Prince Mohammad bin Fahd University
College of Engineering
Department of Civil Engineering
Project proposal

Structural and geotechnical design of Al-Eman mosque located nearby a slope at Azizyah district

LEARNING OUTCOME ASSESSMENT III

SENIOR DESIGN PROJECT PROPOSAL (GROUP I)

Advisors:
- Engr. Danish Ahmed
- Dr. Tahar Ayadat

Coordinator:
- Dr. Andi Asiz

Students Names & ID's:
Eman Alshnakhnkah 201502627
Razan Mugharbel 201600726
Munirah Alqahtani 201502390

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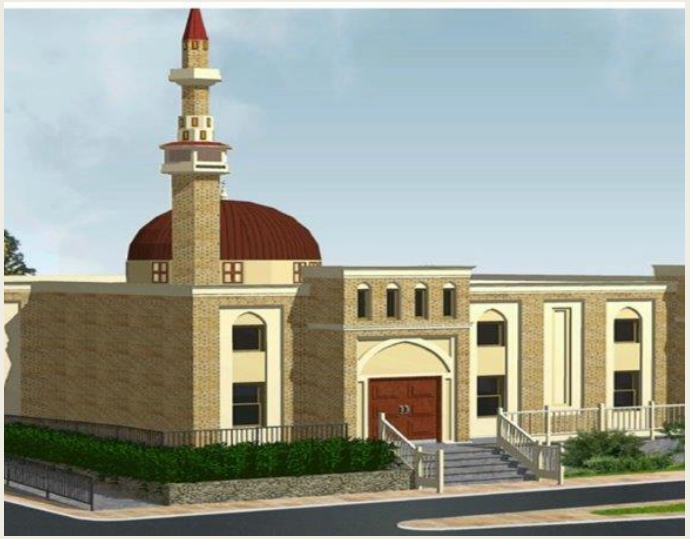
Introduction

- A mosque is a valuable place in Islam. It is the place where religious acts are done in a peaceful atmosphere
- The designated area for the projected mosque is newly inhabited and still lacks of important facilities.



Project Objectives

The main objectives of this project are:

Etabs Modeling	• Structural modeling using Etabs
Structural design	• Reinforced Concrete Structure • Steel Structure
Geotechnical design	• Foundation system • Assessment of slop stability
Cost estimation	• Cost estimation of RCC and steel structure (Comparison)
Project Constraints	• Project constraints analyses

Project Description

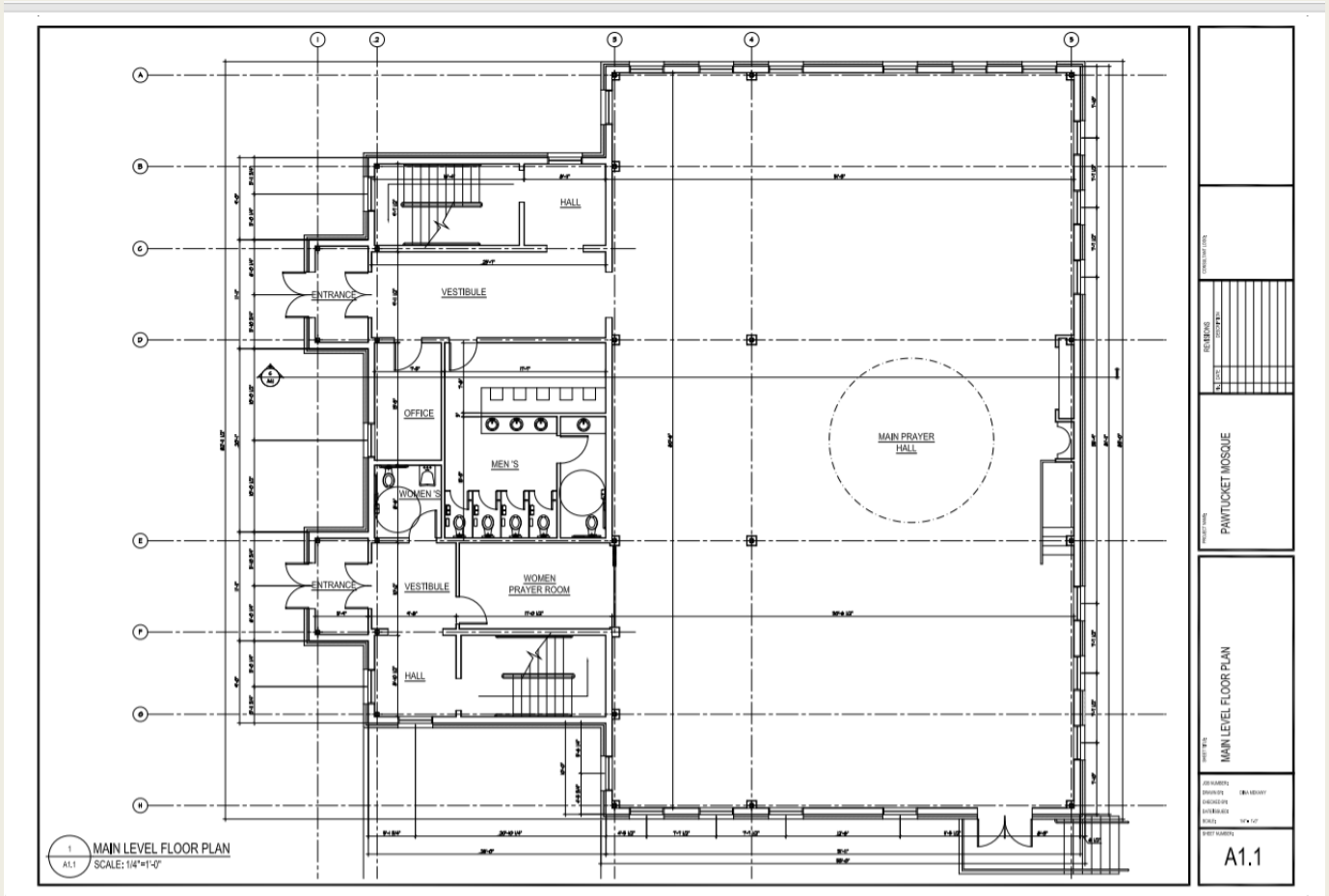
- **Number of floor** = 3 (main, mezzanine and basement floor)
- **Hight of the mosque** = 40 ft
- **Length of the mosque** = 80 ft
- **Width of the mosque** = 76 ft
- **Total area of the mosque** = 6080 $feet^2$
- **Prayer capacity** = 300 person (male and female)

