



TECH 1

Ramy Labna – CM Option
9/16/2013
Advisor: Prof. Sowers

Executive Summary

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Executive Summary

The purpose of this technical report is to evaluate and get familiar with the conditions and background information regarding the project 2B+G+M+7. Information such as the project schedule, site plan, project cost, system details and project delivery system were studied to further attain a better understanding of the project.

2B + G + M + 7 is a 100, 000 square foot building located in Mansoura region in Doha, Qatar. It is comprised of mainly residential apartments with retail stores on the ground floor. The Mansoura area is an up and coming renovated region, targeting high end retail stores in order to bring in more attraction and business to the area.

Client Information

The client for this project is Mrs. Fakhriya Ismail Radhwani, who is a Qatari real estate investor, who is constantly on the lookout for new ventures to increase her capital. She has been in the real estate business for many years and has proven to be very successful. One of the main reasons Ms. Fakhriya had studied and entered the real estate market was due to Qatar being heavily populated with expats who only have the right to rent property throughout the country. This is a huge advantage, as she can benefit from buying property and make some profit through renting it out. Her main objective for the construction of this project is for the potential of financial gain, as the location of the project is an up and coming renovated region, which will help attain higher asking prices for the spaces. Mrs. Fakhriya has put an emphasis on the quality and schedule of completion of the project, to ensure a rapid time for her clients to occupy the building. Some actions were taken to ensure these expectations were met, which included, stringent qualifications for the contractor and design firm to ensure experience and ability to perform.

Existing Conditions

The development of the project is located between Al Mansoura Street and Al Salhiya Street in Doha, Qatar. There was a prior office building on the site, however demolition was not included in the contractual agreement. The area around the site is very congested due to it being a residential and office region. Construction parking for the staff will be off site, right off of Al Salhiya Street, to the entrance of the Site. Extensive underground utilities run along both Al Salhiya and Al Mansoura Street, which the building will tie in to.

Project Schedule

The project started on 15th November, 2012 when Petra Design (Architectural Firm) was hired as the architects to design the building. Commitment Construction (Contractor) was selected

after construction drawings were completed. Project construction commenced on 15th April, 2013. Electrical, Plumbing and HVAC have long durations because the contractor decided to phase the work floor by floor, starting with the basement. The project duration is approximately 24 months from the project commencement. Owner move in would be the 1st May, 2015.

Project Cost Estimate

The actual cost of construction for the Project was \$7M. The cost breakdown for the systems was compared to the square foot estimates obtained from RS Means. It was found that the estimate came in higher than the actual cost due to many reasons such as, the project being located outside the US, therefore materials, utilities and labor costs would be drastically different, since there are different government regulations.

Project Delivery & Staffing Plan

Analyses of the project delivery system and staffing plans were performed to further understand the responsibilities of the parties within the project. The delivery method for the project is Lump Sum Method, since it was easier to manage the project and control the cash flow. Contractor was required to provide a performance bond before any work can begin, and an advance payment bond in conjunction with the performance bond for the protection of the owner in case the contractor fails to abide by contractual agreement.

Since the project is performed solely by Commitment Construction, the staffing plan is quite similar to the Organizational Chart of the project. The General Manager was heavily involved in the early stages of the project in order to get the project underway and make any important decisions regarding changes for any information given by the architect in the construction drawings. Once the project had commenced, responsibilities were then passed down to the Sr. Project Manager who was in charge of the Contracts Manager and Quantity Surveyor and dealt with all the contractual agreements and Sr. Project Engineer who was in charge of the Project Engineer and MEP Coordinator and dealt with the coordination of the construction of the building.

Building Systems

The buildings system summary was looked into with detail, to understand the key aspects of the design and construction of the building. The whole building is structured using Cast in Place Concrete. It is the structural support acting as beams, columns, floors, walls and roof. It serves the exterior façade and interior walls. The reason for the use of this system is due to its long term durability and structural support. A curtain wall system is used partly on all façades of the building. Installation is identical throughout the building and is comprised of powder coated

finish aluminum frame and double pane glazed window with reflected glass on the outer pane and clear glass on the inner pane with an air gap.

