



دانشگاه آزاد اسلامی تهران

# OASIS RESIDENTIAL COMPLEX

Prof. Reshad & Prof. Ahmad Rezaei  
by Saeed Azadi & Ramin Ghanbari



**Living Space and Amenities**  
The Oasis Residential Complex offers a variety of living spaces, ranging from 100 m<sup>2</sup> to 250 m<sup>2</sup>. All the living areas are furnished with modern, high-quality furniture, including an equipped living, dining, and kitchen area. The complex also features a central courtyard with a swimming pool, a gym, a playground, and a parking area.

**Architectural Concept**  
The architectural concept is a direct response to the unique advantages of its location, strategically positioned between two vibrant parks. Instead of simply building on the land, the design seeks to reconnect and bridge these two green spaces. The building's form, a dynamic composition of semi-circular, flexible volumes, and expansive glass, two green spaces.

**Architectural Details**  
The building's form, a dynamic composition of semi-circular, flexible volumes, and expansive glass, two green spaces.

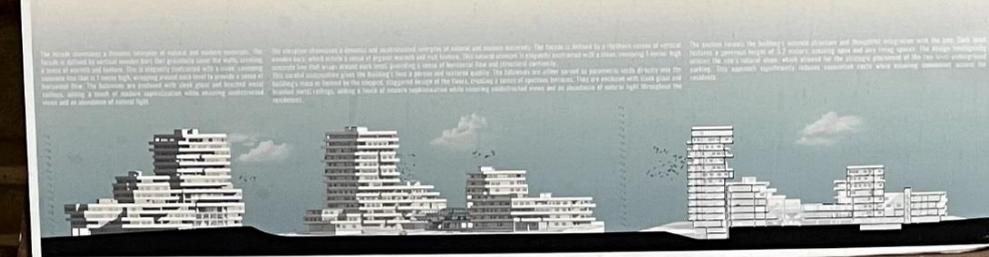
**Site Plan**  
The site plan shows the building's location within the Oasis Residential Complex, highlighting its proximity to the central courtyard and surrounding green spaces.

**Sectional Views**  
The sectional views illustrate the building's internal structure, showing the arrangement of living spaces, balconies, and common areas.

**Materiality and Color**  
The building's facade is a harmonious blend of materials, including light-colored concrete, dark wood, and large glass panels. The color palette is neutral and sophisticated, reflecting the modern architectural style.

**Interior Design**  
The interior design is a blend of modern and traditional elements, featuring high-quality materials, clean lines, and a warm, inviting atmosphere. The living areas are spacious and well-lit, with large windows and balconies that offer panoramic views of the surrounding landscape.

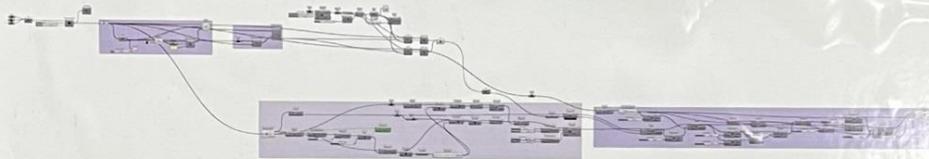
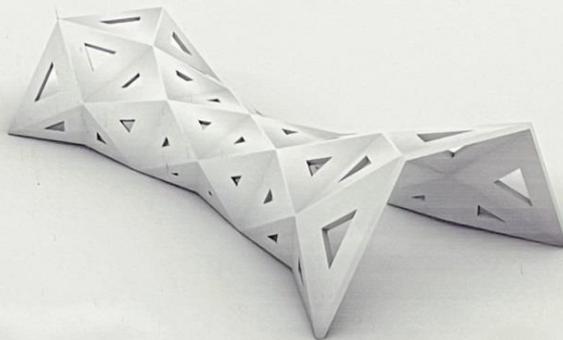
**Area 120 m<sup>2</sup>**  
This thoughtfully designed 120 m<sup>2</sup> unit offers a high-quality, yet affordable living experience. It includes a living room, dining area, kitchen, and two bedrooms, all with modern finishes and fixtures. The unit also features a private balcony and access to the building's amenities.





دانشگاه هنر اسلامی تبریز

# PARAMETRIC PANEL DESIGN



PROFESSORS: DR. SHARBAF, DR. KARIMI  
STUDENT: ELYAS AZARBAYJANI  
FACULTY OF ARCHITECTURE AND URBAN PLANNING  
ISLAMIC ART UNIVERSITY OF TABRIZ



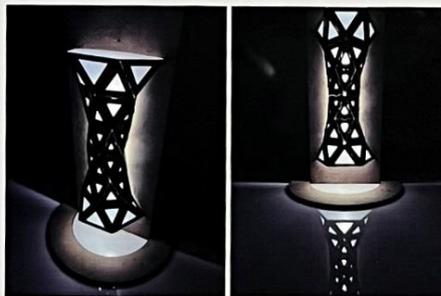
## 1. CONCEPT AND ALGORITHM DEVELOPMENT

THE INITIAL DESIGN CONCEPT WAS INSPIRED BY DYNAMIC FORMS AND POLYHEDRAL SPATIAL STRUCTURES. WITHIN THE GRASSHOPPER COMPUTATIONAL ENVIRONMENT, AN ALGORITHM WAS DEVELOPED TO GENERATE A TRIANGULAR PANELING SYSTEM WITH ADJUSTABLE PARAMETERS SUCH AS ANGLE, DENSITY, AND PROPORTIONS. THIS PARAMETRIC APPROACH ENSURED FLEXIBILITY IN SHAPING A FORM SUITABLE FOR A LIGHTING FIXTURE.



