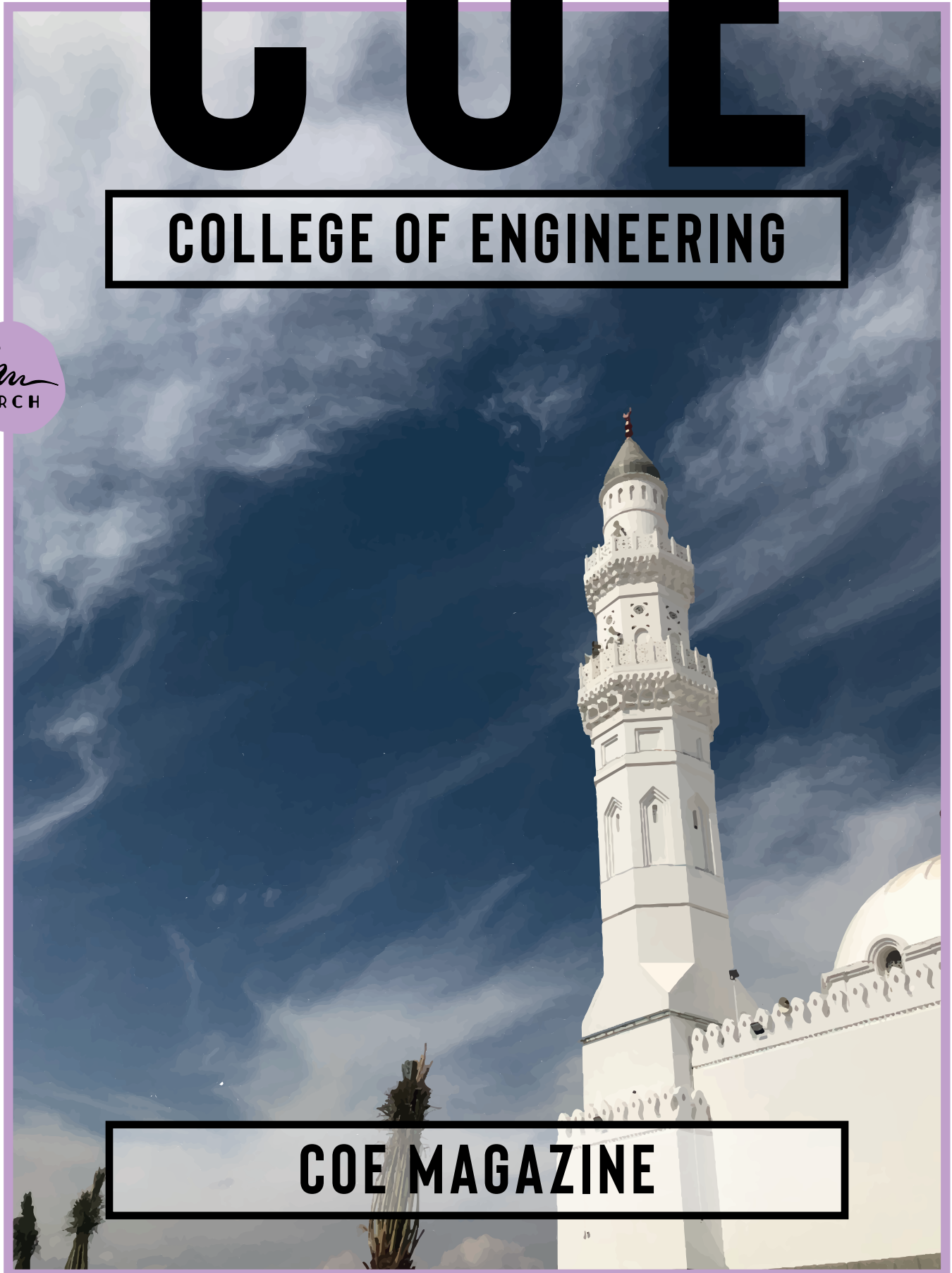
ISSUE OF / 2023

COE

COLLEGE OF ENGINEERING

ARCH



COE MAGAZINE

PRESIDENT MESSAGE

Dr. Bandar Hajjar

University of Prince Mugrin President

QUBAA STUDIO: WHERE INNOVATION SHAPES THE FUTURE

Welcome to this edition of our engineering magazine, titled "Qubaa Studio". More than just a collection of projects, it's a testament to the vibrant spirit of collaboration and innovation that drives our college. Our students, fueled by a passion for service and a commitment to Saudi Vision 2030, have transformed their classroom learnings into tangible solutions for Madinah's flourishing Qubaa district.

The theme of this issue reflects the heart of our initiative: collaboration. Students from diverse engineering disciplines came together as one, their unique strengths merging to form a source of innovation. The results are inspiring. Fifteen exceptional students earned recognition from the Madinah Development Authority, not just for their ingenuity, but for their potential to shape the district's future. Seven, yes, seven of these projects will become reality, breathing life into our designs and leaving a lasting legacy in Qubaa.

This is just the beginning. Our ambitions reach far beyond the walls of our classrooms. We are actively building partnerships with key stakeholders forging collaborative pathways to address challenges and unlock opportunities in Madinah and beyond.

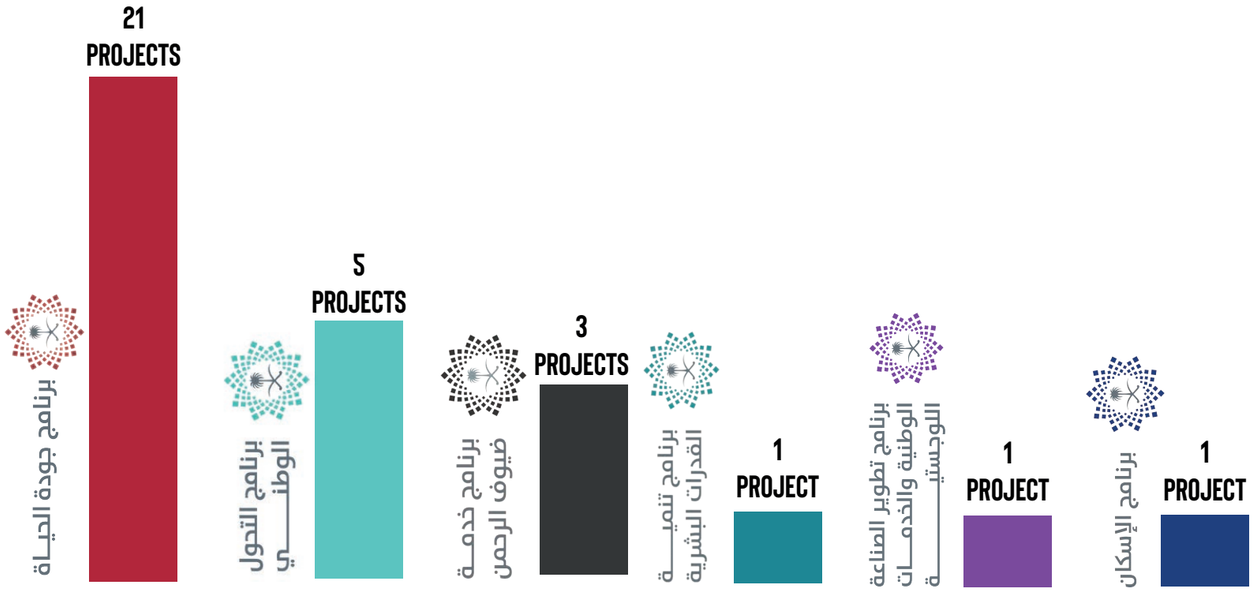
As you turn the pages of this magazine, encounter the passion in the eyes of our students, the meticulous detail in their designs, and the unwavering commitment to building a better future. You'll witness the power of engineering not just as a technical pursuit, but as a force for positive change.

Let this magazine be a beacon, inspiring future generations to join the "Qubaa Studio" of their own, where imagination takes flight and dreams take shape, leaving an indelible mark on the ever-evolving landscape of our beloved Kingdom.

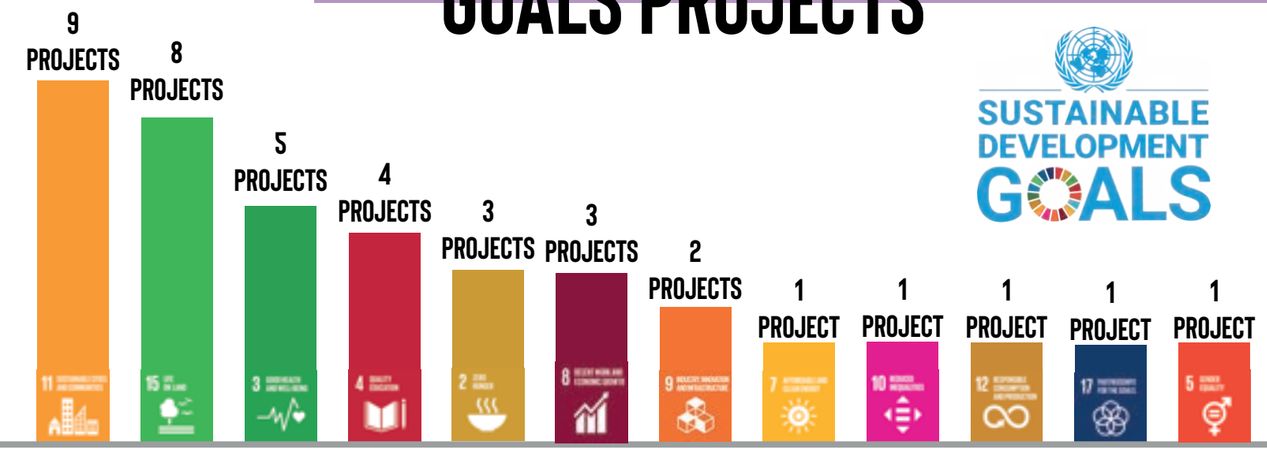
Dr. Mohammed AlMansouri

Dean of the College of Engineering

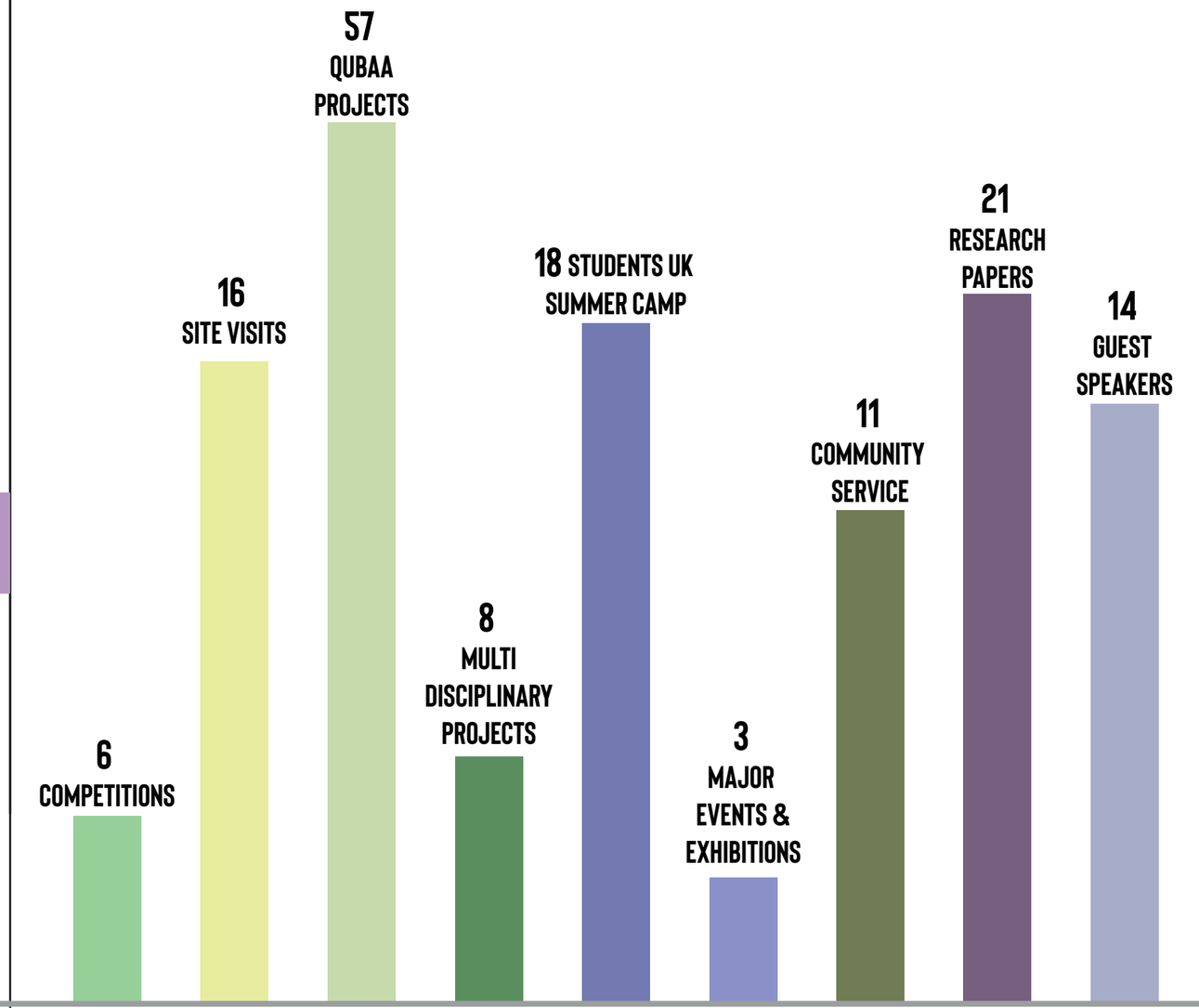
2030 VISION PROJECTS



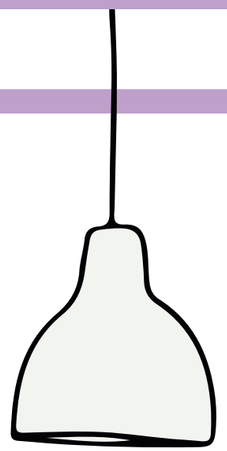
UN SUSTAINABILITY GOALS PROJECTS



COE ACHIEVEMENTS



COLLEGE OF ENGINEERING



ABOUT COLLEGE

The engineering college was established to meet the Kingdom's growing needs in the fields of engineering by serving a distinct social and economic environment in line with the national development plans.

MISSION

To produce quality academic programs in engineering and related design disciplines, provide a sustainable and productive environment that supports research, innovation, and teaching excellence, meet the requirements of national development and play a leading role in the needs of society.

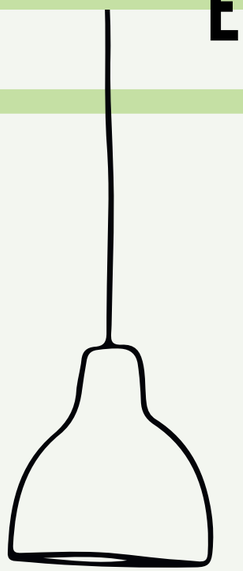
COLLEGE QR

CONTENTS

ARCHITECTURAL ENG. DEPARTMENT

NATURE
DESIGN
ART

ARCHITECTURAL ENG. DEPARTMENT



ABOUT DEPARTMENT

The program was established with the aim to produce graduates who are able to compete in the local market with distinct skills. In addition, the program aims to achieve the national 2030 VISION regarding empowering women by providing opportunities for quality education in engineering fields.

AE program is designed to bridge the gap between different engineering disciplines through graduates who can analyze and design engineering systems for buildings while covering several engineering areas. Focus is also given to producing graduates who demonstrate proficiency in speaking and writing of English language; presenting both orally and using illustrations; and using the latest technologies such as computer-based building design and analysis software.

MISSION

The mission of the Architectural Engineering (AE) Program is to offer quality education based on art, humanistic and engineering sciences; and to advance students' critical thinking, use of technology, and concerns for community, environment, and sustainability in order to produce qualified graduates with research and leadership skills.

OBJECTIVES

- Functioning effectively and efficiently in the architectural engineering practice field.
- Seeking life-long professional development through self-learning, postgraduate studies, training, and workshops.
- Serving society through providing novel solutions for architectural engineering problems while upholding necessary professional and social ethics.

DEPT. QR

FACULTY MEMBERS

DR. HAITHAM FAROUK
- HEAD OF DEPARTMENT -

ENG. AMMAR ALKASEEH
- LECTURER -

ENG. OMAR DAKHIL
- LECTURER -

ENG. DOAA IBRAHIM
- LECTURER -

ENG. SHAHAD MAMARJI
- LECTURER -

ENG. YAHYA ALSHANQITI
- LECTURER -

DR. HUSSAIN ALSADIQ
- ASSISTANT PROF.-

AL-DARA الدارة

كلمة عربية تعني الأرض الواسعة بين الجبال. ودارات العرب هي السهول التي تُنبت ما طاب ريحه من النبات

NOOR ABUEID
4010061

برنامج جودة الحيـاة
- 3 مدن سعودية تصنف ضمن أفضل 100 مدينة للعيش في العالم

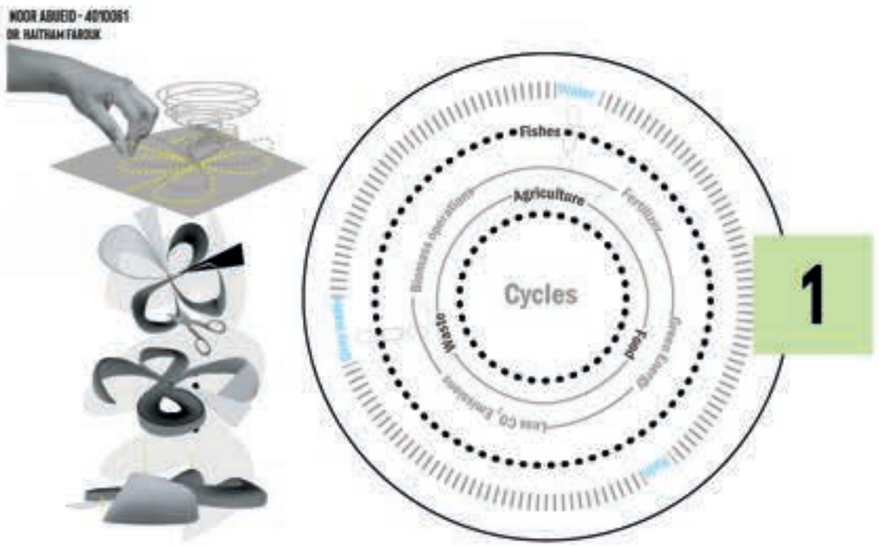
برنامج التحول الوطنـــي
- +86,000 هكتار مساحة الغطاء النباتي الطبيعي المعاد تأهيله

Vision 2030 is changing the way people live and where they live in the Kingdom by making cities more livable. Users can enjoy entertainment in a location that can aid in the healing of the city's climate, as well as promoting local and high-quality food and products, encouraging a healthier, more active, and social lifestyle. By encouraging the production of local food and recycling goods, the rate of import transportation will gradually decrease.

Cities are typically 2°C warmer than rural areas, with commercial and high-density residential areas being 7-5°C warmer.

An analysis made in medina shows that it has increased around 5°C , from the year 1950 to 2011.

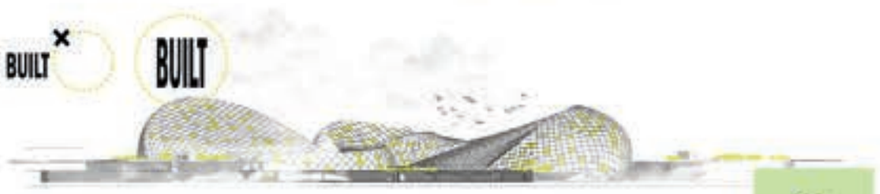
NOOR ABUEID - 4010081
DR. HAITHAM FAROUK



1

CONCEPT

Nature operates in cycles, and there is no better way to restore it than with nature itself. By incorporating these cycles into a project, it can become a self-contained ecosystem. This creates an ongoing loop of integration between the built environment and nature.



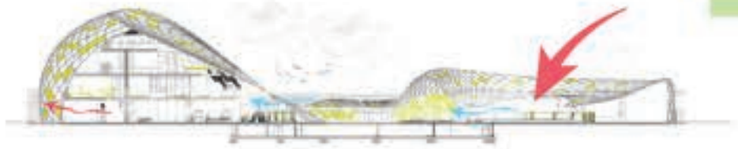
NORTH ELEVATION

Various heights and curves correspond with the site's sun, wind, and vegetation, all to provide the best experience for the user.

2

SECTION B-B

We give the user thermal comfort by adding various water surfaces throughout the site and ventilation panels to encourage cross-ventilation.



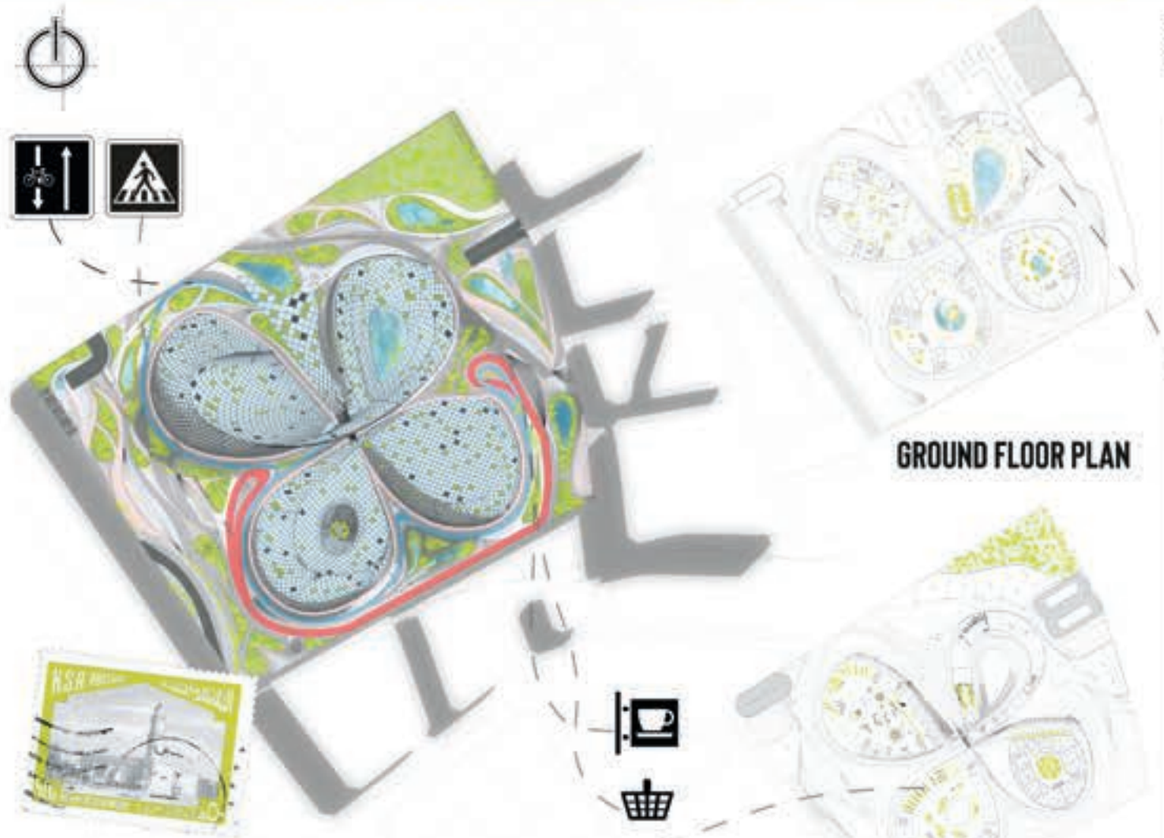
3

AL DARA

Al-Dara is the modern, environmentally friendly version of the traditional ahwash found in Medina, it will aid in reviving neighborhoods and transforming people's lifestyles

ماضي، حاضر
ومستقبل المدينة

THE RELATIONSHIP BETWEEN CLIMATE AND CITY IS 2 WAY



SITE PLAN

Madinah will receive local, wholesome food thanks to vertical farming labs. this also helps with increasing the food security in the Kingdom.

Creating a platform for local designers to display their work while encouraging them to use recycled materials. Dal here is a concept store that sells recycled art.

GREENERY 3RD PLACE

ABDULRAHMAN AL-NOAIMI
3910025

برنامج جودة الحيـاة

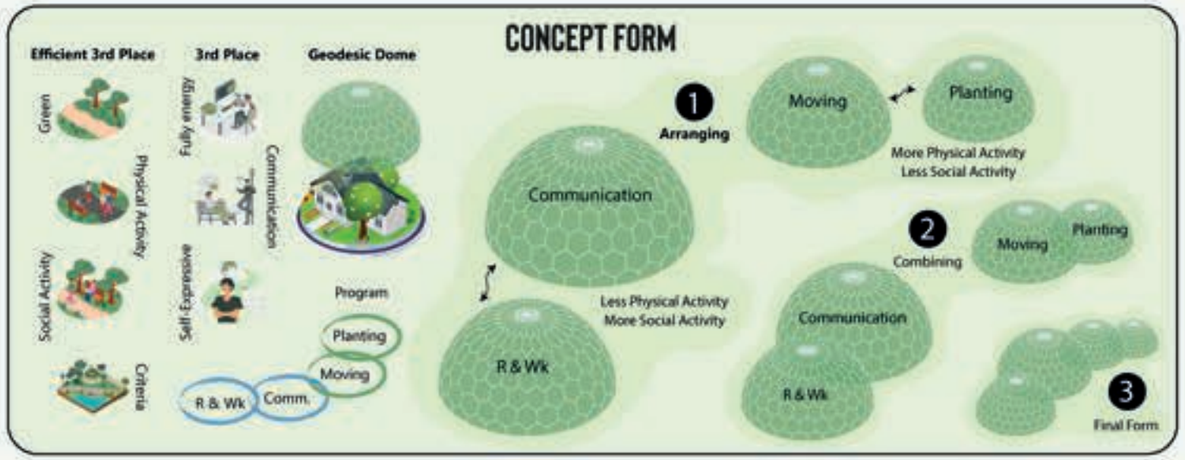
- 3 مدن سعودية تصنف ضمن أفضل 100 مدينة للعيش في العالم
- أكثر من 600 منطقة ترفيهية جديدة في مدن ومناطق المملكة

برنامج التحول الوطنـــــي

- +86,000 هكتار مساحة الغطاء النباتي الطبيعي المعاد تأهيله

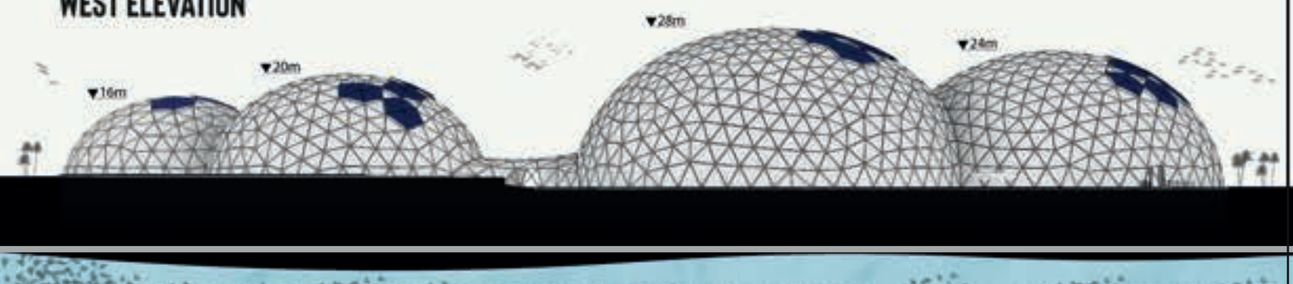
Third place is somewhere that one feels more at ease, pleasant, and homey. Also, it improves community quality of life by fostering social interaction and community building, which has the most significant effect on our social health and helps avoid health issues associated with social isolation. The main idea of this project is to increase and improve third place from social, physical, and health perspectives by studying the impact of third place on social health and finding an efficient third place as a solution.
The project is located in the Quba region, Medina.

