

AL-LAWZ MOUNTAIN NATURAL MUSEUM

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Abstract

This work has presented the development of Al-Lawz Mountain Natural Museum in Tabuk, Saudi Arabia. Thus, prior to the development of the museum, three case studies related to the architecture of museums were analysed. Based on the examined case studies, for the proposed museum, the estimated gross floor area is 21419 m². Furthermore, the building is comprised of few key zone, which are station, restaurant, museum, outdoor activities, and parking. In addition, two potential sites on top Al-Lawz Mountain were proposed as the development site. Both sites were examined using site evaluation analysis based on several key criteria's, which are topography, access/traffic, utilities, security and safety, visibility, surrounding, views, and future development. The results of the site evaluation analysis showed that site 1, which is located at main road 55, north west (NW) of Saudi Arabia in Al-Lawz mountain exhibited the highest score of 191, compared to site 2 with evaluation score of 133. Thus, site 1 was selected as the proposed development site. The museum was designed with the concept of experiencing nature in a unique environment. The proposed museum is expected to preserve the culture and heritage of the province of Tabuk and contribute to the economy of Saudi Arabia as a key tourist attraction.

Keywords-- museum, heritage, mountain, Saudi Arabia, Tabuk

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INTRODUCTION

The existence of museum started with the private accumulations of wealthy people, families, establishments of art workmanship, inquisitive common arts and antiquities [1]. These items were often on display in private rooms or cabinets. The aim of the museum is to thrive on the idea of culture and the legacy of a place, and this cultural heritage should be accessible to all individuals [2].

Thus, museum halls were there to gather, preserve, impart and present human heritage. There are numerous kinds of museum hall around the world, for example, national museum and historical museum [3]. In addition, the museum adds to the dispersion of culture, the improvement of science and heritage and also enhances the preservation of knowledge and culture of the country concerned [4].

The Kingdom of Saudi Arabia (KSA) has many historical, archaeological, cultural and scientific sites in different regions [5]. The oldest museum in KSA is the Riyadh National Museum and is part of the King Abdul-Aziz Historic Center [6]. The Historical Center plays a prominent role in telling the story of Islam, the Saudi civilization, and the history of the Arabian Peninsula [6].

The Kingdom of Saudi Arabia is now in line with the 2030 vision, with all its objectives focused on tourism, economy, and also preserving its heritage of history [7]. Thus, in order to meet all the objectives, the government has decided to set up a site that achieves the functions of these three key elements of tourism, economics and heritage conservation.

As a result, the government has aimed to develop the Tabuk province, located on the north-western side of Saudi Arabia, which was identified as the next tourist spot. The province of Tabuk is rich in culture, natural history and geography. There is a famous mountain called Al-Lawz Mountain, which is also located in the northwest of KSA, on the border of Jordan. Thus, in order to accomplish the 2030 vision of Saudi Arabia, this work

proposed the development of the Al-Lawz Mountain Natural Museum in Tabuk, Saudi Arabia.

CASE STUDIES

This work has examined three case studies related to museum designs. The details of each case study is presented accordingly as follow:

- Messner Mountain Museum
- National Museum of Saudi Arabia
- Ice Q On The Gaislachkogl

Messner Mountain Museum

Messner Mountain Museum is located at the Province of Bolzano - South Tyrol, Italy (Figure 1). This building was designed by architect Zaha Hadid and Patrik Schumacher. The building has a gross area of 1000 m².

The museum focuses in the history of the mountain and nature. The museum is located at the top of Mount Kronplatz with a unique view of the mountain and its surroundings. To explore the museum, the visitor must use the cable car service to reach the top of the mountain.

The museum has four levels. In level one, the museum consists of an entrance area, an exhibition area, a ticket counter, a circulation area and a staircase. In level two, the museum consists of an exhibition area, a circulation area and a stairway.

At level three, the museum consists of an exhibition area, stairs, storage area, plant room, panoramic view area and a circulation area. At level four, the consist of an exhibition area, a stairway, storage area, cinema, terrace, display cases, washrooms, panoramic view area and circulation area. The facilities and the space distribution of this building includes entrance (7%), exhibition area (36%), ticket counter (3%), storage (4%), plant room (6%), cinema (7%), washroom (5%), display cases (5%), terrace (7%), and panoramic view area (20%).