The mechanical system being used is a DX Split Type Air Conditioning Unit. Reasons this was chosen over a chilled water system was because it had lower installation cost, requires less labor and fewer materials to install. The basement areas are ventilated with impulse jet fans, smoke extract fans and fresh air fans, to reduce the level of polluted air and assist with the extraction of smoke in an event of a fire. Residential apartment on the other hand are ventilated using exhaust fans and wall mounted propeller fans to help move air of the enclosure. The staircase and lobby are pressurized with emergency ventilation fans, which are roof mounted and have a fire rating of 2 hours. Most assemblies will have a fire rating of two hours as a minimum. Sprinklers will also be utilized throughout the building.

The total connected load provided by KAHRAMAA is 1466.40 KW, with the maximum demand load for the building being 1128.52 KW. The transformer provided by the utility company is at 1600 KVA. The main switchboard at 2500A feeds the entire building via a bus bar (power concentrated for distribution). The current flows through the main switchboard and is then split into 17 breakers plus 1 spare to be distributed throughout the whole building. Sub main switch boards (SMDB) are used throughout each breaker. The SMDB feeds the final distribution board, which then feeds electrical energy to the end user. Two of the breakers further split into 2 similar bus bars rated at 630A to feed the apartments starting on the fourth floor, continuing on to the seventh floor. The reason to use other bus bars is to improve reliability, eliminate wiring errors and reduce system costs in general.

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16th September, 2013

Client Information



Mrs. Fakhriya Ismail Radhwani

- Qatari real estate investor

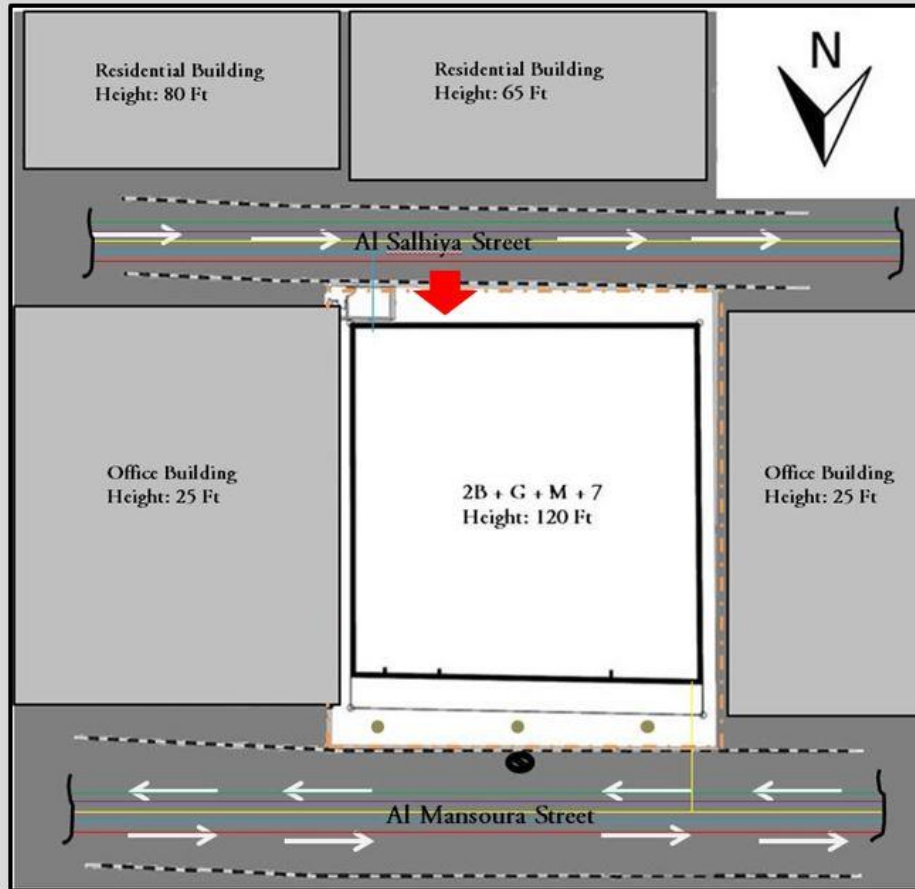
2B + G + M + 7

- Financial gain
- Up & coming renovated region

Experienced Owner

- Emphasis on Quality & Schedule of completion
 - Rapid occupation for her clients.