CONCEPT FORM

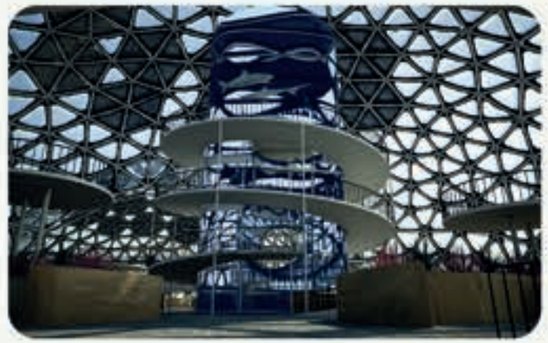


PLANS

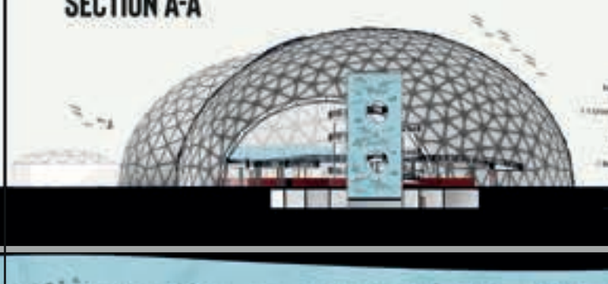
WEST ELEVATION



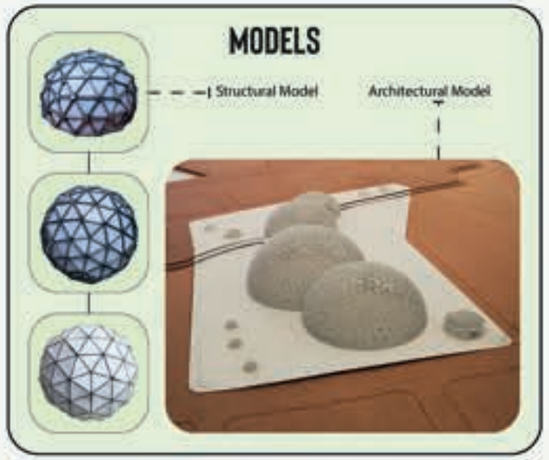
SUSTAINABLE STRATEGIES

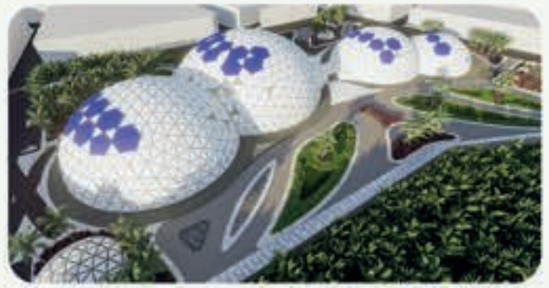


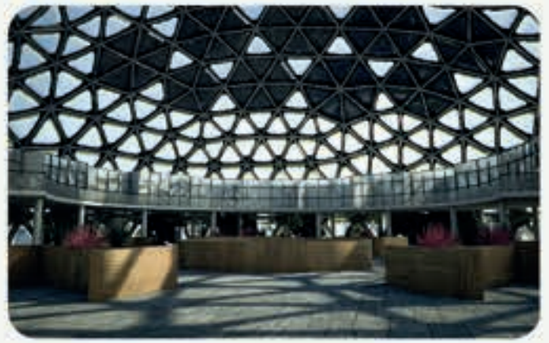
SECTION A-A



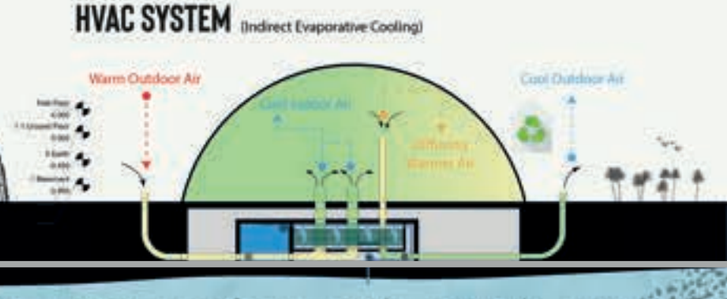
MODELS







HVAC SYSTEM (Indirect Evaporative Cooling)



روح المدينة

KWTHAR ALHALLAK | KHADIJAH ALHAMILI
3910053 | 3910015

برنامج جودة الحيـاة

- 3 مدن سعودية تصنف ضمن أفضل 100 مدينة للعيش في العالم

برنامج خدمـة ضيوف الرحمن

- 15 موقع إسلامي تاريخي وثقافي مؤهل ومطور بحلول عام 2025
- 85% نسبة رضا الحجاج والمعتمرين عن الخدمات المقدمة عام 2025

The project consists of two parts:

A - Rest area part: The idea of the rest area is to provide a sustainable rest area with landscape and sustainable activities, encouraging sustainable mobility, connecting people with nature, and aiming to introduce people to the historical well of Alhajim. It also aims to enhance the quality of rest areas to reflect the identity of Madinah, provide a better experience, and enhance socialization.

B - Resort part: The idea of the resort is to provide comfortable accommodation in the middle of nature for visitors, making it closer to the historical and religious sites. This facilitates easier movement around and exploration of all historical areas in Medina, especially in the Quba area. Both of these parts serve pilgrims and Umrah performers.

CONCEPT

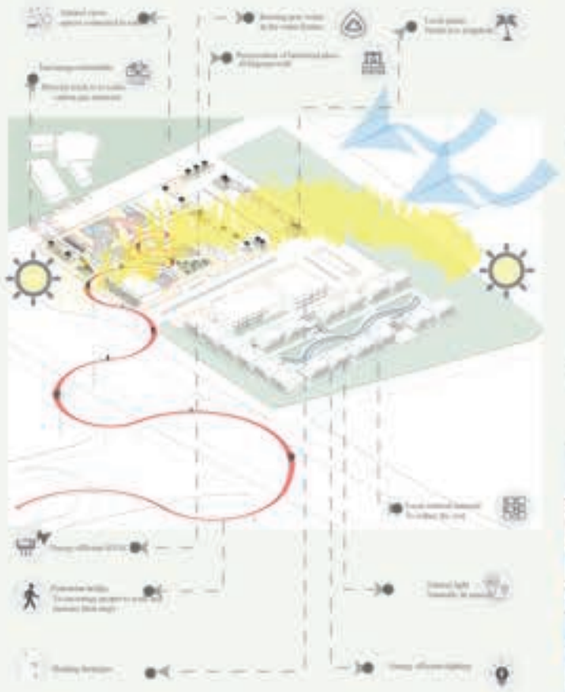
Since around nine million people visit Madinah every year, we decided to provide a rest area with a hotel for the pilgrims and Umrah performers, along with a pedestrian bridge and bicycle track to easily connect them with the historical places.

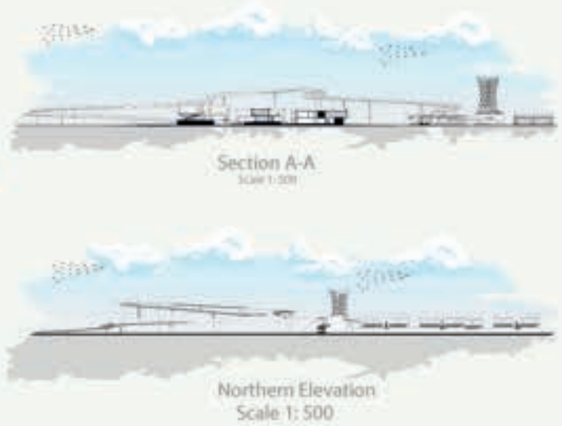
SITE PLANS

The site plan shows the two projects, the resort project and the rest area project. It displays the main entrances to the buildings, parking spaces, and the shared farm between the two projects.

PLANS

It contains two parts: the right part, which is the resting project, contains restaurants, shops, landscapes, and outdoor seating, while the left part contains luxurious comfortable rooms for guests and an internal garden for an enthusiastic view.





SUSTAINABLE STRATEGY

Providing a sustainable project involves incorporating recreational methods, including halls for watching the sky and stars, landscapes, areas for relaxation and meditation, opportunities for breathing fresh air, sustainable activities encouraging mobility and interaction with nature, shaded areas, and the provision of water to enhance the atmosphere.

PHOTOS FOR SUSTAINABLE

The photos illustrate some of the sustainable elements used in the project.

SECTIONS & ELEVATIONS

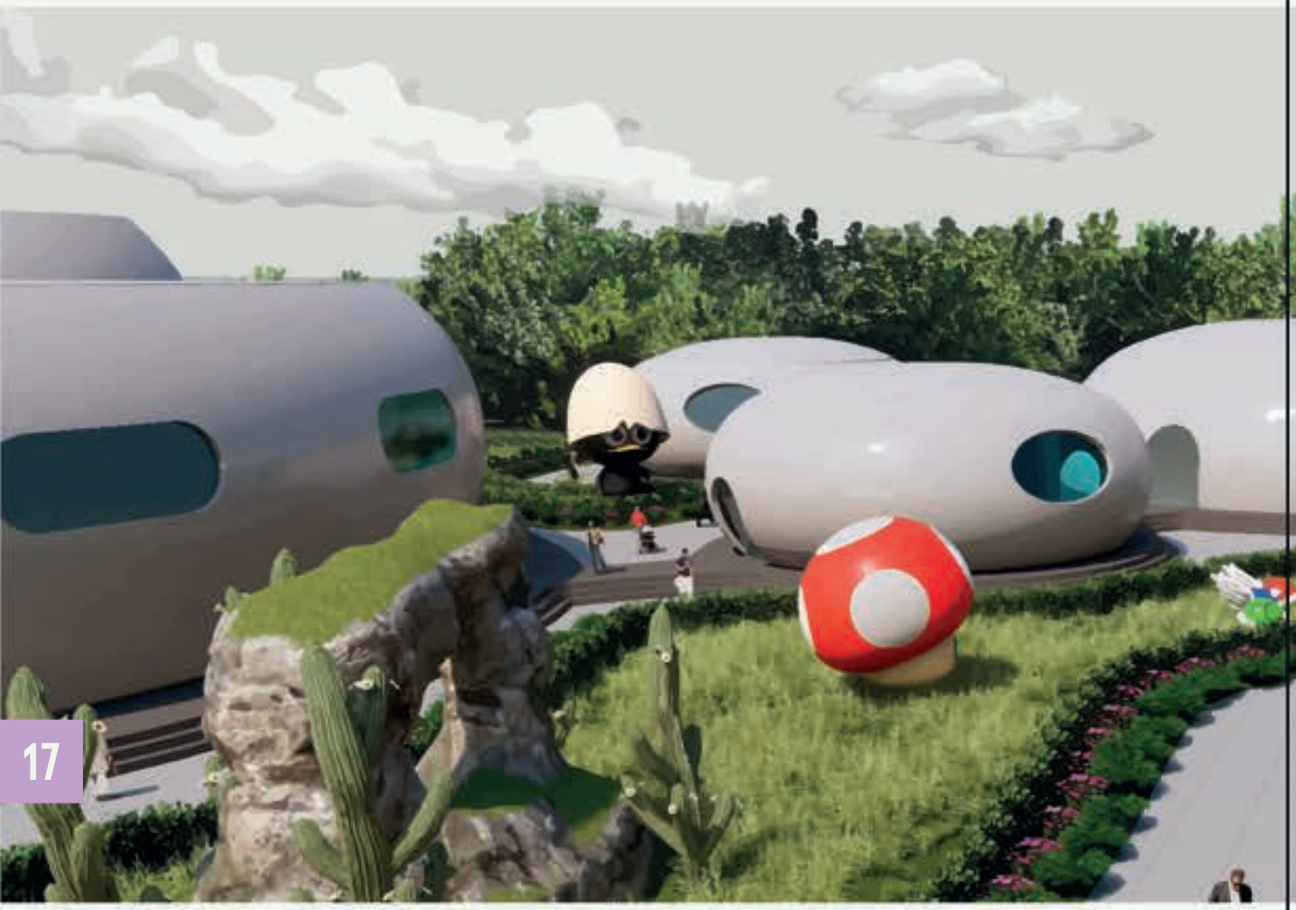
The section and elevation depict the services, shops, landscape elements, the tower, and the bridge connecting the site to the immigration walkway and the bicycle path, facilitating visitor movement to the historical places surrounding the site.

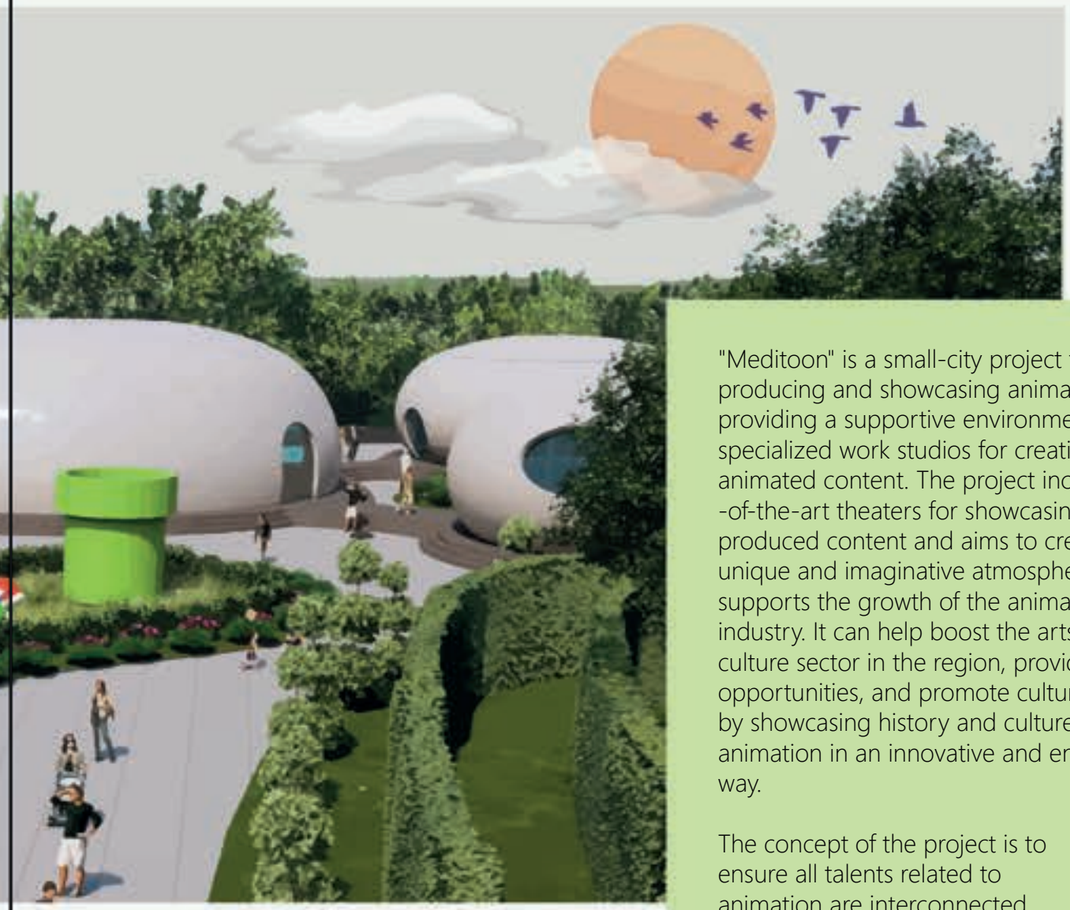
EXTERIOR SHOTS

3D shots of outdoor spaces can represent the outdoor landscape, the shared farm, and the indoor garden of the resort.

MEDITOON
ANIMATION PRODUCTION CITY

EMAN AL-ATTAS
3820031





"Meditoon" is a small-city project focused on producing and showcasing animated films, providing a supportive environment and specialized work studios for creating animated content. The project includes state -of-the-art theaters for showcasing the produced content and aims to create a unique and imaginative atmosphere that supports the growth of the animation industry. It can help boost the arts and culture sector in the region, providing work opportunities, and promote cultural tourism by showcasing history and culture through animation in an innovative and enjoyable way.

The concept of the project is to ensure all talents related to animation are interconnected to produce high-quality animated content.

LOCATION

The site is located in the Kingdom of Saudi Arabia in Medina's King Fahad Park, known for its popularity as a gathering place for visitors and families, including children. The project focuses on providing outdoor green spaces for entertainment purposes, such as having a maze and various activities.

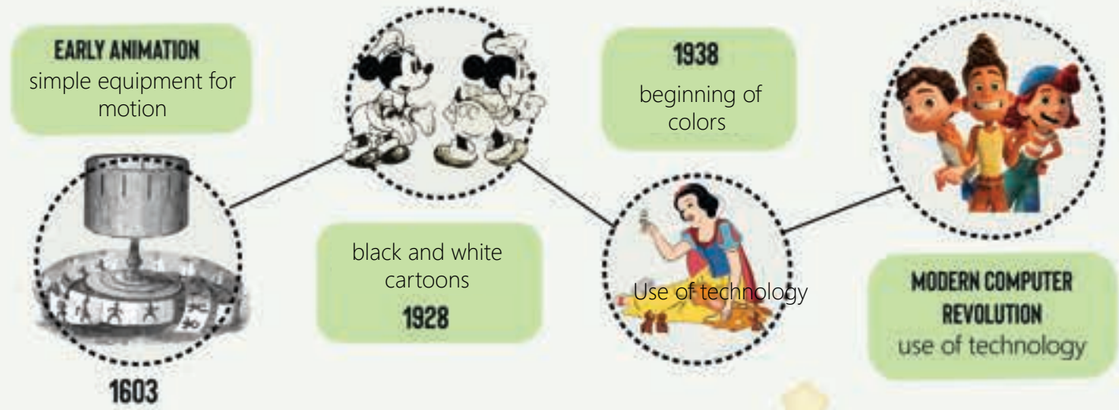
SITEPLAN

The site plan consists of a sidewalk for pedestrians, green spaces, and statues of cartoon characters. Additionally, there is a maze for visitors that tells stories of animated cartoons. The website also includes an elevated place to go up and view the maze from above.

GF-PLAN

The ground floor plan consists of two main zones. The first zone comprises studios and offices for the production of animation, while the second zone is dedicated to showcasing animations. The two zones are connected by a museum and a corridor showcasing the art of animation.

TIMELINE OF ANIMATION



SECTIONS

ELEVATION

CAPSTONE PROJECT II - AE492

برنامج جودة الحيـاة

- 3 مدن سعودية تصنف ضمن أفضل 100 مدينة للعيش في العالم

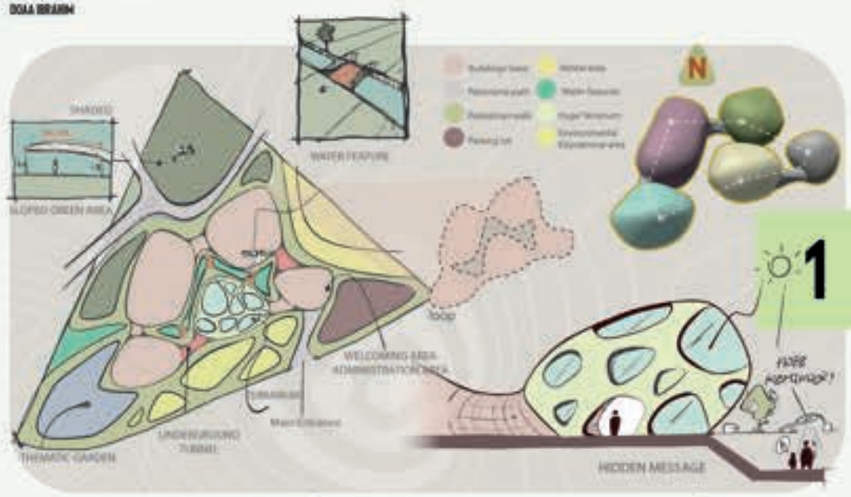
GLOBETICK | ENVIRONMENTAL AWARNESS CENTER

MARIA ALSHEHRI
3910062

GLOBTICK | ENVIRONMENTAL AWARENESS CENTRE

-The awareness center covers the issue of global warming and spreads knowledge to encourage society to take action towards the future. It goes beyond disseminating knowledge to inspire visitors' self-realization and motivates them by taking them on an experimental journey, encouraging them to become active environmental defenders.
-The preparation process involves linking human daily habits with the best alternatives so they can switch to and adopt a healthy, sustainable lifestyle. Visitors will experience this space with their own senses, accumulating experiences from each zone.
-The landscape and building should be designed to evoke the existence of global warming and allow spectators to feel the various expressions of climate change with their whole bodies and senses.

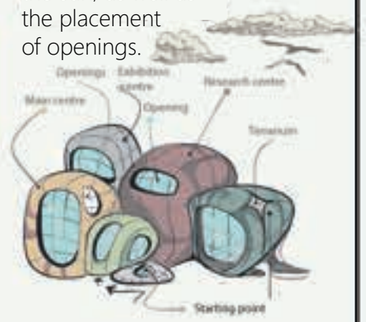
MARIA ALSHEHRI - 3910062
DOAA IBRAHIM

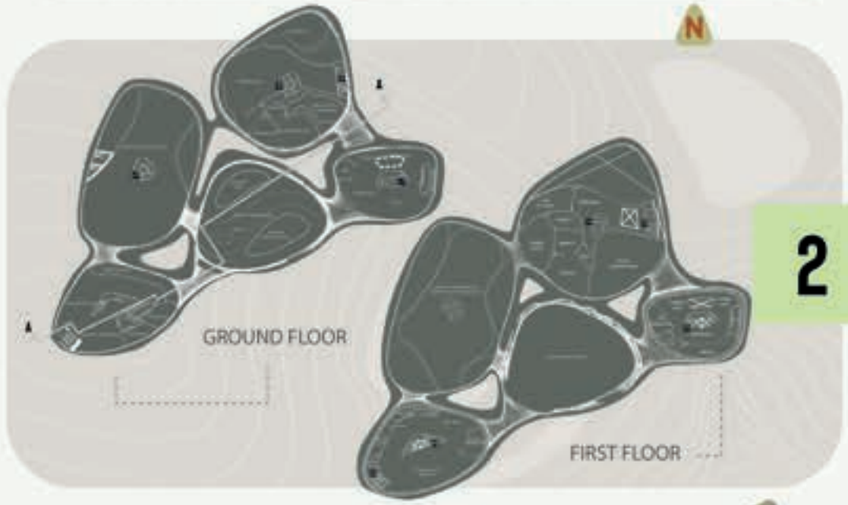


1

FORM

The orientation of the buildings is influenced by the movement of the sun, as well as the placement of openings.





2

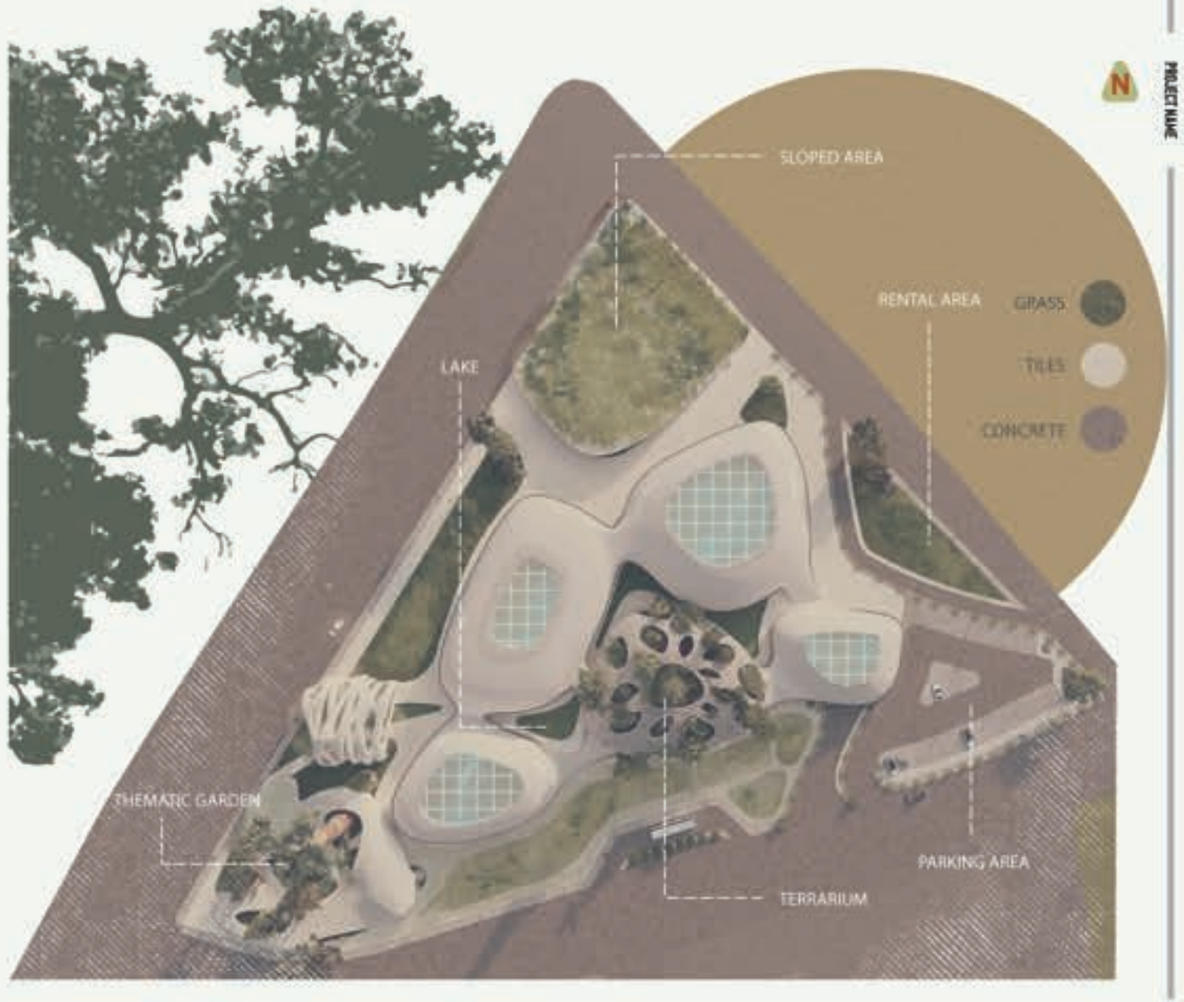
PLANS

The journey begins underground, progressing through the levels of the earth and experiencing the process of sea level rise due to thermal expansion. Visitors have the option to enter the research center or move to the next and final exhibition area, the terrarium, which provides solutions to prevent global warming.

3

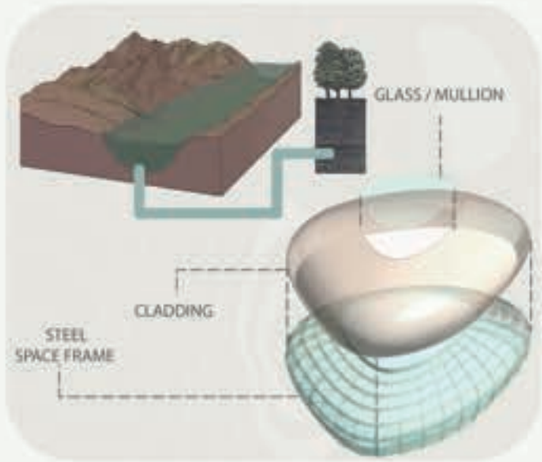
SECTION | ACTIVITIES

Before starting the journey, visitors receive a map of the entire circulation route. Each zone includes a description of its function and an explanation of what visitors will experience and how it relates to global warming. Visitors eventually reach the terrarium, where they have the opportunity to create a small one as a souvenir.