Project Description

Side views of mosque:

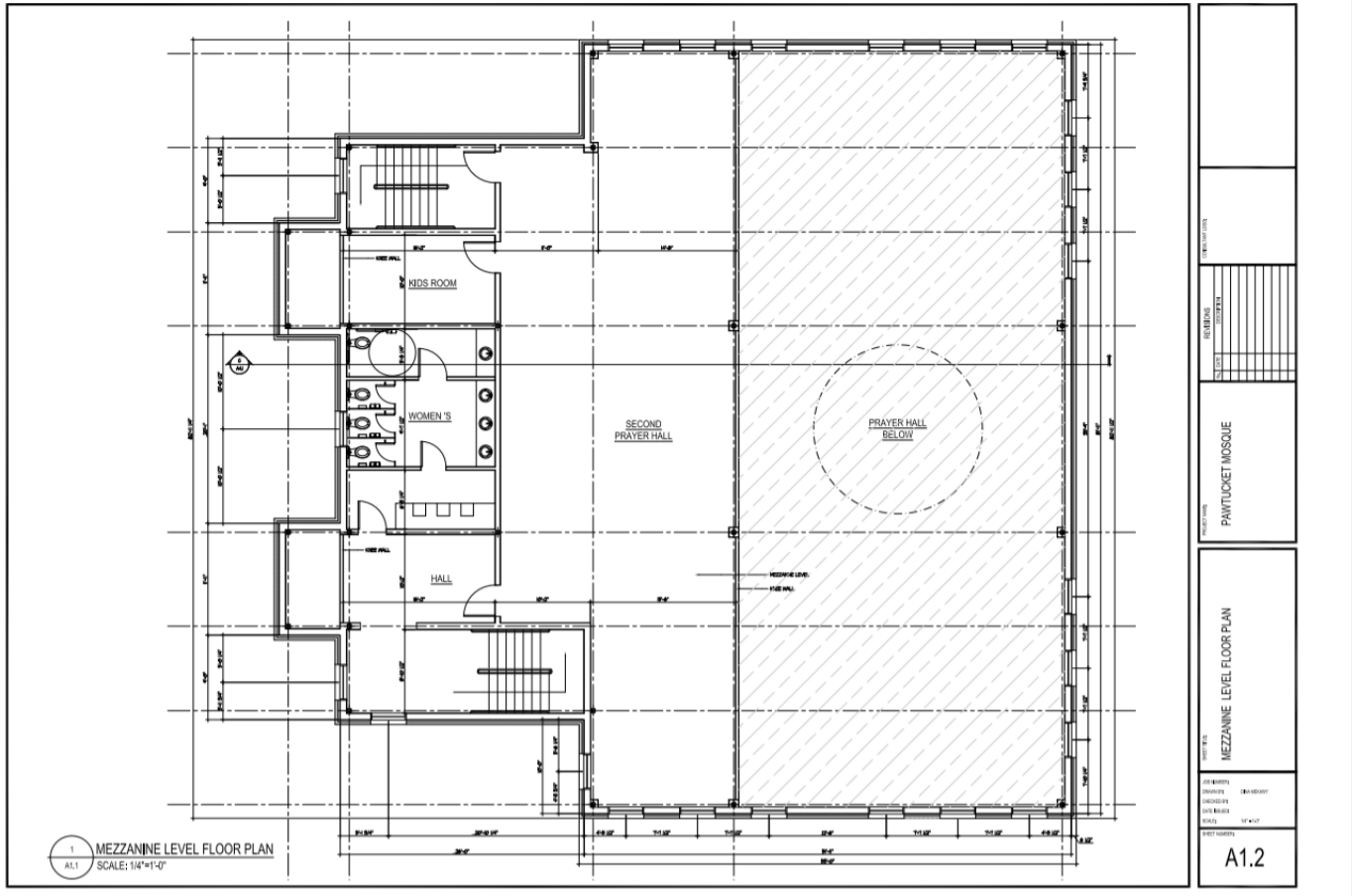
Project Description

Main floor of the mosque:



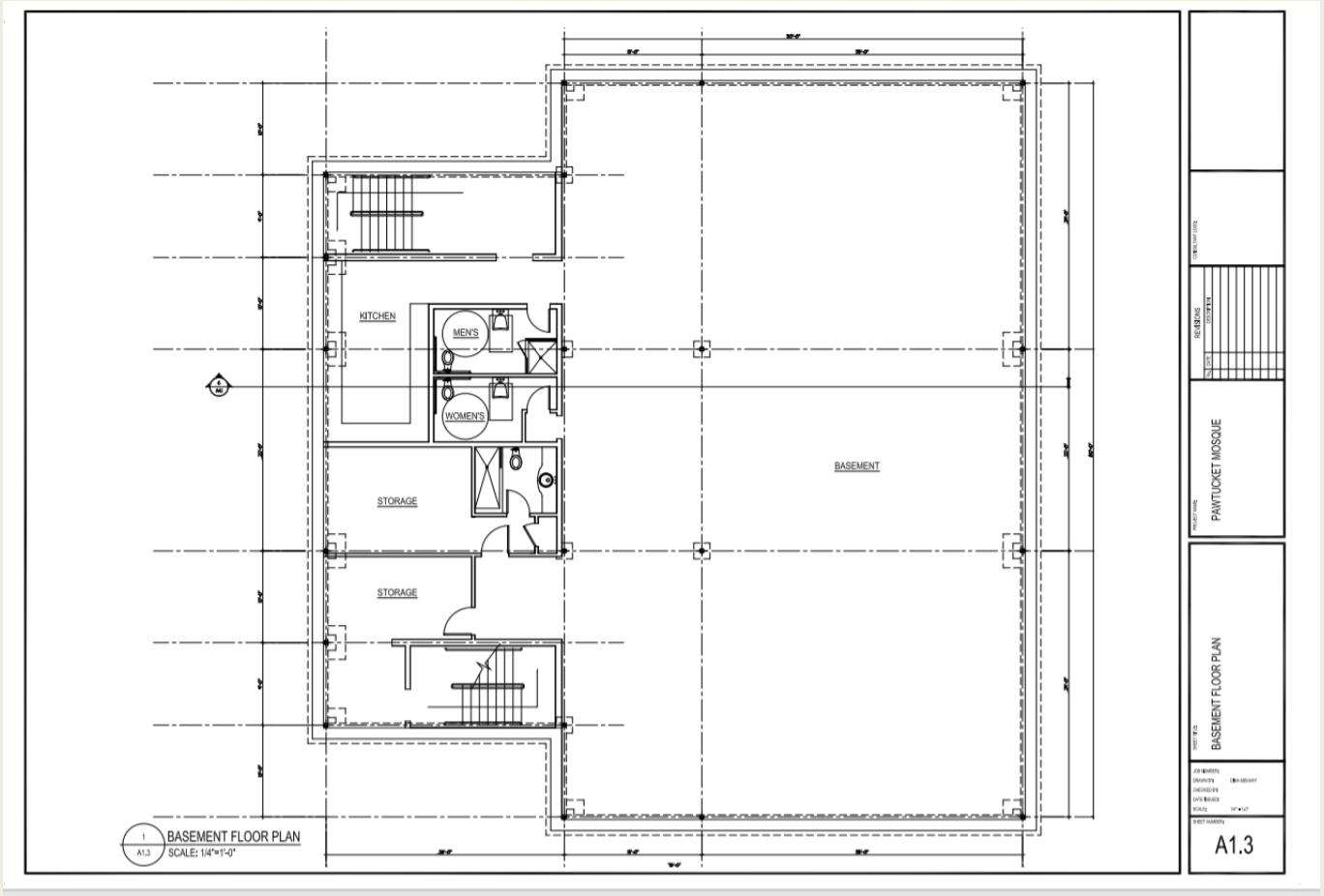
Project Description

Mezzanine floor of the mosque:



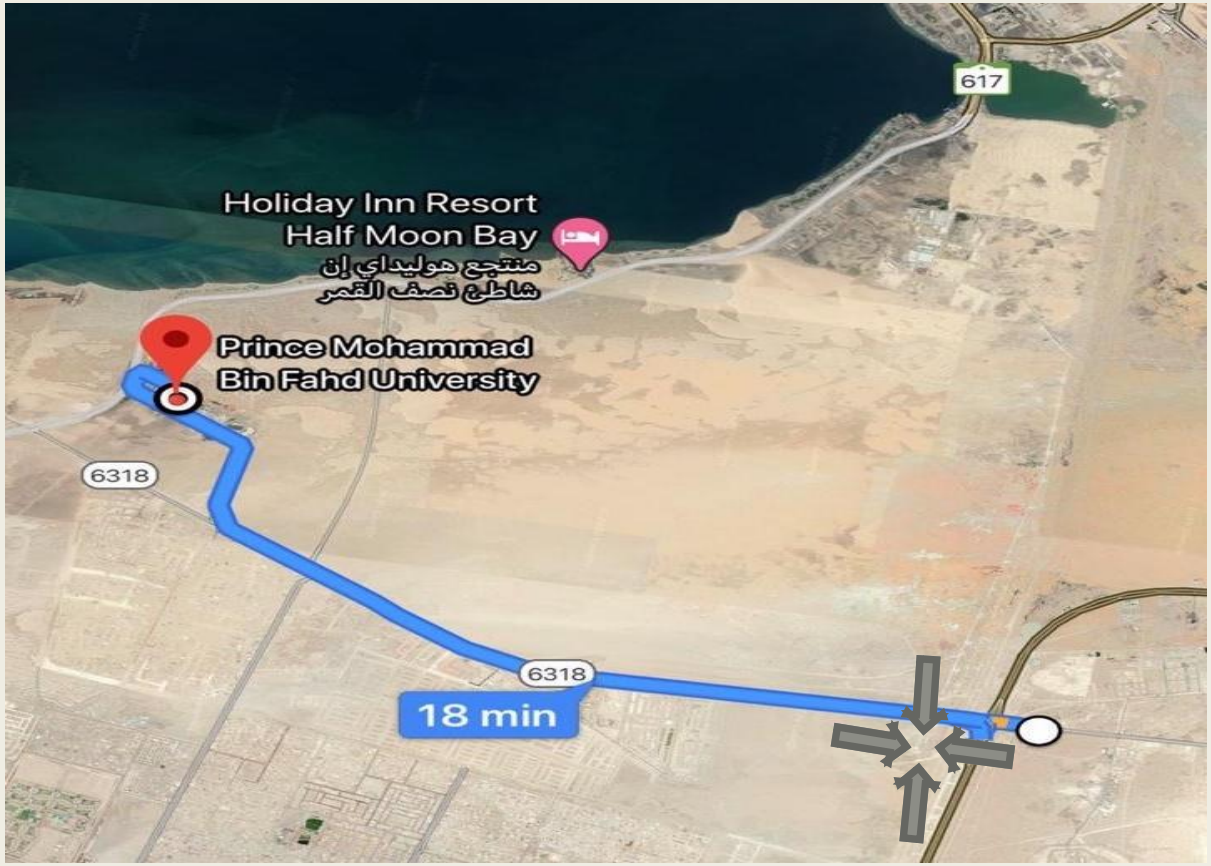
Project Description

Basement floor of the mosque:

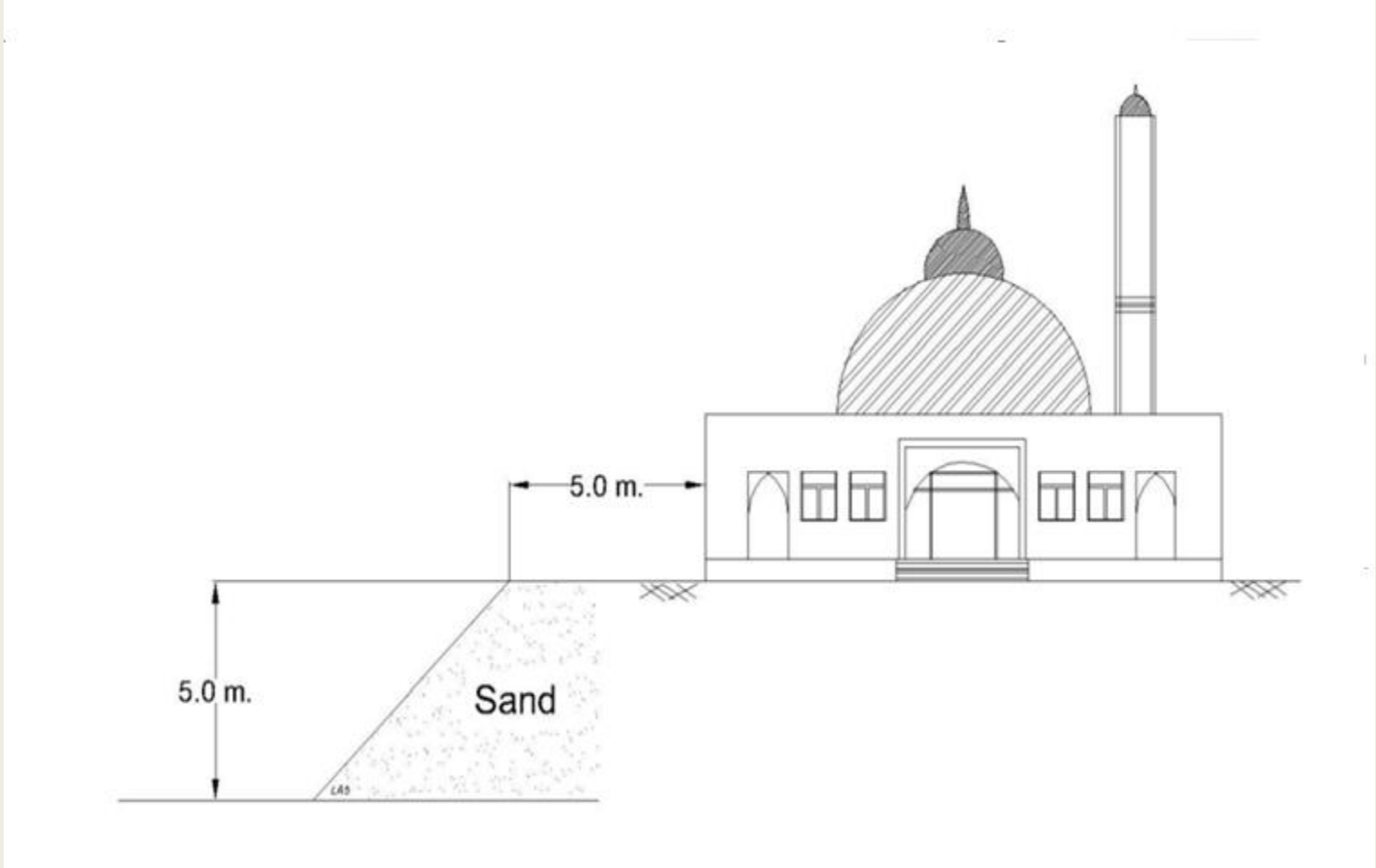


Project Description

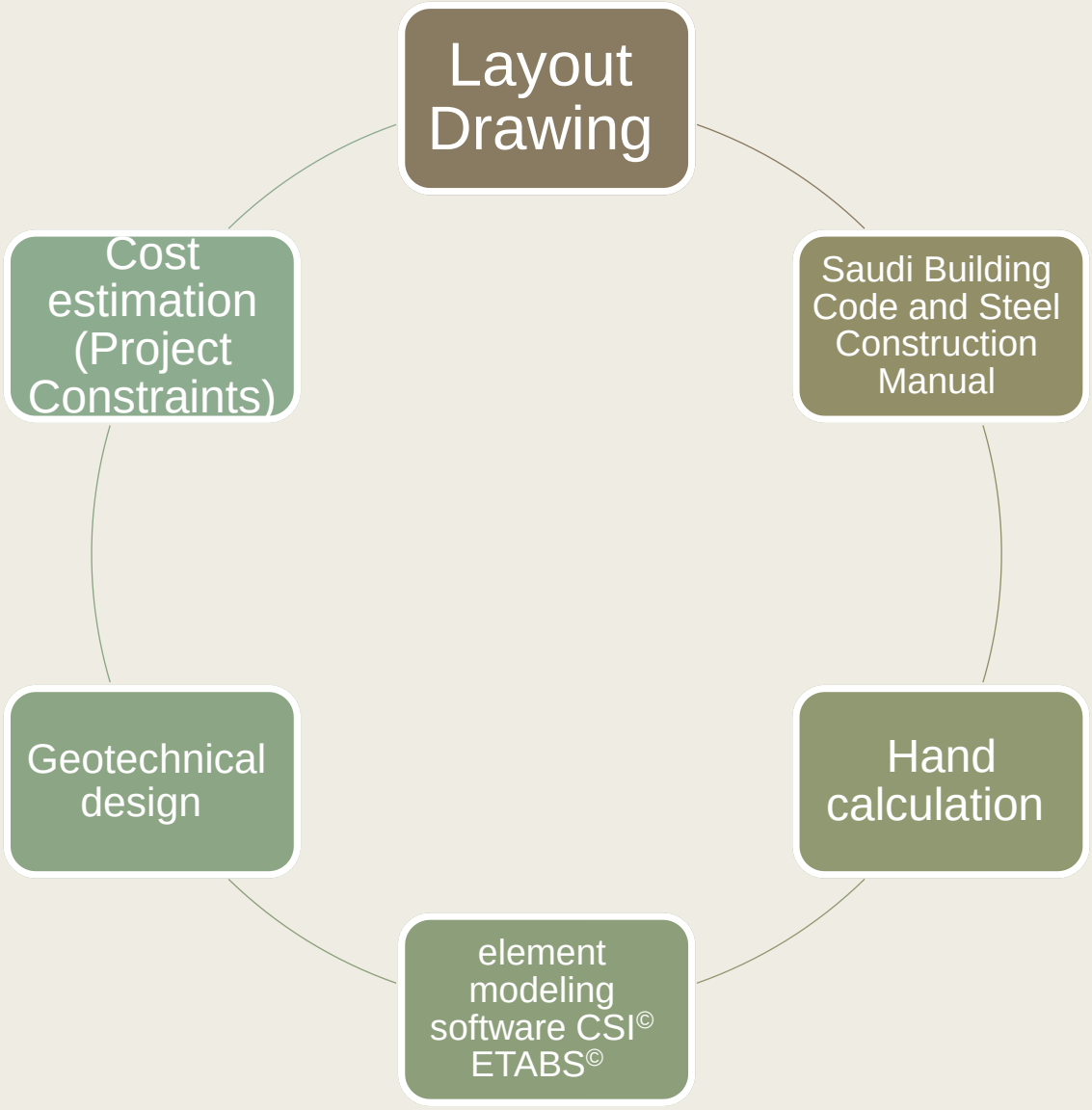
The projected mosque is located at Al Aziziyah disctrict. It is situated about 4 km east of the intersection Abu Hydria/Al Khalidiya Roads (i.e. the bridge of the military base).