## 2. FORM DEVELOPMENT AND OPTIMIZATION

THROUGH DIGITAL DESIGN METHODOLOGIES, THE FORM WAS REFINED AND OPTIMIZED. SPATIAL QUALITIES SUCH AS LIGHT TRANSMISSION, REFLECTION, AND SHADOW CASTING WERE EVALUATED TO ACHIEVE BOTH AESTHETIC APPEAL AND FUNCTIONAL PERFORMANCE. THE TRIANGULAR GEOMETRY WAS SELECTED AS THE PRIMARY DESIGN LANGUAGE, PROVIDING A LIGHTWEIGHT STRUCTURAL SYSTEM WHILE PRODUCING A VISUALLY DYNAMIC EFFECT.



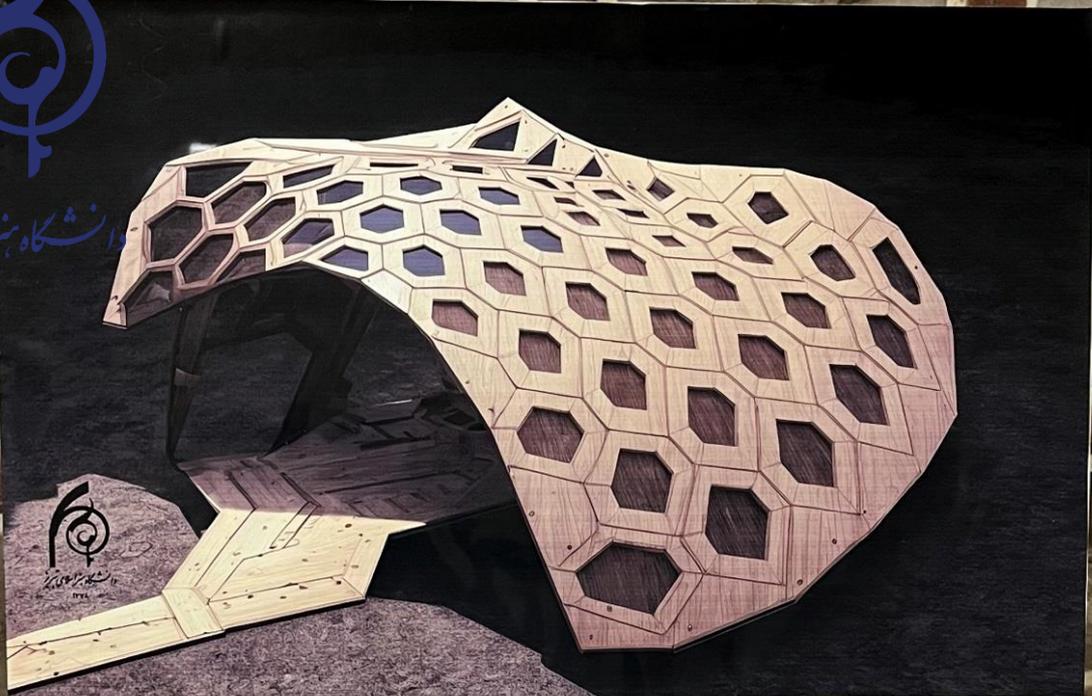
## 3. DIGITAL FABRICATION AND COMPONENT PRODUCTION

ONCE THE FINAL FORM WAS ESTABLISHED, THE ALGORITHMIC OUTPUTS WERE PREPARED FOR LASER CUTTING. THIS STAGE EXEMPLIFIES THE DIGITAL FABRICATION PROCESS, TRANSFORMING THE DIGITAL MODEL INTO PHYSICAL REALITY. PRECISION IN DETAILING JOINTS AND DIMENSIONS ENSURED ASSEMBLY ACCURACY AND OVERALL STRUCTURAL STABILITY.



## 4. ASSEMBLY AND FINAL PRODUCT

IN THE FINAL STAGE, THE LASER-CUT COMPONENTS WERE CAREFULLY ASSEMBLED. THE OUTCOME IS A MODULAR LAMP SHADE WITH A SHELL-LIKE CONFIGURATION, SERVING NOT ONLY AS A FUNCTIONAL LIGHTING ELEMENT BUT ALSO AS A SPATIAL EXPERIENCE THROUGH THE INTERPLAY OF LIGHT AND SHADOW. THE PROJECT DEMONSTRATES THE INTEGRATION OF ALGORITHMIC DESIGN, DIGITAL FABRICATION, AND PRECISE EXECUTION WITHIN THE FRAMEWORK OF DIGITAL ARCHITECTURE.

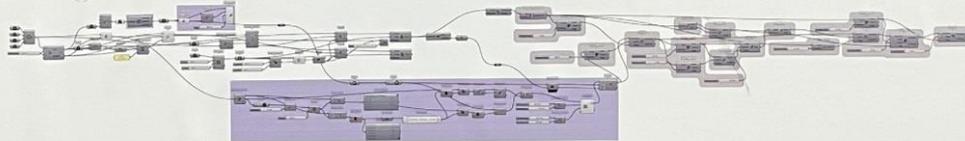


**PROJECT CONCEPT**

THIS PROJECT AIMS TO EXPLORE THE FEASIBILITY OF COVERING A FREEFORM SURFACE WITH HEXAGONAL PANELS. USING SCRIPTING IN GRASSHOPPER, THE BASE SURFACE WAS DIVIDED INTO HEXAGONAL CELLS TO ACHIEVE BOTH STRUCTURAL EFFICIENCY AND AESTHETIC QUALITY.

