

PORTFOLIO

HAJIR HIDAJI

RESIDENTIAL ARCHITECTURE DESIGN

2026

CANADA

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CAUSTIC HOUSE



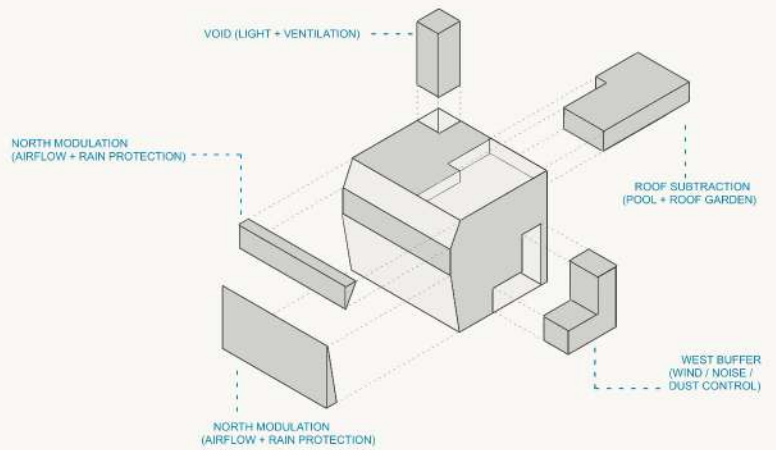
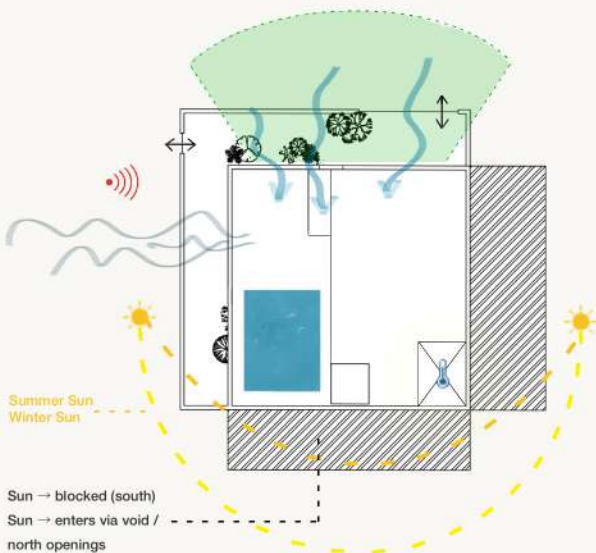
CAUSTIC HOUSE
Light refracted through water as a spatial generator
Climate-Responsive Residential Architecture
Mazandaran, Iran | 2026 | Site Area: 220 m² | Built Area: 510 m²

CAUSTIC

SITE ANALYSIS & DESIGN RESPONSE

Volume subtraction

climate + client-driven →



FINAL DESIGN ARGUMENT

Problem

West exposure to wind, rain, and noise; south and east blocked → limited daylight

Data

Stable diffuse northern light; humid climate conditions

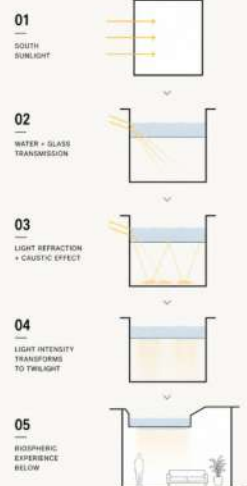
Response

Southeast void, large north-facing openings, glass-bottom pool

Result

Deep daylight penetration, passive ventilation, reduced western disturbance

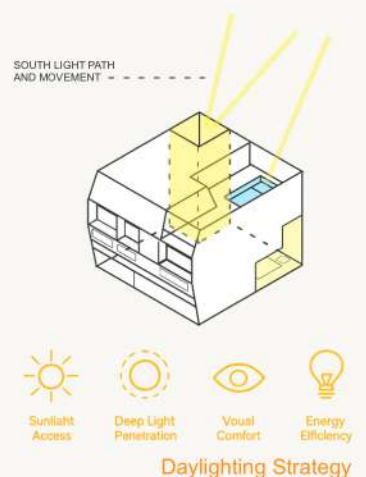
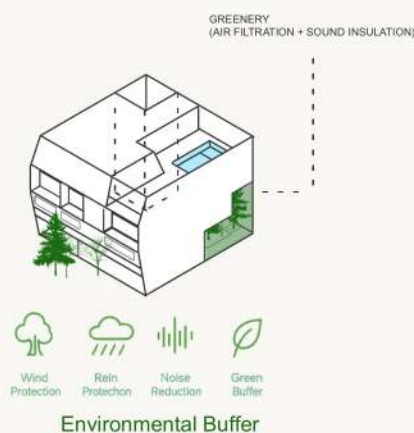
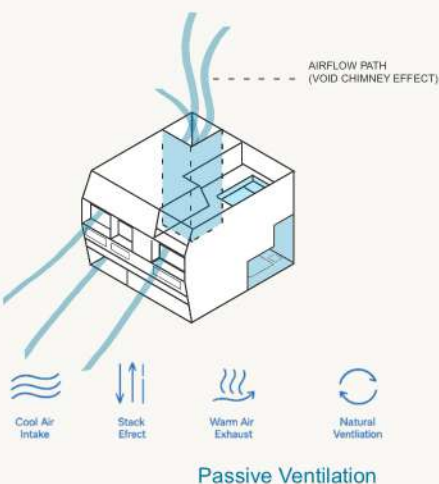
CAUSTIC DIAGRAM



1. SOLAR ORIENTATION
2. WIND DIRECTION
3. CLIMATIC ANALYSIS
4. NOISE ANALYSIS
5. ACCESS & CIRCULATION
6. VIEW ANALYSIS
7. URBAN CONTEXT
8. DESIGN RESPONSE



Climate-responsive design using passive daylighting, stack ventilation, and solar control. A void and glass-bottom pool improve light distribution, airflow, and indoor environmental quality.



CAUSTIC

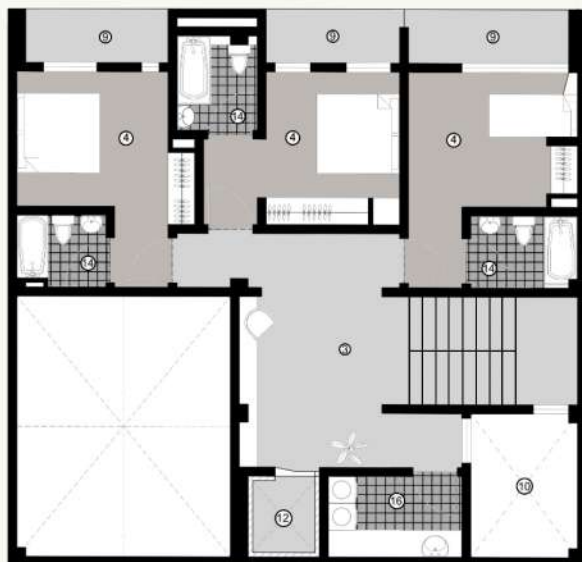
The design uses a modular plan based on function, spatial relationships, and climate response. Spaces are arranged from public to private for efficient circulation and privacy. A glass-floor pool and a void in the south of the house enhance natural light and visual continuity.



