
***EXISTING CONSTRUCTION CONDITIONS &
TECH #1: CONSTRUCTION PROJECT MANAGEMENT***

Executive Summary

The phase IV addition and renovation is the last phase of construction to be done on the Frederick Memorial Hospital building. After the completion of Phase III, Frederick Memorial Hospital is a 298 bed hospital dedicated to serving the areas residents providing a variety of healthcare services. Phase IV is the complete renovation of the G wing of the hospital. The renovated G wing will feature a new entry vestibule, an employee gym, medical exam rooms, physical therapy facility, and administrative offices. Phase IV also includes the addition of a sprinkler system and minor renovations in the H wing of the hospital. The interior courtyard of the G wing, previously a garden, will be infilled to create more usable square footage for each floor in the wing. The building envelope is brick façade. Red brick is on the exterior of the first three floors, and yellow brick on the last floor. The existing façade is to remain and the new façade is placed in front of the existing envelope.

The most unique feature of the project is the fact that the wing is connected and integral with the rest of the hospital. Temporary partitions have to be constructed and maintained so that hospital workers and patients cannot enter the jobsite, and construction workers cannot enter the hospital. Special care has to be made so that no construction dust and debris infiltrates into the hospital. Infection control procedures are stringent for these reasons.

The project has a fairly aggressive schedule and the hospital ownership is adamant that cost remain low. Based on the parametric estimate of \$11 Million, and a square foot estimate of \$16 Million I have calculated, FMH has managed to keep their costs low so far.

The following report will provide a summary schedule of the project, and a summary of the systems within the building. A cost analysis has been performed to compare the actual costs with two different cost estimates. A site plan of existing conditions is shown, as well as a description of the local conditions and information about the client. Lastly, is a description of the project delivery system and the staffing plan.

Project Summary Schedule

One key element of the schedule is that the foundation, structural, and exterior finishes are phased in order to finish before winter. The shell of the building is constructed first so that during the winter months the space inside can be conditioned. The foundation and the superstructure of the courtyard infill will be pumped concrete. The rebar will be placed with a crane. The work will have to be properly sequenced so that the crane and the pump outside the building do not conflict with the exterior masonry. A unique feature of the finish sequence is that the interior finishing crews work from the top floor down. This is done in order to ensure that once floors are finished they are not walked through by the construction workers; this is essential for infection control. The summary schedule is shown on the next page.

ID	Task Name	Start	Finish	2005												2006											
				Ja	Fe	Ma	Ap	Ma	Ju	Jul	Au	Se	Oc	No	De	Ja	Fe	Ma	Ap	Ma	Ju	Jul	Au	Se	Oc	No	De
1	Design	Tue 2/1/05	Mon 7/25/05													Design											
2	Bid Package #1 Procure	Mon 6/6/05	Fri 7/22/05													Bid Package #1 Procure											
3	Bid Package #2 Procure	Mon 7/25/05	Mon 9/12/05													Bid Package #2 Procure											
4	Demolition	Mon 7/25/05	Tue 9/13/05													Demolition											
5	Site Utilities	Thu 9/8/05	Wed 10/5/05													Site Utilities											
6	Courtyard Infill Structure	Wed 9/7/05	Mon 11/7/05													Courtyard Infill Structure											
7	Entrance Canopy Structure	Wed 9/7/05	Wed 10/5/05													Entrance Canopy Structure											
8	Exterior Framing and Sheathing	Mon 10/17/05	Wed 11/2/05													Exterior Framing and Sheathing											
9	Exterior Masonry	Wed 8/31/05	Mon 11/14/05													Exterior Masonry											
10	Exterior Windows and Storefront	Tue 10/18/05	Mon 11/14/05													Exterior Windows and Storefront											
11	Roofing	Tue 11/22/05	Mon 12/19/05													Roofing											
12	Interior - Area G 4th Floor	Mon 10/17/05	Tue 3/7/06													Interior - Area G 4th Floor											
13	Interior - Area G 3rd Floor	Thu 10/27/05	Tue 4/4/06													Interior - Area G 3rd Floor											
14	Interior - Area G 2nd Floor	Thu 11/3/05	Fri 4/28/06													Interior - Area G 2nd Floor											
15	Interior - Area G 1st Floor	Thu 11/10/05	Mon 5/15/06													Interior - Area G 1st Floor											
16	Interior - Area G Basement	Thu 11/17/05	Wed 5/3/06													Interior - Area G Basement											
17	Commissioning	Fri 3/24/06	Tue 5/2/06													Commissioning											
18	WTC List & Punchlist	Wed 3/1/06	Thu 5/11/06													WTC List & Punchlist											
19	Substantial Completion	Mon 5/15/06	Mon 5/15/06													5/15 ◆ Substantial Completion											

