LEKHA MORE PORTFOLIO

ARCHITECTURAL SELECTIVE WORKS

01 Ecological Cooling Shores

Academic Project - SPRING 2026

PROJECT OVERVIEW

Set within a desert city context, this project investigates nocturnal urbanism by treating artificial light at night as both a necessary human infrastructure and a severe ecological pollutant. The research challenges traditional daylight-centric urban planning by investigating the complex, unseen intersections of desert ecology, public health, and labor systems during the night.

Macro Access & Site Integration

ECOLOGICAL FRAMEWORK & DAY SKY IMITATION

The core methodology isolates how modern urban lighting fundamentally breaks desert ecology, specifically through the "day sky imitation" created by blue-rich LED spectrums. By mimicking daylight, these intense light distributions and color spectrums trigger severe circadian delay in both human and ecological actors. The analysis tracks how this specific spectral pollution causes orientation disruption, shifts in predation advantages, interference with pollination and migration, and profound habitat fragmentation at the threshold of bright-to-dark edges.

To ground the spatial analysis, the project maps these systemic breaks against 3–5 specific indicator nocturnal actors. The methodology evaluates the built environment through the following analytical lenses:

Ecological Dependencies: Mapping the exact physiological and spatial requirements for movement, refuge, food, water, nesting, and temperature ranges for the selected indicator species against the city's illuminated footprint.

Spectrum & Barrier Analysis: Tracking specific light attributes (intensity, distribution, shielding, and blue-rich sources) to define bright zones that act as hard barriers to ecological flow.

SECTION A-A

SECTION B - B

MODULAR PLAN

Corridor Integrity: Tracing natural ecological networks—such as washes and park chains—to measure where localized light spill (from street to habitat, and street to home) severs continuous habitat corridors.

Human & Labor Intersections: Superimposing the pathways of night shift workers (across hospitals, logistics, and transit) to understand how essential human exposure nodes (like crossings and bus stops) overlap with ecological disruption.

CLUSTER PLAN

Beneath the secondary archways, reflective membranes simulate a bright day sky during the night.

Shaded microclimates foster desert flora while the inverted sky prevents blue-rich LED spill.

Low-intensity lighting near the ground prevents ecological disruption outside.

The breathable outer lattice absorbs daytime fire and exhales heat into the true night.

Deep balconies visually disconnect our domestic lives from the wildlife corridors below.

Exterior amber lighting honors the fragile visual adaptation thresholds of local species.

Brightness belongs to the interior;
the exterior belongs to the nocturnal

The light spill section demonstrates the protection of the river ecosystem.

The continuous canopy acts as a fortified wall against ecological intrusion.

We must enforce an absolute boundary between human glow and the wild.

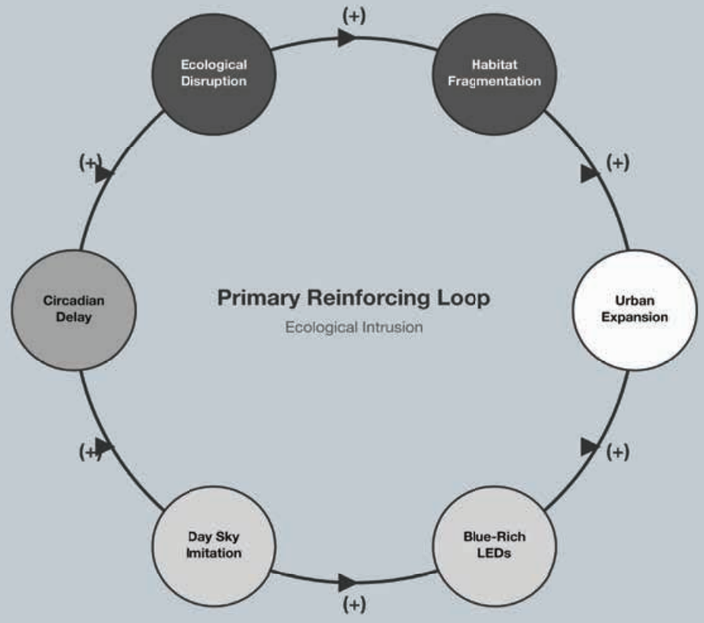
The canopy glows inward, leaving the exterior completely dark against the night sky

Let the architecture do the heavy lifting so the ecosystem can heal

Architecture must take responsibility for its systemic impact on the night

WHAT IS ECS?

A PROTECTOR WALL ECS treats the shore as an inhabitable filter, not a singular building object. It reinstates the continuity of the ecological corridor by acting as a shield. It protects the river from the urban noise and light spill, creating a sanctuary for the desert's nocturnal rhythms.



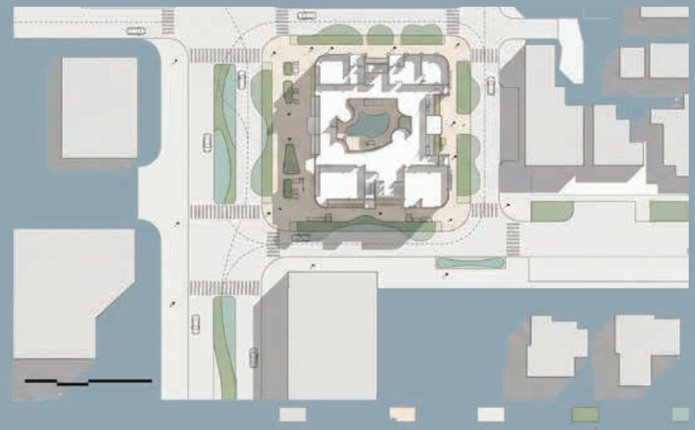
02 Colony_518

Academic Project - Fall 2024

Macro Access & Site Integration

Located within a dense urban fabric, the project site sits adjacent to existing infrastructure and right-of-ways, requiring a sensitive approach to massing. The site plan analysis highlights the relationship between the project footprint and the surrounding existing buildings, establishing a dialogue between the new vertical intervention and the street-level public routes. The strategy prioritizes maintaining accessible public corridors while optimizing the building's orientation to mitigate urban congestion