SUSTAINABLE STRATEGIES | STRUCTURE

A system of pipelines can be built to transport water from the source to a collection point, which is the lake. Once the water is collected, it can be stored in tanks and then pumped to the irrigation system as needed.
MeeFog technology is utilized for the terrarium to enhance plant life by facilitating plantlet development and healthy growth. MeeFog humidification systems are incredibly energy -efficient, aligning with GlobTick's goal of keeping energy costs down and promoting sustainability

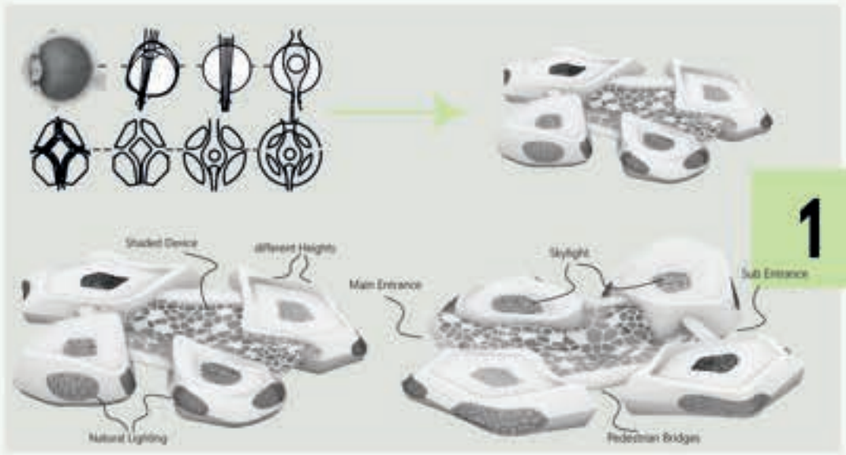


BLIND DISTRICT

MALATH ALHARBI
3720001

PROJECT DESCRIPTION

It is a pavilion project aimed at empowering the blind and visually impaired, enhancing their qualifications for the labor market. The project focuses on creating an inclusive environment that caters to users with special needs, utilizing innovative shapes and methods to engage tactile, auditory, and invisible senses in the architectural experience. The goal is to foster an environment where users are contributors to the community rather than being seen as handicapped, as the space is accessible to all.



1

CONCEPT

The concept revolves around the eye and the optic nerve, which forms a bundle of nerve fibers acting as a communication cable between the eyes and the brain.

2

DESIGN GUIDLINES

The proposal aims to establish a new framework for an integrated area for users by exploring multisensory programs, materials, textures, technology, and navigation. It is regarded as a safe space for users, offering multiple benefits to them.

VIDEO

VR

VR

3

VR & VIDEO QR

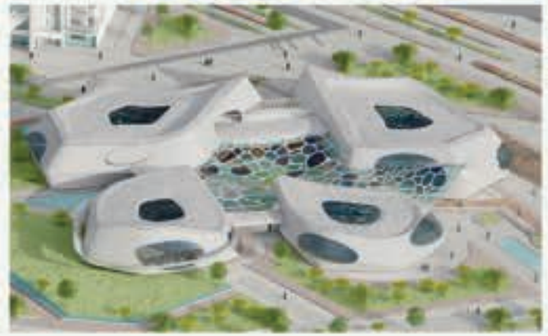
The project utilized innovative methods, such as employing virtual reality programs and creating an integrated video to simplify and explain the project's idea.

GROUND AND FIRST FLOOR PLANS

The layouts have been meticulously designed to ensure comfortable pathways for the blind. Efforts were made to enhance building access for the blind, aiming to divide the block into four main sections, with some buildings featuring a second floor connected by a bridge to facilitate movement within the wing.

3D SHOTS

Numerous pictures were captured to showcase the project's concept, layout, materials, and enhancements tailored for the blind and visually impaired, creating a suitable environment for them.



CAPSTONE PROJECT II - AE 492
DR. HAITHAM FAROUK RASHED

AL - MEDINA STADIUM

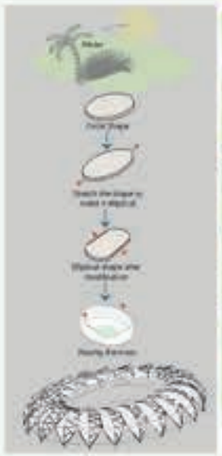
RAMA ABDULNASER CHARAM
3910012

برنامج جودة الحيـاة

- أكثر من 600 منطقة ترفيهية جديدة في مدن ومناطق المملكة

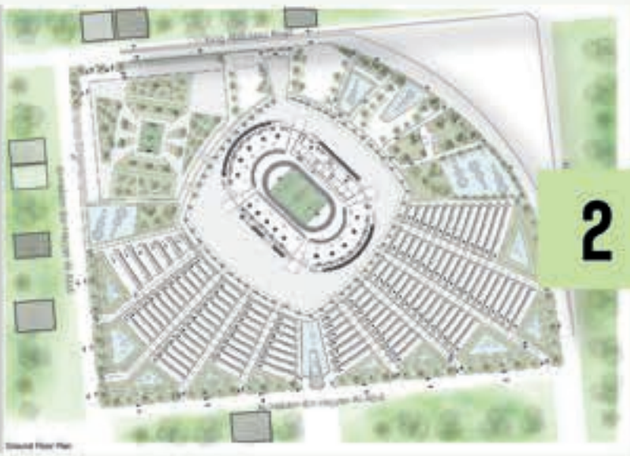
-A stadium is a large enclosed area, typically without a roof, featuring rows of seats along the sides, primarily used for sporting events.
-Why a stadium in KSA? Saudi Arabia is embarking on the construction of three new stadiums and undertaking significant renovations for four existing ones in preparation for hosting the 2027 AFC Asian Cup, as announced by the Kingdom's football federation. Furthermore, this project aligns with Saudi Arabia's vision to become a global hub for sports tourism by 2030.
The stadium's design draws inspiration from the abstracted shape of palm leaves, symbolizing the identity of Medina.
Capacity: 40,000 seats.

Location & Site Section



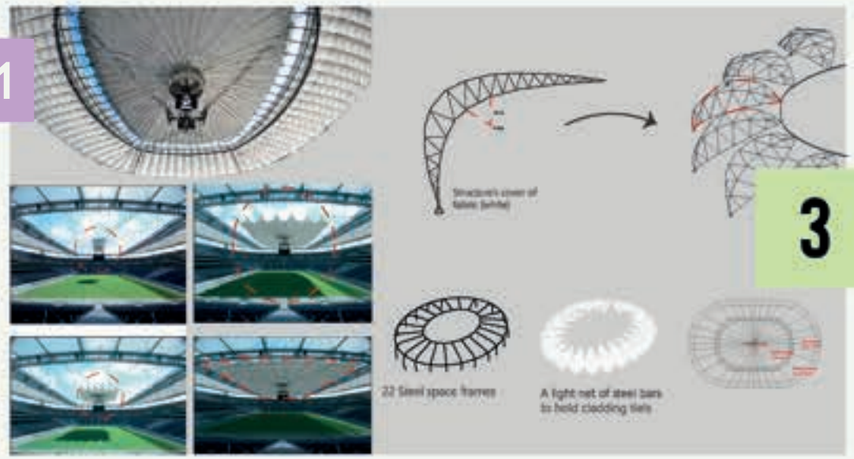
CONCEPT & SITE PLAN

The stadium's design draws inspiration from the abstracted shape of palm leaves, symbolizing the identity of Medina. The site plan provides clear circulation for the project, showcasing the landscape, top view of the building, and parking facilities, crucial aspects of a stadium project.



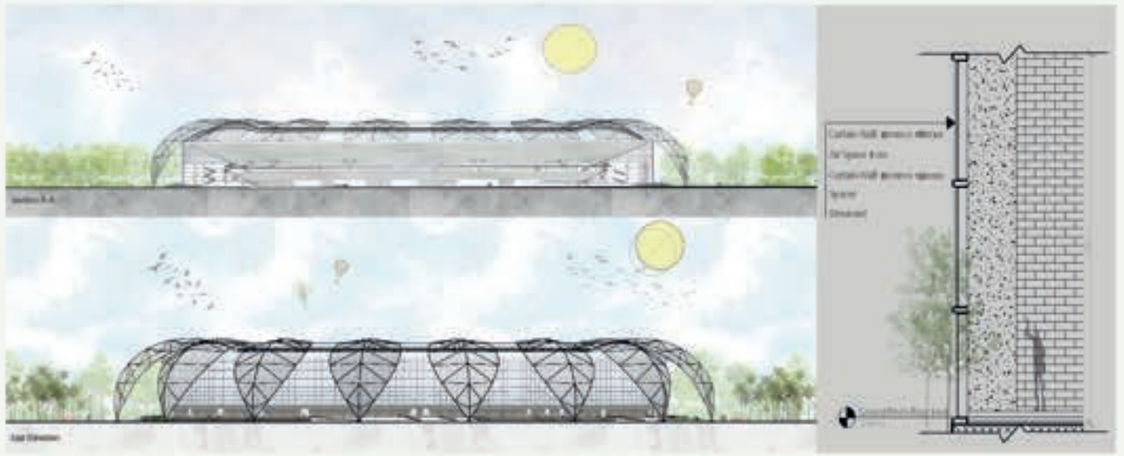
PLANS

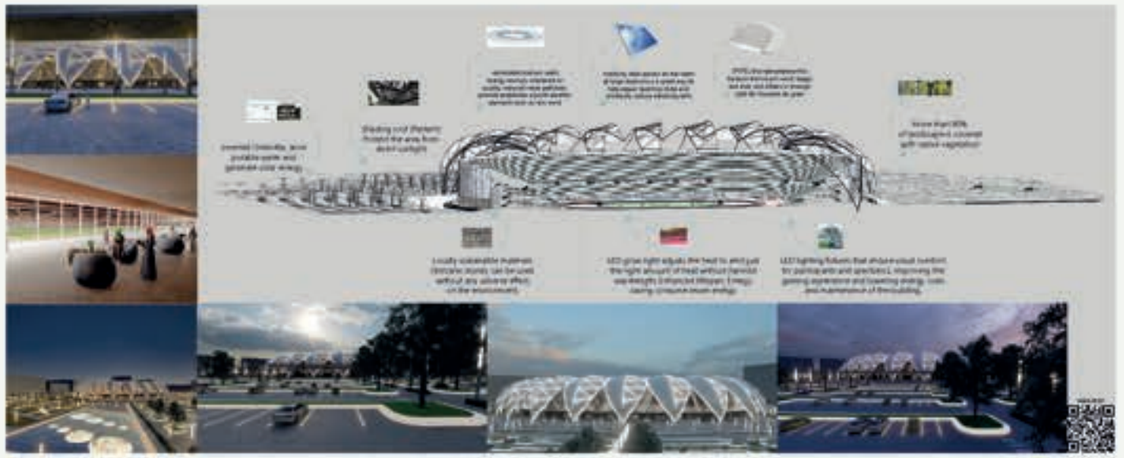
The stadium comprises four floors. The ground floor features 16 entrances for spectators, VIPs, referees, media, logistics, and players, each equipped with security measures. Additionally, the plans incorporate various amenities such as cafeterias, seating areas, restrooms, security facilities, and prayer rooms, as well as retail spaces, a museum, and a VIP lounge.



STRUCTURE & RETRACTABLE ROOF

The retractable roof can be unfolded along the inner radial cables. Proper design of the video cube and its roof is essential to ensure resilience against all potential loading conditions. Steel is the primary structural system employed for the stadium.





SECTION & ELEVATION

Section A-A provides an overview of the stadium's levels, including spectator seats, VIP areas, media sections, and the football field. It also illustrates the vertical and horizontal circulation within the stadium using stairs or lifts. The east elevation showcases the building's exterior.

WALL SECTION

On the top right-hand side, you can see the wall section details for the curtain wall, which includes the following dimensions: curtain wall 50mm X 150mm, air space 5cm, curtain wall 50mm X 150mm, spacer, and desiccant.

INTERIOR & EXTERIOR 3D SHOTS

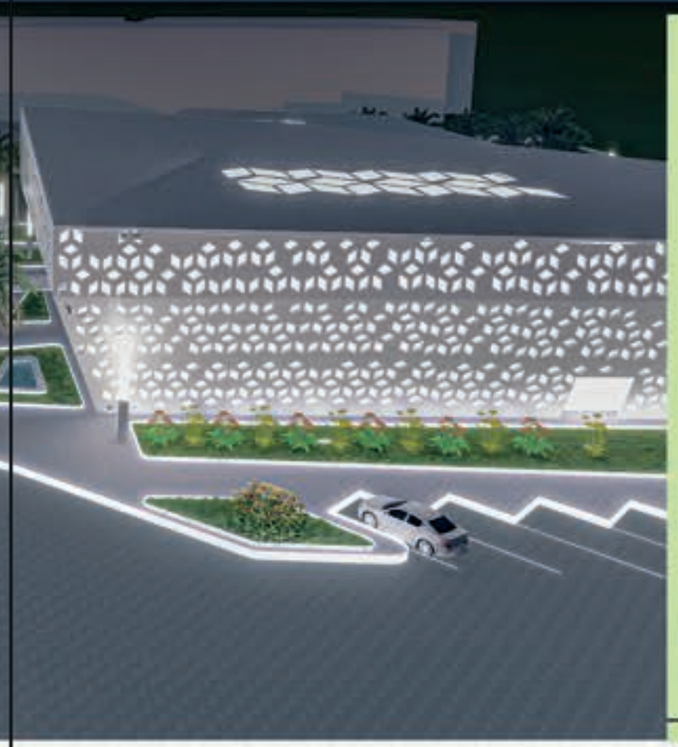
3D shots of the interior and exterior spaces depict the seating area within the stadium and provide a night view of the building.

SUSTAINABLE STRATEGIES

The design strategies primarily focus on optimizing site potential, minimizing non-renewable energy consumption, utilizing local materials, and incorporating environmentally preferable products.

AL-MADINAH TALENT CENTER

TASNIM ABOULNASER CHARAM
3910013



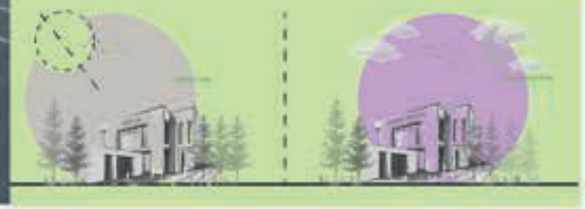
برنامج جودة الحيـاة

- تنمية المساهمة السعودية في الفنون والثقافة
- أكثر من 600 منطقة ترفيهية جديدة في مدن ومناطق المملكة

Since the youth in Saudi Arabia constitute the majority, the best strategy to discover their talent and prevent diseases is to provide them with positive experiences and improve their lifestyle and habits.

Why Madinah?

Medina is chosen for this initiative due to the Islamic religion's focus on human development from various aspects, including identity formation, which benefits both individuals and society.



CONCEPT

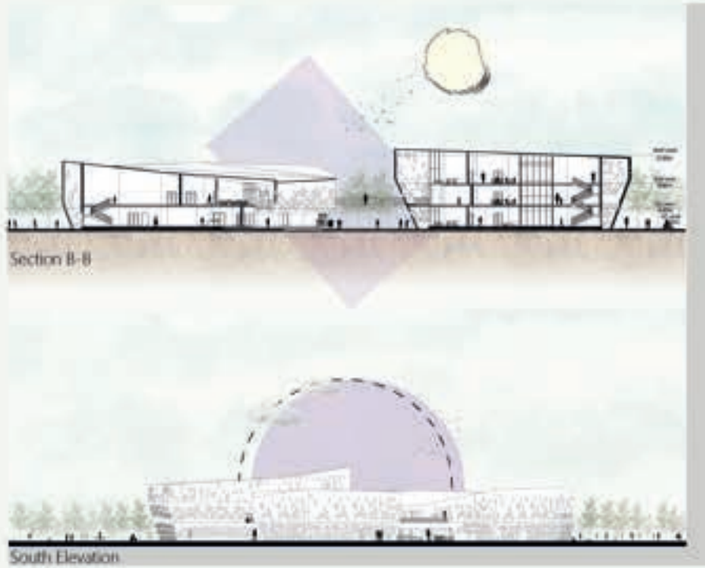
The concept revolves around four main masses. The plan is inspired by Medina's identity, with palm leaves symbolizing the main pathway, education represented as the light of learning, and a random path with different shapes signifying various functions.

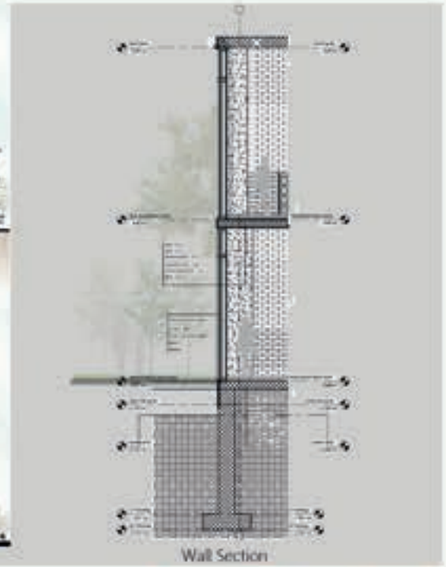
SITE PLAN

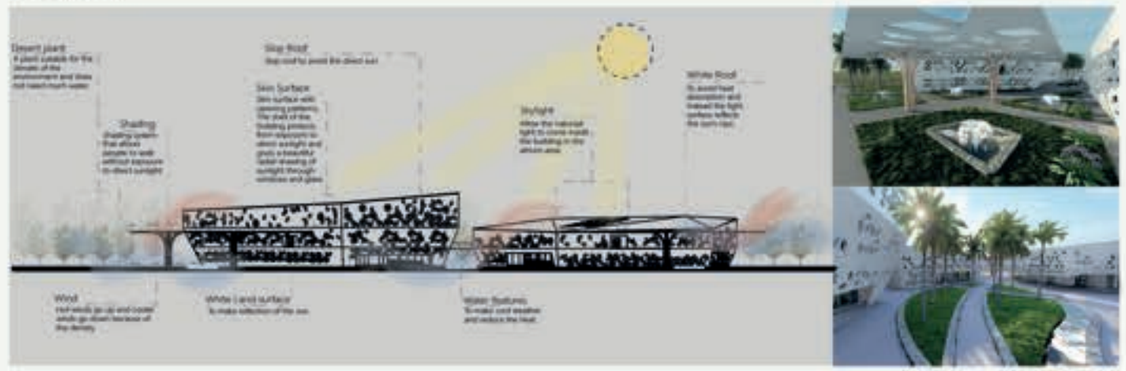
The site plan comprises four masses, each serving a different function: education, administration, gym, and restaurant. The roof features a pattern representing Medina's identity, inspired by King Abdullah Street, and palm trees are incorporated to reflect Medina's identity and proximity to Al-Hajeem Farm.

PLANS

The building consists of three floors, with two entrances on the ground floor for students and teachers, each equipped with security measures. Various amenities are provided, including cafeterias, seating areas, restrooms, security facilities, prayer rooms, retail spaces, a museum, and a VIP lounge.







SECTIONS & ELEVATIONS

Section B-B illustrates the levels, classrooms, gym, and restaurant, showcasing clear vertical and horizontal circulation. The south elevation provides an exterior view of the building across all levels.

WALL SECTION

The wall section details feature a curtain wall with dimensions of 50mm x 150mm, an air gap, and other layers.

SUSTAINABLE STRATEGY

Design strategies focus on optimizing site potential, minimizing non-renewable energy consumption, and using local materials and environmentally preferable products. Water features and white roofs are utilized to reflect sunlight.

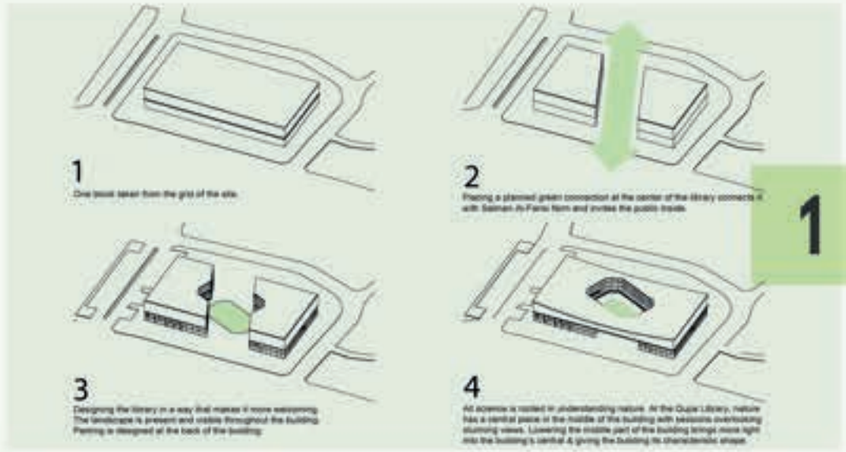
INTERIOR & EXTERIOR 3D SHOTS

3D shots depict the gathering area of the talent center and provide a night view of the building's exterior and interior spaces.

QUBA LIBRARY

HADIAH KALTHAM
3810013

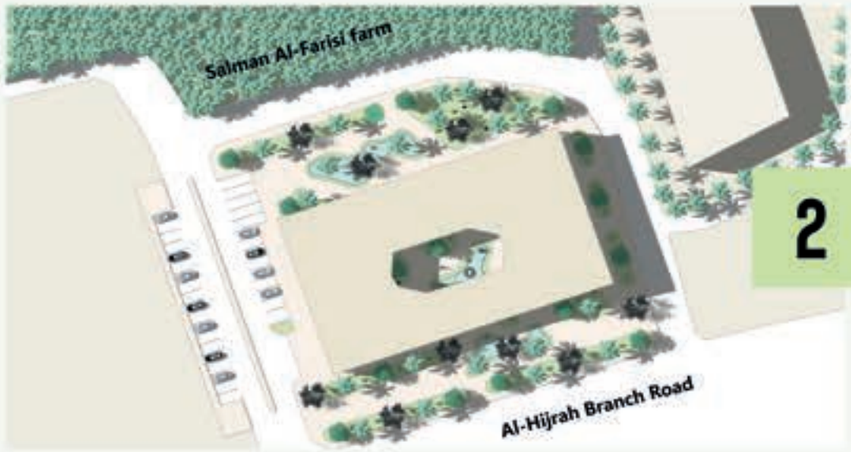
Islam is considered a vital source of inspiration for people seeking knowledge, as the word "Iqra" is the first verse revealed to the Prophet Muhammad (PBUH). Applying the Qur'an to advance society intellectually and socially, the Quba Library project was designed in one of the best areas on earth, Madinah. Specifically, the Quba area contains the first mosque built by the Prophet Muhammad (PBUH) in Islam. In addition, the Quba area is a fertile land and contains many farms, such as the Salman Al-Farsi Farm. The land was chosen near Salman Al-Farsi, a great companion whom God commanded the Prophet Muhammad (PBUH) to buy. Salman Al-Farsi was initially free but became a slave while leaving his family and homeland in pursuit of knowledge of the true religion, a journey echoed by visitors who come to the library to learn valuable facts and sciences.



1

CONCEPT

The library is designed with a modern aesthetic that reflects the identity of Medina. Placing a planned green connection at the center of the library connects it with the Salman Al-Farisi farm and invites the public inside. Lowering the middle part of the building brings more natural light into the central area.



2

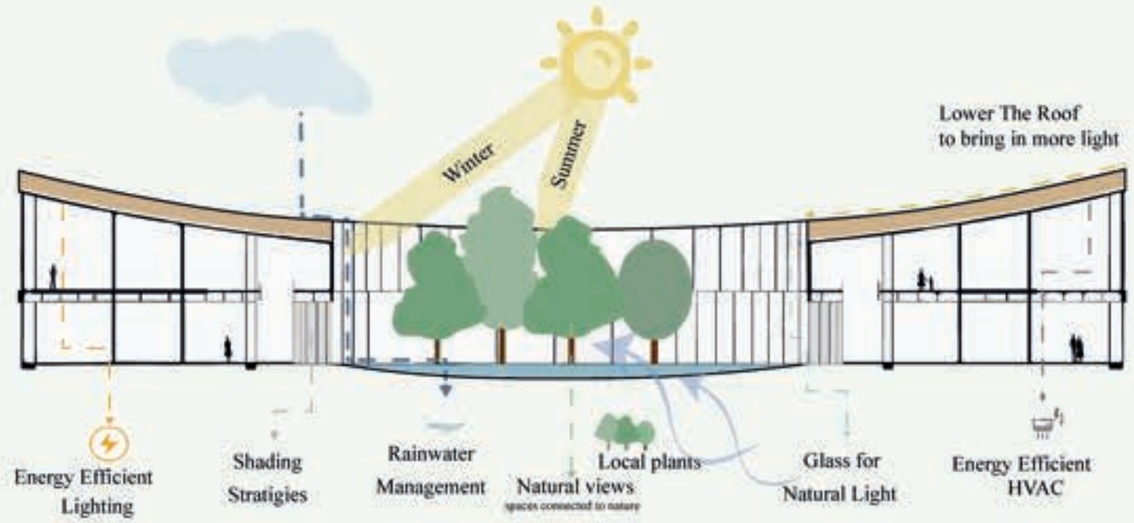
SITE PLAN

The site plan shows the streets around the site, the main entrances to the Quba Library, and the library's parking lots, in addition to Salman Al-Farsi's farm, the most important tourist attraction near the Quba Library.

3

PLAN

The Ground Floor in Quba library consists of two buildings: One is for adults, and the other caters to young people and children



SECTION 1:300

ELEVATIONS 1:300

SUSTAINABLE STRATEGY

Several sustainability strategies were used to create a sustainable building, such as the sloping roof to increase natural light, an indoor garden, sustainable leisure activities, and the provision of water to enhance the atmosphere.

ELEVATIONS

The elevation shows the materials used in the project. The ground floor features glass to connect with nature, while the first floor is stone, blending modern architecture with traditional heritage.

SECTIONS

The section illustrates the vertical movement of the building and the landscape elements of the courtyard that act as an attraction from the main road, connecting the library to the historic farm of Salman Al-Farsi.

3D SHOTS

The outdoor photos represent the landscape surrounding the library, including the indoor garden.

WASTE RECYCLING FACTORY

ESRAA GABER IBRAHIM
3810018

Madinah Al-Munawara was well-known by its greenery lands, valleys, gardens, mountains, and distinctive volcanic soil since Al-Nobwa time. Today, due to urbanization, desertification, waste landfill and the growth of population, the city has lost most of its natural land features and a major number of green lands. The project pursues to establish a sustainable approach from all perspectives, and create a balance system involving the environmental, economic and social dimensions.

برنامج التحول الوطنـــــي

- الحد من التلوث بمختلف أنواعه
- حماية البيئة من الأخطار الطبيعية

FACTS AND FIGURES

1

49.5 %

THE PER CAPITA WASTE GENERATION RATE HAS INCREASED FROM 2010 TO 2018 IN SAUDI ARABIA.