. GROUND FLOOR PLAN



. FIRST FLOOR PLAN



. SECOND FLOOR PLAN



. THIRD FLOOR + POOL TERRACE

. SPATIAL LEGEND

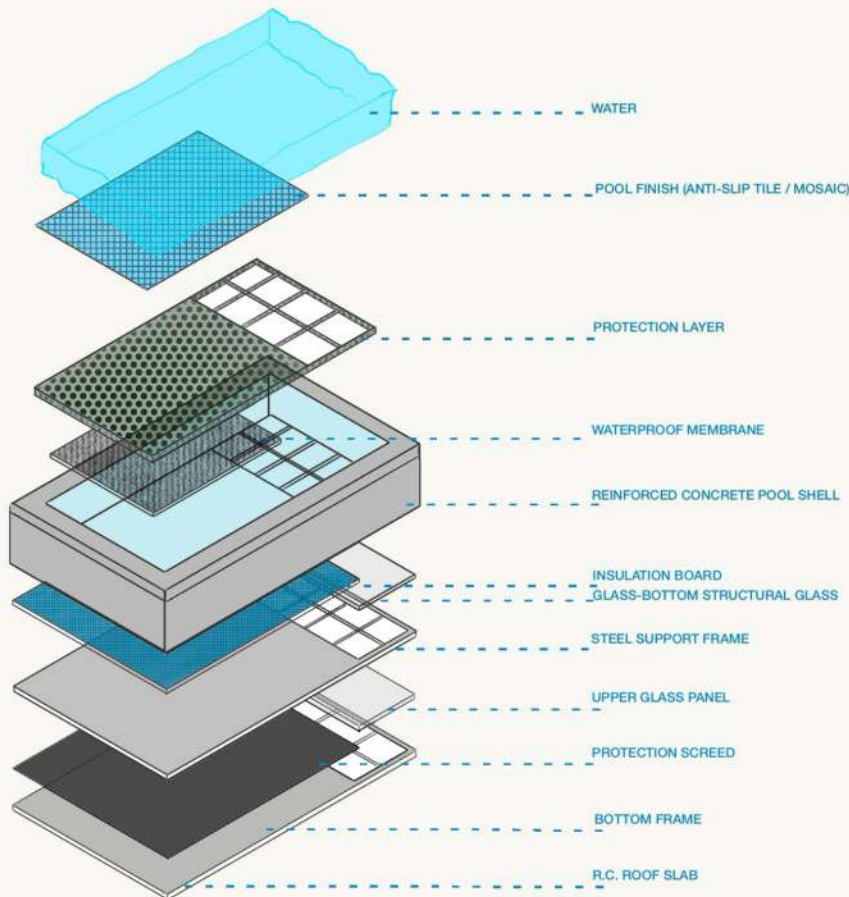
- | | | |
|-------------------|-----------------|-------------|
| 1. ENTRANCE | 7. DINING AREA | 13. WC |
| 2. LOBBY | 8. SITTING AREA | 14. BATH |
| 3. HALL | 9. TERRACE | 15. PARKING |
| 4. MASTER BEDROOM | 10. OPEN SPACE | 16. LAUNDRY |
| 5. KITCHEN | 11. STORAGE | 17. POOL |
| 6. LIVING AREA | 12. LIFT | |

SCALE 1:200

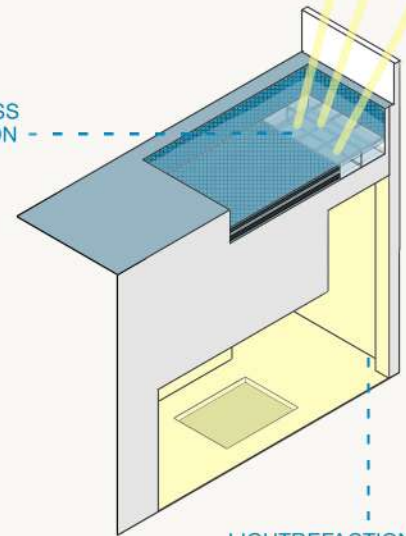


PUBLIC ZONE	
SEMI PRIVATE ZONE	
PRIVATE ZONE	
SERVICE ZONE	
CIRCULATION ZONE	

CAUSTIC

WATER + GLASS
TRANSMISSION

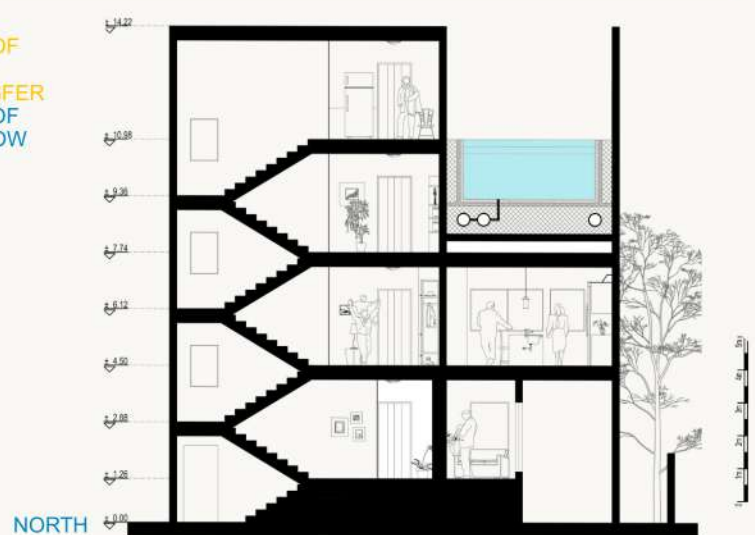
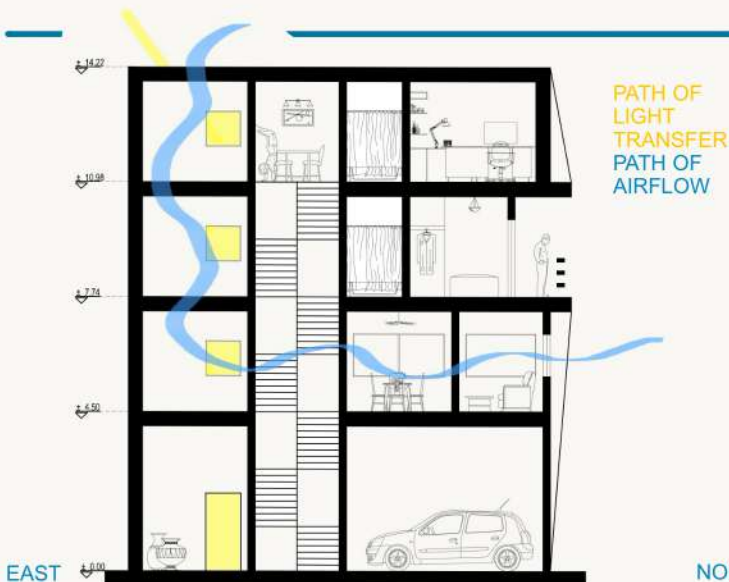
SUNLIGHT

LIGHT REFRACTION AND
CAUSTIC EFFECT

Part of the pool floor uses structural glass to transmit daylight through water and glass to the western patio and interior spaces.

Refraction through moving water creates **caustics**—dynamic light patterns—enhancing visual richness and spatial experience in areas such as the kitchen.

HOUSE & POOL SECTIONS

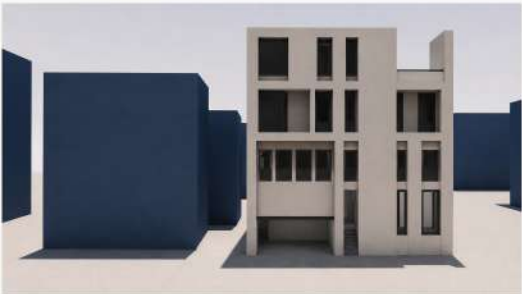


CAUSTIC

The façade design is developed through principles of simplicity, balance, and climate responsiveness. White-grey cement creates a clean and timeless architectural expression, while matte metal elements introduce contrast and a contemporary character.



. WEST



. NORTH



. NORTHWEST



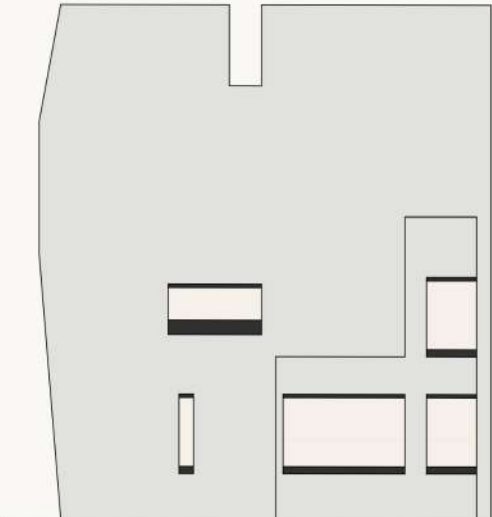
WHITE GREY CEMENT

-  **DURABLE**
High strength and long-lasting performance.
-  **BREATHABLE**
Allows moisture vapor to pass through.
-  **LOW MAINTENANCE**
Easy to clean and resistant to mold and bacteria.
-  **LIGHT REFLECTIVE**
Reflects natural light and helps reduce energy use.
-  **SUSTAINABLE**
Made from natural materials with low environmental impact.