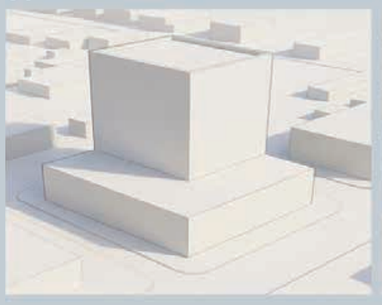
Elevation of Colony_518



Macro Access & Site Integra-

Macro Access & Site Integration

01



01 Base Massing

02

02 Courtyard Carve + Step Backs

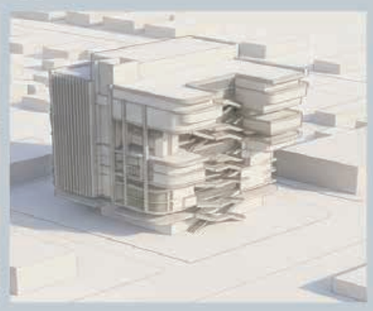
03

03 Sectional Iteration

04

04 Facade Logic + Microclimate

05



05 Circulation Spine

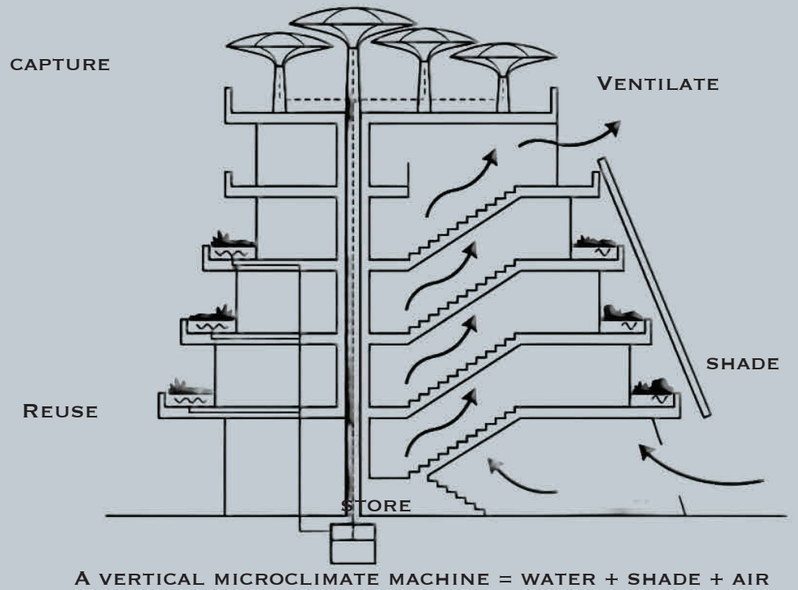
06

06 Intergrated Final - Colony_518

The Vertical Microclimate

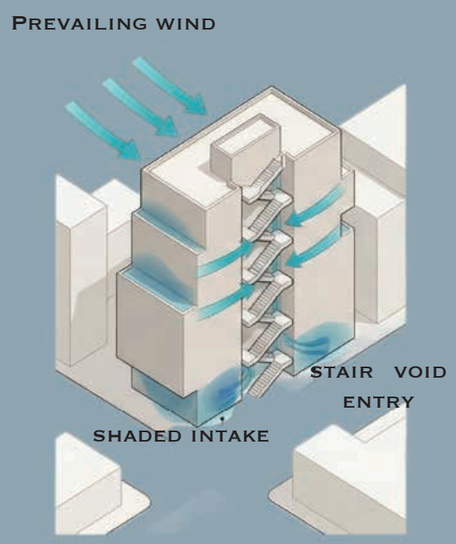
Capture + Ventilate + Reuse + Store + Shade

The form of the tower is not arbitrary; it is an evolved response to environmental performance. The massing process begins with a base block, which is then carved to create a central courtyard, allowing light and air to penetrate the core. Sectional iterations introduce step-backs that maximize terraces, followed by a "Green Ribbon" facade logic that integrates vegetation directly into the building skin. The final integrated form acts as a living machine, designed to capture resources and ventilate spaces naturally



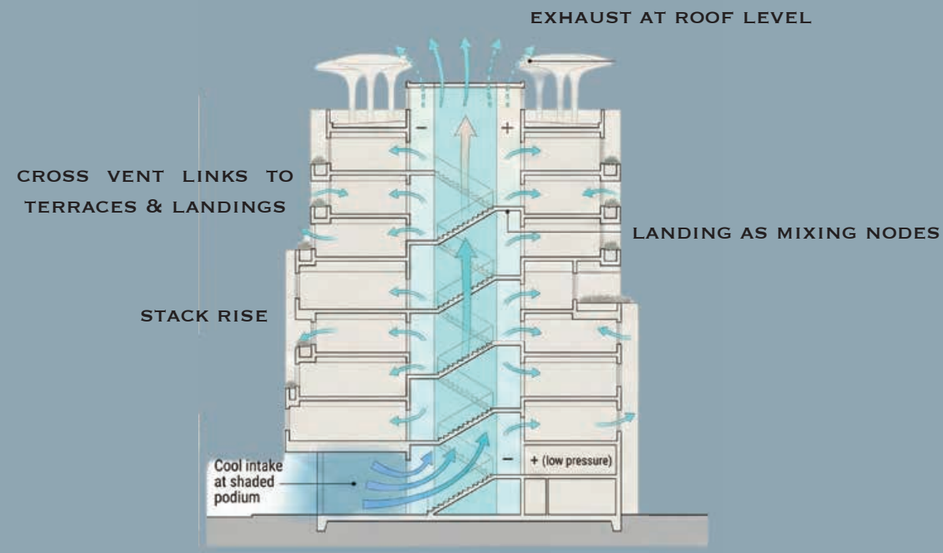
A vertical microclimate machine = water + shade + air

01



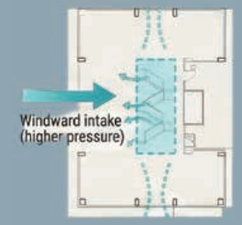
01 Prevailing wind + Intake

02



02 Sectional Ventilation
Path (stair void chimney)

03

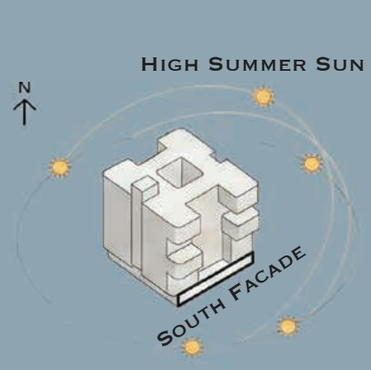


Windward = Intake (cool)
Leeward = Exhaust (warm)