(GENERAL AUTHORITY OF STATISTICS IN SAUDI ARABIA,2021)

2

ACCORDING TO GASTAT, THE TOTAL NUMBER OF PILGRIMS FOR THE 1440 AH HAJJ SEASON IS

2,489,406

AN INCREASE BY **4.96%**

3

GREEN SAUDI INITIATIVE 2030 VISION

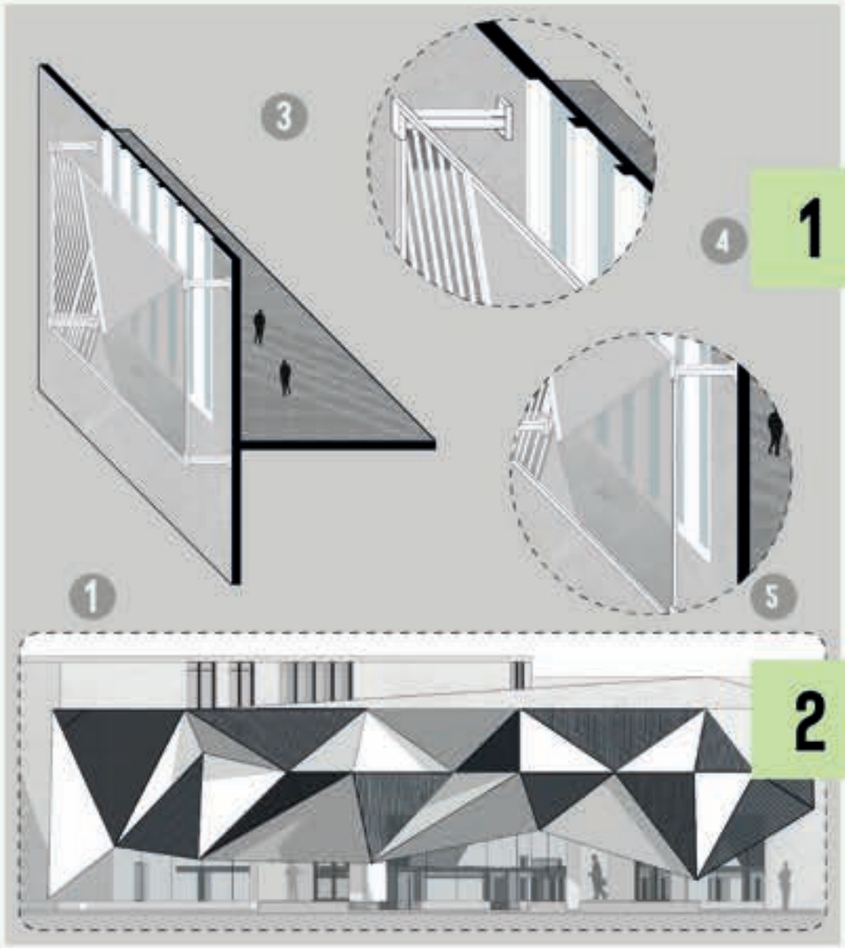
- SAFEGUARD OF THE LOCAL ENVIRONMENT.
- INCREASED EFFICIENCY OF WASTE RECYCLING AND MANAGEMENT.

4

BEE'AH — EMIRATI COMPANY THAT OFFERS WASTE MANAGEMENT FOR AL-MADINAH CITY FOR YEARS.

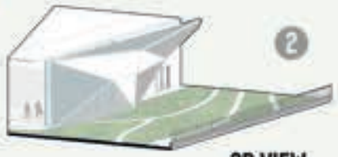
MWAN — NATIONAL CENTER FOR WASTE MANAGEMENT

82 % FINAL EXCLUSION RATE FOR LANDFILLS.



FACADE DESIGN

The Shading system: consists of louvres with an inclination and a solid panel; which help to provide shade and enhance the indoor air quality.



3D VIEW

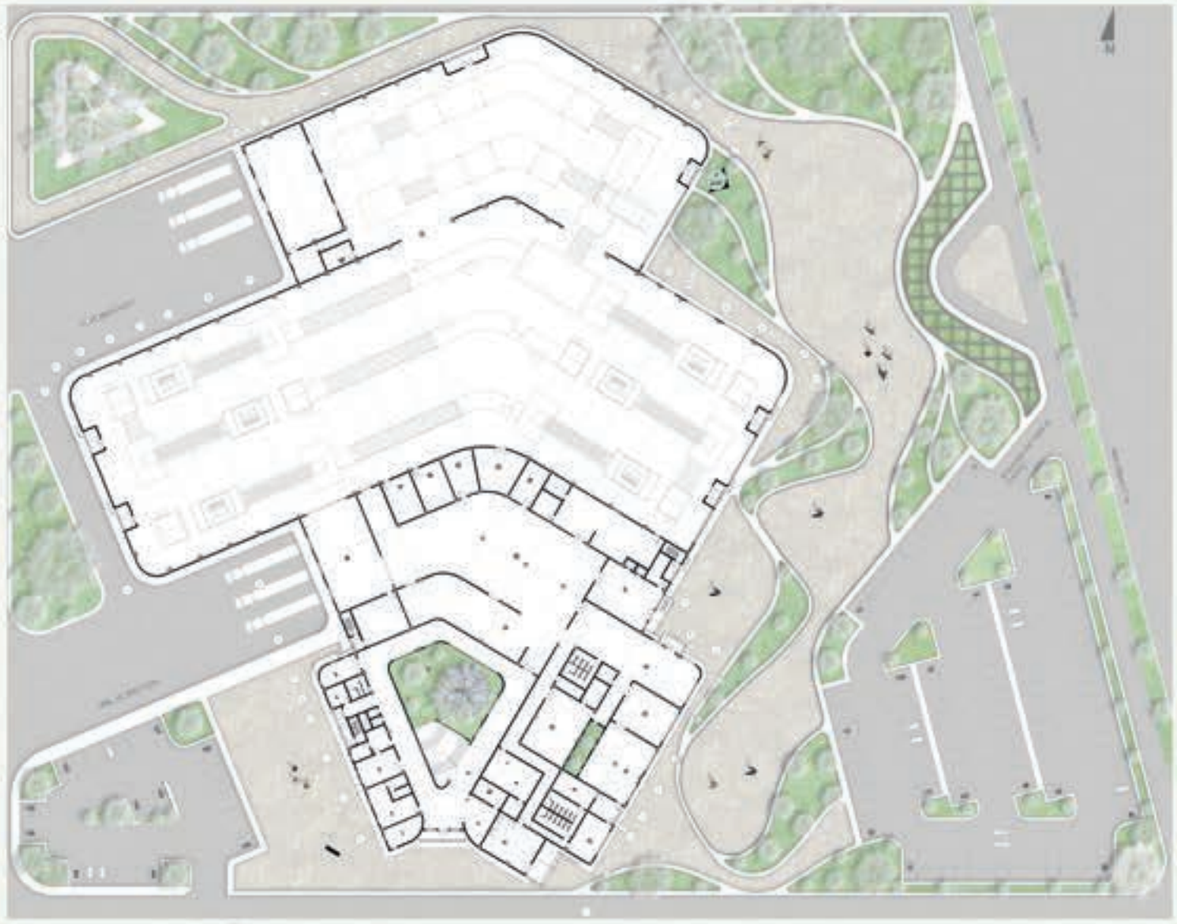
Air-purifying units are attached to the louvres to filter the polluted air from surrounding factories.

I -beam steel structural elements form a regular grid supported by bolts on a channel connection to provide rigidity to the facade.

1 ELEVATION CALLOUT
4 I-BEAM CONNECTION
3 SHADING DETAILS
5 SHADING PANEL

INTERIOR GARDENING

Planting the interior spaces helps to enhance the air quality. as well as decrease the detrimental impact of air pollution inside the industrial facility.



GROUND FLOOR PLAN

It demonstrates multi-zones based on users.
The plan has two main entrances directed to the factory. Workers' facility and management are separated from the visitors' entrance. Circulation has been studied carefully to ensure safety for all users.

1ST FLOOR PLAN-USER JOURNEY

- Experience 1 Ocean of plastic
- Experience 2: Habitat loss
- Experience 3: Toward a green environment

MIND BASE

RAHAF KHALID ALHARBI
3910229

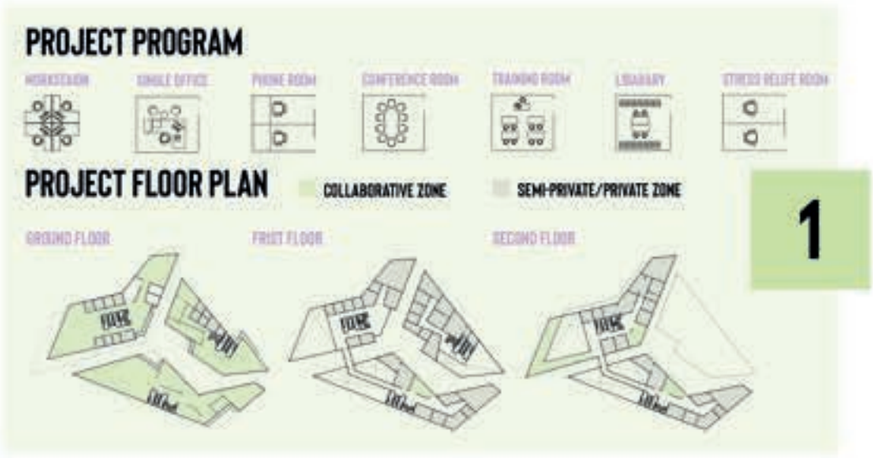
LOCATION : KING ABALLAH IBN ABD ALAZIZ , SAUDI ARABIA , MADINA

برنامج جودة الحيـاة

- تمكين تطوير الشركات المحلية الواعدة إلى شركات رائدة إقليميًا وعالميًا
- زيادة مساهمة المنشآت الصغيرة والمتوسطة في الاقتصاد

COWORKING SPACE IS AN OFFICE TYPE WHERE FREELANCERS, ENTREPRENEURS, CONSULTANTS, STARTUPS, AND STUDENTS SHARE A SPACE. USUALLY REQUIRE A FEE FOR SEATING, A DESK, OR A PRIVATE ROOM FOR GROUPS OF INDIVIDUALS. IN EXCHANGE FOR THIS FEE, WORKERS ARE ENTITLED TO AMENITIES SUCH AS FREE WI-FI, FOOD, AND BEVERAGES. IT IS RESPONSIBLE FOR PROVIDING YOU WITH A WORKSPACE THAT MEETS YOUR NEEDS AND PREFERENCES. IT IS ESTIMATED THAT THERE ARE 40,758 MICRO ENTERPRISES IN MEDINAH, 572 SMALL ENTERPRISES AND 76 MEDIUM ENTERPRISES.

Following the rise of the new independent workforce, the market for co-working spaces in Saudi Arabia lags behind the rest of the world. The availability of co-working space is limited due to the relatively high costs of renting. In addition to design and services, awareness of these spaces is lacking, even though one of the 2030 visions is to increase their gross domestic product from %20 to %30. This project aims to provide a conducive environment for individuals, start-ups, and freelancers to be more productive and to facilitate collaboration and knowledge sharing at a low cost. Additionally, it aims to offer employees a variety of work locations and work modes by designing a flexible workspace. The objectives include boosting creativity, fostering collaboration opportunities, achieving cost efficiency, and providing greater flexibility.

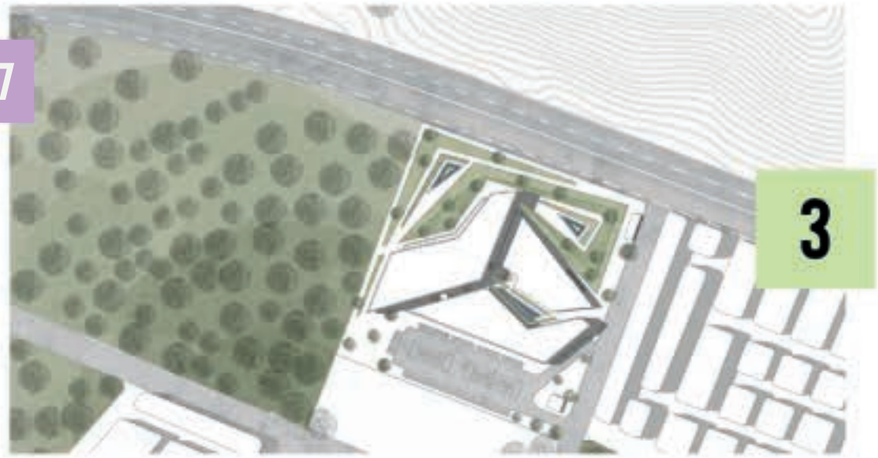


PLANS

The workspaces in this project were designed to fuel employee teamwork, imagination, and creativity. The distributed model strategy is mostly used within the design of the space to create an environment of learning and high collaborative work.

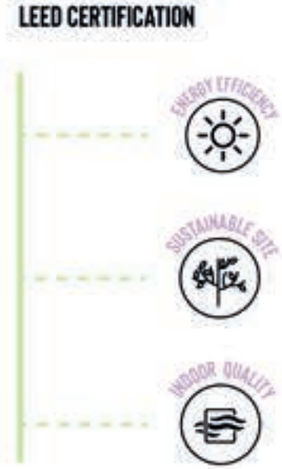
OFFICE PODS

Office pods have become very popular among open -plan offices in the last couple of years as employers seek to provide workers with an environment where collaboration and the exchange of ideas can happen, but also one where individuals can find a bit of reprieve and work solo, without disruptions.



SITE PLAN

The three buildings are organized around an atrium that creates an energetic social core for the building. The green zone has a full view of the mountain, with a seating area that allows workers to spend a large part of their workday outdoors, where natural light and fresh air may help reduce stress levels in employees.



SUSTAINABILITY

The project enhances LEED design strategies by expanding the natural habitat, ensuring good indoor environmental quality, incorporating glazing along the perimeter to maximize natural light and reduce electricity use, installing solar panels, using vertical shades to control sunlight, and implementing LED lights with daylighting controls that automatically adjust the lights when sunlight is available.

3D SHOTS

ARCHITECTURAL DESIGN III - AE 411
DR. AUTHAM KASHEF

AL HAJIM HOTEL

YOUSEF ALAMOUDI
4010321

برنامج خدمـــة
ضيوف الرحمن

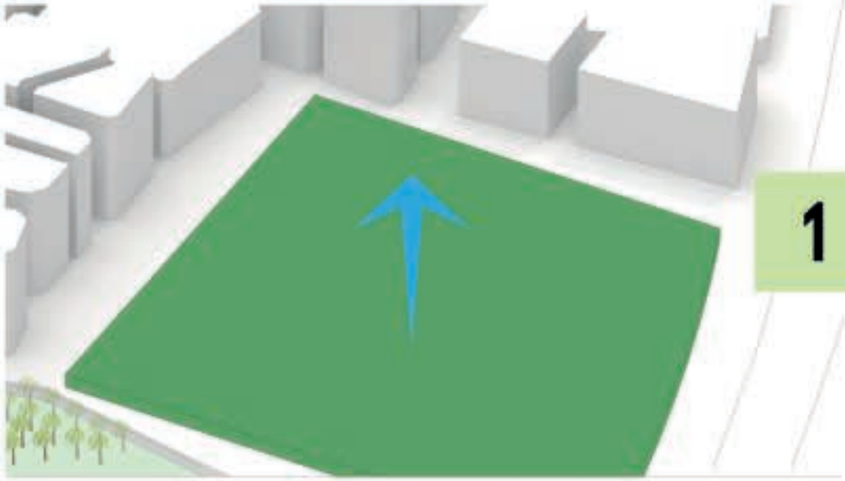
- 15 موقع إسلامي تاريخي وثقافي مؤهل ومطور بحلول عام 2025
- 85% نسبة رضا الحجاج والمعتمرين عن الخدمات المقدمة عام 2025

DESCRIPTION

The goal of the project is to address the significant demand for hotels in Medina by designing a high-rise building with mixed-use functionality, incorporating a hotel, residential and commercial spaces, while also creating a cultural and social environment.

CONCEPT

The concept involves creating a high-rise structure that is environmentally friendly. Its shape responds to local environmental conditions, primarily wind and sun. The building is designed to be connected with other buildings and the surrounding environment.



EXTRUDE

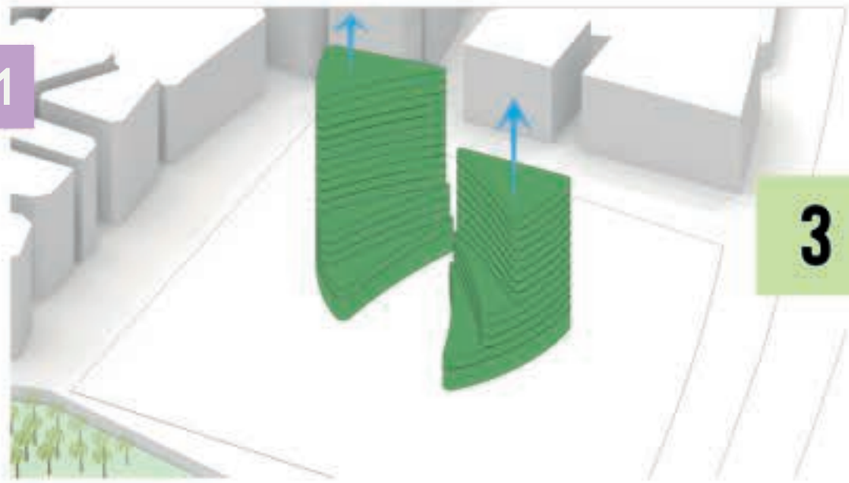
1

This involved extruding boundaries, which was done on-site.

SEPARATION

2

The separation allows for a good connection between the hotel, Al-Hajim water well, and neighborhoods.



HEIGHT GRADIENT

3

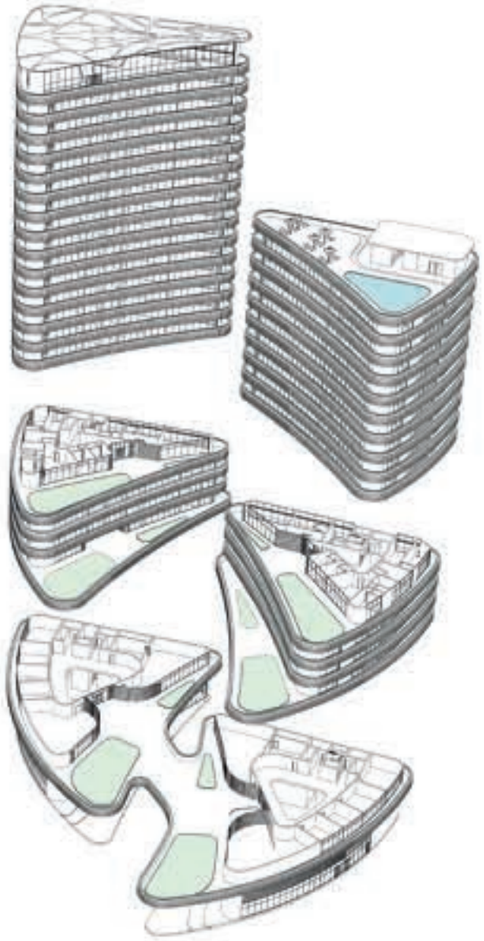
The height gradient allows for a smooth relationship between the hotel and the city.

PERSPECTIVE SECTION

The picture above depicts a detailed section of the high-rise building, indicating that the ground floor is designated for retail, while the upper floors consist of offices and a hotel.

GROUND FLOOR PLAN

The ground floor plan illustrates the commercial and retail portion of the space, which includes restaurants and coffee shops for the hotel residents.



EXPLODED DIAGRAM

The exploded diagram above provides more details about the building's form and its impact on its spaces, such as the commercial section, which occupies the largest areas to enhance the experience.

AL NAKHEEL HOTEL

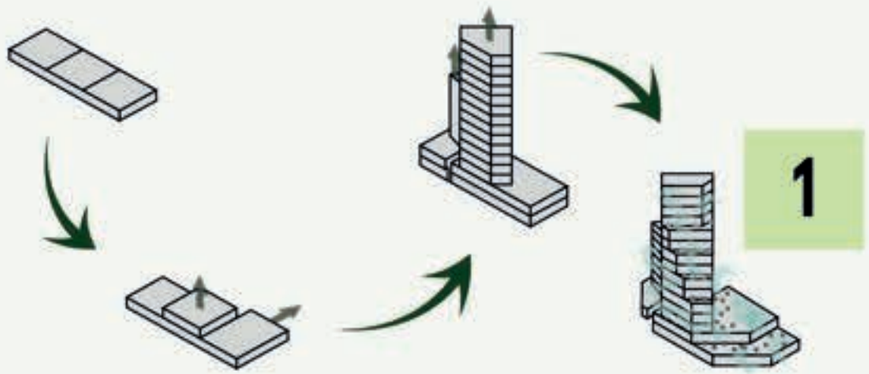
ABDULRAHMAN LAHMOUNI
4010043

برنامج خدمــة
ضيوف الرحمن

- 85% نسبة رضا الحجاج والمعتمرين عن الخدمات المقدمة عام 2025
- رفع الطاقة الاستيعابية للمعتمرين الى 15 مليون عام 2025

The project is a high-rise mixed-use building comprising a hotel, offices, and a mall. It aims to meet the needs of the local residents while establishing itself as a unique architectural landmark in the area. Additionally, it seeks to integrate seamlessly with the surrounding environment and become a prominent feature of the local landscape.

- Residential rooms
- Socializing areas
- Workspace (offices)
- Commercial shops



1

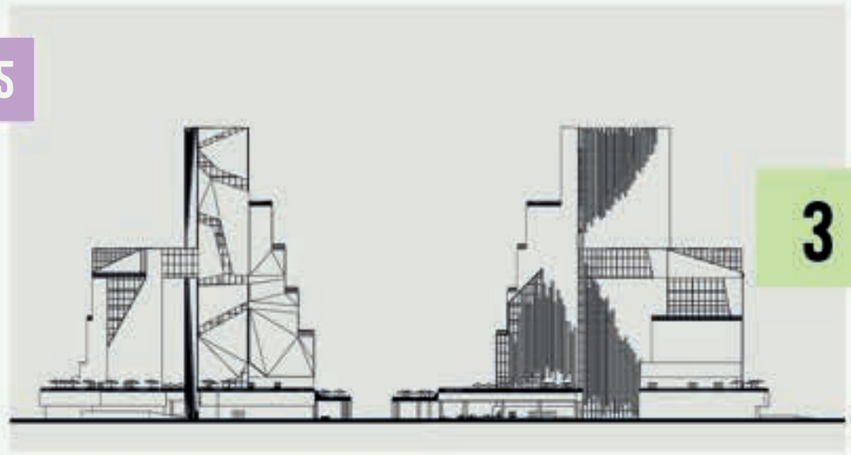
FORM GENERATION

The building's shape was inspired by the impact of wind on tall structures. It was designed to minimize wind load by breaking up the building as much as possible.

2

SITE PLAN

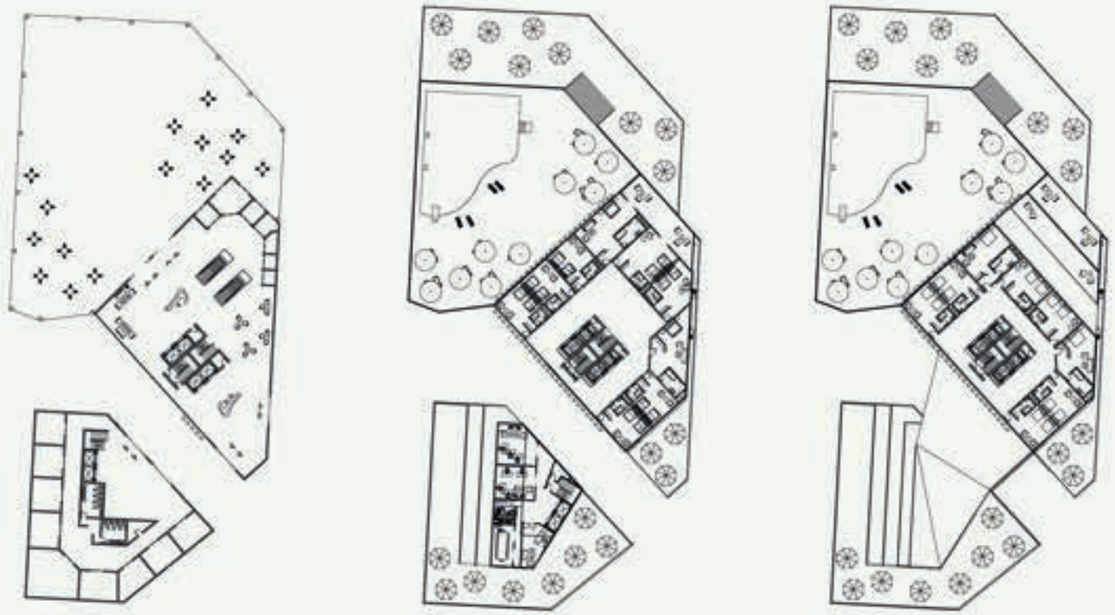
One of the project's goals is to harmonize with the natural surroundings. To achieve this, green spaces have been increased, and regional requirements have been taken into account.



3

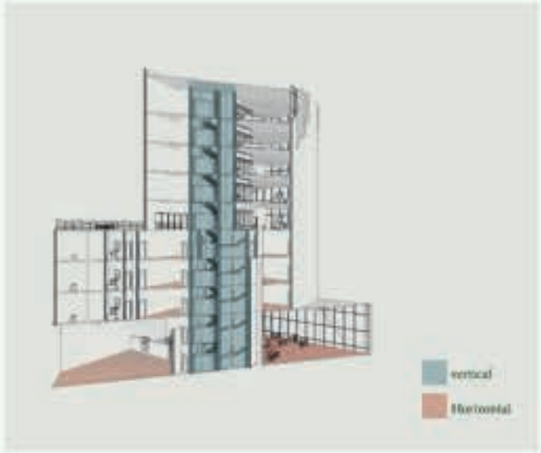
FACADES

Horizontal sun breakers with varying designs were employed to prevent the arrival of harsh sunlight on certain facades, enhancing the building's sustainability. These breakers allow sunlight to enter without introducing excessive heat into the building.



PLANS

The building is divided into three parts: residential, commercial, and offices. One part houses a private hotel, while another section comprises the lower levels of a commercial mall, with offices situated above. At the top of the building, there is a sky garden.