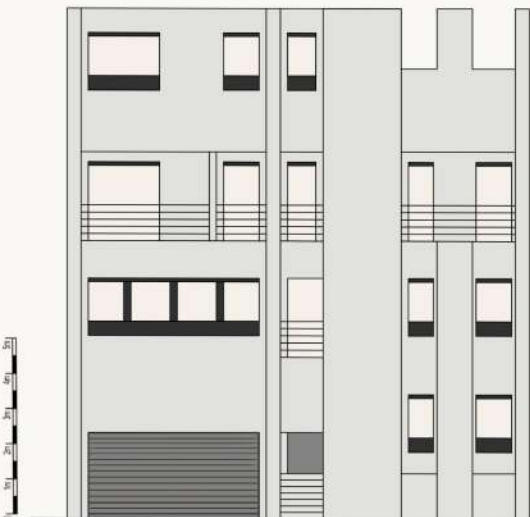


MATTE METAL (WINDOW FRAMES & PLANTERS)

-  **DURABLE**
Strong and long-lasting, suitable for exterior use.
-  **SCRATCH RESISTANT**
Matte finish helps hide fingerprints and minor scratches.
-  **WEATHER RESISTANT**
Resistant to rust, corrosion, and harsh weather conditions.
-  **LOW MAINTENANCE**
Easy to clean with a soft cloth and mild soap.
-  **MODERN AESTHETIC**
Sleek, minimal look that complements contemporary architecture.