Figure 1. Messner Mountain Museum

National Museum of Saudi Arabia

National Museum of Saudi Arabia is located at Riyadh, Saudi Arabia (Figure 2). This building was designed by Canadian architects Moriyama and Teshima. This building has a gross area of 17000 m². The building structure of the National Museum architecturally reacts to the volumetric composition of the historic buildings and the castles of King Abdul-Aziz.

The design has been built as a contemporary addition to all physical structures and comprehensive solutions consistent with human scale, leading to the revitalization of tourism in the city of Riyadh. This museum has two floors. The ground floor consists of an entrance hall, a reception hall, an exhibition gallery, an office and a courtyard. The first floor consists of an exhibition area, a bridge, a theater, a vip lounge and a courtyard. The facilities and the space distribution of this building includes exhibition area (66%), offices (18%), vip lounge (5%) and reception hall (11%).

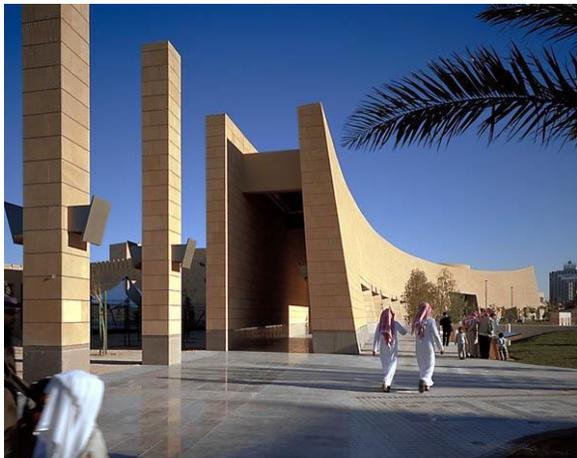


Figure 2. National Museum of Saudi Arabia.

Ice Q on The Gaislachkogel

Ice Q on The Gaislachkogel located at Soelden, Austria (Figure 3). It was designed by architect Johann Obermoser. The gross area of this building is 1300 m². The Ice Q Restaurant is a masterpiece of architecture at the top of Soelden's Gaislachkogel Peak. The design was based on a crystal model reminiscent of the simplicity of the ice blocks with a view of the glaciers and the alpine landscape.

The facilities of the museum includes lobby, plaza, lair, legacy gallery, barrel of the gun, briefing room, tech lab, action hall and screening room. In addition, there is a restaurant, which is located next to the museum. The facilities of the restaurant

includes kitchen, bar, and sitting area. In addition, the visitor must use cable car facilities to reach the museum.



Figure 3. Ice Q on The Gaislachkogel.

PROGRAM ASSUMPTION AND SPACE DETAILS

For the Al-Lawz Mountain Natural Museum, the estimated gross floor area is 21419 m². The details gross floor area of each zone is shown in Table 1. In addition, based on Table 1, the building is comprised of several zone, which are station, restaurant, museum, outdoor activities, and parking.

Table 1. Space details

Zones	Gross floor area (m ²)
Station	3344
Restaurant	936
Museum	7039
Outdoor activities	8000
Parking	2100
Total	21419

PROPOSED SITE

Proposed site: Site 1

For site 1 (Figure 4), this site is located at north west (NW) of Saudi Arabia in Al- Lawz mountain and it is specifically located at main road 55. This site has a ground area of 9000 m² and top area of 13000 m².

Proposed site: Site 2

For site 2 (Figure 5), this site is located north west (NW) of Saudi Arabia in Al- Lawz mountain and it is specifically located at main road 8784. This site has a ground area of 9000 m² and top area of 13000 m².



Figure 4. Site 1



Figure 5. Site 2

SITE EVALUATION AND ANALYSIS

In this work, two sites were proposed for developing the Al-Lawz Mountain Natural Museum. Hence to determine the most appropriate site for development, site evaluation analysis was done. The sites were evaluated based on few criteria's, which are topography, access/traffic, utilities, security and safety, visibility, surrounding views, and future development. In addition, weighting factor (WF) were used in the site evaluation analysis, where 1 = not very important, 2 = somewhat important, 3 = important, 4= very important, and 5= essential. Table 2 shows the result of site evaluation analysis. Based on Table 2, the results have shown that site 1 attained the highest score of 191, compared to site 2 that exhibited score of 133. Thus, site 1 was selected as the proposed development site.

