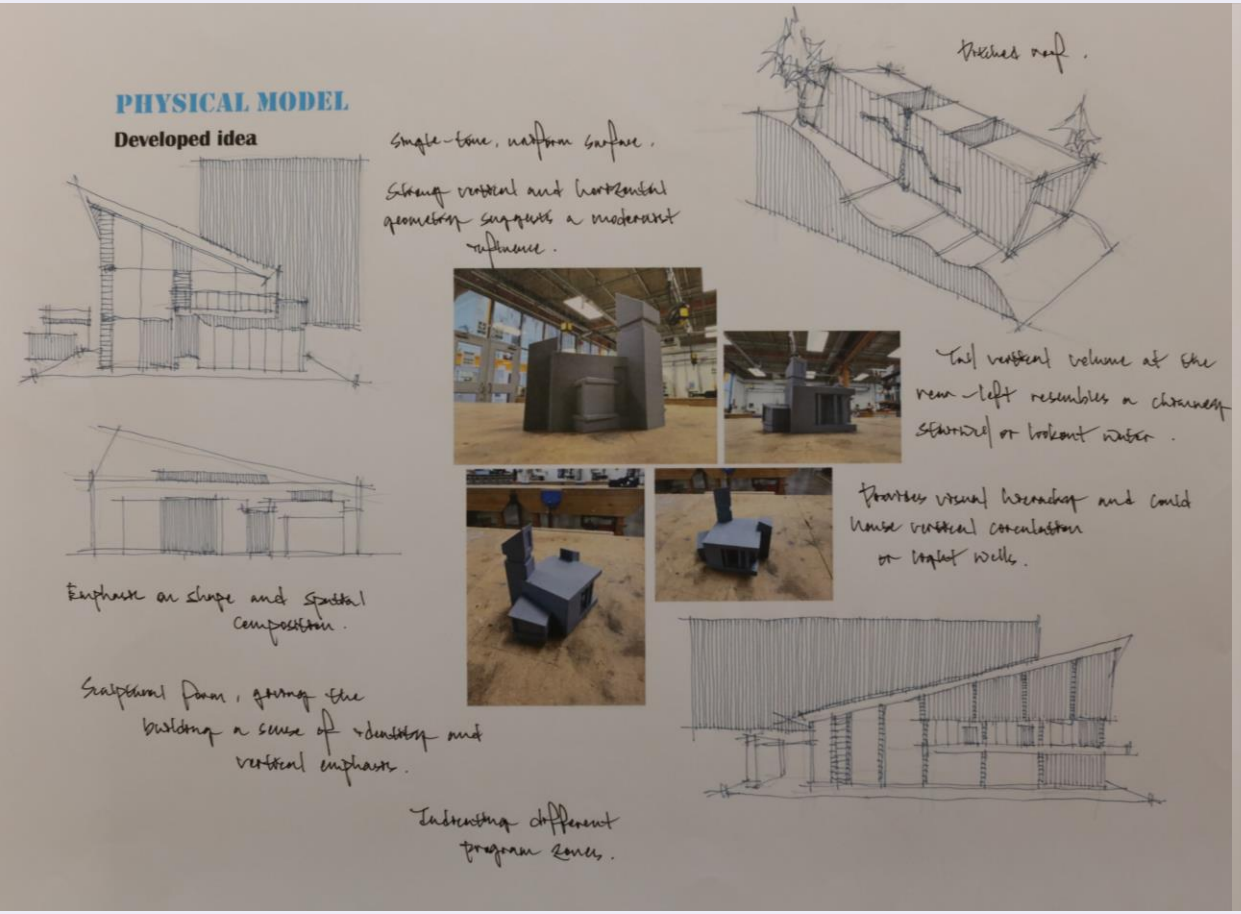

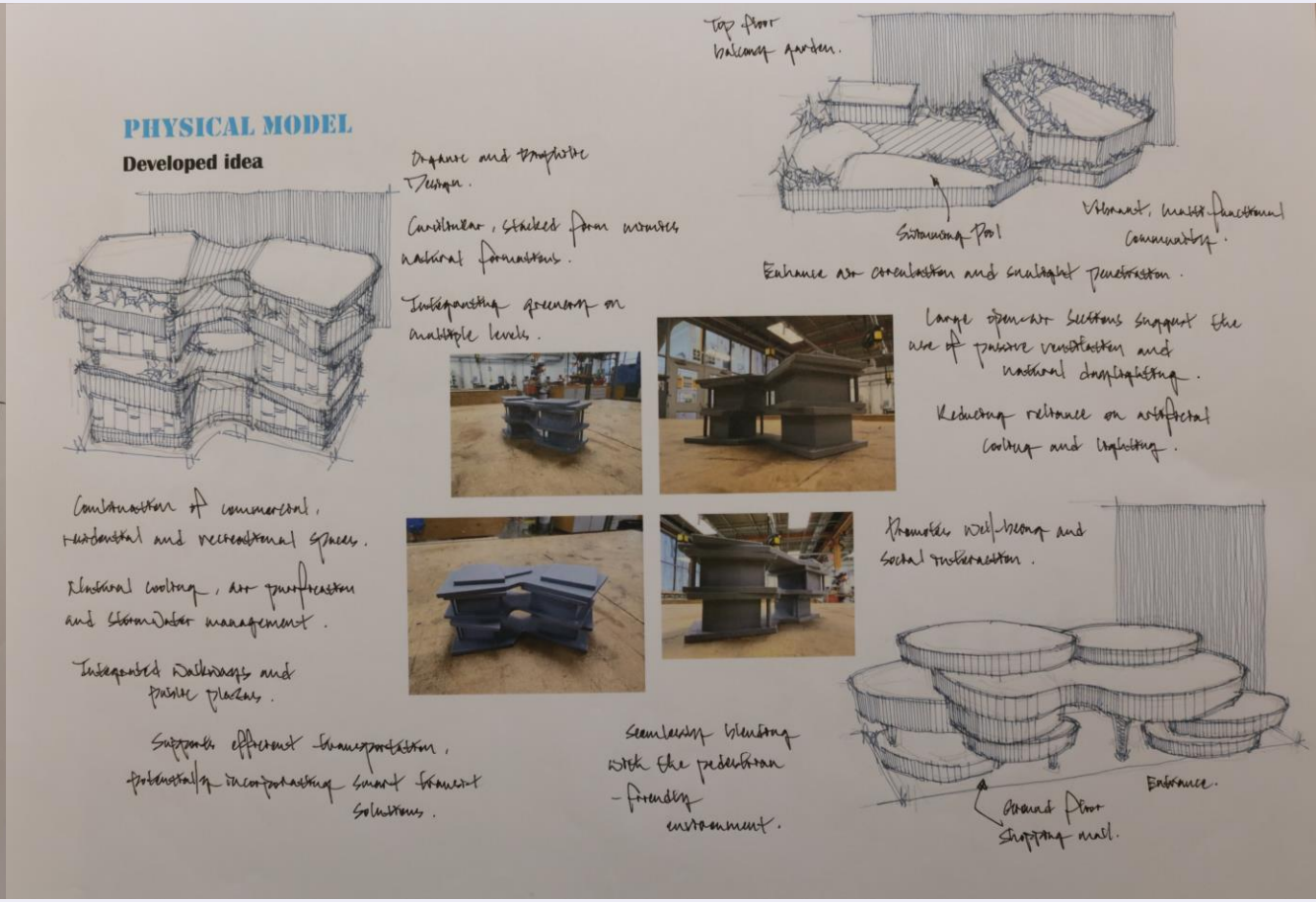

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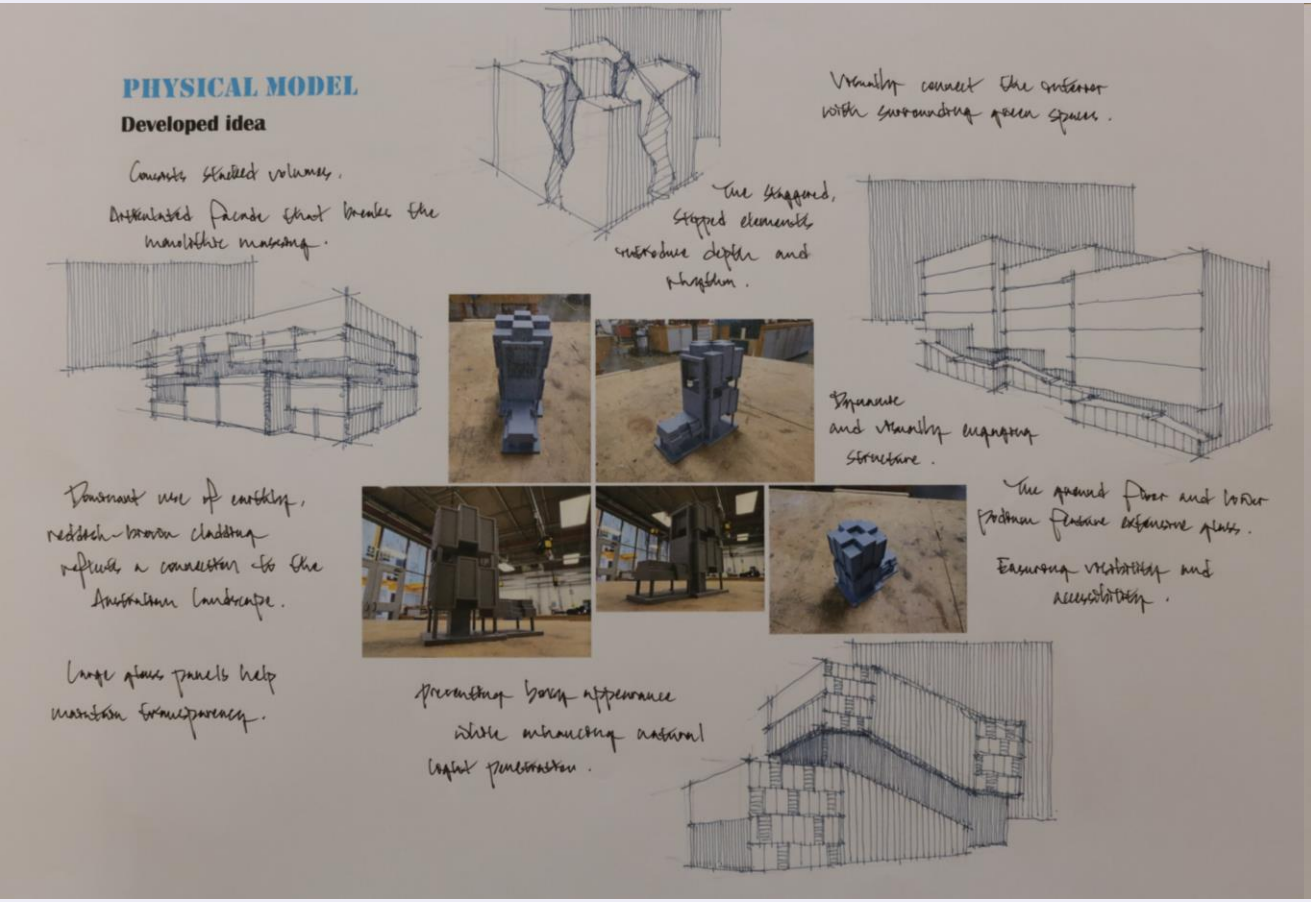
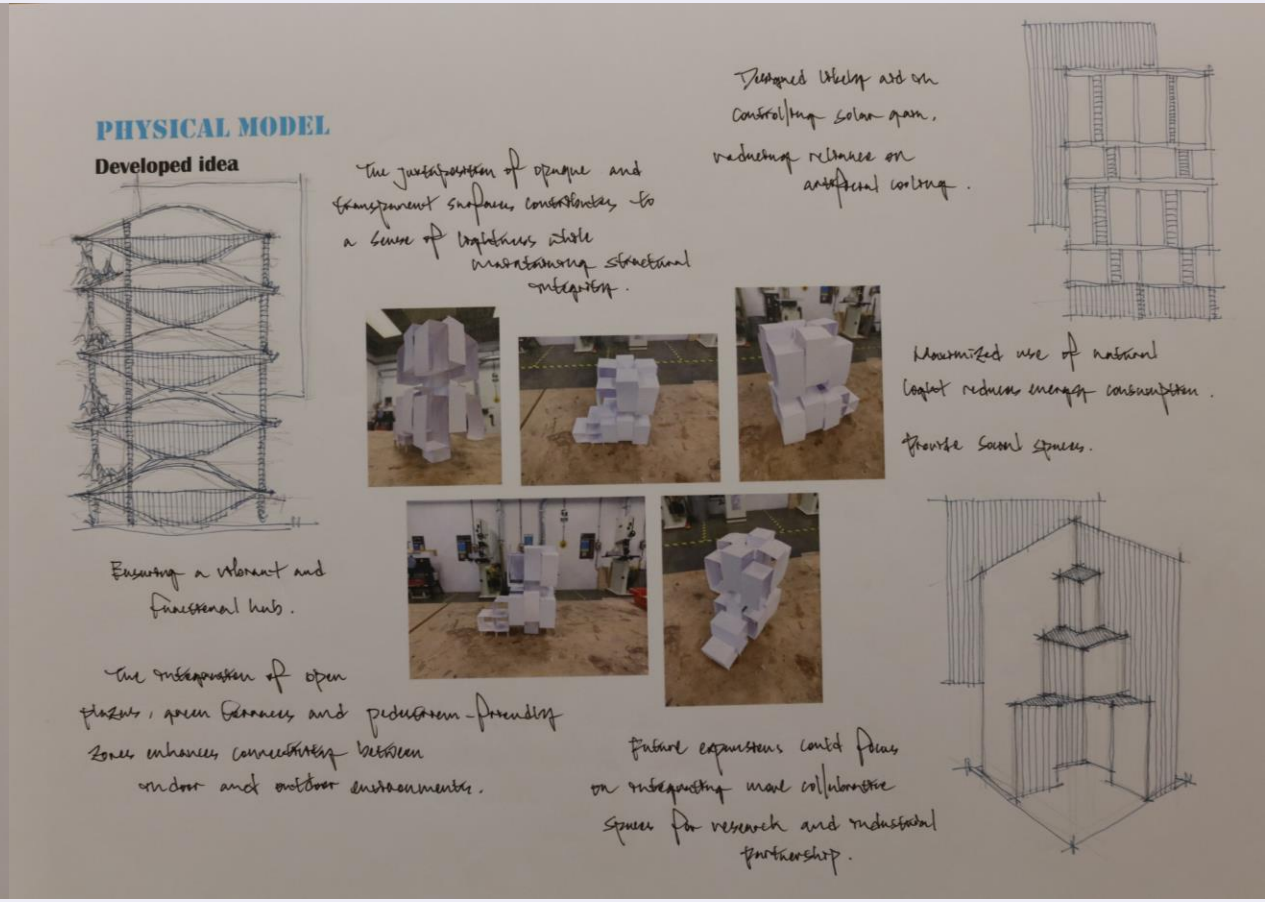




Component 2 Three-Dimensional Design

ERGONOMIC

Fit to function

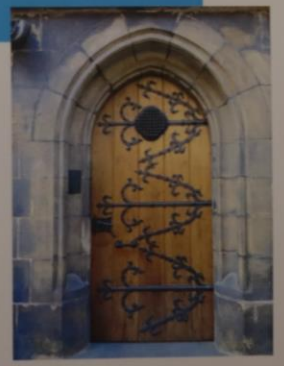
An ergonomically designed residence considers the flow of movement between rooms. Circulation spaces—such as hallways, entrances, and doorways—must provide enough clearance for comfortable passage, including accommodation for individuals with limited mobility. Ideally, corridors should be at least 900 mm wide, and doorways should accommodate a wheelchair with a minimum of 800 mm of clearance.

The zoning of functions is also key: private, public, and service areas should be arranged to minimize unnecessary movement and increase convenience. For example, placing a kitchen near the dining area enhances ergonomic efficiency in daily routines.

The placement of furniture and fixtures is critical to ensuring that activities such as cooking, bathing, sleeping, and working can be performed with ease. Countertop heights, for instance, should typically range from 850 mm to 950 mm for comfortable standing use in kitchens. Seating should support good posture with appropriate back support and height in relation to tables or desks.