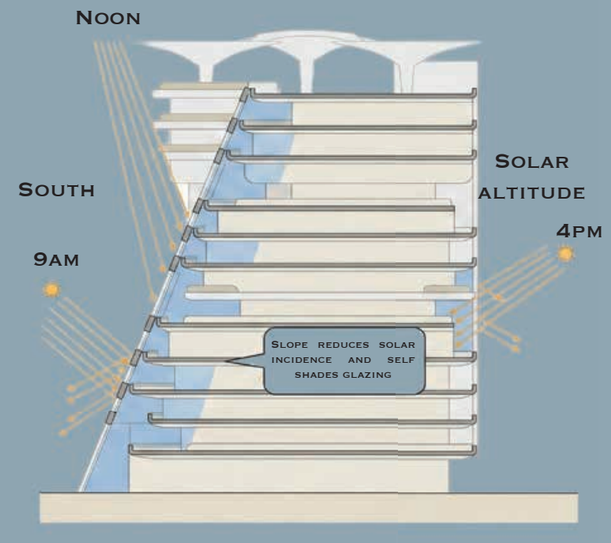
03 Plan Overlay + Pressure
logic

Passive Breathability & Solar Response

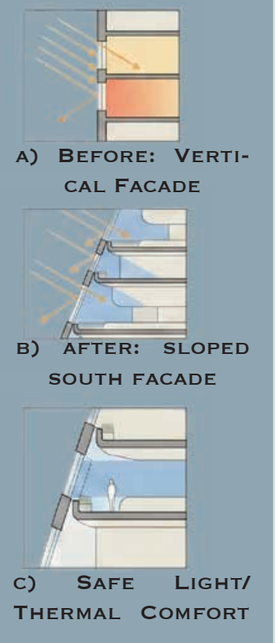
The building functions as a thermal chimney through a "Stair Void" system. Prevailing winds are harvested at the intake and circulated through the sectional ventilation path, exhausting hot air at the roof level. The plan overlay utilizes pressure logic, drawing cool air from the windward intake and releasing it through the leeward exhaust. Simultaneously, the southern facade features a calculated slope that self-shades the glazing, reducing solar incidence and heat gain during peak hours while optimizing daylight access



01 Orientation + Sun Path



02 Sectional Sun / Shade Diagram



a) Before: Vertical Facade

b) After: Sloped south facade

c) Safe Light/ Thermal Comfort

01 Prevailing wind + Intake

Vertical Systems Integration

This detailed section illustrates the complex layering of the tower. From the ground-level interface to the roof-level canopies, the diagram reveals the internal void that drives the stack ventilation effect. It highlights how the residential units stack efficiently while maintaining the open central spine necessary for the environmental systems to function effectively.

Water-Microclimate Causal Loop

Colony 518 operates on a closed-loop water system designed to reduce demand on the Colorado River. Rainwater is captured via the roof canopy and undergoes a first-flush filtration process before descending through gravity trunks to storage weir rooms. This water is redistributed to irrigate microclimate fills and planted terraces, which in turn provide evaporative cooling and comfort to the community. Greywater is recycled for flushing and irrigation, ensuring that every drop contributes to the building's thermal regulation and groundwater recharge.