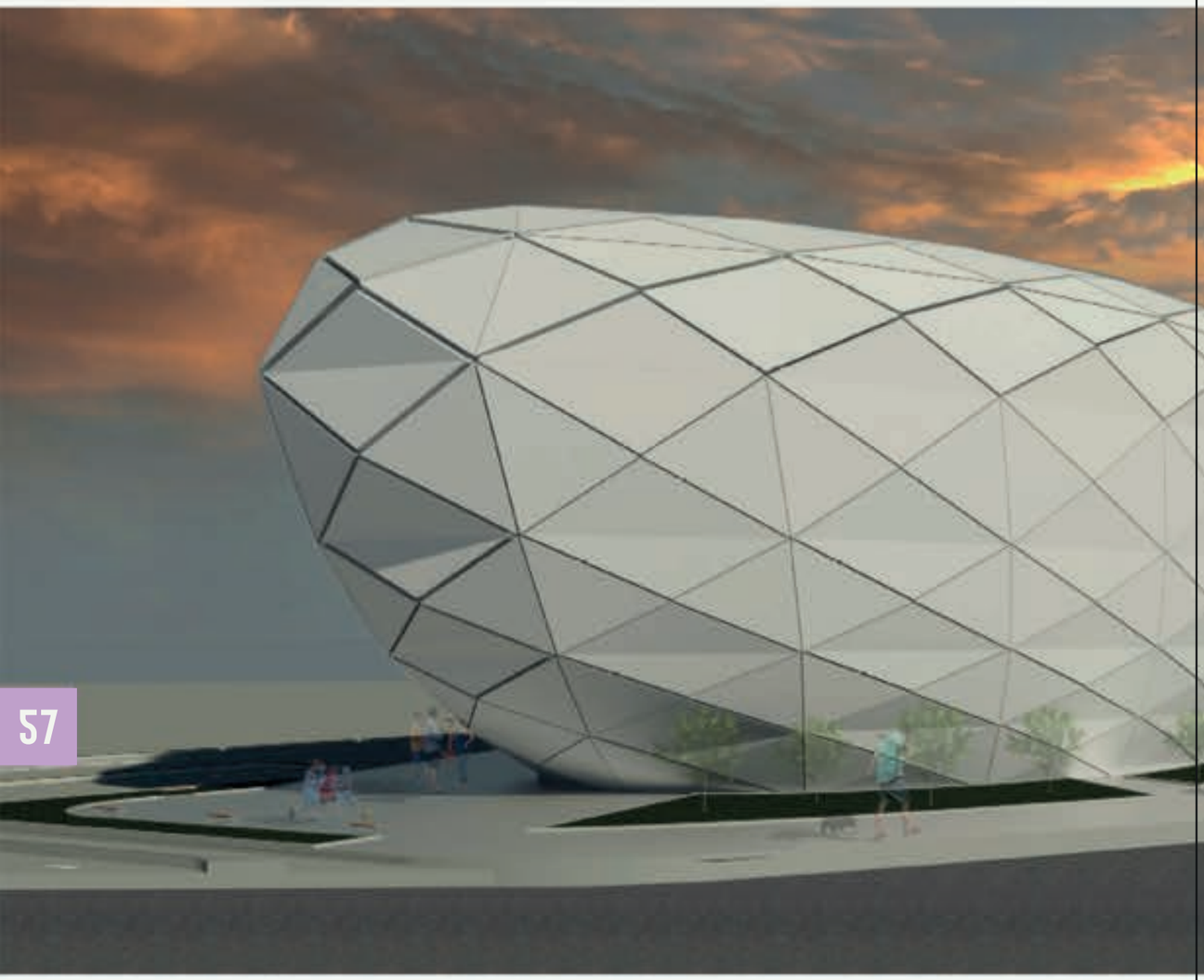


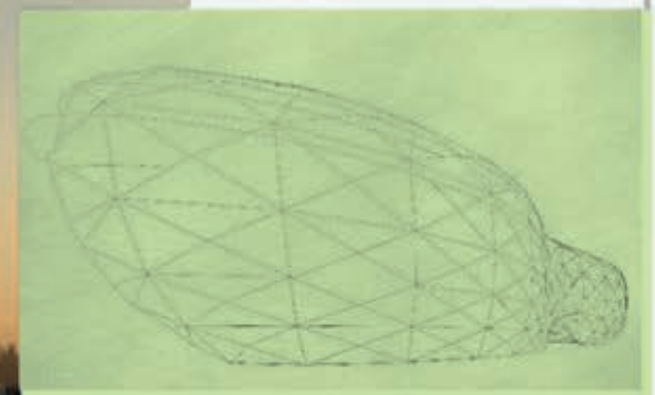
SECTIONS

This horizontal section illustrates various details, including the lower positions and the openings between the buildings. These structures are separate at the base but connected from the 14th floor onwards at the Sky Garden. The horizontal section also explains the movement both horizontally and vertically within the building.

WORLD BAZAAR

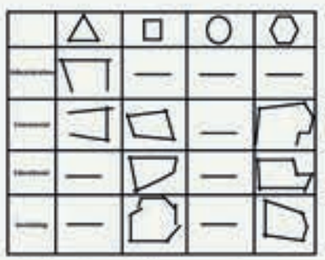
ABDULRAHMAN LAHMOUNI
4010043





The project is a long-span commercial bazaar with an additional function aimed at transforming it into a cultural meeting point for civilizations from around the world, contributing to the city's identity.

Its goal is to rekindle the cultural exchanges and interactions of Medina both pre- and post-Islam.

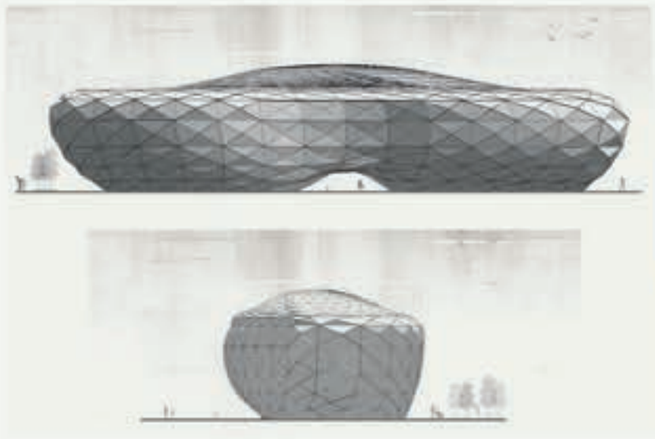


Utilizing the Loft command in a program, and seamlessly merged the sections, resulting in the shape that emerged.

Following modifications to the plan sections, we arrived at the final building shape.

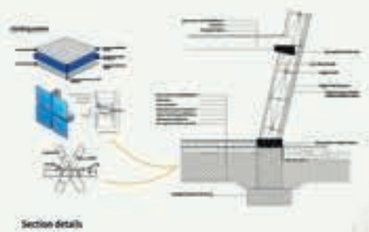
1 CONCEPT

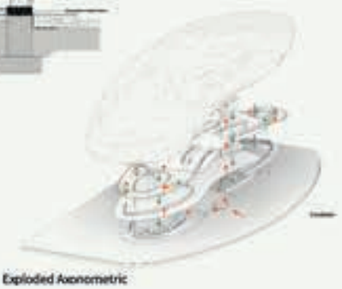
The space articulation was utilized to determine the appropriate function shape with several vertical sections.



2 FACADES

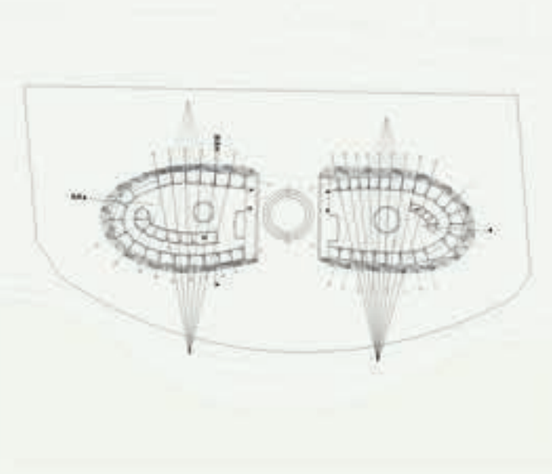
Building facades were employed to minimize heat entry while incorporating openings to enhance visibility of neighboring landmarks.

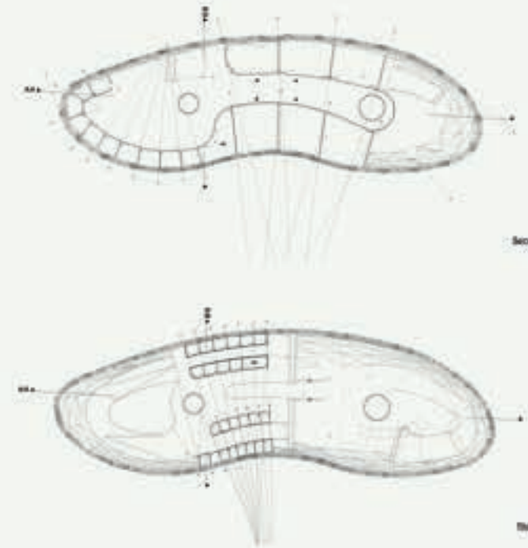


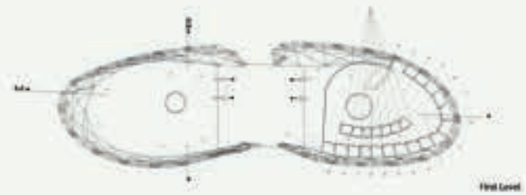


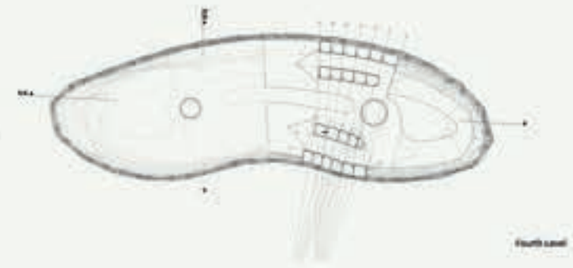
SECTIONS

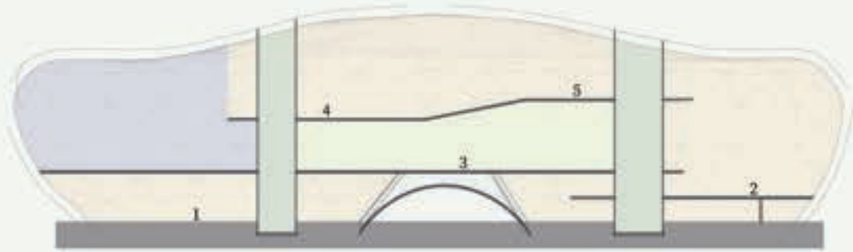
This horizontal section presents some details such as the space outside the ground, as well as the shape of the slopes and columns and the shape of the coverage









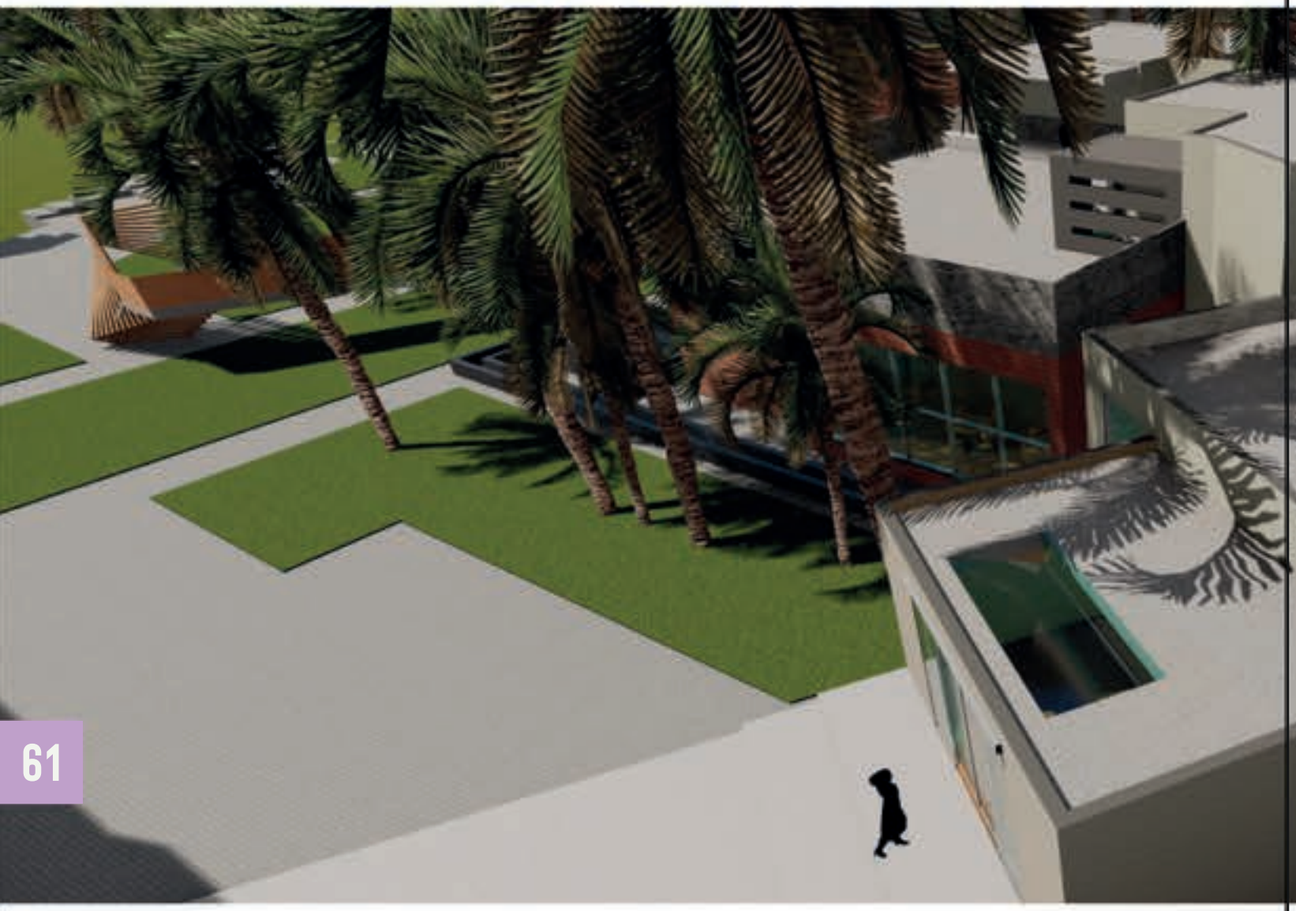


PLANS

The building is structured across five levels, allowing visitors to navigate each level without the need for an elevator. Slopes are predominantly utilized to facilitate movement, ensuring visitors experience the entirety of the bazaar, workshops, and restaurant area. The project aims to offer a modern-style enclosed social area.

CONTEMPORARY ART EXHIBITION

ABDULLAH ALSALHI
4111785



برنامج جودة الحيـاة

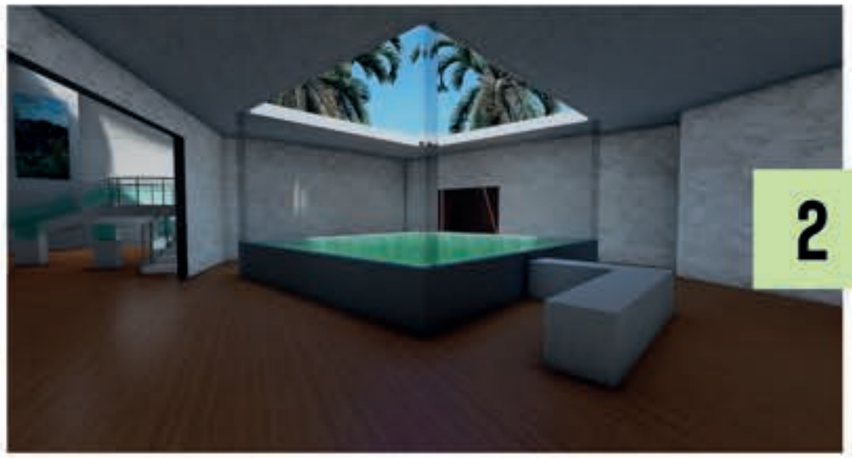
- تنمية المساهمة السعودية في الفنون والثقافة

- أكثر من 600 منطقة ترفيهية جديدة في مدن ومناطق المملكة

The project aims to establish an art gallery that harmonizes the past with the present while fostering social interaction. Achieving this involves implementing parasitic architecture on an existing building along Quba Avenue. Emphasis is placed on the senses, particularly vision, taste, and hearing. Additionally, the project presents a significant opportunity for Saudi Arabian and Al Madinah artists, addressing the region's shortage of art galleries. Situated in the Quba area, frequented by tourists worldwide, the project is well-suited for this location.

PARASITIC ARCHITECTURE

Parasitic architecture involves constructing a new building atop an existing one without demolishing the original structure. This method establishes a connection between the past and present while stimulating users' senses.

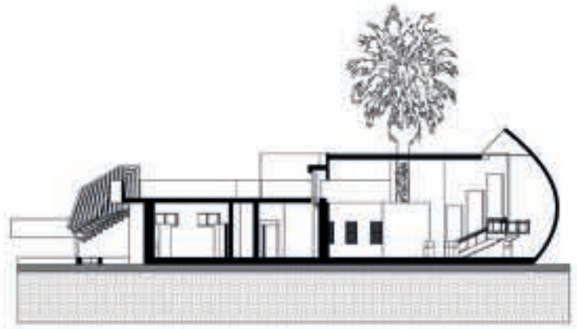


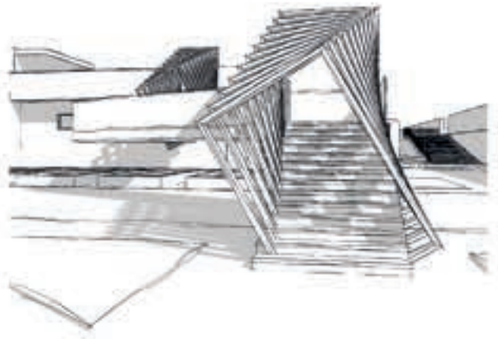
PRESERVING THE HISTORY

Utilizing parasitic architecture aids in preserving the i dentity and history of the existing building.
For instance, the project repurposed an old well on -site into a lobby instead of removing it. Furthermore, the project was conscientiously built around palm trees, ensuring no harm came to them.

PRESENT AND PAST

The project seamlessly blends contemporary art with the existing building's historical significance, fostering a connection to the past while embracing the present. An example of this integration is the pathway from the existing roof to the amphitheater, symbolizing the fusion of past and present elements.





PLAN OF THE PROJECT

The project plan was devised utilizing the structural grid of the existing building. Visitors embark on a journey starting from the entrance, progressing through the lobby featuring the existing well, stimulating the sense of vision.
Next, the galleries enhance vision while incorporating taste elements. The existing building seamlessly integrates with the galleries, fostering a deeper connection with users and enhancing their sensory experience. Visitors can then ascend to the upper floor or visit the café to enjoy views, culminating in the amphitheater, where the sense of hearing is stimulated.

SECTION OF THE PROJECT

This section illustrates the galleries and the existing building, emphasizing their connection. Additionally, a modern semi-sphere shape brings natural light to the project, enhancing vision.

PARAMETRIC SHAPES

The utilization of parametric shapes for the pathway embodies contemporary art principles, contributing to the overall goal of transforming the entire gallery, including the existing building, into a piece of contemporary art, not just the interior.

PARASITE RESTAURANT

OMERELFAROUG ELFADIL
4111399

برنامج جودة الحيـاة

- تنمية المساهمة السعودية في الفنون والثقافة
- 3 مدن سعودية تصنف ضمن أفضل 100 مدينة للعيش في العالم

The main goal of this project is to create an environment in restaurants to enhance the social experience of people and create a sociable space. To improve the social life in restaurants, utilize both hibachi-style indoor Japanese furniture and this course's architectural approach, known as parasitic architecture, is employed to achieve this purpose. The main focus of parasitic architecture is the addition of a new structure to an already existing one without losing its distinctive qualities. As a result of the project's location in the Quba area, which is visited by tourists from all over the world, the area is a good fit for it. As senses play a significant part in this kind of project, they are additionally highlighted in the project. The key senses selected were hearing, vision, and touch.

PARASITE ARCHITECTURE

The main goal of parasitic architecture is to add a new structure to an old one without sacrificing any of it's unique characteristics. This technique has been employed in the project to link the past and the present and to activate the users' senses.

PRESERVING THE HISTORY

By emphasizing the main aspects of the existing building, parasitic architecture helps to preserve its history and identity. For instance, the site's well and vegetation are protected and utilized as pavilions and seating areas.

SOCIALIZING

The main goal of this project is to create an environment in restaurants to enhance t he social experience of people and create a sociable space. This goal can be achieved by both hibachi-style indoor Japanese furniture and parasitic architecture.

SITE PLAN

The well's grid was taken into account when designing the project's plan. There are three components to it: the existing building, a water feature, and dining areas. Bridges connect all three sections, which will aid in the project's social aspect. As a result, each component of the design is accessible to the others, fostering a sense of community. Diners seated near one another can interact while food is cooked in a large, open bowl in front of them as part of the hibachi cooking style, used in the interior dining area. The outdoor sections offer a view of Quba's avenue and a connection to nature.

CIRCULATION

With the help of bridges and a route around the water feature, the project's circulation system aims to connect each section of the restaurant and make it open and accessible to others.

SECTION OF THE PROJECT

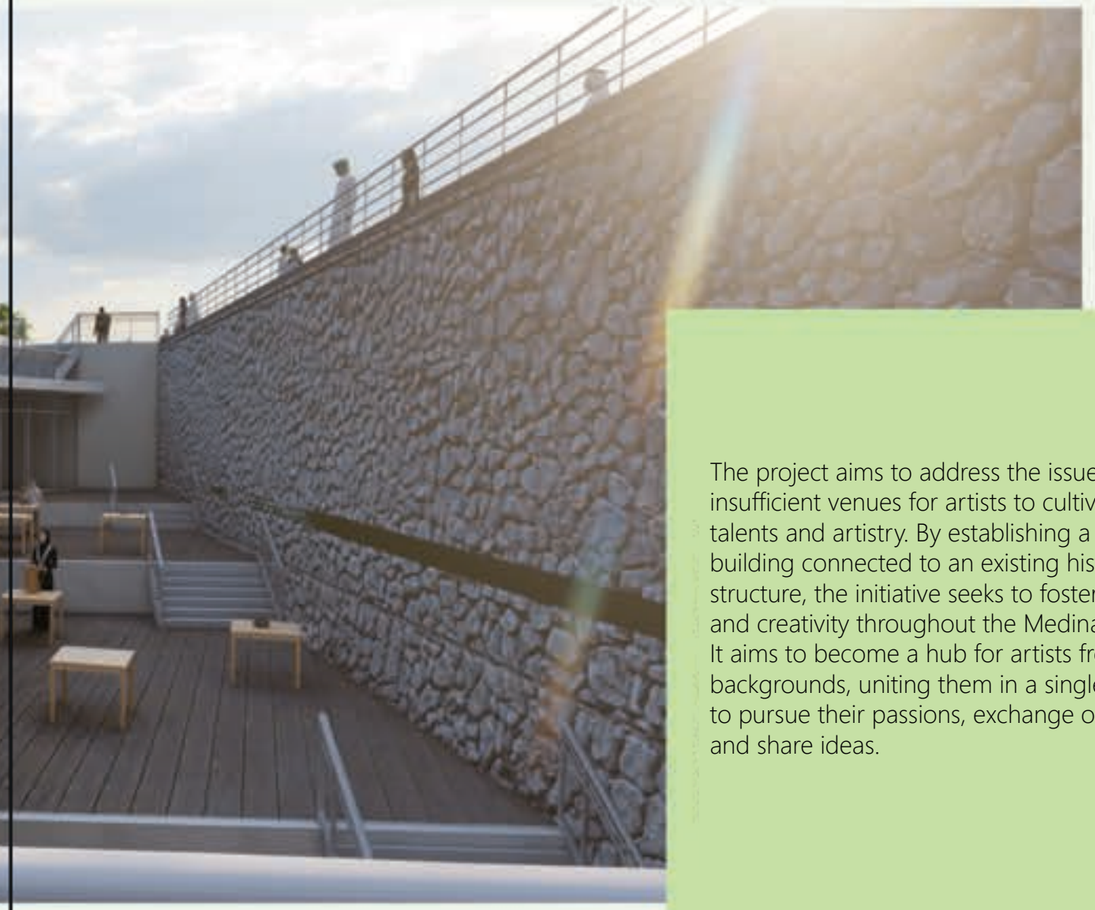
The section of the project emphasizes the different levels of each restaurant component. Additionally, it illustrates the integration of outdoor and indoor spaces.

THE GOLDEN HANDS

ABDULALEEM ABOUD
4020025

برنامج جودة الحيـاة

- تنمية المساهمة السعودية في الفنون والثقافة
- أكثر من 600 منطقة ترفيهية جديدة في مدن ومناطق المملكة

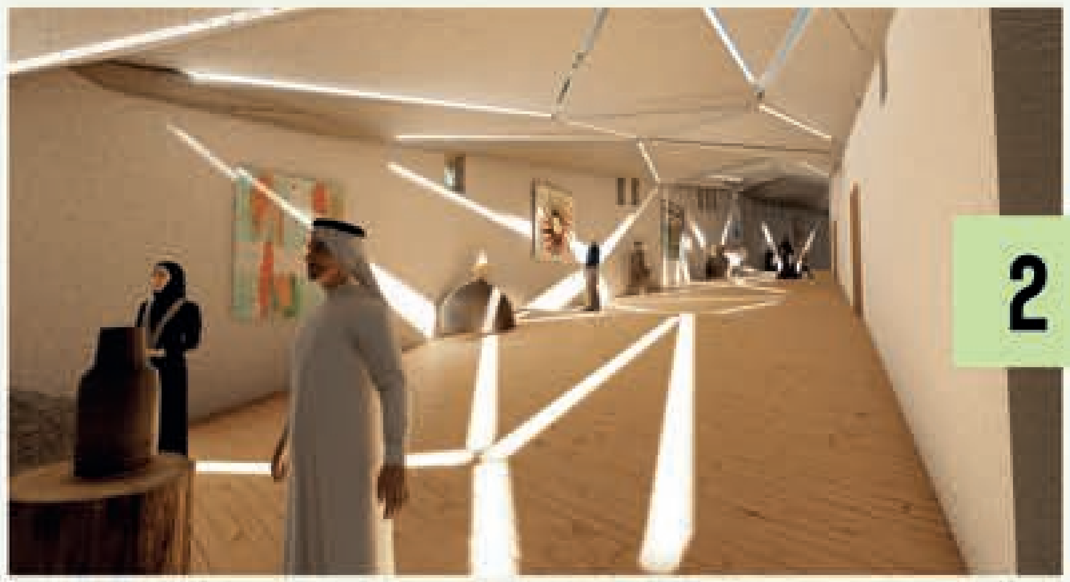


The project aims to address the issue of insufficient venues for artists to cultivate their talents and artistry. By establishing a parasitic building connected to an existing historical structure, the initiative seeks to foster talent and creativity throughout the Medina region. It aims to become a hub for artists from diverse backgrounds, uniting them in a single location to pursue their passions, exchange opinions, and share ideas.

1

PARASITIC ARCHITECTURE

Parasitic architecture is employed in this project to seamlessly integrate the past with the present. Masses are attached to an old historical building in the Quba area, preserving the place's identity and history.



2

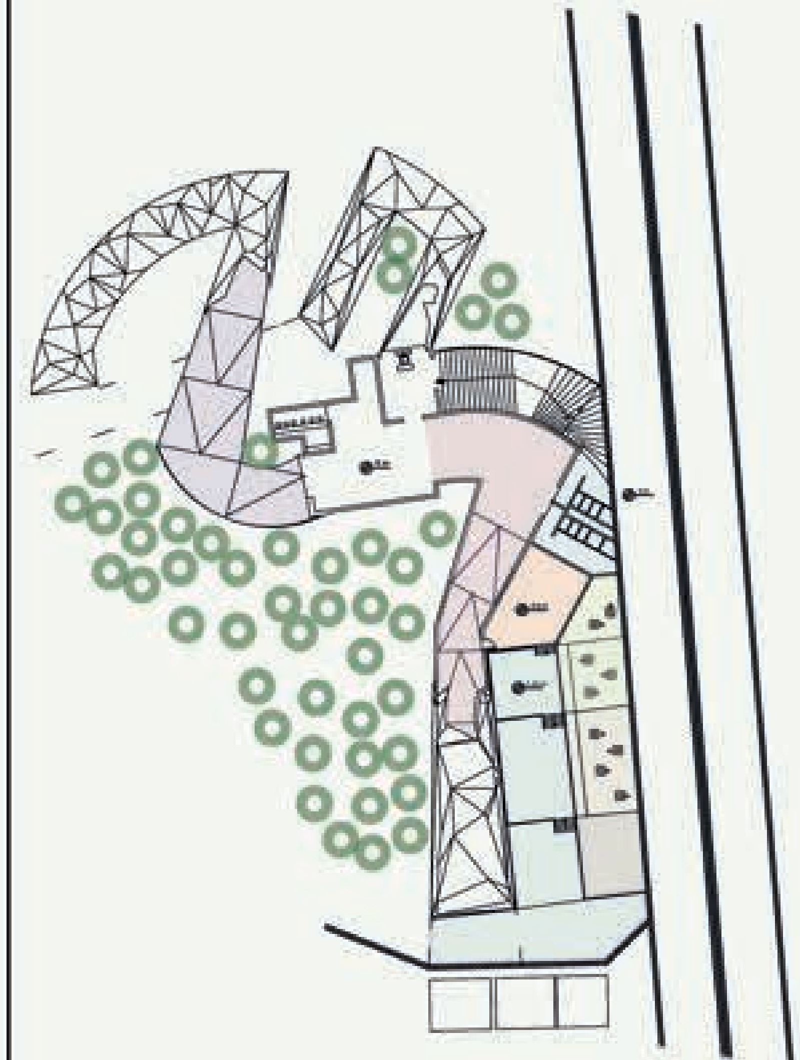
SOCIALIZING

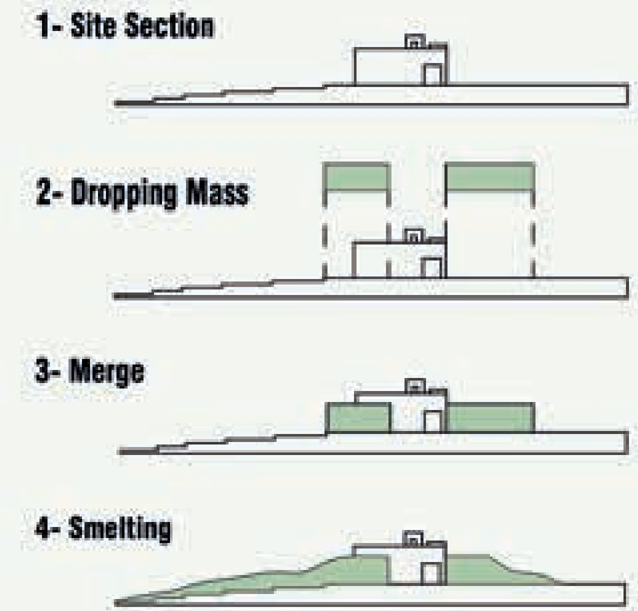
The project aims to foster communication, creating a social environment for the community to exchange diverse opinions and ideas across different races and genders.