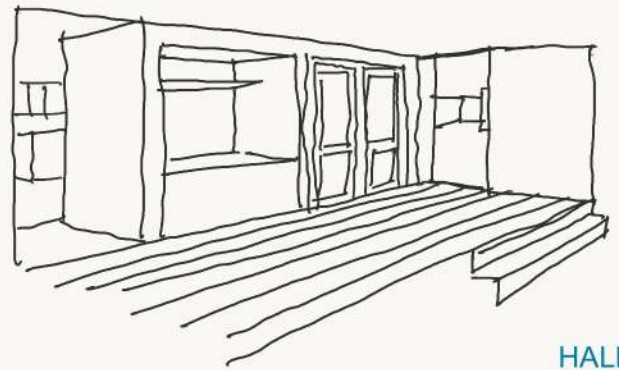


WEST

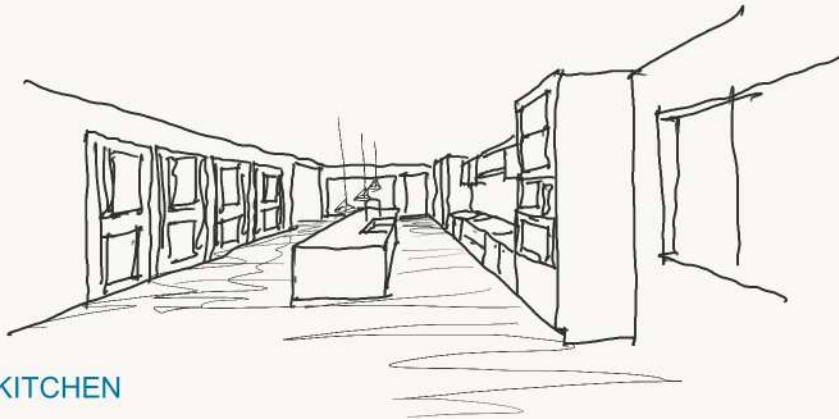


NORTH

CAUSTIC



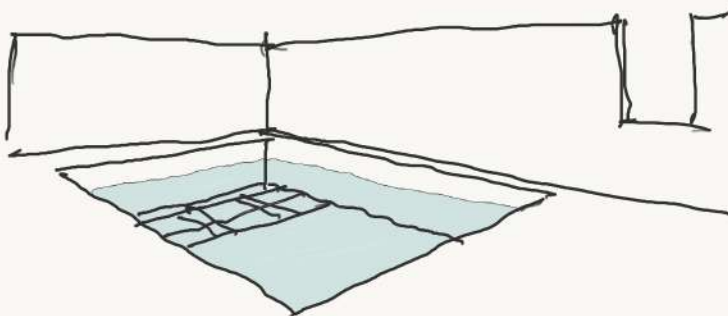
HALL



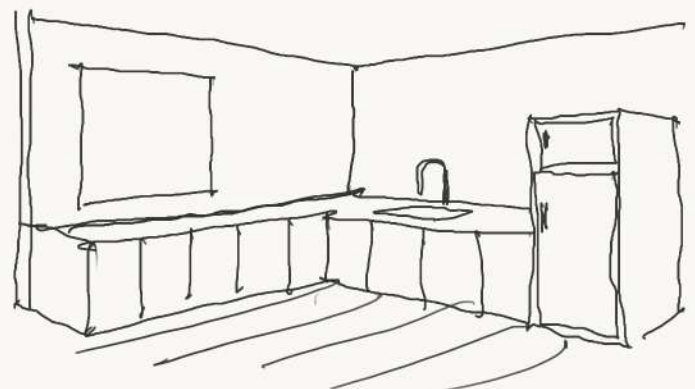
KITCHEN



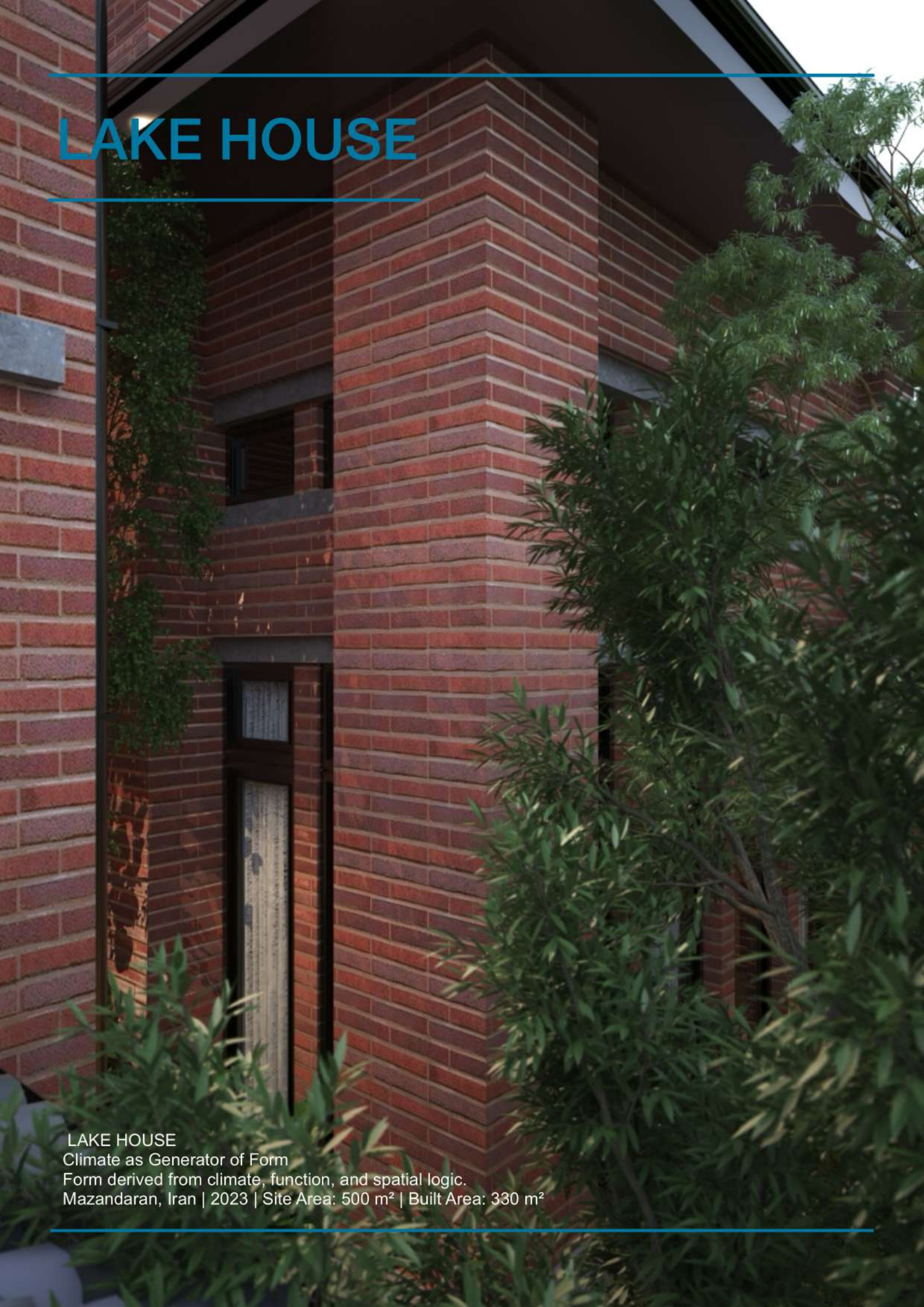
LOBBY



POOL



SMALL KITCHEN

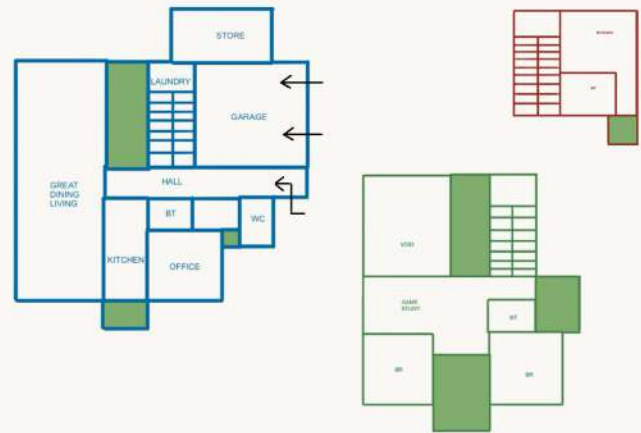
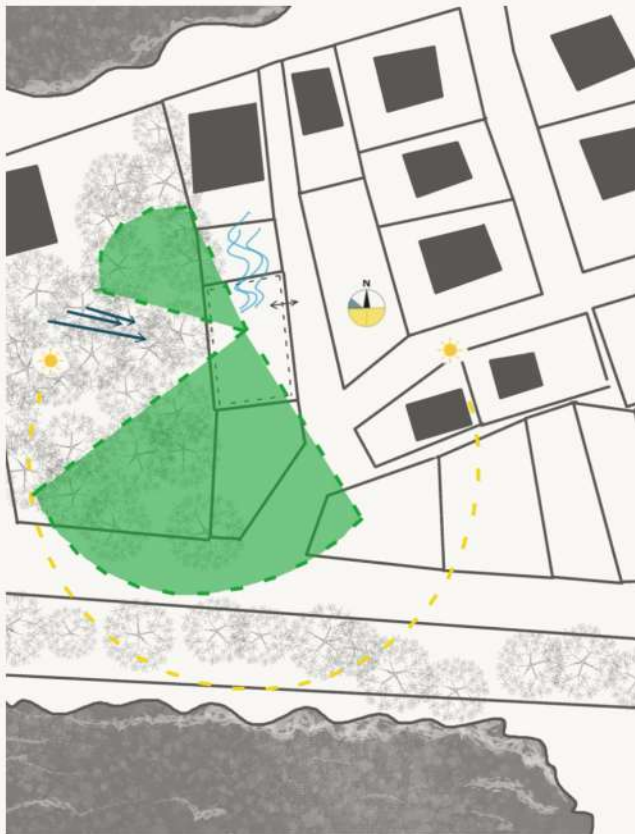
The image shows the exterior of a modern house constructed from red bricks. A prominent corner of the building is visible, featuring a mix of red and brown brick tones. To the left, a dark-framed window is partially visible, and a small, light-colored rectangular object is mounted on the wall. To the right, a dark-framed door is partially visible, and a small, light-colored rectangular object is mounted on the wall. The building is surrounded by lush green foliage, including a large tree on the right and various shrubs in the foreground. The sky is visible in the upper right corner.

LAKE HOUSE

LAKE HOUSE
Climate as Generator of Form
Form derived from climate, function, and spatial logic.
Mazandaran, Iran | 2023 | Site Area: 500 m² | Built Area: 330 m²

LAKE HOUSE

SITE ANALYSIS & DESIGN RESPONSE



The design process followed a sequential logic:

Climatic analysis informed orientation, daylighting, and spatial organization. The plan was developed based on functional needs and human-centered spatial relationships. The architectural form emerged from the internal logic of the plan and site conditions, rather than from purely formal intentions.

CLIMATE

Temp: 17–18°C
Humidity: High
Rain: 700–900 mm
Wind: N → S

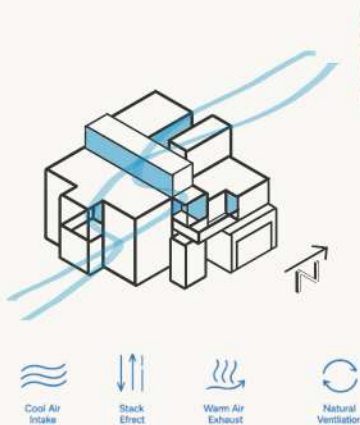
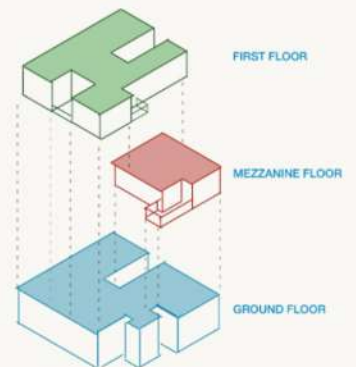
SEASONS

SUMMER → Ventilation
+ Shading

WINTER → Drainage +
Moisture Control

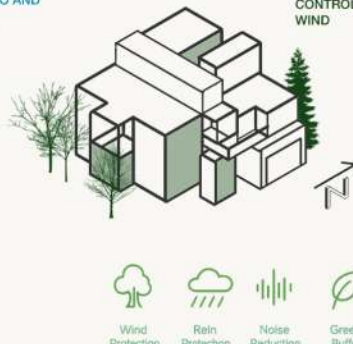
RESPONSE

Cross Ventilation
Sloped Roof
Elevated Floor



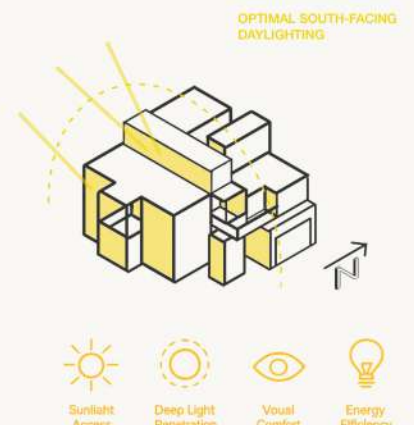
Passive Ventilation

SUITABLE WIND FLOW FROM NORTH TO SOUTH, WITH FAVORABLE WIND CONDITIONS, IS UTILIZED THROUGH THE PATIO AND LARGE OPENINGS



Environmental Buffer

CREATION OF GREEN SPACES AND PLANTING TREES FOR SHADING, REDUCING NOISE AND DUST POLLUTION, AND CONTROLLING UNWANTED WIND