Existing Conditions Site Plans

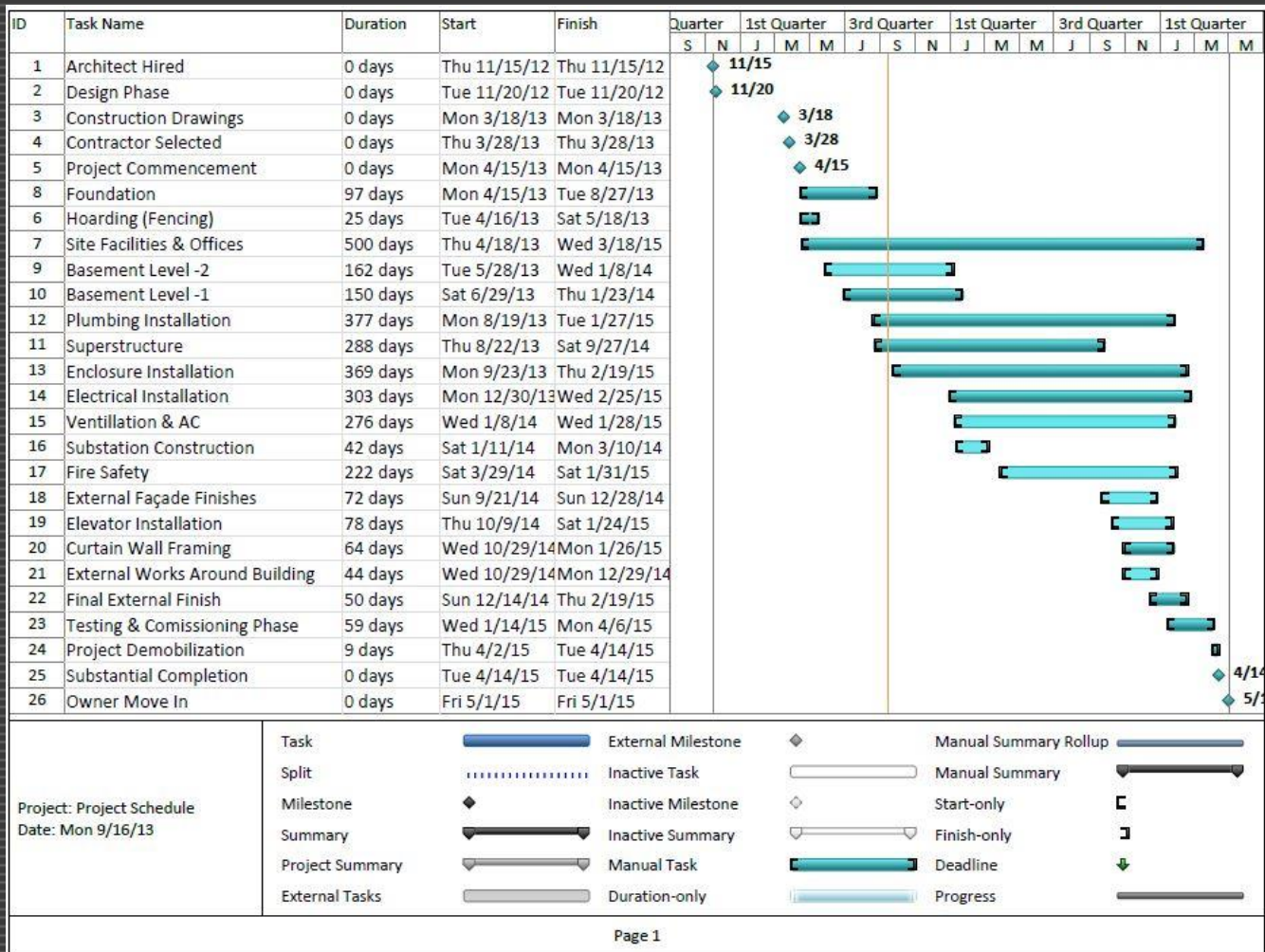


LEGEND

- Direction of Traffic
- Sanitary Line
- Electric Line
- Gas Line
- Communications
- Water Line
- Man Holes
- Existing Hose Connection
- Entrance to Site
- Street
- Adj. Building

| Ramy Labna CM Option | Existing Conditions |
|--------------------------------|----------------------------|
| | 2B + G + M + 7 |
| 9/15/2013 | Doha, Qatar |
| Tech #1 | Prof. Sowers |