Building Systems Summary

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

Demolition

The demolition is extensive on the project. The whole interior of the wing is getting demolished. The existing mechanical, electrical, and plumbing systems are to be removed. Many of the interior partitions are to be removed as well. Additionally, there is some abatement work to remove asbestos. None of the existing structure is to be demolished.

Structural Steel

W8x35 and HSS6x6x3/8 structural steel posts are used along the perimeter of the courtyard where existing bearing walls were demolished. W and HSS members are used as the structure for the new entry vestibule. The structural steel is protected with two hour rating. The structural steel is protected with two hour rating.

Cast-in-Place Concrete

The courtyard infill is a cast-in-place structure with four 22" x 22" columns. At the floor slabs, each column has a 10' x 10' 3 1/2"-thick drop panel. The floor slabs are 9" thick concrete pumped into place. The type of formwork used will be stick-built formwork.

Mechanical System

There are 3 existing draw-through air handling units serving the space. AHU-G1 is 10300 CFM with 358 MBH cooling and 279 MBH heating. AHU-G2 is 8815 CFM with 298 MBH cooling and 213 MBH heating. AHU-G5 is 7700 CFM with 324 MBH cooling and 219 MBH heating. There are 2 new roof top draw-through units being installed on the roof of the G wing. RTU-G3 is 19950 CFM with 964 MBH cooling and 557 MBH heating. RTU-G4 is 16680 CFM with 964 MBH cooling and 557 MBH heating. Two 1000 CFM fan coil units serve the vestibule space. Air is distributed via sheet metal ductwork. Flexible fiberglass insulated duct connects the extruded aluminum diffusers to the sheet metal duct.

Electrical System

The electricity is stepped down at an existing 2500 KVA utility transformer before entering the main distribution panel A (MDPA) with 11 sets of (4) 500 KCMIL, 4" C. Power is distributed from existing panels in 208/120V and 480/277V. For the renovated wing there are 36 panels at 208/120V, 16 panels at 480/277V. Two existing 1250 kW emergency generators serve the space.

Masonry

The renovation has non load bearing brick veneer on the exterior of the wing. The new brick will be placed in front of the existing brick façade. The brick is laid in standard running bond, with a course of soldiers above the windows and three courses of soldiers at the top of the wall. The brick is connected to the existing wall with a flexible tie anchor spaced 16" o.c. horizontally and vertically.

Project Cost Evaluation

- Actual Building Construction Cost
 - \$9,468,374
 - At 85,000 SF - \$111.39/SF
- Total Project Cost
 - \$10,234,749
 - At 85,000 SF - \$120.41/SF
- Major Building System Cost
 - Mechanical: \$1,954,469 - \$22.99/SF
 - Electrical: \$1,036,900 - \$12.20/SF
 - Structural: \$717,974 - \$8.45/SF
 - Sitework: \$766,375 - \$9.02/SF
- Square Foot Estimate From RS Means 2005
 - Used section M.330 Hospital, 2-3 Story, 85000 SF
 - \$206.40/SF
 - Additional Common Additives
 - Basement \$25.50/SF
 - CCTV \$1525 + \$820 for each additional camera
 - Nurse Call Station \$270/EA
 - Duty Station \$278/EA
 - Ceiling Speakers for Sound System \$160/EA
 - Location Modifier
 - Hagerstown, MD - 0.89
 - Total Estimate Cost = \$15,916,414
- D4 Cost Parametric Estimate
 - Smart averaging of 3 medical facility additions ranging from 70,000 to 90,000 SF was implemented
 - Estimate shown on following page
 - Estimate Cost - \$11,048,366