Bathroom fixtures such as sinks, toilets, and showers must be placed at comfortable heights and locations, especially in homes designed for aging users or those with accessibility needs.

The gate, as a key point of daily interaction, plays an essential role in the ergonomic design of a residence. Its handle is positioned at an accessible height (900–1100mm) to accommodate users of various statures, including children, the elderly, and individuals with mobility challenges. The gate's structure incorporates lightweight materials and smooth hinges, requiring minimal effort to open and close, enhancing comfort and safety. With a clear opening width of at least 900mm, it ensures easy passage for wheelchairs, bicycles, and strollers, promoting inclusive access. Transparent or semi-open elements are used to maintain visibility, reduce blind spots, and improve spatial awareness. For added functionality, smart entry features such as motion sensors or keypad systems may be integrated to reduce physical contact and enhance convenience. Overall, the gate's ergonomic design enhances not only accessibility and ease of use but also contributes to the safety and daily comfort of its users.



MATERIALS RESEARCH

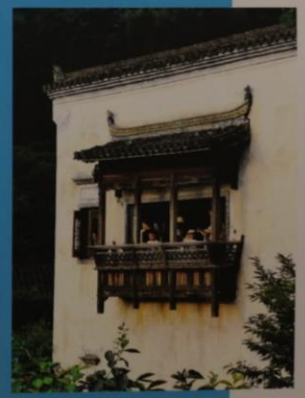
Materials selection

Structural Timber
Renewable and low-carbon if sourced responsibly.
Warm, organic texture enhances human comfort.
Naturally resists heat transfer.
Easy to shape, repair, and adapt.
Structural timber plays a fundamental role in many architectural systems due to its strength, flexibility, and natural beauty. As a load-bearing material, it can be used in beams, columns, floor joists, and framing systems. Timber has an excellent strength-to-weight ratio, making it ideal for both traditional and modern structures. It also supports intricate craftsmanship, as seen in historical architecture, allowing expressive design details.

Glass Panels
Enhances interior brightness, reduces lighting costs.
Links interior and exterior environments.
Can integrate operable sections.
Sleek, contemporary, and minimalistic.
Glass panels are widely used in architecture to provide transparency, daylight, and visual connection between indoor and outdoor spaces. In modern and traditional contexts, glass enables passive solar gain, promotes natural lighting, and enhances spatial openness.

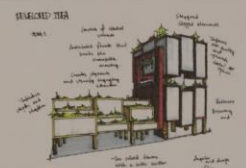
Plaster & Brick
Keeps interiors cool in summer, warm in winter.
Allows for natural humidity regulation.
Sustainable and eco-friendly.
Fire resistant.
Plaster and brick are time-tested materials often used together for wall construction and finishing. Brick provides the structural mass, while plaster acts as a protective and decorative surface layer. This combination is especially effective in load-bearing walls and thermal mass strategies.

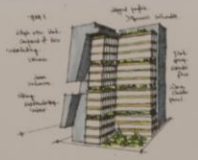
Clay
Durable & Long-lasting.
Good Drainage.
Fire Resistant.
Clay is used in architecture in multiple forms, most commonly as roof tiles, bricks, and rammed earth or adobe. Its natural availability and low embodied energy make it a sustainable material for construction.