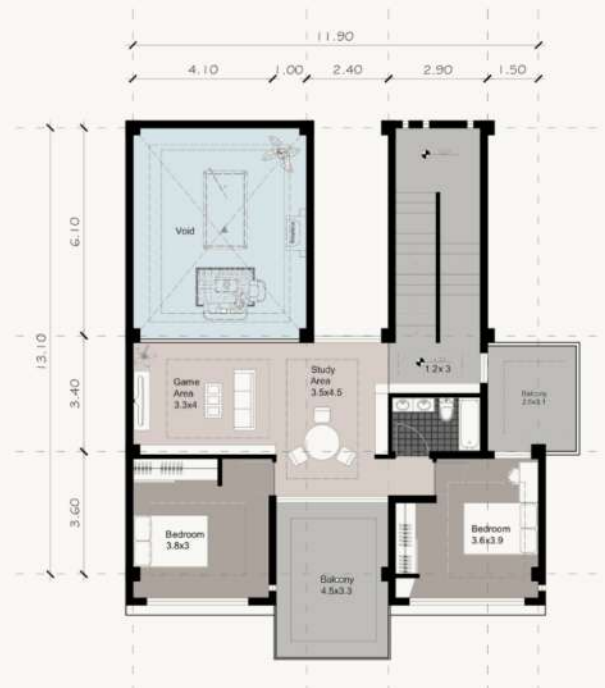


Daylighting Strategy

LAKE HOUSE



MEZZANINE FLOOR



FIRST FLOOR

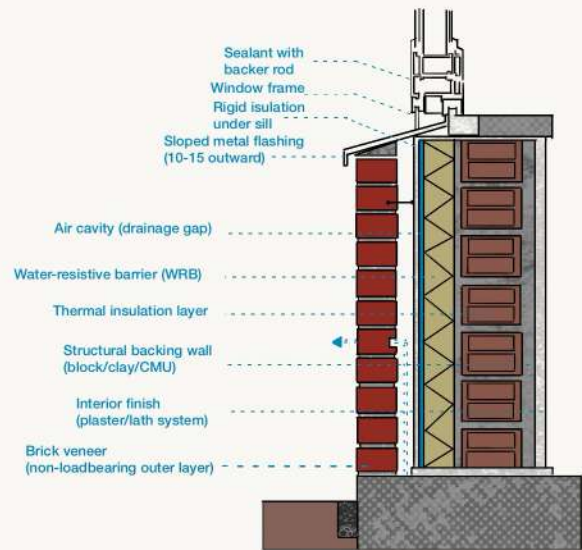
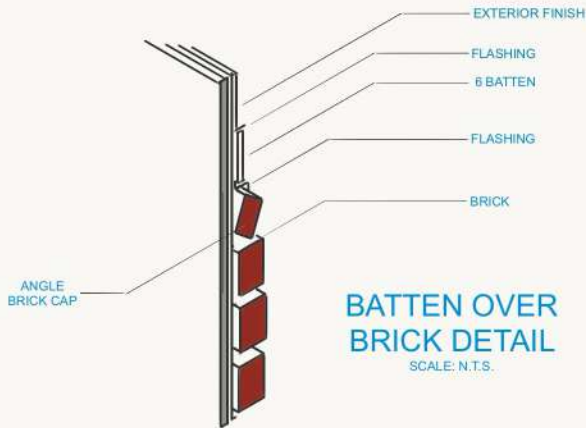
A floor plan is both a technical and experiential representation of space. The design develops through imagining the sequence of entering, moving, and perceiving the space.

1. Mental entry into the space
2. Movement through spatial paths
3. Experiencing light, scale, compression, and openness
4. Formation of spatial perception
5. Translating the experience into a floor plan

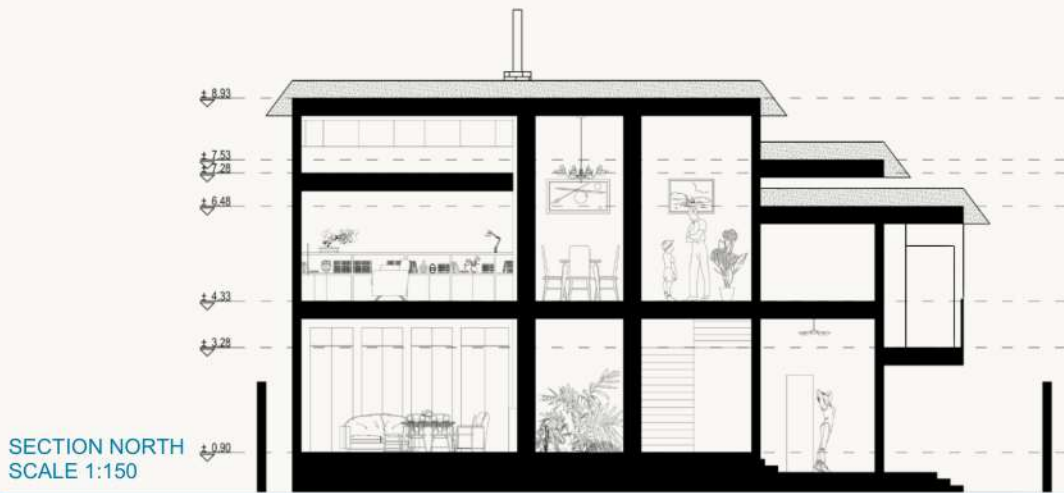


PUBLIC ZONE	
SEMI PRIVATE ZONE	
PRIVATE ZONE	
SERVICE ZONE	
CIRCULATION ZONE	

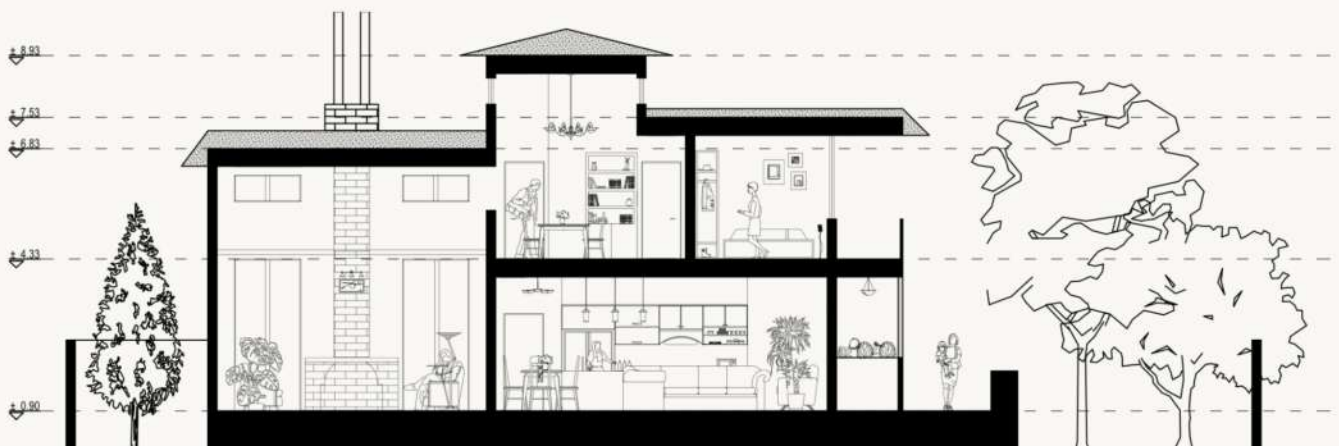
LAKE HOUSE



WALL AND WINDOW SECTION STRUCTURE SECTION



SECTION WEST SCALE 1:150



LAKE HOUSE

BRICK
WALL FINISH



MATTE METAL
WINDOW FRAMES & PLANTER

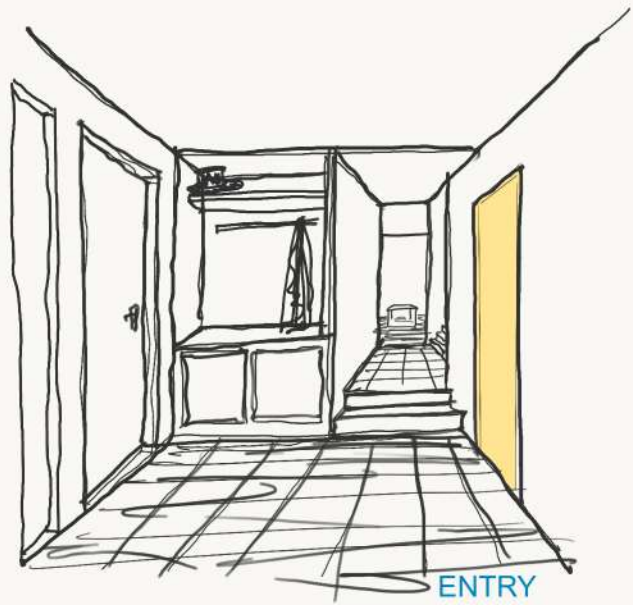
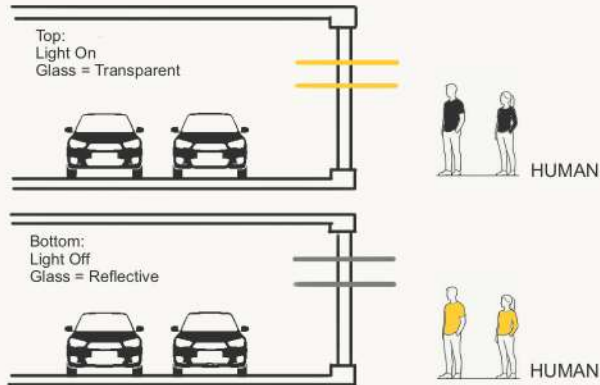