Parametric Estimate for Frederick Memorial Hospital

Phase 4, Additions & Renovations - May 2006 - MD - Frederick

Prepared By: Abe Vogel

Prepared For: Dr. Riley

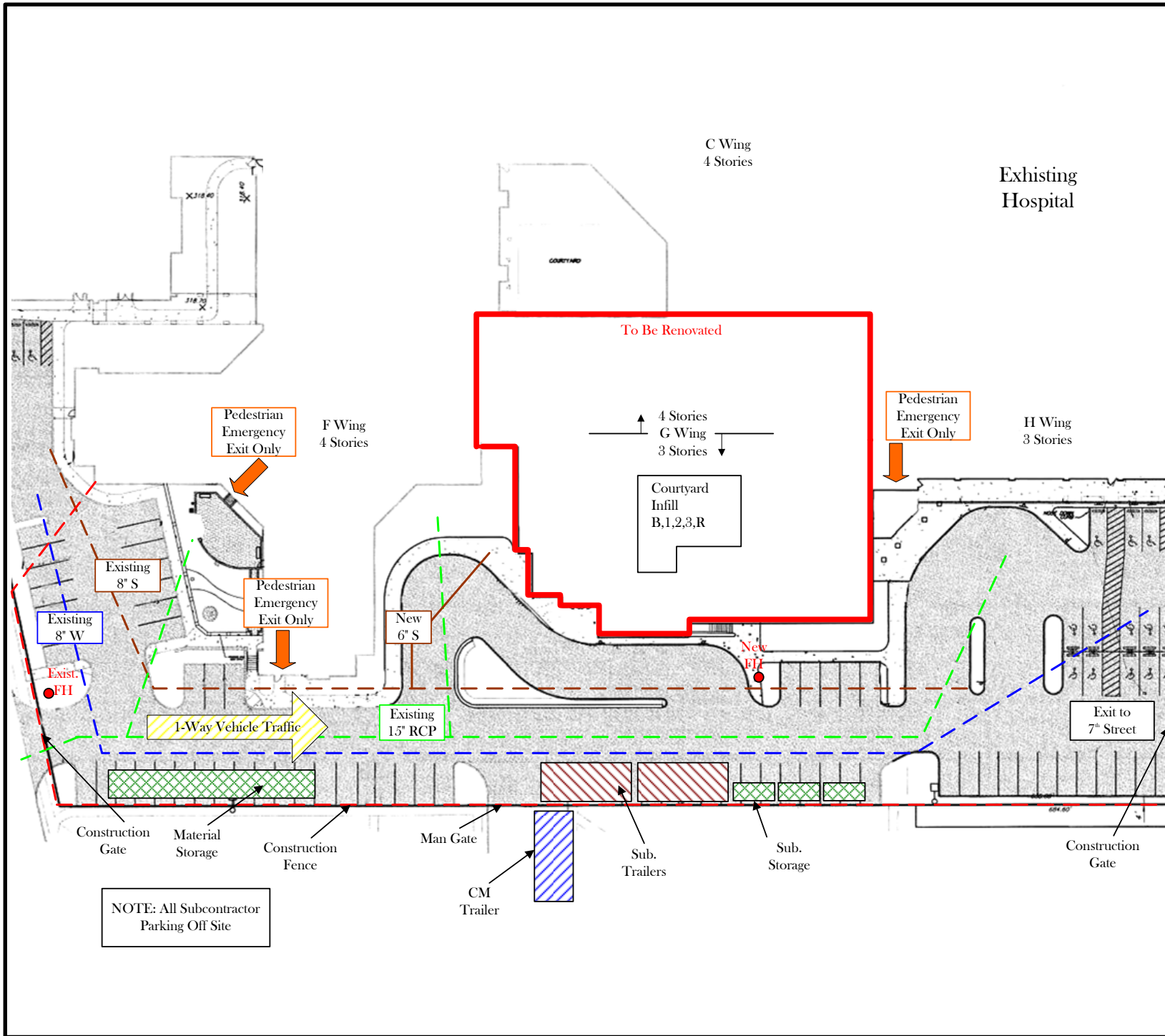
Building Sq. Size: 85000
 Bid Date:
 No. of floors: 3
 No. of buildings:
 Project Height:
 1st Floor Height:
 1st Floor Size:

Site Sq. Size: 155333
 Building use:
 Foundation:
 Exterior Walls:
 Interior Walls:
 Roof Type:
 Floor Type:
 Project Type:

Division		Percent	Sq. Cost	Amount
00	Bidding Requirements	5.96	7.74	658,181
	Bidding Requirements	5.96	7.74	658,181
01	General Requirements	3.81	4.96	421,269
	General Requirements	3.81	4.96	421,269
02	Site Work	5.23	6.80	578,016
	Site Work	5.23	6.80	578,016
03	Concrete	3.87	5.03	427,624
	Concrete	3.87	5.03	427,624
04	Masonry	3.85	5.00	425,113
	Masonry	3.85	5.00	425,113
05	Metals	8.74	11.36	965,652
	Metals	8.74	11.36	965,652
06	Wood & Plastics	2.93	3.80	323,268
	Wood & Plastics	2.93	3.80	323,268
07	Thermal & Moisture Protection	5.00	6.50	552,221
	Thermal & Moisture Protection	5.00	6.50	552,221
08	Doors & Windows	6.03	7.84	666,447
	Doors & Windows	6.03	7.84	666,447
09	Finishes	11.28	14.66	1,246,083
	Finishes	11.28	14.66	1,246,083
10	Specialties	0.98	1.28	108,587
	Specialties	0.98	1.28	108,587
11	Equipment	0.37	0.48	40,492
	Equipment	0.37	0.48	40,492
12	Furnishings	0.41	0.53	45,245
	Furnishings	0.41	0.53	45,245
13	Special Construction	1.54	2.00	169,618
	Special Construction	1.54	2.00	169,618
14	Conveying Systems	1.26	1.64	139,378
	Conveying Systems	1.26	1.64	139,378
15	Mechanical	26.88	34.93	2,969,264
	Mechanical	26.88	34.93	2,969,264
16	Electrical	11.87	15.43	1,311,908
	Electrical	11.87	15.43	1,311,908
Total Building Costs		100.00	129.98	11,048,366