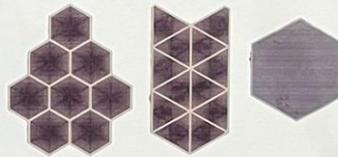
**PARAMETRIC DESIGN PROCESS**

THE PARAMETRIC METHOD ALLOWS THE SURFACE SUBDIVISION TO BE CONTROLLED THROUGH ADJUSTABLE VARIABLES. IN THIS MODEL, CHANGES IN PARAMETERS DIRECTLY AFFECT THE ARRANGEMENT OF THE HEXAGONAL CELLS ON THE FREEFORM SURFACE.



**CONCEPT DESIGN PRESENTATION BOARD**

INSTRUCTORS: DR.SHARBAF, DR.KARIMI  
STUDENT: SANA RAFAT

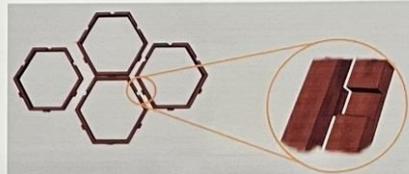
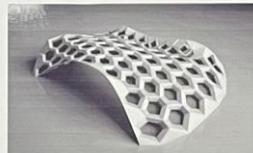
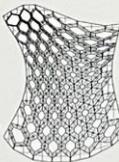


**DIGITAL FABRICATION AND MODEL**

TO INVESTIGATE CONSTRUCTABILITY, DIGITAL FABRICATION OUTPUTS WERE PREPARED. PANELS AND JOINTS WERE UNROLLED INTO TWO-DIMENSIONAL LAYOUTS, READY FOR LASER CUTTING OR CUTTER-PLOTTER PRODUCTION.

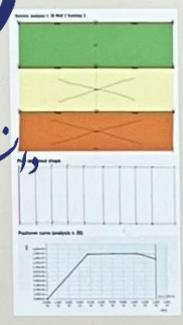
**JOINT SYSTEM (MALE-FEMALE)**

THE JOINTS IN THIS PROJECT ARE DESIGNED BASED ON A MALE-FEMALE SYSTEM. THIS METHOD ENSURES EASY ASSEMBLY, PRECISE ALIGNMENT OF PANELS, AND REDUCES THE NEED FOR ADHESIVES OR ADDITIONAL TOOLS.



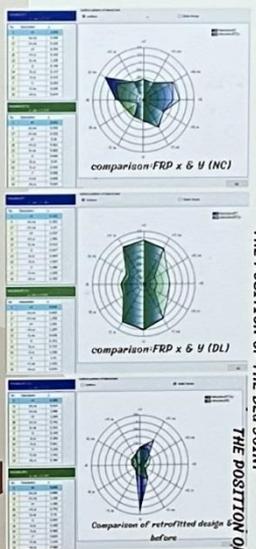
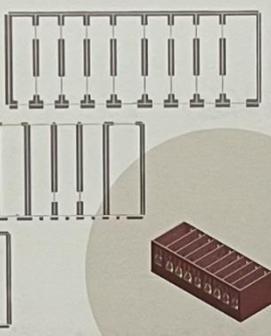


# 3Muta The Final Project House Of Fatmeh Khanum



This building, whose dimensions are 20 meters by 40 meters, is built on three floors including a basement, ground floor and first floor and has numerous and beautiful rooms with decorative stucco, carved columns and capitals, wooden railings and small and large stairs of floors. Thick walls and wooden doors are its important and prominent features and its exterior is a combination of Russian and Iranian architecture. On the northern side, the building has two floors and the southern side has three floors due to the deep courtyard.

The area of this building is 2750 m<sup>2</sup> and the building is at least 150 years old (during the Qajar period).



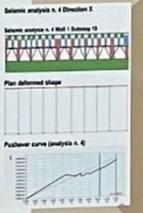
CONNECTION STATUS OF WALL LAYERS  
THE POSITION OF THE BED JOINT  
THE POSITION OF THE HEAD JOINT



Element	Material	Area	Volume	Weight	Cost
Concrete	C20	1000	2000	50000	1000000
Reinforcement	HRB335	100	1000	10000	1000000
Brick	Red	1000	10000	100000	1000000
Mortar	M20	1000	10000	100000	1000000

Results legend

Color	Material
Red	Concrete
Blue	Reinforcement
Green	Brick
Yellow	Mortar



LOCATION:  
TABRIZ, IMAN  
KHOMEINI STREET,  
NORTHERN SIDE OF  
ARG OF ALI SHAH  
AREA: 2,750  
SQUARE METERS  
AGE: AT LEAST 150  
YEARS ERA-QAJAR  
DYNASTY

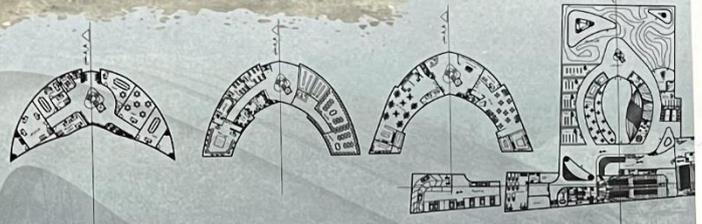
Dr. Farhad Ahmadi  
General Supervisor  
Petroleum Institute



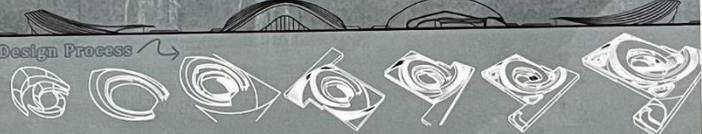
موسسه معماری و هنر  
معماری و هنر اسلامی تبریز

# FAVAQ CULTURAL AND ARTISTIC COMPLEX

Masters: Dr. Parisa Hashempor \_ Dr.Laleh Reshad  
Kosar.Alizadeh



The project site is located in Tabriz, adjacent to the Kabood Mosque, bounded by Shahid Modarres Street to the north and Mir Ali Tabrizi Street to the south. The site covers approximately 7,000 square meters and is surrounded by a mix of historic, residential, and commercial fabric, with the main access from the street opposite the mosque. The prevailing northwest wind and southern sunlight have been considered in the design.