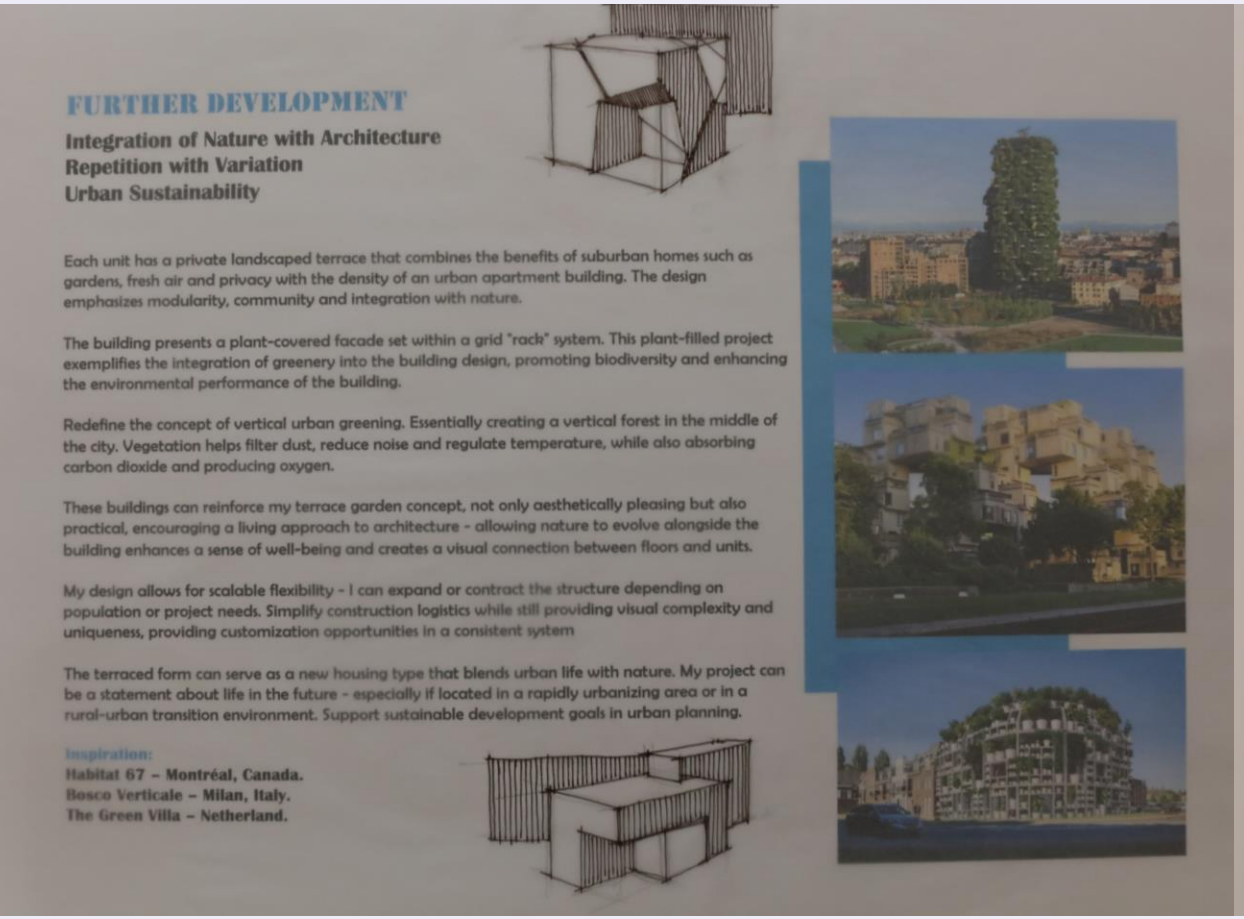
Component 2 Three-Dimensional Design

REVIEW OF IDEAS

I HAVE LISTED THE ADVANTAGES AND DISADVANTAGES OF EACH OF MY DEVELOPED IDEAS AND TAKEN SOME POTENTIAL IMPROVEMENTS		
POSITIVE	THE COMPACT MASSING AND CENTRAL COURTYARD CREATE A SENSE OF PRIVACY WHILE ENCOURAGING NATURAL VENTILATION AND LIGHTING. THE SLOPED ROOF IS EXCELLENT FOR WATER RUNOFF AND POTENTIAL SOLAR PANEL INSTALLATION. A SHADED ROOF GARDEN PROVIDES GREEN SPACE FOR RESIDENTS AND IMPROVES THERMAL INSULATION.	STRONG VERTICAL RHYTHM AND MODULARITY ALLOWS FOR PREFABRICATION AND SCALABILITY. TERRACED GREEN ROOFS ON MULTIPLE LEVELS IMPROVE MICROCLIMATES AND REDUCE HEAT ISLAND EFFECT. THOUGHTFUL BALCONY INTEGRATION ENCOURAGES INDOOR-OUTDOOR FLOW AND PASSIVE COOLING.
NEGATIVE	THE TIGHT INWARD-FACING DESIGN MAY LIMIT CROSS-VENTILATION DEPENDING ON THE SURROUNDING SITE CONTEXT. THE ANGULAR GEOMETRY MIGHT RESULT IN INEFFICIENT INTERIOR LAYOUTS WITH AWKWARD CORNERS OR UNUSABLE SPACES.	THE EXPOSED BOX FORMS MAY RESULT IN THERMAL GAIN IF NOT PROPERLY INSULATED OR SHADED. REPETITION OF MODULES COULD RISK MONOTONY WITHOUT ENOUGH VARIATION IN COLOR OR MATERIAL.
MATERIAL	APPEARS TO USE CONCRETE OR RENDERED BLOCKWORK FOR THE WALLS AND CORRUGATED METAL ROOFING, POSSIBLY WITH TIMBER DETAILS. VERTICAL SLATS ON THE FAÇADE SUGGEST WOOD OR LIGHTWEIGHT METAL FOR SHADING AND PRIVACY.	COMBINATION OF TIMBER OR RED COMPOSITE CLADDING WITH GLASS PANELS FOR TRANSPARENCY AND LIGHTNESS. LIKELY TO USE STEEL FRAMES OR LIGHT-GAUGE FRAMING FOR MODULAR EFFICIENCY.
SUSTAINABILITY	THE ROOF GARDEN AND CENTRAL COURTYARD IMPROVE THERMAL COMFORT AND REDUCE RELIANCE ON ARTIFICIAL COOLING. USE OF NATURAL VENTILATION STRATEGIES SHOWS PASSIVE ENVIRONMENTAL CONSIDERATION. MATERIAL SELECTION COULD BENEFIT FROM MORE RENEWABLE OR RECYCLED MATERIALS TO FURTHER ENHANCE ECO-PERFORMANCE.	THE EMPHASIS ON GREEN ROOFS, CROSS VENTILATION, AND DAYLIGHTING BOOSTS ENERGY EFFICIENCY. PREFABRICATION POTENTIAL SUGGESTS REDUCED CONSTRUCTION WASTE AND FASTER BUILD TIMES. GLASS AREAS SHOULD BE DOUBLE-GLAZED OR SHADED TO AVOID OVERHEATING.
IMPROVEMENTS	INTRODUCE LARGER WINDOW OPENINGS ON SHADED SIDES FOR BETTER DAYLIGHT ACCESS. ADD FLEXIBLE MODULAR INTERIOR SPACES FOR ADAPTIVE USE OVER TIME. INTEGRATE RAINWATER HARVESTING FROM THE SLOPED ROOF.	INTRODUCE SOLAR SHADING ELEMENTS OR KINETIC LOUVERS ON SUN-EXPOSED FAÇADES. VARY THE MODULE HEIGHTS OR TEXTURES TO ENHANCE ARCHITECTURAL INTEREST. ADD COMMUNITY GREEN TERRACES OR SHARED OUTDOOR ZONES TO IMPROVE SOCIAL SUSTAINABILITY.