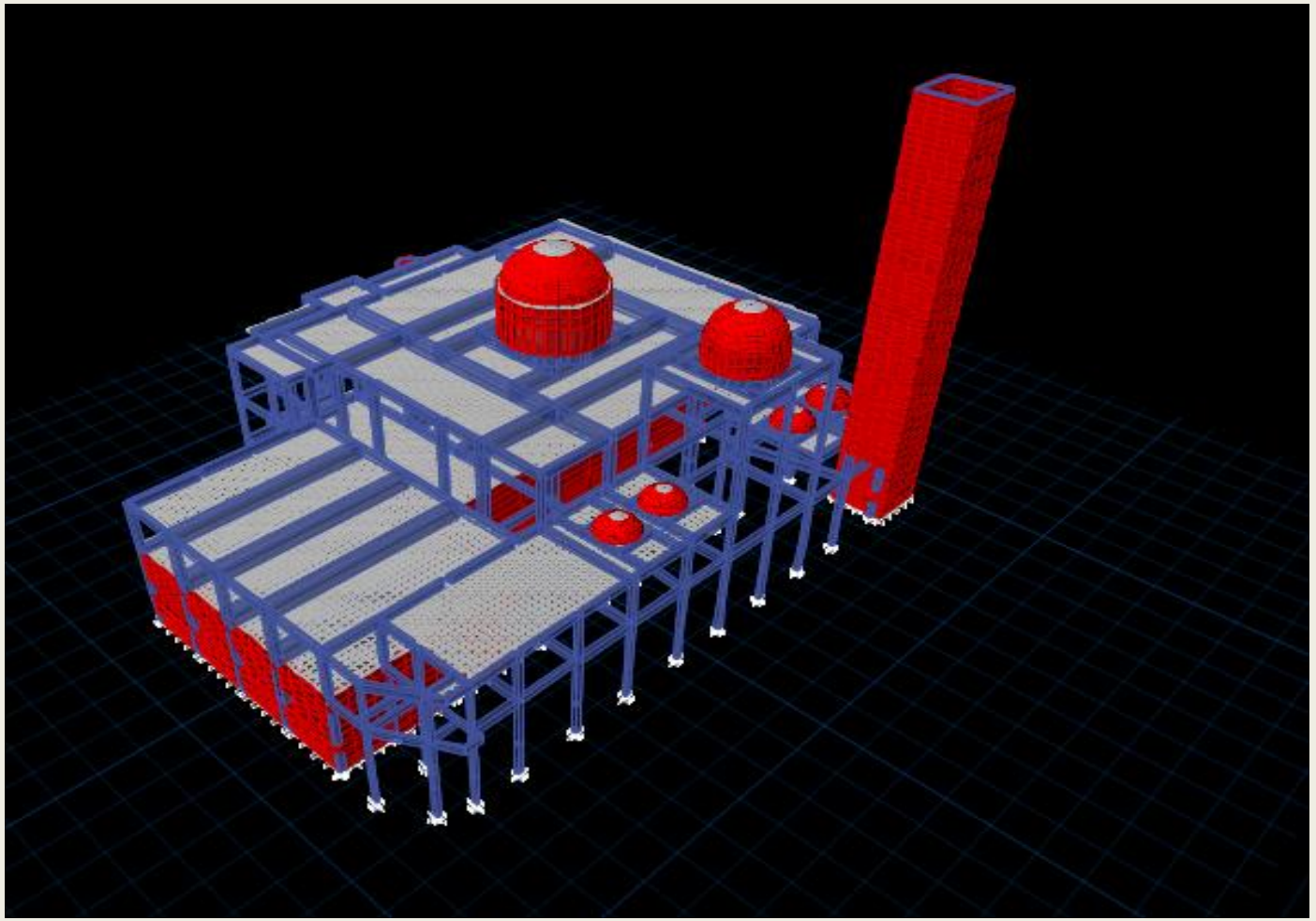
Project Description



Methodology



Structural Design



https://www.google.com/search?q=mosque+etabs+modeling&safe=strict&rlz=1C1CHBF_en

Geotechnical Design

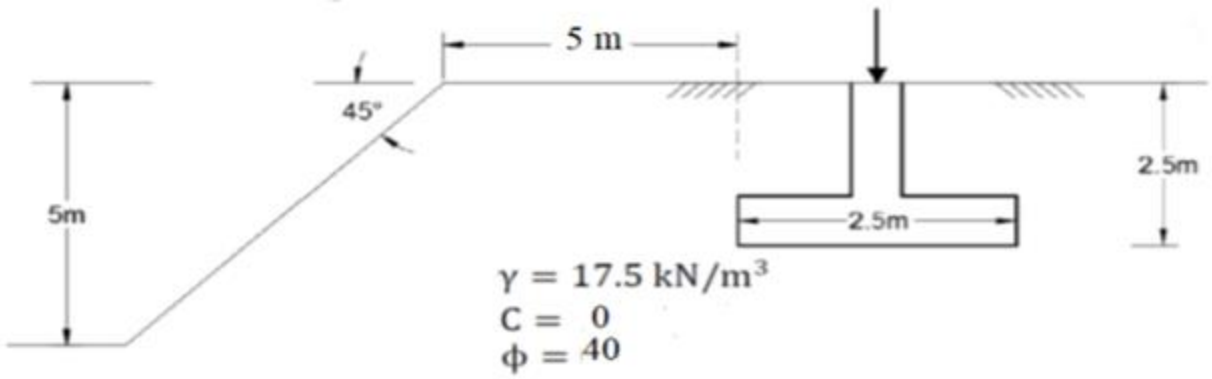


Figure #1. Location of the Foundations of the Mosque

Geotechnical Design

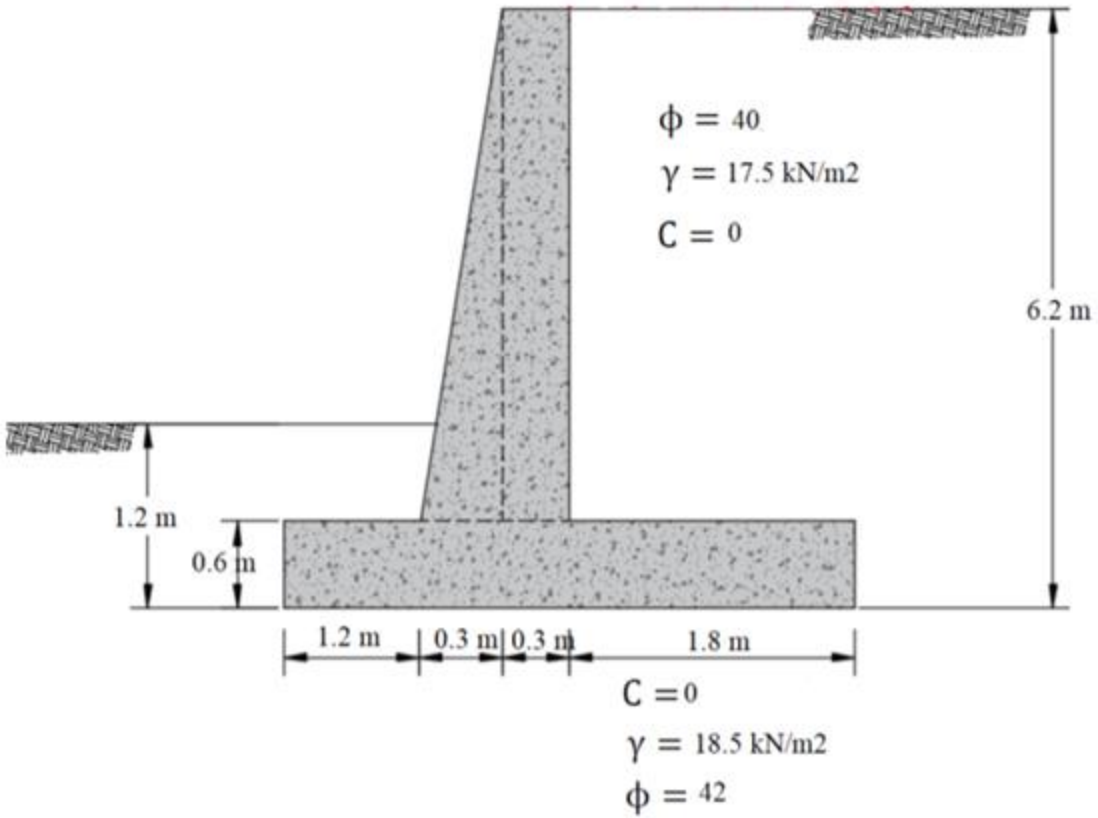
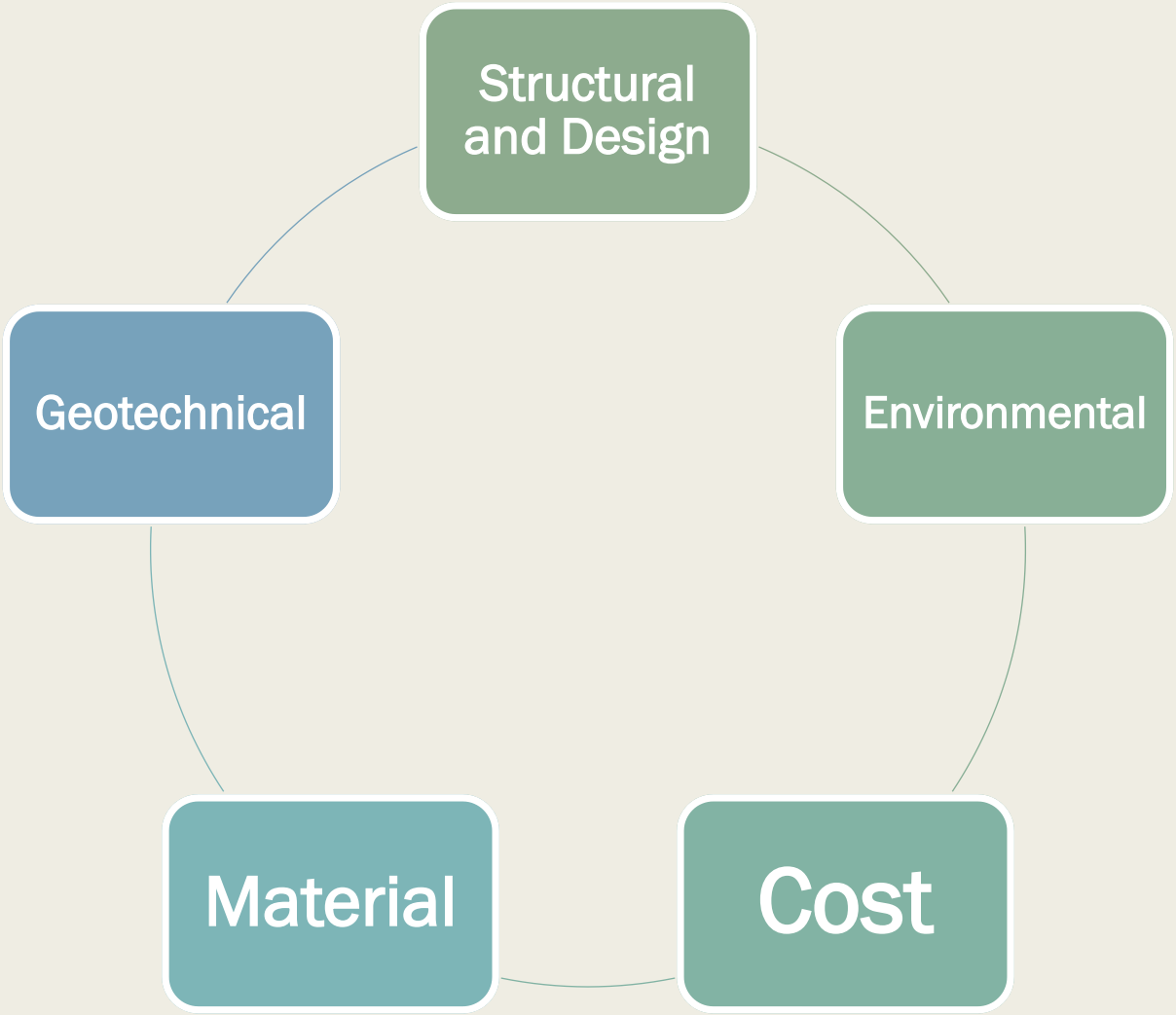


Figure #3: Probable Solution (#1)

Design Constraints



Project Timeline

Month	September				October				November				December				Jan
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Data Collection	1	2															