The complex is designed with three floors above ground plus a basement, reaching a maximum height of 12 meters to preserve the view of the Kabood Mosque. Its mass is inspired by the arches and arcades of the mosque and includes a café and restaurant, library, educational classrooms, administrative offices, an amphitheater and cinema, shop, museum, gallery, and service areas. The layout follows a sunken courtyard (light well) concept with secluded courtyards to optimize natural lighting and maintain a dynamic connection between interior and exterior spaces.





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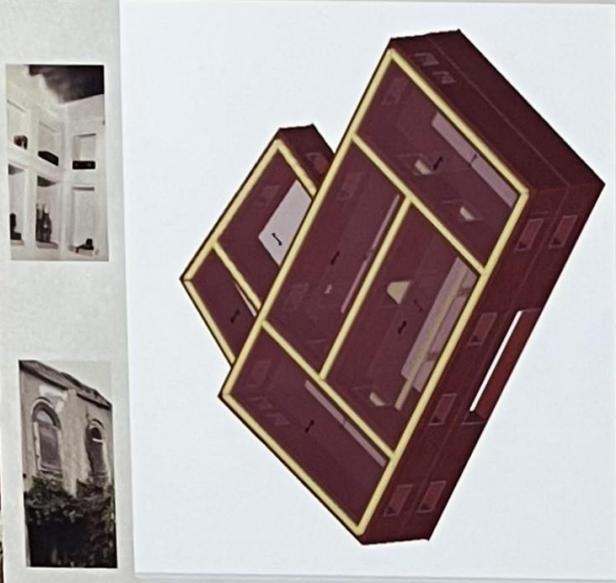
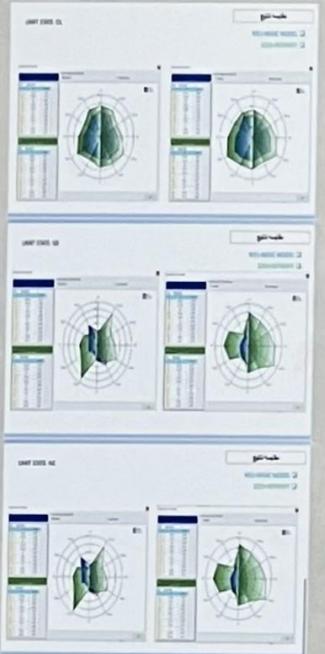
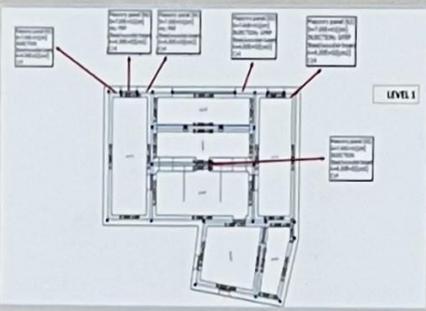
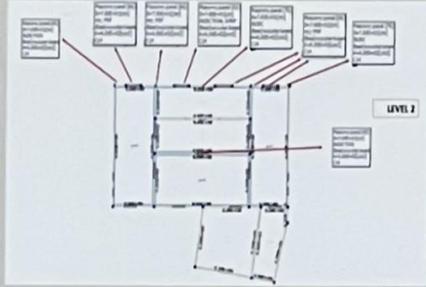


دانشگاه صنعتی شاهرود

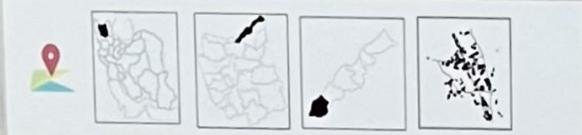


تاریخچه  
جغرافیا و موقعیت مکانی

**Kalibar, Mardaneh Qom**  
**Ansari House**  
This two-story house has been built within a dense texture on a sloping ground. Among its prominent features are multiple niches inside the rooms, details of capitals, and elaborate decorative design of openings.