Living/ Bedroom

Balcony

Lobby

Cut out spaces

PesidentialPlan - Even Level

Restaurant/ Cafeteria

Office/ Admin

circulation

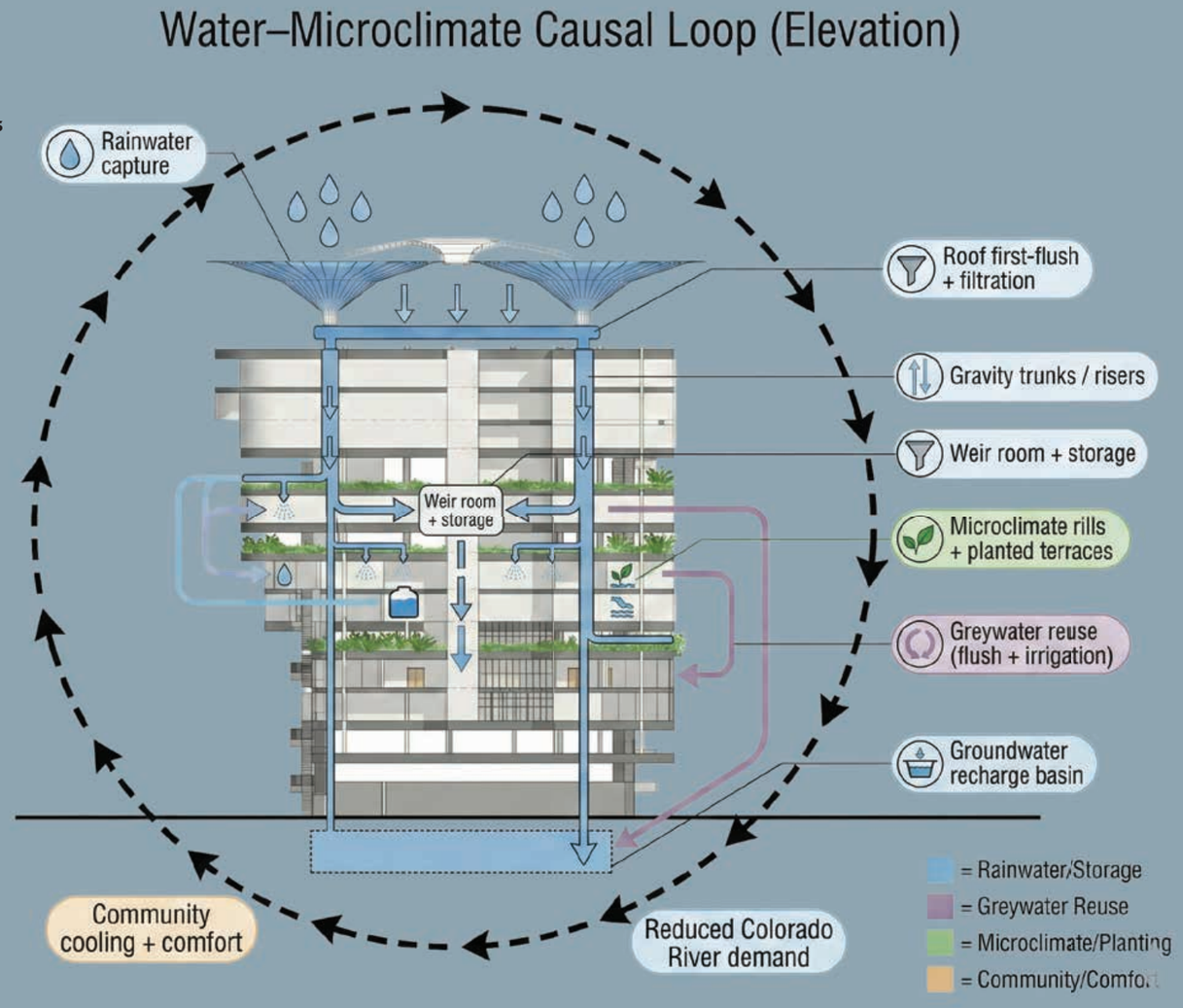
commercial/ retail

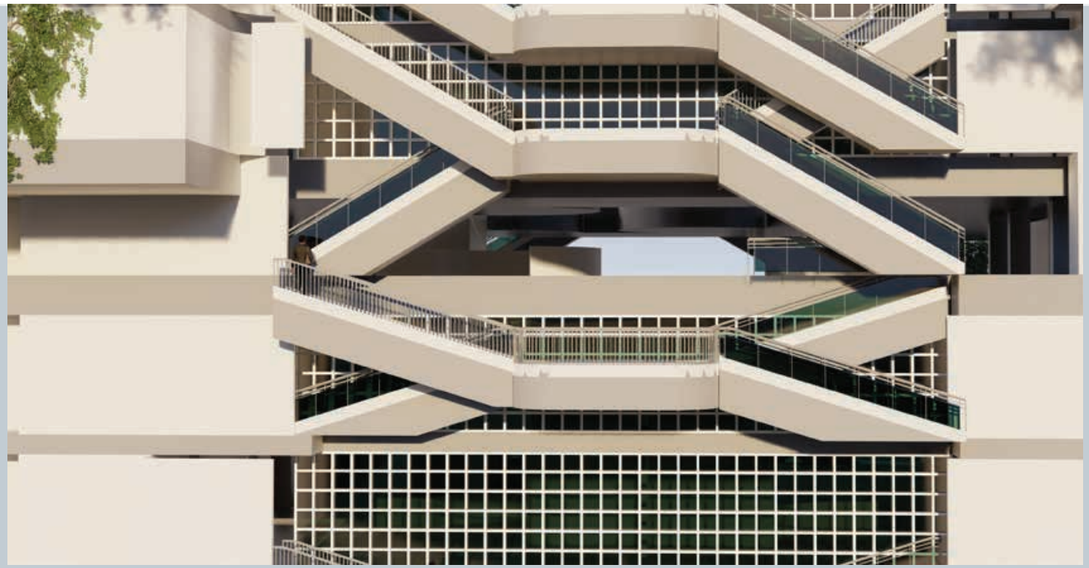
event spaces

Courtyard

Services

Commercial Plan - Odd Level





Residential Configuration

The residential levels are organized around a central void to ensure cross-ventilation for every unit. The “Even Level” plan reveals a layout where living and bedroom spaces are pushed to the perimeter for views and light, while deep balconies buffer the interior from direct sun. “Cut-out spaces” and lobbies are strategically placed to break the density, creating pockets of relief and semi-private gathering zones for residents.