EAST



SOUTH

LAKE HOUSE



LOFT STUDIO



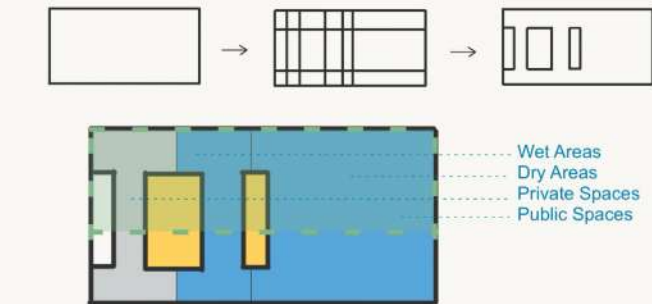
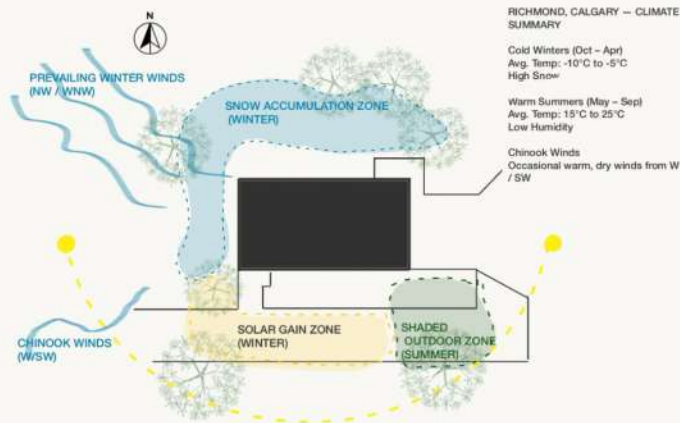
LOFT STUDIO

Form-Driven Architecture

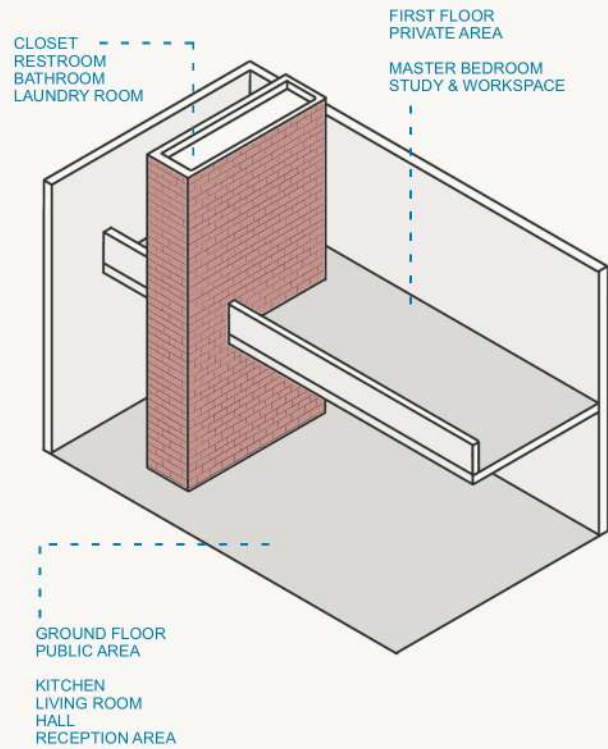
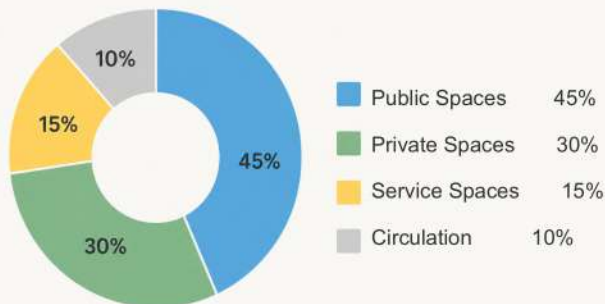
Concept-driven design based on loft architecture and open-plan living, shaped through climatic responsiveness.

Calgary, Canada | 2026 | Site Area: 600 m² | Built Area: 200 m²

LOFT STUDIO



SPACE ALLOCATION



DESIGN LOGIC

- PUBLIC TO PRIVATE**

The ground floor is dedicated to public and social functions, while the upper loft provides a private retreat.
- CLIMATE ADAPTIVE**

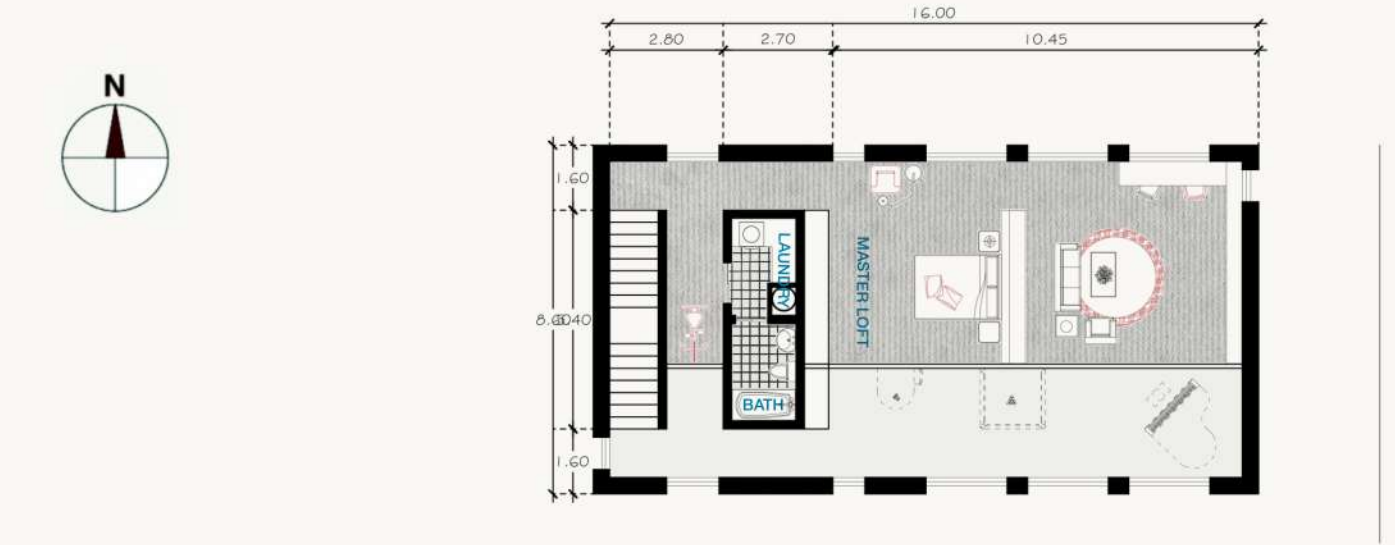
Orientation and zoning respond to Calgary's climate, maximizing solar gain and minimizing winter heat loss.
- FLEXIBLE LOFT LIVING**

Open plan, high ceilings, and minimal partitions allow spatial flexibility for living, working, and hosting.