Proposal		2	3														
Layout	1	2	3														
Preliminary Design			3	4	5	6											
Hand Calculation					5	6	7	8	9	10							
Structural Design and Analysis					5	6	7	8	9	10							
Geotechnical Design								8	9	10	11	12					
Cost Estimation									9	10							
Final Report							7	8	9	10	11	12	13				
Final Report Correction													13	14	15		
Final Presentation													13	14	15		

References

- [1] American Institute of Steel Construction. (2015). *Steel Construction Manual (14th ed.).* Chicago, Illinois, United States of America. ISBN 1-56424-060-6
- [2] American Concrete Institute. ACI. (2014). *Building code requirements for structural concrete (ACI 318-14)*. Farmington Hills, Michigan.

[3] Masters, G., & Ela , W. (2007). Air Pollution. *In Introduction to Environmental Engineering and Science* (p. 367). Pearson.

- [4] *AutoCAD for Mac & Windows: 2D/3D CAD Software.* (n.d.). Retrieved from Autodesk: https://www.autodesk.com/products/autocad/overview?plc=ACDIST&term=1-YEAR&support=ADVANCED&quantity=1

- [5] *CSI ETABS Program.* (n.d.). Retrieved from Computer and Structures. Inc: https://www.csiamerica.com/products/etabs/releases#18-18.1.1.


Thank
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