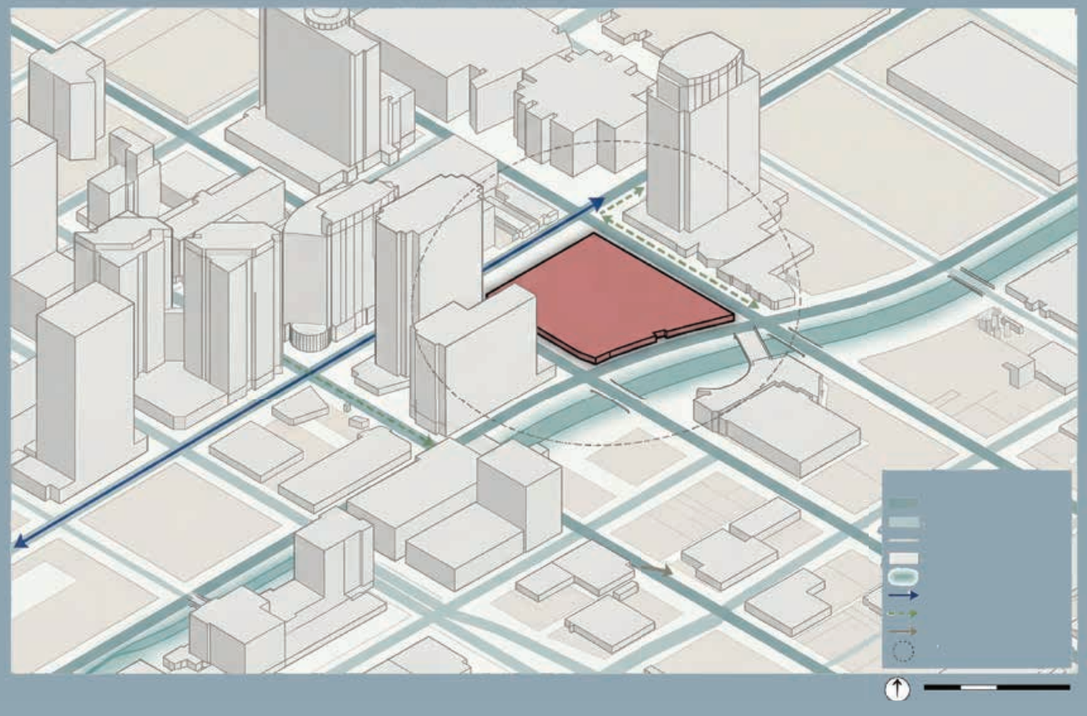
03 Impression Tower

Academic Project - Spring 2024

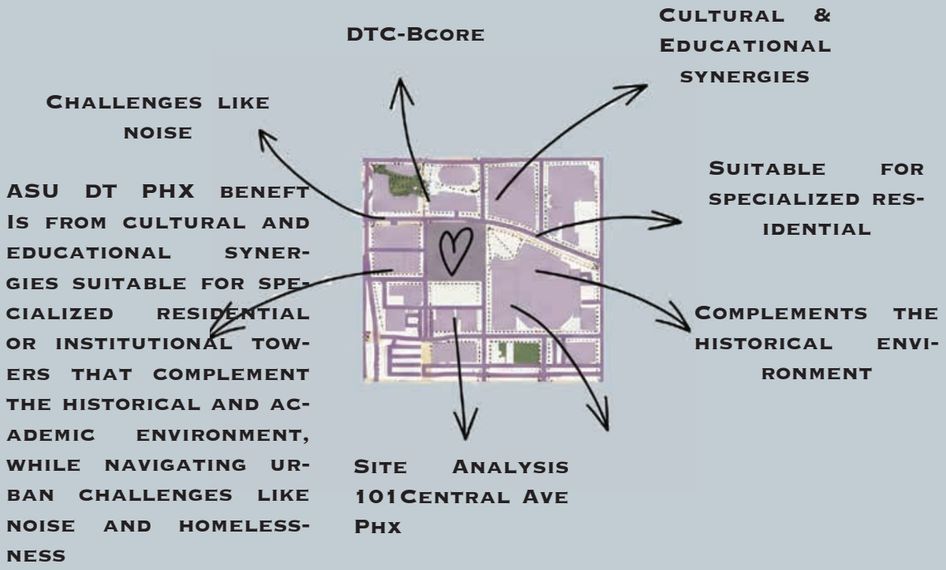
Phoenix Urban Connectivity

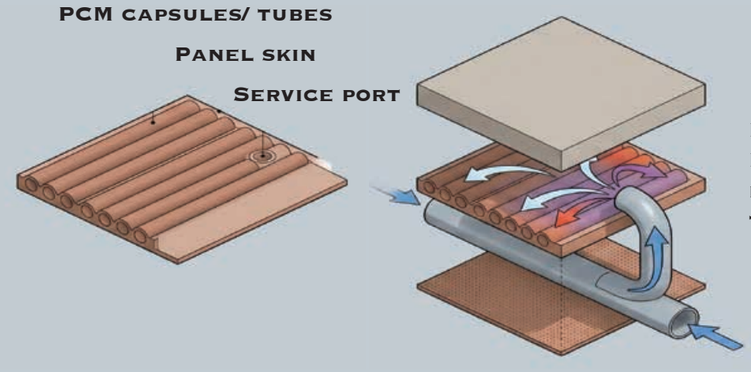
Situated in a high-activity zone, the site benefits from strong cultural and educational synergies, making it ideal for specialized residential or institutional functions. The "Macro Access Plan" identifies primary arterials, transit priority routes, and the 5-minute walking radius, ensuring the tower is well-connected to the urban pulse. The design response complements the historical and academic environment while navigating urban challenges such as noise and homelessness

Macro level site Plan



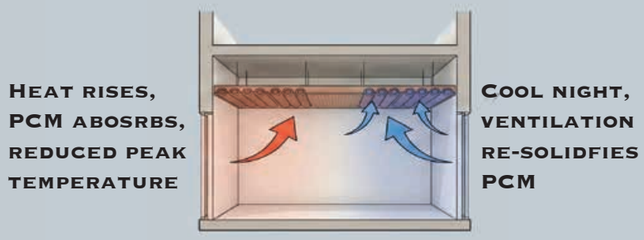
Micro level site plan



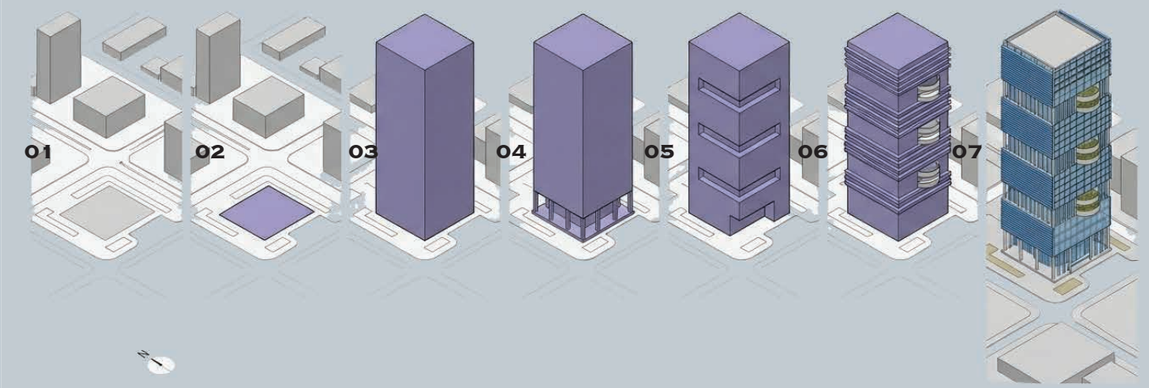


01 PCM Panel Module

02 Exploded Assembly in Impression Towers



03 Building Scale Application



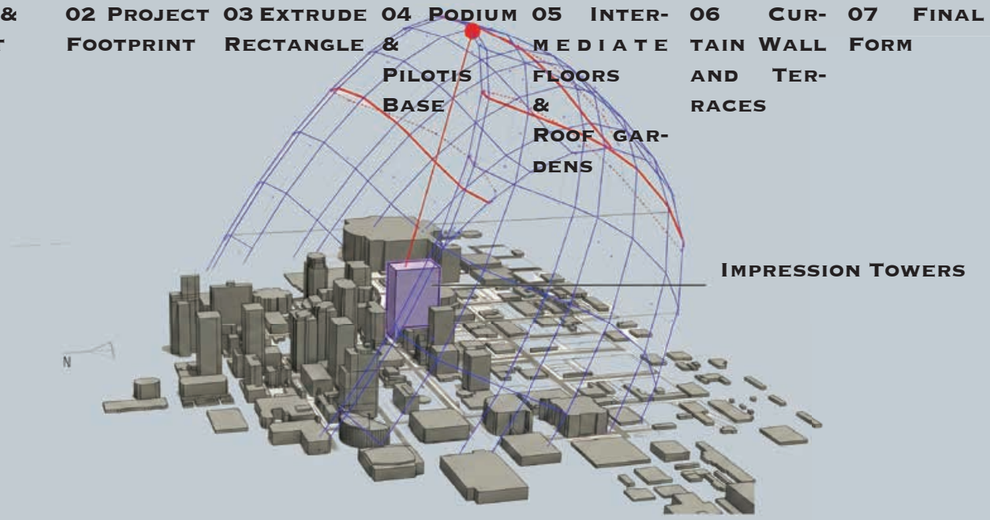
01 Site & context | 02 Project Footprint | 03 Extrude Rectangle | 04 Podium & Pilotis Base | 05 Intermediate floors & Roof gardens | 06 Curtain Wall and Terraces | 07 Final Form

Sculpting the Desert

The transition from site to final form involves a seven-step process. Starting with the site context and project footprint, the mass is extruded and lifted onto a podium and pilotis base to activate the ground plane. To mitigate the scale, void floors and “Sky Gaps” are introduced, followed by shading bands and terraces that break the vertical monotony and provide outdoor respite. This results in a final form that is porous and responsive to the harsh desert sun.