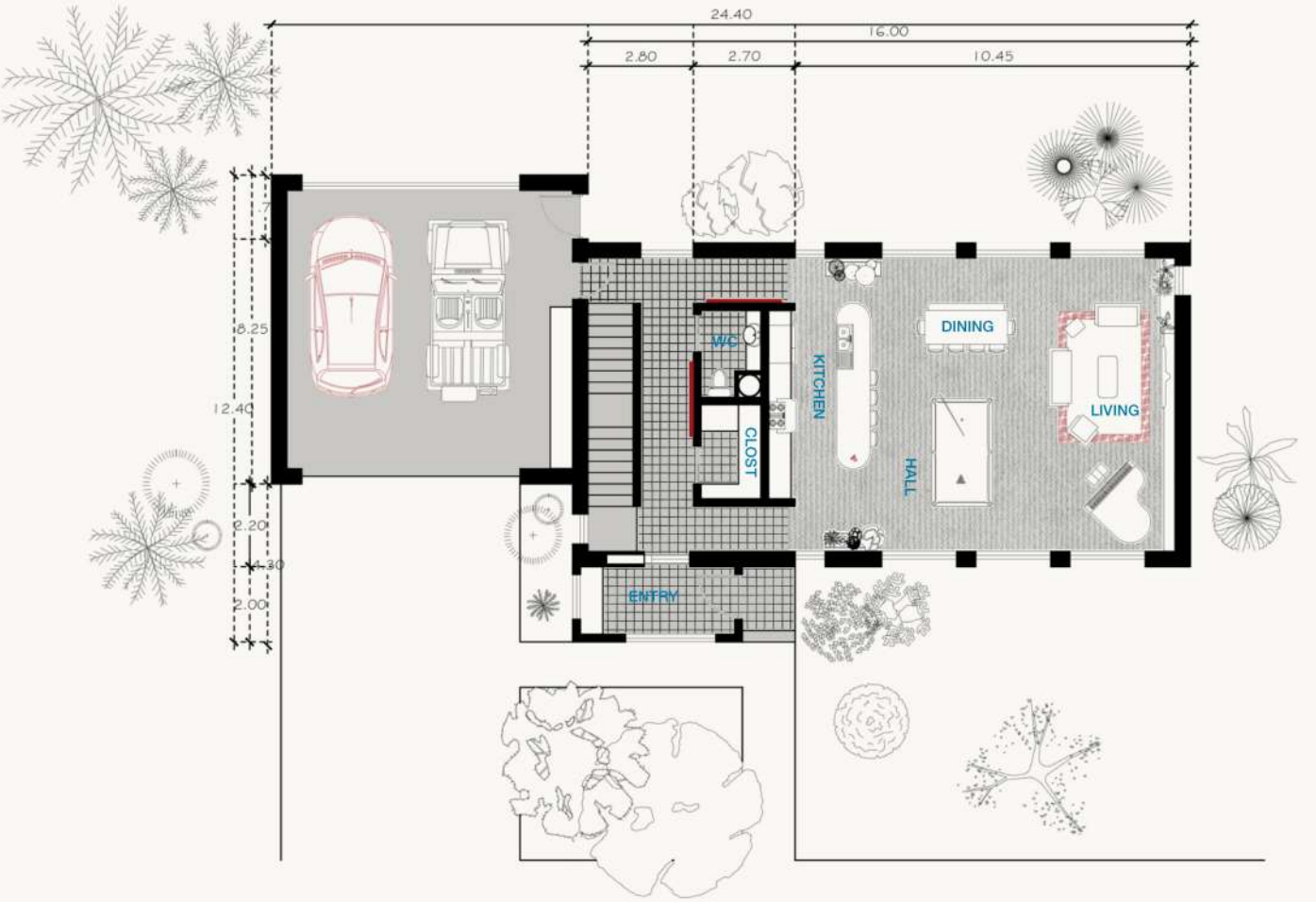
PROJECT DATA

Site Area	600 m ²
Built Area	200 m ²
Floors	2
Bedrooms	1 – 2
Typology	Urban Residential Loft
Location	Calgary, AB, Canada
Climate Zone	7A
Status	Concept Design
Date	2026

LOFT STUDIO



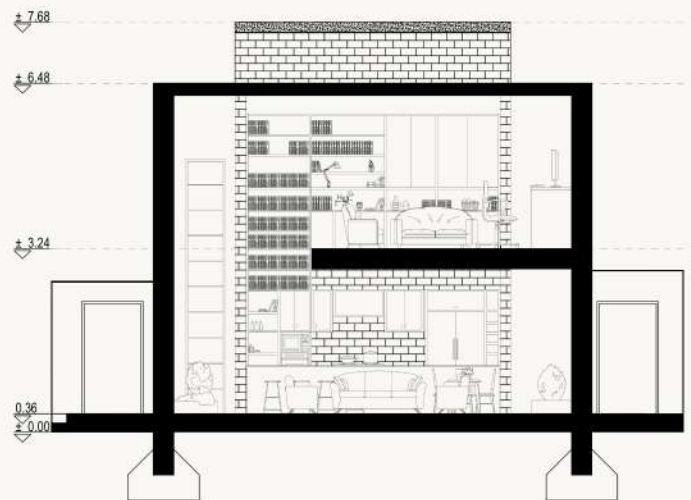
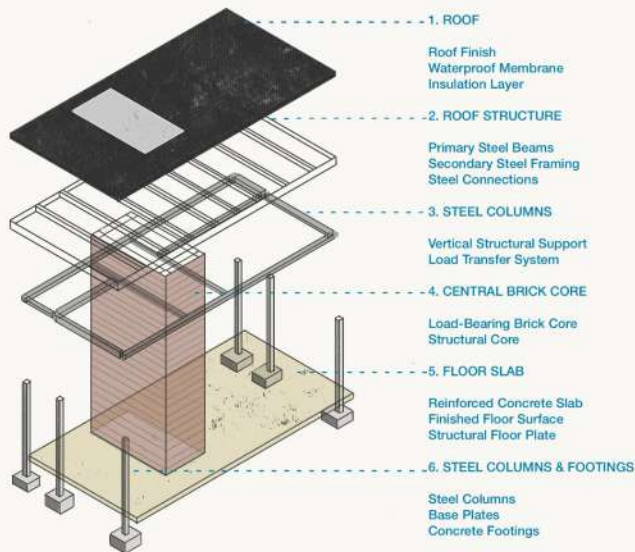
. FIRST FLOOR PLAN