Project Schedule Summary



Project Cost Evaluation



| System | Actual | | SF Estimate | |
|--|-----------------|----------|------------------|-----------|
| | Cost | Cost/SF | Cost | Cost/SF |
| Actual Building Construction Cost (CC) | \$ 5,997,443.10 | \$ 56.58 | \$ 12,647,791.60 | \$ 131.80 |
| Structural System Cost | \$ 3,236,701.38 | \$ 30.54 | \$ 2,860,627.22 | \$ 29.81 |
| Electrical System Cost | \$ 531,506.85 | \$ 5.01 | \$ 260,057.02 | \$ 2.71 |
| Plumbing & Drainage System Cost | \$ 282,898.63 | \$ 2.67 | \$ 867,496.48 | \$ 9.04 |
| Air Conditioning & Ventillation Cost | \$ 302,780.82 | \$ 2.86 | N/A | N/A |
| General Conditions | \$ 728,000.00 | \$ 6.87 | N/A | N/A |
| Total Project Cost (TC) | \$ 7,000,000.00 | \$ 66.04 | \$ 16,733,853.56 | \$ 174.38 |

Location Factor: Philadelphia, PA

Project Delivery System

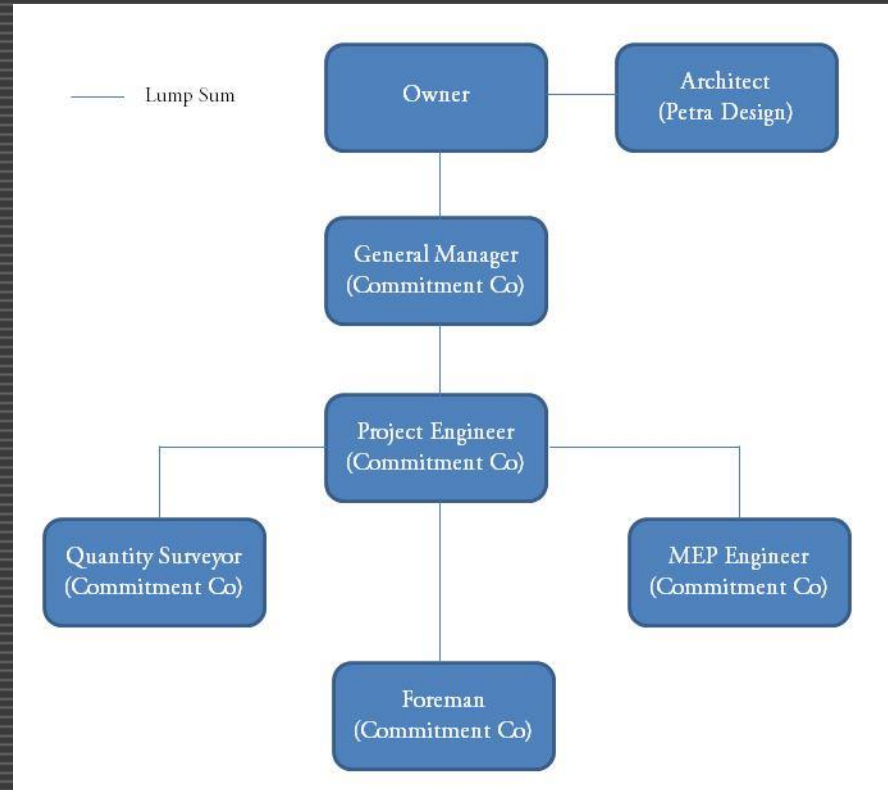


Lump Sum Method

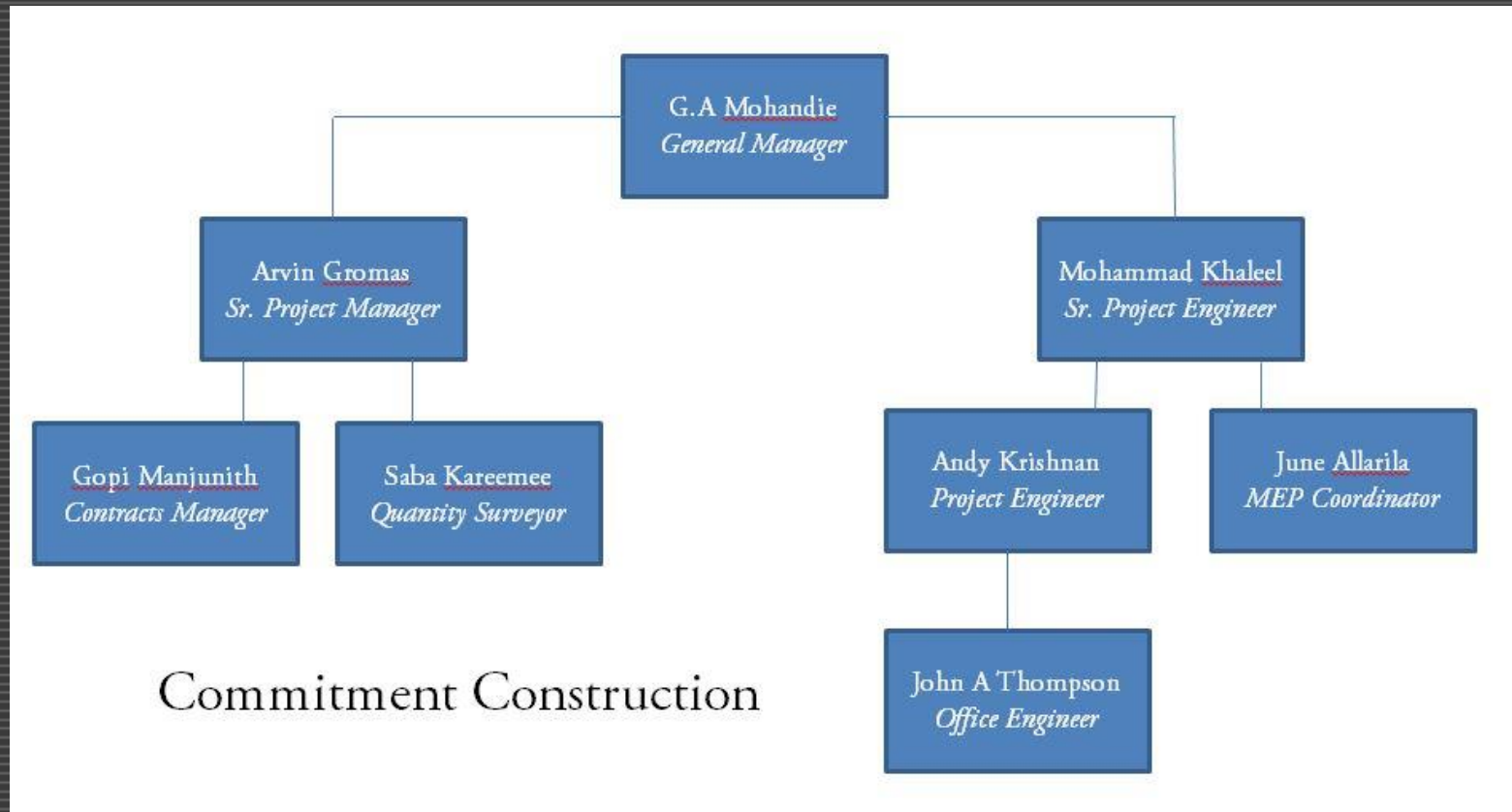
- Easier to manage
- Control of cash flow
- Reduce design & contract administration costs

Bonds Required

- Performance Bond
- Advanced Payment Bond



Staffing Plan



Commitment Construction

Building Systems Summary



Demolition

- Not Required as it was performed before project assigned to contractor.

Cast in Place Concrete