No.	Element Name	Volume	LCR	LCR	LCR	LCR
1	Concrete Slab	1.200	0.05	0.05	0.05	0.05
2	Concrete Wall	2.500	0.05	0.05	0.05	0.05
3	Concrete Column	0.500	0.05	0.05	0.05	0.05
4	Concrete Beam	1.800	0.05	0.05	0.05	0.05
5	Concrete Floor	1.000	0.05	0.05	0.05	0.05
6	Concrete Ceiling	1.000	0.05	0.05	0.05	0.05
7	Concrete Staircase	0.200	0.05	0.05	0.05	0.05
8	Concrete Foundation	0.800	0.05	0.05	0.05	0.05
9	Concrete Wall	1.500	0.05	0.05	0.05	0.05
10	Concrete Column	0.300	0.05	0.05	0.05	0.05
11	Concrete Beam	1.200	0.05	0.05	0.05	0.05
12	Concrete Floor	0.800	0.05	0.05	0.05	0.05
13	Concrete Ceiling	0.800	0.05	0.05	0.05	0.05
14	Concrete Staircase	0.100	0.05	0.05	0.05	0.05
15	Concrete Foundation	0.400	0.05	0.05	0.05	0.05
16	Concrete Wall	1.000	0.05	0.05	0.05	0.05
17	Concrete Column	0.200	0.05	0.05	0.05	0.05
18	Concrete Beam	0.800	0.05	0.05	0.05	0.05
19	Concrete Floor	0.600	0.05	0.05	0.05	0.05
20	Concrete Ceiling	0.600	0.05	0.05	0.05	0.05
21	Concrete Staircase	0.050	0.05	0.05	0.05	0.05
22	Concrete Foundation	0.150	0.05	0.05	0.05	0.05
23	Concrete Wall	0.500	0.05	0.05	0.05	0.05
24	Concrete Column	0.100	0.05	0.05	0.05	0.05
25	Concrete Beam	0.400	0.05	0.05	0.05	0.05
26	Concrete Floor	0.300	0.05	0.05	0.05	0.05
27	Concrete Ceiling	0.300	0.05	0.05	0.05	0.05
28	Concrete Staircase	0.020	0.05	0.05	0.05	0.05
29	Concrete Foundation	0.050	0.05	0.05	0.05	0.05
30	Concrete Wall	0.200	0.05	0.05	0.05	0.05
31	Concrete Column	0.050	0.05	0.05	0.05	0.05
32	Concrete Beam	0.200	0.05	0.05	0.05	0.05
33	Concrete Floor	0.150	0.05	0.05	0.05	0.05
34	Concrete Ceiling	0.150	0.05	0.05	0.05	0.05
35	Concrete Staircase	0.010	0.05	0.05	0.05	0.05
36	Concrete Foundation	0.030	0.05	0.05	0.05	0.05
37	Concrete Wall	0.080	0.05	0.05	0.05	0.05
38	Concrete Column	0.020	0.05	0.05	0.05	0.05
39	Concrete Beam	0.080	0.05	0.05	0.05	0.05
40	Concrete Floor	0.060	0.05	0.05	0.05	0.05
41	Concrete Ceiling	0.060	0.05	0.05	0.05	0.05
42	Concrete Staircase	0.005	0.05	0.05	0.05	0.05
43	Concrete Foundation	0.015	0.05	0.05	0.05	0.05
44	Concrete Wall	0.040	0.05	0.05	0.05	0.05
45	Concrete Column	0.010	0.05	0.05	0.05	0.05
46	Concrete Beam	0.040	0.05	0.05	0.05	0.05
47	Concrete Floor	0.030	0.05	0.05	0.05	0.05
48	Concrete Ceiling	0.030	0.05	0.05	0.05	0.05
49	Concrete Staircase	0.002	0.05	0.05	0.05	0.05
50	Concrete Foundation	0.006	0.05	0.05	0.05	0.05



Samaneh abdi



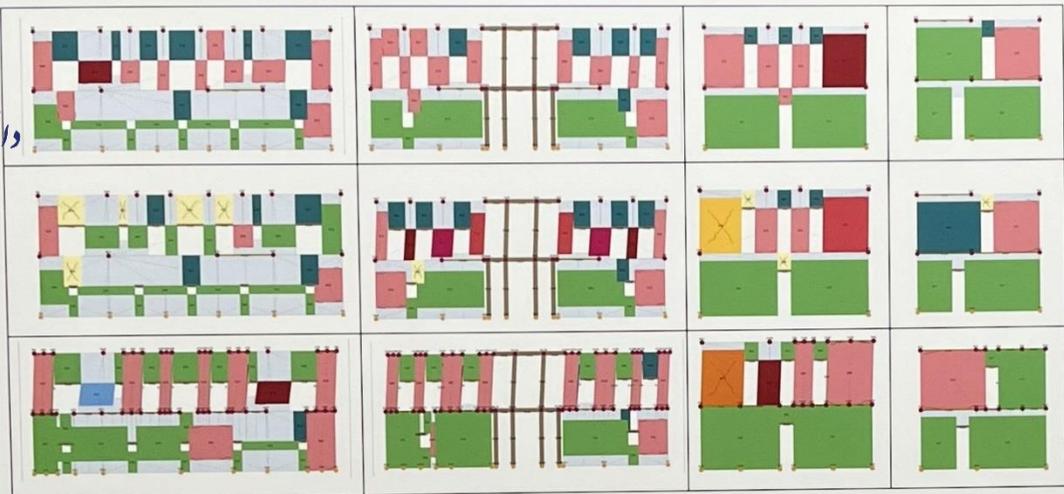
## مقاوم سازی بنا ی خانه ی نگهبان

لوکیشن: نقده  
 بنا در دو طبقه با الگوی خطی و متقارن، در حیاطی وسیع و در بافتی کم تراکم ساخته شده است.  
 ایوان ستون دار و آجرکاری های نما از ویژگی های این ساختمان است.