Table 2. Site evaluation

Criteria	Weighting factor (WF)	Site 1	Site 2
Topography	5	25	20
Access/ Traffic	5	25	20
Utilities	5	25	5
Security and safety	4	16	8
Visibility	5	25	25
Surrounding	5	25	5
Views	5	25	25
Future development	5	25	25
Total	-	191	133

The selected site has one access from main road 55 which is an important road with a large number of passing cars and users. The height of the mountain is 961 from the sea level and the distance from zone one to zone two is 10.3 km. The speed of the cable car is 7.5 m / s. After calculating the distance and speed, the visitor will be taken from zone one to zone two at around 22:53 min. The site is surrounded by deserts and mountains on all sides. It is also surrounded by a number of historic sites that will enhance the value of this museum as it presents the history of these places. All view of this site has a natural view and in zone two it has a good view because it is located at the top level.

PROJECT DESIGN

The aim of this project is to achieve and create a new gathering point that informs, inspires and stimulates visitors with the natural features in the northwest of Saudi Arabia. The main idea behind the museum is the experience of nature in a unique environment. The project uses the natural terrain to reach the idea that the building of the museum is growing in accordance with the mountains. The form of this project has a special expression and character that directly inspires the elements of nature that make the building blend in with its surroundings. The building is designed with a double skin roof. This will allow

natural air ventilation to occur within the building. Furthermore, there are two major opening at the roof, where one is dedicated for courtyard and one is dedicated for the open space within the museum. This open space will allow the penetration of natural day light into the building. The exterior of the building is designed with sharp edges that represents the shape and texture of a mountain. The facilities of this building includes entrance hall, exhibition, main corridor , shops, cinema, registration area, vertical circulation, café, services, labs, lecture hall and outdoor area. The floors within the building are stacked on top of each other and all the mentioned facilities are distributed accordingly in each floors. In addition, there is a restaurant located at the top of the mountain. Furthermore, panoramic viewhas been incorporated into the building to offer a spectacular view of the surrounding nature. The architectural design of the Al-Lawz Mountain Natural Museum is shown in Figure 6 to Figure 10 respectively.



Figure 6. Overview of the Al-Lawz Mountain Natural Museum

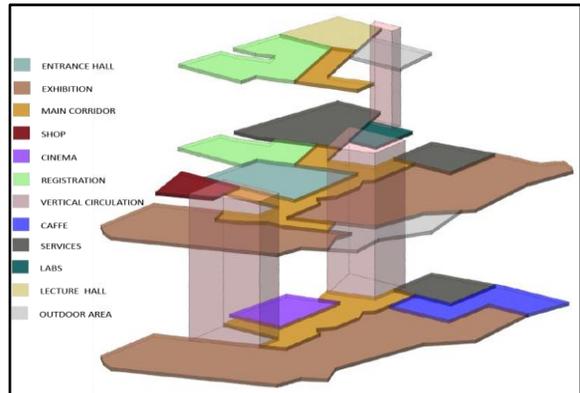


Figure 7. Zoning of the Al-Lawz Mountain Natural Museum

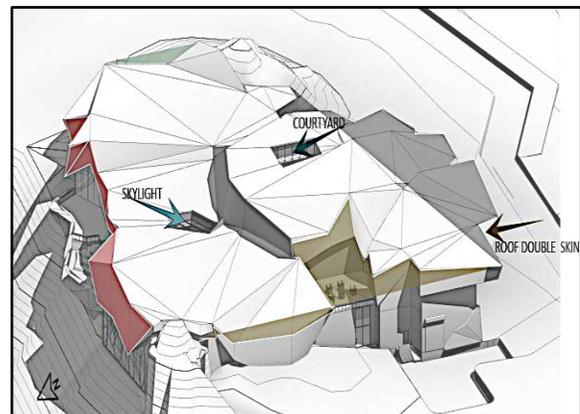


Figure 8. Roofing structure of the Al-Lawz Mountain Natural Museum



Figure 9. Side elevation of the Al-Lawz Mountain Natural Museum



Figure 10. Outdoor of the Al-Lawz Mountain Natural Museum

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CONCLUSION

This work has presented the development of Al-Lawz Mountain Natural Museum in Tabuk, Saudi Arabia. The estimated gross floor area of the proposed museum is 21419 m². In addition, the building is comprised of few key zones, such as station, restaurant, museum, outdoor activities, and parking. The Al-Lawz Mountain Natural Museum is expected to preserve the rich culture and heritage of Tabuk province and Saudi Arabia. In addition, the museum will be a major tourist attraction in Saudi Arabia and will also contribute to its economic development.

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