Final Form & Materiality

The final rendering captures the Impression Tower as a beacon of sustainable desert modernism. The shading bands and pilotis base give the tower a lightweight appearance despite its height, while the blue hues of the glazing reflect the Arizona sky. The design stands as a testament to integrating advanced building technology with aesthetic clarity.



Solar Analyis of site for Impression Towers

Phase Change Material

A key innovation in Impression Tower is the integration of Phase Change Materials (PCM) into the ceiling panel modules to regulate indoor temperatures.

Daytime Cycle: As heat rises, the PCM capsules within the panel skin absorb thermal energy, melting and reducing peak indoor temperatures.

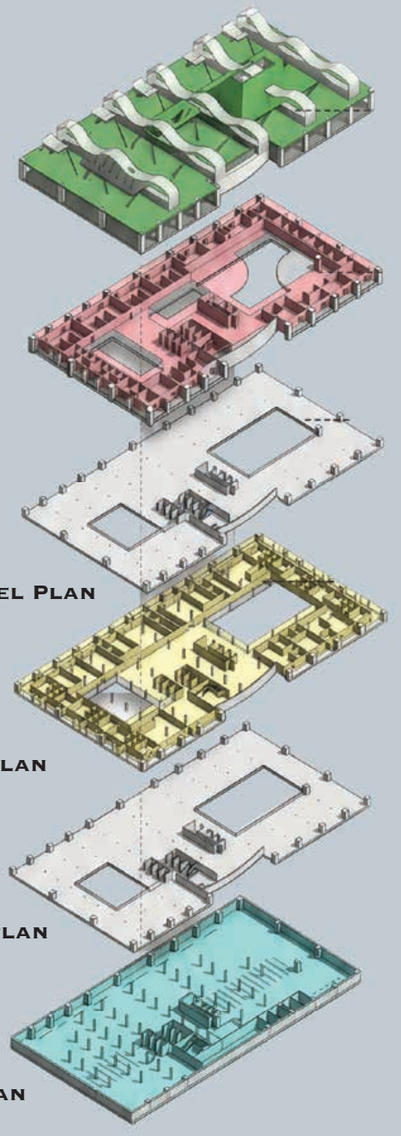
Nighttime Cycle: Cool night ventilation flows through the service ports, recharging the system by solidifying the PCM for the next day.

Assembly: The exploded assembly view demonstrates how PCM tubes are sandwiched between the structure and finishes, creating a passive cooling engine hidden within the architecture.

Parking
Public Zone
Core Services
Open Grid Zone

Access Level Plan

Baement Parking Level Plan



Roof Level Plan
Floor 13-14

Hotel Lvl Plan
Floor 10-12

Inetrmediate Level Plan
Floor 9

Residential Lvl Plan
Floor 6-8

Itermediate Lvl Plan
Floor 5

Parking Level Plan
Floor 2-4

Access Level Plan
Floor 1

East Elevation

North Elevation

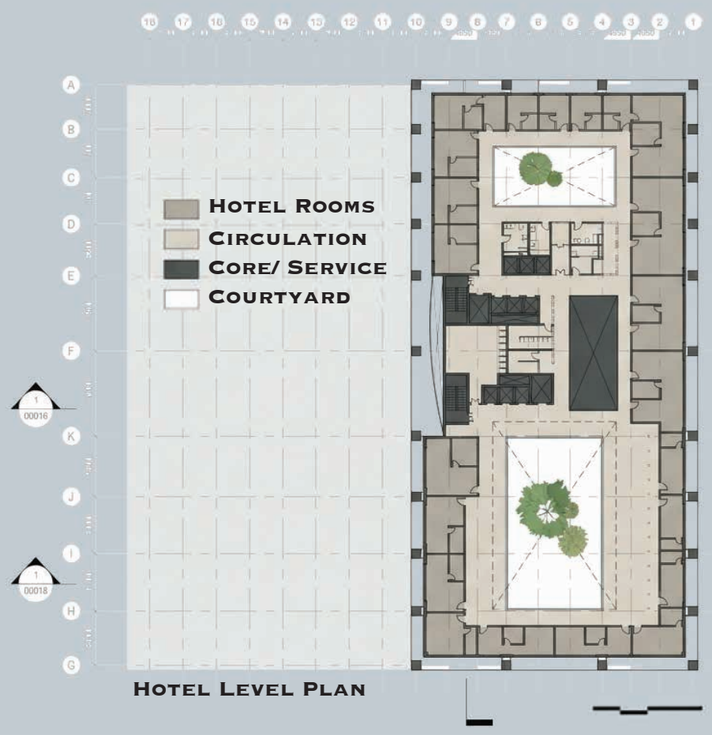
Vertical Zoning & Distribution

The tower utilizes a mixed-use stacking strategy to maximize efficiency.

Access Level (Floor 1): Features a public oval zone and open grid zones for community engagement.

Parking (Floors 2-4): Efficiently integrated into the lower podium levels.

Residential & Hotel (Floors 6-12): Divided by intermediate service levels, the upper floors house residential units and hotel suites, culminating in a roof-level amenity deck



Hotel Level Plan

04 COLO

Professional Practice project 2023

The Vertical Microclimate

Located in the bustling Dadar district near the Railway Station, this professional practice project navigates tight urban constraints. The site is bounded by a 24.40m wide road and sits adjacent to the Dadar Departmental Store and existing Building No. 2. The challenge was to maximize the buildable envelope while respecting the dense existing context and high-traffic conditions of Mumbai

Plinth & Public Realm

The Plinth Level Plan focuses on the interface between the private tower and the public street (Bhavani Shankar Marg). The design ensures seamless vehicular access and organized parking while maintaining a defined entry experience. The setback respects the road widening line, providing a buffer that enhances safety and accessibility in this high-traffic zone.