قبل از مقاوم سازی

### وضعیت دیوارها با بیشترین آسیب



وضعیت دیوارها  
مقاوم سازی

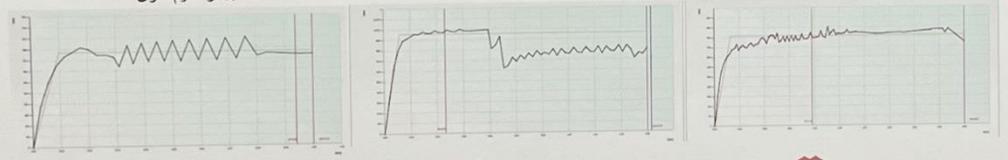
وضعیت بنا با استفاده از نعل درگاه

وضعیت بنا بعد از FRP, Injection

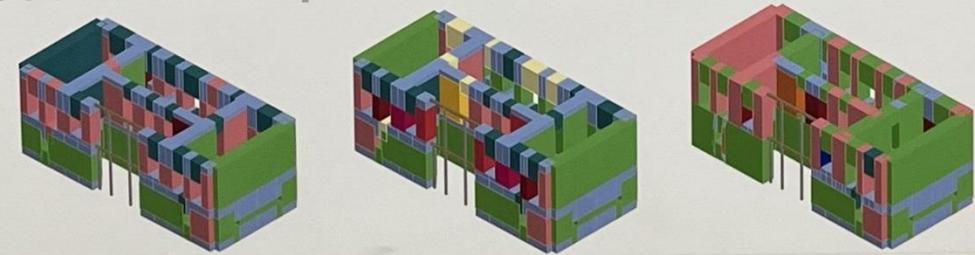
### قبل از مقاوم سازی

### با نعل درگاه

### FRP, Injection



نمودار بار ها بر سبب های بنا



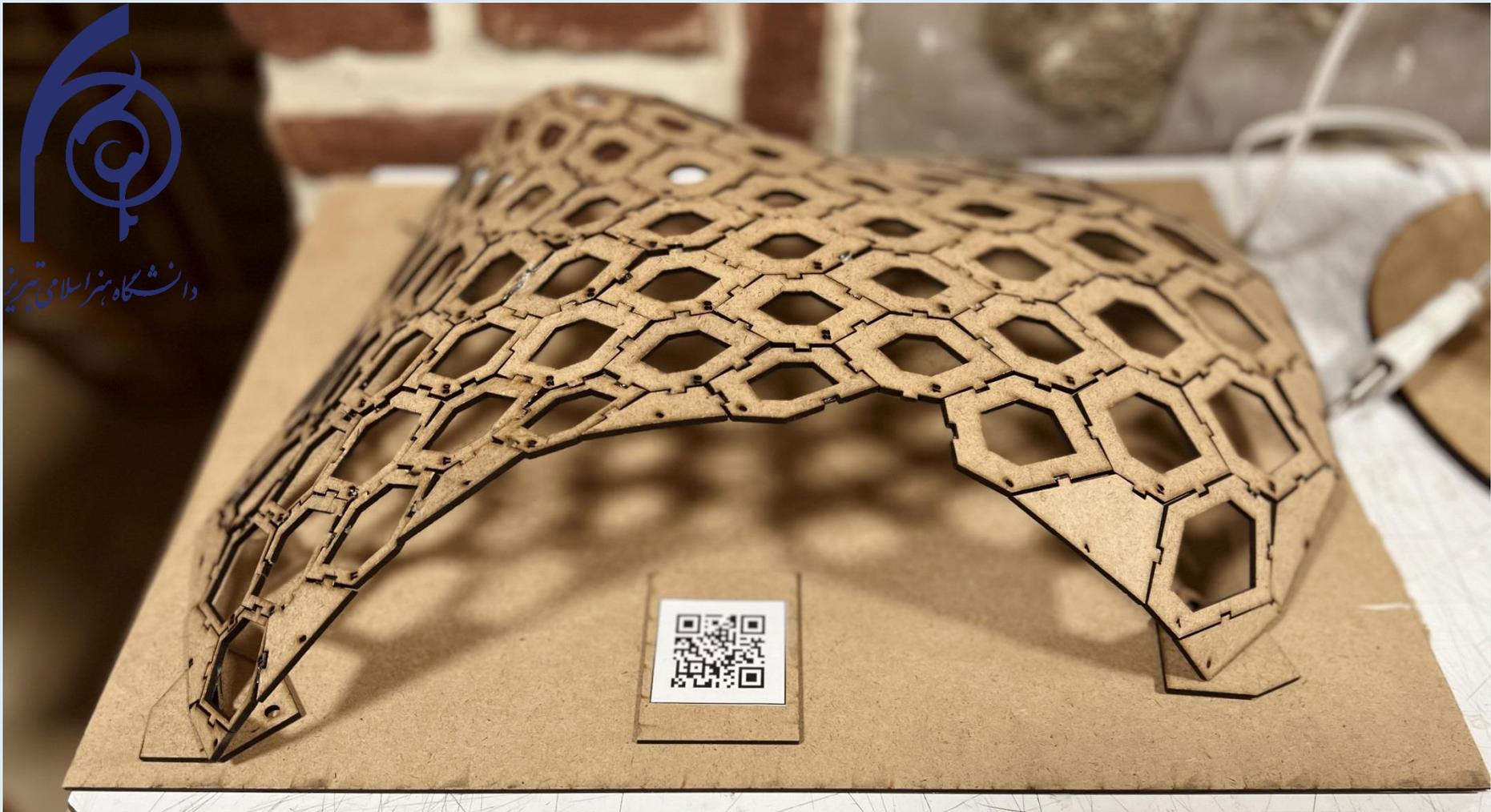
No.	Section ID	Seismic load	Elasticity [kN]	1/10C	1/20	1/5L	dis/100
1	4K	Uniform	0.00	1.038	1.264	1.122	1.673
2	4K	Static Forces	0.00	0.769	0.991	0.799	0.814
3	4K	Uniform	0.00	0.991	0.991	1.000	1.000
4	4K	Static Forces	0.00	0.942	1.049	0.790	0.864
5	4F	Uniform	0.00	0.769	0.912	0.802	0.784
6	4F	Static Forces	0.00	0.841	1.005	0.800	0.807
7	4F	Uniform	0.00	0.847	1.021	1.078	0.808
8	4F	Static Forces	0.00	0.847	1.029	1.033	0.802
9	4K	Uniform	29.25	3.226	1.546	1.195	1.381
10	4K	Static Forces	29.25	2.265	1.271	1.078	0.864
11	4K	Static Forces	29.25	0.941	1.169	0.791	0.911
12	4K	Static Forces	29.25	0.769	0.877	0.764	0.699
13	4K	Uniform	29.25	3.116	1.468	1.133	1.358
14	4K	Uniform	29.25	2.265	2.265	1.071	1.200
15	4K	Static Forces	29.25	0.769	1.126	0.792	0.949
16	4K	Static Forces	29.25	0.769	0.822	0.711	0.871
17	4F	Uniform	49.00	0.848	0.848	0.877	0.862
18	4F	Uniform	49.00	0.974	0.799	0.808	0.700
19	4F	Static Forces	49.00	0.762	0.894	0.817	0.803
20	4F	Static Forces	49.00	0.862	0.964	0.802	0.847
21	4F	Uniform	49.00	0.762	0.848	1.068	0.681
22	4F	Uniform	49.00	0.842	0.791	1.042	0.598
23	4F	Static Forces	49.00	0.862	0.862	1.040	0.616
24	4F	Static Forces	49.00	0.848	0.767	1.022	0.524