Frederick Memorial Hospital

Project 2000 Phase 4 Additions & Renovations



NAME
Abe Vogel
 10.05.05

TITLE
SITE PLAN

Local Conditions

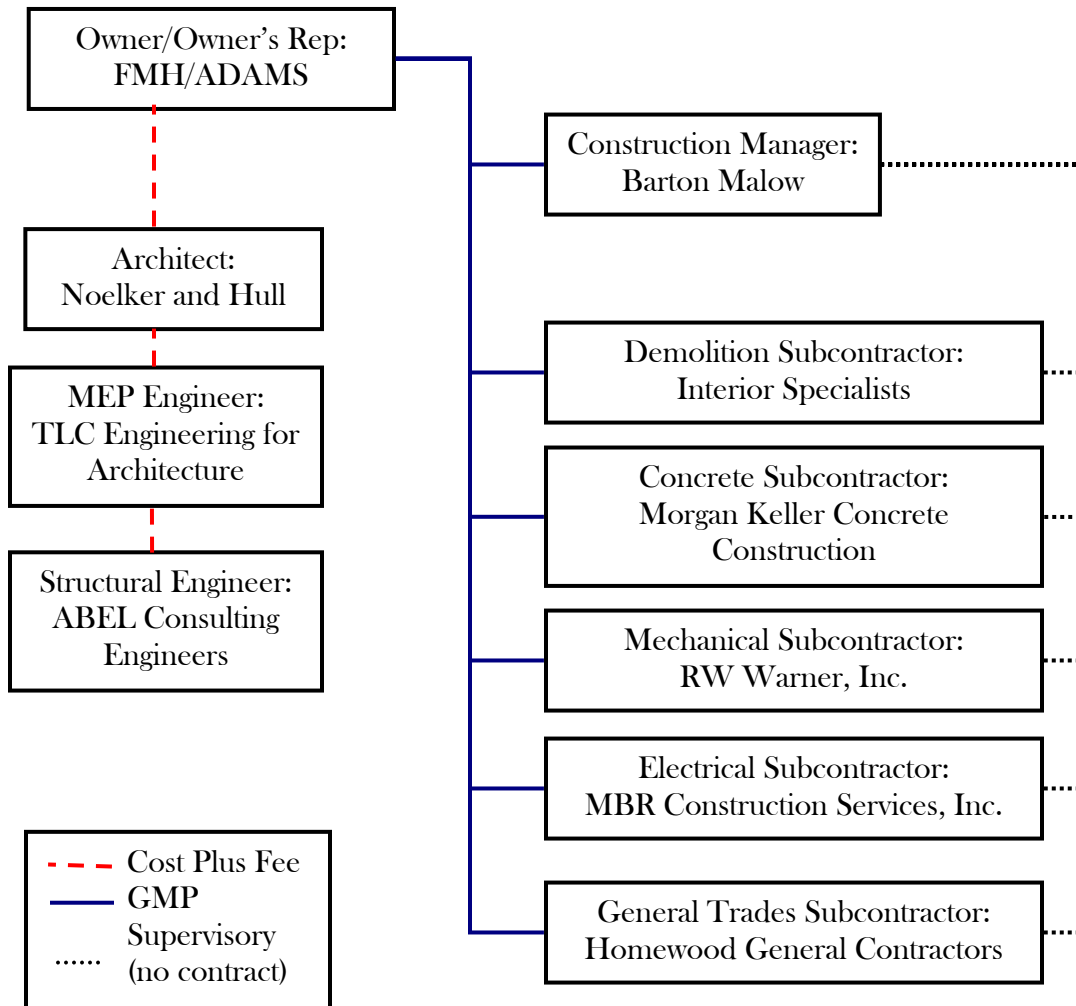
There is no prevailing method of construction in the area; however past phases of construction on the hospital have all been cast-in-place concrete structure. Construction parking is an issue at Frederick Memorial Hospital. Each subcontractor is given two on-site parking permits. All other workers are required to park in public parking lots 3 blocks away. There is ample on-street parking adjacent to the hospital but this is in a residential area, and the residents have made an arrangement with the hospital that all contractors are prohibited from parking on the street. There will not be any recycling of materials on this project. There are no recycling centers in Frederick Maryland. The tipping fees for the local landfill are \$68 per Ton for construction and demolition (rubble). Union labor is not required on the project but the structural steel and the electrical subcontractors will be using union labor from the Ironworkers local union, and the International Brotherhood of Electrical Workers local union respectively. The soil on site is rated for 2000 pounds per square foot.