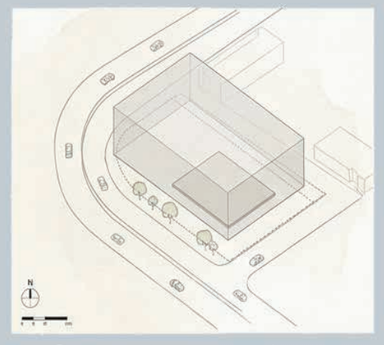
Site Plan - Colo High Rise

Scale 1:500

Climate-Responsive Massing

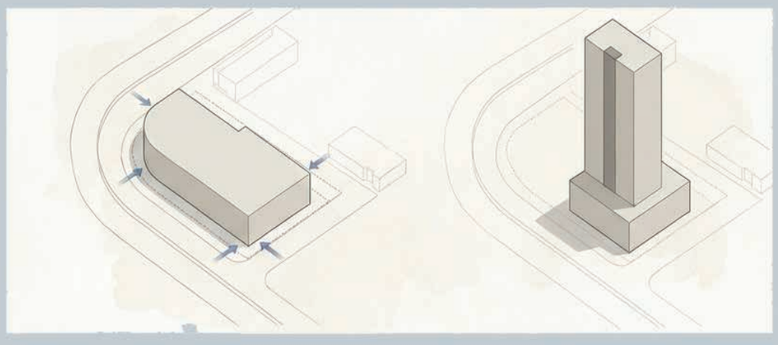
The tower's orientation is derived from a rigorous environmental analysis. The axonometric study maps the sun path across the Summer and Winter Solstices to optimize daylighting without excessive heat gain. Wind analysis shaped the tower's corners to mitigate "downwash" and corner acceleration, ensuring pedestrian comfort at the street level. The massing steps back and slenders as it rises, reducing the wind load and creating a sleek profile against the skyline.