I HAVE LISTED THE ADVANTAGES AND DISADVANTAGES OF EACH OF MY DEVELOPED IDEAS AND TAKEN SOME POTENTIAL IMPROVEMENTS		
POSITIVE	THIS CONCEPT EMPHASIZES STEPPED TERRACED MODULES WITH VERTICAL GARDEN SPACES, ENCOURAGING URBAN GREENING AND PROMOTING RESIDENT WELL-BEING. THE LAYERED AND STAGGERED FORM MAXIMIZES VENTILATION AND SUNLIGHT EXPOSURE, WHILE ALSO PROVIDING SHADE FOR LOWER LEVELS. THE TRANSPARENT GLASS FAÇADE COMBINED WITH WOODEN SHADING PANELS BALANCES LIGHT CONTROL AND AESTHETIC WARMTH. A LARGE CENTRAL COURTYARD CREATES A COMMUNAL FOCAL POINT AND PROMOTES PASSIVE AIRFLOW ACROSS THE TOWER.	THIS CONCEPT CELEBRATES COMMUNITY-FOCUSED LIVING WITH A CENTRAL GREEN COURTYARD AND MULTIPLE SEMI-PRIVATE SPACES. EMPHASIZES CLUSTER HOUSING, WHICH PROMOTES SOCIAL INTERACTION WHILE MAINTAINING MODULAR FLEXIBILITY. THE COMPACT VOLUME IS BROKEN INTO ARTICULATED BLOCKS, GIVING VARIETY IN MASSING AND CREATING SHADED NOOKS.
NEGATIVE	HEAVY RELIANCE ON GLASS CAN LEAD TO OVERHEATING WITHOUT PROPER SOLAR SHADING OR GLAZING TREATMENT. STACKED COMPLEXITY MAY INCREASE CONSTRUCTION DIFFICULTY AND COST, ESPECIALLY IN LESS-RESOURCED SETTINGS. POTENTIAL LACK OF PRIVACY IF OPENINGS ARE TOO EXPOSED OR COMMUNAL AREAS AREN'T CLEARLY ZONED.	DENSE CENTRAL COURTYARD LAYOUTS MAY LIMIT NATURAL AIRFLOW IN HOTTER CLIMATES IF NOT CAREFULLY VENTILATED. THE CLUSTERED ORIENTATION MAY REDUCE EXTERNAL VIEWS AND COULD BE PERCEIVED AS INWARD-LOOKING. REQUIRES WELL-PLANNED CIRCULATION ROUTES TO AVOID TIGHT OR INEFFICIENT PATHWAYS.
MATERIAL	DOMINANT USE OF GLASS PANELS, WOODEN LOUVER SHADING, AND GREY CLADDING VERTICAL GREENERY APPEARS TO BE INTEGRATED WITH MODULAR SUPPORT FOR PLANTERS OR GREEN WALLS.	USE OF METAL ROOFING AND CLADDING, LIKELY CORRUGATED OR STANDING SEAM, ENSURES DURABILITY. TIMBER ELEMENTS APPEAR IN THE PERGOLAS, SCREENS, AND TERRACES, GIVING WARMTH AND TACTILITY. THE ORANGE-BROWN SHADING SUGGESTS CLAY, TERRACOTTA, OR COMPOSITE BOARDS FOR WALL FINISHES.
SUSTAINABILITY	STRONG BIOPHILIC APPROACH THROUGH VERTICAL GARDENS REDUCES URBAN HEAT AND IMPROVES AIR QUALITY. PASSIVE DESIGN STRATEGIES LIKE NATURAL VENTILATION, LIGHT SHELVES, AND VEGETATED SHADING SHOW ENVIRONMENTAL MINDFULNESS. THE LARGE OPEN CENTRAL SPACE SUPPORTS WATER COLLECTION AND COOLING OPPORTUNITIES.	SHARED GREEN SPACES, VEGETATION ON TERRACES, AND ROOF GARDENS ENHANCE THERMAL COMFORT AND ENCOURAGE URBAN AGRICULTURE. CLUSTERED MASSING REDUCES EXPOSED SURFACE AREA, IMPROVING THERMAL PERFORMANCE. EMPHASIZES RESOURCE-SHARING, FROM SHADED COURTYARDS TO POSSIBLY SHARED WATER OR ENERGY SYSTEMS.
IMPROVEMENTS	INTEGRATE ADAPTIVE FAÇADE TECHNOLOGY SUCH AS ADJUSTABLE LOUVERS OR SMART GLASS TO HANDLE SUN ANGLES MORE DYNAMICALLY. ADD RAINWATER HARVESTING FEATURES OR SOLAR PANELS TO ENHANCE SELF-SUFFICIENCY. REFINE ZONING BETWEEN PRIVATE AND PUBLIC TERRACES TO AVOID USER CONFLICT.	INTRODUCE SKYLIGHTS OR LIGHT WELLS INTO DEEPER CLUSTER ZONES FOR IMPROVED DAYLIGHT. ADD ROOF-LEVEL SOLAR PANELS OR SHARED AMENITIES TO ENHANCE ECO-EFFICIENCY. CONSIDER SLOPED ROOFS TO ASSIST WITH RAINWATER RUNOFF AND SOLAR PANEL ORIENTATION.