### FRP, Injection

No.	Section ID	Seismic load	Elasticity [kN]	1/10C	1/20	1/5L	dis/100
1	4K	Uniform	0.00	1.141	1.239	1.477	1.274
2	4K	Static Forces	0.00	0.874	1.030	0.995	1.006
3	4K	Uniform	0.00	0.988	0.767	1.032	1.042
4	4K	Static Forces	0.00	0.868	1.171	1.046	1.035
5	4F	Uniform	0.00	0.849	0.719	1.020	0.475
6	4F	Static Forces	0.00	0.817	0.810	0.810	0.380
7	4F	Uniform	0.00	0.848	0.779	1.176	0.307
8	4F	Static Forces	0.00	0.842	0.706	1.011	0.512
9	4K	Uniform	29.25	3.724	1.077	1.044	1.108
10	4K	Uniform	29.25	1.729	1.028	1.209	1.044
11	4K	Static Forces	29.25	1.111	1.016	1.043	1.077
12	4K	Static Forces	29.25	0.861	1.195	0.820	1.000
13	4K	Uniform	29.25	3.770	1.116	1.240	1.209
14	4K	Uniform	29.25	2.096	1.300	1.537	1.044
15	4K	Static Forces	29.25	0.911	1.274	1.124	1.222
16	4K	Static Forces	29.25	0.769	1.066	0.916	1.019
17	4F	Uniform	49.00	1.528	0.822	0.812	0.459
18	4F	Uniform	49.00	0.811	0.806	1.008	0.768
19	4F	Static Forces	49.00	0.768	0.705	0.802	0.462
20	4F	Static Forces	49.00	0.911	1.001	1.040	0.388
21	4F	Uniform	49.00	0.811	0.792	1.084	0.479
22	4F	Uniform	49.00	0.866	1.006	1.108	0.515
23	4F	Static Forces	49.00	0.844	0.866	1.021	0.434
24	4F	Static Forces	49.00	0.844	0.807	1.116	0.390