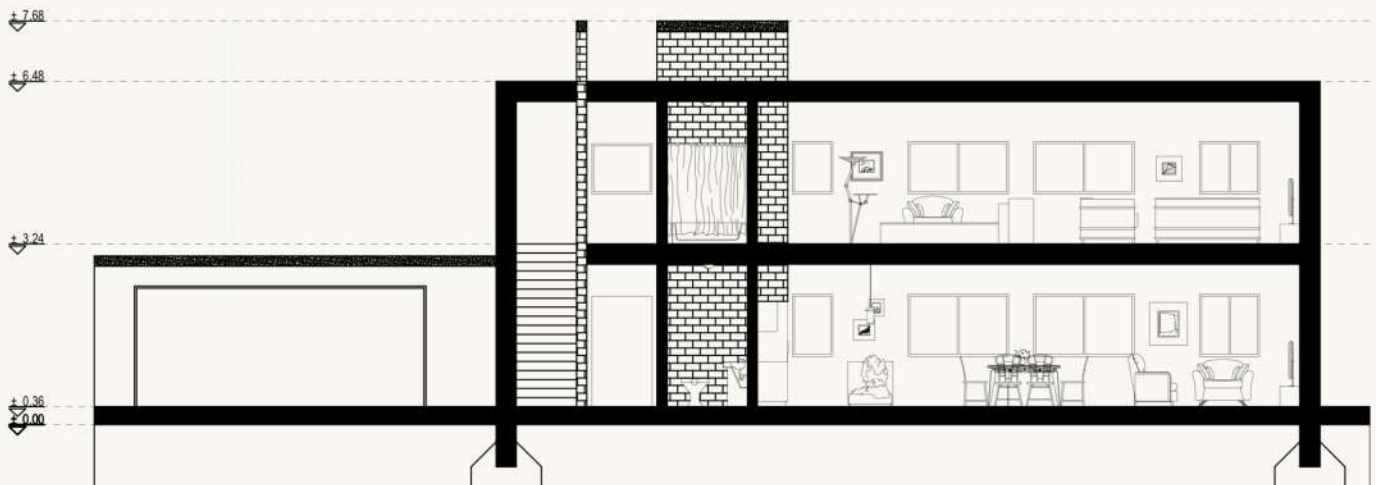
. GROUND FLOOR PLAN

LOFT STUDIO

Structural System & Layer Composition

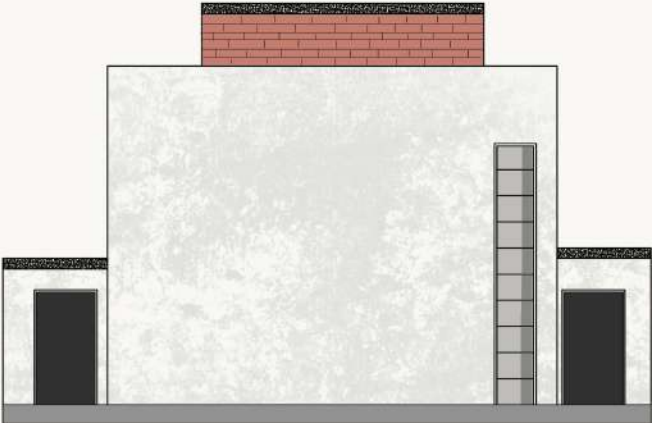
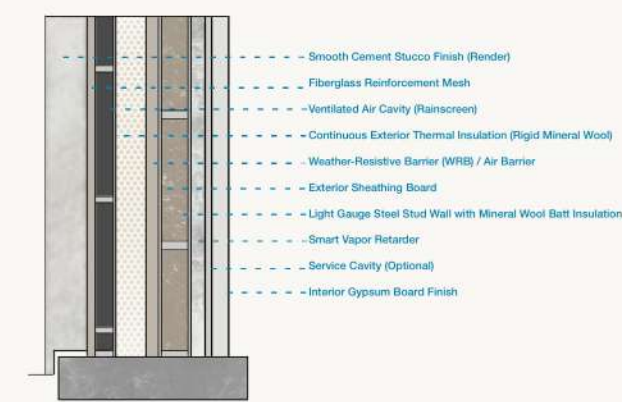


A sectional exploration of the loft's structural framework, material layering, and load transfer strategy.

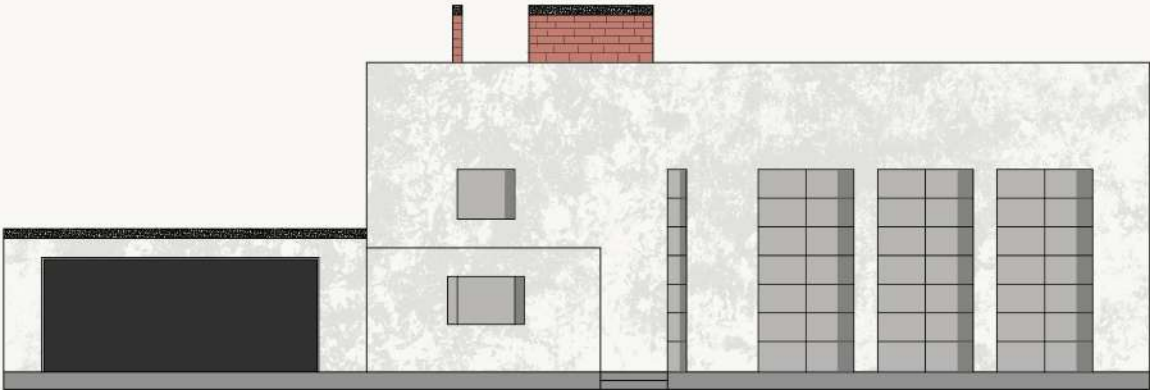


Sectional and structural study of the loft, illustrating spatial configuration, load-bearing strategy, and material layering.

LOFT STUDIO



. EAST



.SOUTH



LOFT STUDIO



CONCRETE
Smooth light gray stucco concrete finish for main facade.



METAL
Black metal window frames, doors, and trim elements for a crisp, modern contrast.



BRICK
Natural red brick for chimney and accent elements.



. SOUTH



. SOUTH WEST

1 GUTTER SECTION DETAIL

- 1 ROOF MEMBRANE
- 2 RIGID INSULATION (MIN. R-10)
- 3 TAPERED SLOPE TO GUTTER
- 4 ALUMINUM BUILT-IN GUTTER

2 DOWNSPOUT DETAIL

- 1 ALUMINUM DOWNSPOUT
- 2 INSULATED BACKER
- 3 WALL STRUCTURE
- 4 THERMAL BREAK BRACKET
- 5 DRAIN AWAY FROM FOUNDATION

3 GUTTER PROFILE

5" (125 mm)
4" (100 mm)
3" (75 mm)



. SOUTH EAST

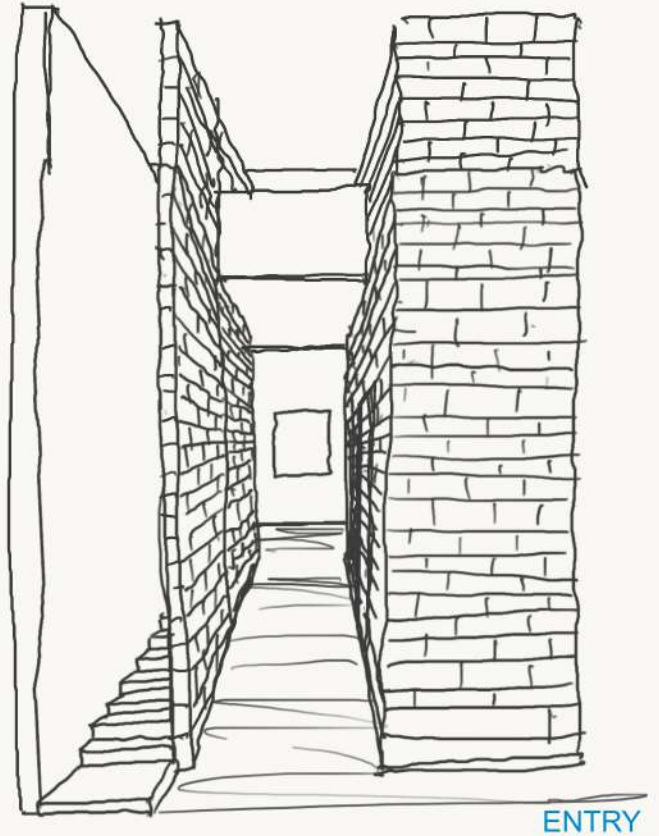
1 WINDOW SECTION DETAIL

- 1 SMOOTH CEMENT STUCCO FINISH (RENDER)
- 2 FIBERGLASS REINFORCEMENT MESH
- 3 VENTILATED AIR CAVITY (BANSCHREIB)
- 4 CONTINUOUS EXTERIOR THERMAL INSULATION (BROD MINERAL WOOL)
- 5 WEATHER RESISTING BARRIER (DWR) / AIR BARRIER
- 6 EXTERIOR SHEATHING BOARD
- 7 WINDOW FRAME (THERMALLY BROKEN ALUMINUM)
- 8 STORM & INSULATED GLASS UNIT
- 9 AIR SEAL / BACKER ROD AND SEALANT
- 10 INTERIOR TRIM / GYPSUM BOARD FINISH

LOFT STUDIO



UPSTAIRS



ENTRY



DOWNSTAIRS

HAJIR HIDAJI



Architectural Designer | Residential Design | Spatial Visualization

Architectural Designer with strong skills in residential spatial design and concept development. Experienced in translating design ideas into functional layouts and coordinating early-stage design processes.



EDUCATION

Master of Architecture (M.Arch)

Azad University, Iran | 2020 | Scholarship

Thesis: Sustainable Residential Design



SKILLS

Core Skills

Residential Design
Spatial Planning
Site Coordination
Problem-Solving

Software

AutoCAD — Advanced
3ds Max — Advanced
V-Ray — Intermediate
Procreate — Advanced
Revit — Currently Learning

Visualization

Architectural Sketching — Advanced
Concept Visualization — Advanced



SELECTED EXPERIENCE

Freelance Architectural Assistant / Site Coordinator

Iran | 2018 – Present

Contributed to residential projects (villas and multi-unit housing)
Developed plans, layouts, and design concepts
Produced architectural drawings (plans, sections, early documentation)
Coordinated with engineers and construction teams
Supervised on-site execution (dimensions, materials, finishes)
Resolved design issues through rapid sketching and adaptive solutions
Collaborated with clients to refine spatial and functional outcomes

Renovation & Interior Coordination

Assisted in material selection and interior layout design
Designed kitchen layouts and supported execution

Focus

Residential Architecture
Design + Construction Integration



CONTACT

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[linkedin.com/in/hajirhidaji](https://www.linkedin.com/in/hajirhidaji)
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