01



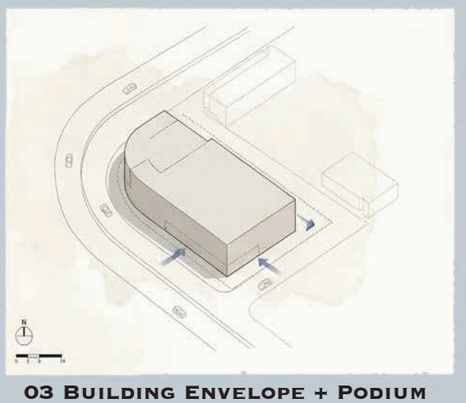
01 Site + Building Envelope

02



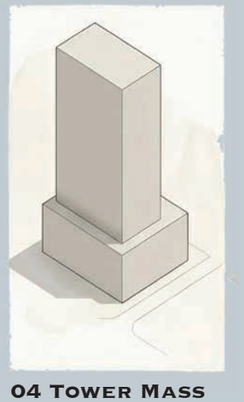
02 Podium Placement + Alignment

03



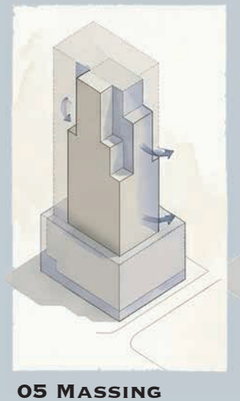
03 Building Envelope + Podium

04



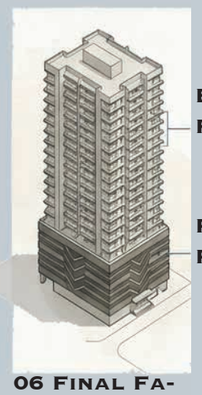
04 Tower Mass Extrusion + Core

05

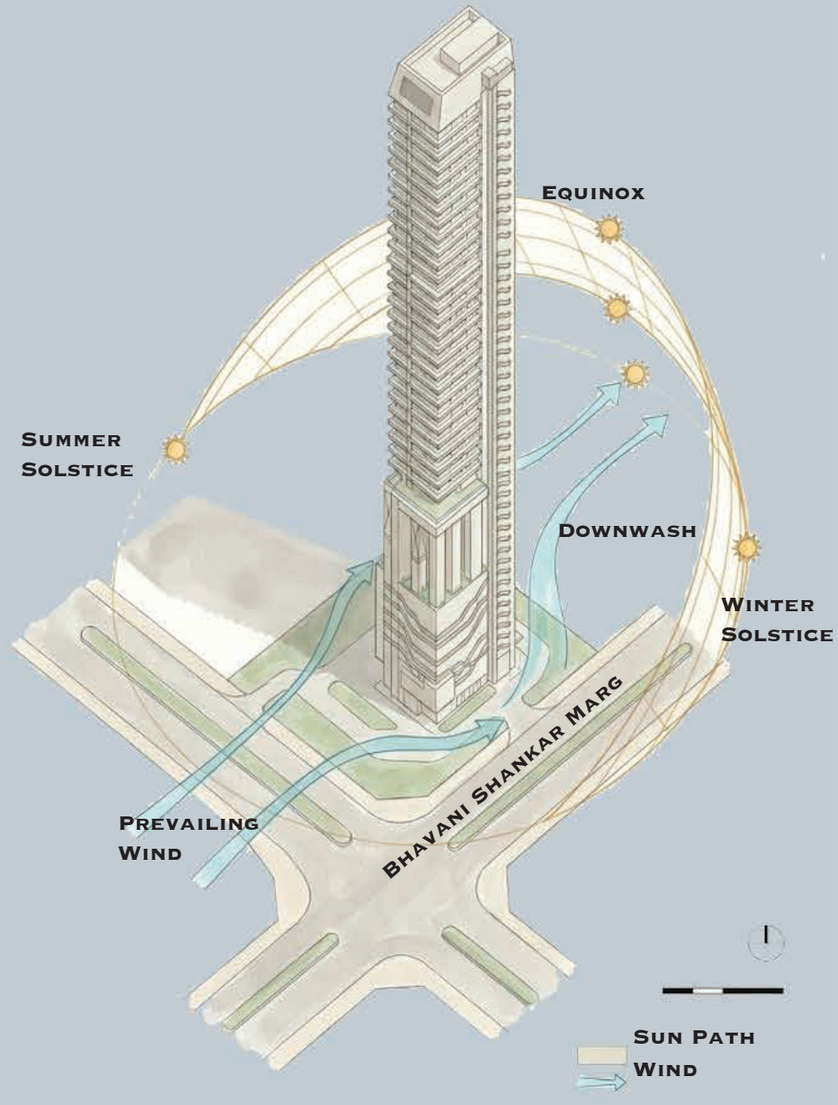


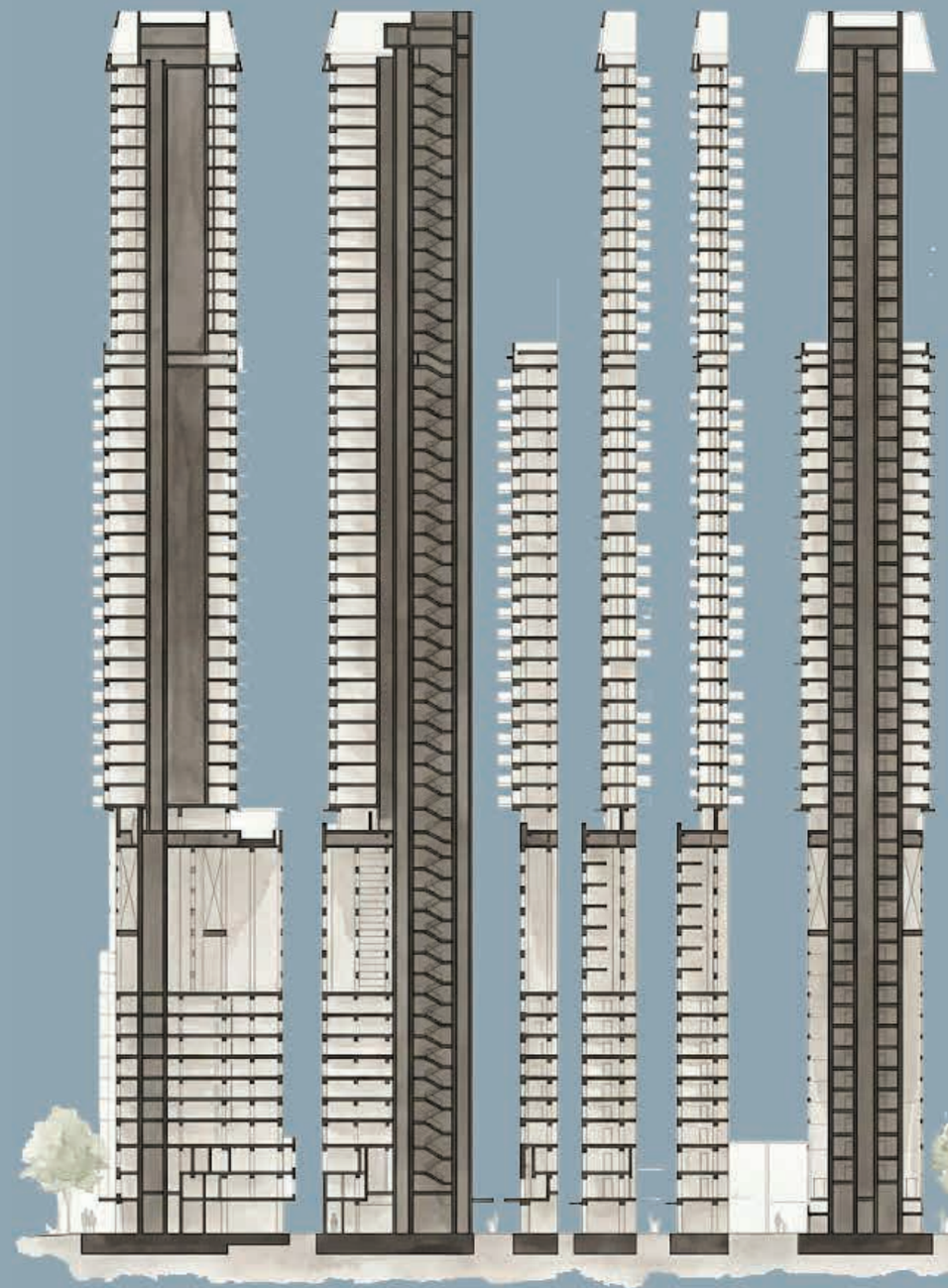
05 Massing Stepping + Slendering

06

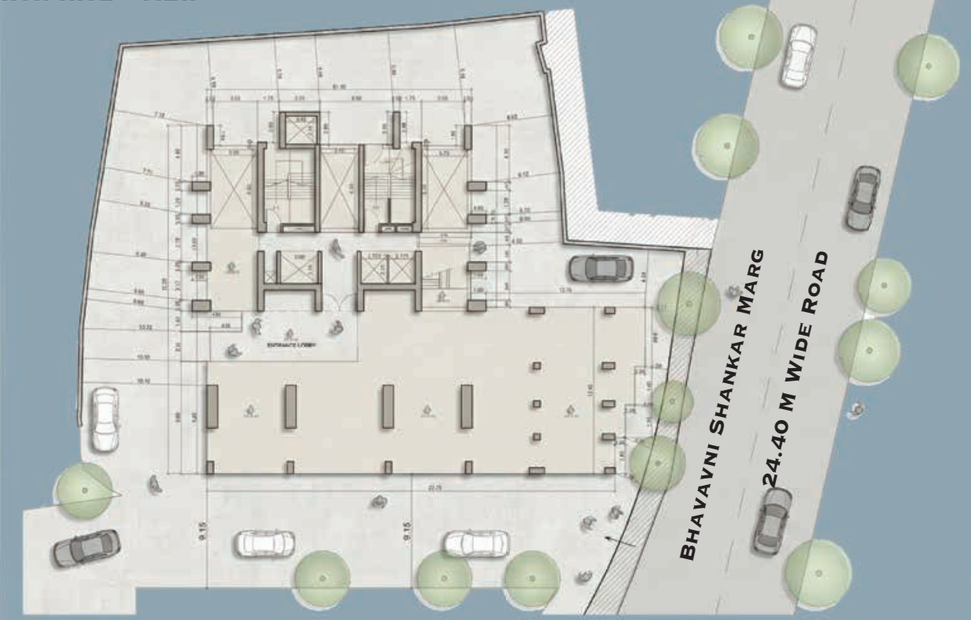


06 Final Facade Logic + Massing





Colo High Rise - View



Plinth Level Plan - Scale 1:100