3

ACTIVITIES

The project offers a variety of indoor and outdoor activities, providing users with options and utilizing available spaces effectively.





THE PROJECT PLAN

The plan adheres to the site's tree grid, featuring two masses adjacent to the old historic building, gradually descending underground. The first mass comprises workshops for users to pursue artistic hobbies, while the second mass houses an art exhibition showcasing works created in the workshops. Outdoor seating areas are also provided for nature viewing.

FORM DEVELOPMENT

The project's form evolved by integrating two blocks and molding them to align with the site's contour.

PROJECT SECTION

The section illustrates the gradual descent of workshops in harmony with the original site contour.

AL-MASAAR

DANIAH TAHA
STUDENT ID: 4210239

برنامج خدمــة
ضيوف الرحمن

- 15 موقع إسلامي: تاريخي: وثقافي:
مؤهل ومطور بحلول عام 2025

Hajeem Well & Masjid Al Noor

Location

Form Development

A pathway through artistic structures to stimulate visual senses and enjoy the nature and culture of Madinah. Fountains around the area to symbolize the Hajeem Well and create a soothing sound for visitors. An art and culture
gallery that exhibits the history and artifacts of Madinah.

1

SITE PLAN

Showing the surroundings of the site is highly significant to the project as it is made to fit the environment around it. Placement of palm trees and the path to the landmarks are shown clearly to give an idea of the circulation of the project.

2

PLAN

The plan shows the three stages of the pathway. In the first stage, visitors will be greeted by the sound o f fountains and the view of palm trees surrounded by curved stone walls. In the second stage, visitors will have access to services and an entrance to the Islamic art gallery. Finally, the third stage involves visiting historical landmarks such as Masjid Al-Noor and the Hajeem Well.

3

GALLERY PLAN

Visitors will find hung art in the main gallery, primarily consisting of Islamic art. The greenhouses will contain plants known to flourish in Madinah. The sculpture gallery will exhibit different Islamic sculptures.

STONE

Stone is a natural material with profound cultural significance in the city of Medina. Its incorporation into the city's architecture offers visitors and locals a unique cultural experience. Stone has become integral to Medina's cultural heritage, with its intricate details and designs reflecting the city's rich history and culture. Symbolizing strength, endurance, and a connection to the natural world, the use of stone in Medina's buildings enriches the cultural experience of this historic city.

ARCHES

Arches hold great significance in Islamic architecture, representing the culture of Madinah. Iconic buildings in Madinah, such as the Prophet's Mosque, grand public buildings, and traditional houses, feature intricate arch designs that showcase the city's close connection to Islamic art and architecture.
By observing the city's architecture and historical buildings adorned with arches, one can experience the cultural significance of Madinah.

ACTIVE

KHALED HELAL
4116039

برنامج جودة الحيـاة

- 3 مدن سعودية تصنف ضمن أفضل 100 مدينة للعيش في العالم

برنامج التحول الوطنـــــي

- +86,000 هكتار مساحة الغطاء النباتي الطبيعي المعاد تأهيله

Quba region lacks places where you can find a connection between indoor and outdoor space. So, this project aims to create this connection by designing a parasitic restaurant building on an existing site. A place where you can experience walking through palm trees while gradually rising above ground level. Upon reaching the maximum level, you will have a great view of the Quba mosque.

This was achieved by integrating the parasitic building not only with the existing structure but also with the outer environment. For example, every dining area in the space offers a view of either the palm trees, Qubba avenue, or Quba mosque. This creates a sense of connection between the customer and the surroundings. Additionally, this project focuses on the senses and how they play a main role in the overall experience. The main senses used were the sense of connection, vision, and smell.

PARASITIC

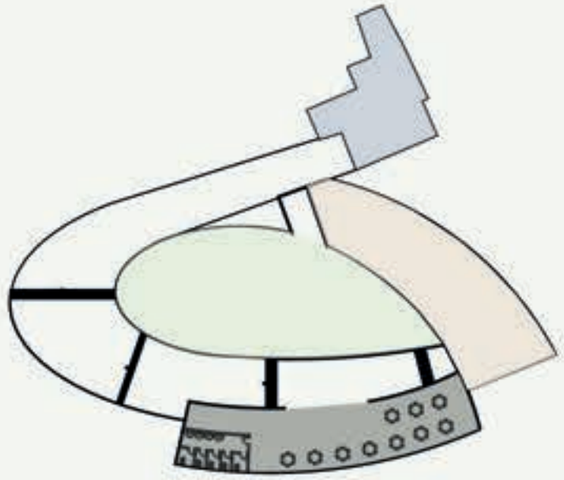
Parasitic architecture is a method of integrating a new building with an existing structure. This was used in the project to create a connection between the past and future, providing a unique experience in the region.

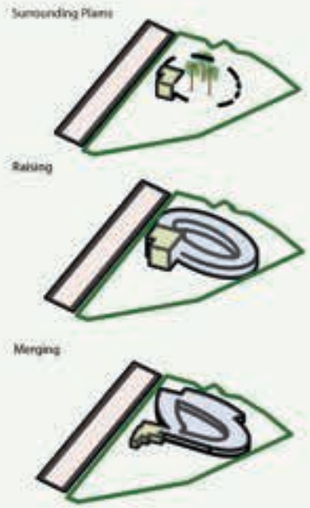
PRESERVING NATURE

One of the main strategies to achieve the project's goal was to preserve the nature on the site. This involves keeping the palm trees and using them in the interior space to enhance the experience. Additionally, this helps in maintaining the main identity of the historical area since the trees are part of it.

SOCIALIZING

One of the main goals of the project was to create an indoor community where people connect with each other and with the environment to create a memorable experience.





PLAN

The plan was deduced from the grid of the site and the palm trees. It consists of two main structures: the first structure is the existing building where the main entrance is located. The second part is an elliptical-shaped structure where people can walk through and interact with each other and with the environment. Simultaneously, the structure rises gradually to the outdoor area, providing a direct view of the Quba mosque.

FORM DEVELOPMENT

The form development illustrates how the structure was achieved, by connecting it to the existing building and surrounding the palms.

SECTIONS

The sections demonstrate how the height varies and rises as you walk indoors, reaching the outdoor space.

GREEN ALGORITHM

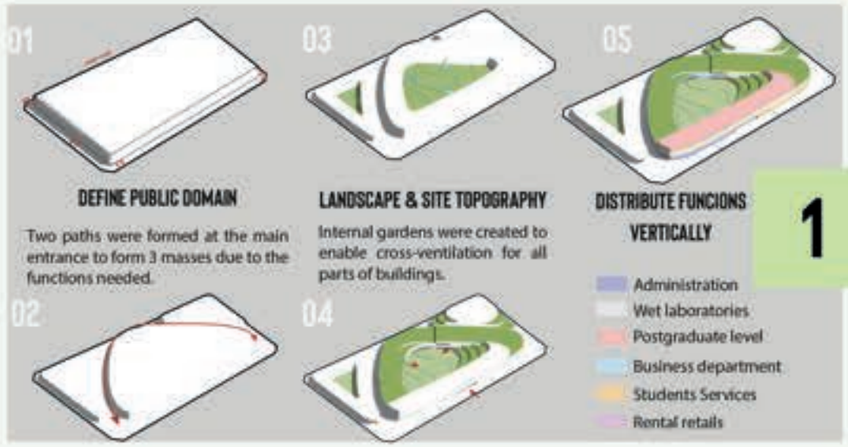
ALAA SAMEER - ESRAA GABER
3810122-3810018

برنامج التحول الوطنـــــي

- الحد من التلوث بمختلف أنواعه
- حماية البيئة من الأخطار الطبيعية

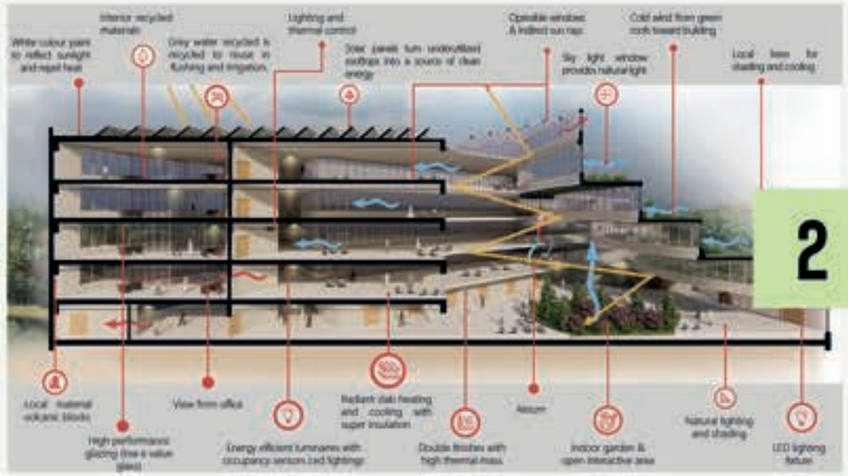
CHART YOUR JOURNEY TOWARD NET-ZERO CAMPUS

An algorithm can be defined as a set of rules or strategies used to solve a problem or perform a computation (Gillis, 2022). The green algorithm is a conceptual design that illustrates all the sustainable strategies applied to achieve net zero campuses. The land is divided into three zones (student housing, health club, and the main building) with an interior plaza defining the public domain and a natural habitat covered with a shading canopy. The project aims to create a vibrant space design with a sustainable approach, encompassing social, economic, and environmental perspectives.



MASS DEVELOPMENT

The form has been created in response to the site's accessibility and sustainability aspects.

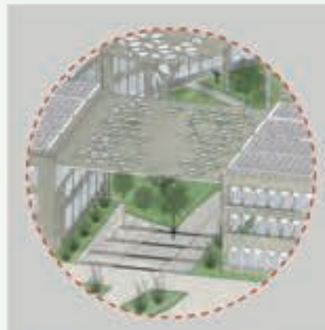


SUSTAINABLE STRATEGIES

Section B-B illustrates the green strategies implemented in the building to help achieve net-zero carbon.

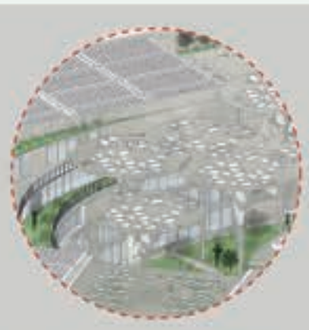
SHADING CANOPY

The shading canopy consists of columns with circular top parts that provide shade and enhance cross -ventilation. It can also hold small water sprinkler units, which cool the air and provide a nice cold breeze.



SITE MATERIAL

A light color pavement material used to absorb the heat. Bicycle path made from recycled plastic.



GREEN TERRACES

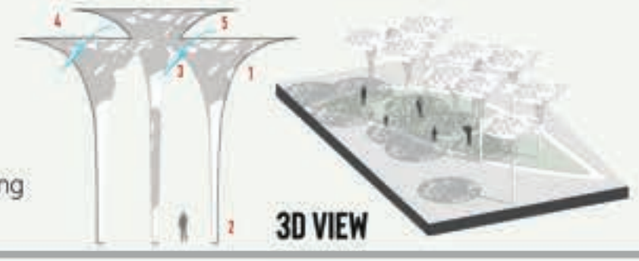
It enhances the outdoor air quality ; cool the breeze entered the building.

MASTERPLAN

This campus is designed after careful analysis of sustainability criteria, starting with site investigation and the implementation of green requirements in social, economic, and environmental aspects. The master plan comprises only three buildings, with the campus divided vertically. Each storey consists of a college with its space program.

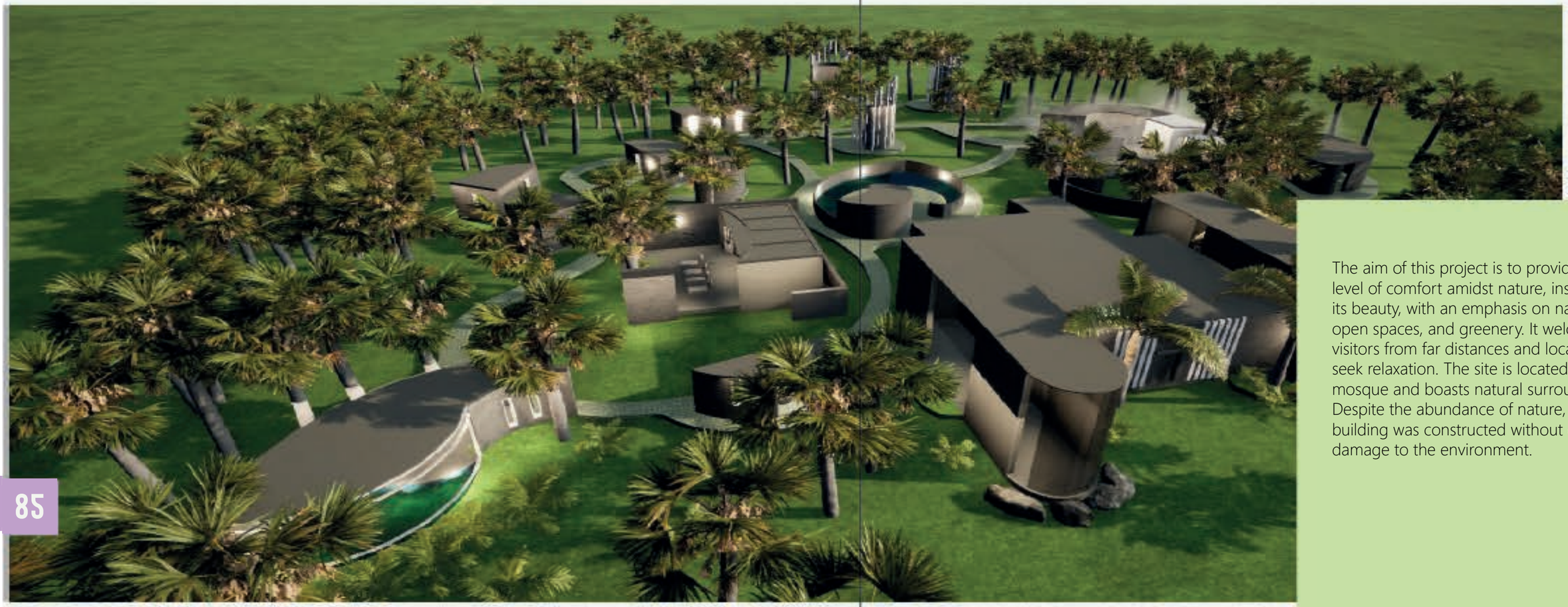
SHADING CANOPY DETAILS

1. Polycarbonate plastic Screen - natural light access
2. Cross ventilation - height differentiation
3. Modular water spray units
4. Air filtration units
5. LED linear lighting fixture



NATURE'S HAVEN SPA

MAJID JANOUDI
411019



The aim of this project is to provide a high level of comfort amidst nature, inspired by its beauty, with an emphasis on natural light, open spaces, and greenery. It welcomes visitors from far distances and locals alike who seek relaxation. The site is located near Quba mosque and boasts natural surroundings. Despite the abundance of nature, the building was constructed without causing damage to the environment.

PARASITIC ARCHITECTURE

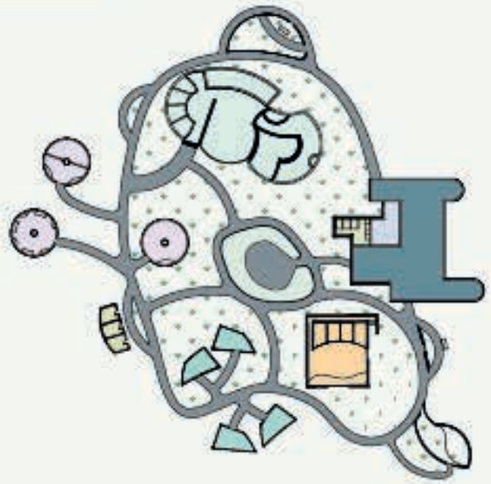
Parasitic architecture involves creating structures or interventions that attach to existing buildings or infrastructure for support and resources.

MEDITATION

The spa features a private s wimming pool for meditation. Relaxation is enhanced by an opening that provides a view of the surrounding nature and greenery.

RELAXATION

After finishing a massage in a narrow room, visitors can step out into a spacious area with a beautiful view of nature.



THE PROJECT PLAN

The plan's concept, inspired by the distribution of palm trees on the site, emphasizes connections between spaces, following the grid of trees.

THE PROJECT CALLOUT SECTION

This section highlights the meditation area, featuring a private swimming pool. It illustrates the water's depth and how users can meditate surrounded by nature.

THE PROJECT ELEVATION

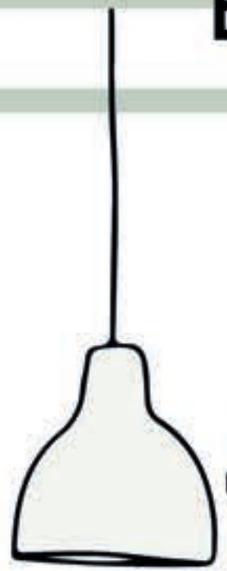
The elevation showcases the project's facade and the materials utilized in its construction

THE PROJECT SECTION

Sections were captured from strategic viewpoints to showcase the majority of the site.


CIVIL
ENG. DEPARTMENT
CONSTRUCTION
DURABILITY
STABILITY

CIVIL ENG. DEPARTMENT



ABOUT DEPARTMENT

The civil engineering program aims for graduate students to demonstrate their professional skills and actively contribute to the sustainable development of society within a few years after graduation. Graduates of the program are expected to engage in successful professional careers through continuous learning.

They will possess the knowledge and applied skills to practice civil engineering reflectively and compassionately for the benefit of their community. They will uphold the highest standards of professional behavior, including integrity, respect, and openness in communication, meeting the expectations of the community and sustaining trust.

MISSION

To graduate professionals in the field of civil engineering(CE) by providing sustainable and productive environment with research exposure that enables them to contribute to the profession and play a leading role in society.

OBJECTIVES

- Become professional engineers who apply ethical and social aspects in the design and construction of solutions to civil engineering problems for the broader good of the community.
- Actively contribute to the advancement of engineering practice in the both sectors in the technical areas of engineering.
- Adapt and continuously practice life-long learning through post-graduate and professional education.

FACULTY MEMBERS

DEPT. QR

DR. MOHAMMED LAISSY
- HEAD OF DEPARTMENT -

ENG. NADER ALHARBI
- LAB ENG. -

DR. HASSAN ALI
- ASSISTANT PROF. -

ENG. ISMAELDIN KAMAL
- LECTURER -

DR. MAHA MODDATHER
- ASSOCIATE PROF. -

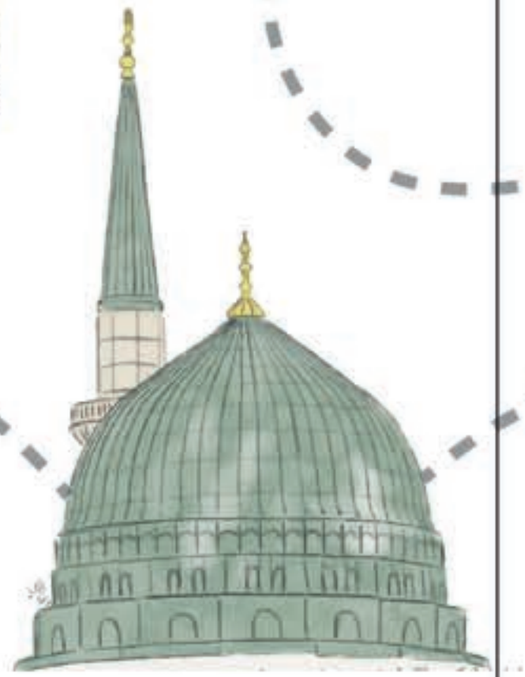
ENG. HAMDI ALSAKKAF
- LECTURER -

SENIOR PROJECT CE
HASSAN A. ABBAS, PH.D., P.E. AND ENG. ISAMELDIN KAMAL YOUSIF

UTILIZING MONORAIL SYSTEM TO LINK RELIGIOUS SITES IN MEDINA

TAREK ALHUSSAIN | ABDULRAHMAN MAERI | HUSSAIN ALSHEKFAH
3910038 3910070 3810234

Quba Mosque



Prophet Mosque

Uhod Mountain

The mobility of visitors in Al Madinah Al Munawara faces increasing difficulties due to congestion and difficulties in delivering a smooth and efficient service to visitors. With Vision 2030's goal of attracting 23 million visitors annually, the current transfer system cannot cope. To address this, a Sustainable Urban Transport (SUT) system is proposed to enhance mobility, reduce congestion, and improve transportation efficiency. Evaluating options like BRT, LRT, and Metro, a straddle-type monorail emerges as the most feasible choice. A detailed analysis and evaluation of each potential route was performed to select the most suitable route. Finite element analysis is used to assess aspects such as load locations, strand cross-section area, bending moment, and deflection characteristics of a monorail guideway girder.

Evaluation of Transportation and Infrastructure Systems

The Current City

Transportation Infrastructure Systems

Public Transport

OPPORTUNITIES FOR IMPLEMENTING SUT

- Improved Air Quality
- Reduced Congestion
- Increased Safety
- Economic Benefits
- Reduced Noise Pollution

01 Bus Rapid Transit (BRT) at Grade

02 BRT Using a Dedicated Lane

Light Rail Transit (LRT)

04 Automated Guideway Transit

05 Monorail Hanging Type

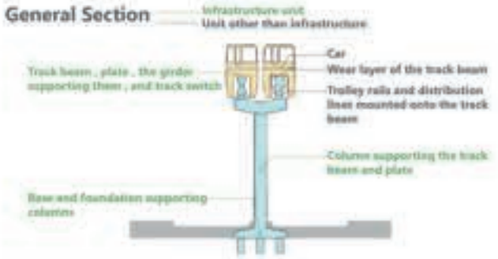
06 Monorail Straddle Type

07 Metro

TRANSPORTATION PROPOSED SYSTEM

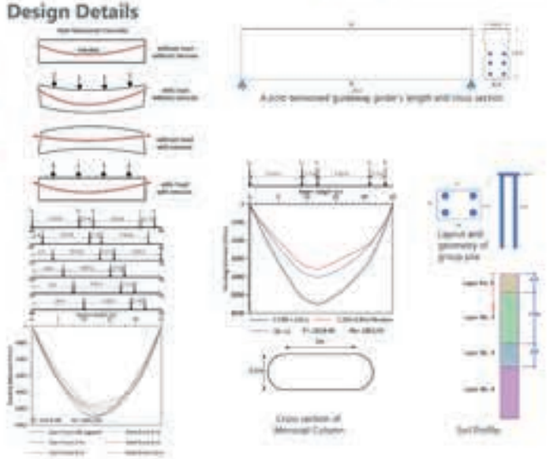
DESIGN ALTERNATIVES

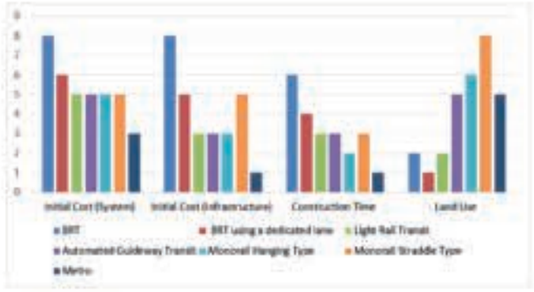
General Section



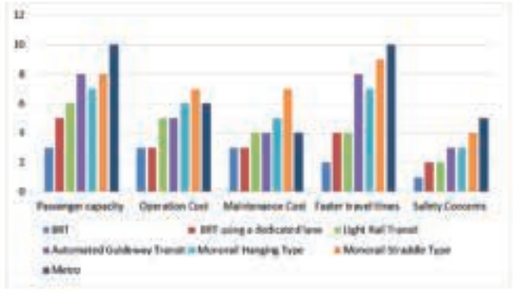
Details and location of axle load.

Design Details

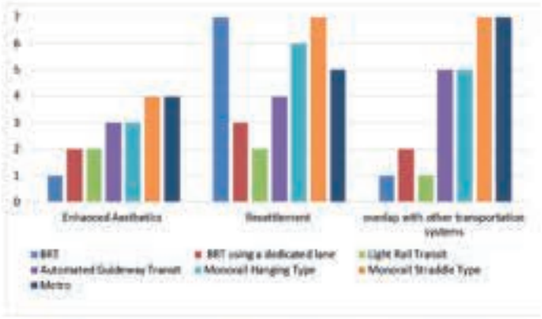




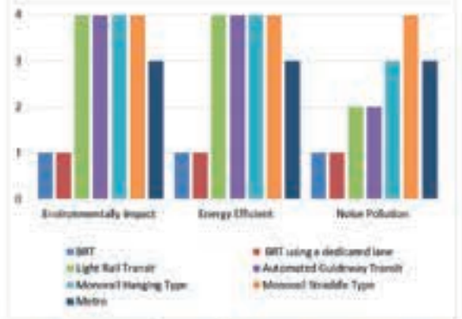
01 Comparison between proposed transportation systems according to criteria for construction cost themes.



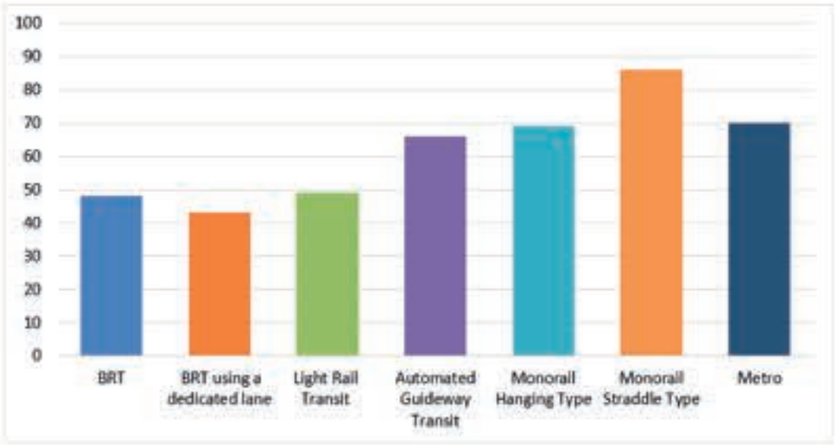
02 Comparison between proposed transportation systems according to Operation Issue .