Client Information

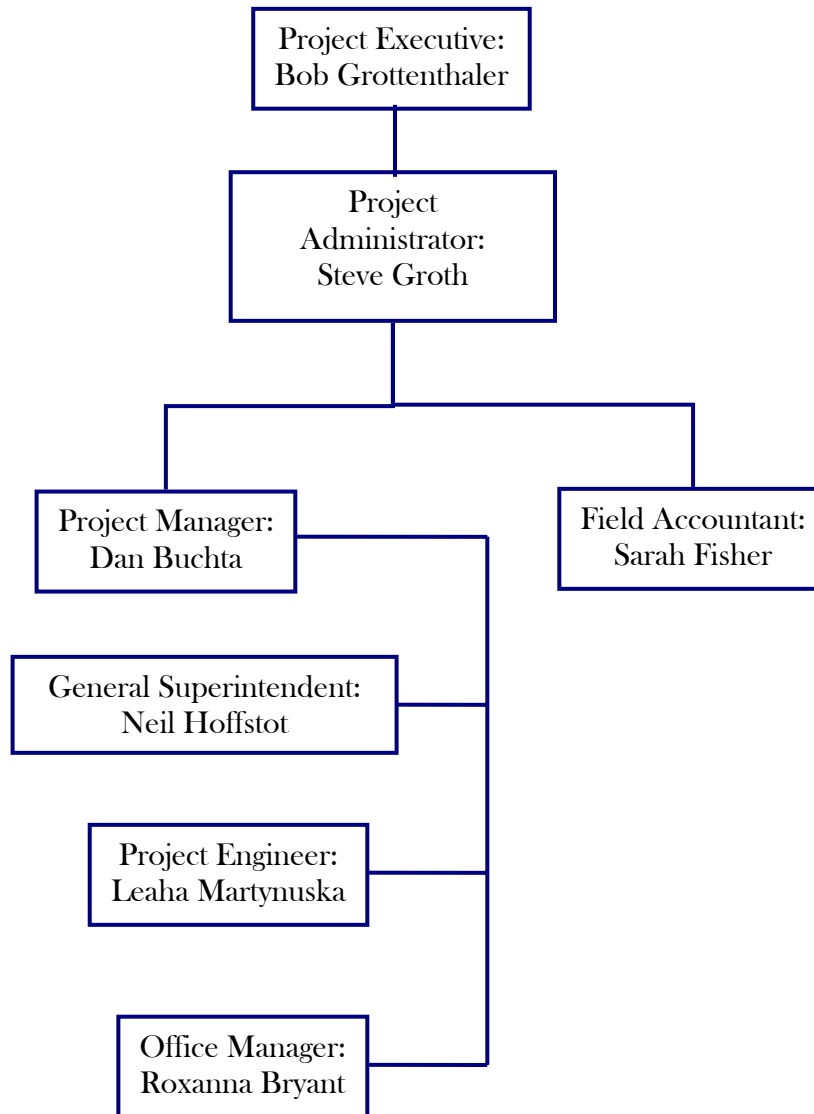
The owner of the project is Frederick Memorial Hospital. FMH, a private not for profit hospital, opened its doors in 1902 and has been providing cost-efficient healthcare to the residents of Frederick ever since. The hospital began a multi-phase project to improve the quality and size of the hospital in 2000. The earlier phases of the project increased the total number of beds to 298. Phase IV, consists of the renovation of the G wing. The G wing will become administrative offices, hospital staff support rooms, exam rooms, physical therapy space, and an employee gym among other things. The hospital has high expectations when it comes to the cost of the project. As it is the last phase, their budget is running dry, and it is essential that the project remain on budget. This has been evident in their insistence on thorough bid and scope reviews to make sure that nothing is bought twice. Imperative to the owner's satisfaction is running and predictable job site. Because the construction is happening within the hospital, a certain level of cleanliness is expected. Contractors are additionally required to notify the hospital when they will be using torches or other equipment, which will produce smoke or odor, to demolish existing systems.

There are weekly construction utility interrupt request meetings in which the contractors outline where they are going to be working and what they are going to be doing.

Project Delivery System



Contractors were solicited with an invitation to bid. As few as 3 and as many as 10 contractors were invited to bid each category. Bids were awarded based on the cost of the bid and the credentials of the contractor. All contractors bidding the project had to fill out a Barton Malow prequalification form in order to bid the project if they were not already prequalified with Barton Malow. For bid security each contractor bidding had to have a bid bond issued by a qualified surety in the amount of 5% of the base bid amount. The contract types and delivery system used on this project are appropriate.

Staffing Plan*Description of Staffing Plan*

The project administrator and the project executive work out of the home office in Linthicum Maryland. Neither of them will have very much time charged to the project; less than 100 hours. The project manager runs the project in Frederick, and works there full time. The general superintendent, project engineer, and office manager all report to the project manager, and work full time. The field accountant works out of the home office; Frederick Memorial Hospital is just one of the projects she is the accountant on. The office manager works at the jobsite.