

## **Chapter V**

### **Results and recommendations**

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### **5-1 Results**

Through this research, and after analyse each part of the project, the results we got can be summarized as:

1- study the architectural plans and understand them have a major role in finding the most appropriate solutions to find the best type of construction system used in the building.

2- The ability to do manual calculation for the elements is necessary to create a good structural designer and to compare the manual solutions with the structural programs results and understand how they work.

3- Identify the structural elements, and how to deal with it, with its mechanism, and it is very important to design it taking into consideration safety and structural strength.

### **5-2 Recommendations:**

1- There should be coordination between the architect and the structural designer during the design process to build an integrated building structurally and architecturally.

2- Recommends executing the project according to the architectural plans attached with the least changes.

3- It is advised to have a structural engineer in the project site to insure executing the work according to the required structural drawings.

4- it is essential to complete the electrical and mechanical design of the project before the start of any editing on it according to the final structural design of the project.

### **5-3 References:**

- 1- Jordan's national building codes, coded loads and forces, the National Building Council  
Jordan, Amman, Jordan, 1990.
- 2- Supervising professor notes.
- 3- ACI Committee 318 (2008), ACI 318-08: Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute, ISBN 0-87031-264.

- 4- Nawy, Edward, Prestressed Concrete Fifth Edition Upgrade: ACI, AASHTO, IBC Codes  
Version (5th Edition), 2009.

#### 5-4 Appendix:

- 1-Appendix (A): Architectural Drawings"this appendix is an attachment with this project".  
2.Appendix (B): Structural Drawings "this appendix is an attachment with this project".  
3.Appendix (C):

TABLE 9.5(a)—MINIMUM THICKNESS OF NONPRESTRESSED BEAMS OR ONE-WAY SLABS UNLESS DEFLECTIONS ARE CALCULATED				
	Minimum thickness, $h$			
	Simply supported	One end continuous	Both ends continuous	Cantilever
Member	Members not supporting or attached to partitions or other construction likely to be damaged by large deflections.			
Solid one- way slabs	$\ell/20$	$\ell/24$	$\ell/28$	$\ell/10$
Beams or ribbed one- way slabs	$\ell/16$	$\ell/18.5$	$\ell/21$	$\ell/8$
Notes: Values given shall be used directly for members with normalweight concrete (density $w_c = 2320 \text{ kg/m}^3$ ) and Grade 420 reinforcement. For other condi- tions, the values shall be modified as follows: a) For structural lightweight concrete having unit density, $w_c$ , in the range 1440-1920 $\text{kg/m}^3$ , the values shall be multiplied by $(1.65 - 0.003w_c)$ but not less than 1.09. b) For $f_y$ other than 420 MPa, the values shall be multiplied by $(0.4 + f_y/700)$ .				

Figure 5-1: Minimum thickness of nonprestressed beams or one way slabs unless deflections are calculated.