استاد: دکتر فرهاد اخوندی  
 دانشجو: زهرا رنجانی

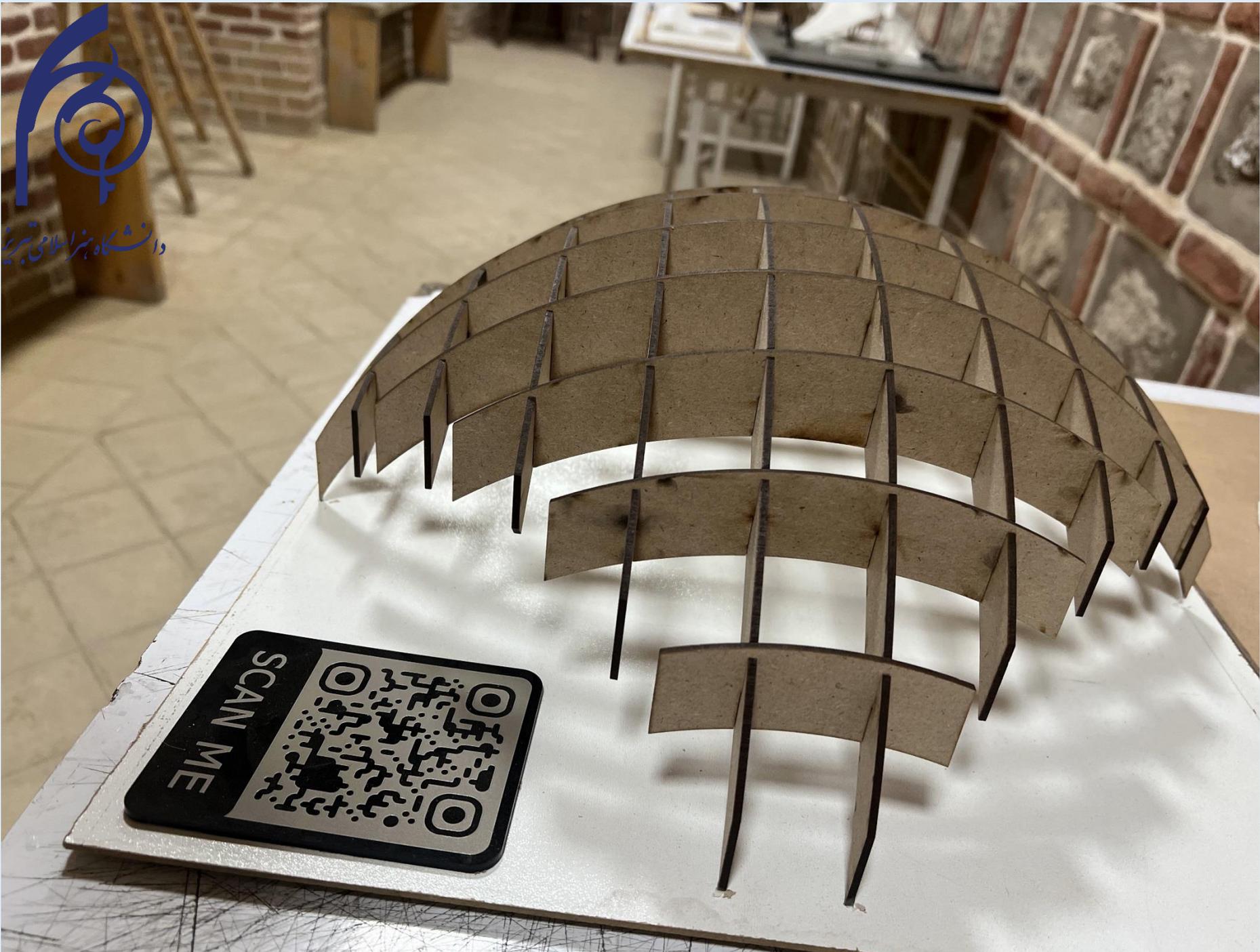






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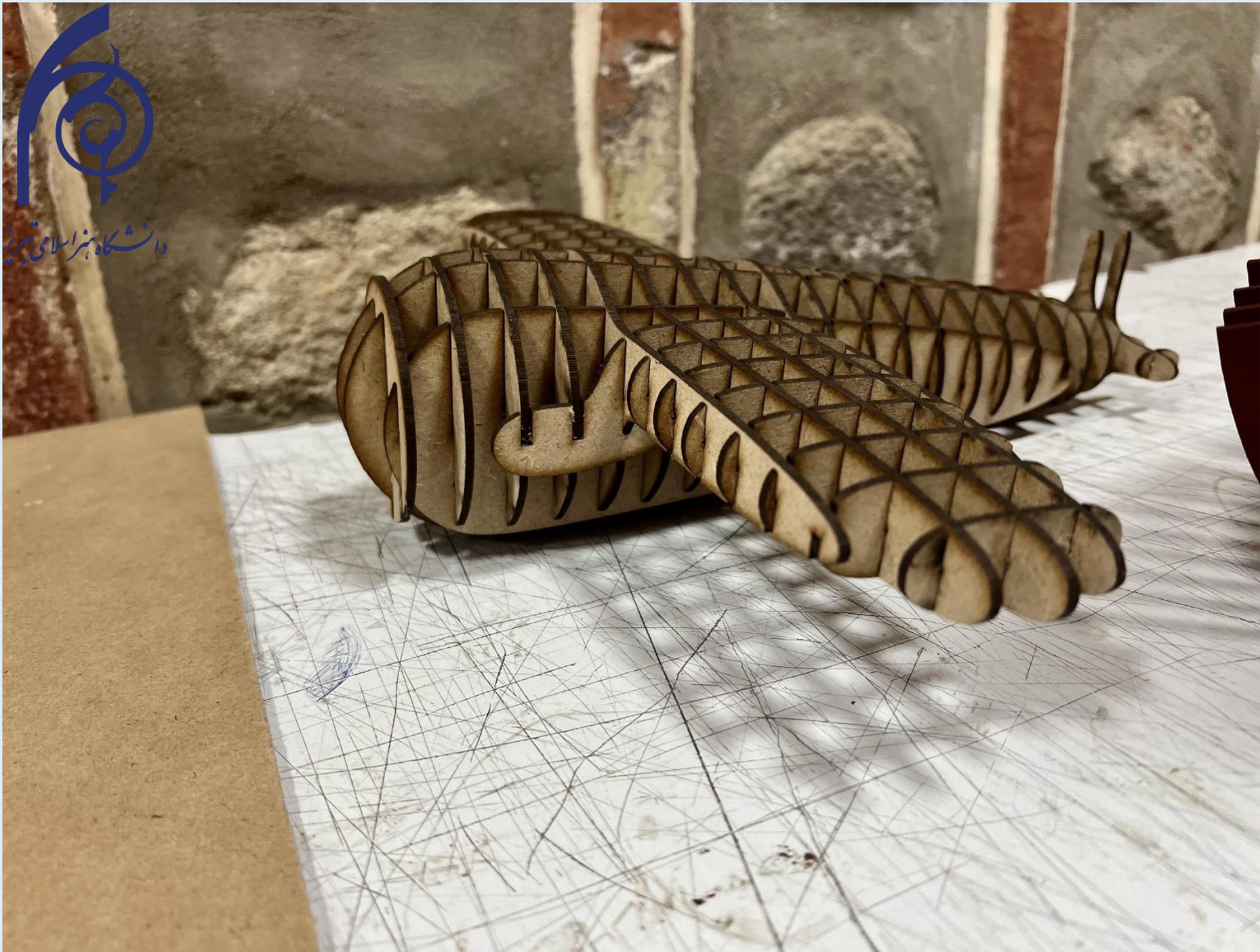
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