03 Comparison between proposed transportation systems according to Influence on Urban Areas.



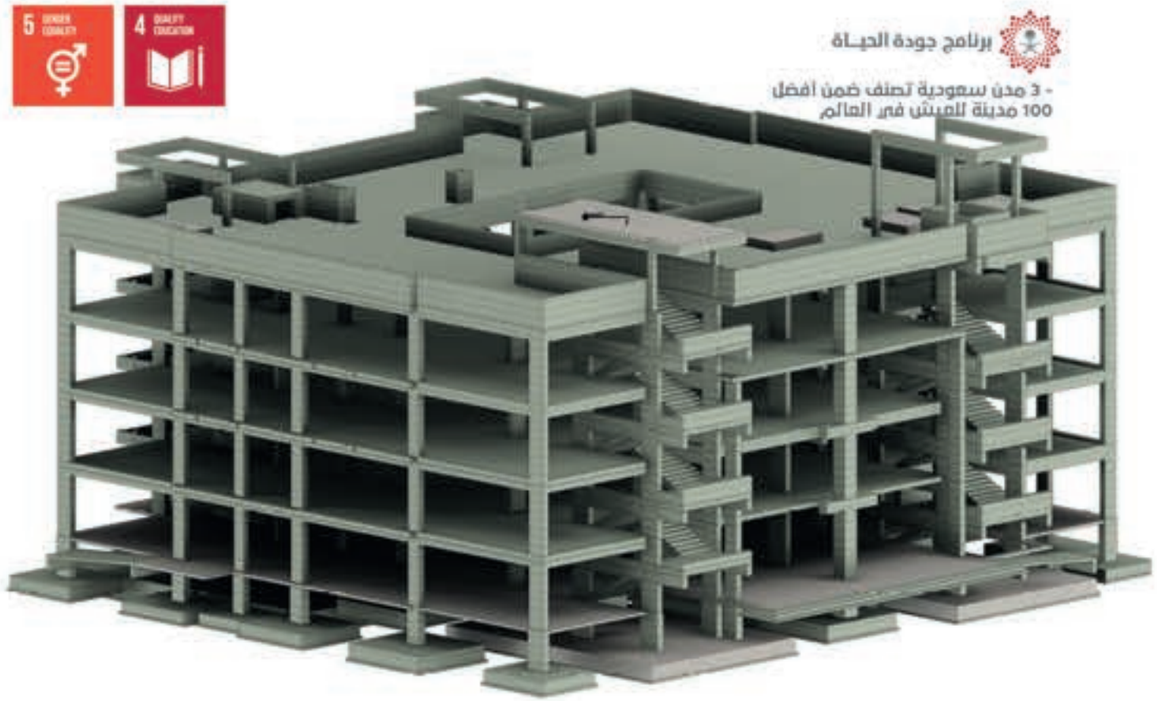
04 Comparison between proposed transportation systems according to Environmentally Themes.



05 The result of Selection of Optimum Transportation Systems.

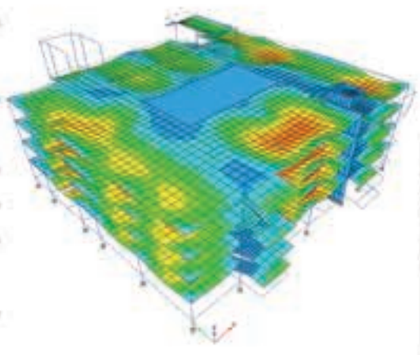
ANALYSIS FOR SCHOOL BUILDING IN DIFFERENT SEISMIC ZONES USING SBC

HAMZA ABBAS | HUSSEIN MANEA | AHMED MOHSEN | MOHAMMED ALSHIEKH HASSAN

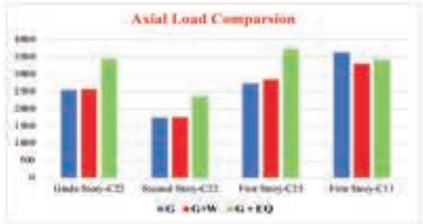


New design of a school building in Medina was checked using 3D modeling in ETABS according to Saudi Building Code (SBC 2018) including wind and seismic loads in addition to providing some design alternatives. Furthermore, the effect of seismic loads was examined using Equivalent Lateral Force method (ELF) in two ways, first by comparing the load combinations results (with and without seismic) and the second by changing the seismic loads for other different seismic zones in KSA (Jizan and Haql). Results showed that the existing design is safe in Medina and the design of some elements were controlled by seismic loads. However, the existing design was found to be unsafe if used as it is in Jizan and Haql due to higher seismic loads.

SCAN THIS QR FOR MORE INFORMATION



STRUCTURAL ANALYSIS OF THE BUILDING USING ETABS



Deflection				
Non-Linear Cases	Span (mm)	Actual Deflection (mm)	Max. Allowable Deflection (mm)	Result
Short Term	7400	3.6	20.5	SAFE
Long Term		24	30.8	SAFE

Punching Shear Check	
Types	Result
Punching Shear Ratios	SAFE
Punching Shear Reinforcement	SAFE

Load Combination Comparison			
C22 (300*1100) – Grade story			
Straining action	G	G+W	G + EQ
P (kN)	1743.135(C)	1762.97(C)	2354.12(C)
M3 (kN.m)	197.63	216.75	334.9
V2 (kN)	-341.57	-380	-617.23

Design Selective Column				
Story	Section	Location	Capacity Ratio	Result
Grade	300*1100	Medina	0.646	SAFE
		Jizan	1.004	UNSAFE
		Haql	2.537	UNSAFE

Axial Force and Biaxial Moment Check for P_u , M_{u2} , M_{u3}

Design P_u kN	Design M_{u2} kN-mm	Design M_{u3} kN-mm	Minimum M_2 kN-mm	Minimum M_3 kN-mm	Rebar % %	Capacity Ratio Unitless
3134.5536	75081.58	-301486.32	75081.58	151210.87	1.46	0.646

Axial Force and Biaxial Moment Check for P_u , M_{u2} , M_{u3}

Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Minimum M_2 kN-m	Minimum M_3 kN-m	Rebar % %	Capacity Ratio Unitless
4160.2707	100.845	-685.179	100.845	200.6915	1.46(O/S #35)	1.004(O/S #35)

Axial Force and Biaxial Moment Check for P_u , M_{u2} , M_{u3}

Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Minimum M_2 kN-m	Minimum M_3 kN-m	Rebar % %	Capacity Ratio Unitless
-1906.6982	-77.7998	-1239.5068	46.2183	91.979	1.46(O/S #35)	2.537(O/S #35)

DESIGN CHECK OF THE BUILDING IN MEDINA

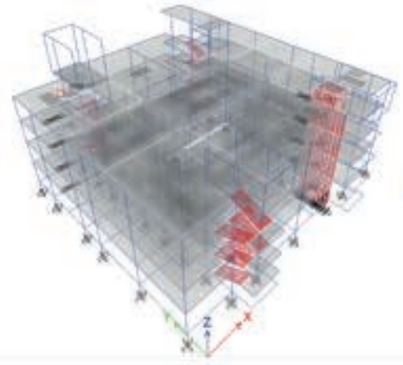
The existing building in Medina was checked against some limits such as deflection and drift, in addition to Checking each structural element and the results show that they are safe.

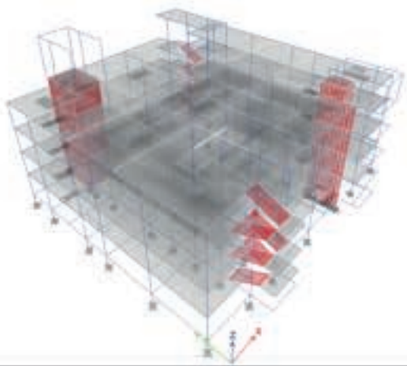
COMPARISON BETWEEN DIFFERENT ZONES

Examining the effect of rebuilding the structure with its same dimensions and design in other cities (Haql and Jizan). As a result, the structure was not safe in both cities.

DESIGN ALTERNATIVES

Implementing several alternatives that resulted in reducing some limits such as torsional irregularity, punching shear. In addition to post-tension that provided percentage reduction in slab's thickness, base shear, and number of columns failed.

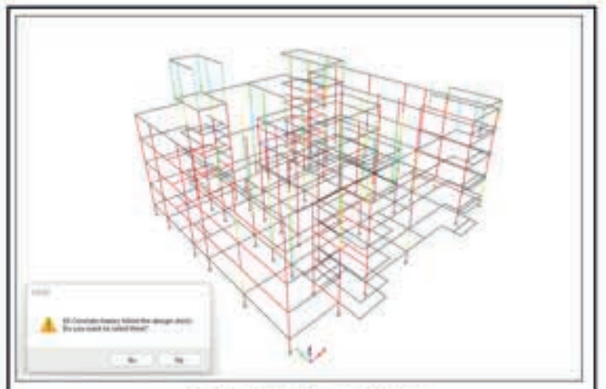




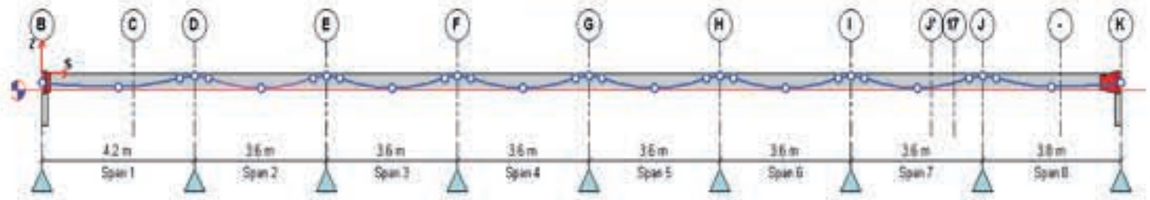
Torsional Irregularity Check				
Design	Max Drift	Average Drift	Ratio	Reslut
Existing Design	0.001458	0.000238	6.113	Extreme torsional irregularity
Alternative Design	0.000297	0.000256	1.162	Regular

Story	Direction	Direction	Height mm (h_{sx})	Elastic drift mm Δ_i	Plastic drift ($\frac{\Delta_i Cd}{I_e}$)	Allowable ($0.015h_{sx}$)	Check
Second	X	Madinah	3350	11.9	23.8	50.25	SAFE
		Jizan	3350	20.4	40.8	50.25	SAFE
		Haql	3350	35.6	71.2	50.25	UNSAFE

Post-tensin Slab VS Flat Slab	
Parmeters	Reduction Achievment %
Thickness	28
Base Shear	8
Coulmns Failed	30



Number of Failed Frames in Haql Zone

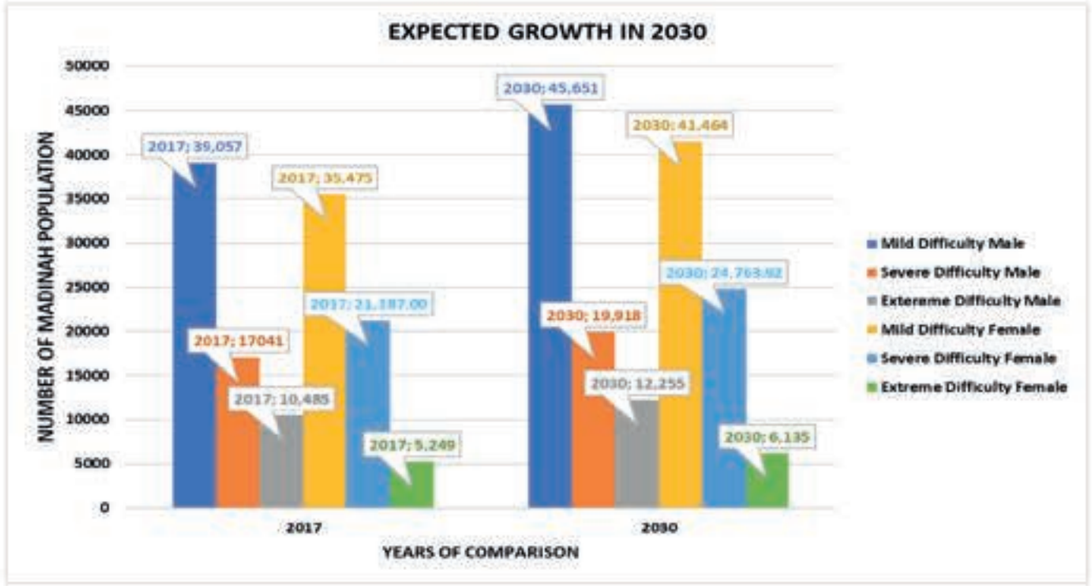


MULTIDISCIPLINARY PROJECT
DR. MOHAMMED LASSEY, DR. HAITHAM FAROUK

ANALYSIS FOR THE BLIND DISTRICT SUBJECTED TO SEISMIC LOADING

OMAR ATARJI | ZUHAIR AL TURKUMANI | ABDULAZIZ HAMID

This multidisciplinary project combines architectural and civil engineering design to provide a social service for the blind and visually impaired. The pavilions consists of four main buildings: an educational building, a medical clinic, an administrative building with a theater, and an entertainment building. The site area is 32,000 m^2 and the main building was chosen in the center. The residential building was chosen with specific studies and easy ways to reach it. The residential facility will be a seven-story building with a helipad that has a gross area of 710 m^2 with residential, commercial, and administrative occupancy. The residential building is designed with different slab systems.



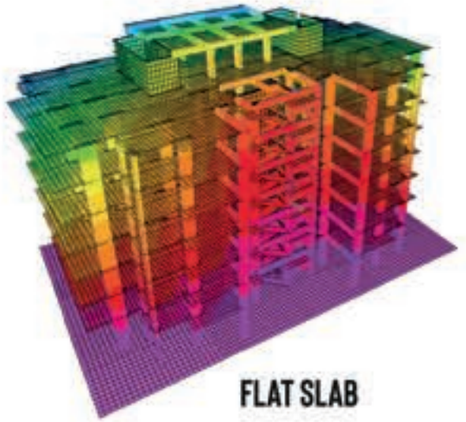
PROBLEM STATEMENT

The project was chosen because the percentage of this category is increasing in Saudi Arabia. The percentage of visual impairment in Saudi Arabia is 7.1%, and it increases annually at a rate of 1.2% every year. The city suffers from a lack of comprehensive rehabilitation centers for this category. The impact of lack of all support requirements for this group leads to its isolation in society.

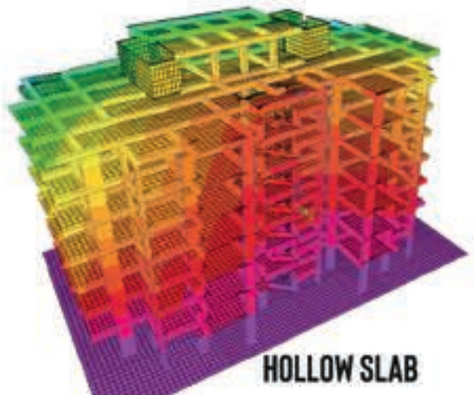
QRs

Scan these QR codes to have a better view and understanding of the projects. On the right: QR for a 360 view of the project. On the left: a QR code for a view of the structural model.

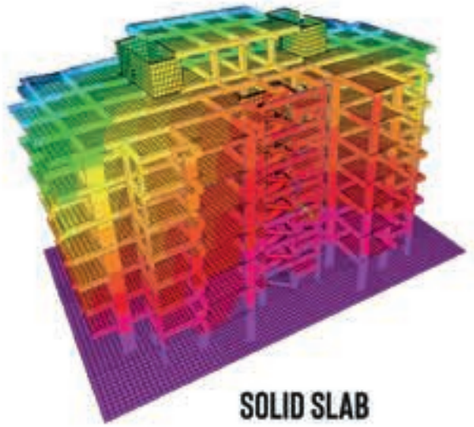
SUPERSTRUCTURE



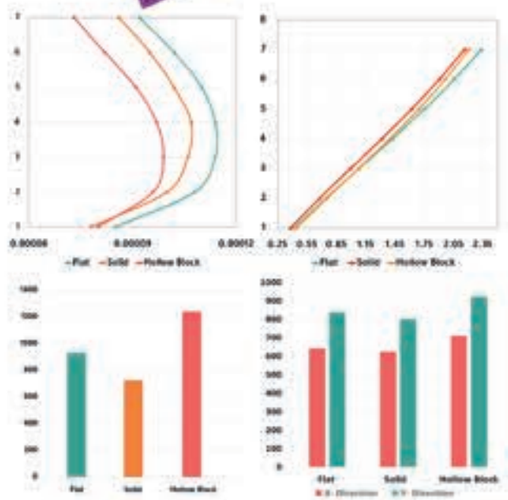
FLAT SLAB



HOLLOW SLAB

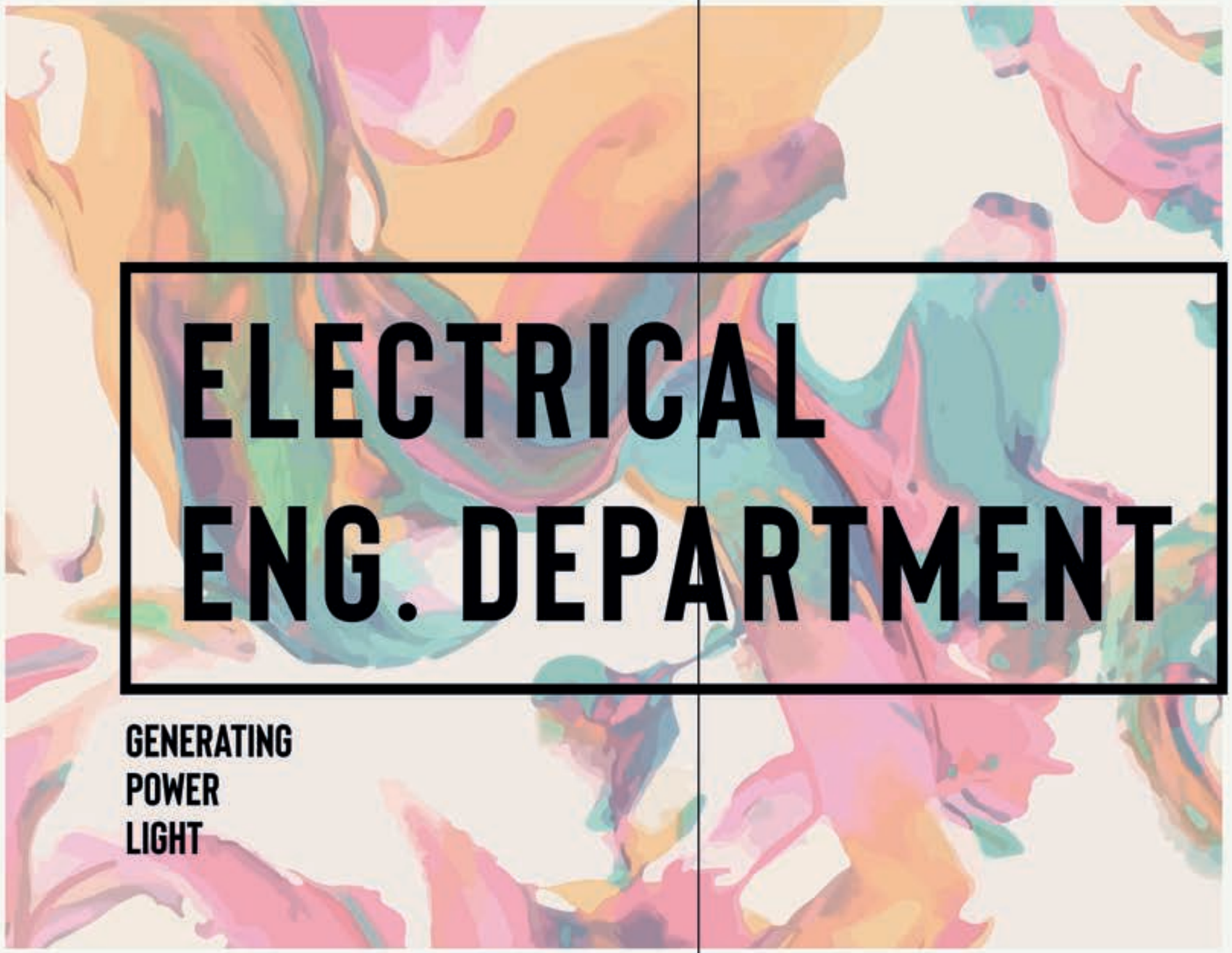


SOLID SLAB



CONCLUSION

The effect of seismic loading on the flat slab system, solid slab system, and hollow block slab system have been examined to understand the response of a building design with different slab systems. The slab systems were examined in accordance with the Saudi building code for several major parameters: story displacement, story drift, column force, base shear, and bending moments. The solid slab showed the lowest displacement with **%7.3** less than the flat slab and the lowest base shear **%13.2** less than the hollow block slab. It has also experienced the lowest axial column forces and bending moments with **%42** and **%16** less than the hollow block slab respectively. The hollow block slab showed the lowest story drift which was **%15** less than the flat slab.


ELECTRICAL
ENG. DEPARTMENT
GENERATING
POWER
LIGHT

ELECTRICAL ENG. DEPARTMENT

ABOUT DEPARTMENT

Electrical Engineering is one of the most versatile majors in the field of engineering, studying all aspects related to electricity, including the flow of electrons. Subsequently, Electrical Engineering subdivides into four basic majors: power, control, communication, and electronics. It is strongly aligned with the 2030 Vision, especially in the fields of renewable energy, 5G technology, fiber optics, and automation.

MISSION

To graduate professionals with the knowledge and skills required to lead in the national marketplace for electrical engineers, equipped with research exposure within a sustainable environment and the ethical standards that enable them to contribute to the profession and play a leading role in the society.

OBJECTIVES

- Make technical contributions to design, development, and manufacturing in Electrical Engineering related applications.
- Demonstrate professionalism and a sense of societal and ethical responsibility in all professional endeavors .
- Be engaged in professional development or post-graduate education to pursue flexible career paths amid future technological changes.

FACULTY MEMBERS

DEPT. QR

DR. AHSAN RAHMAN
- HEAD OF DEPARTMENT -

DR. HADEED AHMED
- ASSOCIATE PROF.-

ENG. GHASSAN GURBAN
- LAB ENG. -

ENG. OSAMA ALJEELANI
- LAB ENG. -

DR. DOHA HAMZA
- ASSISTANT PROF. -

DR. NOURAH ALHAZMI
- ASSISTANT PROF. -

ENG. MOHAMMED MOALLA
- LECTURER -

ENG. BASEL JOUDA
- LECTURER -

AOTUMATIC PV DRY CLEANING SYSTEM

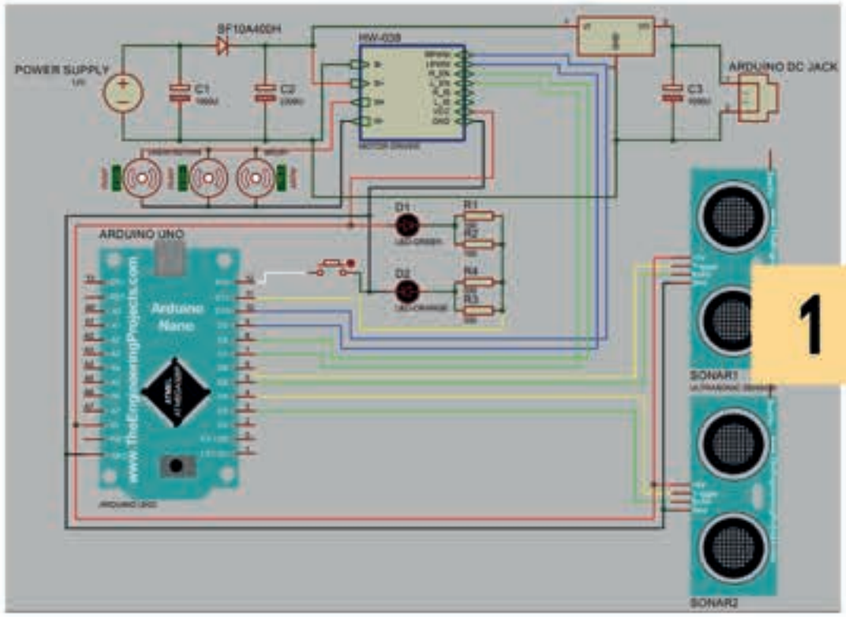
MOHAMED BADAWI, AHMED MARZOQI, ESSA ALRASHIDE
4112195 ,4010352 ,3910028

The focus of this project is to develop an automatic water-less cleaning system for PV panels. The system will work under the assumptions of a hot and dry climate, sandstorms and rain occurrences are present and can be predicted, water sources are limited, the panels are hard to reach by people, and the outer layer of the panels is glass that has a hardness much higher than the brushes used and installed in the system. The system will be able to traverse along the panel, clean the outer layer of sand particles and any other relatively small and unstuck foreign object, clean an entire panel in a single run, and clean regularly.

Objectives

- Develop an automated, low cost, and low power.
- consumption dry-cleaning system.
- Prevent power efficiency loss of the PV panels.

MOHAMED BADAWI, AHMED MARZOQI, ESSA ALRASHIDI - 3910028, 4010352, 4112195
DR. ARSLAN RAHMAN



1

WIRING DIAGRAM

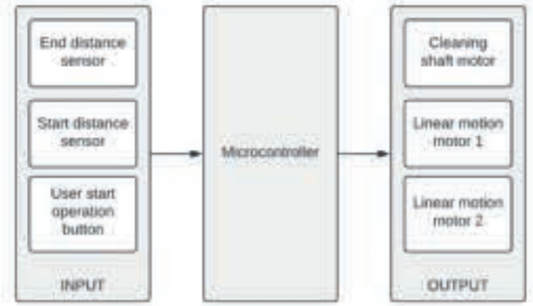
The circuit is made of the microcontroller controlling the circuit operation, the motor driver controlling the rotation speed and direction, capacitors to smooth the voltage, 2 LEDs one is orange and the other green, resistors, voltage regulator, two ultra sonic sensors, and three motors. The motors are powered with a DC source of 12 V, the Arduino is powered by the same 12 V DC

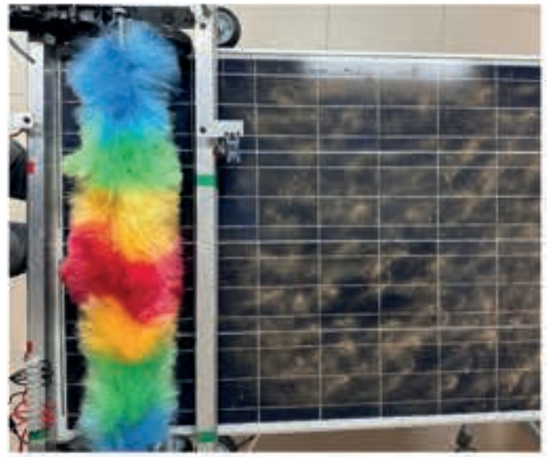
- 21
- source input with a DC jack, the electronics components are energized by the 5 V analog DC Arduino pin.