Component 2 Three-Dimensional Design



FURTHER DEVELOPMENT

Integration of Nature with Architecture
Repetition with Variation
Urban Sustainability

Each unit has a private landscaped terrace that combines the benefits of suburban homes such as gardens, fresh air and privacy with the density of an urban apartment building. The design emphasizes modularity, community and integration with nature.

The building presents a plant-covered facade set within a grid "rack" system. This plant-filled project exemplifies the integration of greenery into the building design, promoting biodiversity and enhancing the environmental performance of the building.

Redefine the concept of vertical urban greening. Essentially creating a vertical forest in the middle of the city. Vegetation helps filter dust, reduce noise and regulate temperature, while also absorbing carbon dioxide and producing oxygen.

These buildings can reinforce my terrace garden concept, not only aesthetically pleasing but also practical, encouraging a living approach to architecture - allowing nature to evolve alongside the building enhances a sense of well-being and creates a visual connection between floors and units.

My design allows for scalable flexibility - I can expand or contract the structure depending on population or project needs. Simplify construction logistics while still providing visual complexity and uniqueness, providing customization opportunities in a consistent system

The terraced form can serve as a new housing type that blends urban life with nature. My project can be a statement about life in the future - especially if located in a rapidly urbanizing area or in a rural-urban transition environment. Support sustainable development goals in urban planning.

Inspiration:
Habitat 67 – Montréal, Canada.
Bosco Verticale – Milan, Italy.
The Green Villa – Netherland.

FURTHER DEVELOPMENT

Contextual Integration with the Landscape
Honest Use of Natural Materials
Climate Responsiveness

Terrace houses are arranged horizontally in the landscape. Natural stone and white stucco are used to blend in with the surroundings, offering stunning views of the Mediterranean Sea. The design combines terrace levels in harmony with the environment, emphasizing the connection between the built form and nature.

This residential complex integrates courtyards and terraces to bring nature into the living Spaces. The design maximizes natural lighting and thermal comfort through variations in sunlight exposure, while the green roof provides architectural, aesthetic and environmental benefits. The interaction of solids and void Spaces, as well as vegetation, promotes an intimate experience with nature.

The house features cascading courtyard shapes that form terraced garden hills that allow light to penetrate into the house and promote cross-ventilation. The use of raw materials such as concrete, wood, iron and glass strengthens the connection with nature, brings warmth to the interior and emphasizes sustainability through the honesty of the materials.

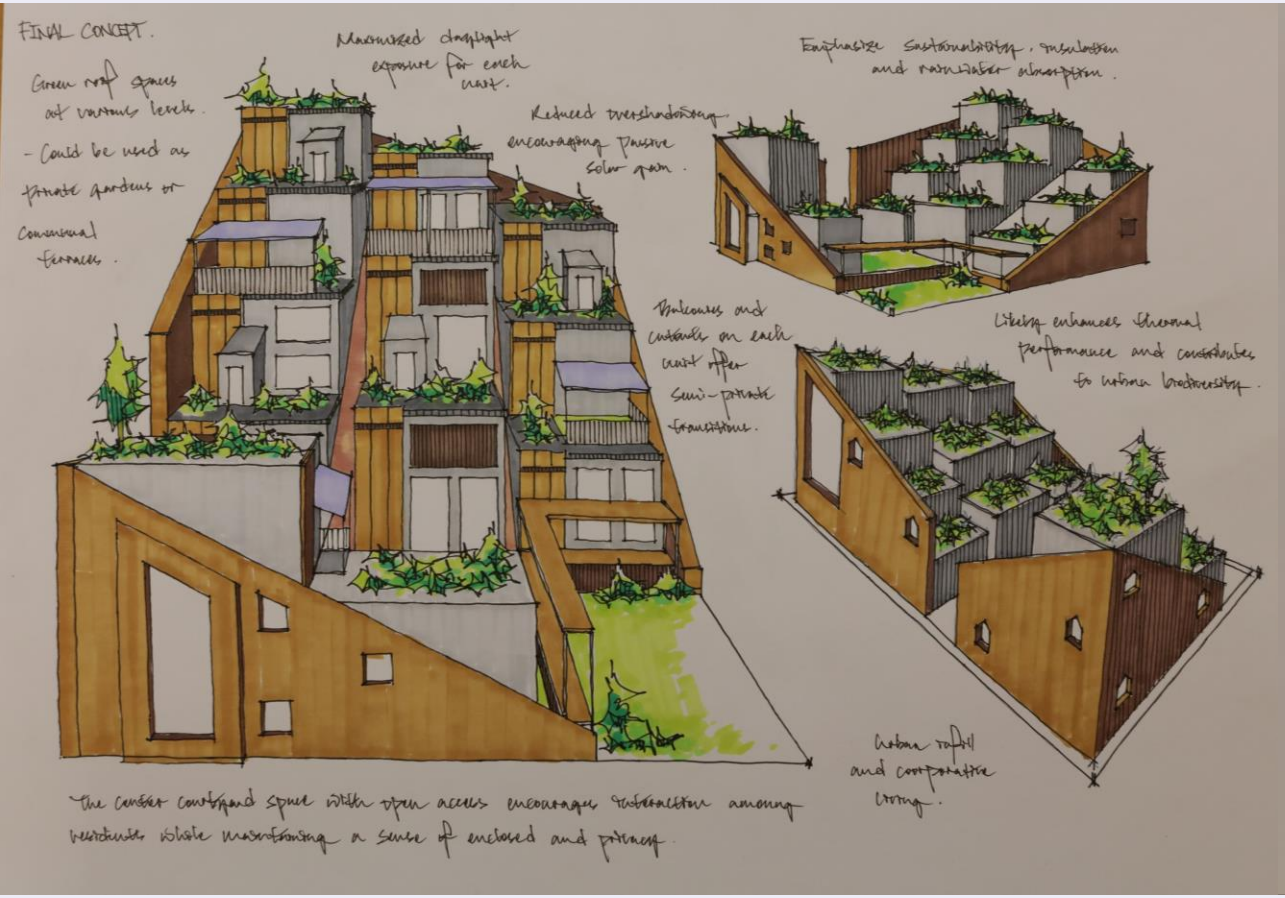
The stepped form of my design aligns with the natural flow of the site. Make the design feel like a part of the environment, not an imposition on it. Especially the location of the terrace to get views, sunlight and ventilation.

