
Chapter 1

Introduction

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1.1.Introduction:

Human being started since its beginning to search for residence and fled to the caves and rock grooves surrounding it, also its attempts to develop methods of life, and to adapt to its environment, and thought to develop his residence using the surrounding materials to create this shelter of wood, animal hides, stones and mud, to the using of iron and cement which is currently used in construction.

In response to the requirements of progress and development it started to trend to the specialized buildings in the areas of public and private life, making for each need its special premises such as universities and schools, hospitals, health centers and residential apartments, etc...

As well, with the development of human being and the development of his life and with continued industrial revolution it was necessary to keep up with the developing events to meet the needs of the people of various categories and jobs, here comes the role of the engineer who puts his ideas and solutions in order to moving forward in Human Revolution.

Green or sustainable architecture considered as one of the new directions of architectural thinking, which is interested in the relationship between the environment and the building. So it should meet the present needs without omission of the future needs of the next generations and it contributes to decrease the effect of buildings on environment and also decrease the buildup and working costs, so it is a high quality system meets the surrounding environment with the least side effects. So it is an invitation to better deal with our environment.

A lot of wonder when we hear about green roofs and green buildings and we wonder why they are planting roofs of buildings? We are terrified of the idea of permanent trees, plants and water above our heads and the impact on homes. It is a risk that we cannot accept it, especially since we have planted inside us the fear of leakage of water from the roofs of our homes, despite the modern technologies that provide complete isolation of water. Therefore, this Bishop is absent from our Arab countries and there are few who speak of them in our Arab world except from a few shy attempts by the friends of the environment here and there.

The focus of study in this project is the construction design procedure of a residential and commercial building and environmental study of it especially for green

roof And clarify its image to be used in the Arab world. which proposed to be constructed in Hebron.

1.2.General definition of the project:

The project is a commercial residential building on a piece of land in Hebron, the total area of the land 2303 m^2 , and the total area of building 9113 m^2 . The building consists of 8 floors, as follows: The basement area is 2190 m^2 , the ground floor area is 665 m^2 , The first floor area is 1042 m^2 and the second floor area is 1042 m^2 . The first and second floors are repeated three times in a row.

1.3.Reasons of choosing the project:

The importance of the choice of the project back to several things, from the structural side the most important one is skill acquisition in the design of structural elements in buildings, particularly of huge buildings such as the project, which we are introducing in this search. In addition to increase in knowledge of construction systems, as we learned in our university courses, as well as the acquisition of scientific and practical knowledge in the design and construction implementation of projects, which will confront us after graduation. From the environmental side to the most important is to answers the following question: Is the building that was created considered Somewhat supportive of the environment? And the following sub question, Will we be able to change people's thinking about green roof? What are the benefits to the building of this technique?

And there are several reasons that led to the selection of this project, including the reasons for the nature of the project, and other reasons for personal can be summarized as follows:

1.3.1. Reasons depend on project's nature:

Palestine suffers from limited natural resources because of occupation policy and misuse the resources such as water .Therefore, these resources are imported from Israel and neighboring countries.

In addition, Palestine suffers from environmental pollution in its different types water, air, soil and noise pollution.

There are many challenges for the future , such as taking a responsible approach towards nature .you need to look for a particular method or a particular replacement without decreasing either comfort level or living standard.

The building sector contributes up to 30% of global annual greenhouse gas emissions

Therefore, we need a technique that reduces pollution and acts as a filter for air purification. Noise reduction, which is considered a problem of modern times especially in cities. Increase the life of the buildings so that they act as thermal insulation. Reduce the cost of air conditioning during the summer and heating during the winter.

So, the design and construction of the buildings affects a large proportion of these resources, and the good construction effect positively on the climate for a long time so it's must be planned and constructed according to the , climatic aspects, and water conservation.

1.3.2. Personal reasons:

We thought to getting out of the box, by doing a different project, with a distinctive idea, that brings to our specialties a different flavor. "Such as add barbecue flavor to our dishes".

The desire to come out with an idea that benefits society by providing a healthy home environment, with minimal costs. So that the available resources will be exploited and the operation of the building as appropriate.

1.4.Project Objectives:

1.4.1. Architectural Objectives

The general shape of the building usually gives an impression of its techniques and attraction to tenants and citizens. And therefore it should be focused on the architectural aspects, and through these projects, the architect can make it a historical event through the coordinated blocks and the elements used in the interfaces.

1.4.2. Structural Objectives:-

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- a- The ability to choose the suitable construction system for different projects and the distribution of structural elements on the drawings, taking responsibility for the preservation of the architectural character.
 - b- To employ all the information we have acquired during our study life through different courses in order to reach a complete project.
 - c- Identify new models and methods of construction that we did not acquire during our university study and know how to deal with them as needed.

1.4.3. Environmental Objective:-

- a- Reduce storm water runoff
- b- Increasing home value and return on investment
- c- Reduce smog and improve air quality
- d- Provide green space.
- e- Improve aesthetics

1.5. Standards

- a- using ACI code.
- b- Using analysis programs and structural design such as (Atir, Sap , safe , Etabs)
- c- Other programs (Microsoft word, Microsoft power point).

1.6. Project Problem

The problem of this project is the analysis and structural design of all the structural elements of our building. In this field, each element of the structural elements such as tiles, columns, bridges, etc. will be analyzed by identifying the loads that are placed on it, and then define the dimensions and design of reinforcing required, taking responsibility the safety factor of the origin and then will be the work of the operational plans and drawings of construction elements that are designed to lead this project to be constructed in reality.

From the environmental side the problem of this project is analysis the all the environmental elements of our building And a general study of green buildings and focus on green roof and then Make appropriate changing decisions that make it economic and environmental building.

1.7.Project procedures:

1. Studying the architectural plans and drawings in order to ensure their correctness from the architectural aspects and their compatibility with the objectives of the project.
2. Determine the Structural loads of green roof system In order to add them to the original load.
3. Studying structural elements of the building and the most appropriate way for the distribution of these elements such as columns, bridges, in a way that does not collide with the architectural design and achieve the economic aspect and safety factor.
4. Selecting structural elements and determining the loads affecting them.
5. Design of structural elements based on analysis results.
6. Design by different design programs.
7. Design of the building by technology 3D
8. Add our report result.

1.8. Project Timeline:

1. First Semester

Tables number (1-1) and (1.2) show the timeline of the stages of the work on the project with the steps shown during the first semester of 2017-2018.

Table 1. 1project timeline for structural design

Week #	Project Selection	Study site	Gather information about the project	Study the building architecturally	Studying the building constructively	Preparing an introduction to the project	Presentation the project	Structural analysis	Structural design	Preparing project plans	Writing the project	View the project
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Table 1. 2project timeline for environmental study

View the project	Writing the project	Design of green roofs using sketch up program	Structural loads of green roof system	Reasons for choosing the green roof company t	Presentation the project	Preparing an introduction to the project	Studying of Components of green roofs	Studying of Types of green roofs	Studying of Green roof	Studying of Green Building	Studying of Sustainable Buildings	Week #
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