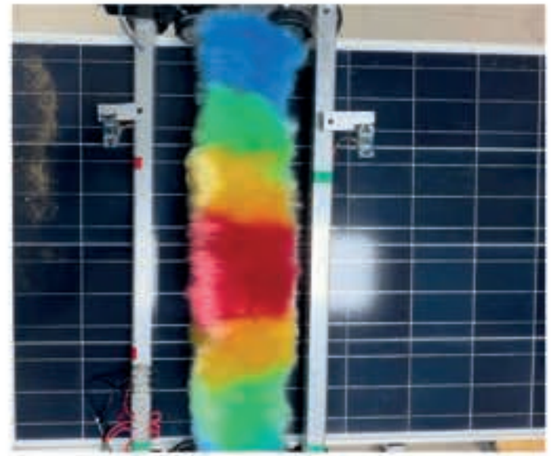
2

FLOWCHART

The flowchart explains the working algorithm of the cleaning system. It starts by powering on the Arduino. Once all variables and ports are initialized, the cycle begins by checking if the user clicked the push button to start the operation, otherwise, program readiness is indicated to user by an orange LED. As soon as the user presses the push button, a variable called "button counter" is increased by **1** which alters the remainder decision result to "Yes". Now the controller indicates that it is operating by turning on a green LED and turning off the orange LED. It reads and stores the distance of the installed ultrasonic sensor. Inside a "for loop", which iterates twice, traverses the system back and forth with a delay of one second. Once the two iterates are finished, the button counter is increased to alter and hold the remainder decision to "No" until the button is pressed again.







BLOCK DIAGRAM

The operation of the system starts with the ultra-sonic sensor in the start line of the panel where the program signal to the driver to initiate the movement and brush motors and when the system reaches the end line, the ultra-sonic sensor on the end line will send a signal to the microcontroller and according to the program, the microcontroller will send a signal to driver again to change the rotation direction of the motors.

CONCLUSION

The purpose of the project was to design and build a prototype of an automatic dry-cleaning system for PV solar panels. The importance of the project shines in large solar energy projects or where the solar panels are in places where manual cleaning services are hard to apply.

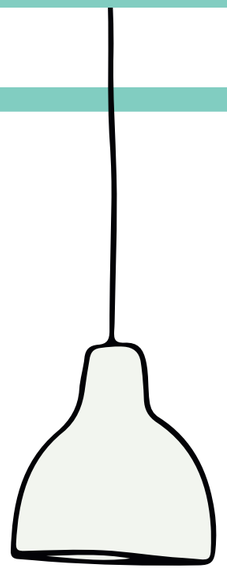
FUTURE WORK

- Configure the system to allow attaching different brushes.
- Update the system to be powered by the panel via a battery.
- Rebuild the system to be industrially compatible.

INTERIOR DESIGN DEPARTMENT

TEXTURE
DECORE
COLOR

INTERIOR DESIGN DEPARTMENT



ABOUT DEPARTMENT

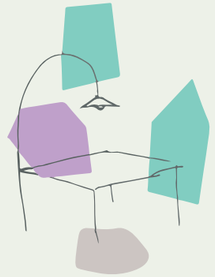
The needs in the built environment sector in Saudi Arabia has come to a more technically complex and demanding. This notion covers all professions including the Interior Design community. The present and familiar Interior Design program curriculum should now be more scientifically and technically sound in order to face the demands. Interior Design Program offered at University of Prince Mugrin curriculum is catered and designed ahead with the required technical engineering and scientific knowledge in parallel with design and aesthetical skills. The department is confident in providing competitive and accredited education level whilst nurturing the students to be successful in fulfilling the contemporary and future needs.

MISSION

To graduate committed professionals in Interior Design field, by providing sustainable and creative environment, with academic research exposure, responsive to the interior environment changes and leadership skills to face socio-cultural needs.

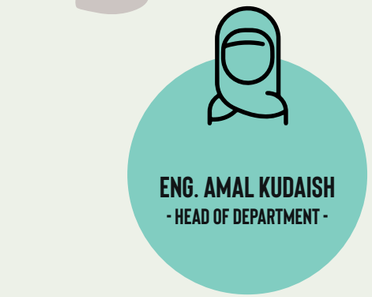
OBJECTIVES

- To graduate committed professionals in the field of Interior Design
- To provide a sustainable and creative interior and exterior environment.
- To support students' growth intellectually with academic research exposure.
- To be responsive to the dynamic profession with leadership skills



FACULTY MEMBERS

DEPT. QR



ENG. AMAL KUDAISH
- HEAD OF DEPARTMENT -

ENG. ALAA ALSHARIF
- LECTURER -

ENG. SMAH ALHAZMI
- LAB ENG. -

ENG. FUTOON ALHAMED
- LECTURER -

DR. RUBA KURDI
- LAB ENG. -

ENG. RAWAN ALBUGHDADI
- LECTURER -

ENG. ALZAHRAA FATANI
- LECTURER -

ENG. ASMAA ALGANAWI
- LECTURER -

CONNECT - SCIENCE AND TECHNOLOGY CENTER

REEM HASHIM
4010037

CONNECT is an interactive science and technology center designed for young students. **The center benefits students by offering** historical science and technology exhibits as well as innovation zones, providing opportunities for them to share ideas and invent new products in an engaging and interactive educational environment.

Concept behind the project:
The concept of the center revolves around time travel, offering a journey from the past to the future. The project's name "CONNECT" was chosen to reflect its mission of bridging the gap between our past and future.

The visitors experience inside the building is designed to emulate the passage of time, with a clockwise movement symbolizing the journey forward into the future.

"TIME MACHINE" HALLWAY

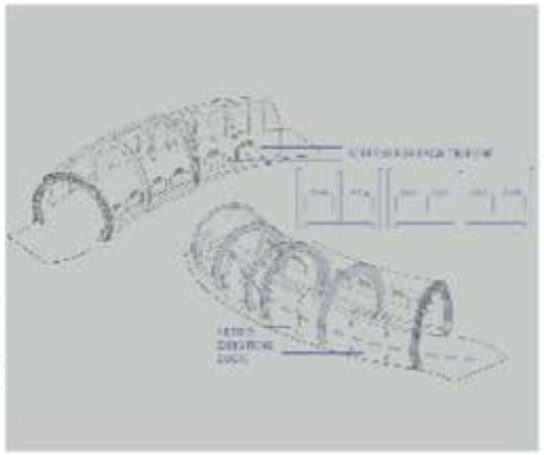
After arriving at the reception, guests can enter the history galleries through the hallway designed like a *Time Machine' This design aims to give visitors the impression that they are moving forward in time as they progress through the hallway. With each step forward, visitors are introduced to different eras of history, providing a gradual and engaging journey through time.

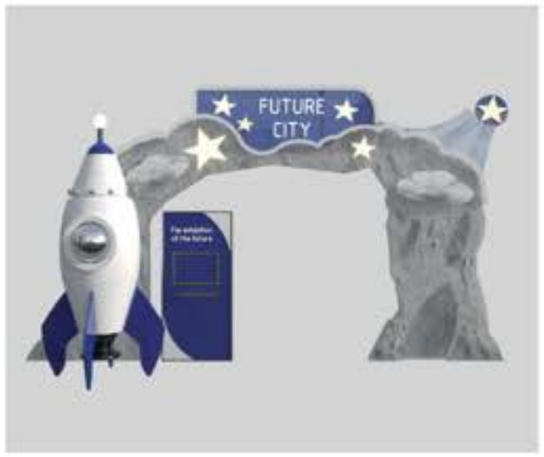
LIBRARY AREA

The project includes both a museum and innovation zones for students.
The library is an integral part of the innovation zones, providing students with access to documents and books for study and research. Students can learn and evaluate their ideas by studying various resources, fostering creativity and innovation.

WORKSHOP AREA

After gathering and discussing their ideas, students can test their project ideas in a workshop area with available assistance.This workshop area offers students the support they need to experiment with their projects and ideas.
It's a space where students can freely express their creativity and bring their ideas to life.





TRAVELING FORWARD IN TIME

The hallway is designed with screens and gates that showcase the scientific development of various fields in the past.The screens present innovations from each year, moving forward to the end of the hallway, guests continue to the next exhibition, while the hallway gates lead back to past history.

HISTORY EXHIBITION

The history exhibition is a space that highlights old Arab scientists and their major innovations, along with facts about science in the past. This exhibition highlights the profound impact of Arab scientists on scientific progress and innovation throughout history.

FUTURE CITY EXHIBITION

Future city is an interactive exhibition area where students can engage in games related to future technology and space. The gate design is intended to be cheerful and welcoming as a way to break up the seriousness from the history exhibits.

MATERIALS BOARD

The project's materials create a contrast between the past and future. Stone materials evoke a sense of history and tradition, suggesting a connection to the past. Steel and shiny elements convey a modern, futuristic aesthetic, emphasizing the concept of time travel. Cool colors, often associated with science, are used throughout the project.

CREATIVITY CENTER

SALMA ALMAZUINI
3910305

The creativity center serves as a gathering point for creative individuals, groups, institutions, freelancers, and students. It offers a variety of creative facilities for use and development, catering to the needs of its diverse users. The center includes a gallery, a small hall, offices, a cafe, and other amenities.

1

RECEPTION

The photo shows the reception area, where guests have their first and last contact with the facility.Since one cannot make a first impression twice, a unique reception table has been designed.The arrangement of the reception area creates a welcoming space, making a positive impression for the center.

2

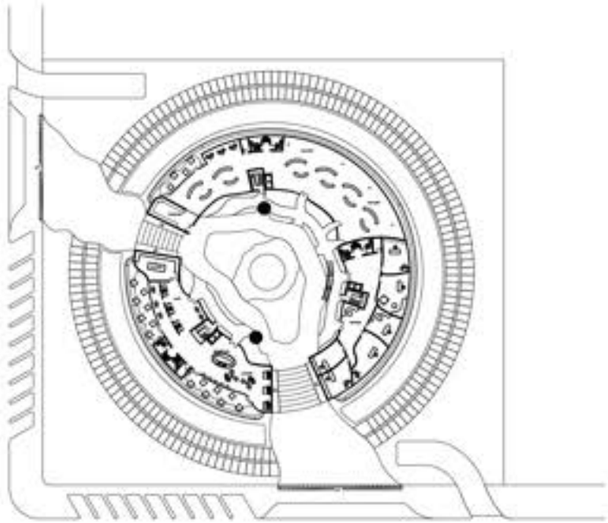
HALL

The room features a small stage and a large screen for displaying projects and ideas. The design of the room is inspired by the center's general atmosphere, creating an environment that fosters creativity and technology.This setup provides both the audience and the presenter with a sense of inspiration and engagement.

3

WAITING AREA

This space is designated for guests and visitors to relax while waiting for appointments, tours, or meetings. The design of the space offers an opportunity to make a positive first impression.



GROUND FLOOR PLAN

The plan illustrates the division of spaces into public and semi-public areas. The public areas include the reception, cafe, waiting area, and gallery, which are open and accessible to all guests and visitors. The semi-public areas refer to offices, which may have restricted access and are intended for specific personnel or purposes.

ELEVATION

The elevation shows the center's main entrance and the exterior shape, along with the materials used to design the building, including sun visors to control light and temperature.

FIRST FLOOR PLAN

The semi-public areas include workshops, a hall, and a VR room, which may be accessible to guests and visitors but with some level of supervision or guidance. The private area consists of administration offices, intended for staff and management use.

MOOD BOARD

A mood board is a visual tool that communicates the essence of brand identity to clients or stakeholders. It includes colors, images, textures, patterns, logos, and any other elements that capture the mood and style of the center brand.

FROLICK DONUTS

SHATHA ABDULLAH
4010217

WHY ?

Due to the lack of brands specializing in selling the finest types of donuts with a local Saudi character, the project aims to launch a distinctive and high quality contemporary brand that offers various types and shapes of donuts. This brand seeks to leave a sense of happiness and an imaginative experience in the minds of customers while engaging their five senses. In addition, it will provide exceptional hygiene standards and diverse services that facilitate constructive communication with customers, while also accommodating people with special needs in terms of accessibility and design.

VISION:

Our goal is to create an influential contemporary global brand with a well-established and distinctive Saudi footprint in the manufacturing of the donuts of various shapes and types in high quality to provide an exceptional happy experience.

TARGET AUDIENCE:

The bakery will attract all types of households and residents. Regardless of whether a person is working class, a business executive, a teacher, or a student, a bakery is always in demand.

VALUES:

HAPPINESS
-Harmony(texture)

DISTINCTIVE
-VARIETY (shapes)

QUALITY
-Balance (space and scales)
-Focal point (color)

SHATHA ABDULLAH - 401027
ENG.FATOOH ALHAMED
TA. SHAIH ALHAZMI

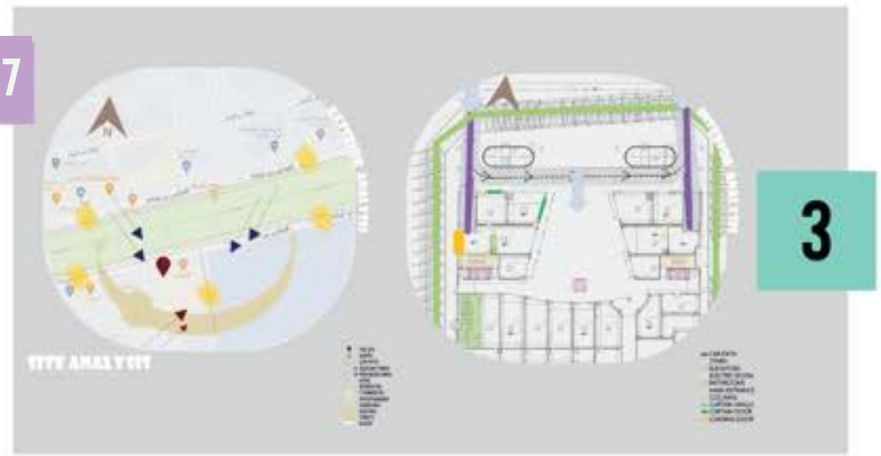
BRANDING

1

FURNITURE DESIGN

2

SITE ANALYSIS



3

FLOOR PLAN

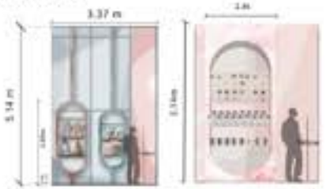
RCP

SECTIONS

EXTERIOR ELEVATION

INTERIOR ELEVATION

PLANOGRAMMING



GOLD THREADS HOTEL

ASMA ALRADDADI
3810050

With the development of local projects, interest in the field of tourism attract tourists from different countries. A hotel located in Amala (Prince Mohammed bin Salman Reserve) was designed. The project aspires to build a five-star hotel that combines the local culture of the region with contemporary design, in line with the goals of Vision 2030.

INSPIRATION

The hotel is inspired by the sunrise and sunset behind the majestic rocky mountains in the Amala Reserve.

DESCRIPTION

The sun of Amala rises from behind its mountains` with golden rays that illuminate Amala, reflectng the purity of its sea and creating a captivating natural landscape that inspires the designs of Amala.

CONCEPT

The designs harmonize with the surrounding environment, incorporating elements from the sun, mountains, and sea.

LOCATION

Amala is located on the northwestern coast of The Kingdom of Saudi Arabia, in the heart of the Red Sea, within the scope of the Prince Mohammed bin Salman Royal Reserve.

OBJECTIVES

The project idea revolves around the concept of luxury tourism based on recovery, health, and treatment.

ECONOMY AND TOURISM

The goal is to boost the economy and diversify income sources in the Kingdom of Saudi Arabia.

EXPERIENCE AND SERVICES

A unique accommodation experience with all services provided.

DESIGN STUDIO IV HOSPITALITY-INTD 312
ISTRUCTOR NAME: ALAA ALI ALSHARIF

GREEN HOTEL

AMAL ALRASHIDI
3710126

Our interior design hotel project is a serene retreat where guests can rejuvenate and heal from the stresses of modern life through a deep connection with nature. Inspired by the healing power of the natural world, our design concept seamlessly integrates elements such as organic materials, biophilic design principles, and soothing color palettes. Each space within the hotel is thoughtfully curated to evoke the tranquility of a natural oasis.

From the lobby's living green walls to the guest rooms with panoramic views of lush landscapes, our design creates a restorative environment that encourages relaxation, mindfulness, and a profound sense of well-being.

FINE DINING AREA

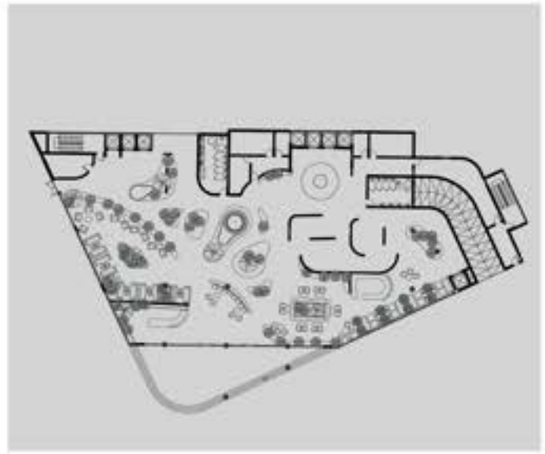
The restaurant in our nature-inspired hotel project is a culinary oasis where guests can savor delicious, locally-sourced cuisine while immersing themselves in the soothing ambiance of the natural surroundings. The restaurant's design mirrors the hotel's overall theme, featuring earthy tones, natural materials, and panoramic views.

GUEST ROOM AREA

Guest rooms are carefully designed to be sanctuaries of tranquility and rejuvenation. Each room is a haven that seamlessly blends the comforts of modern luxury with the healing power of nature. The color palette is soft and earthy, featuring soothing shades of green and beige, reminiscent of serene natural landscapes.

LOUNGE AREA

The hotel lounge design is a serene retreat with comfortable seating, calming colors, and **nature views. It offers a** curated beverage selection and light healthy snacks. Guests can unwind, read, or socialize in this tranquil space that encourages relaxation and connection with nature.



RESTAURANT MOOD BOARD

The restaurant's mood board embodies natural healing with a balance of wood, black, and green elements. It features warm woods, earthy greens, and soft textures, creating a serene and inviting atmosphere. Live plants, natural light, and nature-inspired decor elements add to the rejuvenating ambiance.

RECEPTION AND LOUNGE MOOD BOARD

Reception and lounge areas draws inspiration from nature, with earthy greens and warm wood tones. It features natural textures, live plants, and organic shapes to create a calming and inviting atmosphere. The design prioritizes natural light and open layouts, promoting relaxation and connection with the outdoors.

GROUND FLOOR PLAN

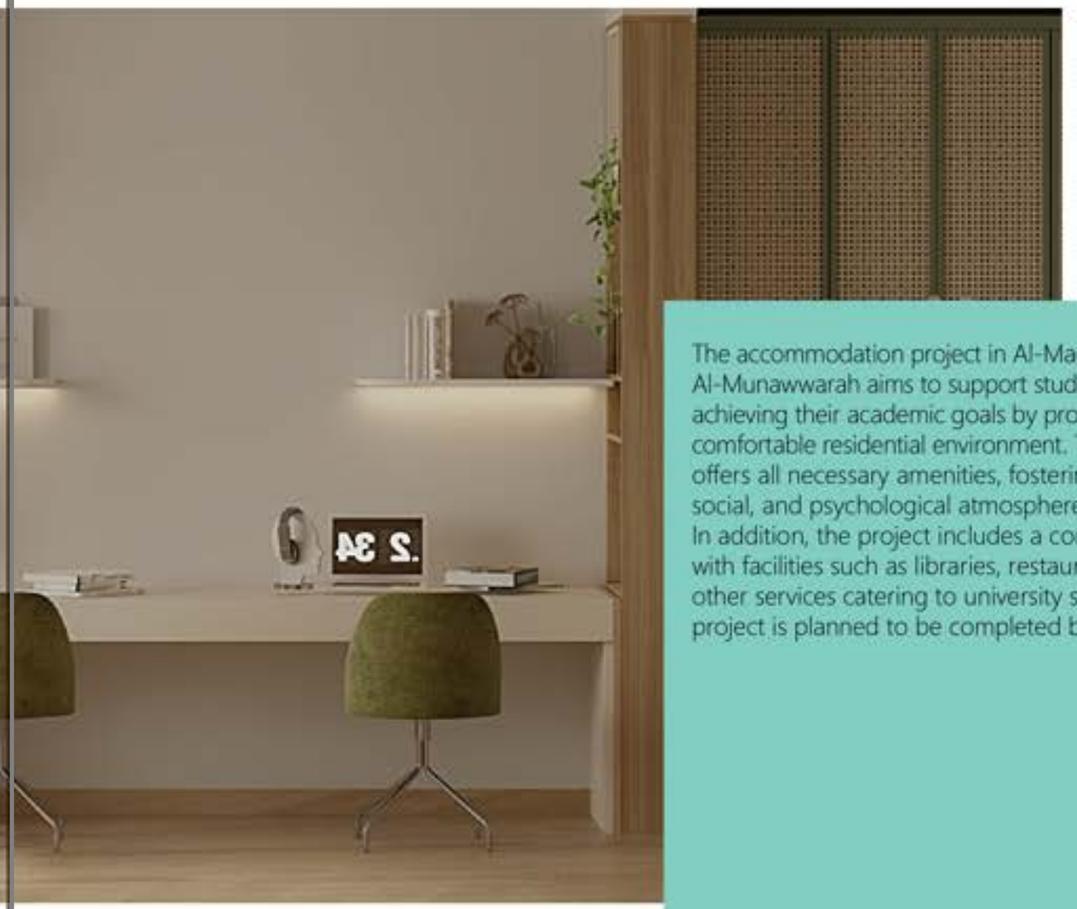
Using natural patterns as inspiration for the **distribution of movement in a floor plan adds** depth, visual interest, and a sense of harmony to interior spaces. It creates an environment in which **movement feels more effortless, and occupants are** subtly guided through the space, creating a feeling of comfort and well-being.

FIRST FLOOR PLAN

Natural patterns often involve curved lines and irregular shapes, and these can be incorporated **into the design to guide the flow of foot traffic in a** more organic and intuitive manner. Curved pathways create a sense of movement and exploration, mimicking the way people naturally move through outdoor environments.

SUKNAA

ASMAA ALRADDADI
3810050



The accommodation project in Al-Madinah Al-Munawwarah aims to support students in achieving their academic goals by providing a comfortable residential environment. The project offers all necessary amenities, fostering a healthy, social, and psychological atmosphere for students. In addition, the project includes a commercial area with facilities such as libraries, restaurants, and other services catering to university students. The project is planned to be completed by 2030.

1

FEATURES

Excellence in creating a student housing environment that is supportive, interactive, and productive for academic, scientific, psychological, and socially distinct, considering the teachings of Islam and significance of Medinah for Muslims

2

VALUE

The value lies in promoting identity and diversity of cultures with the core value being the student's quality of life. Create an integrated place with smart and advanced devices in rooms and bathrooms.

3

DESCRIPTION

An open-plan apartment consisting of a kitchen, study area, living room, bedroom, dressing room, and bathrooms.

ECONOMY

Raising the economy and the level of education through accommodation in the Kingdom of Saudi Arabia.

ACCOMMODATION

Enhance and raise the quality of students' accommodation projects in Madinah, with attention to the significance of Madinah in Islam.

ENVIRONMENT

Helping students learn and raise the level of educational attainment by creating a supportive and **effective environment.**

EDUCATION

Experience education with accommodation in Medina.

1

FEATURES

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CAPSTONE PROJECT II - INTD 492
LECT. FUTOON ALHAMED
TA. SMAH ALHAZMI

MADAR RESORT

BASMAH MAZI
3910290

Project Overview
The project is a creative resort where creative individuals, photography enthusiasts, and nature lovers can come together. The resort also caters to those interested in digital marketing, providing opportunities for individuals and companies to rent photography units to highlight their products. Guests can learn and develop their photography skills through various workshops and experiences offered at the resort. The idea is to combine the needs and interests of these fields in one place, enhancing the unique experience for guests at the resort.

Project Concept
The concept of the project represents the idea of creativity. Where all elements can be linked to it, and manifest the strength of creativity's impact on what is around it, which increases health, productivity, **awareness, and confidence.**

1

PRODUCT STUDIO

Product photography studio from the studio building, which specializes in photographing premium productsfor E-commerce and print advertising campaigns.

2

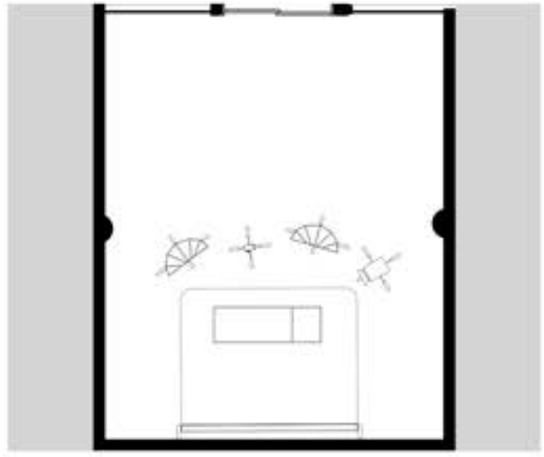
RESTAURANT

The restaurant exists in the social building, which is distinguished by its comfortable and spacious design, in addition to the use of materials and colors related to the nature of Medina.

3

GUEST ROOM

Guest accommodation room is in the resort's residential building



STUDIOS BUILDING FLOOR PLAN

The studios building contains a number of studios, such as product photography, cooking, or fashion, **which are fully equipped according to each field. In addition to offices for editing and processing** images.

ENLARGED PLAN FOR PRODUCT STUDIOS

The enlarged plan shows the details required for a product photography studio.

ONCE UPON A TIME

AMAL ABU DAQQA
3810067

The project is a public children's library for children from preschool age up to the age of fifteen. The children's library is one of the rare libraries in the Kingdom of Saudi Arabia, specifically in Al-Medina, geared towards the children and meeting their intellectual needs and interests.

The project concept aims to create a magical and imaginative environment that inspires children to love learning and reading by incorporating strange and imaginative elements. Ultimately, the library aims to foster creativity and curiosity in children and encourage them to explore the world of books and learn through the lens of Lewis Carroll's classic story Alice in Wonderland.

FIRST READING AREA

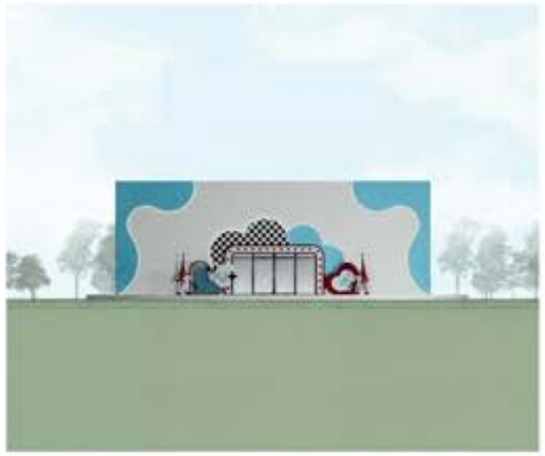
The choice of blue and red in the reading area enhances the fantastical and dreamlike quality of the story, it adds to the symbolism and thematic elements, and connects to both the narrative and visual aspects of the tale.

SECOND READING AREA

Mushrooms are often associated with change and transformation, in this design, mushrooms symbolize the fluidity and the notion that one's perception of oneself can change **radically due to beneficial** reading.

FIRST READING AREA

Within the library, the bookshelves stretch like endless tunnels, their rows of books like secret passages waiting to be explored. Each shelf beckoned like a rabbit hole, promising to transport the reader into a wonderland of stories and ideas, where time could slip away.



NORTH ELEVATION

The elevation shows that library entrance was designed creatively, inspired by Alice in Wonderland playing cards, and models of these characters were placed in order to arouse the curiosity and interest of children to enter and explore the library.

SITE PLAN

The plan shows the three main buildings of the library, showing the external areas and their relationship with the library, as they were designed in **a simplified and less complex manner than the** internal areas.

3D SITE

The three-dimensional figure shows the building mass, the streets, parking lots, and the external area of the library, and also to illustrate the proportionality in the heights of the three buildings.

3D MODEL (COSTUM MADE)

The design idea for this model is inspired by the basic elements from the movie Alice in Wonderland, such as mushrooms, clocks, playing cards, and elixirs, to give the character of the story of the area.

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