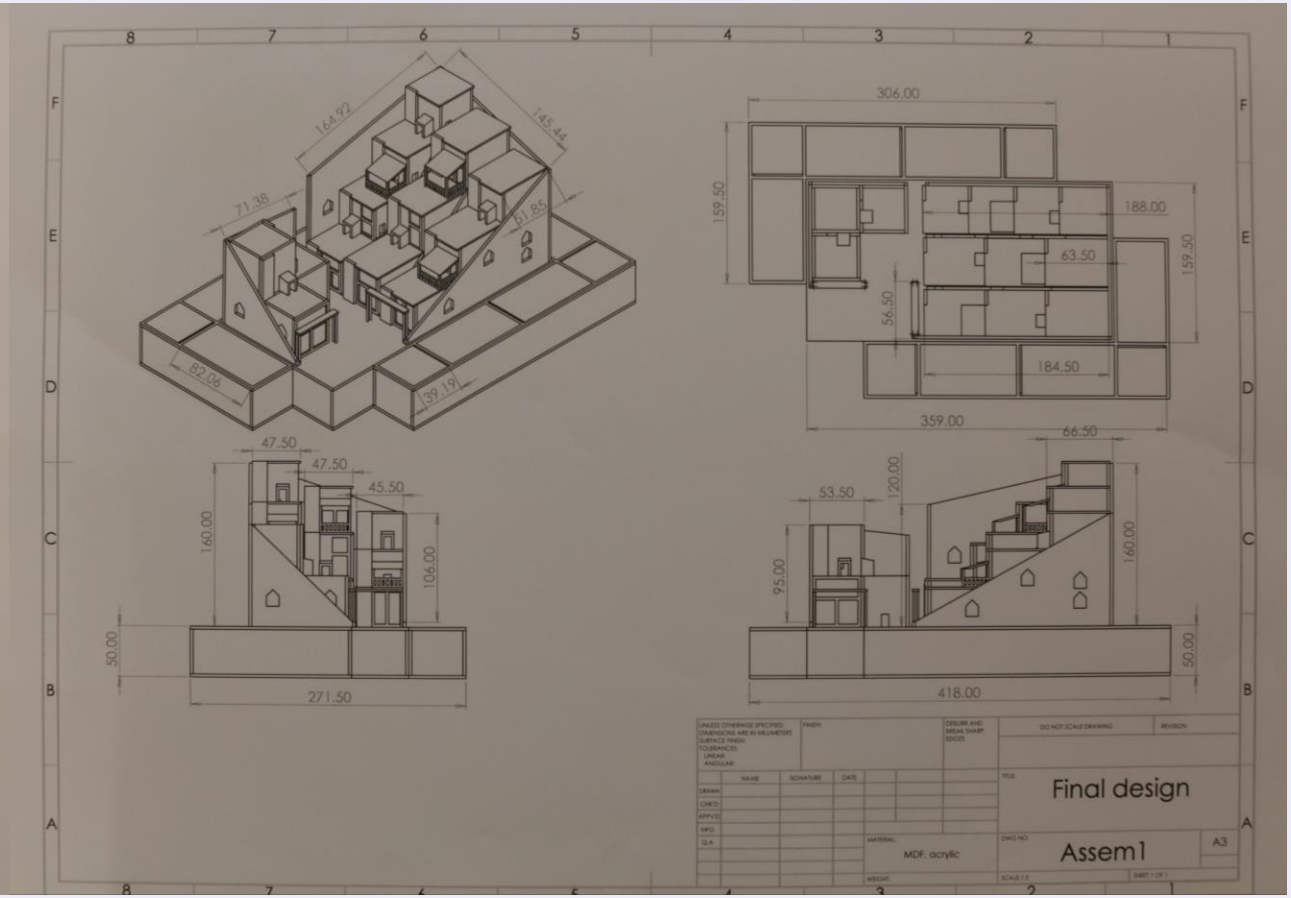
I can emphasize the material contrast between the structural elements and the greenery. The thermal and aesthetic qualities of the building are enhanced - wood and Stone Age beautifully and are low maintenance. I can use locally available materials to keep the site sensitive and sustainable.

I was able to optimize the light and airflow on each patio to make it more comfortable without having to rely on heavy HVAC. Support my green zone to maintain microclimate balance. Reinforcing my sustainability narrative is rooted in form, not just technology.

Inspiration:
The Terraces – Brih, Lebanon
San Lorenzo Residential Complex – Portugal
Olivos House – Argentina

Component 2 Three-Dimensional Design





Component 2 Three-Dimensional Design