

# An-Najah National University

# Faculty of engineering

## **Building Engineering Department**

Project Name: Shopping Center

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# **Project's Abstract**

#### Introduction:

Our Project is Shopping Center; the location of the proposed site is in Nablus city in Palestine.

We will design architectural, structural, electrical and mechanical plans for a shopping center, in addition to considering the environmental aspects and designs.

The project will service people on the city and the visitors of Nablus city, and will achieve the architectural and environmental objectives in addition to structural, electrical and mechanical standards.

The design will consider the environmental requirements and needs, in addition to the architectural, structural, mechanical and electrical systems and the design will be eco friendly.

The reason of choosing an environmentally designed project is the benefits that can be obtained, such as; low energy consumption, less pollution to the outside atmosphere which mean environmentally friendly building. Moreover, the governments and the world attitude claims for such buildings especially after the global warming problems arise.

Our project will improve performance in metrics such as energy savings, water efficiency and improved indoor environmental quality.

## **Requirements design:**

## \* Architectural design:

Architectural design Is an important part in any construction project, because it provides unique buildings and a different shape for a project. In addition, it makes buildings comfortable and easy to use, since it depends on standards and codes for design.

The concept of the project is to redesign already proposed plans for a shopping center at Saudi Arabia taking into consideration the adaption of the project at new location in Nablus where climate and environment is different than it in Saudi Arabia. Moreover, we would perform the structural, electrical, mechanical designs for the project

#### • The Center Description:

**Original Project:** The original project is (4132 m2) square meter, consists of four floors. The floors are:

1- Basement floor which is used for Shops and Restaurant.

2- Ground, first and second floors consists of Shops.

#### Comments that could be found in original project:

1. The parking was outside the building which wastes lots of area.

2. The special needs facilities were not taken in consideration such as ramps and WC's.

3. The number of elevators is not enough and there is only one panoramic elevator and there is no services elevator.

4. There is no emergency exit.

5. The numbers of WC's are not enough and there is only one WC unit in the basement floor.

## **\*** Structural design:

Structural design is a major element in the designing phase for any project, since it determines if the project is structurally safe or not. The proposed project will be designed to resist the loads, and to resist earthquakes forces as well. This chapter defines the design standards that are used for shopping centers' designs, such as codes, loads, programs.

#### Project Description:

The project consists of one block with four floors. Some of its slabs are designed as one way ribbed reinforcement concrete slab, while other slabs are designed as two way ribbed reinforcement concrete slabs.

## \* Mechanical design:

Mechanical design of a building involves many aspects including water supply systems and drainage water systems design.

#### Water supply systems

Feeding water to buildings is divided into two main sections: the cold water supply (regular), and the hot water supply. Each system consists of several sub systems.

## \* Electrical design:

Lighting is one of the most overlooked and yet important elements of good interior design after all. In addition though, lighting is also essential in terms of creating the mood and ambience of a living space, so getting it right from the start is vital.

## **Lighting Design:**

• Design for Day Lighting.

Sunlight is an elemental part of our existence and a fundamental component of green design. Buildings with abundant daylight help keep us physically and emotionally healthy. They also reduce the need to turn on electric lights during the day, cutting lighting energy consumption by 50 to 80 percent, according to the U.S. Green Building Council. Generous use of glass is the most obvious way to get light into a building, but a good day lighting strategy is just that a strategy. Rather than simply cramming in as many windows and skylights as possible, it's important to balance light's benefits with its side effects: heat gain/loss and glare. We can control these elements with proper window placement and orientation, shading techniques and energy-efficient glass. So, in our project we used sides of glass:

- $\checkmark$  The front side for Mall (North side).
- $\checkmark$  The front side for shops.
- $\checkmark$  Glass dome in the ceiling.

#### • Design for Artificial Lighting.

Artificial lighting is any lighting that is not sunlight. Generally speaking, artificial lighting is lighting which is made by human, such as fluorescent, tungsten, mercury vapor, sodium vapor, halogen, compact fluorescent, et cetera. It can be turned on and off at a flick of a switch.

In this project the artificial lighting design was designed by using DIALUX software program.