- Complete structure is Cast in Place.
- Serves as exterior and interior walls.
- Minimum compressive strength:
7 N/mm² (1000 psi)
- 1000 gauge polythene act as a retarder when forming concrete.

| Yes | No | Work Scope |
|-----|----|------------------------|
| | X | Demolition Required? |
| | X | Structural Steel Frame |
| X | | Cast in Place Concrete |
| | X | Precast Concrete |
| X | | Mechanical System |
| X | | Electrical System |
| | X | Masonry |
| X | | Curtain Wall |
| | X | Support of Excavation |

Building Systems Summary



Mechanical System

- Mechanical room located on roof.
- DX Split Type Air Conditioning Unit.
- Basement ventilated with impulse jet fans, smoke extract fans and fresh air fans.
- Exhaust fans used in residential apartments.
- Staircase and Lobby are pressurized with emergency ventilation fans with a fire rating of two hours.
- All Assemblies have a fire rating of two hours as a minimum.
- Sprinklers utilized throughout the building.

Electrical System

- Transformer provided by utility company is 1600 KVA.
- Main switchboard at 2500A feeds entire building via a bus bar.
- Sub Main Switch Boards used throughout each breaker.

Curtain Wall

- Used Partly on all façades of the building.
- Aluminum frame is screwed down using fixing screws.